



ERICSSON

Kathrein Mobile Communication — now part of Ericsson

As of 1. October 2019 the new company data are as follows:

Ericsson Antenna Technology Germany GmbH
Klepperstraße 26
83026 Rosenheim, Germany

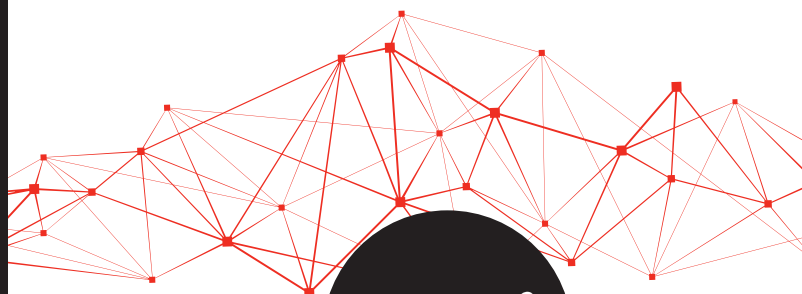
VAT Reg. No.: DE 324 954 029
Tax ID No.: 156/125/80577

www.kathrein.com

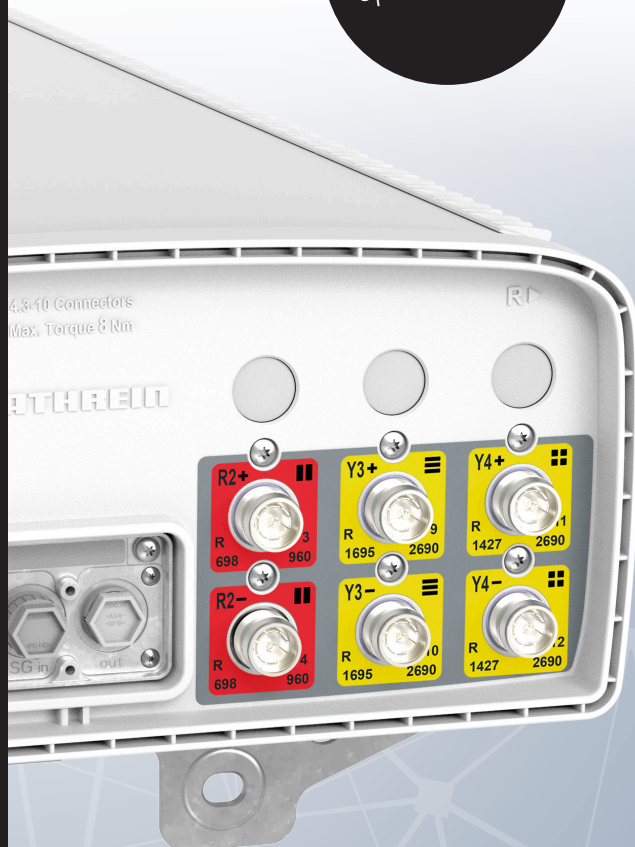
Read more at:
[ericsson.com/en/networks/offerings/5g/
5g-radio/antenna-system/](http://ericsson.com/en/networks/offerings/5g/5g-radio/antenna-system/)

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EDITION 2
Updated Version



KATHREIN



Kathrein Mobile Communication - now part of Ericsson

Mobile communication means being available anywhere and anytime, using media and having Internet access. Mobile network operators face the challenge of reliably providing needed capacities for the enormous data volumes.

Kathrein Mobile Communication is the perfect partner for this task. Our systems and solutions are future-proof, offer low Total Cost of Ownership and ensure highly reliable data transmission. We supply all major network suppliers as well as renowned network operators. Close

collaboration with our customers enables us to optimise our systems and solutions on a continuous basis and to also realise specific requirements. Our intensive research and development activities pave the way for innovative technologies that set standards worldwide.

The additional expertise brought by the acquisition of Kathrein's antenna and filter business will broaden the Ericsson Radio System offering, which is vital for the introduction of 5G.

Find out more about us at www.kathrein.com and www.ericsson.com/en/networks/kathrein

Catalogue Issue 02/2020

All data published in previous catalogue issues hereby become invalid.

We reserve the right to make alterations in accordance with the requirements of our customers.

For up-to-date or additional data please check the latest data sheets on our website: www.kathrein.com

Please also visit our website for new product releases which are not part of this catalogue.

Please also see additional information on inside back cover.



Our quality assurance system and our environmental management system apply to the entire company and are certified by TÜV according to EN ISO 9001 and EN ISO 14001.



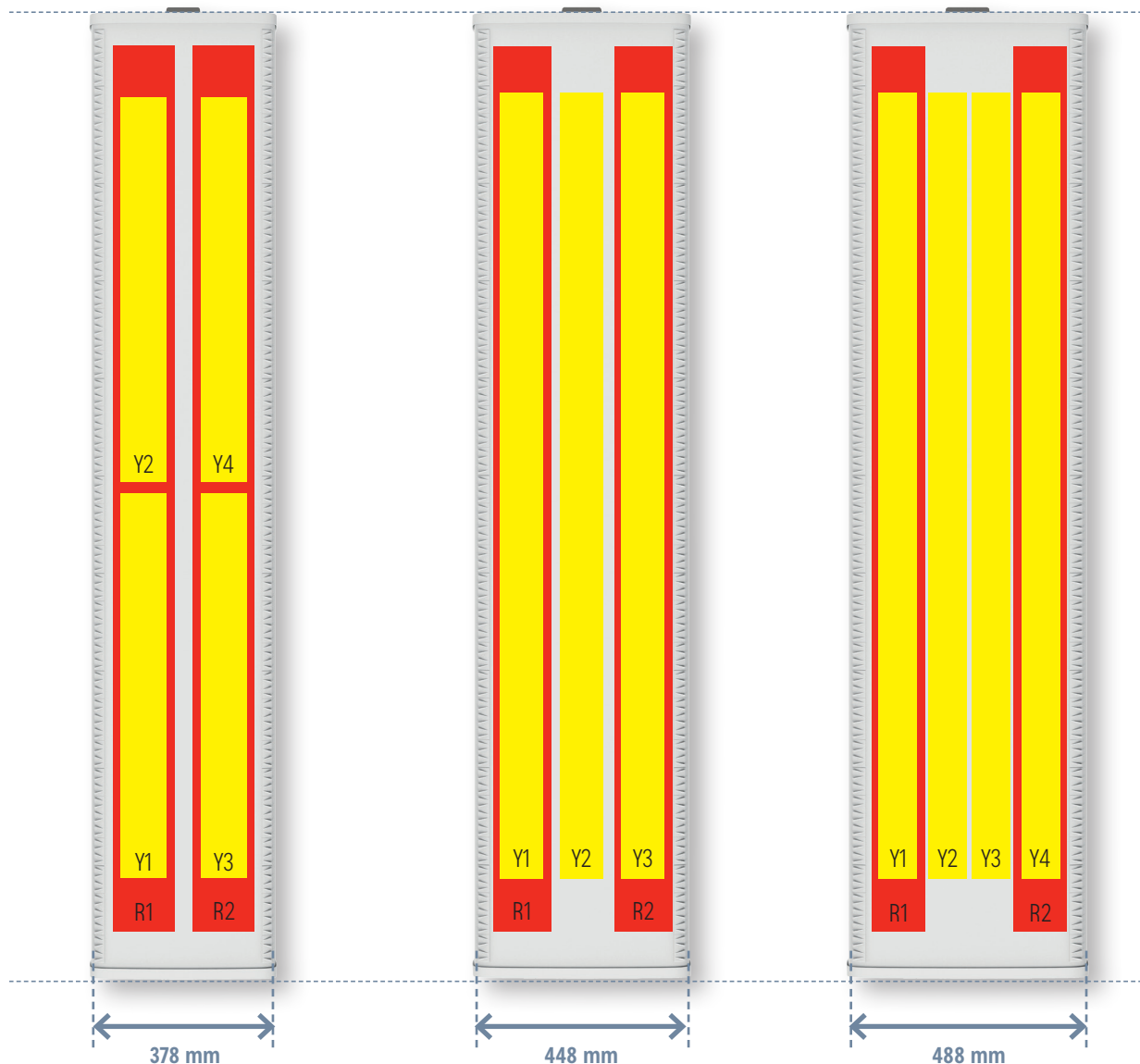
Our products are compliant to the EU Directive RoHS as well as to other environmentally relevant regulations (e.g. REACH).

Technology Promotion

New Platform Architecture

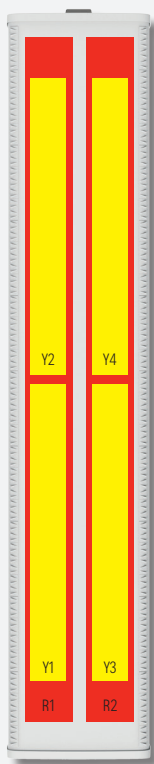
> New Multi-band Platform in 3 Ultra-compact Width Dimensions

- Best-in-class form factor for multi-band antennas (for 378 platform)
 - Market leading width for parallel lowbands
 - ~30% improved maximum wind load*
 - ~25% lower weight*
- Improved manufacturability
 - Significantly reduced amount of components per antenna
 - High level of automation and process stability
 - Sustainably high antenna quality and PIM performance
- Faster industrialization of antenna variants



* Exemplarily applicable for 800372991 vs. 80010991

378 Platform – World's Smallest Antenna with Side-by-Side Lowband Arrays



800372991

12-Port Hexaband 2L4H	R1, R2	Y1, Y3	Y2, Y4
Frequency range [MHz]	698–960	1695–2690	1427–2690
Dual polarisation	✓	✓	✓
Gain [dBi]	15.5	15.9	16.3
Horizontal HPBW [°]	60	65	65
Vertical HPBW [°]	11.0	10.0	10.0
Tilt range [°]	2.5–11.5	2–12	2–12
Port-to-port isolation [dB]	> 25	> 28	> 28
PIM 2 x 43 dBm [dBc]	< -153		
Size L/W/D [mm]	1978/378/164		

Frequency Range [MHz]	Array	Connector/ Ports
698–960	R1	1–2
698–960	R2	3–4
1695–2690	Y1	5–6
1427–2690	Y2	7–8
1695–2690	Y3	9–10
1427–2690	Y4	11–12

Correlation table

> 12-Port Hexaband 2L4H, 800372991

Features

- Revolutionary width reduction from 508 mm to 378 mm
- 2 ultra broadband highband arrays (1427–2690 MHz)
- Market-leading width for parallel lowbands
- First antenna in ultra compact platform worldwide

Functions

- Wind load and weight reduction
- L-band for supplemental downlink
- All bands with independent electrical downtilt
- Use of two separate arrays for 700/800/900 MHz
- Optimal side lobe behaviour through advanced dipole feeding concept

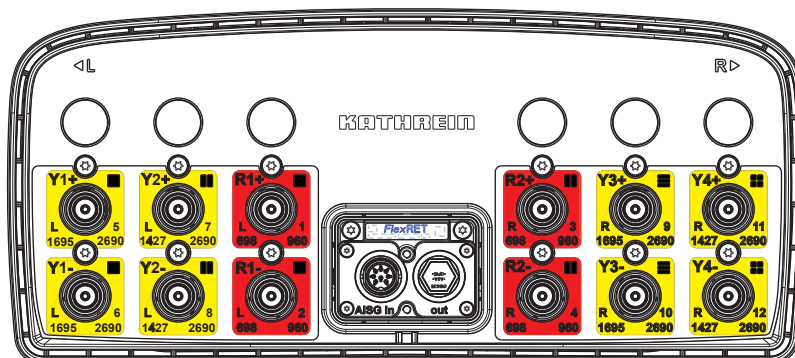
Benefits

- Reduced tower rental costs thanks to:
 - 25% less weight (compared to current platform) – TCO
 - 30% less wind load (compared to current platform) – TCO
- Relaxed tower construction (statics benefit) – TCO
- Increased data throughput at no additional antenna cost
- Ultra broadband dipole ready for L-band use
- Guarantees optimal network performance by avoiding intermodulation products caused by frequency combination of 700/800/900 MHz
- 12 ports (4 x 698–960 MHz, 4 x 1427–2690 MHz, 4 x 1695–2690 MHz)

Site preparation for 5G technology

- Reduces the number of antennas in the field: Existing installations with fewer ports will be replaced by antennas with a higher number of bands and the same form factor
- Fewer antennas and lower wind load allow the installation of additional 5G devices

Layout of interface



2G–5G Hybrid Antenna

Hybrid Passive and Active Antenna System

> Innovative Antenna System for 2G, 3G, 4G, 5G

- Cell sites are often space constrained, making it challenging, if not impossible, to deploy additional hardware, in particular, antennas
- Kathrein Mobile Communication is introducing this innovative antenna system aimed at overcoming these issues, while ensuring the delivery of next generation mobile services
- This new, high-performance antenna system seamlessly integrates a multi-band passive antenna and a massive MIMO active antenna into a single unit

> Ready for 5G All-in-One

Features

- Three separate field-replaceable products, which can be integrated on site into a single physical antenna:
 - Passive multi-band antenna
 - Mechanical Integration Kit (MIK)
 - mMIMO active antenna system
- Available for all Kathrein Mobile Communication 448, 488 platform antennas
- Designed to carry various massive MIMO radios
- Fulfills typical overall maximum height requirements

Functions

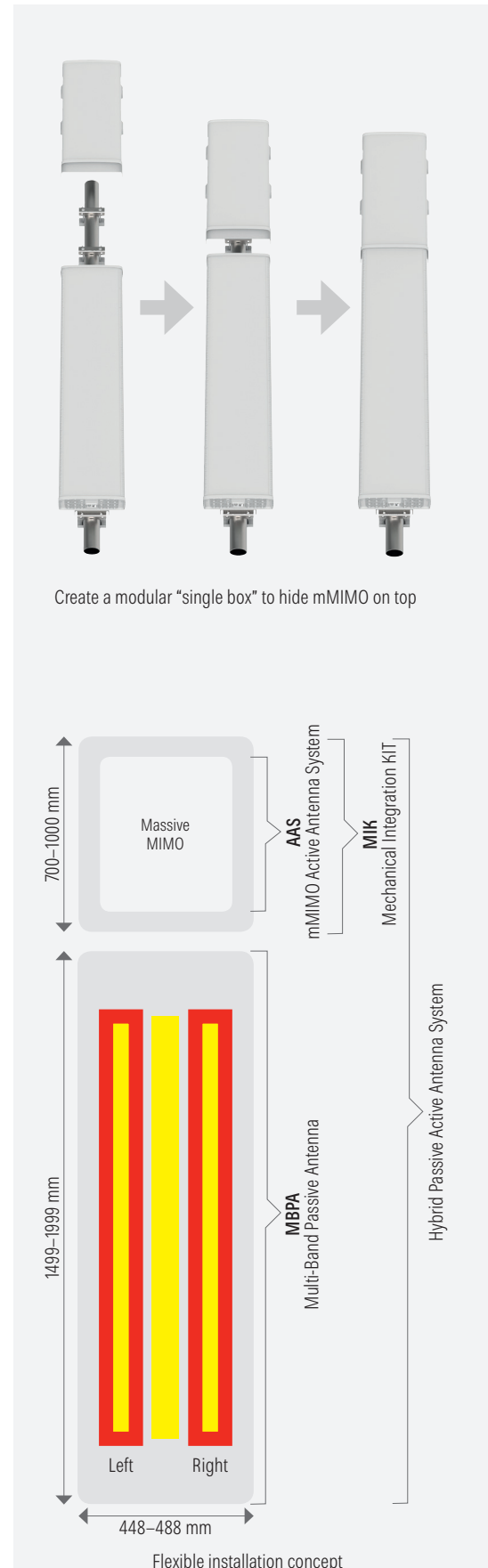
- Innovative antenna system combining various mobile radio standards and technologies
 - State-of-the-art passive multi-band antenna technology with integrated 4 x 4 MIMO support
 - Latest 5G mMIMO technology

Benefits

- Flexible and modular deployment, easy installation
- Existing antenna sites can be easily upgraded to 5G
- Optimal cost-benefit ratio
- Improved visual appearance

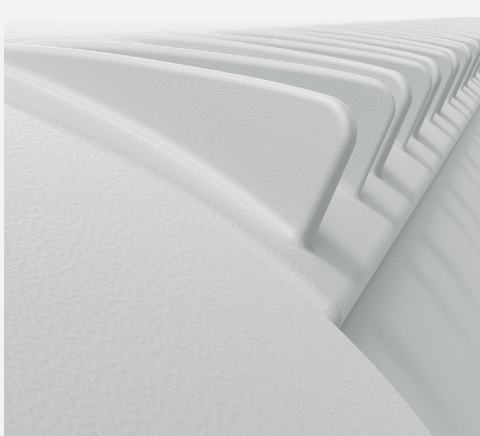
Three installation options

- Stand-alone MBPA
- MBPA with empty MIK; can be installed post installation of option 1
- MBPA, MIK and mMIMO; can be installed post installation of option 1 or 2



New Approach to Wind Load Reduction

Vortex Generators (VGs)



Features

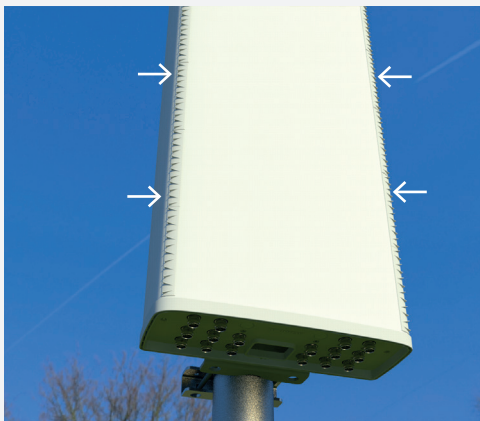
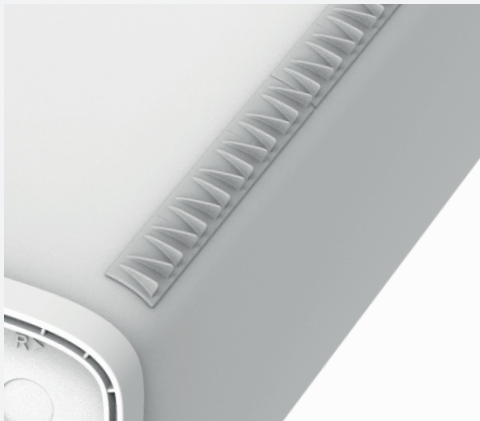
- New approach to wind load reduction
- First ever usage of vortex generators for antennas
- Possible for all new Kathrein Mobile Communication antenna platforms
- Approved in three different wind tunnels
- Approved for all wind speeds

Functions

- Affects the wind flow around the antenna
- Wind flow is directed closer to the antenna
- Reduces drastically the frontal wind load
- No risk of extreme lift effects

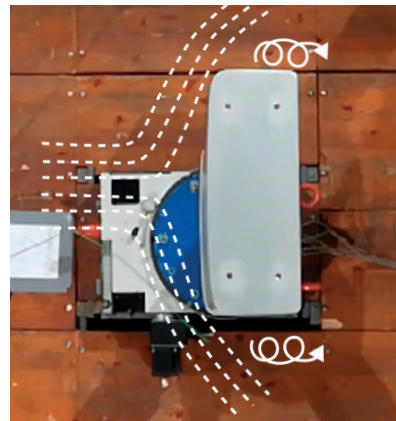
Benefits

- Relaxed tower construction (statics benefit)
- Easier to implement antennas in existing sites
- Less operating expenses
- Best installation space to wind load ratio

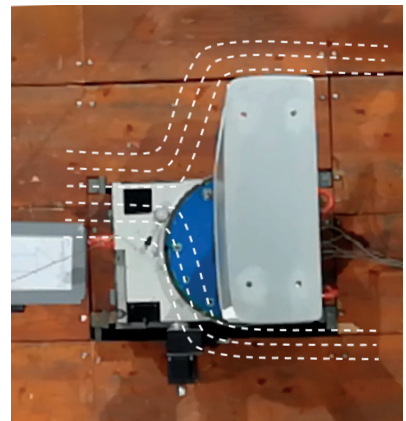


Vortex Generators (VGs)

> Visualisation of the Streamlines in the Wind Tunnel



Without VGs



With VGs

New Approach to Wind Load Reduction

Vortex Generators (VGs)

> Wind Tunnel Tests

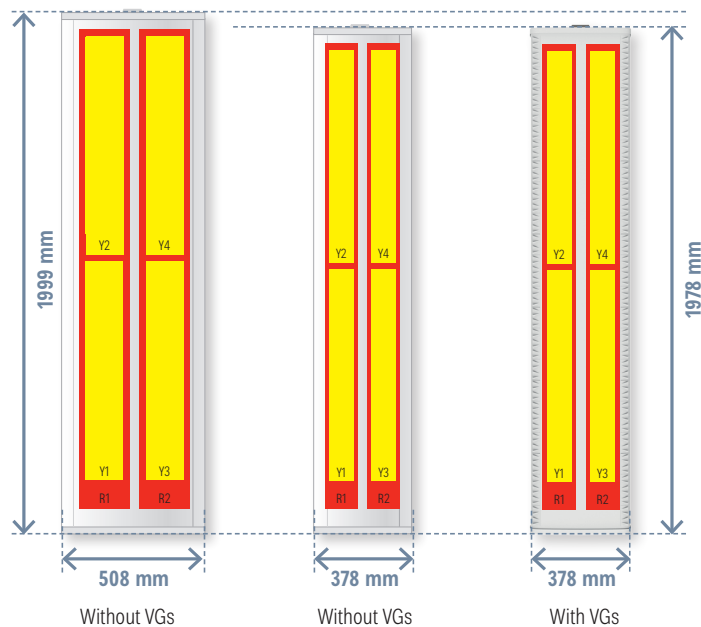
- Measured values
- Accepted by civil engineers and authorities
- All wind directions can be measured
- Results can be used for validation

> Comparison Between Different Antenna Designs and the Impact on Wind Loads

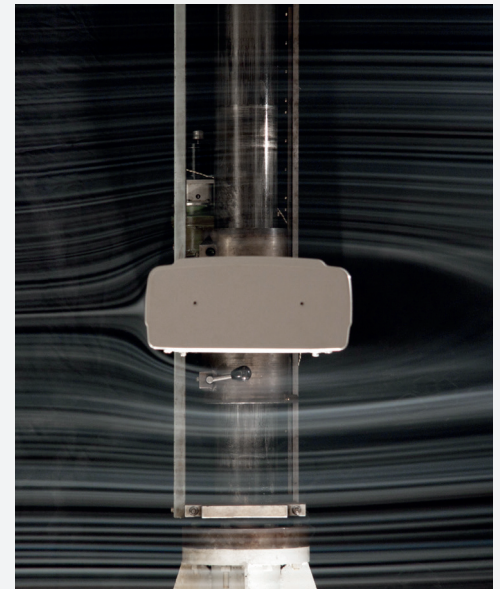
Advantages with new antennas:

- Smaller antenna design → less installation space
- Reduced wind loads
- Optimized profile for best performance

> Tower Loading Improvement



	80010991 Wind load at 150 km/h	Wind load at 150 km/h	800372991 Wind load at 150 km/h
Frontal	1130 N	875 N	465 N (~ -60%)
Maximal	1140 N	875 N	815 N (~ -28%)
Weight	48.7 kg	37 kg	37 kg (~ -25%)



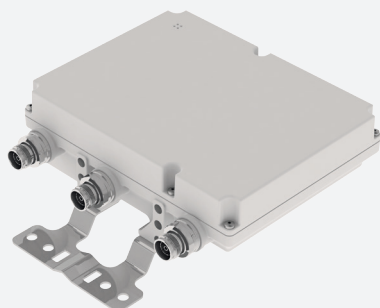
Wind tunnel tests

Detailed information about the methodology and findings about wind loads can be found online in the White Paper "Base Station Antennas – Reliable Wind Load Calculation".
www.kathrein.com → Support → Technical Documents
 → Windload



Antenna Line Devices

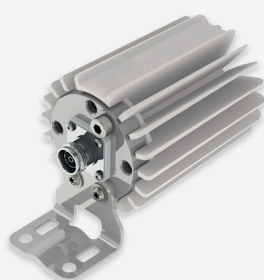
Boxes Between Antenna and Radio – Disposable or Essential?



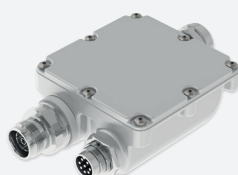
Multi-band Combiner



Multi-band TMAs w/o RF-bypass



50-ohm Load



Smart Bias Tee

An operator's daily challenge is increasing capacity and coverage of mobile communication sites to quench the thirst for data in a highly competitive environment. But why still use Antenna Line Devices (ALDs), when multi-band Remote Radio Units and Active Antenna Solutions are already available?

Mobile communication operators have invested a fortune over the last few years to establish a mobile communication infrastructure as we have it today. For increasing the existing performance to cope with future requirements, there are in principle two options: build up completely new sites in a kind of green field approach or upgrade existing sites.

At first sight, green field approach has a certain charm, as it opens up the possibility to solely use the latest technology with best data rates and energy efficiency. But realistically it would cost another fortune with an undesirably high period for amortization in times of massively decreasing revenue per data unit. Therefore upgrading existing sites by adding new spectrum and technology is the more reasonable approach for most operators. And this is where Antenna Line Devices come into play.

Space is limited everywhere — but especially on top of the mast. Installation of additional radios to add new frequency bands or apply 4T4R/2T2R instead of SISO can in most cases better be realized ground based. Multi-band Combiners allow an efficient use of existing feeder cables or minimizing the number of necessary new feeders. When installing RRUs near the antenna, combiners can be used to feed-in this new signal to the antenna. In case of poor RX-sensitivity of legacy sites, TMAs are used to overcome this weakness and improve performance of the existing infrastructure. This minimizes the necessary investment and downtime of the network compared to the installation of new RRUs.

There's no one-fits-all upgrade solution, since the existing infrastructure varies very much from operator to operator. Kathrein Mobile Communication offers a broad ALD portfolio with approximately 400 products that covers most use cases in the frequency range from 698 to 2690 MHz. This broad ALD portfolio assures the availability of the specific product necessary for a specific use case.

High reliability and robustness of our ALDs in combination with excellent PIM performance help to decrease the total cost of ownership when installing ALDs.

To learn more about Kathrein Mobile Communication's ALD portfolio, please visit our website www.kathrein.com.

Base Station Antennas

LB (Lowband) ≤ 960 MHz
HB (Highband) > 960 MHz

> XPol	2 Ports	1 LB 1 HB 1 LB 1 HB	2 Ports
	4 Ports	2 LB 1 LB 1 HB 2 HB 2 x 3.5 GHz	4 Ports
	6 Ports	1 LB 2 HB 2 LB 1 HB 3 HB	6 Ports
	8 Ports	1 LB 3 HB 2 LB 2 HB 4 HB 4 HB TDD Antenna	8 Ports
	10 Ports	1 LB 4 HB 2 LB 3 HB	10 Ports
	12 Ports	2 LB 4 HB	12 Ports
	14 Ports 16 Ports	2 LB 5 HB 2 LB 6 HB 3 LB 5 HB	14 + 16 Ports
> Small Cell and Special Design			Small Cell
> VPol			VPol
> Omni			Omni
> RET	RCU, Control Devices, Site Sharing, Accessories		RET
> Electrical Accessories	Splitters, Tappers		Electr. Acc.
> Mounting Accessories	Hardware, Tools, Protection Caps		Mounting

Summary of Antenna Types, RET-Products and Accessories

KATHREIN

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
731...		800102..		800107..		80011...	
731651	280	80010235	241	80010715	38 + 39	80011867	94 + 95
		80010292v03	64 + 65	80010725	231 – 234	80011868	96 + 97
732...				80010726	235 – 238	80011877	192 + 193
732327	286			80010728	125 + 126	80011878	194 + 195
		800103..		80010753	228	80011891	137 – 139
734...		80010305v02	25	80010761	28	80011898	162 – 164
734360	302	80010306v02	26			80011965	149 – 151
734361	302	80010368	245	800108..			
734362	302	80010378	31	80010817	37		
734363	302			80010828v01	247	8002...	
734364	302	800104..		80010843	239	80020100	225
734365	302	80010431	251	80010846	250	80020125	240
		80010456v02	24	80010864	70 + 71	80020126	215
737...				80010865	72 + 73	80020448	246
737978	287			80010866	74 + 75	80020622	49 + 50
		800106..		80010867	88 + 89	80020711	227
738...		80010621v02	29	80010868	90 + 91	80020892	146 – 148
738546	280	80010651	30	80010869	92 + 93	80020899	165 – 167
		80010652	51	80010887	34	800250911	127 – 130
742...		80010656	52 + 53	80010888	35		
742033	295	80010664	40 + 41	80010889	36		
742034	295	80010665v01	42 + 43	80010891	140 – 142	8003...	
742113	298	80010666v01	44 + 45			800372965	98 – 100
742192v02	244	80010678	27	800109..		800372966	101 – 103
		80010682	48	80010922	54 + 55	800372991	172 – 175
782...		80010691v01	66 + 67	80010964	110 – 112	800372992	180 – 183
78211293	306	80010692v01	68 + 69	80010965	113 – 115	800372995	205 – 208
78211297	306	80010697	76 + 77	80010966	116 – 118		
		80010698	78 + 79	80010991	176 – 179	8004...	
800101..		80010699	80 + 81	80010992	184 – 187	800442001	209 – 211
80010123v03	46 + 47					800442004	152 – 154

Summary of Antenna Types, RET-Products and Accessories

KATHREIN

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
800442008	196 – 200	850...		85010512	292	86010152	274
800482001	168 – 171	85010002	280	85010513	292	86010153v01	257
800482021	201 – 204	85010003	280			86010154	262
		85010004	306	860...		86010155	263
816...		85010009	288	86010002	266	86010158	259
81610014	306	85010014	293	86010007	261	86010160	275
		85010015	293	86010008	261	86010162	264
840...		85010016	293	86010009	261	86010163	265
84010557	216 + 217	85010017	293	86010010	261	86010165	258
84010558	216 + 217	85010058	295	86010011	261	86020136	273
84010564	229 + 230	85010059	295	86010012	261	86020137	273
84010601G	221 – 224	85010060	297	86010013	261	86020138	273
84010602G	221 – 224	85010061	297	86010014	261	86020160	275
84010603	218 – 220	85010075	299	86010015	261		
84010604	218 – 220	85010076	299	86010029	261	K7...	
840370799	158 – 161	85010080	261	86010030	267	K742263	295
840370964	104 – 106	85010087	300	86010031	268	K742317	295
840370966	107 – 109	85010096	283	86010032	261		
84040600	304	85010097	284	86010033	261		
84040601	304	85010098	294	86010046	260		
84040602	304	85010099	290	86010054	261		
84040603	304	85010101	285	86010101	271		
		85010102	296	86010103	271		
845...		85010103	301	86010105	271		
84510864	58 + 59	85010104	297	86010129	305		
84510865	60 + 61	85010108	301	86010131	270		
84510866	62 + 63	85010110	289	86010136	272		
84510872	85 – 87	85010111	282	86010137	272		
84510891	134 – 136	85010112	291	86010138	272		
84510892	143 – 145	85010205	226	86010148v01	256		
84510965	119 – 121	85010212	280	86010150	274		
84510966	122 – 124	85010213v01	303	86010151	274		

According to AISG, the frequencies shall be marked like shown in the following table.
The upper edge of the frequency range is used to select the colour code.

Frequency Range / MHz Defined by AISG	Frequency Range / MHz Examples	Colour	Colour Code Abbreviation
380–1000	617–746	Red	R
	698–960	Red	R
	698–894	Red	R
	790–960	Red	R
1001–1700	1427–1518	Green	G
1701–2300	1350–2200	Blue	B
	1710–1880	Blue	B
	1710–2180	Blue	B
	1920–2170	Blue	B
2301–3000	2490–2690	Yellow	Y
	1695–2690	Yellow	Y
	1427–2690	Yellow	Y
3001–5000	3300–3800	Purple	P
	3550–4200	Purple	P
5001–6000	5150–5925	Orange	O

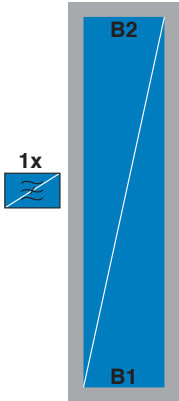
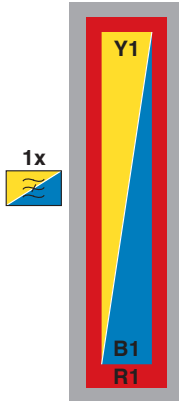
In line with this, we have invented a system in order to better illustrate the physical design of our antennas. Based on the AISG colour coding, every antenna system is displayed corresponding to its frequency range. Each system is additionally marked by its colour code abbreviation as well as an identification number (e.g. “R1” for the first lowband system) called “Array ID”. For multi-array antennas, also the position marking is indicated as stipulated by AISG (“left” / “right” / “center”).

The respective symbols are displayed on each type index of panel antennas in the catalogue.

In case an ultra-broadband dipole array is used for two or three independent system, internal filters can be used in order to divide the bands. Those filters are illustrated by the following symbols:

1. Filter Lowband e.g. 790–862 / 880–960 MHz or 698–803 / 824–960 MHz		2. Filter Highband 1 1710–1880 / 1920–2170 MHz	
3. Filter Highband 2 1710–2170 / 2490–2690 MHz		4. Filter L-Band 1427–1518 / 1695–2180 MHz	

Some examples shall demonstrate the symbolic antenna illustration:

1. 2-Port Antenna 1 Lowband Array e.g. 698–960 or 790–960 MHz		2. 4-Port Antenna 1 Lowband / 1 Highband Array interleaved e.g. 698–960 / 1710–2690 or 790–960 / 1710–2690 MHz	
3. 4-Port Antenna 2 Highbands side-by-side ("multi-array") e.g. 2 x 1695–2690 MHz		4. 6-Port Antenna 1 Lowband Array interleaved with 2 Highband Arrays, Highband stacked e.g. 698–960 / 2 x 1710–2690 MHz	
5. 4-Port Antenna 2 Highbands filtered e.g. 1710–1880 / 1920–2170 MHz		6. 6-Port Antenna 1 Lowband interleaved with 2 filtered Highbands e.g. 790–960 / 1710–2170 / 2490–2690 MHz	

Configuration Type A



80010305v02
80010306v02
80010456v02

Configuration Type B



80010378

Configuration Type C



80010621v02
80010651
80010656
80010678
80010761
80010843
80020125
80020711

Configuration Type D



80010887
80010888
80010889

Configuration Type E



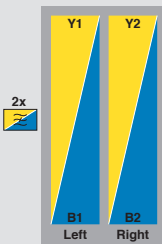
80010817

Configuration Type F



80010652
80010682
80020622

Configuration Type K



80010728

Configuration Type L



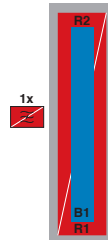
80010123v03

Configuration Type M



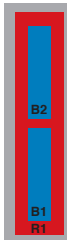
80010664
80010665v01
80010666v01
80010715
80010753

Configuration Type N



80010697
80010698
80010699

Configuration Type P



80010292v03

Configuration Type R



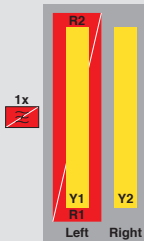
80010691v01
80010692v01

Configuration Type S



80010864
80010865
80010866

Configuration Type W



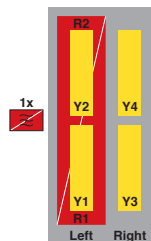
80010867
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80010869
80011867
80011868

Configuration Type X



80010891
80011891
80020892

Configuration Type Z



80011898
80020899

Configuration Type AB



80010964
80010965
80010966
800372965
800372966
840370964
840370966
84510965
84510966

Configuration Type AG



80010991
80010992
800372991
800372992
840370799

Configuration Type AH



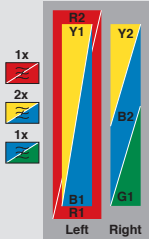
84510892

Configuration Type AI



80011965

Configuration Type AJ



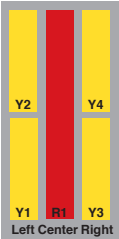
80011877
80011878

Configuration Type AK



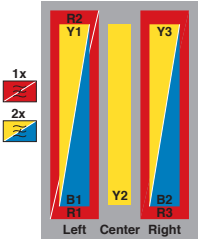
84510864
84510865
84510866

Configuration Type AL



84510891

Configuration Type AM



800442001

Configuration Type AN



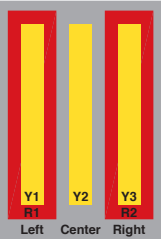
80010922

Configuration Type AO



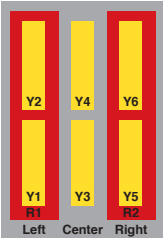
800250911

Configuration Type AP



800442004

Configuration Type AQ



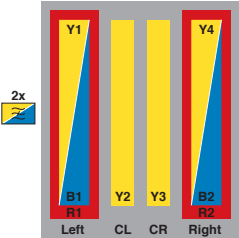
800442008

Configuration Type AR



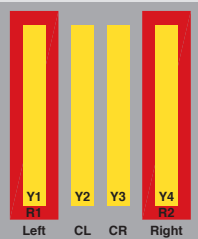
84510872

Configuration Type AS



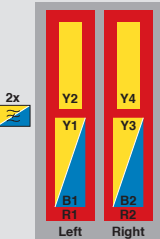
800482021

Configuration Type AT



800482001

Configuration Type AU



800372995

Antenna Designs:

Antenna Families / RET-system

Distinguishing Features

KATHREIN

Design	Compact size and elegant design are the distinguishing features of the Kathrein Mobile Communication antenna families.
Radome	The radomes cover the internal antenna components. The fiberglass material guarantees optimum performance regarding stability, strength, UV resistance, painting and weather protection. The colour of the radome of outdoor panel antennas is similar to RAL 7035.
Environmental influences	Kathrein Mobile Communication antenna designs are based on fundamental engineering knowledge and also on our decades of practical experience, during which the various constructions and materials used have proved their outstanding reliability.
Environmental conditions	Kathrein Mobile Communication cellular antennas are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E. The antennas exceed this standard regarding the following items: – Low temperature: –55 °C – High temperature (dry): +60 °C
Environmental tests	Kathrein Mobile Communication antennas are designed according to the specifications as defined in ETS 300 019-2-4. The homogenous design of the Kathrein Mobile Communication antenna families uses identical modules and materials. Extensive tests have been performed on typical samples and modules. The vibration test has been adapted relating to frequency and acceleration to the conditions of mast mounted antennas.
Impedance	Standard Impedance for all products is 50 Ω unless otherwise stated.
Great variety of half-power beam width, gain values, electrical downtilt	According to the antenna type selected, customers can choose from different half-power beam widths, gain values and electrical downtilts for panel antennas. Downtilts are either fixed or adjustable and controlled by remote electrical tilt system (RET).
Low intermodulation products (typ. <–153 dBc)	With many years of experience in the construction of antennas and intensive research into the effects of intermodulation, we offer optimized material and technology used for antennas (the given value refers to 3rd order products measured with 2 carriers of 20 W each).
Excellent tracking	Tracking states the symmetry between the +45° and –45° polarized horizontal pattern. Bad tracking values lead to interferences in the network and reduced diversity performance. The Kathrein Mobile Communication special Tracking compensation reduces the average value measured at $\pm 60^\circ$ to < 2–3 dB.

Antenna Designs:

Antenna Families / RET-system

Distinguishing Features

KATHREIN

Multi-array design

Besides standard single array antennas, Kathrein Mobile Communication designs antennas providing multiple antenna arrays in one radome. These multi-array antennas do not only supply a future-proof multiplicity of diverse frequency bands for various technologies, but are also well-prepared for different MIMO applications. The Kathrein Mobile Communication portfolio contains a high variety of design solutions like interleaved and side-by-side antenna types or combinations of both as well as filter realizations.

Multi-functional installation hardware

Depending on the type, the antennas are equipped with up to 2 attachment points. For mast-mounting, brackets and mechanical downtilt kits are available. To assist the installation technicians in aligning the panels, an azimuth adjustment tool can be supplied (see Mechanical Accessories).

MTBF Statement

Traditionally, passive components like antennas cannot be well calculated due to the lack of a sufficient number of components in the MTBF library. Unfortunately, this constraint results in a very inaccurate calculation. Thus, such results are technically questionable and unrealistic. In essence, antennas are made out of mechanical parts that do not show any failure rates. Only available failure rates can be calculated into an MTBF value. Consequently such components cannot be listed in any MTBF library.

Remote Electrical Tilt System AISG Compliancy

Kathrein Mobile Communication hereby states that RET devices, as far as the functionality and features are described within the AISG / 3GPP standard, are compliant with the standard.

NGMN-P-BASTA

All antennas which are measured according to the specifications given in NGMN-P-BASTA White Paper Version 9.6/10.0 are clearly marked in the data sheet. Kathrein Mobile Communication is changing over more and more data sheets to NGMN-P-BASTA. The latest data sheets can be found on our website.

RET RFID Functionality

Kathrein Mobile Communication's latest Remote Control Unit (RCU) is equipped with an internal RFID reader. Most of our antennas are equipped with RFID tags in their spindles. With this, all relevant antenna data can automatically be read out by the RCU. Further information as well as an up-to-date list of the antennas can be found on our website. The according data sheets are marked by an RFID sign.

4.3-10 Connectors

Partly, Kathrein Mobile Communication's latest products are equipped with 4.3-10 connectors.

The advantages of this connector are:

- Reduced dimensions on the bottom plate for more installation space
- Improved PIM stability and performance
- Easier installation, lower tightening torque

The universal 4.3-10 jack can be used with 3 different connector types (screw type, push-pull type and hand screw type).

Downtilting of Antennas with external RCU: Downtilt Possibilities

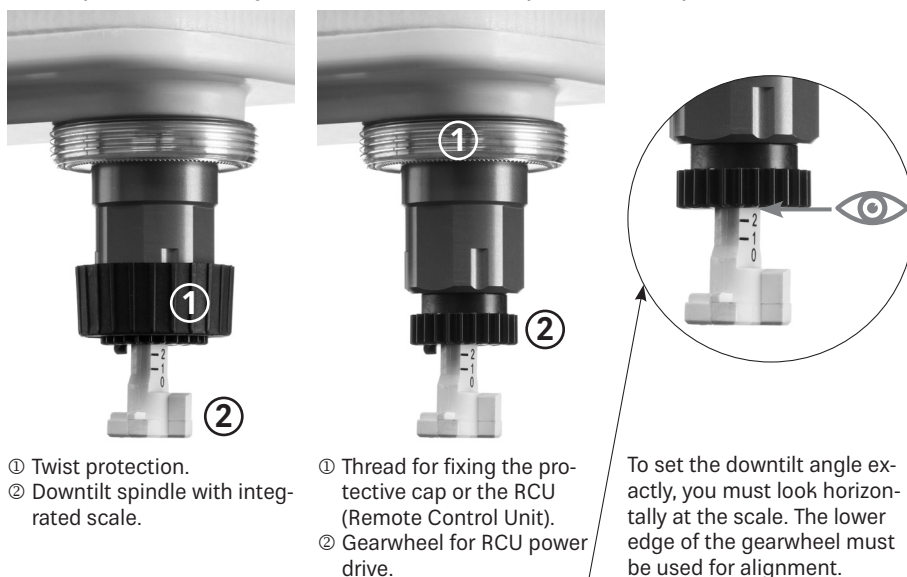
KATHREIN

Mechanical downtilt

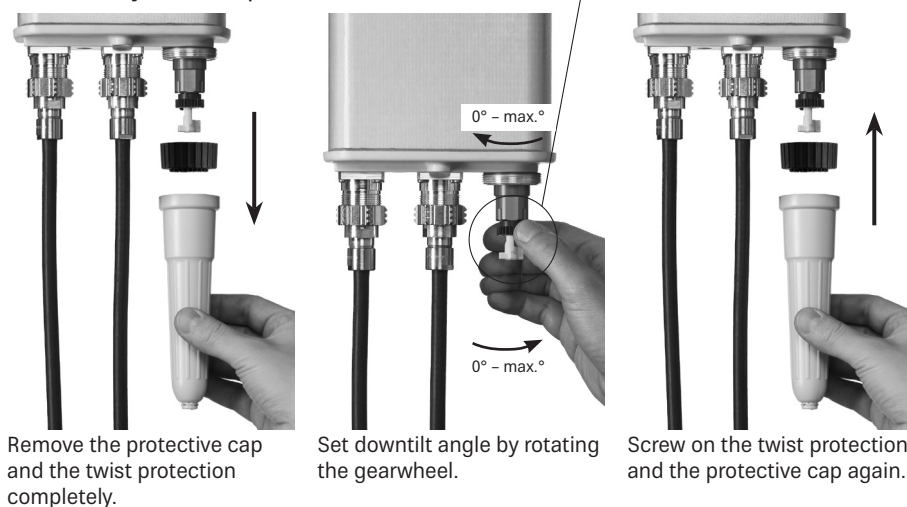
For further technical information please see "Mechanical Accessories", page 279.

Electrical downtilt

Description of the adjustment mechanism (protective cap removed):



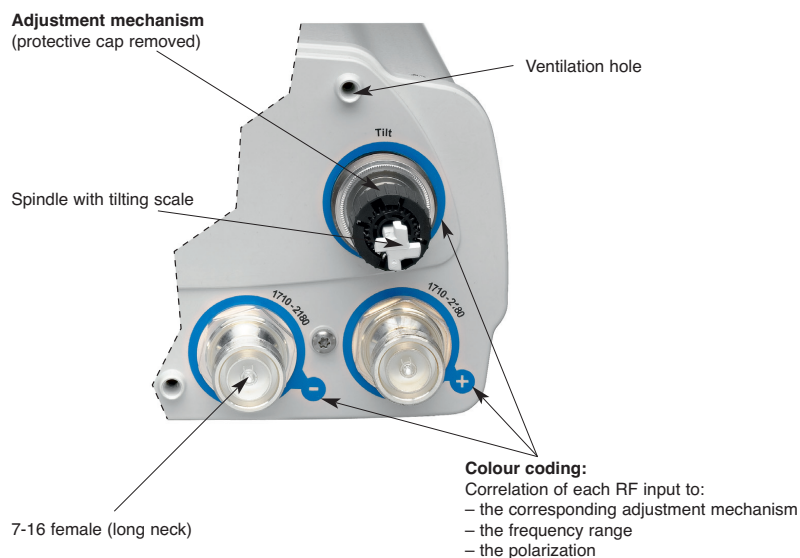
Manual adjustment procedure:



Remote Electrical Tilt (RET)

For further technical information please see "RET", pages 254 and 255.

Description of bottom end cap (exemplary picture):



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Front view

2056 | 80.9
1818 | 71.6
1999 | 78.7

Bottom view

229 | 9.0 *
164 | 6.5 *
97 | 3.8
140 | 5.5
131 | 5.2
221 | 8.7
311 | 12.2
378 | 14.9 *

*** Dimensions refer to radome**

Side view details:

- 1) 22 | 0.9
- 2) 150 | 5.9
- 3) Ø 11 | 0.4

All dimensions in mm | inches

Catalogue 2020 → Alterations to the Catalogue of 2019

KATHREIN

Not longer in the catalogue 2020	Comments / Replacements
2-Port	
80010681	
4-Port	
742226v01	80010715
80010606v01	80010656
80010647v01	
80010901	
80010902	
6-Port	
80010291v02	80010691v01
80020727	
8-Port	
80010767	
80010768	800372965
80010769	800372966
80010825	80010965 or 84510965 or 800372965
80010826	80010966 or 84510966 or 800372966
80020872	84510872
80040064	
80040066	
10-Port	
80010875	
12-Port	
80010798	800372991
80010799	800372992
80010898	80011898
80020799	840370799
Small Cell	
80010713	
80010714	
80010745	
80010746	
80010775	
80010776	
84010555	
84010556	
84010601	
84010602	
84010793	
84010794	
Omnidirectional Antennas	
736347	
K738192	
RET (Remote Electrical Tilt)	
86010156	86010158
Mounting Accessories	
738908	
85010008	85010009
86010157	

Please note: New type numbers in the catalogue 2020 are shown and coloured in the respective register of the different Antenna families.

This list is a general overview which shows the differences in the 2020 catalogue as compared to the 2019 version. Information about phase-out dates can be found on our website: www.kathrein.com.

8-Port Antenna 2LB/2HB 1.4m 65° | 698-803 14dBi | 824-960 14.5dBi | 2x1695-2690 18dBi

Number of Ports				
Frequency Range(s)				
Length				
Horizontal Half-power Beam Width(s)				
Frequency Range in MHz and Gain Value				

Summary – Directional Antennas

2 Ports

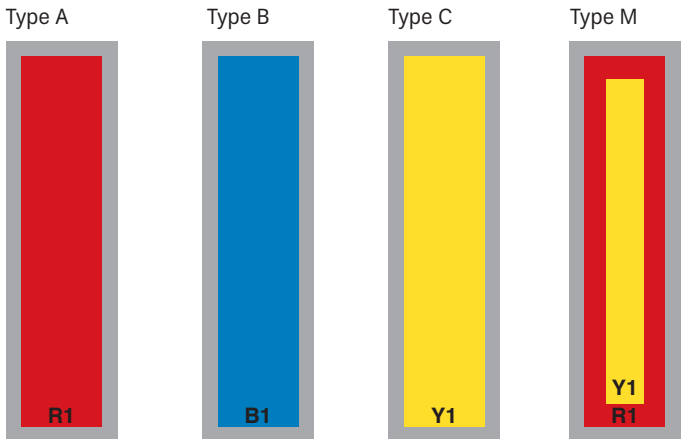
Dual Polarization $\pm 45^\circ$

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2 Ports

Type						Type No.	Height [mm]	Connector female, type and position	Page	1)
1 x Lowband										
2-Port Antenna	790–960	30°	20.5dBi	0.5°–10°T		80010456v02	2254	7-16, rearside	24	A
2-Port Antenna	790–960	65°	17.5dBi	0°–8°T		80010305v02	2254	7-16, rearside	25	A
2-Port Antenna	790–960	65°	17.5dBi	0.5°–9.5°T		80010306v02	2574	7-16, bottom	26	A
1 x Highband										
2-Port Antenna	1695–2690	35°	19.5dBi	2°–10°T		80010678	1272	7-16, bottom	27	C
2-Port Antenna	1710–2690	65°	9.5dBi	0°T		80020711	155	4.3-10, bottom or top	227	C
2-Port Antenna	1710–2690	65°	12dBi	4°T		80010761	278	7-16, bottom	28	C
2-Port Antenna	1710–2690	65°	18dBi	2°–14°T	ESLS	80010621v02	1452	7-16, bottom	29	C
2-Port Antenna	1710–2690	65°	19dBi	0°–6°T		80010651	1670	7-16, bottom	30	C
2-Port Antenna	1710–2200	62°	21.2dBi	0°–6°T	HE	80010378	2548	7-16, bottom	31	B
1 x Lowband 1 x Highband										
2-Port Antenna	790–960 1710–2690	C	65° 65°	8dBi 9dBi	0°T 0°T	80010753	334	7-16, bottom	228	M

1) Configuration Types – further details on page 12–15.



Abbreviations:
 ESLS: Enhanced Side Lobe Suppression (above or below horizon)
 HE: High Efficiency (Antennas with high gain compared to length)
 C: Integrated Combiner

2-Port Antenna

Frequency Range **790-960**

HPBW **30°**

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2-Port Antenna LB 2.3m 30° | 790-960 20.5dBi



Type No.		80010456v02		
Lowband		R1		
		790-960		
Frequency range	MHz	790 – 862	824 – 894	880 – 960
Polarization	°	+45, –45	+45, –45	+45, –45
Gain at 0° T	dBi	2 x 20.0	2 x 20.2	2 x 20.5
Horizontal Pattern:				
Half-power beam width	°	33	32	30
Front-to-back ratio, copolar	dB	> 28	> 29	> 30
Cross polar ratio				
Maindirection	0°	Typically: 25	Typically: 23	Typically: 20
Tracking, Avg.	dB	2.5		
Squint	°	±2.0		
Vertical Pattern:				
Half-power beam width	°	9.1	8.8	8.5
Electrical tilt	°	0.5–10, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	°T dB	0.5 ... 5 ... 10 > 16 ... 13 ... 13	0.5 ... 5 ... 10 > 18 ... 18 ... 17	0.5 ... 5 ... 10 > 18 ... 16 ... 15
Impedance	Ω	50		
VSWR		< 1.5		
Isolation, between ports	dB	> 30		
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)		
Max. power per input	W	500 (at 50 °C ambient temperature)		



Mechanical specifications			
Input		2 x 7-16 female	
Connector position		Rearside	
Adjustment mechanism		1x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1415 318	Maximal: 1555 350
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	2254 / 576 / 99 88.7 / 22.7 / 3.9	
Category of mounting hardware		H (Heavy)	
Weight	kg lb	22 / 24 (clamps incl.) 48.5 / 52.9 (clamps incl.)	
Packing size	mm inches	2500 x 600 x 150 98.4 x 23.6 x 5.9	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

2-Port Antenna

R1

Frequency Range

790-960

HPBW

65°

KATHREIN

2 Ports

2-Port Antenna LB 2.3m 65° | 790-960 17.5dBi



Type No.		80010305v02		
Lowband		R1		
		790-960		
Frequency range	MHz	790 – 862	824 – 894	880 – 960
Polarization	°	+45, -45	+45, -45	+45, -45
Average gain	dBi	16.8 ... 17.0 ... 16.7	16.9 ... 17.1 ... 16.9	17.2 ... 17.4 ... 17.0
Tilt	°	0 ... 4 ... 8	0 ... 4 ... 8	0 ... 4 ... 8
Horizontal Pattern:				
Half-power beam width	°	69	67	65
Front-to-back ratio, copolar	dB	> 25	> 25	> 25
Cross polar ratio	dB	Typically: 25	Typically: 25	Typically: 25
Maindirection	0°	Typically: > 10	Typically: > 10	Typically: > 10
Sector	±60°			
Tracking, Avg.	dB	0.5		
Squint	°	±2.5		
Vertical Pattern:				
Half-power beam width	°	9.1	8.8	8.5
Electrical tilt	°	0–8, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	°T	0 ... 2 ... 4 ... 8	0 ... 2 ... 4 ... 8	0 ... 2 ... 4 ... 8
	dB	18 ... 18 ... 18 ... 16	18 ... 18 ... 18 ... 16	20 ... 18 ... 17 ... 15
Impedance	Ω	50		
VSWR		< 1.5		
Isolation, between ports	dB	> 30		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. effective power per port	W	400 (at 50 °C ambient temperature)		
Max. effective power for the antenna		800 (at 50 °C ambient temperature)		



Mechanical specifications

Input		2 x 7-16 female	
Connector position		Rearside	
Adjustment mechanism		1x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 770 173	Maximal: 845 190
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	2254 / 259 / 99 88.7 / 10.2 / 3.9	
Category of mounting hardware		M (Medium)	
Weight	kg lb	11.5 / 13.5 (clamps incl.) 25.4 / 29.8 (clamps incl.)	
Packing size	mm inches	2536 x 272 x 147 99.8 x 10.7 x 3.9	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

2-Port Antenna

R1

Frequency Range

790-960

HPBW

65°

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2-Port Antenna LB 2.6m 65° | 790-960 17.5dBi

Type No.		80010306v02		
Lowband		R1		
		790-960		
Frequency Range	MHz	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	17.1	17.2	17.4
Gain over all Tilts	dBi	17.1 ± 0.4	17.2 ± 0.2	17.4 ± 0.2
Horizontal Pattern:				
Azimuth Beamwidth	°	69 ± 1.7	68 ± 1.6	65 ± 2.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 22	> 22
Cross Polar Discrimination at Boresight	dB	> 21	> 22	> 23
Cross Polar Discrimination over Sector	dB	> 12.5	> 12.5	> 11.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.5
Vertical Pattern:				
Elevation Beamwidth	°	7.9 ± 0.4	7.8 ± 0.3	7.5 ± 0.4
Electrical Downtilt continuously adjustable	°	0.5 – 9.5		
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 18	> 18
Cross Polar Isolation	dB	> 30		
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.



Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	800 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		2 x 7-16 female long neck		
Connector Position		bottom		
Adjustment Mechanism		1x, Position bottom continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	895	201
		Maximal:	980	220
Max. Wind Velocity	km/h mph	200 124		
Height / Width / Depth	mm inches	2574 / 259 / 99 101.3 / 10.2 / 3.9		
Category of Mounting Hardware		H (Heavy)		
Weight	kg lb	14.0 / 16.2 (clamps incl.) 30.9 / 35.7 (clamps incl.)		
Packing Size	mm inches	2876 / 272 / 127 113.2 / 10.7 / 5.0		
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter		

2-Port Antenna

Frequency Range **1695–2690**

HPBW **35°**

KATHREIN

2 Ports

2-Port Antenna HB 1.3m 35° | 1695–2690 19.5dBi



Type No.		80010678				
Highband		Y1, connector 1-2				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	18.6	19.2	19.4	19.8	19.6
Gain over all Tilts	dBi	18.5 ± 0.4	19.1 ± 0.3	19.4 ± 0.3	19.7 ± 0.5	19.5 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	43 ± 3.1	39 ± 1.7	38 ± 1.3	36 ± 0.7	33 ± 0.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 21	> 23	> 25	> 23
Cross Polar Discrimination at Boresight	dB	> 22	> 23	> 21	> 20	> 11
Cross Polar Discrimination over Sector	dB	> 15.0	> 16.5	> 16.5	> 13.0	> 7.5
Vertical Pattern:						
Elevation Beamwidth	°	7.8 ± 0.5	7.3 ± 0.2	7.1 ± 0.3	6.4 ± 0.3	5.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 10.0				
Tilt Accuracy	°	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 21	> 22	> 20	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 19	> 19	> 18	> 14
Cross Polar Isolation	dB	> 28				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.



Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	400 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	2 x 7-16 female	
Connector Position	bottom	
Adjustment Mechanism	1x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 410 92 Maximal: 450 101
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	1272 / 235 / 69 50.1 / 9.3 / 2.7
Category of Mounting Hardware	M (Medium)	
Weight	kg lb	9.2 / 11.4 (clamps incl.) 20.3 / 25.1 (clamps incl.)
Packing Size	mm inches	1617 / 257 / 103 63.7 / 10.1 / 4.1
Scope of Supply	Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

2-Port Antenna

Frequency Range **1710–2690**

HPBW **65°**

KATHREIN

2-Port Antenna HB 0.3m 65° | 1710–2690 12dBi

Type No.		80010761			
Highband		Y1			
		1710–2690			
Frequency range	MHz	1710 – 1990	1920 – 2200	2200 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	11	11.5	12.2	12.7
Horizontal Pattern:					
Half-power beam width	°	67	65	60	58
Front-to-back ratio, copolar	dB	> 30	> 28	> 28	> 27
Cross polar ratio					
Main direction	0°	Typically: > 20	Typically: > 20	Typically: > 20	Typically: > 20
Sector	±60°	> 8	> 8	> 8	> 8
Vertical Pattern:					
Half-power beam width	°	36	31	25	25
Electrical tilt	°	3, fixed	3, fixed	4, fixed	4, fixed
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 28			
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			



Mechanical specifications			
Input		2 x 7-16 female	
Connector position		Bottom	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	55 12
		Maximal:	55 12
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	278 / 154 / 69 10.9 / 6.1 / 2.7	
Category of mounting hardware		L (Light)	
Weight	kg lb	1.8 (tension bands incl.) 4.0 (tension bands incl.)	
Packing size	mm inches	375 x 172 x 92 14.8 x 6.8 x 39.1	
Scope of supply		Panel and 1 unit of tension bands for 45 – 125 mm 1.8 – 4.9 inches diameter	

2-Port Antenna

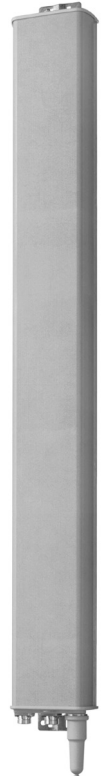
Frequency Range **1710–2690**

HPBW **65°**

KATHREIN

2 Ports

2-Port Antenna HB 1.5 m 65° | 1710–2690 18dBi ESLS



Type No.		80010621v02			
Highband		Y1			
		1710–2690			
Frequency range	MHz	1710 – 1990	1920 – 2200	2200 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	17.4 ... 17.6 ... 17.5	17.9 ... 18.2 ... 18.1	18.4 ... 18.5 ... 18.5	18.5 ... 19.0 ... 18.5
Tilt	°	2 ... 8 ... 14	2 ... 8 ... 14	2 ... 8 ... 14	2 ... 8 ... 14
Horizontal Pattern:					
Half-power beam width	°	68	63	59	58
Front-to-back ratio (180°±30°)	dB	> 25	> 25	> 25	> 25
Cross polar ratio	0°	Typically: 25	Typically: 24	Typically: 25	Typically: 25
Sector	±60°	> 10	> 10	> 10	> 10
Tracking, Avg.	dB	1.5			
Vertical Pattern:					
Half-power beam width	°°	6.7	6.0	5.3	5.0
Electrical tilt		2–14, continuously adjustable			
Sidelobe suppression	°T	2 ... 8 ... 14	2 ... 8 ... 14	2 ... 8 ... 14	2 ... 8 ... 14
– for first sidelobe above main beam	dB	≥ 18 ... 18 ... 18	≥ 18 ... 18 ... 18	≥ 18 ... 18 ... 18	≥ 18 ... 18 ... 18
– within 0°–20° sector above horizon	dB	≥ 17 ... 17 ... 16	≥ 17 ... 17 ... 16	≥ 17 ... 17 ... 16	≥ 17 ... 17 ... 14
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 30			
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)			
Max. effective power per port	W	250 (at 50 °C ambient temperature)			
Max. effective power for the antenna		500 (at 50 °C ambient temperature)			

Mechanical specifications			
Input		2 x 7-16 female	
Connector position		Bottom	
Adjustment mechanism		1x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 250	57
		Maximal: 275	62
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	1452 / 154 / 70 57.2 / 6.0 / 2.8	
Category of mounting hardware		M (Medium)	
Weight	kg lb	6.5 / 8.5 (clamps incl.) 4.3 / 18.7 (clamps incl.)	
Packing size	mm inches	1725 x 172 x 92 7.9 x 6.8 x 3.6	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

2-Port Antenna

Frequency Range **1710–2690**

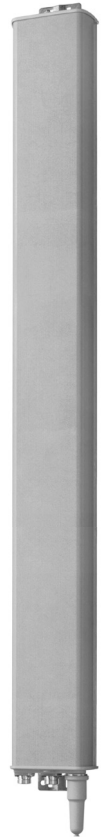
HPBW **65°**

KATHREIN

2-Port Antenna HB 1.7m 65° | 1710–2690 19dBi



Type No.		80010651			
Highband		Y1			
		1710–2690			
Frequency range	MHz	1710 – 1990	1920 – 2170	2170 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain at 0° tilt	dB	18.5	19.0	19.4	19.5
Horizontal Pattern:					
Half-power beam width	°	67	63	60	58
Front-to-back ratio (180°±30°)	dB	> 28	> 28	> 25	> 25
Cross polar ratio Sector 0° ±60°	dB	Typically: 25 > 10	Typically: 25 > 10	Typically: 25 > 10	Typically: 28 > 10
Tracking, Avg.	dB	1.5			
Squint	°	±3			
Vertical Pattern:					
Half-power beam width	°	5.4	4.9	4.3	4.0
Electrical tilt	°	0–6, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	°T dB	0 ... 3 ... 6 ≥ 18 ... 18 ... 17	0 ... 3 ... 6 ≥ 18 ... 18 ... 16	0 ... 3 ... 6 ≥ 18 ... 18 ... 16	0 ... 3 ... 6 ≥ 18 ... 18 ... 17
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 30			
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)			
Max. power per input	W	300 (at 50 °C ambient temperature)			



Mechanical specifications			
Input		2 x 7-16 female	
Connector position		Bottom	
Adjustment mechanism		1x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 295 66	Maximal: 325 73
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	1670 / 155 / 70 65.7 / 6.1 / 2.8	
Category of mounting hardware		M (Medium)	
Weight	kg lb	7 / 9.2 (clamps incl.) 15.4 / 20.3 (clamps incl.)	
Packing size	mm inches	1934 x 172 x 92 76.1 x 6.8 x 3.6	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

2-Port Antenna

B1

Frequency Range

1710–2200

HPBW

62°

KATHREIN

2 Ports

2-Port Antenna HB 2.5m 62° | 1710–2200 21.2dBi

Type No.		80010378		
Highband		B1		
		1710–2200		
Frequency range	MHz	1710 – 1880	1850 – 1990	1920 – 2200
Polarization	°	+45, –45	+45, –45	+45, –45
Gain	dBi	2 x 20.6	2 x 21.1	2 x 21.2
Horizontal Pattern:				
Half-power beam width	°	65	62	60
Front-to-back ratio (180°±30°)	dB	> 30	> 28	> 28
Cross polar ratio	0°	25	23	23
Sector	±60°	> 10	> 10	> 10
Tracking, Avg.	dB	1.0		
Squint	°	±2.5		
Vertical Pattern:				
Half-power beam width	°	3.7	3.5	3.3
Electrical tilt	°	0–6, continuously adjustable		
Sidelobe supression for first sidelobe above main beam	°T	0 ... 3 ... 6	0 ... 3 ... 6	0 ... 3 ... 6
	dB	18 ... 18 ... 17	18 ... 17 ... 17	17 ... 17 ... 17
Null-fill at 0° tilt	dB	20	20	20
Impedance	Ω	50		
VSWR		< 1.5		
Isolation, between ports	dB	> 30		
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)		
Max. power per input	W	300 (at 50 °C ambient temperature)		



Mechanical specifications			
Input		2 x 7-16 female	
Connector position		Bottom	
Adjustment mechanism		1x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	485 109
		Maximal:	535 120
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	2548 / 155 / 89 100.3 / 6.1 / 3.5	
Category of mounting hardware		M (Medium)	
Weight	kg lb	13 / 15 (clamps incl.) 28.7 / 33.1 (clamps incl.)	
Packing size	mm inches	2816 x 173 x 113 110.9 x 6.8 x 4.4	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

Summary – Directional Antennas

4 Ports

Dual Polarization $\pm 45^\circ$

KATHREIN

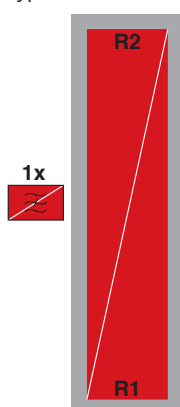
Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband									
4-Port Antenna	698–862 880–960	65° 65°	14.5dBi 15dBi	2°–16°T 2°–16°T	80010887	1459	4.3-10, bottom	34	D
4-Port Antenna	698–862 880–960	65° 65°	15.5dBi 16dBi	2°–12°T 2°–12°T	80010888	1999	4.3-10, bottom	35	D
4-Port Antenna	698–862 880–960	65° 65°	16.5dBi 17dBi	1°–10°T 1°–10°T	80010889	2438	4.3-10, bottom	36	D
4-Port Antenna	790–960 790–960	90° 90°	16dBi 16dBi	0°–8°T 0°–8°T	80010817	2631	7-16, bottom	37	E

1 x Lowband | 1 x Highband

4-Port Antenna	698–960 1695–2690	65° 65°	10.5dBi 13.5dBi	2°T 2°T	80010715	603	4.3-10, bottom	38 + 39	M
4-Port Antenna	790–960 1710–2690	65° 65°	15dBi 17.5dBi	0°–16°T 2°–10°T	80010664	1403	7-16, bottom	40 + 41	M
4-Port Antenna	790–960 1710–2690	65° 65°	16dBi 18.5dBi	0°–10°T 2°–8°T	80010665v01	1997	7-16, bottom	42 + 43	M
4-Port Antenna	698–960 1710–2690	65° 65°	17dBi 18.5dBi	1.5°–10°T 2°–8°T	80010666v01	2622	7-16, bottom	44 + 45	M
4-Port Antenna	790–960 1710–2180	90° 90°	16.5dBi 18dBi	0.5°–7°T 0°–6°T	80010123v03	2635	7-16, bottom	46 + 47	L

1) Configuration Types – further details on page 12–15.

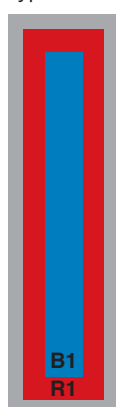
Type D



Type E



Type L



Type M



Summary – Directional Antennas

4 Ports

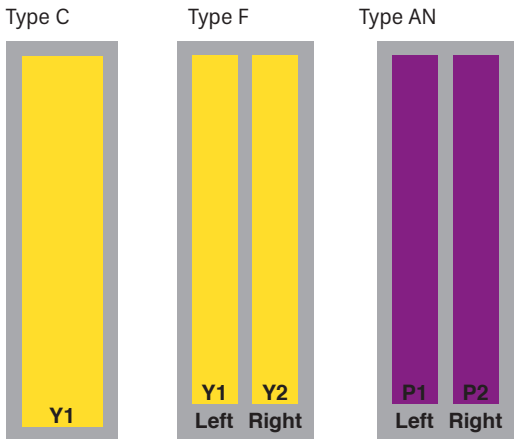
Dual Polarization $\pm 45^\circ$

KATHREIN

4 Ports

Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Highband									
4-Port Antenna	1710–2690	65°	16.5dBi	0°–12°T	80010682	855	7-16, bottom	48	F
	1710–2690	65°	16.5dBi	0°–12°T					
4-Port Antenna	1695–2690	65°	18dBi	2°–14°T	80020622	1471	4.3-10, bottom	49 + 50	F
	1695–2690	65°	18dBi	2°–14°T					
4-Port Antenna	1710–2690	65°	19dBi	0°–10°T	80010652	1668	7-16, bottom	51	F
	1710–2690	65°	19dBi	0°–10°T					
2 x Highband Special Design									
4-Port MicroCell	1695–2690	85°	7.5dBi	0°T	80010843	526	4.3-10, bottom and top	239	C/C
	1695–2690	85°	7.5dBi	0°T					
4-Port Dual-Beam	1695–2690	35° (–30°)	19.5dBi	2°–10°T	80010656	1254	7-16, bottom	52 + 53	C/C
	1695–2690	35° (+30°)	19.5dBi	2°–10°T					
2 x 3.5 GHz									
4-Port Antenna	3300–3800	65°	17.5dBi	2°–12°T	80010922	970	4.3-10, bottom	54 + 55	AN
	3300–3800	65°	17.5dBi						

1) Configuration Types – further details on page 12–15.



Abbreviations:
ESLS: Enhanced Side Lobe Suppression
(above or below horizon)

4-Port Antenna

Frequency Range **HPBW**

R1	R2
698–862	880–960
65°	65°

KATHREIN

4-Port Antenna 2LB 1.5 m 65° | 698–862 14.5dBi | 880–960 15dBi



FlexRET

Type No.		80010887		
Lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	14.2	14.6	15.0
Gain over all Tilts	dBi	14.1 ± 0.5	14.5 ± 0.6	14.8 ± 0.5
Horizontal Pattern:				
Azimuth Beamwidth	°	64 ± 2.7	62 ± 3.6	61 ± 1.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 26
Cross Polar Discrimination at Boresight	dB	> 20	> 21	> 19
Azimuth Beam Port-to-Port Tracking	dB	< 2.5	< 2.0	< 2.5
Vertical Pattern:				
Elevation Beamwidth	°	14.6 ± 1.5	13.2 ± 0.7	12.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 16.0		2.0 – 16.0
Tilt Accuracy	°	< 0.7	< 0.6	< 0.5
First Upper Side Lobe Suppression	dB	> 14	> 14	> 14
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 14	> 15
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2)		> 28 (R2 // R1)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	300 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.



Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	800 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	4 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 470 106 Maximal: 545 123
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1459 / 377 / 169 57.4 / 14.8 / 6.7
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	22.0 / 24.2 (clamps incl.) 48.5 / 53.4 (clamps incl.)
Packing Size	mm inches	1620 / 397 / 212 63.8 / 15.6 / 8.3
Scope of Supply	Panel, FlexRET and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

4-Port Antenna

Frequency Range

HPBW

R1
R2
698-862
880-960
65°
65°
KATHREIN
4-Port Antenna 2LB 2.0m 65° | 698-862 15.5 dBi | 880-960 16dBi

Type No.		80010888		
Lowbands		R1, connector 1-2		R2, connector 3-4
		698-862		880-960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	15.5	15.9	16.4
Gain over all Tilts	dBi	15.4 ± 0.5	15.8 ± 0.3	16.3 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	66 ± 2.7	63 ± 1.0	61 ± 1.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 26
Cross Polar Discrimination at Boresight	dB	> 24	> 26	> 23
Vertical Pattern:				
Elevation Beamwidth	°	10.7 ± 0.7	10.0 ± 0.5	9.1 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		2.0 – 12.0
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 20	> 22
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 20	> 19
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2)		> 28 (R2 // R1)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.


FlexRET


4 Ports

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		4 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	905 203
		Maximal:	905 203
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1999 / 378 / 164 78.7 / 14.9 / 6.5	
Category of Mounting Hardware		XM (X-Medium)	
Weight	kg lb	28.2 / 32.7 (clamps incl.) 62.2 / 72.1 (clamps incl.)	
Packing Size	mm inches	2200 / 412 / 255 86.6 / 16.2 / 10.0	
Scope of Supply		Panel, FlexRET and 1 unit of clamps for 55–115 mm 2.2–4.5 inches diameter	

4-Port Antenna

Frequency Range

HPBW

R1
R2
698–862
880–960
65°
65°
KATHREIN
4-Port Antenna 2LB 2.4m 65° | 698–862 16.5dBi | 880–960 17dBi

Type No.		80010889		
Lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	16.1	16.7	17.4
Gain over all Tilts	dBi	16.1 ± 0.5	16.7 ± 0.4	17.3 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	65 ± 2.2	62 ± 1.5	59 ± 1.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 23	> 25
Cross Polar Discrimination at Boresight	dB	> 25	> 25	> 23
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 1.5	< 2.5
Vertical Pattern:				
Elevation Beamwidth	°	8.9 ± 0.7	8.0 ± 0.6	7.3 ± 0.6
Electrical Downtilt continuously adjustable	°	1.0 – 10.0		1.0 – 10.0
Tilt Accuracy	°	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 15	> 17
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 14	> 15
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 30 (R1 // R2)		> 30 (R2 // R1)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.


FlexRET


Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	800 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		4 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	1140 256
		Maximal:	1140 256
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	2438 / 378 / 164 96.0 / 14.9 / 6.5	
Category of Mounting Hardware		XM (X-Medium)	
Weight	kg lb	33.9 / 38.4 (clamps incl.) 74.7 / 84.7 (clamps incl.)	
Packing Size	mm inches	2640 / 412 / 255 103.9 / 16.2 / 10.0	
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

4-Port Antenna

Frequency Range

HPBW

R1
R2
790–960
790–960
90°
90°
KATHREIN

4-Port Antenna 2LB 2.6m 90° | 2x790–960 16dBi



Type No.		80010817		
Lowbands		R1; R2		
		790–960		
Frequency range	MHz	790 – 862	824 – 894	880 – 960
Polarization	°	+45, –45	+45, –45	+45, –45
Average gain (dBi)	dBi	15.4 ... 15.4 ... 15.0	15.7 ... 15.7 ... 15.4	16.0 ... 16.1 ... 15.9
Tilt	°	0 ... 4 ... 8	0 ... 4 ... 8	0 ... 4 ... 8
Horizontal Pattern:				
Half-power beam width	°	93	90	87
Front-to-back ratio (180°±0°)	dB	> 24	> 24	> 25
Front-to-back ratio (180°±30°)	dB	> 20	> 21	> 22
Cross polar ratio	0°	Typically: 20	Typically: 20	Typically: 18
Sector	±60°	> 10	> 10	> 10
Vertical Pattern:				
Half-power beam width	°	7.4	7.2	6.9
Electrical tilt	°	0–8, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	°T dB	0 ... 4 ... 8 ≥ 17 ... 17 ... 15	0 ... 4 ... 8 ≥ 17 ... 17 ... 15	0 ... 4 ... 8 ≥ 17 ... 17 ... 15
Impedance	Ω	50		
VSWR		< 1.5		
Isolation, between ports	dB	Intrasystem: > 27, Intersystem: > 27		
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)		
Max. effective power per port	W	400 (at 50 °C ambient temperature)		
Max. effective power for the antenna		1200 (at 50 °C ambient temperature)		



4 Ports

Mechanical specifications

Input		4 x 7-16 female	
Connector position		Bottom	
Adjustment mechanism		2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 840 189	Maximal: 925 208
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	2631 / 374 / 106 103.6 / 14.7 / 4.2	
Category of mounting hardware		H (Heavy)	
Weight	kg lb	23 / 25 (clamps incl.) 50.7 / 55.1 (clamps incl.)	
Packing size	mm inches	3055 x 133 x 388 120.0 x 5.2 x 15.3	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

4-Port Antenna

Frequency Range

HPBW

R1	Y1
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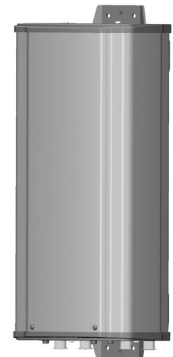
698-960	1695-2690
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65°	65°
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KATHREIN

4-Port Antenna LB/HB 0.6m 65° | 698-960 10.5dBi | 1695-2690 13.5dBi

Type No.		80010715		
Lowband		R1, connector 1-2		
		698-960		
Frequency range	MHz	698 - 824 MHz	824 - 894 MHz	880 - 960 MHz
Polarization	°	+45, -45	+45, -45	+45, -45
Average gain	dBi	10.1	10.6	10.7
Horizontal Pattern:				
Half-power beam width	°	70	69	69
Front-to-back ratio	dB	> 23	> 25	> 25
Total power, ± 30°				
Cross polar ratio				
Main direction	0°	Typically: 25	Typically: 28	Typically: 28
Sector	±60°	> 8	> 10	> 10
Vertical Pattern:				
Half-power beam width	°	40	36	35
Electrical tilt	°	2, fixed		
Impedance	Ω	50		
VSWR		< 1.5		
Isolation: Intrasystem	dB	> 27, typ. > 30	> 30	> 28, typ. > 30
Isolation: Intersystem	dB	> 26, typ. > 30 (R1 // Y1)		
Intermodulation IM3	dBc	< -153 (2 x 43 dBm carrier)		
Max. effective power per port	W	250 (at 50 °C ambient temperature)		
Max. effective power for the antenna		400 (at 50 °C ambient temperature)		



80010715

Highband		Y1, connector 3–4				
		1695–2690				
Frequency range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2200 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45
Average gain	dBi	13.1	13.7	13.7	13.8	13.6
Horizontal Pattern:						
Half-power beam width	°	62	55	55	55	68
Front-to-back ratio						
Total power, ± 30°	dB	> 26	> 27	> 27	> 27	> 25
Cross polar ratio						
Main direction	0°					
Sector	±60°	Typically: 25 > 10	28 > 10	28 > 10	25 > 10	28 > 10
Vertical Pattern:						
Half-power beam width	°	17.6	16.7	15.9	14.5	12.4
Electrical tilt	°	2, fixed				
Impedance		50				
VSWR		< 1.5				
Isolation: Intrasystem	dB	> 26, typ. > 31			> 30, typ. > 31	
Isolation: Intersystem	dB	> 30 (Y1 // R1)				
Intermodulation IM3	dBc	< –153 (2 x 43 dBm carrier)				
Max. effective power per port	W	200 (at 50 °C ambient temperature)				
Max. effective power for the antenna		400 (at 50 °C ambient temperature)				
Total power for the antenna	W	800 (at 50 °C ambient temperature)				

Mechanical specifications			
Input		4 x 4.3-10 female	
Connector position		Bottom	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 110	25
		Maximal: 170	38
Max. wind velocity	km/h mph	241 150	
Height/width/depth	mm inches	603 / 300 / 152 23.7 / 11.8 / 6.0	
Category of mounting hardware		M (Medium)	
Weight	kg lb	8.5 / 10.7 (clamps incl.) 18.7 / 23.6 (clamps incl.)	
Packing size	mm inches	845 x 325 x 193 33.3 x 12.8 x 7.6	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

4-Port Antenna

R1 **Y1**

KATHREIN

Frequency Range

790-960 **1710-2690**

HPBW

65° **65°**

4-Port Antenna LB/HB 1.4m 65° | 790-960 15dBi | 1710-2690 17.5dBi



Type No.		80010664		
Lowband		R1, connector 1-2		
		790-960		
Frequency range	MHz	790 - 862	824 - 894	880 - 960
Polarization	°	+45, -45	+45, -45	+45, -45
Average gain	dBi	14.5 ... 14.4 ... 14.2	14.6 ... 14.5 ... 14.3	14.8 ... 14.6 ... 14.4
Tilt	°	0 ... 8 ... 16	0 ... 8 ... 16	0 ... 8 ... 16
Horizontal Pattern:				
Half-power beam width	°	69	68	67
Front-to-back ratio, copolar (180°±30°)	dB	> 25	> 25	> 25
Cross polar ratio				
Main direction	0°	Typically: 25	Typically: 25	Typically: 25
Sector	±60°	> 10	> 9	> 8
Vertical Pattern:				
Half-power beam width	°	16.5	16.0	15.5
Electrical tilt	°	0-16, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	° T dB	0 ... 8 ... 16 16 ... 15 ... 15	0 ... 8 ... 16 16 ... 15 ... 15	0 ... 8 ... 16 15 ... 15 ... 14
Impedance	Ω	50		
VSWR		< 1.5		
Isolation: Intrasystem	dB	> 30		
Isolation: Intersystem	dB	> 30 (698-960 // 1710-2690 MHz)		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. effective power per port	W	300 (at 50 °C ambient temperature)		
Max. effective power for the antenna		600 (at 50 °C ambient temperature)		



80010664

Highband		Y1, connector 3-4				
		1710-2690				
Frequency range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Polarization	°	+45, -45	+45, -45	+45, -45	+45, -45	+45, -45
Average gain	dBi	17.2 ... 17.3 ... 16.8	17.4 ... 17.4 ... 16.9	17.6 ... 17.7 ... 17.0	17.0 ... 16.8 ... 16.0	17.2 ... 17.3 ... 16.7
Tilt	°	2 ... 6 ... 10	2 ... 6 ... 10	2 ... 6 ... 10	2 ... 6 ... 10	2 ... 6 ... 10
Horizontal Pattern:						
Half-power beam width	°	63	64	66	73	65
Front-to-back ratio, copolar (180°±30°)	dB	> 25	> 28	> 29	> 26	> 25
Cross polar ratio	dB	Typically: 18 > 9	20 > 10	20 > 10	23 > 10	23 > 8
Main direction	0°					
Sector	±60°					
Vertical Pattern:						
Half-power beam width	°	6.2	5.8	5.6	5.4	4.8
Electrical tilt	°	2-10, continuously adjustable				
Sidelobe suppression for first sidelobe above main beam	°T dB	2 ... 6 ... 10 14 ... 15 ... 16	2 ... 6 ... 10 14 ... 15 ... 17	2 ... 6 ... 10 15 ... 16 ... 17	2 ... 6 ... 10 17 ... 18 ... 18	2 ... 6 ... 10 15 ... 17 ... 18
Impedance	Ω	50				
VSWR		<1.5				
Isolation: Intrasystem	dB	> 28				> 30
Isolation: Intersystem	dB	> 30 (790-960 // 1710-2690 MHz)				
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)				
Max. effective power per port	W	200 (at 50 °C ambient temperature)				
Max. effective power for the antenna		400 (at 50 °C ambient temperature)				

4 Ports

Mechanical specifications			
Input		4 x 7-16 female (long neck)	
Connector position		Bottom	
Adjustment mechanism		2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	260 58
		Maximal:	415 93
Max. wind velocity	km/h mph	200 124	
Height / width / depth	mm inches	1403 / 300 / 152 55.2 / 11.8 / 6.0	
Category of mounting hardware		M (Medium)	
Weight	kg lb	18 / 20 (clamps incl.) 39.7 / 44.1 (clamps incl.)	
Packing size	mm inches	1726 x 322 x 190 68.0 x 12.7 x 7.5	
Scope of supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

4-Port Antenna

Frequency Range

HPBW

R1 **Y1**

790-960 **1710-2690**

65° **65°**

KATHREIN

4-Port Antenna LB/HB 2.0m 65° | 790-960 16dBi | 1710-2690 18.5dBi



Type No.		80010665v01		
Lowband		R1, connector 1-2		
		790-960		
Frequency Range	MHz	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.1	16.2	16.2
Gain over all Tilts	dBi	15.9 ± 0.3	16.1 ± 0.2	16.1 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	69 ± 0.9	68 ± 1.2	67 ± 0.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 23	> 23	> 20
Cross Polar Discrimination over Sector	dB	> 9.5	> 10.0	> 11.0
Vertical Pattern:				
Elevation Beamwidth	°	10.1 ± 0.4	9.9 ± 0.3	9.5 ± 0.4
Electrical Downtilt continuously adjustable	°	0.0 – 10.0		
Tilt Accuracy	°	< 0.5	< 0.5	< 0.6
First Upper Side Lobe Suppression	dB	> 16	> 18	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 18	> 16
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 30 (R1 // Y1)		
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010665v01

Highband		Y1, connector 3-4				
		1710-2690				
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	18.2	18.5	18.8	18.8	18.7
Gain over all Tilts	dBi	18.1 ± 0.5	18.4 ± 0.2	18.7 ± 0.5	18.7 ± 0.6	18.5 ± 0.3
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 5.4	63 ± 2.7	61 ± 3.6	62 ± 5.7	64 ± 3.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 27	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 14	> 19	> 20	> 18	> 20
Cross Polar Discrimination over Sector	dB	> 8.0	> 9.5	> 10.0	> 10.0	> 11.5
Vertical Pattern:						
Elevation Beamwidth	°	5.0 ± 0.3	4.7 ± 0.2	4.4 ± 0.3	3.8 ± 0.2	3.5 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 8.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 18	> 19	> 20	> 20
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 16	> 16	> 15	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (R1 // Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	4 x 7-16 female long neck	
Connector Position	bottom	
Adjustment Mechanism	2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 390 88 Maximal: 620 139
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	1997 / 300 / 152 78.6 / 11.8 / 6.0
Category of Mounting Hardware	M (Medium)	
Weight	kg lb	24.0 / 26.2 (clamps incl.) 52.9 / 57.8 (clamps incl.)
Packing Size	mm inches	2316 / 322 / 190 91.2 / 12.7 / 7.5
Scope of Supply	Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

4-Port Antenna

R1 **Y1**

KATHREIN

Frequency Range

698-960 **1710-2690**

HPBW

65° **65°**

4-Port Antenna LB/HB 2.6m 65° | 698-960 17dBi | 1710-2690 18.5dBi



Type No.		80010666v01			
Lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.0	16.6	16.9	17.1
Gain over all Tilts	dBi	16.0 ± 0.5	16.5 ± 0.4	16.8 ± 0.4	17.0 ± 0.2
Horizontal Pattern:					
Azimuth Beamwidth	°	71 ± 2.2	68 ± 1.0	68 ± 0.9	67 ± 1.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 26	> 27
Cross Polar Discrimination at Boresight	dB	> 23	> 22	> 22	> 21
Cross Polar Discrimination over Sector	dB	> 8.0	> 8.5	> 9.5	> 8.5
Vertical Pattern:					
Elevation Beamwidth	°	8.4 ± 0.7	7.7 ± 0.4	7.5 ± 0.4	7.0 ± 0.3
Electrical Downtilt continuously adjustable	°	1.5 – 10.0			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 17	> 16	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 17	> 16	> 15
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (R1 // Y1)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010666v01

Highband		Y1, connector 3-4				
		1710-2690				
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	18.0	18.5	18.8	18.6	19.0
Gain over all Tilts	dBi	18.0 ± 0.4	18.5 ± 0.4	18.7 ± 0.4	18.5 ± 0.7	18.8 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 3.4	62 ± 2.9	62 ± 2.2	60 ± 4.8	60 ± 2.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 27	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 15	> 18	> 20	> 16	> 21
Cross Polar Discrimination over Sector	dB	> 8.0	> 11.0	> 11.0	> 10.0	> 9.5
Vertical Pattern:						
Elevation Beamwidth	°	5.0 ± 0.4	4.7 ± 0.2	4.4 ± 0.4	3.9 ± 0.2	3.5 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 8.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 18	> 20	> 20	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 16	> 16	> 16	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (R1 // Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		4 x 7-16 female long neck	
Connector Position		bottom	
Adjustment Mechanism		2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	530 119
		Maximal:	845 190
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	2622 / 300 / 152 103.2 / 11.8 / 6.0	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	26.5 / 28.7 (clamps incl.) 58.4 / 63.3 (clamps incl.)	
Packing Size	mm inches	2951 / 322 / 190 116.2 / 12.7 / 7.5	
Scope of Supply		Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

4-Port Antenna

R1 **B1**

Frequency Range

790-960 **1710-2180**

HPBW

90° **90°**

KATHREIN

4-Port Antenna LB/HB 2.6m 90° | 790-960 16.5dBi | 1710-2180 18dBi



Type No.		80010123v03		
Lowband		R1, connector 1-2		
		790-960		
Frequency range	MHz	790 - 862	824 - 894	880 - 960
Polarization	°	+45, -45	+45, -45	+45, -45
Average gain	dBi	16.1 ... 16.2 ... 16.1	16.3 ... 16.4 ... 16.3	16.5 ... 16.6 ... 16.5
Tilt	°	0.5 ... 4 ... 7	0.5 ... 4 ... 7	0.5 ... 4 ... 7
Horizontal Pattern:				
Half-power beam width	°	86	86	86
Front-to-back ratio, copolar	dB	> 25	> 25	> 25
Cross polar ratio	dB	Typically:	Typically:	Typically:
Main direction		18	18	20
Sector		> 10	> 10	> 13
		avg. 16	avg. 16	avg. 19
Tracking, Avg.	dB	0.5		
Squint	°	±3.0		
Vertical Pattern:				
Half-power beam width	°	7.3	7.2	6.9
Electrical tilt	°	0.5-7, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam	°T	0.5 ... 4 ... 7	0.5 ... 4 ... 7	0.5 ... 4 ... 7
	dB	15 ... 14 ... 14	15 ... 14 ... 14	15 ... 14 ... 15
VSWR		< 1.5		
Isolation: Intrasystem	dB	> 30		
Isolation: Intersystem	dB	> 42 (790-960 // 1710-2180 MHz)		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. power per input	W	500 (at 50 °C ambient temperature)		
Total power		1000 (at 50 °C ambient temperature)		



80010123v03

Highband		B1, connector 3–4		
		1710–2180		
Frequency range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Polarization	°	+45, –45	+45, –45	+45, –45
Average gain	dBi	17.8 ... 17.7 ... 17.4	18.0 ... 17.9 ... 17.4	17.9 ... 17.8 ... 17.3
Tilt	°	0 ... 3 ... 6	0 ... 3 ... 6	0 ... 3 ... 6
Horizontal Pattern:				
Half-power beam width	°	84	85	88
Front-to-back ratio (180°±30°)	dB	> 23	> 23	> 23
Cross polar ratio	0° dB ±60° ±60°	Typically: 16 > 10 avg. 16	Typically: 16 > 12 avg. 17	Typically: 15 > 10 avg. 18
Maindirection				
Sector				
Tracking, Avg.	dB	0.5		
Squint	°	±3.0		
Vertical Pattern:				
Half-power beam width	°	4.8	4.5	4.2
Electrical tilt	°	0–6, continuously adjustable		
Min. sidelobe supression for first sidelobe above main beam	°T dB	0 ... 3 ... 6 18 ... 17 ... 16	0 ... 3 ... 6 18 ... 17 ... 17	0 ... 3 ... 6 18 ... 16 ... 17
VSWR		< 1.5		
Isolation: Intrasystem	dB	> 30		
Isolation: Intersystem	dB	> 42 (790–960 // 1710–2180 MHz)		
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)		
Max. power per input	W	250 (at 50 °C ambient temperature)		
Total power		500 (at 50 °C ambient temperature)		

Mechanical specifications			
Input		4 x 7-16 female (long neck)	
Connector position		Bottom	
Adjustment Mechanism		2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 680 Maximal: 750	153 169
Max. wind velocity	km/h mph	200 124	
Height / width / depth	mm inches	2635 / 262 / 149 103.7 / 10.3 / 5.9	
Category of mounting hardware		H (Heavy)	
Weight	kg lb	33.0 / 35.0 (clamps incl.) 72.8 / 77.2 (clamps incl.)	
Packing size	mm inches	2966 x 282 x 182 116.8 x 11.1 x 7.2	
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

4-Port Antenna

Y1 Y2

Frequency Range

1710-2690 1710-2690

HPBW

65° 65°

KATHREIN

4-Port Antenna 2 HB 0.9m 65° | 2x1710-2690 16.5dBi



Type No.		80010682			
Highband		Y1; Y2			
		1710-2690			
Frequency range	MHz	1710 – 1990	1920 – 2200	2200 – 2490	2490 – 2690
Polarization	°	+45, -45	+45, -45	+45, -45	+45, -45
Gain at 0° tilt	dBi	15.8	16.2	16.6	16.7
Horizontal Pattern:					
Half-power beam width	°	65	64	60	61
Front-to-back ratio, copolar	dB	> 30	> 30	> 30	> 28
Cross polar ratio	0°	Typically: 25	Typically: 25	Typically: 25	Typically: 25
Sector	±60°	> 8	> 8	> 10	> 10
Vertical Pattern:					
Half-power beam width	°	11	10	9	8.7
Electrical tilt	°	0-12, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	°T dB	0 ... 6 ... 12 ≥ 12 ... 13 ... 15	0 ... 6 ... 12 ≥ 13 ... 14 ... 16	0 ... 6 ... 12 ≥ 13 ... 15 ... 16	0 ... 6 ... 12 ≥ 15 ... 15 ... 17
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 30			
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)			
Max. eff. power per port	W	200 (at 50 °C ambient temperature)			
Max. eff. power for the antenna		600 (at 50 °C ambient temperature)			



Mechanical specifications			
Input		4 x 7-16 female	
Connector position		Bottom	
Adjustment mechanism		2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 345 78	Maximal: 380 85
Max. wind velocity	km/h mph	200 124	
Height / width / depth	mm inches	855 / 315 / 71 33.7 / 12.4 / 2.8	
Category of mounting hardware		M (Medium)	
Weight	kg lb	11 / 13.2 (clamps incl.) 24.3 / 29.1 (clamps incl.)	
Packing size	mm inches	1146 x 337 x 112 45.1 x 13.3 x 4.4	
Scope of supply		Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

4-Port Antenna

Y1 **Y2**

KATHREIN

Frequency Range **1695-2690** **1695-2690**

HPBW **65°** **65°**

4-Port Antenna 2HB 1.5m 65° | 2x1695-2690 18dBi ESLS



Type No.		80020622			
Left side, highband		Y1, connector 1-2			
		1695-2690			
Frequency Range	MHz	1695 – 1880	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	18.0	18.6	18.8
Gain over all Tilts	dBi	17.3 ± 0.4	17.9 ± 0.4	18.3 ± 0.4	18.6 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 3.2	63 ± 2.6	60 ± 3.5	56 ± 2.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 24	> 26	> 23
Cross Polar Discrimination at Boresight	dB	> 22	> 22	> 22	> 18
Cross Polar Discrimination over Sector	dB	> 12.5	> 10.0	> 9.5	> 13.0
Vertical Pattern:					
Elevation Beamwidth	°	6.8 ± 0.5	6.1 ± 0.5	5.2 ± 0.3	4.9 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 14.0			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 20	> 20	> 20	> 20
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 17	> 16	> 16
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (Y1 // Y2)			
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y1	W	500 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



4 Ports

Data sheet continued on next page.

80020622

Right side, highband		Y2, connector 3-4			
		1695-2690			
Frequency Range	MHz	1695 – 1880	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.2	17.9	18.6	18.9
Gain over all Tilts	dBi	17.1 ± 0.4	17.8 ± 0.5	18.4 ± 0.4	18.7 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	68 ± 3.8	64 ± 4.1	59 ± 2.6	55 ± 2.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 25	> 23
Cross Polar Discrimination at Boresight	dB	> 22	> 22	> 22	> 19
Cross Polar Discrimination over Sector	dB	> 13.5	> 11.0	> 9.5	> 12.0
Vertical Pattern:					
Elevation Beamwidth	°	6.8 ± 0.4	6.0 ± 0.5	5.2 ± 0.3	4.8 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 14.0			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 19	> 20	> 20
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 18	> 17	> 17	> 15
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (Y2 // Y1)			
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y2	W	500 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	700 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	4 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 565 127 Maximal: 620 139
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	1471 / 275 / 86 57.9 / 10.8 / 3.4
Category of Mounting Hardware	M (Medium)	
Weight	kg lb	13.0 / 15.2 (clamps incl.) 28.7 / 33.5 (clamps incl.)
Packing Size	mm inches	1791 / 298 / 119 70.5 / 11.7 / 4.7
Scope of Supply	Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

4-Port Antenna

Y1 Y2

Frequency Range

1710-2690 1710-2690

HPBW

65° 65°

KATHREIN

4-Port Antenna 2HB 1.7m 65° | 2x1710-2690 19dBi



Type No.		80010652			
Highbands		Y1; Y2			
		1710-2690			
Frequency range	MHz	1710 – 1990	1920 – 2200	2200 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	18.2 ... 18.4 ... 18.0	18.7 ... 18.9 ... 18.4	18.8 ... 19.0 ... 18.3	18.7 ... 19.0 ... 18.3
Tilt	°	0 ... 5 ... 10	0 ... 5 ... 10	0 ... 5 ... 10	0 ... 5 ... 10
Horizontal Pattern:					
Half-power beam width	°	65	65	62	65
Front-to-back ratio, copolar	dB	> 30	> 26	> 28	> 26
Cross polar ratio	0°	Typically: 22 > 10	Typically: 22 > 10	Typically: 22 > 10	Typically: 20 > 10
Sector	±60°				
Vertical Pattern:					
Half-power beam width	°	5.5	5.0	4.3	4.0
Electrical tilt	°	0–10, continuously adjustable			
Sidelobe suppression	° T	0 ... 5 ... 10	0 ... 5 ... 10	0 ... 5 ... 10	0 ... 5 ... 10
for first sidelobe above main beam	dB	≥ 18 ... 16 ... 15	≥ 18 ... 16 ... 15	≥ 18 ... 16 ... 15	≥ 18 ... 15 ... 15
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 30			
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)			
Max. effective power per port	W	250 (at 50 °C ambient temperature)			
Max. effective power for the antenna		500 (at 50 °C ambient temperature)			



4 Ports

Mechanical specifications			
Input		4 x 7-16 female	
Connector position		Bottom	
Adjustment mechanism		2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	705 158
		Maximal:	775 174
Max. wind velocity	km/h mph	200 124	
Height/width/depth	mm inches	1668 / 315 / 71 65.7 / 12.4 / 2.8	
Category of mounting hardware		M (Medium)	
Weight	kg lb	17 / 19.2 (clamps incl.) 37.5 / 42.3 (clamps incl.)	
Packing size	mm inches	1961 x 337 x 112 77.2 x 14.8 x 4.4	
Scope of supply		Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

4-Port Dual-Beam

Y1

Y2

Frequency Range

1695–2690

1695–2690

HPBW

35°

35°

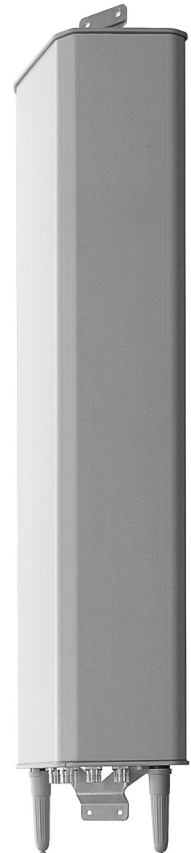
KATHREIN



4-Port Dual-Beam Antenna 2HB 1.3m 35° | 2x 1695–2690 19.5dBi

Type No.		80010656				
Left side, highband		Y1, connector 1–2				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	18.7	19.2	19.5	19.7	19.5
Gain over all Tilts	dBi	18.6 ± 0.5	19.1 ± 0.3	19.4 ± 0.4	19.6 ± 0.5	19.4 ± 1.1
Horizontal Pattern:						
Azimuth Beamwidth	°	41 ± 1.8	38 ± 1.7	37 ± 1.2	36 ± 2.0	33 ± 1.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 23	> 23	> 24	> 23
Cross Polar Discrimination over Sector	dB	> 15.0	> 16.5	> 17.0	> 13.5	> 8.0
Vertical Pattern:						
Elevation Beamwidth	°	7.8 ± 0.6	7.4 ± 0.2	7.1 ± 0.3	6.4 ± 0.4	5.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 10.0				
Tilt Accuracy	°	< 0.5	< 0.3	< 0.2	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 21	> 20	> 19	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y1 // Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010656

Right side, highband		Y2, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	18.6	19.1	19.4	19.7	19.6
Gain over all Tilts	dBi	18.5 ± 0.5	19.0 ± 0.5	19.3 ± 0.5	19.6 ± 0.6	19.5 ± 1.0
Horizontal Pattern:						
Azimuth Beamwidth	°	41 ± 1.9	38 ± 2.3	37 ± 1.3	35 ± 1.0	33 ± 1.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 20	> 22	> 25	> 23
Cross Polar Discrimination over Sector	dB	> 15.0	> 16.5	> 17.0	> 13.5	> 7.5
Vertical Pattern:						
Elevation Beamwidth	°	7.8 ± 0.6	7.4 ± 0.3	7.1 ± 0.4	6.4 ± 0.4	5.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 10.0				
Tilt Accuracy	°	< 0.7	< 0.4	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 20	> 20	> 19	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y2 // Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	800 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	4 x 7-16 female	
Connector Position	bottom	
Adjustment Mechanism	2x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 430 97 Maximal: 465 105
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	1254 / 381 / 151 49.4 / 15.0 / 5.9
Category of Mounting Hardware	M (Medium)	
Weight	kg lb	17.0 / 19.2 (clamps incl.) 37.5 / 42.3 (clamps incl.)
Packing Size	mm inches	1696 / 402 / 172 66.8 / 15.8 / 6.8
Scope of Supply	Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

4-Port Antenna

P1 **P2**

KATHREIN

Frequency Range **3300–3800** **3300–3800**

HPBW **65°** **65°**

4-Port Antenna 2x3300–3800 1.0m 65° | 2x3300–3800 17.5dBi



Type No.		80010922	
Left side, highband		P1, connector 1–2	
		3300–3800	
Frequency Range	MHz	3300 – 3590	3600 – 3800
Gain at mid Tilt	dBi	17.5	17.6
Gain over all Tilts	dBi	17.3 ± 0.4	17.4 ± 0.5
Horizontal Pattern:			
Azimuth Beamwidth	°	66 ± 4.6	63 ± 4.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 21
Cross Polar Discrimination over Sector	dB	> 12.0	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.5
Vertical Pattern:			
Elevation Beamwidth	°	6.0 ± 0.3	5.6 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0 (P1 + P2 simultaneously)	
Tilt Accuracy	°	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 24	> 23
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 18
Cross Polar Isolation	dB	> 25, typ. > 28	
Port to Port Isolation	dB	> 27, typ. > 30 (P1 // P2)	
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)	
Max. Effective Power Ports P1	W	300 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010922

Right side, highband		P2, connector 3-4	
		3300-3800	
Frequency Range	MHz	3300 – 3590	3600 – 3800
Gain at mid Tilt	dBi	17.5	17.8
Gain over all Tilts	dBi	17.3 ± 0.5	17.6 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	67 ± 3.8	63 ± 4.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25
Cross Polar Discrimination over Sector	dB	> 12.0	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5
Vertical Pattern:			
Elevation Beamwidth	°	5.9 ± 0.4	5.6 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0 (P1 + P2 simultaneously)	
Tilt Accuracy	°	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 22	> 22
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 17
Cross Polar Isolation	dB	> 25, typ. > 28	
Port to Port Isolation	dB	> 27, typ. > 30 (P2 // P1)	
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)	
Max. Effective Power Ports P2	W	300 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	400 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		4 x 4.3-10 female		
Connector Position		bottom		
Adjustment Mechanism		1x, Position bottom continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	235	53
		Maximal:	255	57
Max. Wind Velocity	km/h mph	241 150		
Height / Width / Depth	mm inches	970 / 179 / 76 38.2 / 7.0 / 3.0		
Category of Mounting Hardware		M (Medium)		
Weight	kg lb	5.4 / 7.6 (clamps incl.) 11.9 / 16.7 (clamps incl.)		
Packing Size	mm inches	1320 / 190 / 95 52.0 / 7.5 / 3.7		
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter		

Summary – Directional Antennas

6 Ports

Dual Polarization $\pm 45^\circ$

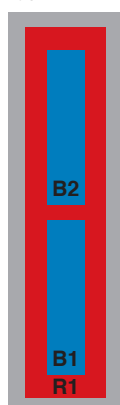
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Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
1 x Lowband 2 x Highband					
6-Port Antenna	698–960	65°	13.5dBi	2°–16°T	84510864
	1695–2690	65°	17.5dBi	2°–12°T	
	1695–2690	65°	17.5dBi	2°–12°T	
6-Port Antenna	698–960	65°	15dBi	2°–12°T	84510865
	1695–2690	65°	17.5dBi	2°–12°T	
	1695–2690	65°	17.5dBi	2°–12°T	
6-Port Antenna	698–960	65°	16.5dBi	1°–10°T	84510866
	1695–2690	65°	18dBi	2°–12°T	
	1695–2690	65°	18dBi	2°–12°T	
6-Port Antenna	790–960	65°	17.5dBi	2°–10°T	80010292v03
	1710–2180	65°	17.5dBi	0°–10°T	
	1710–2180	65°	17dBi	0°–10°T	
6-Port Antenna	698–960	65°	16dBi	1°–12°T	80010691v01
	1710–2690	65°	16dBi	2°–12°T	
	1710–2690	65°	16dBi	2°–12°T	
6-Port Antenna	698–960	65°	17dBi	1.5°–10°T	80010692v01
	1710–2690	65°	17dBi	0°–10°T	
	1710–2690	65°	17dBi	2°–10°T	
6-Port Antenna	698–960	65°	14.5dBi	2°–16°T	80010864
	1695–2690	65°	17.5dBi	2.5°–12°T	
	1695–2690	65°	18dBi	2.5°–12°T	
6-Port Antenna	698–960	65°	16dBi	2°–12°T	80010865
	1695–2690	65°	18dBi	2.5°–12°T	
	1695–2690	65°	18dBi	2.5°–12°T	
6-Port Antenna	698–960	65°	17dBi	1°–10°T	80010866
	1695–2690	65°	18dBi	2.5°–12°T	
	1695–2690	65°	18dBi	2.5°–12°T	

New or changed product

1) Configuration Types – further details on page 12–15.

Type P



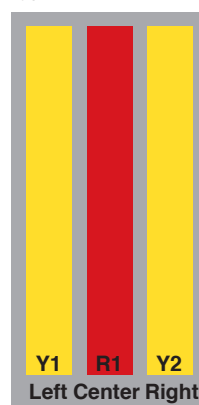
Type R



Type S



Type AK



Summary – Directional Antennas

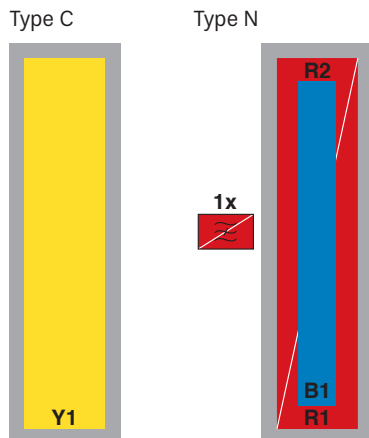
6 Ports

Dual Polarization $\pm 45^\circ$

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Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 1 x Highband									
6-Port Antenna	790–862	65°	14dBi	0°–14°T	80010697	1332	7-16, bottom	78	N
	880–960	65°	14dBi	0°–14°T				+	
	1710–2180	65°	17dBi	0°–8°T				77	
6-Port Antenna	790–862	65°	15.5dBi	0°–10°T	80010698	1932	7-16, bottom	78	N
	880–960	65°	16dBi	0°–10°T				+	
	1710–2180	65°	18.5dBi	0°–6°T				79	
6-Port Antenna	790–862	65°	16.5dBi	0°–7°T	80010699	2532	7-16, bottom	80	N
	880–960	65°	17dBi	0°–7°T				+	
	1710–2180	65°	18.5dBi	0°–6°T				81	
3 x Highband Special Design									
6-Port Tri-Sector Slimpole	1710–2690	80°	10dBi	0°T	80020125	691	4.3-10, bottom	240	C/C/C

1) Configuration Types – further details on page 12–15.



