



Shaping the  
connected world



## **Mobile communication**

In-building solutions  
and antenna line products

# 20 26



We are your specialist for  
reliable, high quality and  
innovative communication  
technologies.

ESB is a global company Customer-focused with headquarters in Spain (Valencia) which manufactures and develops Mobile Communication solutions in different areas like macro, micro, indoor coverage, smallcells and camouflage antenna Solutions for Communication Service Providers around the world.

## **Our vision**

We trust in the efficient and sustainable telecom infrastructure as a primary driver in the international integration

## **Mission**

Communication technologies play an important role in the process of evolution.

They connect people and enable the world to be connected. ESB pursues an effective and responsible connection of the worlds' technologies. Demand of these technologies is constantly rising, as well as global data consumption. With more than 40 years experience, we are capable of meeting the most complex requirements and challenges.

"It is our mission to shape a connected world, continue to build it and improve its efficiency using innovative and sustainable technologies"

Our near future depends on new technologies. Due to our strong roots and experience, we will fight daily to achieve this environmental friendly connected world.

Esb mobile communication portfolio offers high-end Wireless products for all frequency bands and global standards, we are constantly evolving our portfolio to meet the market demand and in close cooperation with our customers and sales network, from the proof of concept to massive production.

## Our Values

ESB develops and sales telecom products on a global market. Working globally with the automotive and telecom industry brings the responsibility of working towards social and economic development and sustainability, as well as conducting business responsibly.

We work actively in our basic values: Innovation, cooperation, long-term approach and reduction of environmental impact.

**Innovation:** every day we pursue innovation in all we do. we focus on research, development and innovation (R & D & I). These 3 factors are the basis of our growth and our main difference compared to our competitors.

**Cooperation.** Working on product development gives us the opportunity to collaborate with any kind of company. We work effusively to maintain respectful and positive relations with all of our partners as well as suppliers, clients and everyone else whom we work with.

**Long-Term approach.** Developing products implies committing to long-term approaches with our partners and major investors. Having a long-term mind-set with regard to sustainability and management secures customer and owner value over time.

**Environmental friendly.** ESB works on daily basis to reduce visual impact of the telecommunication sector in our world. Therefore, product development moves towards the integration of the antenna with the environment.

**Quality Policy.** Quality is the best argument when it comes to competing on the market and represents a guarantee for the continuity and the future of any company.





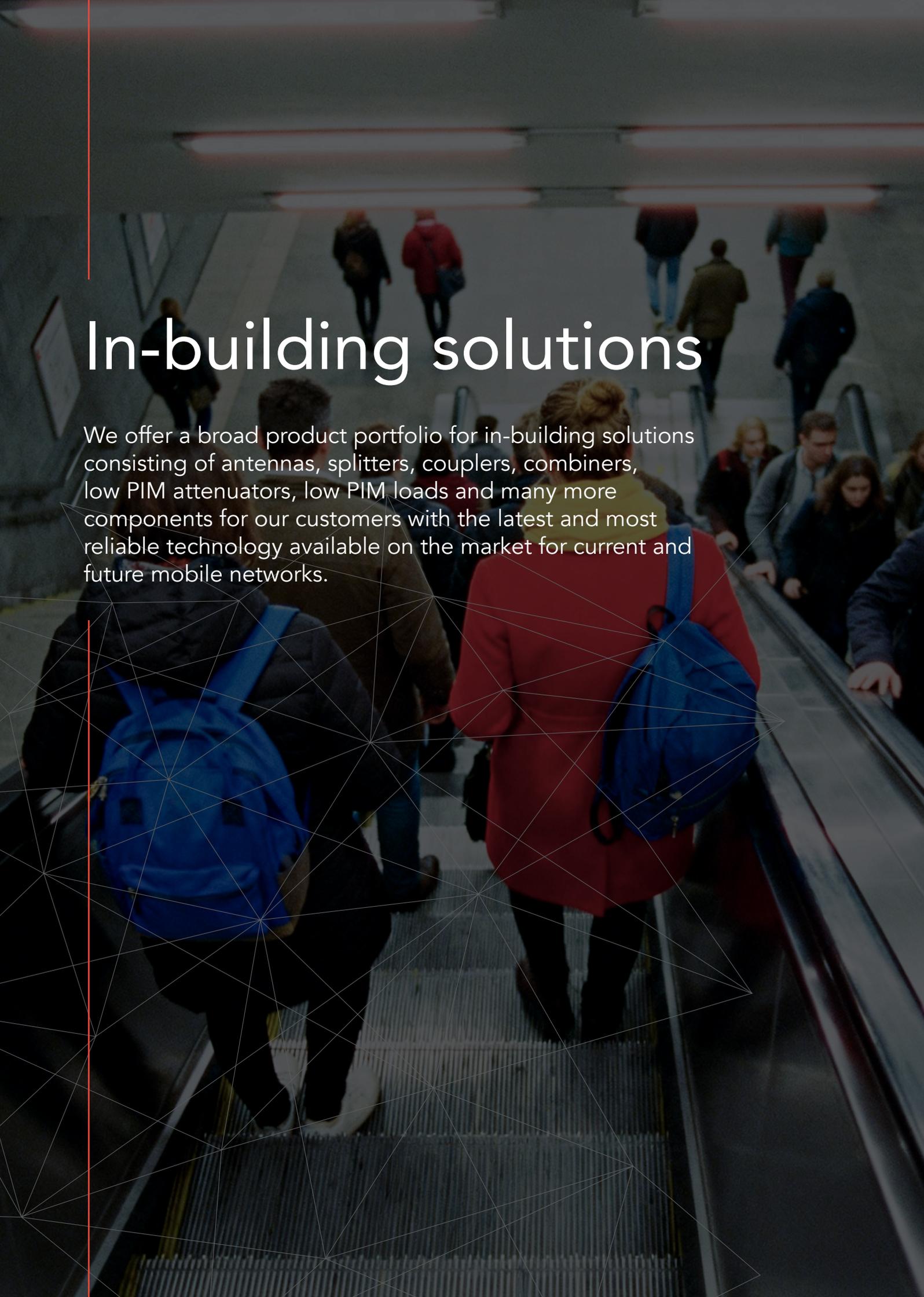
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A photograph of a busy escalator with many people. The image is overlaid with a semi-transparent geometric pattern of white lines forming a network of triangles. A vertical orange line is on the left side. The text is in white, contrasting with the dark background.

# In-building solutions

We offer a broad product portfolio for in-building solutions consisting of antennas, splitters, couplers, combiners, low PIM attenuators, low PIM loads and many more components for our customers with the latest and most reliable technology available on the market for current and future mobile networks.

## In-building solutions

Indoor Antennas **\_10**

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Low PIM Splitters **\_28**

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Low PIM Directional Couplers **\_36**

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Standard Attenuators **\_46**

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# Indoor antennas

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ESB portfolio offers a wide variety of Low intermodulation (PIM3) indoor omni and directional panel antennas for each application. Customer can select from 1 port antenna up to 4 port antennas with different connector (4.3-10 & N) for the most demanding scenarios. All antennas have passed a comprehensive quality control check.

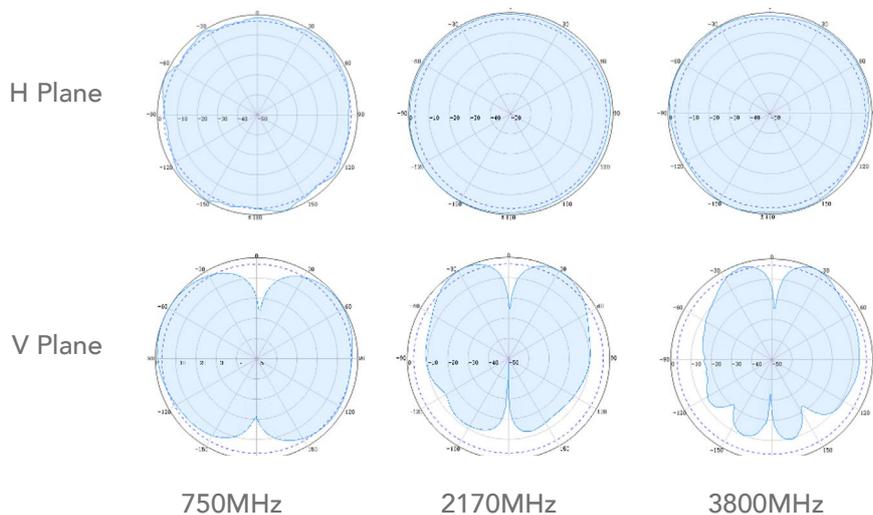
<b>Part Number</b>	<b>Description</b>	<b>Page</b>
78711019v01	1-Port Omni 698-960 (SISO)/1425-4000 (SISO) N	12
78712019v01	1-Port Omni 698-960 (SISO)/1425-4000 (SISO) 4.3-10	12
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# 7871x019v01

Indoor  
Omnidirectional Antenna  
V-Pol 1-port 2/5dBi  
698-4200

**Omni Indoor**  
**698-4200 2/5dBi (Dome)**

Type	78712019v01		78711019v01	
	Frequency (MHz)	698-805	806-960	1425-2700
Gain (dBi)	2.0	2.0	5.0	5.5
VSWR	≤ 2.0	≤ 1.8	≤ 1.5	≤ 1.5
Polarization	Vertical			
PIM3 (dBc, @2x43dBm)	≤ -153			
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	85	80	54	28
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Lightning Protection	DC Grounded			
Connector	1 x 4.3-10 Female		1 x N Female	
Dimension (mm)	Ø186 x 86			
Weight (kgs)	Approx. 0.25			
Reflector Material	Aluminum			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			



# 7871x030

Indoor  
Omnidirectional Antenna  
H/V-Pol 2-port 3/5dBi  
698-4000

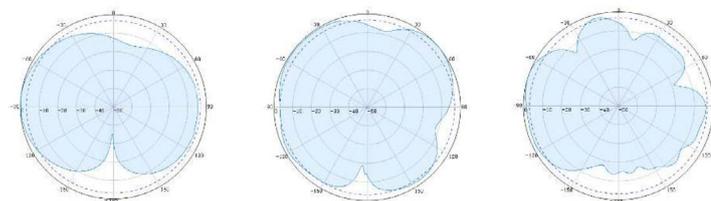
**Omni Indoor**  
**698-4000 3/5dBi**

Type	78712030		78711030	
	Frequency (MHz)	698-805	806-960	1425-2700
Gain (dBi)	2.5	3.5	4.5	5.0
VSWR	≤ 2.0	≤ 1.8	≤ 1.8	≤ 1.8
Polarization	H-V			
Isolation (dB)	≥ 19		≥ 23	
PIM3 (dBc, @2x43dBm)	≤ -153			
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	95	90	46	38
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Lightning Protection	DC Grounded			
Connector	2 x 4.3-10 Female		2 x N Female	
Dimension (mm)	Ø215 x 47			
Weight (kgs)	Approx. 0.45			
Lightning protection	The outer conductor of the connectors is DC grounded The inner conductor of the connectors is not DC grounded			
Reflector Material	Aluminum			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			

H Plane



V Plane



750MHz

2170MHz

3800MHz

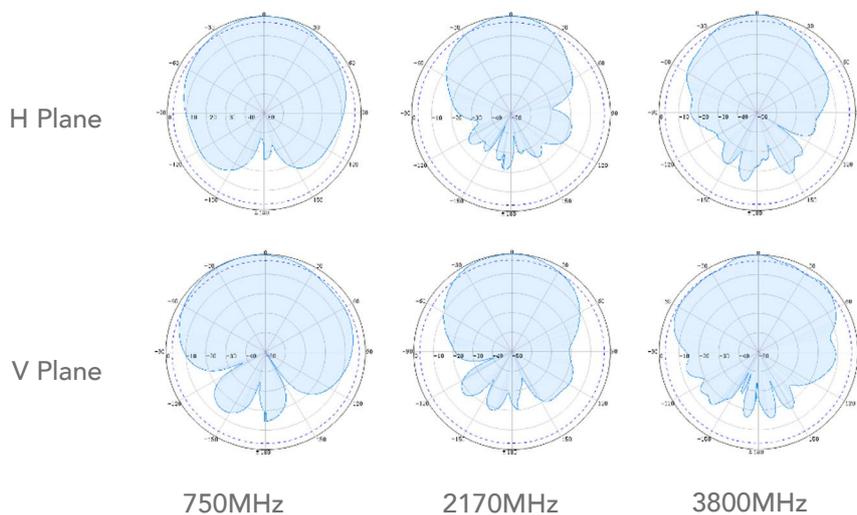


# 7871x323

Indoor  
Directional Panel Antenna  
VPol 1-port 6/8dBi  
698-4000MHz

## Panel Indoor 698-4000MHz 6/8dBi

Type	78712323		78711323	
	Frequency (MHz)	698-806	806-960	1425-2700
Gain (dBi)	5.5	6.5	8.0	7.0
VSWR	≤ 2.0	≤ 2.0	≤ 1.8	≤ 1.8
Polarization	Vertical			
PIM3 (dBc, @2x43dBm)	≤ -153			
Front-to-Back Ratio (dB)	≤ 9	≤ 10	≤ 15	≤ 11
Horizontal Beamwidth (°)	100	85	65	50
Vertical Beamwidth (°)	90	82	60	45
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Lightning Protection	All metal parts of the antenna and mounting kit are DC grounded. Inner conductor is not DC grounded			
Connector	4.3-10 Female		N Female	
Dimension (mm)	180 x 158 x 60			
Weight (kgs)	Approx. 0.40			
Reflector Material	Aluminum			
Radome Material	ABS (UV Stabilized with RAL 9003)			
Operating Temperature (°C)	-40 to +65			



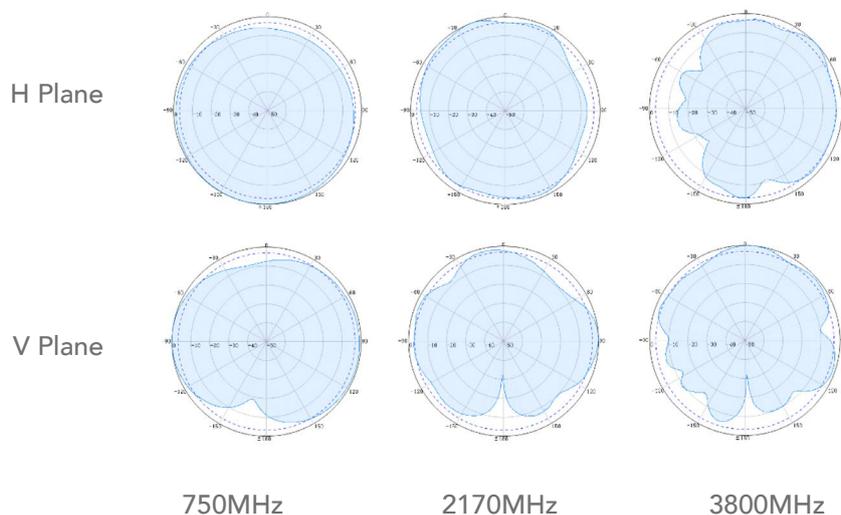
# 78712033

Indoor  
Omnidirectional Antenna  
H-Pol 1-port 3/5dBi  
698-4000

## Omni Indoor 698-4000 3/5dBi (Rectangular Card)

Type	78712033				
Frequency (MHz)	698-960	1425-1690	1690-2170	2170-2700	3300-4000
Gain (dBi)	3.0	3.5	4.0	5.0	4.0
VSWR	≤ 2.0	≤ 2.0	≤ 1.8	≤ 1.8	≤ 1.8
Polarization	Horizontal				
PIM3 (dBc, @2x43dBm)	≤ -153				
Horizontal Beamwidth (°)	360				
Vertical Beamwidth (°)	118	85	75	63	70
Input Impedance (ohm)	50				
Max. Input Power (W)	50				
Lightning Protection	DC Grounded				
Connector	1 x 4.3-10 Female				
Dimension (mm)	180 x 110 x 7				
Weight (kgs)	Approx. 0.2				
Reflector Material	RF PCB				
Radome Material	ABS (UV Stabilized)				
Operating Temperature (°C)	-40 to +65				

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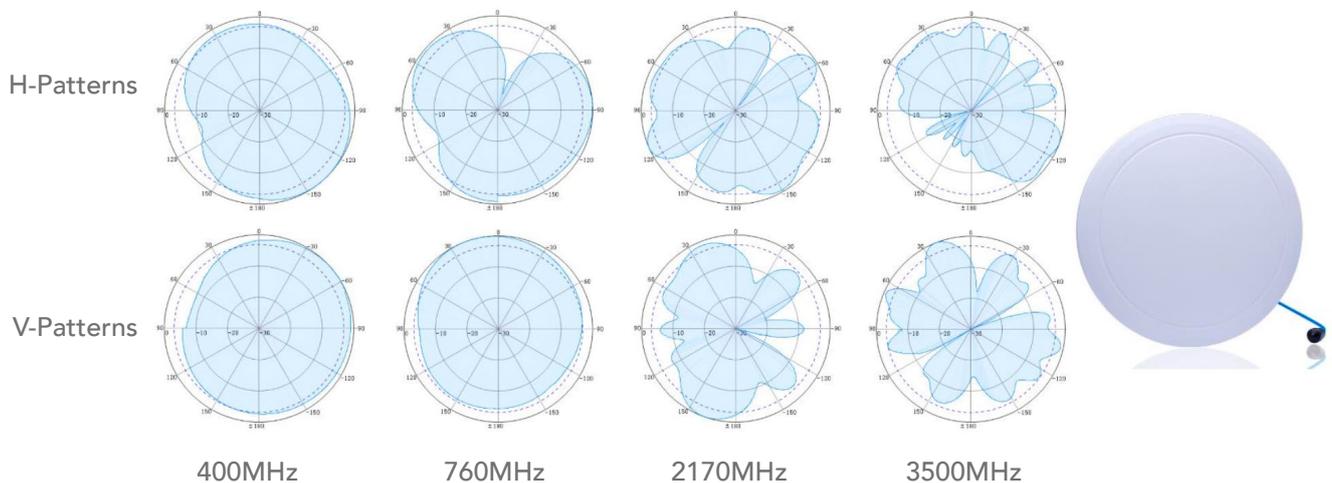


# 78712038

Indoor  
Omni Antenna Thin  
H-Pol 1-port 2/5dBi  
380-4000Mhz

## Omni Indoor 380-4000 2/5dBi (Thin-plate)

Type	78712038			
Frequency (MHz)	380-520	698-960	1710-2700	3300-4000
Gain (dBi)	2.0 ±1	2.0 ±1	4.0 ±1	4.5 ±1
VSWR	≤ 2.0	≤ 2.0	≤ 1.8	≤ 1.8
Polarization	Horizontal			
PIM3 (dBc, @2x43dBm)	≤-153			
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	120	85	76	58
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Connector	1 x 4.3-10 Female			
Lightning Protection	Outer conductor of the connectors is DC grounded Inner conductor of the connectors is not DC grounded			
Dimension (mm)	Ø280 x 19			
Weight (kgs)	Approx. 0.5			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			

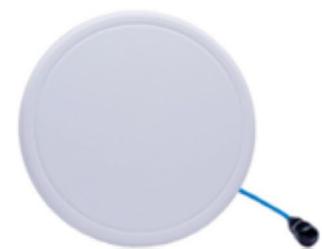
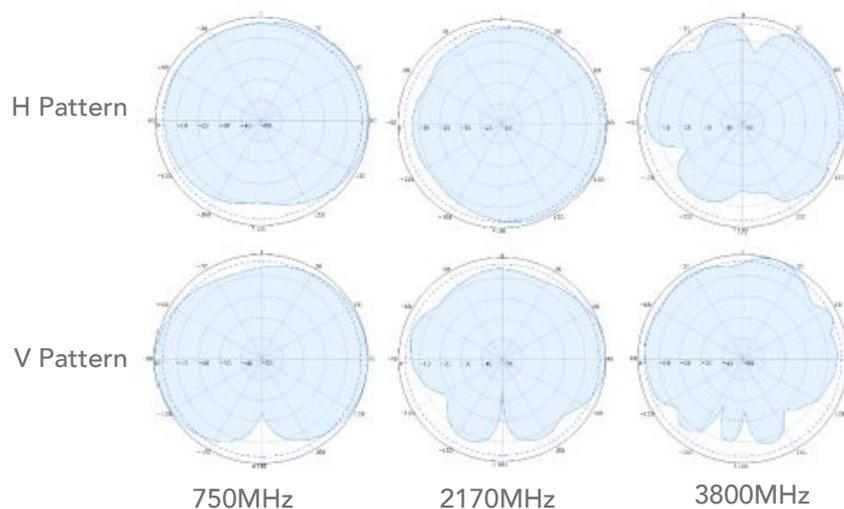


**78712035**

Indoor  
Omnidirectional Antenna  
H-Pol 1-port 3/5dBi  
698-4200

**Omni Indoor**  
**698-4200 3/5dBi (Flat)**

Type	78712035				
Frequency (MHz)	698-960	1425-1690	1690-2170	2170-2700	3300-4200
Gain (dBi)	2.5	3.5	4.0	5.0	4.0
VSWR	≤ 2.0	≤ 2.0	≤ 1.8	≤ 1.8	≤ 1.8
Polarization	Horizontal				
PIM3 (dBc, @2x43dBm)	≤ -153				
Horizontal Beamwidth (°)	360				
Vertical Beamwidth (°)	116	90	78	70	65
Input Impedance (ohm)	50				
Max. Input Power (W)	50				
Lightning Protection	DC Grounded				
Connector	1 x 4.3-10 female				
Dimension (mm)	Ø190 x 7.3				
Weight (kgs)	Approx. 0.2				
Reflector Material	RF PCB				
Radome Material	ABS (UV Stabilized)				
Operating Temperature (°C)	-40 to +65				

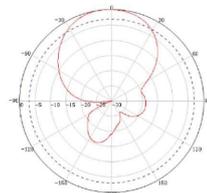
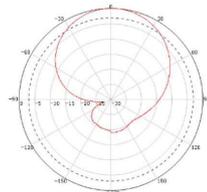


# 78712311

Indoor  
Panel Directional Antenna  
H/V-Pol 2-port 6/9dBi  
698-2700

**Omni Indoor**  
**2700 7/9dBi**

Type	78712311			
Frequency (MHz)	698-805	806-960	1690-2170	2170-2700
Gain (dBi)	6.5	7.0	8.5	9.0
VSWR	≤ 1.8			
Polarization	±45°			
PIM3 (dBc, @2x43dBm)	≤ -150			
Isolation (dB)	≤ 20			
Horizontal Beamwidth (°)	78	73	65	60
Vertical Beamwidth (°)	70	62	58	55
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Lightning Protection	DC Grounded			
Connector	2 x 4.3-10 Female			
Dimension (mm)	315 x 195 x 68			
Weight (kgs)	Approx. 0.7			
Reflector Material	Copper and PCB			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			

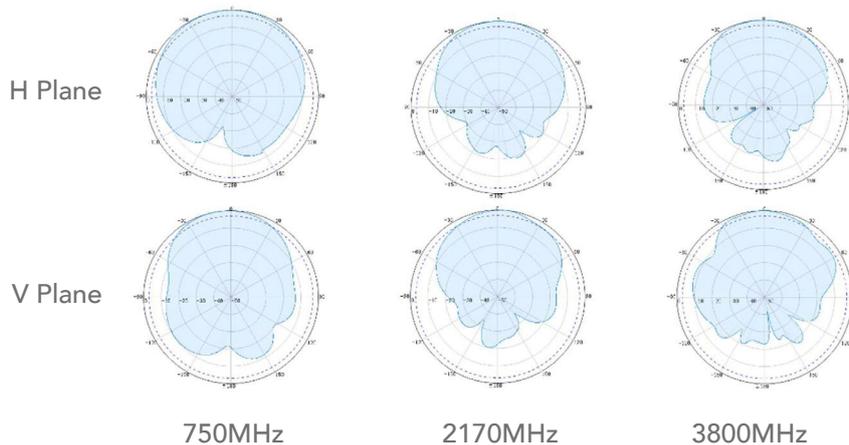


# 78712330

Indoor  
Panel Directional Antenna  
H/V-Pol 2-port 6/9dBi  
698-4000

**Panel Indoor**  
**698-4000 6/9dBi**

Type	78712330		
Frequency (MHz)	698-960	1425-2700	3300-4000
Gain (dBi)	5.5	8.5	7.0
VSWR	≤ 2.0	≤ 1.8	≤ 2.0
Polarization	H-V		
PIM3 (dBc, @2x43dBm)	≤ -153		
Isolation (dB)	≥ 12	≥ 20	≥ 24
Front-to-Back Ratio (dB)	≥ 7	≥ 13	≥ 10
Horizontal Beamwidth (°)	90	65	45
Vertical Beamwidth (°)	78	60	38
Input Impedance (ohm)	50		
Max. Input Power (W)	50		
Lightning Protection	DC Grounded		
Connector	2 x 4.3-10 Female		
Dimension (mm)	315 x 195 x 68		
Weight (kgs)	Approx. 0.65		
Reflector Material	Aluminum and PCB		
Radome Material	ABS (UV Stabilized)		
Operating Temperature (°C)	-40 to +65		

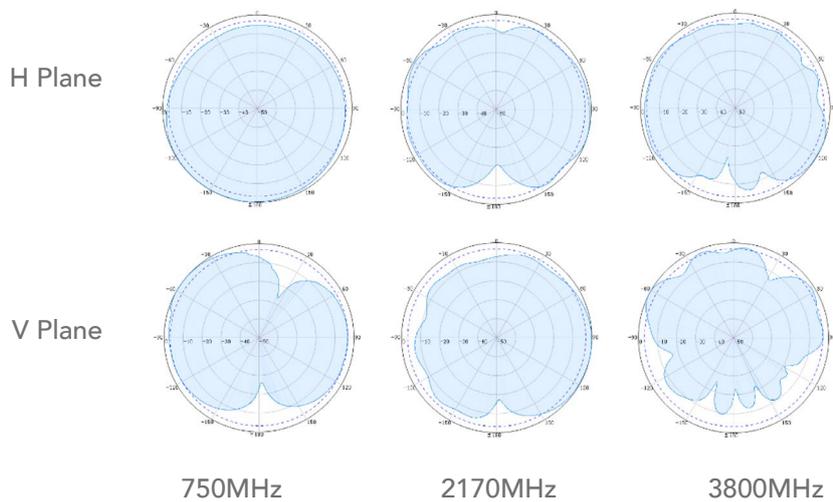


# 78712032

Indoor  
Omnidirectional Antenna  
H/H-Pol 2-port 3/6dBi  
698-4200

## Omni Indoor 698-4200 3/6dBi (Rectangular Card)

Type	78712032			
Frequency (MHz)	698-960	1425-2170	2300-2700	3300-4200
Gain (dBi)	3.0	4.0	6.0	5.5
VSWR	≤ 2.0	≤ 2.0	≤ 1.8	≤ 1.8
Polarization	H-H			
Isolation (dB)	20	23	23	23
PIM3 (dBc, @2x43dBm)	≤ -153			
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	113	78	65	102
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Lightning Protection	DC Grounded			
Connector	2 x 4.3-10 Female			
Dimension (mm)	250 X 150 X 12			
Weight (kgs)	Approx. 0.4			
Reflector Material	RF PCB			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			

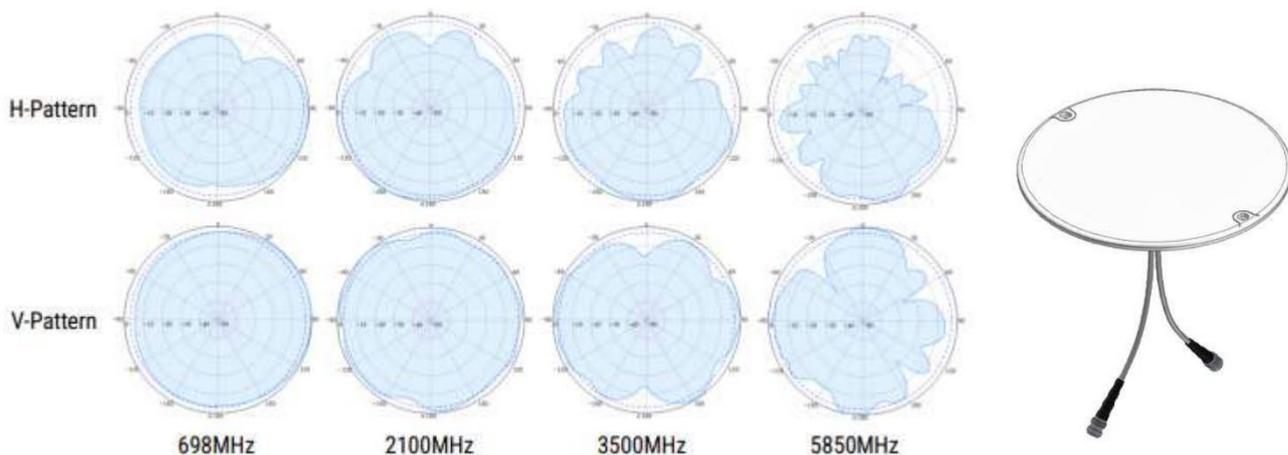


# 78712036

Indoor  
Omni Antenna Ultra-Thin  
H/H-Pol 2-port 4/6dBi  
698-6000

## Omni Indoor 698-6000 4/6dBi (Ultra-Thin)

Type	78712036			
Frequency (MHz)	698-960	1425-2700	3300-4000	4000-6000
Gain (dBi)	4.8	4.3	5.1	7.3
VSWR	≤ 1.8	≤ 1.7	≤ 1.7	≤ 1.7
Polarization	H-H			
Isolation (dB)	≥15	≥20	≥20	≥28
PIM3 (dBc, @2x43dBm)	≤ -153			
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	100-120	30-68	20-48	19-35
Input Impedance (ohm)	50			
Max. Input Power (W)	100			
Lightning Protection	Outer conductor of the connectors is DC grounded Inner conductor of the connectors is not DC grounded			
Connector	2 x 4.3-10 Female			
Dimension (mm)	Ø285 x 8			
Weight (kgs)	Approx. 0.5			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			