6-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2
698-960	1695-2690	1695-2690
65°	65°	65°

KATHREIN

6-Port Antenna LB/2HB 1.4m 65° | 698-960 13.5dBi | 2x1695-2690 17.5dBi



Integrated RET



Type No.		84510864			
Center, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.3	13.7	13.9	13.9
Gain over all Tilts	dBi	13.2 ± 0.4	13.7 ± 0.3	13.8 ± 0.2	13.8 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	72 ± 1.9	70 ± 1.8	69 ± 2.5	68 ± 1.4
Front-to-Back Ratio, Total Power, ±30°	dB	> 25	> 26	> 26	> 25
Cross Polar Discrimination at Boresight	dB	19	19	18	16
Cross Polar Discrimination over Sector	dB	13.1	11.4	10.9	8.4
Azimuth Beam Port-to-Port Tracking	dB	3.0	2.0	2.0	1.5
Vertical Pattern:					
Elevation Beamwidth	°	18.2 ± 1.7	16.2 ± 1.1	15.6 ± 0.8	14.5 ± 1.0
Electrical Downtilt continuously adjustable	°	2.0 – 16.0			
Tilt Accuracy	°	< 0.9	< 0.7	< 0.7	< 0.8
First Upper Side Lobe Suppression	dB	> 16	> 18	> 19	> 18
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 28 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	200 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, highband		Y1, connector 3-4					
		1695-2690					
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2305 – 2360	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.2	17.5	17.3	17.2	17.8
Gain over all Tilts	dBi	16.8 ± 0.6	17.1 ± 0.7	17.3 ± 0.9	17.3 ± 0.8	17.2 ± 0.7	17.7 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 5.3	61 ± 2.8	60 ± 3.2	65 ± 3.9	65 ± 3.5	62 ± 2.8
Front-to-Back Ratio, Total Power, ±30°	dB	> 27	> 25	> 23	> 27	> 27	> 26
Cross Polar Discrimination at Boresight	dB	26	25	19	18	18	20
Cross Polar Discrimination over Sector	dB	8.3	9.1	7.8	8.4	6.9	5.5
Azimuth Beam Port-to-Port Tracking	dB	2.0	2.5	4.5	2.5	3.0	2.0
Vertical Pattern:							
Elevation Beamwidth	°	7.4 ± 0.5	6.9 ± 0.3	6.5 ± 0.4	5.7 ± 0.3	5.7 ± 0.4	5.1 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.6	< 0.7	< 0.7	< 0.8	< 0.7	< 0.8
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 16	> 16	> 16
Cross Polar Isolation	dB	> 28					
Port to Port Isolation	dB	> 28 (Y1 // R1) > 28 (Y1 // Y2)					
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)					
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

84510864

Right side, highband		Y2, connector 5-6					
		1695-2690					
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2305 – 2360	2500 – 2690
Gain at mid Tilt	dBi	17.0	17.2	17.4	17.3	17.2	17.8
Gain over all Tilts	dBi	16.9 ± 0.6	17.1 ± 0.7	17.3 ± 0.8	17.3 ± 0.8	17.2 ± 0.7	17.7 ± 1.0
Horizontal Pattern:							
Azimuth Beamwidth	°	62 ± 4.9	61 ± 2.9	61 ± 3.7	66 ± 2.7	66 ± 2.2	62 ± 2.9
Front-to-Back Ratio, Total Power, ±30°	dB	> 26	> 25	> 24	> 26	> 26	> 26
Cross Polar Discrimination at Boresight	dB	25	25	19	19	19	19
Cross Polar Discrimination over Sector	dB	9.3	9.6	6.8	7.2	5.7	6.1
Azimuth Beam Port-to-Port Tracking	dB	2.0	3.0	3.5	3.0	3.0	2.0
Vertical Pattern:							
Elevation Beamwidth	°	7.4 ± 0.5	6.9 ± 0.4	6.5 ± 0.4	5.7 ± 0.3	5.7 ± 0.4	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.6	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 18	> 16	> 16	> 16
Cross Polar Isolation	dB	> 28					
Port to Port Isolation	dB	> 28 (Y2 // R1) > 28 (Y2 // Y1)					
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)					
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	600 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications		
Input	6 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 595 134 Maximal: 595 134
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1412 / 353 / 164 55.6 / 13.9 / 6.5
Category of Mounting Hardware	M (Medium)	
Weight	kg lb	22 / 24.2 (clamps incl.) 48.5 / 53.4 (clamps incl.)
Packing Size	mm inches	1625 / 377 / 210 63.9 / 14.8 / 8.3
Scope of Supply	Panel, integrated RET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

6-Port Antenna

R1

Y1

Y2

Frequency Range

698-960

1695-2690

1695-2690

Dual Polarization

65°

65°

65°

KATHREIN

6-Port Antenna LB/2HB 1.9m 65° | 698-960 15dBi | 2x1695-2690 17.5dBi

Type No.		84510865			
Center, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.6	15.0	15.2	15.3
Gain over all Tilts	dBi	14.6 ± 0.4	15.0 ± 0.3	15.2 ± 0.3	15.2 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	71 ± 2.3	68 ± 2.1	67 ± 1.7	66 ± 1.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 27	> 27	> 27
Vertical Pattern:					
Elevation Beamwidth	°	12.1 ± 0.9	11.0 ± 0.7	10.6 ± 0.5	10.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.7	< 0.5	< 0.6	< 1.0
First Upper Side Lobe Suppression	dB	> 17	> 16	> 16	> 18
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Integrated RET



Left side, highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.0	17.3	17.5	17.4	17.8
Gain over all Tilts	dBi	16.9 ± 0.6	17.3 ± 0.5	17.5 ± 0.6	17.4 ± 0.7	17.7 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 4.3	61 ± 3.2	60 ± 3.3	64 ± 3.2	62 ± 2.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 24	> 23	> 28	> 25
Vertical Pattern:						
Elevation Beamwidth	°	7.5 ± 0.4	7.0 ± 0.3	6.7 ± 0.5	5.8 ± 0.4	5.3 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1.2	< 1.2	< 1.1	< 0.9	< 0.9
First Upper Side Lobe Suppression	dB	> 17	> 17	> 17	> 16	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	28 (Y1 // R1) 30 (Y1 // Y2)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

84510865

Right side, highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.2	17.5	17.6	17.6	17.9
Gain over all Tilts	dBi	17.2 ± 0.8	17.5 ± 0.5	17.5 ± 0.6	17.5 ± 0.9	17.8 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 4.7	61 ± 3.6	60 ± 3.4	64 ± 3.3	62 ± 2.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 24	> 27	> 25
Vertical Pattern:						
Elevation Beamwidth	°	7.5 ± 0.4	7.0 ± 0.4	6.6 ± 0.5	5.8 ± 0.3	5.3 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1.1	< 1.1	< 0.9	< 0.8	< 0.9
First Upper Side Lobe Suppression	dB	> 19	> 21	> 20	> 18	> 18
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	28 (Y2 // R1, Y1)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	700 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications		
Input	6 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 815 183 Maximal: 815 183
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1885 / 353 / 164 74.2 / 13.9 / 6.5
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	26.5 / 29.4 (clamps incl.) 58.4 / 64.8 (clamps incl.)
Packing Size	mm inches	2100 / 377 / 210 82.7 / 14.8 / 8.3
Scope of Supply	Panel, integrated RET and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter	

6-Port Antenna

R1

Y1

Y2

Frequency Range

698-960

1695-2690

1695-2690

Dual Polarization

65°

65°

65°

KATHREIN

6-Port Antenna LB/2HB 2.7m 65° | 698-960 16.5dBi | 2x1695-2690 18dBi

Type No.		84510866			
Center, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.2	16.5	16.6	16.8
Gain over all Tilts	dBi	16.1 ± 0.6	16.5 ± 0.5	16.5 ± 0.5	16.7 ± 0.6
Horizontal Pattern:					
Azimuth Beamwidth	°	69 ± 2.0	66 ± 1.8	65 ± 2.3	63 ± 2.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 28	> 28	> 28
Vertical Pattern:					
Elevation Beamwidth	°	8.3 ± 0.7	7.6 ± 0.3	7.4 ± 0.4	7.0 ± 0.3
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.7	< 0.8	< 0.7	< 0.7
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 18
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 28 dB (R1 // Y1, Y2)			
Max. Effective Power per Port	W	200 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	400 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Integrated RET



Left side, highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.1	17.4	17.7	17.7	17.9
Gain over all Tilts	dBi	17.0 ± 0.7	17.4 ± 0.6	17.6 ± 0.9	17.5 ± 0.8	17.8 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 4.7	60 ± 2.8	59 ± 3.4	62 ± 3.2	61 ± 3.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 26	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	6.9 ± 0.6	6.4 ± 0.3	6.1 ± 0.4	5.4 ± 0.2	4.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 19	> 20	> 16	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 dB (Y1 // R1, Y2)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

84510866

Right side, highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.3	17.6	17.8	17.7	17.9
Gain over all Tilts	dBi	17.2 ± 0.7	17.5 ± 0.7	17.7 ± 0.9	17.5 ± 0.8	17.8 ± 1.0
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 4.9	60 ± 3.1	58 ± 4.1	62 ± 2.3	61 ± 4.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 24	> 26	> 24
Vertical Pattern:						
Elevation Beamwidth	°	6.9 ± 0.6	6.4 ± 0.3	6.2 ± 0.5	5.4 ± 0.3	4.9 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 16	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 dB (Y2 // R1, Y1)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	700 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications		
Input	6 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1230 276 Maximal: 1230 276
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	2697 / 353 / 164 106.2 / 13.9 / 6.5
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	32.0 / 33.5 (clamps incl.) 70.5 / 73.8 (clamps incl.)
Packing Size	mm inches	2910 / 377 / 210 114.6 / 14.8 / 8.3
Scope of Supply	Panel, integrated RET and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	B1	B2
790–960	1710–2180	1710–2180
65°	65°	65°

KATHREIN

6-Port Antenna LB/2HB 2.6m 65° | 790–960 17.5dBi | 2x1710–2180 17.5dBi



Type No.		80010292v03		
Lowband		R1, connector 1–2		
		790–960		
Frequency Range	MHz	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	17.1	17.3	17.4
Gain over all Tilts	dBi	17.0 ± 0.3	17.2 ± 0.3	17.3 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	69 ± 1.1	68 ± 1.3	66 ± 1.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 27	> 28
Cross Polar Discrimination at Boresight	dB	> 25	> 25	> 27
Cross Polar Discrimination over Sector	dB	> 14.0	> 14.5	> 12.5
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.0	< 2.5
Vertical Pattern:				
Elevation Beamwidth	°	7.9 ± 0.3	7.6 ± 0.3	7.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 10.0		
Tilt Accuracy	°	< 0.1	< 0.1	< 0.2
First Upper Side Lobe Suppression	dB	> 14	> 15	> 15
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 36 (R1 // B1, B2)		
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.



Lower highband		B1, connector 3–4		
		1710–2180		
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Gain at mid Tilt	dBi	17.2	17.3	17.3
Gain over all Tilts	dBi	17.1 ± 0.4	17.2 ± 0.3	17.2 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	64 ± 2.6	62 ± 2.4	62 ± 2.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 29	> 26
Cross Polar Discrimination at Boresight	dB	> 31	> 30	> 29
Cross Polar Discrimination over Sector	dB	> 12.0	> 12.5	> 11.5
Azimuth Beam Port-to-Port Tracking	dB	< 0.5	< 1.0	< 1.0
Vertical Pattern:				
Elevation Beamwidth	°	7.6 ± 0.4	7.2 ± 0.5	6.8 ± 0.6
Electrical Downtilt continuously adjustable	°	0.0 – 10.0		
Tilt Accuracy	°	< 0.6	< 0.7	< 0.6
First Upper Side Lobe Suppression	dB	> 14	> 17	> 16
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 36 (B1 // R1, B2)		
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)		
Max. Effective Power Ports B1	W	500 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010292v03

Upper highband		B2, connector 5-6		
		1710-2180		
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Gain at mid Tilt	dBi	16.7	16.8	17.0
Gain over all Tilts	dBi	16.5 ± 0.3	16.6 ± 0.3	16.8 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	66 ± 3.1	63 ± 4.0	61 ± 2.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 30	> 27
Cross Polar Discrimination at Boresight	dB	> 30	> 30	> 28
Cross Polar Discrimination over Sector	dB	> 14.5	> 14.0	> 11.0
Azimuth Beam Port-to-Port Tracking	dB	< 0.5	< 1.0	< 1.5
Vertical Pattern:				
Elevation Beamwidth	°	7.6 ± 0.3	7.2 ± 0.4	6.9 ± 0.5
Electrical Downtilt continuously adjustable	°	0.0 – 10.0		
Tilt Accuracy	°	< 0.4	< 0.5	< 0.6
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 36 (B2 // R1, B1)		
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)		
Max. Effective Power Ports B2	W	500 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 36
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	6 x 7-16 female	
Connector Position	bottom	
Adjustment Mechanism	3x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 665 149 Maximal: 730 164
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	2598 / 261 / 146 102.3 / 10.3 / 5.7
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	27.0 / 29.2 (clamps incl.) 59.5 / 64.3 (clamps incl.)
Packing Size	mm inches	2902 / 284 / 184 114.3 / 11.2 / 7.2
Scope of Supply	Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2
698–960	1710–2690	1710–2690
65°	65°	65°

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6-Port Antenna LB/2HB 2.0m 65° | 698–960 16dBi | 2x1710–2690 16dBi

Type No.	80010691v01				
Lowband	R1, connector 1–2				
		698–960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.3	15.6	15.9	16.2
Gain over all Tilts	dBi	15.2 ± 0.4	15.6 ± 0.3	15.8 ± 0.5	16.1 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	71 ± 2.2	69 ± 1.1	68 ± 1.1	67 ± 1.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 26	> 26	> 28
Cross Polar Discrimination over Sector	dB	> 8.5	> 10.0	> 10.5	> 9.5
Vertical Pattern:					
Elevation Beamwidth	°	10.8 ± 0.9	10.1 ± 0.5	9.9 ± 0.7	9.2 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 12.0			
Tilt Accuracy	°	< 0.6	< 0.5	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 18	> 17	> 19
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 18	> 17	> 18
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 32 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Lower highband	Y1, connector 3–4					
		1710–2690				
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.4	15.8	15.8	15.3	16.3
Gain over all Tilts	dBi	15.4 ± 0.5	15.8 ± 0.3	15.8 ± 0.4	15.3 ± 0.7	16.2 ± 0.3
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 5.8	61 ± 4.5	62 ± 2.9	64 ± 8.0	60 ± 2.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 24	> 24	> 23
Cross Polar Discrimination over Sector	dB	> 7.5	> 7.5	> 9.0	> 7.5	> 8.0
Vertical Pattern:						
Elevation Beamwidth	°	10.9 ± 0.8	10.0 ± 0.8	9.4 ± 0.8	8.4 ± 0.9	7.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.5	< 0.6	< 0.5	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 15	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 18	> 18	> 15	> 15	> 19
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 32 (Y1 // R1, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010691v01

Upper highband		Y2, connector 5-6				
		1710-2690				
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.1	15.4	15.4	15.1	15.6
Gain over all Tilts	dBi	15.1 ± 0.5	15.4 ± 0.3	15.3 ± 0.4	15.1 ± 0.5	15.5 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	60 ± 6.1	60 ± 4.0	61 ± 4.4	62 ± 6.3	60 ± 3.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 26	> 23	> 22
Cross Polar Discrimination over Sector	dB	> 8.0	> 9.0	> 8.5	> 6.5	> 8.5
Vertical Pattern:						
Elevation Beamwidth	°	10.9 ± 0.7	10.2 ± 0.5	9.6 ± 0.8	8.4 ± 0.6	7.8 ± 0.7
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.3	< 0.3	< 0.5
First Upper Side Lobe Suppression	dB	> 19	> 19	> 19	> 17	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 18	> 19	> 15	> 14	> 18
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 32 (Y2 // R1, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 32
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		6 x 7-16 female long neck		
Connector Position		bottom		
Adjustment Mechanism		3x, Position bottom continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	390	88
		Maximal:	620	139
Max. Wind Velocity	km/h mph	200 124		
Height / Width / Depth	mm inches	1997 / 300 / 152 78.6 / 11.8 / 6.0		
Category of Mounting Hardware		M (Medium)		
Weight	kg lb	25.0 / 27.2 (clamps incl.) 55.1 / 60.0 (clamps incl.)		
Packing Size	mm inches	2316 / 322 / 190 91.2 / 12.7 / 7.5		
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter		

6-Port Antenna Frequency Range HPBW

R1	Y1	Y2
698-960	1710-2690	1710-2690
65°	65°	65°

KATHREIN

6-Port Antenna LB/2HB 2.6m 65° | 698-960 17dBi | 2x1710-2690 17dBi



Type No.		80010692v01			
Low band		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.2	16.7	16.9	17.2
Gain over all Tilts	dBi	16.1 ± 0.5	16.7 ± 0.3	16.8 ± 0.3	17.1 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	71 ± 2.2	68 ± 1.1	68 ± 0.9	66 ± 1.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 26	> 27
Cross Polar Discrimination at Boresight	dB	> 22	> 23	> 23	> 23
Cross Polar Discrimination over Sector	dB	> 9.0	> 9.5	> 10.0	> 8.0
Vertical Pattern:					
Elevation Beamwidth	°	8.7 ± 0.7	8.0 ± 0.5	7.8 ± 0.4	7.2 ± 0.5
Electrical Downtilt continuously adjustable	°	1.5 – 10.0			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 17	> 18	> 18	> 16
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	>32 (R1 // Y1 // Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



Lower high band		Y1, connector 3-4				
		1710-2690				
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.6	16.7	16.8	16.8	17.1
Gain over all Tilts	dBi	16.5 ± 0.6	16.7 ± 0.3	16.6 ± 0.4	16.6 ± 0.9	16.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	59 ± 3.8	63 ± 5.1	65 ± 3.6	59 ± 7.2	61 ± 2.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 25	> 24	> 23
Cross Polar Discrimination at Boresight	dB	> 16	> 21	> 20	> 17	> 20
Cross Polar Discrimination over Sector	dB	> 8.0	> 10.0	> 9.5	> 8.0	> 10.5
Vertical Pattern:						
Elevation Beamwidth	°	7.6 ± 0.4	7.5 ± 0.3	7.1 ± 0.6	6.1 ± 0.3	6.0 ± 0.2
Electrical Downtilt continuously adjustable	°	0.0 – 10.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.4	< 0.6	< 0.3
First Upper Side Lobe Suppression	dB	> 13	> 16	> 17	> 15	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	>32 (R1 // Y1 // Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010692v01

Upper high band		Y2, connector 5-6				
		1710-2690				
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.6	16.7	16.6	16.6	17.0
Gain over all Tilts	dBi	16.5 ± 0.5	16.6 ± 0.4	16.5 ± 0.3	16.4 ± 0.9	16.7 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 3.7	64 ± 6.7	65 ± 5.5	63 ± 5.7	65 ± 5.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 25	> 25	> 23
Cross Polar Discrimination at Boresight	dB	> 15	> 20	> 21	> 19	> 14
Cross Polar Discrimination over Sector	dB	> 6.0	> 9.5	> 9.5	> 7.0	> 7.5
Vertical Pattern:						
Elevation Beamwidth	°	6.5 ± 0.4	6.2 ± 0.2	6.0 ± 0.3	5.3 ± 0.3	4.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 10.0				
Tilt Accuracy	°	< 0.3	< 0.2	< 0.2	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 20	> 18
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	>32 (R1 // Y1 // Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 32
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on ngmn-P-BASTA requirements.

Mechanical specifications		
Input	6 x 7-16 female long neck	
Connector Position	bottom	
Adjustment Mechanism	3x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 530 119 Maximal: 845 190
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	2622 / 300 / 152 103.2 / 11.8 / 6.0
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	31.0 / 33.2 (clamps incl.) 68.3 / 73.2 (clamps incl.)
Packing Size	mm inches	2951 / 322 / 190 116.2 / 12.7 / 7.5
Scope of Supply	Panel, FlexRET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2
698–960	1695–2690	1695–2690
65°	65°	65°

KATHREIN

6-Port Antenna LB/2HB 1.4m 65° | 698–960 14.5dBi | 2x1695–2690 18dBi



FlexRET



Type No.		80010864			
Left side, lowband		R1, connector 1–2			
		698–960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.5	14.0	14.2	14.5
Gain over all Tilts	dBi	13.5 ± 0.3	14.0 ± 0.4	14.2 ± 0.3	14.4 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	72 ± 3.2	70 ± 2.7	68 ± 2.4	67 ± 2.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 24	> 25
Cross Polar Discrimination at Boresight	dB	> 23	> 23	> 24	> 22
Cross Polar Discrimination over Sector	dB	> 7.0	> 7.0	> 7.0	> 7.5
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 1.5	< 2.0	< 2.5
Vertical Pattern:					
Elevation Beamwidth	°	17.4 ± 1.1	16.2 ± 1.1	15.7 ± 0.7	14.9 ± 0.8
Electrical Downtilt continuously adjustable	°	2.0 – 16.0			
Tilt Accuracy	°	< 0.6	< 0.8	< 0.6	< 0.5
First Upper Side Lobe Suppression	dB	> 15	> 16	> 16	> 19
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 22	> 20	> 20	> 20
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 3–4				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.3	17.5	17.6	17.2	17.6
Gain over all Tilts	dBi	17.2 ± 0.6	17.5 ± 0.3	17.5 ± 0.3	17.1 ± 0.4	17.5 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 3.9	61 ± 3.0	62 ± 3.3	66 ± 6.8	64 ± 5.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 28	> 26	> 24	> 24
Cross Polar Discrimination at Boresight	dB	> 16	> 20	> 23	> 18	> 15
Cross Polar Discrimination over Sector	dB	> 7.0	> 9.0	> 10.5	> 8.5	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.5	< 2.5	< 2.0	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	6.7 ± 0.4	6.3 ± 0.3	6.0 ± 0.5	5.3 ± 0.2	4.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 17	> 17	> 18	> 19	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 14	> 14	> 14	> 14
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010864

Right side, highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.2	17.5	17.8	18.2	18.3
Gain over all Tilts	dBi	17.2 ± 0.4	17.4 ± 0.3	17.7 ± 0.4	18.1 ± 0.3	18.1 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 2.4	63 ± 3.2	63 ± 2.9	61 ± 2.0	61 ± 2.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 23	> 23	> 24	> 25
Cross Polar Discrimination at Boresight	dB	> 22	> 24	> 24	> 20	> 18
Cross Polar Discrimination over Sector	dB	> 15.5	> 15.0	> 13.0	> 7.5	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 1.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.7 ± 0.4	6.4 ± 0.4	5.5 ± 0.3	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 21	> 21	> 22	> 18	> 19
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 15	> 15	> 15	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		6 x 7-16 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 450 101	Maximal: 520 117
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1402 / 377 / 169 55.2 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	25.0 / 27.2 (clamps incl.) 55.1 / 59.9 (clamps incl.)	
Packing Size	mm inches	1602 / 397 / 212 63.1 / 15.6 / 8.3	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2
698-960	1695-2690	1695-2690
65°	65°	65°

KATHREIN

6-Port Antenna LB/2HB 1.9m 65° | 698-960 16dBi | 2x1695-2690 18dBi



FlexRET



Type No.		80010865			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.2	15.7	15.9	16.2
Gain over all Tilts	dBi	15.2 ± 0.5	15.6 ± 0.3	15.8 ± 0.4	16.1 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	69 ± 2.3	68 ± 2.1	67 ± 2.0	67 ± 1.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 26	> 26
Cross Polar Discrimination at Boresight	dB	> 23	> 22	> 23	> 22
Cross Polar Discrimination over Sector	dB	> 8.0	> 8.0	> 9.0	> 8.0
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.0	< 2.0	< 2.0
Vertical Pattern:					
Elevation Beamwidth	°	10.8 ± 1.1	9.8 ± 0.4	9.5 ± 0.6	8.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 16	> 17	> 16
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (R1 // Y1,Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.3	17.7	17.9	17.6	18.1
Gain over all Tilts	dBi	17.2 ± 0.5	17.6 ± 0.3	17.7 ± 0.3	17.5 ± 0.5	17.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 4.2	62 ± 2.6	61 ± 2.4	63 ± 6.1	66 ± 6.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 27	> 26	> 23	> 23
Cross Polar Discrimination at Boresight	dB	> 16	> 20	> 24	> 18	> 15
Cross Polar Discrimination over Sector	dB	> 7.5	> 8.5	> 10.5	> 8.5	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 2.5	< 2.5	< 2.0	< 2.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.4	5.9 ± 0.3	5.6 ± 0.4	4.9 ± 0.2	4.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1
First Upper Side Lobe Suppression	dB	> 19	> 17	> 17	> 16	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 14	> 13	> 13	> 14
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010865

Right side, highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.3	17.5	17.8	18.2	18.1
Gain over all Tilts	dBi	17.3 ± 0.3	17.5 ± 0.3	17.8 ± 0.4	18.1 ± 0.3	17.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 2.9	66 ± 2.8	66 ± 2.6	65 ± 1.8	68 ± 4.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 24	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 15	> 19	> 18	> 17	> 19
Cross Polar Discrimination over Sector	dB	> 10.5	> 15.0	> 14.5	> 10.0	> 10.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 0.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.7 ± 0.3	6.3 ± 0.5	5.6 ± 0.3	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 19	> 25	> 25	> 19	> 21
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 15	> 17	> 17	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	6 x 7-16 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 630 142 Maximal: 730 164
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1921 / 377 / 169 75.6 / 14.8 / 6.7
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	27.1 / 29.3 (clamps incl.) 59.7 / 64.6 (clamps incl.)
Packing Size	mm inches	2121 / 397 / 212 83.5 / 15.6 / 8.3
Scope of Supply	Panel, FlexRET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2
698-960	1695-2690	1695-2690
65°	65°	65°

KATHREIN

6-Port Antenna LB/2HB 2.4m 65° | 698-960 17dBi | 2x1695-2690 18dBi



FlexRET



Type No.		80010866			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 820	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.3	16.8	17.0	17.3
Gain over all Tilts	dBi	16.2 ± 0.5	16.8 ± 0.4	17.0 ± 0.3	17.3 ± 0.2
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 2.4	65 ± 1.4	65 ± 0.9	64 ± 1.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 26	> 27
Cross Polar Discrimination at Boresight	dB	> 24	> 25	> 25	> 26
Cross Polar Discrimination over Sector	dB	> 6.5	> 7.0	> 9.0	> 10.0
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.5	< 2.0	< 2.0
Vertical Pattern:					
Elevation Beamwidth	°	8.7 ± 0.7	7.9 ± 0.5	7.6 ± 0.4	7.2 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.3	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 17	> 17	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 15	> 15	> 16
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (R1 // Y1,Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	17.9	17.9	17.3	18.1
Gain over all Tilts	dBi	17.3 ± 0.5	17.8 ± 0.3	17.8 ± 0.3	17.2 ± 0.2	17.9 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 4.5	62 ± 3.0	62 ± 2.6	69 ± 4.9	63 ± 6.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 24	> 23
Cross Polar Discrimination at Boresight	dB	> 16	> 22	> 24	> 19	> 16
Cross Polar Discrimination over Sector	dB	> 8.5	> 10.5	> 11.0	> 8.5	> 7.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.5	< 2.0	< 1.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.4	5.9 ± 0.2	5.6 ± 0.4	4.9 ± 0.1	4.5 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 19	> 18	> 17	> 16	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 14	> 13	> 14	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010866

Right side, highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	17.7	18.0	18.4	18.6
Gain over all Tilts	dBi	17.4 ± 0.3	17.6 ± 0.3	17.9 ± 0.5	18.3 ± 0.3	18.4 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 2.3	62 ± 2.0	61 ± 1.9	60 ± 1.7	58 ± 3.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 25	> 25	> 23
Cross Polar Discrimination at Boresight	dB	> 22	> 23	> 21	> 16	> 16
Cross Polar Discrimination over Sector	dB	> 16.0	> 16.0	> 13.0	> 8.0	> 7.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.0	< 1.0	< 1.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.6 ± 0.3	6.3 ± 0.4	5.6 ± 0.4	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.3	< 0.3	< 0.4	< 0.2
First Upper Side Lobe Suppression	dB	> 21	> 24	> 23	> 19	> 23
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 15	> 15	> 15	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		6 x 7-16 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	830 187
		Maximal:	960 216
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	2441 / 377 / 169 96.1 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	35.0 / 37.2 (clamps incl.) 77.1 / 81.9 (clamps incl.)	
Packing Size	mm inches	2641 / 397 / 212 104.0 / 15.6 / 8.3	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	R2	B1
790–862	880–960	1710–2180
65°	65°	65°

KATHREIN

6-Port Antenna 2LB/HB 1.3m 65° | 790–862 14dBi | 880–960 14dBi | 1710–2180 17dBi



Type No.		80010697	
Lowbands		R1, connector 1–2	R2, connector 3–4
		790–862	880–960
Frequency Range	MHz	790 – 862	880 – 960
Gain at mid Tilt	dBi	13.8	14.1
Gain over all Tilts	dBi	13.7 ± 0.4	14.0 ± 0.5
Horizontal Pattern:			
Azimuth Beamwidth	°	69 ± 1.3	68 ± 1.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 22
Cross Polar Discrimination at Boresight	dB	> 23	> 20
Cross Polar Discrimination over Sector	dB	> 9.0	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5
Vertical Pattern:			
Elevation Beamwidth	°	16.2 ± 0.7	15.0 ± 0.8
Electrical Downtilt continuously adjustable	°	0.0 – 14.0	0.0 – 14.0
Tilt Accuracy	°	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 16
Cross Polar Isolation	dB	> 30	
Port to Port Isolation	dB	> 38 (R1, R2 // B1) > 28 (R1 // R2)	
Max. Effective Power for Group of Ports 1+3 // 2+4	W	300 (at 50 °C ambient temperature)	
Max. Effective Power Ports R1 + R2	W	700 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010697

Highband		B1, connector 5-6		
		1710-2180		
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Gain at mid Tilt	dBi	17.0	17.2	17.2
Gain over all Tilts	dBi	16.9 ± 0.4	17.0 ± 0.3	17.0 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	63 ± 5.6	61 ± 4.8	61 ± 5.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 28	> 26
Cross Polar Discrimination at Boresight	dB	> 18	> 19	> 20
Cross Polar Discrimination over Sector	dB	> 8.5	> 9.5	> 10.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5	< 2.5
Vertical Pattern:				
Elevation Beamwidth	°	7.4 ± 0.3	7.1 ± 0.3	6.8 ± 0.5
Electrical Downtilt continuously adjustable	°	0.0 – 8.0		
Tilt Accuracy	°	< 0.2	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 15	> 19	> 19
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 38 (R1, R2 // B1)		
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)		
Max. Effective Power Ports B1	W	500 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		6 x 7-16 female long neck		
Connector Position		bottom		
Adjustment Mechanism		3x, Position bottom continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	245	55
		Maximal:	395	89
Max. Wind Velocity	km/h mph	200 124		
Height / Width / Depth	mm inches	1332 / 300 / 152 52.4 / 11.8 / 6.0		
Category of Mounting Hardware		M (Medium)		
Weight	kg lb	21.0 / 23.2 (clamps incl.) 46.3 / 51.1 (clamps incl.)		
Packing Size	mm inches	1641 / 322 / 190 64.6 / 12.7 / 7.5		
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter		

6-Port Antenna

Frequency Range

HPBW

R1	R2	B1
790–862	880–960	1710–2180
65°	65°	65°

KATHREIN

6-Port Antenna 2LB/HB 1.9m 65° | 790–862 15.5dBi | 880–960 16 dBi | 1710–2180 18.5dBi



Type No.		80010698	
Lowbands		R1, connector 1–2	R2, connector 3–4
		790–862	880–960
Frequency Range	MHz	790 – 862	880 – 960
Gain at mid Tilt	dBi	15.4	15.9
Gain over all Tilts	dBi	15.3 ± 0.2	15.8 ± 0.3
Horizontal Pattern:			
Azimuth Beamwidth	°	69 ± 1.3	67 ± 1.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 27
Cross Polar Discrimination at Boresight	dB	> 23	> 25
Cross Polar Discrimination over Sector	dB	> 14.0	> 13.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 2.0
Vertical Pattern:			
Elevation Beamwidth	°	11.3 ± 0.5	10.1 ± 0.6
Electrical Downtilt continuously adjustable	°	0.0 – 10.0	0.0 – 10.0
Tilt Accuracy	°	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 16
Cross Polar Isolation	dB	> 30	> 30
Port to Port Isolation	dB	> 38 (R1 // B1) > 28 (R1 // R2)	> 38 (R2 // B1) > 28 (R2 // R1)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010698

Highband		B1, connector 5-6		
		1710-2180		
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Gain at mid Tilt	dBi	18.6	18.8	18.7
Gain over all Tilts	dBi	18.5 ± 0.4	18.7 ± 0.3	18.6 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	63 ± 2.9	61 ± 3.1	60 ± 3.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 29	> 26
Cross Polar Discrimination at Boresight	dB	> 28	> 29	> 28
Cross Polar Discrimination over Sector	dB	> 13.5	> 17.0	> 12.0
Azimuth Beam Port-to-Port Tracking	dB	< 0.5	< 0.5	< 0.5
Vertical Pattern:				
Elevation Beamwidth	°	5.0 ± 0.3	4.8 ± 0.2	4.5 ± 0.4
Electrical Downtilt continuously adjustable	°	0.0 – 6.0		
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 15	> 17	> 16
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 38 (B1 // R1, R2)		
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)		
Max. Effective Power Ports B1	W	500 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		6 x 7-16 female long neck	
Connector Position		bottom	
Adjustment Mechanism		3x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	475 107
		Maximal:	520 117
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	1932 / 261 / 146 76.1 / 10.3 / 5.7	
Category of Mounting Hardware		M (Medium)	
Weight	kg lb	23.0 / 25.2 (clamps incl.) 50.7 / 55.5 (clamps incl.)	
Packing Size	mm inches	2256 / 282 / 182 88.8 / 11.1 / 7.2	
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

6-Port Antenna

Frequency Range

HPBW

R1	R2	B1
790–862	880–960	1710–2180
65°	65°	65°

KATHREIN

6-Port Antenna 2LB/HB 2.5m 65° | 790–862 16.5dBi | 880–960 17dBi | 1710–2180 18.5dBi



Type No.		80010699	
Lowbands		R1, connector 1–2	R2, connector 3–4
		790–862	880–960
Frequency Range	MHz	790 – 862	880 – 960
Gain at mid Tilt	dBi	16.6	17.0
Gain over all Tilts	dBi	16.5 ± 0.2	16.9 ± 0.3
Horizontal Pattern:			
Azimuth Beamwidth	°	69 ± 1.1	66 ± 1.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 26	> 26
Cross Polar Discrimination over Sector	dB	> 13.0	> 14.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5
Vertical Pattern:			
Elevation Beamwidth	°	8.0 ± 0.3	7.3 ± 0.3
Electrical Downtilt continuously adjustable	°	0.0 – 7.0	0.0 – 7.0
Tilt Accuracy	°	< 1.0	< 0.3
First Upper Side Lobe Suppression	dB	> 12	> 14
Cross Polar Isolation	dB	> 30	
Port to Port Isolation	dB	> 28 (R1 // R2) > 38 (R1, R2 // B1)	
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.



80010699

Highband		B1, connector 5-6		
		1710-2180		
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Gain at mid Tilt	dBi	18.5	18.7	18.7
Gain over all Tilts	dBi	18.4 ± 0.4	18.5 ± 0.3	18.5 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	64 ± 2.4	61 ± 3.3	61 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 28	> 26
Cross Polar Discrimination at Boresight	dB	> 33	> 31	> 31
Cross Polar Discrimination over Sector	dB	> 13.5	> 15.0	> 13.5
Azimuth Beam Port-to-Port Tracking	dB	< 0.5	< 0.5	< 0.5
Vertical Pattern:				
Elevation Beamwidth	°	5.0 ± 0.2	4.8 ± 0.2	4.5 ± 0.3
Electrical Downtilt continuously adjustable	°	0.0 – 6.0		
Tilt Accuracy	°	< 0.2	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 14	> 18	> 18
Cross Polar Isolation	dB	> 30		
Port to Port Isolation	dB	> 38 (B1 // R1, R2)		
Max. Effective Power per Port	W	250 (at 50 °C ambient temperature)		
Max. Effective Power Ports B1	W	500 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	6 x 7-16 female long neck	
Connector Position	bottom	
Adjustment Mechanism	3x, Position bottom continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 645 145 Maximal: 710 160
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	2532 / 261 / 146 99.7 / 10.3 / 5.7
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	26.0 / 28.2 (clamps incl.) 57.3 / 62.1 (clamps incl.)
Packing Size	mm inches	2856 / 282 / 182 112.4 / 11.1 / 7.2
Scope of Supply	Panel and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

Summary – Directional Antennas

8 Ports

Dual Polarization $\pm 45^\circ$

KATHREIN

Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
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Lowband | 3 x Highband

8-Port Antenna	698–960	65°	16.5dBi	1°–10°T	84510872	2697	4.3-10, bottom	85 – 87	AR
	1695–2690	65°	17dBi	2°–12°T					
	1695–2690	65°	17dBi	2°–12°T					
	1695–2690	65°	17dBi	2°–12°T					

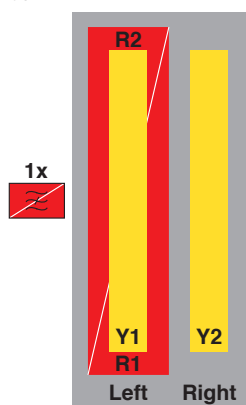
2 x Lowband | 2 x Highband

8-Port Antenna	698–862	65°	14.5dBi	2°–16°T	80010867	1459	7-16, bottom	88 + 89	W
	880–960	65°	15dBi	2°–16°T					
	1695–2690	65°	17.5dBi	2.5°–12°T					
	1695–2690	65°	18.5dBi	2.5°–12°T					
8-Port Antenna	698–862	65°	15.5dBi	2°–12°T	80010868	1921	7-16, bottom	90 + 91	W
	880–960	65°	16dBi	2°–12°T					
	1695–2690	65°	18dBi	2.5°–12°T					
	1695–2690	65°	18dBi	2.5°–12°T					
8-Port Antenna	698–862	65°	16.5dBi	1.5°–10°T	80010869	2441	7-16, bottom	92 + 93	W
	880–960	65°	17dBi	1.5°–10°T					
	1695–2690	65°	18dBi	2.5°–12°T					
	1695–2690	65°	18dBi	2.5°–12°T					
8-Port Antenna	698–862	65°	14.5dBi	2°–16°T	80011867	1499	4.3-10, bottom	94 + 95	W
	880–960	65°	15dBi	2°–16°T					
	1695–2690	65°	18dBi	2.5°–12°T					
	1427–2690	65°	18dBi	2.5°–12°T					
8-Port Antenna	698–862	65°	15.5dBi	2°–12°T	80011868	1999	4.3-10, bottom	96 + 97	W
	880–960	65°	16dBi	2°–12°T					
	1695–2690	65°	18dBi	2.5°–12°T					
	1427–2690	65°	18dBi	2.5°–12°T					

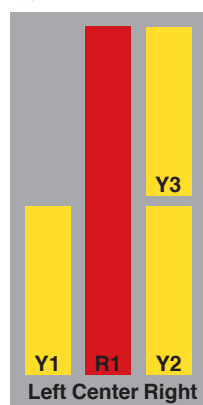
New or changed product

1) Configuration Types – further details on page 12–15.

Type W



TypeAR



Summary – Directional Antennas

8 Ports

Dual Polarization ±45°

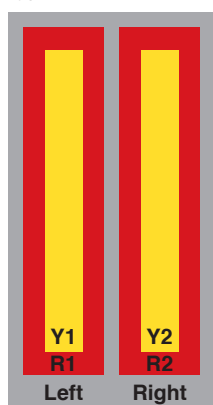
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Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 2 x Highband					
8-Port Antenna	698–960 698–960 1427–2690 1427–2690	65° 65° 65° 65°	15.4dBi 15.4dBi 17.9dBi 17.9dBi	2.5°–11.5°T 2.5°–11.5°T 2°–12°T 2°–12°T	800372965 1978 4.3-10, bottom 98 – 100 AB
8-Port Antenna	698–960 698–960 1427–2690 1427–2690	65° 65° 65° 65°	16.4dBi 16.4dBi 17.9dBi 17.9dBi	2.5°–10°T 2.5°–10°T 2°–12°T 2°–12°T	800372966 2591 4.3-10, bottom 101 – 103 AB
8-Port Antenna	698–894 698–894 1695–2360 1695–2360	65° 65° 65° 65°	13dBi 13dBi 17dBi 17dBi	4°–18°T 4°–18°T 2.5°–12°T 2.5°–12°T	840370964 1214 4.3-10, bottom 104 – 106 AB
8-Port Antenna	698–894 698–894 1695–2360 1695–2360	65° 65° 60° 60°	15.5dBi 15.5dBi 18dBi 18dBi	1°–10°T 1°–10°T 2.5°–12°T 2.5°–12°T	840370966 2437 4.3-10, bottom 107 – 109 AB
8-Port Antenna	698–960 698–960 1695–2690 1695–2690	65° 65° 65° 65°	14dBi 14dBi 17.5dBi 17.5dBi	2°–16°T 2°–16°T 2.5°–12°T 2.5°–12°T	80010964 1499 4.3-10, bottom 110 – 112 AB
8-Port Antenna	698–960 698–960 1695–2690 1695–2690	65° 65° 65° 65°	15.5dBi 15.5dBi 18dBi 18dBi	2°–12°T 2°–12°T 2.5°–12°T 2.5°–12°T	80010965 1999 4.3-10, bottom 113 – 115 AB
8-Port Antenna	698–960 698–960 1695–2690 1695–2690	65° 65° 65° 65°	16.5dBi 16.5dBi 18dBi 18dBi	1°–10°T 1°–10°T 2.5°–12°T 2.5°–12°T	80010966 2438 4.3-10, bottom 116 – 118 AB
8-Port Antenna	698–960 698–960 1695–2690 1695–2690	65° 65° 65° 65°	15dBi 15dBi 17dBi 17dBi	2°–12°T 2°–12°T 2°–12°T 2°–12°T	84510965 1995 4.3-10, bottom 119 – 121 AB
8-Port Antenna	698–960 698–960 1695–2690 1695–2690	65° 65° 65° 65°	15dBi 15dBi 17.5dBi 17.5dBi	1°–10°T 1°–10°T 2°–12°T 2°–12°T	84510966 2500 4.3-10, bottom 122 – 124 AB

New or changed product

1) Configuration Types – further details on page 12–15.

Type AB



Summary – Directional Antennas

8 Ports

Dual Polarization $\pm 45^\circ$

KATHREIN

Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
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4 x Highband

8-Port Antenna	1710–2170	65°	17.5dBi	2°–11°T	80010728	1471	7-16, bottom	125 + 126	K
	1710–2170	65°	17.5dBi	2°–11°T					
	2490–2690	60°	18dBi	2°–14°T					
	2490–2690	60°	18dBi	2°–14°T					

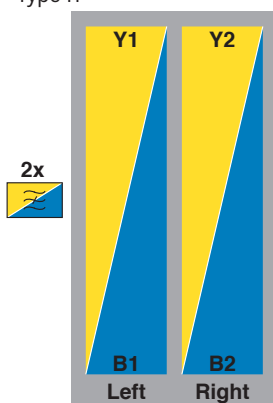
4 x Highband TDD Antenna

8+1-Port Antenna	3300–3800	90°	15.6dBi	2°–12°T	800250911	921	4.3-10, bottom	127 – 130	AO
	3300–3800	90°	15.7dBi	2°–12°T					
	3300–3800	90°	15.7dBi	2°–12°T					
	3300–3800	90°	15.6dBi	2°–12°T					

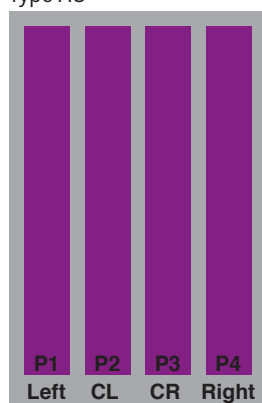
New or changed product

1) Configuration Types – further details on page 12–15.

Type K



Type AO



8-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2	Y3
698-960	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°

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8-Port Antenna LB/3HB 2.7m 65° | 698-960 16.5dBi | 3x1695-2690 17dBi



Integrated RET

Type No.	84510872				
Center, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.1	16.5	16.6	16.8
Gain over all Tilts	dBi	16.0 ± 0.6	16.5 ± 0.5	16.5 ± 0.5	16.6 ± 0.6
Horizontal Pattern:					
Azimuth Beamwidth	°	70 ± 2.5	67 ± 1.7	66 ± 1.5	65 ± 2.0
Front-to-Back Ratio, Total Power, ±30°	dB	> 26	> 27	> 28	> 28
Vertical Pattern:					
Elevation Beamwidth	°	8.4 ± 0.8	7.6 ± 0.4	7.4 ± 0.4	6.9 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.8	< 0.9	< 0.8	< 0.8
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 17
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 28 (R1 // Y1, Y2, Y3)			
Max. Effective Power per Port	W	200 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	400 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



8 Ports

Left side, highband	Y1, connector 3-4					
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.8	17.2	17.2	17.0	17.5
Gain over all Tilts	dBi	16.8 ± 0.8	17.2 ± 0.7	17.2 ± 0.7	17.1 ± 0.8	17.4 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 5.8	60 ± 3.9	61 ± 3.3	63 ± 2.9	62 ± 3.1
Front-to-Back Ratio, Total Power, ±30°	dB	> 25	> 23	> 23	> 27	> 25
Vertical Pattern:						
Elevation Beamwidth	°	7.5 ± 0.5	7.0 ± 0.3	6.6 ± 0.4	5.8 ± 0.3	5.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1.3	< 1.4	< 1.2	< 1.0	< 1.1
First Upper Side Lobe Suppression	dB	> 19	> 19	> 18	> 17	> 19
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y1 // R1, Y2, Y3)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

84510872

Right side, lower highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.0	17.4	17.4	17.5	17.8
Gain over all Tilts	dBi	17.0 ± 0.8	17.4 ± 0.8	17.4 ± 0.8	17.4 ± 0.8	17.8 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	60 ± 6.0	59 ± 5.5	60 ± 7.4	62 ± 3.7	62 ± 3.4
Front-to-Back Ratio, Total Power, ±30°	dB	> 24	> 24	> 24	> 25	> 23
Vertical Pattern:						
Elevation Beamwidth	°	7.5 ± 0.5	6.9 ± 0.3	6.5 ± 0.4	5.7 ± 0.4	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.9	< 0.9	< 1.0	< 0.9	< 0.8
First Upper Side Lobe Suppression	dB	> 18	> 20	> 19	> 19	> 18
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y2 // R1, Y1, Y3)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, upper highband		Y3, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.7	16.9	17.0	17.3	17.6
Gain over all Tilts	dBi	16.7 ± 0.5	16.9 ± 0.5	17.0 ± 0.6	17.2 ± 0.8	17.6 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 3.5	62 ± 3.8	62 ± 4.4	61 ± 2.6	61 ± 3.3
Front-to-Back Ratio, Total Power, ±30°	dB	> 26	> 26	> 24	> 27	> 24
Vertical Pattern:						
Elevation Beamwidth	°	7.5 ± 0.5	7.0 ± 0.3	6.6 ± 0.5	5.8 ± 0.3	5.3 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1.1	< 1.0	< 0.9	< 0.9	< 0.8
First Upper Side Lobe Suppression	dB	> 20	> 23	> 21	> 21	> 20
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y3 // R1, Y1, Y2)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y3	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

84510872

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	800 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications		
Input	8 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1230 276 Maximal: 1230 276
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	2697 / 353 / 164 106.2 / 13.9 / 6.5
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	33.7 / 36.6 (clamps incl.) 74.3 / 80.7 (clamps incl.)
Packing Size	mm inches	2910 / 377 / 210 114.6 / 14.8 / 8.3
Scope of Supply	Panel, integrated RET and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter	

8-Port Antenna Frequency Range HPBW

R1	R2	Y1	Y2
698-862	880-960	1695-2690	1695-2690
65°	65°	65°	65°

KATHREIN

8-Port Antenna 2LB/2HB 1.5m 65° | 698-862 14.5dBi | 880-960 15dBi | 2x1695-2690 18dBi



FlexRET



Type No.		80010867		
Left side, lowbands		R1, connector 1-2		R2, connector 3-4
		698-862		880-960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	14.0	14.5	14.9
Gain over all Tilts	dBi	13.9 ± 0.5	14.3 ± 0.5	14.7 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	67 ± 3.7	63 ± 3.4	61 ± 3.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 23	> 26
Cross Polar Discrimination at Boresight	dB	> 20	> 22	> 21
Cross Polar Discrimination over Sector	dB	> 7.0	> 6.0	> 7.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5	< 2.0
Vertical Pattern:				
Elevation Beamwidth	°	14.6 ± 1.6	13.3 ± 0.7	11.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 16.0		2.0 – 16.0
Tilt Accuracy	°	< 0.7	< 0.7	< 0.4
First Upper Side Lobe Suppression	dB	> 14	> 15	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 14	> 15
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2)		> 28 (R2 // R1, Y2) > 30 (R2 // Y1)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	300 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.2	17.6	17.5	17.1	17.7
Gain over all Tilts	dBi	17.1 ± 0.6	17.5 ± 0.3	17.5 ± 0.4	17.1 ± 0.4	17.6 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 2.9	61 ± 2.1	62 ± 2.6	64 ± 7.0	62 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 25	> 24	> 24
Cross Polar Discrimination at Boresight	dB	> 17	> 23	> 25	> 20	> 18
Cross Polar Discrimination over Sector	dB	> 8.5	> 10.5	> 11.0	> 8.5	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5	< 1.5	< 2.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	6.7 ± 0.5	6.4 ± 0.3	6.0 ± 0.5	5.3 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 18	> 18	> 19	> 16	> 17
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 14	> 14	> 16	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010867

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.4	17.7	18.0	18.5	18.6
Gain over all Tilts	dBi	17.4 ± 0.4	17.6 ± 0.3	17.9 ± 0.5	18.4 ± 0.4	18.5 ± 0.3
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 3.4	62 ± 1.8	61 ± 1.5	59 ± 2.0	57 ± 2.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 25	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 23	> 25	> 24	> 20	> 20
Cross Polar Discrimination over Sector	dB	> 15.5	> 17.5	> 14.5	> 8.0	> 8.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.0 ± 0.4	6.5 ± 0.3	6.2 ± 0.4	5.6 ± 0.4	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 19	> 19	> 17	> 17
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 17	> 17	> 17	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y2 // R2) > 30 (Y2 // R1, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		8 x 7-16 female long neck	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	470 106
Max. Wind Velocity	km/h mph	Maximal:	545 123
Height / Width / Depth	mm inches	200 124	
		1459 / 377 / 169 57.4 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	28.5 / 30.7 (clamps incl.) 62.8 / 67.7 (clamps incl.)	
Packing Size	mm inches	1658 / 397 / 212 65.3 / 15.6 / 8.3	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

8-Port Antenna Frequency Range HPBW

R1	R2	Y1	Y2
698-862	880-960	1695-2690	1695-2690
65°	65°	65°	65°

KATHREIN

8-Port Antenna 2LB/2HB 1.9m 65° | 698-862 15.5dBi | 880-960 16dBi | 2x1695-2690 18dBi



FlexRET



Type No.		80010868		
Left side, lowbands		R1, connector 1-2		R2, connector 3-4
		698-862		880-960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	15.0	15.4	15.9
Gain over all Tilts	dBi	14.9 ± 0.5	15.3 ± 0.5	15.8 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	71 ± 2.5	68 ± 2.5	66 ± 1.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 26
Cross Polar Discrimination over Sector	dB	> 7.0	> 7.0	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.5	< 2.5
Vertical Pattern:				
Elevation Beamwidth	°	11.0 ± 0.9	10.0 ± 0.6	9.4 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		2.0 – 12.0
Tilt Accuracy	°	< 0.5	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 18	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 18	> 18
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2)		> 28 (R2 // R1) > 30 (R2 // Y1, Y2)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	17.8	17.9	17.6	18.3
Gain over all Tilts	dBi	17.3 ± 0.5	17.7 ± 0.3	17.8 ± 0.3	17.5 ± 0.4	18.1 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 4.2	61 ± 3.0	60 ± 2.5	65 ± 5.0	61 ± 5.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 26	> 26	> 24	> 24
Cross Polar Discrimination over Sector	dB	> 8.0	> 8.0	> 9.5	> 9.0	> 10.0
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.0	< 1.5	< 1.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.4	5.9 ± 0.2	5.6 ± 0.4	4.9 ± 0.2	4.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 19	> 18	> 17	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 15	> 14	> 14	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010868

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.3	17.7	18.0	18.4	18.4
Gain over all Tilts	dBi	17.3 ± 0.4	17.6 ± 0.3	17.9 ± 0.4	18.3 ± 0.3	18.3 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 2.4	63 ± 3.2	62 ± 2.9	60 ± 2.0	60 ± 2.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 23	> 24	> 23	> 25
Cross Polar Discrimination over Sector	dB	> 15.5	> 14.5	> 13.0	> 7.5	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.7 ± 0.3	6.4 ± 0.4	5.5 ± 0.4	5.0 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 20	> 21	> 22	> 17	> 20
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 16	> 15	> 15	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		8 x 7-16 female long neck	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	630 142
		Maximal:	730 164
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1921 / 377 / 169 75.6 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	34.0 / 36.2 (clamps incl.) 75.0 / 79.8 (clamps incl.)	
Packing Size	mm inches	2121 / 397 / 212 83.5 / 15.6 / 8.3	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

8-Port Antenna Frequency Range HPBW

R1	R2	Y1	Y2
698-862	880-960	1695-2690	1695-2690
65°	65°	65°	65°

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8-Port Antenna 2LB/2HB 2.4m 65° | 698-862 16.5dBi | 880-960 17dBi | 2x1695-2690 18dBi



FlexRET



Type No.		80010869		
Left side, lowbands		R1, connector 1-2		R2, connector 3-4
		698-862		880-960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	16.0	16.4	17.0
Gain over all Tilts	dBi	15.9 ± 0.4	16.3 ± 0.4	16.9 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	68 ± 2.8	66 ± 2.2	64 ± 2.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 25
Cross Polar Discrimination over Sector	dB	> 6.5	> 7.5	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.5	< 2.0
Vertical Pattern:				
Elevation Beamwidth	°	8.7 ± 0.6	8.0 ± 0.5	7.2 ± 0.3
Electrical Downtilt continuously adjustable	°	1.5 – 10.0		1.5 – 10.0
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 17	> 15	> 19
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 15	> 17
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2)		> 28 (R2 // R1) > 30 (R2 // Y1, Y2)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	17.8	17.9	17.5	18.1
Gain over all Tilts	dBi	17.3 ± 0.5	17.8 ± 0.3	17.8 ± 0.3	17.4 ± 0.4	17.9 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 4.2	61 ± 2.8	61 ± 2.5	66 ± 5.1	63 ± 5.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 26	> 26	> 24	> 24
Cross Polar Discrimination over Sector	dB	> 8.0	> 9.0	> 10.0	> 9.0	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.0	< 1.5	< 1.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.4	5.9 ± 0.2	5.6 ± 0.4	4.9 ± 0.2	4.5 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 18	> 18	> 17	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 15	> 14	> 15	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010869

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	17.7	17.9	18.5	18.4
Gain over all Tilts	dBi	17.3 ± 0.4	17.7 ± 0.3	17.9 ± 0.4	18.4 ± 0.3	18.3 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 2.8	62 ± 2.9	62 ± 2.8	59 ± 2.3	60 ± 2.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 24	> 25
Cross Polar Discrimination over Sector	dB	> 15.5	> 15.0	> 13.5	> 8.0	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 1.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.7 ± 0.3	6.4 ± 0.4	5.5 ± 0.4	5.0 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.2	< 0.2	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 20	> 21	> 22	> 18	> 20
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 14	> 16	> 15	> 15	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		8 x 7-16 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	830 187
		Maximal:	960 216
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	2441 / 377 / 169 96.1 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	37.4 / 39.6 (clamps incl.) 82.5 / 87.3 (clamps incl.)	
Packing Size	mm inches	2641 / 397 / 212 104.0 / 15.6 / 8.3	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698–862	880–960	1695–2690	1427–2690
65°	65°	65°	65°

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8-Port Antenna 2LB/2HB 1.5m 65° | 698–862 14.5dBi | 880–960 15dBi | 1695–2690 18dBi | 1427–2690 18dBi



FlexRET



Type No.		80011867		
Left side, lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	791 – 862	880 – 960
Gain at mid Tilt	dBi	14.1	14.6	15.0
Gain over all Tilts	dBi	14.0 ± 0.4	14.4 ± 0.6	14.8 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	71 ± 3.7	67 ± 3.1	65 ± 4.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 23	> 25
Vertical Pattern:				
Elevation Beamwidth	°	14.3 ± 1.3	13.2 ± 0.9	11.7 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 16.0		2.0 – 16.0
Tilt Accuracy	°	< 0.6	< 0.5	< 0.6
First Upper Side Lobe Suppression	dB	> 15	> 16	> 14
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2)		> 28 (R2 // R1) > 30 (R2 // Y1, Y2)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5–6				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.2	17.5	17.7	17.6	17.8
Gain over all Tilts	dBi	17.1 ± 0.5	17.5 ± 0.2	17.6 ± 0.4	17.5 ± 0.6	17.7 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 4.0	64 ± 3.1	62 ± 4.0	55 ± 4.1	59 ± 7.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 28	> 28	> 26	> 23
Vertical Pattern:						
Elevation Beamwidth	°	6.7 ± 0.3	6.4 ± 0.3	6.0 ± 0.5	5.2 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 19	> 19	> 17	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80011867

Right side, highband		Y2, connector 7-8						
		1427-2690						
Frequency Range	MHz	1427 – 1496	1492 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.3	16.5	17.3	17.7	17.9	17.9	18.2
Gain over all Tilts	dBi	16.3 ± 0.3	16.5 ± 0.2	17.3 ± 0.3	17.6 ± 0.3	17.9 ± 0.3	17.9 ± 0.4	18.0 ± 0.6
Horizontal Pattern:								
Azimuth Beamwidth	°	73 ± 6.0	67 ± 5.1	67 ± 4.5	66 ± 3.4	66 ± 2.8	68 ± 2.9	62 ± 6.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 26	> 26	> 26	> 27	> 24
Vertical Pattern:								
Elevation Beamwidth	°	8.6 ± 0.3	8.6 ± 0.2	7.2 ± 0.4	6.7 ± 0.3	6.3 ± 0.5	5.6 ± 0.4	5.1 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0						
Tilt Accuracy	°	< 0.4	< 0.4	< 0.6	< 0.6	< 0.6	< 0.7	< 0.6
First Upper Side Lobe Suppression	dB	> 19	> 19	> 19	> 20	> 20	> 16	> 15
Cross Polar Isolation	dB	> 28						
Port to Port Isolation	dB	> 28 (Y2 // Y1) > 30 (Y2 // R1, R2)	> 30 (Y2 // R1, R2, Y1)					
Max. Effective Power per specified Band and Port	W	150 (at 50 °C ambient temperature)			200 (at 50 °C ambient temperature)		120 (at 50 °C ambient temperature)	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)						
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)						

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

* not applicable for L-band

Mechanical specifications		
Input	8 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 665 149 Maximal: 665 149
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1499 / 378 / 164 59.0 / 14.9 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	28.3 / 32.8 (clamps incl.) 62.4 / 72.4 (clamps incl.)
Packing Size	mm inches	1681 / 402 / 248 66.2 / 15.8 / 9.8
Scope of Supply	Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698–862	880–960	1695–2690	1427–2690
65°	65°	65°	65°

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8-Port Antenna 2LB/2HB 2.0m 65° | 698–862 15.5dBi | 880–960 16dBi | 1695–2690 18dBi | 1427–2690 18dBi



FlexRET



Type No.		80011868		
Left side, lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	791 – 862	880 – 960
Gain at mid Tilt	dBi	15.2	15.6	16.0
Gain over all Tilts	dBi	15.1 ± 0.5	15.6 ± 0.3	15.8 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	67 ± 3.1	64 ± 2.3	63 ± 3.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 27
Vertical Pattern:				
Elevation Beamwidth	°	10.6 ± 0.7	9.7 ± 0.5	9.1 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		2.0 – 12.0
Tilt Accuracy	°	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 19	> 21
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 19	> 19
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2)		> 28 (R2 // R1) > 30 (R2 // Y1, Y2)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5–6				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	18.0	18.2	17.9	18.2
Gain over all Tilts	dBi	17.3 ± 0.5	17.9 ± 0.4	18.1 ± 0.4	17.8 ± 0.4	18.1 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 4.1	62 ± 3.4	61 ± 2.6	59 ± 4.4	61 ± 6.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 27	> 25	> 24	> 24
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.3	5.8 ± 0.3	5.5 ± 0.4	4.9 ± 0.2	4.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 17	> 16	> 17	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 16	> 15	> 15	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80011868

Right side, highband		Y2, connector 7-8						
		1427-2690						
Frequency Range	MHz	1427 – 1496	1492 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.3	16.5	17.3	17.7	17.9	17.9	18.2
Gain over all Tilts	dBi	16.3 ± 0.3	16.5 ± 0.2	17.3 ± 0.3	17.6 ± 0.3	17.9 ± 0.3	17.9 ± 0.4	18.0 ± 0.6
Horizontal Pattern:								
Azimuth Beamwidth	°	73 ± 6.0	67 ± 5.1	66 ± 4.8	66 ± 3.4	66 ± 2.8	68 ± 2.9	62 ± 6.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 26	> 26	> 26	> 27	> 24
Vertical Pattern:								
Elevation Beamwidth	°	8.6 ± 0.3	8.6 ± 0.2	7.2 ± 0.4	6.7 ± 0.3	6.3 ± 0.5	5.6 ± 0.4	5.1 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0						
Tilt Accuracy	°	< 0.4	< 0.4	< 0.6	< 0.6	< 0.6	< 0.7	< 0.6
First Upper Side Lobe Suppression	dB	> 19	> 19	> 19	> 20	> 20	> 16	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 18	> 18	> 19	> 19	> 16	> 15
Cross Polar Isolation	dB	> 28						
Port to Port Isolation	dB	> 28 (Y2 // Y1) > 30 (Y2 // R1, R2)	> 30 (Y2 // R1, R2, Y1)					
Max. Effective Power per specified Band and Port	W	150 (at 50 °C ambient temperature)		200 (at 50 °C ambient temperature)			120 (at 50 °C ambient temperature)	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)						
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)						

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

* not applicable for L-band

Mechanical specifications		
Input	8 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 905 203 Maximal: 905 203
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1999 / 378 / 164 78.7 / 14.9 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	34.3 / 38.8 (clamps incl.) 75.6 / 85.5 (clamps incl.)
Packing Size	mm inches	2200 / 383 / 255 86.6 / 15.1 / 10.0
Scope of Supply	Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1427-2690	1427-2690
65°	65°	65°	65°

KATHREIN

■ Ultra compact width

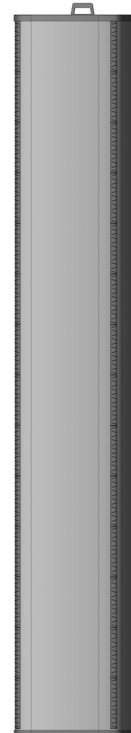


FlexRET

8-Port Antenna 2LB/2HB 2.0m 65° | 2x698-960 15.4dBi | 2x1427-2690 17.9dBi

Type No.	800372965				
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 - 806	791 - 862	824 - 894	880 - 960
Gain at mid Tilt	dBi	14.0	14.7	15.0	15.4
Gain over all Tilts	dBi	14.0 ± 0.4	14.7 ± 0.4	15.0 ± 0.4	15.4 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 5.7	58 ± 3.7	57 ± 3.3	53 ± 5.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 18	> 20	> 22	> 21
Vertical Pattern:					
Elevation Beamwidth	°	11.8 ± 1.3	10.9 ± 0.6	10.7 ± 0.5	10.1 ± 0.7
Electrical Downtilt continuously adjustable	°	2.5 - 11.5			
Tilt Accuracy	°	< 0.5	< 0.4	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 17	> 19	> 21
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 dB (R1 // R2, Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 - 806	791 - 862	824 - 894	880 - 960
Gain at mid Tilt	dBi	14.0	14.7	15.0	15.5
Gain over all Tilts	dBi	14.0 ± 0.4	14.7 ± 0.4	15.0 ± 0.5	15.5 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 4.8	59 ± 4.0	57 ± 3.3	53 ± 4.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 19	> 20	> 21	> 21
Vertical Pattern:					
Elevation Beamwidth	°	11.8 ± 0.9	11.0 ± 0.6	10.8 ± 0.6	10.2 ± 0.9
Electrical Downtilt continuously adjustable	°	2.5 - 11.5			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 17	> 19	> 21
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 dB (R2 // R1, Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

800372965

Left side, highband		Y1, connector 5-6					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.6	17.9	17.9	17.6	17.7
Gain over all Tilts	dBi	16.9 ± 0.7	17.5 ± 0.6	17.7 ± 0.8	17.9 ± 0.8	17.5 ± 0.7	17.7 ± 0.7
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 4.9	68 ± 3.8	68 ± 6.3	67 ± 4.9	67 ± 6.3	60 ± 5.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 28	> 26	> 27	> 27	> 29
Vertical Pattern:							
Elevation Beamwidth	°	8.0 ± 0.4	6.9 ± 0.4	6.4 ± 0.3	6.2 ± 0.4	5.7 ± 0.3	5.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.4	< 0.2	< 0.2	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 20	> 21	> 19	> 19	> 19
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 dB (Y1 // R1, R2, Y2)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highband		Y2, connector 7-8					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.5	17.8	17.9	17.5	17.7
Gain over all Tilts	dBi	16.9 ± 0.6	17.5 ± 0.5	17.7 ± 0.8	17.9 ± 0.8	17.5 ± 0.6	17.6 ± 0.7
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 4.0	68 ± 4.1	68 ± 3.9	66 ± 6.2	66 ± 6.4	60 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 27	> 26	> 27	> 26	> 27
Vertical Pattern:							
Elevation Beamwidth	°	7.9 ± 0.4	6.8 ± 0.4	6.4 ± 0.3	6.1 ± 0.4	5.6 ± 0.3	5.3 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 18	> 19	> 18	> 18	> 17
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 dB (Y2 // R1, R2, Y1)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800372965

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

* not applicable for L-band

Mechanical specifications		
Input	8 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 465 105 Maximal: 815 183
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1978 / 378 / 164 77.9 / 14.9 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	35.9 / 40.4 (clamps incl.) 79.1 / 89.1 (clamps incl.)
Packing Size	mm inches	2125 / 440 / 293 83.7 / 17.3 / 11.5
Scope of Supply	Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1427-2690	1427-2690
65°	65°	65°	65°

KATHREIN

■ Ultra compact width

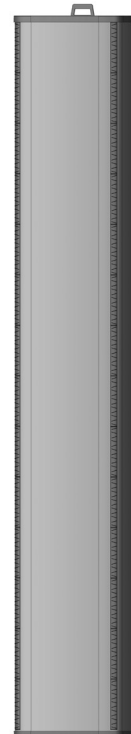


FlexRET

8-Port Antenna 2LB/2HB 2.6m 65° | 2x698-960 16.4dBi | 2x1427-2690 17.9dBi

Type No.	800372966				
Left side, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.0	15.7	16.0	16.4
Gain over all Tilts	dBi	15.0 ± 0.6	15.7 ± 0.6	16.0 ± 0.5	16.4 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	63 ± 4.5	60 ± 2.9	58 ± 3.7	55 ± 5.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 24	> 24
Vertical Pattern:					
Elevation Beamwidth	°	9.1 ± 0.7	8.6 ± 0.4	8.4 ± 0.5	7.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 10			
Tilt Accuracy	°	< 0.4	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 17	> 17	> 19
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



8 Ports

Right side, lowband	R2, connector 3-4				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.0	15.7	16.0	16.4
Gain over all Tilts	dBi	15.0 ± 0.7	15.7 ± 0.6	16.0 ± 0.6	16.4 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 4.8	61 ± 3.6	59 ± 4.5	55 ± 4.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 24	> 25
Vertical Pattern:					
Elevation Beamwidth	°	9.0 ± 0.7	8.6 ± 0.4	8.3 ± 0.5	7.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 10			
Tilt Accuracy	°	< 0.4	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 18	> 18	> 20
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800372966

Left side, highband		Y1, connector 5-6					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.6	17.9	17.9	17.6	17.7
Gain over all Tilts	dBi	16.9 ± 0.7	17.5 ± 0.6	17.7 ± 0.8	17.9 ± 0.8	17.5 ± 0.7	17.7 ± 0.7
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 4.9	68 ± 3.8	68 ± 6.3	67 ± 4.9	67 ± 6.3	60 ± 5.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 28	> 26	> 27	> 27	> 29
Vertical Pattern:							
Elevation Beamwidth	°	8.0 ± 0.4	6.9 ± 0.4	6.4 ± 0.3	6.2 ± 0.4	5.7 ± 0.3	5.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2 – 12					
Tilt Accuracy	°	< 0.4	< 0.2	< 0.2	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 20	> 21	> 19	> 19	> 19
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 (Y1 // R1, R2, Y2)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highband		Y2, connector 7-8					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.5	17.8	17.9	17.5	17.7
Gain over all Tilts	dBi	16.9 ± 0.6	17.5 ± 0.5	17.7 ± 0.8	17.9 ± 0.8	17.5 ± 0.6	17.6 ± 0.7
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 4.0	68 ± 4.1	68 ± 3.9	66 ± 6.2	66 ± 6.4	60 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 27	> 26	> 27	> 26	> 27
Vertical Pattern:							
Elevation Beamwidth	°	7.9 ± 0.4	6.8 ± 0.4	6.4 ± 0.3	6.1 ± 0.4	5.6 ± 0.3	5.3 ± 0.3
Electrical Downtilt continuously adjustable	°	2 – 12					
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 18	> 19	> 18	> 18	> 17
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 (Y2 // R1, R2, Y1)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

800372966

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input	8 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 630 142 Maximal: 1110 249
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	2591 / 378 / 164 102 / 14.9 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	43.6 / 48.1 (clamps incl.) 96.1 / 106.0 (clamps incl.)
Packing Size	mm inches	2745 / 440 / 293 108.1 / 17.3 / 11.5
Scope of Supply	Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

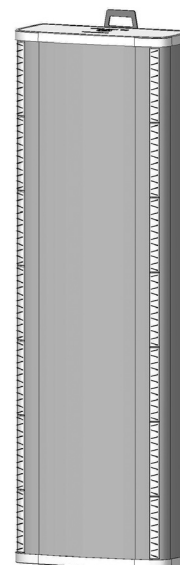
R1	R2	Y1	Y2
698–894	698–894	1695–2360	1695–2360
65°	65°	65°	65°

KATHREIN

■ Ultra compact width



FlexRET



8-Port Antenna 2LB/2HB 4ft 65° | 2x698–894 13dBi | 2x1695–2360 17dBi

Type No.		840370964	
Left side, lowband		R1, connector 1–2	
		698–894	
Frequency Range	MHz	698 – 824	824 – 894
Gain at mid Tilt	dBi	12.3	12.9
Gain over all Tilts	dBi	12.3 ± 0.3	12.9 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	55 ± 4.2	53 ± 5.3
Front-to-Back Ratio, Co-Polar, ± 30°	dB	> 21	> 24
Cross Polar Discrimination over Sector	dB	5.0	8.0
Vertical Pattern:			
Elevation Beamwidth	°	19.0 ± 1.8	17.7 ± 1.4
Electrical Downtilt continuously adjustable	°	4.0 – 18.0	
Tilt Accuracy	°	< 1.8	< 1.4
First Upper Side Lobe Suppression	dB	> 16	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 21	> 19
Cross Polar Isolation	dB	> 25 typically	
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2) typically	
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)	
Max. Effective Power Ports R1	W	600 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lowband		R2, connector 3–4	
		698–894	
Frequency Range	MHz	698 – 824	824 – 894
Gain at mid Tilt	dBi	12.2	13.1
Gain over all Tilts	dBi	12.1 ± 0.3	13.0 ± 0.3
Horizontal Pattern:			
Azimuth Beamwidth	°	56 ± 4.7	51 ± 4.0
Front-to-Back Ratio, Co-Polar, ± 30°	dB	> 20	> 22
Cross Polar Discrimination over Sector	dB	4.5	6.0
Vertical Pattern:			
Elevation Beamwidth	°	19.0 ± 1.9	17.5 ± 1.1
Electrical Downtilt continuously adjustable	°	4.0 – 18.0	
Tilt Accuracy	°	< 1.5	< 1.1
First Upper Side Lobe Suppression	dB	> 16	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 21	> 23
Cross Polar Isolation	dB	> 25 typically	
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2) typically	
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)	
Max. Effective Power Ports R2	W	600 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

840370964

Left side, highband		Y1, connector 5-6			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	16.4	17.0	17.2	16.8
Gain over all Tilts	dBi	16.4 ± 0.6	16.9 ± 0.7	17.1 ± 0.8	16.8 ± 0.7
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 3.1	63 ± 6.2	61 ± 5.3	61 ± 6.0
Front-to-Back Ratio, Co-Polar, ± 30°	dB	> 29	> 29	> 29	> 31
Cross Polar Discrimination over Sector	dB	11.5	9.5	9.0	10.0
Vertical Pattern:					
Elevation Beamwidth	°	8.7 ± 0.5	8.0 ± 0.4	7.6 ± 0.5	6.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.3	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 20	> 16	> 16	> 17
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 15	> 16	> 16
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 dB (Y1 // R1, R2, Y2)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highband		Y2, connector 7-8			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	16.3	16.9	17.1	17.1
Gain over all Tilts	dBi	16.3 ± 0.6	16.8 ± 0.6	17.0 ± 0.8	17.0 ± 0.8
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 3.8	65 ± 4.2	63 ± 5.6	61 ± 3.5
Front-to-Back Ratio, Co-Polar, ± 30°	dB	> 29	> 30	> 30	> 31
Cross Polar Discrimination over Sector	dB	13.0	13.5	12.5	11.0
Vertical Pattern:					
Elevation Beamwidth	°	8.7 ± 0.6	7.9 ± 0.4	7.5 ± 0.5	6.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 15	> 15	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 15	> 15	> 15
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 dB (Y2 // R1, R2, Y1)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

840370964

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications			
Input		8 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	275 62
		Maximal:	485 109
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1214 / 378 / 164 47.7 / 14.9 / 6.5	
Category of Mounting Hardware		XM (X-Medium)	
Weight	kg lb	24 / 29.0 (clamps incl.) 52.9 / 63.9 (clamps incl.)	
Packing Size	mm inches	1360 / 440 / 293 53.6 / 17.3 / 11.5	
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698–894	698–894	1695–2360	1695–2360
65°	65°	65°	65°

KATHREIN

■ Ultra compact width

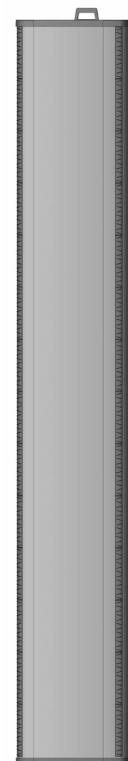


FlexRET

8-Port Antenna 2LB/2HB 8ft 65° | 2x698–894 15.5dBi | 2x1695–2360 18dBi

Type No.	840370966		
Left side, lowband		R1, connector 1–2	
		698–894	
Frequency Range	MHz	698 – 824	824 – 894
Gain at mid Tilt	dBi	14.8	15.9
Gain over all Tilts	dBi	14.8 ± 0.5	15.9 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	60 ± 4.4	56 ± 4.2
Front-to-Back Ratio, ± 30°	dB	> 25	> 25
Cross Polar Discrimination at Boresight	dB	> 16	> 22
Cross Polar Discrimination over Sector	dB	> 7.5	> 9.5
Vertical Pattern:			
Elevation Beamwidth	°	9.8 ± 0.6	8.8 ± 0.3
Electrical Downtilt continuously adjustable	°	1.0 – 10.0	
Tilt Accuracy	°	< 0.8	< 0.6
First Upper Side Lobe Suppression	dB	> 16	> 17
Cross Polar Isolation	dB	> 25 typically	
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2) typically	
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.



8 Ports

Right side, lowband		R2, connector 3–4	
		698–894	
Frequency Range	MHz	698 – 824	824 – 894
Gain at mid Tilt	dBi	14.8	15.8
Gain over all Tilts	dBi	14.8 ± 0.5	15.8 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	60 ± 4.5	57 ± 4.8
Front-to-Back Ratio, ± 30°	dB	> 25	> 25
Cross Polar Discrimination at Boresight	dB	> 16	> 21
Cross Polar Discrimination over Sector	dB	> 8.0	> 11.0
Vertical Pattern:			
Elevation Beamwidth	°	9.8 ± 0.6	8.8 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0	
Tilt Accuracy	°	< 0.8	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 19
Cross Polar Isolation	dB	> 25 typically	
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2) typically	
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

840370966

Left side, highband		Y1, connector 5-6			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	17.8	18.1	18.3	18.3
Gain over all Tilts	dBi	17.7 ± 0.3	17.9 ± 0.4	18.2 ± 0.6	18.2 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 4.0	66 ± 4.2	63 ± 5.6	64 ± 4.0
Front-to-Back Ratio, ± 30°	dB	> 26	> 28	> 29	> 30
Cross Polar Discrimination at Boresight	dB	> 17	> 23	> 23	> 19
Cross Polar Discrimination over Sector	dB	> 11.5	> 12.5	> 9.5	> 8.5
Vertical Pattern:					
Elevation Beamwidth	°	6.0 ± 0.3	5.5 ± 0.3	5.2 ± 0.4	4.6 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.3	< 0.4	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 18	> 21	> 19	> 20
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (Y1 // R1, R2, Y2)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, highband		Y2, connector 7-8			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	17.7	18.2	18.3	18.4
Gain over all Tilts	dBi	17.7 ± 0.3	18.0 ± 0.4	18.2 ± 0.6	18.3 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 4.1	66 ± 4.0	63 ± 5.5	63 ± 4.3
Front-to-Back Ratio, ± 30°	dB	> 25	> 27	> 28	> 32
Cross Polar Discrimination at Boresight	dB	> 17	> 23	> 24	> 20
Cross Polar Discrimination over Sector	dB	> 12.0	> 12.5	> 8.5	> 9.0
Vertical Pattern:					
Elevation Beamwidth	°	6.0 ± 0.3	5.5 ± 0.3	5.2 ± 0.4	4.6 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 21	> 19	> 19
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, Y1)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

840370966

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		8 x 4.3-10 female		
Connector Position		bottom		
Adjustment Mechanism		FlexRET, continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	590	132
		Lateral:	485	109
		Maximal:	1035	233
Max. Wind Velocity	km/h mph	241 150		
Height / Width / Depth	mm inches	2437 / 378 / 164 96.0 / 14.9 / 6.5		
Category of Mounting Hardware		XM (X-Medium)		
Weight	kg lb	39.3 / 43.8 (clamps incl.) 86.6 / 96.9 (clamps incl.)		
Packing Size	mm inches	2585 / 440 / 293 101.8 / 17.3 / 11.5		
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter		

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1695-2690	1695-2690
65°	65°	65°	65°

KATHREIN

8-Port Antenna 2LB/2HB 1.5m 65° | 2x 698-960 14dBi | 2x 1695-2690 17.5dBi

Type No.	80010964				
Left side, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.6	14.2	14.3	14.6
Gain over all Tilts	dBi	13.6 ± 0.6	14.2 ± 0.3	14.3 ± 0.3	14.5 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	65 ± 4.2	63 ± 2.4	62 ± 2.4	59 ± 3.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 23	> 25	> 25
Vertical Pattern:					
Elevation Beamwidth	°	17.8 ± 1.8	16.2 ± 1.0	15.8 ± 0.8	14.7 ± 1.1
Electrical Downtilt continuously adjustable	°	2.0 – 16.0			
Tilt Accuracy	°	< 0.7	< 0.7	< 0.8	< 0.8
First Upper Side Lobe Suppression	dB	> 17	> 16	> 15	> 15
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 26, typically 30 (R1 // R2) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	600 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



FlexRET



Right side, lowband	R2, connector 3-4				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.4	14.1	14.3	14.3
Gain over all Tilts	dBi	13.4 ± 0.5	14.0 ± 0.5	14.2 ± 0.3	14.3 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 5.6	62 ± 2.9	62 ± 2.9	60 ± 3.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 26	> 26
Vertical Pattern:					
Elevation Beamwidth	°	17.6 ± 1.5	16.1 ± 1.3	15.5 ± 0.7	14.6 ± 0.9
Electrical Downtilt continuously adjustable	°	2.0 – 16.0			
Tilt Accuracy	°	< 1.1	< 0.8	< 0.8	< 1.1
First Upper Side Lobe Suppression	dB	> 18	> 15	> 15	> 16
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 26, typically 30 (R2 // R1) > 30 (R2 // Y1) > 27, typically 30 (R2 // Y2)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	600 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010964

Left side, highband		Y1, connector 5-6				
		1695 – 2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.3	17.5	17.7	17.2
Gain over all Tilts	dBi	16.9 ± 0.3	17.3 ± 0.4	17.4 ± 0.4	17.7 ± 0.8	17.1 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 4.0	63 ± 4.9	60 ± 4.5	54 ± 4.5	56 ± 8.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 25	> 27	> 23
Vertical Pattern:						
Elevation Beamwidth	°	6.8 ± 0.3	6.4 ± 0.2	6.0 ± 0.5	5.2 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.3	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 16	> 15	> 14
Cross Polar Isolation	dB	> 26, typically 30				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, highband		Y2, connector 7-8				
		1695 – 2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.8	17.2	17.3	17.6	17.0
Gain over all Tilts	dBi	16.8 ± 0.4	17.2 ± 0.5	17.2 ± 0.6	17.6 ± 0.9	17.0 ± 1.0
Horizontal Pattern:						
Azimuth Beamwidth	°	67 ± 4.7	64 ± 6.7	61 ± 6.8	55 ± 6.0	54 ± 9.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 25	> 26	> 22
Vertical Pattern:						
Elevation Beamwidth	°	6.8 ± 0.3	6.4 ± 0.3	6.0 ± 0.5	5.3 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 16	> 15	> 16	> 14
Cross Polar Isolation	dB	> 26, typically 30				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010964

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 26
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input		8 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 835 188 Maximal: 840 189
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1499 / 508 / 175 59.0 / 20.0 / 6.9
Category of Mounting Hardware		XM (X-Medium)
Weight	kg lb	34.2 / 38.7 (clamps incl.) 75.4 / 85.3 (clamps incl.)
Packing Size	mm inches	1700 / 542 / 268 66.9 / 21.3 / 10.6
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1695-2690	1695-2690
65°	65°	65°	65°

KATHREIN

8-Port Antenna 2LB/2HB 2.0m 65° | 2x698-960 15.5dBi | 2x1695-2690 18dBi



FlexRET

Type No.	80010965				
Left side, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.8	15.4	15.6	15.9
Gain over all Tilts	dBi	14.8 ± 0.6	15.4 ± 0.4	15.6 ± 0.2	15.8 ± 0.2
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 3.9	61 ± 3.2	60 ± 2.7	60 ± 2.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 27	> 25
Vertical Pattern:					
Elevation Beamwidth	°	11.9 ± 0.8	11.0 ± 0.8	10.5 ± 0.4	10.2 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.7	< 0.7	< 0.7	< 0.7
First Upper Side Lobe Suppression	dB	> 14	> 14	> 15	> 14
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R1 // R2) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



8 Ports

Right side, lowband	R2, connector 3-4				
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.8	15.3	15.5	15.8
Gain over all Tilts	dBi	14.8 ± 0.6	15.3 ± 0.3	15.5 ± 0.3	15.7 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	63 ± 3.6	62 ± 1.8	62 ± 2.1	60 ± 3.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 26	> 27
Vertical Pattern:					
Elevation Beamwidth	°	11.6 ± 0.7	11.0 ± 0.6	10.7 ± 0.4	10.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.7	< 0.6	< 0.6	< 0.5
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 16
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R2 // R1) > 30 (R2 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010965

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.6	17.9	18.3	18.1	18.1
Gain over all Tilts	dBi	17.5 ± 0.4	17.8 ± 0.4	18.1 ± 0.5	18.0 ± 0.6	18.0 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 5.1	65 ± 4.1	62 ± 7.2	56 ± 4.1	57 ± 5.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	6.4 ± 0.5	5.9 ± 0.3	5.5 ± 0.4	4.8 ± 0.3	4.4 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.1	< 0.2	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 18	> 16	> 18	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.5	18.0	18.3	18.2	17.9
Gain over all Tilts	dBi	17.4 ± 0.4	17.8 ± 0.4	18.1 ± 0.6	18.0 ± 0.7	17.8 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 4.7	66 ± 4.7	62 ± 7.8	57 ± 3.8	59 ± 7.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 26	> 26	> 25	> 24
Vertical Pattern:						
Elevation Beamwidth	°	6.4 ± 0.4	5.9 ± 0.3	5.5 ± 0.5	4.8 ± 0.3	4.4 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 18	> 18	> 15	> 17	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010965

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		8 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1130 254	Maximal: 1140 256
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1999 / 508 / 175 78.7 / 20.0 / 6.9	
Category of Mounting Hardware		XM (X-Medium)	
Weight	kg lb	41.6 / 46.1 (clamps incl.) 91.7 / 101.6 (clamps incl.)	
Packing Size	mm inches	2200 / 542 / 268 86.6 / 21.3 / 10.6	
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1695-2690	1695-2690
65°	65°	65°	65°

KATHREIN

8-Port Antenna 2LB/2HB 2.4m 65° | 2x698-960 16.5dBi | 2x1695-2690 18dBi



FlexRET



Type No.		80010966			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.7	16.1	16.4	16.5
Gain over all Tilts	dBi	15.6 ± 0.4	16.1 ± 0.3	16.3 ± 0.3	16.4 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 2.9	65 ± 2.3	65 ± 2.6	64 ± 2.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 25
Cross Polar Discrimination over Sector	dB	> 10.0	> 9.5	> 10.0	> 11.5
Vertical Pattern:					
Elevation Beamwidth	°	9.7 ± 0.7	9.0 ± 0.5	8.7 ± 0.5	8.3 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 18	> 18	> 20
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R1 // R2) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.5	16.0	16.3	16.6
Gain over all Tilts	dBi	15.5 ± 0.6	16.0 ± 0.5	16.3 ± 0.4	16.5 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 3.5	65 ± 2.6	64 ± 3.0	63 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 23	> 24	> 26
Cross Polar Discrimination over Sector	dB	> 9.5	> 10.5	> 10.0	> 11.5
Vertical Pattern:					
Elevation Beamwidth	°	9.8 ± 0.6	9.0 ± 0.7	8.6 ± 0.4	8.1 ± 0.5
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 21	> 20	> 20
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R2 // R1) > 30 (R2 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010966

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.6	18.0	18.3	18.1	17.9
Gain over all Tilts	dBi	17.5 ± 0.4	17.9 ± 0.4	18.1 ± 0.5	18.0 ± 0.6	17.8 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 4.9	64 ± 5.0	62 ± 5.4	57 ± 5.7	61 ± 7.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 26	> 26	> 25	> 24
Cross Polar Discrimination over Sector	dB	> 8.5	> 11.5	> 10.0	> 7.5	> 9.0
Vertical Pattern:						
Elevation Beamwidth	°	6.4 ± 0.5	5.9 ± 0.3	5.5 ± 0.4	4.8 ± 0.3	4.4 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 19	> 17	> 19	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.5	17.9	18.2	18.3	18.1
Gain over all Tilts	dBi	17.4 ± 0.5	17.8 ± 0.4	18.0 ± 0.6	18.2 ± 0.6	17.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 3.0	66 ± 5.5	63 ± 6.9	56 ± 7.1	57 ± 7.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 25	> 27	> 25
Cross Polar Discrimination over Sector	dB	> 9.5	> 11.0	> 10.0	> 9.5	> 10.5
Vertical Pattern:						
Elevation Beamwidth	°	6.4 ± 0.5	5.9 ± 0.3	5.6 ± 0.4	4.9 ± 0.4	4.4 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1
First Upper Side Lobe Suppression	dB	> 19	> 18	> 18	> 19	> 18
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010966

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		8 x 4.3-10 female		
Connector Position		bottom		
Adjustment Mechanism		FlexRET, continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	1400	315
		Maximal:	1405	316
Max. Wind Velocity	km/h mph	241 150		
Height / Width / Depth	mm inches	2438 / 508 / 175 96.0 / 20.0 / 6.9		
Category of Mounting Hardware		XH (X-Heavy)		
Weight	kg lb	47.1 / 52.1 (clamps incl.) 103.8 / 114.9 (clamps incl.)		
Packing Size	mm inches	2635 / 542 / 268 103.7 / 21.3 / 10.6		
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter		

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1695-2690	1695-2690
65°	65°	65°	65°

KATHREIN

8-Port Antenna 2LB/2HB 2.0m 65° | 2x698-960 15dBi | 2x1695-2690 17dBi



Integrated RET

Type No.		84510965			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 - 806	790 - 862	824 - 894	880 - 960
Gain at mid Tilt	dBi	14.0	14.5	14.7	15.0
Gain over all Tilts	dBi	14.0 ± 0.5	14.6 ± 0.5	14.7 ± 0.3	15.0 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	72 ± 8.7	68 ± 8.1	66 ± 3.9	62 ± 4.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 23	> 24
Vertical Pattern:					
Elevation Beamwidth	°	11.8 ± 1.1	10.8 ± 0.6	10.5 ± 0.7	9.8 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 - 12.0			
Tilt Accuracy	°	< 0.9	< 1.1	< 1.1	< 1.2
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 17
Cross Polar Isolation	dB	> 27			
Port to Port Isolation	dB	> 27 (R1 // R2, Y1, Y2)			
Max. Effective Power per Port	W	150 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



8 Ports

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 - 806	790 - 862	824 - 894	880 - 960
Gain at mid Tilt	dBi	13.9	14.5	14.7	15.1
Gain over all Tilts	dBi	13.9 ± 0.4	14.5 ± 0.5	14.7 ± 0.4	15.0 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	73 ± 7.0	69 ± 4.4	67 ± 5.3	63 ± 5.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 23	> 23
Vertical Pattern:					
Elevation Beamwidth	°	11.8 ± 1.0	10.8 ± 0.7	10.5 ± 0.8	9.9 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 - 12.0			
Tilt Accuracy	°	< 0.9	< 1.0	< 1.2	< 1.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 16	> 18
Cross Polar Isolation	dB	> 27			
Port to Port Isolation	dB	> 27 (R2 // R1, Y1, Y2)			
Max. Effective Power per Port	W	150 (at 40 °C ambient temperature)			
Max. Effective Power Ports R2	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

84510965

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.8	17.1	17.0	17.1	17.5
Gain over all Tilts	dBi	16.9 ± 0.7	17.1 ± 0.6	16.9 ± 0.8	17.0 ± 0.9	17.4 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 3.2	67 ± 3.0	65 ± 4.6	61 ± 6.2	60 ± 5.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 25	> 24	> 25
Vertical Pattern:						
Elevation Beamwidth	°	6.7 ± 0.5	6.2 ± 0.3	5.9 ± 0.3	5.1 ± 0.2	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.2	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 16	> 16	> 19	> 16
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	125 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	200 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.7	16.9	16.8	16.7	17.4
Gain over all Tilts	dBi	16.7 ± 0.7	16.9 ± 0.7	16.8 ± 0.8	16.7 ± 0.9	17.2 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 3.3	67 ± 3.9	66 ± 4.8	61 ± 6.3	59 ± 3.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 23	> 23	> 26
Vertical Pattern:						
Elevation Beamwidth	°	6.8 ± 0.5	6.2 ± 0.3	5.9 ± 0.3	5.2 ± 0.3	4.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 17	> 16	> 17	> 18
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	125 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	200 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

84510965

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	800 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications		
Input	8 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1155 260 Maximal: 1270 286
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1986 / 448 / 164 78.2 / 17.6 / 6.5
Category of Mounting Hardware	XH (X-Heavy)	
Weight	kg lb	33.7 / 43.1(clamps incl.) 74.3 / 95,0 (clamps incl.)
Packing Size	mm inches	2193 / 468 / 205 86.3 / 18.4 / 8.1
Scope of Supply	Panel, integrated RET and clamps for 55-115 mm 2.2-4.5 inches diameter	

8-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2
698-960	698-960	1695-2690	1695-2690
65°	65°	65°	65°

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Preliminary Issue

8-Port Antenna 2LB/2HB 2.5m 65° | 2x698-960 15dBi | 2x1695-2690 17.5dBi



Integrated RET



Type No.		84510966			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.0	15.1	15.2	15.3
Gain over all Tilts	dBi	15.0 ± 0.5	15.1 ± 0.5	15.2 ± 0.4	15.3 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	68 ± 8	65 ± 5	65 ± 6	60 ± 5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 25
Cross Polar Discrimination over Sector	dB	> 10.0	> 9.5	> 10.0	> 11.5
Cross Polar Ratio Main Direction: 0°	dB	> 18	> 17	> 17	> 17
Vertical Pattern:					
Elevation Beamwidth	°	10.9 ± 0.7	10.0 ± 0.5	8.8 ± 0.5	9.3 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 1	< 1	< 1	< 1
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 15
Cross Polar Isolation	dB	> 27			
Port to Port Isolation	dB	> 27 (R1 // R2, Y1, Y2)			
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.0	15.1	15.1	15.4
Gain over all Tilts	dBi	15.0 ± 0.6	15.1 ± 0.5	15.1 ± 0.4	15.3 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 8	65 ± 5	64 ± 6	60 ± 6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 23	> 24	> 25
Cross Polar Discrimination over Sector	dB	> 9.5	> 10.5	> 10.0	> 11.5
Cross Polar Ratio Main Direction: 0°	dB	> 18	> 17	> 17	> 17
Vertical Pattern:					
Elevation Beamwidth	°	10.8 ± 0.8	10.0 ± 0.7	9.8 ± 0.4	9.4 ± 0.5
Electrical Downtilt continuously adjustable	°	1.0 – 10.0			
Tilt Accuracy	°	< 1	< 1	< 1	< 1
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 15
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R2 // R1, Y1, Y2)			
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)			
Max. Effective Power Ports R2	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.0	17.3	17.5	17.4	17.8
Gain over all Tilts	dBi	17.0 ± 0.4	17.3 ± 0.4	17.5 ± 0.5	17.4 ± 0.6	17.7 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 7	65 ± 6	62 ± 7	57 ± 5.7	57 ± 8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 25	> 25	> 24
Cross Polar Discrimination over Sector	dB	> 8	> 8	> 8	> 6	> 5
Cross Polar Ratio Main Direction: 0°	dB	> 15	> 15	> 15	> 15	> 15
Vertical Pattern:						
Elevation Beamwidth	°	6.2 ± 0.5	5.7 ± 0.3	5.3 ± 0.4	4.6 ± 0.3	4.2 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1	< 1	< 1	< 1	< 1
First Upper Side Lobe Suppression	dB	> 15	> 16	> 16	> 15	> 14
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y1 // R1, R2, Y2)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.0	17.2	17.6	17.6	17.9
Gain over all Tilts	dBi	17.0 ± 0.5	17.2 ± 0.4	17.5 ± 0.6	17.6 ± 0.6	17.8 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 8	65 ± 6	63 ± 6.9	56 ± 7.1	57 ± 7.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 25	> 25	> 25
Cross Polar Discrimination over Sector	dB	> 8	> 8	> 8	> 6	> 5
Cross Polar Ratio Main Direction: 0°	dB	> 15	> 15	> 15	> 15	> 15
Vertical Pattern:						
Elevation Beamwidth	°	6.2 ± 0.5	5.7 ± 0.3	5.4 ± 0.4	4.7 ± 0.4	4.3 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1	< 1	< 1	< 1	< 1
First Upper Side Lobe Suppression	dB	> 15	> 16	> 16	> 15	> 15
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y2 // R1, R2, Y1)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	700 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input		8 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		Integrated RET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1555 350 Maximal: 1701 383
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	2500 / 448 / 164 98.4 / 17.6 / 6.5
Category of Mounting Hardware		XH (X-Heavy)
Weight	kg lb	41.0 / 43.9 (clamps incl.) 90.4 / 96.8 (clamps incl.)
Scope of Supply		Panel, integrated RET and clamps for 55-115 mm 2.2-4.5 inches diameter

8-Port Antenna

Frequency Range

HPBW

B1	B2	Y1	Y2
1710–2170	1710–2170	2490–2690	2490–2690
65°	65°	60°	60°

KATHREIN

8-Port Antenna 4HB 1.5m 65° | 2x1710–2170 17.5dBi | 2x2490–2690 18dBi

Type No.		80010728			
		B1, connector 1–2			Y1, connector 5–6
		1710–2170			2490–2690
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2490 – 2690
Gain at mid Tilt	dBi	17.3	17.8	17.8	18.1
Gain over all Tilts	dBi	17.2 ± 0.4	17.7 ± 0.3	17.7 ± 0.3	17.8 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 3.1	64 ± 2.4	63 ± 3.1	56 ± 3.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 26	> 26	> 24
Cross Polar Discrimination at Boresight	dB	> 22	> 22	> 22	> 25
Cross Polar Discrimination over Sector	dB	> 13.5	> 12.5	> 10.5	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5	< 1.0	< 1.0
Vertical Pattern:					
Elevation Beamwidth	°	6.7 ± 0.4	6.3 ± 0.3	5.9 ± 0.5	4.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 11.0			2.0 – 14.0
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 17	> 17	> 16
Cross Polar Isolation	dB	> 28			> 28
Port to Port Isolation	dB	> 30 (B1 // B2, Y1, Y2)			> 30 (Y1 // B1, B2, Y2)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports B1 + Y1	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



FlexRET



8 Ports

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010728

		B2, connector 3–4			Y2, connector 7–8
			1710–2170		2490–2690
Frequency Range	MHz	1710 – 1880	1850 – 1990	1920 – 2170	2490 – 2690
Gain at mid Tilt	dBi	17.3	17.8	17.8	17.9
Gain over all Tilts	dBi	17.2 ± 0.4	17.7 ± 0.3	17.7 ± 0.2	17.6 ± 0.6
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 3.8	64 ± 2.3	63 ± 3.1	56 ± 3.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 26	> 23
Cross Polar Discrimination at Boresight	dB	> 21	> 21	> 21	> 23
Cross Polar Discrimination over Sector	dB	> 14.5	> 12.0	> 11.0	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.0	< 0.5	< 1.5
Vertical Pattern:					
Elevation Beamwidth	°	6.8 ± 0.4	6.3 ± 0.3	6.0 ± 0.4	4.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 11.0			2.0 – 14.0
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 17	> 16	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 17	> 16	> 16
Cross Polar Isolation	dB	> 28			> 28
Port to Port Isolation	dB	> 30 (B2 // B1, Y1, Y2)			> 30 (Y2 // B1, B2, Y1)
Max. Effective Power for Group of Ports 5+7 // 6+8	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports B2 + Y2	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	700 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		8 x 7-16 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	570 128
		Maximal:	625 141
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	1471 / 275 / 103 57.9 / 10.8 / 4.1	
Category of Mounting Hardware		M (Medium)	
Weight	kg lb	17.0 / 19.2 (clamps incl.) 37.5 / 42.3 (clamps incl.)	
Packing Size	mm inches	1666 / 298 / 136 65.6 / 11.7 / 5.4	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

8+1-Port Antenna

P1	P2	P3	P4
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Frequency Range

3300–3800	3300–3800	3300–3800	3300–3800
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HPBW

90°	90°	90°	90°
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KATHREIN

8+1-Port Antenna 4HB 0.9m 90° | 4x3300–3800 15.7dBi



Integrated RET

Type No.		800250911		
Left side, highband		P1, connector 1–2		
		3300–3800		
Frequency Range	MHz	3300 – 3400	3400 – 3600	3600 – 3800
Gain at mid Tilt	dBi	15.2	15.5	15.6
Gain over all Tilts	dBi	15 ± 0.7	15.1 ± 0.7	15.1 ± 0.7
Horizontal Pattern:				
Azimuth Beamwidth	°	97 ± 5	94 ± 5	89 ± 11.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 17	> 17	> 16
Vertical Pattern:				
Elevation Beamwidth	°	6.1 ± 0.4	6.0 ± 0.5	5.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		
Tilt Accuracy	°	< 0.5	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 15	> 15	> 14
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 13	> 12
Cross Polar Isolation	dB	> 23		
Port to Port Isolation	dB	> 23 (P1 // P2 // P3 // P4)		
Max. Effective Power per Port	W	25 (at 50 °C ambient temperature)		
Max. Effective Power Ports P1	W	50 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.



8 Ports

Center left side, highband		P2, connector 3–4		
		3300–3800		
Frequency Range	MHz	3300 – 3400	3400 – 3600	3600 – 3800
Gain at mid Tilt	dBi	14.8	15.3	15.7
Gain over all Tilts	dBi	14.5 ± 0.6	14.9 ± 0.7	15.4 ± 0.6
Horizontal Pattern:				
Azimuth Beamwidth	°	104 ± 4	96 ± 8	86 ± 11
Front-to-Back Ratio, Total Power, ± 30°	dB	> 19	> 19	> 20
Vertical Pattern:				
Elevation Beamwidth	°	6.2 ± 0.4	6.1 ± 0.5	5.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		
Tilt Accuracy	°	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 15	> 14
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 13	> 12
Cross Polar Isolation	dB	> 23		
Port to Port Isolation	dB	> 23 (P1 // P2 // P3 // P4)		
Max. Effective Power per Port	W	25 (at 50 °C ambient temperature)		
Max. Effective Power Ports P2	W	50 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800250911

Center right side, highband		P3, connector 5-6		
		3300-3800		
Frequency Range	MHz	3300 – 3400	3400 – 3600	3600 – 3800
Gain at mid Tilt	dBi	14.8	15.3	15.7
Gain over all Tilts	dBi	14.6 ± 0.7	14.9 ± 0.8	15.4 ± 0.7
Horizontal Pattern:				
Azimuth Beamwidth	°	104 ± 4	96 ± 8	86 ± 11
Front-to-Back Ratio, Total Power, ± 30°	dB	> 19	> 19	> 20
Vertical Pattern:				
Elevation Beamwidth	°	6.2 ± 0.5	6.1 ± 0.5	5.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 15	> 14
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 13	> 12
Cross Polar Isolation	dB	> 23		
Port to Port Isolation	dB	> 23 (P1 // P2 // P3 // P4)		
Max. Effective Power per Port	W	25 (at 50 °C ambient temperature)		
Max. Effective Power Ports P3	W	50 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highband		P4, connector 7-8		
		3300-3800		
Frequency Range	MHz	3300 – 3400	3400 – 3600	3600 – 3800
Gain at mid Tilt	dBi	15.2	15.5	15.6
Gain over all Tilts	dBi	15.0 ± 0.7	15.1 ± 0.6	15.1 ± 0.7
Horizontal Pattern:				
Azimuth Beamwidth	°	97 ± 5	94 ± 5	89 ± 11
Front-to-Back Ratio, Total Power, ± 30°	dB	> 18	> 17	> 17
Vertical Pattern:				
Elevation Beamwidth	°	6.1 ± 0.4	6.0 ± 0.4	5.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		
Tilt Accuracy	°	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 15	> 14
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 13	> 13	> 12
Cross Polar Isolation	dB	> 23		
Port to Port Isolation	dB	> 23 (P1 // P2 // P3 // P4)		
Max. Effective Power per Port	W	25 (at 50 °C ambient temperature)		
Max. Effective Power Ports P4	W	50 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

800250911

Broadcast Beam at mid Tilt				
Frequency Range	MHz	3300 – 3400	3400 – 3600	3600 – 3800
Azimuth 3dB Beamwidth	°	65	65	65
Gain	dB	16.5	16.5	16.5
Gain roll-off at Sector Edge	dB	8	8	8
Cross Polar Ratio (0°)	dB	> 15	> 12	> 10
Front-to-back Ratio	dB	> 21	> 23	> 25
Service Beam at mid Tilt				
0° Direct Beam Gain	dB	20.7	20.8	20.7
0° Direction Beam Horizontal 3dB Beam Width	°	25.1	23.4	21.8
0° Direction Beam Horizontal SLS	dB	> 14	> 14	> 14
0° Direction Beam Cross polar Ratio	dB	> 15	> 13	> 11
0° Direction Beam Front-to-Back Ratio	dB	> 23	> 22	> 23
±30° Direct Beam Gain	dB	20.0	20.1	19.8
±30° Direction Beam Horizontal 3dB Beam Width	°	27.0	25.8	24.8
±30° Direction Beam Horizontal SLS	dB	> 14	> 10	> 5
30° Direction Beam Cross polar Ratio	dB	> 15	> 15	> 15
±30° Direction Beam Front-to-Back Ratio	dB	> 22	> 22	> 21
Multi Beam at mid Tilt				
Horizontal 3dB Beam Width	°	32.7	32.0	31.5
Gain	dB	19.3	19.2	18.9
0° Direction Beam Horizontal SLS	dB	9	7	5

Calibration and electrical parameters		
Coupling factor between each antenna column and cal network	dB	-26 ± 1 (equal power on all)
Max. amplitude tolerance from calibration port to input ports	dB	± 0.5 (within ±45° or -45° Pol Ports)
Max. phase tolerance cal network	°	±10

800250911

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 23
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	200 (at 50 °C ambient temperature)
Power rating at installation scenario		
Max. allowed output power per port TDD radio to antenna*	W	40

Values based on NGMN-P-BASTA (version 10.0) requirements.
 * For TDD radio configured with DL ratio 66 % (DDDSUDDSUU) TDD pattern. Connection via jumper cables > 0.3 dB IL

Mechanical specifications			
Input		8 x 4.3-10 female	
CAL		1 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: Maximal:	345 78 380 85
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	921 / 275 / 103 36.3 / 10.8 / 4.1	
Category of Mounting Hardware		M (Medium)	
Weight	kg lb	7.0 / 9.2 (clamps incl.) 15.4 / 20.3 (clamps incl.)	
Packing Size	mm inches	1150 / 340 / 185 45.3 / 13.4 / 7.3	
Scope of Supply		Panel and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

Summary – Directional Antennas

10 Ports

Dual Polarization $\pm 45^\circ$

KATHREIN

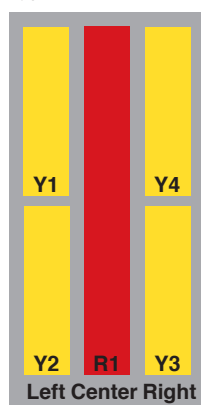
Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
1 x Lowband 4 x Highband									
10-Port Antenna	698–960	65°	15.3dBi	2°–12°T	84510891	1995	4.3-10, bottom	134 – 136	AL
	1695–2690	65°	16dBi	2°–12°T					
	1695–2690	65°	16dBi	2°–12°T					
	1695–2690	65°	16.5dBi	2°–12°T					
	1695–2690	65°	16dBi	2°–12°T					
10-Port Antenna	698–960	65°	16dBi	2°–12°T	80011891	1999	4.3-10, bottom	137 – 139	X
	1695–2690	65°	16dBi	2°–14°T					
	1695–2690	65°	16dBi	2°–14°T					
	1427–2690	65°	16.5dBi	2°–14°T					
	1695–2690	65°	16.5dBi	2°–14°T					
10-Port Antenna	698–960	65°	16dBi	2°–12°T	80010891	1995	4.3-10, bottom	140 – 142	X
	1695–2690	65°	16dBi	2°–14°T					
	1695–2690	65°	16dBi	2°–14°T					
	1695–2690	65°	17dBi	2°–14°T					
	1695–2690	65°	16.5dBi	2°–14°T					
10-Port Antenna	698–960	65°	16.5dBi	1°–10°T	84510892	2697	4.3-10, bottom	143 – 145	AH
	1695–2690	65°	17dBi	2°–12°T					
	1695–2690	65°	17dBi	2°–12°T					
	1695–2690	65°	17dBi	2°–12°T					
	1695–2690	65°	17dBi	2°–12°T					
10-Port Antenna	698–960	65°	17dBi	1.5°–10°T	80020892	2693	4.3-10, bottom	146 – 148	X
	1695–2690	65°	17.5dBi	2.5°–12°T					
	1695–2690	65°	17dBi	2.5°–12°T					
	1695–2690	65°	18dBi	2.5°–12°T					
	1695–2690	65°	17.5dBi	2.5°–12°T					

1) Configuration Types – further details on page 12–15.

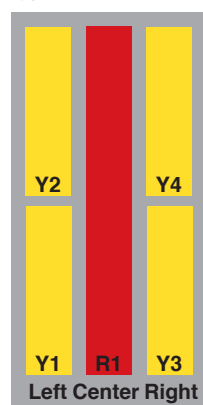
Type X



Type AH



Type AL



Summary – Directional Antennas

10 Ports

Dual Polarization ±45°

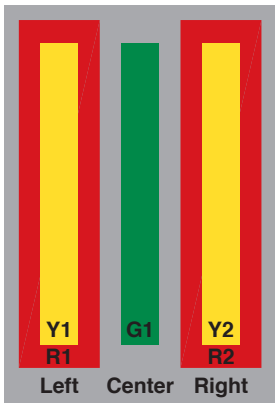
KATHREIN

Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 3 x Highband					
10-Port Antenna	698–960	65°	15.5dBi	2°–12°T	80011965
	698–960	65°	15.5dBi	2°–12°T	
	1427–1518	65°	17dBi	2.5°–12°T	
	1695–2690	65°	18dBi	2.5°–12°T	
	1695–2690	65°	18dBi	2.5°–12°T	
10-Port Antenna	698–960	65°	14.7dBi	2°–14°T	800442004
	698–960	65°	14.6dBi	2°–14°T	
	1427–2690	65°	17.8dBi	2°–12°T	
	1695–2690	65°	17.7dBi	2°–12°T	
	1427–2690	65°	17.6dBi	2°–12°T	

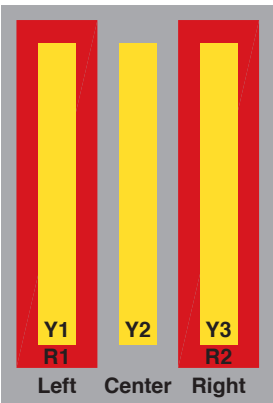
New or changed product

1) Configuration Types – further details on page 12–15.

Type AI



Type AP



10-Port Antenna Frequency Range HPBW

R1	Y1	Y2	Y3	Y4
698-960	1695-2690	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°	65°

10-Port Antenna LB/4HB 2.0m 65° | 698-960 15.3dBi | 4x1695-2690 16dBi



Integrated RET

Type No.		84510891			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain over all Tilts	dBi	14.8 ± 0.4	15.1 ± 0.4	15.3 ± 0.3	15.3 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	72 ± 1.9	70 ± 2.2	69 ± 2.0	68 ± 2.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 27	> 27	> 26
Vertical Pattern:					
Elevation Beamwidth	°	11.5 ± 0.8	10.5 ± 0.5	10.2 ± 0.4	9.7 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 1	< 1	< 1	< 1
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 16	> 16	> 16
Cross Polar Isolation	dB	> 27			
Port to Port Isolation	dB	> 27 (R1 // Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	300 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Left side, lower highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain over all Tilts	dBi	15.9 ± 0.7	16.3 ± 0.4	16.3 ± 0.5	16.5 ± 0.6	16.7 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 5.8	60 ± 2.7	59 ± 3.3	62 ± 3.6	63 ± 4.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 24	> 26	> 25
Vertical Pattern:						
Elevation Beamwidth	°	9.9 ± 0.7	8.9 ± 0.5	8.5 ± 0.5	7.5 ± 0.5	6.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.6	< 0.5	< 0.5	< 0.7	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 18	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 17	> 16	> 16	> 16
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y1 // R1, Y2, Y3, Y4)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

84510891

Left side, upper highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain over all Tilts	dBi	15.5 ± 0.5	16 ± 0.4	16.1 ± 0.6	16.2 ± 0.7	16.4 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 5.9	62 ± 3.9	59 ± 4.1	62 ± 4.8	64 ± 3.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 26	> 26
Vertical Pattern:						
Elevation Beamwidth	°	10.0 ± 0.6	9.1 ± 0.5	8.6 ± 0.6	7.5 ± 0.4	6.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.7	< 0.9	< 0.9	< 1	< 0.6
First Upper Side Lobe Suppression	dB	> 17	> 17	> 17	> 15	> 17
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 16	> 15	> 14	> 16
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y2 // R1, Y1, Y3, Y4)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lower highband		Y3, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain over all Tilts	dBi	15.9 ± 0.6	16.1 ± 0.4	16.2 ± 0.6	16.5 ± 0.5	16.7 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 5.5	61 ± 3.0	60 ± 4.4	62 ± 3.2	63 ± 4.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 24	> 25	> 26
Vertical Pattern:						
Elevation Beamwidth	°	9.9 ± 0.7	8.9 ± 0.5	8.5 ± 0.6	7.4 ± 0.4	6.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.5	< 0.4	< 0.5	< 0.6	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 17	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 16	> 15	> 13	> 15
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y3 // R1, Y1, Y2, Y4)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y3	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

135

84510891

Right side, upper highband		Y4, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain over all Tilts	dBi	15.5 ± 0.7	16.0 ± 0.3	16.0 ± 0.5	16.0 ± 0.6	16.3 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 5.9	61 ± 3.2	60 ± 3.4	63 ± 4.1	64 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	10.3 ± 0.9	9.1 ± 0.5	8.7 ± 0.8	7.5 ± 0.4	6.9 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 1.1	< 1	< 1	< 0.6	< 0.7
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16	> 17	> 14
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 15	> 15	> 15	> 14
Cross Polar Isolation	dB	> 27				
Port to Port Isolation	dB	> 27 (Y4 // R1, Y1, Y2, Y3)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y4	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	700 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications		
Input	10 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 870 196 Maximal: 870 196
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1995 / 353 / 164 78.5 / 13.9 / 6.5
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	29 / 31.9 (clamps incl.) 63.9 / 70.3 (clamps incl.)
Packing Size	mm inches	2210 / 377 / 210 87.0 / 14.8 / 8.3
Scope of Supply	Panel, integrated RET and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter	

10-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2	Y3	Y4
698-960	1695-2690	1695-2690	1427-2690	1695-2690
65°	65°	65°	65°	65°

10-Port Antenna LB/4HB 2.0m 65° | 698-960 16dBi | 3x1695-2690 16.5dBi | 1427-2690 16.5dBi



FlexRET

Type No.	80011891				
Left side, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.5	15.9	16.1	16.3
Gain over all Tilts	dBi	15.4 ± 0.6	15.8 ± 0.6	16.0 ± 0.6	16.2 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 3.0	64 ± 2.7	62 ± 2.3	63 ± 3.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 23	> 25	> 28
Vertical Pattern:					
Elevation Beamwidth	°	10.7 ± 0.6	9.9 ± 0.5	9.5 ± 0.4	9.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 18	> 22	> 21	> 19
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 30 (R1 // Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



10 Ports

Left side, lower highband	Y1, connector 3-4					
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.2	15.8	15.9	15.6	16.4
Gain over all Tilts	dBi	15.2 ± 0.6	15.7 ± 0.5	15.8 ± 0.4	15.6 ± 0.6	16.3 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.5	63 ± 3.5	62 ± 2.9	64 ± 5.8	56 ± 5.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	10.8 ± 0.9	10.2 ± 0.5	9.8 ± 0.8	8.5 ± 0.4	7.8 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 19	> 20	> 19	> 17	> 15
Cross Polar Isolation	dB	> 27, typically 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80011891

Left side, upper highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.0	16.4	16.3	15.7	16.0
Gain over all Tilts	dBi	15.9 ± 0.8	16.3 ± 0.7	16.2 ± 0.7	15.6 ± 0.5	15.8 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	59 ± 5.4	57 ± 3.9	58 ± 5.6	62 ± 4.1	65 ± 7.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 26	> 26	> 25	> 26
Vertical Pattern:						
Elevation Beamwidth	°	9.4 ± 0.5	8.8 ± 0.4	8.3 ± 0.7	7.4 ± 0.4	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 18	> 19	> 14
Cross Polar Isolation	dB	> 27, typically 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lower highband		Y3, connector 7-8						
		1427-2690						
Frequency Range	MHz	1427 – 1496	1492 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	14.6	14.8	15.6	16.0	16.3	16.5	16.9
Gain over all Tilts	dBi	14.6 ± 0.3	14.8 ± 0.3	15.5 ± 0.5	15.9 ± 0.5	16.2 ± 0.6	16.4 ± 0.7	16.7 ± 0.9
Horizontal Pattern:								
Azimuth Beamwidth	°	72 ± 6.7	66 ± 8.0	66 ± 4.9	64 ± 5.1	65 ± 4.4	68 ± 2.3	61 ± 5.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 24	> 25	> 25	> 28	> 25
Vertical Pattern:								
Elevation Beamwidth	°	12.3 ± 0.6	12.5 ± 0.5	10.5 ± 0.6	9.8 ± 0.5	9.3 ± 0.7	8.1 ± 0.5	7.2 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 14.0						
Tilt Accuracy	°	< 0.7	< 0.7	< 0.6	< 0.3	< 0.3	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 14	> 15	> 16	> 17	> 18	> 19	> 14
Cross Polar Isolation	dB	> 27, typically 28						
Port to Port Isolation	dB	> 30 (Y3 // R1, Y1, Y2, Y4)						
Max. Effective Power per specified Band and Port	W	150 (at 50 °C ambient temperature)		200 (at 50 °C ambient temperature)			120 (at 50 °C ambient temperature)	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)						
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)						

Values based on NGMN-P-BASTA (version 10.0) requirements.

80011891

Right side, upper highband		Y4, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.9	16.2	16.5	16.9	16.5
Gain over all Tilts	dBi	15.8 ± 0.6	16.1 ± 0.3	16.4 ± 0.5	16.8 ± 0.5	16.3 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 2.6	62 ± 2.6	61 ± 2.1	58 ± 2.9	58 ± 3.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 25	> 21
Vertical Pattern:						
Elevation Beamwidth	°	9.6 ± 0.6	9.1 ± 0.4	8.6 ± 0.5	7.7 ± 0.4	6.7 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 17	> 16
Cross Polar Isolation	dB	> 27, typically 28				
Port to Port Isolation	dB	> 30 (Y4 // R1, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 30
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

* not applicable for L-band

Mechanical specifications				
Input		10 x 4.3-10 female		
Connector Position		bottom		
Adjustment Mechanism		FlexRET, continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	905	203
		Maximal:	905	203
Max. Wind Velocity	km/h mph	241 150		
Height / Width / Depth	mm inches	1999 / 378 / 164 78.7 / 14.9 / 6.5		
Category of Mounting Hardware		XM (X-Medium)		
Weight	kg lb	33.2 / 37.7 (clamps incl.) 73.2 / 83.1 (clamps incl.)		
Packing Size	mm inches	2200 / 412 / 255 86.6 / 16.2 / 10.0		
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter		

10-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2	Y3	Y4
698-960	1695-2690	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°	65°

10-Port Antenna LB/4HB 2.0m 65° | 698-960 16dBi | 4x1695-2690 16.5dBi



FlexRET

Type No.		80010891			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.5	15.9	16.0	16.3
Gain over all Tilts	dBi	15.4 ± 0.4	15.8 ± 0.3	15.9 ± 0.3	16.2 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 2.3	64 ± 1.6	64 ± 1.1	63 ± 3.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 26	> 28
Vertical Pattern:					
Elevation Beamwidth	°	10.6 ± 0.7	9.8 ± 0.5	9.5 ± 0.4	9.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 17	> 20	> 20
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 15	> 17	> 18	> 17
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 28 (R1 // Y4) > 30 (R1 // Y1, Y2, Y3)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



Left side, lower highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.3	15.8	15.9	15.5	16.4
Gain over all Tilts	dBi	15.2 ± 0.6	15.7 ± 0.4	15.8 ± 0.3	15.6 ± 0.6	16.3 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.5	63 ± 4.5	62 ± 2.9	64 ± 6.9	58 ± 5.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	10.6 ± 0.8	10.1 ± 0.5	9.7 ± 0.8	8.4 ± 0.4	7.7 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.3	< 0.4	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 20	> 21	> 19	> 16	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 20	> 20	> 19	> 16	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010891

Left side, upper highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.0	16.4	16.3	15.6	15.9
Gain over all Tilts	dBi	15.9 ± 0.7	16.3 ± 0.5	16.2 ± 0.6	15.6 ± 0.5	15.7 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	59 ± 5.3	56 ± 3.9	58 ± 5.3	62 ± 4.0	65 ± 7.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 26	> 26	> 25	> 26
Vertical Pattern:						
Elevation Beamwidth	°	9.2 ± 0.5	8.7 ± 0.4	8.2 ± 0.7	7.3 ± 0.4	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 19	> 19	> 20	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 16	> 16	> 18	> 14
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lower highband		Y3, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.3	16.5	16.9	17.3	17.2
Gain over all Tilts	dBi	16.2 ± 0.4	16.5 ± 0.3	16.8 ± 0.5	17.1 ± 0.4	16.9 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 4.1	64 ± 3.3	63 ± 2.6	60 ± 2.1	60 ± 4.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 24	> 23
Vertical Pattern:						
Elevation Beamwidth	°	9.5 ± 0.7	8.9 ± 0.4	8.5 ± 0.6	7.5 ± 0.4	6.8 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 18	> 19	> 19	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 18	> 17	> 17	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y3 // R1, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010891

Right side, upper highband		Y4, connector 9–10				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.9	16.2	16.4	16.9	16.5
Gain over all Tilts	dBi	15.8 ± 0.4	16.1 ± 0.2	16.4 ± 0.3	16.8 ± 0.3	16.3 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 2.6	62 ± 2.5	61 ± 2.3	58 ± 3.1	59 ± 3.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 25	> 25	> 21
Vertical Pattern:						
Elevation Beamwidth	°	9.6 ± 0.6	9.0 ± 0.5	8.6 ± 0.6	7.5 ± 0.5	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 17	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 18	> 18	> 17	> 17	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y4 // R1, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	10 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 660 148 Maximal: 760 171
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1995 / 377 / 169 78.5 / 14.8 / 6.7
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	34.0 / 36.2 (clamps incl.) 74.9 / 79.7 (clamps incl.)
Packing Size	mm inches	2196 / 397 / 212 86.5 / 15.6 / 8.3
Scope of Supply	Panel, FlexRET and 2 units of clamps for 42–115 mm 1.7–4.5 inches diameter	

10-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2	Y3	Y4
698-960	1695-2690	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°	65°

10-Port Antenna LB/4HB 2.7m 65° | 698-960 16.5dBi | 4x1695-2690 17dBi



Integrated RET

Type No.	84510892				
Center, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.1	16.5	16.6	16.7
Gain over all Tilts	dBi	16.0 ± 0.5	16.4 ± 0.4	16.5 ± 0.3	16.6 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	71 ± 2.9	68 ± 1.6	68 ± 1.2	67 ± 1.3
Front-to-Back Ratio, Total Power, ±30°	dB	> 25	> 27	> 27	> 27
Cross Polar Discrimination at Boresight	dB	> 20	> 19	> 19	> 18
Cross Polar Discrimination over Sector	dB	> 12	> 14	> 14	> 12
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 1.0
Vertical Pattern:					
Elevation Beamwidth	°	8.4 ± 0.7	7.6 ± 0.4	7.3 ± 0.4	6.9 ± 0.3
Electrical Downtilt continuously adjustable	°	1 – 10			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16	> 16
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 28 (R1 // Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	200 (at 40 °C ambient temperature)			
Max. Effective Power Ports R1	W	400 (at 40 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



10 Ports

Left side, upper highband	Y1, connector 3-4					
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.6	17.0	17.2	16.8	17.2
Gain over all Tilts	dBi	16.6 ± 0.4	16.9 ± 0.4	17.0 ± 0.5	16.9 ± 0.5	17.1 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 4.0	60 ± 2.2	60 ± 4.4	65 ± 3.8	61 ± 3.1
Front-to-Back Ratio, Total Power, ±30°	dB	> 26	> 25	> 24	> 26	> 26
Cross Polar Discrimination at Boresight	dB	> 21	> 23	> 21	> 18	> 19
Cross Polar Discrimination over Sector	dB	> 10	> 9	> 8	> 10	> 6
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 3.0	< 4.0	< 3.0	< 3.5
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.5	6.8 ± 0.3	6.4 ± 0.4	5.6 ± 0.3	5.1 ± 0.3
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 17	> 16
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y1 // R1, Y2, Y3, Y4)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y1	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

84510892

Left side, lower highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.9	17.4	17.5	17.3	17.5
Gain over all Tilts	dBi	16.9 ± 0.4	17.3 ± 0.4	17.4 ± 0.5	17.3 ± 0.5	17.4 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 4.9	59 ± 3.0	59 ± 4.3	64 ± 4.6	62 ± 2.5
Front-to-Back Ratio, Total Power, ±30°	dB	> 25	> 25	> 24	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 20	> 21	> 19	> 18	> 20
Cross Polar Discrimination over Sector	dB	> 10	> 9	> 8	> 9	> 7
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.5	< 3.5	< 2.5	< 3.0
Vertical Pattern:						
Elevation Beamwidth	°	7.4 ± 0.6	6.8 ± 0.4	6.4 ± 0.6	5.5 ± 0.5	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 1.1	< 1.0	< 1.0	< 0.9	< 0.8
First Upper Side Lobe Suppression	dB	> 17	> 18	> 17	> 17	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y2 // R1, Y1, Y3, Y4)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y2	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lower highband		Y3, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.1	17.5	17.5	17.2	17.4
Gain over all Tilts	dBi	17.1 ± 0.5	17.5 ± 0.4	17.4 ± 0.5	17.2 ± 0.5	17.4 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	59 ± 4.4	58 ± 4.0	59 ± 5.7	64 ± 4.2	61 ± 2.6
Front-to-Back Ratio, Total Power, ±30°	dB	> 25	> 25	> 24	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 24	> 21	> 18	> 17	> 18
Cross Polar Discrimination over Sector	dB	> 12	> 9	> 8	> 9	> 6
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.0	< 4.0	< 2.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.4 ± 0.6	6.8 ± 0.4	6.5 ± 0.6	5.6 ± 0.6	5.1 ± 0.4
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 15	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y3 // R1, Y1, Y2, Y4)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y3	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

84510892

Right side, upper highband		Y4, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.8	17.2	17.3	16.9	17.2
Gain over all Tilts	dBi	16.8 ± 0.4	17.2 ± 0.4	17.2 ± 0.5	17.0 ± 0.5	17.2 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	60 ± 4.8	59 ± 2.9	60 ± 5.3	65 ± 3.5	61 ± 2.8
Front-to-Back Ratio, Total Power, ±30°	dB	> 26	> 25	> 24	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 21	> 20	> 19	> 17	> 19
Cross Polar Discrimination over Sector	dB	> 11	> 9	> 7	> 10	> 5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.5	< 4.5	< 2.5	< 3.5
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.6	6.8 ± 0.4	6.5 ± 0.5	5.6 ± 0.4	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 1.1	< 1.0	< 1.0	< 0.8	< 0.8
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 15	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y4 // R1, Y1, Y2, Y3)				
Max. Effective Power per Port	W	175 (at 40 °C ambient temperature)				
Max. Effective Power Ports Y4	W	300 (at 40 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	800 (at 40 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	10 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	Integrated RET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1230 276 Maximal: 1230 276
Max. Wind Velocity	km/h mph	200 124
Height / Width / Depth	mm inches	2697 / 353 / 164 106.2 / 13.9 / 6.5
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	38.3 / 40.5 (clamps incl.) 84.4 / 89.3 (clamps incl.)
Packing Size	mm inches	2910 / 377 / 210 114.6 / 14.8 / 8.3
Scope of Supply	Panel, integrated RET and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter	

10-Port Antenna

Frequency Range

HPBW

R1	Y1	Y2	Y3	Y4
698-960	1695-2690	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°	65°

10-Port Antenna LB/4HB 2.7m 65° | 698-960 17dBi | 4x1695-2690 17.5dBi



FlexRET

Type No.		80020892			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	16.3	16.8	17.0	17.3
Gain over all Tilts	dBi	16.3 ± 0.4	16.8 ± 0.3	17.0 ± 0.4	17.3 ± 0.2
Horizontal Pattern:					
Azimuth Beamwidth	°	70 ± 1.7	68 ± 1.7	68 ± 1.8	66 ± 1.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 23	> 23	> 23	> 22
Cross Polar Discrimination over Sector	dB	> 7.5	> 7.5	> 8.0	> 7.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.0	< 2.0	< 2.0
Vertical Pattern:					
Elevation Beamwidth	°	8.6 ± 0.6	7.9 ± 0.4	7.6 ± 0.5	7.1 ± 0.4
Electrical Downtilt continuously adjustable	°	1.5 – 10.0			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16	> 15
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 28 (R1 // Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



Left side, lower highband		Y1, connector 3-4				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.1	17.5	17.5	17.3	17.8
Gain over all Tilts	dBi	17.1 ± 0.5	17.4 ± 0.3	17.5 ± 0.4	17.3 ± 0.4	17.6 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 3.9	62 ± 2.8	62 ± 3.2	61 ± 6.6	63 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 24	> 24	> 21	> 23
Cross Polar Discrimination at Boresight	dB	> 16	> 22	> 22	> 19	> 19
Cross Polar Discrimination over Sector	dB	> 8.0	> 10.0	> 11.5	> 9.5	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.0	< 2.0	< 2.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.5	6.8 ± 0.5	6.4 ± 0.6	5.6 ± 0.4	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 15	> 15	> 14	> 14
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y1 // R1) > 30 (Y1 // Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80020892

Left side, upper highband		Y2, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.6	16.9	17.0	16.7	17.1
Gain over all Tilts	dBi	16.5 ± 0.5	16.8 ± 0.3	16.9 ± 0.4	16.6 ± 0.4	16.9 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 3.9	62 ± 3.6	62 ± 4.1	64 ± 7.6	60 ± 5.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 24	> 22	> 22
Cross Polar Discrimination at Boresight	dB	> 16	> 23	> 22	> 19	> 19
Cross Polar Discrimination over Sector	dB	> 7.5	> 9.5	> 12.0	> 8.5	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.0	< 2.0	< 1.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.5	6.8 ± 0.4	6.4 ± 0.6	5.7 ± 0.4	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 17	> 16	> 15	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y2 // R1) > 30 (Y2 // Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lower highband		Y3, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.4	17.6	17.9	18.2	18.4
Gain over all Tilts	dBi	17.4 ± 0.4	17.6 ± 0.2	17.8 ± 0.4	18.1 ± 0.3	18.2 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 3.0	66 ± 2.0	66 ± 1.5	66 ± 2.2	65 ± 4.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 22	> 23	> 22	> 25
Cross Polar Discrimination at Boresight	dB	> 16	> 20	> 18	> 16	> 18
Cross Polar Discrimination over Sector	dB	> 11.0	> 14.0	> 14.5	> 11.5	> 9.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.0	< 0.5	< 1.0	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.7 ± 0.3	6.3 ± 0.4	5.6 ± 0.4	5.0 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 24	> 23	> 19	> 21
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y3 // R1) > 30 (Y3 // Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80020892

Right side, upper highband		Y4, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.9	17.1	17.3	17.5	17.6
Gain over all Tilts	dBi	16.9 ± 0.3	17.1 ± 0.3	17.3 ± 0.4	17.4 ± 0.2	17.4 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 2.5	65 ± 1.5	65 ± 1.4	66 ± 1.7	66 ± 4.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 24	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 15	> 19	> 18	> 16	> 18
Cross Polar Discrimination over Sector	dB	> 10.0	> 14.5	> 14.5	> 11.5	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 0.5	< 0.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.2 ± 0.4	6.7 ± 0.4	6.3 ± 0.5	5.6 ± 0.4	5.0 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 24	> 23	> 20	> 19
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 28 (Y4 // R1) > 30 (Y4 // Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		10 x 4.3-10	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 930 209	Maximal: 1075 242
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	2693 / 377 / 169 106.0 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	42.5 / 44.7 (clamps incl.) 93.7 / 98.5 (clamps incl.)	
Packing Size	mm inches	2896 / 397 / 212 114.0 / 15.6 / 8.3	
Scope of Supply		Panel and 2 units of clamps for 42-115 mm (1.7-4.5 inch) diameter	

10-Port Antenna

Frequency Range

HPBW

R1	R2	G1	Y1	Y2
698-960	698-960	1427-1518	1695-2690	1695-2690
65°	65°	65°	65°	65°

10-Port Antenna 2LB/3HB 2.0m 65° | 698-960 15.5dBi | 698-960 15.5dBi |
1427-1518 17dBi | 2x1695-2690 18dBi



FlexRET

Type No.	80011965				
Left side, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 - 806	790 - 862	824 - 894	880 - 960
Gain at mid Tilt	dBi	14.8	15.3	15.4	15.7
Gain over all Tilts	dBi	14.7 ± 0.6	15.3 ± 0.3	15.4 ± 0.3	15.6 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	61 ± 4.7	62 ± 3.7	63 ± 3.8	62 ± 3.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 22	> 25	> 27
Vertical Pattern:					
Elevation Beamwidth	°	11.7 ± 0.9	10.9 ± 0.7	10.5 ± 0.5	10.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 - 12.0			
Tilt Accuracy	°	< 0.8	< 0.8	< 0.6	< 0.4
First Upper Side Lobe Suppression	dB	> 14	> 14	> 14	> 13
Cross Polar Isolation	dB	> 29			
Port to Port Isolation	dB	> 26, typically 30 (R1 // R2, G1) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



10 Ports

Right side, lowband	R2, connector 3-4				
		698-960			
Frequency Range	MHz	698 - 806	790 - 862	824 - 894	880 - 960
Gain at mid Tilt	dBi	14.8	15.4	15.6	15.8
Gain over all Tilts	dBi	14.8 ± 0.6	15.4 ± 0.3	15.6 ± 0.3	15.7 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 3.2	61 ± 2.8	61 ± 2.6	60 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 22	> 25	> 27
Vertical Pattern:					
Elevation Beamwidth	°	11.4 ± 0.5	10.9 ± 0.6	10.5 ± 0.5	10.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 - 12.0			
Tilt Accuracy	°	< 0.6	< 0.6	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 13	> 15	> 15	> 16
Cross Polar Isolation	dB	> 29			
Port to Port Isolation	dB	> 26, typically 30 (R2 // R1, G1) > 30 (R2 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80011965

Center, highband		G1, connector 5-6	
		1427-1518	
Frequency Range	MHz	1427 – 1496	1492 – 1518
Gain at mid Tilt	dBi	16.9	17.3
Gain over all Tilts	dBi	16.9 ± 0.4	17.2 ± 0.3
Horizontal Pattern:			
Azimuth Beamwidth	°	61 ± 9.6	55 ± 4.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 27
Vertical Pattern:			
Elevation Beamwidth	°	7.9 ± 0.2	7.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0	
Tilt Accuracy	°	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 20	> 22
Cross Polar Isolation	dB	> 28	
Port to Port Isolation	dB	> 26, typically 30 (G1 // R1, R2, Y1, Y2)	
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)	
Max. Effective Power Ports G1	W	300 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highband		Y1, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.4	17.7	18.0	17.7	17.9
Gain over all Tilts	dBi	17.3 ± 0.3	17.6 ± 0.5	17.9 ± 0.5	17.7 ± 0.5	17.8 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.9	66 ± 7.5	65 ± 7.7	58 ± 3.8	55 ± 4.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 26	> 28	> 26	> 26
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.4	5.9 ± 0.4	5.5 ± 0.5	4.8 ± 0.3	4.5 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.6	< 0.6	< 0.6	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 19	> 17	> 15	> 13
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, G1, Y2)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80011965

Right side, highband		Y2, connector 9-10				
		1695 – 2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.3	17.7	17.9	17.9	17.7
Gain over all Tilts	dBi	17.2 ± 0.4	17.6 ± 0.5	17.8 ± 0.5	17.8 ± 0.5	17.6 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	67 ± 6.7	68 ± 8.7	67 ± 8.9	58 ± 4.3	56 ± 7.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 26	> 26	> 24	> 25
Vertical Pattern:						
Elevation Beamwidth	°	6.3 ± 0.5	5.8 ± 0.4	5.5 ± 0.5	4.8 ± 0.3	4.3 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.6	< 0.6	< 0.6	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 20	> 17	> 18	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, G1, Y1)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 26
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

* not applicable for L-band

Mechanical specifications		
Input	10 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1130 254 Maximal: 1140 256
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1999 / 508 / 175 78.7 / 20.0 / 6.9
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	46.3 / 50.8 (clamps incl.) 102.1 / 112.0 (clamps incl.)
Packing Size	mm inches	2200 / 542 / 268 86.6 / 21.3 / 10.6
Scope of Supply	Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

10-Port Antenna Frequency Range HPBW

R1	R2	Y1	Y2	Y3
698-960	698-960	1427-2690	1695-2690	1427-2690
65°	65°	65°	65°	65°

10-Port Antenna 2LB/3HB 1.5m 65° | 2x698-960 14.6dBi | 2x1427-2690 17.6dBi | 1695-2690 17.7dBi



FlexRET



Type No.	800442004				
Left side, lowband	R1, connector 1-2				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.5	14.2	14.4	14.7
Gain over all Tilts	dBi	13.4 ± 0.5	14.2 ± 0.3	14.4 ± 0.3	14.6 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 7	58 ± 5	55 ± 5	52 ± 6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 23	> 25	> 25
Vertical Pattern:					
Elevation Beamwidth	°	15.8 ± 1.6	14.7 ± 0.9	14.4 ± 0.9	13.6 ± 0.9
Electrical Downtilt continuously adjustable	°	2.0 – 14.0			
Tilt Accuracy	°	< 0.9	< 0.7	< 0.6	< 0.7
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 16
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	typ > 25 (R1 // R2) > 28 (R1 // Y1, Y2, Y3)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lowband	R2, connector 3-4				
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.5	14.1	14.3	14.6
Gain over all Tilts	dBi	13.4 ± 0.5	14.1 ± 0.4	14.3 ± 0.4	14.5 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 6	58 ± 6	56 ± 4	52 ± 6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 25	> 24
Vertical Pattern:					
Elevation Beamwidth	°	15.8 ± 1.4	14.8 ± 0.8	14.5 ± 0.9	13.8 ± 0.9
Electrical Downtilt continuously adjustable	°	2.0 – 14.0			
Tilt Accuracy	°	< 0.9	< 0.7	< 0.6	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 15
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 28 (R2 // Y1, Y2, Y3)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

800442004

Left side, highband		Y1, connector 5-6					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.3	17.4	17.6	17.7	17.8	17.6
Gain over all Tilts	dBi	16.2 ± 0.4	17.3 ± 0.6	17.2 ± 0.8	17.4 ± 0.8	17.5 ± 0.8	17.5 ± 0.7
Horizontal Pattern:							
Azimuth Beamwidth	°	71 ± 3	66 ± 4	67 ± 6	65 ± 4	61 ± 4	60 ± 4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 28	> 25	> 26	> 30	> 29
Vertical Pattern:							
Elevation Beamwidth	°	8.2 ± 0.4	7.0 ± 0.3	6.6 ± 0.3	6.3 ± 0.4	5.6 ± 0.1	5.2 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.7	< 0.2	< 0.1	< 0.1	< 0.2	< 0.1
First Upper Side Lobe Suppression	dB	> 16	> 18	> 19	> 19	> 21	> 23
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 (Y1 // R1, R2, Y2, Y3)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Center, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.3	17.5	17.7	17.6
Gain over all Tilts	dBi	16.8 ± 0.5	17.2 ± 0.6	17.4 ± 0.7	17.5 ± 0.4	17.4 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	56 ± 3	57 ± 4	58 ± 3	62 ± 3	65 ± 2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 30	> 27	> 28	> 31	> 30
Vertical Pattern:						
Elevation Beamwidth	°	8.9 ± 0.7	8.2 ± 0.4	7.8 ± 0.6	7.0 ± 0.4	6.5 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.5	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 17	> 18	> 18	> 21
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 28 (Y2 // R1, R2, Y1, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800442004

Right side, highband		Y3, connector 9-10					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.2	17.3	17.3	17.5	17.4	17.6
Gain over all Tilts	dBi	16.2 ± 0.4	17.2 ± 0.6	17.2 ± 0.7	17.4 ± 0.8	17.4 ± 0.7	17.5 ± 0.6
Horizontal Pattern:							
Azimuth Beamwidth	°	72 ± 4	67 ± 3	67 ± 4	65 ± 5	63 ± 5	59 ± 4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 27	> 25	> 25	> 28	> 28
Vertical Pattern:							
Elevation Beamwidth	°	8.2 ± 0.4	7.0 ± 0.4	6.6 ± 0.3	6.2 ± 0.4	5.6 ± 0.2	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.4	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 19	> 20	> 19	> 21	> 24
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 (Y3 // R1, R2, Y1, Y2)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

* not applicable for L-band

Mechanical specifications			
Input		10 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 525 118	Maximal: 700 157
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1499 / 448 / 164 59.0 / 17.6 / 6.5	
Category of Mounting Hardware		XM (X-Medium)	
Weight	kg lb	32.9 / 37.1 (clamps incl.) 72.9 / 81.6 (clamps incl.)	
Packing Size	mm inches	1635 / 495 / 250 64.4 / 19.5 / 9.8	
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

Summary – Directional Antennas

12 Ports

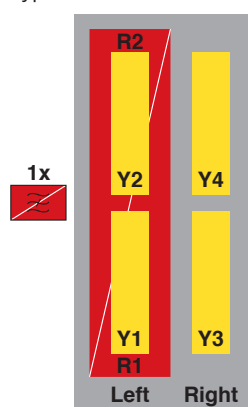
Dual Polarization $\pm 45^\circ$

KATHREIN

Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 4 x Highband					
12-Port Antenna	698–894	65°	15.5dBi	1°–10°T	840370799
	689–894	65°	15.5dBi	1°–10°T	
	1695–2360	65°	17dBi	2.5°–12°T	
	1695–2360	65°	17dBi	2.5°–12°T	
	1695–2360	65°	17dBi	2.5°–12°T	
	1695–2360	65°	17dBi	2.5°–12°T	
12-Port Antenna	698–862	65°	15.5dBi	2°–12°T	80011898
	880–960	65°	16dBi	2°–12°T	
	1695–2690	65°	16dBi	2°–14°T	
	1695–2690	65°	16dBi	2°–14°T	
	1427–2690	65°	16.5dBi	2°–14°T	
	1695–2690	65°	16.5dBi	2°–14°T	
12-Port Antenna	698–862	65°	16.5dBi	1.5°–10°T	80020899
	880–960	65°	17dBi	1.5°–10°T	
	1695–2690	65°	17.5dBi	2.5°–12°T	
	1695–2690	65°	17dBi	2.5°–12°T	
	1695–2690	65°	18dBi	2.5°–12°T	
	1695–2690	65°	17.5dBi	2.5°–12°T	

1) Configuration Types – further details on page 12–15.

Type Z



Type AG



Summary – Directional Antennas

12 Ports

Dual Polarization ±45°

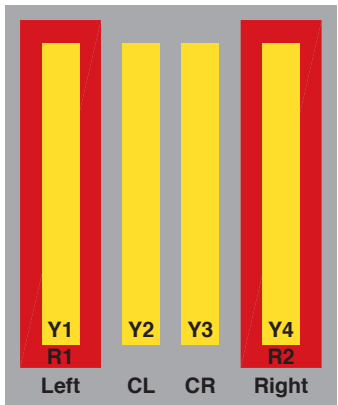
KATHREIN

Type	Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 4 x Highband					
12-Port Antenna	698–960	65°	14.6dBi	2°–12°T	800482001
	689–960	65°	14.6dBi	2°–12°T	
	1427–2690	65°	17.8dBi	2°–12°T	
	1695–2690	65°	17.2dBi	2°–12°T	
	1695–2690	65°	17.2dBi	2°–12°T	
	1427–2690	65°	17.8dBi	2°–12°T	
12-Port Antenna	698–960	65°	15dBi	2.5°–11.5°T	800372991
	689–960	65°	15dBi	2.5°–11.5°T	
	1695–2690	65°	16dBi	2°–12°T	
	1427–2690	65°	16dBi	2°–12°T	
	1695–2690	65°	16dBi	2°–12°T	
	1427–2690	65°	16dBi	2°–12°T	
12-Port Antenna	698–960	65°	15.5dBi	2°–12°T	80010991
	698–960	65°	15.5dBi	2°–12°T	
	1695–2690	65°	16dBi	2°–14°T	
	1695–2690	65°	16.5dBi	2°–14°T	
	1695–2690	65°	16dBi	2°–14°T	
	1695–2690	65°	16.5dBi	2°–14°T	
12-Port Antenna	698–960	65°	16.4dBi	2.5°–10°T	800372992
	698–960	65°	16.4dBi	2.5°–10°T	
	1427–2690	65°	17.6dBi	2°–12°T	
	1695–2690	65°	16.8dBi	2°–12°T	
	1427–2690	65°	17.6dBi	2°–12°T	
	1695–2690	65°	16.8dBi	2°–12°T	
12-Port Antenna	698–960	65°	16.5dBi	1°–10°T	80010992
	698–960	65°	16.5dBi	1°–10°T	
	1695–2690	65°	17.5dBi	2.5°–12°T	
	1695–2690	65°	17.5dBi	2.5°–12°T	
	1695–2690	65°	17.5dBi	2.5°–12°T	
	1695–2690	65°	17.5dBi	2.5°–12°T	

New or changed product

1) Configuration Types – further details on page 12–15.

Type AT



12 Ports

12-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2	Y3	Y4
698–894	698–894	1695–2360	1695–2360	1695–2360	1695–2360
65°	65°	65°	65°	65°	65°

■ Ultra compact width



FlexRET

12-Port Antenna 2LB/4HB 8ft 65° | 2x698–894 15.5dBi | 4x1695–2360 17dBi

Type No.		840370799	
Left side, lowband		R1, connector 1–2	
		698–894	
Frequency Range	MHz	698 – 824	824 – 894
Gain at mid Tilt	dBi	14.8	15.9
Gain over all Tilts	dBi	14.8 ± 0.5	15.9 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	60 ± 4.4	56 ± 4.2
Front-to-Back Ratio, ± 30°	dB	> 25	> 25
Cross Polar Discrimination at Boresight	dB	> 16	> 22
Cross Polar Discrimination over Sector	dB	> 7.5	> 9.5
Vertical Pattern:			
Elevation Beamwidth	°	9.8 ± 0.6	8.8 ± 0.3
Electrical Downtilt continuously adjustable	°	1.0 – 10.0	
Tilt Accuracy	°	< 0.8	< 0.6
First Upper Side Lobe Suppression	dB	> 16	> 17
Cross Polar Isolation	dB	> 25 typically	
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2, Y3, Y4) typically	
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.



Right side, lowband		R2, connector 3–4	
		698–894	
Frequency Range	MHz	698 – 824	824 – 894
Gain at mid Tilt	dBi	14.8	15.8
Gain over all Tilts	dBi	14.8 ± 0.5	15.8 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	60 ± 4.5	57 ± 4.8
Front-to-Back Ratio, ± 30°	dB	> 25	> 25
Cross Polar Discrimination at Boresight	dB	> 16	> 21
Cross Polar Discrimination over Sector	dB	> 8.0	> 11.0
Vertical Pattern:			
Elevation Beamwidth	°	9.8 ± 0.6	8.8 ± 0.4
Electrical Downtilt continuously adjustable	°	1.0 – 10.0	
Tilt Accuracy	°	< 0.8	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 19
Cross Polar Isolation	dB	> 25 typically	
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2, Y3, Y4) typically	
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.

840370799

Left side, lower highband		Y1, connector 5-6			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	16.4	16.9	17.4	16.9
Gain over all Tilts	dBi	16.3 ± 0.5	16.8 ± 0.4	17.2 ± 0.5	17.0 ± 0.7
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 5.2	66 ± 2.7	63 ± 4.7	65 ± 8.1
Front-to-Back Ratio, ± 30°	dB	> 23	> 28	> 29	> 29
Cross Polar Discrimination at Boresight		> 14	> 17	> 20	> 16
Cross Polar Discrimination over Sector	dB	> 10.0	> 10.5	> 11.0	> 8.0
Vertical Pattern:					
Elevation Beamwidth	°	7.7 ± 0.6	7.2 ± 0.4	6.8 ± 0.7	5.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.8	< 0.7	< 0.7	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 15	> 14
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (Y1 // R1, R2, Y2, Y3, Y4)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, upper highband		Y2, connector 7-8			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	16.1	16.6	17.0	16.7
Gain over all Tilts	dBi	16.0 ± 0.5	16.6 ± 0.4	16.9 ± 0.4	16.6 ± 0.6
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 4.8	65 ± 3.1	63 ± 3.8	65 ± 6.3
Front-to-Back Ratio, ± 30°	dB	> 25	> 27	> 28	> 28
Cross Polar Discrimination at Boresight	dB	> 15	> 18	> 21	> 16
Cross Polar Discrimination over Sector	dB	> 10.5	> 11.0	> 11.0	> 7.5
Vertical Pattern:					
Elevation Beamwidth	°	7.8 ± 0.6	7.3 ± 0.4	6.9 ± 0.7	6.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 16	> 15	> 15
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, Y1, Y3, Y4)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

159

840370799

Right side, lower highband		Y3, connector 9-10			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	16.5	17.0	17.4	16.9
Gain over all Tilts	dBi	16.5 ± 0.4	16.9 ± 0.4	17.3 ± 0.5	17.1 ± 0.8
Horizontal Pattern:					
Azimuth Beamwidth	°	65 ± 6.1	66 ± 3.3	63 ± 4.3	64 ± 6.4
Front-to-Back Ratio, ± 30°	dB	> 23	> 26	> 28	> 27
Cross Polar Discrimination at Boresight	dB	> 14	> 18	> 21	> 21
Cross Polar Discrimination over Sector	dB	> 10.5	> 10.5	> 10.5	> 8.5
Vertical Pattern:					
Elevation Beamwidth	°	7.7 ± 0.5	7.2 ± 0.4	6.8 ± 0.7	6.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.6	< 0.4	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 17	> 16	> 14
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (Y3 // R1, R2, Y1, Y2, Y4)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, upper highband		Y4, connector 11-12			
		1695-2360			
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2305 – 2360
Gain at mid Tilt	dBi	16.3	16.7	17.0	16.7
Gain over all Tilts	dBi	16.2 ± 0.5	16.6 ± 0.5	16.9 ± 0.5	16.8 ± 0.6
Horizontal Pattern:					
Azimuth Beamwidth	°	63 ± 6.6	64 ± 4.6	63 ± 3.8	64 ± 5.0
Front-to-Back Ratio, ± 30°	dB	> 24	> 25	> 28	> 27
Cross Polar Discrimination at Boresight	dB	> 15	> 19	> 21	> 20
Cross Polar Discrimination over Sector	dB	> 10.5	> 11.5	> 12.0	> 9.0
Vertical Pattern:					
Elevation Beamwidth	°	7.7 ± 0.6	7.2 ± 0.4	6.8 ± 0.7	6.0 ± 0.2
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 15	> 14	> 14
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (Y4 // R1, R2, Y1, Y2, Y3)			
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)			
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

840370799

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications				
Input		12 x 4.3-10 female		
Connector Position		bottom		
Adjustment Mechanism		FlexRET, continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	590	132
		Lateral:	485	109
		Maximal:	1035	233
Max. Wind Velocity	km/h mph	241 150		
Height / Width / Depth	mm inches	2437 / 378 / 164 96.0 / 14.9 / 6.5		
Category of Mounting Hardware		XM (X-Medium)		
Weight	kg lb	43.5 / 48 (clamps incl.) 95.9 / 105.9 (clamps incl.)		
Packing Size	mm inches	2585 / 440 / 293 101.8 / 17.3 / 11.5		
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter		

12-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2	Y3	Y4
698–862	880–960	1695–2690	1695–2690	1427–2690	1695–2690
65°	65°	65°	65°	65°	65°

12-Port Antenna 2LB/4HB 2.0m 65° | 698–862 15.5dBi | 880–960 16dBi |
3x1695–2690 16.5dBi | 1427–2690 16.5dBi



FlexRET



Type No.		80011898		
Left side, lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	791 – 862	880 – 960
Gain at mid Tilt	dBi	15.3	15.7	16.0
Gain over all Tilts	dBi	15.2 ± 0.5	15.6 ± 0.3	15.9 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	67 ± 3.1	64 ± 2.3	63 ± 3.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 27
Vertical Pattern:				
Elevation Beamwidth	°	10.6 ± 0.7	9.7 ± 0.5	9.1 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		2.0 – 12.0
Tilt Accuracy	°	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 19	> 21
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2, Y3, Y4)		> 27, typ. > 28 (R2 // Y1, Y4) > 30 (R2 // Y2, Y3)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, lower highband		Y1, connector 5–6				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.3	15.8	15.9	15.6	16.4
Gain over all Tilts	dBi	15.2 ± 0.6	15.7 ± 0.4	15.8 ± 0.3	15.6 ± 0.6	16.3 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.5	63 ± 4.5	62 ± 2.9	64 ± 6.9	56 ± 6.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	10.6 ± 0.8	10.1 ± 0.5	9.7 ± 0.8	8.4 ± 0.4	7.7 ± 0.7
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.3	< 0.4	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 21	> 21	> 20	> 16	> 15
Cross Polar Isolation	dB	> 27, typ. 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80011898

Left side, upper highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.0	16.4	16.3	15.6	15.9
Gain over all Tilts	dBi	15.9 ± 0.7	16.3 ± 0.5	16.2 ± 0.6	15.6 ± 0.5	15.7 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	59 ± 5.9	56 ± 4.4	58 ± 5.9	62 ± 4.0	65 ± 8.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 26	> 26	> 25	> 26
Vertical Pattern:						
Elevation Beamwidth	°	9.2 ± 0.6	8.7 ± 0.5	8.2 ± 0.8	7.3 ± 0.4	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 19	> 19	> 20	> 19
Cross Polar Isolation	dB	> 27, typ. 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lower highband		Y3, connector 9-10						
		1427-2690						
Frequency Range	MHz	1427 – 1496	1492 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	14.6	14.8	15.6	16.1	16.3	16.6	16.9
Gain over all Tilts	dBi	14.6 ± 0.3	14.8 ± 0.3	15.6 ± 0.4	16.0 ± 0.4	16.2 ± 0.4	16.4 ± 0.6	16.7 ± 0.8
Horizontal Pattern:								
Azimuth Beamwidth	°	72 ± 7.6	66 ± 8.8	66 ± 5.5	64 ± 5.7	65 ± 5.0	68 ± 2.7	61 ± 6.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 24	> 25	> 25	> 28	> 25
Vertical Pattern:								
Elevation Beamwidth	°	12.1 ± 0.7	12.3 ± 0.5	10.3 ± 0.8	9.7 ± 0.5	9.1 ± 0.8	7.9 ± 0.6	7.1 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0						
Tilt Accuracy	°	< 0.8	< 0.7	< 0.5	< 0.3	< 0.3	< 0.3	< 0.5
First Upper Side Lobe Suppression	dB	> 14	> 15	> 15	> 17	> 18	> 18	> 14
Cross Polar Isolation	dB	> 27, typ. 28						
Port to Port Isolation	dB	> 30 (Y3 // R1, R2, Y1, Y2, Y4)						
Max. Effective Power per specified Band and Port	W	150 (at 50 °C ambient temperature)		200 (at 50 °C ambient temperature)			120 (at 50 °C ambient temperature)	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)						
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)						

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

163

80011898

Right side, upper highband		Y4, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.9	16.2	16.4	16.8	16.4
Gain over all Tilts	dBi	15.8 ± 0.4	16.1 ± 0.2	16.4 ± 0.4	16.7 ± 0.3	16.2 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 2.9	62 ± 2.8	61 ± 2.6	58 ± 3.1	58 ± 3.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 25	> 25	> 21
Vertical Pattern:						
Elevation Beamwidth	°	9.6 ± 0.7	9.0 ± 0.6	8.5 ± 0.6	7.5 ± 0.5	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 17	> 16
Cross Polar Isolation	dB	> 27, typ. 28				
Port to Port Isolation	dB	> 30 (Y4 // R1, R2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27, typ. 28
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

* not applicable for L-band

Mechanical specifications				
Input		12 x 4.3-10 female		
Connector Position		bottom		
Adjustment Mechanism		FlexRET, continuously adjustable		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	905	203
		Maximal:	905	203
Max. Wind Velocity	km/h mph	241 150		
Height / Width / Depth	mm inches	1999 / 378 / 164 78.7 / 14.9 / 6.5		
Category of Mounting Hardware		XM (X-Medium)		
Weight	kg lb	36.3 / 40.8 (clamps incl.) 80.0 / 90.0 (clamps incl.)		
Packing Size	mm inches	2200 / 412 / 255 86.6 / 16.2 / 10.0		
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter		

12-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2	Y3	Y4
698–862	880–960	1695–2690	1695–2690	1695–2690	1695–2690
65°	65°	65°	65°	65°	65°

12-Port Antenna 2LB/4HB 2.7m 65° | 698–862 16.5dBi | 880–960 17dBi | 4x1695–2690 17.5dBi



FlexRET

Type No.	80020899			
Left side, lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	16.0	16.3	16.9
Gain over all Tilts	dBi	15.9 ± 0.3	16.2 ± 0.4	16.9 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	71 ± 2.5	70 ± 2.2	67 ± 3.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 26
Cross Polar Discrimination at Boresight	dB	> 22	> 22	> 21
Cross Polar Discrimination over Sector	dB	> 7.0	> 7.0	> 7.0
Azimuth Beam Port-to-Port Tracking	dB	< 2.0	< 2.0	< 2.0
Vertical Pattern:				
Elevation Beamwidth	°	8.6 ± 0.6	7.9 ± 0.5	7.1 ± 0.4
Electrical Downtilt continuously adjustable	°	1.5 – 10.0		1.5 – 10.0
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 16	> 16
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2, Y3, Y4)		> 28 (R2 // R1) > 30 (R2 // Y1, Y2, Y3, Y4)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.



12 Ports

Left side, lower highband		Y1, connector 5–6				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.9	17.2	17.3	16.7	17.2
Gain over all Tilts	dBi	16.8 ± 0.4	17.1 ± 0.3	17.2 ± 0.4	16.6 ± 0.4	17.0 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 3.4	62 ± 3.6	62 ± 4.2	64 ± 7.3	60 ± 5.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 24	> 21	> 22
Cross Polar Discrimination at Boresight	dB	> 17	> 23	> 22	> 19	> 18
Cross Polar Discrimination over Sector	dB	> 8.0	> 9.5	> 11.5	> 8.5	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 2.0	< 1.5	< 1.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.5	6.8 ± 0.4	6.4 ± 0.6	5.7 ± 0.4	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 17	> 16	> 15	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80020899

Left side, upper highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.6	16.9	16.9	16.3	16.9
Gain over all Tilts	dBi	16.6 ± 0.5	16.9 ± 0.4	16.9 ± 0.4	16.2 ± 0.3	16.8 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 3.7	63 ± 3.7	62 ± 2.9	66 ± 5.8	62 ± 5.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 26	> 24	> 25	> 23
Cross Polar Discrimination at Boresight	dB	> 15	> 22	> 25	> 18	> 16
Cross Polar Discrimination over Sector	dB	> 7.5	> 9.5	> 10.5	> 8.0	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 2.5	< 2.0	< 2.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	7.0 ± 0.5	6.5 ± 0.3	6.1 ± 0.5	5.5 ± 0.4	4.9 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.2	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 14	> 15	> 16	> 16	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lower highband		Y3, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.7	17.7	18.0	18.1	18.3
Gain over all Tilts	dBi	17.6 ± 0.3	17.7 ± 0.3	17.9 ± 0.5	18.0 ± 0.3	18.1 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 2.5	62 ± 1.6	62 ± 1.5	61 ± 1.5	59 ± 3.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 21	> 22	> 21	> 17	> 16
Cross Polar Discrimination over Sector	dB	> 15.5	> 16.0	> 13.5	> 8.0	> 9.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 0.5	< 1.0	< 1.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.6 ± 0.3	6.3 ± 0.4	5.6 ± 0.4	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 20	> 22	> 21	> 18	> 22
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y3 // R1, R2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80020899

Right side, upper highband		Y4, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.3	17.5	17.7	17.8	17.9
Gain over all Tilts	dBi	17.3 ± 0.3	17.4 ± 0.2	17.6 ± 0.4	17.7 ± 0.3	17.7 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 2.9	62 ± 1.8	61 ± 1.9	60 ± 1.8	58 ± 3.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 24	> 25	> 24
Cross Polar Discrimination at Boresight	dB	> 20	> 21	> 19	> 16	> 17
Cross Polar Discrimination over Sector	dB	> 16.0	> 17.0	> 14.5	> 8.5	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 0.5	< 1.0	< 1.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	7.1 ± 0.4	6.7 ± 0.3	6.3 ± 0.4	5.7 ± 0.5	5.0 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.3	< 0.2
First Upper Side Lobe Suppression	dB	> 20	> 24	> 23	> 18	> 23
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y4 // R1, R2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1100 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		12 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	930 209
		Maximal:	1075 242
Max. Wind Velocity	km/h mph	200 124	
Height / Width / Depth	mm inches	2693 / 377 / 169 106.0 / 14.8 / 6.7	
Category of Mounting Hardware		H (Heavy)	
Weight	kg lb	46.5 / 48.7 (clamps incl.) 102.5 / 107.4 (clamps incl.)	
Packing Size	mm inches	2896 / 397 / 212 114.0 / 15.6 / 8.3	
Scope of Supply		Panel, FlexRET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

12-Port Antenna Frequency Range HPBW

R1	R2	Y1	Y2	Y3	Y4
698-960	698-960	1427-2690	1695-2690	1695-2690	1427-2690
65°	65°	65°	65°	65°	65°

12-Port Antenna 2LB/4HB 1.5m 65° | 2x698-960 14.6dBi | 2x1427-2690 17.8dBi |
2x1695-2690 17.2dBi



FlexRET



Type No.		800482001			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.8	14.2	14.4	14.6
Gain over all Tilts	dBi	13.8 ± 0.4	14.1 ± 0.3	14.4 ± 0.4	14.6 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	59 ± 6.3	56 ± 3.1	53 ± 5.5	50 ± 4.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 19	> 20	> 22
Vertical Pattern:					
Elevation Beamwidth	°	16.1 ± 1.1	15.1 ± 0.9	14.6 ± 0.7	13.6 ± 1.2
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.6	< 0.9
First Upper Side Lobe Suppression	dB	> 15	> 16	> 17	> 16
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	600 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.8	14.1	14.4	14.8
Gain over all Tilts	dBi	13.8 ± 0.3	14.1 ± 0.3	14.3 ± 0.3	14.7 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	60 ± 5.7	56 ± 4.1	54 ± 5.8	50 ± 6.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 20	> 20	> 21
Vertical Pattern:					
Elevation Beamwidth	°	16.1 ± 0.8	15.1 ± 0.8	14.6 ± 0.6	13.6 ± 0.9
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.6	< 0.6	< 0.6	< 0.7
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 17
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	600 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

800482001

Left side, highband		Y1, connector 5-6					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.9	17.0	17.2	17.4	17.5	17.8
Gain over all Tilts	dBi	15.9 ± 0.6	17.0 ± 0.6	17.2 ± 0.6	17.3 ± 0.7	17.5 ± 0.8	17.8 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	73 ± 3.9	67 ± 4.1	63 ± 4.8	61 ± 4.8	60 ± 4.0	55 ± 3.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 30	> 29	> 28	> 29	> 29	> 28
Vertical Pattern:							
Elevation Beamwidth	°	8.4 ± 0.5	7.0 ± 0.5	6.5 ± 0.4	6.2 ± 0.4	5.6 ± 0.3	5.2 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 17	> 19	> 17	> 16	> 17	> 19
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 25 (Y1 // R1, R2, Y2, Y3, Y4)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, center highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.0	17.0	17.1	17.2	17.4
Gain over all Tilts	dBi	16.9 ± 0.7	17.0 ± 0.7	17.0 ± 0.8	17.2 ± 0.7	17.4 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 7.9	60 ± 6.5	63 ± 6.7	65 ± 4.6	60 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 27	> 28	> 30	> 29
Vertical Pattern:						
Elevation Beamwidth	°	7.2 ± 0.6	6.7 ± 0.3	6.4 ± 0.4	5.9 ± 0.2	5.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 17	> 19	> 19	> 20
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800482001

Right side, center highband		Y3, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.9	17.1	17.0	17.2	17.2
Gain over all Tilts	dBi	16.9 ± 0.8	17.0 ± 0.7	17.0 ± 0.7	17.1 ± 0.6	17.2 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 9.2	60 ± 8.4	64 ± 8.9	64 ± 4.1	62 ± 4.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 28	> 28	> 28	> 29
Vertical Pattern:						
Elevation Beamwidth	°	7.4 ± 0.5	6.8 ± 0.3	6.5 ± 0.4	6.0 ± 0.3	5.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 14	> 17	> 18	> 19	> 20
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y3 // R1, R2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highband		Y4, connector 11-12					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	15.9	17.0	17.2	17.4	17.5	17.8
Gain over all Tilts	dBi	15.9 ± 0.5	17.0 ± 0.6	17.2 ± 0.6	17.4 ± 0.7	17.4 ± 0.7	17.8 ± 0.9
Horizontal Pattern:							
Azimuth Beamwidth	°	74 ± 6.1	69 ± 3.5	66 ± 4.6	63 ± 5.8	63 ± 4.9	56 ± 4.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 29	> 29	> 29	> 28	> 29	> 28
Vertical Pattern:							
Elevation Beamwidth	°	8.3 ± 0.5	6.9 ± 0.5	6.5 ± 0.3	6.2 ± 0.5	5.6 ± 0.3	5.2 ± 0.2
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.3	< 0.3	< 0.4	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 17	> 17	> 16	> 17	> 19
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 25 (Y4 // R1, R2, Y1, Y2, Y3)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

800482001

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input	12 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 670 151 Maximal: 760 171
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1499 / 488 / 164 59.0 / 19.2 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	39.0 / 43.5 (clamps incl.) 86.0 / 95.9 (clamps incl.)
Packing Size	mm inches	1650 / 550 / 293 65.0 / 21.7 / 11.5
Scope of Supply	Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

12-Port Antenna	R1	R2	Y1	Y2	Y3	Y4
Frequency Range	698-960	698-960	1695-2690	1427-2690	1695-2690	1427-2690
HPBW	65°	65°	65°	65°	65°	65°

■ Ultra compact width



FlexRET

12-Port Antenna 2LB/4HB 2.0m 65° | 2x698-960 15dBi | 2x1695-2690 16dBi | 2x1427-2690 16dBi

Type No.		800372991			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.0	14.7	15.0	15.4
Gain over all Tilts	dBi	14.0 ± 0.5	14.7 ± 0.4	15.0 ± 0.4	15.4 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 6.6	59 ± 4.5	57 ± 3.9	55 ± 5.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 23	> 21
Vertical Pattern:					
Elevation Beamwidth	°	11.8 ± 1.1	10.9 ± 0.7	10.7 ± 0.6	10.1 ± 0.8
Electrical Downtilt continuously adjustable	°	2.5 – 11.5			
Tilt Accuracy	°	< 0.5	< 0.4	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 17	> 20	> 19	> 18
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			



Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.0	14.8	15.0	15.5
Gain over all Tilts	dBi	14.0 ± 0.5	14.7 ± 0.4	15.0 ± 0.4	15.4 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 6.8	59 ± 4.3	57 ± 3.9	55 ± 5.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 23	> 22
Vertical Pattern:					
Elevation Beamwidth	°	11.9 ± 1.4	10.9 ± 0.6	10.7 ± 0.6	10.1 ± 0.7
Electrical Downtilt continuously adjustable	°	2.5 – 11.5			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 19	> 21	> 20	> 19
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

800372991

Left side, lower highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.5	15.7	15.9	15.6	15.8
Gain over all Tilts	dBi	15.5 ± 0.4	15.7 ± 0.6	15.9 ± 0.6	15.6 ± 0.5	15.8 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 3.5	65 ± 4.5	65 ± 5.0	63 ± 5.1	57 ± 5.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 26	> 26	> 28
Vertical Pattern:						
Elevation Beamwidth	°	10.7 ± 0.6	10.2 ± 0.6	9.8 ± 0.5	8.9 ± 0.4	8.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.5	< 0.5	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 22	> 18
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 28 (Y1 // R1, R2, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, upper highband		Y2, connector 7-8					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.1	15.8	16.1	16.3	16.1	15.9
Gain over all Tilts	dBi	15.0 ± 0.4	15.7 ± 0.5	16.0 ± 0.6	16.3 ± 0.6	16.0 ± 0.9	15.8 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 3.3	65 ± 4.1	66 ± 4.6	67 ± 4.4	67 ± 5.0	61 ± 6.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 27	> 25	> 28	> 26	> 28
Vertical Pattern:							
Elevation Beamwidth	°	11.6 ± 0.9	9.7 ± 0.6	9.1 ± 0.4	8.6 ± 0.6	7.8 ± 0.4	7.4 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.3	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 19	> 18	> 18	> 18	> 19
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 (Y2 // R1, R2, Y1, Y3, Y4)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800372991

Right side, lower highband		Y3, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.5	15.9	15.9	15.6	15.8
Gain over all Tilts	dBi	15.5 ± 0.4	15.7 ± 0.6	15.9 ± 0.5	15.6 ± 0.5	15.8 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	67 ± 4.5	65 ± 5.2	64 ± 4.9	64 ± 8.4	58 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 24	> 25	> 24	> 26
Vertical Pattern:						
Elevation Beamwidth	°	10.8 ± 0.7	10.2 ± 0.7	9.7 ± 0.7	8.8 ± 0.5	8.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 18	> 18	> 20	> 18
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 28 (Y3 // R1, R2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, upper highband		Y4, connector 11-12					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.0	15.8	16.1	16.4	16.0	15.9
Gain over all Tilts	dBi	15.0 ± 0.4	15.7 ± 0.5	16.0 ± 0.6	16.3 ± 0.6	16.0 ± 0.9	15.8 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	63 ± 3.3	67 ± 4.4	65 ± 3.3	66 ± 3.5	68 ± 6.2	61 ± 5.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 26	> 25	> 26	> 26	> 27
Vertical Pattern:							
Elevation Beamwidth	°	11.8 ± 0.7	9.8 ± 0.6	9.1 ± 0.4	8.6 ± 0.6	7.8 ± 0.4	7.4 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0					
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 18	> 18	> 17	> 16	> 18
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 28 (Y4 // R1, R2, Y1, Y2, Y3)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

800372991

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input	12 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 465 105 Maximal: 815 183
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1978 / 378 / 164 77.9 / 14.9 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	37.0 / 41.5 (clamps incl.) 81.6 / 91.5 (clamps incl.)
Packing Size	mm inches	2125 / 440 / 293 83.7 / 17.3 / 11.5
Scope of Supply	Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

12-Port Antenna Frequency Range HPBW

R1	R2	Y1	Y2	Y3	Y4
698-960	698-960	1695-2690	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°	65°	65°

12-Port Antenna 2LB/4HB 2.0m 65° | 2x698-960 15.5dBi | 4x1695-2690 16.5dBi



FlexRET



Type No.		80010991			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.8	15.4	15.6	15.9
Gain over all Tilts	dBi	14.8 ± 0.5	15.4 ± 0.3	15.6 ± 0.2	15.8 ± 0.2
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 3.9	61 ± 3.2	60 ± 2.7	60 ± 2.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 27	> 25
Vertical Pattern:					
Elevation Beamwidth	°	11.9 ± 0.8	11.0 ± 0.8	10.5 ± 0.5	10.1 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.7	< 0.8	< 0.7	< 0.7
First Upper Side Lobe Suppression	dB	> 14	> 14	> 15	> 14
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 26 (R1 // R2) > 30 (R1 // Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.8	15.4	15.5	15.8
Gain over all Tilts	dBi	14.8 ± 0.6	15.3 ± 0.3	15.5 ± 0.3	15.7 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	63 ± 3.6	62 ± 1.8	62 ± 2.1	60 ± 3.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 26	> 27
Vertical Pattern:					
Elevation Beamwidth	°	11.6 ± 0.7	11.0 ± 0.6	10.7 ± 0.4	10.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.6	< 0.6	< 0.6	< 0.4
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 16
Cross Polar Isolation	dB	> 28			
Port to Port Isolation	dB	> 26 (R2 // R1) > 30 (R2 // Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010991

Left side, highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.5	15.8	16.0	15.6	15.9
Gain over all Tilts	dBi	15.5 ± 0.4	15.7 ± 0.5	15.9 ± 0.5	15.6 ± 0.8	15.8 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.5	66 ± 6.1	63 ± 6.6	61 ± 7.6	58 ± 5.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 23	> 24	> 21	> 23
Vertical Pattern:						
Elevation Beamwidth	°	10.7 ± 0.6	10.1 ± 0.5	9.5 ± 0.7	8.5 ± 0.6	7.7 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 21	> 21	> 20	> 20	> 18
Cross Polar Isolation	dB	> 26, typically > 30				
Port to Port Isolation	dB	> 30 (Y1 // R1, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.0	16.3	16.6	16.4	16.1
Gain over all Tilts	dBi	15.9 ± 0.5	16.3 ± 0.6	16.5 ± 0.7	16.3 ± 0.9	16.0 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	62 ± 6.6	62 ± 7.5	60 ± 7.3	57 ± 6.5	62 ± 8.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 25	> 26	> 23	> 24
Vertical Pattern:						
Elevation Beamwidth	°	9.3 ± 0.9	8.6 ± 0.4	8.2 ± 0.6	7.3 ± 0.4	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.2	< 0.2	< 0.2	< 0.4
First Upper Side Lobe Suppression	dB	> 19	> 19	> 20	> 18	> 19
Cross Polar Isolation	dB	> 26, typically > 30				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010991

Right side, lower highband		Y3, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.5	15.7	15.8	15.8	15.8
Gain over all Tilts	dBi	15.5 ± 0.5	15.7 ± 0.5	15.9 ± 0.6	15.7 ± 0.9	15.8 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.0	66 ± 7.8	65 ± 7.3	59 ± 8.0	60 ± 9.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 25	> 23	> 22
Vertical Pattern:						
Elevation Beamwidth	°	10.7 ± 0.7	10.0 ± 0.6	9.5 ± 0.8	8.5 ± 0.6	7.7 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 20	> 21	> 21	> 17	> 18
Cross Polar Isolation	dB	> 26, typically > 30				
Port to Port Isolation	dB	> 30 (Y3 // R1, R2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, upper highband		Y4, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.9	16.2	16.5	16.7	16.1
Gain over all Tilts	dBi	15.8 ± 0.5	16.1 ± 0.6	16.4 ± 0.7	16.6 ± 0.9	16.0 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 6.8	64 ± 7.8	61 ± 7.8	54 ± 6.7	64 ± 10.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 24	> 25	> 24
Vertical Pattern:						
Elevation Beamwidth	°	9.5 ± 0.9	8.7 ± 0.5	8.2 ± 0.6	7.1 ± 0.3	6.8 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.2	< 0.2	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 20	> 20	> 20	> 20	> 17
Cross Polar Isolation	dB	> 26, typically > 30				
Port to Port Isolation	dB	>30 (Y4 // R1, R2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010991

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 26
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1300 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	12 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1130 254 Maximal: 1140 256
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1999 / 508 / 175 78.7 / 20.0 / 6.9
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	46.0 / 50.5 (clamps incl.) 101.4 / 111.3 (clamps incl.)
Packing Size	mm inches	2200 / 542 / 268 86.6 / 21.3 / 10.6
Scope of Supply	Panel and 2 units of clamps for 55–115 mm 2.2–4.5 inches diameter	

12-Port Antenna	R1	R2	Y1	Y2	Y3	Y4
Frequency Range	698-960	698-960	1427-2690	1695-2690	1427-2690	1695-2690
HPBW	65°	65°	65°	65°	65°	65°

■ Ultra compact width

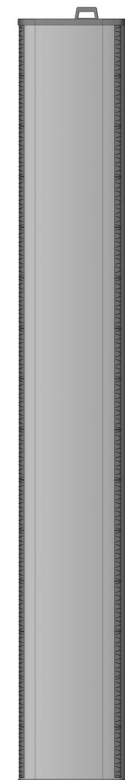


FlexRET

12-Port Antenna 2LB/4HB 2.6m 65° | 2x698-960 16.4dBi | 2x1427-2690 17.6dBi | 2x1695-2690 16.8dBi

Type No.		800372992			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.0	15.7	16.0	16.4
Gain over all Tilts	dBi	15.0 ± 0.6	15.7 ± 0.6	16.0 ± 0.5	16.4 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	63 ± 4.5	60 ± 2.9	58 ± 3.7	55 ± 5.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 24	> 24
Vertical Pattern:					
Elevation Beamwidth	°	9.1 ± 0.7	8.6 ± 0.4	8.4 ± 0.5	7.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 10			
Tilt Accuracy	°	< 0.4	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 17	> 17	> 19
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.0	15.7	16.0	16.4
Gain over all Tilts	dBi	15.0 ± 0.7	15.7 ± 0.6	16.0 ± 0.6	16.4 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 4.8	61 ± 3.6	59 ± 4.5	55 ± 4.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 22	> 24	> 25
Vertical Pattern:					
Elevation Beamwidth	°	9.0 ± 0.7	8.6 ± 0.4	8.3 ± 0.5	7.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 10			
Tilt Accuracy	°	< 0.4	< 0.5	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 18	> 18	> 20
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

800372992

Left side, lower highband		Y1, connector 5-6					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.3	17.1	17.5	17.6	17.2	17.2
Gain over all Tilts	dBi	16.2 ± 0.6	17.0 ± 0.5	17.4 ± 0.7	17.6 ± 0.8	17.1 ± 0.8	17.1 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	61 ± 5.1	64 ± 4.4	65 ± 4.1	63 ± 4.3	66 ± 4.9	59 ± 4.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 25	> 25	> 27	> 26	> 28
Vertical Pattern:							
Elevation Beamwidth	°	8.9 ± 0.5	7.6 ± 0.5	7.1 ± 0.4	6.8 ± 0.5	6.3 ± 0.4	5.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2 – 12					
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 14	> 17	> 16	> 17	> 17	> 18
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 25 (Y1 // R1, R2, Y2, Y3, Y4)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, upper highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.4	16.8	16.8	16.6	16.6
Gain over all Tilts	dBi	16.4 ± 0.5	16.7 ± 0.6	16.8 ± 0.6	16.5 ± 0.6	16.5 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 4.5	64 ± 3.6	62 ± 4.4	64 ± 5.7	60 ± 5.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 28	> 27	> 27
Vertical Pattern:						
Elevation Beamwidth	°	7.8 ± 0.6	7.2 ± 0.3	6.9 ± 0.5	6.3 ± 0.4	5.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 15	> 16	> 19	> 20
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800372992

Right side, lower highband		Y3, connector 9-10					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.2	17.1	17.5	17.6	17.3	17.2
Gain over all Tilts	dBi	16.0 ± 0.6	17.0 ± 0.4	17.4 ± 0.7	17.6 ± 0.8	17.1 ± 0.7	17.1 ± 0.7
Horizontal Pattern:							
Azimuth Beamwidth	°	61 ± 6.1	65 ± 4.6	65 ± 4.4	63 ± 4.6	66 ± 4.8	59 ± 4.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 24	> 25	> 25	> 26	> 27
Vertical Pattern:							
Elevation Beamwidth	°	9.0 ± 0.4	7.7 ± 0.4	7.1 ± 0.4	6.8 ± 0.4	6.3 ± 0.4	5.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2 – 12					
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 14	> 17	> 17.0	> 18	> 17	> 18
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 25 (Y3 // R1, R2, Y1, Y2, Y4)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, upper highband		Y4, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.4	16.8	16.9	16.6	16.6
Gain over all Tilts	dBi	16.4 ± 0.4	16.7 ± 0.6	16.8 ± 0.7	16.5 ± 0.6	16.5 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 5.1	64 ± 4.5	61 ± 4.2	64 ± 5.4	60 ± 5.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 27	> 27	> 26
Vertical Pattern:						
Elevation Beamwidth	°	7.7 ± 0.6	7.2 ± 0.4	6.9 ± 0.5	6.3 ± 0.4	5.7 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16	> 21	> 19
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y4 // R1, R2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

800372992

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input	12 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 630 142 Maximal: 1110 249
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	2591 / 378 / 164 102 / 14.9 / 6.5
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	47.0 / 51.5 (clamps incl.) 103.6 / 113.5 (clamps incl.)
Packing Size	mm inches	2739 / 440 / 293 107.8 / 17.3 / 11.5
Scope of Supply	Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

12-Port Antenna

Frequency Range

HPBW

R1	R2	Y1	Y2	Y3	Y4
698-960	698-960	1695-2690	1695-2690	1695-2690	1695-2690
65°	65°	65°	65°	65°	65°

12-Port Antenna 2LB/4HB 2.7m 65° | 2x698-960 16.5dBi | 4x1695-2690 17.5dBi



FlexRET

Type No.		80010992			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.7	16.1	16.4	16.5
Gain over all Tilts	dBi	15.7 ± 0.4	16.1 ± 0.3	16.3 ± 0.3	16.4 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	66 ± 2.9	65 ± 2.3	65 ± 2.6	64 ± 2.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 25
Vertical Pattern:					
Elevation Beamwidth	°	9.7 ± 0.7	9.0 ± 0.5	8.7 ± 0.5	8.3 ± 0.4
Electrical Downtilt continuously adjustable	°	1 – 10			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 18	> 18	> 20
Cross Polar Isolation	dB	> 28, typically 30			
Port to Port Isolation	dB	> 27, typically 30 (R1 // R2, Y2) > 30 (R1 // Y1, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R1	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	15.5	16.0	16.3	16.6
Gain over all Tilts	dBi	15.5 ± 0.5	16.0 ± 0.5	16.3 ± 0.4	16.5 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	67 ± 3.5	65 ± 2.6	64 ± 3.0	63 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 23	> 24	> 26
Vertical Pattern:					
Elevation Beamwidth	°	9.8 ± 0.6	9.0 ± 0.7	8.6 ± 0.4	8.1 ± 0.5
Electrical Downtilt continuously adjustable	°	1 – 10			
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 21	> 20	> 20
Cross Polar Isolation	dB	> 28, typically 30			
Port to Port Isolation	dB	> 27, typically 30 (R2 // R1, Y4) > 30 (R2 // Y1, Y2, Y3)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Ports R2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010992

Left side, lower highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.0	17.3	17.6	17.1	17.0
Gain over all Tilts	dBi	17.0 ± 0.4	17.3 ± 0.4	17.5 ± 0.5	17.0 ± 0.4	16.9 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 4.9	63 ± 5.3	60 ± 6.0	60 ± 5.5	61 ± 7.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 25	> 24	> 23
Vertical Pattern:						
Elevation Beamwidth	°	7.4 ± 0.3	6.9 ± 0.3	6.5 ± 0.5	5.8 ± 0.3	5.2 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12				
Tilt Accuracy	°	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 19	> 20	> 19	> 18	> 17
Cross Polar Isolation	dB	> 26, typically 30				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y1	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, upper highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.9	17.4	17.5	17.1	17.0
Gain over all Tilts	dBi	16.9 ± 0.6	17.3 ± 0.4	17.5 ± 0.5	17.1 ± 0.5	16.9 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 5.7	62 ± 5.4	60 ± 5.8	58 ± 4.6	60 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 26	> 24	> 23
Vertical Pattern:						
Elevation Beamwidth	°	6.9 ± 0.6	6.3 ± 0.3	5.9 ± 0.5	5.2 ± 0.2	4.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 16	> 15	> 15	> 15
Cross Polar Isolation	dB	> 26, typically 30				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y2	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010992

Right side, lower highband		Y3, connector 9–10				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.1	17.3	17.7	17.3	16.9
Gain over all Tilts	dBi	17.0 ± 0.5	17.3 ± 0.5	17.6 ± 0.7	17.1 ± 0.5	16.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 5.0	64 ± 7.5	60 ± 9.1	56 ± 5.8	59 ± 8.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 25	> 22	> 22
Vertical Pattern:						
Elevation Beamwidth	°	7.4 ± 0.4	6.8 ± 0.4	6.4 ± 0.6	5.7 ± 0.2	5.1 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 17	> 17	> 17	> 16	> 16
Cross Polar Isolation	dB	> 26, typically 30				
Port to Port Isolation	dB	> 30 (Y3 // R1, R2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y3	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, upper highband		Y4, connector 11–12				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	17.1	17.4	17.6	17.2	17.1
Gain over all Tilts	dBi	17.0 ± 0.6	17.4 ± 0.4	17.5 ± 0.5	17.1 ± 0.5	16.9 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 5.2	61 ± 4.3	60 ± 4.7	57 ± 4.4	61 ± 6.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25	> 26	> 26	> 23
Vertical Pattern:						
Elevation Beamwidth	°	6.9 ± 0.6	6.3 ± 0.3	6.0 ± 0.5	5.2 ± 0.3	4.8 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12				
Tilt Accuracy	°	< 0.2	< 0.2	< 0.2	< 0.1	< 0.2
First Upper Side Lobe Suppression	dB	> 17	> 17	> 17	> 16	> 17
Cross Polar Isolation	dB	> 26, typically 30				
Port to Port Isolation	dB	> 30 (Y4 // R1, R2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Ports Y4	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010992

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1300 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications			
Input		12 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 1545 347	Maximal: 1555 350
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	2671 / 508 / 175 105.2 / 20.0 / 6.9	
Category of Mounting Hardware		XH (X-Heavy)	
Weight	kg lb	60.5 / 65.5 (clamps incl.) 133.3 / 144.3 (clamps incl.)	
Packing Size	mm inches	2870 / 542 / 268 113.0 / 21.3 / 10.6	
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter	

Summary – Directional Antennas

14 Ports

Dual Polarization $\pm 45^\circ$

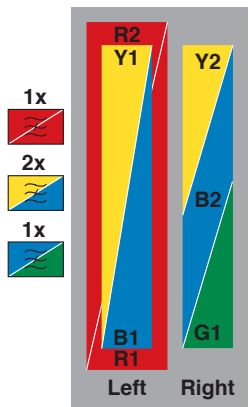
KATHREIN

Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 5 x Highband									
14-Port Antenna	698–862	65°	14.5dBi	2°–16°T	80011877	1499	4.3-10, bottom	192 + 193	AJ
	880–960	65°	15dBi	2°–16°T					
	1710–2170	65°	17dBi	2.5°–12°T					
	2500–2690	65°	17dBi	2.5°–12°T					
	1427–1518	65°	16.5dBi	2.5°–12°T					
	1710–2170	65°	16.5dBi	2.5°–12°T					
	2500–2690	65°	17dBi	2.5°–12°T					
14-Port Antenna	698–862	65°	15.5dBi	2°–12°T	80011878	1999	4.3-10, bottom	194 + 195	AJ
	880–960	65°	16dBi	2°–12°T					
	1710–2170	65°	17.5dBi	2.5°–12°T					
	2500–2690	65°	18dBi	2.5°–12°T					
	1427–1518	65°	16.5dBi	2.5°–12°T					
	1710–2170	65°	16.5dBi	2.5°–12°T					
	2500–2690	65°	17dBi	2.5°–12°T					

14 + 16 Ports

1) Configuration Types – further details on page 12–15.

Type AJ



Summary – Directional Antennas

16 Ports

Dual Polarization $\pm 45^\circ$

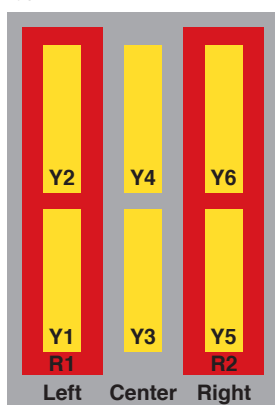
KATHREIN

Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
2 x Lowband 6 x Highband									
16-Port Antenna	698–960	65°	15.6dBi	2.5°–11.5°T	800442008	1944	4.3-10, bottom	196 – 200	AS
	698–960	65°	15.6dBi	2.5°–11.5°T					
	1695–2690	65°	15.9dBi	2°–12°T					
	1427–2690	65°	16.4dBi	2°–12°T					
	1695–2690	65°	16dBi	2°–12°T					
	1695–2690	65°	16dBi	2°–12°T					
	1695–2690	65°	15.9dBi	2°–12°T					
	1427–2690	65°	16.4dBi	2°–12°T					
16-Port Antenna	698–960	65°	14.7dBi	2°–12°T	800482021	1499	4.3-10, bottom	201 – 204	AQ
	698–960	65°	14.7dBi	2°–12°T					
	1427–2180	65°	16.8dBi	2°–12°T					
	2490–2690	65°	17dBi	2°–12°T					
	1695–2690	65°	17.3dBi	2°–12°T					
	1695–2690	65°	17.3dBi	2°–12°T					
	1427–2180	65°	16.8dBi	2°–12°T					
	2490–2690	65°	17dBi	2°–12°T					
16-Port Antenna	698–960	65°	16.5dBi	2.5°–10°T	800372995	2591	4.3-10, bottom	205 – 208	AU
	698–960	65°	16.5dBi	2.5°–10°T					
	1427–2180	65°	16.5dBi	2°–12°T					
	2490–2690	65°	16.6dBi	2°–12°T					
	1695–2690	65°	16.8dBi	2°–12°T					
	1427–2180	65°	16.5dBi	2°–12°T					
	2490–2690	65°	16.6dBi	2°–12°T					
	2490–2690	65°	16.8dBi	2°–12°T					

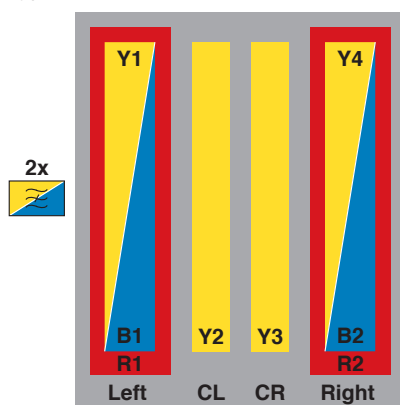
New or changed product

1) Configuration Types – further details on page 12–15.

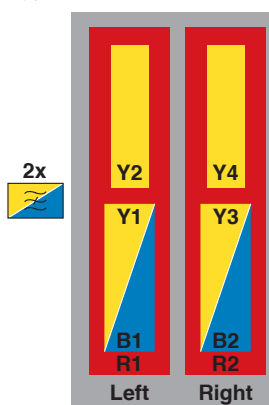
Type AQ



Type AS



Typ AU



Summary – Directional Antennas

16 Ports

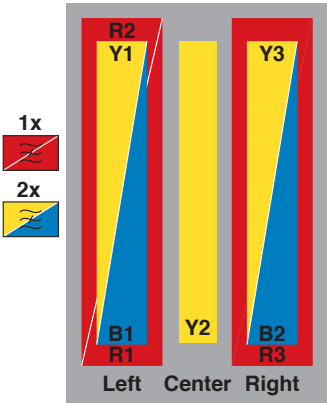
Dual Polarization ±45°

Type					Type No.	Height [mm]	Connector female, type and position	Page	1)
3 x Lowband 5 x Highband									
16-Port Antenna	698–862	65°	15.1dBi	2°–12°T	800442001	1944	4.3-10, bottom	209 – 211	AM
	880–960	65°	15.4dBi	2°–12°T					
	698–960	65°	15.5dBi	2°–12°T					
	1427–2170	65°	17.1dBi	2.5°–12°T					
	1427–2170	65°	17.1dBi	2.5°–12°T					
	2500–2690	65°	17dBi	2.5°–12°T					
	1710–2690	65°	18.8dBi	2.5°–12°T					
	2500–2690	65°	17dBi	2.5°–12°T					

New or changed product

1) Configuration Types – further details on page 12–15.

Type AM



14-Port Antenna

Frequency Range

HPBW

R1	R2	B1	Y1	G1	B2	Y2
698–862	880–960	1710–2170	2500–2690	1427–1518	1710–2170	2500–2690
65°	65°	65°	65°	65°	65°	65°

14-Port Antenna 2LB/5HB 1.5m 65° | 698–862 14.5dBi | 880–960 15dBi |
2x1710–2170 17dBi | 2x2500–2690 17dBi |
1427–1518 16.5dBi



FlexRET



Type No.	80011877			
Left side, lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	791 – 862	880 – 960
Gain at mid Tilt	dBi	14.1	14.7	15.0
Gain over all Tilts	dBi	14.0 ± 0.4	14.5 ± 0.5	14.8 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	71 ± 4.1	67 ± 2.6	65 ± 3.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 22	> 25
Vertical Pattern:				
Elevation Beamwidth	°	14.5 ± 1.4	13.1 ± 0.8	11.8 ± 0.7
Electrical Downtilt continuously adjustable	°	2.0 – 16.0		2.0 – 16.0
Tilt Accuracy	°	< 0.6	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 16	> 16
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28, typically > 30 (R1 // R2) > 30 (R1 // Y1, Y2, B1, B2, G1)		> 28, typically > 30 (R1 // R2) > 30 (R2 // Y1, Y2, B1, B2, G1)
Max. Effective Power Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highbands		B1, connector 7–8		Y1, connector 11–12
		1710–2170		2500–2690
Frequency Range	MHz	1710 – 1785 1805 – 1880	1920 – 1980 2110 – 2170	2500 – 2570 2620 – 2690
Gain at mid Tilt	dBi	16.8	16.8	17.0
Gain over all Tilts	dBi	16.7 ± 0.6	16.6 ± 0.5	16.6 ± 0.6
Horizontal Pattern:				
Azimuth Beamwidth	°	62 ± 7.5	61 ± 4.9	60 ± 6.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 26	> 28
Vertical Pattern:				
Elevation Beamwidth	°	7.1 ± 0.5	6.4 ± 0.5	4.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0		2.5 – 12.0
Tilt Accuracy	°	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 18	> 21	> 15
Cross Polar Isolation	dB	> 28		> 28
Port to Port Isolation	dB	> 30 (B1 // R1, R2, B2, Y1, Y2)		> 30 (Y1 // R1, R2, G1, B1, B2, Y2)
Max. Effective Power Group of Ports 7+11 // 8+12	W	150 (at 50 °C ambient temperature)		
Max. Effective Power Ports B1 + Y1	W	300 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

80011877

Right side, highbands		G1, connector 5–6		B2, connector 9–10		Y2, connector 13–14
Frequency Range	MHz	1427–1518		1710–2170		2500–2690
		1427 – 1496	1492 – 1518	1710 – 1785 1805 – 1880	1920 – 1980 2110 – 2170	2500 – 2570 2620 – 2690
Gain at mid Tilt	dBi	16.1	16.3	16.6	16.5	17.2
Gain over all Tilts	dBi	16.1 ± 0.3	16.4 ± 0.3	16.5 ± 0.3	16.5 ± 0.3	17.0 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	72 ± 3.9	67 ± 5.4	66 ± 3.5	68 ± 2.6	61 ± 6.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 26	> 26	> 27	> 28
Vertical Pattern:						
Elevation Beamwidth	°	8.6 ± 0.4	8.6 ± 0.3	7.3 ± 0.4	6.4 ± 0.7	4.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				2.5 – 12.0
Tilt Accuracy	°	< 0.3	< 0.2	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 15	> 15	> 17	> 16	> 15
Cross Polar Isolation	dB	> 28		> 28		> 28
Port to Port Isolation	dB	> 30 (G1 // R1, R2, B1, B2, Y1, Y2)		> 30 (B2 // R1, R2, G1, B1, Y1, Y2)		> 30 (Y2 // R1, R2, G1, B1, B2, Y1)
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)		150 (at 50 °C ambient temperature)		120 (at 50 °C ambient temperature)
Max. Effective Power Group of Ports 5 + 9 + 13 // 6 + 10 + 14	W	150 (at 50 °C ambient temperature)				
Max. Effective Power Ports G1 + B2 + Y2	W	300 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

* not applicable for L-band

Mechanical specifications		
Input	14 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 665 149 Maximal: 665 149
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1499 / 378 / 164 59.0 / 14.9 / 6.5
Category of Mounting Hardware	XH (X-Heavy)	
Weight	kg lb	33.0 / 38.0 (clamps incl.) 72.7 / 83.7 (clamps incl.)
Packing Size	mm inches	1681 / 402 / 248 66.2 / 15.8 / 9.8
Scope of Supply	Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

The "Category of Mounting Hardware" will change to "XM"

14-Port Antenna

Frequency Range

HPBW

R1	R2	B1	Y1	G1	B2	Y2
698-862	880-960	1710-2170	2500-2690	1427-1518	1710-2170	2500-2690
65°	65°	65°	65°	65°	65°	65°

14-Port Antenna 2LB/5HB 2.0m 65° | 698-862 15.5dBi | 880-960 16dBi |
2x1710-2170 17dBi | 2x2500-2690 17.5dBi |
1427-1518 16.5dBi



FlexRET



Type No.		80011878		
Left side, lowbands		R1, connector 1-2		R2, connector 3-4
		698-862		880-960
Frequency Range	MHz	698 – 806	791 – 862	880 – 960
Gain at mid Tilt	dBi	15.3	15.6	16.1
Gain over all Tilts	dBi	15.3 ± 0.3	15.6 ± 0.3	16.0 ± 0.3
Horizontal Pattern:				
Azimuth Beamwidth	°	66 ± 1.4	64 ± 2.1	61 ± 3.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 24	> 26
Vertical Pattern:				
Elevation Beamwidth	°	10.6 ± 0.6	9.8 ± 0.5	9.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		2.0 – 12.0
Tilt Accuracy	°	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 18	> 19	> 20
Cross Polar Isolation	dB	> 30		> 30
Port to Port Isolation	dB	> 28, typically > 30 (R1 // R2) > 30 (R1 // Y1, Y2, B1, B2, G1)		> 28, typically > 30 (R2 // R1) > 30 (R2 // Y1, Y2, B1, B2, G1)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		
Max. Effective Power Ports R1 + R2	W	800 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, highbands		B1, connector 7-8		Y1, connector 11-12
		1710-2170		2500-2690
Frequency Range	MHz	1710 – 1785 1805 – 1880	1920 – 1980 2110 – 2170	2500 – 2570 2620 – 2690
Gain at mid Tilt	dBi	17.3	17.7	18.0
Gain over all Tilts	dBi	17.2 ± 0.5	17.6 ± 0.4	17.8 ± 0.5
Horizontal Pattern:				
Azimuth Beamwidth	°	64 ± 4.1	61 ± 2.8	61 ± 8.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 26	> 24
Vertical Pattern:				
Elevation Beamwidth	°	5.8 ± 0.5	5.1 ± 0.5	4.1 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0		2.5 – 12.0
Tilt Accuracy	°	< 0.2	< 0.2	< 0.1
First Upper Side Lobe Suppression	dB	> 19	> 17	> 18
Cross Polar Isolation	dB	> 28		> 28
Port to Port Isolation	dB	> 30 (B1 // R1, R2, B2, Y1, Y2) > 28, typically > 30 (B1 // G1)		> 30 (Y1 // R1, R2, G1, B1, B2, Y2)
Max. Effective Power Group of Ports 7+11 // 8+12	W	150 (at 50 °C ambient temperature)		
Max. Effective Power Ports B1 + Y1	W	300 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 9.6) requirements.

80011878

Right side, highbands		G1, connector 5–6		B2, connector 9–10		Y2, connector 13–14
Frequency Range	MHz	1427–1518		1710–2170		2500–2690
		1427 – 1496	1492 – 1518	1710 – 1785 1805 – 1880	1920 – 1980 2110 – 2170	2500 – 2570 2620 – 2690
Gain at mid Tilt	dBi	16.1	16.3	16.6	16.5	17.2
Gain over all Tilts	dBi	16.1 ± 0.3	16.4 ± 0.3	16.5 ± 0.3	16.5 ± 0.3	17.0 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	72 ± 3.9	67 ± 5.4	66 ± 3.5	68 ± 2.6	61 ± 6.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 26	> 26	> 27	> 28
Vertical Pattern:						
Elevation Beamwidth	°	8.6 ± 0.4	8.6 ± 0.3	7.3 ± 0.4	6.4 ± 0.7	4.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0				2.5 – 12.0
Tilt Accuracy	°	< 0.3	< 0.2	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 15	> 15	> 17	> 16	> 15
Cross Polar Isolation	dB	> 28		> 28		> 28
Port to Port Isolation	dB	> 30 (G1 // R1, R2, B2, Y1, Y2) > 28, typically > 30 (G1 // B1)		> 30 (B2 // R1, R2, G1, B1, Y1, Y2)		> 30 (Y2 // R1, R2, G1, B1, B2, Y1)
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)		150 (at 50 °C ambient temperature)		120 (at 50 °C ambient temperature)
Max. Effective Power Group of Ports 5 + 9 + 13 // 6 + 10 + 14	W	150 (at 50 °C ambient temperature)				
Max. Effective Power Ports G1 + B2 + Y2	W	300 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	900 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

* not applicable for L-band

Mechanical specifications			
Input		14 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	905 203
		Maximal:	905 203
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1999 / 378 / 164 78.7 / 14.9 / 6.5	
Category of Mounting Hardware		XH (X-Heavy)	
Weight	kg lb	41.0 / 46.0 (clamps incl.) 90.4 / 101.4 (clamps incl.)	
Packing Size	mm inches	2200 / 383 / 255 86.6 / 15.1 / 10.0	
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

The "Category of Mounting Hardware" will change to "XM"

16-Port Antenna

R1	R2	Y1	Y2	Y3	Y4	Y5	Y6
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Frequency Range

698-960	698-960	1695-2690	1427-2690	1695-2690	1695-2690	1695-2690	1427-2690
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HPBW

65°	65°	65°	65°	65°	65°	65°	65°
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16-Port Antenna 2LB/6HB 1.95m 65° | 2x698-960 15.6dBi | 2x1427-2690 16.4dBi |
2x1695-2690 15.9dBi | 2x1695-2690 16.0dBi



FlexRET

Type No.		800442008			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.3	15.1	15.3	15.6
Gain over all Tilts	dBi	14.3 ± 0.6	15.0 ± 0.5	15.3 ± 0.4	15.6 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	68 ± 6	64 ± 5	61 ± 5	55 ± 5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 21	> 22	> 22
Vertical Pattern:					
Elevation Beamwidth	°	11.9 ± 0.9	11.2 ± 0.6	11.0 ± 0.5	10.4 ± 0.6
Electrical Downtilt continuously adjustable	°	2.5 – 11.5			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 18	> 18	> 18
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, Y1, Y2, Y3, Y4, Y5, Y6)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.3	15.1	15.3	15.6
Gain over all Tilts	dBi	14.3 ± 0.6	15.0 ± 0.5	15.3 ± 0.4	15.6 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	68 ± 6	63 ± 5	60 ± 5	55 ± 5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 21	> 22	> 22
Vertical Pattern:					
Elevation Beamwidth	°	11.9 ± 0.9	11.2 ± 0.6	11.0 ± 0.5	10.5 ± 0.6
Electrical Downtilt continuously adjustable	°	2.5 – 11.5			
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 18	> 18	> 17
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, Y1, Y2, Y3, Y4, Y5, Y6)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, lower highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.3	15.6	15.9	15.6	15.8
Gain over all Tilts	dBi	15.3 ± 0.5	15.5 ± 0.6	15.7 ± 0.6	15.5 ± 0.5	15.7 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4	64 ± 6	62 ± 6	58 ± 6	57 ± 6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	11.4 ± 0.8	10.5 ± 0.6	10.1 ± 1.0	9.0 ± 0.6	8.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 18	> 18
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y1 // R1, R2, Y2, Y3, Y4, Y5, Y6)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, upper highband		Y2, connector 7-8					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	14.6	15.7	16.1	16.4	15.9	15.8
Gain over all Tilts	dBi	14.6 ± 0.6	15.6 ± 0.5	15.9 ± 0.6	16.2 ± 0.7	15.8 ± 0.6	15.6 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	70 ± 4	66 ± 6	64 ± 5	62. ± 6	64 ± 5	60 ± 5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 25	> 25	> 25	> 25
Vertical Pattern:							
Elevation Beamwidth	°	11.9 ± 0.6	10.1 ± 0.6	9.4 ± 0.5	8.9 ± 0.7	8.1 ± 0.4	7.5 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12					
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 15	> 17	> 18	> 18	> 18	> 16
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, Y1, Y3, Y4, Y5, Y6)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Center, lower highband		Y3, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.2	15.6	15.8	16.0	15.8
Gain over all Tilts	dBi	15.2 ± 0.5	15.6 ± 0.4	15.8 ± 0.4	16.0 ± 0.4	15.7 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	55 ± 5	59 ± 4	60 ± 3	61 ± 6	66 ± 4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	12.9 ± 1.1	11.9 ± 0.6	11.3 ± 0.9	9.9 ± 0.4	9.3 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 17	> 18	> 18	> 18	> 17
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y3 // R1, R2, Y1, Y2, Y4, Y5, Y6)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Center, upper highband		Y4, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.5	15.8	16.0	16.0	15.6
Gain over all Tilts	dBi	15.5 ± 0.5	15.8 ± 0.4	16.0 ± 0.4	15.9 ± 0.4	15.6 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	55 ± 5	55 ± 5	56 ± 4	60 ± 8	66 ± 3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	12.2 ± 0.7	11.4 ± 0.5	10.9 ± 0.7	9.9 ± 0.5	9.2 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 17	> 18	> 18	> 18	> 18
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y4 // R1, R2, Y1, Y2, Y3, Y5, Y6)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lower highband		Y5, connector 13-14				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.3	15.6	15.9	15.6	15.8
Gain over all Tilts	dBi	15.3 ± 0.5	15.5 ± 0.6	15.7 ± 0.6	15.5 ± 0.5	15.7 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4	64 ± 5	61 ± 5	62 ± 4	55 ± 5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 25	> 25	> 25
Vertical Pattern:						
Elevation Beamwidth	°	11.1 ± 0.8	10.3 ± 0.5	9.8 ± 0.8	8.7 ± 0.5	8.0 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12				
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 16	> 17	> 18	> 18
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y5 // R1, R2, Y1, Y2, Y3, Y4, Y6)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, upper highband		Y6, connector 15-16					
		1427-2690					
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2170	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	14.6	15.7	16.1	16.4	15.9	15.8
Gain over all Tilts	dBi	14.6 ± 0.5	15.6 ± 0.5	15.9 ± 0.6	16.2 ± 0.7	15.8 ± 0.6	15.6 ± 0.8
Horizontal Pattern:							
Azimuth Beamwidth	°	70 ± 4	66 ± 6	64 ± 5	62. ± 6	64 ± 5	60 ± 5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 25	> 25	> 25	> 25
Vertical Pattern:							
Elevation Beamwidth	°	11.9 ± 0.6	11.1 ± 0.6	9.4 ± 0.5	8.9 ± 0.7	8.1 ± 0.4	7.5 ± 0.5
Electrical Downtilt continuously adjustable	°	2 – 12					
Tilt Accuracy	°	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
First Upper Side Lobe Suppression	dB	> 15	> 17	> 18	> 18	> 17	> 16
Cross Polar Isolation	dB	> 25					
Port to Port Isolation	dB	> 25 (Y6 // R1, R2, Y1, Y2, Y3, Y4, Y5)					
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)					

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input		16 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 690 155 Maximal: 925 208
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1944 / 448 / 165 76.5 / 17.6 / 6.5
Category of Mounting Hardware		XM (X-Medium)
Weight	kg lb	45 / 49.5 (clamps incl.) 99.2 / 109.1 (clamps incl.)
Packing Size	mm inches	2095 / 510 / 293 82.5 / 20.1 / 11.5
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter

16-Port Antenna

R1	R2	B1	Y1	Y2	Y3	B2	Y4
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Frequency Range

698-960	698-960	1427-2180	2490-2690	1695-2690	1695-2690	1427-2180	2490-2690
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HPBW

65°	65°	65°	65°	65°	65°	65°	65°
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16-Port Antenna 2LB/6HB 1.5m 65° | 2x698-960 14.7dBi | 2x1427-2180 16.8dBi |
2x2490-2690 17dBi | 2x1695-2690 17.3dBi



FlexRET



Type No.		800482021			
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.8	14.2	14.4	14.7
Gain over all Tilts	dBi	13.8 ± 0.3	14.1 ± 0.3	14.4 ± 0.4	14.7 ± 0.3
Horizontal Pattern:					
Azimuth Beamwidth	°	58 ± 4.8	55 ± 3.4	54 ± 5.1	50 ± 5.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 20	> 20	> 21
Vertical Pattern:					
Elevation Beamwidth	°	16.1 ± 1.0	15.1 ± 0.9	14.6 ± 0.7	13.5 ± 0.8
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.9	< 0.6	< 0.5	< 0.9
First Upper Side Lobe Suppression	dB	> 14	> 16	> 16	> 15
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, B1, B2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	13.8	14.2	14.4	14.8
Gain over all Tilts	dBi	13.8 ± 0.3	14.2 ± 0.4	14.4 ± 0.3	14.7 ± 0.4
Horizontal Pattern:					
Azimuth Beamwidth	°	60 ± 5.7	56 ± 3.6	54 ± 4.9	50 ± 6.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 21	> 20	> 20
Vertical Pattern:					
Elevation Beamwidth	°	16.3 ± 0.9	15.1 ± 0.8	14.8 ± 0.7	13.8 ± 1.1
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.8	< 0.6	< 0.5	< 0.8
First Upper Side Lobe Suppression	dB	> 15	> 15	> 15	> 16
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, B1, B2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	300 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800482021

Left side, highbands		B1, connector 5-6				Y1, connector 9-10
		1427-2180				2490-2690
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2490 – 2690
Gain at mid Tilt	dBi	15.5	16.6	16.8	16.9	17.1
Gain over all Tilts	dBi	15.4 ± 0.4	16.5 ± 0.6	16.6 ± 0.6	16.7 ± 0.7	16.9 ± 0.9
Horizontal Pattern:						
Azimuth Beamwidth	°	75 ± 4.2	70 ± 4.2	68 ± 4.5	66 ± 6.5	56 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 28	> 27	> 28	> 28
Vertical Pattern:						
Elevation Beamwidth	°	9.3 ± 0.5	7.8 ± 0.6	7.2 ± 0.4	6.9 ± 0.4	5.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				2.0 – 12.0
Tilt Accuracy	°	< 0.4	< 0.4	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 18	> 17	> 17	> 17
Cross Polar Isolation	dB	> 25				> 25
Port to Port Isolation	dB	> 25 (B1 // R1, R2, B2, Y1, Y2, Y3, Y4)				> 25 (Y1 // R1, R2, B1, B2, Y2, Y3, Y4)
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)				120 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, center highband		Y2, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.9	16.9	17.0	17.3	17.3
Gain over all Tilts	dBi	16.8 ± 0.6	16.8 ± 0.7	16.9 ± 0.8	17.2 ± 0.8	17.3 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	61 ± 9.8	60 ± 6.7	64 ± 6.0	64 ± 6.2	60 ± 5.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 26	> 26	> 30	> 30
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.5	6.8 ± 0.4	6.5 ± 0.4	5.9 ± 0.3	5.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.5	< 0.4	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 16	> 17	> 19	> 19	> 20
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, B1, B2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

800482021

Right side, center highband		Y3, connector 13-14				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	17.0	17.1	17.1	17.4	17.3
Gain over all Tilts	dBi	16.9 ± 0.7	17.0 ± 0.6	17.0 ± 0.7	17.3 ± 0.6	17.3 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	60 ± 8.1	59 ± 6.7	63 ± 8.7	63 ± 5.0	62 ± 6.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 27	> 27	> 29	> 29
Vertical Pattern:						
Elevation Beamwidth	°	7.3 ± 0.5	6.8 ± 0.4	6.5 ± 0.4	5.9 ± 0.2	5.6 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 14	> 15	> 19	> 21	> 21
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y3 // R1, R2, B1, B2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highbands		B2 connector 7-8				Y4 connector 15-16
		1427-2180				2490-2690
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2490 – 2690
Gain at mid Tilt	dBi	15.5	16.5	16.7	16.8	17.0
Gain over all Tilts	dBi	15.4 ± 0.5	16.4 ± 0.6	16.6 ± 0.6	16.7 ± 0.7	16.8 ± 0.8
Horizontal Pattern:						
Azimuth Beamwidth	°	76 ± 5.5	72 ± 4.5	70 ± 4.5	67 ± 7.0	57 ± 4.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 27	> 27	> 27	> 28
Vertical Pattern:						
Elevation Beamwidth	°	9.1 ± 0.7	7.7 ± 0.5	7.2 ± 0.4	6.9 ± 0.4	5.7 ± 0.3
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				2.0 – 12.0
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 14	> 17	> 16	> 17	> 17
Cross Polar Isolation	dB	> 25				> 25
Port to Port Isolation	dB	> 25 (B2 // R1, R2, B1, Y1, Y2, Y3, Y4)				> 25 (Y4 // R1, R2, B1, B2, Y1, Y2, Y3)
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)				120 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

800482021

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input		16 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 670 151 Maximal: 760 171
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1499 / 488 / 164 59.0 / 19.2 / 6.5
Category of Mounting Hardware		XM (X-Medium)
Weight	kg lb	41.3 / 45.8 (clamps incl.) 91.0 / 100.9 (clamps incl.)
Packing Size	mm inches	1650 / 550 / 293 65.0 / 21.7 / 11.5
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter

16-Port Antenna

R1	R2	B1	Y1	Y2	B2	Y3	Y4
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Frequency Range

698-960	698-960	1427-2180	2490-2690	1695-2690	1427-2180	2490-2690	1695-2690
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HPBW

65°	65°	65°	65°	65°	65°	65°	65°
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■ Ultra compact width

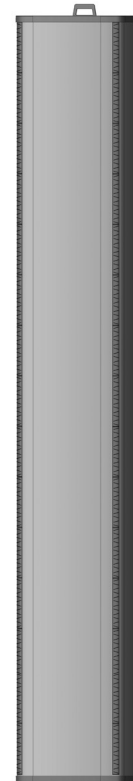


FlexRET

16-Port Antenna 2LB/6HB 2.6m 65° | 2x698-960 16.5dBi | 2x1695-2690 16.8dBi |
2x1427-2180 16.5dBi | 2x2490-2690 16.6dBi

Type No.	800372995				
Left side, lowband		R1, connector 1-2			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.9	15.7	16.0	16.5
Gain over all Tilts	dBi	14.9 ± 0.7	15.7 ± 0.6	16.0 ± 0.5	16.5 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	63 ± 4.5	60 ± 2.9	58 ± 3.7	55 ± 4.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 19	> 22	> 24	> 24
Vertical Pattern:					
Elevation Beamwidth	°	9.1 ± 0.7	8.6 ± 0.4	8.4 ± 0.5	7.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 10.0			
Tilt Accuracy	°	< 0.3	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 17	> 17	> 19
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R1 // R2, B1, B2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.