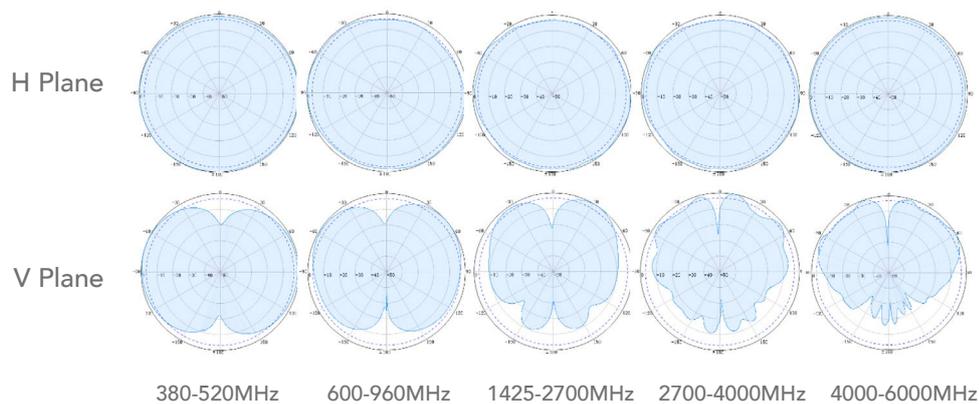
# 78712041

## Omni Indoor 380-6000 2/3/6dBi (Dome)

Indoor  
Omnidirectional Antenna (Dome)  
V-Pol 1-port 2/3/6dBi  
380-6000

Type	78712041				
Frequency (MHz)	380-520	600-960	1425-2700	2700-4000	4000-6000
Gain (dBi)	1.5	2.5	4.5	5.0	5.5
VSWR	≤ 2.5	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0
Polarization	Vertical				
PIM3 (dBc, @2x43dBm)	≤ -153				
Horizontal Beamwidth (°)	360				
Vertical Beamwidth (°)	100	90	45	22	35
Input Impedance (ohm)	50				
Max. Input Power (W)	50				
Lightning Protection	DC Grounded				
Connector	1 x 4.3-10 Female				
Dimension (mm)	Ø285 x 135				
Weight (kgs)	Approx. 0.85				
Reflector Material	Aluminum				
Radome Material	ABS (UV Stabilized)				
Operating Temperature (°C)	-40 to +65				

(A)3WQMN41117194YR/3WQM41117194YR  
(A)4WQMN41117194YR/4WQM41117194YR



# 78712043 & 78712045

**V-Pol Omni**  
**698-4000 3/4dBi**

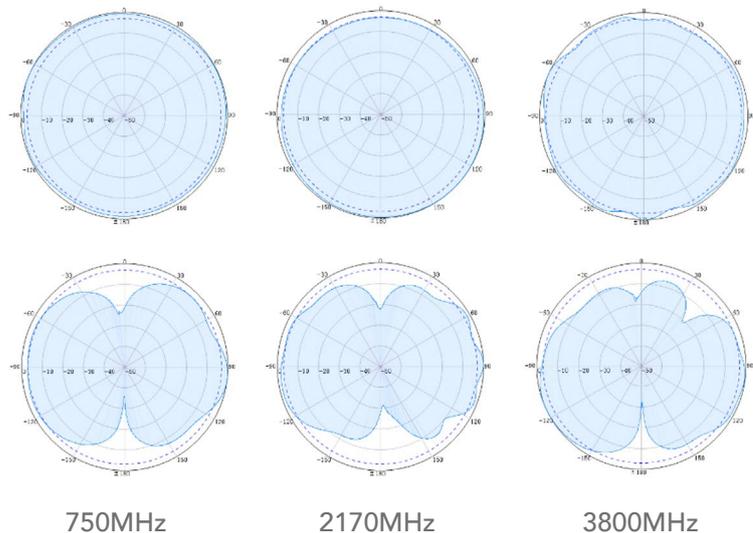
Indoor/Outdoor  
Omni Antenna (Mini)  
V-Pol 1-port 3/4dBi  
698-4000

Type	Cubic Column	78712043		
	Cylindrical Column	78712045		
Frequency Range (MHz)	698-960	1425-2700	3300-4000	
Gain (dBi)	3	4	4.5	
VSWR	≤ 1.8			
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm			
Polarization	Vertical			
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	80	52	38	
Input Impedance (ohm)	50			
Max. Input Power (W)	100			
Lightning Protection	DC Grounded			
Connector Type	1 x 4.3-10 Female			
Dimension (mm)	66 x 66 x 190	Ø63 x 190		
Weight (kgs)	Cubic Column: 0.35	Cylindrical Column: 1.0		
Radome Material	UV-ABS			
Radiator Material	Aluminum			
Operating Temperature (°C)	-40 to +65			
Mounting	Mounting Clamp for Pole Ø38-Ø52 included 70010027 for 78712045 / 70010028 for 78712043			

**78712043**  
Cubic Column



**78712045**  
Cylindrical Column

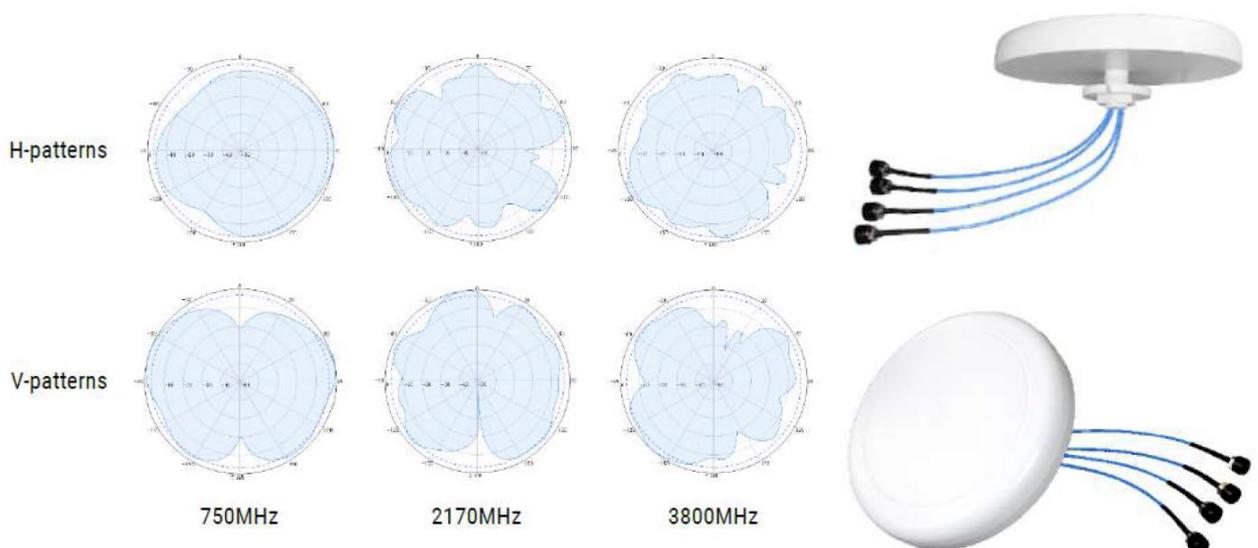


# 787x3160

Indoor  
Omni Antenna  
HH-Pol 4-port 4/5dBi  
698-4000

## Omni Indoor 698-4000 4/5dBi

Type	78713160		78733160	
Frequency (MHz)	698-960		1425-2700	3300-4000
Gain (dBi)	3.5		4.0	4.5
VSWR	≤ 2.0		≤ 2.0	≤ 2.0
Polarization	H-H			
PIM3 (dBc, @2x43dBm)	≤ -153			
Isolation (dB)	≥ 15	≥ 20	≥ 22	
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	90	46	38	
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
Lightning Protection	All metal parts (outer conductors) are DC grounded. Inner conductor is not DC grounded			
Connector	4 x 4.3-10 Female		4 x N Female	
Dimension (mm)	Ø320 x 50			
Weight (kgs)	Approx. 1.0			
Reflector material	Aluminium			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			

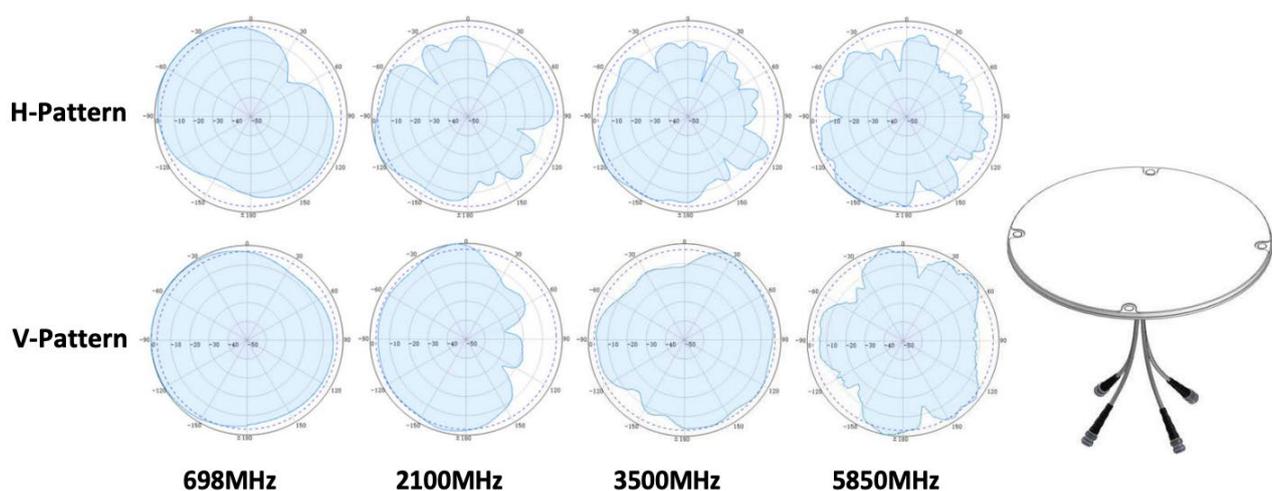


# 78715160

Indoor  
Omni Antenna (Ultra-Thin Plate)  
H-Pol 4-port 4/8dBi  
698-6000

## Omni Indoor 698-6000 4/8dBi (Ultra-Thin)

Type	78715160			
Frequency (MHz)	698-960	1425-2700	3300-4000	4000-6000
Gain (dBi)	4.3	6.9	6.3	7.9
VSWR	≤ 1.8	≤ 1.7	≤ 1.7	≤ 1.7
Polarization	Horizontal			
PIM3 (dBc, @2x43dBm)	≤ -153			
Isolation (dB)	≥ 15	≥ 20	≥ 28	≥ 28
Horizontal Beamwidth (°)	360			
Vertical Beamwidth (°)	100-120	30-68	20-48	19-35
Input Impedance (ohm)	50			
Max. Input Power (W)	100			
Lightning Protection	DC Grounded			
Connector	4 x 4.3-10 Female			
Dimension (mm)	Ø355 x 14			
Weight (kgs)	Approx. 1.6			
Radome Material	ABS (UV Stabilized)			
Operating Temperature (°C)	-40 to +65			



# 787x3130

## Panel Indoor 698-4000 6/9dBi

Indoor  
Panel Directional Antenna  
VHPol 4-port 6/9dBi  
698-4000

Type	78713130		78733130
Frequency (MHz)	698-960	1425-2700	3300-4000
Gain (dBi)	5.5	8.5	7.9
VSWR	≤ 2.0	≤ 2.0	≤ 2.0
Polarization	V-H		
PIM3 (dBc, @2x43dBm)	≤ -153		
Isolation (dB)	≥ 12	≥ 20	≥ 24
Front-to-Back Ratio (dB)	≥ 7	≥ 13	≥ 10
Horizontal Beamwidth (°)	130-85	95-58	65-33
Vertical Beamwidth (°)	108-78	83-45	90-25
Input Impedance (ohm)	50		
Max. Input Power (W)	50		
Lightning Protection	Outer conductor of the connectors is DC grounded Inner conductor of the connectors is not DC grounded		
Connector	4.3-10 Female	N Female	
Dimension (mm)	385 x 315 x 68		
Weight (kgs)	Approx. 1.5		
Reflector Material	Aluminum and PCB		
Radome Material	ABS (UV Stabilized)		
Operating Temperature (°C)	-40 to +65		
Mounting	Fixed wall mounting bracket included		
Optional accessory (*order separately)	Universal Mounting Bracket 70010008 Wall mount: ±25° horizontal swivel & +27°/-35° vertical tilt Pole mount: ±45° horizontal swivel; pole size Ø38-Ø52mm		

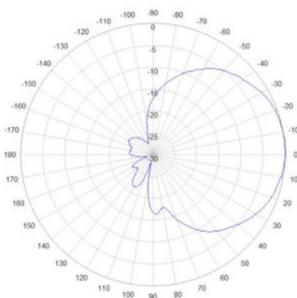


**78713109**

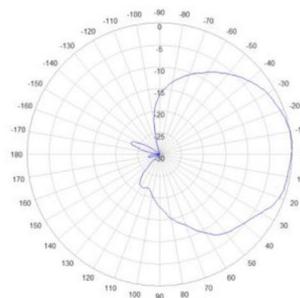
Indoor  
Directional pannel Antenna  
VHPol 8-port 9dBi  
3300-4200

**Directional antenna**  
**8x8MIMO 3300-4200 9dBi**

Type	78713109	
Frequency (MHz)	3300-3800	3801-4200
Gain (dBi)	8.8	9.3
VSWR	≤ 1.5	
Polarization	±45°	
Isolation (dB)	22	
Front to back ratio @180°±30°, dB	22	23
Horizontal Beamwidth (°)	65	60
Vertical Beamwidth (°)	60	56
Input Impedance (ohm)	50	
Max. Input Power (W)	50	
Connector	8 x 4.3-10 Female	
IP protection	IP40 (indoor)	
Radome colour	Off-white	
Dimension (mm)	200x200x48	
Weight (kgs)	Approx. 0.9	
Radome Material	ABS (UV Stabilized)	
Operating Temperature (°C)	-40 to +65	
Mounting type	Wall/mount with adjustable mounting kits	

**Patterns**

Horizontal Beamwidth



Vertical Beamwidth



# Low PIM splitters

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ESB Low PIM splitters are designed to cover the most demanding networks starting from 380Mhz up to 6000Mhz. Round or squared tube are available as well as different connectors (4.3-10, 7/16 and N) for the most convenient scenario.

Part Number	Description	Page
78710131	2-way Splitter 340-3800 MHz 7/16	30
78710133	3-way Splitter 340-3800 MHz 7/16	30
78710134	4-way Splitter 340-3800 MHz 7/16	30
78761022v03	2-way Splitter 350-6000 MHz N	31
78761032v03	3-way Splitter 350-6000 MHz N	31
78761042v03	4-way Splitter 350-6000 MHz N	31
78761022v01	2-way Splitter 698-4000 MHz N	32
78710141	2-way Splitter 380-4000 MHz 4.3-10	33
78710143	3-way Splitter 380-4000 MHz 4.3-10	33
78710144	4-way Splitter 380-4000 MHz 4.3-10	33
78762023v01	2-way Splitter 555-6000 MHz 4.3-10	34
78762033v01	3-way Splitter 555-6000 MHz 4.3-10	34
78762043v01	4-way Splitter 555-6000 MHz 4.3-10	34

# 7871013x

340-3800Mhz Outdoor Power Splitter  
 2-/3-/4- Way Power Splitter  
 Low PIM -160dBc  
 500W DIN 7/16

## Power Splitter 500W 340-3800 (Square Tube)

Type	78710131	78710133	78710134
Frequency (MHz)	340-3800		
Splitting Output	2-way	3-way	4-way
Distribution Loss (dB)	3.0	4.8	6.0
Insertion Loss (dB)	< 0.3	< 0.4	< 0.5
Return Loss (dB)	≥ 19		
PIM3 (dBc, @2x43dBm)	≤ -160		
Input Impedance (ohm)	50		
Max. Input Power (W)	500		
Connector	DIN 7/16 Female		
Weight (kgs)*	0.6	0.7	0.8
Dimension (mm)**	318 x 25 x 25	365 x 25 x 25	399 x 25 x 25
Ingress Protection Class	IP65 (for outdoor and indoor)		
Operating RH (%)	≤ 95		
Operating Temperature (°C)	-25 to +65		
Environmental data	Electromagnetic Compatibility 2014/30/EU RoHS compliance directive 2011/65/EU ETSI EN 300 019-1-4		
Mounting	Built-in Bracket for wall mount		
Colour	Light Grey		



# 787610X2v03

Power Splitter  
 2-/3-/4-way  
 N 300W PIM -160dBc  
 350-6000MHz

## Power Splitter 300W 350-6000 (Square Tube)

Type	78761022v03	78761032v03	78761042v03
Frequency (MHz)	350-6000		
Splitting Output	2-way	3-way	4-way
VSWR	≤1.25	≤1.25	≤1.25
Split Loss (dB)	≤3.5	≤5.6	≤7.1
PIM3 (dBc, @2x43dBm)	≤ -160		
Input Impedance (ohm)	50		
Max. Input Power (W)	300		
Peak Power (W)	1200		
Connector	N Female		
Weight (kgs)	0.5	0.6	0.65
Dimension (mm)	318 x 25 x 25	365 x 25 x 25	399 x 25 x 25
Dimension (mm)**	420x80x40	420x80x40	460x80x60
Ingress Protection Class	IP65 (for outdoor and indoor)		
Operating RH (%)	≤ 95		
Operating Temperature (°C)	-25 to +65		
Mounting	Built-in Bracket for wall mount		
Colour	Light Grey		

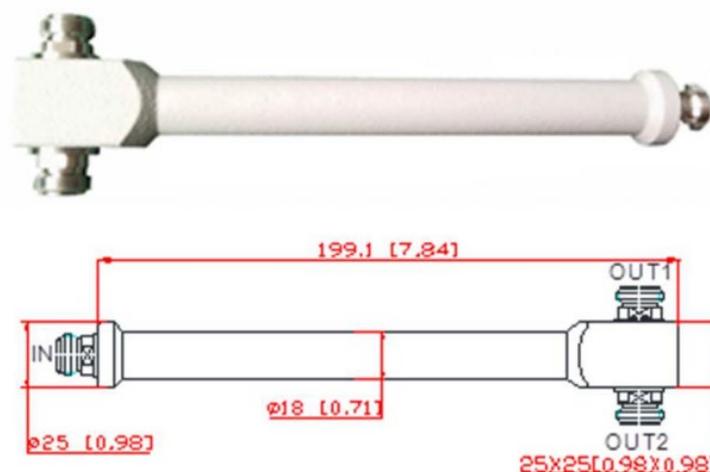


# 78761022v01

## Power Splitter 300W 698-4000 (Round Tube)

Power Splitter 2 way  
N 300W PIM -160dBc  
698-4000MHz

Type	78761022v01
Frequency (MHz)	698-4000
Splitting Output	2-way
Distribution Loss (dB)	3.0
Insertion Loss (dB)	< 0.4
Return Loss (dB)	≥ 19
PIM3 (dBc, @2x43dBm)	≤ -160
Input Impedance (ohm)	50
Handling Power (W)	100
Peak Power (W)	1200
Connector	N Female (Screwed-in)
Weight (kgs)*	0.22
Dimension (mm)**	199.1 x 25 x 25
Ingress Protection Class	IP65 (for outdoor and indoor)
Operating RH (%)	≤ 95
Operating Temperature (°C)	-25 to +65
Mounting	Built-in Bracket for wall mount
Colour	Light Grey

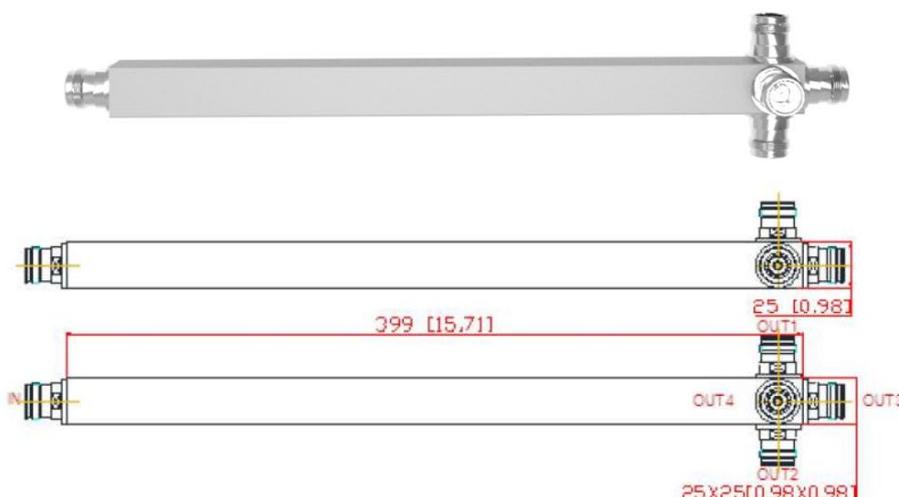


# 7871014x

380-4000Mhz Outdoor Power Splitter  
 2-/3-/4- Way Power Splitter  
 Low PIM -160dBc  
 500W 4.3-10 F

## Power Splitter 500W 380-4000 (Square Tube)

Type	78710141	78710143	78710144
Frequency (MHz)	380-4000		
Splitting Output	2-way	3-way	4-way
Split Loss (dB)	≤3.5	≤5.6	≤6.8
PIM3 (dBc, @2x43dBm)	≤ -160		
Input Impedance (ohm)	50		
Handling Power (W)	500		
Peak Power (W)	1500		
Connector	4.3-10 Female		
Weight (kgs)	0.5	0.64	0.75
Dimension (mm)	318 x 25 x 25	365 x 25 x 25	399 x 25 x 25
Ingress Protection Class	IP65 (for outdoor and indoor)		
Operating RH (%)	≤ 95		
Operating Temperature (°C)	-25 to +65		
Environmental data	Electromagnetic Compatibility 2014/30/EU RoHS compliance directive 2011/65/EU ETSI EN 300 019-1-4		
Mounting	Built-in Bracket for wall mount		
Colour	Light Grey		

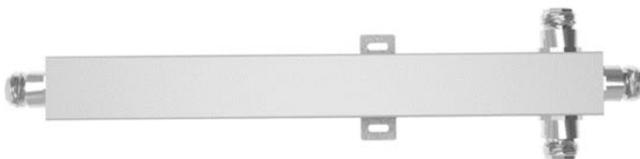


# 787620X3v01

## Power Splitter 500W 555-6000 (Square Tube)

Power Splitter  
2- / 3- / 4-way 4.3-10F 500W  
PIM -163dBc  
555-6000Mhz

Type	78762023v01	78762033v01	78762043v01
Frequency (MHz)	555-6000		
Splitting Output	2-way	3-way	4-way
Distribution Loss (dB)	3.0	5.0	6.0
Insertion Loss (dB)	< 0.4	< 0.5	< 0.6
Return Loss (dB)	≥ 19		
VWSR	≤ 1.3		
PIM3 (dBc, @2x43dBm)	≤ -163		
Input Impedance (ohm)	50		
Max. Input Power (W)	500		
Peak Power (W)	1500		
Connector	4.3-10 Female (Screwed-in)		
Weight (kgs)	0.35	0.4	0.45
Dimension (mm)	218 x 25 x 25	269.2 x 25 x 25	269.20 x 25 x 25
Ingress Protection Class	IP65 (for outdoor and indoor)		
Operating RH (%)	≤ 95		
Operating Temperature (°C)	-40 to +80		
Mounting	Built-in Bracket for wall mount		
Colour	Light Grey		





# Low PIM Directional Couplers

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ESB Low PIM directional couplers allow to separate an incoming signal in two identical or two different shares with the output signals being very effectively de-coupled from each other. These directional couplers are designed to cover the most demanding networks starting from 380Mhz up to 6000Mhz. Different connectors are available (4.3-10 and N) for the most convenient scenario.

Part Number	Description	Page
78761106	6 dB Coupler 698-2700 MHz N	38
78761108	8 dB Coupler 698-2700 Mhz N	38
78761110	10 dB Coupler 698-2700 MHz N	38
78761115	15 dB Coupler 698-2700 MHz N	38
78761105v03	5 dB Coupler 350-6000 MHz N	39
78761106v03	6 dB Coupler 350-6000 MHz N	39
78761108v03	8 dB Coupler 350-6000 Mhz N	39
78761110v03	10 dB Coupler 350-6000 MHz N	39
78761115v03	15 dB Coupler 350-6000 MHz N	39
78761120v03	20 dB Coupler 350-6000 MHz N	39
78762105V03	5 dB Coupler 380-6000 MHz 4.3-10	40
78762106V03	6 dB Coupler 380-6000 MHz 4.3-10	40
78762108V03	8 dB Coupler 380-6000 Mhz 4.3-10	40
78762110V03	10 dB Coupler 380-6000 MHz 4.3-10	40
78762115V03	15 dB Coupler 380-6000MHz 4.3-10	40
78762120V03	20 dB Coupler 380-6000 MHz 4.3-10	40
78762130V03	30 dB Coupler 380-6000 MHz 4.3-10	40
78762105v01	5 dB Coupler 555-6000 4.3-10	41
78762106v01	6 dB Coupler 555-6000 4.3-10	41
78762107v01	7 dB Coupler 555-6000 4.3-10	41
78762108v01	8 dB Coupler 555-6000 4.3-10	41
78762110v01	10 dB Coupler 555-6000 4.3-10	41
78762113v01	13 dB Coupler 555-6000 4.3-10	41
78762115v01	15 dB Coupler 555-6000 4.3-10	41
78762120v01	20 dB Coupler 555-6000 4.3-10	41
78762130v01	30 dB Coupler 555-6000 4.3-10	41

# 787611XX

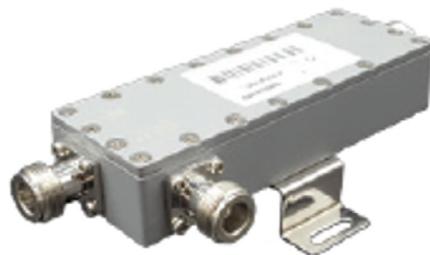
## Directional Coupler 698-2700

Directional Coupler N  
PIM -155dBc  
698-2700

Type	78761106	78761108	78761110	78761115
Coupling Value (dB)	6	8	10	15
Coupling Bias (dB)	±0.8	±0.8	±1.0	±1.0
Insertion Loss (dB)	≤1.76	≤1.17	≤0.96	≤0.44
Isolation (dB)	≥24	≥26	≥28	≥33

Electrical Specifications	
Frequency Range (MHz)	698-2700
Impedance (Ω)	50
Return Loss (dB)	> 19
IM3 (dBc, @2x43dBm)	≤ -155
Max. Power Rating (W)	300
Peak Power (W)	800

Mechanical and Environmental Specifications	
Dimension (mm)**	126 x 45 x 25
Weight (kgs)*	0.53
Colour	Light Grey
Mounting	Wall Mount with Bracket
Operating Temp (°C)	-25 to +65
Ingress Protection Class	IP65
Packing Dimension (mm)	180 x 100 x 55
SKU (unit per box)	40 pcs per inner carton



# 787611XXv03

Directional Coupler NF  
PIM -160dBc  
350-6000MHz

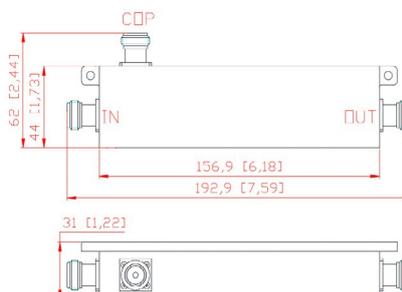
## Directional Coupler 350-6000Mhz

Type	78761105v03	78761106v03	78761108v03
Coupling Value (dB)	5	6	8
Coupling Bias (dB)	±2.0	±2.0	±2.0
Insertion Loss (dB)	≤3.0	≤1.8	≤1.5
Isolation (dB)350-4800	≥22	≥23	≥26
Isolation(dB)4800-6000	≥20	≥21	≥22
VSWR	≤1.3 (350-4800Mhz) ≤1.40 (4800-6000MHz)		

Type	78761110v03	78761115v03	78761120v03
Coupling Value (dB)	10	15	20
Coupling Bias (dB)	±2.0	±2.3	±2.3
Insertion Loss (dB)	≤1.1	≤0.8	≤0.22
Isolation (dB)350-4800	≥28	≥33	≥38
Isolation(dB)4800-6000	≥23	≥30	≥35
VSWR	≤1.3 (350-4800Mhz) ≤1.40 (4800-6000MHz)		

Electrical Specifications	
Frequency Range (MHz)	350-6000
Impedance (Ω)	50
IM3 (dBc, @2x43dBm)	≤ -160
Connector Type	N female
Max. Power Rating (W)	200
Peak Power (W)	1,200

Mechanical and Environmental Specifications	
Dimension (mm)**	156.90 x 44 x 31
Weight (kgs)*	0.6
Colour	Light Grey
Mounting	Wall Mount
Operating Temp (°C)	-35 to +85
Ingress Protection Class	IP65
Packing Dimension (mm)	180 x 100 x 55



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 787621XXv03

## Directional Coupler 380-6000

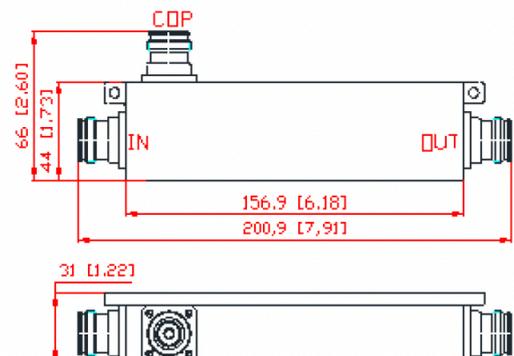
Directional Coupler 4.3-10  
PIM -160dBc  
380-6000

Type	78762105v03	78762106v03	78762108v03	78762110v03
Coupling Value (dB)	5	6	8	10
Coupling Bias (dB)	±1.8	±1.8	±1.8	±1.1
Insertion Loss (dB)	≤3.0	≤2.20	≤1.7	≤0.8
Isolation (dB)	≥20	≥21	≥22	≥23

Type	78762115v03	78762120v03	78762130v03
Coupling Value (dB)	15	20	30
Coupling Bias (dB)	±2.2	±2.2	±2.2
Insertion Loss (dB)	≤0.8	≤0.3	≤0.3
Isolation (dB)	≥30	≥35	≥38

Electrical Specifications	
Frequency Range (MHz)	380-6000
Impedance (Ω)	50
IM3 (dBc, @2x43dBm)	≤ -160
Connector Type	4.3-10
Max. Power Rating (W)	200
Peak Power (W)	1,500

Mechanical and Environmental Specifications	
Dimension (mm)**	156.9 x 44 x 31
Weight (kgs)*	0.675
Colour	Light Grey
Mounting	Wall Mount
Operating Temp (°C)	-40 to +80
Ingress Protection Class	IP65
Packing Dimension (mm)	240 x 80 x 35
SKU (unit per box)	30 pcs per inner carton



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 787621XXv01

Directional Coupler 4.3-10  
 PIM -160dBc  
 555-6000

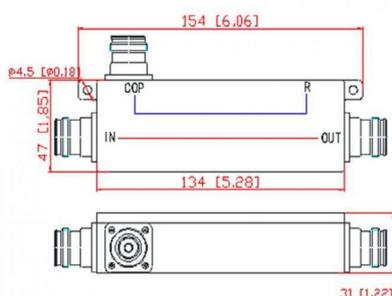
## Air Dielectric directional Coupler 555-6000MHz

Type	78762105v01	78762106v01	78762107v01	78762108v01	78762110v01
Coupling Value (dB)	5	6	7	8	10
Coupling Bias (dB)	±1.4	±1.4	±1.4	±1.1	±1.6
Insertion Loss (dB)	≤2.2	≤1.8	≤1.8	≤1.1	≤0.8
Isolation (dB)	≥21	≥23	≥23	≥25	≥28

Type	78762113v01	78762115v01	78762120v01	78762130v01
Coupling Value (dB)	15	15	20	30
Coupling Bias (dB)	±1.6	±1.6	±1.6	±1.6
Insertion Loss (dB)	≤0.22	≤0.22	≤0.2	≤0.2
Isolation (dB)	≥31	≥31	≥36	≥45

Electrical Specifications	
Frequency Range (MHz)	555-6000
Impedance (Ω)	50
IM3 (dBc, @2x43dBm)	≤ -161
Connector Type	4.3-10
Max. Power Rating (W)	500
Peak Power (W)	1,500

Mechanical and Environmental Specifications	
Dimension (mm)**	127 x 40 x 31
Packind dimension (mm)	190 x 85 x 45
Weight (kgs)*	0.6
Colour	Light Grey
Mounting	Wall Mount
Operating Temp (°C)	-35 to +85
Ingress Protection Class	IP65
Packing Dimension (mm)	430 x 400 x 105



\* including mounting bracket and connectors  
 \*\* excluding mounting bracket and connectors

# RF Tappers

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Tappers are designed to split a signal into unequal parts respectively to tap off a signal portion from a main signal.

**RF Tapper**  
**300W 380-6000 (Square Tube)**

## 7872013Xv03

380-6000Mhz RF Tapper  
 7/10/15dB  
 Low PIM -160dBc  
 300W 4.3-10 F

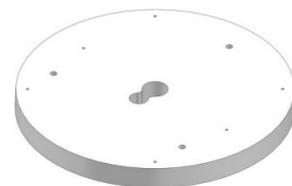
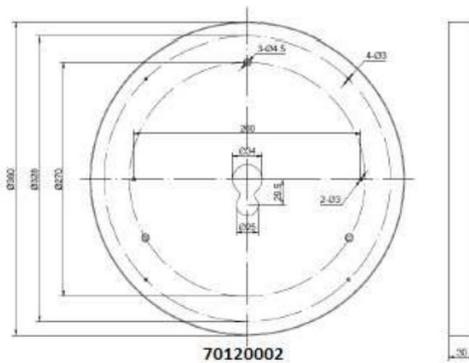
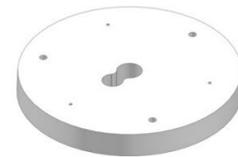
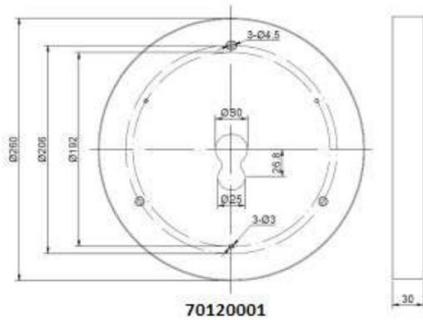
Type	78720136v03	78720137v03	78720138v03
Frequency (MHz)	380-6000		
Coupling (dB)	7±1.7	10±0.9	15±1.5
Inserion Loss	≤1.5	≤1.2	≤0.8
PIM3 (dBc, @2x43dBm)	≤ -160		
Input Impedance (ohm)	50		
Handling Power (W)	300		
Peak Power (W)	1500		
Connector	4.3-10 Female		
VSWR	≤1.35		
Weight (kgs)	0.3		
Dimension (mm) excluding connector	95 x 25 x 25		
Ingress Protection Class	IP65 (for outdoor and indoor)		
Operating RH (%)	≤ 95		
Operating Temperature (°C)	-55 to +65		
Environmental data	RoHS compliance directive 2011/65/EU		
Material data for housing	Aluminium + Powder coated		
Material data for connectors	Brass + CuSnZn3		
Mounting	Built-in Bracket for wall mount		
Colour	Light Grey		



## 70120001 / 70120002

RF absorbing base for ESB omni ceiling antennas

Type	70120001	70120002
Mounting	30 x Ø260	30 x Ø360
Colour	ABS (UV Stabilized)	



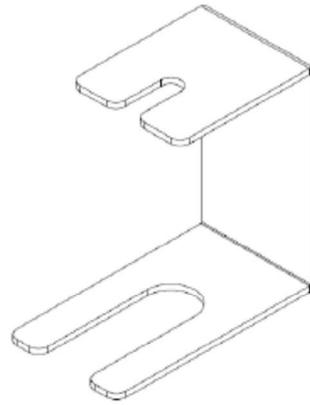
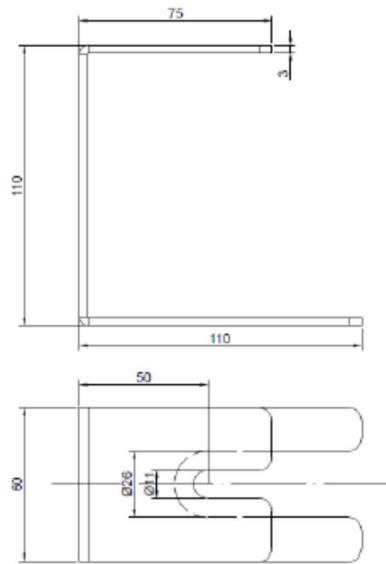
### Application of ESB absorbing base

In general, omni ceiling-mounted antennas are installed on non-metallic surface and avoid being installed near any metallic object or surface to avoid RF interferences which could badly affect the antenna performance. When such installation becomes not possible, ESB RF Absorbing Base is used to minimize the RF interferences and improve the performance to acceptable level. ESB does not guarantee the operation of this device and highly recommends installing antennas on non-metallic surfaces

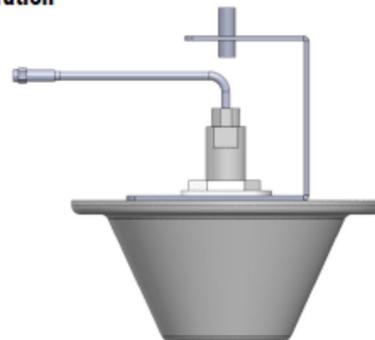
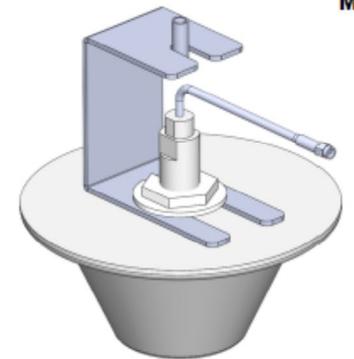
**70010017**

**C-bracket ceiling Indoor mounting**

Indoor  
Omni Antenna mounting kit



**Mounting Illustration**



**Bracket NOT suitable for slim antennas**

# Standard attenuators

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Attenuators are used mainly where a power reduction is needed to reach a certain level in a transmission line. Different input power starting from 5W up to 100W can be found in our portfolio.

Part Number	Description	MHz	IM3 (dBc)	Input Power (W)	Connector Type	Page
78710305	3 dB Attenuator	DC-6000	-120	5	N F/M	48
78710605	6 dB Attenuator	DC-6000	-120	5	N F/M	48
78711005	10 dB Attenuator	DC-6000	-120	5	N F/M	48
78712005	20 dB Attenuator	DC-6000	-120	5	N F/M	48
78710310	3 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78710610	6 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78711010	10 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78711510	15 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78712010	20 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78713010	30 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78714010	40 dB Attenuator	DC-4000	-120	10	4.3-10 F/M	49
78710385	3 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78710685	6 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78711085	10 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78711585	15 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78712085	20 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78713085	30 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78714085	40 dB Attenuator	DC-4000	-120	15	4.3-10 F/M	50
78710325	3 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78710625	6 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78711025	10 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78711525	15 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78712025	20 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78713025	30 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78714025	40 dB Attenuator	DC-4000	-120	25	4.3-10 F/M	51
78710345	3 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78710645	6 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78711045	10 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78711545	15 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78712545	20 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78713045	30 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78714045	40 dB Attenuator	DC-4000	-105	50	4.3-10 F/M	52
78710355	3 dB Attenuator	DC-4000	-105	100	4.3-10 F/M	53
78710655	6 dB Attenuator	DC-4000	-105	100	4.3-10 F/M	53
78711055	10 dB Attenuator	DC-4000	-105	100	4.3-10 F/M	53
78711555	15 dB Attenuator	DC-4000	-105	100	4.3-10 F/M	53
78712055	20 dB Attenuator	DC-4000	-105	100	4.3-10 F/M	53
78713055	30 dB Attenuator	DC-4000	-105	100	4.3-10 F/M	53

# 7871xx05

Attenuator 5W N  
DC-6000

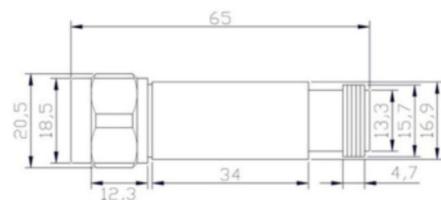
## Attenuator DC-6000 5W

Type	78710305	78710605	78711005	78712005
Attenuation (dB)	3	6	10	20
Attenuation Tolerance (dB)	±0.5	±0.5	±0.5	±0.8

Electrical Specifications	
Frequency (MHz)	DC - 6000
PIM3 (dBc, @2x33dBm)	≤ -120
Impedance (Ω)	50
Return Loss (dB)	≥ 21
Max Input Power (W)	5
Connector	N M/F

Mechanical and Environmental Specifications	
Dimension (mm)**	Ø205 x 65
Weight (kgs)*	0.08
Application	Indoor
Operating Temperature (°C)	-55 to +125
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	70 x 30 x 30
SKU (unit/inner carton)	100 pieces per inner carton/box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx10

Attenuator 10W 4.3-10  
DC-4000

## Attenuator DC-4000 10W

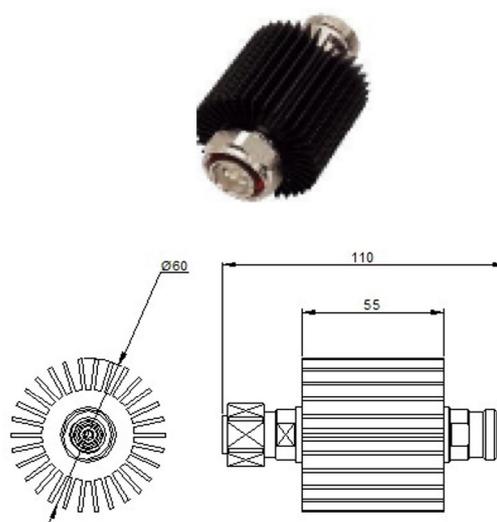
Type	78710310	78710610	78711010	78711510
Attenuation (dB)	3	6	10	15
Attenuation Tolerance (dB)	±0.7	±0.7	±0.7	±0.7

Type	78712010	78713010	78714010
Attenuation (dB)	20	30	40
Attenuation Tolerance (dB)	±0.7	±0.8	±0.8

Electrical Specifications	
Frequency (MHz)	DC - 4000
PIM3 (dBc, @2x33dBm)	≤ -120
Impedance (Ω)	50
Return Loss (dB)	≥ 21
Max Input Power (W)	10
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	Ø55 x 69
Weight (kgs)*	4.3-10 F/M: 0.30
Ingress Protection	IP55
Operating Temperature (°C)	-55 to +125
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	160 x 70 x 70
SKU (unit/inner carton)	50 pieces per inner carton/box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx85

Attenuator 15W 4.3-10  
DC-4000

## Attenuator DC-4000 15W

Type	78710385	78710685	78711085	78711585
Attenuation (dB)	3	6	10	15
Attenuation Tolerance (dB)	±0.7	±0.7	±0.7	±0.7

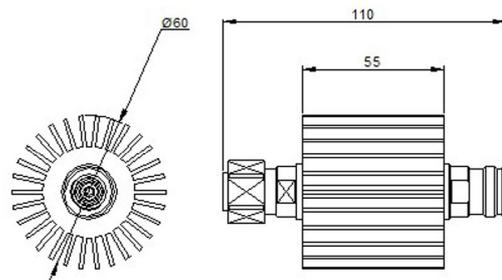
Type	78712085	78713085	78714085
Attenuation (dB)	20	30	40
Attenuation Tolerance (dB)	±0.7	±0.8	±0.8

Electrical Specifications	
Frequency (MHz)	DC - 4000
PIM3 (dBc, @2x33dBm)	≤ -120
Impedance (Ω)	50
Return Loss (dB)	≥ 21
Max Input Power (W)	15
Orientation	Bidirectional depending of the direction signal is connected
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	Ø60 x 55
Weight (kgs)*	4.3-10 F/M: 0.30
Ingress Protection	IP55
Operating Temperature (°C)	-55 to +125
Operating RH (%)	≤ 95



Packing Information	
Packing Size (mm)	160 x 70 x 70
SKU (unit/inner carton)	50 pieces per inner carton/box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx25

Attenuator 25W 4.3-10  
DC-4000

## Attenuator DC-4000 25W

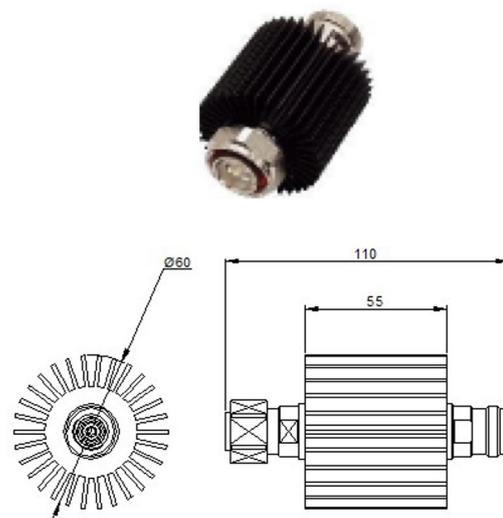
Type	78710325	78710625	78711025	78711525
Attenuation (dB)	3	6	10	15
Attenuation Tolerance (dB)	±0.7	±0.7	±0.7	±0.7

Type	78712025	78713025	78714025
Attenuation (dB)	20	30	40
Attenuation Tolerance (dB)	±0.7	±0.8	±0.8

Electrical Specifications	
Frequency (MHz)	DC - 4000
PIM3 (dBc, @2x33dBm)	≤ -120
Impedance (Ω)	50
Return Loss (dB)	≥ 21
Max Input Power (W)	25
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	Ø60 x 55
Weight (kgs)*	4.3-10 F/M: 0.30
Ingress Protection	IP55
Operating Temperature (°C)	-55 to +125
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	160 x 70 x 70
SKU (unit/inner carton)	50 pieces per inner carton/box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx45

Attenuator 50W 4.3-10  
DC-4000

## Attenuator DC-4000 50W

Type	78710345	78710645	78711045	78711545
Attenuation (dB)	3	6	10	15
Attenuation Tolerance (dB)	±0.7	±0.7	±0.7	±0.7

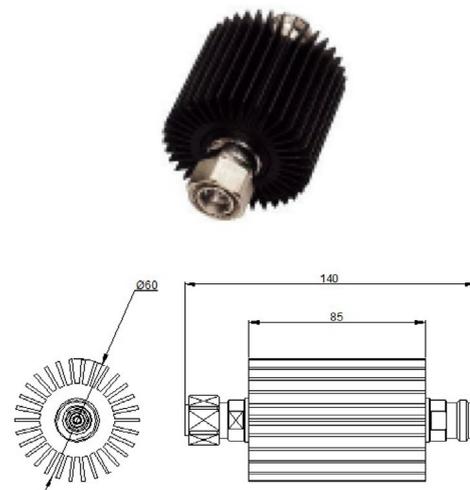
Type	78712045	78713045	78714045
Attenuation (dB)	20	30	40
Attenuation Tolerance (dB)	±0.7	±0.8	±0.8

Electrical Specifications	
Frequency (MHz)	DC - 4000
PIM3 (dBc, @2x43dBm)	≤ -105
Impedance (Ω)	50
Return Loss (dB)	≥ 21
Max Input Power (W)	50
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	Ø60 x 85
Weight (kgs)*	4.3-10 F/M: 0.45
Ingress Protection	IP55
Operating Temperature (°C)	-55 to +125
Operating RH (%)	≤ 95

Signal process
Bidirectional device
Signal can be attenuated in both directions

Packing Information	
Packing Size (mm)	160 x 70 x 70
SKU (unit/inner carton)	50 pieces per inner carton/box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx55

Attenuator 100W 4.3-10  
DC-4000

## Attenuator DC-4000 100W

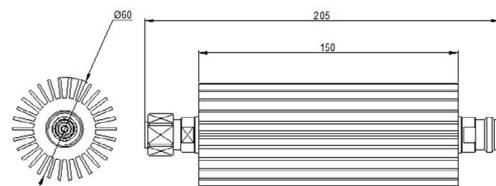
Type	78710355	78710655	78711055	78711555
Attenuation (dB)	3	6	10	15
Attenuation Tolerance (dB)	±0.7	±0.7	±0.7	±0.7

Type	78712055	78713055
Attenuation (dB)	20	30
Attenuation Tolerance (dB)	±0.7	±0.8

Electrical Specifications	
Frequency (MHz)	DC - 4000
PIM3 (dBc, @2x43dBm)	≤ -105
Impedance (Ω)	50
Return Loss (dB)	≥ 21
Max Input Power (W)	100
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	Ø60 x 150
Weight (kgs)*	4.3-10 F/M: 0.95
Ingress Protection	IP55
Operating Temperature (°C)	-55 to +125
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	225 x 70 x 70
SKU (unit/inner carton)	50 pieces per inner carton/box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# Low PIM attenuators

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Low PIM Attenuators are used mainly where a power reduction is needed to reach a certain level in a transmission line keeping an excellent intermodulation level -160dBc. Different input power starting from 25W up to 200W with 4.3-10 connectors can be found in our portfolio.

Part Number	Description	MHz	IM3 (dBc)	Input Power (W)	Connector Type	Page
78720334	3 dB Attenuator	698 - 4000	-160	25	4.3-10 F/M	56
78720634	6 dB Attenuator	698 - 4000	-160	25	4.3-10 F/M	56
78721034	10 dB Attenuator	698 - 4000	-160	25	4.3-10 F/M	56
78721534	15 dB Attenuator	698 - 4000	-160	25	4.3-10 F/M	56
78722034	20 dB Attenuator	698 - 4000	-160	25	4.3-10 F/M	56
78723034	30 dB Attenuator	698 - 4000	-160	25	4.3-10 F/M	56
78710344	3 dB Attenuator	698 - 4000	-160	50	4.3-10 F/M	57
78710644	6 dB Attenuator	698 - 4000	-160	50	4.3-10 F/M	57
78711044	10 dB Attenuator	698 - 4000	-160	50	4.3-10 F/M	57
78711544	15 dB Attenuator	698 - 4000	-160	50	4.3-10 F/M	57
78712044	20 dB Attenuator	698 - 4000	-160	50	4.3-10 F/M	57
78713044	30 dB Attenuator	698 - 4000	-160	50	4.3-10 F/M	57
78710354	3 dB Attenuator	698 - 4000	-160	100	4.3-10 F/M	58
78710654	6 dB Attenuator	698 - 4000	-160	100	4.3-10 F/M	58
78711054	10 dB Attenuator	698 - 4000	-160	100	4.3-10 F/M	58
78711554	15 dB Attenuator	698 - 4000	-160	100	4.3-10 F/M	58
78712054	20 dB Attenuator	698 - 4000	-160	100	4.3-10 F/M	58
78713054	30 dB Attenuator	698 - 4000	-160	100	4.3-10 F/M	58
78710364	3 dB Attenuator	698 - 4000	-160	200	4.3-10 F/M	59
78710664	6 dB Attenuator	698 - 4000	-160	200	4.3-10 F/M	59
78711064	10 dB Attenuator	698 - 4000	-160	200	4.3-10 F/M	59
78711564	15 dB Attenuator	698 - 4000	-160		4.3-10 F/M	59
78712064	20 dB Attenuator	698 - 4000	-160	200	4.3-10 F/M	59
78713064	30 dB Attenuator	698 - 4000	-160	200	4.3-10 F/M	59

# 7872xx34

Low PIM Attenuator 25W 4.3-10  
698-4000

## Attenuator 698-4000 25W

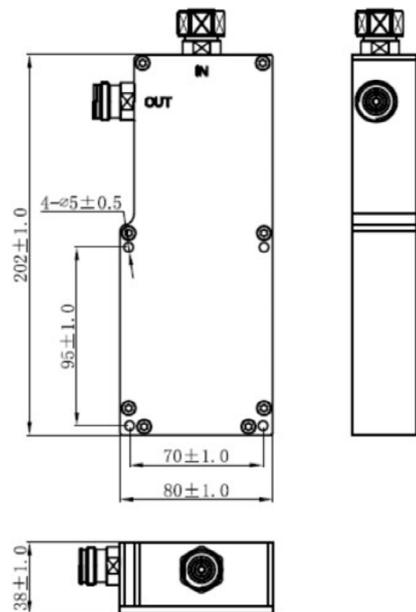
Type	78720334	78720634	78721034	78721534	78722034	78723034
Attenuation (dB)	3	6	10	15	20	30
Attenuation Tolerance (dB)	±0.6	±1.0	±1.0	±1.0	±1.3	±1.3

Electrical Specifications	
Frequency (MHz)	698 - 4000
PIM3 (dBc, @2x43dBm)	≤ -160
Impedance (Ω)	50
Return Loss (dB)	≥ 19
Max Input Power (W)	25
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	202 x 80 x 38
Weight (kgs)*	1.6
Ingress Protection	IP65
Operating Temperature (°C)	-40 to +65
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	250 x 90 x 50
SKU (unit/inner carton)	8 pieces per inner carton/ box

Signal process
1. Signal is attenuated per above table in the forward direction (Input to Output)
2. Signal goes through without attenuation in the reverse direction (Output to Input) with max power 5W
3. Default orientation: Input= Male connector / Output= Female connector



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx44

## Attenuator 698-4000 50W

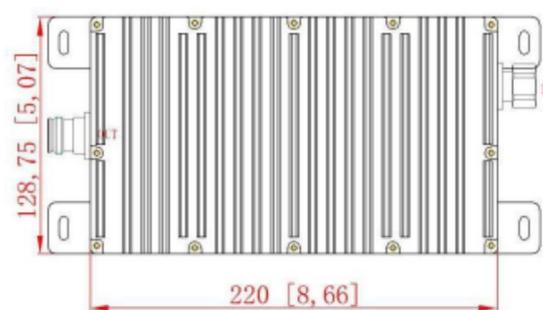
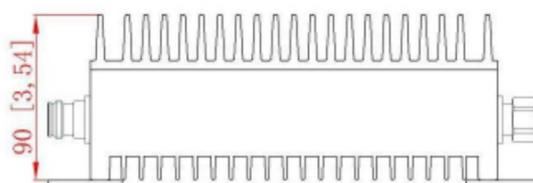
Low PIM Attenuator 50W 4.3-10  
698-4000

Type	78710344	78710644	78711044	78711544	78712044	78713044
Attenuation (dB)	3	6	10	15	20	30
Attenuation Tolerance (dB)	±0.6	±1.0	±1.0	±1.0	±1.3	±1.3

Electrical Specifications	
Frequency (MHz)	698 - 4000
PIM3 (dBc, @2x43dBm)	≤ -160
Impedance (Ω)	50
Max Input Power (W)	50
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	220 x 128.7 x 70
Weight (kgs)*	3.0
Ingress Protection	IP65
Operating Temperature (°C)	-40 to +65
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	415 x 290 x 265
SKU (unit/inner carton)	4 pieces per inner carton/ box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx54

Low PIM Attenuator 100W 4.3-10  
698-4000

## Attenuator 698-4000 100W

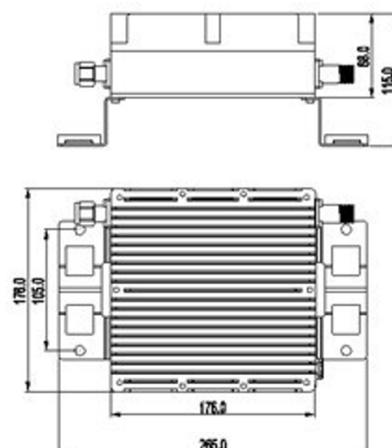
Type	78710354	78710654	78711054	78711554
Attenuation (dB)	3	6	10	15
Attenuation Tolerance (dB)	±0.6	±1.0	±1.0	±1.0

Type	78712054	78713054
Attenuation (dB)	20	30
Attenuation Tolerance (dB)	±1.3	±1.3

Electrical Specifications	
Frequency (MHz)	698 - 4000
PIM3 (dBc, @2x43dBm)	≤ -160
Impedance (Ω)	50
Return Loss (dB)	≥ 19
Max Input Power (W)	100
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	176 x 176 x 97.5
Weight (kgs)*	4.3-10 F/M: 4.7
Ingress Protection	IP65
Operating Temperature (°C)	-40 to +65
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	415 x 290 x 265
SKU (unit/inner carton)	54 pieces per inner carton/ box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 7871xx64

Low PIM Attenuator 200W 4.3-10  
698-4000

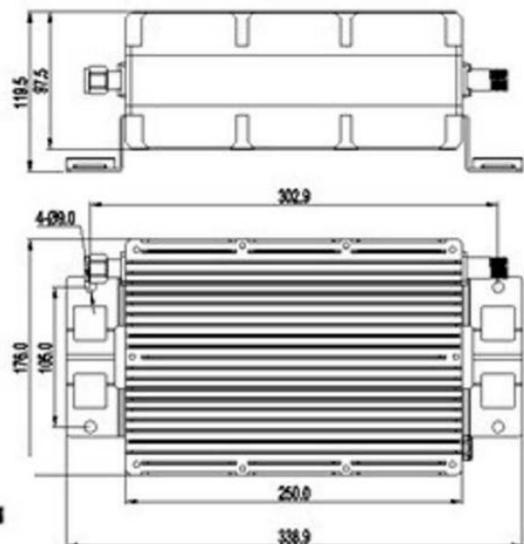
## Attenuator 698-4000 200W

Type	78710364	78710664	78711064	78711564	78712064	78713064
Attenuation (dB)	3	6	10	15	20	30
Attenuation Tolerance (dB)	±0.6	±1.0	±1.0	±1.0	±1.3	±1.3

Electrical Specifications	
Frequency (MHz)	698 - 4000
PIM3 (dBc, @2x43dBm)	≤ -160
Impedance (Ω)	50
Return Loss (dB)	≥ 19
Max Input Power (W)	200
Connector	4.3-10 F/M

Mechanical and Environmental Specifications	
Dimension (mm)**	250 x 176 x 97.5
Weight (kgs)*	4.3-10 F/M: 7.7
Ingress Protection	IP65
Operating Temperature (°C)	-40 to +65
Operating RH (%)	≤ 95

Packing Information	
Packing Size (mm)	415 x 365 x 285
SKU (unit/inner carton)	4 pieces per inner carton/ box



\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# Loads & Low PIM loads

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ESB Low PIM loads comprises a comprehensive portfolio for the most demanding mobile telecommunications networks in the market. They guarantee an excellent intermodulation level (-160dBc) as well as minimum VSWR values in order to avoid any reflect transmission. Low PIM loads can be found with different male or female 4.3-10 connectors.