Right side, lowband		R2, connector 3-4			
		698-960			
Frequency Range	MHz	698 – 806	791 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.9	15.7	16.0	16.5
Gain over all Tilts	dBi	14.9 ± 0.7	15.7 ± 0.6	16.0 ± 0.6	16.5 ± 0.5
Horizontal Pattern:					
Azimuth Beamwidth	°	64 ± 4.8	61 ± 3.6	59 ± 4.5	54 ± 4.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 18	> 22	> 24	> 25
Vertical Pattern:					
Elevation Beamwidth	°	9.0 ± 0.7	8.6 ± 0.4	8.3 ± 0.5	7.9 ± 0.5
Electrical Downtilt continuously adjustable	°	2.5 – 10.0			
Tilt Accuracy	°	< 0.3	< 0.4	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 15	> 18	> 18	> 20
Cross Polar Isolation	dB	> 25			
Port to Port Isolation	dB	> 25 (R2 // R1, B1, B2, Y1, Y2, Y3, Y4)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800372995

Left side, lower highbands		B1, connector 5–6				Y1, connector 7–8
		1427–2180				2490–2690
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2490 – 2690
Gain at mid Tilt	dBi	15.7	16.5	16.4	16.6	16.7
Gain over all Tilts	dBi	15.7 ± 0.4	16.4 ± 0.5	16.3 ± 0.5	16.5 ± 0.6	16.6 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	60 ± 5.7	65 ± 4.4	66 ± 3.7	65 ± 3.9	61 ± 4.0
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 26	> 25	> 26	> 27
Vertical Pattern:						
Elevation Beamwidth	°	9.5 ± 0.5	7.8 ± 0.5	7.2 ± 0.3	6.9 ± 0.5	5.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				2.0 – 12.0
Tilt Accuracy	°	< 0.4	< 0.3	< 0.4	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 15	> 16
Cross Polar Isolation	dB	> 25				> 25
Port to Port Isolation	dB	> 25 (B1 // R1, R2, B2, Y1, Y2, Y3, Y4)				> 25 (Y1 // R1, R2, B1, B2, Y2, Y3, Y4)
Max. Effective Power for Group of Ports 7+11 // 8+12	W	150 (at 50 °C ambient temperature)				120 (at 50 °C ambient temperature)
Max. Effective Power Ports B1 + Y1	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Left side, upper highband		Y2, connector 9–10				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.4	16.8	16.9	16.6	16.7
Gain over all Tilts	dBi	16.4 ± 0.5	16.7 ± 0.6	16.8 ± 0.6	16.6 ± 0.6	16.6 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 4.5	64 ± 3.6	62 ± 4.4	64 ± 5.7	60 ± 5.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 28	> 27	> 27
Vertical Pattern:						
Elevation Beamwidth	°	7.8 ± 0.6	7.2 ± 0.3	6.9 ± 0.5	6.3 ± 0.4	5.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2
First Upper Side Lobe Suppression	dB	> 16	> 15	> 16	> 19	> 20
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y2 // R1, R2, B1, B2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

80010372995

Right side, lower highbands		B2 connector 11–12				Y3, connector 13–14
		1427–2180				2490–2690
Frequency Range	MHz	1427 – 1518	1695 – 1880	1850 – 1990	1920 – 2180	2490 – 2690
Gain at mid Tilt	dBi	15.7	16.5	16.3	16.5	16.7
Gain over all Tilts	dBi	15.7 ± 0.5	16.3 ± 0.5	16.2 ± 0.6	16.4 ± 0.7	16.6 ± 0.5
Horizontal Pattern:						
Azimuth Beamwidth	°	60 ± 6.1	65 ± 3.9	67 ± 3.9	65 ± 5.5	62 ± 4.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 25	> 23	> 24	> 26
Vertical Pattern:						
Elevation Beamwidth	°	9.6 ± 0.6	7.8 ± 0.5	7.3 ± 0.3	6.9 ± 0.6	5.7 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				2.0 – 12.0
Tilt Accuracy	°	< 0.4	< 0.3	< 0.3	< 0.3	< 0.3
First Upper Side Lobe Suppression	dB	> 19	> 17	> 16	> 14	> 15
Cross Polar Isolation	dB	> 25				> 25
Port to Port Isolation	dB	> 25 (B2 // R1, R2, B1, Y1, Y2, Y3, Y4)				> 25 (Y3 // R1, R2, B1, B2, Y1, Y2, Y4)
Max. Effective Power for Group of Ports 11+13 // 12+14	W	150 (at 50 °C ambient temperature)				120 (at 50 °C ambient temperature)
Max. Effective Power Ports B2 + Y3	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, upper highband		Y4, connector 15–16				
		1695–2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2490 – 2690
Gain at mid Tilt	dBi	16.4	16.8	16.9	16.6	16.6
Gain over all Tilts	dBi	16.3 ± 0.4	16.7 ± 0.7	16.9 ± 0.7	16.5 ± 0.6	16.5 ± 0.7
Horizontal Pattern:						
Azimuth Beamwidth	°	64 ± 5.1	64 ± 4.5	61 ± 4.2	64 ± 5.4	60 ± 5.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 25	> 27	> 27	> 26
Vertical Pattern:						
Elevation Beamwidth	°	7.7 ± 0.6	7.2 ± 0.4	6.9 ± 0.5	6.3 ± 0.4	5.7 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 12.0				
Tilt Accuracy	°	< 0.3	< 0.3	< 0.3	< 0.2	< 0.3
First Upper Side Lobe Suppression	dB	> 16	> 16	> 16	> 21	> 19
Cross Polar Isolation	dB	> 25				
Port to Port Isolation	dB	> 25 (Y4 // R1, R2, B1, B2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

207

800372995

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	-45, +45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.
* not applicable for L-band

Mechanical specifications		
Input		16 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 630 142 Maximal: 1110 250
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	2591 / 378 / 164 102.0 / 14.9 / 6.5
Category of Mounting Hardware		XM (X-Medium)
Weight	kg lb	48.8 / 53.3 (clamps incl.) 107.6 / 117.5 (clamps incl.)
Packing Size	mm inches	2745 / 440 / 293 108.1 / 17.3 / 11.5
Scope of Supply		Panel, FlexRET and clamps for 55-115 mm 2.2-4.5 inches diameter

16-Port Antenna

Frequency Range

HPBW

R1	R2	R3	B1	B2	Y1	Y2	Y3
698–862	880–960	698–960	1427–2170	1427–2170	2500–2690	1710–2690	2500–2690
65°	65°	65°	65°	65°	65°	65°	65°

16-Port Antenna 3LB/5HB 1.9m 65° | 698–862 15.1dBi | 880–960 15.4dBi | 698–960 15.5dBi | 2x1427–2170 17.1dBi | 2x2500–2690 17dBi | 1710–2690 18.8dBi



FlexRET



Type No.		800442001		
Left side, lowbands		R1, connector 1–2		R2, connector 3–4
		698–862		880–960
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	14.4	15.1	15.5
Gain over all Tilts	dBi	14.4 ± 0.5	15.1 ± 0.6	15.4 ± 0.4
Horizontal Pattern:				
Azimuth Beamwidth	°	66 ± 6.3	62 ± 4.4	62 ± 5.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 20	> 23
Vertical Pattern:				
Elevation Beamwidth	°	11.5 ± 0.9	10.8 ± 0.6	9.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		2.0 – 12.0
Tilt Accuracy	°	< 0.5	< 0.6	< 0.4
First Upper Side Lobe Suppression	dB	> 15	> 16	> 15
Cross Polar Isolation	dB	> 25		> 25
Port to Port Isolation	dB	> 25 (R1 // R2, R3) typically > 26, typically 30 (R1 // Y1, Y2, Y3, B1, B2)		> 25 (R2 // R1, R3) typically > 26, typically 30 (R2 // Y1, Y2, Y3, B1, B2)
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		200 (at 50 °C ambient temperature)
Max. Effective Power for Group of Ports 1+3 // 2+4	W	400 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, lowband		R3, connector 5–6		
		698–960		
Frequency Range	MHz	698 – 806	790 – 862	880 – 960
Gain at mid Tilt	dBi	14.5	15.3	15.6
Gain over all Tilts	dBi	14.5 ± 0.5	15.2 ± 0.6	15.5 ± 0.5
Horizontal Pattern:				
Azimuth Beamwidth	°	66 ± 4.5	63 ± 4.8	61 ± 4.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 20	> 20
Vertical Pattern:				
Elevation Beamwidth	°	11.4 ± 0.9	10.8 ± 0.6	9.9 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 12.0		
Tilt Accuracy	°	< 0.5	< 0.6	< 0.6
First Upper Side Lobe Suppression	dB	> 17	> 18	> 17
Cross Polar Isolation	dB	> 25		
Port to Port Isolation	dB	> 25 (R3 // R1, R2) typically > 26, typically 30 (R3 // Y1, Y2, Y3, B1, B2)		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

800442001

Left side, highbands		B1, connector 7-8			Y1, connector 11-12
		1427-2170			2500-2690
Frequency Range	MHz	1427 – 1518	1710 – 1880	1920 – 2170	2500 – 2690
Gain at mid Tilt	dBi	15.6	17.0	17.3	17.2
Gain over all Tilts	dBi	15.5 ± 0.6	16.9 ± 0.6	17.1 ± 0.7	17.0 ± 0.7
Horizontal Pattern:					
Azimuth Beamwidth	°	69 ± 3.5	63 ± 5.1	63 ± 4.8	57 ± 2.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 20	> 26	> 25	> 27
Vertical Pattern:					
Elevation Beamwidth	°	7.7 ± 0.4	6.4 ± 0.3	5.8 ± 0.4	4.8 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			2.5 – 12.0
Tilt Accuracy	°	< 0.5	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 17	> 18	> 15
Cross Polar Isolation	dB	> 26			> 26
Port to Port Isolation	dB	> 26, typically 30 (B1 // R1, R2, R3, B2, Y1, Y2, Y3)			> 26, typically 30 (Y1 // R1, R2, R3, B1, B2, Y2, Y3)
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)			150 (at 50 °C ambient temperature)
Max. Effective Power for Group of Ports 7+11 // 8+12	W	180 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

Right side, highbands		B2, connector 9-10			Y3, connector 15-16
		1427-2170			2500-2690
Frequency Range	MHz	1427 – 1518	1710 – 1880	1920 – 2170	2500 – 2690
Gain at mid Tilt	dBi	15.6	16.9	17.2	17.2
Gain over all Tilts	dBi	15.5 ± 0.7	16.8 ± 0.6	17.1 ± 0.7	17 ± 0.7
Horizontal Pattern:					
Azimuth Beamwidth	°	68 ± 4.7	63 ± 5.7	63 ± 5.5	56 ± 3.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 26	> 25	> 27
Vertical Pattern:					
Elevation Beamwidth	°	7.8 ± 0.6	6.4 ± 0.3	5.8 ± 0.4	4.9 ± 0.4
Electrical Downtilt continuously adjustable	°	2.5 – 12.0			2.5 – 12.0
Tilt Accuracy	°	< 0.5	< 0.4	< 0.3	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 16	> 17	> 16
Cross Polar Isolation	dB	> 26			> 26
Port to Port Isolation	dB	> 26, typically 30 (B2 // R1, R2, R3, B1, Y1, Y2, Y3)			> 26, typically 30 (Y3 // R1, R2, R3, B1, B2, Y1, Y2)
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)			150 (at 50 °C ambient temperature)
Max. Effective Power for Group of Ports 9+15 // 10+16	W	180 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 10.0) requirements.

800442001

Center, highband		Y2, connector 13-14		
		1710-2690		
Frequency Range	MHz	1710 – 1880	1920 – 2170	2500 – 2690
Gain at mid Tilt	dBi	17.6	18.3	19
Gain over all Tilts	dBi	17.5 ± 0.5	18.2 ± 0.8	18.8 ± 0.8
Horizontal Pattern:				
Azimuth Beamwidth	°	58 ± 6.1	58 ± 3.2	61 ± 2.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 27	> 30
Vertical Pattern:				
Elevation Beamwidth	°	6.9 ± 0.4	6.4 ± 0.5	5.1 ± 0.3
Electrical Downtilt continuously adjustable	°	2.5 – 12.0		
Tilt Accuracy	°	< 0.6	< 0.6	< 0.5
First Upper Side Lobe Suppression	dB	> 15	> 16	> 17
Cross Polar Isolation	dB	> 26		
Port to Port Isolation	dB	> 26 (Y2 // R1, R2, R3, B1, B2, Y1, Y3)		
Max. Effective Power per Port	W	150 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

Electrical specifications, all ports		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 25
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)*
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

* not applicable for L-band

Mechanical specifications			
Input		16 x 4.3-10 female	
Connector Position		bottom	
Adjustment Mechanism		FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal:	690 155
		Maximal:	925 208
Max. Wind Velocity	km/h mph	241 150	
Height / Width / Depth	mm inches	1944 / 448 / 165 76.5 / 17.6 / 6.5	
Category of Mounting Hardware		XM (X-Medium)	
Weight	kg lb	47 / 51.5 (clamps incl.) 108.0 / 116.9 (clamps incl.)	
Packing Size	mm inches	2095 / 510 / 293 82.5 / 20.1 / 11.5	
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm 2.2–4.5 inches diameter	

Summary – Small Cell Antennas Special Design Antennas

KATHREIN

Type					Type No.	Height [mm]	Connector female, type and position	Page
Omnidirectional								
1-Port Omni	1695–2700	360°	2dBi	0°T	80010431	115	N, bottom or top	251
2-Port Omni Slimpole	1710–2690	360°	5dBi	0°T	80020126	691	4.3-10, bottom	215
14-Port Omni236	698–894	360°	3.3dBi	0°T	84010557	626	4.3-10, bottom	216 + 217
	698–894	360°	3.3dBi	0°T	84010558			
	1695–2690	360°	6.7dBi	0°T				
	1695–2690	360°	6.7dBi	0°T				
	3550–3700	360°	5.8dBi	10°T				
	3550–3700	360°	5.8dBi	10°T				
	5150–5925	360°	4dBi	12°T				
20-Port Omni	698–894	360°	3.5dBi	0°T	84010603	626	4.3-10, bottom	218 – 220
	698–894	360°	3.5dBi	0°T	84010604			
	1695–2690	360°	9dBi	4°T				
	1695–2690	360°	9dBi	6°T				
	1695–2690	360°	9dBi	4°T				
	1695–2690	360°	9dBi	6°T				
	3400–4200	360°	6.8dBi	9°T				
	3400–4200	360°	6.8dBi	9°T				
	5150–5925	360°	5dBi	2°T				
	5150–5925	360°	5dBi	2°T				
24-Port Omni with GPS	1695–2690	360°	9dBi	4°T	84010601G 84010602G	626	4.3-10, bottom	221 – 224
	1695–2690	360°	9dBi	6°T				
	1695–2690	360°	9dBi	4°T				
	1695–2690	360°	9dBi	4°T				
	1695–2690	360°	9dBi	6°T				
	1695–2690	360°	9dBi	4°T				
	3400–4200	360°	7dBi	8°T				
	3400–4200	360°	7dBi	8°T				
	3400–4200	360°	7dBi	8°T				
	3400–4200	360°	7dBi	8°T				
	5150–5925	360°	5dBi	0°T				
	5150–5925	360°	5dBi	0°T				

New or changed product

Summary – Small Cell Antennas Special Design Antennas

KATHREIN

Type					Type No.	Height [mm]	Connector female, type and position	Page
1-Sector								
1-Port LogPer	690–2690	67°	11dBi	0°T	742192v02	300	7-16, bottom	244
1-Port Antenna	1710–2180	12°	18.5dBi	0°T	80010368	299	7-16, side	245
1-Port Yagi	790–960	C 38°	14dBi	0°T	80010828v01	170	7-16, rearside	247
	1710–2170	28°	15.5dBi	0°T				
2-Port Inside Connect Antenna	1695–2690	75°	8dBi	0°T	80020100	121.5	4.3-10, back	225
Accessories Parts for 80020100					85010205			226
2-Port Antenna	1710–2690	65°	9.5dBi	0°T	80020711	155	4.3-10, bottom or top	227
2-Port Antenna	790–960	C 65°	8dBi	0°T	80010753	334	7-16, bottom	228
	1710–2690	65°	9dBi	0°T				
10-Port Antenna	1695–2690	65°	14dBi	3°–15°T	84010564	610	4.3-10, bottom	229 + 230
	1695–2690	65°	14dBi	3°–15°T				
	3550–3720	65°	11dBi	7°T				
	3550–3720	65°	11dBi	7°T				
	5150–5925	65°	5dBi	12°T				
12-Port Antenna	1695–2200	14°	18.0dBi	5°	80010725	378	4.3-10, bottom	231 – 234
	1695–2200	12°	19.4dBi	5°				
	1695–2200	11°	19.3dBi	5°				
	1695–2200	11°	19.3dBi	5°				
	1695–2200	12°	19.4dBi	5°				
	1695–2200	14°	18.0dBi	5°				
12-Port Antenna	2300–2690	10°	20.5dBi	7°	80010726	378	4.3-10, bottom	235 – 238
	2300–2690	9°	21dBi	7°				
	2300–2690	8°	21dBi	7°				
	2300–2690	8°	21.5dBi	7°				
	2300–2690	9°	21dBi	7°				
	2300–2690	10°	21dBi	7°				
2-Sector								
1-Port BiDir	694–960/1710–2690	65°	5dBi	0°T	80020448	428	4.3-10, bottom	246
4-Port MicroCell	1695–2690	85°	7.5dBi	0°T	80010843	526	4.3-10, bottom and top	239
	1695–2690	85°	7.5dBi	0°T				
Tri-Sector								
6-Port Tri-Sector Slimpole	1710–2690	80°	10dBi	0°T	80020125	691	4.3-10, bottom	240
Street Connect								
2-Port Street Connect	1695–2690	360°	6dBi	0°T	80010235	∅ 375	4.3-10, bottom	241

New or changed product

Abbreviations:
C: Integrated Combiner

Omni Slimpole Antenna Dual Polarization

1710-2690

X

KATHREIN

2-Port Omni Slimpole HB 0.7m 360° | 1710-2690 5dBi

Type No.		80020126			
		1710-2690			
Frequency range	MHz	1710 – 1990	1920 – 2170	2170 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	2 x 5	2 x 5	2 x 5	2 x 5
Horizontal Pattern:					
Half-power beam width		Omni	Omni	Omni	Omni
Deviation from circularity	dB	±1	±1	±1.5	±1.5
Vertical Pattern:					
Half-power beam width	°	42	40	36	33
Electrical tilt	°	0, fixed			
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 30			
Intermodulation IM3	dBc	< –153 (2 x 43 dBm carrier)			
Max. power per input	W	100 (at 50 °C ambient temperature)			



Small Cell

Mechanical specifications		
Input		2 x 4.3-10 female
Connector position		Bottom
Weight	kg	2.3
	lb	5.1
Wind load (at 150 km/h)	N	50
	lbf	11.2
Max. wind velocity	km/h	200
	mph	124
Mechanical interface		Flange connection 8 x M6 at a graduated diameter of 136 mm 5.4 inches. Evenness of the opposite surface: 0.5 mm 0.02 inches
Packing size	mm	742 x 220 x 219
	inches	29.2 x 8.7 x 8.6
Height / diameter	mm	691 / 100
	inches	27.2 / 3.9

14-Port Omni Antenna

R1-R2

Y1-Y2

P1-P2

O1

Frequency Range

698-894

1695-2690

3550-3700

5150-5925

HPBW

360°

360°

360°

360°

14-Port Omni Antenna 2LB/5HB 0.6m 360° | 2x698-894 3.3dBi | 2x1695-2690 6.7dBi | 2x3550-3700 5.8dBi | 5150-5925 4dBi

Type No.		84010557		84010558	
Radome colour		Brown		Grey	
Lowbands		R1, connector 1-2		R2, connector 3-4	
		698-894		698-894	
Frequency range	MHz	698 – 806	824 – 894	698 – 806	824 – 894
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	2 x 3.1 ± 0.4	2 x 3.5 ± 0.4	2 x 3.0 ± 0.5	2 x 3.6 ± 0.5
Horizontal Pattern:					
Half-power beam width	°	360 (with 1-5 dB null, typical)		360 (with 1-5 dB null, typical)	
Vertical Pattern:					
Half-power beam width	°	66 ± 6	57 ± 2	62 ± 4	60 ± 3
Electrical tilt	°	0, fixed		0, fixed	
Impedance		Ω	50	50	
VSWR		< 1.5		1.5	
Isolation	Intrasystem Intersystem	dB	> 23 > 28 (R1 // Y1, Y2, P1, P2, O1) > 28 (R2 // Y1, Y2, P1, P2, O1) > 20 (R2 // R1)	> 23 > 28 (R1 // Y1, Y2, P1, P2, O1) > 28 (R2 // Y1, Y2, P1, P2, O1) > 20 (R2 // R1)	
Intermodulation		dBc	< -153 (2 x 43 dBm carrier)		
Max. power per input		W	125 (at 50 °C ambient temperature)		

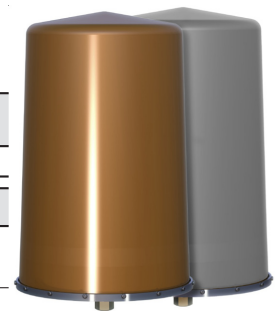
Values based on NGMN-P-BASTA (version 9.6) requirements.

Highband		Y1, connector 5-6			
		1695-2690			
Frequency range	MHz	1695 – 1850	1850 – 2220	2300 – 2360	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	5.8 ± 0.2	6.8 ± 0.2	6.8 ± 0.2	7.2 ± 0.2
Horizontal Pattern:					
Half-power beam width	°	360 (with –10 dB null, typical)	360 (with –10 dB null, typical)	360 (with –10 dB null, typical)	360 (with –10 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	35 ± 2	26 ± 2	26 ± 1	25 ± 1
Electrical tilt	°	0, fixed			
Impedance	Ω	50			
VSWR		< 1.5			
Isolation	Intrasystem Intersystem	> 23 > 28	> 23 > 28	> 23 > 28	> 23 > 28
Intermodulation	dBc	< -153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Highband		Y2, connector 7-8			
		1695-2690			
Frequency range	MHz	1695 – 1850	1850 – 2220	2300 – 2360	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	5.8 ± 0.2	6.3 ± 0.5	7.2 ± 0.3	7.0 ± 0.2
Horizontal Pattern:					
Half-power beam width	°	360 (with –10 dB null, typical)	360 (with –10 dB null, typical)	360 (with –10 dB null, typical)	360 (with –10 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	34 ± 2	31 ± 2	25 ± 1	27 ±1
Electrical tilt	°	0, fixed			
Impedance	Ω	50			
VSWR		< 1.5			
Isolation	Intrasystem Intersystem	> 23 > 28	> 23 > 28	> 23 > 28	> 23 > 28
Intermodulation	dBc	< -153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.



84010557, 84010558

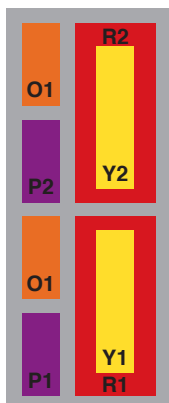
Highband		P1, connector 9–10	P2, connector 11–12
		3550–3700	3550–3700
Frequency range	MHz	3550 – 3700	3550 – 3700
Polarization	°	+45, –45	+45, –45
Gain	dBi	5.8 ± 0.1	5.8 ± 0.5
Horizontal Pattern:			
Half-power beam width	°	360 (with –15 dB null, typical)	360 (with –15 dB null, typical)
Vertical Pattern:			
Half-power beam width	°	27.5 ± 2.5	28 ± 0.5
Electrical tilt	°	9 ± 1.5	11 ± 2
Impedance	Ω	50	50
VSWR		< 1.5	< 1.5
Isolation	Intrasystem Intersystem	dB	> 22 > 28
Intermodulation		dBc	N/A
Max. power per input	W	100 (at 50 °C ambient temperature)	100 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Highband		O1, connector 13–14				
		5150–5925				
Frequency range	MHz	5150 – 5350	5350 – 5470	5470 – 5725	5725 – 5850	5850 – 5925
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	4.2 ± 0.4	3.9 ± 0.7	3.9 ± 0.8	4.0 ± 0.7	3.9 ± 0.1
Horizontal Pattern:						
Half-power beam width	°	360 (with –15 dB null, typical)				
Vertical Pattern:						
Half-power beam width	°	32 ± 1	28 ± 1	27 ± 1	27 ± 9	32 ± 9
Electrical tilt	°	12 ± 5				
Impedance	Ω	50				
VSWR		< 1.5				
Isolation	Intrasystem Intersystem	dB				
		> 27 > 28				
Intermodulation		dBc				
		N/A				
Max. power per input	W	2 (at 50 °C ambient temperature)				
Max. input power per radio*	W	1	–	–	–	–

Values based on NGMN-P-BASTA (version 9.6) requirements.

* To comply with EIRP restrictions for FCC Title 47 part 15 for fixed outdoor point to multi-point applications



Mechanical specifications		
Input		14 x 4.3-10 connector female
Connector position		Bottom
Weight	kg	18
	lb	40
Wind load (at Rated Wind Speed: 150 km/h)	N	138
	lbf	32
Max. wind velocity	km/h	242
	mph	150
Mechanical interface		Hex nut (requires a 1½" wrench) Torque setting: 122 Nm 90 lbf·ft
Packing size	mm	755 x 480 x 480
	inches	29.7 / 18.9 / 18.9
Height / diameter	mm	626 / 407
	inches	24.6 / 16

20-Port Omni Antenna

R1, R2

Y1, Y3

Y2, Y4

P1, P2

O1, O2

Frequency Range

698–894

1695–2690

1695–2690

3400–4200

5150–5925

HPBW

360°

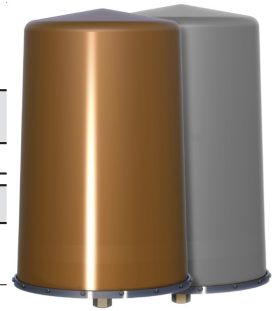
360°

360°

360°

360°

20-Port Omni Antenna 2LB/8HB 0.6m 360° | 2x698–894 3.5dBi |
4x1695–2690 9dBi | 2x3400–4200 6.8dBi |
2x5150–5925 5dBi



Type No.			84010603		84010604	
Radome colour			Brown		Grey	
Lowbands			R1, connector 1–2		R2, connector 3–4	
			698–894		698–894	
Frequency range	MHz		698–806	824–894	698–806	824–894
Polarization	°		+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi		2 x 3.5	2 x 3.7	2 x 3.8	2 x 3.8
Horizontal Pattern:						
Half-power beam width	°		360 (with 10 dB nulls, typical)		360 (with 10 dB nulls, typical)	
Vertical Pattern:						
Half-power beam width	°		68	63	68	60
Electrical tilt	°		0, fixed		0, fixed	
Impedance			Ω		50	
VSWR			< 1.5		1.5	
Isolation	Intrasystem Intersystem	dB	> 23, typ. 27 > 28 (R1 // Y1, Y2, Y3, Y4) > 20 (R2 // R1)		> 23, typ. 27 > 28 (R1 // Y1, Y2, Y3, Y4) > 20 (R2 // R1)	
Intermodulation		dBc	< –153 (2 x 43 dBm carrier)			
Max. power per input		W	125 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Highband		Y1, connector 5–6; Y3, connector 7–8			
		1695–2690			
Frequency range	MHz	1695 – 1850	1850 – 2200	2300 – 2360	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	8.2	8.3	8.5	7.8
Horizontal Pattern:					
Half-power beam width	°	360 (with 25 dB null, typical)	360 (with 25 dB null, typical)	360 (with 25 dB null, typical)	360 (with 25 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	18	16	14	12
Electrical tilt	°	4, fixed			
Impedance	Ω	50			
VSWR		< 1.5			
Isolation	Intrasystem Intersystem	dB			
		> 25 > 22	> 25 > 26	> 25 > 26	> 25 > 26
Intermodulation	dBc	< –153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the Y1 & Y3 (four connectors) as one set of MIMO.

84010603, 84010604

Highband		Y2, connector 9–10; Y4, connector 11–12			
		1695–2690			
Frequency range	MHz	1695 – 1850	1850 – 2200	2300 – 2360	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	7.8	8.3	8.6	8.3
Horizontal Pattern:					
Half-power beam width	°	360 (with 20 dB null, typical)	360 (with 20 dB null, typical)	360 (with 20 dB null, typical)	360 (with 20 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	18	16	14	12
Electrical tilt	°	6, fixed			
Impedance	Ω	50			
VSWR		< 1.5			
Isolation	Intrasystem Intersystem	dB	> 25 > 27	> 25 > 28	> 25 > 28
Intermodulation	dBc	< –153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the Y2 & Y4 (four connectors) as one set of MIMO.

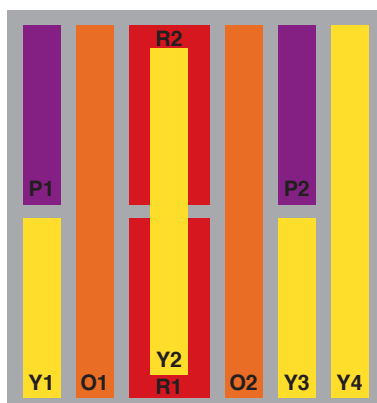
Highband		P1, connector 13–14; P2, connector 15–16	
		3400–4200	
Frequency range	MHz	3400 – 3700	3700 – 4200
Polarization	°	+45, –45	+45, –45
Gain	dBi	6.5	6.5
Horizontal Pattern:			
Half-power beam width	°	360 (with 25 dB null, typical)	360 (with 25 dB null, typical)
Vertical Pattern:			
Half-power beam width	°	28	23
Electrical tilt	°	10, fixed	8, fixed
Impedance	Ω	50	
VSWR		< 1.5	
Isolation	Intrasystem Intersystem	dB	> 23 > 25
Intermodulation	dBc	N/A	
Max. power per input	W	100 (at 50 °C ambient temperature)	100 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

84010603, 84010604

Highband		O1, connector 17-18; O2, connector 19-20				
		5150-5925				
Frequency range	MHz	5150 – 5350	5350 – 5470	5470 – 5725	5725 – 5850	5850 – 5925
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45
Gain (typical/maximum)	dBi	4.0 / 5.8	4.1 / 5.6	4.1 / 6.0	4.1 / 6.0	4.5 / 6.0
Horizontal Pattern:						
Half-power beam width	°	360 (with 25 dB null, typical)				
Vertical Pattern:						
Half-power beam width	°	20	20	19	16	16
Electrical tilt	°	2, fixed				
Impedance	Ω	50				
VSWR		< 1.5				
Isolation	Intrasystem Intersystem	dB				
		> 25 > 28				
Intermodulation	dBc	N/A				
Max. power per input	W	50 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.



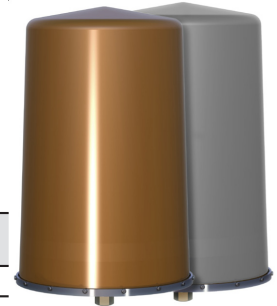
Mechanical specifications		
Input	20 x 4.3-10 connector female	
Connector position	Bottom	
Weight	kg lb	21.8 48.0
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	138 32
Max. wind velocity	km/h mph	242 150
Mechanical interface	Hex nut (requires a 1½" wrench) Torque setting: 122 Nm 90 lbf·ft	
Packing size	mm inches	755 x 480 x 480 29.7 / 18.9 / 18.9
Height / diameter	mm inches	626 / 407 24.6 / 16

24-Port Omni Antenna	Y1, Y4	Y2, Y5	Y3, Y6	P1, P3	P2, P4	O1, O2
Frequency Range	1695–2690	1695–2690	1695–2690	3400–4200	3400–4200	5150–5925
HPBW	360°	360°	360°	360°	360°	360°

with GPS

24-Port Omni Antenna 12HB 0.6m 360° | 6x1695–2690 9dBi | 4x3400–4200 7dBi | 2x5150–5925 5dBi with GPS

Type No.	84010601G	84010602G
Radome colour	Brown	Grey



Highband		Y1, connector 1–2; Y4, connector 7–8			
		1695–2690			
Frequency range	MHz	1695 – 1850	1850 – 2220	2300 – 2360	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	7.8 ± 0.3	8.0 ± 0.1	8.5 ± 0.1	8.9 ± 0.3
Horizontal Pattern:					
Half-power beam width	°	360 (with –9 dB null, typical)	360 (with –10 dB null, typical)	360 (with –11 dB null, typical)	360 (with –14 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	21 ± 1	18 ± 1	16 ± 1	14 ± 0
Electrical tilt	°	7 ± 1	6 ± 1	5 ± 1	3 ± 1
Impedance	Ω	50			
VSWR		< 1.5	< 1.5	< 1.5	< 1.5
Isolation	dB	> 25	> 25	> 25	> 25
Intrasytem Intersystem		> 20	> 20	> 26	> 25
Intermodulation	dBc	< –153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the Y1 & Y4 (four connectors) as one set of MIMO.

Please note: This antenna is not RED certified for the use in Europe.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 304

84010601G, 84010602G

Highband		Y2, connector 3-4; Y5, connector 9-10			
		1695-2690			
Frequency range	MHz	1695 – 1850	1850 – 2220	2300 – 2360	2490 – 2690
Polarization	°	+45, -45	+45, -45	+45, -45	+45, -45
Gain	dBi	7.8 ± 0.3	8.3 ± 0.2	8.9 ± 0.3	8.6 ± 0.2
Horizontal Pattern:					
Half-power beam width	°	360 (with -9 dB null, typical)	360 (with -10 dB null, typical)	360 (with -11 dB null, typical)	360 (with -14 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	20 ± 1	18 ± 1	16 ± 1	14 ± 1
Electrical tilt	°	8 ± 1	7 ± 1	6 ± 1	4 ± 1
Impedance	Ω	50			
VSWR		< 1.5	< 1.5	< 1.5	< 1.5
Isolation	Intrasystem Intersystem	dB	> 25 > 20	> 25 > 26	> 25 > 25
Intermodulation	dBc	< -153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the Y2 & Y5 (four connectors) as one set of MIMO.

Highband		Y3, connector 5-6; Y6, connector 11-12			
		1695-2690			
Frequency range	MHz	1695 – 1850	1850 – 2220	2300 – 2360	2490 – 2690
Polarization	°	+45, -45	+45, -45	+45, -45	+45, -45
Gain	dBi	7.9 ± 0.4	8.1 ± 0.1	8.6 ± 0.4	8.3 ± 0.1
Horizontal Pattern:					
Half-power beam width	°	360 (with -9 dB null, typical)	360 (with -10 dB null, typical)	360 (with -11 dB null, typical)	360 (with -14 dB null, typical)
Vertical Pattern:					
Half-power beam width	°	20 ± 1	18 ± 1	15 ± 1	14 ± 1
Electrical tilt	°	8 ± 1	5 ± 1	5 ± 1	3 ± 1
Impedance	Ω	50			
VSWR		< 1.5	< 1.5	< 1.5	< 1.7
Isolation	Intrasystem Intersystem	dB	> 25 > 20	> 25 > 26	> 25 > 25
Intermodulation	dBc	< -153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the Y3 & Y6 (four connectors) as one set of MIMO.

8401061G, 84010602G

Highband		P1, connector 13–14; P3, connector 17–18	
		3400–4200	
Frequency range	MHz	3400 – 3700	3700 – 4200
Polarization	°	+45, –45	+45, –45
Gain	dBi	6.9 ± 0.2	7.0 ± 0.1
Horizontal Pattern:			
Half-power beam width	°	360 (with –15 dB null, typical)	360 (with –15 dB null, typical)
Vertical Pattern:			
Half-power beam width	°	22.5 ± 0.5	22.5 ± 1.5
Electrical tilt	°	9 ± 2	7 ± 2
Impedance	Ω	50	50
VSWR		< 1.5	< 1.5
Isolation	Intrasystem Intersystem	> 23 > 28	> 23 > 28
Intermodulation	dBc	N/A	N/A
Max. power per input	W	100 (at 50 °C ambient temperature)	100 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the P1 & P3 (four connectors) as one set of MIMO.

Highband		P2, connector 15–16; P4, connector 19–20	
		3400–4200	
Frequency range	MHz	3400 – 3700	3700 – 4200
Polarization	°	+45, –45	+45, –45
Gain	dBi	7.0 ± 0.2	7.1 ± 0.3
Horizontal Pattern:			
Half-power beam width	°	360 (with –15 dB null, typical)	360 (with –15 dB null, typical)
Vertical Pattern:			
Half-power beam width	°	23 ± 1.5	23 ± 2
Electrical tilt	°	9 ± 2	7 ± 1
Impedance	Ω	50	50
VSWR		< 1.5	< 1.5
Isolation	Intrasystem Intersystem	> 23 > 28	> 23 > 28
Intermodulation	dBc	N/A	N/A
Max. power per input	W	100 (at 50 °C ambient temperature)	100 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

To have better performance in 4X4 MIMO, Kathrein recommends that one uses the P2 & P4 (four connectors) as one set of MIMO.

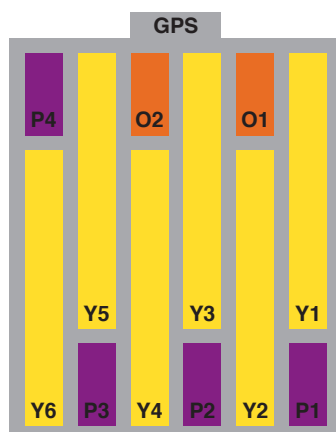
8401061G, 84010602G

Highband		01, connector 21–22; 02, connector 23–24				
		5150–5925				
Frequency range	MHz	5150 – 5350	5350 – 5470	5470 – 5725	5725 – 5850	5850 – 5925
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45
Gain (typical/maximum)	dBi	4.9 / 5.9	4.8 / 5.2	5.0 / 5.6	4.9 / 5.5	4.4 / 4.9
Horizontal Pattern:						
Half-power beam width	°	360 (with –15 dB null, typical)				
Vertical Pattern:						
Half-power beam width	°	21 ± 0.5	19 ± 1	19 ± 0.5	20 ± 0.5	19 ± 1
Electrical tilt	°	0 ± 1				
Impedance	Ω	50				
VSWR		< 1.5				
Isolation	Intrasystem Intersystem	dB				
		> 25 > 28				
Intermodulation	dBc	N/A				
Max. power per input	W	50 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Maximum power to comply with ERP restrictions for FCC Title 47 und Part 15

U-NII Band		U-NII 1	U-NII 2A	U-NII 2C	U-NII 3
Frequency	MHz	5150–5250	5250–5350	5470–5725	5725–5850
Max. input powr per radio		1	0.25	0.25	1



GPS specifications		
Frequency range	MHz	1575.42 ± 3
LNA gain	dB	29 typical
Pre-amp filtering	dB	–30 at ± 100 MHz
Polarization		Right-hand circular
H-plane beam width		Omni
E-plane half-power beam width	°	105
Connector		N female
DC power	Vdc	2.7–5.5, 6–11 mA Through N output connector
Temperature range	°C	–40 to + 85

Mechanical specifications		
Input		24 x 4.3-10 connector female
Connector position		Bottom
Weight	kg lb	22.2 49.0
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	138 32
Max. wind velocity	km/h mph	242 150
Mechanical interface		Hex nut (requires a 1½" wrench) Torque setting: 122 Nm 90 lbf·ft
Packing size	mm inches	755 x 480 x 480 29.7 / 18.9 / 18.9
Height / diameter	mm inches	626 / 407 24.6 / 16

2-Port Kathrein Inside Connect Frequency Range Dual Polarization HPBW hor. Gain

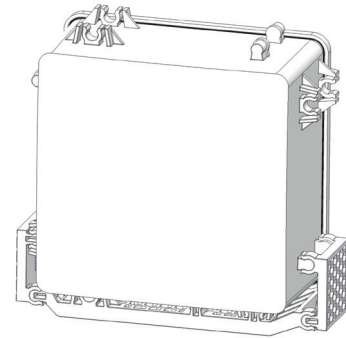
Y1
1695–2690
X
75°
8dBi

KATHREIN

2-Port Kathrein Inside Connect HB 75° | 1695–2690 8dBi

Type No.		80020100
Use Case		integration into enclosure (e. g. street furniture)
Highband		Y1
		1695–2690
Frequency range	MHz	1695 – 2690
Polarization	°	+45, –45
Gain	dBi	max. 8
Horizontal Pattern:		
Half-power beam width	°	75 (±5)
Front-to-back ratio, copolar (180°±30°)	dB	typ. > 25
Cross polar ratio 0°	dB	typ. > 24
Cross polar ratio over sector ±60°	dB	> 10
Vertical Pattern:		
Half-power beam width	°	75 (±5)
Impedance	Ω	50
VSWR		< 1.9
Isolation, between ports	dB	> 25
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)
Max. power per input	W	40 (at 50 °C ambient temperature)
Max. power per antenna	W	40 (at 50 °C ambient temperature)

Material: Reflector: Aluminum.
Radome: PC, colour: White.



Mechanical specifications		
Input		2 x 4.3-10 female
Connector position		back
Operating temperature range	°C	–20 ... 70
Fire load	kWh	1.4
Fire protection		UL 94-V2
Height / width / depth incl. modular mounting parts	mm inches	121.5 / 124 / 74 4.8 / 4.9 / 2.9
Category of mounting hardware		see accessory parts and mounting options
Weight	kg lb	0.4 0.9
Packing size	mm inches	155 x 155 x 80 6.1 x 6.1 x 3.1
Protection class		IP 56
Scope of supply		Antenna and mounting parts: 1x 0107670, 2x 0107672
Mounting interface		Screw M6, max. screw head height: 6 mm 0.24 inches, max. screw head diameter: 13.5 mm 0.53 inches

Further mounting parts (please order separately)

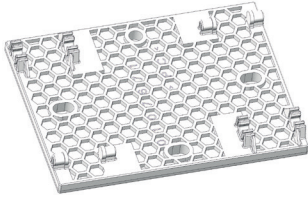
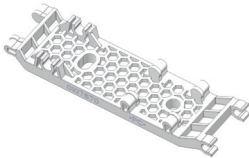
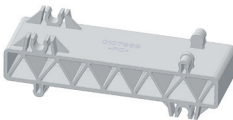
Type No.	Description
85010205	Package with mounting parts

Kathrein Inside Connect

Accessory parts 85010205 for 80020100

KATHREIN

Modular mounting parts package

Type No. of the package		85010205	
Modular mounting part	Part number	Number of pieces included	Function
	0107671	6 pcs.	Back to back installation, mounting and stabilization interface
	0107670	3 pcs.	Side by side / stacked installation, mounting and stabilization interface
	0107669	4 pcs.	High isolation spacer
	0107673	3 pcs.	Additional stabilization element

2-Port Antenna

Frequency Range **1710–2690**

HPBW **65°**

KATHREIN

2-Port Antenna HB 0.2m 65° | 1710–2690 9.5dBi

Type No.		80020711			
Highband		Y1			
		1710–2690			
Frequency range	MHz	1710 – 1990	1920 – 2200	2200 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	8.7	9.2	9.6	9.8
Horizontal Pattern:					
Half-power beam width	°	Approx. 67	Approx. 62	Approx. 55	Approx. 53
Front-to-back ratio, copolar (180°±30°)	dB	> 24	> 24	> 22	> 22
Cross polar ratio 0°	dB	Typically: 20	Typically: 20	Typically: 24	Typically: 24
Cross polar ratio sector corner ±60°	dB	> 10	> 9	> 8	> 8
Vertical Pattern:					
Half-power beam width	°	Approx. 66	Approx. 60	Approx. 55	Approx. 53
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	> 27			
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)			
Max. power per input	W	100 (at 50 °C ambient temperature)			
Max. power per antenna	W	150 (at 50 °C ambient temperature)			



Mechanical specifications			
Input		2 x 4.3-10 female	
Connector position		Bottom or top	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 35	8
		Maximal: 35	8
Max. wind velocity	km/h mph	200 124	
Height / width / depth	mm inches	155 / 155 / 69 6.1 / 6.1 / 2.7	
Category of mounting hardware		L (Light)	
Weight	kg lb	1.5 (tension bands incl.) 3.3 (tension bands incl.)	
Packing size	mm inches	257 x 172 x 92 10.1 x 6.8 x 3.6	
Scope of Supply		Panel and 1 unit of tension bands for 45–125 mm 1.8–4.9 inches diameter	

2-Port Antenna

Frequency Range

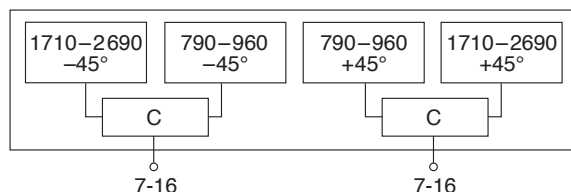
HPBW

R1	Y1
790–960	1710–2690
65°	65°

KATHREIN

2-Port Antenna LB/HB 0.3m C 65° | 790–960 8dBi | 1710–2690 9dBi

Type No.		80010753						
		R1			Y1			
		790-960			1710-2690			
Frequency range	MHz	790 – 862	824 – 894	880 – 960	1710 – 1990	1920 – 2200	2200 – 2490	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45
Average gain	dBi	2 x 7.8	2 x 8.0	2 x 8.5	2 x 7.8	2 x 8.9	2 x 8.7	2 x 8.2
Horizontal Pattern:								
Half-power beam width	°	67			65	55	60	62
Front-to-back ratio	dB	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25
Cross polar ratio								
Main direction	0°	Typically: 15	Typically: 18	Typically: 20	Typically: 25	Typically: 25	Typically: 25	Typically: 25
Sector	±60°	> 8	> 8	> 8	> 10	> 10	> 10	> 10
Vertical Pattern:								
Half-power beam width	°	65			75	60	60	65
Impedance		50						
VSWR		< 1.5						
Isolation: Intrasystem	dB	> 30			> 30		> 27	> 25
Intermodulation IM3		< -150 dBc (2 x 43 dBm carrier)						
Max. effective power per port	W	200 (at 50 °C ambient temperature)			100 (at 50 °C ambient temperature)			
Max. effective power for the antenna	W	300 (at 50 °C ambient temperature)						



Mechanical specifications		
Input	2 x 7-16 female	
Connector position	Bottom	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 100 22 Maximal: 110 25
Max. wind velocity	km/h mph	200 124
Height / width / depth	mm inches	334 / 260 / 136 13.1 / 10.2 / 5.4
Category of mounting hardware	L (Light)	
Weight	kg lb	2.8 (tension bands incl.) 6.2 (tension bands incl.)
Packing size	mm inches	495 x 272 x 157 19.5 x 10.7 x 6.2
Scope of Supply	Panel and 1 unit of tension bands for 45–125 mm 1.8–4.9 inches diameter	

10-Port Antenna

Frequency Range

HPBW

Y1	Y2	P1	P2	O1
1695–2690	1695–2690	3530–3720	3530–3720	5150–5925
65°	65°	65°	65°	65°

10-Port Antenna 5HB 0.6m 65° | 2x1695–2690 14dBi | 2x3530–3720 11dBi | 5150–5925 5dBi



FlexRET



Type No.		84010564			
Highband		Y1, connector 1–2; Y2, connector 3–4			
		1695–2690			
Frequency range	MHz	1695 – 1850	1850 – 2220	2300 – 2360	2490 – 2690
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	13.1 ±0.4	14 ±0.4	14.2 ±0.8	14.6 ±0.8
Horizontal Pattern:					
Half-power beam width	°	73 ±2	61 ±2	53 ±2	48±2
Front-to-back ratio, total power, ± 30°	dB	24	26	29	27
Cross polar discrimination at Boresight (Typ)	dB	21	21.5	24.5	19
Vertical Pattern:					
Half-power beam width	°	18 ±1	17 ±1	16 ±2	15 ±2
Electrical tilt	°	3 – 15, continuously adjustable			
First upper sidelobe suppression	dB	16	21	20	20
Impedance	Ω	50 Ω			
VSWR		< 1.5	< 1.5	< 1.5	< 1.7
Isolation	Intrasystem Intersystem	dB	> 23 > 28	> 23 > 28	> 20 > 28
Intermodulation	dBc	< –153 (2 x 43 dBm carrier)			
Max. power per input	W	150 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

Highband			P1, connector 5–6; P2, connector 7–8	
			3530–3720	
Frequency range	MHz		3530 – 3720	
Polarization	°		+45, –45	
Gain	dBi		11 ±0.5	
Horizontal Pattern:				
Half-power beam width	°		65 ±7	
Vertical Pattern:				
Half-power beam width	°		29 ±4	
Electrical tilt	°		7 ±3	
Impedance	Ω		50 Ω	
VSWR			< 1.5	
Isolation	Intrasystem Intersystem	dB	> 25 > 28	
Intermodulation		dBc	N/A	
Max. power per input		W	100 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 9.6) requirements.

Data sheet continued on next page.

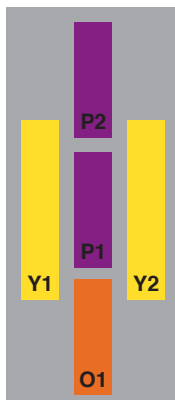
For more information about additional mounting accessories please refer to page 275

84010564

Highband		O1, connector 9-10				
		5150-5925				
Frequency range	MHz	5150 – 5350	5350 – 5470	5470 – 5725	5725 – 5850	5850 – 5925
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	+45, –45
Gain (typical/maximum)	dBi	5.3 / 5.84	5.0 / 5.31	5.3 / 5.81	5.3 / 5.81	5 / 5.48
Horizontal Pattern:						
Half-power beam width	°	45 ±7				
Vertical Pattern:						
Half-power beam width	°	32 ±4	35 ±4	30 ±2	21 ±2	23 ±2
Electrical tilt	°	12 ±6, fixed				
Impedance	Ω	50				
VSWR		< 1.5				
Isolation	Intrasystem Intersystem	dB				
		> 30 > 32				
Intermodulation	dBc	N/A				
Max. power per input	W	2 (at 50 °C ambient temperature)				
Max. input power per radio*	W	1	–	–	–	–

Values based on NGMN-P-BASTA (version 9.6) requirements.

* To comply with EIRP restrictions for FCC Title 47 part 15 for fixed outdoor point to multi-point applications



Mechanical specifications		
Input	10 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 835 188 Maximal: 840 189
Max. Wind Velocity	km/h mph	242 150
Height / Width / Depth	mm inches	610 / 378 / 169 24.0 / 14.9 / 6.7
Category of Mounting Hardware	XM (X-Medium)	
Weight	kg lb	12.7 28.0
Packing Size	mm inches	810 / 412 / 255 31.9 / 16.2 / 10.0
Scope of Supply	Panel, FlexRET and clamps for 42–115 mm 1.7–4.5 inches diameter	

12-Port Antenna	B1	B2	B3	B4	B5	B6
Frequency Range	1695–2200	1695–2200	1695–2200	1695–2200	1695–2200	1695–2200
Dual Polarization	X	X	X	X	X	X
HPBW	14°	12°	11°	11°	12°	14°
Gain	18.0dBi	19.4dBi	19.3dBi	19.3dBi	19.4dBi	18.0dBi
Fixed Electr. DT	5°	5°	5°	5°	5°	5°
Azimuth Beam Direction	(-39°)	(-23°)	(-8°)	(+8°)	(+23°)	(+39°)

12-Port Antenna 6HB 0.4m | 6x1695–2200 19dBi

Type No.		80010725		
		B1, connector 1–2		
		1695–2200		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200
Gain	dBi	16.9 ± 1.0	18.1 ± 0.9	19.0 ± 1.1
Horizontal Pattern:				
Azimuth Beamwidth	°	16.3 ± 2.3	13.6 ± 0.8	12.6 ± 0.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 24	> 23
Cross Polar Discrimination at Boresight	dB	> 7	> 15	> 16
Vertical Pattern:				
Elevation Beamwidth	°	23.0 ± 2.0	24.3 ± 1.9	22.9 ± 2.7
Electrical Downtilt	°	5, fixed		
First Upper Side Lobe Suppression	dB	> 11	> 18	> 17
Cross Polar Port Isolation	dB	> 25		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

		B2, connector 3–4		
		1695–2200		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200
Gain	dBi	18.5 ± 1.1	19.5 ± 0.7	20.2 ± 1.2
Horizontal Pattern:				
Azimuth Beamwidth	°	13.2 ± 0.5	12.0 ± 0.8	11.0 ± 0.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 28	> 28
Cross Polar Discrimination at Boresight	dB	> 19	> 28	> 32
Vertical Pattern:				
Elevation Beamwidth	°	25.0 ± 0.9	24.6 ± 1.4	23.1 ± 2.2
Electrical Downtilt	°	5, fixed		
First Upper Side Lobe Suppression	dB	> 14	> 18	> 17
Cross Polar Isolation	dB	> 28		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

80010725

		B3, connector 5–6		
		1695–2200		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200
Gain	dBi	18.7 ± 0.8	19.2 ± 0.8	19.9 ± 1.2
Horizontal Pattern:				
Azimuth Beamwidth	°	12.2 ± 0.5	11.1 ± 1.0	10.4 ± 0.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 24
Cross Polar Discrimination at Boresight	dB	> 20	> 23	> 25
Vertical Pattern:				
Elevation Beamwidth	°	25.7 ± 0.9	24.9 ± 1.0	23.3 ± 2.1
Electrical Downtilt	°	5, fixed		
First Upper Side Lobe Suppression	dB	> 20	> 20	> 16
Cross Polar Isolation	dB	> 28		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

		B4, connector 7–8		
		1695–2200		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200
Gain	dBi	19.2 ± 0.9	19.7 ± 0.7	20.3 ± 1.2
Horizontal Pattern:				
Azimuth Beamwidth	°	12.0 ± 0.8	10.8 ± 0.9	10.2 ± 0.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 28	> 27
Cross Polar Discrimination at Boresight	dB	> 19	> 22	> 25
Vertical Pattern:				
Elevation Beamwidth	°	26.0 ± 0.8	25.0 ± 1.0	23.4 ± 2.0
Electrical Downtilt	°	5, fixed		
First Upper Side Lobe Suppression	dB	> 23	> 18	> 16
Cross Polar Isolation	dB	> 28		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

80010725

		B5, connector 9–10		
		1695–2200		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200
Gain	dBi	18.6 ± 1.0	19.4 ± 0.9	19.9 ± 1.2
Horizontal Pattern:				
Azimuth Beamwidth	°	12.7 ± 0.3	11.7 ± 0.8	10.9 ± 0.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 24
Cross Polar Discrimination at Boresight	dB	> 18	> 24	> 28
Vertical Pattern:				
Elevation Beamwidth	°	25.6 ± 1.2	24.9 ± 0.6	23.2 ± 1.7
Electrical Downtilt	°	5, fixed		
First Upper Side Lobe Suppression	dB	> 20	> 19	> 15
Cross Polar Isolation	dB	> 28		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

Values based on NGMN-P-BASTA (version 10.0) requirements.

		B6, connector 11–12		
		1695–2200		
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200
Gain	dBi	17.4 ± 0.8	18.2 ± 0.9	19.0 ± 1.2
Horizontal Pattern:				
Azimuth Beamwidth	°	16.1 ± 2.3	13.5 ± 0.6	12.6 ± 0.9
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24	> 25
Cross Polar Discrimination at Boresight	dB	> 7	> 12	> 17
Vertical Pattern:				
Elevation Beamwidth	°	23.9 ± 2.8	24.9 ± 1.1	23.3 ± 2.4
Electrical Downtilt	°	5, fixed		
First Upper Side Lobe Suppression	dB	> 15	> 21	> 20
Cross Polar Isolation	dB	> 25		
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)		

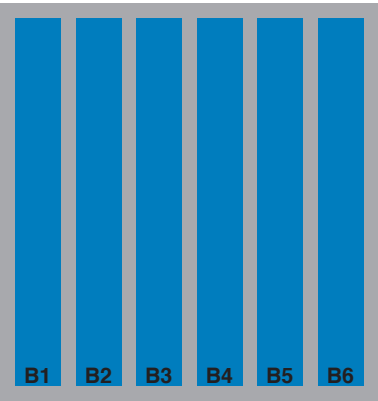
Values based on NGMN-P-BASTA (version 10.0) requirements.

80010725

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications				
Input		12 x 4.3-10 female		
Connector Position		bottom		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal	470	106
		Lateral	55	12
Max. Wind Velocity	km/h mph	200 124		
Height / Width / Depth	mm	378 / 864 / 111		
	inches	14.9 / 34.0 / 4.4		
Category of Mounting Hardware		XM * (X-Medium)		
Weight	kg	14.5 / 19.0 (clamps incl.)		
	lb	32.0 / 41.9 (clamps incl.)		
Packing Size	mm	474 x 959 x 238		
	inches	18.7 x 37.8 x 9.4		
Scope of Supply		Panel and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter		
* no downtilt possible				



12-Port Antenna

Frequency Range	2300–2690	2300–2690	2300–2690	2300–2690	2300–2690	2300–2690
Dual Polarization	X	X	X	X	X	X
HPBW	10°	9°	8°	8°	9°	10°
Gain	20.5dBi	21dBi	21dBi	21.5dBi	21dBi	21dBi
Fixed Electr. DT	7°	7°	7°	7°	7°	7°
Azimuth Beam Direction	(-33°)	(-20°)	(-7°)	(+7°)	(+20°)	(+33°)

12-Port Antenna 6HB 0.4m | 6x2300–2690 21dBi

Type No.		80010726	
		Y1, connector 1-2	
		2300–2690	
Frequency Range	MHz	2300 – 2400	2490 – 2690
Gain	dBi	20.3 ± 0.4	20.9 ± 0.7
Horizontal Pattern:			
Azimuth Beamwidth	°	10.5 ± 0.3	9.2 ± 0.6
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24
Cross Polar Discrimination at Boresight	dB	> 22	> 14
Vertical Pattern:			
Elevation Beamwidth	°	18.8 ± 1.2	17.6 ± 1.3
Electrical Downtilt	°	7, fixed	7, fixed
First Upper Side Lobe Suppression	dB	> 16	> 13
Cross Polar Port Isolation	dB	> 28	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

		Y2, connector 3-4	
		2300–2690	
Frequency Range	MHz	2300 – 2400	2490 – 2690
Gain	dBi	21.3 ± 0.6	21.7 ± 1.0
Horizontal Pattern:			
Azimuth Beamwidth	°	9.1 ± 0.2	8.2 ± 0.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 27	> 25
Cross Polar Discrimination at Boresight	dB	> 24	> 14
Vertical Pattern:			
Elevation Beamwidth	°	19.6 ± 0.9	17.7 ± 1.0
Electrical Downtilt	°	7, fixed	7, fixed
First Upper Side Lobe Suppression	dB	> 17	> 15
Cross Polar Port Isolation	dB	> 28	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

Data sheet continued on next page.

For more information about additional mounting accessories please refer to page 279

80010726

		Y3, connector 5-6	
		2300-2690	
Frequency Range	MHz	2300 – 2400	2490 – 2690
Gain	dBi	21.5 ± 0.8	21.6 ± 1.0
Horizontal Pattern:			
Azimuth Beamwidth	°	8.8 ± 0.1	7.9 ± 0.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 28	> 26
Cross Polar Discrimination at Boresight	dB	> 26	> 16
Vertical Pattern:			
Elevation Beamwidth	°	20.0 ± 0.9	18.0 ± 0.8
Electrical Downtilt	°	7, fixed	7, fixed
First Upper Side Lobe Suppression	dB	> 15	> 16
Cross Polar Port Isolation	dB	> 28	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

		Y4, connector 7-8	
		2300-2690	
Frequency Range	MHz	2300 – 2400	2490 – 2690
Gain	dBi	21.5 ± 0.7	21.6 ± 1.3
Horizontal Pattern:			
Azimuth Beamwidth	°	8.6 ± 0.1	7.9 ± 0.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 26	> 25
Cross Polar Discrimination at Boresight	dB	> 28	> 15
Vertical Pattern:			
Elevation Beamwidth	°	20.0 ± 0.7	17.9 ± 0.7
Electrical Downtilt	°	7, fixed	7, fixed
First Upper Side Lobe Suppression	dB	> 14	> 15
Cross Polar Port Isolation	dB	> 28	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

80010726

		Y5, connector 9-10	
		2300-2690	
Frequency Range	MHz	2300 – 2400	2490 – 2690
Gain	dBi	20.9 ± 0.7	21.4 ± 0.9
Horizontal Pattern:			
Azimuth Beamwidth	°	9.2 ± 0.2	8.4 ± 0.3
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 24
Cross Polar Discrimination at Boresight	dB	> 23	> 15
Vertical Pattern:			
Elevation Beamwidth	°	19.6 ± 0.7	17.7 ± 1.1
Electrical Downtilt	°	7, fixed	7, fixed
First Upper Side Lobe Suppression	dB	> 15	> 13
Cross Polar Port Isolation	dB	> 28	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)	

Values based on NGMN-P-BASTA (version 10.0) requirements.

		Y6, connector 11-12	
		2300-2690	
Frequency Range	MHz	2300 – 2400	2490 – 2690
Gain	dBi	20.5 ± 0.7	21.0 ± 0.8
Horizontal Pattern:			
Azimuth Beamwidth	°	10.5 ± 0.2	9.3 ± 0.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 24	> 25
Cross Polar Discrimination at Boresight	dB	> 21	> 13
Vertical Pattern:			
Elevation Beamwidth	°	18.5 ± 1.2	17.5 ± 1.5
Electrical Downtilt	°	7, fixed	7, fixed
First Upper Side Lobe Suppression	dB	> 15	> 11
Cross Polar Port Isolation	dB	> 28	
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)	

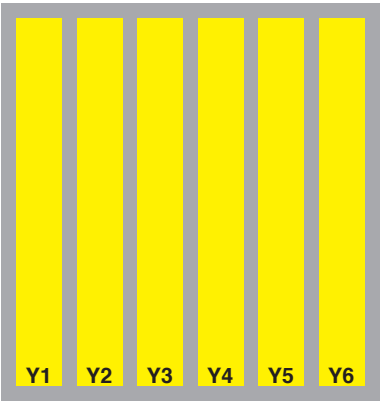
Values based on NGMN-P-BASTA (version 10.0) requirements.

80010726

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization	°	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 10.0) requirements.

Mechanical specifications				
Input		12 x 4.3-10 female		
Connector Position		bottom		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal	470	106
		Lateral	55	12
Max. Wind Velocity	km/h mph	200 124		
Height / Width / Depth	mm	378 / 864 / 111		
	inches	14.9 / 34.0 / 4.4		
Category of Mounting Hardware		XM * (X-Medium)		
Weight	kg	14.8 / 19.3 (clamps incl.)		
	lb	32.6 / 42.5 (clamps incl.)		
Packing Size	mm	474 x 959 x 238		
	inches	18.7 x 37.8 x 9.4		
Scope of Supply		Panel and 2 units of clamps for 55-115 mm 2.2-4.5 inches diameter		
* no downtilt possible				



4-Port Micro Cell Antenna 1695-2690 1695-2690

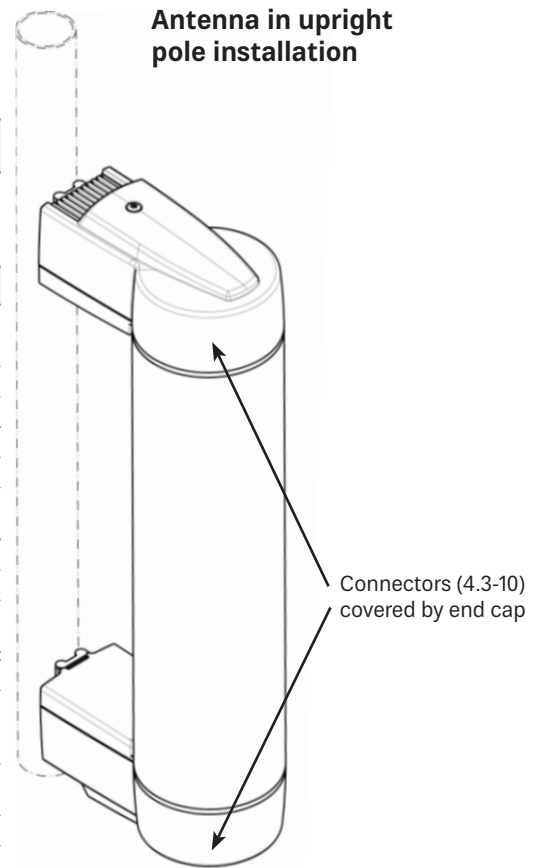
Dual Polarization X X

HPBW 85° 85°

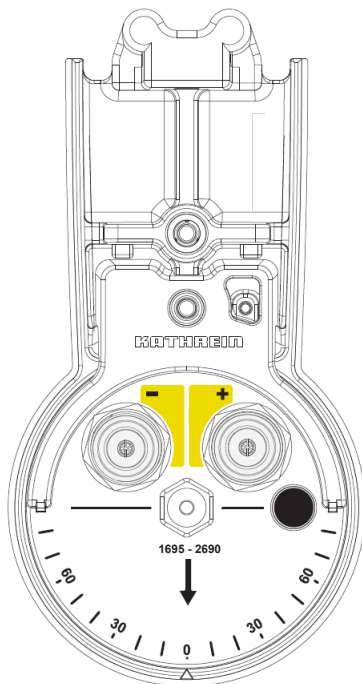
KATHREIN

4-Port Micro Cell Antenna 2HB 0.5m 85° | 2x1695-2690 7.5dBi

Type No.		80010843
Use case		Flexible Indoor Coverage Flexible Street Level Micro Cell Coverage Not for Macro Site Installation Pole and wall mounting
Electrical data		Per sector
		1695-2690
Frequency range	MHz	1695 – 2690
Polarization	°	+45, –45
Gain	dBi	7.5
Horizontal Pattern:		
Half-power beam width	°	85
Cross polar ratio	0° 60° dB	≥ 18 typ. ≥ 8 typ.
Vertical Pattern:		
Half-power beam width	°	80
Electrical tilt (upright installation)	°	0, fixed
Impedance	Ω	50 Ω
VSWR		1695 –1710 MHz: < 1.6 1710 –2200 MHz: < 1.5 2200 –2690 MHz: < 1.6
Isolation, between all ports	dB	≥ 25 (Intra- / Intersystem)
Intermodulation IM3	dBc	< –153 (2 x 43 dBm carrier)
Max. power per input	W	50 (at 50 °C ambient temperature)



Top view / connector view



Mechanical specifications

Input		4 x 4.3-10 female (2 x top, 2 x bottom, covered by end cap)
Adjustment mechanism		Two continuously rotatable antenna modules (radiator and reflector) within the radome (set by hand)
Tilt adjustment mechanism (installation at right angle)		Set by hand Continuously for each sector (0° ... 360°)
Azimuth adjustment mechanism (upright installation)		Set by hand Continuously for each sector (0° ... 360°)
IP Protection class		IP65
Wind load (at 150 km/h)	N lbf	25 5.6
Max. wind velocity	km/h mph	160 99.4
Feeder cables		Max. ¼" High Flex (bending radius ≤ 25 mm ≤ 1.0 inches) push pull and handscrew type, angular connector required
Allowed diameter of mounting pole	mm inches	≥ 40 ≥ 1.6
Max. distance wall/pole when mounted	mm inches	190 7.5
Height / diameter	mm inches	526 / 100 20.7 / 3.9
Category of mounting hardware		L (Light)
Weight	kg lb	2.0 4.4
Packing size	mm inches	547 / 242 / 174 21.5 / 9.5 / 6.9

Tri-Sector Slimpole Antenna
Frequency Range
Dual Polarization
HPBW

0°

120°

240°

1710–2690

1710–2690

1710–2690

X

X

X

80°

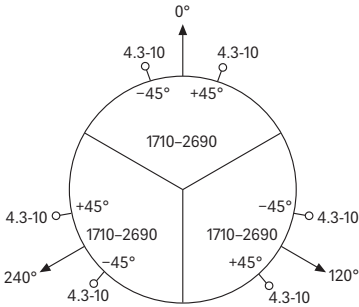
80°

80°

KATHREIN

6-Port Tri-Sector Slimpole HB 0.7m 80° | 1710–2690 10dBi

Type No.		80020125				Electrical datas per sector
		1710–2690				
Frequency range	MHz	1710 – 1990	1920 – 2170	2170 – 2490	2490 – 2690	
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45	
Gain	dBi	2 x 9.5	2 x 10	2 x 10.5	2 x 11	
Horizontal Pattern:						
Half-power beam width	°	80	78	75	73	
Front-to-back ratio, copolar	dB	> 30	> 28	> 28	> 27	
Cross polar ratio	dB					
Maindirection	0°	Typically: 20	Typically: 20	Typically: 20	Typically: 20	
Sector	±60°	> 10	> 10	> 10	> 10	
Vertical Pattern:						
Half-power beam width	°	44	42	35	31	
Electrical tilt	°	0, fixed				
Impedance	Ω	50				
VSWR		< 1.5				
Isolation, between ports	dB	> 25				
Intermodulation IM3	dBc	< –153 (2 x 43 dBm carrier)				
Max. power per input	W	100 (at 50 °C ambient temperature)				



Mechanical specifications			
Input		6 x 4.3-10 female	
Connector position		Bottom	
Weight	kg	2.3	
	lb	5.1	
Wind load (at 150 km/h)	N	50	
	lbf	11.2	
Max. wind velocity	km/h	200	
	mph	124	
Mechanical interface		Flange connection 8 x M6 at a graduated diameter of 136 mm 5.4 inches. Evenness of the opposite surface: 0.5 mm 0.02 inches	
Packing size	mm	742 x 220 x 219	
	inches	29.2 x 8.7 x 8.6	
Height / diameter	mm	691 / 100	
	inches	27.2 / 3.9	

Street Connect

2-Port Antenna

Frequency Range

1695–2690

Dual Polarization

WV

HPBW

360°

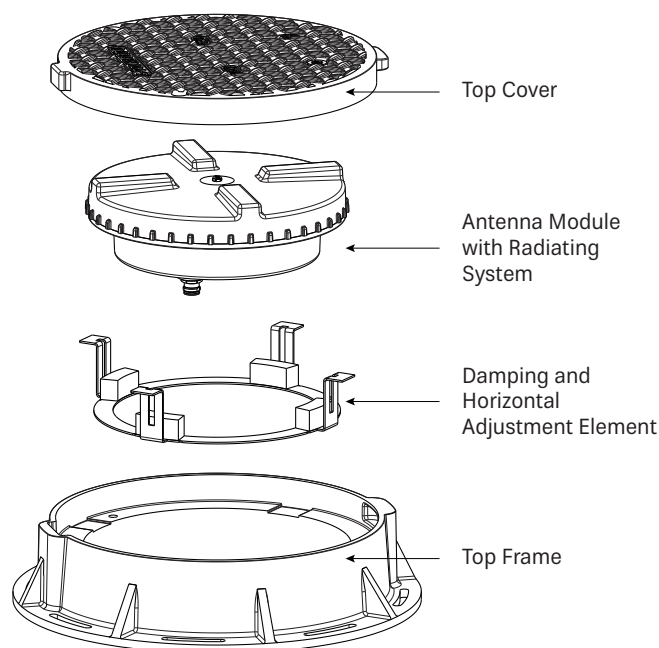
KATHREIN

2-Port Street Connect HB 360° | 1695–2690 6dBi

Type No.		80010235				
Use Case		In-Ground Installation, High traffic urban areas				
High band		Y1, connector 1–2				
		1695 – 2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2200	2300 – 2490	2490 – 2690
Max. Gain (Free Space)	dBi	7.3	7.4	7.3	5.7	7.1
Horizontal Pattern		Quasi Omni Max. Deviation from Circularity ±6 dB	Quasi Omni Max. Deviation from Circularity ±6 dB	Quasi Omni Max. Deviation from Circularity ±5 dB	Quasi Omni Max. Deviation from Circularity ±5 dB	Quasi Omni Max. Deviation from Circularity ±6 dB
Vertical Pattern		Four main lobes above ground level	Four main lobes above ground level	Six main lobes above ground level	Four main lobes above ground level	Four main lobes above ground level
Isolation (Port 1 // Port 2)	dB	1695–2300 MHz: > 20 2300–2690 MHz: > 25				
Max. Effective Power per Port	W	20 (at 50 °C ambient temperature)				

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.7
Return Loss	dB	> 11.7
Passive Intermodulation	dBc	< -153 (2 x 43 dBm carrier)
Polarization		Dual Vertical
Max. Effective Power for the Antenna	W	40 (at 50 °C ambient temperature)

Mechanical specifications		
Input		2 x 4.3-10 female
Connector Position		Bottom
Adjustment Mechanism Horizontal		Set by hand, 9° steps
Feeder Cables		Push Pull type connector
Top Cover Diameter / Height	mm inches	375 / 32 14.8 / 1.3
Top Frame Outer / Inner Diameter / Height	mm inches	480 / 315 / 100 18.9 / 12.4 / 3.9
Antenna Modul Diameter / Height	mm inches	310 / 136 12.2 / 5.4
Weight Antenna Module	kg lb	3.2 7.1
Weight Complete System	kg lb	13.6 30.0
IP Protection Class		IP 68 (with appropriate feeder cable connector)
Max. Load Top Cover	kN	50 (without permanent deformation, according EN 124 – Class D400)



Mounting:

Follow the installation guidelines for Polieco Kio D400 / EN 124 top cover and frame. Feeder cable to be installed strain-relieved. Maximum force 5 N per cable. Avoid mounting locations where obstructions may have impact on the antenna performance, e.g. parking cars. Recommended tightening torque for the cover screws (2x): 50 Nm.

Attention: Please follow the mounting and instruction guidelines carefully. Liability cannot be assumed for damages as a result of unsatisfactory fitting and installation, improper putting into service, incorrect operation and maintenance, as well as any alterations or modifications carried out by the operator and accessory parts by the customer.

Remark:

All electrical values are stated for the complete system with top frame and cover.

Summary – Directional Antennas

VPol

690...2690 MHz

KATHREIN

Type	Type No.	Height [mm]	Connector female, type and position	Page
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Vertical Polarization

1-Port LogPer	690–2690	67°	11dBi	0°T	742192v02	300	7-16, bottom	244
1-Port Antenna	1710–2180	12°	18.5dBi	0°T	80010368	299	7-16, side	245
1-Port BiDir	694–960/1710–2690	65°	5dBi	0°T	80020448	428	4.3-10, bottom	246
1-Port Yagi	790–960 1710–2170	C 38° 28°	14dBi 15.5dBi	0°T 0°T	80010828v01	170	7-16, rearside	247

VPol

Abbreviations:
C: Integrated Combiner

1-Port LogPer Antenna

Vertical Polarization

Half-power Beam Width

690-2690
V
67°

KATHREIN

1-Port LogPer Antenna 690–2690 67° 11dBi

Type No.		742192v02					
Frequency range	MHz	690 – 880	880 – 960	960 – 1695	1695 – 2200	2200 – 2490	2490 – 2690
VSWR		< 1.6	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Gain	dBi	10.1	10.6	11.0	11.0	11.0	11.0
Impedance	Ω	50	50	50	50	50	50
Polarization		Vertical	Vertical	Vertical	Vertical	Vertical	Vertical
Front-to-back ratio	db	> 25	> 25	> 25	> 25	> 22	> 25
Half-power beam width	°	69	64	57	53	47	45
		54	53	50	48	46	44
Intermodulation IM3 (2 x 43 dBm carrier)	dBc	< –150	< –150	< –150	< –150	< –150	< –150
Max. power	W	300	300	250	200	170	150
Total power	W	500 (at 50 °C ambient temperature)					



Mechanical specifications				
Input		1 x 7-16 female		
Connector position		Bottom		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal	20	4
		Lateral	210	47
		Rearside	30	7
Max. wind velocity	km/h mph	241 150		
Height / width / depth	mm inches	300 / 155 / 785 11.8 / 6.1 / 30.9		
Weight	kg lb	5.5 12.1		
Packing size	mm inches	360 x 175 x 1000 14.2 x 6.9 x 39.4		

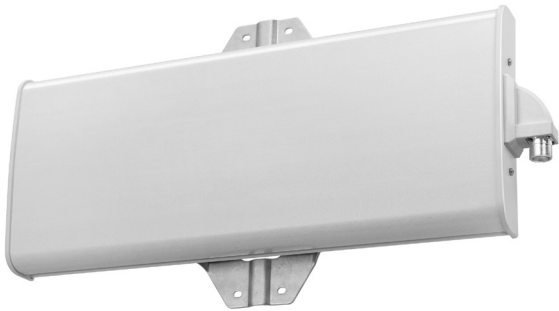
1-Port Antenna
Vertical Polarization
HPBW

1710-2180
V
12°

KATHREIN

1-Port Antenna HB 0.3m 12° | 1710-2180 18.5dBi

Type No.		80010368		
		1710-2180		
Frequency range	MHz	1710 – 1880	1850 – 1990	1920 – 2180
Polarization		Vertical	Vertical	Vertical
Gain	dBi	18.1	18.4	18.7
Horizontal Pattern:				
Half-power beam width	°	13.3	12.8	12
Front-to-back ratio (180°±30°)	dB	> 30	> 30	> 30
Sidelobe suppression	dB	> 18	> 18	> 17
Vertical Pattern:				
Half-power beam width	°	37	36	36
Electrical tilt	°	0, fixed		
Sidelobe suppression for first sidelobe above main beam	dB	> 18	> 18	> 18
Impedance	Ω	50		
VSWR		< 1.5		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. power per input	W	300 (at 50 °C ambient temperature)		



Mechanical specifications				
Input		1 x 7-16 female		
Connector position		Side (see picture)		
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 250	56	
		Maximal: 275	62	
Max. wind velocity	km/h mph	200		
		124		
Height / width / depth	mm inches	299 / 743 / 69		
		11.8 / 29.3 / 2.7		
Weight	kg lb	9		
		19.8		
Packing size	mm inches	442 x 852 x 124		
		17.4 x 33.5 x 4.9		

1-Port BiDir Antenna Vertical Polarization HPBW

694-960/1710-2690

V

65°

KATHREIN

1-Port Bi-Directional Antenna LB/HB 0.4m 65° | 694-960/1710-2690 5dBi

Type No.		80020448	
Input		1 x 4.3-10 female	
Frequency range	MHz	694 – 960, 1710 – 2690	
VSWR		694-960 MHz:	< 2.0
		1710-2690 MHz:	< 1.7
Gain	dBi	694-806 MHz:	5.0
		806-960 MHz:	5.5
		171-2690 MHz:	6.5
Impedance	Ω	50	
Polarization		Vertical	
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)	
Max. power (total)	W	200 (at 50 °C ambient temperature)	
Weight	kg	1.1	
	lb	2.4	
Wind load (at 150 km/h)	N lbf	Frontal:	30 6.7
		Lateral:	70 15.7
		Rearside:	35 7.9
Max. wind velocity	km/h	200	
	mph	124	
Packing size	mm	450 x 205 x 110	
	inches	17.7 x 8.1 x 4.3	
Height/width/depth	mm	428 / 180 / 79	
	inches	16.9 / 7.1 / 3.1	
Fire load	kWh	4.46	

Material:	Radiator: Tin-plated copper. Reflector: Weather-proof aluminum. Radome: High impact plastic, color: Grey. All screws and nuts: Stainless steel.
Mounting:	Wall mounting: No additional mounting kit needed. For pipe mast mounting use clamps listed below (order separately).
Ice protection:	The radiating system is protected by the radome. Due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	All metal parts of the antenna as well as the inner conductor are DC grounded.



1-Port Yagi Antenna
Dual Polarization
HPBW
Gain
Integrated Combiner

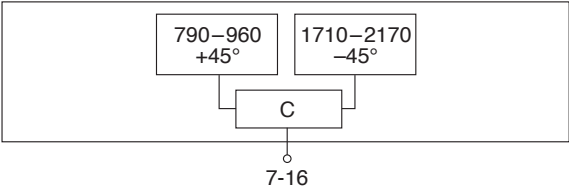
790-960	1710-2170
+45°	-45°
38°	28°
14dBi	15.5dBi
C	

KATHREIN

1-Port Yagi Antenna LB/HB 1.1m C 38°/28° | 790-960 14dBi | /1710-2170 15.5dBi

Type No.		80010828v01			
		790-960		1710-2170	
Frequency range	MHz	790 – 870	870 – 960	1710 – 1880	1920 – 2170
VSWR		< 1.5	< 1.5	< 1.5	< 1.5
Gain (average)	dBi	13	14	13	15.5
Impedance	Ω	50	50	50	50
Polarization	°	+45	+45	−45	−45
Front-to-back ratio	dB	≥ 25	≥ 25	≥ 27	≥ 27
Half-power beam width (avg.)	°				
		horizontal			
		vertical			
Max. power	W	85 (at 50 °C ambient temperature)		15 (at 50 °C ambient temperature)	
Integrated combiner		The insertion loss is included in the given antenna gain values.			

Please note: This antenna is suitable for tunnel applications.



Mechanical specifications		
Input		1 x 7-16 female
Connector position		Rearside
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	200 45
Max. wind velocity	km/h mph	215 134
Dimensions	mm	1184 / Ø 170
	inches	46.6 / Ø 6.7
Weight	kg	6 / 10 (clamps incl.)
	lb	13.2 / 22.0 (clamps incl.)
Packing size	mm	1350 x 260 x 220
	inches	53.1 x 10.2 x 8.7

VPoI

Summary – Omnidirectional Antennas
VPol
694...2700 MHz

KATHREIN

Type						Type No.	Connector female	Height [mm]	Remarks	Page
Lowband Highband										
1-Port Omni	694–960/1695–2700	360°	2dBi	0°T		80010846	N	202	indoor/outdoor	250
Highband										
1-Port Omni	1695–2700	360°	2dBi	0°T		80010431	N	115	indoor/outdoor	251

1-Port Omni Antenna
Vertical Polarization
Indoor and outdoor use

694-960/1695-2700
V

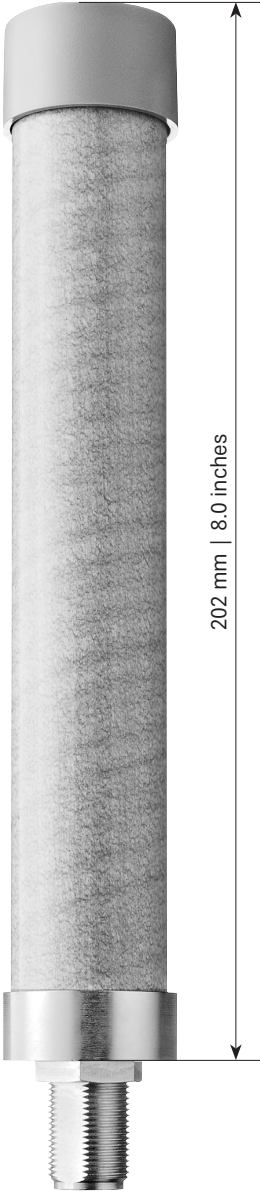
KATHREIN

1-Port Omni Antenna LB/HB 0.2m 360° | 694-960/1695-2700 2dBi

Type No.		80010846			
Input		1 x N female			
Connector position		Bottom or top			
Frequency range	MHz	694 – 960 / 1695 – 2700			
VSWR	MHz	694 – 864 < 2.0	864 – 894 < 2.2	894 – 960 < 2.5	1695 – 2700 < 2.0
Gain	dBi	2			
Impedance	Ω	50			
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)			
Polarization		Vertical			
Max. power	W	50 (at 50 °C ambient temperature)			
Weight	g	210			
	lb	0.46			
Wind load (at 150 km/h)	N	6			
	lbf	1.3			
Radome diameter	mm	30			
	inches	1.2			
Height	mm	202			
	inches	8.0			
Fire load	kWh	0.2			

Material: Radiator: Brass.
Radome: Fiberglass, colour: White.

Mounting: One hole mounting (16 mm | 0.6 inches diameter) to
surfaces of max. 10 mm | 0.4 inches thickness.



1-Port Omni Antenna

Vertical Polarization

Indoor and outdoor use

1695-2700
V

KATHREIN

1-Port Omni Antenna HB 0.1m 360° | 1695-2700 2dBi

Type No.		80010431
Input		1 x N female
Connector position		Bottom or top
Frequency range	MHz	1695 – 2700
VSWR		< 1.8
Gain	dBi	2
Impedance	Ω	50
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)
Polarization		Vertical
Max. power	W	50 (at 50 °C ambient temperature)
Weight	g	150
	lb	0.33
Radome diameter	mm	20
	inches	0.8
Height	mm	115
	inches	4.5
Fire load	kWh	0.07

Material:	Radiator: Brass. Radome: Fiberglass, color: White.
Mounting:	One hole mounting (16 mm 0.6 inches diameter) to surfaces of max. 10 mm 0.4 inches thickness.
Grounding:	All metal parts of the antenna and the mounting kit are DC grounded. The inner conductor is not DC grounded.



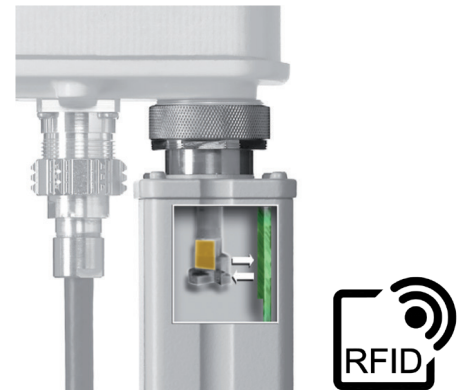
Type		Type No.	Page
Remote Electrical Tilt System			
General Information			254
Data Sheets of RET Components			
Slimline Remote Control Unit (RCU)		86010148v01	256
FlexRET Module		86010153v01 86010165	257 258
Antenna Line Configurator (ALC)		86010158	259
Portable Control Adapter (PCA)		86010046	260
Power Supply and Signal Cable		86010007, ...	261
Torque Screwdriver		85010080	261
Site Sharing Adapter (3-way)		86010154	262
Site Sharing Adapter (6-way)		86010155	263
Gender Adapter for FlexRET		86010162	264
Port Extender for FlexRET		86010163	265
DC Power and Signal Splitter		86010002	266
Lightning Protection Device		86010030	267
Earthing Clamp		86010031	268
Protection Caps for RET Spindle		85010004	306
Smart Bias Tee		78211055, -56 78211592, -93	394 – 397

New or changed product

Functionality of Different RET Technologies

RCU with RFID Feature

- External RCU 86010148v01 includes a RFID reader
- Antenna spindles are equipped with RFID tags
- The antenna specific data is stored on this tag:
 - ⇒ Type number
 - ⇒ Serial number
 - ⇒ Configuration File
- With power on, the data is read out automatically from the tag by the RCU
- List of all updated antennas on our website:
www.kathrein.com/en/support/technical-documents/rfid-spindle/



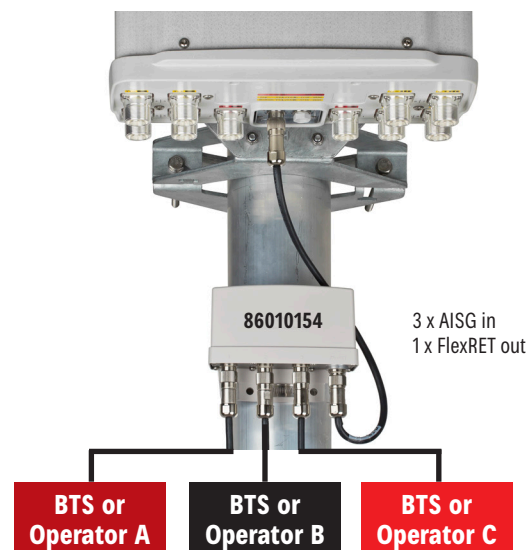
FlexRET

- Integrated RET module inside the antenna (86010153v01 or 86010165)
- Pre-configured with the antenna specific parameters:
 - ⇒ Type number
 - ⇒ Serial number
 - ⇒ Configuration file
- Calibrated ex-factory
- The FlexRET module is exchangeable
 - ⇒ Automatic data transfer in case of exchange with internal RFID tag
 - ⇒ Only calibration is necessary
- Daisy chain possibility with FlexRET antennas and / or external RCUs
- Same module for all antennas
- SingleRET or MultiRET selection possible
- Array allocation possible with special Site Sharing Adapter or Gender Adapter / Port Extender



Site Sharing Adapter

- Needed whenever the AISG control of a FlexRET antenna shall be performed by a higher number of base stations (BTS)
- 2 different realizations available
 - ⇒ 3-way Site Sharing Adapter: Type no. 86010154 – FlexRET control with up to 3 BTS
 - ⇒ 6-way Site Sharing Adapter: Type no. 86010155 – FlexRET control with up to 6 BTS
- Daisy chaining of up to 3 FlexRET antennas
- Additional ALDs can be mounted prior to the Site Sharing Adapter
- Flexible allocation of antenna arrays to the different BTS units using a special software application via PC
- Each BTS can act independently
- Individual password protection of configuration possible
- Configuration can be sent to the Site Sharing Adapter with every AISG control device (BTS or e.g. Kathrein ALC)



Functionality of Different RET Technologies

Gender Adapter (86010162)

- Can be used if 2 base stations (BTS) are interconnected to one common FlexRET antenna
- Mounted on the FlexRET output of the module
- Converts the AISG output to an AISG input
- The allocation of the antenna arrays can easily be performed during the commissioning process via the BTS or flexible allocation of antenna arrays to the different BTS units using a special software application via PC



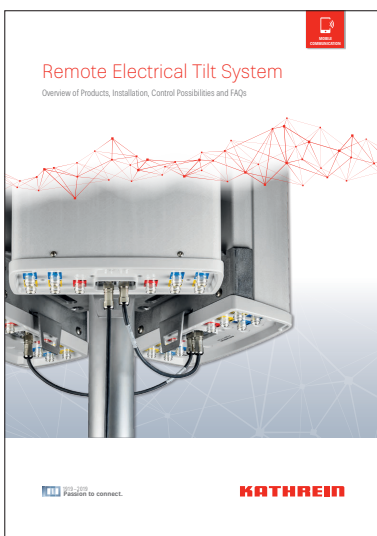
Port Extender (86010163)

- Can be used if 2 BTS are interconnected to common FlexRET antennas in daisy chain
- Mounted on the FlexRET module by 2 screws
- Converts 1 FlexRET input and output to 2 FlexRET inputs and outputs
- Daisy chaining with further FlexRET antennas and / or external RCUs
- The allocation of the antenna arrays can easily be performed during the commissioning process via the BTS or flexible allocation of antenna arrays to the different BTS units using a special software application via PC



Manuals for all our AISG control devices and for the Site Sharing Adapter as well as the corresponding software downloads can be found on our website in the section Support "Technical Documents" respectively "Driver and Software".

For details of the RET system please also see Kathrein's RET brochure.



Kathrein Mobile Communication's overall RET system works in accordance with the AISG (Antenna Interface Standards Group) standard and 3GPP (3rd Generation Partnership Project).

Remote Control Unit (RCU) for Kathrein base station antennas with adjustable electrical down-tilt and appropriate mechanical interface.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Compact size
- Prepared for automatic configuration and calibration
- Daisy Chain feasibility
- Suitable for operation under outdoor conditions



Type No.		86010148v01
Protocols		compliant to AISG 1.1 and 3GPP/AISG 2.0
Logical interface ex factory ¹⁾		3GPP/AISG 2.0
Input voltage range	V	10 ... 30 (pin 1, pin 6)
Power consumption	W	< 1 (stand by); < 10 (motor activated)
Connectors ^{2) 3)}		2 x 8 pin connector according to IEC 60130-9; according to AISG Daisy chain in: male; Daisy chain out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 1, pin 6); DC return (pin 7); according to AISG / 3GPP
Adjustment time (full range)	sec	40 (typically, depending on antenna type)
Adjustment cycles		> 50,000
Temperature range	°C	-40 ... +60
Protection class		IP 24
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated
Weight	kg lbs	0.5 0.99
Packing size	mm inches	245 x 93 x 102 9.6 x 3.6 x 4
Dimensions (H x W x D)	mm inches	177.5 x 59.5 x 49.5 7.0 x 2.3 x 1.9

¹⁾ The protocol of the logical interface can be switched from 3GPP/AISG 2.0 AISG 1.1 to with a vendor specific command. Start-up operation of the RCU is only possible in a RET system supporting 3GPP/AISG 2.0!

The protocol can also be changed as follows: 3GPP to AISG 1.1: Enter "AISG1" into the additional data field "Installer's ID" and perform a layer 2 reset or a power reset. AISG 1.1 to 3 GPP: Enter "3GPP" into the additional data field "Installer's ID" and perform a layer 7 reset or a power reset. After switching the protocol any other information can be entered into the "Installer's ID" field.

Please note:

If the Primary of the RET system doesn't support the standard of the 'logical interface ex factory', the RCU must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

²⁾ The tightening torque for fixing the connector must be 1.0–1.5 Nm. The connector should be tightened by hand or using the torque screwdriver (85010080) as described in the connecting cable data sheet (85010007, ...)

³⁾ The RCU gets the information stored in the antenna after power on automatically if a corresponding antenna is used. In this case, it is not necessary to configure the RCU manually.

Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
EN 55022 (Emission)
EN 55024 (Immunity)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

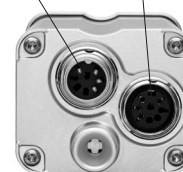
EU-RED Hereby, Kathrein SE declares that the radio equipment type 86010148v01 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.kathrein.com>

Certification: CE, FCC

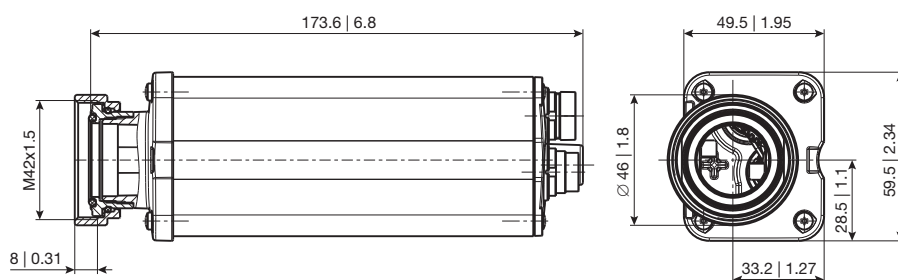
Scope of supply: Remote Control Unit, Assembly paste



Daisy chain in (male) Daisy chain out (female)



Bottom view of RCU



All dimensions in mm | inches

A flexible, integrated solution for adjusting the electrical downtilt of Kathrein FlexRET antennas.

- Compliant to 3GPP/AISG 2.0
- Single RETs or Multi RET displayed
- Two way antenna sharing feasibility
- Daisy Chain feasibility
- Pre-configured



Type No.		86010153v01
Protocols		compliant to 3GPP/AISG 2.0
Logical interface ex factory		3GPP/AISG 2.0
Operates as		Single RETs or Multi RET
Ex factory		Single RETs
Input voltage range	V	10 ... 30 (pin 6)
Power consumption	W	Typically < 1; < 10 (motor activated)
Connectors		2 x 8 pin connector according to IEC 60130-9; according to AISG-C 485 Daisy chain in: male; Daisy chain out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Adjustment time (full range)	sec	40 (typically, depending on antenna type)
Adjustment cycles		> 50,000
Temperature range	°C	-40 ... +60
Protection class		IP 24 (installed)
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated
Weight	g lb	350 0.77
Packing size (H x W x D)	mm inches	245 x 93 x 102 9.6 x 3.6 x 4
Dimensions (H x W x D)	mm inches	142 x 71 x 51 5.6 x 2.8 x 2



Please note:

If the Primary which controls the FlexRET system does not support the default ex-factory interface setting, then the FlexRET must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

If the FlexRET of an antenna has to be replaced, the FlexRET gets the information stored in the antenna after power on automatically. It is not necessary to configure the FlexRET manually.

Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
EN 55022 (Emission)
EN 55024 (Immunity)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

EU-RED: Hereby, KATHREIN SE declares that the radio equipment type 86010153v01 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.kathrein.com>

Certification: CE, FCC

Scope of supply: FlexRET

Optional: **Site Sharing Adapter** (86010154 or 86010155) to create independent logical interfaces at one antenna or site. Makes it possible to operate with more than one independent Node B.

Gender Adapter (86010162) to convert the AISG out (female) to an AISG in (male) port in order to operate one FlexRET with exactly 2 BTS.
Detailed information is given in the data sheet of the Gender Adapter.

Port Extender (86010163) to convert the existing AISG input and output in order to operate FlexRET with exactly 2 BTS while maintaining the daisy chain capability.
Detailed information is given in the data sheet of the Port Extender.

Please note:

In general, the addressing of the FlexRET is automatically performed. Only in case the FlexRET is manually addressed, the serial number has to be extended by the corresponding colour coding extension (e.g. CSG351234-**R1**). The respective information can be found on the site documentation which is included in the scope of supply.

All FlexRET antennas are equipped with this module. The module does not need to be ordered separately.

A flexible, integrated solution for adjusting the electrical downtilt of Kathrein FlexRET antennas.

- Compliant to 3GPP / AISG 2.0 – AISG 3 ready
- Single RETs or Multi RET displayed
- Individual user-specific configuration possible:
 - Antenna sharing-assignment of certain RET-subunits to RET-ports
 - Antenna tilt consolidations for RET control of several arrays by one RET-subunit
- Daisy Chain feasibility
- Pre-configured



Type No.		86010165
Protocols		compliant to 3GPP / AISG 2.0 – AISG 3 ready
Logical interface ex factory		3GPP / AISG 2.0
Operates as		Single RETs or Multi RET
Ex factory		Single RETs
Input voltage range	V	10 ... 30 (pin 6)
Power consumption	W	Typically < 1; < 10 (motor activated)
Connectors		2 x 8 pin connector according to IEC 60130-9; according to AISG-C 485 Daisy chain in: male; Daisy chain out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Adjustment time (full range)	sec	40 (typically, depending on antenna type)
Adjustment cycles		> 50,000
Temperature range	°C	–40 ... +60
Protection class		IP 24 (installed)
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated
Weight	g lb	350 0.77
Packing size (H x W x D)	mm inches	245 x 93 x 102 9.6 x 3.6 x 4
Dimensions (H x W x D)	mm inches	142 x 71 x 51 5.6 x 2.8 x 2



This device is not compatible to antennas with FlexRET 86010153 or 86010153v01. These FlexRET devices can not be replaced by 86010165.

Non-observance can damage the antenna and the RET device.

Please note:

If the Primary which controls the FlexRET system does not support the default ex-factory interface setting, then the FlexRET must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

The FlexRET needs to be powered by a LPS (Limited Power Source, Class: P2) according to IEC/EN 62368-1.

If the FlexRET of an antenna has to be replaced, the FlexRET gets the information stored in the antenna after power on automatically. It is not necessary to configure the FlexRET manually.

Standards: EN 62368-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETSI EN 301489-1 (EMI)
ETSI EN 301489-3 (EMI)
ETS 300019-1-4 (Environmental)
ETSI EN 300330 (Radio equipment)
EN 50364 (Health)

EU-RED: Hereby, KATHREIN SE declares that the radio equipment type 86010165 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.kathrein.com>

Certification: CE, FCC

Scope of supply: FlexRET

Optional: **Site Sharing Adapter** (86010154 or 86010155) to create independent logical interfaces at one antenna or site. Makes it possible to operate with more than one independent Node B. Operation in AISG 2.0 mode only.

Gender Adapter (86010162) to convert the AISG out (female) to an AISG in (male) port in order to operate one FlexRet with exactly 2 BTS.
Detailed information is given in the data sheet of the Gender Adapter.

Port Extender (86010163) to convert the existing AISG input and output in order to operate FlexRet with exactly 2 BTS while maintaining the daisy chain capability.
Detailed information is given in the data sheet of the Port Extender.

Please note:

In general, the addressing of the FlexRET is automatically performed. Only in case the FlexRET is manually addressed, the serial number has to be extended by the corresponding colour coding extension (e.g. CSG351234-R1). The respective information can be found on the site documentation which is included in the scope of supply.

Antenna Line Configurator (ALC) For Antenna Line Devices (ALD)

KATHREIN

- Supports AISG 2 / AISG 3
- HDLC-logging feature

- High-resolution display
- New Browser-interface



Antenna Line Configurator

Type No.	86010158
Connector* to RCU/TMA	1 x 8-pin connector according to IEC 60130-9, female, conforming to AISG RF-connector (SMB male)
Input voltage of ALC	24 V DC
Display	High-resolution display, sunlight visible
Tiltensor	Measuring range $\pm 80^\circ$, accuracy $\pm 1^\circ$
Output voltage to RCU's/TMA's	AISG female pin 6: 24 $\pm$ 1 V DC RF-plug: 24 $\pm$ 1 V DC
Output power (power supply to RCU's/TMA's)	RF-plug + AISG female pin 6 $\leq$ 15 W
Current monitoring measurement level	AISG female pin 6, RF-plug: 10 – 650 mA
Over-current protection	AISG female pin 6, RF-plug: < 650 mA
Interface to RCU/TMA	RS 485 / power supply / RF connector (SMB male)
Protocol to RCU/TMA	HDLC hex-coded command set, conforming to 3GPP / AISG 2 and AISG 3
Interface	W-LAN (802.11g), USB 2.0
Max. number of RCU's/TMA's	9/1 pcs., depending on system configuration and length of control cable
Max. length of control cable	200 m / 9 RCU's (in daisy chain configuration) 150 m / 6 RCU's (in splitter configuration)
Internal memory	512 MB
Weight	1 kg 2.2 lb
Protection class	IP 54
Temperature range (operating)	-20 ... +45 °C ambient temperature
Temperature range (charging)	10 ... +40 °C ambient temperature
Dimensions (H x W x D)	265 x 102 x 37 mm 10.4 x 4.0 x 1.5 inches
Packing size	405 x 290 x 105 mm 15.9 x 11.4 x 4.1 inches
Power supply	LiPo-battery (16.6 V, > 1850 mAh)

* Tightening torque for fixing the connector must be 0.5–1.0 Nm ('hand-tightened').
The connector should be tightened by hand only!



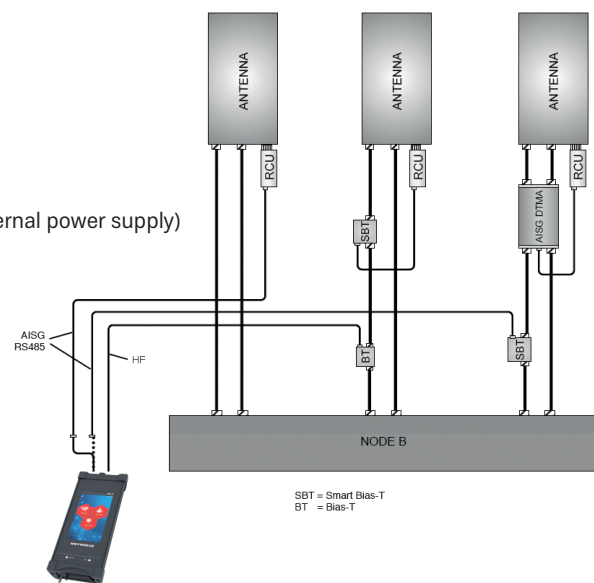
Please Note:

The user manual can be downloaded from our website <https://www.kathrein.com/en/support/technical-documents/user-manuals/>

Certificate: CE
FCC
UL (for external power adapter)

Standards: EN 60950-22
EN 62368-1
EN 62479
EN 50581
ETSI EN 301489-1
ETSI EN 301489-17
ETSI EN 300328 2.1.1

Scope of supply: ALC
Charging device (can also be used as external power supply)
USB cable
RET cable
HF cable (SMB / 7-16)
Transport case
Screen cover



RET

Portable Control Adapter (PCA) For Antenna Line Devices (ALD)

KATHREIN



Portable Control Adapter

Type No.		86010046	
Connector * to RCU/TMA		1 x 8-pin connector according to IEC 60130-9, female, conforming to AISG RF-connector (SMB male)	
Input voltage of PCA	V DC	24	
Output voltage to RCU's/TMA's	V DC	AISG female pin 6 (24 V DC): 24 ±10% AISG female pin 1 (12 V DC): 14 ±7% RF male (at 24 V DC): 24 ±10% *** RF male (at 12 V DC): 14 ±7% ***	
Output power (power supply to RCU's/TMA's)	W	AISG female pin 6 (24 V DC) without load on pin 1 (12 V DC) and on RF-plug: ≤ 60 AISG female Pin 1 (12 V DC) with max. 30 W load on pin 6 (24 V DC) and/or on RF plug: ≤ 30	
Current monitoring measurement level	mA	Per branch (12 V, 24 V, RF): 10 – 2500	
Over-current protection		Per branch (12 V, 24 V, RF): < 2500	
Interface to RCU/TMA		RS 485 / power supply / RF connector (SMB male)	
Protocol to RCU/TMA		HDLC hex-coded command set, conforming to AISG 1.1 and 3GPP / AISG 2.0	
Interface to PC		USB 1.1/2.0	
Max. number of RCU's/TMA's		27/3 pcs., depending on system configuration and length of control cable	
Max. length of control cable	m ft	9 RCU's (in daisy chain configuration): 200 656.17 6 RCU's (in splitter configuration): 150 492.13	
Weight	g lb	535 1.2 (incl. external power adapter)	
Temperature range	°C	0 ... +55 ambient temperature	
Height x width x depth	mm inches	40 x 95 x 160 1.57 x 3.74 x 6.29	
External power supply **		Input: 90 – 264 V AC, 47 – 63 Hz 24 V DC / 3.0 A	

* Tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened').

The connector should be tightened by hand only!

** If powered via AISG-interface, no external power supply is required.

*** Switchable with software

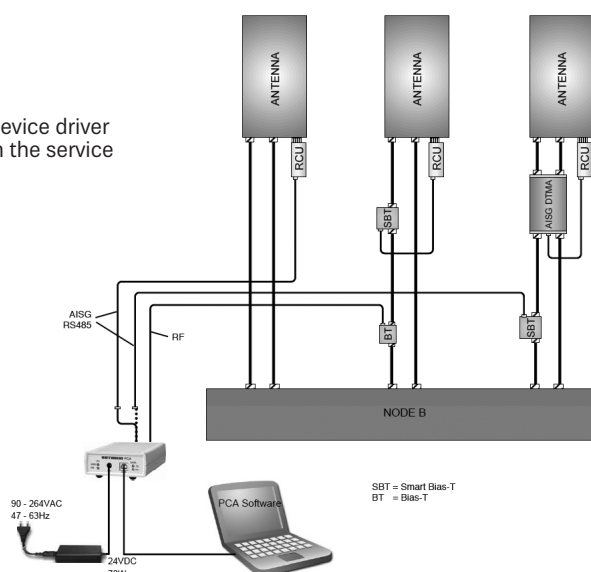
Certificate: CE
FCC part 15 class B
UL (for external power adapter)

Standards: EN 60950-1
EN 55022
EN 55024

System requirements for PCA Software: Windows XP, Win7, Win8, Win10

Scope of supply: PCA
External power supply (24 V DC / 70 W)
USB cable
AC power cable
Installation guide

Please note: The latest PCA application software, the device driver and PCA manual can be downloaded from the service portal under www.kathrein.com



SBT = Smart Bias-T
BT = Bias-T

Connecting Cable For Remote Electrical Tilt (RET) System

KATHREIN

For indoor and outdoor use

RET Cable for power supply and control

Type No.	86010007 ...
Connectors	2 x 8 pin connector according IEC 60130-9, female/male
Tightening torque for fixing the connectors	1.0 – 1.5 Nm (The connector should be tightened by hand or by special torque screwdriver)
Construction	Screen 1x twisted pair 100 Ω/1 MHz 2x power supply, 1x ground AWM style 20317 I/II A/B + 20549 + 20233
Rated current	4 A (power supply) (at 50 °C air temperature)
Temperature range	–40 °C to +80 °C, (fixed position)
Protection class	IP 67 (connected)
Cable diameter	8 mm
Flammability	VL 1581 VW-1 CSA FT 1
Colour	Black, similar to RAL 9005

Minimum bending radius: One time 60 mm,
several times 120 mm.

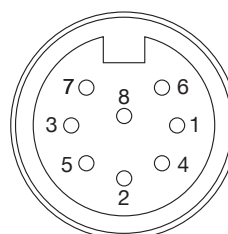
The male and female connectors of all Kathrein RET products are compatible components which are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E.



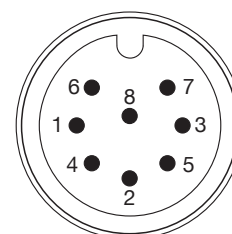
Control Cable

Length	Type No.
0.5 m	86010054
1 m	86010007
2 m	86010008
3 m	86010029
5 m	86010009
10 m	86010010
20 m	86010032
25 m	86010011
40 m	86010012
50 m	86010033
60 m	86010013
80 m	86010014
100 m	86010015

Female



Male



PIN assignment according AISG:

- 1 +13 V DC (+12 V DC nominal)
- 2 not connected
- 3 RS485 B
- 4 not connected
- 5 RS485 A
- 6 +29 V DC (+24 V DC nominal)
- 7 DC Return
- 8 not connected



Optional:

Torque screwdriver for AISG connecting cable (order no. 85010080).

With the torque screwdriver, Kathrein connecting cables can be easily fixed with the recommended torque of 1 Nm.