Part Number	Description	MHz	IM3 (dBc)	Input Power (W)	Connector Type	Page
75110484	Termination Load	DC-6000	N/A	2W	4.3-10-M	62
75110425	Termination Load	DC-6000	N/A	25W	4.3-10-M	63
75110104	Termination Load	DC-6000	-160	10W	4.3-10-F	64
75120104	Termination Load	DC-6000	-160	10W	4.3-10-M	64
75110504	Termination Load	DC-4000	-160	50W	4.3-10-F	65
75120504	Termination Load	DC-4000	-160	50W	4.3-10-M	65
75111004	Termination Load	DC-4000	-160	100W	4.3-10-F	66
75121004	Termination Load	DC-4000	-160	100W	4.3-10-M	66
75112004	Termination Load	DC-4000	-160	200W	4.3-10-F	67
75122004	Termination Load	DC-4000	-160	200W	4.3-10-M	67

# 75110484

## Termination Load 50ohm DC-6000 2W

2W Termination Load 50 ohm  
DC-6000 4.3-10 Male

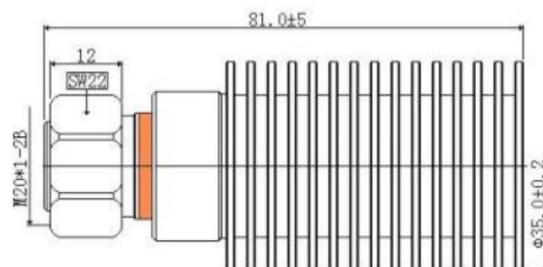
Type	75110484
Power Rating (W)	2
Frequency (MHz)	DC - 6000
Impedance (Ω)	50
VSWR	≤ 1.07 (0-1Ghz) ≤ 1.11 (1Ghz-2.5Ghz) ≤ 1.20 (2.5-6Ghz)
Dimension (mm)	37 x $\phi$ 20
IP protection	IP65
Weight (g)	Approx 60
Application	Indoor & outdoor
Operating temperature (°C)	-25 + 65°c



**75110425****Termination Load  
DC-6000**

Load 25W  
4.3-10 male connector  
DC-6000Mhz

Type	75110425
Power Rating (W)	25
Frequency (MHz)	DC - 6000
Impedance ( $\Omega$ )	50
VSWR	$\leq 1.15$
Connector	4.3-10 male
Dimension (mm)	81 x $\phi 35$
Application	Indoor
Operating temperature ( $^{\circ}\text{C}$ )	-25 + 65 $^{\circ}\text{C}$



# 751x0104

## Termination Load 50ohm DC-6000 10W

Termination Load 50 ohm  
Low PIM: -160dBc 10W  
DC-6000 4.3-10: -Male / Female

Type	75110104 (4.3-10-Female)	75120104 (4.3-10-Male)
Power Rating (W)	10	
Frequency (MHz)	DC - 6000	
PIM3 (dBc)	-160	
Impedance (Ω)	50	
VSWR	≤ 1.20	
Dimension (mm)**	140 x φ63	
Weight (kgs)*	Female: 0.715	
	Male: 0.715	
Application	Indoor	
Packing dimensions	210 × 65 × 65	



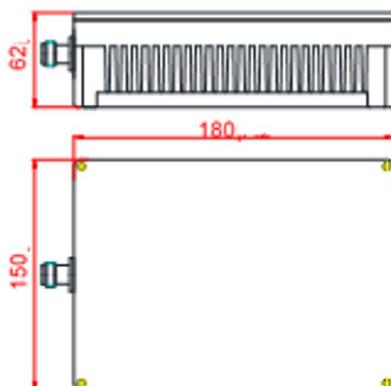
\* including connector  
\*\* excluding connector

## 751x0504

### Termination Load 50ohm DC-4000 50W

Termination Load 50 ohm  
Low PIM: -160dBc 50W  
DC-4000 4.3-10: -Male / Female

Type	75110504 (4.3-10-Female)	75120504 (4.3-10-Male)
Power Rating (W)	50	
Frequency (MHz)	DC - 4000	
PIM3 (dBc)	See Above Type Number Selection Table	
Impedance ( $\Omega$ )	50	
VSWR	$\leq 1.20$	
Dimension (mm)**	180 x 150 x 62	
Weight (kgs)*	Female: 2.545 approx.	
	Male: 2.530 approx.	
Ingress Protection	IP65	



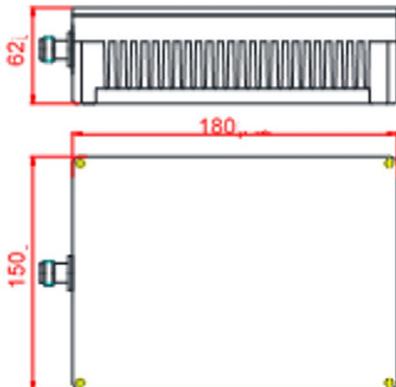
\* including connector  
\*\* excluding connector

# 751X1004

## Termination Load 50ohm DC-4000 100W

Termination Load 50 ohm  
Low PIM: -160dBc 100W  
DC-4000 4.3-10: -Male / Female

Type	75111004 (4.3-10-Female)	75121004 (4.3-10-Male)
Power Rating (W)	100	
Frequency (MHz)	DC - 4000	
PIM3 (dBc)	-160	
Impedance ( $\Omega$ )	50	
VSWR	$\leq 1.20$	
Dimension (mm)**	180 x 150 x 62	
Weight (kgs)*	Female: 2.545 approx.	
	Male: 2.530 approx.	
Ingress Protection	IP65	
Operating temperature ( $^{\circ}\text{C}$ )	-40 to +80	

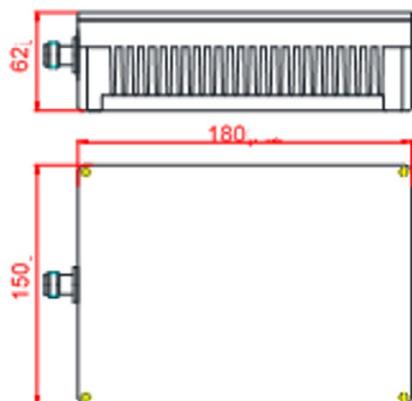


\* including connector  
\*\* excluding connector

**751X2004****Termination Load  
50ohm DC-4000 200W**

Termination Load 50 ohm  
 Low PIM: -160dBc 200W  
 DC-4000 4.3-10: -Male / Female

Type	75112004 (4.3-10-Female)	75122004 (4.3-10-Male)
Power Rating (W)	200	
Frequency (MHz)	DC - 4000	
PIM3 (dBc)	-160	
Impedance ( $\Omega$ )	50	
VSWR	$\leq 1.20$	
Dimension (mm)**	180 x 150 x 62	
Weight (kgs)*	Female: 2.595 approx.	
	Male: 2.580 approx.	
Ingress Protection	IP65	
Operating temperature ( $^{\circ}\text{C}$ )	-40 to +80	



\* including connector  
 \*\* excluding connector

# Antenna line products



#shipyard Thursday, February 28th

**Justin** 10:21 PM  
What Ok not much really. Just a lil attribution.  
Why Show in cold hard numbers how much money Proof is earning our customers.  
Who Notification customers. All of 'em.



Proof is pocketing this particular customer about \$400/month after our ads even given that negative campaign.  
For a while we had "working early this morning, but it wasn't performing enough" and in one day, we ripped it out of our campaign and rewrote it in the standard so we could do the calculation without holding up API calls. It is now just as performant as the original call to get all campaigns.

**Justin** 10:21 PM  
Proved using Apple's OS for the network logs (2 MB)



**AG** 10:21 PM  
We're amazing y'all. There is that sentiment.  
**David** 10:21 PM  
We're GETTING PUGGISH GUY.  
That looks really amazing guys.

MacBook Pro

## Antenna line products

Hybrid & Same Band Combiners **\_70**

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Special Antennas **\_82**

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Small Cell Antennas **\_104**

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Trisector and Cannister antennas **\_134**

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Multi-Band Combiners **\_161**

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System components and accesories **\_216**

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# Hybrid & Same Band Combiners

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Low PIM ESB hybrid combiners are basically used to combine a signal into equal shares with the maximum port isolation needed in current mobile networks. 2x2, 3x3 and 4x4 versions are available covering different frequency range for each scenario.

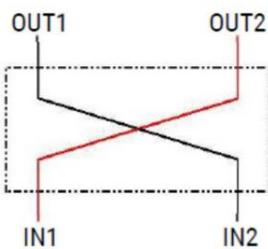
Part Number	Description	MHz	IM3 (dBc)	Input Power (W)	Connector Type	Page
78211527	Hybrid combiner 2x2	698-4000	-160	500	4.3-10-F	72
78211527v01	Hybrid combiner 2x2	555-6000	-160	500	4.3-10-F	73
78211507	Hybrid combiner 2x1	698-4200	-160	500	4.3-10-F	74
78211380	Hybrid combiner 2x2	380-3800	-160	500	4.3-10-F	75
78211538v01	Hybrid combiner 4x4	380-6000	-160	500	4.3-10-F	76
78211336v01	Hybrid combiner 3x3	380-6000	-160	500	4.3-10-F	77
78211536v01	Hybrid combiner 4x4	698-4200	-160	500	4.3-10-F	78
78211533Hlv01	Hybrid combiner 3x3	698-4200	-160	500	4.3-10-F	79
78211359	Hybrid combiner 4x2	3300-5900	-161	500	4.3-10-F	80
78311235v01	Same band combiner	1800	-160	500	4.3-10-F	81

**78211527**

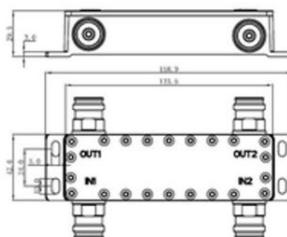
**2:2 Hybrid Combiner  
698-4000Mhz**

Hybrid Combiner 2-in/2-out  
PIM -160dBc  
698-4000Mhz

Type	78211527
Frequency (MHz)	698-4000
Insertion Loss (dB)	3.1 ±0.6
VSWR	≤ 1.25
Isolation (dB)	≥ 25
PIM3 (dBc, @2x43dBm)	≤ -160
Input Impedance (ohm)	50
Max. Input Power (W)	500
Peak Power (W)	1500
Connector	4.3-10 Female
Weight (kgs)*	0.50
AISG/DC Bypass Path (2500mA Max)	IN1 ↔ OUT2 IN2 ↔ OUT1
Dimension (mm)**	158.9 x 42.60 x 29.5
Ingress Protection Class	IP65 (for outdoor and indoor)
Operating RH (%)	≤ 95
Operating Temperature (°C)	-40 to +65
Mounting	Wall Mount
Colour	Light Grey



Schematic Diagram



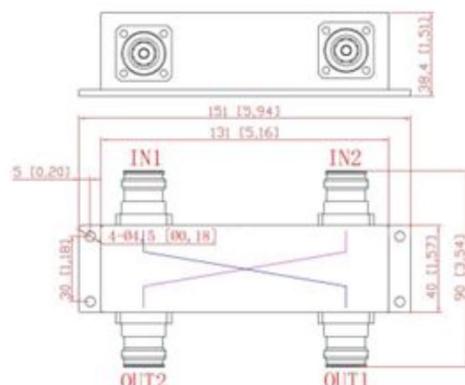
\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 78211527v01

## 2:2 Hybrid Combiner 550-6000Mhz

Hybrid Combiner 2-in/2-out  
PIM -160dBc  
550-6000Mhz

Type	78211527v01
Frequency (MHz)	550-6000
Coupling (dB)	3
Insertion Loss (dB)	±1.4 (550-610Mhz) ±0.8 (610-6000Mhz)
VSWR	≤ 1.35
Isolation (dB)	≥ 23
PIM3 (dBc, @2x43dBm)	≤ -160
Input Impedance (ohm)	50
Max. Input Power (W)	200
Peak Power (W)	1000
Connector	4.3-10 Female
Weight (kgs)*	0.60
AISG/DC Bypass Path (2500mA Max)	IN1 ↔ OUT1 IN2 ↔ OUT2
Dimension (mm)**	131 x 40 x 38.4
Ingress Protection Class	IP65 (for outdoor and indoor)
Operating RH (%)	≤ 95
Operating Temperature (°C)	-40 to +65
Mounting	Wall Mount
Colour	Light Grey



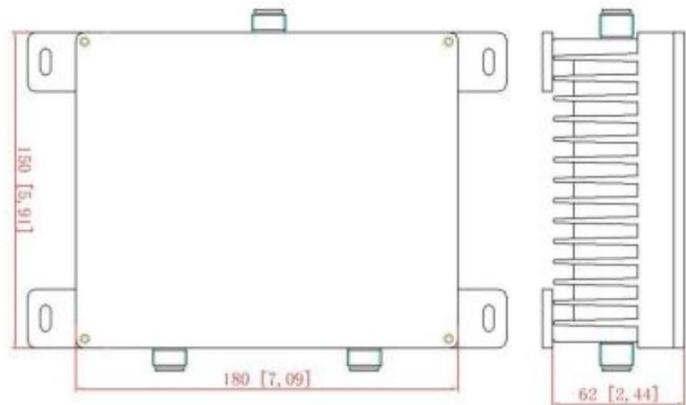
\* including mounting bracket and connectors  
\*\* excluding mounting bracket and connectors

# 78211507

## 2:1 Hybrid Combiner 698-4200Mhz

Hybrid Combiner 2-in/1-out  
PIM -160dBc  
698-4200Mhz

Type	78211507
Frequency (MHz)	698-4200
Insertion Loss (dB)	≤3.6
VSWR	≤ 1.25
Isolation (dB)	≥ 23
PIM3 (dBc, @2x43dBm)	≤ -160
Input Impedance (ohm)	50
Max. Input Power (W)	500
Peak Power (W)	1200
Connector	4.3-10 Female
Weight (kgs)*	0.60
Dimension (mm)**	180 x 150 x 62
Ingress Protection Class	IP65 (for outdoor and indoor)
Operating RH (%)	≤ 95
Operating Temperature (°C)	-40 to +65
Mounting	Wall Mount
Colour	Black

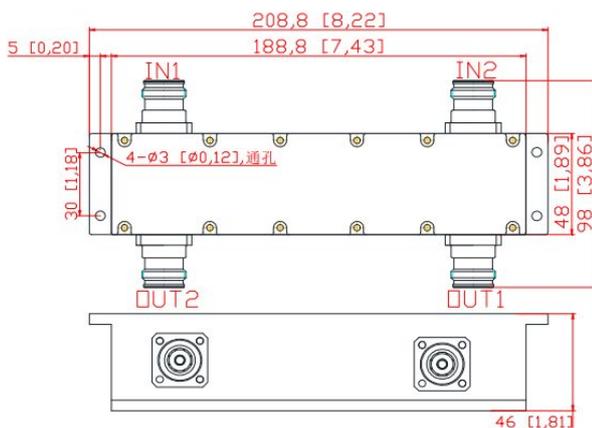


# 78211380

## 2:2 Hybrid Combiner 380-3800Mhz

Hybrid Combiner 2-in/2-out  
PIM -160dBc  
380-3800Mhz

Type	78211380
Frequency (MHz)	380-3800
Insertion Loss (dB)	3 ± 1.0
VSWR	≤ 1.25
Isolation (dB)	≥ 23
PIM3 (dBc, @2x43dBm)	≤ -160
Input Impedance (ohm)	50
Max. Input Power (W)	500
Peak Power (W)	1,500
Connector	4.3-10 Female
Weight (kgs)*	1.1 ± 0.55
AISG/DC Bypass Path (2500mA Max)	IN1 ↔ OUT1 IN2 ↔ OUT2
Dimension (mm)**	188.8 x 48 x 46
Ingress Protection Class	IP65 (for outdoor and indoor)
Operating RH (%)	≤ 95
Operating Temperature (°C)	-40 to +65
Mounting	Wall Mount
Colour	Light Grey

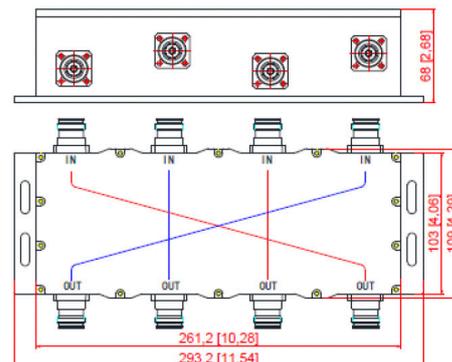
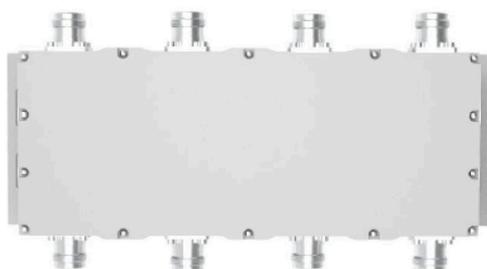


# 78211538v01

## 4:4 Hybrid Combiner 380-3800Mhz

Hybrid Combiner 4-in/4-out  
PIM -160dBc  
380-3800Mhz

Type		78211538v01
Frequency (MHz)		380-3800
Insertion Loss (dB)	380-960Mhz	6.2±1.5
	1710-2700Mhz	6.2±1.5
	3400-3800Mhz	6.2±1.5
Isolation (dB)	380-960Mhz	≥18
	1710-2700Mhz	≥18
	3400-3800Mhz	≥18
PIM3 (dBc, @2x43dBm)		≤ -160
VSWR		≤ 1.3
Input Impedance (ohm)		50
Max. Input Power (W)		500
Peak Power (W)		1,500
Connector		4.3-10F
Dimension (mm)		293.2 x 109 x 68 (excluding mounting bracket and connectors)
Operating Temperature (°C)		-40 to +80
Operating Humidity (%)		≤ 95
Ingress Protection Class		IP65
Weight (g)		3200

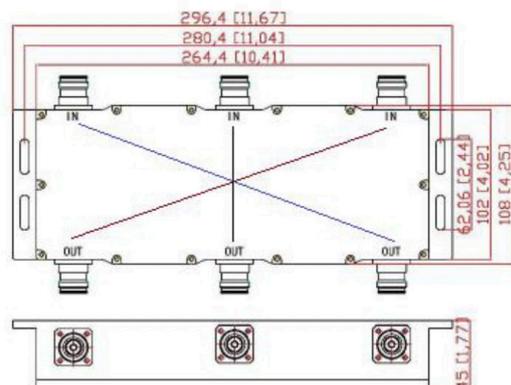


# 78211336v01

Hybrid Combiner 3-in/3-out  
 PIM -160dBc  
 380-3800MHz

## 3:3 Hybrid Combiner 380-3800MHz

Type	78211336v01	
Frequency (MHz)	380-3800	
Insertion Loss (dB)	380-960Mhz	5.1
	1710-2700Mhz	5.1
	3400-3800Mhz	5.1
Isolation (dB)	380-960Mhz	≥20
	1710-2700Mhz	≥20
	3400-3800Mhz	≥20
PIM3 (dBc, @2x43dBm)	≤ -160	
VSWR	≤ 1.30	
Input Impedance (ohm)	50	
Max. Input Power (W)	500	
Peak Power (W)	1,500	
AISG/DC Bypass Path (2500mA Max)	IN1 ↔ OUT3 IN2 ↔ OUT2 IN3 ↔ OUT1	
Connector	4.3-10F	
Dimension (mm)	296.4 x 108 x 45 (excluding mounting bracket and connectors)	
Operating Temperature (°C)	-40 to +80	
Operating Humidity (%)	≤ 95	
Ingress Protection Class	IP65	
Weight (g)	2380	

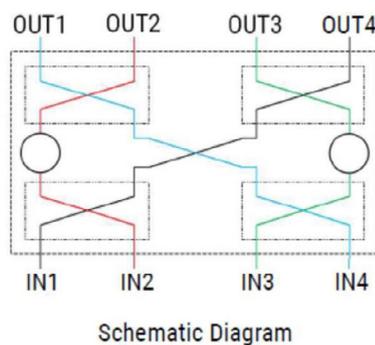
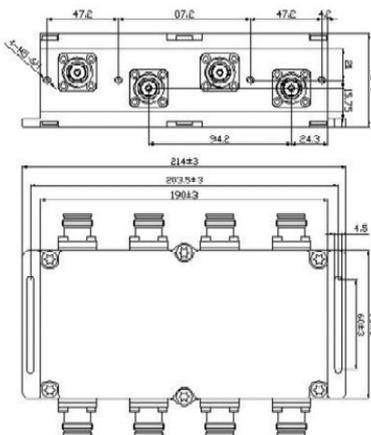


# 78211536v01

## 4:4 Hybrid Combiner 698-4200Mhz

Hybrid Combiner 4-in/4-out  
PIM -160dBc  
698-4200Mhz

Type	78211536v01	
Frequency (MHz)	698-4200	
Insertion Loss (dB)	698-2700: 6 ±1.5	2700-4200: 6 ±1.5
Return Loss (dB)	698-2700: ≥ 19	2700-4200: ≥ 18
VSWR	≤ 1.3	
Isolation (dB)	≥ 23	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	500	
Peak Power (W)	1,500	
Connector	4.3-10 Female	
Weight (kgs)	2.2	
Dimension (mm)*	214 x 99.4 x 62	
Ingress Protection Class	IP65 (for outdoor and indoor)	
Operating RH (%)	≤ 95	
Operating Temperature (°C)	-40 to +65	
Mounting	Built-in Bracket for wall mount or pole mount	
Colour	Light Grey	

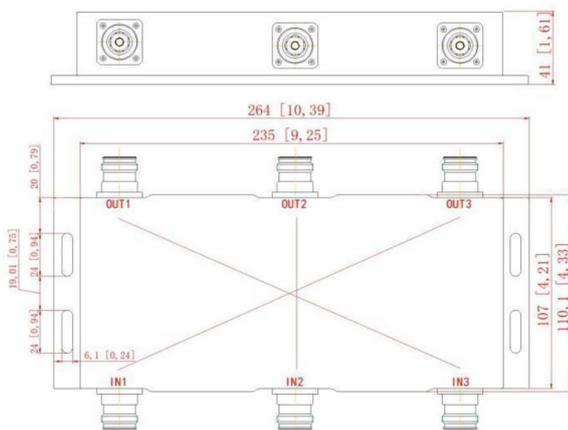


## 78211533HIv01

### 3:3 Hybrid Combiner 698-4200Mhz

Hybrid Combiner 3-in/3-out  
PIM -160dBc  
698-4200Mhz

Type	78211533HIv01
Frequency (MHz)	698-4200
Distribution Loss (dB)	≤ 5.5
Insertion Loss (dB)	±1.2
Isolation (dB)	≥ 25
PIM3 (dBc, @2x43dBm)	≤ -160
VSWR	≤ 1.30
Input Impedance (ohm)	50
Max. Input Power (W)	500
Peak Power (W)	1,500
AISG/DC Bypass Path (2500mA Max)	IN1 ↔ OUT3 IN2 ↔ OUT2 IN3 ↔ OUT1
Connector	4.3-10F
Dimension (mm)	235 x 107 x 41 (excluding mounting bracket and connectors)
Operating Temperature (°C)	-40 to +80
Operating Humidity (%)	≤ 95
Ingress Protection Class	IP65
Mounting	Wall Mount

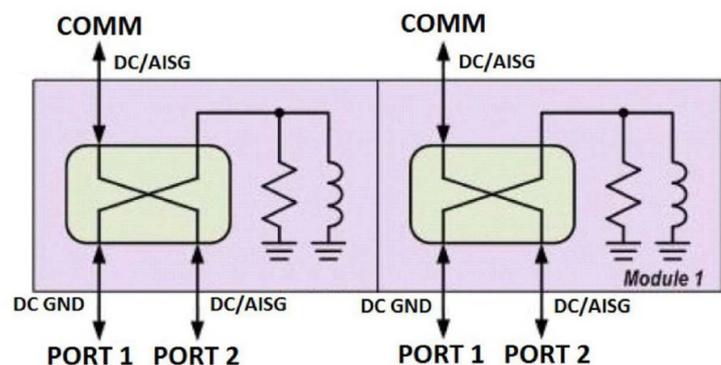


# 78211359

## Dual Hybrid Combiner 3300-5925MHz, 4.3-10 F, -161dBc, IP65

Hybrid Combiner 4-in/2-out  
PIM -161dBc  
3300-5925Mhz

Type	78211359
Frequency (MHz)	3300-5925
Insertion Loss (dB)	3.2±0.5
Isolation (dB)	≥ 22
PIM3 (dBc, @2x43dBm)	≤ -161
VSWR	≤ 1.25
Input Impedance (ohm)	50
Input Power Peak power (W)	400
Peak Power (W)	1500
AISG carrier	2176KHz ± 100ppm
DC current/max AISG	2.5A
DC pass-through	Branch 2
Lightning surge current	10 kA
Lightning surge current waveform	8/20 waveform
Connector	4.3-10F
Dimension (mm, excluding bracket and connectors)	200x110x75
Operating Temperature (°C)	-40 to +80
Operational Humidity (%)	≤ 95
Ingress Protection	IP65
Mounting	Wall Mount or pole mount

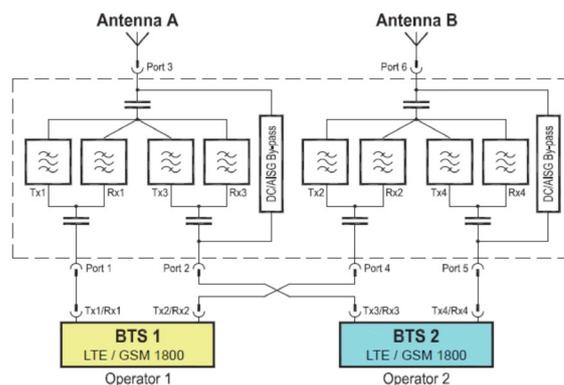
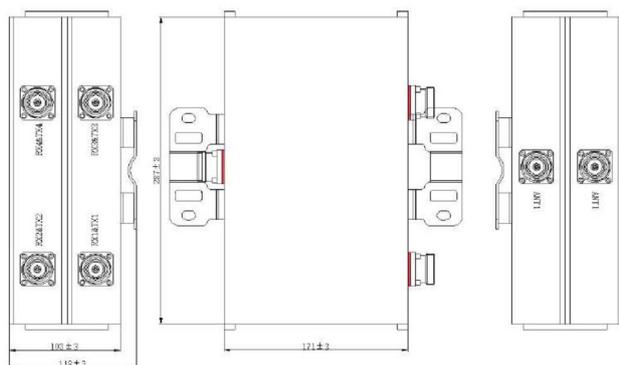


# 78311235v01

Outdoor Same-Band combiner  
 1730-1750/1825-1845MHz  
 1765-1785/1860-1880MHz

## Same-Band combiner

Type	78311235v01
Pass band frequency BTS 1 (LTE/GSM1800 / Operator 1) BTS 2 (LTE/GSM1800 / Operator 2)	Rx1/Rx2= 1730-1750MHz, Tx1/Tx2= 1825-1845 Mhz Rx3/Rx4= 1765-1785MHz, 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 Port1↔Port2 / Port4↔Port5	>30dB (1730-1750 / 1765-1785 / 1825-1845 / 1860-1880 MHz)
DC/AISG transparency (switchable) Port1↔Port3 / Port4↔Port6 Port2↔Port3 / Port5↔Port6	Stop By-pass (max. 2500 mA)
VSWR	< 1.25 (pass bands)
PIM3 (dBc, @2x43dBm)	≤ -160
Input Impedance (ohm)	50
Input Power Tx1/Tx2/Tx3/Tx4	< 100W / < 100W / < 100W / < 100W
Lightning Protection	3 kA, 10/350 μs pulse
Connector	4.3-10 female
Application	Indoor or outdoor (IP 66)
Dimension (mm)	287 x 171 x 218
Weight (kgs)	Approx. 5Kg
Mounting	Wall or mast pole
Operating Temperature (°C)	-40 to +65



# Special antennas

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ESB special antennas are designed to deliver maximum performance in harsh environments in line with the most demanding new 5G networks. The product portfolio ranges from antennas for rural environments, through antennas for high gain tunnels and 2x2 MIMO technology to antennas designed for private networks.

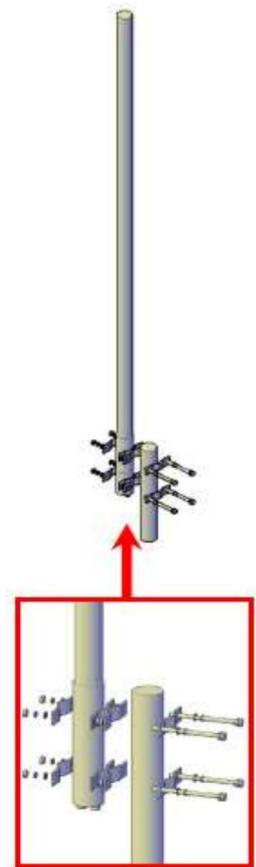
Part Number	Type	Inputs	Connector	MHz	Gain (dB)	Page
80011740/6	Omni	1port	4.3-10-F	698-960	11dB	84
80011747/2	Omni	2port	4.3-10-F	698-960	7.5dB	85
80011275	Omni	2port	4.3-10-F	1710-2700	10dB	86
80011274	Omni	2port	4.3-10-F	698-2700	8dB/10dB	87
80112014	Quasi-Omni	4port	4.3-10-F	698-2690	8dB/12dB	88
74212011v01	Log-per	1port	4.3-10-F	698-4000	11dB	89
74212010v01	Log-per	1port	4.3-10-F	698-4000	12dB/14dB	90
74212012v01	Log-per	2port	4.3-10-F	698-4000	10dB/11dB	91
74211014	Log-per	4port	4.3-10F	3300-3800	12dB	92
74211025	Log-per	2port	4.3-10F	3300-3800	12dB	93
74211037	Log-per	2port	4.3-10F	3300-3800	15dB	94
74212033	Log-per	2port	4.3-10F	2500-2700	14dB	95
78712071v01	Directional Antenna	2port	4.3-10F	2300-2700	19dB	96
78712071/2v01	Directional Pannel	2port	4.3-10F	2300-2700	19dB	96
80012087	Stadium antenna	2port	4.3-10F	698-2700	11/12dB	97
80012088	Stadium antenna	2port	4.3-10F	698-3800	11/12/12dB	98
74212045	Log-per	4port	4.3-10F	698-4200	12/15dB	99
ESBANT1Y33S	Antenna	2port	4.3-10F	1710-2690	21/21dB	100
ESBANT1L1Y90	Antenna	4port	4.3-10F	698-2690	15/17dB	102

# 80011740/6

Omni Antenna  
V-Pol 1-port 11dBi  
698-960MHz

## V-Pol Omni 698-960Mhz 11dBi Outdoor

Type	80011740/6
Frequency Range (MHz)	698-960
Gain (dBi)	11(@850Mhz) / 9.3(@700Mhz)
VSWR	≤ 1.7
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm
Polarization	Vertical
Horizontal Beamwidth (°)	360
Vertical Beamwidth (°)	7.5
Pre-set Electrical Tilt (°)	6
Input Impedance (ohm)	50
Max. Input Power (W)	250
Lightning Protection	DC Grounded
Connector Type	1 x 4.3-10 Female
Dimension (mm)	Ø52 x 2830
Weight (kgs)	8.2 approx
Radome Material	Fiber Glass
Radiator Material	Copper
Operating Temperature (°C)	-40 to +65
Max. Wind Velocity (km/h)	210
Mounting	Mounting Clamp for Pole included

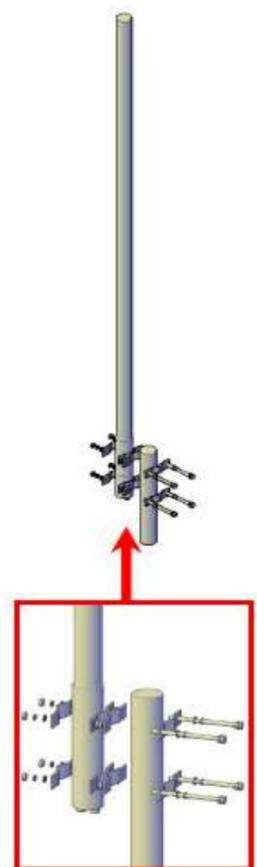


**80011747/2**

Omni Antenna  
 VV-Pol 2-port 7.5dBi  
 698-960MHz

**VV-Pol Omni**  
**698-960MHz 7.5dBi Outdoor**

Type	80011747/2
Frequency Range (MHz)	698-960
Gain (dBi)	7.5
VSWR	≤ 1.7
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm
Polarization	Vertical / Vertical
Horizontal Beamwidth (°)	360
Vertical Beamwidth (°)	15
Pre-set Electrical Tilt (°)	2
Input Impedance (ohm)	50
Max. Input Power (W)	250 per port
Lightning Protection	DC Grounded
Connector Type	2 x 4.3-10 Female
Dimension (mm)	Ø76 x 3,200
Weight (kgs)	10.5
Radome Material	Fiber Glass
Radiator Material	Copper
Operating Temperature (°C)	-40 to +65
Max. Wind Velocity (km/h)	210
Mounting	Mounting Clamp for Pole Ø60-Ø110 included

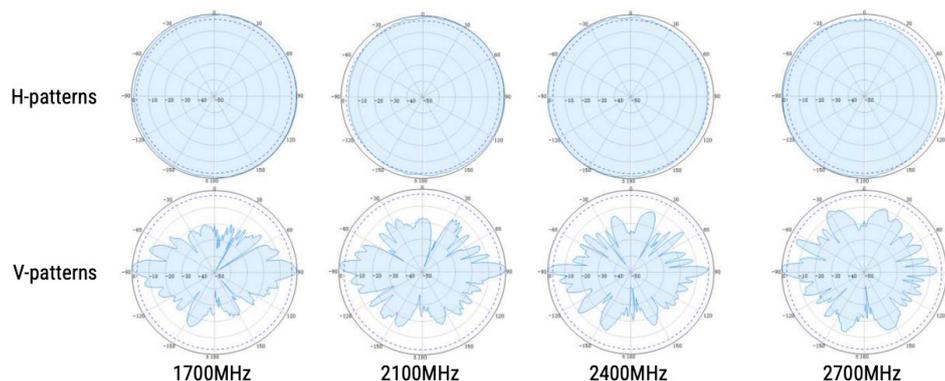


# 80011275

## VV-Pol Omni 1695-2700MHz 10dBi Outdoor

Omni Antenna  
VV-Pol 2-port 10dBi  
1695-2700MHz

Type	80011275		
Frequency Range (MHz)	1695-2300	2300-2500	2500-2700
Gain (dBi)	9 ±0.5	10 ±0.5	9 ±0.5
VSWR	≤ 1.8	≤ 1.8	≤ 1.8
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm		
Isolation	>20dB		
Polarization	Vertical / Vertical		
Horizontal Beamwidth (°)	360		
Vertical Beamwidth (°)	8	6	5
Pre-set Electrical Tilt (°)	0 (prefixed)		
Input Impedance (ohm)	50		
Max. Input Power (W)	150 per port		
Lightning Protection	DC Grounded		
Connector Type	2 x 4.3-10 Female		
Dimension (mm)	Ø52 x 2,500		
Weight (kgs)	3.6		
Radome Material	Fiber Glass (white)		
Reflector Material	Aluminium		
Operating Temperature (°C)	-40 to +65		
Max. Wind Velocity (km/h)	210		
Mounting	Mounting Clamp for Pole Ø60-Ø110 included		

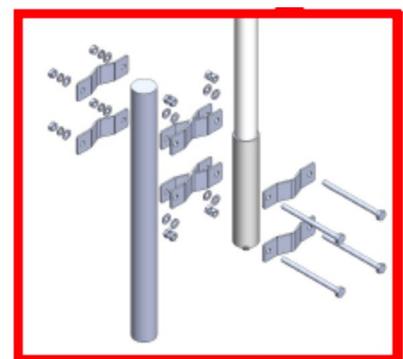
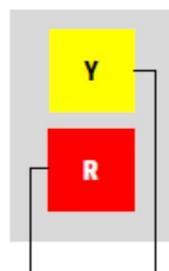
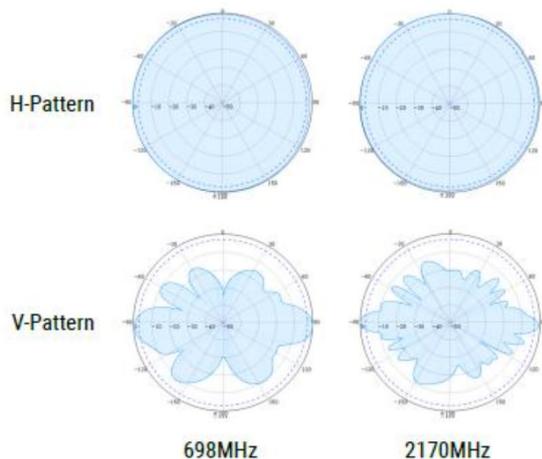


# 80011274

**VV-Pol Omni**  
**698-960/1710-2700Mhz 8/10dBi**  
**Outdoor**

Omni Antenna  
 VV-Pol 2-port 8/10dBi  
 698-960/1710-2700Mhz

Type	80011274	
Band	R	Y
Frequency (MHz)	698-960	1710-2700
Gain (dBi)	8 ± 0.5	10 ± 0.5
VSWR	≤ 1.8	≤ 2.0
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm	
Polarization	vertical / vertical	
Horizontal Beamwidth (°)	360	
Vertical Beamwidth (°)	14	9
Isolation	≥25dB	≥25dB
Input Impedance (ohm)	50	
Max. Input Power (W)	100 per port	
Lightning Protection	DC Grounded	
Connector Type	1 x 4.3-10 female	1 x 4.3-10 female
Dimension (mm)	Ø76 x 3200	
Weight (kgs)	9.5	
Radome Material	Fiber Glass	
Operating Temperature (°C)	-40 to +65	
Max. Wind Velocity (km/h)	200	
Wind load (N), @150Km/h	209.49	
Mounting	Mounting Clamp for Pole Ø60-Ø110 included	

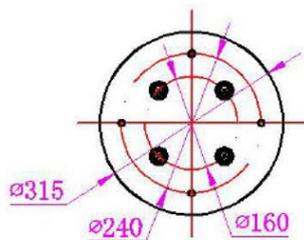
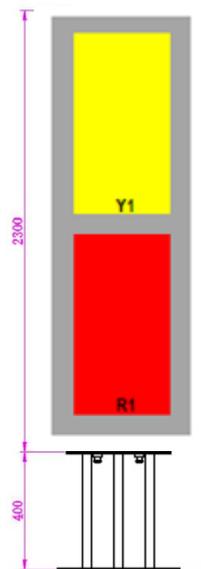


# 800112014

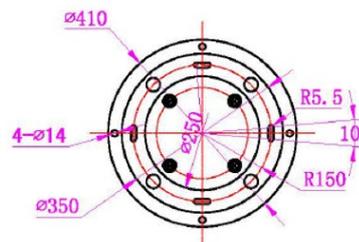
## X-Pol Quasi-Omni 698-960 / 1710-2700 8/12dBi

Quasi-Omni Antenna  
XX-Pol 4-port 8/12dBi  
698-960 / 1710-2700

Type	800112014	
Frequency Range (MHz)	698-960	1710-2700
Gain (dBi)	8	12
VSWR	≤ 1.7	
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm	
Polarization	±45°	
Isolation (dB)	≥ 18	≥ 18
Horizontal Beamwidth (°)	360	
Vertical Beamwidth (°)	12	7
Input Impedance (ohm)	50	
Max. Input Power (W)	250	
Lightning Protection	DC Grounded	
Connector Type	2 x 4.3-10 Female	2 x 4.3-10 Female
Dimension (mm)	Ø315 x 2,300	
Weight (kgs)	28.6 approx	
Radome Material	Fiber Glass	
Reflector Material	Aluminum	
Operating Temperature (°C)	-40 to +65	
Max. Wind Velocity (km/h)	200	
Mounting	70010004 Floor Mount with Steel Stand (Supplied)	



Bottom View - Antenna



Bottom View - Stand

**74212011v01****Log Periodic Antenna  
690-4000 11dBi**Log Periodic Antenna  
V-Pol 1-port 11dBi  
690-4000

Type	74212011v01					
Frequency Range (M Hz)	690-960	960-1695	1695-2200	2200-2490	2490-2690	3300-3800
Gain (dBi, typ.)	10.3	11.0	11.0	11.0	11.0	10.5
VSWR	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Polarization	Vertical					
PIM3 (dBc), @2x43dBm	≤ -150					
Horizontal Beamwidth (°)	67	57	53	47	41	63
Vertical Beamwidth (°)	54	50	48	45	44	55
Front-to-Back Ratio (dB)	≥ 20	≥ 20	≥ 25	≥ 25	≥ 25	≥ 25
Input Impedance (Ω)	50					
Max. Input Power (W)	250	250	200	200	200	200
Lightning Protection	DC Grounded					
Connector Type	1 x 4.3-10 Female					
Dimension (mm)	285 x 145 x 785					
Weight (kgs)	5.5					
Reflector Material	Aluminum					
Radome Material	Fiber Glass					
Rated Wind Velocity (km/h)	200					
Operating Temperature (°C)	-40 to +65					
Wind Load (N) (@150km/h Wind Speed)	Frontal: 25.5   Lateral: 143.1   Rearside: 41.8					
Mounting	4 x M12 Threaded Rods (L=162mm) with Washers and Nuts					
Complaint to Environmental Standards	Dry Heat	GB/T 2423.2		(IEC 60068-2-2)		
	Cold	GB/T 2423.1		(IEC 60068-2-1)		
	Damp Heat	GB/T 2423.3		(IEC 60068-2-78)		
	Change of Temperature	GB/T 2423.22		(IEC 60068-2-14)		
	Salt Mist	GB/T 2423.17		(IEC 60068-2-11)		
		GB/T 10125		(ISO 9227)		
	Ingress Protection	GB/T 4208		(IEC 60529)		
	Vibration	GB/T 2423.10		(IEC 60068-2-64)		
Drop Test	GB/T 2423.8 & 4857.5		(ISO 2248)			



# 74212010v01

## Log Periodic Antenna 690-4000 12/14dBi

Log Periodic Antenna  
V-Pol 1-port 12/14dBi  
690-4000

Type	74212010v01				
Frequency Range (MHz)	690-806	806-960	1425-2170	2170-2700	3300-4000
Gain (dBi, typ.)	11.5	12.5	13.5	13.5	13.5
VSWR	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Polarization	Vertical				
PIM3 (dBc), @2x43dBm	≤ -150				
Horizontal Beamwidth (°)	56	54	45	41	40
Vertical Beamwidth (°)	47	45	37	35	32
Front-to-Back Ratio (dB)	≥ 25	≥ 25	≥ 25	≥ 25	≥ 23
Input Impedance (Ω)	50				
Max. Input Power (W)	250				
Lightning Protection	DC Grounded				
Connector Type	1 x 4.3-10 Female				
Dimension (mm)	250 x 200 x 1060				
Weight (kgs)	3.5				
Reflector Material	Copper				
Radome Material	Fiber Glass				
Rated Wind Velocity (km/h)	200				
Operating Temperature (°C)	-40 to +65				
Mounting	4 x M12 Threaded Rods (L=162mm) with Washers and Nuts				
Wind Load (N) (@150km/h Wind Speed)	Frontal: 33.49   Lateral: 159.74   Rearside: 58.6				
Complaint to Environmental Standards	Dry Heat	GB/T 2423.2		(IEC 60068-2-2)	
	Cold	GB/T 2423.1		(IEC 60068-2-1)	
	Damp Heat	GB/T 2423.3		(IEC 60068-2-78)	
	Change of Temperature	GB/T 2423.22		(IEC 60068-2-14)	
	Salt Mist	GB/T 2423.17		(IEC 60068-2-11)	
		GB/T 10125		(ISO 9227)	
	Ingress Protection	GB/T 4208		(IEC 60529)	
	Vibration	GB/T 2423.10		(IEC 60068-2-64)	
Drop Test	GB/T 2423.8 & 4857.5		(ISO 2248)		



# 74212012v01

## Log Periodic Antenna 690-4000 11dBi

Log Periodic Antenna  
H/V-Pol 2-port 11dBi  
690-4000

Type	74212012v01				
Frequency Range (MHz)	690-960	960-1695	1695-2170	2170-2690	3300-3800
Gain (dBi, typ.)	9.5	10.5	11.0	11.0	10.5
VSWR	≤ 1.8	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
Polarization	Vertical / Horizontal				
PIM3 (dBc), @2x43dBm	≤ -150				
Horizontal Beamwidth (°)	68	65	61	58	65
Vertical Beamwidth (°)	53	50	48	45	53
Isolation (dB)	≥ 20	≥ 20	≥ 28	≥ 28	≥ 28
Front-to-Back Ratio (dB)	≥ 20	≥ 20	≥ 25	≥ 25	≥ 25
Input Impedance (Ω)	50				
Max. Input Power (W)	200				
Lightning Protection	DC Grounded				
Connector Type	2 x 4.3-10 Female				
Dimension (mm)	300 x 300 x 785				
Weight (kgs)	4.5				
Reflector Material	Copper				
Radome Material	Fiber Glass (RAL7035)				
Rated Wind Velocity (km/h)	200				
Operating Temperature (°C)	-40 to +65				
Wind Load (N) (@150km/h Wind Speed)	Frontal: 58.8   Lateral: 185.2   Rearside: 96.4				
Mounting	4 x M12 Threaded Rods (L=162mm) with Washers and Nuts				
Complaint to Environmental Standards	Dry Heat	GB/T 2423.2		(IEC 60068-2-2)	
	Cold	GB/T 2423.1		(IEC 60068-2-1)	
	Damp Heat	GB/T 2423.3		(IEC 60068-2-78)	
	Change of Temp.	GB/T 2423.22		(IEC 60068-2-14)	
	Salt Mist	GB/T 2423.17		(IEC 60068-2-11)	
		GB/T 10125		(ISO 9227)	
	Ingress Protection	GB/T 4208		(IEC 60529)	
	Vibration	GB/T 2423.10		(IEC 60068-2-64)	
Drop Test	GB/T 2423.8 & 4857.5		(ISO 2248)		

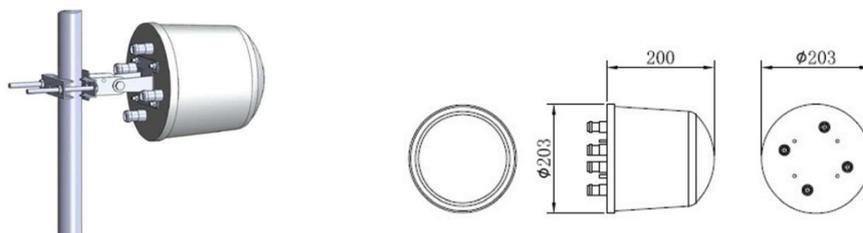


# 74211014

## Log Periodic Antenna 3300-3800 12dBi

Log Periodic Antenna  
XX-Pol4-port 12dBi  
3300-3800MHz

Type	74211014		
Frequency Range (MHz)	3300-3800		
Gain (dBi, typ.)	12		
VSWR	≤ 1.5		
Polarization	±45°		
PIM3 (dBc), @2x43dBm	≤ -153		
Horizontal Beamwidth (°)	55		
Vertical Beamwidth (°)	48		
Front-to-Back Ratio (dB)	≥ 20		
Input Impedance (Ω)	50		
Max. Input Power (W)	200		
Lightning Protection	DC Grounded		
Connector Type	4 x 4.3-10 Female		
Dimension (mm)	Ø203 x 200		
Weight (kgs)	1.8		
Radome Material	Fiber Glass (Grey)		
Operating Temperature (°C)	-40 to +65		
Mounting	Pole Mount		
Complaint to Environmental Standards	Dry Heat	GB/T 2423.2	(IEC 60068-2-2)
	Cold	GB/T 2423.1	(IEC 60068-2-1)
	Damp Heat	GB/T 2423.3	(IEC 60068-2-78)
	Change of Temperature	GB/T 2423.22	(IEC 60068-2-14)
	Salt Mist	GB/T 2423.17	(IEC 60068-2-11)
		GB/T 10125	(ISO 9227)
	Ingress Protection	GB/T 4208	(IEC 60529)
	Vibration	GB/T 2423.10	(IEC 60068-2-64)
	Drop Test	GB/T 2423.8 & 4857.5	(ISO 2248)

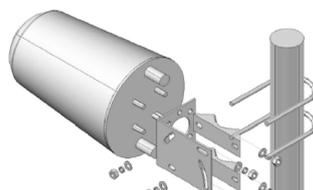


# 74211025

## Log Periodic Antenna 3300-3800 12dBi

Log Periodic Antenna XPol  
2-port 12dBi  
3300-3800

Type	74211025		
Frequency Range (MHz)	3300-3800		
Gain (dBi, typ.)	12		
VSWR	≤ 1.5		
Polarization	±45°		
PIM3 (dBc), @2x43dBm	≤ -153		
Horizontal Beamwidth (°)	55		
Vertical Beamwidth (°)	48		
Front-to-Back Ratio (dB)	≥ 20		
Input Impedance (Ω)	50		
Max. Input Power (W)	200		
Lightning Protection	DC Grounded		
Connector Type	2 x 4.3-10 Female		
Dimension (mm)	Ø130 x 200		
Weight (kgs)	1.2		
Radome Material	Fiber Glass (Grey)		
Operating Temperature (°C)	-40 to +65		
Mounting	Pole Mount clamp (dacromet coated mild steel) included Pole size $\phi 38$ - $\phi 52$ mm		
Max wind velocity (Km/h)	210		
Wind Load (N) (@150km/h Wind Speed)	Frontal: 24.3   Lateral: 27.6   Rearside: 40.2		
Complaint to Environmental Standards	Dry Heat	GB/T 2423.2	(IEC 60068-2-2)
	Cold	GB/T 2423.1	(IEC 60068-2-1)
	Damp Heat	GB/T 2423.3	(IEC 60068-2-78)
	Change of Temperature	GB/T 2423.22	(IEC 60068-2-14)
	Salt Mist	GB/T 2423.17	(IEC 60068-2-11)
		GB/T 10125	(ISO 9227)
	Ingress Protection	GB/T 4208	(IEC 60529)
	Vibration	GB/T 2423.10	(IEC 60068-2-64)
	Drop Test	GB/T 2423.8 & 4857.5	(ISO 2248)

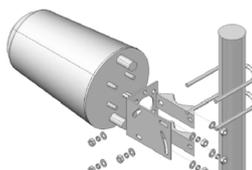


# 74211037

## Log Periodic Antenna 3300-3800 15dBi

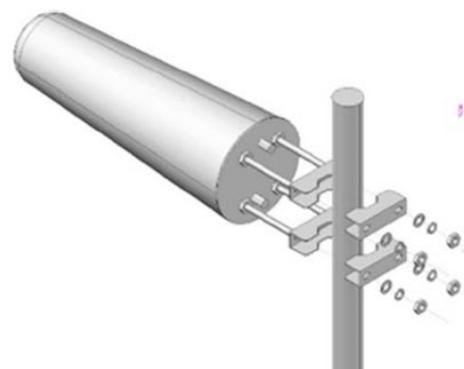
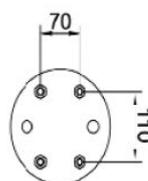
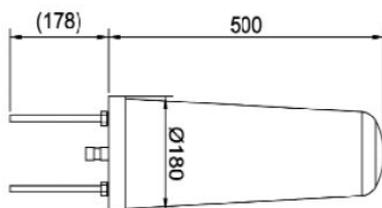
Log Periodic directional  
antenna X-Pol 2-port  
3300-3800 15dBi

Type	74211037		
Frequency Range (MHz)	3300-3800		
Gain (dBi, typ.)	15		
VSWR	≤ 1.5		
Polarization	±45°		
PIM3 (dBc), @2x43dBm	≤ -153		
Front-to-Back Ratio (dB)	≥ 20		
Isolation (dB)	≥ 20		
Horizontal Beamwidth (°)	33		
Vertical Beamwidth (°)	32		
Input Impedance (Ω)	50		
Max. Input Power (W)	200		
Lightning Protection	DC Grounded		
Connector Type	2 x 4.3-10 Female		
Dimension (mm)	Ø180 x 330		
Weight (kgs)	TBD		
Max wind velocity (Km/h)	200		
Wind Load (N) (@150km/h Wind Speed)	TBD		
Radome Material	Fiberglass, Gray (RAL7035)		
Reflector Material	Aluminum		
Operating Temperature (°C)	-40 to +65		
Mounting	Pole Mount		
Complaint to Environmental Standards	Dry Heat	GB/T 2423.2	(IEC 60068-2-2)
	Cold	GB/T 2423.1	(IEC 60068-2-1)
	Damp Heat	GB/T 2423.3	(IEC 60068-2-78)
	Change of Temperature	GB/T 2423.22	(IEC 60068-2-14)
	Salt Mist	GB/T 2423.17	(IEC 60068-2-11)
		GB/T 10125	(ISO 9227)
	Ingress Protection	GB/T 4208	(IEC 60529)
	Vibration	GB/T 2423.10	(IEC 60068-2-64)
	Drop Test	GB/T 2423.8 & 4857.5	(ISO 2248)



**74212033****Log Periodic Antenna  
2500-2700 14dBi**Log Periodic directional  
antenna X-Pol 2-port  
2500-2700 14dBi

Type	74212033
Frequency Range (MHz)	2500-2700
Gain (dBi, typ.)	14
VSWR	≤ 1.5
Polarization	±45°
PIM3 (dBc), @2x43dBm	≤ -153
Front-to-Back Ratio (dB)	≥ 24
Isolation (dB)	≥ 25
Horizontal Beamwidth (°)	32
Vertical Beamwidth (°)	30
Input Impedance (Ω)	50
Max. Input Power (W)	200
Lightning Protection	DC Grounded
Connector Type	2 x 4.3-10 Female
Dimension (mm)	Ø180 x 500
Weight (kgs)	TBD
Max wind velocity (Km/h)	200
Wind Load (N) (@150km/h Wind Speed)	Frontal 22.92   Lateral 62.23   Rearside 40.11
Radome Material	Fiberglass, Gray (RAL7035)
Reflector Material	Aluminum
Operating Temperature (°C)	-40 to +65
Mounting	Clamps for Pole Size Ø38-Ø52mm included

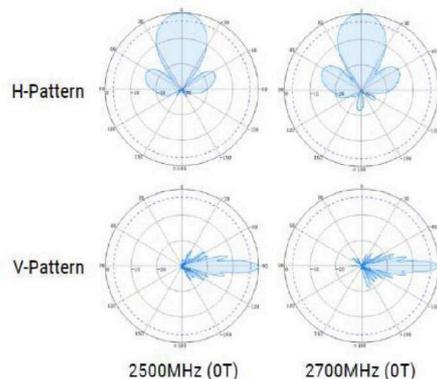


# 78712071v01 & 78712071/2v01

## Directional Antenna 2300-2700 19dBi

Directional antenna  
X-Pol 2-port 2300-2700  
19dBi 35° with fixed  
electrical D/T

Type	78712071v01	78712071/2v01
Frequency Range (MHz)	2300-2700	
Gain (dBi, typ.)	19	
VSWR	≤ 1.5	
Polarization	±45°	
PIM3 (dBc), @2x43dBm	≤ -153	
Front-to-Back Ratio (dB)	≥ 25	
Isolation (dB)	≥ 24	
Electrical Tilt (°)	0	2
Horizontal Beamwidth (°)	34	
Vertical Beamwidth (°)	7	
Input Impedance (Ω)	50	
Max. Input Power (W)	200	
Lightning Protection	DC Grounded	
Connector Type	2 x 4.3-10 Female	
Dimension (mm)	900 x 285 x 90	
Weight (kgs)	7	
Max wind velocity (Km/h)	210	
Wind Load (N) (@150km/h Wind Speed)	TBD	
Radome Material	UV-PVC	
Reflector Material	Aluminum	
Operating Temperature (°C)	-40 to +65	
Mounting	Adjustable D/T Clamp for Pole Size Ø50-Ø80 included	



# 80012087

Directional Antenna  
 X-Pol 2-port narrow beam for stadium  
 698-960/1710-2700  
 11/12dBi 35° OT

**XPol Stadium antenna 35°**  
**698-960/1710-2700 11/12dBi 0°T**

Type	80012087	
Band	R	Y
Frequency (MHz)	698-960	1710-2700
Gain (dBi)	11	12
VSWR	≤ 1.5	≤ 1.7
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm	
Polarization	±45°	
Electrical Tilt (°)	0	
Isolation	≥20	≥20
Front-to-Back ratio (dB)	≥20	≥20
Horizontal Beamwidth (°)	35	34
Vertical Beamwidth (°)	75	68
Input Impedance (ohm)	50	
Max. Input Power (W)	100	
Lightning Protection	DC Grounded	
Connector Type	2 x 4.3-10 female	
Dimension (mm)	580 x 286 x 132	
Weight (kgs)	3.2	
Radome Material	UV-PVC (light grey RAL7035)	
Reflector Material	Aluminum	
Rated Wind Velocity (km/h)	200	
Operating Temperature (°C)	-40 to +70	
Mounting	90° D/T clamp 70010036v01 for pole 50-110mm included	



# 80012088

**XPol Stadium antenna 35°**  
**698-960/1710-2700/ 3300-4000**  
**11/12/12dBi 0°T**

Directional Antenna  
 X-Pol 2-port narrow beam for stadium  
 698-960/1710-2700/3300-3800  
 11/12/12dBi 35° 0T

Type	80012088		
Band	R	Y	P
Frequency (MHz)	698-960	1710-2700	3300-3800
Gain (dBi)	11	12	12
VSWR	≤ 1.5	≤ 1.8	≤ 1.8
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm		N/A
Polarization	±45°		
Electrical Tilt (°)	0		
Isolation	≥20	≥20	≥20
Front-to-Back ratio (dB)	≥20	≥20	≥22
Horizontal Beamwidth (°)	35	34	34
Vertical Beamwidth (°)	75	68	65
Input Impedance (ohm)	50		
Max. Input Power (W)	100		
Lightning Protection	DC Grounded		
Connector Type	2 x 4.3-10 female		
Dimension (mm)	200 x 160 x 80		
Weight (kgs)	3.9		
Radome Material	UV-PVC (light grey RAL7035)		
Reflector Material	Aluminum		
Rated Wind Velocity (km/h)	200		
Operating Temperature (°C)	-40 to +70		
Mounting	90° D/T clamp 70010036v01 for pole 50-110mm included		



**74212045**

**Log Periodic Antenna**  
**698-2700 / 3300-4200**  
**12dBi/15dBi**

Log Periodic Antenna  
 H/V-Pol 4-port  
 12/15dBi  
 698-4200

**Preliminary**

Type	74212045				
Port/Band	Port 2 (V-Pol) & 3 (H-Pol)			Port 1 (+45°) & 4 (-45°)	
Frequency Range (MHz)	698-960	1425-2170	2170-2700	3300-3800	3800-4200
Gain (dBi, typ.)	11	12.1	11.8	14.6	13.5
VSWR	≤ 1.8	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
Polarization	Vertical / Horizontal			±45°	
PIM3 (dBc), @2x43dBm	≤ -150				
Horizontal Beamwidth (°)	60	58	61	27	31
Vertical Beamwidth (°)	47	42	44	23	23
Isolation (dB)	≥ 20	≥ 24	≥ 28	≥ 28	≥ 28
Front-to-Back Ratio (dB)	≥ 20	≥ 26	≥ 24	≥ 25	≥ 22
Input Impedance (Ω)	50				
Max. Input Power (W)	200				
Lightning Protection	DC Grounded				
Connector Type	4 x 4.3-10 Female				
Dimension (mm)	303 x 303 x 785				
Weight (kgs)	5				
Reflector Material	Copper				
Radome Material	Fiber Glass (RAL7035)				
Ingress protection	IP56				
Rated Wind Velocity (km/h)	200				
Operating Temperature (°C)	-40 to +65				
Wind Load (N) (@150km/h Wind Speed)	Frontal: 58.8   Lateral: 185.2   Rearside: 96.4				
Mounting	4 x M12 Threaded Rods (L=162mm) with Washers and Nuts 2 sets of brackets included for pole size Ø38-Ø70mm All mounting materials and accessories in 316 stainless steel				



# ESBANT1Y33S

**2-Ports 1H Antenna**  
**1x1710-2690MHz**

2-Ports 1H Antenna  
1x1710-2690MHz  
32°/32° 21/21dBi 1.399m·  
E-Tilt: 2-12, Integrated RCU

## Electrical Specifications

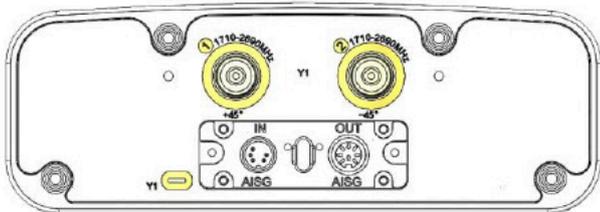
Frequency Range(MHz)		17102690				
		17101880	18501990	19202170	23002400	24902690
Polarization		±45°				
Electrical Downtilt(°)		212, Independently continuously adjustable				
Gain (dBi)	Mid tilt	19.5	20.1	20.6	20.8	20.7
	Over all tilts	19.4±0.5	20.0±0.5	20.5±0.5	20.7±0.5	20.6±0.6
First upper Side Lobe Suppression (dB)		>15	>15	>15	>15	>15
Horizontal 3dB Beam Width (°)		35±3	33±3	31±3	27±3	25±3
Vertical 3dB Beam Width(°)		7.3±0.7	7.0±0.7	6.6±0.6	5.7±0.5	5.4±0.5
Front to Back Ratio 180°±30° ( dB)		>25	>25	>25	>25	>25
CPR at Boresight(dB)		>20	>20	>20	>20	>20
VSWR		≤1.5				
CrossPolar Isolation (dB)		>28				
Intermodulation IM3 (dBc)		≤ 150(2 x 43 dBm carrier)				
Max. power per port(W)		200				
Impedance (Ω)		50				
Grounding		DC Ground				

Values based on NGMN recommendations on Base Station Antenna Standards\_v11.1 (BASTA\_v11.1)

## Mechanical Specifications

RET type	Integrated RET (AISG2.0/3GPP)
AISG Connectors (1 in and 1 out)	2x5 pin (in: Male; out Female)
Connector	2 x 4.310 Female, Bottom
Antenna dimensions (H x W x D) (mm)	1399x259x89
Packing dimensions (H x W x D)(mm)	1619x334x164
Antenna weight (kg)	9.5/13.5 (clamps incl.)
Diameter of installation pole	50 ~125 mm
Radome material	Fiberglass
Radome color	Light grey
Operational temperature (°C)	40 to +60
Wind load at 42m/s (N)	330/140/370(Frontal/Lateral/Rear side)
Max. operational wind speed (km/h)	200

**Connector Position :**



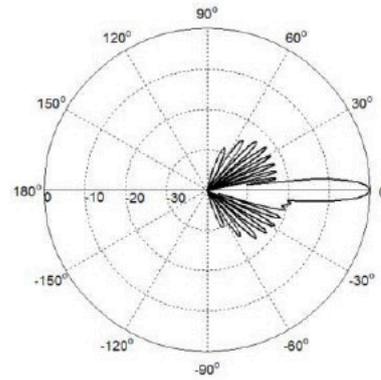
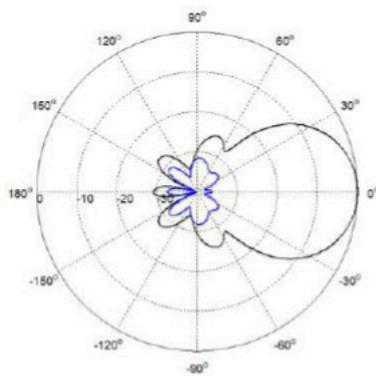
**Configuration Types:**



RET S/N :  
HXSxx-Y1-xx..... ;

Y1 : 1710-2690MH.