Old style connector:
Torque screwdriver not usable



New style connector:
Torque screwdriver usable

3-way

Operate a FlexRET system with up to three independent primaries.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Single RETs or Multi RET displayed
- Selectable arrangement of arrays
- Possible for up to three FlexRETs (daisy chain)



Type No.	86010154	
Protocols	compliant to AISG 1.1 and 3GPP/AISG 2.0	
Logical interface ex factory	3GPP/AISG 2.0	
Input voltage range	V	10 ... 30 (pin 1, pin 6)
Power consumption	W	< 3 (stand by); < 12 (motor activated)
Connectors	4 x 8 pin connector according to IEC 60130-9; according to AISG In: male; Out: female	
Hardware interfaces	RS 485A/B (pin 5, pin 3); power supply (pin 1, pin 6); DC return (pin 7); according to AISG / 3GPP	
Temperature range	°C	-40 ... +60
Protection class	IP 54 (installed)	
Lightning protection	AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)	
Max. cable length (Site Sharing Adapter to last FlexRET Antenna)	m ft	150 492
Housing material	Cover: Aluminum die cast coated	
Weight	g lb	650 1.4 lb
Packing size	mm inches	160 x 250 x 100 6.3 x 9.8 x 3.9 inches
Dimensions (H x W x D)	mm inches	123 x 166 x 62 4.8 x 6.5 x 2.4



Please note:

The Site Sharing Adapter can exclusively be used with FlexRET antennas. The FlexRET output of the Site Sharing Adapter needs to be directly connected to the FlexRET antenna. For selecting the arrangement of the antenna arrays, a separate software application is available.

The Site Sharing Adapter expands the AISG interface of max. three FlexRETs up to three AISG interfaces for three independent AISG primaries. The alignment of antenna arrays can be configured individually.

Only FlexRET devices from firmware version FW_V02.01.00 are suitable for operation with the Site Sharing Adapter.

- The firmware version can be queried through the AISG command "get information".
- The latest firmware version for FlexRET can be downloaded from the Kathrein website.
- FlexRET Antennas with firmware version FW_V02.00.XX must be updated before the initial setup of the Site Sharing Adapter. The FlexRET device will not be detected otherwise.
- A firmware update can be performed with a corresponding primary (e.g. Node B) or Controller (e.g. Kathrein ALC, -PCA, -CCU).

Standby power for Site Sharing Adapter and FlexRET system is taken by the BTS with the highest DC input voltage. When the motor is in operation, the electrical power is allocated fairly to the base stations, according to the individual input. The Site Sharing Adapter can not be used in combination with an AISG splitter (e.g. 86010002). For the connection of the Site Sharing Adapter and the FlexRETs, a standard AISG cable shall be used.

The latest configuration software and the manual with detailed configuration information are provided via our customer portal on www.kathrein.com

Additional earthing may be needed depending on the used installation. Please follow the guidelines given in the manual.

Standards:

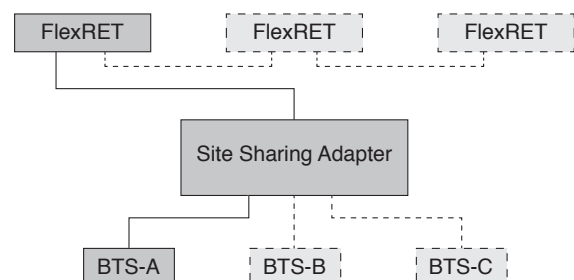
EN 60950-1 (Safety),
EN 60950-22 (Safety – Equipment installed outdoor)
EN 55022 (Emission),
EN 55024 (Immunity),
ETS 300019-1-4 (Environmental),
UL 60950-1; 1st edition

Certification:

CE, FCC

Scope of supply:

Site Sharing Adapter, tension band



6-way

Operate a FlexRET system with up to six independent primaries.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Single RETs or Multi RET displayed
- Selectable arrangement of arrays
- Possible for up to three FlexRETs (daisy chain)



Type No.		86010155
Protocols		compliant to AISG 1.1 and 3GPP/AISG 2.0
Logical interface ex factory		3GPP/AISG 2.0
Input voltage range	V	10 ... 30 (pin 1, pin 6)
Power consumption	W	< 3 (stand by); < 12 (motor activated)
Connectors		7 x 8 pin connector according to IEC 60130-9; according to AISG In: male; Out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 1, pin 6); DC return (pin 7); according to AISG / 3GPP
Temperature range	°C °F	-40 ... +60 -40 ... +140
Protection class		IP 54 (installed)
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)
Max. cable length (Site Sharing Adapter to last FlexRET Antenna)	m ft	150 492
Housing material		Cover: Aluminum die cast coated
Weight	g lb	1350 3.0 lb
Packing size	mm inches	195 x 360 x 110 7.68 x 14.17 x 4.33
Dimensions (H x W x D)	mm inches	156 x 265 x 65 6.14 x 10.43 x 2.56



Please note:

The Site Sharing Adapter can exclusively be used with FlexRET antennas. The FlexRET output of the Site Sharing Adapter needs to be directly connected to the FlexRET antenna. For selecting the arrangement of the antenna arrays, a separate software application is available.

The Site Sharing Adapter expands the AISG interface of max. three FlexRETs up to three AISG interfaces for six independent AISG primaries. The alignment of antenna arrays can be configured individually.

Only FlexRET devices from firmware version FW_V02.01.00 are suitable for operation with the Site Sharing Adapter.

- The firmware version can be queried through the AISG command "get information".
- The latest firmware version for FlexRET can be downloaded from the Kathrein website.
- FlexRET Antennas with firmware version FW_V02.00.XX must be updated before the initial setup of the Site Sharing Adapter. The FlexRET device will not be detected otherwise.
- A firmware update can be performed with a corresponding primary (e.g. Node B) or Controller (e.g. Kathrein ALC, -PCA, -CCU).

When the motor is in operation, the electrical power is allocated fairly to the base stations, according to the individual input. The Site Sharing Adapter can not be used in combination with an AISG splitter (e.g. 86010002). For the connection of the Site Sharing Adapter and the FlexRETs, a standard AISG cable shall be used.

The latest configuration software and the manual with detailed configuration information are provided via our customer portal on www.kathrein.com

Additional earthing may be needed depending on the used installation. Please follow the guidelines given in the manual.

Standards:

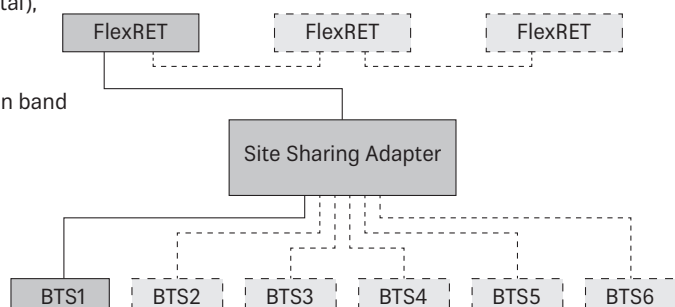
EN 60950-1 (Safety),
EN 60950-22 (Safety – Equipment installed outdoor)
EN 55022 (Emission),
EN 55024 (Immunity),
ETS 300019-1-4 (Environmental),
UL 60950-1; 1st edition

Certification:

CE, FCC

Scope of supply:

Site Sharing Adapter, tension band



Converts the AISG out (female) to an AISG in (male) port in order to operate the FlexRET with two BTS.
Only for FlexRET 86010153v01.



Type No.		86010162
Protocols		compliant to 3GPP/AISG 2.0
Input voltage range	V	10 ... 30 (pin 6)
Connectors		1 x 8 pin connector (male) according to IEC 60130-9; according to AISG C485 1 x 8 pin connector (female) according to IEC 60130-9; according to AISG C485 Female mates with FlexRET
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Temperature range	°C	-40 ... +60
Protection class		IP 67 (installed)
Surge current capability		AISG interface (each pin) in combination with FlexRET 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5
Housing material		Connector shell: Zinc die cast Ni plated; Contacts: Ag plated
Weight	g lb	45 0.099
Packing size (H x W x D)	mm inches	43 x 20 x 20 1.7 x 0.78 x 0.78
Dimensions (H x W x D)	mm inches	43 x 20 x 20 1.7 x 0.78 x 0.78

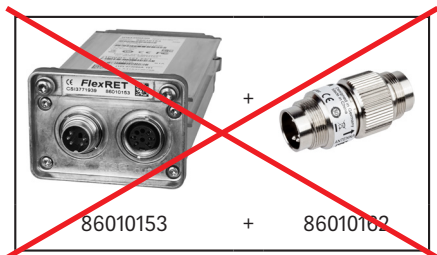


Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

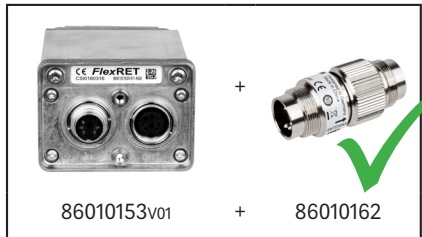
Certification: CE

Scope of supply: Gender Adapter

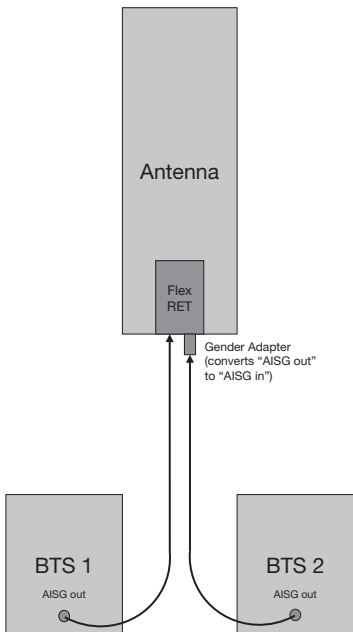
Notice: The Gender Adapter is solely to be used in combination with the FlexRET module 86010153v01. A combination with other modules, especially with the FlexRET module 86010153, must be avoided since this could lead to unexpected behaviour in the FlexRET module and could cause overvoltage in the primary power supply.
For avoidance of doubt, the combination with any other module, with exception of the FlexRET module 86010153v01, could lead to a damage. In no event will Kathrein, its affiliates and/or subsidiaries be liable for direct, incidental, consequential, special, indirect damages arising from or relating to the combination with another module except FlexRET module 86010153v01. These limitations will apply even if Kathrein has been advised of the possibility of such damages and whether such damages are foreseeable or not.



In combination with 86010153:
Gender Adapter is not usable.



In combination with 86010153v01:
Gender Adapter can be used.



Port Extender allows daisy chaining of FlexRET 86010153v01 when the FlexRET operates with two BTS. G-in and G-out is converting the AISG-out (female) of FlexRET to an AISG-in while maintaining the daisy chain capability on this port.
Only for FlexRET 86010153v01.



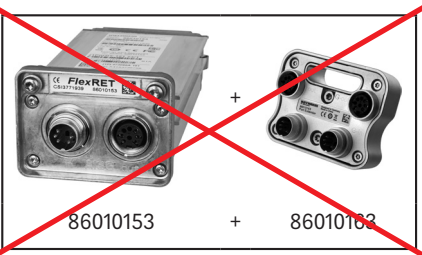
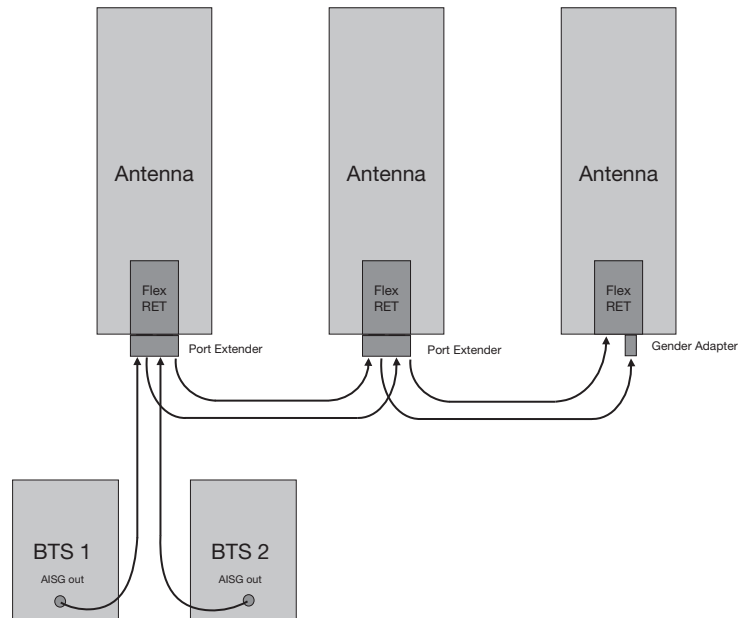
Type No.		86010163
Protocols		compliant to 3GPP/AISG 2.0
Input voltage range	V	10 ... 30 (pin 6)
Connectors		4 x 8 pin connector according to IEC 60130-9; according to AISG C485 Daisy chain in: male; Daisy chain out: female Daisy chain G-in: male; Daisy chain G-out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Temperature range	°C	-40 ... +60
Protection class		IP 67 (installed)
Surge current capability		AISG interface (each pin) in combination with FlexRET 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5
Weight	g lb	160 0.35
Packing size (H x W x D)	mm inches	90 x 70 x 70 3.5 x 2.8 x 2.8
Dimensions (H x W x D)	mm inches	44.5 x 81 x 62 1.8 x 3.2 x 2.4



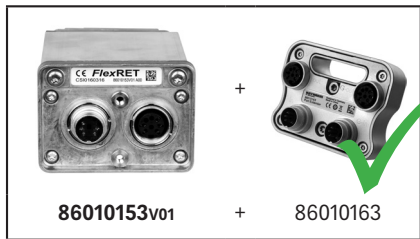
Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

Certification: CE
Scope of supply: Port Extender

Notice:
The Port Extender is solely to be used in combination with the FlexRET module 86010153v01. A combination with other modules, especially with the FlexRET module 86010153, must be avoided since this could lead to unexpected behaviour in the FlexRET module and could cause overvoltage in the primary power supply. For avoidance of doubt, the combination with any other module, with exception of the FlexRET module 86010153v01, could lead to a damage. In no event will Kathrein, its affiliates and/or subsidiaries be liable for direct, incidental, consequential, special, indirect damages arising from or relating to the combination with another module except FlexRET module 86010153v01. These limitations will apply even if Kathrein has been advised of the possibility of such damages and whether such damages are foreseeable or not.



In combination with 86010153:
Port Extender is not usable.



In combination with **86010153v01**:
Port Extender can be used.

DC-Power and Signal Splitter For Remote Electrical Tilt (RET) Indoor and Outdoor Use

KATHREIN

AISG compliant device for splitting of DC-power and control signals from one input to three outputs.



3-way Splitter for RET

Type No.	86010002
Connectors ¹⁾	4 x 8 pin connector according IEC 60130-9, 1 x male, 3 x female
Rated current (power supply)	3 A (at 50 °C)
Max. voltage	60 V
Protection class	IP 65
Weight	250 g
Packing size	114 mm x 117 mm x 117 mm
Height/width/depth	91 mm / 103 mm / 72 mm

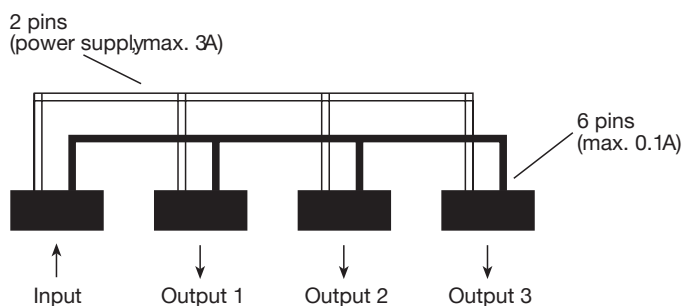
¹⁾ The tightning torque for fixing the connector must be 1.0–1.5 Nm ("hand-tightened").

Material: Connector plate: Aluminum.
Cap: Plastic.

Mounting: Mast mounting (50–145 mm diameter) by clamp.
Wall mounting by screws (not supplied).

Note: **Connectors must be situated at the bottom. No inverted mounting possible.**

Scope of supply: 3-way Splitter
Clamp (50...145 mm)



Lightning Protection Device (LPD) For Remote Electrical Tilt (RET) Indoor and Outdoor Use

KATHREIN

The device is designed for lightning protection of control cables carrying partial lightning currents up to 25 kA (shield) and 2.5 kA (inner conductor), according IEC 61643-1, IEC 61312-3. Each pin is protected individually.



Lightning Protection Device for RET

Type No.	86010030
Connectors ¹⁾	2 x 8 pin connector according IEC 60130-9, input: male, output: female
SPD-Type	8 x bipolar gas tube
Max. impuls current	25 kA (housing, shield) (10/350 μ s) inner conductors: 2.5 kA/pin (10/350 μ s)
Max. dynamic overvoltage at spark gap (1 kV/ μ s)	< 700 V
Static overvoltage (100 V/s)	< 100 V
Grounding	Via mounting plate / clamps at metallic surfaces or via separate cable, min. cross-section 5 mm ² Cu (screw M6)
Max. operation current	4 A at 50 °C
Max. operation voltage	60 V
Protection class	IP 55
Weight	250 g
Packing size	114 mm x 117 mm x 117 mm
Height/width/depth	91 mm / 103 mm / 72 mm

¹⁾ The tightening torque for fixing the connector must be 1.0–1.5 Nm ('hand-tightened').

Material: Connector plate: Aluminum.
Cap: Plastic.

Mounting: Mast mounting (50–145 mm diameter) by clamp.
Wall mounting by screws (not supplied).

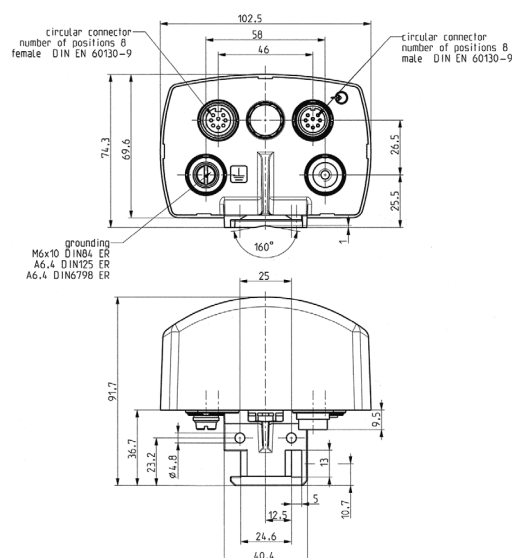
Note: No decoupling elements are integrated. The coordination with additional LPD's (device input) should be checked according to IEC 61312.

Grounding of the device via the mounting plate at metallic surfaces or via additional grounding cable (not included in the delivery extend).

Connectors must be situated at the bottom. No inverted mounting possible.

Important: A control cable with a minimum length of 2 meters is required between Lightning Protection Device and Central Control Unit at the BTS to achieve the required decoupling.

Scope of supply: Lightning Protection Device
Clamp (50...145 mm)



RET

Earthing Clamp For Power Supply and Control Cable For Remote Control Unit (RCU)

KATHREIN

The clamp is designed for lightning protection of control cables according to EN 50164-1

Earthing clamp for RCU power supply and signal cable

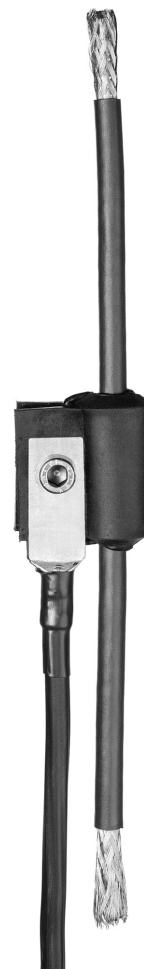
Type No.	86010031
Max. lightning current	20 kA (pulse 10/350 µsec)
Contact resistance	< 3 mΩ
Protection class	IP 68
Grounding	Via stranded grounding wire, 16 mm ² , length 0.5 m, one end terminated with cable eye (10 mm lug)
Packing size	Plastic bag: 210 mm x 210 mm
Weight	160 g

Material:
Body: Stainless steel with vulcanized Ethylene-Propylene-Caoutchouc
Screw: Stainless steel
Skin: Copper alloy
Grounding wire: Copper

Note:
The earthing clamp is suitable only for the Kathrein Power Supply and Signal Cables,
Type No. 86010007 to 86010015, 86010029,
86010032, 86010033, 86010054 to 86010060 or
shielded cables with

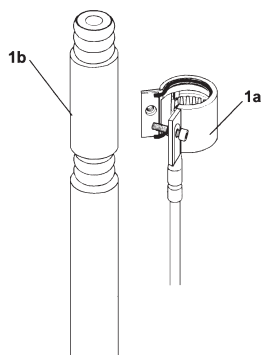
- shield diameter 6.1 mm
- jacket diameter 7.8 mm ±0.3 mm

The kit contains:
1 x Grounding kit body incl. Butyl sealing rope
covered with paper
1 x Screw M6 DIN 912
1 x Grounding wire



Mounting instructions:

This instruction is written for qualified and experienced personnel. Please read it carefully before starting work. Any liability or responsibility for the result of improper or unsafe installation is disclaimed!

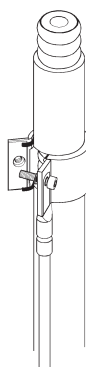


Attention!

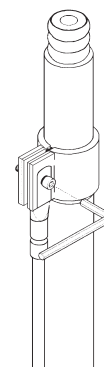
Install grounding kit only where the cable runs straight.

Fig. 1a Preassembled grounding kit.

Fig. 1b Clean the plastic jacket at the desired grounding point and cut out a strip of 15 mm with aid of a suitable stripping tool.



Remove covering paper from Butyl sealing. Wrap the grounding kit body around the cable and align it.



Tighten the screw (> 6 Nm)

Summary – Electrical Accessories

380...3800 MHz

KATHREIN

Type	Type No.	Frequency range	Remark	Max. power	Connector female	Page
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Splitters

2-way Splitter 380–3800	86010131	380–3800 MHz	Indoor/Outdoor	700 W	7-16	270
2-way Splitter 694–3800	86010101	694–3800 MHz	Indoor/Outdoor	700 W	7-16	271
3-way Splitter 694–3800	86010103	694–3800 MHz	Indoor/Outdoor	700 W	7-16	271
4-way Splitter 694–3800	86010105	694–3800 MHz	Indoor/Outdoor	700 W	7-16	271

Tappers

2-way Tapper 694–2700	7.0/1.0 dB	86010136	694 – 2700 MHz	Indoor	100 W	N	272
2-way Tapper 694–2700	7.0/1.0 dB	86020136	694 – 2700 MHz	Indoor/Outdoor	100 W	4.3-10	273
2-way Tapper 694–2700	10.4/0.4 dB	86010137	694 – 2700 MHz	Indoor	100 W	N	272
2-way Tapper 694–2700	10.4/0.4 dB	86020137	694 – 2700 MHz	Indoor/Outdoor	100 W	4.3-10	273
2-way Tapper 694–2700	15.1/0.1 dB	86010138	694 – 2700 MHz	Indoor	100 W	N	272
2-way Tapper 694–2700	15.1/0.1 dB	86020138	694 – 2700 MHz	Indoor/Outdoor	100 W	4.3-10	273
2-way Tapper 694–2700	7.0/1.0 dB	86010150	694–2700 MHz	Indoor/Outdoor	500 W	7-16	272
2-way Tapper 694–2700	10.5/0.5 dB	86010151	694–2700 MHz	Indoor/Outdoor	500 W	7-16	273
2-way Tapper 694–2700	15.3/0.3 dB	86010152	694–2700 MHz	Indoor/Outdoor	500 W	7-16	274

Continuously adjustable ratio

Multi-band Tapper 380–960/1695–2700/ 3400–3800/4920–5920 5.0–20.0dB	86010160	380 – 960 MHz 1695 – 2700 MHz 3400 – 3800 MHz 4920 – 5920 MHz	Indoor/Outdoor	100 W	N	275
Multi-band Tapper 380–960/1695–2700/ 3400–3800/4920–5920 5.0–20.0dB	86020160	380 – 960 MHz 1695 – 2700 MHz 3400 – 3800 MHz 4920 – 5920 MHz	Indoor/Outdoor	100 W	4.3-10	275

Low-loss Power Splitters Multi-band

380-3800

KATHREIN

For indoor and outdoor use.

2-way Splitter 380-3800

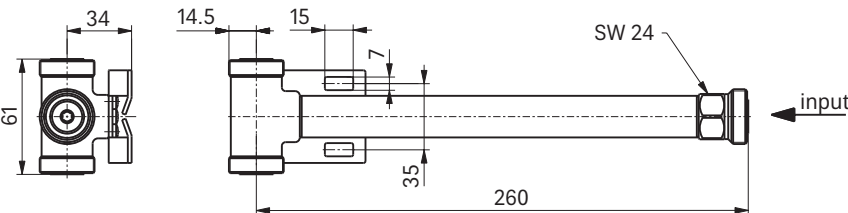
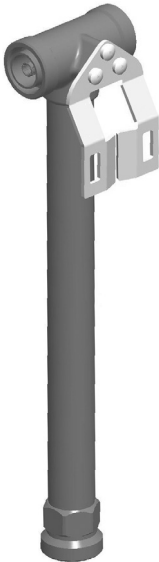
Type No.	86010131
Connector	7-16 female
Max. power (at 50 °C ambient temperature)	700 W
For connecting ... antennas	2
Frequency range	380 – 3800 MHz
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Impedance	50 Ω
Insertion loss	< 0.05 dB
Weight	870 g
Packing size	300 x 75 x 75 mm

Material: Brass. Surface treatment: CuSnZn3

Mounting: Bracket for wall mounting included in the scope of supply.
For pipe mast mounting use clamps listed below (order separately).

DC capability: DC transmission between all terminations (suitable for remote power supply systems).

Environmental conditions: ETS 300 019-1-4 class 4.1 E
– Low temperature: -55 °C
– High temperature (dry): +60 °C
IP 65



Clamps (order separately) Please note that packing quantity is 2 pcs

Type No.	Description	Remarks
734360	1 tension band	Mast: 34–60 mm diameter
734361	1 tension band	Mast: 60–80 mm diameter
734362	1 tension band	Mast: 80–100 mm diameter
734363	1 tension band	Mast: 100–120 mm diameter
734364	1 tension band	Mast: 120–140 mm diameter
734365	1 tension band	Mast: 45–125 mm diameter



734364

Low-loss Power Splitters Multi-band

694-3800

KATHREIN

For indoor and outdoor use.

2-way Splitter 694-3800

3-way Splitter 694-3800

4-way Splitter 694-3800

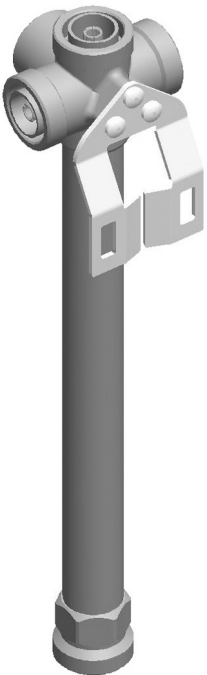
Type No.	86010101	86010103	86010105
Connector (female)	7-16	7-16	7-16
Max. power (at 50 °C ambient temperature)	700 W	700 W	700 W
For connecting ... antennas	2	3	4
Frequency range	694 – 3800 MHz		
VSWR	694 – 894 MHz: < 1.32 790 – 3800 MHz: < 1.15		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Impedance	50 Ω		
Insertion loss	< 0.05 dB		
Weight	870 g	900 g	960 g
Packing size	300 x 75 x 75 mm		

Material: Brass. Surface treatment: CuSnZn3

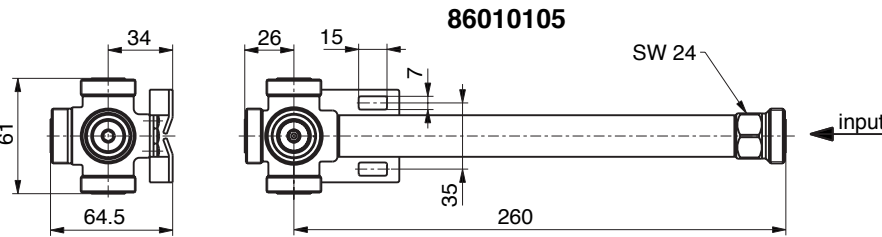
Mounting: Bracket for wall mounting included in the scope of supply.
For pipe mast mounting use clamps listed below (order separately).

DC capability: DC transmission between all terminations (suitable for remote power supply systems).

Environmental conditions: ETS 300 019-1-4 class 4.1 E
– Low temperature: -55 °C
– High temperature (dry): +60 °C
IP 65



86010105



Clamps (order separately)
Please note that packing quantity is 2 pcs

Type No.	Description	Remarks
734360	1 tension band	Mast: 34–60 mm diameter
734361	1 tension band	Mast: 60–80 mm diameter
734362	1 tension band	Mast: 80–100 mm diameter
734363	1 tension band	Mast: 100–120 mm diameter
734364	1 tension band	Mast: 120–140 mm diameter
734365	1 tension band	Mast: 45–125 mm diameter



734364

Electr. Acc.

Low-loss Power Tappers Multi-band

694-2700

KATHREIN

For indoor use.

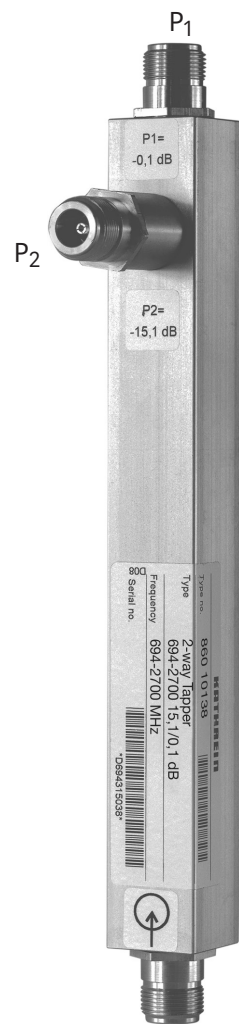
2-way Tapper 694-2700 7.0/1.0dB
2-way Tapper 694-2700 10.4/0.4dB
2-way Tapper 694-2700 15.1/0.1dB

Type No.		86010136	86010137	86010138
Frequency range	MHz	694 – 2700 MHz		
Tap Loss				
Input ↔ P ₁	dB	-1.0	-0.4	-0.1
Input ↔ P ₂		-7.0	-10.4	-15.1
For connecting ... antennas		2		
Insertion loss	dB	< 0.05		
Impedance	Ω	50		
VSWR		694-790 MHz: < 2.0 790-2500 MHz: < 1.5 2500-2700 MHz: < 2.0		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. power	W	100 (at 50 °C ambient temperature)		
Connectors		N female		
Weight	g lb	500 1.1		
Profile cross-section	mm inches	25 x 25 1.0 x 1.0		
Packing size	mm inches	267 x 95 x 111 10.5 x 3.7 x 4.4		
Max. size	mm inches	244 / 64 / 25 9.6 / 2.5 / 1.0		

Material: Housing: Aluminum.
 Inner conductor: Brass.

DC capability: DC transmission only between input and port P₁.
 P₂ is coupled capacitively.

Environmental conditions: IP 52



Input

Low-loss Power Tappers Multi-band

694-2700

KATHREIN

For indoor and outdoor use.

2-way Tapper 694-2700 7.0/1.0dB
2-way Tapper 694-2700 10.4/0.4dB
2-way Tapper 694-2700 15.1/0.1dB

Type No.		86020136	86020137	86020138
Frequency range	MHz	694 – 2700 MHz		
Tap Loss				
Input ↔ P ₁	dB	-1.0	-0.4	-0.1
Input ↔ P ₂		-7.0	-10.4	-15.1
For connecting ... antennas		2		
Insertion loss	dB	< 0.05		
Impedance	Ω	50		
VSWR		694-790 MHz: < 2.0 790-2500 MHz: < 1.5 2500-2700 MHz: < 2.0		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. power	W	100 (at 50 °C ambient temperature)		
Connectors		4.3-10 female		
Weight	g lb	500 1.1		
Profile cross-section	mm inches	25 x 25 1.0 x 1.0		
Packing size	mm inches	253 x 73 x 92 10.0 x 2.9 x 3.6		
Max. size	mm inches	247 / 66 / 25 9.7 / 2.6 / 1.0		

Material: Housing: Aluminum.
Inner conductor: Brass.

DC capability: DC transmission only between input and port P₁.
P₂ is coupled capacitively.

Environmental conditions: IP 65



Low-loss Power Tappers Multi-band

694–2700

KATHREIN

For indoor and outdoor use.

2-way Tapper 694–2700 7.0 /1.0dB

2-way Tapper 694–2700 10.5/0.5dB

2-way Tapper 694–2700 15.3/0.3dB

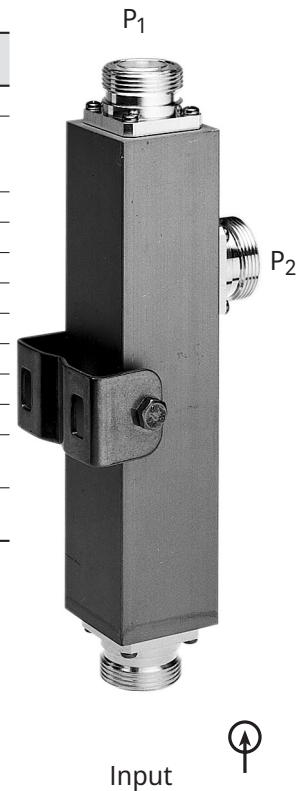
Type No.		86010150	86010151	86010152
Frequency range	MHz	694 – 2700		
Tap Loss				
Input ↔ P ₁	dB	-1.0	-0.5	-0.3
Input ↔ P ₂		-7.0	-10.5	-15.3
For connecting ... antennas		2		
Insertion loss	dB	< 0.05		
Impedance	Ω	50		
VSWR		694 – 2700 MHz: < 1.5		
Intermodulation IM3	dBc	< -150 (2 x 43 dBm carrier)		
Max. power per input	W	500 (at 50 °C ambient temperature)		
Connector		7-16 female		
Weight	kg lb	1.3 2.9		
Packing size	mm inches	310 x 93 x 112 12.2 x 3.7 x 4.4		
Max. size	mm inches	244 / 90 / 55 9.6 x 3.5 x 2.2		

Material: Housing: Aluminum.
Inner conductor: Brass.

DC capability: DC transmission only between input and port P₁.
P₂ is coupled capacitively.

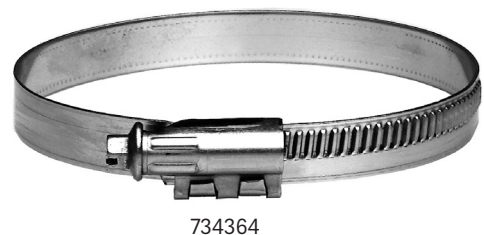
Mounting: Bracked for wall mounting included in the scope of supply.
For pipe mast mounting use clamps listed below (order separately).

Environmental conditions: IP 65



Clamps (order separately)
Please note that packing quantity is 2 pcs

Type No.	Description	Remarks
734360	1 tension band	Mast: 34–60 mm diameter
734361	1 tension band	Mast: 60–80 mm diameter
734362	1 tension band	Mast: 80–100 mm diameter
734363	1 tension band	Mast: 100–120 mm diameter
734364	1 tension band	Mast: 120–140 mm diameter
734365	1 tension band	Mast: 45–125 mm diameter



734364

For indoor and outdoor use.

2-way Tapper 380–960/1695–2700/3400–3800/4920–5920

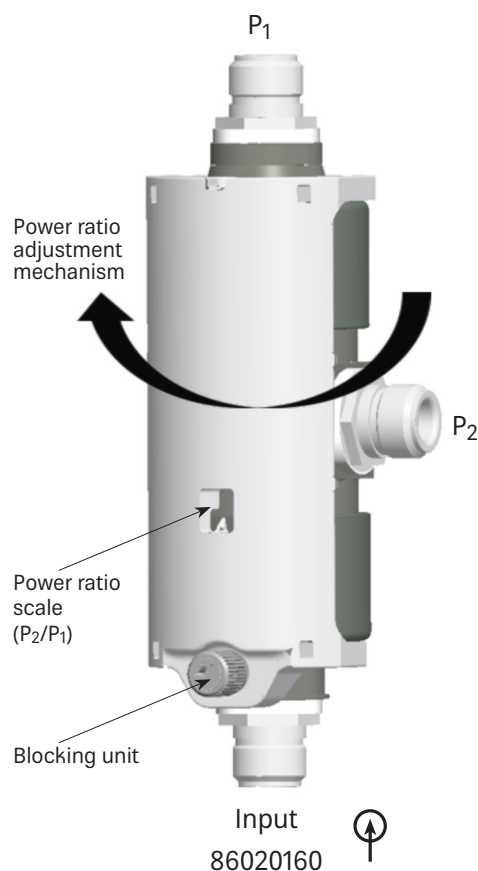
Type No.		86020160	86010160
Frequency range	MHz	380 – 960 1695 – 2700 3400 – 3800 4920 – 5920	
Power ratio between outputs (P_2 / P_1)	dB	–5 to –20 continuously adjustable	
For connecting ... antennas		2	
Insertion loss	dB	380 – 960 MHz: < 0.2 1695 – 2700 MHz: < 0.2 3400 – 3800 MHz: < 0.5 4920 – 5920 MHz: < 0.7	
Impedance	Ω	50	
VSWR		380 – 960 MHz: < 1.5 1695 – 2700 MHz: < 1.5 3400 – 3800 MHz: < 1.7 4920 – 5920 MHz: < 1.7	
Intermodulation IM3	dBc	380 – 960 MHz: < –150 (2 x 43 dBm carrier) 1695 – 2700 MHz: < –150 (2 x 43 dBm carrier) 3400 – 3800 MHz: < –150 (2 x 43 dBm carrier) 4920 – 5920 MHz: not relevant	
Max. power	W	100 (at 50 °C ambient temperature)	
Connector		4.3-10 female	N female
Weight	kg lb	0.4 0.9	0.5 1.1
Environmental conditions		Indoor, outdoor use	
Protection class		IP 65	
Profile diameter	mm inches	50 2.0	
Packing size	mm inches	225 x 80 x 62 8.9 x 5.0 x 2.4	190 x 80 x 60 7.5 x 5.0 x 2.4
Max. size (including connectors)	mm inches	160 / 63 / 52 6.3 / 2.5 / 2.0	160 / 70 / 55 6.3 / 2.8 / 2.2

Material: Housing: Aluminum.
Inner conductor: Brass.

DC capability: DC transmission only between input and port P_1 .

Splitting table (typical values)

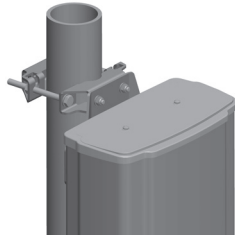
P_2 / P_1 [dB]	Splitting ratio P_1 / P_2	Splitting attenuation	
		P_1 / P_{Input} [dB]	P_2 / P_{Input} [dB]
–5	3.2	–1.30	–6.30
–6	4.0	–1.05	–7.05
–7	5.0	–0.85	–7.85
–8	6.3	–0.70	–8.70
–9	8.0	–0.60	–9.60
–10	10.0	–0.50	–10.50
–11	12.6	–0.40	–11.40
–12	15.8	–0.35	–12.35
–13	20.0	–0.25	–13.25
–14	25.1	–0.20	–14.20
–15	31.6	–0.15	–15.15
–16	39.8	–0.14	–16.14
–17	50.1	–0.12	–17.12
–18	63.1	–0.11	–18.11
–19	79.4	–0.10	–19.10
–20	100.0	–0.09	–20.09



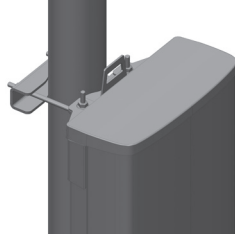
	Page
Mounting Configurations	278
Product Line of Mounting Parts	279
Clamps “L”, “M” and “H”	280
Clamps “XM” and “XH”	281 – 285
Downtilt kit “L”	286
Downtilt kit “L” and “M”	287
Downtilt kit “H”	288
Downtilt kit “XM” and “XH”	289 + 290
Uptilt Joint for Downtilt kit “XM” and “XH”	291
Spacer for Downtilt kit “XM” and “XH”	292
Azimuth Adjustment Kits “L”, “M” and “H”	293
Azimuth Adjustment Kit “XH”	294
3 Sector Clamps “L”, “M” and “H”	295
3 Sector Clamp “XH”	296
Offset “L”, “M”, “H” and “XH”	297
2x Panel Mounting Kit “L”, “M” and “H”	298 – 300
2x Panel Mounting Kit “XH”	301
Tension Band	302
Mechanical Integration Kit (MIK) for Nokia mMIMO Active Antennas	303
Canister Pole Mounting Kits	304
Antenna Monitoring Unit AMU	305
Protection Caps	306

The hereinafter referred to “wind load category L - M - H - XM - XH” correspond to the defined “category of mounting hardware” given in the respective data sheets.

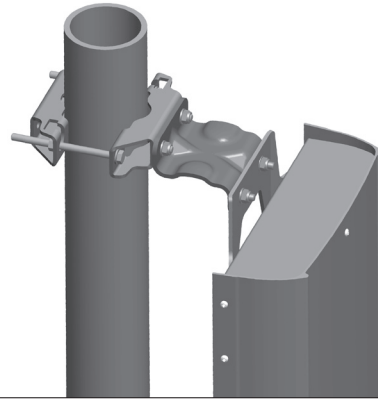
Clamp
Large Pipe Diameter
("L", "M", "H")



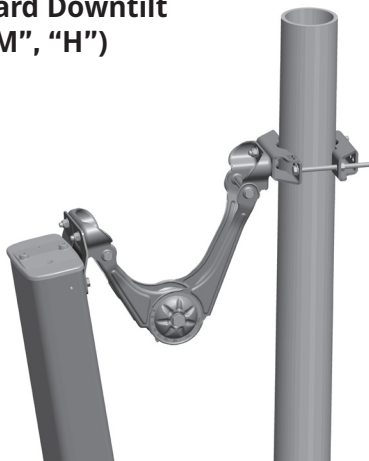
Clamp
Large Pipe Diameter
("XH", "XM")



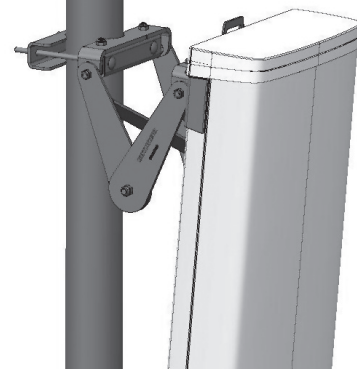
Offset
("L", "M", "H")



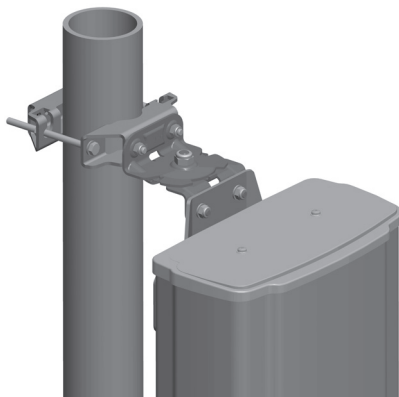
Standard Downtilt
("L", "M", "H")



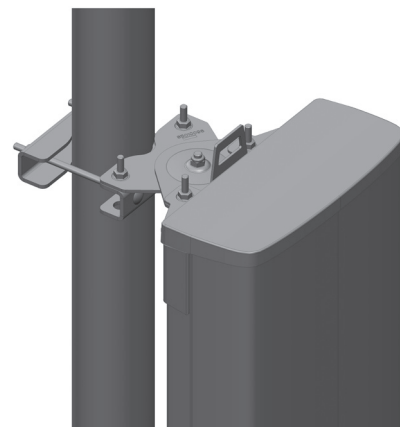
Standard Downtilt
("XH", "XM")



Azimuth
("L", "M", "H")

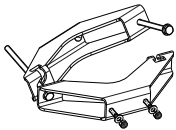
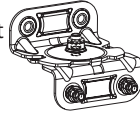
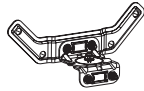
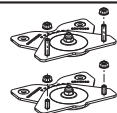
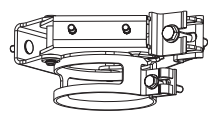
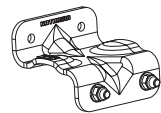
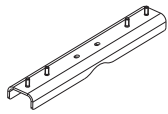


Azimuth
("XH")



Product Line of Mounting Parts

KATHREIN

Type	Windload Classification	Pole Diameter in mm		Type No.	Remark	Page
Clamp 	light / medium	Ø 28–60		731651		280
	light / medium / heavy	Ø 42–115		738546		
		Ø 55–115		85010212		
		Ø 110–220		85010002		
		Ø 210–380		85010003		
Clamp 	XM (X-medium)	Ø 55–115		85010111		282
	XH (X-heavy)	Ø 55–115		85010096		283
	XH (X-heavy)	Ø 110–220		85010097		284
	XH (X-heavy)	Ø 210–380		85010101		285
Downtilt kit 	light			732327		286
	light / medium			737978		287
	heavy			85010009		288
Downtilt kit 	XM (X-medium)			85010110		289
	XH (X-heavy)			85010099		290
Uptilt Joint for Downtilt kit 	XM (X-medium) XH (X-heavy)			85010112		291
Azimuth Adjustment Kit 	light / medium			85010014	Pole mounting adjustment angle ±30° (additional clamp needed)	293
	heavy			85010015		
Azimuth Adjustment Kit 	light / medium			85010016	Wall mounting adjustment angle ±30°	293
	heavy			85010017		
Azimuth Adjustment Kit 	X-heavy			85010098		294
3 Sector Clamp 	light / medium	Ø 88.9		K742263		295
		Ø 88.9		K742317		
		Ø 114.3		742033		
		Ø 139.7		742034		
	heavy	Ø 114.3		85010058		
		Ø 139.7		85010059		
	X-heavy	Ø 114.3		85010102		296
Offset 	light / medium			85010060	Clearance between pole and antenna (additional clamp needed)	297
	heavy			85010061		
	X-heavy			85010104		
2x Panel Mounting Kit 	light / medium	max. Panel width 160		742113	Additional clamp needed	298
		max. Panel width 325		85010075		299
	heavy	max. Panel width 377		85010087		300
		X-heavy	Ø 110–220	max. Panel width 378	85010103	301
	Ø 210–380		85010108			
	Tension Band 	light	Ø 34–60		734360	Please note: Only usable without downtilt kit
Ø 60–80			734361			
Ø 80–100			734362			
Ø 100–120			734363			
Ø 120–140			734364			
Ø 45–125			734365			

New or changed product

Mounting Hardware

Clamps

(Wind Load Category “L”, “M” and “H”)

KATHREIN

Clamps

Type No.	731651	738546	85010212	85010002	85010003
Suitable for mast diameter	28–60 mm	42–115 mm	55–115 mm	110–220 mm	210–380 mm
Antenna – mast distance F	25–28 mm	20–26 mm	30–34 mm	47–55 mm	48–68 mm
Number of pieces	1 clamp	1 clamp	1 clamp	1 clamp	1 clamp
Material – Clamp	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Screws	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Stainless steel/ Stainless steel
– Nuts	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight	0.8 kg	1.1 kg	1.6 kg	2.7 kg	4.8 kg

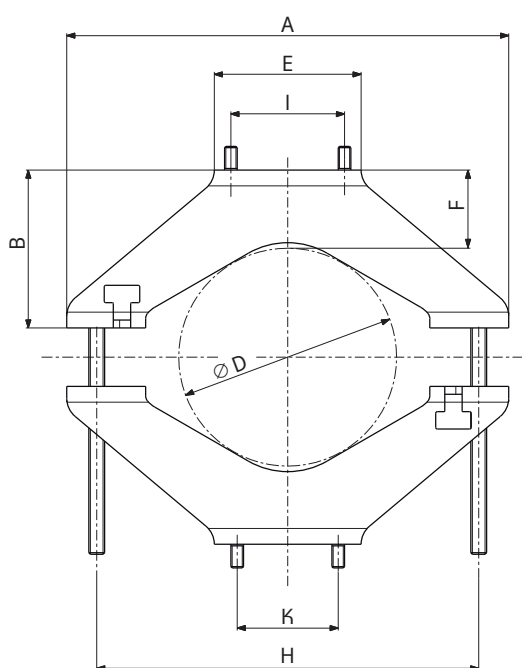
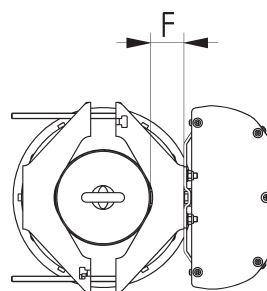
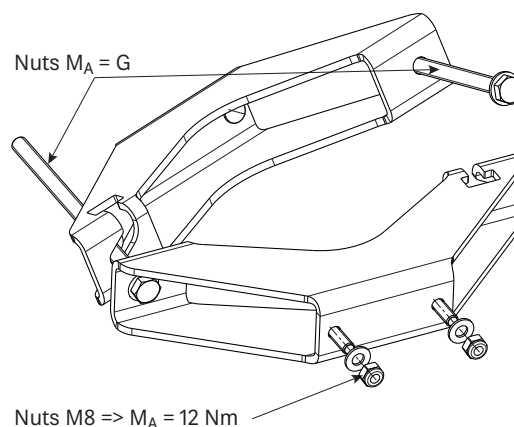


Figure similar to 85010002



Type No.	A	B	C	D	E	F	G	H	I	K
731651	116 mm	40 mm	40 mm	28–60 mm	93 mm	25–28 mm	20 Nm	84 mm	–	64 mm
738546	152 mm	40 mm	40 mm	42–115 mm	93 mm	20–26 mm	25 Nm	125 mm	72 mm	64 mm
85010212	174 mm	50 mm	50 mm	55–115 mm	104 mm	30–34 mm	35 Nm	126 mm	72 mm	–
85010002	280 mm	100 mm	50 mm	110–220 mm	93 mm	47–55 mm	35 Nm	240 mm	72 mm	64 mm
85010003	442 mm	150 mm	50 mm	210–380 mm	150 mm	48–68 mm	35 Nm	392 mm	72 mm	64 mm

**Please note: Kathrein does not recommend to use counter nuts.
The additional nuts supplied are only meant as spares.**

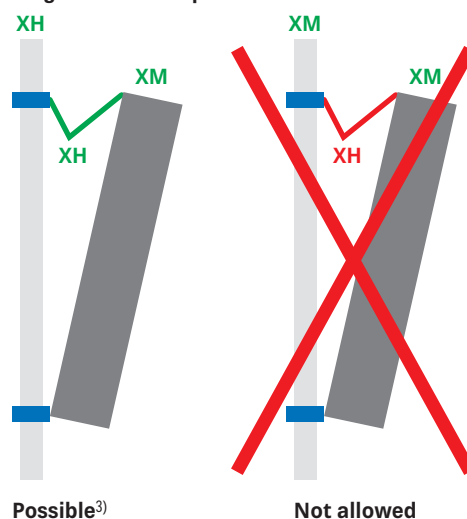
Category of Mounting Hardware for Selected Antennas Changes from “XH” → “XM”

KATHREIN

The “Category of Mounting Hardware” will change from “XH” to “XM”.
On the respective catalogue page you will also find a note.

Type	Page
Antennas to be changed to “XM”	
80011877	192 + 193
80011878	194 + 195
Antennas already changed to “XM”	
80010888	35
80010889	36
80011867	94 + 95
80011868	96 + 97
80010964	110 – 112
80010965	113 – 115
80011965	149 – 151
80011898	162 – 164
80010991	176 – 179

Configuration examples:



Possible combinations of mounting hardware “XM” and “XH”

	85010111 Clamp “XM”	85010096 85010097 85010101 Clamp “XH”	85010110 Downtilt Kit “XM”	85010099 Downtilt Kit “XH”	85010112 Uptilt Joint “XM/XH”	85010102 3-Sector Clamp Kit “XH”	85010104 Offset “XH”	85010098 Azimuth Adjustment “XH”	85010103 85010108 2x Panel Mounting Kit “XH”
85010111 Clamp “XM”	—	—	✓	✗	✓	—	✗	✗	—
85010096 85010097 86010101 Clamp “XH”	—	—	✓	✓	✓	—	✓	✓	—
85010110 Downtilt Kit “XM”	✓	✓	—	—	✓	✓ ²⁾	✗	✗	✓
85010099 Downtilt Kit “XH”	✗	✓	—	—	✓	✓ ²⁾	✗	✗	✓
85010112 Uptilt Joint “XM/XH”	✓	✓	✓	✓	—	✓ ²⁾	✗	✗	✓
85010102 3-Sector Clamp Kit “XH”	—	—	✓ ²⁾	✓ ²⁾	✓ ²⁾	—	✓ ²⁾	✓ ²⁾	✗
85010104 Offset “XH”	✗	✓	✗	✗	✗	✓ ²⁾	—	✗	✗
85010098 Azimuth Adjustment “XH”	✗	✓	✗	✗	✗	✓ ²⁾	✗	—	✗
85010103 85010108 2x Panel Mounting Kit “XH”	—	—	✓	✓	✓	✗	✗	✗	—
“XM” Antenna 378	✓	✓	✓	✓	✓	✓	✓ ³⁾	✓ ³⁾	✓
“XM” Antenna 508	✓	✓	✓	✓	✓	✓ ¹⁾	✓ ³⁾	✓ ³⁾	✗
“XH” Antenna 378	✗	✓	✗	✓	✓	✓	✓	✓	✓
“XH” Antenna 508	✗	✓	✗	✓	✓	✓ ¹⁾	✓	✓	✗

✓ OK

✗ Not allowed

1) Only possible in combination with 3x Offset “XH”

2) The use of Downtilt kit “XM” / “XH” in combination with Offset “XH” / Azimuth Adjustment “XH” is strictly forbidden

3) With Clamp “XH” / Accessories “XH” / Antenna “XM”

Mounting Hardware

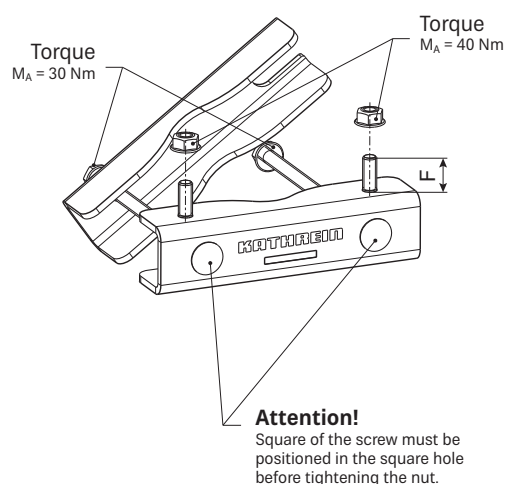
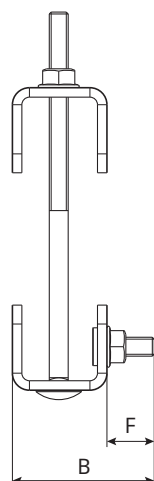
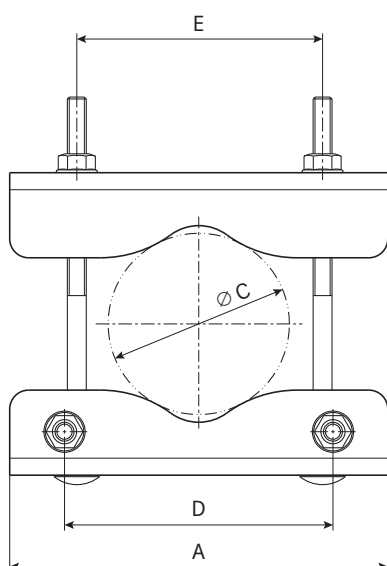
Clamps

(Wind Load Category “XM”)

KATHREIN

Clamps 55–115mm XM

Type No.		85010111
Suitable for mast diameter	mm inches	55 – 115 2.2 – 4.5
Scope of supply		2 x clamps
Material – Clamp – Screws – Nuts		Hot-dip galvanized steel Hot-dip galvanized steel Stainless steel
Weight	kg lb	4.5 9.9



	A	B	C	D	E	F
mm	200	75	55 – 115	142	130	(25)
inches	7.9	2.9	2.2 – 4.5	5.6	5.1	(1)

Please note: Kathrein does not recommend to use counter nuts.

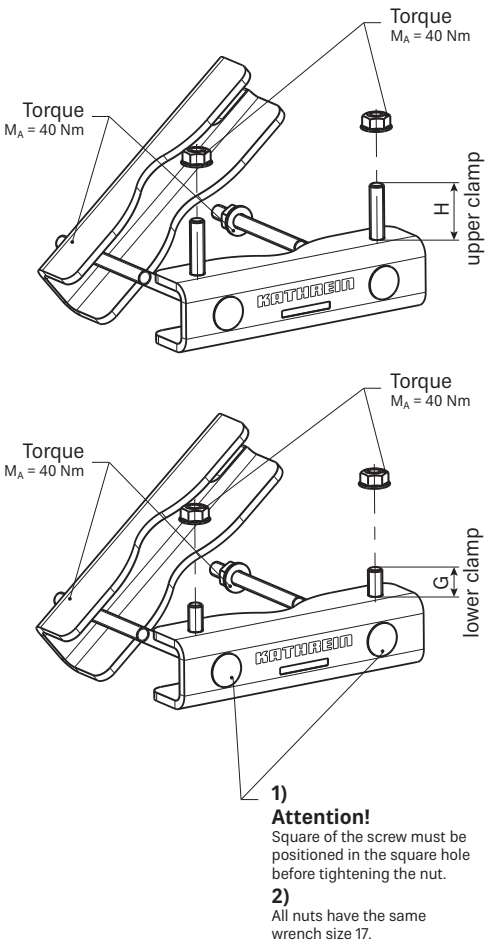
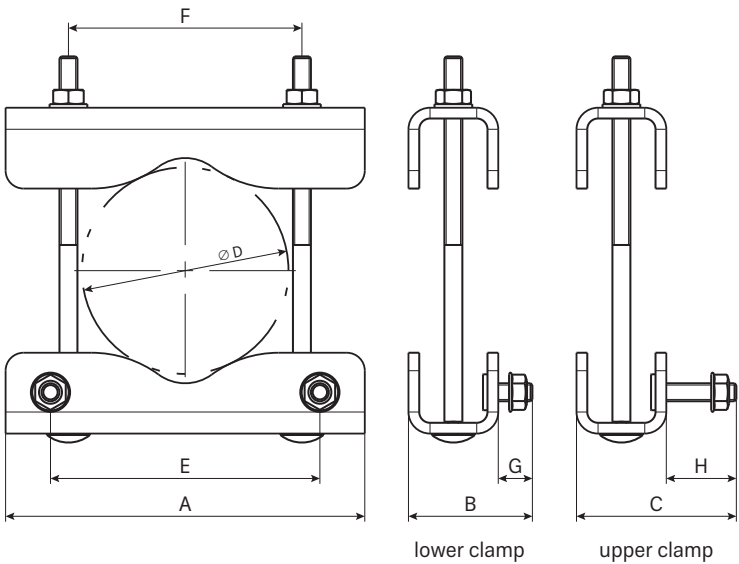
Mounting Hardware

Clamp

(Wind Load Category “XH”)

Clamp

Type No.		85010096
Suitable for mast diameter	mm inches	55 – 115 2.2 – 4.5
Scope of supply		1 x lower clamp 1 x upper clamp
Material – Clamp – Screws – Nuts		Hot-dip galvanized steel Hot-dip galvanized steel Stainless steel
Weight	kg	5.0
	lb	11.0



	A	B	C	D	E	F	G	H
mm	200	69	89	55 – 115	150	130	(19)	(39)
inches	7.9	2.7	3.5	2.2 – 4.5	5.9	5.1	(0.7)	(1.5)

Please note: Kathrein does not recommend to use counter nuts.

Mounting Hardware

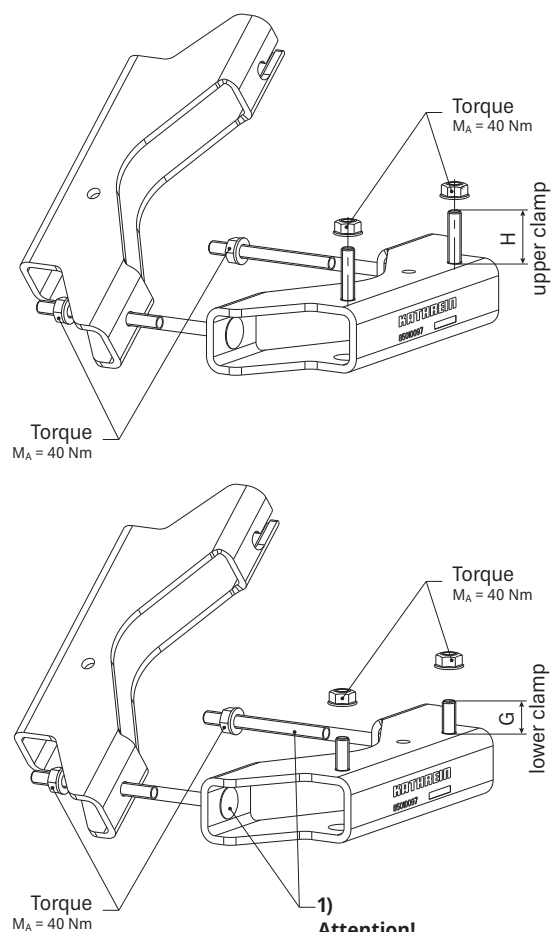
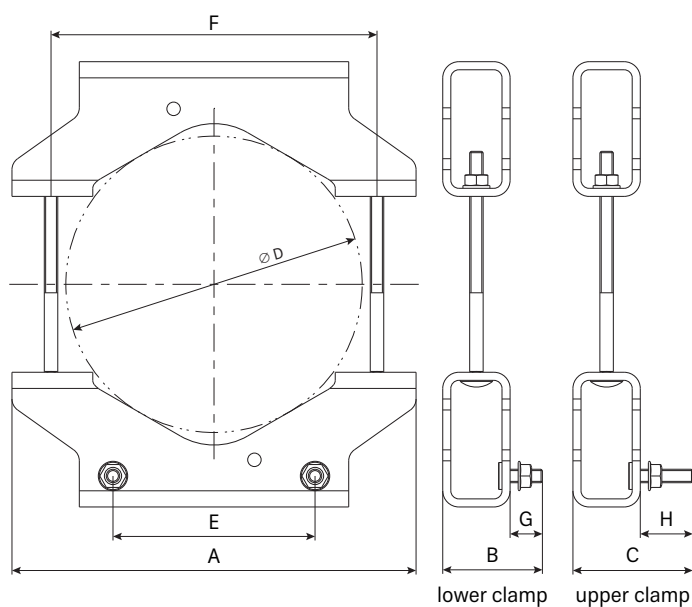
Clamp

(Wind Load Category “XH”)

KATHREIN

Clamp

Type No.		85010097
Suitable for mast diameter	mm inches	110 – 220 4.3 – 8.7
Scope of supply		1 x lower clamp 1 x upper clamp
Material – Clamp – Screws – Nuts		Hot-dip galvanized steel Hot-dip galvanized steel Stainless steel
Weight	kg lb	9.4 20.7



Attention!
Square of the screw must be positioned in the square hole before tightening the nut.
2)
All nuts have the same wrench size 17.

	A	B	C	D	E	F	G	H
mm	300	69	89	110 – 220	150	242	(19)	(39)
inches	11.8	2.7	3.5	4.3 – 8.7	5.9	9.5	(0.7)	(1.5)

Please note: Kathrein does not recommend to use counter nuts.

Mounting Hardware

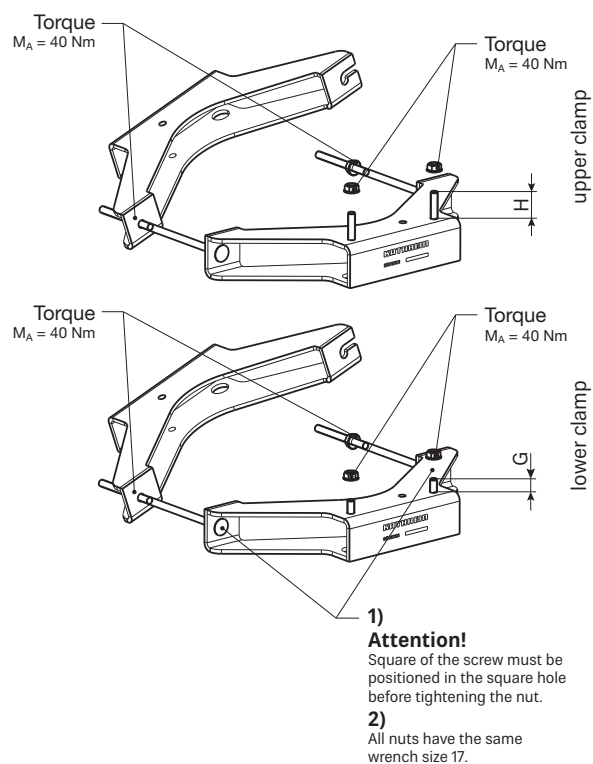
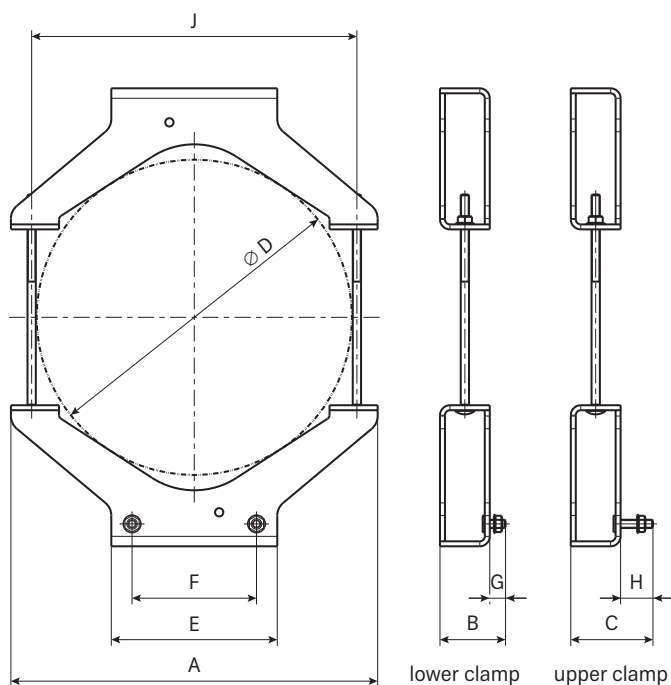
Clamp

(Wind Load Category “XH”)

KATHREIN

Clamp

Type No.		85010101
Suitable for mast diameter	mm inches	210 – 380 8.27 – 14.96
Scope of supply		1 x upper clamp 1 x lower clamp
Material – Clamp – Screws – Nuts		Hot-dip galvanized steel Hot-dip galvanized steel Stainless steel
Weight	kg	14.6
	lb	32.2



	A	B	C	D	E	F	G	H	J
mm	442	79	99	210 – 380	200	150	19	39	392
inches	17.4	3.1	3.9	8.27 – 14.96	7.87	5.9	0.75	1.54	15.43

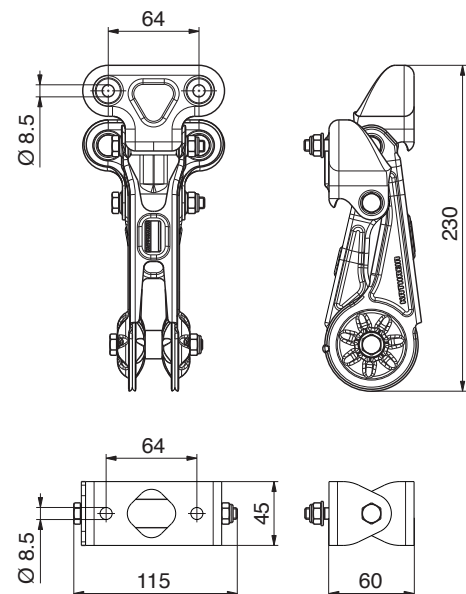
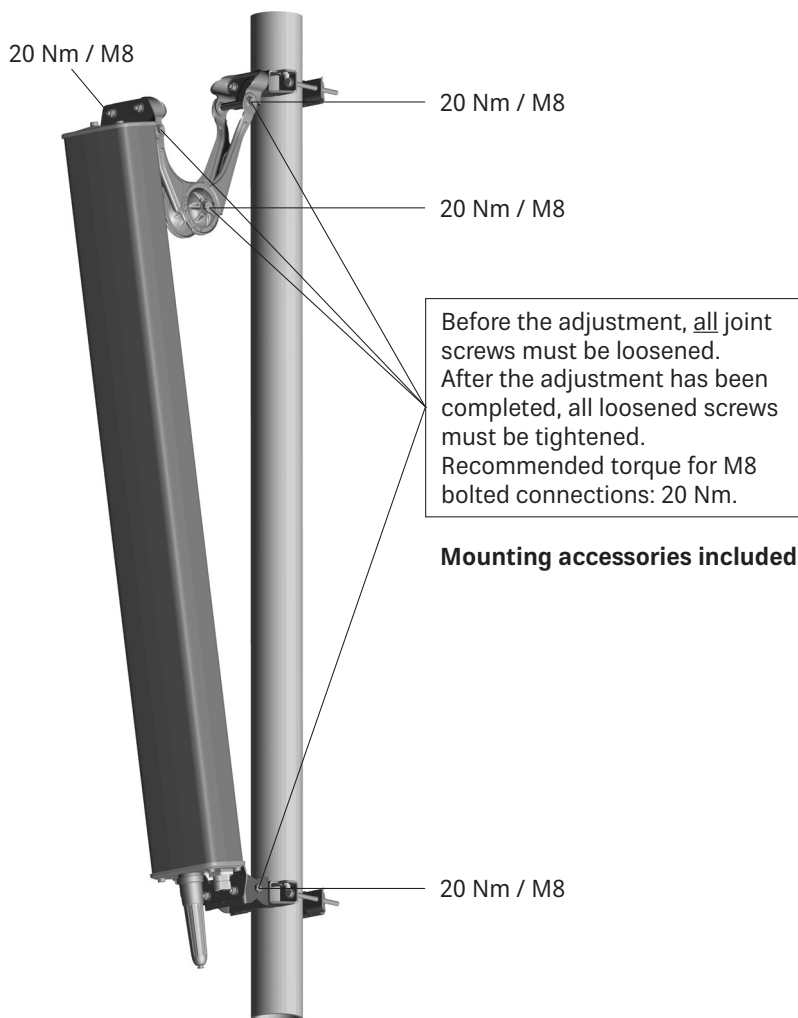
Please note: Kathrein does not recommend to use counter nuts.

Standard Downtilt kit for Panel Antennas (Wind Load Category “L”)

KATHREIN

Downtilt kit

Type No.	732327
Preferred range of use	– Panel antennas with attached mounting plates – Downtilt kit without scale for universal use
Weight	1.3 kg
Material	Hot-dip galvanized steel
Screws	Hot-dip galvanized steel / stainless steel
Nuts / washers	Stainless steel



Instructions to adjust the required downtilt angle are given in the datasheet or on the rearside of the antenna.

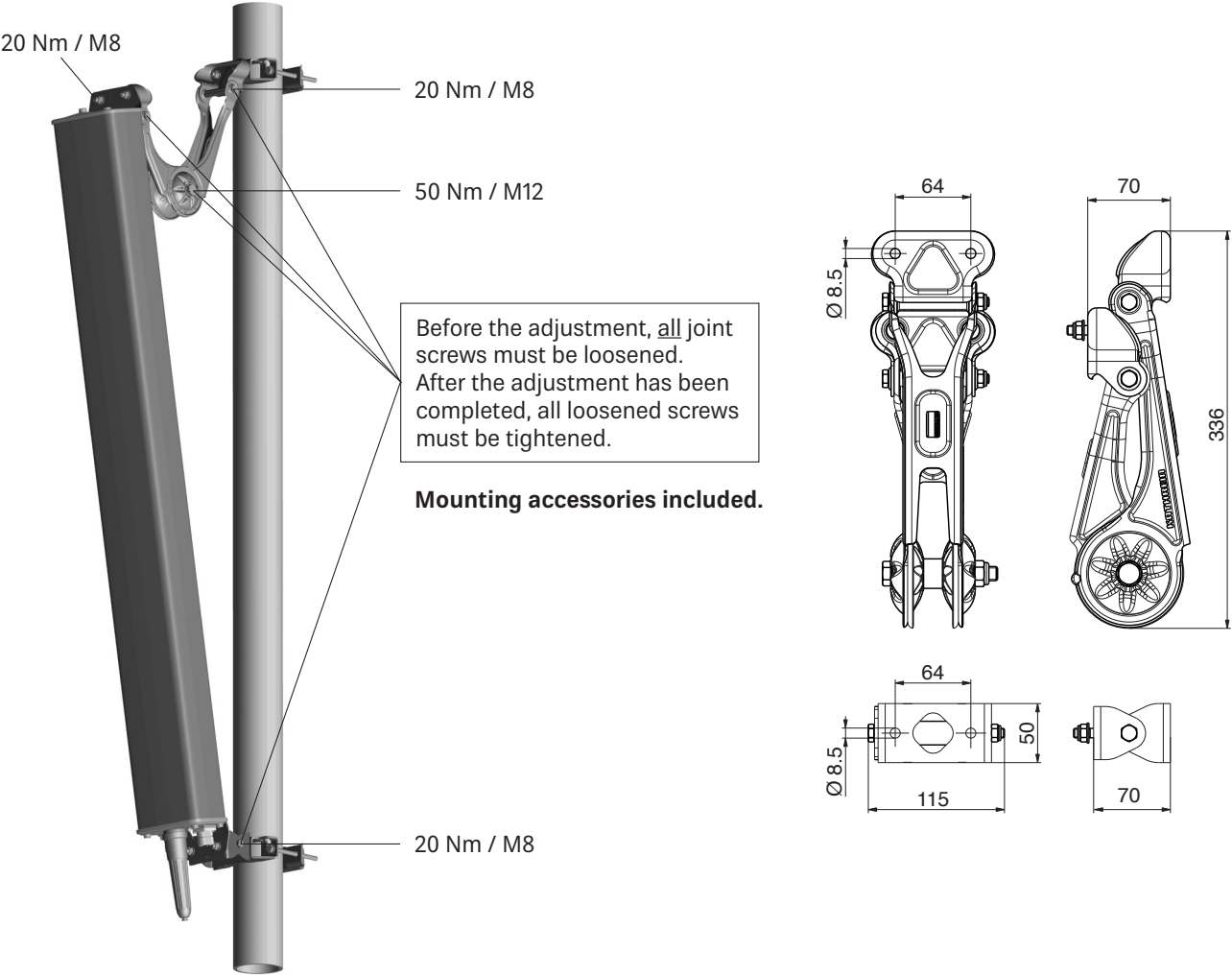
Mounting this downtilt kit enlarges the spacing between mast and antenna by 42 mm.

Use the downtilt kit together with the clamps as described in the antenna datasheet.

Standard Downtilt kit for Panel Antennas (Wind Load Category “L” and “M”)

Downtilt kit

Type No.	737978
Preferred range of use	– Panel antennas with attached mounting plates – Downtilt kit without scale for universal use
Weight	2.3 kg
Material	Hot-dip galvanized steel
Screws	Hot-dip galvanized steel / stainless steel
Nuts / washers	Stainless steel



Instructions to adjust the required downtilt angle are given in the datasheet or on the rearside of the antenna.
 Mounting this downtilt kit enlarges the spacing between mast and antenna by 70 mm.
 Use the downtilt kit together with the clamps as described in the antenna datasheet.

Standard Downtilt kit for Panel Antennas (Wind Load Category “XM”)

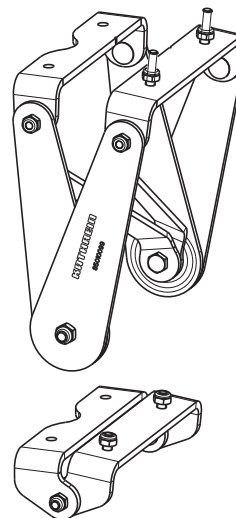
KATHREIN

Special downtilt kit for Panel antennas with wind load category “XM”.

Downtilt kit XM

Type No.		85010110
Preferred range of use		– Panel antennas with attached mounting plates – Downtilt kit without scale for universal use
Weight	kg lb	8.5 18.7
Material		Hot-dip galvanized steel
Screws		Hot-dip galvanized steel
Nuts		Stainless steel

Attention: The downtilt kit is not to be used together with azimuth kits or offsets.



Recommended mast clamps:

Type No.	Description	Mast diameter mm inches	Weight approx. kg lb	Units per antenna
85010111	2 clamps	55 – 115 2.2 – 4.5	4.5 9.9	1
85010097	2 clamps	110 – 220 4.3 – 8.7	9.7 20.7	1

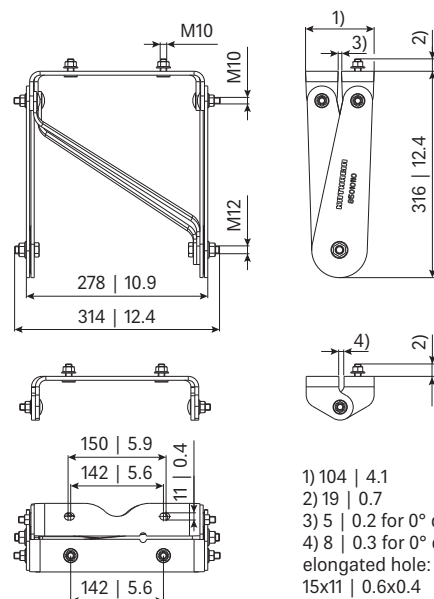
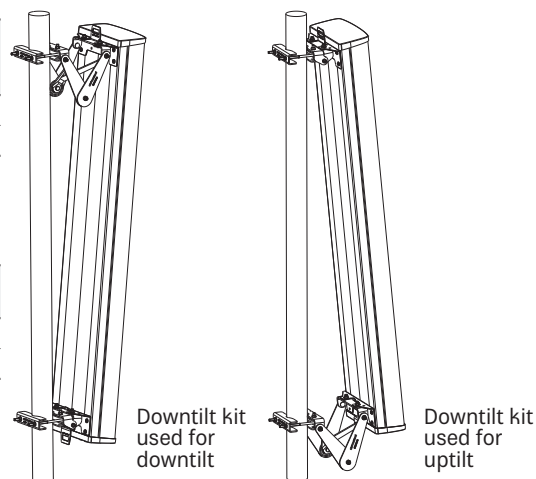
Recommended torque for bolted connections:

Screw size		Torque
M10	Nm	50
M12	Nm	85

Instructions to adjust the required downtilt angle are given in the antenna datasheet or on the rearside of the antenna.

Mounting this downtilt kit enlarges the spacing between mast and antenna by a minimum of 59 mm | 2.3 inches.

Use the downtilt kit together with the clamps as described in the antenna datasheet.



All dimensions in mm | inches

Standard Downtilt kit for Panel Antennas (Wind Load Category “XH”)

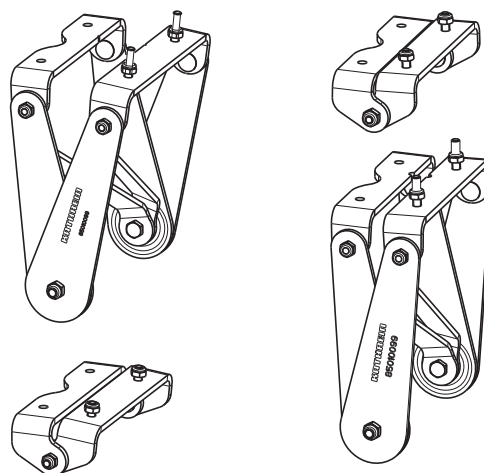
KATHREIN

Special downtilt kit for Panel antennas with wind load category “XH”.

Downtilt kit

Type No.		85010099
Preferred range of use		– Panel antennas with attached mounting plates – Downtilt kit without scale for universal use
Weight	kg lb	10.6 23.4
Material		Hot-dip galvanized steel
Screws		Hot-dip galvanized steel
Nuts		Stainless steel

Attention: The downtilt kit is not to be used together with azimuth kits or offsets.

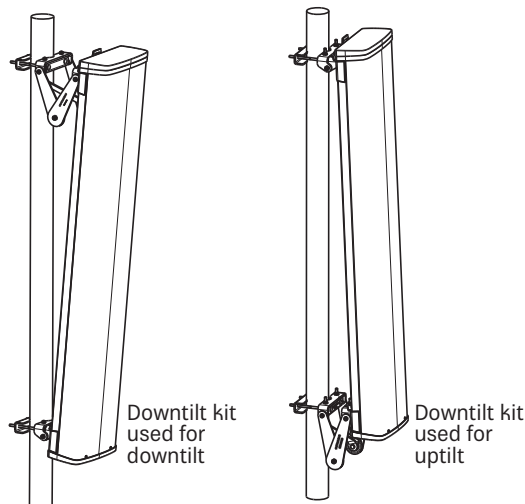


Recommended mast clamps:

Type No.	Description	Mast diameter mm inches	Weight approx. kg lb	Units per antenna
85010096	2 clamps	55–115 2.2–4.5	5.0 11.0	1
85010097	2 clamps	110–220 4.3–8.7	9.7 20.7	1
85010101	2 clamps	210–380 8.3–14.9	14.6 32.2	1

Recommended torque for all bolted connections:

Screw size		Torque
M10	Nm	50
M12	Nm	85



Maximum acceptable load:

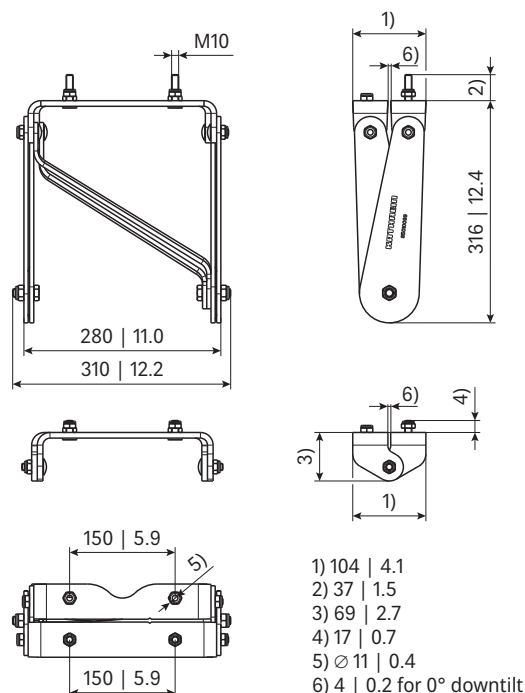
Frontal wind load	N lbf	< 6000 2348.9
Lateral wind load	N lbf	< 1950 438.4

Instructions to adjust the required downtilt angle are given in the antenna datasheet or on the rearside of the antenna.

Mounting this downtilt kit enlarges the spacing between mast and antenna by a minimum of 59 mm | 2.3 inches.

Use the downtilt kit together with the clamps as described in the antenna datasheet.

The downtilt kit can also be used for uptilting the antenna with an angle up to max. 2.5°.



All dimensions in mm | inches

Uptilt Joint for Downtilt kit (Wind Load Category “XM” and “XH”)

KATHREIN

Uptilt joint for downtilt kit

Type No.		85010112
Weight	kg lb	2.5 5.5
Material		Hot-dip galvanized steel
Bolts		Hot-dip galvanized steel
Nuts		Stainless steel

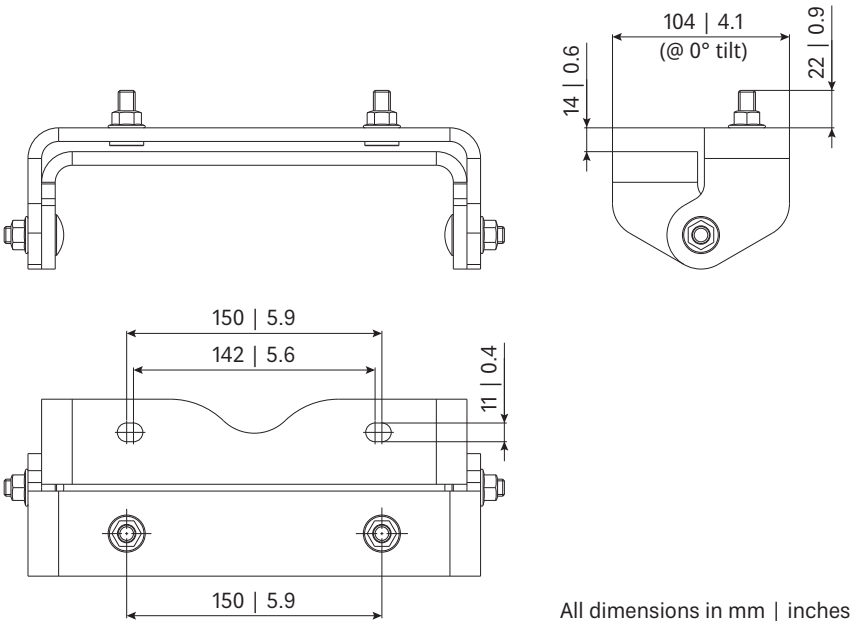
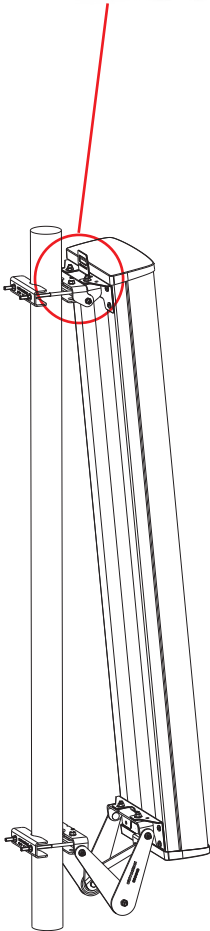
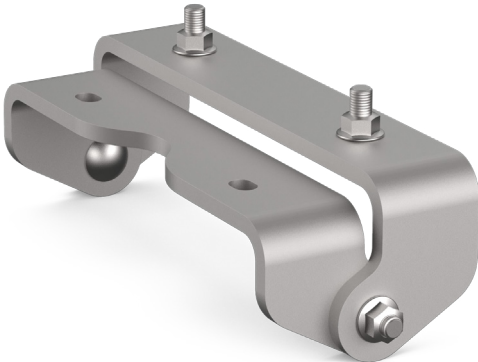
Recommended torque for bolted connections:

Screw size		Torque
M10	Nm	50

- The uptilt joint 85010112 enhances the functionality of the existing downtilt kits 85010099 and 85010110 to a fully functional uptilt kit
- The max. possible uptilt angle is identical to the max. downtilt angle (depending on antenna length)
- Enables easy antenna installation on sites with special uptilt requirements without the need of cost intensive site-specific constructions
- Compatible with antennas, clamps and downtilt kits in windload category XM and XH

Attention: Always make sure, that the used mounting accessories fit to the windload category of the antenna to be mounted. It is NOT permitted to use a XM-clamp for a XH-antenna in combination with this uptilt joint.

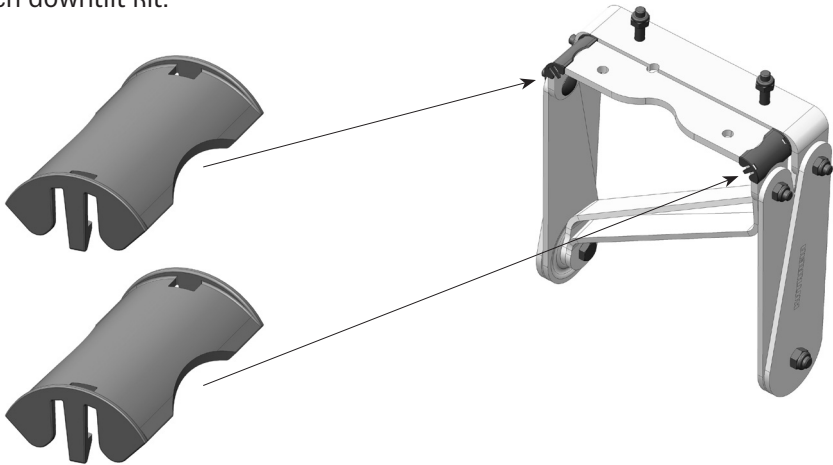
Scope of supply: One uptilt joint (downtilt kit, clamps etc. need to be ordered separately)



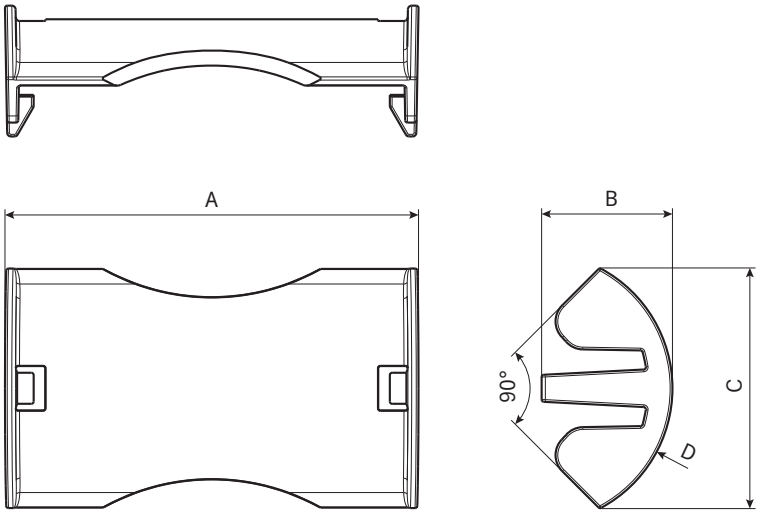
All dimensions in mm | inches

Mounting Hardware Spacer for Downtilt Kit (Wind Load Category “XM” and “XH”)

- Plastic spacer to ease mounting of the Downtilt Kit XH 85010099 and XM 85010110 in “no-downtilt” position (0°), only.
- For downtilt positions > 0°, no spacer is needed. If spacers have been attached anyway, they have to be removed.
- High performance plastic with exceptional UV-stability.
- Snap-on design for easy assembly prior mounting the downtilt kit.
- Two spacers necessary for each downtilt kit.



Type No.	Description	Packing unit
85010512	Spacer for Downtilt Kit XH 85010099	50 pcs.
85010513	Spacer for Downtilt Kit XM 85010110	50 pcs.



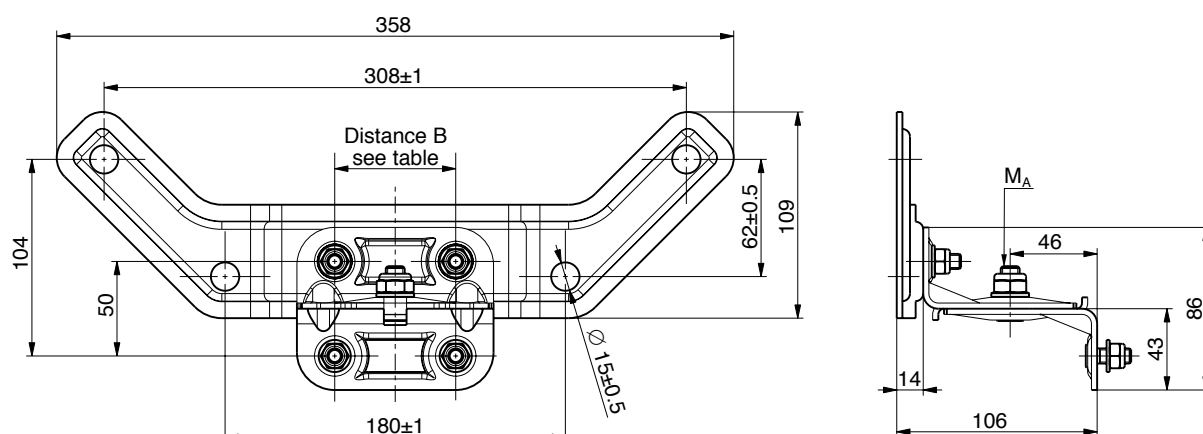
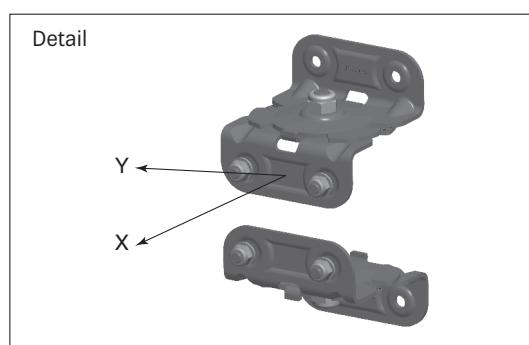
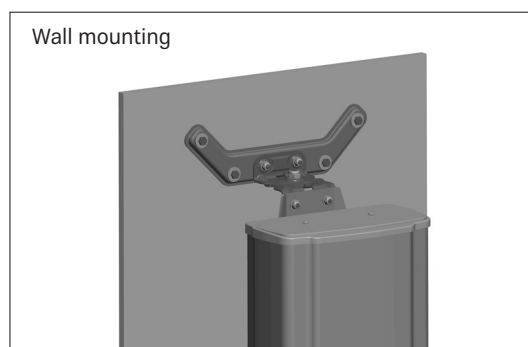
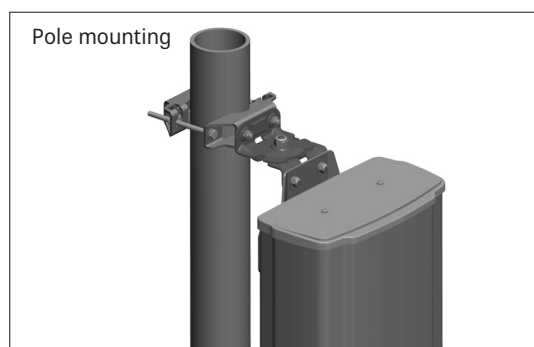
		85010512	85010513
A	mm inches	54.7 2.2	54.7 2.2
B	mm inches	17.3 0.7	15.3 0.6
C	mm inches	31.8 1.3	29.0 1.1
D	mm inches	R 19.5 R 0.8	R 17.5 R 0.7

Mounting Hardware

Azimuth Adjustment Kits

(Wind Load Category “L”, “M” and “H”)

KATHREIN



The azimuth adjustment kit for pole mounting can be mounted with all suitable clamps, 3-Sector clamps and 2x Panel mounting kits (with the latter only as an interface between mounting kit and antenna).

Type No.	85010014	85010015	85010016	85010017
Suitable for	pole mounting		wall mounting	
Number of pieces	2 brackets	2 brackets	2 brackets	2 brackets
Distance between screws [B]	64 mm	72 mm	64 mm	72 mm
Angular range	± 30°		± 30°	
Weight / kit	approx. 1260 g	approx. 1260 g	approx. 2500 g	approx. 2500 g
Supplied mounting accessories	all screws		Screws and dowels for wall fastening are not supplied, they must be chosen by installer according to on-site requirements.	
Materials	Parts are hot-dip galvanized steel; Captive nuts are stainless steel			
Max. permissible static load / kit				
– X direction	2150 N	5100 N	2150 N	5100 N
– Y direction	760 N	1350 N	760 N	1350 N

Recommended torque: Screws M6: 8 Nm; Screws M8: 20 Nm; MoS₂ greased.

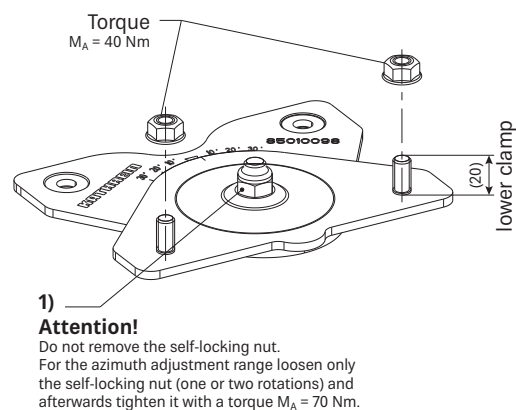
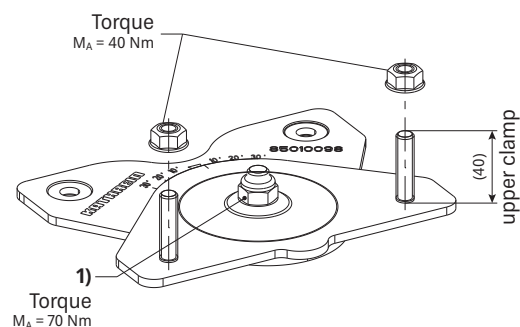
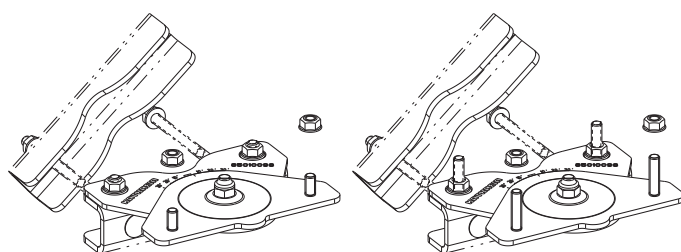
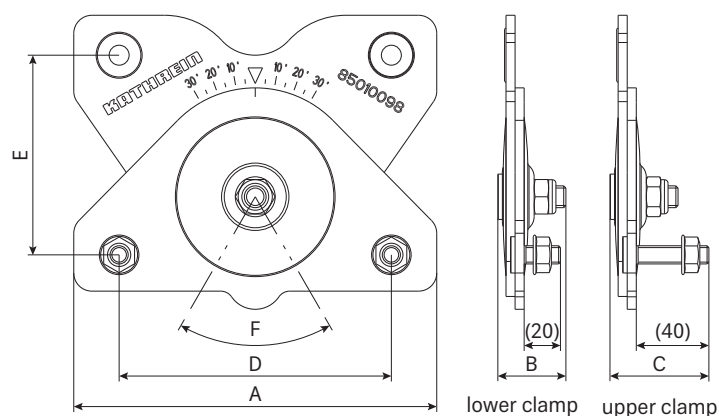
Minimum torque MA: 30 Nm; MoS₂ greased

Mounting Hardware Azimuth Adjustment (Wind Load Category “XH”)

KATHREIN

Clamp

Type No.	85010098	
Scope of supply	1 x lower clamp 1 x upper clamp	
Material – Clamp – Bolts – Nuts	Hot-dip galvanized steel Hot-dip galvanized steel Stainless steel	
Weight	kg lb	3.3 7.3



	A	B	C	D	E	F
mm	200	37.5	54.5	150	110	$\pm 30^\circ$
inches	7.9	1.48	2.15	5.9	4.3	

Please note:
Kathrein does not recommend to use counter nuts.

Mounting Hardware

3 Sector Clamp Kit

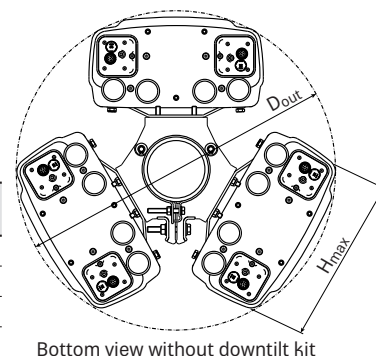
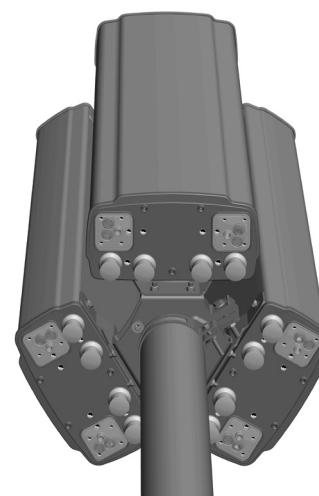
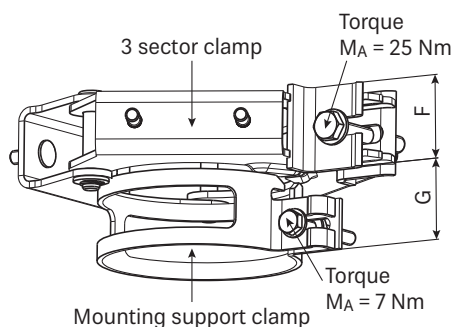
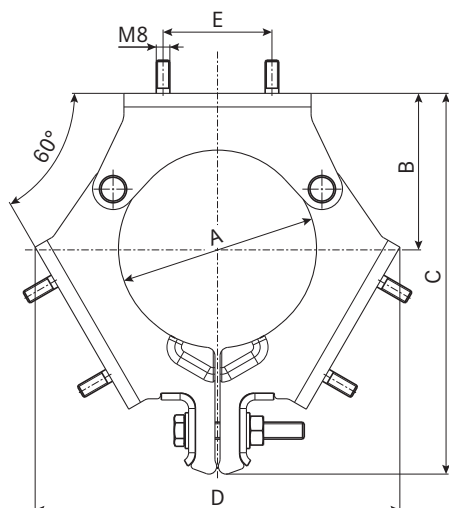
(Wind Load Category “L”, “M” and “H”)

KATHREIN

- Slim and unobstrusive design.
- Nearly cylindrical optical appearance with small outer diameter.
- Suitable for all Panels with an antenna housing width less than 400 mm | 15.7 inches (H_{max}).

Please note:

Panels with connector position “Rearside” fit only with downtilt kit, azimuth adjustment kit or offset mounted in-between.



Type No.	A	B	C	D	E	F	G	H _{max}	Weight kg lb
K742263	88.9 3.5	65 2.6	180 7.1	168 6.6	64 2.5	50 2.0	45 1.8	280 11.0	4 8.8
K742317	88.9 3.5	88 3.5	213 8.4	199 7.8	64 2.5	50 2.0	45 1.8	361 14.2	4 8.8
742033	114.3 4.5	92 3.6	217 8.5	207 8.1	64 2.5	50 2.0	45 1.8	377 14.8	4 8.8
742034	139.7 5.5	100 3.9	236 9.3	228 9.0	64 2.5	50 2.0	45 1.8	400 15.7	4 8.8
85010058	114.3 4.5	92 3.6	217 8.5	207 8.1	72 2.8	50 2.0	45 1.8	377 14.8	4 8.8
85010059	139.7 5.5	100 3.9	236 9.3	228 9.0	72 2.8	50 2.0	45 1.8	400 15.7	4 8.8

All dimensions in mm | inches.

D_{out} is determined by mounted components.

3 Sector Clamp Kit (Antenna Wind load Category “L” and “M”)

Type No.	K742263	K742317	742033	742034
Angle between antennas	120°	120°	120°	120°
Suitable for mast diameter	88.9 mm 3.5 inches	88.9 mm 3.5 inches	114.3 mm 4.5 inches	139.7 mm 5.5 inches
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp
Material	Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel	Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel	Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel	Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel

3 Sector Clamp Kit (Antenna Wind load Category “H”)

Type No.	85010058	85010059
Angle between antennas	120°	120°
Suitable for mast diameter	114.3 mm 4.5 inches	139.7 mm 5.5 inches
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp
Material	Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel	Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel

Mounting Hardware

3 Sector Clamp Kit

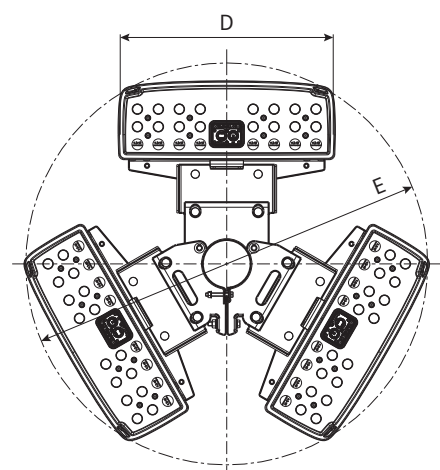
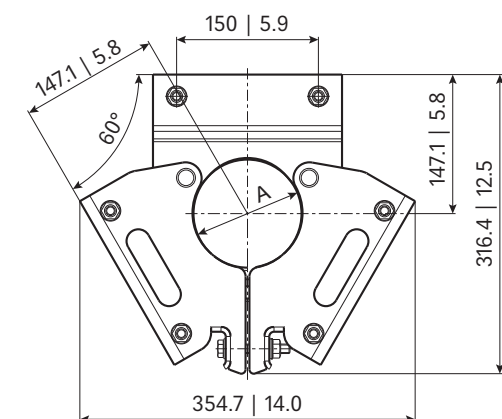
(Wind Load Category “XH”)

KATHREIN

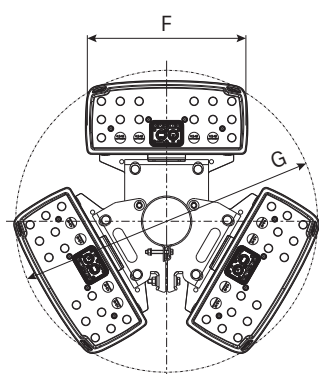
- Nearly cylindrical optical appearance with small outer diameter.
- Suitable for all Panels with an antenna housing width of 508 mm | 20.0 inches (H_{max}).

3 Sector Clamp Kit (Antenna Wind load Category “XH”)

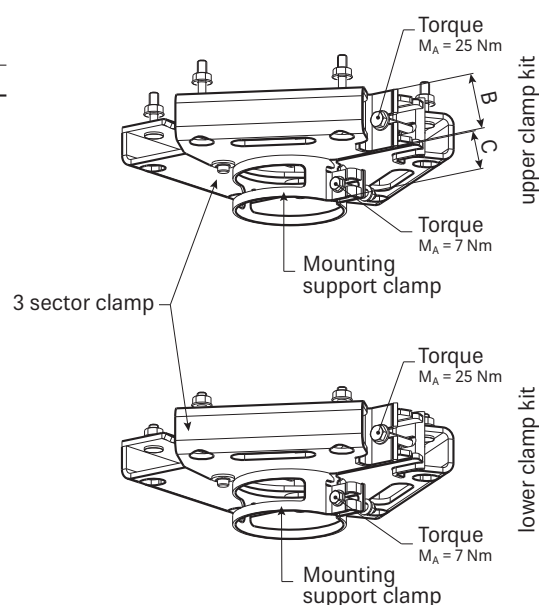
Type No.		85010102
Angle between antennas	°	120
Suitable for mast diameter	mm	114.3
	inches	4.5
Number of pieces		2 x 3 sector clamp 2 x mounting support clamp
Material		Hot-dip galvanized steel Aluminum Hot-dip galvanized steel Stainless steel
Weight		kg lb
		14.5 31.9



Bottom view with offset



Bottom view without offset



Dimensions	mm	inches
A	Ø 114.3	Ø 4.5
B	62	2.4
C	45	1.8
D	max. 508	max. 20.0
E	Ø 959	Ø 37.8
F	max. 378	max. 14.9
G	Ø 720.3	Ø 28.4

All dimensions in mm | inches

Please note:

Antennas with an antenna housing width 508 mm | 20.0 inches are only suitable in combination with offset 85010104 or downtilt kit 85010099.

A simultaneous combination of downtilt kit and offset is not permitted.