**Pattern sample for reference :**



1710-2690MHz

# ESBANT1L1Y90

## 4-Port 1L1H Antenna 698-960/1710-2690MHz

4-Port 1L1H Antenna  
698-960/1710-2690MHz  
90° 16/17dBi 2.5m  
E-Tilt: 2-12°/2-12°, Integrated RCU

### Electrical Specifications

Frequency Range(MHz)	17102690			
	698~806	790~894	880~960	
Polarization	±45°			
Electrical Downtilt(°)	2-12, Independently continuously adjustable			
Gain (dBi)	15±0.8	15.5±0.8	15.9±0.8	
First upper Side Lobe Suppression (dB)	>14			
Horizontal 3dB Beam Width (°)	86±5	86±5	86±5	
Vertical 3dB Beam Width(°)	8.7±0.9	7.8±0.8	7.2±0.8	
Front to Back Ratio 180°±30° ( dB)	>20	>20	>21	
CPR at Boresight(dB)	>13			
Frequency Range(MHz)	1710~2690 (Y1)			
	1710~1920	1920~2170	2300~2490	2490~2690
Polarization	±45°			
Electrical Downtilt(°)	2-12, Independently continuously adjustable			
Gain (dBi)	16.8±0.9	16.5±0.9	16.8±1	17.2±1.1
First upper Side Lobe Suppression (dB)	>14			
Horizontal 3dB Beam Width (°)	85±9	80±8	75±8	70±5
Vertical 3dB Beam Width(°)	7.4±0.9	6.6±0.9	5.8±0.8	5.4±0.8
Front to Back Ratio 180°±30° ( dB)	>24	>24	>24	>24
CPR at Boresight(dB)	>13			
VSWR	≤1.5			
Isolation (dB)	≥24			
Intermodulation IM3 (dBc)	≤ -150(2 x 43 dBm carrier)			
Max. power per port(W)	200			
Impedance (Ω)	50			
Grounding	DC Ground			

Values based on NGMN recommendations on Base Station Antenna Standards\_v12 (BASTA\_v12)

Mechanical Specifications	
RET type	Integrated RET (AISG2.0/3GPP)
AISG Connectors (1 in and 1 out)	2x8 pin (in: Male; out: Female)
Connector	4 x 4.3-10 Female, Bottom
Antenna dimensions (H x W x D) (mm)	2500x320x140
Packing dimensions (H x W x D)(mm)	2740x410x265
Antenna weight (kg)	21.5/26 (clamps incl.)
Diameter of installation pole (mm)	50 ~ 115
Mechanical Tilt (°)	0~10
Radome material	Fiberglass
Radome color	Grey
Operational temperature (°C)	-40 to +65
Wind load at 42m/s (N)	776/159/909 (Frontal/Lateral/Rear side)
Max. operational wind speed (km/h)	200

**Connector Position:**



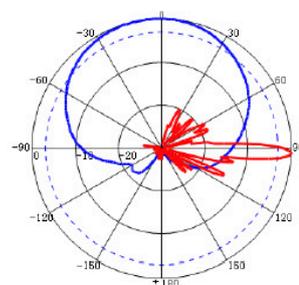
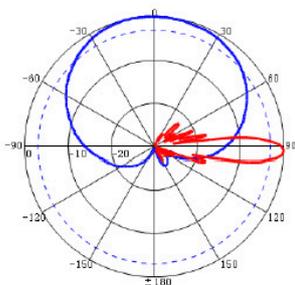
R1: 698-960MHz  
 Y1: 1710-2690MHz;

**Configuration Types:**



RET S/N:  
 HXxxx-R1-xx.....;  
 HXxxx-Y1-xx.....;

**Pattern sample for reference:**



# Small Cell Antennas

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The new 5G networks require a high consumption of small cells to provide more data capacity in densely populated areas. ESB offers different designs for each useful scenario focused on low weight, compact size and high performance.

Part Number	Description	Connector	Inputs	Gain (dB)	Page
72432008	Log Periodic 698-960/1710-4000	N-F	1	8/9dBi	106
72412008	Log Periodic 698-960/1710-4000	4.3-10-F	1	8/9dBi	106
80011313v01	V-Pol Directional 698-2700	N-F	1	6/8dBi	107
80012323	V-Pol Directional 380-6000	4.3-10-F	1	3/8dBi	108
80013154	XX-Pol Directional 1695-4200	4.3-10-F	4	8/9dBi	109
80013130	V/H-Pol Directional 698-4200	4.3-10-F	4	6/9dBi	110
80112751	X-Pol Directional 1710-2690/3300-4000	4.3-10-F	2	8dBi	111
80112752	X-Pol Directional 1710-2690/3300-4000	4.3-10-F	2	11dBi	112
80112753	X-Pol Directional 698-3800	4.3-10-F	2	8/12dBi	113
80112754	XX-Pol Directional 698-4000	4.3-10-F	4	8/9dBi	114
80012065	X-Pol Directional 698-3800	4.3-10-F	2	13/13dBi	115
80012075	XXXX-Pol Directional 1695-4000	4.3-10-F	8	13/12dBi	116
80013112	12 port antenna 8 x MB + 4 C-Band	4.3-10-F	12	12/13dBi	117
80013118	8 port antenna C-Band with calibration port	4.3-10-F	8	15dBi	119
80013119	12 port antenna 4xMB+8C-Band with cal port	4.3-10-F	12	15/14dBi	121
80020449v01	Bi-directional 698-3800	4.3-10-F	1	5dB/6dB	123
80020452	Bi-directional 1710-4000	4.3-10-F	2	5dB/6dB	124
80011847	Omni 698-4000	4.3-10-F	1	3dB	125
73410007	73410007 L-Bracket for antenna 80011847	N/A	N/A	N/A	126
80011848	Omni MIMO antenna 617-6000Mhz	4.3-10-F	2	3dB/5dB	127
80011863	Omni SISO broadband antenna 380-4000	4.3-10-F	1	3.5dB/8dB	128
80012078	Directional antenna	F	12	8/13/11dB	129
80011845	Outdoor Omni	N-F	1	3dB	131
70010015v01	Universal outdoor mounting bracket	N/A	N/A	N/A	132
70010012	Clamp + downtilt for antenna 180-400mm	N/A	N/A	N/A	133

# 724x2008

## Log Periodic 698-960/1710-4000 8/9dBi

Log Periodic Antenna  
V-Pol 1-port 8/9dBi  
698-960 / 1710-4000

Type	72412008 (4.3-10 Female)		72432008 (N Female)
Frequency (MHz)	698-960	1710-2700	3300-4000
Gain (dBi)	8	9	9.5
VSWR	≤ 2.0	≤ 1.5	≤ 1.8
Polarization	Vertical		
PIM3 (dBc, @2x43dBm)	≤ -150		
Front-to-Back Ratio (dB)	≥ 15		
Horizontal Beamwidth (°)	95	78	59
Vertical Beamwidth (°)	68	56	48
Input Impedance (ohm)	50		
Max. Input Power (W)	50		
Lightning Protection	DC Grounded		
Connector	1 x 4.3-10 Female	1 x N Female	
Dimension (mm)	249 x 210 x 65		
Weight (kgs)	Approx. 0.87		
Reflector Material	Aluminum		
Radome Material	ABS (UV Stabilized)		
Operating Temperature (°C)	-40 to +65		
Mounting	Pole-mount Clamp for Pole Size Ø38 to Ø52 Included		

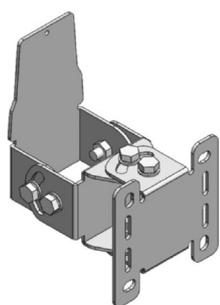


# 80011313v01

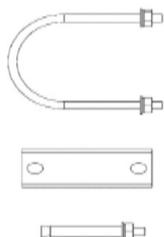
Outdoor Directional  
Panel Antenna  
V-Pol 1-port 7/9dBi  
698-960 / 1710-2700

**Panel outdoor**  
**698-960/1690-2700 7/9dBi**

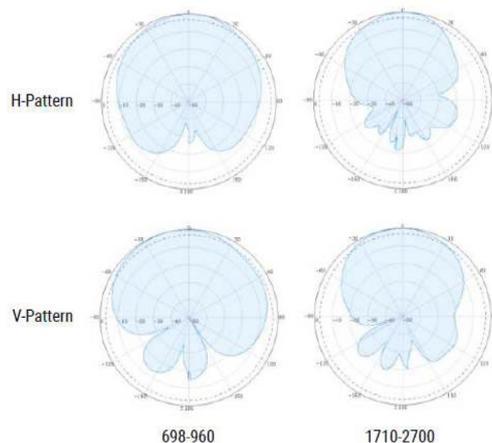
Type	80011313v01	
Frequency (MHz)	698-960	1690-2700
Gain (dBi)	6.5	9.0
VSWR	≤ 1.8	≤ 1.5
Polarization	Vertical	
PIM3 (dBc, @2x43dBm)	≤ -150	
Horizontal Beamwidth (°)	90	65
Vertical Beamwidth (°)	73	55
Input Impedance (ohm)	50	
Max. Input Power (W)	50	
Lightning Protection	DC Grounded	
Connector Type	N Female	
Dimension (mm)	168 x 158 x 50	
Weight (kgs)	Approx. 0.40	
Mounting	Standard fixed wall mount included *Optional Universal Bracket 70010015-V01 for wall or pole mount with universal tilt and swivel adjustment (pole size: 38-52mm)	
Reflector Material	Aluminum	
Ingress Protection	IP54 (outdoor)	
Radome Material	ABS (UV Stabilized)	
Operating Temperature (°C)	-40 to +65	



\*70010015v01(optional)



Standard fixed wall mount included

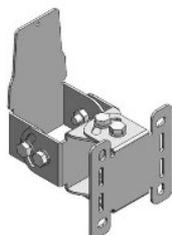


**80012323**

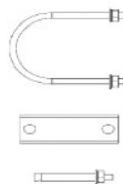
**Panel Outdoor  
380-6000 3/8dBi**

Outdoor  
Panel Directional Antenna  
VPol 1-port 3/8dBi  
380-6000

Type	80012323				
Frequency (MHz)	380-520	698-960	1710-2700	3300-4200	4900-6000
Gain (dBi)	5.6	7.1	8.5	8.3	7.9
VSWR	≤ 3.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0
Polarization	Vertical				
PIM3 (dBc, @2x43dBm)	N/A	≤ -150			N/A
Front-to-Back Ratio (dB)	N/A	≥ 13	≥ 18	≥ 16	≥ 14
Horizontal Beamwidth (°)	82	90	82	46	22
Vertical Beamwidth (°)	71	60	60	42	24
Input Impedance (ohm)	50				
Max. Input Power (W)	50				
Lightning Protection	All metal parts of the antenna and mounting kit are DC grounded. Inner conductor is not DC grounded				
Connector	1 x 4.3-10 Female				
Dimension (mm)	315 x 195 x 68				
Weight (kgs)	Approx. 0.7				
Reflector Material	Aluminum				
Radome Material	ABS (UV Stabilized) RAL 90003				
Operating Temperature (°C)	-40 to +65				
Ingress protection	IP54 (outdoor or indoor) application				
Mounting	Wall mount plate included in the scope of the antenna				
Optional accessory (*order separately)	Universal Mounting Bracket 70010015v01 Wall mount: ±25° horizontal swivel & +27°/-35° vertical tilt Pole mount: ±45° horizontal swivel; pole size Ø38-Ø52mm				



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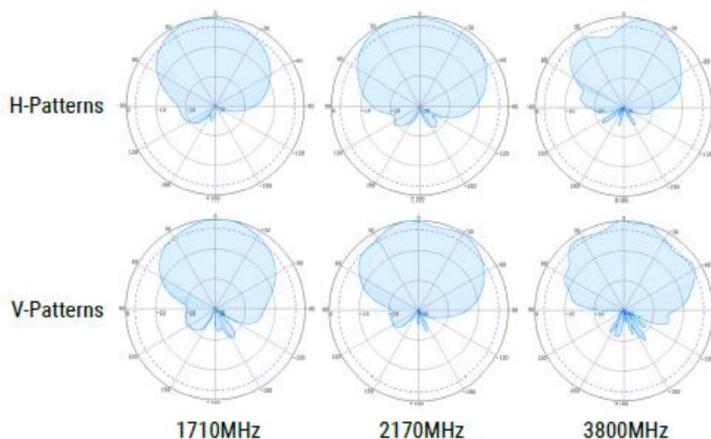
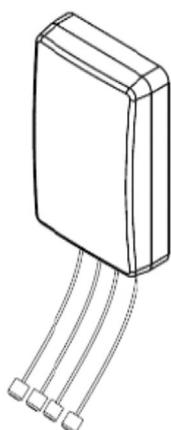


# 80013154

Outdoor  
Directional Antenna  
XXPol 4-port 8/9dBi  
1695-4200MHz

**Directional antenna  
4 x 1695-4200Mhz 8/9dBi**

Type	80013154	
Frequency Range (MHz)	1695-2700	3300-4200
Gain (dBi)	7.2	8.4
VSWR	≤ 1.8	≤ 2.0 (3300-3800) ≤ 2.5 (3800-4200)
Polarization	±45°	
PIM3 (dBc, @2x43dBm)	≤ -153	N/A
Isolation (dB)	≥ 23	≥ 20
Front-to-Back Ratio (dB)	≥ 15	≥ 15
Horizontal Beamwidth (°)	75	68
Vertical Beamwidth (°)	58	55
Input Impedance (ohm)	50	
Max. Input Power (W)	50	
Lightning Protection	DC grounded	
Connector	4 x 4.3-10 Female	
Dimension (mm)	315 x 195 x 68	
Weight (kgs)	Approx. 1.20	
Radome Material	ABS (UV Stabilized)	
Ingress protection	IP 54 (outdoor)	
Operating Temperature (°C)	-40 to +65	
Mounting	Fixed wall mounting bracket included	
Optional accesory (*order separately)	Universal Mounting Bracket 70010015v01 Wall mount: ±25° horizontal swivel & +27°/-35° vertical tilt Pole mount: ±45° horizontal swivel; pole size Ø38-Ø52mm	



# 80013130

Outdoor  
Directional Antenna  
V/H-Pol 4-port 6/9dBi  
698-4200MHz

## Directional antenna 4 x 698-4200MHz 6/9dBi

Type	80013130		
Frequency (MHz)	698-960	1425-2700	3300-4200
Gain (dBi)	5.5	8.5	7.0
VSWR	≤ 2.0	≤ 2.0	≤ 2.0
Polarization	V-H		
PIM3 (dBc, @2x43dBm)	≤-153		
Isolation (dB)	≥ 12	≥ 20	≥ 24
Front-to-Back Ratio (dB)	≥ 7	≥13	≥10
Horizontal Beamwidth (°)	86	61	48
Vertical Beamwidth (°)	73	58	33
Input Impedance (ohm)	50		
Max. Input Power (W)	50		
Lightning Protection	Outer conductor of the connectors is DC grounded Inner conductor of the connectors is not DC grounded		
Connector	4 x 4.3-10 Female		
Dimension (mm)	393 x 317 x 80		
Weight (kgs)	Approx. 1.74		
Reflector Material	Aluminum and RF-PCB		
Radome Material	ABS (UV Stabilized)		
Ingress protection	IP54 (outdoor)		
Operating Temperature (°C)	-40 to +65		
Mounting	Fixed wall mounting bracket included		
Optional accessory (*order separately)	Universal Mounting Bracket 70010015v01 Wall mount: ±25° horizontal swivel & +27°/-35° vertical tilt Pole mount: ±45° horizontal swivel; pole size Ø38-Ø52mm		



**80112751**

Directional Antenna  
 X-Pol 2-port 10dBi 65°  
 1710-2690 / 3300-4000  
 Fixed Electrical D/T (0T)

**XPol Directional**  
**1710-2690/ 3300-4000 10dBi 0°T**

Type	80112751	
Frequency Range (MHz)	1710-2690	3300-4000
Gain (dBi)	10	10
VSWR	≤ 1.5	
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm	N/A
Polarization	±45°	
Electrical Tilt (°)	0	
Horizontal Beamwidth (°)	65	65
Vertical Beamwidth (°)	60	60
Input Impedance (ohm)	50	
Max. Input Power (W)	100	
Front-to-Back Ratio (dB)	≥ 23	
Isolation (dB)	≥ 25	
Lightning Protection	DC Grounded	
Connector Type	2 x 4.3-10 Female	
Dimension (mm)	220 x 160 x 80	
Weight (kgs)	1.0	
Radome Material	UV-PVC (light gray)	
Ingress protection	IP56	
Reflector Material	Aluminum	
Rated Wind Velocity (km/h)	210	
Operating Temperature (°C)	-40 to +70	
Mounting	Mechanical Adjustable Downtilt Clamp for Pole Diameter 38-110 included	



# 80112752

Directional Antenna  
 X-Pol 2-port 11dBi 65°  
 1710-2690 / 3300-4000  
 Fixed Electrical D/T (0T)

## XPol Directional 1710-2690/ 3300-4000 11dBi 0°T

Type	80112752		
Frequency Range (MHz)	1710-2690	3300-4000	3800-4000
Gain (dBi)	11	11	11
VSWR	≤ 1.5	≤ 1.5	≤ 2.0
3rd Order PIM (dBc)	≤ -150	NA	NA
Polarization	±45°		
Electrical Tilt (°)	0		
Horizontal Beamwidth (°)	65 ±5	65 ±5	
Vertical Beamwidth (°)	30 ±5	30 ±5	
Input Impedance (ohm)	50		
Max. Input Power (W)	100		
Front-to-Back Ratio (dB)	≥ 23		
Isolation (dB)	≥ 25	≥ 25	≥ 22
Lightning Protection	DC Grounded		
Connector Type	2 x 4.3-10 Female		
Dimension (mm)	250 x 160 x 80		
Weight (kgs)	1.3 (antenna) + 0.5 (bracket)		
Radome Material	UV-PVC		
Ingress protection	IP 56		
Reflector Material	Aluminum		
Rated Wind Velocity (km/h)	210		
Operating Temperature (°C)	-40 to +70		
Mounting	Mechanical Adjustable Downtilt Clamp for Pole Diameter 38-110 included		

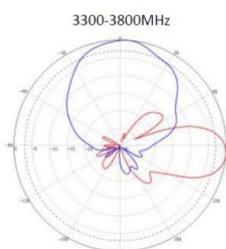
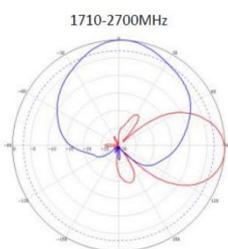
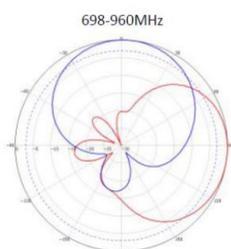


# 80112753

Outdoor  
Directional Antenna  
X-Pol 2-port 8/12dBi  
698-3800

## Directional antenna 2 x 698-3800MHz 8/12dBi

Type	80112753		
Frequency range (Mhz)	698-960	1710-2700	3300-3800
Gain (dBi)	8±1	11±1	12±1
Polarization	±45°		
VSWR	≤1.8		
Cross polar discrimination(dB)	≥15 (±60°≥8)		
PIM3 (dBc, @2x43dBm)	≤ -150		
Electrical downtilt	0°		
Front to back ratio(dB)	≥20		
Horizontal beamwidth	70±10	65±15	60±15
Vertical beamwidth	65±10	35±10	30±10
Isolation	≥25	≥20	≥20
Input Impedance (ohm)	50		
Max. Input Power (W)	100 (per port)		
Lightning Protection	DC Grounded		
Connector	2 x 4.3-10 Female		
Dimension (mm)	420*280*125		
Weight (kgs)	Approx. 3.8		
Connector position	Bottom		
Radome Material	UPVC / Gray		
Ingress protection	IP56		
Rated wind velocity	60m/s		
Operating Temperature (°C)	-40 to +65		
Suitable pole diameter(mm)	φ35-70		
Mechanical tilt(°)	0-15		
Mounting kit	Included		



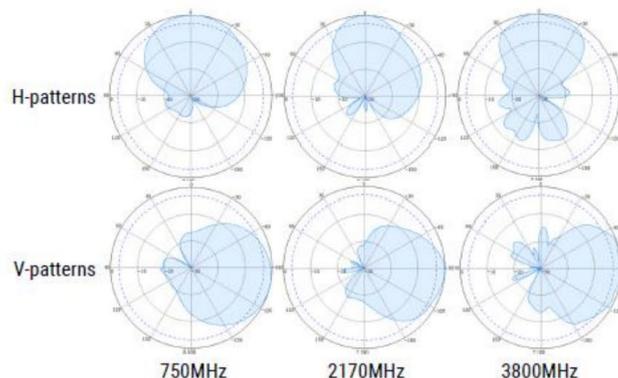
# 80112754

Directional Antenna  
XX-Pol 4-port 8/9dBi  
75°/65° 0T/0T

**XXPol Directional**  
**698-960/1710-2690/3300-4000 8/9dBi 0°T/0°T**

698-960 / 1710-2690 / 3300-4000

Type	80112754		
Port	Port 1 & 2	Port 3 & 4	
Frequency Range (MHz)	698-960	1710-2690	3300-4000
Gain (dBi)	8.3	9.7	10.5
VSWR	≤ 1.5		
3rd Order PIM (dBc)	≤ -150 @ 2x43dBm		
Polarization	±45°		
Electrical Tilt (°)	0		
Horizontal Beamwidth (°)	75	65	65
Vertical Beamwidth (°)	63	60	60
Input Impedance (ohm)	50		
Max. Input Power (W)	100 (per port)		
Front-to-Back Ratio (dB)	≥ 20	≥ 23	
Isolation (dB)	≥ 25		
Lightning Protection	DC Grounded		
Connector Type	4 x 4.3-10 Female		
Dimension (mm)	330 x 280 x 130		
Weight (kgs)	2.5		
Radome Material	UV-PVC (GREY RAL7035)		
Ingress protection	IP56		
Reflector Material	Aluminum		
Rated Wind Velocity (km/h)	210		
Operating Temperature (°C)	-40 to +65		
Mounting	Mechanical Adjustable Downtilt Clamp for Pole Diameter 38-52 included		

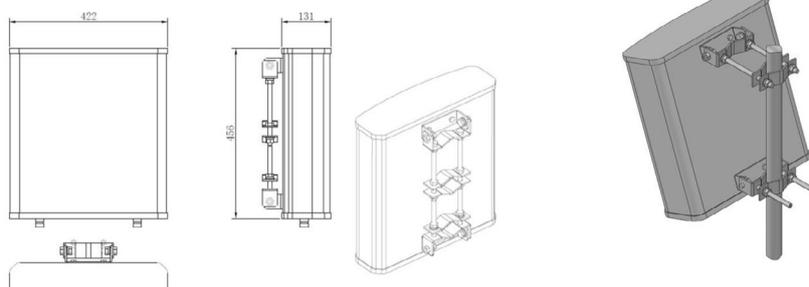


**80012065**

Stadium antenna  
698-960/1710-3800Mhz  
X-Pol 2-port 13/13/13dBi  
38°/37°/33°

**Narrow beam antenna**  
**698-960/1710-3800Mhz**

Type	80012065		
Frequency Range (MHz)	698-960	1710-2700	3300-3800
Gain (dBi)	12.5	13	13
VSWR	≤2.0	≤2.0	≤2.0
Polarization	±45°		
PIM3 (dBc, @2x43dBm)	≤ -150		
Horizontal Beamwidth (°)	38±6	37±6	33±6
Vertical Beamwidth (°)	38±6	36±6	32±6
Front-to-Back Ratio (dB)	≥18	≥16	≥16
Isolation (dB)	≥20	≥24	≥24
Input Impedance (ohm)	50		
Max. Input Power (W)	100W		
Lightning Protection	DC grounded		
Connectors	2 x 4.3-10 Female		
Dimension (mm)	456 x 422 x 131		
Weight (kgs)	Antenna 6kg Bracket 1.80kg		
Ingress protection Class	IP65		
Wind Load (N) @ 150km/h wind speed	Frontal: 253.85 Lateral: 85.51 Rearside: 296.15		
Radome Material	UV-PVC		
Reflector Material	Aluminium		
Max wind velocity (km/h)	210		
Operating Temperature (°C)	-40 to +65		
Mounting	Pole Mount (Pole Size: Ø50- Ø80mm)		

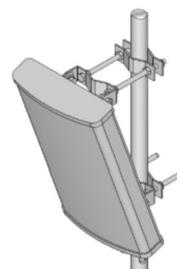
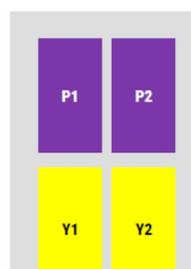


# 80012075

**Directional antenna**  
**4 x 1695-2690Mhz 13dBi**  
**4 x 3300-4000Mhz 12dBi**

Outdoor  
 Directional Antenna  
 XXXX-Pol 8-port 13/12dBi  
 1695-4000MHz

Type	80012075	
Band	Y1/Y2	P1/P2
Frequency	1695-2690	3300-4000
Polarization	±45°	
Gain (dBi)	4 x 13	4 x 11.5
VSWR	≤1.5	
Isolation	≥22dB	
PIM3 (dBc, @2x43dBm)	≤ -150	N/A
Electrical downtilt	0°	
Front to back ratio(dB)	≥22	≥20
Horizontal beamwidth°	65	60
Vertical beamwidth°	22	33
Input Impedance (ohm)	50	
Max. Input Power (W)	150 (per port)	
Lightning Protection	DC Grounded	
Connector	8 x 4.3-10 Female	
Dimension (mm)	650*285*90	
Weight (kgs)	Approx. 4.3	
Connector position	Bottom	
Radome Material	UPVC / Gray pantone 427C	
Ingress protection	IP56	
Max wind velocity	200Km/h	
Wind load (N, @150Km/h)	Frontal: 156.55 Lateral: 77.87 Rearside: 273.97	
Operating Temperature (°C)	-40 to +65	
Suitable pole diameter (mm)	φ35-70	
Mechanical tilt(°)	0-15	
Mounting	D/T clamp 70010013 included for pole 50-80mm	