Possible accessories

85010104	Offset
85010099	Downtilt kit

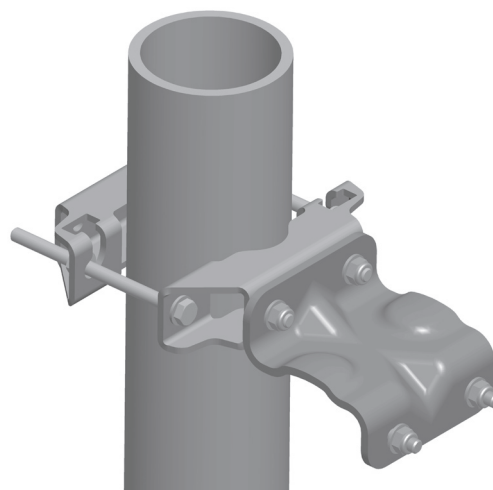
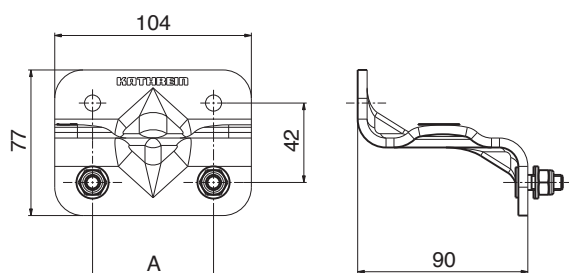
Mounting Hardware Offset for Panel Antennas (Wind Load Category “L”, “M”, “H” and “XH”)

KATHREIN

Type No.	85010060	85010061
Wind load category	“L” and “M”	“H”
Quantity needed per antenna	2 x spacer	
Material: – spacer – nuts	Hot-dip galvanized steel Stainless steel	
Dimension “A”	64 mm	72 mm
Weight	0.65 kg	
Scope of supply	1 x spacer, Fitting accessories	

Recommended torque for M8 bolted connections: 20 Nm

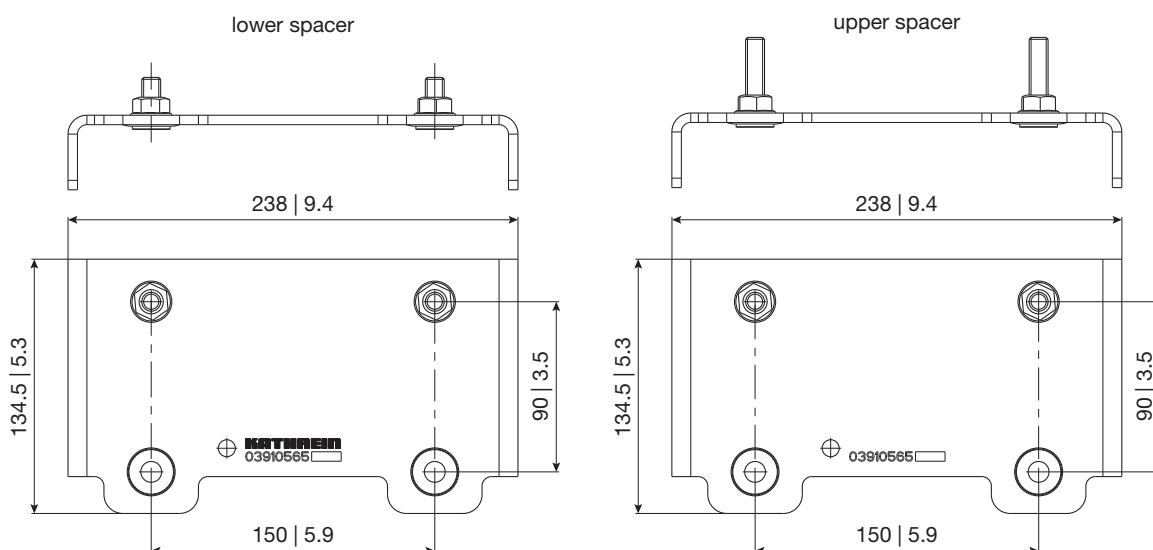
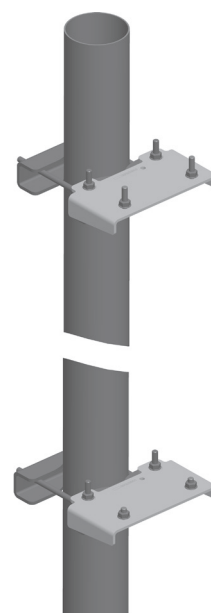
Please use the offset in combination with clamps corresponding to the pole diameter.



Type No.	85010104	
Wind load category	“XH”	
Quantity needed per antenna	1x spacer kit	
Material: – spacer – nuts	Hot-dip galvanized steel Hot-dip galvanized steel	
Weight	kg lb	2.88 6.35
Scope of supply	2 x spacer, Fitting accessories	

Recommended torque for M10 bolted connections: 40 Nm

Please use the offset in combination with clamps corresponding to the pole diameter.



All dimensions in mm | inches

Panel Accessories

2 x Panel Mounting Kit

(Wind Load Category “L” and “M”)

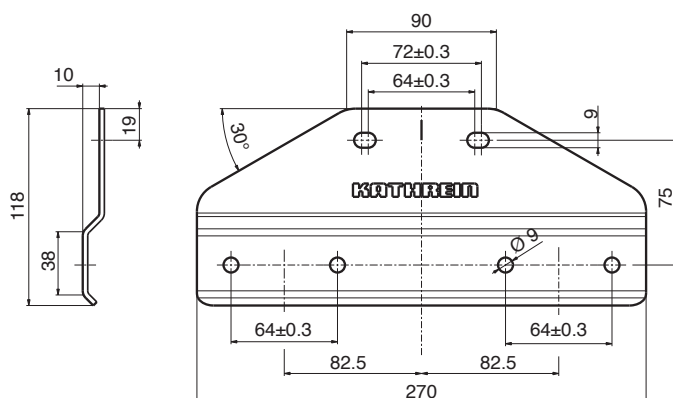
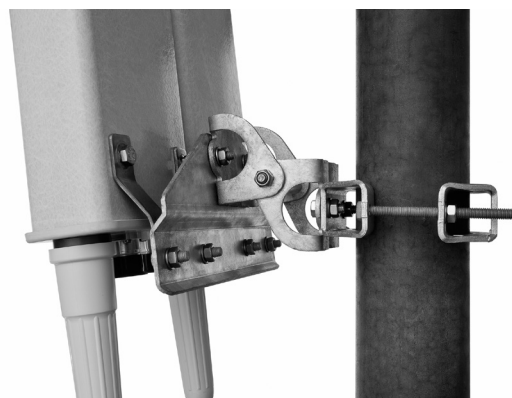
KATHREIN

Use this mounting kit only for Panels with a maximum width of 160 mm.
Wind load category: L (Light) or M (Medium)

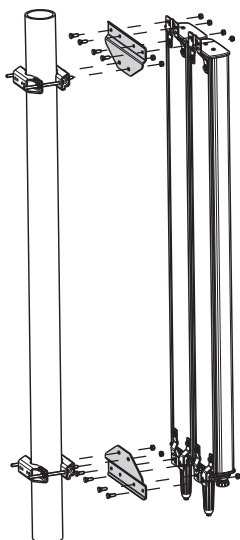
2 x Panel Mounting Kit

Type No.	742113
Contents	2 x brackets and mounting accessories
Material: – Clamp and screws – Nuts and washers	Hot-dip galvanized steel Stainless steel
Weight	Approx. 1.6 kg

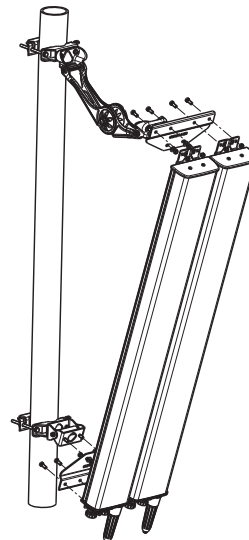
Recommended torque for M8 bolted connections: 20 Nm



Configuration without mechanical downtilt



Configuration with mechanical downtilt



Use the 2 x Panel Mounting Kit together with the following mounting accessories

Type No.	Description	Remarks	Weight approx.	Units per antenna
731651	1 clamp	Mast: 28 – 60 mm diameter	0.8 kg	2
738546	1 clamp	Mast: 42 – 115 mm diameter	1.1 kg	2
85010002	1 clamp	Mast: 110 – 220 mm diameter	2.7 kg	2
85010003	1 clamp	Mast: 210 – 380 mm diameter	4.8 kg	2
85010060	1 offset	in combination with the clamps	1.3 kg	2
737978	1 downtilt kit	Downtilt angle: depending on antenna height	2.3 kg	1

If a downtilt kit is used, please choose the fitting one from the antenna datasheet.

For a three sector panel arrangement, use the mounting kit type no. 742113 together with the three sector clamp K742317, 742033 or 742034. Three sector clamp K742263 does not match.

2 x Panel Mounting Kit

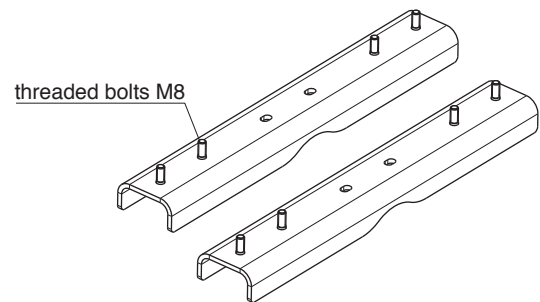
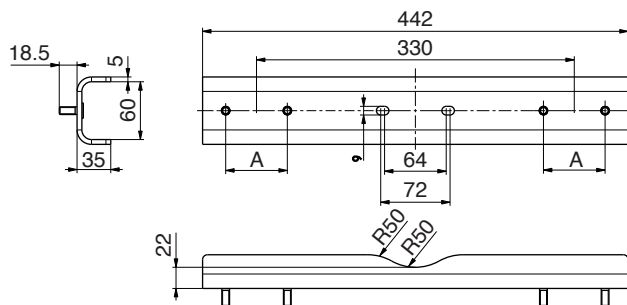
KATHREIN

(Wind Load Category “L”, “M” and “H”)

Use this mounting kit for Panels with a maximum width of 325 mm.

Type No.	85010075	85010076
Contents	2 x brackets and mounting accessories	
Material: – Clamp and screws – Nuts and washers	Hot-dip galvanized steel Stainless steel	
Weight	Approx. 3.3 kg	
Hole distance “A”	64 mm	72 mm
Windload category (Antenna)	“L” and “M”	“H”

Recommended torque for M8 bolted connections: 20 Nm



Configuration without mechanical downtilt	Configuration with mechanical downtilt

Mounting Accessories (order separately)

Clamps (only the listed clamps are allowed!)

Type No.	Description	Remarks	Weight approx.	Units per mounting kit
85010002	1 clamp	Mast: 110 – 220 mm diameter	2.7 kg	2
85010003	1 clamp	Mast: 210 – 380 mm diameter	4.8 kg	2
85010060	1 offset		1.3 kg	4
85010061	1 offset		1.3 kg	4

If a downtilt kit is used, please choose the fitting one from the antenna datasheet.

2 x Panel Mounting Kit

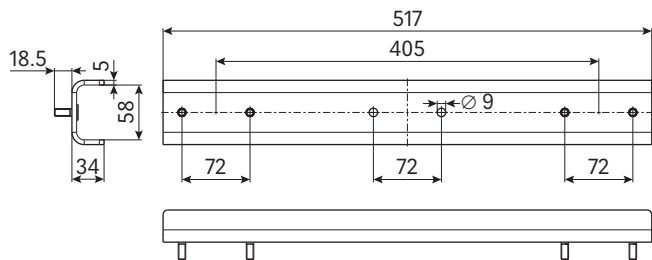
KATHREIN

(Wind Load Category "H")

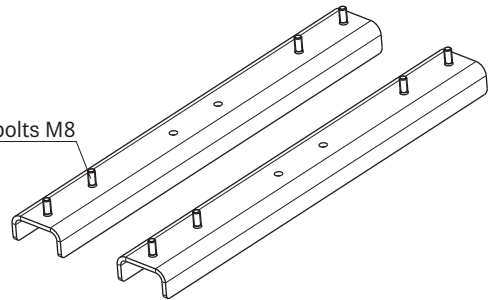
Use this mounting kit for Panels with a maximum width of 377 mm.

Type No.	85010087
Contents	2 x brackets and mounting accessories
Material: – Clamp and screws – Nuts and washers	Hot-dip galvanized steel Stainless steel
Weight	Approx. 3.3 kg
Hole distance	72 mm
Windload category (Antenna)	"H"

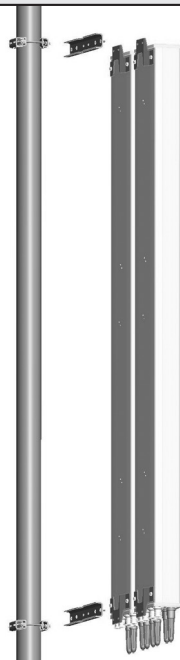
Recommended torque for M8 bolted connections: 20 Nm



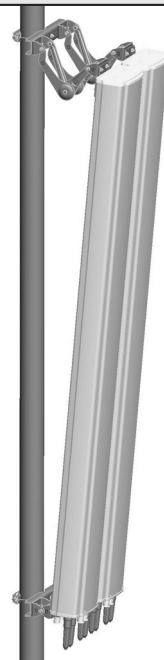
threaded bolts M8



Configuration without mechanical downtilt



Configuration with mechanical downtilt



Mounting Accessories (order separately)

Clamps (only the listed clamps are allowed!)

Type No.	Description	Remarks	Weight approx.	Units per mounting kit
85010212	1 clamp	Mast: 55–115 diameter	1.6 kg	2
85010002	1 clamp	Mast: 110–220 mm diameter	2.7 kg	2
85010003	1 clamp	Mast: 210–380 mm diameter	4.8 kg	2
85010009	Downtilt kit		4.4 kg	2

The downtilt kit can not be used in combination with any offset (85010060 and 85010061).

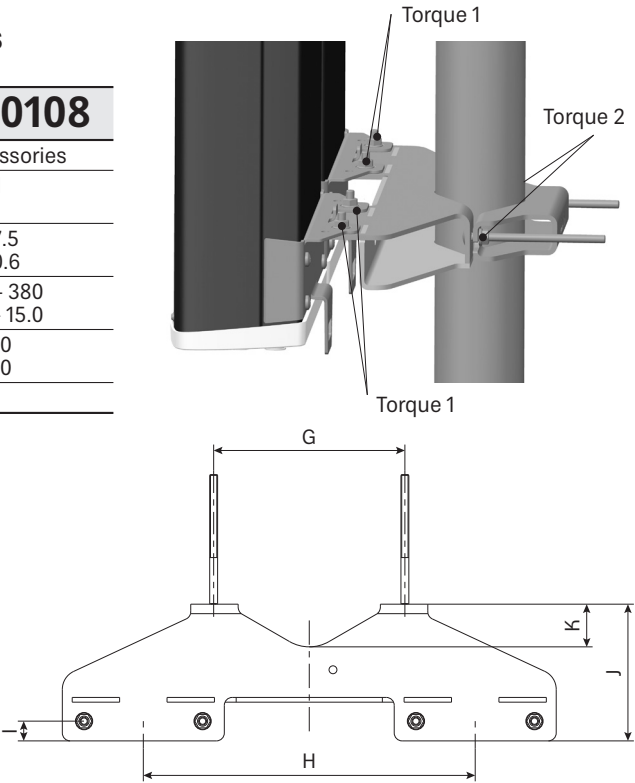
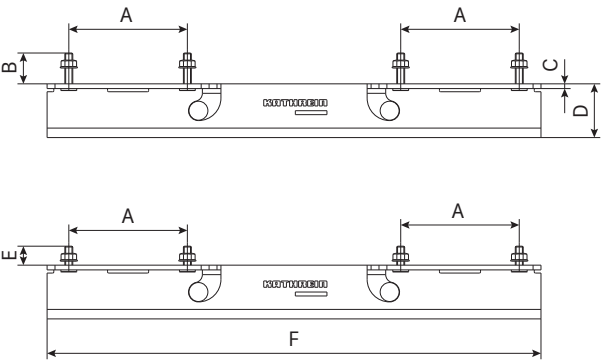
2 x Panel Mounting Kit

KATHREIN

(Wind Load Category “XH”)

Use this mounting kit for Panels with
a maximum width of 378 mm | 14.9 inches

Type No.		85010103	85010108
Contents		2 x clamps and mounting accessories	
Material: – Clamp and screws – Nuts and washers		Hot-dip galvanized steel Stainless steel	
Weight	kg lb	20.5 45.2	27.5 60.6
Suitable for mast Ø	mm inches	110 – 220 4.3 – 8.7	210 – 380 8.3 – 15.0
Torque M _A	1	40	40
Torque M _A	2	25	40
Windload category (Antenna)		“XH”	



Type		A	B	C	D	E	F	G	H	I	J	K
85010103	mm inches	150 5.91	39 1.54	6 0.24	68 2.68	24 0.84	625 24.61	242 9.53	420 16.54	25 0.98	173 6.81	54 2.13
85010108	mm inches	150 5.91	39 1.54	6 0.24	68 2.68	24 0.84	625 24.61	392 14.43	420 16.54	25 0.98	221 8.7	102 4.02

Please note: Kathrein does not recommend to use counter nuts.

Configuration <u>without</u> mechanical downtilt	Configuration <u>with</u> mechanical downtilt

Type No.	Description	Weight approx. kg lb	Units per mounting kit
85010099	1 downtilt kit	10.6 23.4	2

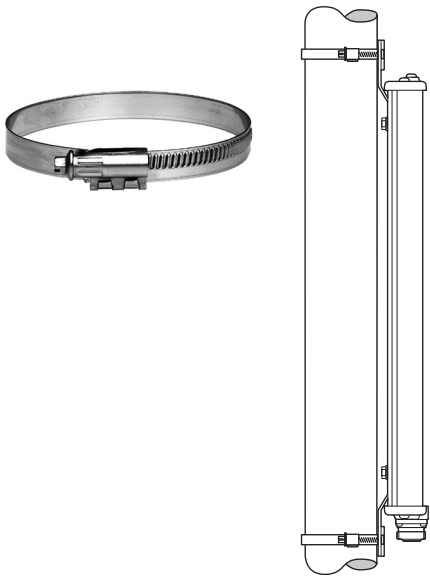
Mounting Hardware

Tension Band for Panel Antennas

(Wind Load Category “L”)

KATHREIN

Type No.		734360	734361	734362	734363	734364	734365
Suitable for mast diameter	mm inches	34-60 1.3-2.4	60-80 2.4-3.1	80-100 3.1-3.9	100-120 3.9-4.7	120-140 4.7-5.5	45-125 1.8-4.9
Material		Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight (approx.)	kg	0.06	0.07	0.08	0.09	0.11	0.08
	lb	0.13	0.15	0.18	0.20	0.24	0.18
Contents		2 pcs	2 pcs	2 pcs	2 pcs	2 pcs	2 pcs



Please note:
Only usable without downtilt kit!

Mechanical Integration Kit (MIK) for Nokia mMIMO Active Antennas (MAA) and 448 Platform Antennas

KATHREIN

Type No.		85010213v01
Preferred range of use		- Integration of massive MIMO adaptive antenna (MAA) with a 448 platform antenna - Panel antennas with attached mounting plates
MAA Compatibility		Compatible with Nokia 5G NR MAA in band n78, i.e. AEQB, AEQE, AEQP, AEQQ and AEQC. For compatibility of further Nokia MAA please contact your Nokia representative.
Wind loaded (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 450 101 Maximal: 545 123
Max. Wind Velocity	km/h mph	241 150
Weight	kg lb	13.6 30.0 excl. windshield 16.6 36.6 incl. windshield 23.6 52.0 incl. windshield, clamps, spacer
Packing size	mm in	1183 x 513 x 380 46.6 x 20.2 x 15.0

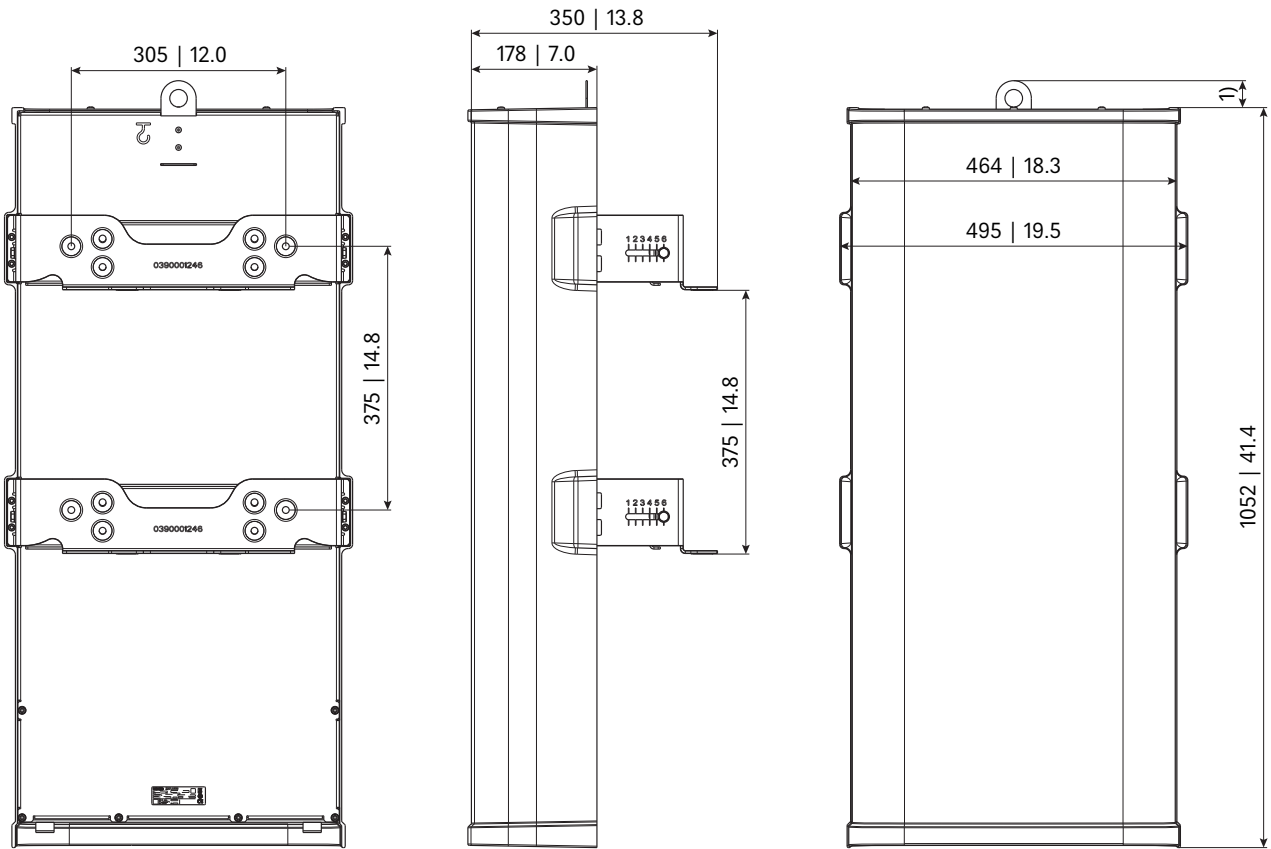
Scope of supply

MIK	Radome and windshield (windshield only needed for installation without active antenna)
Clamps	2 units of clamps for 55–115 mm 2.2–4.5 inches diameter
Spacer	2 spacers for passive antenna to get aligned with MIK

Accessories

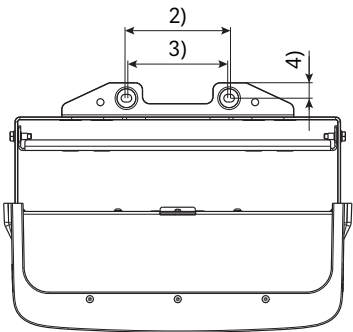
Type No.	Description	Mast diameter mm inches	Weight approx. kg lb	Units per antenna
85010097	2 clamps	110–220 4.3–8.7	9.7 20.7	1

Attention: This MIK is only compatible to 448 platform antennas



- 1) 38 | 1.5
- 2) 150 | 5.9
- 3) 142 | 5.6
- 4) 22 | 0.9

All dimensions in mm | inches



Kathrein Mobile Communication offers a series of pole mounting kits for Kathrein Mobile Communication canister antennas. Mounting kits are available to secure Kathrein Mobile Communication antennas to the top of existing wood, metal, or concrete poles. These mounts are engineered to support these 2' tall, multi-band antennas in extreme environments. Depending on the type of pole the antenna is being mounted to, the Kathrein Mobile Communication pole mount kits come in two different colours (brown or grey).

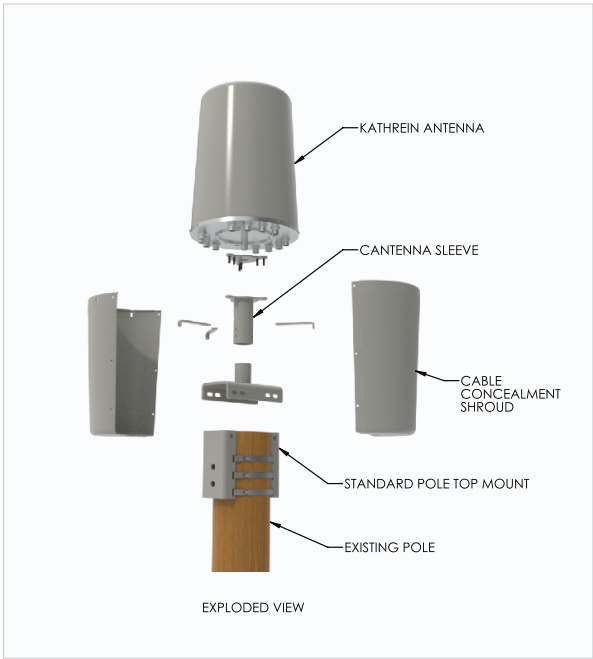
Type Number	Colour	Pole Diameter
84040600	Brown	Standard
84040601	Grey	Standard

Standard Pole Diameter is defined as 5.00" to 8.37"

Type Number	Colour	Pole Diameter
84040602	Brown	Wide
84040603	Grey	Wide

Wide Pole Diameter is defined as 5.25" to 14.12"

Standard Size Pole



Wide Diameter Pole



All kits include the pole top mount brackets, antenna sleeve, and cable concealment shroud.

Kathrein Mobile Communication recommends using the standard pole top mount when possible due to the decreased shroud and mount size. The smaller size provides for better aesthetics.

Antenna Monitoring Unit AMU

KATHREIN

GPS/GLONASS based Antenna Monitoring Unit to monitor base station antennas in the field.

- Compatible to all panel antennas
- Easy to adapt onto an antenna
- Hardware prepared for AISG 3.0
- Compact size
- BTS time sync via GPS clock

Antenna Monitoring Unit AMU

Type No.		86010129
Monitoring Unit		
Receiver Type		L1, C/A code
Channels		72 channel, GPS and GLONASS parallel tracking
Used Geodetic System		WGS 84
Horizontal Accuracy	m	± 10
Azimuth Accuracy*	°	1.7 (rms)
Tilt- Roll Accuracy*	°	± 2
Altitude Accuracy*	m	± 10
First start (after installation)	h	3 – 12
Connector		2 x 8 pin connector according to IEC 60130-9; according to AISG C485; Daisy chain in: male; Daisy chain out: female
Hardware Interfaces		RS 485 A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Input Voltage Range	V	10...30 DC (pin 6)
Power Consumption	W	< 2
Protocols		AISG 2.0
Protection Class		IP 65
Environmental Temperature Range	°C	-40 – +55
Lightning Protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)
BTS Time Sync		
Frequency Range	MHz	1572 – 1608 (GPS and GLONASS)
LNA Gain	dB	27 ± 3
Noise Figure	dB	Typ. 3
Supply Voltage	V	4 – 6 V DC
DC Current	mA	< 80
Non-destruction Supply Voltage	V	-32 ... +32 V DC
Lightning Protection	kA	2.5 (10/350 µs) 8 (8/20 µs)
Connector		SMA female
Housing Material		ALU, ASA
Weight	kg lb	1.6 3.5
Packing Size	mm inches	400 x 190 x 136 15.7 x 7.5 x 5.4
Dimensions (H x W x D)	mm inches	65.8 x 355.7 x 143.2 2.6 x 14.0 x 5.6
Scope of Supply		
AMU		1 pc.
Adapter Plate		1 pc.

* Depends on multipath environment, number of satellites in view; satellite geometry, ionospheric activity and use of SBAS.

Please note: Please follow the user manual for installation and operating details. The AMU needs to be powered by a LPS (Limited Power Source, Class: PS2) according to IEC/EN 62368-1.

Standards: IEC/EN 62368-1 (Safety),
EN 60950-22 (Safety – Equipment installed outdoor),
EN 55024 (Immunity),
ETS 300019-1-4 class 4.1 and 4.2 H (Environmental).

EU-RED: Hereby, KATHREIN SE declares that the radio equipment type 86010129 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: <http://www.kathrein.com>

Certification: CE, FCC



Protection Caps IP 68 for 7-16 Female Connectors

Technical Data

Type No.		81610014
Material		ABS PC
Application		Indoor or outdoor (IP 68)
Temperature range	°C	-30 ... +95
Weight	g	3
	lb	0.007
Height	mm	16
	inches	0.63
Diameter	mm	32
	inches	1.26
Quantity per pack	pcs	100



Technical Data

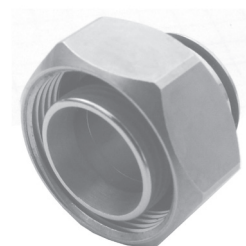
Type No.		78211293
Material		Brass, silver-plated
Application		Indoor or outdoor (IP 68)
Temperature range	°C	-65 ... +165
Weight	g	60
	lb	0.132
Height	mm	22
	inches	0.87
Diameter	mm	32
	inches	1.26



Protection Caps IP 68 for 4.3-10 Female Connectors

Technical Data

Type No.		78211297
Material		Metal
Application		Indoor or outdoor (IP 68)
Temperature range	°C	-55 ... +90
Weight	g	27.9
	lb	0.062
Height	mm	17.3
	inches	0.68
Diameter	mm	24.8
	inches	0.97
Max. torque tightening	Nm	5



Protection Caps for RET Spindle

85010004

Packing unit: 5 pieces



Antenna Line Products

> Multi-Band Combiners

Dual-Band Combiners
Triple-Band Combiners
Quad-Band Combiners

Multi-Band Combiners

> Same-Band Combiners and Hybrid Combiners

Band-Pass Filters
Hybrid Combiners
3 dB Couplers
Same-Band Combiners

Same-Band and Hybrid Combiners

> System Components and Accessories

Smart Bias Tees
DC-Stops
Attenuators
50 Ω Loads
Clamp Sets

System Components and Accessories

> DTMA's

DTMA's

Catalogue 2020 → Alterations to the Catalogue of 2019

KATHREIN

Not longer in the catalogue 2020	Comments / Replacements
Multi-Band Combiners	
Dual-Band Combiners	
78210770	Kathrein Auto-Sense unit from this family (78210778V01) that is not phased out or *KRF102409 (1965-1780/2110-2360/180-1995, 4.3-10, Double Unit, DC bypass on all ports)
78210771	
78211280V43	Kathrein Auto-Sense units from this family (78211287V43-78211288V45) that are not phased out or *KRF102378 (698-803/824-894, Double Unit, DC bypass on all ports) or 7821143xV4x (694-862/880-960) depending on the use case.
78211281V43	
78211282V43	
78211283V43	
78211284V43	
78211285V43	
78211620	Units from this family (78211627-78211628V02) that are not phased out or *KRF102386 (1710-1880/1920-2690 doesn't have L-Band, Double Unit, DC bypass on all ports).
78211621	
78211622	
78211623	
78211624	
78211625	
78211626	
78211830	78211790
78211831	78211791
78211832	78211792
78211833	78211793
78211834	78211794
78211835	78211795
78211836	78211796
78211837	78211797
78211837V01	78211797V01
78211837V02	78211797V02
78211838	78211798
78211838V01	78211798V01
78211838V02	78211798V02

Catalogue 2020 → Alterations to the Catalogue of 2019

KATHREIN

Not longer in the catalogue 2020	Comments / Replacements
Triple-Band Combiners	
78210700	7821182x or 7821149x depending on use case
78210701	
78210702	
78210703	
78210704	
78210705	
78210707	
78210707V01	
78210707V02	
78210708	
78210708V01	
78210708V02	
78210780	
78210781	
78210788V01	
78210880	
78210881	
78210882	
78210883	
78210884	
78210885	
78210887	
78210887V01	
78210887V02	
78210888	
78210888V01	
78210888V02	
78211920	
78211921	
78211922	
78211923	
78211924	
78211925	
78211927	
78211927V01	
78211927V02	
78211928	
78211928V01	
78211928V02	
78211930	
78211931	
78211932	
78211933	
78211934	
78211935	
78211937	
78211937V01	
78211937V02	
78211938	
78211938V01	
78211938V02	

Catalogue 2020 → Alterations to the Catalogue of 2019

KATHREIN

Not longer in the catalogue 2020	Comments / Replacements
Same-Band and Hybrid Combiners	
Same-Band Combiners / Hybrid Combiners / 3 dB Couplers	
78210500	78210507
78210524	78210527
78210534	78210536
78210525	78210527
78211228V01	
78211230	
System Components and Accessories	
Smart Bias Tees	
78211065	78211055
78211066	78211056
78211596	78211592
78211597	78211593
DTMAs	
78210495V43	KRY 112 587/16*
78210510V43	78210512V43
78210511V43	78210512V43
78210581V43	78210583V43
78210863V04	
78210864V04	
78210872V01	KRY 112 212/1*
78210877V01	KRY 112 144/2*
78211175	
78211175V02	
78211175V03	
78211176	
78211176V02	78211910V02
78211176V03	
78211245V43	KRY 112 442/16*
78211332	
78211332V02	78211912V02
78211332V03	
78211333	
78211333V02	
78211334	
78211334V02	
78211334V03	
78211335	
78211335V02	
78211910	78211910V02
78211912	78211912V02

Please note: New type numbers in the catalogue 2020 are shown and coloured in the respective register of the different product families.

This list is a general overview which shows the differences in the 2020 catalogue as compared to the 2019 version. Information about phase-out dates can be found on our website: www.kathrein.com.

* Detailed information are available on request.

Summary of Filter, Combiner and Amplifier Types

KATHREIN

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
728..		78210517V46	414, 415	78210665V43	339	78211055	394, 395
728954	321	78210527	381	78210669	338	78211056	394, 395
		78210536	380	78210669V43	340		
731..		78210583V43	416			782111..	
731651	403	78210587	422, 423	782107..		78211107	419, 420
		78210587V02	422, 423	78210778V01	352	78211107V02	419, 420
734..		78210588	424, 425			78211107V03	419, 420
734360	403	78210588V02	424, 425	782108..		78211144	379
734361	403	78210588V03	424, 425	78210850V01	392	78211180	323
734362	403			78210891	402	78211180V43	324
734363	403	782106..		78210892	402	78211181	323
734364	403	78210620V43	342	78210893	402	78211181V43	324
734365	403	78210621V43	342	78210894	402	78211182	323
		78210622V43	342			78211182V43	324
738..		78210623V43	342	782109..		78211183	323
738546	403	78210624V43	342	78210936	383, 384	78211183V43	324
		78210625V43	342	78210970V43	331		
782102..		78210626V43	343	78210971V43	331	782112..	
78210264	322	78210627V43	344	78210972V43	331	78211228V03	387
78210279	341	78210627V44	344	78210973V43	331	78211235	385, 386
		78210627V45	344	78210974V43	331	78211275V43	410
782104..		78210628V43	344	78210975V43	331	78211287V43	325
78210430V43	411	78210628V44	344	78210977V43	332	78211287V44	345
78210473	400	78210628V45	344	78210977V44	332	78211287V45	325
78210475	401	78210660	337	78210977V45	332	78211288V43	325
78210484	398	78210660V43	339	78210978V43	332	78211288V44	325
		78210661	337	78210978V44	332	78211288V45	325
782105..		78210661V43	339	78210978V45	332	78211293	306
78210506	377	78210662	337	78210979V43	333	78211297	306
78210507	378	78210662V43	339	78210990V43	417, 418		
78210512V43	412, 413	78210663	337	78210990V44	417, 418	782113..	
78210512V44	412, 413	78210663V43	339	78210990V46	417, 418	78211330V43	421
78210512V46	412, 413	78210664	337			78211340	368
78210517V43	414, 415	78210664V43	339	782110..		78211341	368
78210517V44	414, 415	78210665	337	78211000	393	78211342	368

Summary of Filter, Combiner and Amplifier Types

KATHREIN

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
78211343	368	78211452	357	78211478V02	330	78211567V01	360
78211347	369	78211453	357	78211490	355	78211567V02	360
78211347V01	369	78211454	357	78211491	355	78211568	360
78211347V02	369	78211455	357	78211492	355	78211568V01	360
78211348	369	78211457	358	78211493	355	78211568V02	360
78211348V01	369	78211457V01	358	78211494	355	78211570	361
78211348V02	369	78211457V02	358	78211495	355	78211571	361
		78211458	358	78211497	356	78211572	361
782114..		78211458V01	358	78211497V01	356	78211573	361
78211400V43	366	78211458V02	358	78211497V02	356	78211574	361
78211401V43	366	78211460	334	78211498	356	78211575	361
78211402V43	366	78211461	334	78211498V01	356	78211577	362
78211403V43	366	78211462	334	78211498V02	356	78211577V01	362
78211404V43	366	78211463	334			78211577V02	362
78211405V43	366	78211464	334	782115..		78211578	362
78211407V43	367	78211465	334	78211530	346	78211578V01	362
78211407V44	367	78211466	335	78211531	346	78211578V02	362
78211407V45	367	78211467	336	78211532	346	78211580	370
78211408V43	367	78211467V01	336	78211533	346	78211581	370
78211408V44	367	78211467V02	336	78211534	346	78211582	370
78211408V45	367	78211468	336	78211535	346	78211583	370
78211430V43	326	78211468V01	336	78211536	347	78211584	370
78211431V43	326	78211468V02	336	78211537	348	78211585	370
78211432V43	326	78211470	328	78211537V01	348	78211587	371
78211433V43	326	78211471	328	78211537V02	348	78211587V01	371
78211434V43	326	78211472	328	78211538	348	78211587V02	371
78211435V43	326	78211473	328	78211538V01	348	78211588	371
78211437V43	327	78211474	328	78211538V02	348	78211588V01	371
78211437V44	327	78211475	328	78211560	359	78211588V02	371
78211437V45	327	78211476	329	78211561	359	78211589	372
78211438V43	327	78211477	330	78211562	359	78211592	396, 397
78211438V44	327	78211477V01	330	78211563	359	78211593	396, 397
78211438V45	327	78211477V02	330	78211564	359		
78211450	357	78211478	330	78211565	359	782116..	
78211451	357	78211478V01	330	78211567	360	78211627	345

Summary of Filter, Combiner and Amplifier Types

KATHREIN

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
78211627V01	345	782117..		782118..		782119..	
78211627V02	345	78211760	399	78211820	353	78211910V02	426, 427
78211628	345	78211761	399	78211821	353	78211912V02	428, 429
78211628V01	345	78211762	399	78211822	353		
78211628V02	345	78211763	399	78211823	353	784..	
78211690	363	78211790	349	78211824	353	78410367	398
78211691	363	78211791	349	78211825	353		
78211692	363	78211792	349	78211827	354	793..	
78211693	363	78211793	349	78211827V01	354	793554	382
78211694	363	78211794	349	78211827V02	354		
78211695	363	78211795	349	78211828	354	850..	
78211696	364	78211796	350	78211828V01	354	85010002	403
78211697	365	78211797	351	78211828V02	354	85010003	403
78211697V01	365	78211797V01	351	78211847	376		
78211697V02	365	78211797V02	351				
78211698	365	78211798	351				
78211698V01	365	78211798V01	351				
78211698V02	365	78211798V02	351				

> **Multi-Band Combiners**

Dual-Band Combiners
Triple-Band Combiners
Quad-Band Combiners

Summary of Multi-Band Combiner Types

KATHREIN

Frequency Combinations for Dual-, Triple- and Quad-Band Combiners

Dual-Band Combiners:

Type No.	Frequency [MHz]		Connector Type (female)	Combiner Type	Page
728954	68 - 470	870 - 960	N		321
78210264	50 - 2200	2400 - 2500	N		322
78211180 ... -183	690 - 2180	2400 - 2700	7-16		323
78211180V43 ... -183V43	690 - 2180	2400 - 2700	4.3-10		324
78211287V43 ... -288V45	698 - 806	824 - 960	4.3-10	Auto-sense	325
78211430V43 ... -435V43	694 - 862	880 - 960	4.3-10		326
78211437V43 ... -438V45	694 - 862	880 - 960	4.3-10	Auto-sense	327
78211470 ... -475	703 - 788	791 - 960	4.3-10		328
78211476	703 - 788	791 - 960	4.3-10	Cross-Bypass	329
78211477 ... -478V02	703 - 788	791 - 960	4.3-10	Auto-sense	330
78210970V43 ... -975V43	790 - 862	880 - 960	4.3-10		331
78210977V43 ... -978V45	790 - 862	880 - 960	4.3-10	Auto-sense	332
78210979V43	790 - 862	880 - 960	4.3-10	Cross-Bypass	333
78211460 ... -465	380 - 960	1427 - 3800	4.3-10		334
78211466	380 - 960	1427 - 3800	4.3-10	Cross-Bypass	335
78211467 ... -468V02	380 - 960	1427 - 3800	4.3-10	Auto-sense	336
78210660 ... -665	470 - 960	1695 - 2700	7-16		337
78210669	470 - 960	1695 - 2700	7-16	Cross-Bypass	338
78210660V43 ... -665V43	470 - 960	1695 - 2700	4.3-10		339
78210669V43	470 - 960	1695 - 2700	4.3-10	Cross-Bypass	340
78210279	790 - 1880	1920 - 2170	7-16		341
78210620V43 ... -625V43	1710 - 1880	1920 - 2200	4.3-10		342
78210626V43	1710 - 1880	1920 - 2200	4.3-10	Cross-Bypass	343
78210627V43 ... -628V45	1710 - 1880	1920 - 2200	4.3-10	Auto-sense	344
78211627 ... -628V02	1427 - 1880	1920 - 2690	4.3-10	Auto-sense	345
78211530 ... -535	1427 - 1518	1710 - 2690	4.3-10		346
78211536	1427 - 1518	1710 - 2690	4.3-10	Cross-Bypass	347
78211537 ... -538V02	1427 - 1518	1710 - 2690	4.3-10	Auto-sense	348
78211790 ... -795	1427 - 2200	2300 - 2690	4.3-10		349
78211796	1427 - 2200	2300 - 2690	4.3-10	Cross-Bypass	350
78211797 ... -98V02	1427 - 2200	2300 - 2690	4.3-10	Auto-sense	351
78210778V01	1695 - 1780 / 2095 - 2200	1850 - 1920 / 1930 - 2000	7-16	Auto-sense	352

New Product

Summary of Multi-Band Combiner Types

KATHREIN

Frequency Combinations for Dual-, Triple- and Quad-Band Combiners

Triple-Band Combiners:

Type No.	Frequency [MHz]				Connector Type (female)	Combiner Type	Page
78211820 ... -825	690 - 862	880 - 960	1427 - 3800		4.3-10		353
78211827 ... -828V02	690 - 862	880 - 960	1427 - 3800		4.3-10	Auto-Sense	354
78211490 ... -495	703 - 788	791 - 960	1427 - 3800		4.3-10		355
78211497 ... -498V02	703 - 788	791 - 960	1427 - 3800		4.3-10	Auto-Sense	356
78211450 ... -455	380 - 960	1427 - 2200	2300 - 2690		4.3-10		357
78211457 ... -458V02	380 - 960	1427 - 2200	2300 - 2690		4.3-10	Auto-Sense	358
78211560 ... -565	380 - 960	1427 - 1880	1920 - 2690		4.3-10		359
78211567 ... -568V02	380 - 960	1427 - 1880	1920 - 2690		4.3-10	Auto-Sense	360
78211570 ... -575	380 - 960	1427 - 1518	1710 - 2690		4.3-10		361
78211577 ... -578V02	380 - 960	1427 - 1518	1710 - 2690		4.3-10	Auto-Sense	362
78211690 ... -695	1427 - 1880	1920 - 2360	2496 - 2690		4.3-10		363
78211696	1427 - 1880	1920 - 2360	2496 - 2690		4.3-10	Cross-Bypass	364
78211697 ... -698V02	1427 - 1880	1920 - 2360	2496 - 2690		4.3-10	Auto-Sense	365
78211400V43 ... -405V43	1710 - 1880	1920 - 2170	2300 - 2700		4.3-10		366
78211407V43 ... -408V45	1710 - 1880	1920 - 2170	2300 - 2700		4.3-10	Auto-Sense	367

Quad-Band Combiners:

Type No.	Frequency [MHz]				Connector Type (female)	Combiner Type	Page
78211340 ... -343	690 - 862	880 - 960	1427 - 1880	1920 - 2690	4.3-10		368
78211347 ... -348V02	690 - 862	880 - 960	1427 - 1880	1920 - 2690	4.3-10	Auto-Sense	369
78211580 ... -585	380 - 960	1427 - 1880	1920 - 2200	2300 - 2690	4.3-10		370
78211587 ... -588V02	380 - 960	1427 - 1880	1920 - 2200	2300 - 2690	4.3-10	Auto-Sense	371
78211589	380 - 960	1427 - 1880	1920 - 2200	2300 - 2690	4.3-10	Cross-Bypass	372

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318

Type No.	Connector	Auto-Sense	Frequency / MHz															
Dual-Band Combiner																		
	N		68 - 470	870 - 970														
	N		50 - 2200															
			690 - 2180															
78211064																		
782118xV43 / 7821118x	4.3-10/7-16																	
7821128xV4x	4.3-10	•																
7821143xV4x	4.3-10	•	698 - 906															
7821147x	4.3-10	•	880 - 960															
7821097xV4x	4.3-10	•	703 - 788															
7821146x	4.3-10	•	790 - 862															
7821066xV43 / 7821066x	4.3-10/7-16	•	380 - 960															
78210279	7/16		470 - 960															
7821062xV4x	4.3-10	•																
7821162x	4.3-10	•																
7821153x	4.3-10	•																
7821179x	4.3-10	•																
78210778V01	7/16	•																
Triple-Band Combiner																		
7821182x	4.3-10	•																
7821149x	4.3-10	•	690 - 862															
7821145x	4.3-10	•	703 - 788															
7821156x	4.3-10	•	380 - 960															
7821157x	4.3-10	•	380 - 960															
7821169x	4.3-10	•																
7821140xV4x	4.3-10	•																
Quad-Band Combiner																		
7821158x	4.3-10	•	380 - 960															
7821134x	4.3-10	•	690 - 862															

Auto-Sense Combiners

Functionality & Benefits

KATHREIN

In order to enable the control of ALDs¹⁾ when deploying standard multi-band combiners in mobile communication networks, such combiners are fitted with integrated DC/AISG bypass circuits. Depending on the application, different bypass configurations are available. The correct bypass combination needs to be selected in order to ensure the proper control and configuration of the ALDs.

With Kathrein Mobile Communication Auto-Sense Combiners the correct bypass is detected automatically, thereby enabling safe and easy deployment in universal applications.

How does it work?

Two different modes

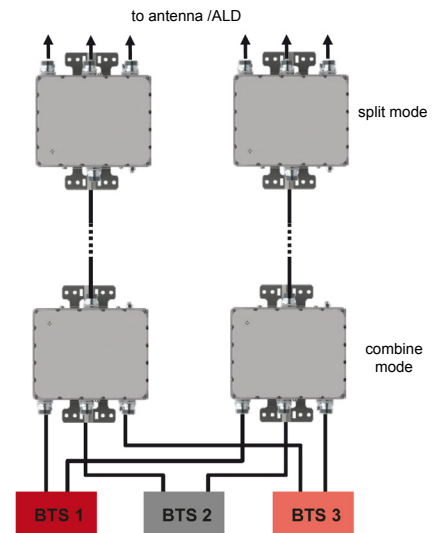
Kathrein Mobile Communication Auto-Sense Combiners automatically switch into the appropriate mode by checking the DC voltage on all ports.

Split mode: close to the antenna

- Kathrein Mobile Communication Combiners detect if an ALD (DC load) or an antenna (short circuit) is connected to a port and therefore bypass or block the DC/AISG signal.
- LEDs for each port indicate if DC is bypassed or not.

Combine mode: close to the BTS

- Automatic detection of DC voltage on one or more input ports. DC/AISG signal is bypassed to connected ALDs according to three different functional preconfigurations.
- In combine mode, LEDs show if DC is connected to a port and which DC/AISG signal is put through to the common port.

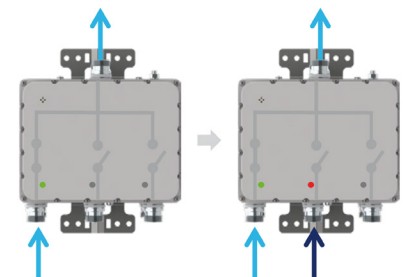


Three different functional preconfigurations

Kathrein Mobile Communication Auto-Sense Combiners are available in three variants with different preconfigured functions.

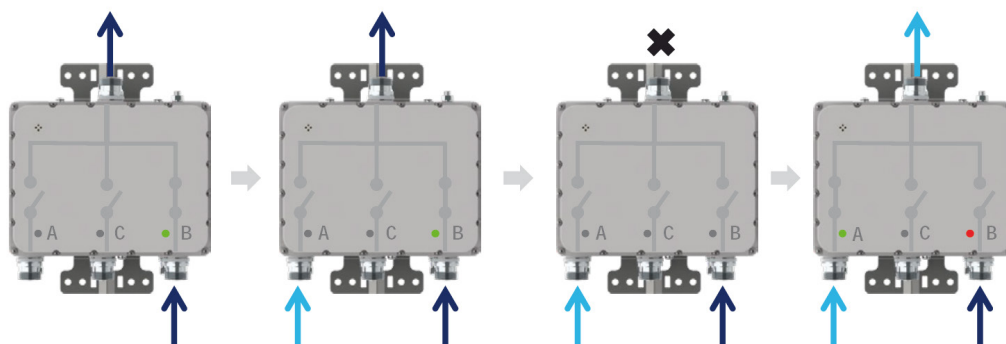
First In – First Out function

- The first BTS which supplies DC voltage at any input port is bypassed to the common port, other DC/AISG signals will be ignored and blocked.
- After installation, LED lights help to adjust the system by indicating the bypass situation.



Priority Controlled function

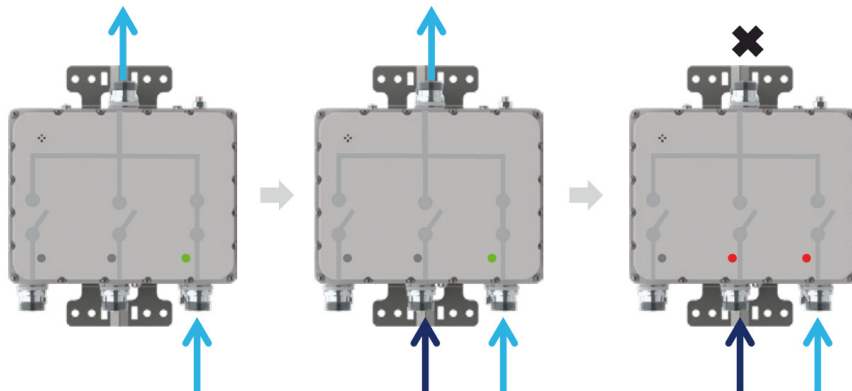
- The combiner detects all ports that are supplied with DC and bypasses the AISG/DC signal with the highest priority according to a preprogrammed priority table setting. (For detailed information on the preset priorities of each combiner, please check the latest datasheets on our website.)
- During the detection phase, LED lights indicate which port/signal is bypassed and which ones are blocked. If a new base station is connected during this phase, the combiner automatically switches the DC/AISG bypass to this port if the priority is higher than the one of the currently bypassed port.



¹⁾ ALD = Antenna Line Device

Exclusive User function

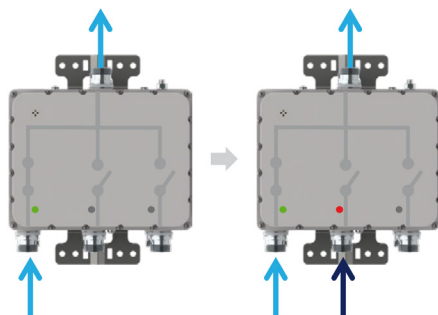
- If the Exclusive User function is set in the combiner, the first base station which supplies an appropriate DC voltage at any input port is bypassed to the common port.
- If a second DC/AISG signal is erroneously fed into the combiner, then none of the DC/AISG signals will be allowed to bypass to the common port. The DC/AISG functionality at the common port will be disabled and the LEDs start blinking in red until only one DC/AISG signal is connected.



Benefits & features

■ LED status indication

Installation mistakes can be easily revealed as LEDs for each port indicate if DC is bypassed or not and even if the DC is blocked.



Green LED light indicates that this is the port / DC signal that is bypassed to the common port.

Red light indicates that this port would also be supplied with a DC/AISG signal, but the signal is blocked.

No light indicates that no DC has been detected on this port.

■ Simplification

Kathrein Mobile Communication Auto-Sense Combiners can be used for split and combine applications – one type for all DC bypass situations. As soon as DC is connected to the combiner, the combiner will detect its role in the system and automatically adjust the behavior accordingly.

■ Savings and efficiency

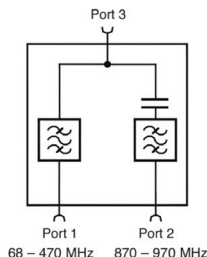
The multi usability of Kathrein Mobile Communication Auto-Sense Combiners helps to reduce stock, ordering logistics and number of parts. No external DC stops are required either.

For more detailed information please see our functional description of Auto-Sense Combiners on our website.

68 – 470 MHz

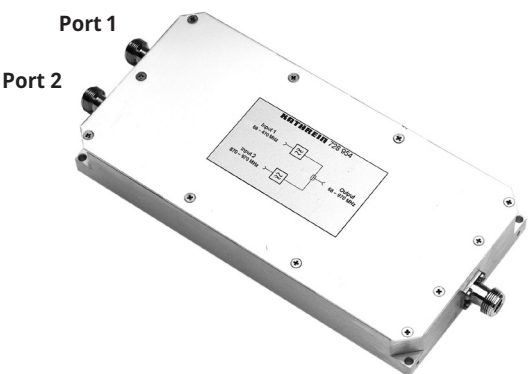
870 – 970 MHz

- Designed for inhouse multiband distribution network
- Enables feeder sharing
- DC by-pass between port 1 and port 3
- Built-in DC stop between port 2 and port 3

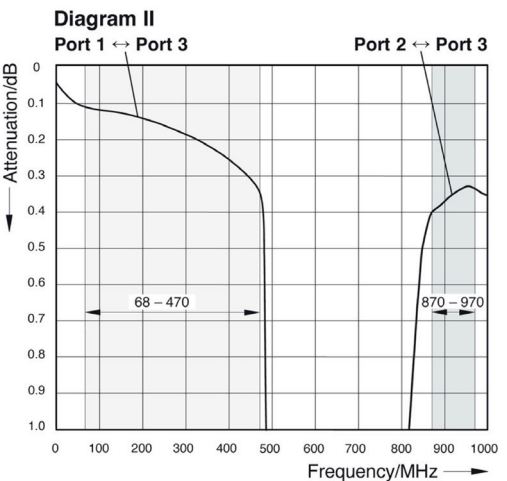
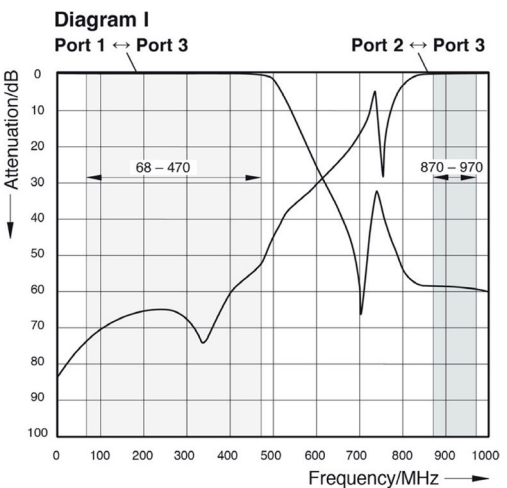


Technical Data

Type No.		728954
Pass band		
Band 1	MHz	68 – 470
Band 2	MHz	870 – 970
Insertion loss		
Port 1 ↔ Port 3	dB	< 0.5 (68 – 470 MHz)
Port 2 ↔ Port 3	dB	< 0.5 (870 – 970 MHz)
Isolation		
Port 1 ↔ Port 2	dB	> 45
VSWR		< 1.2
Impedance	Ω	50
Input power		
Band 1	W	< 50
Band 2	W	< 50
Temperature range	°C °F	–20 ... +70 –4 ... +158
Connectors		N female
Application		Indoor
DC transparency		
Port 1 ↔ Port 3	mA	By-pass (max. 2500)
Port 2 ↔ Port 3		Short circuited
Port 3 ↔ Port 2		Stop
Weight	kg lb	0.8 1.8
Packing size	mm in	285 x 55 x 125 11.2 x 2.2 x 4.9
Dimensions (w x h x d)	mm in	229 x 32 x 112 9.0 x 1.3 x 4.4 (without connectors)



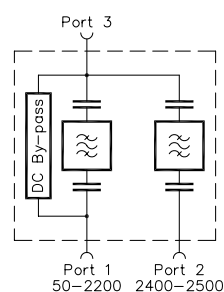
Typical Attenuation Curves



50 – 2200 MHz

2400 – 2500 MHz

- Designed for inhouse multiband distribution networks
- Enables feeder sharing
- DC by-pass between ports 1 and 3
- Built-in DC stop between port 2 and 3



Technical Data

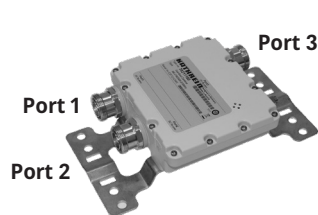
Type No.		78210264
Pass band		
Band 1]	MHz	50 – 2200
Band 2	MHz	2400 – 2500
Insertion loss		
Port 1 ↔ Port 3	dB	< 0.1 (50 – 2200 MHz)
Port 2 ↔ Port 3	dB	< 0.2 (2400 – 2500 MHz)
Isolation		
Port 1 ↔ Port 2	dB	> 50 (50 – 2200 / 2400 – 2500 MHz)
VSWR		< 1.25 (50 – 2200 / 2400 – 2500 MHz)
Impedance	Ω	50
Input power		
Band 1	W	< 200
Band 2	W	< 200
Intermodulation products	dBc	< -150 dBc (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-20 ... +55 -4 ... +131
Connectors		N female
Application		Indoor
Special features		Built-in DC stop between ports 2 and 3*
Mounting		With 4 screws (max. 4 mm diameter)
Weight	kg lb	0.47 1.0
Packing size	mm in	225 x 140 x 75 8.9 x 5.6 x 3.0
Dimensions (w x h x d)	mm in	86 x 30.4 x 181.4 3.4 x 1.2 x 7.1 (including connectors and mounting feet)

* DC by-pass between ports 1 and 3 (max. 2500 mA)

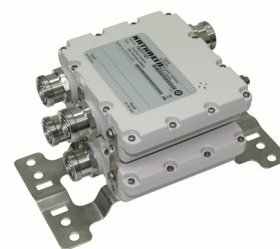
690 – 2180 MHz

2400 – 2700 MHz

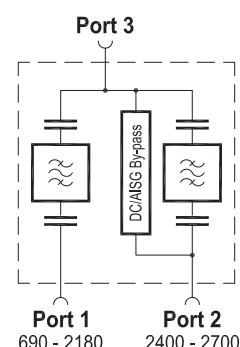
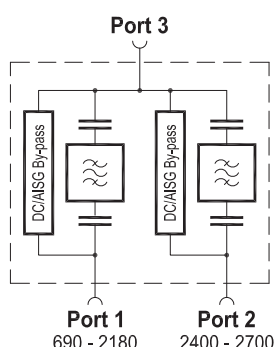
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- Extremely small dimensions and low weight**
- Very low insertion loss**
- High input power**



Single Unit



Double Unit



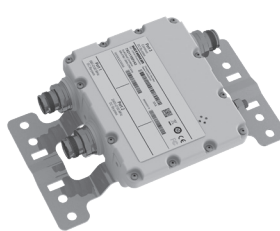
Technical Data

Type No.		78211180 Single Unit	78211182 Single Unit
		78211181 Double Unit	78211183 Double Unit
Pass band Band 1 Band 2	MHz MHz	690 – 2180 2400 – 2700	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.2 (690 – 2180 MHz) typ. 0.1 < 0.15 (2400 – 2700 MHz) typ. 0.1	
Isolation Port 1 ↔ Port 2	dB	> 50 (690 – 2180 MHz), > 48 (2400 – 2700 MHz)	
VSWR		< 1.22 (690 – 2180 MHz) < 1.2 (2400 – 2700 MHz)	
Impedance	Ω	50	
Input power Band 1 / Band 2	W	< 500 / < 500	
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–55 ... +60 –55 ... +60	
Connectors		7-16 female (long neck)	
Application		Indoor or outdoor (IP 66)	
DC/ISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	Single Unit: 1.5 3.3 / Double Unit: 2.8 6.2	
Dimensions (w x h x d)	mm in	Single Unit: 141 x 119 x 48 5.6 x 4.7 x 1.9 / Double Unit: 141 x 119 x 99 5.6 x 4.7 x 3.9 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 266 x 196 x 130 10.5 x 7.7 x 5.1 / Double Unit: 266 x 196 x 180 10.5 x 7.7 x 7.1	

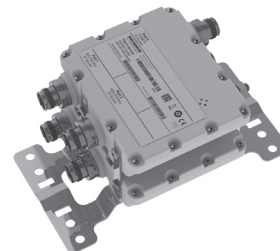
690 – 2180 MHz

2400 – 2700 MHz

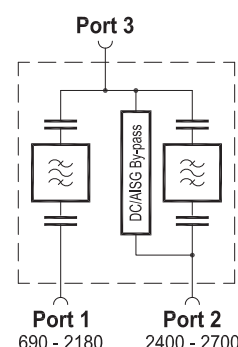
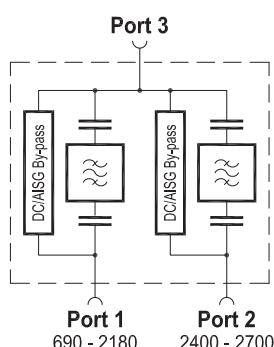
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit



Double Unit



Technical Data

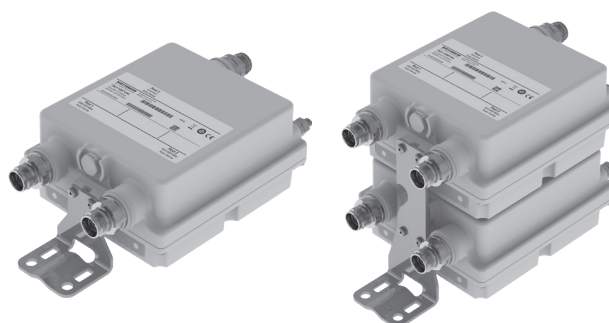
Type No.		7821180V43 Single Unit	7821182V43 Single Unit
		7821181V43 Double Unit	7821183V43 Double Unit
Pass band Band 1 Band 2	MHz MHz	690 – 2180 2400 – 2700	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.2 (690 – 2180 MHz) typ. 0.1 < 0.15 (2400 – 2700 MHz) typ. 0.1	
Isolation Port 1 ↔ Port 2	dB	> 50 (690 – 2180 MHz), > 48 (2400 – 2700 MHz)	
VSWR		< 1.22 (690 – 2180 MHz) < 1.2 (2400 – 2700 MHz)	
Impedance	Ω	50	
Input power Band 1 / Band 2	W	< 300 / < 300	
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–55 ... +60 –67 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/ISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	Single Unit: 1.5 3.3 / Double Unit: 2.8 6.2	
Dimensions (w x h x d)	mm in	Single Unit: 141 x 119 x 48 5.6 x 4.7 x 1.9 / Double Unit: 141 x 119 x 99 5.6 x 4.7 x 3.9 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 266 x 196 x 130 10.5 x 7.7 x 5.1 / Double Unit: 266 x 196 x 180 10.5 x 7.7 x 7.1	

698 – 806 MHz

824 – 960 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated Auto-Sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

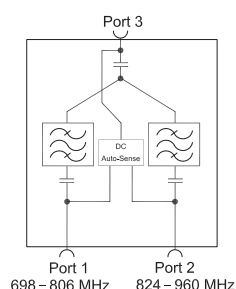


Multi-Band Combiners

Priority table for the variants 78211287V44 and 78211288V44 with Priority Controlled Function

698-806 MHz	Priority 1 (highest)
824-960 MHz	Priority 2 (lowest)

For more information see Auto-Sense quick guide later in this datasheet.



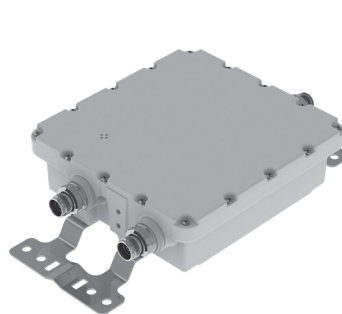
Technical Data

Type No. DC/AISG transparency		78211287V43 78211287V44 78211287V45		78211288V43 78211288V44 78211288V45	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function				clamps included	
Unit		Single		Double	
Pass band					
Band 1	MHz	698 – 806			
Band 2	MHz	824 – 960			
Insertion loss					
Port 1 ↔ Port 3	dB	< 0.3 (698 – 796 MHz); < 0.5 (796 – 806 MHz)			
Port 2 ↔ Port 3	dB	< 0.5 (824 – 834 MHz); < 0.3 (834 – 960 MHz)			
Isolation					
Port 1 ↔ Port 2	dB	> 50			
VSWR		< 1.2			
Impedance	Ω	50			
Input power					
Band 1 / Band 2	W	< 300			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency					
Port 1 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Port 2 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Lightning protection	kA	3, 10/350 μs pulse			
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With included clamp set			
Windload (at Rated Wind Speed: 150 km/h)	N lbf N lbf	Single Unit: 49 11.0 (frontal) Single Unit: 15 3.4 (lateral)		Double Unit: 49 11.0 (frontal) Double Unit: 40 9.0 (lateral)	
Weight	kg lb	Single Unit: 2.5 5.5 / Double Unit: 5.0 11.0			
Dimensions (w x h x d)	mm in	Single Unit: 153 x 171 x 81 6.0 x 6.7 x 3.2 / Double Unit: 153 x 171 x 167 6.0 x 6.7 x 6.5 (without connectors, without mounting brackets)			
Packing size	mm in	Single Unit: 365 x 235 x 160 14.4 x 9.3 x 6.3 / Double Unit: 365 x 235 x 245 14.4 x 9.3 x 9.6			

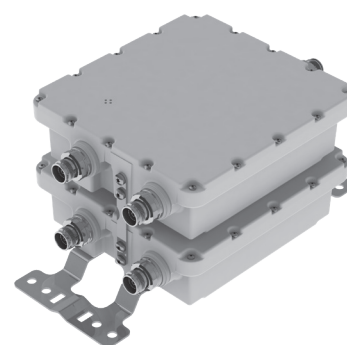
694 - 862 MHz

880 - 960 MHz

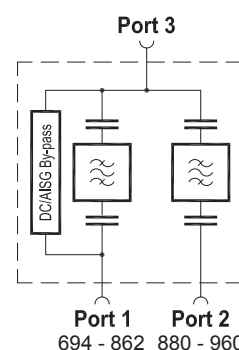
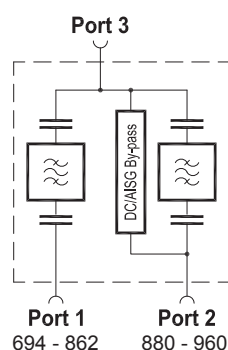
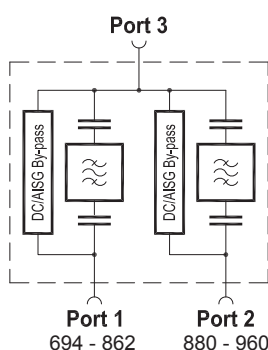
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit



Double Unit



Technical Data

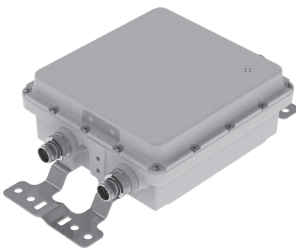
Type No.		78211430V43 Single Unit	78211432V43 Single Unit	78211434V43 Single Unit
		78211431V43 Double Unit	78211433V43 Double Unit	78211435V43 Double Unit
Pass band Band 1 Band 2	MHz MHz	694 - 862 880 - 960		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.4, typically 0.2 (694 - 862 MHz) < 0.4, typically 0.2 (880 - 960 MHz)		
Isolation Port 1 ↔ Port 2	dB	> 45 (694 - 862 MHz / 880 - 960 MHz)		
VSWR		< 1.25 (694 - 862 / 880 - 960 MHz)		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 300		
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	-55 ... +60 -67 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Lightning protection	kA	3, 10/350 μs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set		
Weight	kg lb	Single Unit: 3 6.6 / Double Unit: 6 13.2		
Dimensions (w x h x d)	mm in	Single Unit: 200 x 214 x 66 mm 7.9 x 8.4 x 2.6 Double Unit: 200 x 214 x 137 7.9 x 8.4 x 5.4 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 400 x 265 x 150 15.7 x 10.4 x 5.9 Double Unit: 400 x 265 x 220 15.7 x 10.4 x 8.7		

694 – 862 MHz

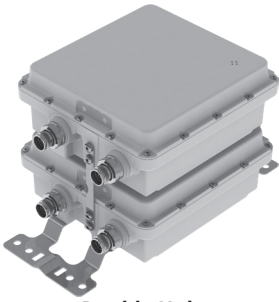
880 – 960 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

AUTO-SENSE



Single Unit

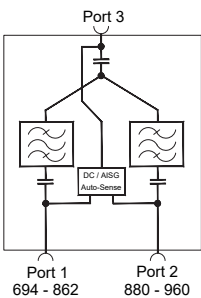


Double Unit

Priority table for the variants 78211437V44 and 78211438V44 with Priority Controlled Function

694-862 MHz	Priority 1 (highest)
880-960 MHz	Priority 2 (lowest)

For more information see Auto-Sense quick guide later in this datasheet.



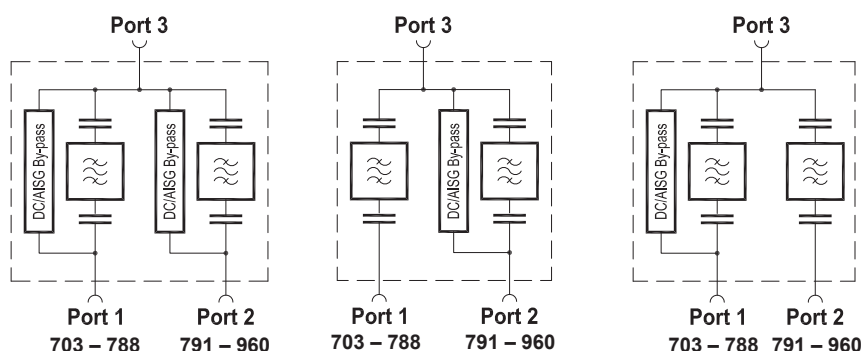
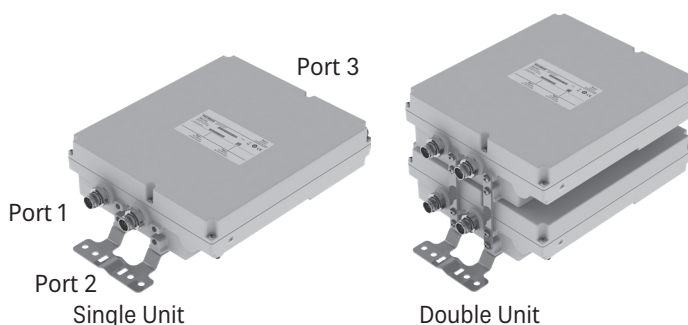
Technical Data

Type No. DC/AISG transparency			
1. First In - First Out Function		78211437V43	
2. Priority Controlled Function		78211437V44	
3. Exclusive User Function		78211437V45	
Unit		Single	Double
Pass band			
Band 1	MHz	694 – 862	
Band 2	MHz	880 – 960	
Insertion loss			
Port 1 ↔ Port 3	dB	< 0.4, typically 0.2 (694 – 862 MHz)	
Port 2 ↔ Port 3	dB	< 0.4, typically 0.2 (880 – 960 MHz)	
Isolation			
Port 1 ↔ Port 2	dB	> 45 (694 – 862 MHz / 880 – 960 MHz)	
VSWR		< 1.25 (694 – 862 / 880 – 960 MHz)	
Impedance	Ω	50	
Input power			
Band 1 / Band 2	W	< 300	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-55 ... +60 -67 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 3	mA	Auto-Sense (max. 2000)	
Port 2 ↔ Port 3	mA	Auto-Sense (max. 2000)	
Lightning protection	kA	3, 10/350 µs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb	Single Unit: 3.2 7.1 / Double Unit: 6.4 14.1	
Dimensions (w x h x d)	mm in	Single Unit: 200 x 214 x 84 7.9 x 8.4 x 3.3 Double Unit: 200 x 214 x 173 7.9 x 8.4 x 6.8 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 395 x 260 x 163 15.6 x 10.2 x 6.4 Double Unit: 395 x 260 x 253 15.6 x 10.2 x 10.0	

703 – 788 MHz

791 – 960 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



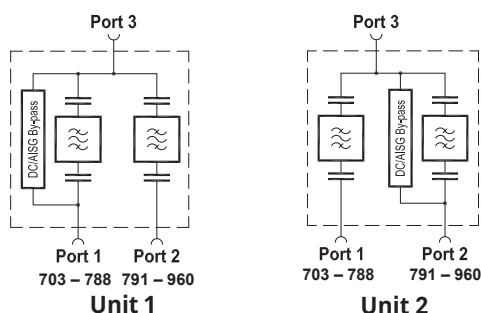
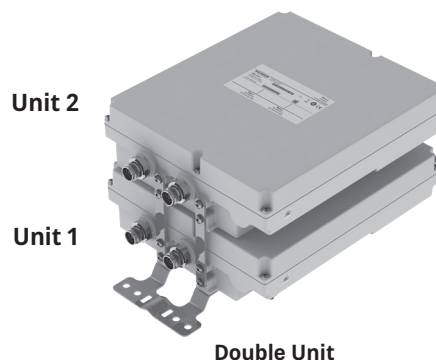
Technical Data

Type No.		78211470 Single Unit	78211472 Single Unit	78211474 Single Unit
		78211471 Double Unit	78211473 Double Unit	78211475 Double Unit
Pass band Band 1 Band 2	MHz MHz	703 – 788 791 – 960		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.7 (703 – 785 MHz) / < 1.0 (785 – 787 MHz) / < 1.5 (787 – 788 MHz) < 1.5 (791 – 793 MHz) / < 1.0 (793 – 800 MHz) / < 0.7 (800 – 960 MHz)		
Isolation Port 1 ↔ Port 2	dB	> 40		
VSWR		< 1.25		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 200 / < 200		
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	-40 ... +60 -40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Lightning protection	kA	3, 10/350 µs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. diameter 8 0.315) / Mast mounting: With additional clamp set		
Weight	kg lb	Single unit: 6.2 13.7 / Double unit: 12 26.5		
Dimensions (w x h x d)	mm in	Single unit: 258 x 301 x 88 10.2 x 11.9 x 3.5 / Double unit: 258 x 301 x 178 10.2 x 11.9 x 7.0 (without connectors, without mounting brackets)		
Packin size	mm in	Single unit: 477 x 334 x 175 18.8 x 13.1 x 6.9 / Double unit: 477 x 334 x 265 18.8 x 13.1 x 10.4		

703 – 788 MHz

791 – 960 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211476 Double Unit	
Pass band			
Band 1	MHz	703 – 788	
Band 2	MHz	791 – 960	
Insertion loss			
Port 1 ↔ Port 3	dB	< 0.7 (703 – 785 MHz) / < 1.0 (785 – 787 MHz) / < 1.5 (787 – 788 MHz)	
Port 2 ↔ Port 3	dB	< 1.5 (791 – 793 MHz) / < 1.0 (793 – 800 MHz) / < 0.7 (800 – 960 MHz)	
Isolation	dB	> 40	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2	W	< 200 / < 200	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 3	mA		
Port 2 ↔ Port 3	mA		
Lightning protection	kA	3, 10/350 µs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	4.6 10.1	
Dimensions (w x h x d)	mm in	258 x 301 x 178 10.2 x 11.9 x 7.0 (without connectors, without mounting brackets)	
Packing size	mm in	477 x 334 x 265 18.8 x 13.1 x 10.4	

703 – 788 MHz

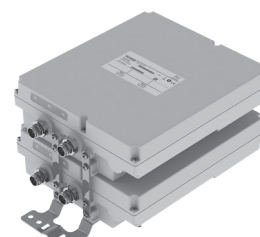
791 – 960 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Single Unit

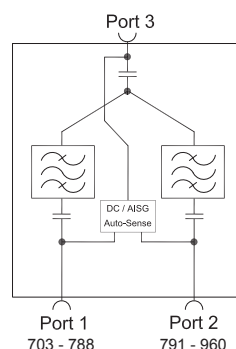


Double Unit

Priority table for the variants 78211477V01 and 78211478V01 with Priority Controlled Function

703-788 MHz	Priority 2 (lowest)
791-960 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



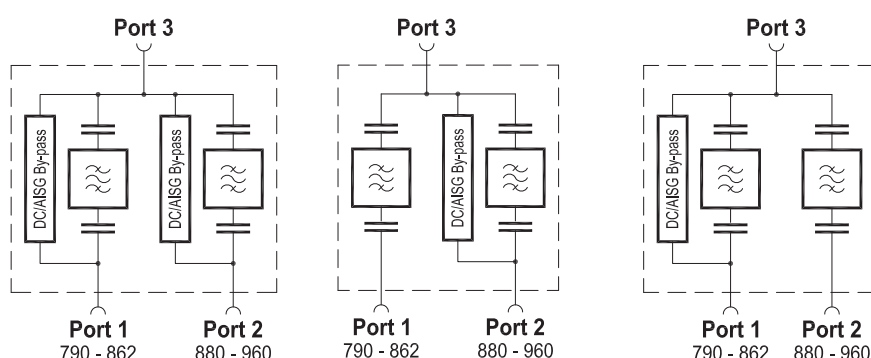
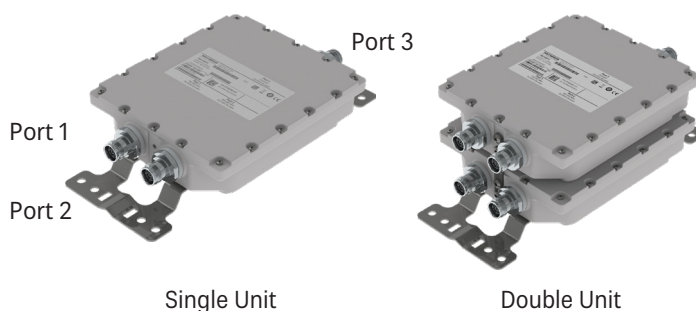
Technical Data

Type No. DC/AISG transparency		78211477 78211477V01 78211477V02		78211478 78211478V01 78211478V02	
1. First In - First Out Function					
2. Priority Controlled Function					
3. Exclusive User Function					
Unit		Single		Double	
Pass band					
Band 1	MHz	703 – 788			
Band 2	MHz	791 – 960			
Insertion loss					
Port 1 ↔ Port 3	dB	< 0.7 (703 – 785 MHz) / < 1.0 (785 – 787 MHz) / < 1.5 (787 – 788 MHz)			
Port 2 ↔ Port 3	dB	< 1.5 (791 – 793 MHz) / < 1.0 (793 – 800 MHz) / < 0.7 (800 – 960 MHz)			
Isolation	dB	> 40			
VSWR		< 1.25			
Impedance	Ω	50			
Input power					
Band 1 / Band 2	W	< 200 / < 200			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency					
Port 1 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Port 2 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Lightning protection	kA	3, 10/350 µs pulse			
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With additional clamp set			
Weight	kg lb	Single Unit: 6.3 13.9 / Double Unit: 12.2 26.9			
Dimensions	mm in	Single Unit: 258 x 301 x 88 10.2 x 11.9 x 3.5 Double Unit: 258 x 301 x 178 10.2 x 11.9 x 7.0 (without connectors, without mounting brackets)			
Packing size	mm in	Single Unit: 477 x 334 x 175 18.8 x 13.1 x 6.9 Double Unit: 477 x 334 x 265 18.8 x 13.1 x 10.4			

790 – 862 MHz

880 – 960 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

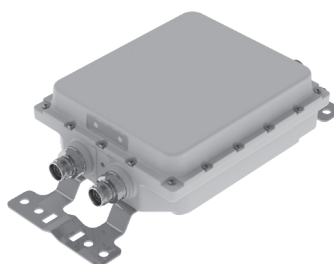
Type No.		78210970V43 Single Unit	78210972V43 Single Unit	78210974V43 Single Unit
		78210971V43 Double Unit	78210973V43 Double Unit	78210975V43 Double Unit
Pass band Band 1 Band 2	MHz MHz	790 – 862 880 – 960		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.4, typically 0.2 dB (790 – 862 MHz) < 0.4, typically 0.2 dB (880 – 960 MHz)		
Isolation Port 1 ↔ Port 2	dB	> 50 (790 - 862 MHz / 880 – 960 MHz)		
VSWR		< 1.25 (790 – 862 / 880 – 960 MHz)		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 200 / < 200		
Intermodulation products	dBc	< -160 dBc (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	-40 ... +60 -40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Lightning protection	kA	3, 10/350 µs pulse		
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set		
Weight	kg lb	Single Unit: 2.6 5.7 / Double Unit: 5.1 11.2		
Dimensions (w x h x d)	mm in	Single Unit: 177 x 52 x 209 7.0 x 2.0 x 8.2/ Double Unit: 177 x 108 x 209 7.0 x 4.3 x 8.2 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 392 x 272 x 139 15.4 x 10.7 x 5.5 / Double Unit: 392 x 272 x 189 15.4 x 10.7 x 7.4		

790 – 862 MHz

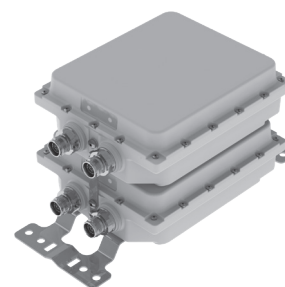
880 – 960 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Single Unit

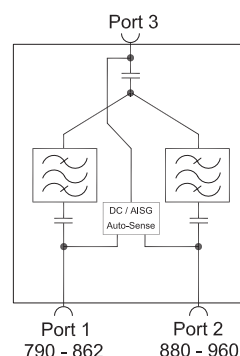


Double Unit

Priority table for the variants 78210977V44 and 78210978V44 with Priority Controlled Function

790-862 MHz	Priority 1 (highest)
880-960 MHz	Priority 2 (lowest)

For more information see Auto-Sense quick guide later in this datasheet.



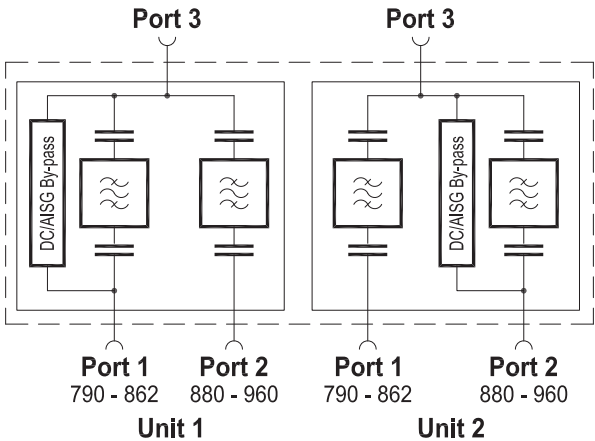
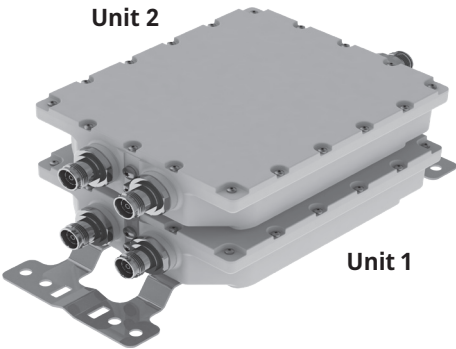
Technical Data

Type No. DC/AISG transparency			
1. First In - First Out Function		78210977V43	
2. Priority Controlled Function		78210977V44	
3. Exclusive User Function		78210977V45	
Unit		Single	Double
Pass band			
Band 1	MHz	790 – 862	
Band 2	MHz	880 – 960	
Insertion loss			
Port 1 ↔ Port 3		< 0.4 (790 – 862 MHz)	
Port 2 ↔ Port 3		< 0.4 (880 – 960 MHz)	
Isolation			
Port 1 ↔ Port 2		> 50	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2	W	< 300	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 3	mA	Auto-Sense (max. 2000)	
Port 2 ↔ Port 3	mA	Auto-Sense (max. 2000)	
Lightning protection	kA	3, 10/350 µs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With additional clamp set	
Weight	kg lb	Single Unit: 2.9 6.4 / Double Unit: 5.8 12.7	
Dimensions (w x h x d)	mm in	Single Unit: 177 x 70 x 209 7.0 x 2.8 x 8.2 / Double Unit: 177 x 146 x 209 7.0 x 5.7 x 8.2 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 392 x 272 x 165 15.4 x 10.7 x 6.5 / Double Unit: 392 x 272 x 240 15.4 x 10.7 x 9.5	

790 - 862 MHz

880 - 960 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



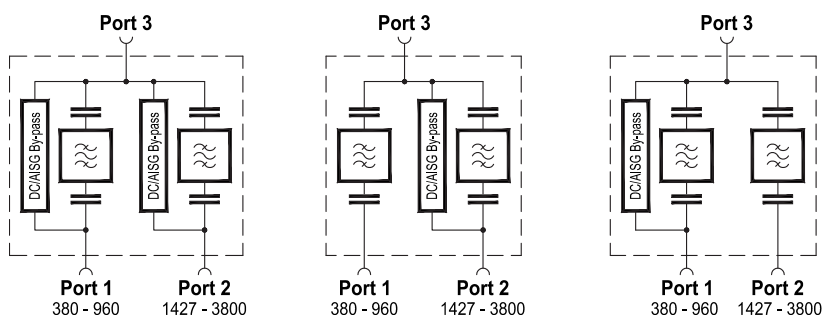
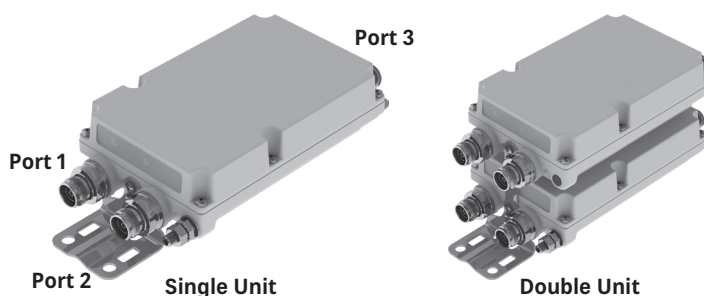
Technical Data

Type No.		78210979V43 Double Unit	
Pass band Band 1 Band 2	MHz MHz	790 - 862 880 - 960	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.4, typically 0.2 (790 - 862 MHz) < 0.4, typically 0.2 (880 - 960 MHz)	
Isolation Port 1 ↔ Port 2	dB	> 50 dB (790 - 862 MHz / 880 - 960 MHz)	
VSWR		< 1.25 (790 - 862 / 880 - 960 MHz)	
Impedance	Ω	50	
Input power Band 1 / Band 2	W	< 300	
Intermodulation products	dBc	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	Unit 1 By-pass (max. 2500) Stop	Unit 2 Stop By-pass (max. 2500)
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb	5.1 11.2	
Dimensions (w x h x d)	mm in	177.4 x 209.4 x 108.35 7.0 x 8.2 x 4.3 (without connectors, without mounting brackets)	
Packing size	mm in	392 x 272 x 189 15.4 x 10.7 x 7.4	

380 – 960 MHz

1427 – 3800 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



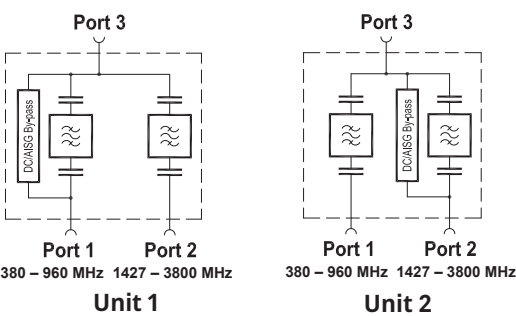
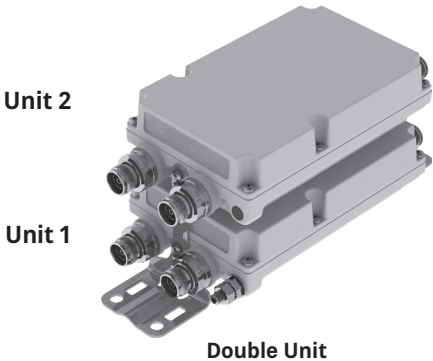
Technical Data

Type No.		78211460 Single Unit	78211462 Single Unit	78211464 Single Unit
		78211461 Double Unit	78211463 Double Unit	78211465 Double Unit
Pass band Band 1 Band 2	MHz MHz	380 – 960 1427 – 3800		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.2 (380 – 960 MHz) < 0.2 (1427 – 3800 MHz)		
Isolation Port 1 ↔ Port 2	dB	> 40		
VSWR		< 1.25		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 300 / < 200 (1427 – 2700 MHz); < 100 (2700 – 3800 MHz)		
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	-40 ... +60 -40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Lightning protection	kA	3, 10/350 µs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With additional clamp set		
Weight	kg lb	Single Unit: 1.7 3.7 / Double Unit: 3.4 7.5		
Dimensions (w x h x d)	mm in	Single Unit: 183 x 117 x 55 7.2 x 4.6 x 2.2 Double Unit: 183 x 117 x 115 7.2 x 4.6 x 4.5 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 353 x 181 x 129 13.9 x 7.1 x 5.1 / Double Unit: 353 x 181 x 188 13.9 x 7.1 x 7.4		

380 – 960 MHz

1427 – 3800 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

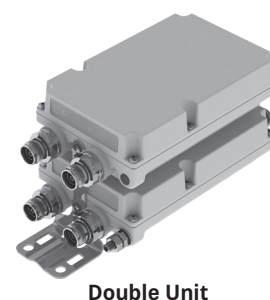
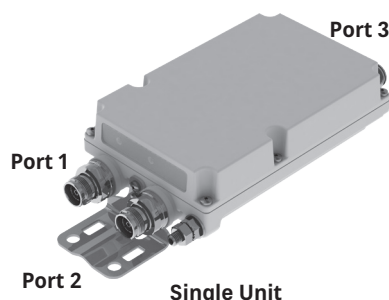
Type No.		78211466 Double Unit	
Pass band Band 1 Band 2	MHz MHz	380 – 960 1427 – 3800	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.2 (380 – 960 MHz) < 0.2 (1427 – 3800 MHz)	
Isolation	dB	> 40	
VSWR		< 1.25	
Impedance	Ω	50	
Input power Band 1 / Band 2	W	< 300 / < 200 (1427 - 2700 MHz); < 100 (2700 - 3800 MHz)	
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–40 ... +60 –40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	Unit 1 By-pass (max. 2500) Stop	Unit 2 Stop By-pass (max. 2500)
Lightning protection	kA	3, 10/350 μs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	3.4 7.5	
Dimensions (w x h x d)	mm in	183 x 117 x 115 7.2 x 4.6 x 4.5 (without connectors, without mounting brackets)	
Packing size	mm in	353 x 181 x 188 13.9 x 7.1 x 7.4	

380 – 960 MHz

1427 – 3800 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated Auto-Sense technology for automatic DC / AISG detection and bypass functionality
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

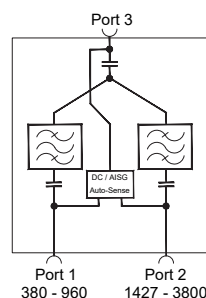
AUTO-SENSE



Priority table for the variants 78211467V01 and 78211468V01 with Priority Controlled Function

380-960 MHz	Priority 2 (lowest)
1427-3800 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



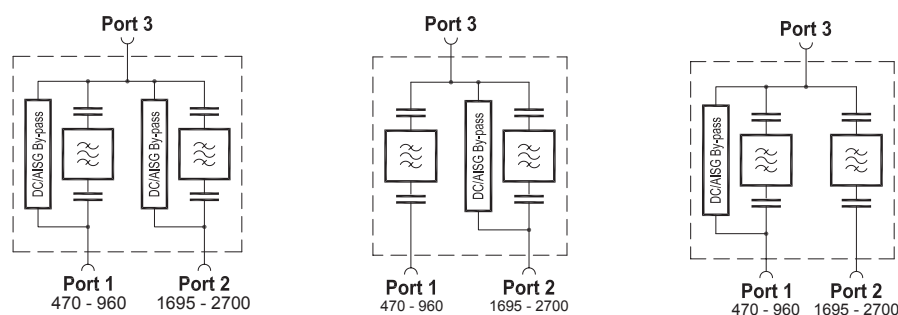
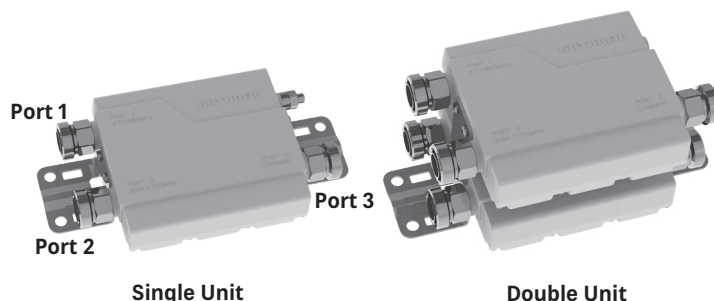
Technical Data

Type No. DC/AISG transparency					
1. First In - First Out Function					
2. Priority Controlled Function					
3. Exclusive User Function					
Unit		Single		Double	
Pass band					
Band 1	MHz	380 – 960			
Band 2	MHz	1427 – 3800			
Insertion loss					
Port 1 ↔ Port 3	dB	< 0.2 (380 – 960 MHz)			
Port 2 ↔ Port 3	dB	< 0.2 (1427 – 3800 MHz)			
Isolation					
Port 1 ↔ Port 2	dB	> 40			
VSWR		< 1.25			
Impedance	Ω	50			
Input power					
Band 1 / Band 2	W	< 300 / < 200 (1427 – 2700 MHz); < 100 (2700 – 3800 MHz)			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency					
Port 1 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Port 2 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Lightning protection	kA	3, 10/350 μs pulse			
Wind load (at Rated Wind Speed 150 km/h 93 mph)	N lbf	frontal: 42 9 lateral: 11 2		frontal: 42 9 lateral: 31 7	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With additional clamp set			
Weight	kg lb	Single Unit: 1.7 3.7 / Double Unit: 3.4 7.5			
Dimensions (w x h x d)	mm in	Single Unit: 183 x 117 x 55 7.2 x 4.6 x 2.2; Double Unit: 183 x 117 x 115 7.2 x 4.6 x 4.5 (without connectors, without mounting brackets)			
Packing size	mm in	Single Unit: 353 x 181 x 129 13.9 x 7.1 x 5.1 / Double Unit: 353 x 181 x 188 13.9 x 7.1 x 7.4			

470 – 960 MHz

1695 – 2700 MHz

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- Extremely small dimensions and low weight**
- Very low insertion loss**
- High input power**



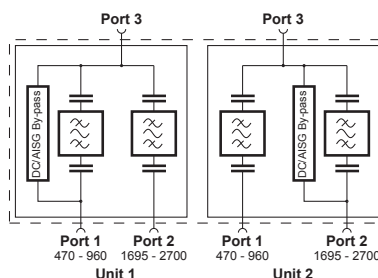
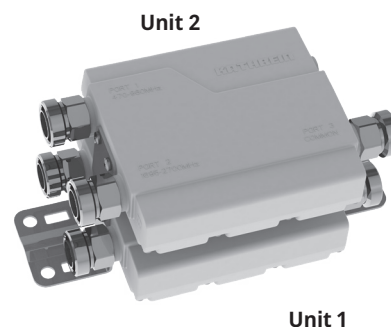
Technical Data

Type No.		78210660 Single Unit	78210662 Single Unit	78210664 Single Unit
		78210661 Double Unit	78210663 Double Unit	78210665 Double Unit
Pass band				
Band 1	MHz	470 – 960		
Band 2	MHz	1695 – 2700		
Insertion loss				
Port 1 ↔ Port 3	dB	< 0.1 (470 – 960 MHz)		
Port 2 ↔ Port 3	dB	< 0.1 (1695 – 2700 MHz)		
Isolation				
Port 1 ↔ Port 2	dB	> 55 (470 – 960 MHz) / > 65 (1695 – 2700 MHz)		
VSWR		< 1.2 (470 – 960 MHz / 1695 – 2700 MHz)		
Impedance	Ω	50		
Input power				
Band 1 / Band 2	W	< 650 / < 350		
Intermodulation products	dBc	< – 160 dBc (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–55 ... +60 –67 ... +140		
Connectors		7-16 female (long neck)		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 3	mA	By-pass (max. 2500)	Stop	By-pass (max. 2500)
Port 2 ↔ Port 3	mA	By-pass (max. 2500)	By-pass (max. 2500)	Stop
Lightning protection	kA	3, 10/350 µs pulse		
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set		
Weight	kg lb	Single Unit: 1.2 2.6 / Double Unit: 2.4 5.3		
Dimensions (w x h x d)	mm in	Single Unit: 126 x 145 x 38 5.0 x 5.7 x 1.5 / Double Unit: 126 x 145 x 93 5.0 x 5.7 x 3.7 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 285 x 157 x 93 11.2 x 6.2 x 3.7 / Double Unit: 285 x 157 x 148 11.2 x 6.2 x 5.8		

470 – 960 MHz

1695 – 2700 MHz

- Designed to support separate DC/AISG supply for a low-band and high-band DTMA via 2 feeder cables (see application)
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Double unit for XPol antennas
- Built-in lightning protection
- Extremely small dimensions and low weight**
- Very low insertion loss**
- High input power**



Technical Data

Type No.		78210669 Double Unit	
Pass band			
Band 1	MHz	470 – 960	
Band 2	MHz	1695 – 2700	
Insertion loss			
Port 1 ↔ Port 3	dB	< 0.1 (470 – 960 MHz)	
Port 2 ↔ Port 3	dB	< 0.1 (1695 – 2700 MHz)	
Isolation			
Port 1 ↔ Port 2	dB	> 55 (470 – 960 MHz) / > 65 (1695 – 2700 MHz)	
VSWR (all ports)		< 1.2 (470 – 960 / 1695 – 2700 MHz)	
Impedance	Ω	50	
Input power			
Band 1	W	< 650	
Band 2	W	< 350	
Intermodulation products	dBc	< -160 (3 rd order with 2 x 20 W)	
Temperature range	°C °F	-55 ... +60 -67 ... +140	
Connectors		7-16 female (long neck)	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 3	mA	Unit 1 By-pass (max. 2500) Stop	Unit 2 Stop By-pass (max. 2500)
Port 2 ↔ Port 3	mA		
Lighning protaction	kA	3, 10/350 μs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	2.4 5.3	
Dimensions (w x h x d)	mm in	126 x 145 x 93 5.0 x 5,7 x 3.7 (without connectors, without mounting brackets)	
Packing size	mm in	285 x 157 x 148 11.2 x 6.2 x 5.8	

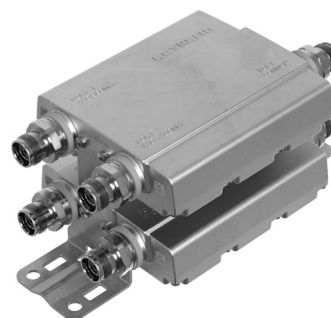
470 - 960 MHz

1695 - 2700 MHz

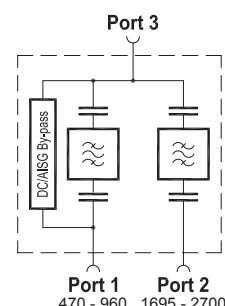
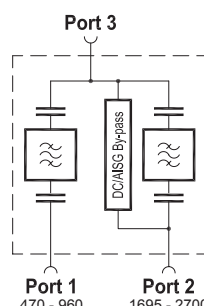
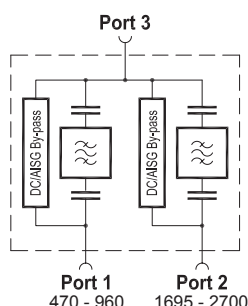
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit



Double Unit



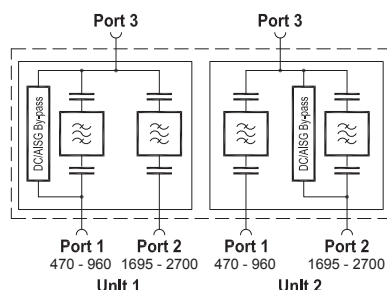
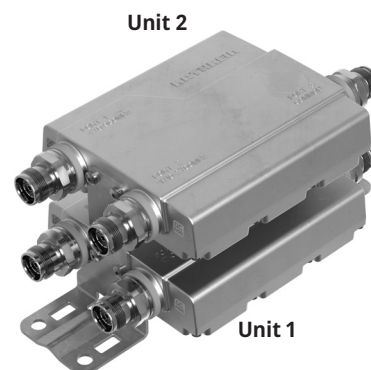
Technical Data

Type No.		78210660V43 Single Unit	78210662V43 Single Unit	78210664V43 Single Unit
		78210661V43 Double Unit	78210663V43 Double Unit	78210665V43 Double Unit
Pass band Band 1 Band 2	MHz MHz	470 – 960 1695 – 2700		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.1 (470 – 960 MHz) < 0.1 (1695 – 2700 MHz)		
Isolation Port 1 ↔ Port 2	dB	> 55 (470 – 960 MHz) / > 65 (1695 – 2700 MHz)		
VSWR		< 1.2 (470 – 960 MHz / 1695 – 2700 MHz)		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 300 / < 300		
Intermodulation products	dBc	< – 160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–55 ... +60 –67 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Lightning protection	kA	3, 10/350 ms pulse		
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set		
Weight	kg lb	Single Unit: 1.2 2.6 / Double Unit: 2.4 5.3		
Dimensions (w x h x d)	mm in	Single Unit: 126 x 145 x 38 5.0 x 5.7 x 1.5 / Double Unit: 126 x 145 x 93 5.0 x 5.7 x 3.7 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 285 x 157 x 93 11.2 x 6.2 x 3.7 / Double Unit: 285 x 157 x 148 11.2 x 6.2 x 5.8		

470 - 960 MHz

1695 - 2700 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



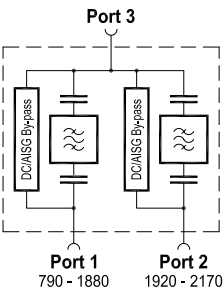
Technical Data

Type No.		78210669V43 Double Uninit	
Pass band			
Band 1	MHz	470 – 960	
Band 2	MHz	1695 – 2700	
Insertion loss			
Port 1 ↔ Port 3	dB	< 0.1 (470 – 960 MHz)	
Port 2 ↔ Port 3	dB	< 0.1 (1695 – 2700 MHz)	
Isolation			
Port 1 ↔ Port 2	dB	> 55 (470 – 960 MHz) / > 65 (1695 – 2700 MHz)	
VSWR (all ports)		< 1.2 (470 – 960 / 1695 – 2700 MHz)	
Impedance	Ω	50	
Input power			
Band 1 / Band 2	WW	< 300 / < 300	
Intermodulation products	dBc	< –160 (3 rd order with 2 x 20 W)	
Temperature range	°C °F	–55 ... +60 –67 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 3	mA		
Port 2 ↔ Port 3	mA		
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	2.4 5.3	
Dimensions (w x h x d)	mm in	126 x 145 x 93 5.0 x 5.7 x 3.7 (without connectors, without mounting brackets)	
Packing size	mm in	285 x 157 x 148 11.2 x 6.2 x 5.8	

790 – 1880 MHz

1920 – 2170 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



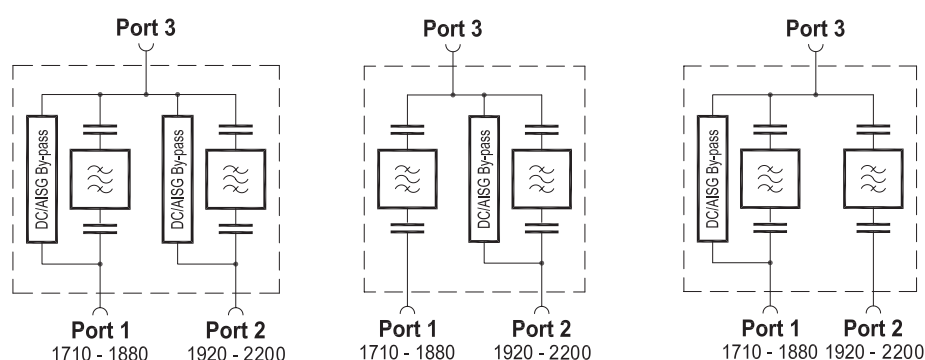
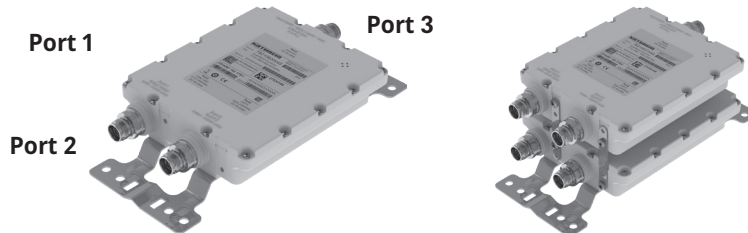
Technical Data

Type No.		78210279 Double Unit
Pass band Band 1 Band 2	MHz MHz	790 – 1880 1920 – 2170
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.1, typically 0.05 (790 – 960 MHz) / < 0.4, typically 0.2 (1710 – 1880 MHz) < 0.4, typically 0.2 (1920 – 2170 MHz)
Isolation Port 1 ↔ Port 2	dB	> 55 (790 – 960 MHz) > 50 (1710 – 1880 MHz, 1920 – 1980 MHz, 2110 – 2170 MHz)
VSWR		< 1.2 (790 – 960 MHz) / < 1.25 (1710 – 1880 MHz) / < 1.2 (1920 – 2170 MHz)
Impedance	Ω	50
Input power Band 1 / Band 2	W	< 500 / < 500
Intermodulation products	dBc	< – 160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	–55 ... +60 –67 ... +140
Connectors		7-16 female (long neck)
Application		Indoor or outdoor (IP 66)
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500 mA) By-pass (max. 2500 mA)
Lightning protection	kA	3, 10/350 µs pulse
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Weight	kg lb	6.6 14.6
Dimensions (w x h x d)	mm in	130 x 270 x 99 5.1 x 10.6 x 3.9 (without connectors, without mounting brackets)
Packing size	mm in	207 x 437 x 214 8.1 x 17.2 x 8.4

1710 – 1880 MHz

1920 – 2200 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



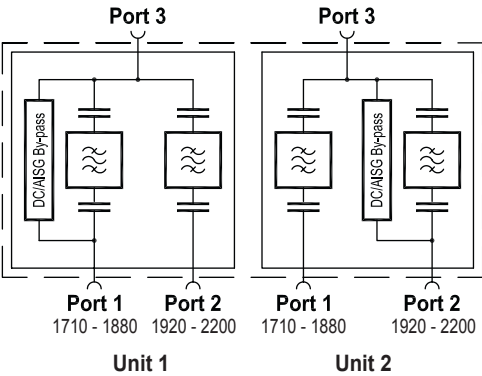
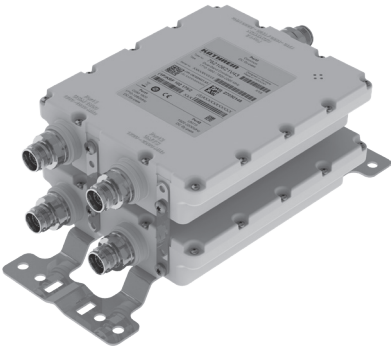
Technical Data

Type No.		78210620V43	78210622V43	78210624V43
		Single Unit	Single Unit	Single Unit
		78210621V43	78210623V43	78210625V43
		Double Unit	Double Unit	Double Unit
Pass band				
Band 1 (GSM 1800)	MHz	1710 – 1880		
Band 2 (UMTS)	MHz	1920 – 2200		
Insertion loss				
Port 1 ↔ Port 3	dB	< 0.3, typically 0.14 (1710 – 1880 MHz)		
Port 2 ↔ Port 3	dB	< 0.3, typically 0.12 (1920 – 2200 MHz)		
Isolation				
Port 1 ↔ Port 2	dB	> 55 (1710 – 1880) / > 50 (1920 – 2200 MHz)		
VSWR		< 1.2 (1710 – 1880) / (1920 – 2200 MHz)		
Impedance	Ω	50		
Input power				
Band 1 / Band 2	W	< 300 / < 300		
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–55 ... +60 –67 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 3	mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Port 2 ↔ Port 3	mA			
Lightning protection	kA	3 kA, 10/350 μs pulse		
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set		
Weight	kg lb kg lb	Single Unit: 2.2 4.9 Double Unit: 4.3 9.5		
Dimensions (w x h x d)	mm in mm in	Single Unit: 163.5 x 195.3 x 46 6.4 x 7.7 x 1.8 (without connectors, without mounting brackets) Double Unit: 163.5 x 195.3 x 102 6.4 x 7.7 x 4.0 (without connectors, without mounting brackets)		
Packing size	mm in mm in	Single Unit: 392 x 272 x 139 15.5 x 10.7 x 5.5 Double Unit: 392 x 272 x 189 15.5 x 10.7 x 7.4		

1710 – 1880 MHz

1920 – 2200 MHz

- Designed to support separate DC/AISG supply for a low-band and high-band DTMA via 2 feeder cables (see application)
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Double unit for XPol antennas
- Built-in lightning protection



Technical Data

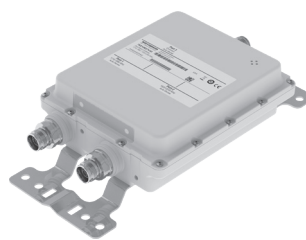
Type No.		78210626V43 Double Unit	
Pass band			
Band 1 (GSM 1800)	MHz	1710 – 1880	
Band 2 (UMTS)	MHz	1920 – 2200	
Insertion loss			
Port 1 ↔ Port 3	dB	< 0.3 (1710 – 1880 MHz)	
Port 2 ↔ Port 3	dB	< 0.3 (1920 – 2200 MHz)	
Isolation			
Port 1 ↔ Port 2	dB	> 55 (1710 – 1880 MHz) / > 50 (1920 – 2200 MHz)	
VSWR		< 1.2 (1710 – 1880) / (1920 – 2200 MHz)	
Impedance	Ω	50	
Input power	W		
Band 1 / Band 2		< 300 / < 300	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C	-55 ... +60 -67 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 3	mA		
Port 2 ↔ Port 3	mA	Unit 1 By-pass (max. 2500) Stop	Unit 2 Stop By-pass (max. 2500)
Lightning protection		3 kA, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	kg lb	4.3 9.5	
Dimensions (w x h x d)	mm in	164 x 195 x 102 6.4 x 7.7 x 4.0 (without connectors, without mounting brackets)	
Packing size	mm in	392 x 272 x 189 15.4 x 10.7 x 7.4	

1710 – 1880 MHz

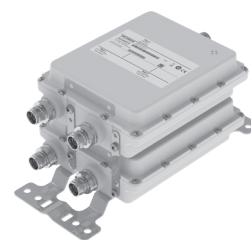
1920 – 2200 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

AUTO-SENSE



Single Unit

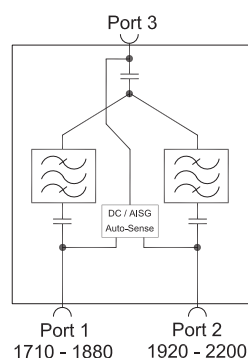


Double Unit

Priority table for the variants 78210627V44 and 78210628V44 with Priority Controlled Function

1710-1880 MHz	Priority 2 (lowest)
1920-2200 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

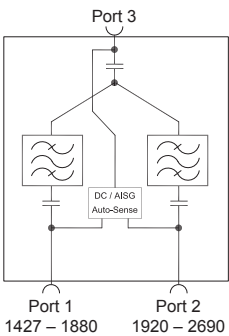
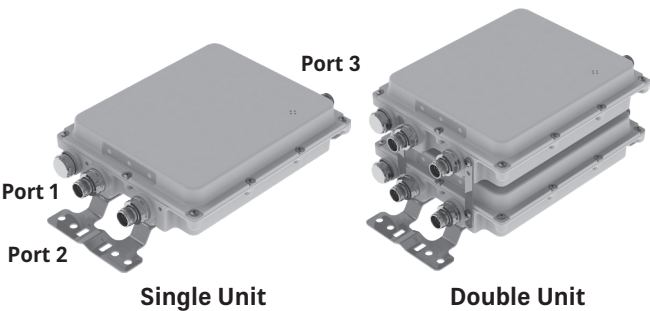
Type No. DC/AISG transparency		78210627V43 78210627V44 78210627V45	78210628V43 78210628V44 78210628V45
1. First In - First Out Function			
2. Priority Controlled Function			
3. Exclusive User Function			
Unit		Single	Double
Pass band Band 1 Band 2	MHz MHz	1710 – 1880 1920 – 2200	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.3 (1710 – 1880 MHz) < 0.3 (1920 – 2200 MHz)	
Isolation Port 1 ↔ Port 2	dB	> 55 (1710 – 1880 MHz) / > 50 (1920 – 2200 MHz)	
VSWR		< 1.2	
Impedance	Ω	50	
Input power Band 1 / Band 2	W	< 300 / < 300	
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–55 ... +60 –67 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
Lightning protection	kA	3, 10/350 µs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With additional clamp set	
Grounding		M8 stud	
Weight	kg lb	Single Unit: 2.4 5.3 / Double Unit: 4.8 10.5	
Dimensions (w x h x d)	mm in	Single Unit: 164 x 195 x 63 6.4 x 7.7 x 2.5 / Double Unit: 164 x 195 x 129 6.4 x 7.7 x 5.1 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 392 x 272 x 139 15.4 x 10.7 x 5.5 / Double Unit: 392 x 272 x 189 15.4 x 10.7 x 7.4	

1427 – 1880 MHz

1920 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

AUTO-SENSE



Priority table for the variants 78211627V01 and 78211628V01 with Priority Controlled Function

1427-1880 MHz	Priority 2 (lowest)
1920-2690 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.