**80013112**

Directional Panel Antenna  
12-port 12/13dBi  
1695-4200MHz

**Directional panel antenna**  
**8 x 1695-2690Mhz**  
**4 x 3300-4200Mhz**

**Electrical specifications**

Port Information	Y1-Y4			P1-P2
Frequency Range (Mhz)	1695-2180	2300-2400	2496-2700	3300-4200
Polarization	+45%/ -45°			
Electrical Down tilt	2°, 4°, 6° Fixed			0° Fixed
Gain (max) (dBi)	11	11.3	12	13
Gain (avg) (dBi)	10.2	10.8	11.3	12.2

**Horizontal Pattern**

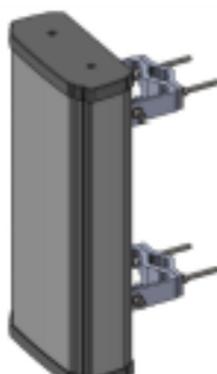
Azimuth Beam width (°)	90	65	61	65
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**Vertical Pattern**

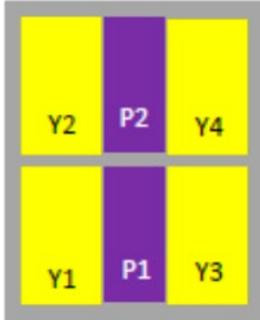
Elevation Beam width (°)	27	25	21	18
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**General specifications**

Port Information	Y1-Y4	P1-P2
Intra-Cluster Isolation (dB)	>23	
Inter-Cluster Isolation (dB)	>23	
VSWR	1.5: 1	
Polarization (°)	±45	
Intermodulation IM3 (dBc)	-153 (3rd Order, 2x20W)	N/A
Impedance (Ω)	50	
Max. Effective Power per Port (Watts)	150	



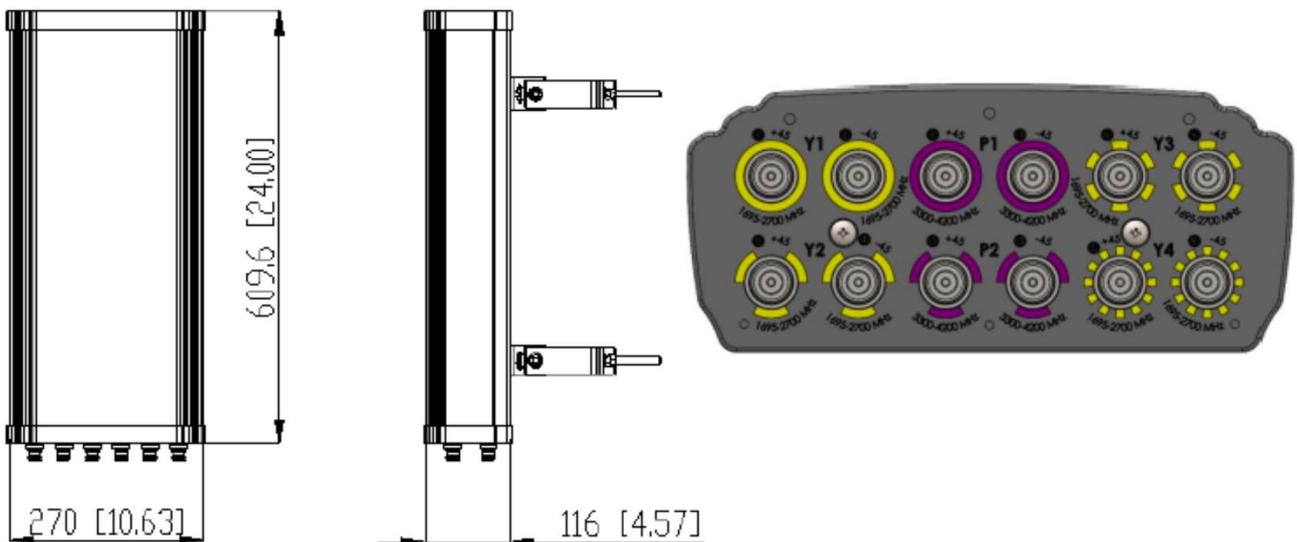
### Array information



Array	Frequency(MHz)	Connectors
Y1-Y4	1695-2700	1-8
Y1-Y2	3300-4200	9-12

### Mechanical specifications

Connector Type & Quantity	12 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (D x H) (inch / mm)	10.7 x 24 x 4.6 / 270 x 609 x 116
Weight (without Mounting Kit) (lb / kg)	9.3 / 4.2
Wind Load (@100 mph) (N)	Front 183, Side 67, Rear 183
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Gray)



# 80013118

MIMO Sector Antenna  
15dBi  
3300-3800 Mhz

## MIMO Sector Antenna 15dBi / 3300-3800 Mhz

Electrical specifications (Default wide beam)	
Port Information	P1-P4
Frequency Range (Mhz)	3300-3800
Gain (dBi)	14.2
Horizontal Pattern	
Azimuth Beam width (°)	80
Front-to-Back Ratio (dB)	>23
Cross Polar Discrimination at Boresight (dB)	>15
Vertical Pattern	
Elevation Beam width (°)	7
Electrical Downtilt continuously Adjustable (°)	2-12
First Upper Side Lobe Suppression (dB)	>15

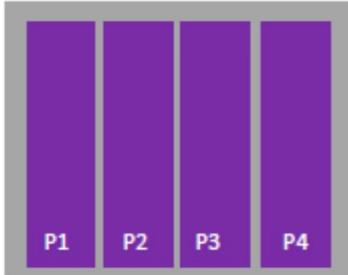
Electrical specifications (Service beam)	
Frequency Range (Mhz)	3300-3800
Gain (dBi)	18.7
Horizontal Pattern	
Azimuth Beam width (°)	23
Front-to-Back Ratio (dB)	>25
Cross Polar Discrimination at Boresight (dB)	>18
Vertical Pattern	
Elevation Beam width (°)	7
Electrical Downtilt continuously Adjustable (°)	2-12
First Upper Side Lobe Suppression (dB)	>15

Electrical specifications (Broadcast beam)	
Frequency Range (Mhz)	3300-3800
Gain (dBi)	15.3
Horizontal Pattern	
Azimuth Beam width (°)	65
Front-to-Back Ratio (dB)	>23
Cross Polar Discrimination at Boresight (dB)	>15
Vertical Pattern	
Elevation Beam width (°)	7
Electrical Downtilt continuously Adjustable (°)	2-12
First Upper Side Lobe Suppression (dB)	>15

General specifications	
Isolation (dB)	>25
VSWR	1.5: 1
Polarization (°)	±45
Intermodulation IM3 (dBc)	-153 (3rd Order, 2x20W)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	120



### Array information



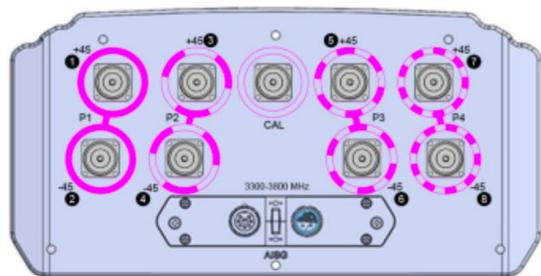
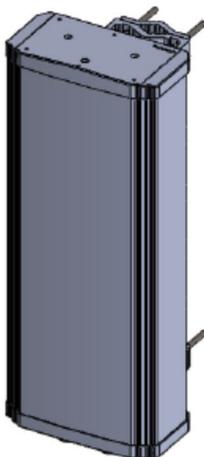
Array	Frequency(MHz)	Connectors
P1-P4	3300-3800	1-8

### Mechanical specifications

Connector Type & Quantity	8 x 4.3-10 & 1 Cal. port
Connector Position	Bottom
Antenna Dimension (D x H) (mm)	300 x 150 x 800
Packing Dimension (W x D x H) (mm)	325 x 175 x 900
Weight (without Mounting Kit) (kg)	15
Packing Weight	18
Max. Wind Load (m/s)	60
Radome (Color)	ASA (Gray)

### Remote Electrical Tilt (RET)

Internal RET	GN-RETi(Replaceable internal RET)
Protocol	3GPP/AISG 2.0



Bottom

# 80013119

**Mid band 4T4R(FDD) +  
3.5G 8T8R(TDD) Sector Antenna  
15dBi - 14.1dBi / 3300-3800 Mhz**

Mid band 4T4R(FDD) +  
3.5G 8T8R(TDD) Sector Antenna  
15 dBi / 14.1 dBi  
4-port x 1695-2690 MHz, 8-port x 3300-3800

### Electrical specifications (None beamforming)

Port Information	Y1-Y2			
Frequency Range (Mhz)	1695-1755	1850-1990	2110-2155	2500-2690
Gain (dBi)	13.9	14.8	15.3	15.5
Horizontal Pattern				
Azimuth Beam width (°)	70±5	68±5	64±5	55±5
Front-to-Back Ratio	<-25			
Cross Polar Discrimination at Boresight	>15			
Cross Polar Discrimination over Sector	>8	>8	>7	>6
Vertical Pattern				
Elevation Beam width (°)	13±3	12±3	11±3	10±3
Electrical Downtilt continuously Adjustable	4-14			
First Upper Side Lobe Suppression	>14			

### Electrical specifications (Single column beam)

Port Information	P1-P4
Frequency Range (Mhz)	3300-3800
Gain (dBi)	13
Horizontal Pattern	
Azimuth Beam width (°)	80±15
Front-to-Back Ratio (dB)	>25
Cross Polar Discrimination at Boresight (dB)	>15
Vertical Pattern	
Elevation Beam width (°)	11±3
Electrical Downtilt continuously Adjustable (°)	4-14
First Upper Side Lobe Suppression (dB)	>13

### Electrical specifications (Broadcast beam / Beamforming)

Port Information	P1-P4
Frequency Range (Mhz)	3300-3800
Gain (dBi)	14.1
Horizontal Pattern	
Azimuth Beam width (°)	65±10
Front-to-Back Ratio (dB)	>25
Cross Polar Discrimination at Boresight (dB)	>15
Vertical Pattern	
Elevation Beam width (°)	10±3
Electrical Downtilt continuously Adjustable (°)	4-14
First Upper Side Lobe Suppression (dB)	>13

### Electrical specifications (Service beam / Beamforming)

Port Information	P1-P4
Frequency Range (Mhz)	3300-3800
Gain (dBi)	17.5
<b>Horizontal Pattern</b>	
Azimuth Beam width (°)	21±3
Front-to-Back Ratio (dB)	>25
Cross Polar Discrimination at Boresight (dB)	>15
<b>Vertical Pattern</b>	
Elevation Beam width (°)	10±3
Electrical Downtilt continuously Adjustable (°)	4-14
First Upper Side Lobe Suppression (dB)	>13

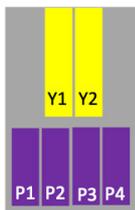
### General specifications

Intrabrand Isolation (dB)	>23
Interbrand Isolation (dB)	>27(Y1,Y2/P1,P2,P3, P4) >25(Y1//Y2) >21(P1//P2//P3//P4)
VSWR	1.5: 1
Polarization (°)	±45
Intermodulation IM3 (dBc)	-150 (3rd Order, 2x20W)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	100

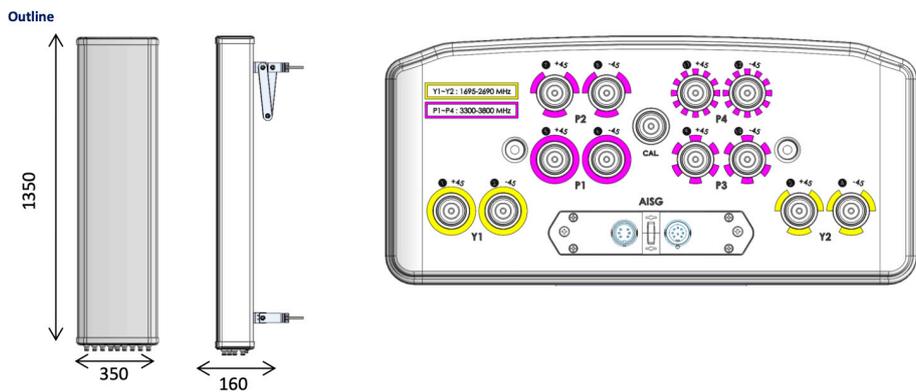
### Mechanical specifications

Connector Type & Quantity	12 x 4.3-10 Female 1 x 4.3-10 Female (Cal. Port)
Connector Position	Bottom
Antenna Dimension (D x H) (mm)	53.1 x 13.8 x 6.3 / 1350 x 350 x 160
Packing Dimension (W x D x H) (mm)	57.1 x 16.5 x 8.7 / 1450 x 420 x 220
Weight (without Mounting Kit) (kg)	39.7 / 18
Wind Load (m/s)	Front 640, Side 256
Max. Wind Speed (mph)	150
Radome (Color)	ASA (Gray)

### Array information



Array	Frequency(MHz)	AISG RET Unique ID		Connectors
Y1-Y2	1695-2690	RET	GNRETXXXXXXXXXXXXX1	4.3-10
P1-P4	3300-3800	RET	GNRETXXXXXXXXXXXXX2	4.3-10 X 8
		RAE	GNRETXXXXXXXXXXXXX3	4.3-10 X 1 (Cal. PORT)

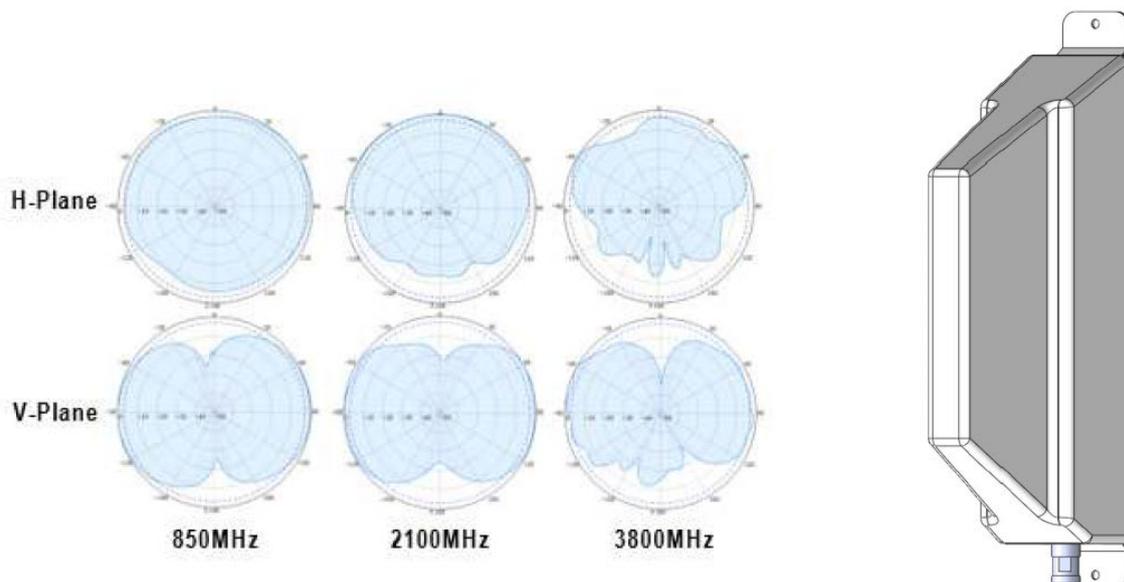


# 80020449v01

Outdoor Panel  
 Directional Antenna  
 VPol 1-port 5/6dBi -150dBc  
 Bi-directional 694-3800MHz

## V-Pol Bi-Directional 694-3800 5/6dBi

Type	80020449v01		
Frequency (MHz)	698-960	1710-2690	3300-4000
Gain (dBi)	4.0	5.2	6.6
VSWR	≤ 2.0	≤ 1.8	≤ 2.0
Polarization	Vertical		
PIM3 (dBc, @2x43dBm)	≤ -150		
Horizontal Beamwidth (°)	90 ± 10	75 ± 10	58 ± 10
Vertical Beamwidth (°)	75	60	50
Input Impedance (ohm)	50		
Max. Input Power (W)	100		
Lightning Protection	DC Grounded		
Connector (at the bottom)	1 x 4.3-10 Female		
Dimension (mm)	340 x 190 x 82		
Weight (kgs)	Approx. 1.0		
Radome Material	ASA + PC (White, RAL 9003)		
Operating Temperature (°C)	-40 to +65		
Mounting	Wall Mount with 2 x M6*60 Expansion Bolt		

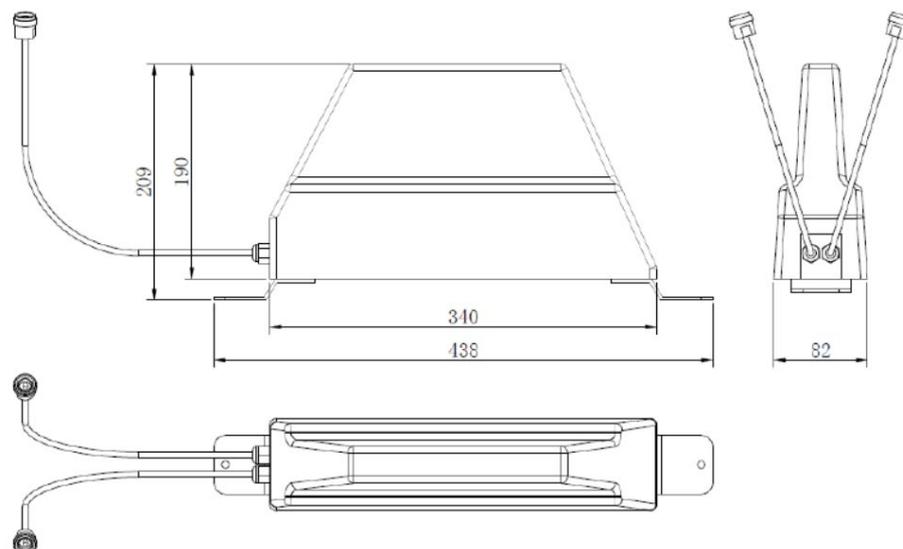


# 80020452

Outdoor Panel  
Bidirectional Antenna  
VHPol 2-port 5/6dBi -153dBc  
Bi-directional 1710-4000MHz

## VH-Pol Bi-Directional 1710-4000 5/6dBi

Type	80020452	
Frequency Range (MHz)	1710-2700	3300-4000
Gain (dBi)	5.5 ± 0.5	6 ± 0.5
VSWR	≤ 1.8	≤ 2.0
Polarization	Vertical/ Horizontal	
PIM3 (dBc, @2x43dBm)	≤ -153	
Horizontal Beamwidth (°)	120	108
Vertical Beamwidth (°)	51	52
Isolation (dB)	24	3300-3800 (24) 3800-4000 (20)
Input Impedance (ohm)	50	
Max. Input Power (W)	100	
Lightning Protection	DC Grounded	
Connector (at the bottom)	2 x 4.3-10 Female	
Dimension (mm)	340 x 190 x 82	
Weight (kgs)	Approx. 1.2	
Radome Material	ASA + PC (White, RAL 9003)	
Operating Temperature (°C)	-40 to +65	
Mounting	Wall Mount with 2 x M6*60 Expansion Bolt	

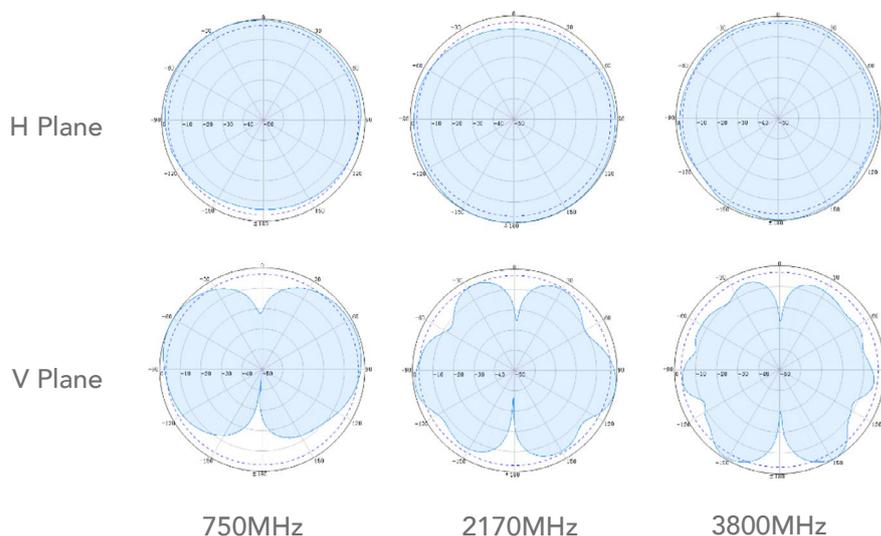


# 80011847

Outdoor Mini Omni Directional  
Antenna V-Pol  
1-port 3dBi  
698-960 / 1710-4000

## Outdoor Mini Omni 698-960/1710-4000 3dBi

Type	80011847				
Frequency (MHz)	698-806	806-960	1710-2170	2170-2700	3300-4000
Gain (dBi)	≥ 2.9	≥ 3.0	≥ 2.6	≥ 3.2	≥ 2.7
VSWR	≤ 2.5	≤ 2.5	≤ 3.0	≤ 2.5	≤ 1.5
Polarization	Vertical				
PIM3 (dBc, @2x43dBm)	≤ -150				
Horizontal Beamwidth (°)	360				
Vertical Beamwidth (°)	85	70	50	35	33
Input Impedance (ohm)	50				
Max. Input Power (W)	100				
Connector	1 x 4.3-10 Female				
Dimension (mm)	Ø30 x 208.5				
Weight (kgs)	0.17				
Lightning protection	All metal parts of the antenna and the mounting kit are DC grounded (the inner conductor is not DC grounded)				
Reflector Material	Aluminum				
Radome Material	Fiber Glass				
Operating Temperature (°C)	-40 to +65				
*Optional Mounting bracket	73410007 (order separately)				

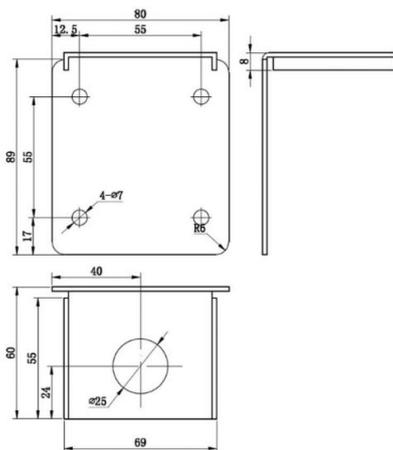


# 73410007

Mounting bracket  
for mini omni antenna 80011847  
Suitable for wall  
mount and pole mount

## Mount Bracket for Mini Omni Antenna

Type	73410007
Applicable Antenna Models	80011847
Installation Scenarios	<p><b>Pole Mount:</b> with two U-clamps provided for pole size 25 – 45mm</p> <p><b>Wall Mount:</b> fix through the four holes with screws (screws not included, screw type depends on wall material)</p>
Material	Stainless Steel (thk = 2mm)
Attaching of the Antenna	<ol style="list-style-type: none"> <li>1. Remove the fastening nut from the bottom of the antenna</li> <li>2. Insert the antenna through the centre hole of the bracket</li> <li>3. Tighten the fastening nut from the bottom</li> <li>4. Apply thread adhesive or sealant when necessary for better results</li> <li>5. Attach the signal cable to the bottom connector of the antenna</li> <li>6. Only attach the antenna to the bracket after the bracket is fixed on the wall/ pole</li> </ol>
Dimensions (mm)	89 x 80 x 60



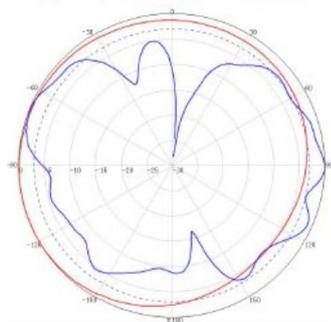
# 80011848

**Outdoor Mini Omni**  
**617-960/1710-6000**  
**3/5/5/5dBi**

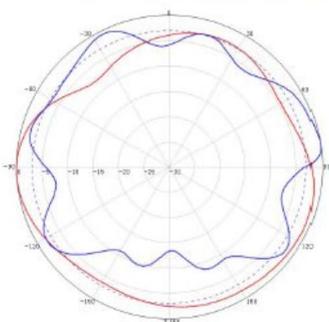
Outdoor MiMO Omnidirectional  
 Antenna VV-Pol  
 2-port  
 3/5/5/5dBi  
 617-960 / 1710-6000

Type	80011848			
Frequency range (MHz)	617-960	1710-2700	3300-4000	4900-6000
Maximum Gain (dBi)	3	5	5	5
PIM3 (dBc, @2x43dBm)	≤ -153			
Horizontal Beamwidth (°)	360			
Vertical beam width (°)	85	70	55	28
Input Impedance (ohm)	50			
Max. Input Power (W)	50			
VSWR	≤ 2.5			
Connector	2 x 4.3-10 Female			
Dimension (mm)	Ø82 x 200			
Weight (kgs)	0.8 (including bracket)			
Lightning protection	All metal parts of the antenna and the mounting kit are DC grounded (the inner conductor is not DC grounded)			
Reflector Material	Aluminum			
Radome Material	UPVC (white)			
Rated wind velocity (m/s)	40			
Operating Temperature (°C)	-40 to +65			
Suitable pole diameter	Ø25- Ø50			
Mounting bracket	included			

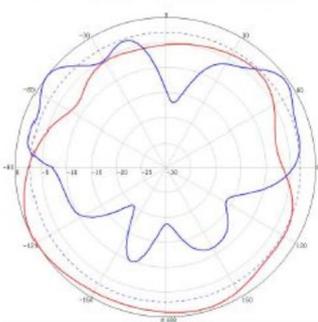
617~960MHz Typical pattern:



1710~2700MHz Typical pattern:



3300~6000MHz Typical pattern:

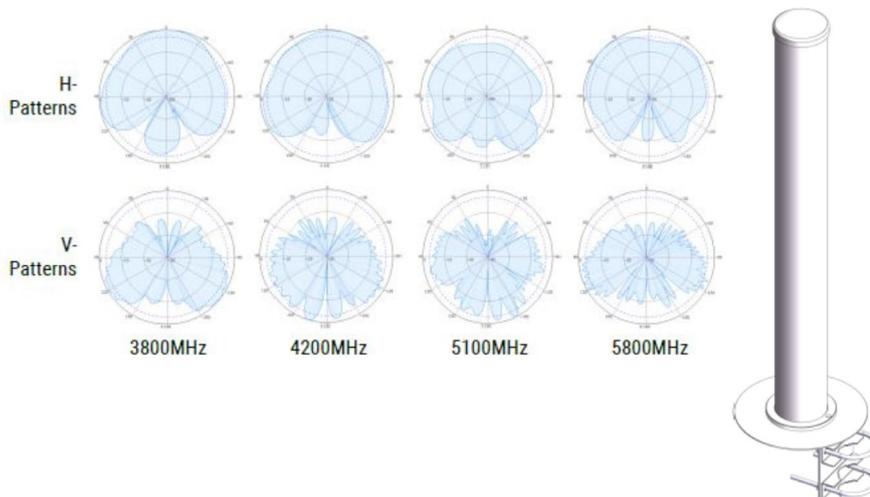


# 80011863

## Outdoor Omni 380-6000 3.6-8.5dBi

Omni Antenna V-Pol 1-port  
3.6-8.5dBi 380-6000MHz

Type	80011863						
Frequency range (MHz)	380 - 470	520 - 600	690 - 960	1250 - 1710	1710 - 270	3300 - 4000	4000 - 6000
Gain (dBi)	3.6	4.1	5.7	6.1	8.5	5.8	6.4
VSWR	≤2.5	≤2.5	≤2.0	≤2.0	≤2.0	≤2.0	≤2.5
Polarization	Vertical						
PIM3 (dBc, @2x43dBm)	NA		≤ -153			NA	
Horizontal Beamwidth (°)	360						
Vertical Beamwidth (°)	50	42	31	23	18	41	12
Input Impedance (ohm)	50						
Max. Input Power (W)	50						
Connector	1 x 4.3-10 Female						
Dimension (mm)	Ø63 x 600						
Weight (kgs)	1.0 approx						
Lightning protection	All metal parts of the antenna and the mounting kit are DC grounded (the inner conductor is not DC grounded)						
Ground plate Material	Aluminum (Diameter: Ø160mm)						
Radome Material	UV-PVC (white)						
Operating Temperature (°C)	-40 to +65						
Ingress Protection	IP65						
Mounting bracket	Bracket included for pole size Ø38- Ø52mm)						

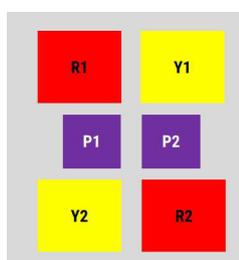


# 80012078

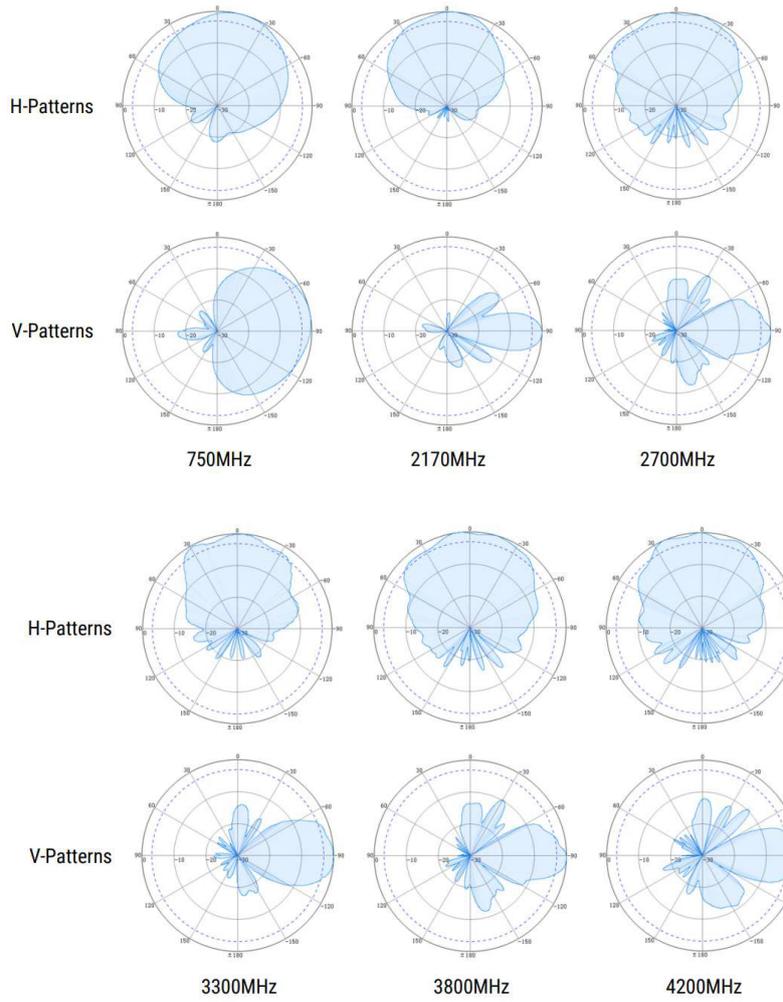
Directional Antenna  
 XXXXXX-Pol 12-port  
 8/13/11dBi

**Directional antenna**  
**698-960/1695-2690/33004200**

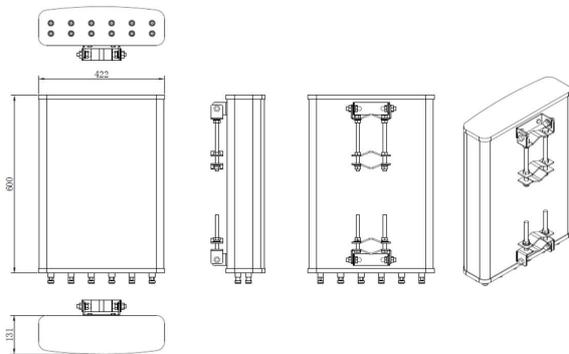
Type	80012078			
Band	R1/R2	Y1/Y2	P1/P2	
Frequency	698-960	1695-2690	33004000	40004200
Gain (dBi)	8	13	10.8	10.5
VSWR	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.8
Polarization	±45°	±45°	±45°	
Intra-Cluster Isolation (dB)	≥ 20	≥ 22	≥ 20	
Front to back ratio(dB)	≥ 16.6	≥ 25.5	≥ 18.4	≥ 16.7
Horizontal beamwidth°	77	62	66	75
Vertical beamwidth°	63	21	30	26
PIM3 (dBc, @2x43dBm)	≤ -150	≤ -150	NA	
Electrical downtilt°	0			
Input Impedance (ohm)	50			
Max. Input Power (W)	150			
Lightning Protection	DC Grounded			
Connector	4 x 4.3-10 F	4 x 4.3-10 F	4 x 4.3-10 F	
Dimension (mm)	600 x 422 x 131			
Weight (kgs)	Approx. 8.1(antenna) Approx. 1.8 (bracket)			
Max wind velocity	200Km/h			
Wind load (N, @150Km/h)	Frontal: 328.15 Lateral: 112.18 Rearside: 382.84			
Radome Material	UV-PVC / Gray, RAL 7035			
Reflector Material	Aluminium			
Operating Temperature (°C)	-40 to +65			
Suitable pole diameter(mm)	∅35-70			
Mounting kit	Adjustable D/T Clamp (Medium Duty) for Pole Size ∅50-∅80 included.			