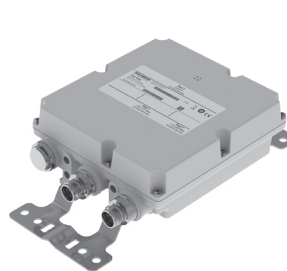
Technical Data

Type No. DC/AISG transparency		78211627 78211627V01 78211627V02		78211628 78211628V01 78211628V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function		Single		Double	
Unit					
Pass band					
Band 1	MHz	1427 – 1880			
Band 2	MHz	1920 – 2690			
Insertion loss					
Port 1 ↔ Port 4	dB	< 0.3 (1427 – 1880 MHz) typ. 0.2 dB			
Port 2 ↔ Port 4	dB	< 0.35 (1920 – 2690 MHz) typ. 0.2 dB			
Isolation	dB	> 40			
VSWR		< 1.25			
Impedance	Ω	50			
Input power					
Band 1 / Band 2	W	< 300			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
Lightning protection	kA	3, 10/350 µs pulse			
DC/AISG transparency					
Port 1, 2 ↔ Port 3	mA	Auto-Sense (max. 2000)			
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With additional clamp set			
Weight	kg lb	Single unit: 3.5 7.60 / Double unit: 6.8 15.0			
Dimensions (w x h x d)	mm in	Single Unit: 251 x 211 x 68 9.9 x 8.3 x 2.7 Double Unit: 251 x 211 x 139 9.9 x 8.3 x 5.5 (without connectors, without mounting brackets)			
Packing size	mm in	Single Unit: 439 x 289 x 160 17.3 x 11.4 x 6.3 Double Unit: 439 x 289 x 230 17.3 x 11.4 x 9.1			

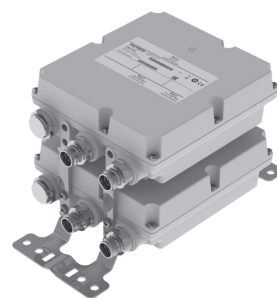
1427 – 1518 MHz

1710 – 2690 MHz

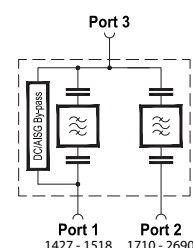
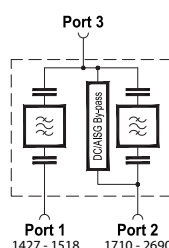
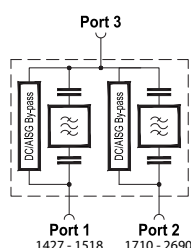
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit



Double Unit



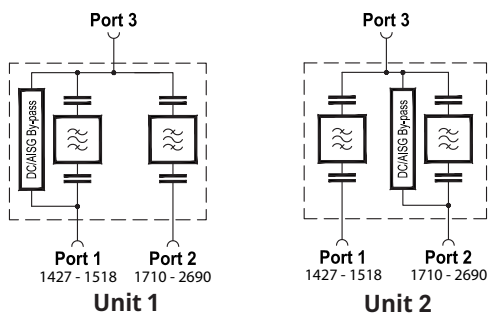
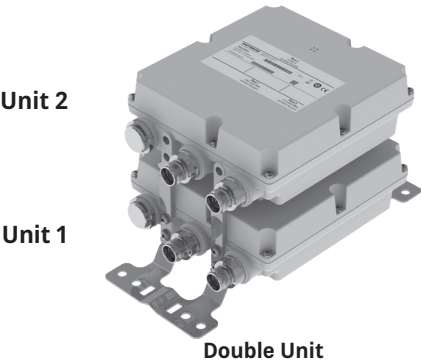
Technical Data

Type No.		78211530 Single Unit	78211532 Single Unit	78211534 Single Unit
		78211531 Double Unit	78211533 Double Unit	78211535 Double Unit
Pass band				
Band 1	MHz		1427 – 1518	
Band 2	MHz		1710 – 2690	
Insertion loss				
Port 1 ↔ Port 3	dB		< 0.2 (1427 – 1518)	
Port 2 ↔ Port 3	dB		< 0.3 (1710 – 2690)	
Isolation	dB		> 40	
VSWR			< 1.25	
Impedance	Ω		50	
Input power				
Band 1 / Band 2	W		< 200	
Intermodulation products	dBc		< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F		-40 ... +60 -40 ... +140	
Connectors			4.3-10 female	
Application			Indoor or outdoor (IP 66)	
DC/AISG transparency				
Port 1 ↔ Port 3	mA	By-pass (max. 2500)	Stop	By-pass (max. 2500)
Port 2 ↔ Port 3	mA	By-pass (max. 2500)	By-pass (max. 2500)	Stop
Lightning protection	kA		3, 10/350 µs pulse	
Mounting			Wall mounting: With 4 screws (max. 8 0.315 [mm in] diameter) / Mast mounting: With included clamp set	
Weight	kg lb		Single unit : 3.2 7.1 Double unit: 6.3 13.9	
Dimensions (w x h x d)	mm in		Single unit: 190 x 176 x 77 7.5 x 7.0 x 3.0 Double unit: 190 x 176 x 161 7.5 x 7.0 x 6.3 (without connectors, without mounting brackets)	
Packing size	mm in		Single unit: 375 x 245 x 160 14.8 x 9.7 x 6.3 Double unit: 375 x 245 x 245 14.8 x 9.7 x 9.7	

1427 – 1518 MHz

1710 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211536 Double Unit		clamps included
Pass band Band 1 Band 2	MHz MHz	1427 – 1518 1710 – 2690		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.2 (1427 – 1518 MHz) < 0.3 (1710 – 2690 MHz)		
Isolation	dB	> 40		
VSWR		< 1.25		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 200		
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–40 ... +60 –40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	Unit 1 By-pass (max. 2500) Stop	Unit 2 Stop By-pass (max. 2500)	
Lightning protection	kA	3, 10/350 μs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With included clamp set		
Weight	kg lb	6.3 13.9		
Dimensions (w x h x d)	mm in	190 x 176 x 161 7.5 x 6.9 x 6.3 (without connectors, without mounting brackets)		
Packing size	mm in	375 x 245 x 245 14.8 x 9.7 x 9.7		

clamps
included

1427 – 1518 MHz

1710 – 2690 MHz

AUTO-SENSE

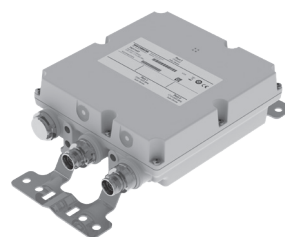
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- A detailed manual about Auto-Sense technology can be downloaded on our homepage.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

Priority table for the variants 78211537V01 and 78211538V01 with Priority Controlled Function

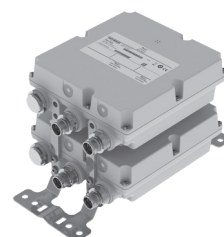
1427-1518 MHz Priority 2 (lowest)

1710-2690 MHz Priority 1 (highest)

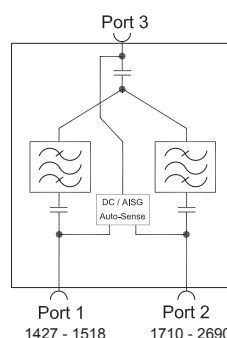
For more information see Auto-Sense quick guide later in this datasheet.



Single Unit



Double Unit

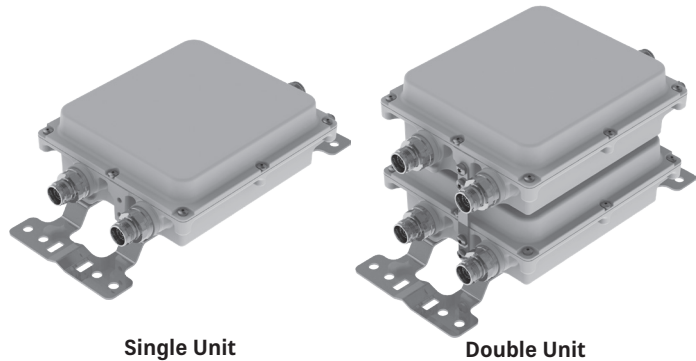


Technical Data

Type No. DC/AISG transparency		78211537 78211537V01 78211537V02		78211538 78211538V01 78211538V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function		clamps included			
Unit		Single		Double	
Pass band Band 1 Band 2	MHz MHz	1427 – 1518 1710 – 2690			
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3]	dB dB	< 0.2 (1427 – 1518) < 0.3 (1710 – 2690)			
Isolation	dB	> 40			
VSWR		< 1.25			
Impedance	Ω	50			
Input power Band 1 / Band 2	W	< 200			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
Lightning protection	kA	3, 10/350 μs pulse			
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 [mm in] diameter) Mast mounting: With included clamp set			
Weight	kg lb	Single unit : 3.2 7.1 Double unit: 6.3 13.9			
Dimensions (w x h x d)	mm in	Single unit: 190 x 176 x 77 7.5 x 7.0 x 3.0 Double unit: 190 x 176 x 161 7.5 x 7.0 x 6.3 (without connectors, without mounting brackets)			
Packing size	mm in	Single unit: 375 x 245 x 160 14.8 x 9.7 x 6.3 Double unit: 375 x 245 x 245 14.8 x 9.7 x 9.7			

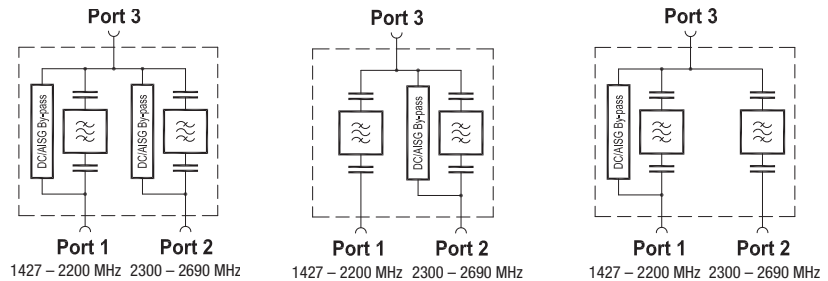
1427 – 2200 MHz 2300 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit

Double Unit



Technical Data

Type No.		78211790 Single Unit	78211792 Single Unit	78211794 Single Unit
		78211791 Double Unit	78211793 Double Unit	78211795 Double Unit
Pass band Band 1 Band 2	MHz MHz	1427 – 2200 2300 – 2690		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	dB dB	< 0.2 (1427 – 2200 MHz) < 0.2 (2300 – 2690 MHz)		
Isolation	dB	> 50		
VSWR		< 1.25		
Impedance	Ω	50		
Input power Band 1 / Band 2	W	< 300		
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–55 ... +60 –67 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	mA mA	By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500)	By-pass (max. 2500) Stop
Lightning protection	kA	3, 10/350 µs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With clamp set		
Weight	kg lb	Single Unit: 2.5 5.5 / Double Unit: 4.6 10.1		
Dimensions (w x h x d)	mm in	Single Unit: 192 x 172 x 68 7.6 x 6.8 x 2.7 Double Unit: 192 x 172 x 139 7.6 x 6.8 x 5.5 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 392 x 272 x 155 15.4 x 10.7 x 6.1 Double Unit: 392 x 272 x 220 15.4 x 10.7 x 8.7		

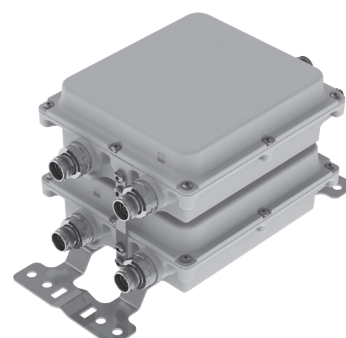
1427 – 2200 MHz

2300 – 2690 MHz

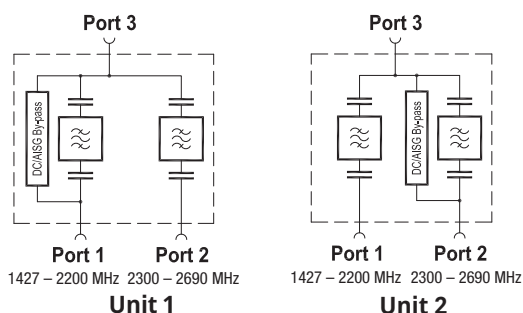
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory

Unit 2

Unit 1



Double Unit



Technical Data

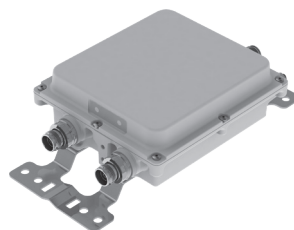
Type No.		78211796 Double Unit	
Pass band			
Band 1	MHz	1427 – 2200	
Band 2	MHz	2300 – 2690	
Insertion loss			
Port 1 ↔ Port 3	dB	< 0.2 (1427 – 2200 MHz)	
Port 2 ↔ Port 3	dB	< 0.2 (2300 – 2690 MHz)	
Isolation	dB	> 50	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2	W	< 300	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-55 ... +60 -67 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/ISG transparency			
Port 1 ↔ Port 3	mA		
Port 2 ↔ Port 3	mA		
Lightning protection	kA	3, 10/350 µs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With clamp set	
Weight	kg lb	4.6 10.1	
Dimensions (w x h x d)	mm in	192 x 172 x 139 7.6 x 6.8 x 5.5 (without connectors, without mounting brackets)	
Packing size	mm in	392 x 272 x 220 15.4 x 10.7 x 8.7	

1427 – 2200 MHz

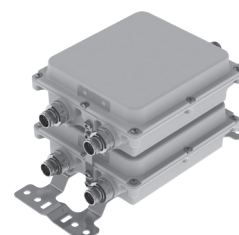
2300 – 2690 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Single Unit



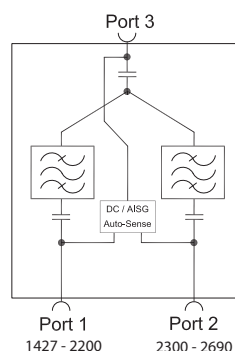
Double Unit

Priority table for the variants 78211797V01 and 78211798V01 with Priority Controlled Function

1427-2200 MHz Priority 2 (lowest)

2300-2690 MHz Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

Type No. DC/AISG transparency		78211797 78211797V01 78211797V02		78211798 78211798V01 78211798V02	
1. First In - First Out Function		Single		Double	
2. Priority Controlled Function					
3. Exclusive User Function					
Unit					
Pass band					
Band 1	MHz			1427 – 2200	
Band 2	MHz			2300 – 2690	
Insertion loss					
Port 1 ↔ Port 3	dB			< 0.2 (1427 – 2200 MHz)	
Port 2 ↔ Port 3	dB			< 0.2 (2300 – 2690 MHz)	
Isolation	dB			> 50	
VSWR				< 1.25	
Impedance	Ω			50	
Input power					
Band 1 / Band 2	W			< 300	
Intermodulation products	dBc			< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F			-55 ... +60 -67 ... +140	
Connectors				4.3-10 female	
Application				Indoor or outdoor (IP 66)	
DC/AISG transparency					
Port 1 ↔ Port3	mA			Auto-Sense (max. 2000)	
Port 2 ↔ Port3	mA			Auto-Sense (max. 2000)	
Lightning protection	kA			3, 10/350 µs pulse	
Mounting	mm in			Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With additional clamp set	
Weight	kg lb			Single Unit: 2.5 5.5 / Double Unit: 4.6 10.1	
Dimensions	mm in			Single Unit: 192 x 172 x 68 7.6 x 6.8 x 2.7 Double Unit: 192 x 172 x 139 7.6 x 6.8 x 5.5 (without connectors, without mounting brackets)	
Packing size	mm in			Single Unit: 392 x 272 x 155 15.4 x 10.7 x 6.1 Double Unit: 392 x 272 x 220 15.4 x 10.7 x 8.7	

1695 – 1780 / 2095 – 2200 MHz

1850 – 1920 / 1930 – 2000 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.

Combine Mode (near BTS):

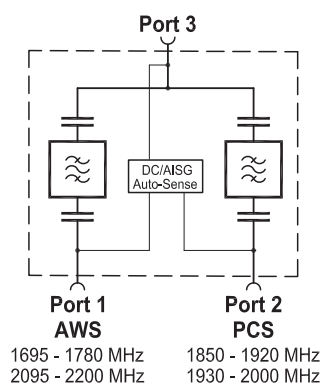
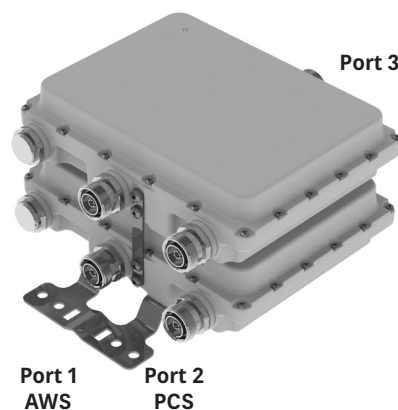
In combine mode, the auto-sense combiner has the ability to operate in First In - First Out Function

Split Mode (near antenna):

In split mode, the auto-sense combiner automatically detects connected Antenna Line Devices and bypasses or stops the DC / AISG signal accordingly.

A detailed manual about Auto-Sense technology can be downloaded on our homepage.

- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Technical Data

Type No.		78210778v01 Double unit		clamps included
Pass band				
Band 1	MHz	1695 – 1780 (Rx) / 2095 – 2200 (Tx)		
Band 2	MHz	1850 – 1920 (Rx) / 1930 – 2000 (Tx)		
Insertion loss				
Port 1 ↔ Port 3	dB	< 0.3 (1695 – 1780 / 2095 – 2200 MHz)		
Port 2 ↔ Port 3	dB	< 0.3 (1850 – 1920 / 1930 – 2000 MHz)		
Isolation				
Port 1 ↔ Port 2	dB	> 50		
VSWR		< 1.25		
Impedance	Ω	50		
Input power per Band	W	< 250 (operational) / < 500 (survival)		
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	-40 ... +60 -40 ... +140		
Connectors		7-16 female (long neck)		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 3	mA	Auto-sense (max. 2000)		
Port 2 ↔ Port 3	mA	Auto-sense (max. 2000)		
DC supply	V DC	7 – 30		
Operating Current	mA	Typ. 6.5		
Voltage drop	V	< 0.15		
Lightning protection	kA	3, 10/350 μs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With included clamp set		
Weight	kg lb	6.1 13.45		
Dimensions (w x h x d)	mm in	244 x 185 x 130 9.6 x 7.3 x 5.1 (without connectors, without mounting brackets)		

Triple-Band Combiner

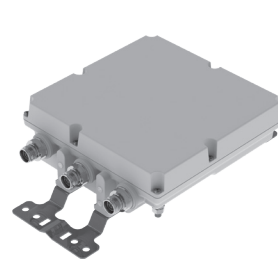
KATHREIN

690 – 862 MHz

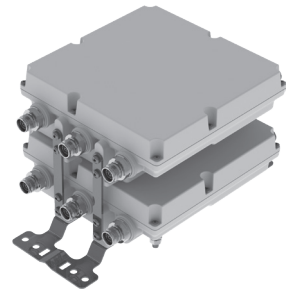
880 – 960 MHz

1427 – 3800 MHz

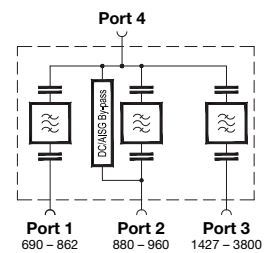
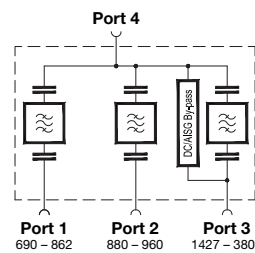
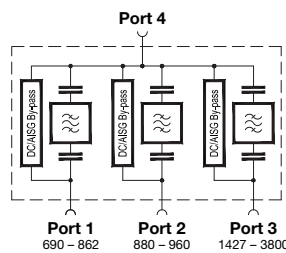
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit



Double Unit



Technical Data

Type No.		78211820 Single Unit	78211822 Single Unit	78211824 Single Unit
		78211821 Double Unit	78211823 Double Unit	78211825 Double Unit
Pass band				
Band 1	MHz	690 – 862		
Band 2	MHz	880 – 960		
Band 3	MHz	1427 – 3800		
Insertion loss				
Port 1 ↔ Port 4	dB	< 0.35 (690 - 852 MHz); < 0.6 (852 - 862 MHz)		
Port 2 ↔ Port 4	dB	< 0.6 (880 - 890 MHz); < 0.35 (890 - 960 MHz)		
Port 3 ↔ Port 4	dB	< 0.15 (1427 - 3800 MHz)		
Isolation				
Port 1	dB	> 50 (880 - 960 MHz); > 90 (1427 - 3800 MHz)		
Port 2	dB	> 60 (690 - 862 MHz); > 90 (1427 - 3800 MHz)		
Port 3	dB	> 65 (690 - 862 MHz); > 60 (880 - 960 MHz)		
VSWR		< 1.25		
Impedance	Ω	50		
Input power				
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200 (1427 – 2700 MHz); < 100 (2700 – 3800 MHz)		
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–40 ... +60 –40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 4	mA	By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500)	Stop Stop By-pass (max. 2500)	Stop By-pass (max. 2500) Stop
Port 2 ↔ Port 4	mA			
Port 3 ↔ Port 4	mA			
Lightning protection	kA	3, 10/350 µs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With clamp set		
Weight	kg lb	Single Unit: 5 11.0 / Double Unit: 9.9 21.8		
Dimensions (w x h x d)	mm in	Single Unit: 222 x 222 x 86.5 8.7 x 8.7 x 3.4 Double Unit: 222 x 222 176 8.7 x 8.7 x 6.9 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 405 x 295 x 170 16.0 x 11.6 x 6.7 Double Unit: 405 x 295 x 260 16.0 x 11.6 x 10.2		

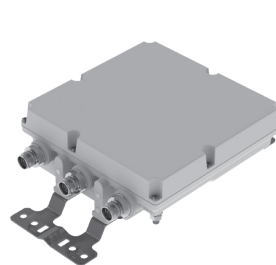
690 – 862 MHz

880 – 960 MHz

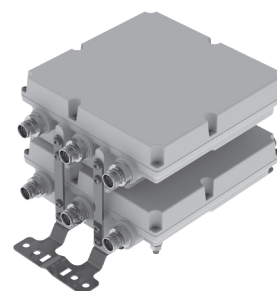
1427 – 3800 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated Auto-Sense technology for automatic DC / AISG detection and bypass functionality
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Single Unit

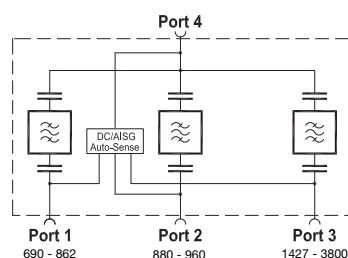


Double Unit

Priority table for the variants 78211827V01 and 78211828V01 with Priority Controlled Function

690–862 MHz	Priority 2
880–960 MHz	Priority 3 (lowest)
1427–3800 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

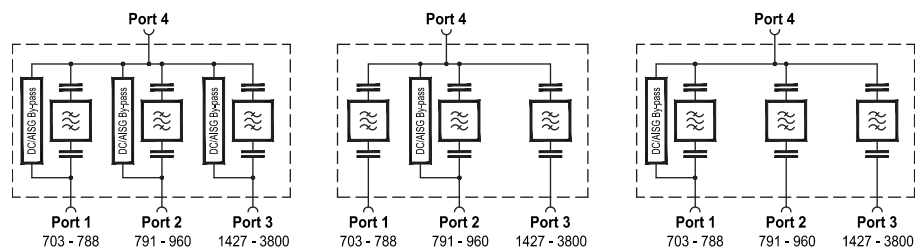
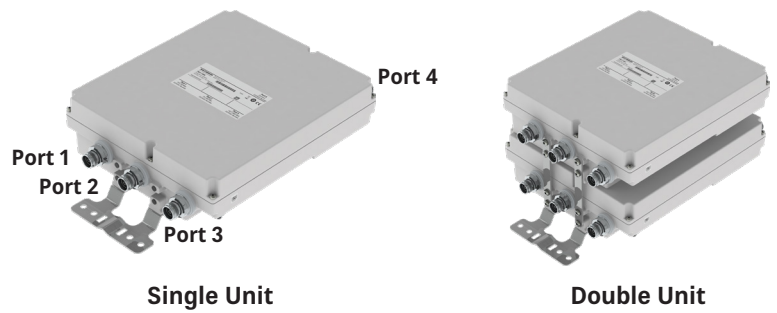
Type No. DC/AISG transparency			
1. First In - First Out Function		78211827	
2. Priority Controlled Function		78211827V01	
3. Exclusive User Function		78211827V02	
Unit		Single	Double
Pass band			
Band 1	MHz	690 – 862	
Band 2	MHz	880 – 960	
Band 3	MHz	1427 – 3800	
Insertion loss			
Port 1 ↔ Port 4	dB	< 0.4 (690 – 852 MHz); < 0.6 (852 – 862 MHz)	
Port 2 ↔ Port 4	dB	< 0.6 (880 – 890 MHz); < 0.4 (890 – 960 MHz)	
Port 3 ↔ Port 4	dB	< 0.15 (1427 – 3800 MHz)	
Isolation			
Port 1 ↔ Port 2	dB	> 55 (690 – 862 MHz); > 50 (880 – 960 MHz)	
Port 1 ↔ Port 3	dB	> 65 (690 – 862 MHz); > 75 (1427 – 3800 MHz)	
Port 2 ↔ Port 3	dB	> 60 (880 – 960 MHz); > 75 (1427 – 3800 MHz)	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200 (1427 – 2700 MHz); < 100 (2700 – 3800 MHz)	
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–40 ... +60 –40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1, 2, 3 ↔ Port 4	mA	Auto-sense (max. 2000)	
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With clamp set	
Weight	kg lb	Single Unit: 5 11.0 / Double Unit: 9.9 21.8	
Dimensions (w x h x d)	mm in	Single Unit: 222 x 222 x 86.5 8.7 x 8.7 x 3.4; Double Unit: 222 x 222 176 8.7 x 8.7 x 6.9 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 405 x 295 x 170 16.0 x 11.6 x 6.7 Double Unit: 405 x 295 x 260 16.0 x 11.6 x 10.3	

703 – 788 MHz

791 – 960 MHz

1427 – 3800 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211490	78211492	78211494
		Single Unit	Single Unit	Single Unit
		78211491	78211493	78211495
		Double Unit	Double Unit	Double Unit
Pass band				
Band 1	MHz	703 – 788		
Band 2	MHz	791 – 960		
Band 3	MHz	1427 – 3800		
Insertion loss				
Port 1 ↔ Port 4	dB	< 0.7 (703 – 785 MHz) / < 1.0 (785 – 787 MHz) / < 1.5 (787 – 788 MHz)		
Port 2 ↔ Port 4	dB	< 1.5 (791 – 792 MHz) / < 1.0 (792 – 800 MHz) / < 0.7 (800 – 960 MHz)		
Port 3 ↔ Port 4	dB	< 0.2 (1427 – 3800 MHz)		
Isolation	dB	> 40		
VSWR		< 1.25		
Impedance	Ω	50		
Input power				
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200 (1427 – 2700 MHz); < 100 (2700 – 3800 MHz)		
Intermodulation products	dBc	-160 (3 rd order; with 2 x 20 W)		
Temperature range	°C F°	-40 ... +60 -40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 4	mA	By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500)	Stop By-pass (max. 2500) Stop	By-pass (max. 2500) Stop Stop
Port 2 ↔ Port 4	mA			
Port 3 ↔ Port 4	mA			
Lightning protection	kA	3, 10/350 µs pulse		
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set		
Weight	kg lb	Single Unit: 6.2 13.7 / Double Unit: 12.0 26.5		
Dimensions (w x h x d)	mm in	Single unit: 258 x 301 x 88 10.2 x 11.9 x 3.5 Double unit: 258 x 301 x 178 10.2 x 11.9 x 7.0 (without connectors, without mounting brackets)		
Packing size	mm in	Single unit: 477 x 334 x 175 18.8 x 13.1 x 6.9 Double unit: 477 x 334 x 265 18.8 x 13.1 x 10.4		

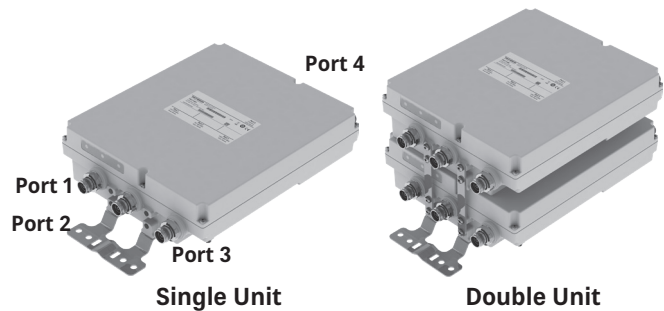
703 – 788 MHz

791 – 960 MHz

1427 – 3800 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

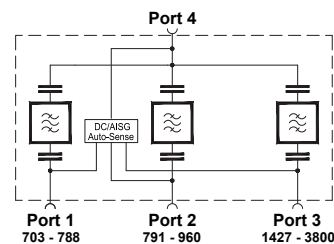
AUTO-SENSE



Priority table for the variants 78211497V01 and 78211498V01 with Priority Controlled Function

703-788 MHz	Priority 3 (lowest)
791-960 MHz	Priority 2
1427-3800 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

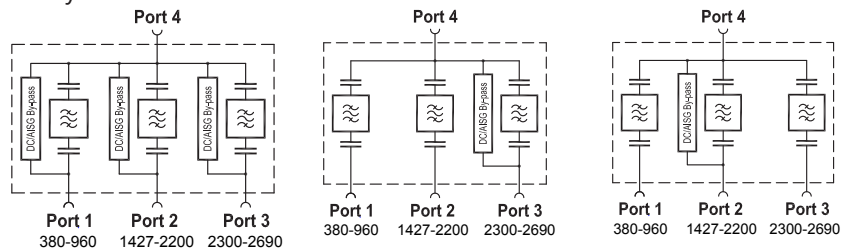
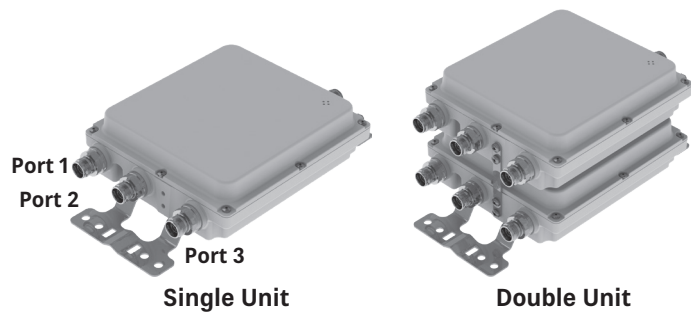
Type No. DC/AISG transparency		78211497 78211497V01 78211497V02		78211498 78211498V01 78211498V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function		Single		Double	
Unit					
Pass band					
Band 1	MHz			703 – 788	
Band 2	MHz			791 – 960	
Band 3	MHz			1427 – 3800	
Insertion loss					
Port 1 ↔ Port 4	dB			< 0.7 (703 – 785 MHz) / < 1.0 (785 – 787 MHz) / < 1.5 (787 – 788 MHz)	
Port 2 ↔ Port 4	dB			< 1.5 (791 – 792 MHz) / < 1.0 (792 – 800 MHz) / < 0.7 (800 – 960 MHz)	
Port 3 ↔ Port 4	dB			< 0.2 (1427 – 3800 MHz)	
Isolation	dB			> 40	
VSWR				< 1.25	
Impedance	Ω			50	
Input power	W				
Band 1 / Band 2 / Band 3				< 200 / < 200 / < 200 (1427 – 2700 MHz); < 100 (2700 – 3800 MHz)	
Intermodulation products	dBc			< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F			-40 ... +60 -40 ... +140	
Connectors				4.3-10 female	
Application				Indoor or outdoor (IP 66)	
DC/AISG transparency					
Port 1, 2, 3 ↔ Port 4	mA			Auto-Sense (max. 2000)	
Lightning protection	kA			3, 10/350 µs pulse	
Mounting	mm in			Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With additional clamp set	
Weight	kg lb			Single unit: 6.2 13.7 / Double unit: 12.0 26.5	
Dimensions (w x h x d)	mm in			Single Unit: 258 x 301 x 88 10.2 x 11.9 x 3.5 Double Unit: 258 x 301 x 178 10.2 x 11.9 x 7.0 (without connectors, without mounting brackets)	
Packing size	mm in			Single Unit: 477 x 334 x 175 18.8 x 13.1 x 6.9 Double Unit: 477 x 334 x 265 18.8 x 13.1 x 10.4	

380 – 960 MHz

1427 – 2200 MHz

2300 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211450 Single Unit		78211452 Single Unit		78211454 Single Unit	
		78211451 Double Unit		78211453 Double Unit		78211455 Double Unit	
Pass band							
Band 1	MHz	380 – 960					
Band 2	MHz	1427 – 2200					
Band 3	MHz	2300 – 2690					
Insertion loss							
Port 1 ↔ Port 4	dB	< 0.2 (380 – 960 MHz)					
Port 2 ↔ Port 4	dB	< 0.2 (1427 – 2200 MHz)					
Port 3 ↔ Port 4	dB	< 0.2 (2300 – 2690 MHz)					
Isolation	dB	> 50					
VSWR		< 1.25					
Impedance	Ω	50					
Input power							
Band 1 / Band 2 / Band 3	W	< 300 / < 200 / < 200					
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W), exempt from TETRA 360 – 470 MHz: < –150					
Temperature range	°C °F	–40 ... +60 –40 ... +140					
Connectors		4.3-10 female					
Application		Indoor or outdoor (IP 66)					
DC/AISG transparency							
Port 1 ↔ Port 4	mA	By-pass (max. 2500)		Stop		Stop	
Port 2 ↔ Port 4	mA	By-pass (max. 2500)		Stop		By-pass (max. 2500)	
Port 3 ↔ Port 4	mA	By-pass (max. 2500)		By-pass (max. 2500)		Stop	
Lightning protection	kA	3, 10/350 μs pulse					
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With included clamp set					
Weight	kg lb	Single unit: 3.5 7.7 / Double unit: 6.9 15.2					
Dimensions (w x h x d)	mm in	Single Unit: 215 x 197 x 68 8.5 x 7.8 x 2.7 Double Unit: 215 x 197 x 139 8.5 x 7.8 x 5.5 (without connectors, inclusive mounting brackets)					
Packing size	mm in	Single Unit: 392 x 272 x 165 15.4 x 10.7 x 6.5 Double Unit: 392 x 272 x 240 15.4 x 10.7 x 9.5					

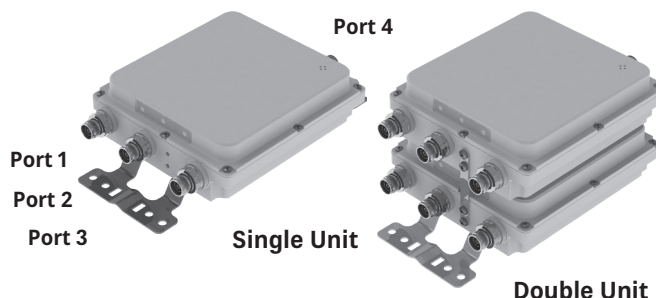
380 – 960 MHz

1427 – 2200 MHz

2300 – 2690 MHz

AUTO-SENSE

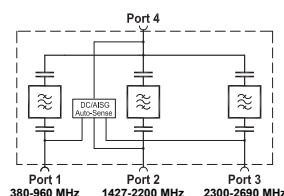
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Priority table for the variants 78211457V01 and 78211458V01 with Priority Controlled Function

380-960 MHz	Priority 2
1427-2200 MHz	Priority 3 (lowest)
2300-2690 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

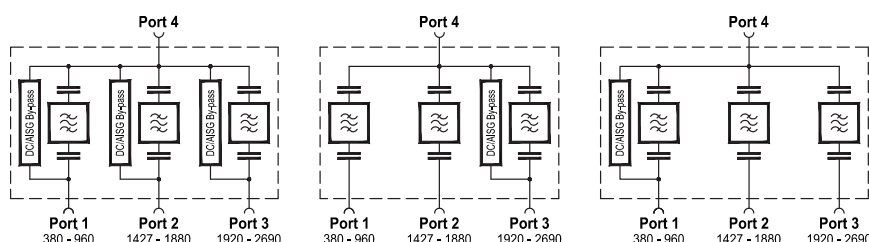
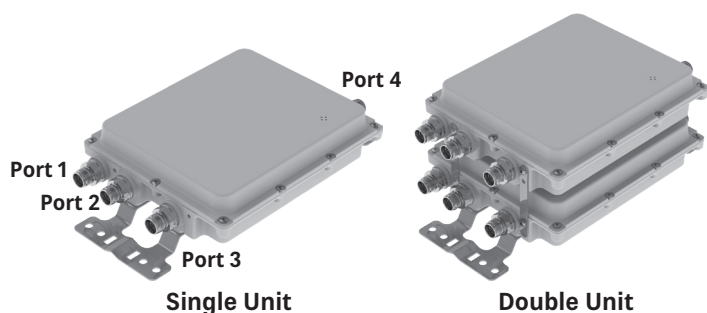
Type No. DC/AISG transparency		78211457 78211457V01 78211457V02		clamps included	78211458 78211458V01 78211458V02	
Unit		Single			Double	
Pass band						
Band 1	MHz	380 – 960				
Band 2	MHz	1427 – 2200				
Band 3	MHz	2300 – 2690				
Insertion loss						
Port 1 ↔ Port 4	dB	< 0.2 (380 – 960 MHz)				
Port 2 ↔ Port 4	dB	< 0.2 (1427 – 2200 MHz)				
Port 3 ↔ Port 4	dB	< 0.2 (2300 – 2690 MHz)				
Isolation	dB	> 50				
VSWR		< 1.25				
Impedance	Ω	50				
Input power						
Band 1 / Band 2 / Band 3	W	< 300 / < 200 / < 200				
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W), exempt from TETRA 360 – 470 MHz: < -150				
Temperature range	°C °F	-40 ... +60 -40 ... +140				
Connectors		4.3-10 female				
Application		Indoor or outdoor (IP 66)				
DC/AISG transparency						
Port 1, 2, 3 ↔ Port 4	mA	Auto-Sense (max. 2000)				
Lightning protection	kA	3, 10/350 μs pulse				
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) / Mast mounting: With included clamp set				
Weight	kg lb	Single Unit: 3.7 8.2 / Double Unit: 7.2 15.9				
Dimensions (w x h x d)	mm in	Single Unit: 215 x 197 x 68 8.5 x 7.8 x 2.7 Double Unit: 215 x 197 x 139 8.5 x 7.8 x 5.5 (without connectors, without mounting brackets)				
Packing Size	mm in	Single Unit: 392 x 272 x 165 15.4 x 10.7 x 6.5 Double Unit: 392 x 272 x 240 15.4 x 10.7 x 9.4				

380 – 960 MHz

1427 – 1880 MHz

1920 – 2690 MHz

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211560 Single Unit	78211562 Single Unit	78211564 Single Unit
		78211561 Double Unit	78211563 Double Unit	78211565 Double Unit
Pass band				
Band 1	MHz	380 – 960		
Band 2	MHz	1427 – 1880		
Band 3	MHz	1920 – 2690		
Insertion loss				
Port 1 ↔ Port 4	dB	< 0.2 (380 – 960 MHz)		
Port 2 ↔ Port 4	dB	< 0.3 (1427 – 1880 MHz)		
Port 3 ↔ Port 4	dB	< 0.35 (1920 – 2690 MHz)		
Isolation	dB	> 40		
VSWR		< 1.25		
Impedance	Ω	50		
Input power				
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200		
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W), exempt from TETRA 360 – 470 MHz: < –150 < –160 (1427 – 2690 MHz, 3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–40 ... +60 –40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 4	mA	By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500)	Stop Stop By-pass (max. 2500)	By-pass (max. 2500) Stop Stop
Port 2 ↔ Port 4	mA			
Port 3 ↔ Port 4	mA			
Lightning protection	kA	3, 10/350 µs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With clamp set		
Weight	kg lb	Single unit: 3.6 7.1 / Double unit: 7.0 15.4		
Dimensions (w x h x d)	mm in	Single Unit: 251 x 211 x 68 9.9 x 8.3 x 2.7 Double Unit: 251 x 211 x 139 9.9 x 8.3 x 5.5 (without connectors, without mounting brackets)		
Packing size	mm in	Single Unit: 439 x 289 x 160 17.3 x 11.4 x 6.3 Double Unit: 439 x 289 x 230 17.3 x 11.4 x 9.1		

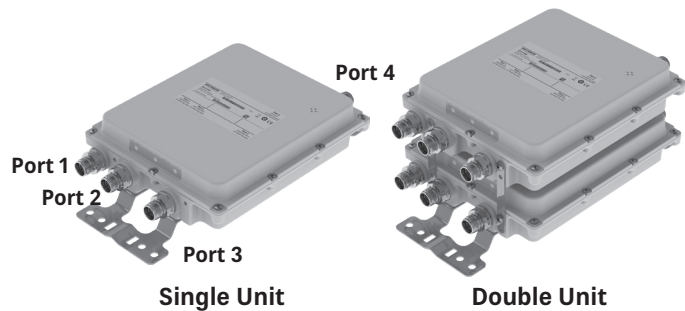
380 – 960 MHz

1427 – 1880 MHz

1920 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

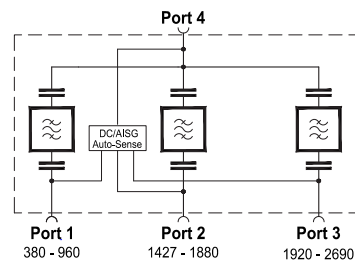
AUTO-SENSE



Priority table for the variants 78211567V01 and 78211568V01 with Priority Controlled Function

380–960 MHz	Priority 2
1427–1880 MHz	Priority 3 (lowest)
1920–2690 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

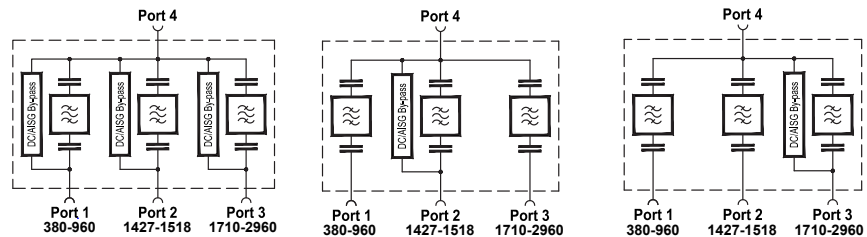
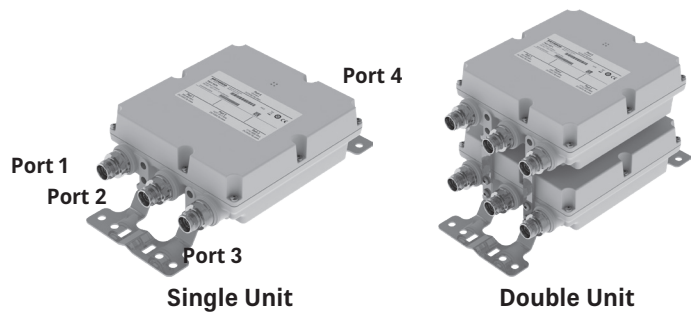
Type No. DC/AISG transparency		78211567 78211567V01 78211567V02		78211568 78211568V01 78211568V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function		Single		Double	
Unit					
Pass band					
Band 1	MHz			380 – 960	
Band 2	MHz			1427 – 1880	
Band 3	MHz			1920 – 2690	
Insertion loss					
Port 1 ↔ Port 4	dB			< 0.2 (380 – 960 MHz)	
Port 2 ↔ Port 4	dB			< 0.3 (1427 – 1880 MHz)	
Port 3 ↔ Port 4	dB			< 0.35 (1920 – 2690 MHz)	
Isolation	dB			> 40	
VSWR				< 1.25	
Impedance	Ω			50	
Input power	W			< 200 / < 200 / < 200	
Band 1 / Band 2 / Band 3					
Intermodulation products	dBc			< -160 (3 rd order; with 2 x 20 W), exempt from TETRA 360 – 470 MHz: < -150	
Temperature range	°C °F			-40 ... +60 -40 ... +140	
Connectors				4.3-10 female	
Application				Indoor or outdoor (IP 66)	
DC/AISG transparency					
Port 1, 2, 3 ↔ Port 4	mA			Auto-Sense (max. 2000)	
Lightning protection	kA			3, 10/350 µs pulse	
Mounting	mm in			Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With additional clamp set	
Weight	kg lb			Single unit: 3.7 8.2 / Double unit: 7.1 15.7	
Dimensions (w x h x d)	mm in			Single Unit: 251 x 211 x 68 9.9 x 8.3 x 2.7 Double Unit: 251 x 211 x 139 9.9 x 8.3 x 5.5 (without connectors, without mounting brackets)	
Packing size	mm in			Single Unit: 439 x 289 x 160 17.3 x 11.4 x 6.3 Double Unit: 439 x 289 x 230 17.3 x 11.4 x 9.1	

380 – 960 MHz

1427 – 1518 MHz

1710 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211570 Single Unit		78211572 Single Unit		78211574 Single Unit	
		78211571 Double Unit		78211573 Double Unit		78211575 Double Unit	
Pass band							
Band 1	MHz	380 – 960					
Band 2	MHz	1427 – 1518					
Band 3	MHz	1710 – 2690					
Insertion loss							
Port 1 ↔ Port 4	dB	< 0.2 (380 – 960 MHz)					
Port 2 ↔ Port 4	dB	< 0.2 (1427 – 1518 MHz)					
Port 3 ↔ Port 4	dB	< 0.3 (1710 – 2690 MHz)					
Isolation	dB	> 40					
VSWR		< 1.25					
Impedance	Ω	50					
Input power							
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200					
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)					
Temperature range	°C °F	-40 ... +60 -40 ... +140					
Connectors		4.3-10 female					
Application		Indoor or outdoor (IP 66)					
DC/AISG transparency							
Port 1 ↔ Port 4	mA	By-pass (max. 2500)		Stop		Stop	
Port 2 ↔ Port 4	mA	By-pass (max. 2500)		By-pass (max. 2500)		By-pass (max. 2500)	
Port 3 ↔ Port 4	mA	By-pass (max. 2500)		Stop		By-pass (max. 2500)	
Lightning protection	kA	3, 10/350 μs pulse					
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With included clamp set					
Weight	kg lb	Single unit: 3.2 7.05 / Double unit: 6.3 13.89					
Dimensions (w x h x d)	mm in	Single Unit: 190 x 176 x 77 7.5 x 6.9 x 3.0 Double Unit: 190 x 176 x 161 7.5 x 6.9 x 6.3 (without connectors, without mounting brackets)					
Packing size	mm in	Single Unit: 375 x 245 x 160 14.76 x 9.65 x 6.30 Double Unit: 375 x 245 x 245 14.76 x 9.65 x 9.65					

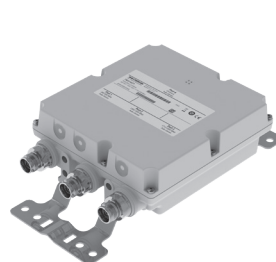
380 – 960 MHz

1427 – 1518 MHz

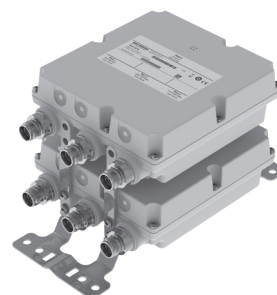
1710 – 2690 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- A detailed manual about Auto-Sense technology can be downloaded on our homepage.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection



Single Unit

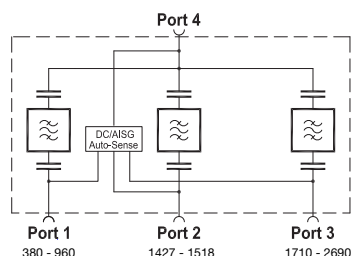


Double Unit

Priority table for the variants 78211577V01 and 78211578V01 with Priority Controlled Function

380-960 MHz	Priority 1 (highest)
1427-1518 MHz	Priority 3 (lowest)
1710-2690 MHz	Priority 2

For more information see Auto-Sense quick guide later in this datasheet.

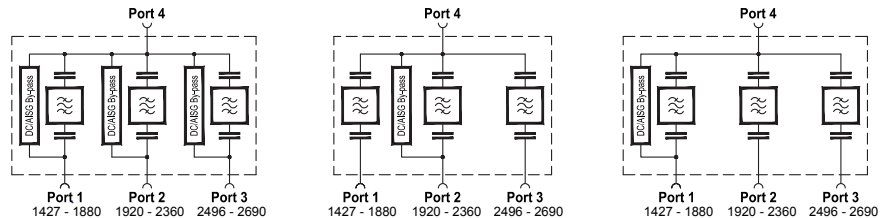
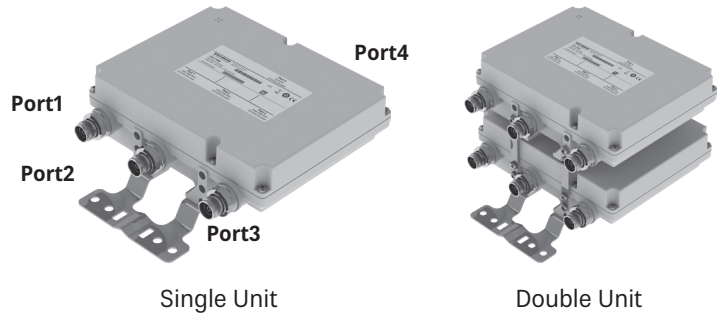


Technical Data

Type No. DC/AISG transparency		78211577 78211577V01 78211577V02		clamps included	78211578 78211578V01 78211578V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function						
Unit		Single		Double		
Pass band						
Band 1	MHz	380 – 960				
Band 2	MHz	1427 – 1518				
Band 3	MHz	1710 – 2690				
Insertion loss						
Port 1 ↔ Port 4	dB	< 0.2 (380 – 960 MHz)				
Port 2 ↔ Port 4	dB	< 0.2 (1427 – 1518 MHz)				
Port 3 ↔ Port 4	dB	< 0.3 (1710 – 2690 MHz)				
Isolation	dB	> 40				
VSWR		< 1.25				
Impedance	Ω	50				
Input power						
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200				
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)				
Temperature range	°C °F	–40 ... +60 –40 ... +140				
Connectors		4.3-10 female				
Application		Indoor or outdoor (IP 66)				
DC/AISG transparency						
Port 1, 2, 3 ↔ Port 4	mA	Auto-Sense (max. 2000)				
Lightning protection	kA	3, 10/350 µs pulse				
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting: With included clamp set				
Weight	kg lb	Single unit: 3.2 7.1 / Double unit: 6.3 13.9				
Dimensions (w x h x d)	mm in	Single Unit: 190 x 176 x 77 7.5 x 6.9 x 3.0 Double Unit: 190 x 176 x 161 7.5 x 6.9 x 6.3 (without connectors, without mounting brackets)				
Packing size	mm in	Single Unit: 375 x 245 x 160 14.8 x 9.7 x 6.3 Double Unit: 375 x 245 x 245 14.8 x 9.7 x 9.7				

1427 – 1880 MHz 1920 – 2360 MHz 2496 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

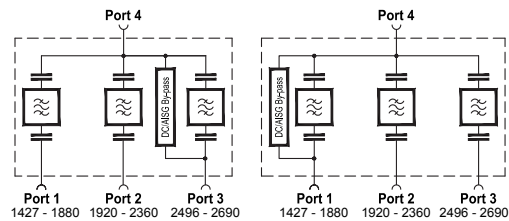
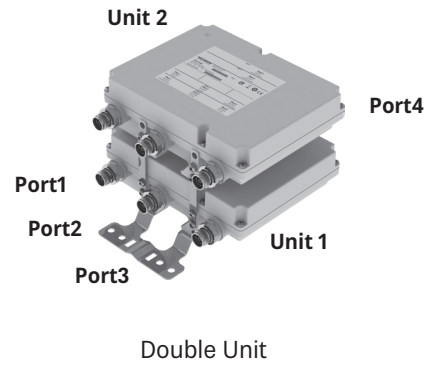
Type No.		78211690 Single Unit	78211692 Single Unit	78211694 Single Unit
		78211691 Double Unit	78211693 Double Unit	78211695 Double Unit
Pass band				
Band 1 (GSM/LTE1800)	MHz		1427 – 1880	
Band 2 (UMTS2100)	MHz		1920 – 2360	
Band 3 (2300 ... LTE2600)	MHz		2496 – 2690	
Insertion loss				
Port 1 ↔ Port 4	dB		< 0.5 (typ. 0.2 dB)	
Port 2 ↔ Port 4	dB		< 0.5 (typ. 0.2 dB)	
Port 3 ↔ Port 4	dB		< 0.5 (typ. 0.2 dB)	
Isolation				
Port 1 ↔ Port 2	dB		> 45 (1427 – 1880 / 1920 – 2360 MHz)	
Port 1 ↔ Port 3	dB		> 45 (1427 – 1880 / 2496 – 2690 MHz)	
Port 2 ↔ Port 3	dB		> 45 (1920 – 2360 / 2496 – 2690 MHz)	
VSWR			< 1.25	
Impedance	Ω		50	
Input power				
Band 1 / Band 2 / Band 3	W		< 150 / < 150 / < 150	
Intermodulation products	dBc		< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F		-40 ... +60 -40 ... +140	
Connectors			4.3-10 female	
Application			Indoor or outdoor (IP 66)	
DC/AISG transparency				
Port 1 ↔ Port 4	mA	By-pass (max. 2500)	Stop	By-pass (max. 2500)
Port 2 ↔ Port 4	mA	By-pass (max. 2500)	By-pass (max. 2500)	Stop
Port 3 ↔ Port 4	mA	By-pass (max. 2500)	Stop	Stop
Lightning protection	kA		3, 10/350 µs pulse	
Mounting			Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb		Single unit: 3.0 6.6 / Double unit: 6.0 13.2	
Dimensions (w x h x d)	mm in		Single unit: 225 x 176 x 75 8.9 x 6.9 x 3.0 Double unit: 225 x 176 x 156 8.9 x 6.9 x 6.1 (without connectors, without mounting brackets)	
Packing size	mm in		Single unit: 367 x 289 x 152 14.4 x 11.4 x 6.0 Double unit: 367 x 289 x 233 14.4 x 11.4 x 9.2	

1427 – 1880 MHz

1920 – 2360 MHz

2496 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



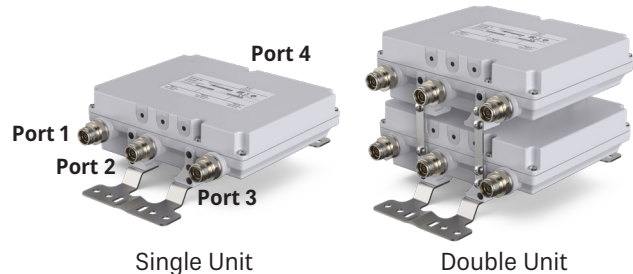
Technical Data

Type No.		78211696 Double Unit	
Pass band			
Band 1 (GSM/LTE1800)	MHz	1427 – 1880	
Band 2 (UMTS2100)	MHz	1920 – 2360	
Band 3 (2300 ... LTE2600)	MHz	2496 – 2690	
Insertion loss			
Port 1 ↔ Port 4	dB	< 0.5 (typ. 0.2 dB)	
Port 2 ↔ Port 4	dB	< 0.5 (typ. 0.2 dB)	
Port 3 ↔ Port 4	dB	< 0.5 (typ. 0.2 dB)	
Isolation			
Port 1 ↔ Port 2	dB	> 45 (1427 – 1880 / 1920 – 2360 MHz)	
Port 1 ↔ Port 3	dB	> 45 (1427 – 1880 / 2496 – 2690 MHz)	
Port 2 ↔ Port 3	dB	> 45 (1920 – 2360 / 2496 – 2690 MHz)	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2 / Band 3	W	< 150 / < 150 / < 150	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female (long neck)	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 4	mA	Unit 1 Stop Stop By-pass (max. 2500)	Unit 2 By-pass (max. 2500) Stop Stop
Port 2 ↔ Port 4	mA		
Port 3 ↔ Port 4	mA		
Lightning protection	kA	3, 10/350 μs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb	6.0 13.2	
Packing size	mm in	367 x 289 x 233 14.4 x 11.4 x 9.2	
Dimensions (w x h x d)	mm in	225 x 176 x 156 8.9 x 6.9 x 6.1 (without connectors, without mounting brackets)	

1427 – 1880 MHz 1920 – 2360 MHz 2496 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- A detailed manual about Auto-Sense technology can be downloaded on our homepage.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

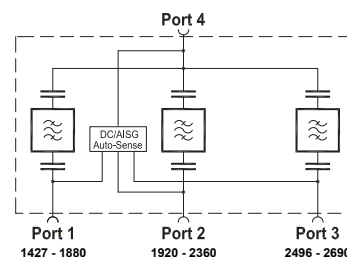
AUTO-SENSE



Priority table for the variants 78211697V01 and 78211698V01 with Priority Controlled Function

1427–1880 MHz	Priority 3 (lowest)
1920–2360 MHz	Priority 2
2496–2690 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

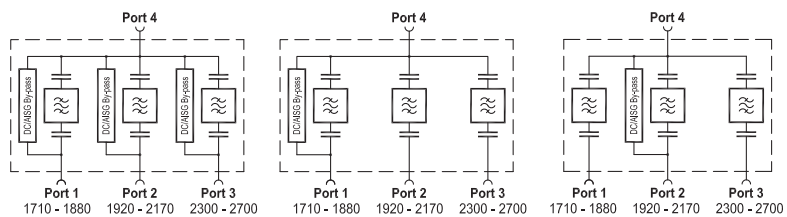
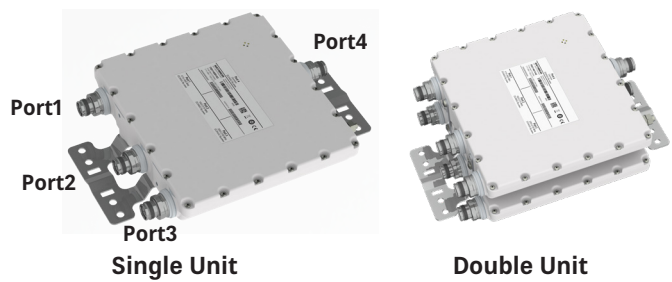
Type No. DC/AISG transparency			
1. First In - First Out Function		78211697	
2. Priority Controlled Function		78211697V01	
3. Exclusive User Function		78211697V02	
Unit		Single	Double
Pass band			
Band 1	MHz	1427 – 1880	
Band 2	MHz	1920 – 2360	
Band 3	MHz	2496 – 2690	
Insertion loss			
Port 1 ↔ Port 4	dB	< 0.5 (typ. 0.2 dB)	
Port 2 ↔ Port 4	dB	< 0.5 (typ. 0.2 dB)	
Port 3 ↔ Port 4	dB	< 0.5 (typ. 0.2 dB)	
Isolation			
Port 1 ↔ Port 2	dB	> 45 (1427 – 1880 / 1920 – 2360 MHz)	
Port 1 ↔ Port 3	dB	> 45 (1427 – 1880 / 2496 – 2690 MHz)	
Port 2 ↔ Port 3	dB	> 45 (1920 – 2360 / 2496 – 2690 MHz)	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2 / Band 3	W	< 150 / < 150 / < 150	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1, 2, 3 ↔ Port 4	mA	Auto-Sense (max. 2000)	
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb	Single unit: 3.0 6.6 / Double unit: 6.0 13.2	
Dimensions (w x h x d)	mm in	Single unit: 225 x 176 x 75 8.9 x 6.9 x 3.0 Double unit: 225 x 176 x 156 8.9 x 6.9 x 6.1 (without connectors, without mounting brackets)	
Packing size	mm in	Single unit: 367 x 289 x 152 14.4 x 11.4 x 6.0 / Double unit: 367 x 289 x 233 14.4 x 11.4 x 9.2	

1710 – 1880 MHz

1920 – 2170 MHz

2300 – 2700 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



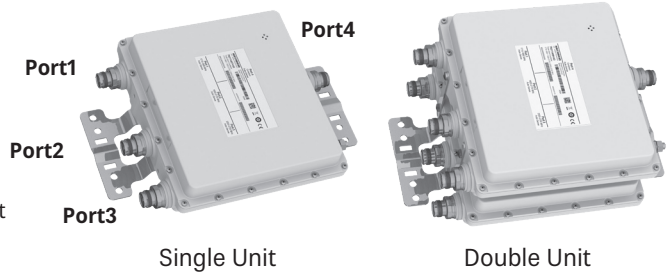
Technical Data

Type No.		78211400V43	78211402V43	78211404V43
		Single Unit	Single Unit	Single Unit
		78211401V43	78211403V43	78211405V43
		Double Unit	Double Unit	Double Unit
Pass band				
Band 1	MHz	1710 – 1880		
Band 2	MHz	1920 – 2170		
Band 3	MHz	2300 – 2700		
Insertion loss				
Port 1 ↔ Port 4	dB	< 0.3 (typ. 0.1)		
Port 2 ↔ Port 4	dB	< 0.3 (typ. 0.1)		
Port 3 ↔ Port 4	dB	< 0.3 (typ. 0.1)		
Isolation				
Port 1 ↔ Port 2	dB	> 50 (1710 – 1880 / 1920 – 2170 MHz)		
Port 1 ↔ Port 3	dB	> 50 (1710 – 1880 / 2300 – 2700 MHz)		
Port 2 ↔ Port 3	dB	> 50 (1920 – 2170 / 2300 – 2700 MHz)		
VSWR		< 1.25		
Impedance	Ω	50		
Input power	W			
Band 1 / Band 2 / Band 3		< 200 / < 200 / < 200		
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)		
Temperature range	°C °F	–55 ... +60 –67 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 4	mA	By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500)	By-pass (max. 2500) Stop Stop	Stop By-pass (max. 2500) Stop
Port 2 ↔ Port 4	mA			
Port 3 ↔ Port 4	mA			
Lightning protection	kA	3, 10/350 μs pulse		
Mounting		Wall mounting: With 4 screws (max. diameter [mm in] 8 0.315) Mast mounting: With additional clamp set		
Weight	kg lb	Single unit: 3.3 7.3 Double unit: 6.7 14.8		
Dimensions (w x h x d)	mm in	Single unit: 235 x 217 x 46 9.3 x 8.5 x 1.8 Double unit: 235 x 217 x 97 9.3 x 8.5 x 3.8 (without connectors, without mounting brackets)		
Packing size	mm in	Single unit: 405 x 325 x 155 15.9 x 12.8 x 6.1 Double unit: 405 x 325 x 205 15.9 x 12.8 x 8.1		

1710 – 1880 MHz 1920 – 2170 MHz 2300 – 2700 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- A detailed manual about Auto-Sense technology can be downloaded on our homepage.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

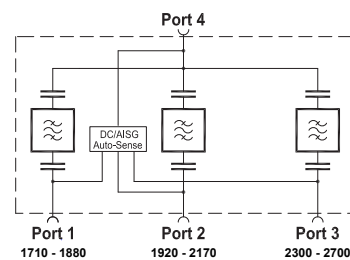
AUTO-SENSE



Priority table for the variants 78211407V44 and 78211408V44 with Priority Controlled Function

1710-1880 MHz	Priority 3 (lowest)
1920-2170 MHz	Priority 2
2300-2700 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

Type No. DC/AISG transparency		78211407V43 78211407V44 78211407V45		78211408V43 78211408V44 78211408V45	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function					
Unit		Single		Double	
Pass band					
Band 1	MHz	1710 – 1880			
Band 2	MHz	1920 – 2170			
Band 3	MHz	2300 – 2700			
Insertion loss					
Port 1 ↔ Port 4	dB	< 0.3 (typ. 0.1 dB)			
Port 2 ↔ Port 4	dB	< 0.3 (typ. 0.1 dB)			
Port 3 ↔ Port 4	dB	< 0.3 (typ. 0.1 dB)			
Isolation					
Port 1 ↔ Port 2	dB	> 50 (1710 – 1880 / 1920 – 2170 MHz)			
Port 1 ↔ Port 3	dB	> 50 (1710 – 1880 / 2300 – 2700 MHz)			
Port 2 ↔ Port 3	dB	> 50 (1920 – 2170 / 2300 – 2700 MHz)			
VSWR		< 1.25			
Impedance	Ω	50			
Input power					
Band 1 / Band 2 / Band 3	W	< 200 / < 200 / < 200			
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	–55 ... +60 –67 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency Port 1, 2, 3 ↔ Port 4	mA	Auto-Sense (max. 2000)			
Lightning protection	kA	3, 10/350 μs pulse			
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set			
Weight	kg lb	Single unit: 3.4 7.5 / Double unit: 6.9 15.2			
Dimensions (w x h x d)	mm in	Single unit: 235 x 217 x 64 9.3 x 8.5 x 2.5 Double unit: 235 x 217 x 135 9.3 x 8.5 x 5.3 (without connectors, without mounting brackets)			
Packing size	mm in	Single unit: 404 x 324 x 175 15.9 x 12.8 x 6.9 / Double unit: 404 x 324 x 245 15.9 x 12.8 x 9.6			

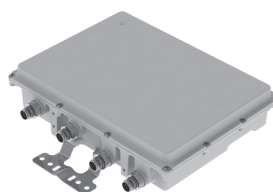
690 – 862 MHz

880 – 960 MHz

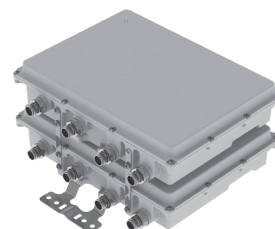
1427 – 1880 MHz

1920 – 2690 MHz

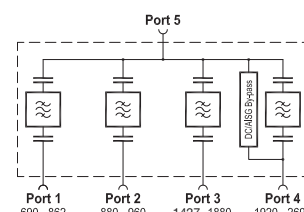
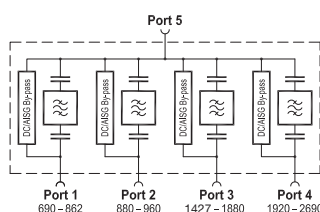
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Single Unit



Double Unit



Technical Data

Type No.		78211340 Single Unit	78211342 Single Unit
		78211341 Double Unit	78211343 Double Unit
Pass band			
Band 1	MHz	690 – 862	
Band 2	MHz	880 – 960	
Band 3	MHz	1427 – 1880	
Band 4	MHz	1920 – 2690	
Insertion loss			
Port 1 ↔ Port 5	dB	< 0.45, typ. 0.25 (690 – 862 MHz)	
Port 2 ↔ Port 5	dB	< 0.45, typ. 0.3 (880 – 960 MHz)	
Port 3 ↔ Port 5	dB	< 0.35, typ. 0.2 (1427 – 1880 MHz)	
Port 4 ↔ Port 5	dB	< 0.35, typ. 0.3 (1920 – 2690 MHz)	
Isolation	dB	> 40	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2 / Band 3 / Band 4	W	< 200 / < 200 / < 200 / < 100	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 5]	mA	By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500)	Stop
Port 2 ↔ Port 5	mA		Stop
Port 3 ↔ Port 5	mA		Stop
Port 4 ↔ Port 5	mA		By-pass (max. 2500)
Lightning protection	kA	3, 10/350 µs pulse	
Mounting	mm in	Wall mounting: With 4 screws (max. diameter 8 0.315) / Mast mounting: With included clamp set	
Weight	kg lb	Single Unit: 6.7 14.6 / Double Unit: 13.3 29.3	
Dimensions (w x h x d)	mm in	Single Unit approx.: 358 x 271 x 84 14.1 x 10.7 x 3.3 Double Unit approx.: 358 x 271 x 172 14.1 x 10.7 x 6.8 (without connectors, without mounting brackets)	
Packing size	mm in	Single Unit: 460x 440 x 177 18.1 x 17.3 x 7.0 Double Unit: 460 x 440 x 265 18.1 x 17.3 x 10.4	

690 – 862 MHz

880 – 960 MHz

1427 – 1880 MHz

1920 – 2690 MHz

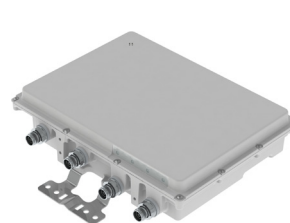
AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

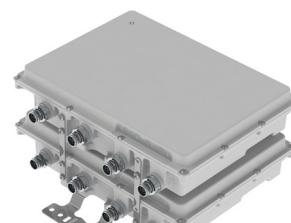
Priority table for the variants 78211797V01 and 78211798V01 with Priority Controlled Function

690-862 MHz	Priority 2
880-960 MHz	Priority 3
1427-1880 MHz	Priority 4 (lowest)
1920-2690 MHz	Priority 1 (highest)

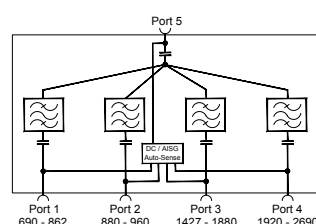
For more information see Auto-Sense quick guide later in this datasheet.



**78211347
Single Unit**



**78211348
Double Unit**



Technical Data

Type No. DC/AISG transparency		78211347 78211347V01 78211347V02		78211348 78211348V01 78211348V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function		Single		Double	
Unit					
Pass band					
Band 1	MHz	690 – 862			
Band 2	MHz	880 – 960			
Band 3	MHz	1427 – 1880			
Band 4	MHz	1920 – 2690			
Insertion loss					
Port 1 ↔ Port 5	dB	< 0.45, typ. 0.25 (690 – 862 MHz)			
Port 2 ↔ Port 5	dB	< 0.45, typ. 0.3 (880 – 960 MHz)			
Port 3 ↔ Port 5	dB	< 0.35, typ. 0.2 (1427 – 1880 MHz)			
Port 4 ↔ Port 5	dB	< 0.35, typ. 0.3 (1920 – 2690 MHz)			
Isolation	dB	> 40			
VSWR		< 1.25			
Impedance	Ω	50			
Input power					
Band 1 / Band 2 / Band 3 / Band 4	W	< 200 / < 200 / < 200 / < 100			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency					
Port 1, 2, 3, 4 ↔ Port 5	mA	Auto-Sense (max. 2000)			
Lightning protection	kA	3, 10/350 µs pulse			
Mounting	mm in	Wall mounting: With 4 screws (max. diameter 8 0.315) Mast mounting: With included clamp set			
Weight	kg lb	Single Unit: 6.8 14.9 / Double Unit: 13.5 29.6			
Dimensions (w x h x d)	mm in	Single Unit: 358 x 271 x 84 14.1 x 10.7 x 3.3 Double Unit: 358 x 271 x 172 14.1 x 10.7 x 6.8 (without connectors, without mounting brackets)			
Packing size	mm in	Single Unit: 460 x 440 x 177 18.1 x 17.3 x 7.0 Double Unit: 460 x 440 x 265 18.1 x 17.3 x 10.4			

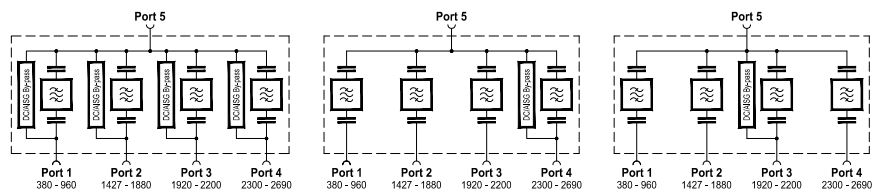
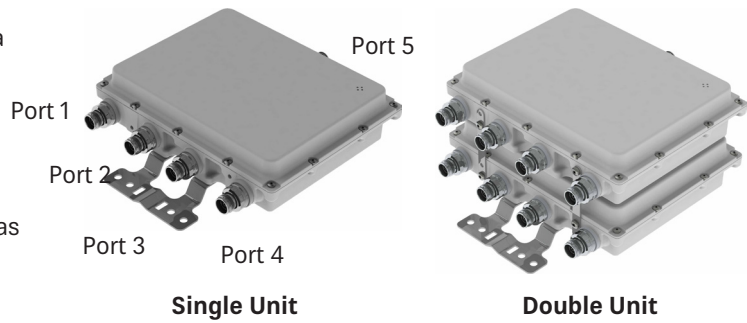
380 – 960 MHz

1427 – 1880 MHz

1920 – 2200 MHz

2300 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available as a single unit, or for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211580	78211582	78211584
		Single Unit	Single Unit	Single Unit
		78211581	78211583	78211585
		Double Unit	Double Unit	Double Unit
Pass band				
Band 1 (TETRA ... GSM 900)	MHz	380 – 960		
Band 2 (GSM 1800)	MHz	1427 – 1880		
Band 3 (UMTS)	MHz	1920 – 2200		
Band 4 (LTE 2600)	MHz	2300 – 2690		
Insertion loss				
Port 1 ↔ Port 5	dB	< 0.2 (380 – 960 MHz)		
Port 2 ↔ Port 5	dB	< 0.3 (1427 – 1880 MHz)		
Port 3 ↔ Port 5	dB	< 0.3 (1920 – 2200 MHz)		
Port 4 ↔ Port 5	dB	< 0.3 (2300 – 2690 MHz)		
Isolation	dB	> 40		
VSWR		< 1.25		
Impedance	Ω	50		
Input power				
Band 1/Band 2/Band 3/Band 4	W	< 200 / < 200 / < 200 / < 100		
Intermodulation products	dBc	< -160 (3rd order; with 2 x 20 W), exempt from TETRA 360 – 470 MHz: < -150		
Temperature range	°C °F	-40 ... +60 -40 ... +140		
Connectors		4.3-10 female		
Application		Indoor or outdoor (IP 66)		
DC/AISG transparency				
Port 1 ↔ Port 5	mA	By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500) By-pass (max. 2500)	Stop Stop Stop By-pass (max. 2500)	Stop Stop Stop By-pass (max. 2500) Stop
Port 2 ↔ Port 5	mA			
Port 3 ↔ Port 5	mA			
Port 4 ↔ Port 5	mA			
Lightning protection	kA	3, 10/350 µs pulse		
Mounting	mm in	Wall mounting: With 4 screws (max.: 8 0.315 diameter) / Mast mounting: With clamp set		
Weight	kg lb	Single unit: 3.9 8.6 / Double unit: 7.7 17.0		
Dimensions (w x h x d)	mm in	Single unit: 270 x 213 x 67 10.6 x 8.4 x 2.6 Double unit: 270 x 213 x 138 10.6 x 8.4 x 5.4 (without connectors, without mounting brackets)		
Packing size	mm in	Single unit: 394 x 339 x 160 15.5 x 13.3 x 6.3 Double unit: 394 x 339 x 230 15.5 x 13.3 x 9.1		

380 – 960 MHz

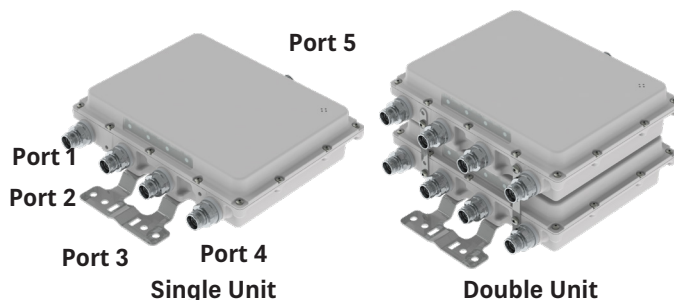
1427 – 1880 MHz

1920 – 2200 MHz

2300 – 2690 MHz

AUTO-SENSE

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes Integrated auto-sense technology for automatic DC / AISG detection and bypass functionality.
- A detailed manual about Auto-Sense technology can be downloaded on our homepage.
- Available as a single unit, or for XPol antennas as a double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection

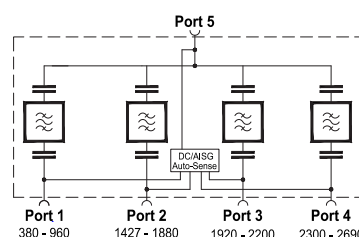


Multi-Band Combiners

Priority table for the variants 78211587V01 and 78211588V01 with Priority Controlled Function

380-960 MHz	Priority 2
1427-1880 MHz	Priority 4 (lowest)
1920-2200 MHz	Priority 3
2300-2690 MHz	Priority 1 (highest)

For more information see Auto-Sense quick guide later in this datasheet.



Technical Data

Type No. DC/AISG transparency		78211587 78211587V01 78211587V02		78211588 78211588V01 78211588V02	
1. First In - First Out Function 2. Priority Controlled Function 3. Exclusive User Function		Single		Double	
Unit					
Pass band					
Band 1 (TETRA ... GSM 900)	MHz	380 – 960			
Band 2 (GSM 1800)	MHz	1427 – 1880			
Band 3 (UMTS)	MHz	1920 – 2200			
Band 4 (LTE 2600)	MHz	2300 – 2690			
Insertion loss					
Port 1 ↔ Port 5	dB	< 0.2 (380 – 960 MHz)			
Port 2 ↔ Port 5	dB	< 0.3 (1427 – 1880 MHz)			
Port 3 ↔ Port 5	dB	< 0.3 (1920 – 2200 MHz)			
Port 4 ↔ Port 5	dB	< 0.3 (2300 – 2690 MHz)			
Isolation	dB	> 40			
VSWR		< 1.25			
Impedance	Ω	50			
Input power					
Band 1/Band 2/Band 3/Band 4	W	< 200 / < 200 / < 200 / < 100			
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W), exempt from TETRA 360 – 470 MHz: < -150			
Temperature range	°C °F	-40 ... +60 -40 ... +140			
Connectors		4.3-10 female			
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency					
Port 1, 2, 3, 4 ↔ Port 5		Auto-sense (max. 2000)			
Lightning protection	kA	3, 10/350 µs pulse			
Mounting	mm in	Wall mounting: With 4 screws (max.: 8 0.315 diameter) / Mast mounting: With clamp set			
Weight	kg lb	Single unit: 4 8.8 / Double unit: 7.8 17.2			
Dimensions (w x h x d)	mm in	Single unit: 270 x 213 x 67 10.6 x 8.4 x 2.6 Double unit: 270 x 213 x 138 10.6 x 8.4 x 5.4 (without connectors, without mounting brackets)			
Packing size	mm in	Single unit: 394 x 339 x 160 15.5 x 13.3 x 6.3 Double unit: 394 x 339 x 230 15.5 x 13.3 x 9.1			

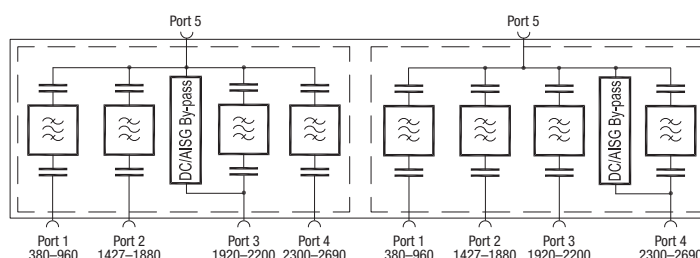
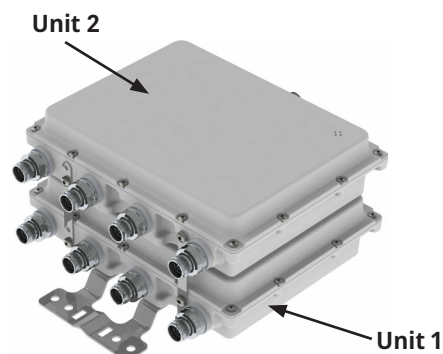
380 – 960 MHz

1427 – 1880 MHz

1920 – 2200 MHz

2300 – 2690 MHz

- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Very low insertion loss
- Enables feeder sharing
- Designed for co-siting purposes
- Available for XPol antennas as double unit
- Suitable for indoor and outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.		78211589 Double Unit	
Pass band			
Band 1 (TETRA ... GSM 900)	MHz	380 – 960	
Band 2 (GSM 1800)	MHz	1427 – 1880	
Band 3 (UMTS)	MHz	1920 – 2200	
Band 4 (LTE 2600)	MHz	2300 – 2690	
Insertion loss			
Port 1 ↔ Port 5	dB	< 0.2 (380 – 960 MHz)	
Port 2 ↔ Port 5	dB	< 0.3 (1427 – 1880 MHz)	
Port 3 ↔ Port 5	dB	< 0.3 (1920 – 2200 MHz)	
Port 4 ↔ Port 5	dB	< 0.3 (2300 – 2690 MHz)	
Isolation	dB	> 40	
VSWR		< 1.25	
Impedance	Ω	50	
Input power			
Band 1 / Band 2 / Band 3 / Band 4	W	< 200 / < 200 / < 200 / < 100	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W), except from TETRA 360 – 470 MHz: < -150	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or outdoor (IP 66)	
DC/AISG transparency			
Port 1 ↔ Port 5	mA	Unit 1 Stop Stop By-pass (max. 2500) Stop	Unit 2 Stop Stop Stop By-pass (max. 2500)
Port 2 ↔ Port 5	mA		
Port 3 ↔ Port 5	mA		
Port 4 ↔ Port 5	mA		
Lightning protection	kA	3, 10/350 µs pulse	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb	7.7 17.0	
Dimensions (w x h x d)	mm in	270 x 213 x 138 10.6 x 8.4 x 5.4 (without connectors, without mounting brackets)	
Packing size	mm in	394 x 339 x 230 15.5 x 13.3 x 9.1	

 **Same-Band Combiners
and Hybrid Combiners**

Band-Pass Filters

Hybrid Combiners

3 dB Couplers

Same-Band Combiners

Summary of Same-Band Combiner and Hybrid Combiner Types

KATHREIN

Description	Type No.	Frequency range	Max. input power	Connector	Page
Band-Pass Filter	78211847	2575 – 2615 MHz	40 W at each port	4.3-10	376
Hybrid Combiner 2:1	78210506	698 – 2690 MHz	150 W at each port	7-16	377
Hybrid Combiner 2:1	78210507	698 – 2690 MHz	60 W at each port	4.3-10	378
Hybrid Combiner 16:4	78211144	698 – 960 MHz 1710 – 1880 MHz 1920 – 2170 MHz 2500 – 2690 MHz	50 W at each port	7-16	379
Hybrid Combiner 4:4	78210536	698 – 2690 MHz	150 W at each port	4.3-10	380
3-dB Coupler	78210527	698 – 2690 MHz	150 W at each port	4.3-10	381
3-dB Coupler	793554	800 – 2200 MHz	300 W	7-16	382
Same-Band Combiner	78210936	880 – 960 MHz	100 W at each port	7-16	383, 384
Same-Band Combiner	78211235	1730 – 1880 MHz	100 W at each port	7-16	385, 386
Same-Band Combiner	78211228V03	2500 – 2690 MHz	100 W at each port	4.3-10	387

Summary of Same-Band Combiner and Hybrid Combiner Types

Frequency Combinations

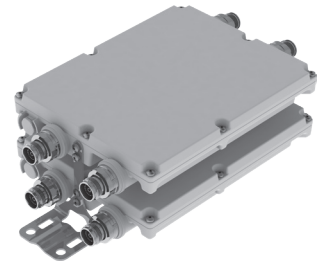
KATHREIN

Type No.	Frequency / MHz													
	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800		
Band Pass Filter														
78211847											2575 - 2615			
Same-Band Combiner														
78210936			880 - 960											
78211235						1730 - 1880								
78211228V03											2500 - 2690			
Hybrid Combiner														
78210506, 2:1 (2 x 150 W)						698 - 2690								
78210507, 2:1 (2 x 60 W)						698 - 2690								
78210536, 4:4 (4 x 150 W)						698 - 2690								
78210527, 2:2 (2 x 150 W)						698 - 2690								
793554, 2:2			800 - 2200											
Hybrid Combiner System														
78211144, 16:4 (16 x 50 W)		806 - 960					1710 - 1880	1920 - 2170			2500 - 2690			

Band-pass Filter B 38 2575 - 2615 MHz

KATHREIN

- Band-pass Filter for Band 38 with Band 7 Suppression
- Suitable for indoor or outdoor applications
- Wall or mast mounting



Technical Data

Type No.		78211847 Double Unit
Pass band	MHz	2575 – 2615
Insertion loss	dB dB dB	< 1.4 (2575 – 2577 / 2613 – 2615 MHz) <1.1 (2577 – 2580/ 2610 – 2613 MHz) < 0.9 (2580 – 2610 MHz)
Stop band attenuation	dB dB dB	> 50 (< 2535 / > 2655 MHz) > 40 (2535 – 2555 / 2635 – 2655 MHz) > 35 (2555 – 2570/ 2620 – 2635 MHz)
VSWR		< 1.25 (2575 – 2615 MHz)
Impedance	Ω	50
Input power per port	W	< 40
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +60 -40 ... +140
Connectors		4.3-10
Application		Indoor or outdoor (IP66)
DC/AISG transparency	mA	By-pass (max. 2500)
Mounting		Mast mounting: with additional clamp set
Number of input/output ports		4x Input (BTS), 4x Output (ANT)
Weight	kg lb	6.0 13.2
Dimensions (w x h x d)	mm in	225 x 176 x 92 8.9 x 6.9 x 3.6 (without connectors, without mounting brackets)
Packing size	mm in	380 x 235 x 150 15.0 x 9.3 x 5.9

For more information about accessories please refer to page 390

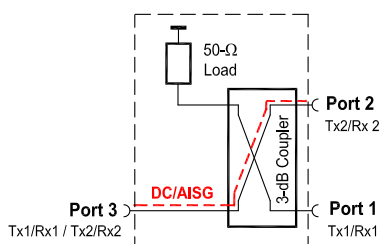
Hybrid Combiner 2 : 1

698 – 2690 MHz

2 x 150 W

KATHREIN

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- DC by-pass between port 2 and port 3



Same-Band and Hybrid Combiners

Technical Data

Type No.		78210506
Frequency range	MHz	698 – 2690
Attenuation		
Port 1 ↔ Port 3	dB	3 ± 0.6
Port 2 ↔ Port 3	dB	3 ± 0.6
Port 1 ↔ Port 2	dB	> 25*
VSWR (all ports)		< 1.12 (698 – 2690 MHz)
Impedance	Ω	50
Input power		
Port 1	W	< 150
Port 2	W	< 150
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +55 -40 ... +131
Connectors		7-16 female
Application		Indoor or outdoor (IP 66)
DC/AISG transparency		
Port 1 ↔ Port 3		Stop
Port 2 ↔ Port 3		By-pass (max. 2500)
Mounting	mm in	Wall mounting: With 4 screws (diameter max. 8 0.31) / Mast mounting: With additional clamp set
Weight	kg lb	8 17.6
Dimensions (w x h x d)	mm in	235 x 480 x 120 9.3 x 18.9 x 4.7 (without connectors, without mounting brackets)
Packing size	mm in	545 x 280 x 190 21.5 x 11.0 x 7.5

* Valid if all ports are terminated with 50-Ohm loads.

Note:

The input power rating of 150 W is specified at an ambient temperature of +40 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

The max. power rating increases or decreases with falling or rising ambient temperature and depending on horizontal or vertical mounting in accordance with the following table:

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	80 W	100 W
+40 °C	110 W	150 W
+25 °C	150 W	100 W

For more information about accessories please refer to page 390

Hybrid Combiner 2 : 1

698 – 2690 MHz

2 x 60 W

KATHREIN

- With 4.3-10 connectors
- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between port 1 and port 3

Technical Data

Type No.		78210507
Frequency range	MHz	698 – 2690
Attenuation		
Port 1 ↔ Port 3	dB	3.1 ±0.5
Port 2 ↔ Port 3	dB	3.1 ±0.5
Port 1 ↔ Port 2	dB	> 23*
VSWR (all ports)		< 1.2 (698 – 2170 MHz) / < 1.25 (2170 – 2690 MHz)
Impedance	Ω	50
Input power		
Port 1	W	< 60
Port 2	W	< 60
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +55 -40 ... +131
Connectors		4.3-10 female
Application		Indoor or outdoor (IP 66)
DC/AISG transparency		
Port 1 ↔ Port 3		By-pass (max. 2500 mA)
Port 2 ↔ Port 3		Stop
Mounting	mm in	Wall mounting: With 4 screws (diameter max. 8 0.31) / Mast mounting: With additional clamp set
Weight	kg lb	4.3 9.5
Dimensions (w x h x d)	mm in	264 x 203 x 72.5 10.4 x 8.0 x 2.9 (without connectors, without mounting brackets)
Packing size	mm in	385 x 345 x 168 15.3 x 13.7 x 6.6

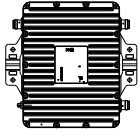
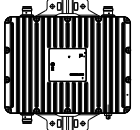
* Valid if all ports are terminated with 50-Ohm loads.

Note:

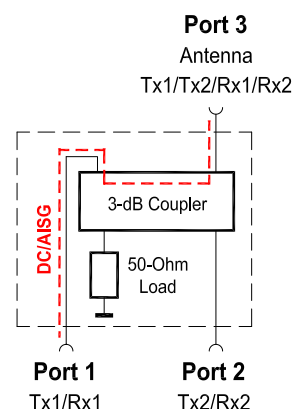
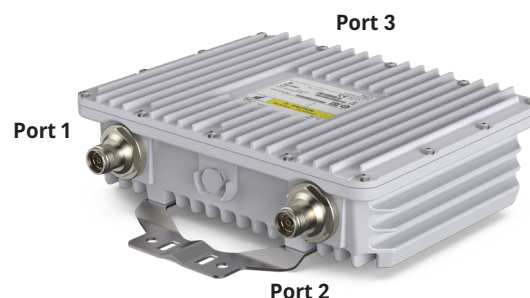
The input power rating of 150 W is specified at an ambient temperature of +40 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	55 W	60 W
+40 °C	70 W	75 W
+25 °C	80 W	85 W

For more information about accessories please refer to page 390

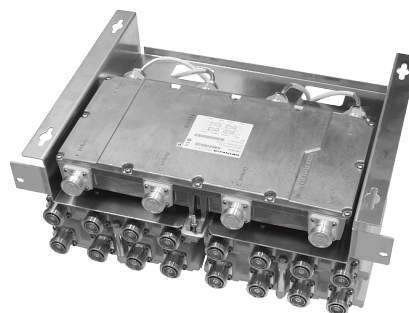


Hybrid Combiner System

16 : 4

KATHREIN

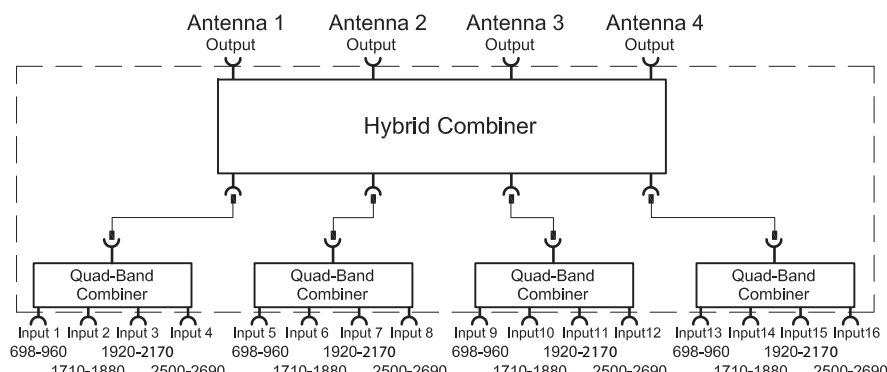
- **Point of Interface (POI)** for coverage solutions with passive **Distributed Antenna Systems (DAS)**
- Designed for the decoupled combining of 16 transmitter or receiver signals and distributing these signals evenly onto 4 antenna outputs.
- Suitable for indoor or outdoor applications
- External 50 Ohm loads available as an accessory



Technical Data

Type No.		78211144 16 : 4	
Frequency range			
Band 1	MHz		698 – 960
Band 2	MHz		1710 – 1880
Band 3	MHz		1920 – 2170
Band 4	MHz		2500 – 2690
Power distribution loss (excluding insertion loss) Input 1...8/12/16 ↔ Output 1...4	dB		Typically 6.5
Insertion loss Input 1...16 ↔ Output 1...4	dB		Typically 6.5
Isolation between input ports			
Same bands	dB		> 22 *)
Different bands	dB		> 50
VSWR (all ports)			< 1.5
Impedance	Ω		50
Input power at each input port	W		< 50
Intermodulation products	dBc		< -155 dBc (3 rd order; with 2 x 20 W)
Temperature range	°C °F		-40 ... +60 -40 ... +140
Connectors			7-16 female
Application			Indoor or Outdoor (IP 66)
Mounting			Wall mounting: With 4 screws (max. 6 mm diameter) / 19"-drawer
Weight	kg lb		21.5 47.4
Packing size (w x h x d)	mm in		570 x 272 x 584 22.4 x 10.7 x 23.0
Dimensions (w x h x d)			
	mm in		19" drawer x 187 x 374 7.4 x 14.7

* Valid if all ports are terminated with 50-Ohm loads



Note:

The use of fewer than 16 inputs or 4 outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein Mobile Communication type 78410367), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein Mobile Communication low intermodulation type 78210475).

For more information about accessories please refer to page 390

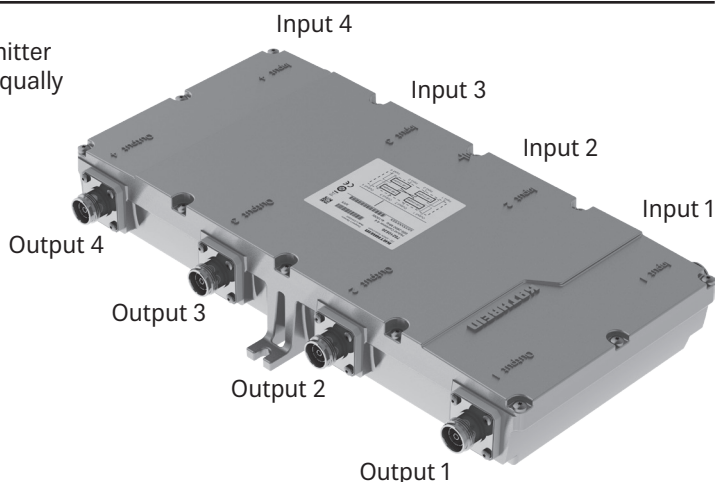
Hybrid Combiner 4:4

698 – 2690 MHz

4 x 150 W

KATHREIN

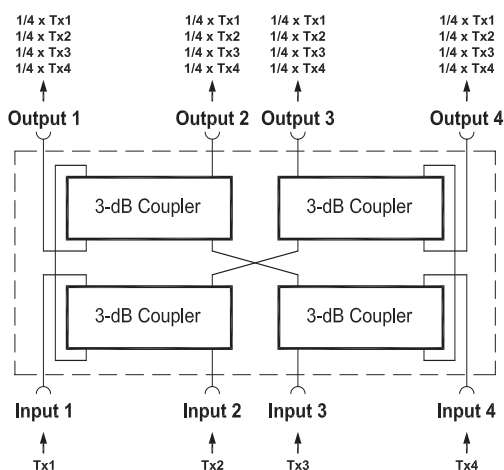
- Designed for the decoupled combining of 4 transmitter or receiver signals and distributing these signals equally onto 4 antenna outputs
- Suitable for indoor or outdoor applications
- DC/AISG bypass
- External DC stop available as an accessory



Technical Data

Type No.		78210536	
Frequency range	MHz	698 - 2690	
Insertion loss Input 1...4 ↔ Output 1...4	dB	0.35 ± 0.15	} typically 6.3
Power distribution loss (excluding insertion loss) Input 1...4 ↔ Output 1...4	dB	6 ± 0.75	
	dB		
Isolation Input 1...4 ↔ Input 1...4 Output 1...4 ↔ Output 1...4	dB dB	> 20 * (698 - 2170 MHz) > 19 * (2170 - 2690 MHz), typically > 20	
VSWR (all ports)		< 1.22 (698 - 2170 MHz) < 1.4, typ. 1.2 (2170 - 2690 MHz)	
Impedance	Ω	50	
Input power	W	< 150 at each input port	
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	-40 ... +60 -40 ... +140	
Connectors		4.3-10 female	
Application		Indoor or Outdoor (IP 66)	
DC/AISG transparency		Bypass (max. 2500 mA) between Input 1 ↔ Output 4 / Input 2 ↔ Output 2 / Input 3 ↔ Output 3 / Input 4 ↔ Output 1 External DC stop available as an accessory	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter)	
Weight	kg lb	4.5 9.9	
Dimensions (w x h x d)	mm in	376 x 65 x 224 14.8 x 2.6 x 8.8 (with connectors and mounting feet)	
Packing size	mm in	453 x 125 x 273 17.8 x 4.9 x 10.7	

* Valid if all ports are terminated with 50-Ohm loads



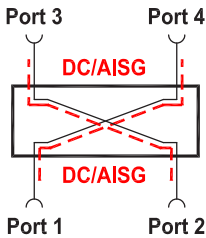
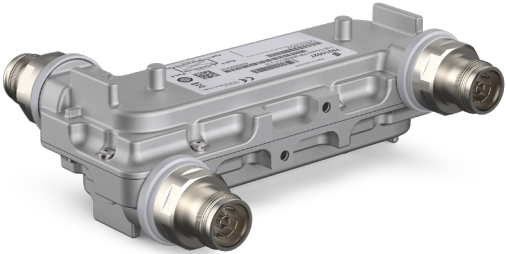
Note:

The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein type 784 10484), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein low-intermodulation type 78210474).

3 dB Coupler Hybrid Combiner 2 : 2 698 – 2690 MHz

KATHREIN

- With 4.3-10 connectors
- Can be used for the decoupled combining of 2 transmitters onto a common antenna with frequency spacing as narrow as desired (3 dB loss)
- Can be used for the decoupled combining of 2 transmitters onto two antennas with frequency spacing as narrow as desired
- Can be used as a decoupled 2-way splitter
- Can be used as a frequency-independant 90° phase shifter (90° Hybrid)
- Suitable for indoor and outdoor applications
- DC/AISG by-pass
- External DC stop available as an accessory



Technical Data

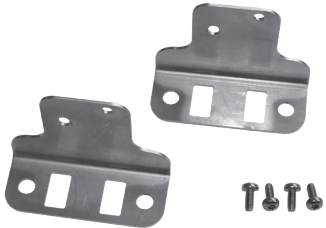
Type No.		78210527
Frequency range	MHz	698 – 2690
Attenuation		
Port 1 ↔ Port 3	dB	3 ±0.5
Port 1 ↔ Port 4	dB	3 ±0.5
Port 1 ↔ Port 2	dB	> 25
Directivity	dB	> 23
Return loss	dB	> 25
Impedance	Ω	50
Input power	W	< 150 at each input port
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +70 -40 ... +158
Connectors		4.3-10 female
Application		Indoor <i>or</i> outdoor (IP66)
DC/AISG transparency		By-pass between Port 1 ↔ Port 4 / Port 2 ↔ Port 3 (max. 2500 mA) External DC stop available as an accessory
Weight	kg lb	0.7 1.5
Dimensions (w x h x d)	mm in	158 x 55 x 60 6.22 x 2.17 x 2.36 (without connectors)

Note:
VSWR and attenuation values only valid if all ports are terminated with 50-Ohm-loads.

Accessories (order separately)

Type No.	Description
78211000	DC stop
78210473	50-Ohm load (80 W; 4.3-10 Connectors)
78210484	50-Ohm load (2 W)
78210526	Mounting kit

Mounting kit 78210526



3 dB Coupler Hybrid Combiner 2:2 800 – 2200 MHz

KATHREIN

The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a combiner component.

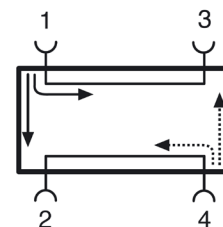
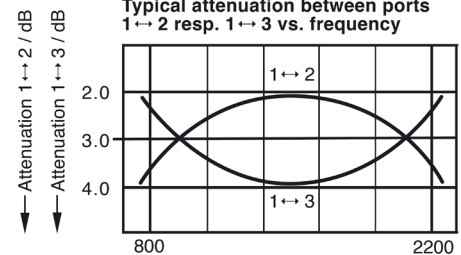
Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned in accordance with the mismatch of ports 2 and 3. Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 or 1 and 4.



Diagram I

Typical attenuation between ports 1 ↔ 2 resp. 1 ↔ 3 vs. frequency

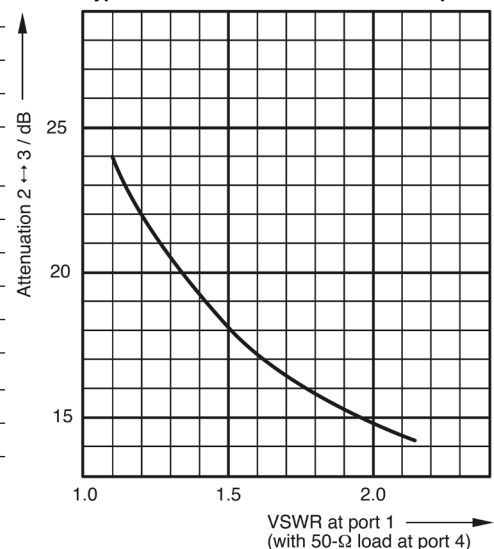


Technical Data

Type No.	793554
Frequency range	800 - 2200 MHz
Attenuation 1 ↔ 2 / ↔ 3	3 ±1.2 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 20 dB
VSWR	< 1.2
Impedance	50 Ω
Input power	< 300 W total power at two inputs, with max. 200 W at one input
Intermodulation products	<-160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor and outdoor (IP66)
Mounting	With 2 screws (max. 5.5 mm diameter)
Weight	1.3 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	104.9 x 50.2 x 93.9 mm (including connectors)

Diagram II

Typical attenuation 2 ↔ 3 vs. VSWR at port 1

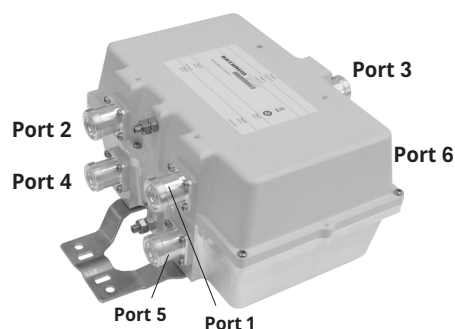


For more information about accessories please refer to page 390

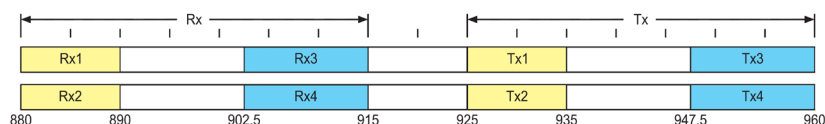
880 – 890 / 925 – 935 MHz

902.5 – 915 / 947.5 – 960 MHz

- Enables antenna and feeder sharing for two base stations in the same frequency band
- Suitable for two operators with frequency allocations within the same frequency band
- Very low Tx/Rx insertion loss compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG By-pass for DTMA supply



Tuning Diagram



Technical Data

Type No.	78210936
Pass band BTS 1 (GSM900 / Operator 1) BTS 2 (GSM900 / Operator 2)	Rx1/Rx2 = 880 - 890 MHz, Tx1/Tx2 = 925 - 935 MHz Rx3/Rx4 = 902.5 - 915 MHz, Tx3/Tx4 = 947.5 - 960 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.5 dB, typically 0.3 dB (880 - 890 MHz) / < 0.7 dB, typically 0.4 dB (925 - 935 MHz) < 0.7 dB, typically 0.5 dB (902.5 - 915 MHz) / < 0.5 dB, typically 0.3 dB (947.5 - 960 MHz)
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (880 - 890 / 902.5 - 915 / 925 - 935 / 947.5 - 960 MHz)
VSWR	< 1.2 (pass bands)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	6.9 kg
Dimensions (w x h x d)	275 x 176 x 140 mm (without connectors, without mounting brackets)

880 – 890 / 925 – 935 MHz

902.5 – 915 / 947.5 – 960 MHz

Typical Attenuation Curves

BTS 1 (GSM 900)

Diagram I (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)

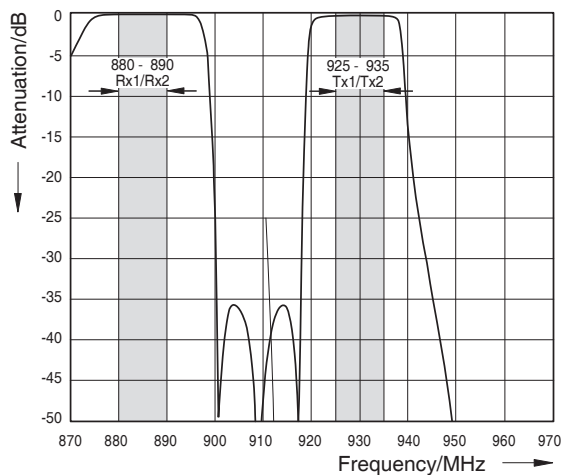
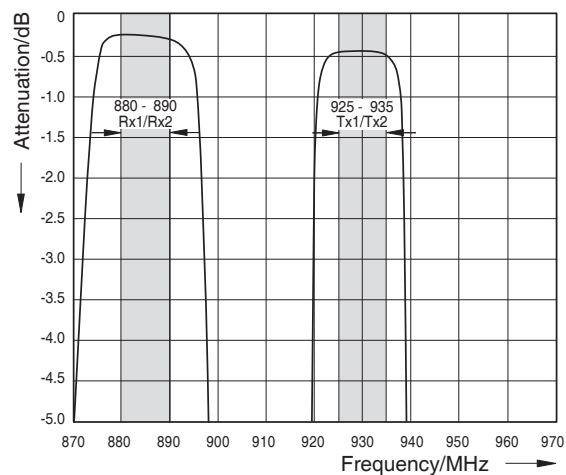


Diagram II (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)



BTS 2 (GSM 900)

Diagram III (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)

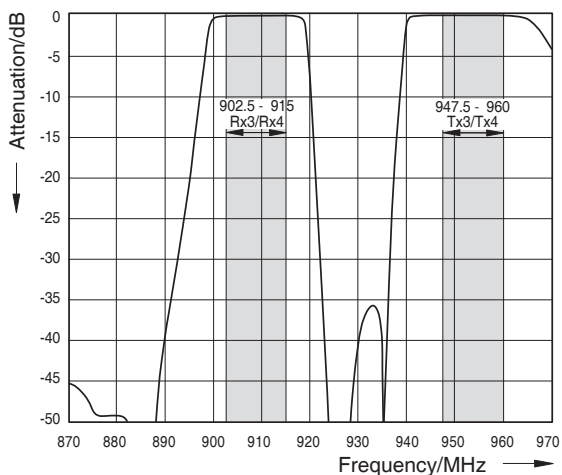
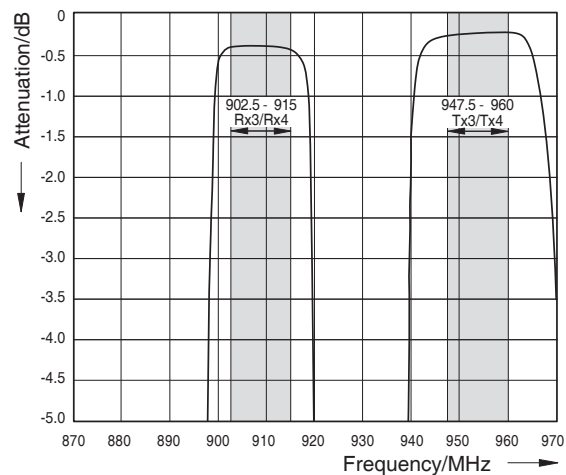
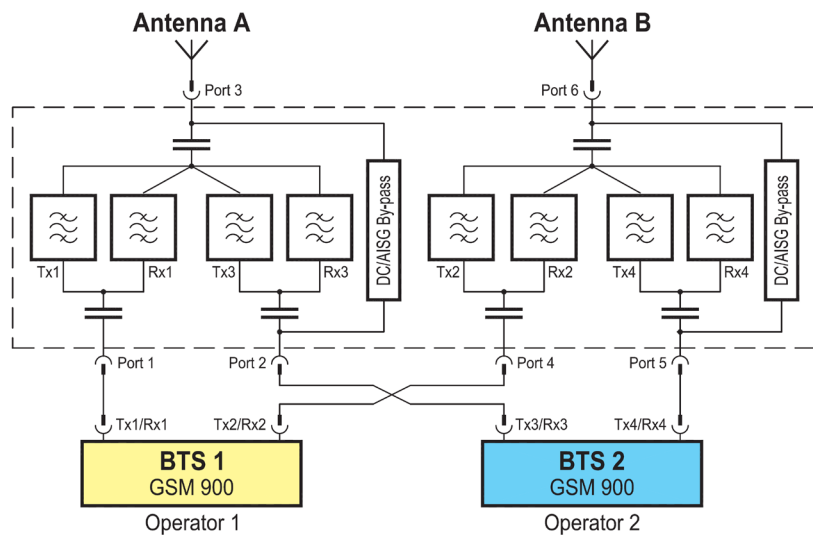


Diagram IV (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)



Block Diagram



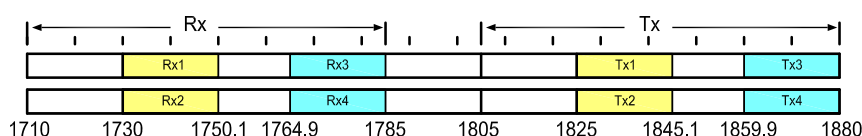
1730 – 1750 / 1825 – 1845 MHz

1765 – 1785 / 1860 – 1880 MHz

- Enables antenna and feeder sharing for two base stations in the same frequency band
- Suitable for two operators with frequency allocations within the same frequency band
- Very low Tx/Rx insertion loss compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



Tuning Diagram



Technical Data

Type No.	78211235
Pass band BTS 1 (LTE/GSM1800 / Operator 1) BTS 2 (LTE/GSM1800 / Operator 2)	Rx1/Rx2 = 1730 – 1750 MHz, Tx1/Tx2 = 1825 – 1845 MHz Rx3/Rx4 = 1765 – 1785 MHz, Tx3/Tx4 = 1860 – 1880 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.5 dB (1730 – 1750 MHz) / < 0.5 dB (1825 – 1845 MHz) < 0.5 dB (1765 – 1785 MHz) / < 0.5 dB (1860 – 1880 MHz)
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (1730 – 1750 / 1765 – 1785 / 1825 – 1845 / 1860 – 1880 MHz)
VSWR	< 1.25 (pass bands)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency (switchable) Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Weight	5.5 kg
Dimensions (w x h x d)	250 x 193 x 101 mm (without connectors, without mounting brackets)
Packing size (w x h x d)	367 x 307 x 185 mm

1730 - 1750 / 1825 - 1845 MHz

1765 - 1785 / 1860 - 1880 MHz

Typical Attenuation Curves

BTS 1 (LTE/GSM 1800)

Diagram 1

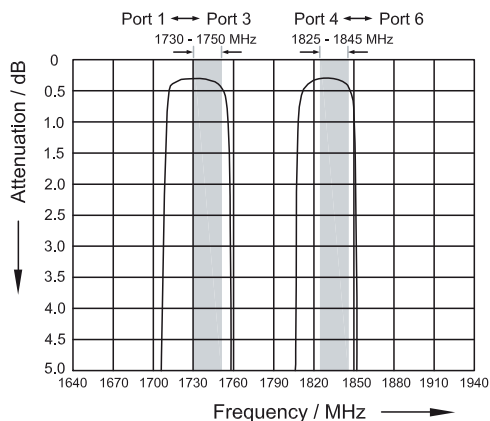
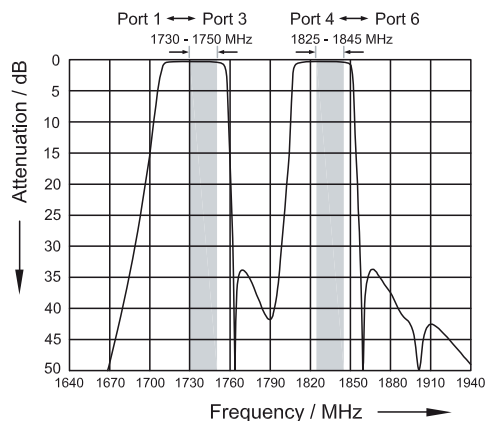


Diagram 2



BTS 2 (LTE/GSM 1800)

Diagram 3

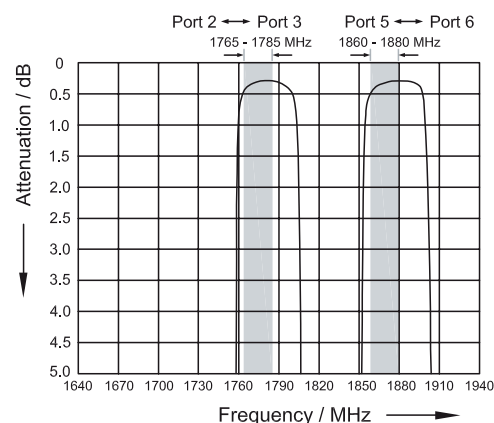
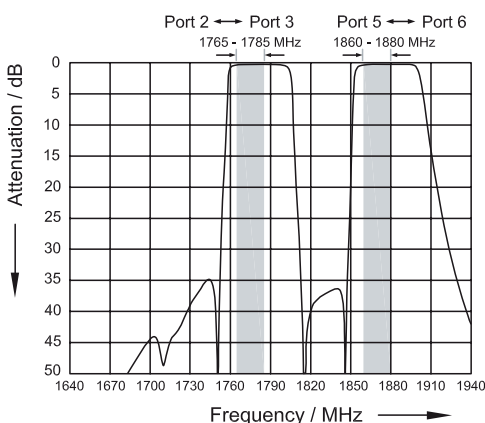
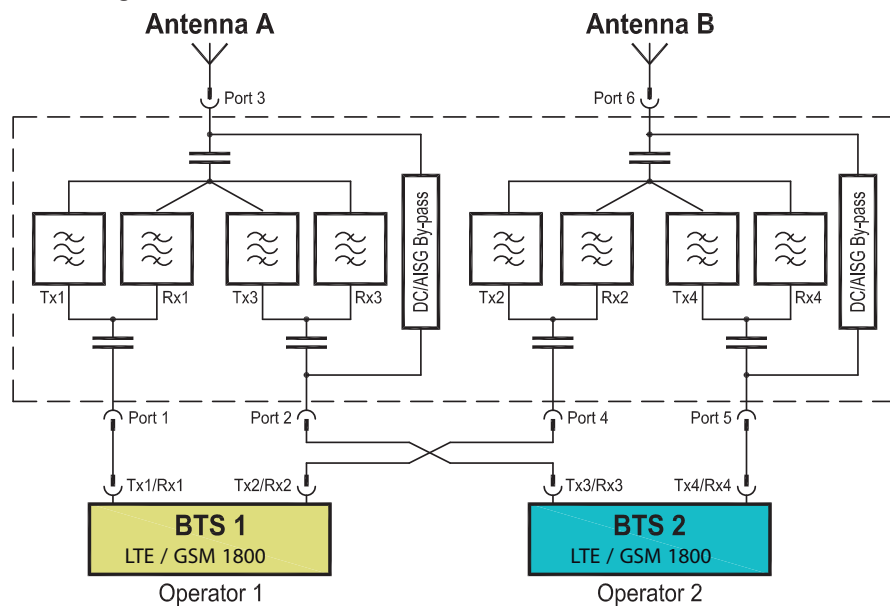


Diagram 4



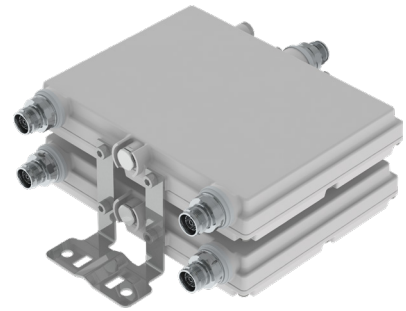
Block Diagram



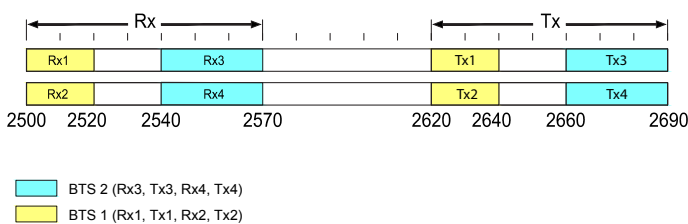
2500 – 2520 / 2620 – 2640 MHz

2540 – 2570 / 2660 – 2690 MHz

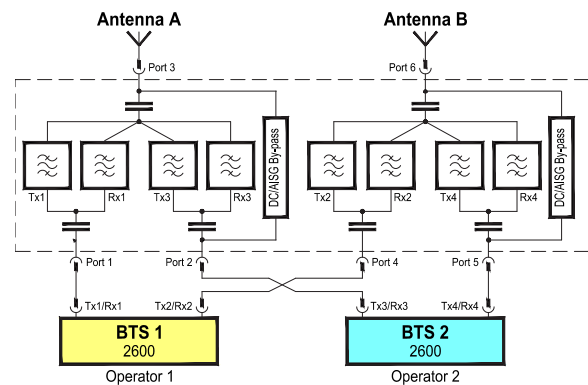
- Enables antenna and feeder sharing for two base stations in the same frequency band
- Low insertion loss over complete LTE 2600 bandwidth compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



Tuning Diagram



Block Diagram



Technical Data

Type No.		78211228V03
Pass band BTS 1 (LTE 2600) BTS 2 (LTE 2600)	MHz MHz	Rx = 2500 – 2520 / Tx = 2620 – 2640 Rx = 2540 – 2570 / Tx = 2660 – 2690
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	dB dB	< 0.9 < 0.9
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	dB	> 35
VSWR		< 1.25 (pass bands)
Impedance	Ω	50
Input power Tx1 / Tx2 / Tx3 / Tx4	W	< 100 / < 100 / < 100 / < 100
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +60 -40 ... +140
Connectors		4.3-10 female
Application		Indoor or outdoor (IP66)
DC/AISG transparency (factory switchable) Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	mA	Stop By-pass (max. 2500)
Lightning protection	kA	3, 10/350 μs pulse
Mounting	mm in	Wall mounting: With 4 screws (diameter max. 8 0.315) / Mast mounting: With additional clamp set
Weight	kg lb	7 15.5
Dimensions (w x h x d)	mm in	225 x 176 x 88 8.9 x 6.9 x 3.5 (without connectors, without mounting brackets)
Packing size	mm in	345 x 305 x 165 13.9 x 12 x 6.5

 **System Components
and Accessories**

Smart Bias Tees

DC-Stops

Attenuators

50 Ω Loads

Clamp Sets

Summary of System Components and Accessories

KATHREIN

Description	Type No.	Frequency range	Connector Type	Max. input power	Page
DC Stop	78210850V01	250 – 2700 MHz	7-16	750 W	392
DC Stop	78211000	250 – 3800 MHz	4.3-10	500 / 300 W	393
Smart Bias Tee	78211055	617 – 2700 MHz	7-16	750 W	394, 395
Smart Bias Tee	78211056	617 – 2700 MHz	7-16	750 W	394, 395
Smart Bias Tee	78211592	617 – 2700 MHz	4.3-10	500 W	396, 397
Smart Bias Tee	78211593	617 – 2700 MHz	4.3-10	500 W	396, 397
50 Ω Load	78410367	0 – 4000 MHz	7-16 male	1.5 W	398
50 Ω Load	78210484	0 – 6000 MHz	4.3-10 male	2 W	398
50 Ω Load	78211760	690 – 5800 MHz	4.3-10 male	25 W	399
50 Ω Load	78211761	690 – 5800 MHz	4.3-10 female	25 W	399
50 Ω Load	78211762	690 – 5800 MHz	4.3-10 male	50 W	399
50 Ω Load	78211763	690 – 5800 MHz	4.3-10 female	50 W	399
50 Ω Load	78210473	380 – 5800 MHz	4.3-10 female	80 W	400
50 Ω Load	78210475	380 – 5800 MHz	7-16 female	150 W	401
Attenuator 3 dB	78210891	0 – 4000 MHz	4.3-10	15 W	402
Attenuator 6 dB	78210892	0 – 4000 MHz	4.3-10	15 W	402
Attenuator 10 dB	78210893	0 – 4000 MHz	4.3-10	15 W	402
Attenuator 20 dB	78210894	0 – 4000 MHz	4.3-10	15 W	402
Clamp Set	734360				403
Clamp Set	734361				403
Clamp Set	734362				403
Clamp Set	734363				403
Clamp Set	734364				403
Clamp Set	734365				403
Clamp Set	731651				403
Clamp Set	738546				403
Clamp Set	85010002				403
Clamp Set	85010003				403

Type No.	RF-Connector																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</
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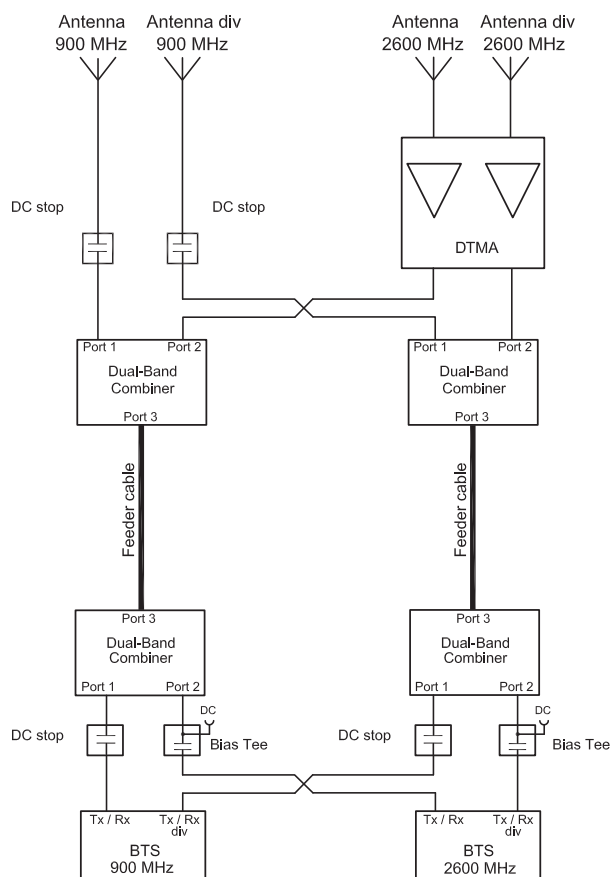
DC Stop

250 – 2700 MHz

KATHREIN

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Isolation of AISG signals
- Suitable for indoor or outdoor applications



Technical Data

Type No.		78210850V01
Frequency range	MHz	250 - 2700
Insertion loss Port 1 ↔ Port 2	dB	< 0.1 (250 - 2700 MHz)
Isolation Port 1 ↔ Port 2	dB	DC Stop > 23 (AISG 2.176 MHz)
VSWR		< 1.5 (250 - 380 MHz) < 1.25 (380 - 690 MHz) < 1.1 (690 - 2700 MHz)
Impedance	Ω	50
Input power	W	< 750 (250 - 2700 MHz)
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +70 -40 ... +158
Connectors Port 1 Port 2		7-16 male 7-16 female
Application		Indoor or outdoor (IP 67)
Weight	kg lb	0.3 0.7
Dimensions (w x h x d)	mm in	70 x 40 x 32 2.8 x 1.6 x 1.3 (including connectors and earthing screw of 6 mm diameter)

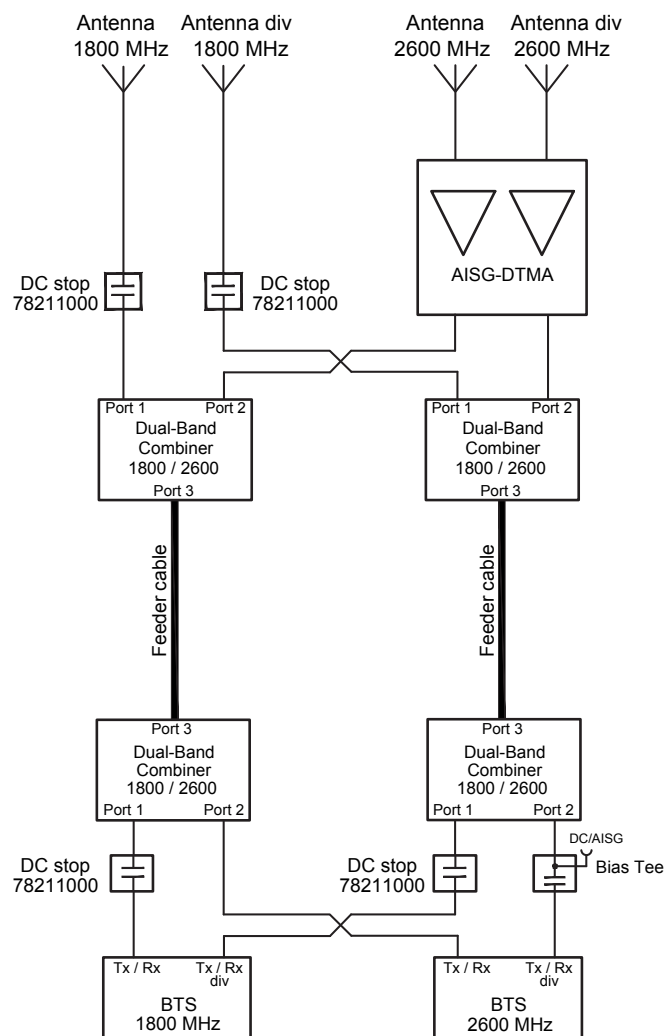


DC Stop 250 – 3800 MHz

KATHREIN

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Isolation of AISG signals
- Suitable for indoor or outdoor applications



Technical Data

Type No.		78211000
Frequency range	MHz	250 - 3800
Insertion loss Port 1 ↔ Port 2	dB	< 0.1
Isolation Port 1 ↔ Port 2	dB	DC Stop > 23 (AISG 2.176 MHz)
VSWR		< 1.5 (250 - 380 MHz) < 1.25 (380 - 575 MHz) < 1.1 (575 - 3700 MHz) < 1.2 (3700 - 3800 MHz)
Impedance	Ω	50
Input power	W	< 500 (250 - 2700 MHz) < 300 (2700 - 3800 MHz)
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +70 -40 ... +158
Connectors Port 1 Port 2		4.3-10 male 4.3-10 female
Application		Indoor or outdoor (IP 67)
Weight	kg lb	0.2 0.44
Dimensions (w x Ø)	mm in	79 x 29 3.1 x 1.1 (including connectors)



Smart Bias Tee

617 – 2700 MHz

KATHREIN

7-16 connectors

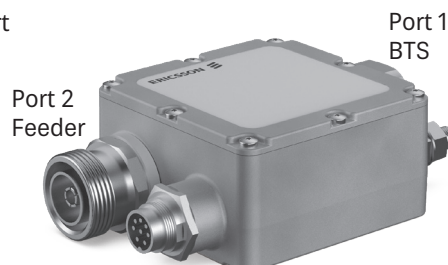
The **Smart Bias Tee** combines the performance of a standard Bias Tee with the function of an additional modem (AISG standard) in order to provide either DC voltage as well as remote control signals via an RF feeder cable to a TMA or RCU.

The **Smart Bias Tee** provides low RF signal insertion loss from port 1 to port 2 and vice versa. The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.

- **78211055:**
+8 ... 32 VDC (DC on pin6) version for **use near the BTS**, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **78211056:**
+8 ... 32 VDC (DC on pin6) version for **use near the antenna**, in order to control an RCU (only required if **no TMA** is in use)



78211055



Port 1
BTS

78211056



Port 1
Antenna

Abbreviations:

RCU	=	Remote Control Unit for remote electrical control of antenna tilt
BTS	=	Base Transceiver Station
TMA	=	Tower Mounted Amplifier
AISG	=	Antenna Interface Standards Group
Port 1	=	Port for BTS or for Antenna
Port 2	=	Port for Feeder Cable
Port DC/RCU	=	Port for DC voltage and Remote Control Unit signals

Technical Data

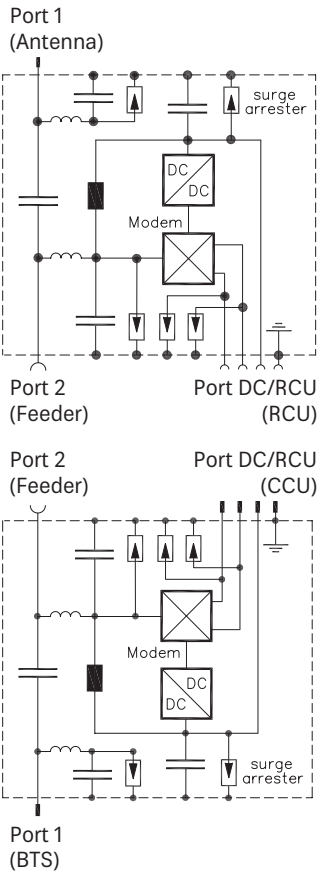
Type No.		78211055 +8 ... +32 VDC / BTS	78211056 +8 ... +32 VDC / Antenna
Port 1: 7-16 male		BTS	Antenna
Port 2: 7-16 female		Feeder	Feeder
Frequency range	MHz	617 – 2700	
Insertion loss Port 1 ↔ Port 2	dB	< 0.1 (617 – 2700 MHz)	
Isolation for DC and RCU signals Port 1 ↔ Port 2	dB	> 70	
Port 1 ↔ Port DC/RCU	dB	> 70	
Port 2 ↔ Port DC/RCU	dB	> 0	
VSWR		< 1.1 (617 – 2700 MHz)	
Impedance	Ω	50	
Input power Port 1 or Port 2 Port DC/RCU	W	< 750 (617 – 2700 MHz) < 2.5 A / +8 ... +32 VDC	
Power consumption	W	Typically 0.6 W	
Lightning protection	kA	3, 10/350 μs pulse	
Intermodulation products	dBc	< – 160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–40 ... +60 –40 ... +140	
Modem carrier frequency	MHz	2.176	
Application		Indoor or outdoor (IP 66)	
Weight	kg lb	0.8 1.8	
Dimensions (w x h x d)	mm in	81 x 81 x 46 3.2 x 3.2 x 1.8 (without connectors)	
Packing size (w x h x d)	mm in	167 x 102 x 86 6.6 x 4.0 x 3.4	

Smart Bias Tee

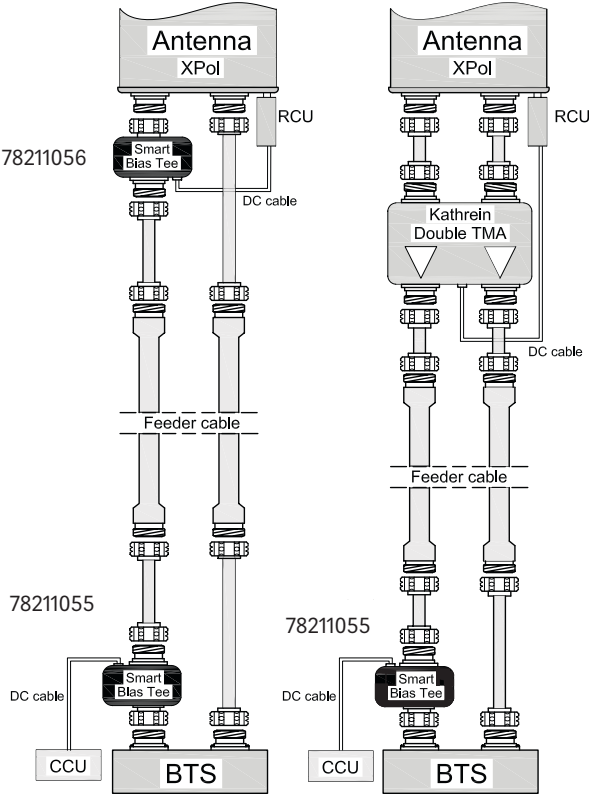
617 – 2700 MHz

KATHREIN

Block diagrams:



Application Examples:



Pin connections:

	78211055	78211056
8-pin connector (IEC 60130-9)	male	female
Pin 1	Not connected	Not connected
Pin 2	Not connected	Not connected
Pin 3	RS485-B	RS485-B
Pin 4	Not connected	Not connected
Pin 5	RS485-A	RS485-A
Pin 6	+8...+32 VDC in	+8...+32 VDC out
Pin 7	DC return (grounded)	DC return (grounded)
Pin 8	Not connected	Not connected

Smart Bias Tee

617 – 2700 MHz

KATHREIN

4.3-10 connectors

The **Smart Bias Tee** combines the performance of a standard Bias Tee with the function of an additional modem (AISG standard) in order to provide either DC voltage as well as remote control signals via an RF feeder cable to a TMA or RCU.

The **Smart Bias Tee** provides low RF signal insertion loss from port 1 to port 2 and vice versa. The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.

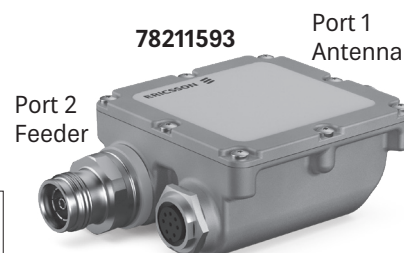
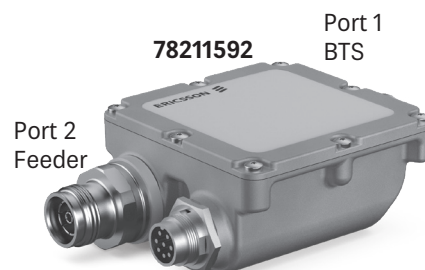
- **78211592:**
+8 ... 32 VDC (DC on pin6) version for **use near the BTS**, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **78211593:**
+8 ... 32 VDC (DC on pin6) version for **use near the antenna**, in order to control an RCU (only required if **no TMA** is in use)

Abbreviations:

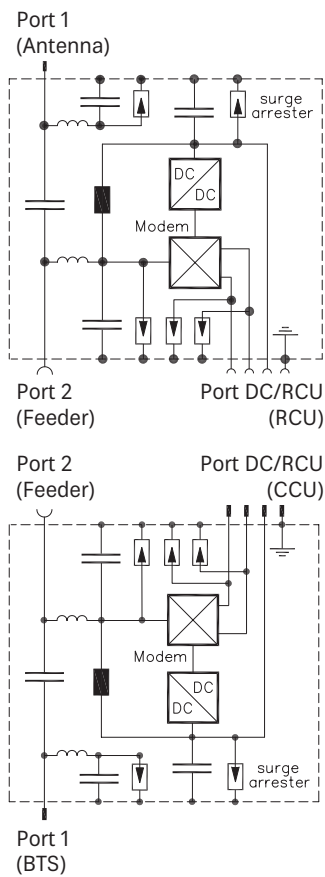
RCU	=	Remote Control Unit for remote electrical control of antenna tilt
BTS	=	Base Transceiver Station
TMA	=	Tower Mounted Amplifier
AISG	=	Antenna Interface Standards Group
Port 1	=	Port for BTS or for Antenna
Port 2	=	Port for Feeder Cable
Port DC/ RCU	=	Port for DC voltage and Remote Control Unit signals

Technical Data

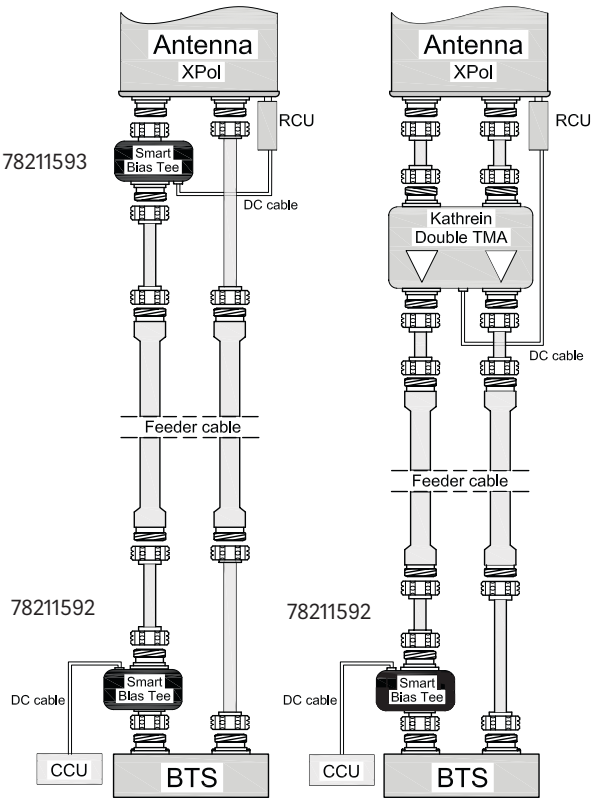
Type No.		78211592 +8 ... +32 VDC / BTS	78211593 +8 ... +32 VDC / Antenna
Port 1: 4.3-10 male		BTS	Antenna
Port 2: 4.3-10 female		Feeder	Feeder
Frequency range	MHz	617 – 2700	
Insertion loss Port 1 ↔ Port 2	dB	< 0.1 (617 – 2700 MHz)	
Isolation for DC and RCU signals Port 1 ↔ Port 2	dB	> 70 (DC), > 30 dB 2.176 MHz (AISG signal)	
Port 1 ↔ Port DC/RCU	dB	> 70	
Port 2 ↔ Port DC/RCU	dB	> 0	
VSWR		< 1.2 (617 – 690 MHz), < 1.1 (690 – 2700 MHz)	
Impedance	Ω	50	
Input power Port 1 or Port 2	W	< 500 (617 – 2700 MHz)	
Port DC/RCU		< 2.5 A / +8 ... +32 VDC	
Power consumption	W	Typically 0.6	
Lightning protection	kA	3, 10/350 μs pulse	
Intermodulation products	dBc	< – 160 (3 rd order; with 2 x 20 W)	
Temperature range	°C °F	–40 ... +60 –40 ... +140	
Modem carrier frequency	MHz	2.176	
Application		Indoor or outdoor (IP 66)	
Weight	kg lb	0.4 1.0	
Dimensions (w x h x d)	mm in	81 x 81 x 42 3.2 x 3.2 x 1.6	
Packing size (w x h x d)	mm in	167 x 102 x 86 6.6 x 4.0 x 3.4	



Block diagrams:



Application Examples:



Pin connections:

	78211592	78211593
8-pin connector (IEC 60130-9)	male	female
Pin 1	Not connected	Not connected
Pin 2	Not connected	Not connected
Pin 3	RS485-B	RS485-B
Pin 4	Not connected	Not connected
Pin 5	RS485-A	RS485-A
Pin 6	+8...+32 VDC in	+8...+32 VDC out
Pin 7	DC return (grounded)	DC return (grounded)
Pin 8	Not connected	Not connected

50-Ohm Load

0 ... 6000 MHz

1.5 / 2.0 W

KATHREIN

- Standard 50-Ohm terminations for small and medium power
- Suitable for terminating open ports on RF equipment for indoor and/or outdoor applications

1.5 Watt *

Type No.		78410367
Connector		7-16 male
Frequency range	MHz	0 – 4000
VSWR	0 - 2000 MHz	< 1.10
	2000 - 4000 MHz	< 1.30
Application		Indoor or outdoor (IP65)
Weight	g lb	120 0.26
Dimensions	mm in	40 / 32 diameter 1.6 / 1.3 diameter
Packing size	mm in	Approx. 50 x 90 x 100 2.0 x 3.5 x 3.9



78410367

2 Watt *

Type No.		78210484
Connector		4.3-10 male
Frequency range		0 – 6000 MHz
VSWR	0 – 1000 MHz	< 1.08
	1000 – 2500 MHz	< 1.13
	2500 – 6000 MHz	< 1.25
Application		Indoor or outdoor (IP 67)
Weight	g lb	70 0.15
Packing size	mm in	90 x 60 x 25 3.5 x 2.4 x 1.0
Dimensions	mm in	27.5 / 26.7 diameter 1.08 / 1.05 diameter



78210484

* Rated power at 40 °C ambient temperature. The max. power rating increases or decreases with falling or rising ambient temperature.

50-Ohm Load

690 – 5800 MHz

25 W / 50 W

KATHREIN

- Designed as 50-Ohm termination wherever improved intermodulation performance compared to standard loads is required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Built-in DC stop



78211760, 78211761



78211762, 78211763

Type No.		78211760	78211761	78211762	78211763
Frequency range	MHz	690 – 5800 MHz			
VSWR		< 1.2			
Impedance	Ω	50			
Input power	W	25	25	50	50
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)			
Temperature range	°C °F	-40 ... +55 -40 ... +131			
Connector		4.3-10 male	4.3-10 female	4.3-10 male	4.3-10 female
Application		Indoor or outdoor (IP 66)			
DC/AISG transparency		Built-in DC stop AISG: Attenuation up to 3 dB when used in a network			
Mounting		Wall mounting: With 2 screws (max. 8.0 mm diameter)			
Weight	kg lb	1.0 2.2		1.2 2.6	
Dimensions	mm in	Ø 74 x 109 2.9 x 4.3		Ø 96 x 122 3.8 x 4.8	

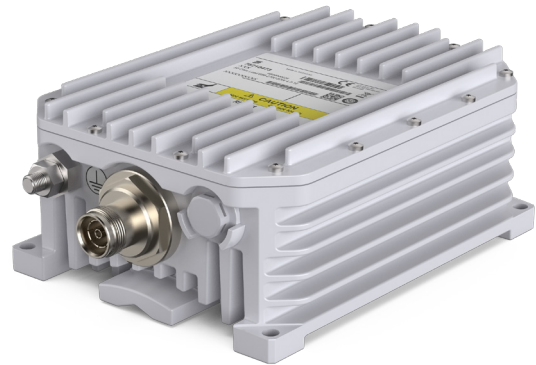
50-Ohm Load

380 – 3800 MHz

80 W

KATHREIN

- Designed as 50-Ohm termination wherever improved intermodulation performance compared to standard loads is required
- Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Built-in DC stop



Technical Data

Type No.		78210473
Frequency range	MHz	380 – 3800
VSWR		< 1.2 (380 – 450 MHz) < 1.12 (450 – 3200 MHz) < 1.29 (3200 – 3800 MHz)
Impedance	Ω	50
Input power	W	< 80 (see table)
Intermodulation products	dBc	< -160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	-40 ... +55 -40 ... +131
Connector		4.3-10 female
Application		Indoor or outdoor (IP 66)
DC/AISG transparency		Built-in DC stop AISG: Attenuation up to 3 dB when used in a network
Mounting		Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional Clamp set (see data sheet)
Weight	kg lb	3.1 6.8
Dimensions (w x h x d)	mm in	144 x 216 x 79 5.7 x 8.5 x 3.1 (including connector)
Packing size	mm in	377 x 232 x 189 14.8 x 9.1 x 7.4

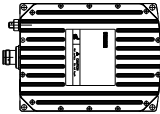
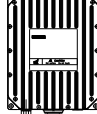
Note:

The RF port connector should always point downwards if mounted outdoors.

The input power rating of 80 W is specified at an ambient temperature of +40 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

The max. power rating increases or decreases with falling or rising ambient temperature and depending on horizontal or vertical mounting in accordance with the following table:

Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	50 W	60 W
+40 °C	70 W	80 W
+25 °C	90 W	100 W

For more information about accessories please refer to page 390

50-Ohm Load

380 – 5800 MHz

150 W

KATHREIN

- Designed as 50-Ohm termination wherever improved intermodulation performance compared to standard loads is required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Built-in DC stop



Technical Data

Type No.		78210475
Frequency range	MHz	380 – 5800
VSWR		< 1.2 (380 – 450 MHz) < 1.12 (450 – 5000 MHz) < 1.25 (5000 – 5800 MHz)
Impedance	Ω	50
Input power	W	< 150
Intermodulation products	dBc	< –160 (3 rd order; with 2 x 20 W)
Temperature range	°C °F	–40 ... +55 –40 ... +131
Connectors		7-16 female (long neck)
Application		Indoor or outdoor (IP 66)
DC/AISG transparency		Built-in DC stop AISG: Attenuation up to 3 dB when used in a network
Mounting		Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set (see page 2)
Weight	kg lb	6 13.2
Dimensions (w x h x d)	mm in	235 x 235 x 107 9.3 x 9.3 x 4.2 (without connectors, without mounting brackets)
Packing size (w x h x d)	mm in	405 x 305 x 195 15.9 x 12.0 x 7.7

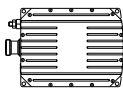
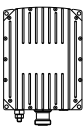
Note:

The RF port connector should always point downwards if mounted outdoors.

The input power rating of 150 W is specified at an ambient temperature of +40 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

The max. power rating increases or decreases with falling or rising ambient temperature and depending on horizontal or vertical mounting in accordance with the following table:

Max. input power

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	80 W	100 W
+40 °C	110 W	150 W
+25 °C	150 W	180 W

For more information about accessories please refer to page 390

Attenuator

15 W

0 – 4000 MHz

Air-Cooled attenuator for medium power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metall housing, very stable and RF proof
- Free choise of mounting position due to convection-cooling



Technical Data

Type No.		78210891	78210892	78210893	78210894
Attenuation	dB	3 ±0.3	6 ±0.3	10 ±0.3	20 ±0.3
Max. power	W	15	15	15	15
Frequency range	MHz	0 – 4000			
VSWR		< 1.15			
Impdance	Ω	50			
Connectors		4.3 – 10			
IP rating		IP65			
Application		Outdoor			
Weight	g lb	100 0.22			
Dimensions (L x diameter)	mm in	61 x 40 2.4 x 1.6			

Type No.	Clamp set suitable for mast diameter of
734360	34 - 60 mm
734361	60 - 80 mm
734362	80 - 100 mm
734363	100 - 120 mm
734364	120 - 140 mm
734365	45 - 125 mm



Clamps for ALDs with weight ≥ 10 kg

Type No.	731651	738546	85010002	85010003
Suitable for mast diameter	28–60 mm	42–115 mm	110–220 mm	210–380 mm
Antenna – mast distance F	25–28 mm	20–26 mm	47–55 mm	48–68 mm
Number of pieces	1 clamp	1 clamp	1 clamp	1 clamp
Material – Clamp	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Screws	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Stainless steel/ Stainless steel
– Nuts	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight	0.8 kg	1.1 kg	2.7 kg	4.8 kg

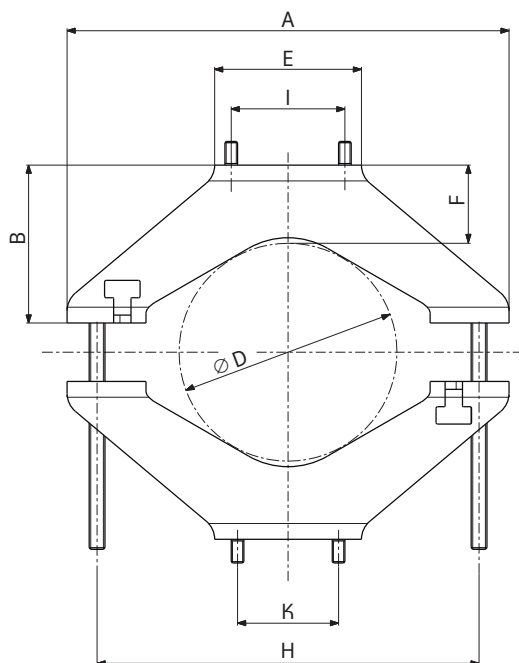
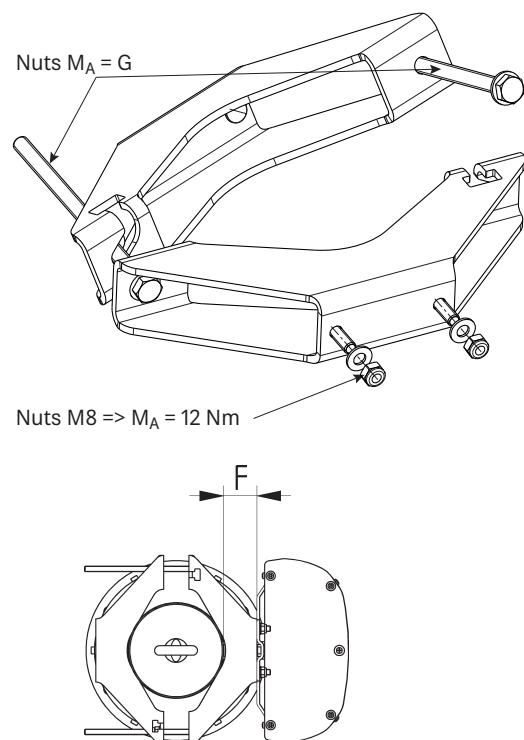


Figure similar to 85010002



Type No.	A	B	C	D	E	F	G	H	I	K
731651	116 mm	40 mm	40 mm	28–60 mm	93 mm	25–28 mm	20 Nm	84 mm	–	64 mm
738546	152 mm	40 mm	40 mm	42–115 mm	93 mm	20–26 mm	25 Nm	125 mm	72 mm	64 mm
85010002	280 mm	100 mm	50 mm	110–220 mm	93 mm	47–55 mm	35 Nm	240 mm	72 mm	64 mm
85010003	442 mm	150 mm	50 mm	210–380 mm	150 mm	48–68 mm	35 Nm	392 mm	72 mm	64 mm

DTMAs:

Description	Type No.	Frequency range	Connector type (female)	Gain	Page
DTMA-700-12-AISG-CWA	78211275V43	UL: 703 - 748 / DL: 758 - 803 MHz	4.3-10	12 dB	410
DTMA-800-12-AISG	78210430V43	UL: 832 - 862 / DL: 791 - 821 MHz	4.3-10	12 dB	411
DTMA-800-900-12-AISG	78210512V43 78210512V44 78210512V46	UL: 832 - 862 / DL: 791 - 821 MHz UL: 880 - 915 / DL: 925 - 960 MHz	4.3-10	12 dB	412, 413
DTMA-800-900-12-AISG-D	78210517V43 78210517V44 78210517V46	UL: 832 - 862 / DL: 791 - 821 MHz UL: 880 - 915 / DL: 925 - 960 MHz	4.3-10	12 dB	414, 415
DTMA-1800-12-AISG-CWA	78210583V43	UL: 1710 - 1785 / DL: 1805 - 1880 MHz	4.3-10	12 dB	416
DTMA-1800-UMTS-12-AISG-D	78210990V43 78210990V44 78210990V46	UL: 1710 - 1785 / DL: 1805 - 1880 MHz UL: 1920 - 1980 / DL: 2110 - 2170 MHz	4.3-10	12 dB	417, 418
DTMA-1800-UMTS-BYPASS1500-12-AISG	78211107 78211107V02 78211107V03	UL: 1710 - 1785 / DL: 1805 - 1880 MHz UL: 1920 - 1980 / DL: 2110 - 2170 MHz	4.3-10	12 dB	419, 420
DTMA-2600-12-AISG	78211330V43	UL: 2500 - 2570 / DL: 2620 - 2690 MHz	4.3-10	12 dB	421
DTMA-1800-2100-2600-BYP1500-12-AISG	78210587 78210587V02	UL: 1710 - 1785 / DL: 1805 - 1880 MHz UL: 1920 - 1980 / DL: 2110 - 2170 MHz UL: 2500 - 2570 / DL: 2620 - 2690 MHz	4.3-10	12 dB	422, 423
DTMA-1800-2100-2600-BYP1500-12-AISG-T	78210588 78210588V02 78210588V03	UL: 1710 - 1785 / DL: 1805 - 1880 MHz UL: 1920 - 1980 / DL: 2110 - 2170 MHz UL: 2500 - 2570 / DL: 2620 - 2690 MHz	4.3-10	12 dB	424, 425
DTMA-2100-2600-BYP1500-12-AISG	78211910V02	UL: 1920 - 1980 / DL: 2110 - 2170 MHz UL: 2500 - 2570 / DL: 2620 - 2690 MHz	4.3-10	12 dB	426, 427
DTMA-1800-2600-BYP1500-12-AISG	78211912V02	UL: 1710 - 1785 / DL: 1805 - 1880 MHz UL: 2500 - 2570 / DL: 2620 - 2690 MHz	4.3-10	12 dB	428, 429

New Product UL = Uplink / DL = Downlink

Summary of DTMA Types

Frequency Combinations and Alarming overview

KATHREIN

Frequency Band		B28 (700)			B20 (800)			B8 (900)			B3 (1800)			B1 (2100)			B7 (2600)		
Type No.	Connector Type	Antenna Ports			Antenna Ports			Antenna Ports			Antenna Ports			Antenna Ports			Antenna Ports		
		2	4	6	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6
78211275V43	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210430V43	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210512V43/V44/V46	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210517V43/V44/V46	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210583V43	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210990V43/V44/V46	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78211107/V02/V03	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78211330V43	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210587/V02	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78210588/V02/V03	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78211910V02	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
78211912V02	4.3-10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

1) RF-Bypass 1427-1518 MHz (incl. "L-Band")

2) AISG2.0 (default) & AISG1.1 (optional)

3) Low CWA (Current Window Alarm) = 170 - 200mA

DTMA Modes

The communication between the base station (BTS) and the DTMA can vary depending on the BTS. To meet customers' needs, Kathrein Mobile Communication has incorporated different communication modes in the DTMA. **These modes are only of relevance if multi-band DTMA are used (i.e. more than one band is amplified within one DTMA).**

The correct mode of the DTMA needs to be selected based on the according BTS addressing behavior.

The modes can also be switched by inserting a vendor specific switching command into the AISG additional data field "Installation Date" via a software download file provided by Kathrein Mobile Communication. For further information, please contact your local Kathrein Mobile Communication support.

Existing Modes:

1. Single Band Mode

- In case the DTMA functionality is controlled by the BTS separately (i.e. each BTS controls one band)
- The DTMA behaves as two single TMAs, each BTS has the control over one TMA (2 AISG signal and DC paths)
- There is one address per band

2. Wide Band Mode

- In case one BTS controls the overall DTMA functionality
- There is one address for the complete DTMA
- In case a DTMA has 2 RET Ports, the information in both ports is redundant, meaning during the DTMA commissioning the installer can connect the RET cable on any of the ports.

3. Wide Band Mode - single ID

- In case one BTS controls the overall DTMA functionality
- There is one address per band
- The TMA has one single ID, independent which BTS-port is communicating; the lowest and highest frequency band of the TMA are chosen to create this ID
- In case a DTMA has 2 RET ports, the information on both ports is redundant, meaning during the DTMA commissioning the installer can connect the RET cable on any of the ports

Addressing of a Dual Band DTMA, example 78210517V4x (Dual Band DTMA for 800 + 900 MHz)

1. Single Band Mode (78210517V43)

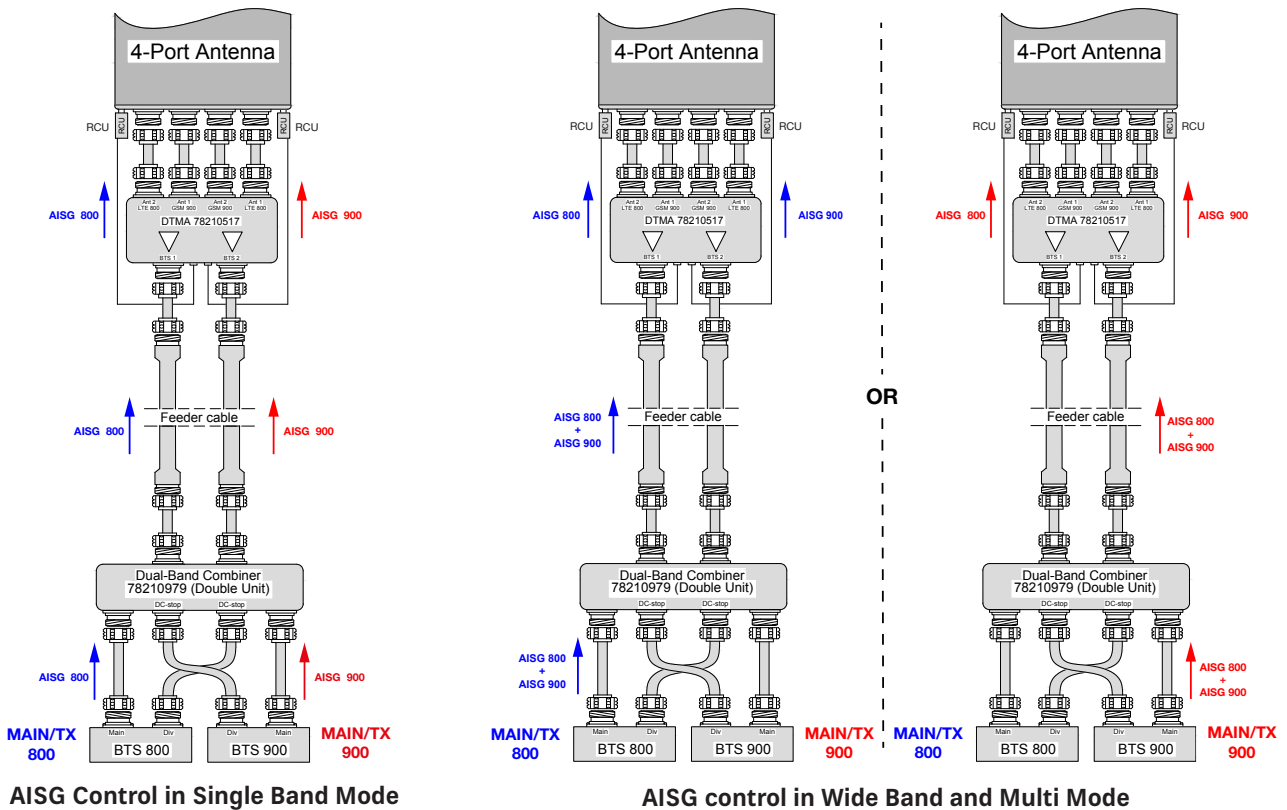
	BTS 1 (800)	BTS 2 (900)
AISG control	x	
Address	Serial Number + "_0.8"	Serial Number + "_0.9"

2. Wide Band Mode (78210517V44)

	BTS 1 (800)	BTS 2 (900)
AISG control	x	
Address	Serial Number + "_WBM_1"	
OR		
AISG control		x
Address		Serial Number + "_WBM_2"

3. Wide Band Mode - single ID (78210517V46)

	BTS 1 (800)	BTS 2 (900)
AISG control	x	
Address	Serial Number + "_0809"	
OR		
AISG control		x
Address		Serial Number + "_0809"



Addressing of a Triple Band DTMA, example 78210588 (Triple Band DTMA for 1800 + 2100 + 2600 MHz)

For one TMA only two addresses are available, therefore two frequency bands (1800 + 2100) are condensed.

1. Single Band Mode (78210588)

	BTS 1 (1800/2100)	BTS 2 (2600)
AISG control	X	
Address	Serial Number + "_1821"	Serial Number + "_26"

2. Wide Band Mode (78210588V02)

	BTS 1 (1800/2100)	BTS 2 (2600)
AISG control	X	
Address	Serial Number + "_WBM_1"	
OR		
AISG control		X
Address		Serial Number + "_WBM_2"

3. Wide Band Mode - single ID (78210588V03)

	BTS 1 (1800/2100)	BTS 2 (2600)
AISG control	X	
Address	Serial Number + "_1826"	
OR		
AISG control		X
Address		Serial Number + "_1826"

DTMA-700-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- AISG setting switchable



AISG	=	Antenna Interface Standards Group
RET	=	Remote Electrical Tilt
CWA	=	Current Window Alarm

Technical Data

Type No.		78211275V43 DTMA-700-12-AISG-CWA	
Tx Characteristics			
Frequency range	MHz	758 – 803	
Insertion loss	dB	Typically 0.45	
Input power (per input)	W	< 100 (+50 dBm)	
Intermodulation products in Rx band	dBm	< -117 (2 Tx carriers at +43 dBm)	
Return loss	dB	> 18	
Rx Characteristics			
Frequency range	MHz	703 – 748	
Loss in bypass mode	dB	Typically 1.6 (DC OFF)	
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)	
Gain	dB	12 nominal	
Noise figure	dB	Typically 1.3	
3 rd order intercept point (OIP3)	dBm	Typically 25	
DVB-T attenuation	dB	> 30 (< 698 MHz)	
Environmental Characteristics			
Operating temperature range	°C F	-40 ... +65 -40 ... +149	
IP rating		IP67*	
MTBF	hours	> 1 000 000 (per TMA)	
EMC		According to ETS 301 342-3	
DC and Alarm Characteristics		CWA Mode	AISG Mode
DC supply	V	9 – 19	9 – 30
Operating current per TMA	mA	80 – 130	Nom. 150 at 12 V
Alarm management	mA	170 – 200	AISG
Mechanical Characteristics			
Material		Aluminium housing	
Connectors	RF AISG out	4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: Not connected)	
Mounting	mm in	Wall mounting: With 4 screws (max. diameter 8 0.31) Mast mounting: With additional clamp set	
Weight	kg lb	8.8 19.4	
Dimensions (w x h x d)	mm in	220 x 220 x 126 8.7 x 8.7 x 5.0 (without connectors, without mounting brackets)	

For more information about accessories please refer to page 390

DTMA-800-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- **Compact line**
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and 2.0 (default)
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt



Technical Data

Type No.		78210430V43 DTMA-800-12-AISG
Tx Characteristics		
Frequency range	MHz	791 – 821
Insertion loss	dB	Typically 0.25
Ripple	dB	< 0.3
Input power (per input)	W	< 100 (+50 dBm) CW
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
Rx Characteristics		
Frequency range	MHz	832 – 862
Loss in by-pass mode	dB	Typically 2.0
Return loss	dB	> 16 (DC ON)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.2
3 rd order intercept point (OIP3)	dBm	Typically 30
Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67*
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
DC supply	V	10 – 30
Operating current per DTMA (without RET)	mA mA	Nom. 155 at 10 V Nom. 60 at 30 V
Alarm management		AISG
Mechanical Characteristics		
Material		Aluminium housing
Connectors RF RET		4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	kg lb	6.2 13.7
Packing size	mm in	250 x 450 x 210 9.8 x 17.7 x 8.3
Dimensions (w x h x d)	mm in	176 x 247 x 104 6.9 x 9.7 x 4.1 (without connectors, without mounting brackets)



DTMA-800-900-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



- Double unit for easy use with XPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and AISG 2.0 (default)
- Supports Wide-Band (configuration 1 ... 6) or Single-Band Mode (configuration 7,8 or 9)
- Built-in lightning protection

AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt



Technical Data

Type No.	Single-Band Mode	78210512V43 DTMA-800-900-12-AISG
	Wide-Band Mode	78210512V44 DTMA-800-900-12-AISG
	Wide-Band Mode single ID	78210512V46 DTMA-800-900-12-AISG

800 MHz Tx Characteristics

Frequency range	MHz	791 - 821
Insertion loss	dB	Typically 0.5
Input power (per input and frequency band)	kW	< 0.18 (+52.5 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43)
Return loss	dB	> 18

800 MHz Rx Characteristics

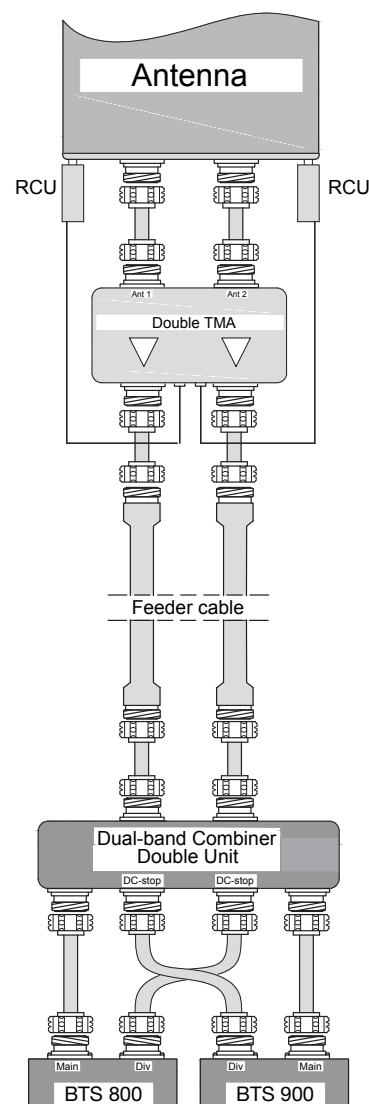
Frequency range	MHz	832 - 862
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) / > 14 dB (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
3 rd order intercept point (OIP3)	dBm	Typically 25

900 MHz Tx Characteristics

Frequency range	MHz	925 - 960
Insertion loss	dB	Typically 0.5
Input power (per input and frequency band)	kW	< 0.18 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43)
Return loss	dB	> 18

900 MHz Rx Characteristics

Frequency range	MHz	880 - 915
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) / > 14 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
3 rd order intercept point (OIP3)	dBm	Typically 25



For more information about accessories please refer to page 390

DTMA-800-900-12-AISG

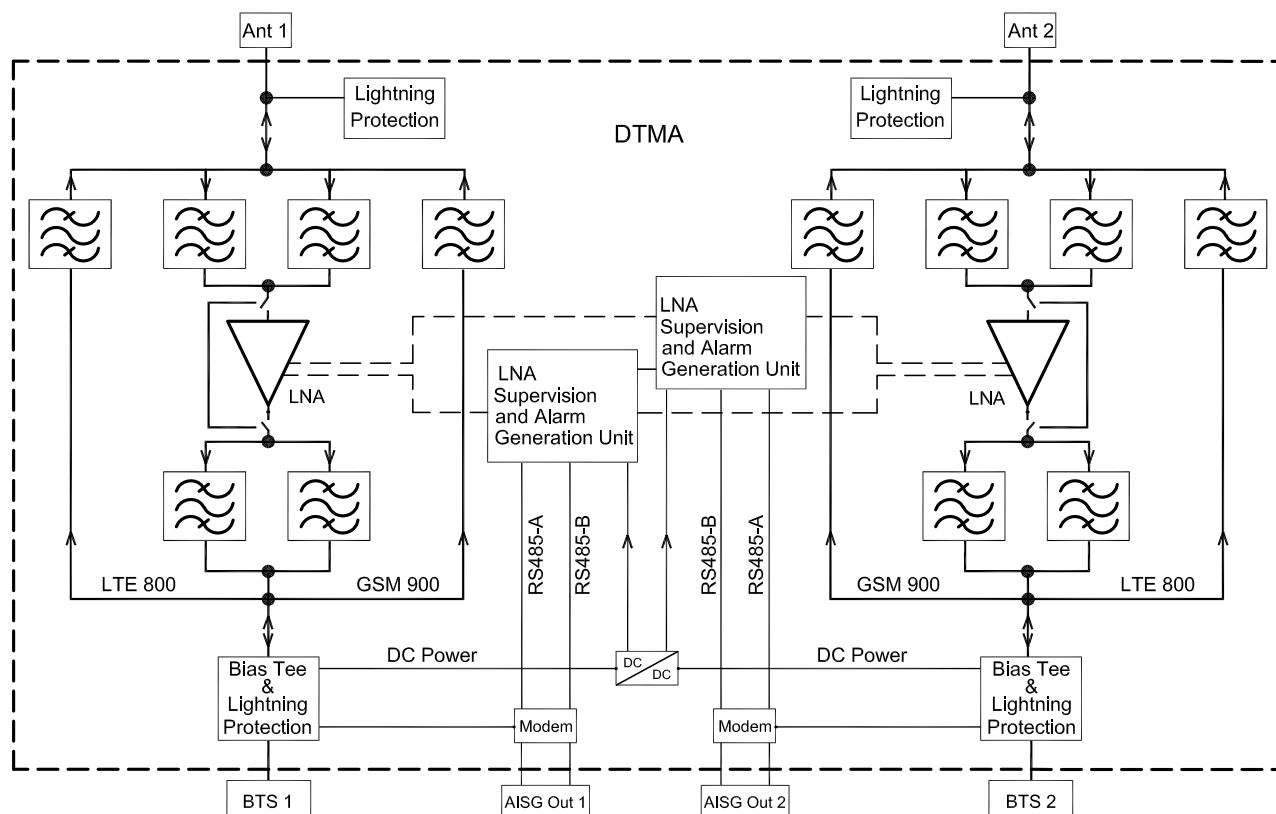
Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67*
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
Lightning protection	kA	3, 10/350 µs pulse
DC and Alarm Characteristics		AISG Mode
DC supply	V DC	9 - 31
Operating current per DTMA (without RET)	mA mA	Nom. 300 at 10 V Nom. 100 at 30 V
Alarm management		AISG
Mechanical Characteristics		
Material		Aluminium housing
Connectors	RF AISG out	4.3 - 10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	kg lb	11 24.3
Dimensions (w x h x d)	mm in	231 x 246 x 159 9.0 x 9.6 x 6.3 (without connectors, without mounting brackets)
Packing size	mm in	397 x 297 x 240 15.6 x 12.2 x 9.4

Block Diagram



DTMA-800-900-12-AISG-D

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



- Double unit for easy use with XXPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and AISG 2.0 (default)
- Supports Multi-Band, Wide-Band (configuration 1 ... 6) and Single-Band Mode (configuration 7, 8 or 9)
- DC supply via BTS 1, BTS 2 or both
- Built-in lightning protection
- Low inrush current
- Auto-Select feature for Multi-Band and Wide-Band Mode

AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt



Technical Data

Type No.	Single-Band Mode	78210517V43 DTMA-800-900-12-AISG-D
	Wide-Band Mode	78210517V44 DTMA-800-900-12-AISG-D
	Wide-Band Mode single ID	78210517V46 DTMA-800-900-12-AISG-D

800 MHz Tx Characteristics

Frequency range	MHz	791 – 821
Insertion loss	dB	Typically 0.4
Input power (per input)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -116 (2 Tx carriers at +43)
Return loss	dB	> 18

800 MHz Rx Characteristics

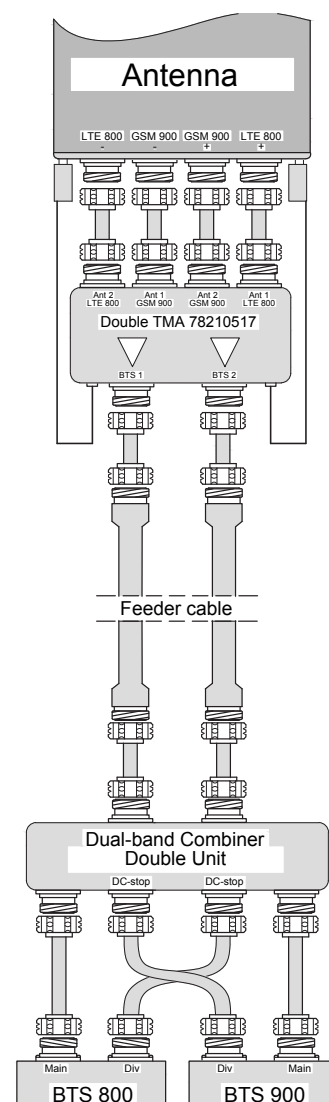
Frequency range	MHz	832 – 862
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
3 rd order intercept point (OIP3)	dBm	Typically 25

900 MHz Tx Characteristics

Frequency range	MHz	925 – 960
Insertion loss	dB	Typically 0.4
Input power (per input)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -116 (2 Tx carriers at +43)
Return loss	dB	> 18

900 MHz Rx Characteristics

Frequency range	MHz	880 – 915
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
3 rd order intercept point (OIP3)	dBm	Typically 25



For more information about accessories please refer to page 390

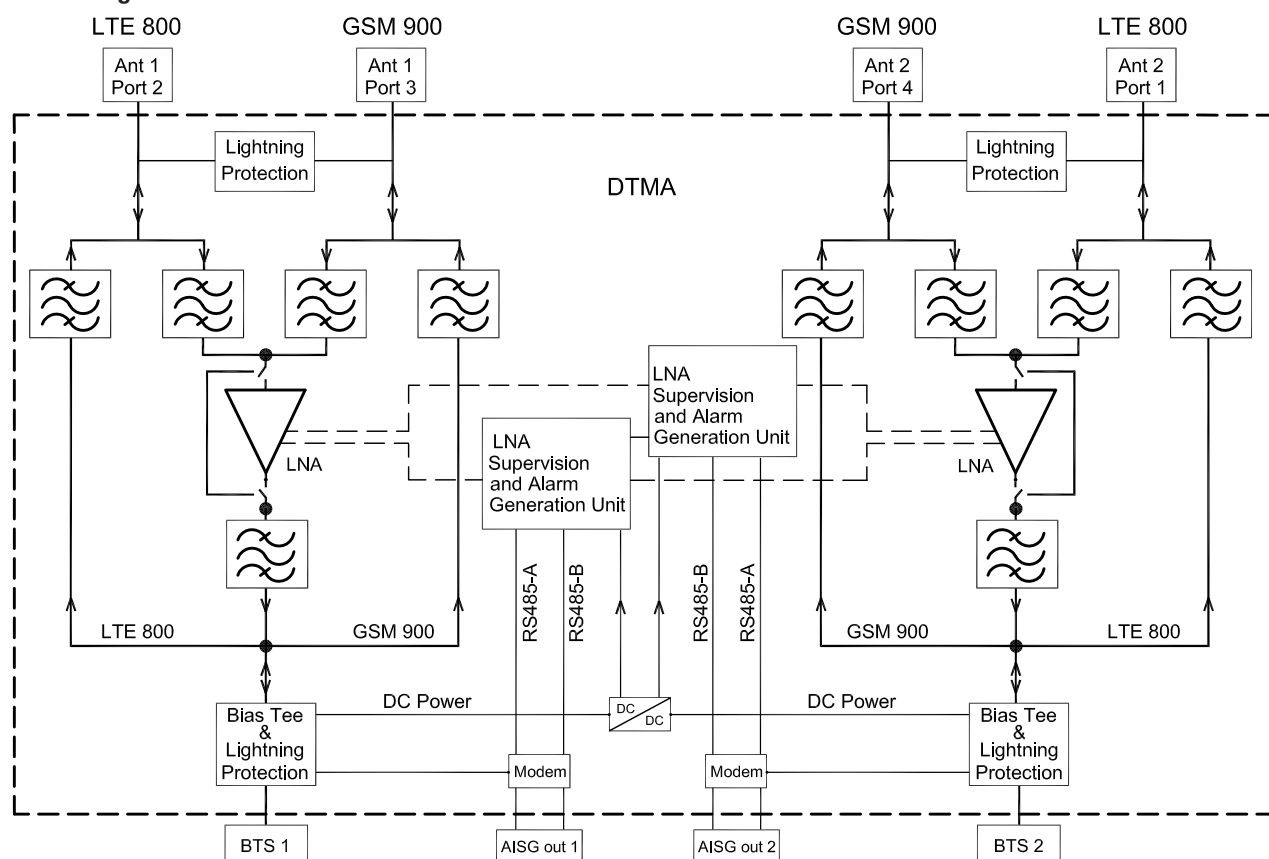
DTMA-800-900-12-AISG-D

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
Lightning protection	kA	3, 10/350 µs pulse
DC and Alarm Characteristics		AISG Mode
DC supply	V DC	10 – 30
Operating current per DTMA (without RET)	mA mA	Nom. 190 at 10 V Nom. 70 at 30 V
Alarm management		AISG
Mechanical Characteristics		
Material		Aluminium housing
Connectors RF AISG		4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 31 V DC, pin 7: DC return, other pins: Not connected)
Mounting		Wall mounting: With 4 screws (max. 8 mm 0.315 diameter) Mast mounting: With additional clamps
Weight	kg lb	11 24.25
Packing size	mm in	440 x 380 x 255 17.3 x 15 x 10
Dimensions (w x h x d)	mm in	300 x 258 x 147 11.8 x 10.15 x 5.8 (without connectors, without mounting brackets)

Block Diagram



DTMA-1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- **Compact line**
- Double units for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable
- CWA and AISG configurations
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection



RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
CWA = Current Window Alarm

Technical Data

Type No.	CWA alarm 170-200 mA	78210583V43 DTMA-1800-12-AISG-CWA	
Tx Characteristics			
Frequency range	MHz	1805 - 1880	
Insertion loss	dB	Typically 0.25 dB	
Input power (per input)	kW	< 0.2 (+53 dBm) CW / < 1.6 (+62 dBm) peak	
Intermodulation products in Rx band	dBm	< -117 (2 Tx carriers at +43 dBm)	
Return loss	dB	> 18	
Rx Characteristics			
Frequency range	MHz	1710 - 1785	
Loss in bypass mode	dB	Typically 1.7	
Return loss	dB	> 16 (DC ON) / > 12 (DC OFF)	
Gain	dB	12 nominal	
Noise figure	dB	Typically 1.0	
3 rd order intercept point (OIP3)	dBm	Typically 30	
Environmental Characteristics			
Operating temperature range	°C °F	-40 ... +65 -40 ... +149	
IP rating		IP67*	
MTBF	hours	> 1 000 000 (per TMA)	
EMC		According to ETS 300 342-3	
DC and Alarm Characteristics		CWA	AISG Mode
DC supply	V	7 - 19	10 - 30
Operating current (without RET)	mA	80 - 120	Nom. 155 at 10 V Nom. 65 at 30 V
Alarm management		170-200 mA	AISG*
Mechanical Characteristics			
Material		Aluminium housing	
Connectors	RF AISG	4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)	
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	kg lb	4 8.8	
Dimensions (w x h x d)	mm in	218 x 169 x 74 8.6 x 6.7 x 2.9 (without connectors, without mounting brackets)	
Packing size	mm in	405 x 235 x 175 15.9 x 9.3 x 6.9	



For more information about accessories please refer to page 390

DTMA-1800-UMTS-12-AISG-D

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



- **Compact line**
- Double units for easy use with XXPol antennas
- Supports AISG 1.1 and 2.0 (default)
- Supports Multi-Band, Wide Band (configuration 1 ... 6) and Single-Band Mode (configuration 7, 8 or 9)
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- DC Supply via BTS 0, BTS 1 or both
- Auto-Select feature for Multi-Band and Wide-Band Mode
- Low inrush current

AISG = Antenna Interface Standards Group

RET = Remote Electrical Tilt



Technical Data

Type No.	Single-Band Mode	78210990V43 DTMA-1800-UMTS-12-AISG-D
	Wide-Band Mode	78210990V44 DTMA-1800-UMTS-12-AISG-D
	Wide-Band Mode single ID	78210990V46 DTMA-1800-UMTS-12-AISG-D

Tx Characteristics

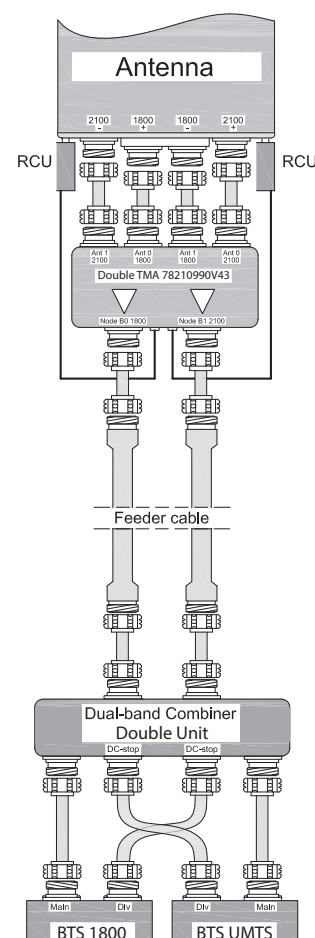
Frequency range	MHz	1805 – 1880	2110 – 2170
Insertion loss	dB	Typically 0.5	Typically 0.3
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm)/< 1.6 kW (+62 dBm) peak	
Intermodulation products in Rx band	dBm	< -117 (2 Tx carriers at +43 dBm)	
Return loss	dB	> 18	

Rx Characteristics

Frequency range	MHz	1710 – 1785	1920 – 1980
Return loss	dB	> 16 (DC ON) / > 12	
Loss in bypass mode	dB	Typically 2.3 (DC OFF)	
Gain	dB	nominal 12	
Noise figure	dB	Typically 1.4	
3 rd order intercept point (OIP3)	dBm	Typically 30	

Environmental Characteristics

Operating temperature range	°C °F	-40 ... +65 -40 ... +149	
IP rating		IP67	
MTBF	hours	> 1 000 000 (per TMA)	
EMC		According to ETS 300 342-3	

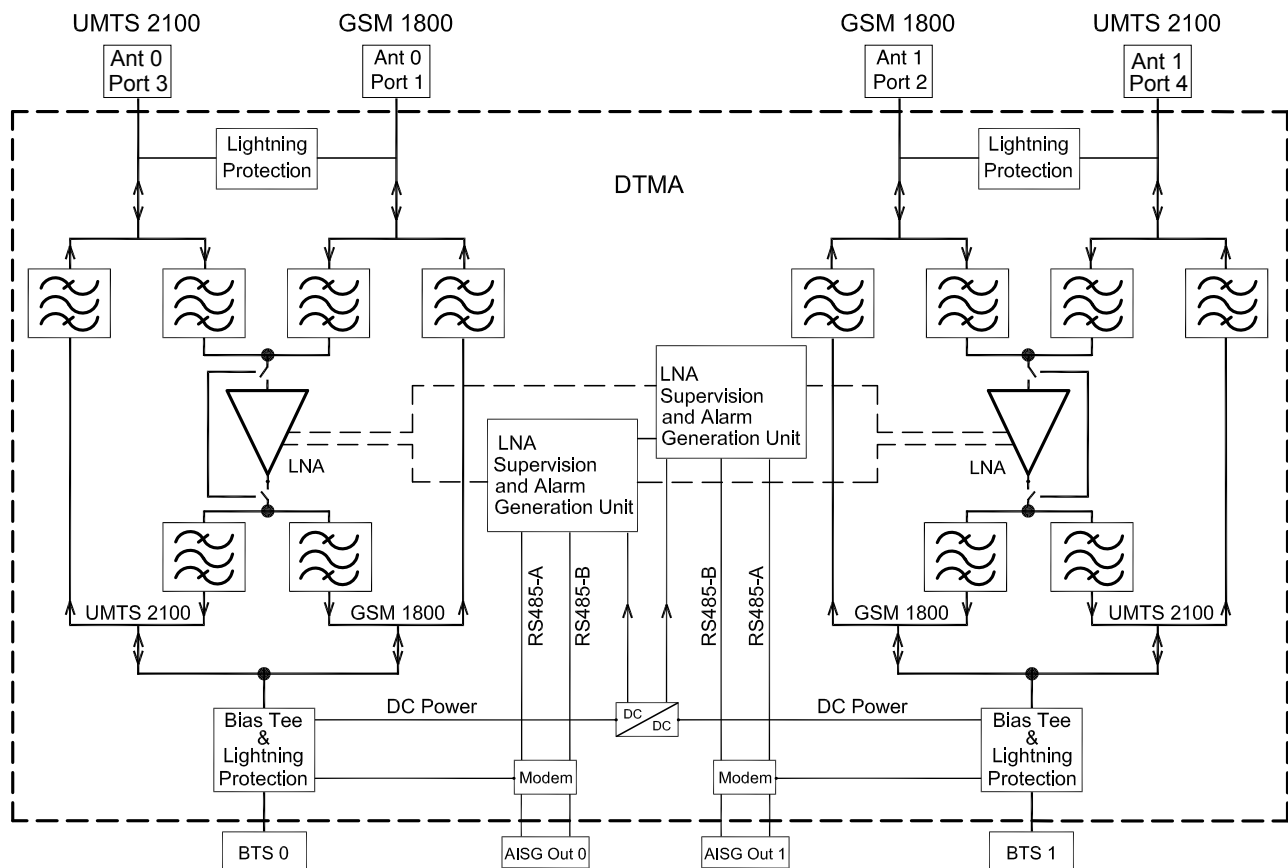


DTMAS



DC and Alarm Characteristics		
DC supply	V DC	10 – 30
Operating current per DTMA (without RET)	mA mA	Nom. 175 at 10 V Nom. 65 at 30 V
Alarm management		AISG*
Mechanical Characteristics		
Material		Aluminium housing
Connectors RF AISG		4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamps
Weight	kg lb	6.5 14.4
Packing size	mm in	300 x 435 x 190 11.8 x 17.1 x 7.5
Dimensions (w x h x d)	mm in	220 x 220 x 83 8.7 x 8.7 x 3.3 (without connectors, without mounting brackets)

Block Diagram



DTMA-1800-UMTS-BYPASS1500-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- Double units for easy use with XPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and 2.0 (default)
- Built-in lightning protection
- Supports Multi-Band, Wide-Band (configuration 1 .. 6) or Single-Band Mode (configuration 7, 8 or 9)
- DC Supply via BTS1, BTS2 or both
- Auto-Select feature for Multi-Band and Wide-Band Mode



AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt

Technical Data

Type No.	Single-Band Mode	78211107 DTMA-1800-UMTS-BYPASS1500-12-AISG
	Wide-Band Mode	78211107V02 DTMA-1800-UMTS-BYPASS1500-12-AISG
	Wide-Band Mode single ID	78211107V03 DTMA-1800-UMTS-BYPASS1500-12-AISG

1800 MHz Tx Characteristics

Frequency range	MHz	1805 – 1880
Insertion loss	dB	Typically 0.5
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18

1800 MHz Rx Characteristics

Frequency range	MHz	1710 – 1785
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Loss in bypass mode	dB	Typically 2.0 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

UMTS Tx Characteristics

Frequency range	MHz	2110 – 2170
Insertion loss	dB	Typically 0.3
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18

UMTS Rx Characteristics

Frequency range	MHz	1920 – 1980
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Loss in bypass mode	dB	Typically 2.0 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

For more information about accessories please refer to page 390

DTMA-1800-UMTS-BYPASS1500-12-AISG

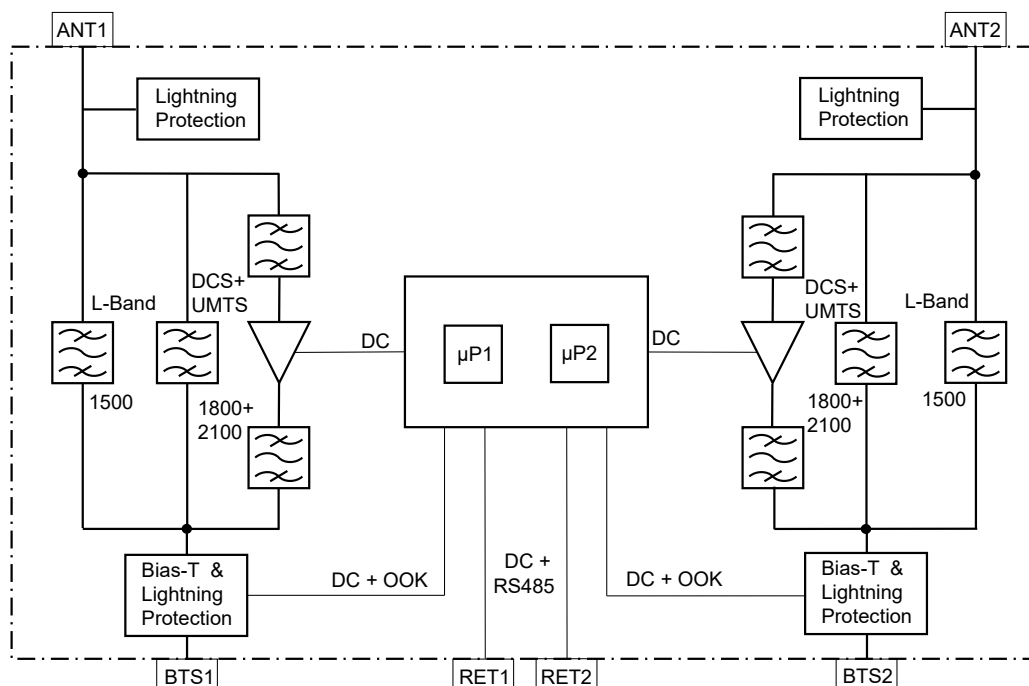
Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



1427 - 1518 MHz Bypass Characteristics		
Frequency range	MHz	1427 – 1518
Insertion loss	dB	Typically 0.15
Input power	kW	< 0.1 (+50 dBm)
Intermodulation products	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18
Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
DC supply	V	10 – 30
Operating current per DTMA (without RET)	mA	Nom. 175 @ 10 V Nom. 65 @ 30 V
Alarm management		AISG
Mechanical Characteristics		
Material		Aluminium housing
Connectors	RF AISG	4.3-10 female, 8-pin female, IEC 60130-9, (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting
Weight	kg lb	8.8 19.4
Dimensions (w x h x d)	mm in	290 x 235 x 94 / 11.4 x 9.3 x 3.7
Packing size	mm in	420 x 335 x 175 / 16.5 x 13.2 x 6.9

Block Diagram



DTMA-2600-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- **Compact line**
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and 2.0 (default)
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Low weight

AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt

Technical Data

Type No.		78211330V43 DTMA-2600-12-AISG
Tx Characteristics		
Frequency range	MHz	2620 - 2690
Insertion loss	dB	Typically 0.3
Input power (per input)	kW	< 0.1 (+50 dBm) CW / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
Rx Characteristics		
Frequency range	MHz	2500 - 2570
Loss in by-pass mode	dB	Typically 1.8
Return loss	dB	> 18 (DC ON)
Gain	dB	12, nominal
Noise figure	dB	Typically 1.6
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25
Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67*
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
DC supply	V	10 - 30
Operating current per DTMA (without RET)	mA mA	Nom. 130 at 10 V DC Nom. 50 at 30 V DC
Alarm management		AISG
Mechanical Characteristics		
Material		Aluminium housing
Connectors RF AISG		4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting		Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	kg lb	3 6.6
Dimensions (w x h x d)	mm in	138 x 191 x 72 5.4 x 7.5 x 2.8 (without connectors, without mounting brackets)
Packing size	mm in	217 x 397 x 170 8.5 x 15.6 x 6.7

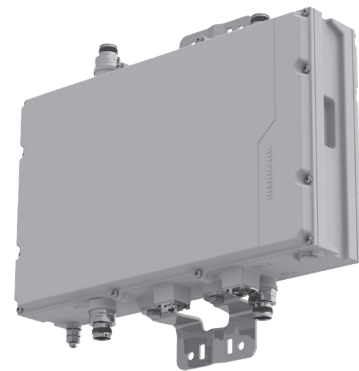


DTMA-1800-2100-2600-BYP1500-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- Double unit for easy use with XPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and AISG 2.0 (default)
- Supports Multi-Band, Wide-Band (conf. 1 ... 6) and Single-Band (conf. 7, 8, 9)
- Built-in lightning protection
- DC supply via BTS1, BTS2 or both
- Auto-select feature for Multi-Band or Wide-Band mode



AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt
BYP = RF-BYPass

Technical Data

Type No.	Single-Band Mode	78210587 DTMA-1800-2100-2600-BYP1500-12-AISG
	Wide-Band Mode	78210587V02 DTMA-1800-2100-2600-BYP1500-12-AISG

1800 MHz Tx Characteristics

Frequency range	MHz	1805 - 1880
Insertion loss	dB	Typically 0.4
Input power (per input and frequency band)	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18

1800 MHz Rx Characteristics

Frequency range	MHz	1710 - 1785
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

2100 MHz Tx Characteristics

Frequency range	MHz	2110 - 2170
Insertion loss	dB	Typically 0.3
Input power (per input and frequency band)	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18

2100 MHz Rx Characteristics

Frequency range	MHz	1920 - 1980
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure		Typically 1.5
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

For more information about accessories please refer to page 390

DTMA-1800-2100-2600-BYP1500-12-AISG

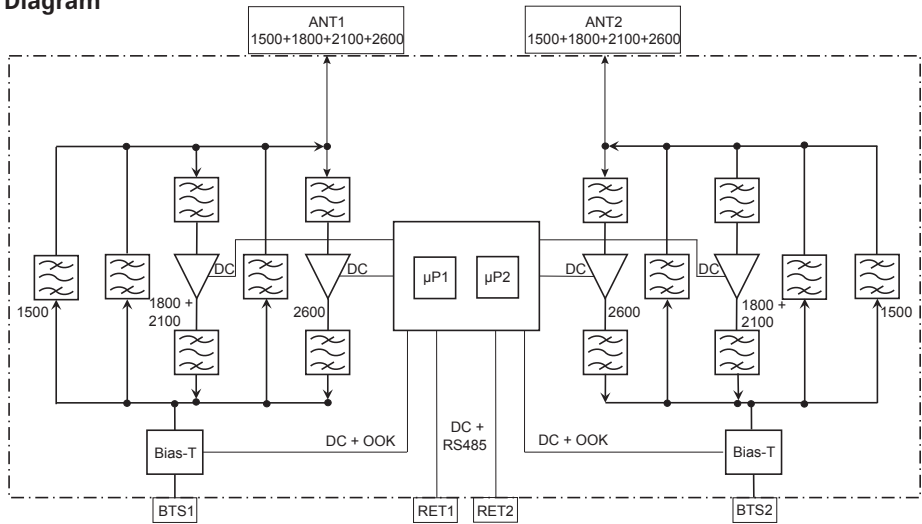
Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



2600 MHz Tx Characteristics		
Frequency range	MHz	2620 - 2690
Insertion loss	dB	Typically 0.4
Input power (per input and frequency band)	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18
2600 MHz Rx Characteristics		
Frequency range	MHz	2500 - 2570
Loss in bypass mode	dB	Typically 1.8
Return loss	dB	> 18 (DC ON) > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure		Typically 1.7
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25
1427 - 1518 MHz Bypass Characteristics		
Frequency range	MHz	1427 - 1518
Insertion loss	dB	Typically 0.2
Input power	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18
Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67*
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
		AISG Mode
DC supply	V	10 - 30
Operating current (without RET)	mA	Nom. 400 at 10 V Nom. 150 at 30 V
Alarm management		AISG*
Mechanical Characteristics		
Material		Aluminium housing
Connectors	RF AISG out	4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 – 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting	mm in	Wall mounting: With 4 screws (diameter: max. 8 0.31) Mast mounting: With additional clamp set
Weight	kg lb	10 22.05
Dimensions (w x h x d)	mm in	377 x 235 x 95 14.8 x 9.3 x 3.7 (without connectors, without mounting brackets)

Block Diagram



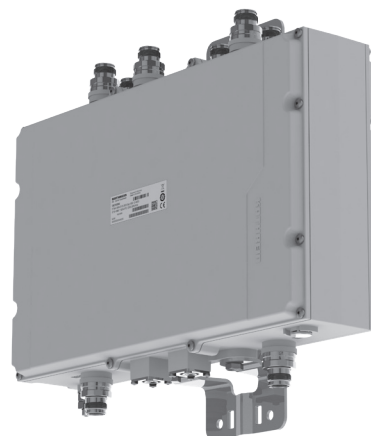
DTMA-1800-2100-2600-BYP1500-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

- Double unit for easy use with XPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and AISG 2.0 (default)
- Supports Multi-Band, Wide-Band Mode (Configuration 1-6) and Single-Band Mode (Configuration 7, 8, 9)
- Built-in lightning protection
- DC supply via BTS1, BTS2 or both
- Auto-select feature for Multi-Band or Wide-Band Mode

AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt
BYP = RF-BYPass



Technical Data

Type No.	Single-Band Mode	78210588 DTMA-1800-2100-2600-BYP1500-12-AISG
	Wide-Band Mode	78210588V02 DTMA-1800-2100-2600-BYP1500-12-AISG
	Wide-Band Mode single ID	78210588V03 DTMA-1800-2100-2600-BYP1500-12-AISG

1800 MHz Tx Characteristics

Frequency range	MHz	1805 - 1880
Insertion loss	dB	Typically 0.6
Input power (per input and frequency band)	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18

1800 MHz Rx Characteristics

Frequency range	MHz	1710 - 1785
Loss in bypass mode	dB	Typically 2.3
Return loss	dB	> 18 (DC ON) > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.7
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

2100 MHz Tx Characteristics

Frequency range	MHz	2110 - 2170
Insertion loss	dB	Typically 0.5
Input power (per input and frequency band)	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18

2100 MHz Rx Characteristics

Frequency range	MHz	1920 - 1980
Loss in bypass mode	dB	Typically 2.0
Return loss	dB	> 18 (DC ON) > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure		Typically 1.7
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

For more information about accessories please refer to page 390

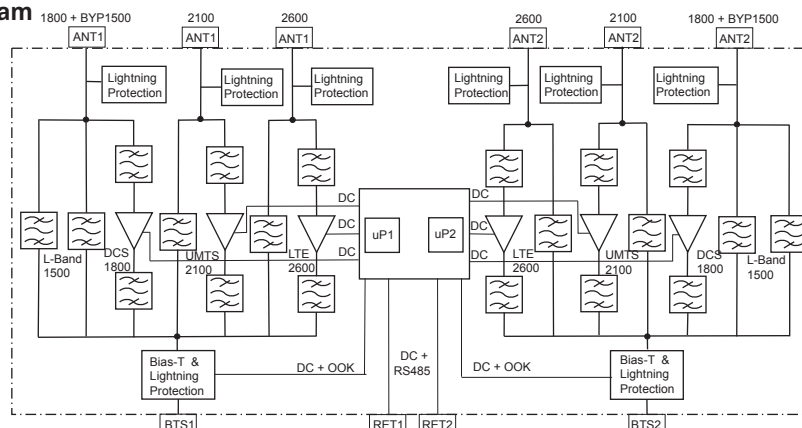
DTMA-1800-2100-2600-BYP1500-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

2600 MHz Tx Characteristics		
Frequency range	MHz	2620 - 2690
Insertion loss	dB	Typically 0.6
Input power (per input and frequency band)	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18
2600 MHz Rx Characteristics		
Frequency range	MHz	2500 - 2570
Loss in bypass mode	dB	Typically 1.8
Return loss	dB	> 18 (DC ON) > 12 (DC OFF)
Gain	dB	12 nominal
Noise figure		Typically 1.7
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25
1427 - 1518 MHz Bypass Characteristics		
Frequency range	MHz	1427 - 1518
Insertion loss	dB	Typically 0.25
Input power	kW	< 0.1 (+ 50 dBm) < 1.6 (+ 62 dBm) peak
Intermodulation products in Rx band	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18
Environmental Characteristics		
Operating temperature range	°C F	-40 ... +65 -40 ... +149
IP rating		IP67
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
AISG Mode		
DC supply	V	10 - 30
Operating current (without RET)	mA	Nom. 400 at 10 V Nom. 150 at 30 V
Alarm management		AISG
Mechanical Characteristics		
Material		Aluminium housing
Connectors	RF AISG out	4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting	mm in	Wall mounting: With 4 screws (diameter: max. 8 0.31) Mast mounting: With additional clamp set
Weight	kg lb	12 26.5
Dimensions (w x h x d)	mm in	377 x 235 x 96 14.8 x 9.3 x 3.8 (without connectors, without mounting brackets)
Packing Size	mm in	420 x 420 x 175 16.5 x 16.5 x 6.9

Block Diagram



DTMA-UMTS-2600-BYPASS1500-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



- Double units for easy use with XXPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and 2.0 (default)
- Built-in lightning protection
- Supports Multi-Band, Wide-Band (configuration 1 .. 6) or Single-Band Mode (configuration 7, 8 or 9)
- DC Supply via BTS1, BTS2 or both
- Auto-Select feature for Multi-Band and Wide-Band Mode

AISG = Antenna Interface Standards Group

RET = Remote Electrical Tilt

Technical Data

Type No.	Wide-Band Mode	78211910V02 DTMA-UMTS-2600-BYPASS1500-12-AISG
UMTS Tx Characteristics		
Frequency range	MHz	2110 – 2170
Insertion loss	dB	Typically 0.3
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
UMTS Rx Characteristics		
Frequency range	MHz	1920 – 1980
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Loss in bypass mode	dB	Typically 1.8 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25
2600 MHz Tx Characteristics		
Frequency range	MHz	2620 – 2690
Insertion loss	dB	Typically 0.4
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
2600 MHz Rx Characteristics		
Frequency range	MHz	2500 – 2570
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Loss in bypass mode	dB	Typically 2.0 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.7
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

For more information about accessories please refer to page 390

DTMA-UMTS-2600-BYPASS1500-12-AISG

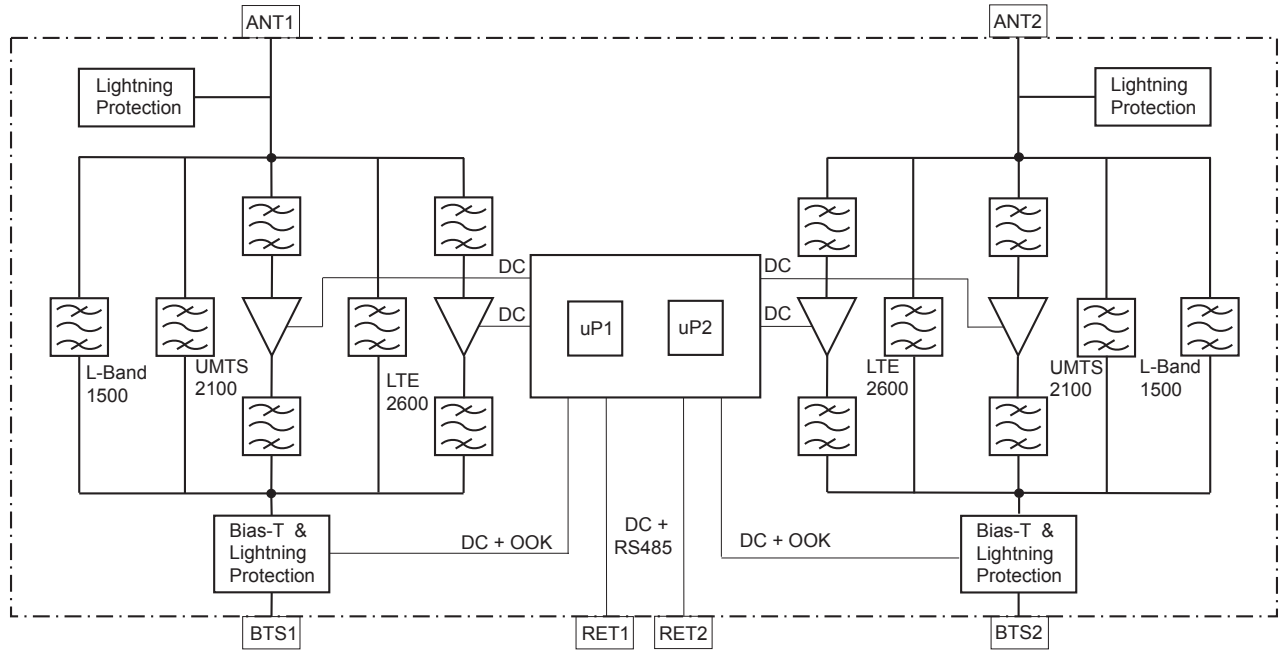
Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



1427 - 1518 MHz Bypass Characteristics		
Frequency range	MHz	1427 – 1518
Insertion loss	dB	Typically 0.2
Input power	kW	< 0.1 (+50 dBm)
Intermodulation products	dBm	< - 117 (2 Tx carriers at + 43 dBm)
Return loss	dB	> 18
Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67*
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
DC supply	V	10 – 30
Operating current per DTMA (without RET)	mA mA	Nom. 300 at 10 V Nom. 100 at 30 V
Alarm management		AISG*
Mechanical Characteristics		
Material		Aluminium housing
Connectors	RF AISG	4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting
Weight	kg lb	8.8 19.4
Dimensions (W x H x D)	mm in	290 x 235 x 94 11.4 x 9.3 x 3.7

Block diagram



DTMA-1800-2600-BYPASS1500-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



- Double units for easy use with XXPol antennas
- Suitable for antenna RET control according to AISG/3GPP standard
- Bypass mode to ensure cell operation in case of DC power down
- Supports AISG 1.1 and 2.0 (default)
- Built-in lightning protection
- Supports Multi-Band, Wide-Band (configuration 1 .. 6) or Single-Band Mode (configuration 7, 8 or 9)
- DC Supply via BTS1, BTS2 or both
- Auto-Select feature for Multi-Band and Wide-Band Mode

AISG = Antenna Interface Standards Group
RET = Remote Electrical Tilt



Technical Data

Type No.	Wide-Band Mode	78211912V02 DTMA-1800-2600-BYPASS1500-12-AISG
1800 Tx Characteristics		
Frequency range	MHz	1805 – 1880
Insertion loss	dB	Typically 0.5
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
1800 Rx Characteristics		
Frequency range	MHz	1710 – 1785
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Loss in bypass mode	dB	Typically 2.0 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.5
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25
2600 MHz Tx Characteristics		
Frequency range	MHz	2620 – 2690
Insertion loss	dB	Typically 0.4
Input power (per input and frequency band)	kW	< 0.1 (+50 dBm) / < 1.6 (+62 dBm) peak
Intermodulation products in RX band	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
2600 MHz Rx Characteristics		
Frequency range	MHz	2500 – 2570
Return loss	dB	> 18 (DC ON) / > 12 (DC OFF)
Loss in bypass mode	dB	Typically 2.0 (DC OFF)
Gain	dB	12 nominal
Noise figure	dB	Typically 1.7
Output 1-dB compression point	dBm	> 10
3 rd order intercept point (OIP3)	dBm	Typically 25

For more information about accessories please refer to page 390

DTMA-1800-2600-BYPASS1500-12-AISG

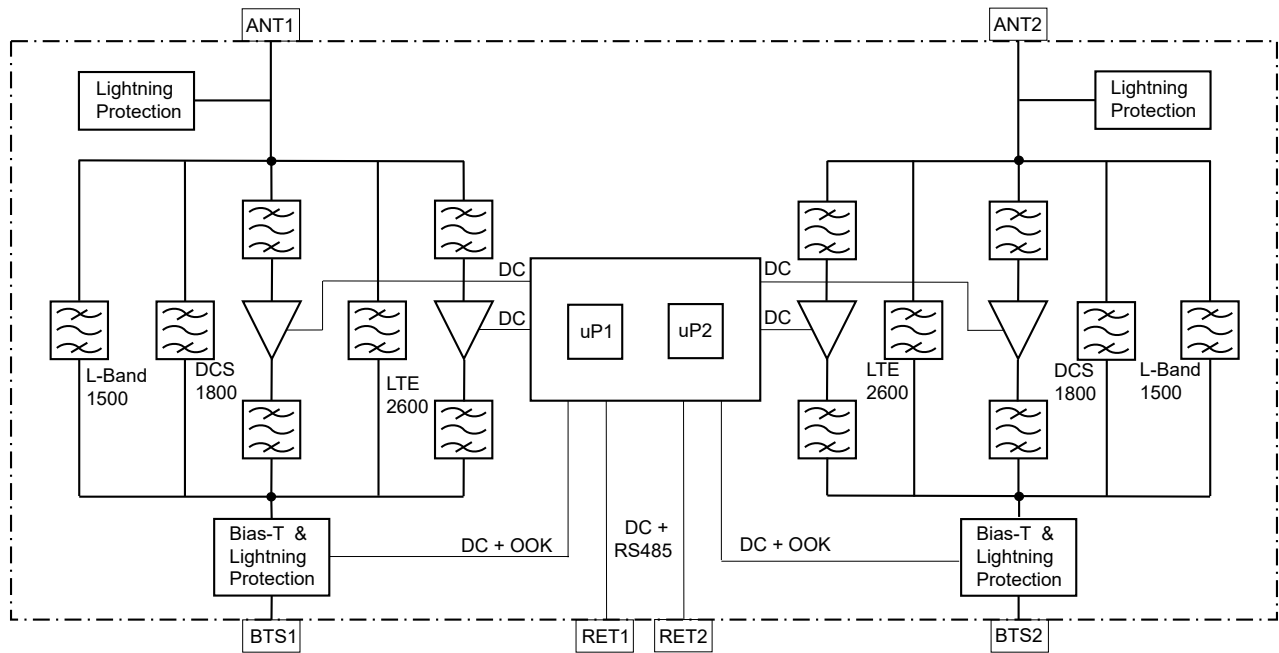
Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN



1427 - 1518 MHz Bypass Characteristics		
Frequency range	MHz	1427 – 1518
Insertion loss	dB	Typically 0.2
Input power	kW	< 0.1 (+50 dBm)
Intermodulation products	dBm	< -117 (2 Tx carriers at +43 dBm)
Return loss	dB	> 18
Environmental Characteristics		
Operating temperature range	°C °F	-40 ... +65 -40 ... +149
IP rating		IP67*
MTBF	hours	> 1 000 000 (per TMA)
EMC		According to ETS 300 342-3
DC and Alarm Characteristics		
DC supply	V	10 – 30
Operating current per DTMA (without RET)	mA mA	Nom. 300 at 10 V Nom. 100 at 30 V
Alarm management		AISG*
Mechanical Characteristics		
Material		Aluminium housing
Connectors	RF AISG	4.3-10 female 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 10 - 30 V DC, pin 7: DC return, other pins: Not connected)
Mounting	mm in	Wall mounting: With 4 screws (max. 8 0.315 diameter) Mast mounting
Weight	kg lb	8.8 19.4
Dimensions (W x H x D)	mm in	290 x 235 x 94 11.4 x 9.3 x 3.7

Block diagram



Calculation of Wind Loading on Kathrein Base Station Antennas

In general, the wind loading of antennas is determined based on the standard EN 1991-1-4. This European standard corresponds to the German standard DIN 1055-4.

Because of wind loading tests performed by an independent institute in 2016, in order to determine the data sheet values, Kathrein Mobile Communication uses a combination of wind tunnel test results as well as an approved adaption of the form factor within the scope of the standard.

The indicated values are the frontal and the maximum wind load of the antenna. Due to the latest determination methods, the wind load values are decreased. However, these values are still determined in accordance with the standard EN 1991-1-4. The mechanical design of the antennas remains unaffected.

A detailed description concerning this topic is provided in the White Paper "BASE STATION ANTENNAS – RELIABLE WIND LOAD CALCULATION" which is available on our website.

Please note

As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions. The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4.

The antennas may be used at locations where the anticipated peak wind velocity or gust wind speed lies within the maximum wind speed listed in the datasheet. We warrant the mechanical safety and electrical functionality under such conditions. The wind speeds are defined in accordance with the DIN, EN or TIA standards. This warranty makes allowance for the partial safety factors specified in those standards.

Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an antenna or even cause it to fall to the ground. These facts must be considered during the site planning process. The details given in our data sheets have to be followed carefully when installing the antennas and accessories.

It should be noted that the site-specific load acting on an antenna depends on the geographic location, the location-specific factors, the height over ground and how the antenna is mounted on the mast. The site structural engineer is in charge of the correct calculation and interpretation of the wind load at the antenna site.

Site planning and installation must be carried out by qualified and experienced staff. All relevant national safety regulations must be upheld and respected. Incorrect site planning, faulty installation, as well as interfering surroundings on site, may lead to deviations in the electrical parameters compared to those specified in the respective data sheets.

Sales Partners

A list of the Kathrein Mobile Communication International Sales Partners can be found on our website:

www.kathrein.com

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