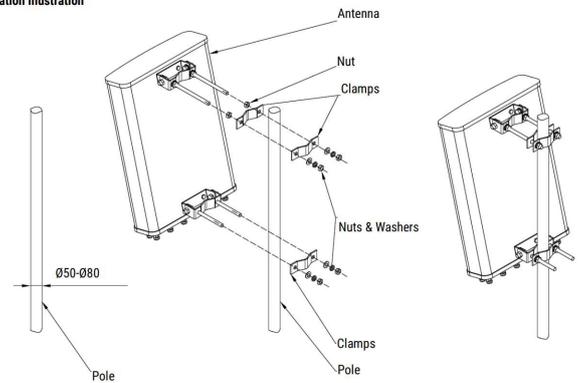
Typical Radiation Patterns



Mechanical Dimensions



Installation Illustration

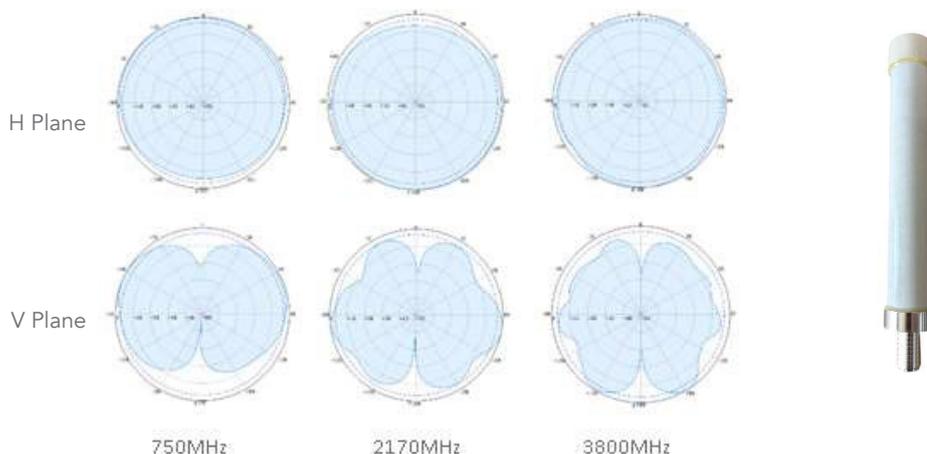


# 80011845

## Outdoor Mini Omni 698-960/1710-4000 3dBi

Outdoor Mini Omni Directional  
Antenna V-Pol  
1-port 3dBi  
698-960 / 1710-4000

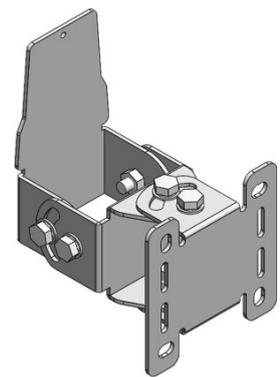
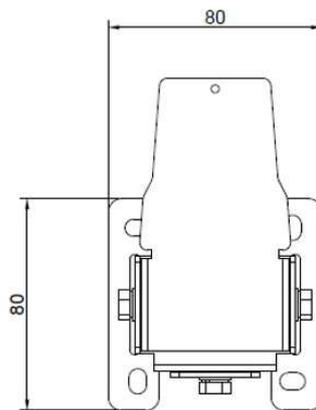
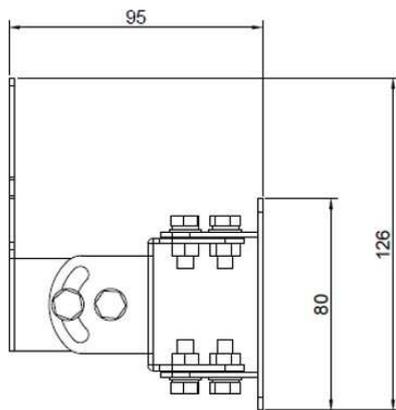
Type	80011845				
Frequency (MHz)	698-806	806-960	1710-2170	2170-2700	3300-4000
Gain (dBi)	≥ 2.9	≥ 3.0	≥ 2.6	≥ 3.2	≥ 2.7
VSWR	≤ 2.0	≤ 2.5	≤ 2.5	≤ 2.0	≤ 1.5
Polarization	Vertical				
PIM3 (dBc, @2x43dBm)	≤ -153				
Horizontal Beamwidth (°)	360				
Vertical Beamwidth (°)	85	70	50	35	33
Input Impedance (ohm)	50				
Max. Input Power (W)	100				
Connector	1 x N Female				
Dimension (mm)	Ø30 x 208.5 (without connector)				
Weight (kgs)	0.17				
Lightning protection	All metal parts of the antenna and the mounting kit are DC grounded (the inner conductor is not DC grounded)				
Reflector Material	Aluminum				
Radome Material	Fiber Glass				
Operating Temperature (°C)	-40 to +65				
*Optional Mounting bracket	73410007 (order separately)				



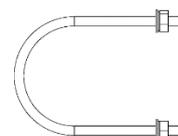
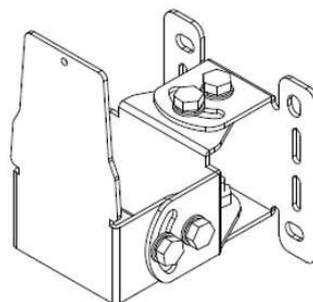
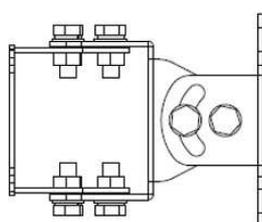
# 70010015v01

Universal Mounting Bracket  
 For 1-port / 2-port / 4-port  
 Small Panel Antenna  
 Horizontal and Vertical Adjustments

Type	70010015v01
Application	For mounting 1-port, 2-port, or 4-port small panel antennas Suitable for wall mount and pole mount
Material	2.0mm Stainless Steel
Tilt Adjustment	Up to 45° (Both horizontal and vertical, depending on antenna size.)
Mounting (Included in the Packing)	Wall mount: secure the bracket with expansion bolts supplied. Pole mount: attach the bracket to the pole with the U-clamps supplied. Insert the antenna on the flap of the bracket and secure M3 screw on the flap. Adjustment to desire horizontal / vertical angle.
Size (reference only)	126 x 80 x 95mm
Accessories Included	M6 x 60mm Expansion Bolts x 4 (Wall Mount) U-Clamps x 2 (Pole Size: Ø38-52mm) M3 x 6mm Allen Screw x 1



Universal Bracket 70010015V01:



Accessories included

# 70010012

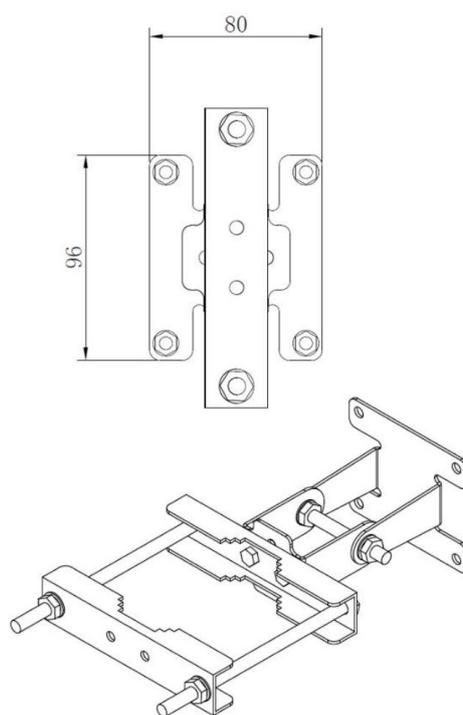
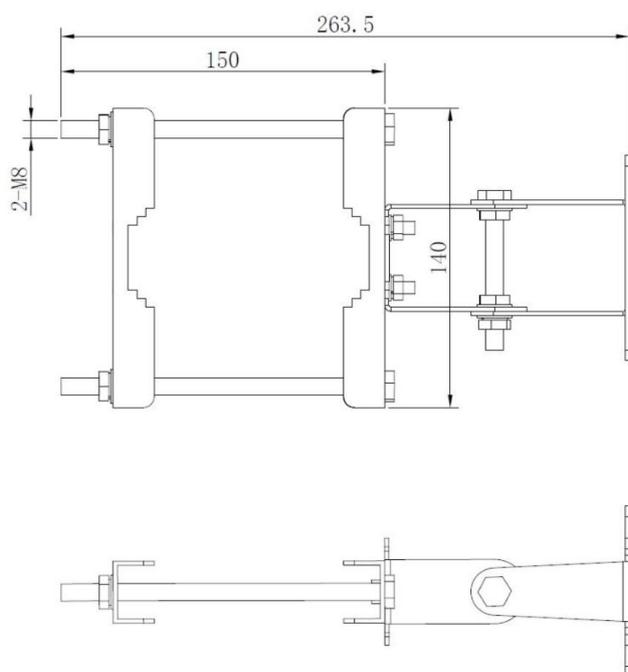
## Clamp + downtilt mounting bracket

Light duty mounting bracket for directional panel antenna

Type	70010012
Application	Light Duty
For Mast Size (mm)	Ø38- Ø110
For Antenna Length (mm)	200-400
Material	Stainless Steel
Weight (kgs)	Approx. 0.63

Max. Downtilt Range (°), @ Various Panel Sizes

Antenna Panel Length (mm)	200	220	250	300	350
Downtilt Range (°)	±45	±45	±45	±43.5	±37.8



# **Trisector and Cannister antennas**

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<b>Part Number</b>	<b>Description</b>	<b>Page</b>
ECOSD1R2Y	Trisector 18 port antenna 1L2H (2000x365mm)	136
ECOSD4P	Trisector 24 port antenna 4P + 1 calibration per sector (1250x370mm)	138
ECOSD6Y	Trisector 12 port antenna 4 x 1710-2690Mhz (1650x240mm)	140
ECOSD1Y2P	Trisector 18 port antenna 2 x 1710-2690 + 4 x 3300-3800Mhz (1000x300mm)	142
ECOSC2Y2P	Pseudo omni canister antenna 1710-2690/3300-4200Mhz 9.4/9.2 dBi	144
ECOSC4Y4P	Pseudo omni canister antenna 8T8R 1695-2690/3300-4200Mhz 10.4/8.4 dBi	146
ECOSC2Y2P/2	Bidirectional canister antenna 4T4R 1695-4200Mhz T2° 11dBi	148
ECOSC2Y2P/2S	Bidirectional canister antenna 4T4R 1695-4200Mhz T2° 11dBi	150
801112006	Bidirectional canister 4T4R 1695-4200Mhz T0° 9/10 dBi	152
801112007	Bidirectional canister 4T4R 1695-4200Mhz T0° 11.5/12dBi	153
70010023	Wall mount stand for canister 801112006	154
80110004	Trisector 12 port antenna 1695-2700/3300-4200Mhz	156
ECOSD1R2Y2PLB	2-Ports 1H Antenna 1x1710-2690MHz 32°/32° 21/21dBi	157
ECOSC2R4Y2P	Small Cell Pseudo Omni Conduit Canister Antenna	159

# ECOSD1R2Y

**Tri-Sector with  
Internal RET antenna**

2-port x 698-960 MHz  
4-port x 1710-2690 MHz  
H 65° / V 6.5°  
Gain : 15 dBi / 17 dBi

## Electrical specifications

Port Information	R1		
Frequency Range (Mhz)	698-806	790-862	880-960
Gain (Mid Tilt) (dBi)	15.3	15.4	15.1

### Horizontal Pattern

Azimuth Beam width (°)	73		74
Front-to-Back Ratio (dB)	20	22	20
Cross Polar Discrimination at Boresight (dB)	17		

### Vertical Pattern

Elevation Beam width (°)	11.5	10.5	10
First Upper Side Lobe Suppression (dB)	15		
Electrical Down tilt continuously adjustable (°)	2-12		

## Electrical specifications

Port Information	Y1-Y2				
Frequency Range (Mhz)	1710-1880	1850-1990	1920-2170	2300-2400	2500-2690
Gain (Mid Tilt) (dBi)	16.2	16.6	16.8	16.7	16.7

### Horizontal Pattern

Azimuth Beam width (°)	72	64	63	69	72
Front-to-Back Ratio (dB)	23	24	24	24	20
Cross Polar Discrimination at Boresight (dB)	18			15	15

### Vertical Pattern

Elevation Beam width (°)	7.1	6.4	6.1	5.4	4.8
First Upper Side Lobe Suppression(dB)	15				
Electrical Down tilt continuously adjustable (°)	2-12				

### General specifications

In-Band Cross Polar Port Isolation (dB)	>25
Inter-Band Port Isolation (dB)	>30
VSWR	1.5 : 1
Polarization	±45
Intermodulation IM3 (dBc)	-153(2 x 43 dBm Carrier)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	250

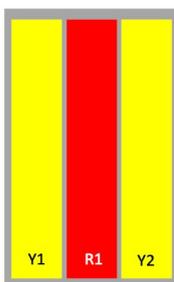
### Mechanical specifications

Connector Type & Quantity	18 x 4.3-10 Female
Connector Position	Bottom
Lightning Protection	DC Ground
Antenna Dimension (D x H) (inch / mm)	Ø 14.3 x 78.7 / Ø 365 x 2000
Weight (without Mounting Kit) (lb / kg)	99.2 / 45
Wind Load (@100 mph) (N)	Front 970, Side 970
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	FRP (Gray)

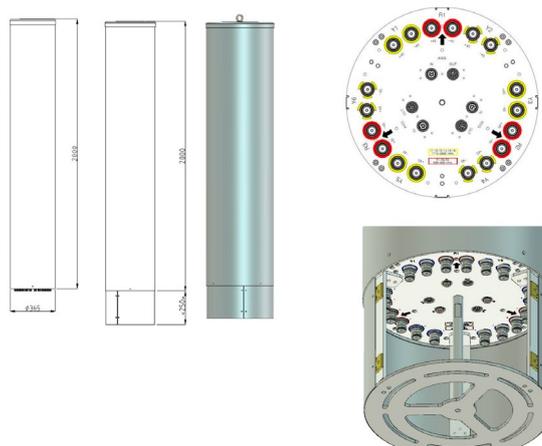
### Remote Electrical Tilt (RET)

Internal RET	ACS-RM800(internal replaceable RET)
Protocol	3GPP/AISG 2.0

### Array information



Array	Frequency(MHz)	Connectors
R1	698-960	1-2
Y1-Y2	1710-2690	3-6



# ECOSD4P

(8-port x 3400-3800 MHz) x 3 sector  
 H 70 °, V 6.5 °  
 Gain : 15.0 dBi  
 Electrical Down tilt : 2°-12°

## 3.5G 8T8R Tri-Sector Antenna

Electrical specifications Service Beam (beamforming)	
Port information	P1-P4
Frequency Range (MHz)	3400-3800
0° Beam Gain (dBi)	19.2
+30° Beam Gain (dBi)	19.0
<b>Horizontal Pattern</b>	
0° Beam Azimuth Beam width (°)	23
0° Beam Front-to-Back Ratio (dB)	>23
0° Beam Cross Polar Discrimination at Boresight (dB)	>15
+30° Beam Azimuth Beam width (°)	24
+30° Beam Front-to-Back Ratio (dB)	>23
+30° Beam Cross Polar Discrimination at Boresight (dB)	>15
<b>Vertical Pattern</b>	
0° Beam Elevation Beam width (°)	7
0° Beam First Upper Side Lobe Suppression	>13
+30° Beam Elevation Beam width	7
0° Beam First Upper Side Lobe Suppression	>13
Electrical Downtilt continuously Adjustable	2-12

Electrical specifications Single Column Beam	
Port information	P1-P4
Frequency Range (MHz)	3400-3800
Gain (dB)	14.5
<b>Horizontal Pattern</b>	
Azimuth Beam width (°)	80
Front-to-Back Ratio (dB)	>21
Cross Polar Discrimination at Boresight (dB)	>15
Cross Polar Discrimination over Sector (dB)	>8
<b>Vertical Pattern</b>	
Elevation Beam width (°)	7
Electrical Downtilt continuously Adjustable (°)	2-12
First Upper Side Lobe Suppression (dB)	>13

Electrical specifications Broadcast Beam (beamforming)	
Port information	P1-P4
Frequency Range (MHz)	3400-3800
Gain (dB)	15.5
<b>Horizontal Pattern</b>	
Azimuth Beam width (°)	65
Front-to-Back Ratio (dB)	>21
Cross Polar Discrimination at Boresight (dB)	>15
<b>Vertical Pattern</b>	
Elevation Beam width (°)	7
Electrical Downtilt continuously Adjustable (°)	2-12
First Upper Side Lobe Suppression (dB)	>13

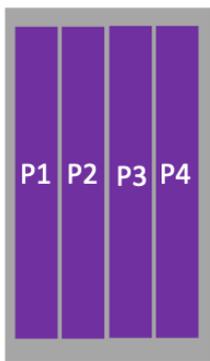
### General specifications

Intraband Isolation (dB)	>25
Interband Isolation (dB)	>20(P1//P2//P3//P4)
VSWR	1.5 : 1
Polarization	±45
Intermodulation IM3 (dBc)	-153(3rd order, 2x20W)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	75

### Mechanical specifications

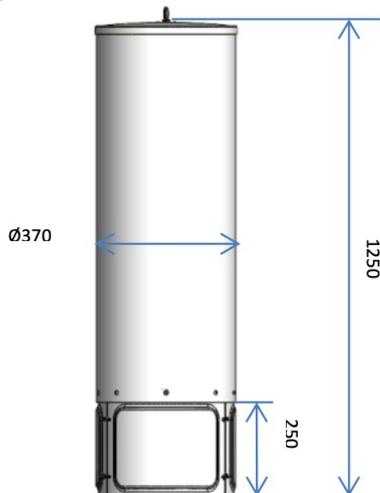
Connector Type & Quantity	27 x 4.3-10 Female 8+1 (calibration port) per sector
Connector Position	Bottom
Antenna Dimension (D x H) (inch / mm)	39.4 x Ø 14.5 / 1000 x Ø370
Weight (without Mounting Kit) (lb / kg)	50.7 / 25
Wind Load (@100 mph) (N)	330
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Light Gray)

### Array information



Array	Frequency(MHz)	AISG RET Unique ID	Connectors
P1-P4	3400-3800	GNRETXXXXXXXXXX XX3	27 x 4.3-10 Female 8+1 (calibration port) per sector

Outline



# ECOSD6Y

**Tri-Sector with Internal RET antenna**  
**15.7 .dBi**

4-port x 1710-2690 MHz  
 per sector  
 Gain : 15.7 .dBi

## Electrical specifications

Port Information	Y1-Y2				
Frequency Range (Mhz)	1710-1880	1850-1990	1910-2170	2300-2400	2500-2690
Gain (Mid Tilt) (upper)	14.6	15.2	15.4	15.4	15.1
Gain (Mid Tilt) (Down)	14.9	15.5	15.7	15.7	15.4

### Horizontal Pattern

Azimuth Beam width (°)	66	61	61	64	65
Front-to-Back Ratio (dB)	25				
Cross Polar Discrimination at Boresight	15				

### Vertical Pattern

Elevation Beam width (°)	16	16	15	14	15
First Upper Side Lobe Suppression(dB)	15				
Electrical Down tilt continuously adjustable	2-12				

## General specifications

Isolation (dB)	>25
Inter-Band Port Isolation (dB)	>30
VSWR	1.5 : 1
Polarization	±45°
Intermodulation IM3 (dBc)	-153 (2 x 43 dBm Carrier)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	250



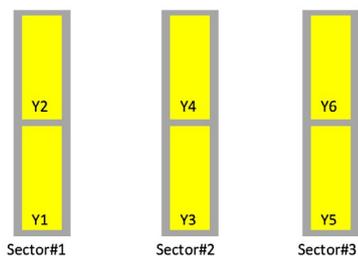
### Mechanical specifications

Connector Type & Quantity	8 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (WxD) (mm)	Ø 240 x 1650
Packing Dimension (WxHxD) (mm)	300 x 300 x 1850
Weight (without Mounting Kit) (kg)	20
Weight (packed)	30
Wind Load (@100 mph) (N)	395N
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Cool Gray/R7035)

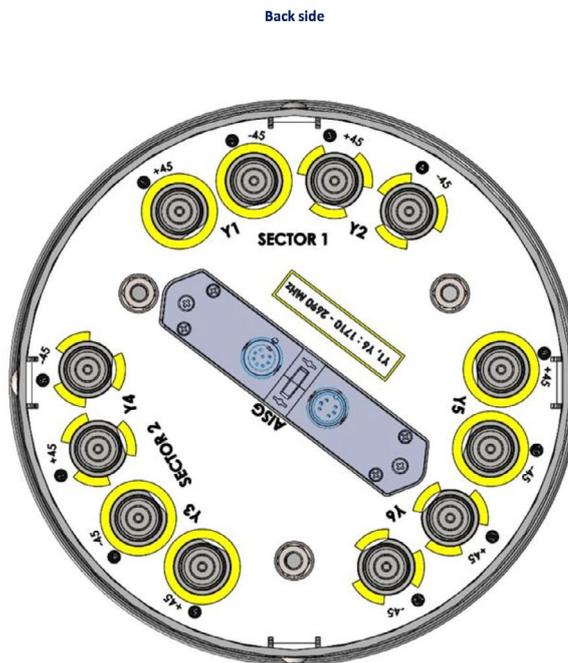
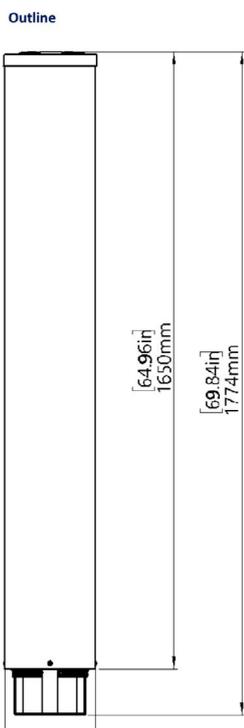
### Remote Electrical Tilt (RET)

Internal RET	RETP-1T3 (Internal replaceable RET)
Protocol	3GPP/AISG 2.0

### Array information



Sector No	Array	Frequency(MHz)	Connectors
Sector #1	Y1-Y2	1710-2690	1-4
Sector #2	Y3-Y4	1710-2690	5-8
Sector #3	Y5-Y6	1710-2690	9-12



# ECOSD1Y2P

**1 x Mid + 2 x C band cylindrical  
Tri-Sector Antenna  
13.5 dBi / 14.3 dBi**

1 x Mid  
2 x C band cylindrical  
Tri-Sector Antenna  
13.5 dBi / 14.3 dBi

Electrical specifications				
Port Information	Y1-Y3			
Frequency Range	1695-1910	1910-2180	2305-2360	2360-2700
Gain (AVG.)	12.9	13.1	13.3	13.5
Horizontal Pattern				
Azimuth Beam width (°)	67	65	63	61
Front-to-Back Ratio (dB)	23	23	24	20
Cross Polar Discrimination at Boresight (dB)	18	18	18	15
Vertical Pattern				
Elevation Beam width (°)	18	16	16	14
Electrical Downtilt continuously Adjustable	2-12			
First Upper Side Lobe Suppression	15			

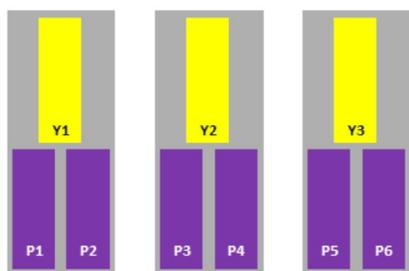
Electrical specifications				
Port Information	P1-P6			
Frequency Range	3300-3550	3550-3700	3700-4200	
Gain (AVG.)	13.8	14.1	14.3	
Horizontal Pattern				
Azimuth Beam width (°)	66	63	60	
Front-to-Back Ratio (dB)	25			
Cross Polar Discrimination at Boresight (dB)	18			
Vertical Pattern				
Elevation Beam width (°)	13	12	11	
Electrical Downtilt continuously Adjustable	2-12			
First Upper Side Lobe Suppression	15			

### General specifications

Intra-Cluster Isolation (dB)	>25	
Inter-Cluster Isolation	>25 (Y1 / P1, P2) >20 (P1 / P2)	
VSWR	1.5 : 1	
Polarization	±45°	
Intermodulation IM3 (dBc)	-153(3rd Order, 2x20W)	
Impedance (Ω)	50	
Max. Effective Power per Port (Watts)	100	50



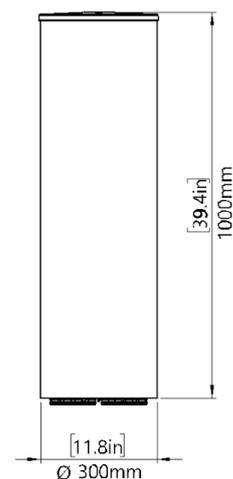
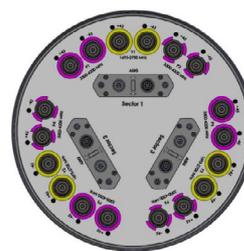
### Array information



Sector No	Array	Frequency(MHz)	Connectors
Sector #1	Y1	16959-2700	1-2
	P1-P2	3300-4200	3-6
Sector #2	Y2	16959-2700	7-8
	P3-P4	3300-4200	9-12
Sector #3	Y3	16959-2700	13-14
	P5-P6	3300-4200	15-18

### Mechanical specifications

Connector Type & Quantity	18 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (WxD) (mm)	Ø 300 x 1000
Packing Dimension (WxHxD) (mm)	360 x 360 x 1100
Weight (without Mounting Kit) (kg)	30
Weight (packed)	37
Wind Load (@100 mph) (N)	270
Radome (Color)	ASA (Cool Gray)



### Remote Electrical Tilt (RET)

Internal RET	RETP-1T2 (Internal RET 2 CH.)
Protocol	3GPP/AISG 2.0

# ECOSC2Y2P

## Small Cell Pseudo Omni Canister Fixed Antenna

4-port x 1710-2690 MHz  
 4-port x 3300-4200 MHz  
 HPBW: 360°  
 Gain: 9.4 dBi, 9.2 dBi

### Electrical specifications

Port Information	Y1-Y2				P1-P2
Frequency Range (Mhz)	1710-1850	1850-1910	1910-2180	2300-2690	3300-4200
Gain Max (dBi)	9.4	9.1	9.3	9.4	9.2
Gain Avg (dBi)	8.9	8.8	8.8	9	8.5

#### Horizontal Pattern

Azimuth Beam width (°)	360				
GainOMNI Deviation (dB)	3.5	5	5	5	6

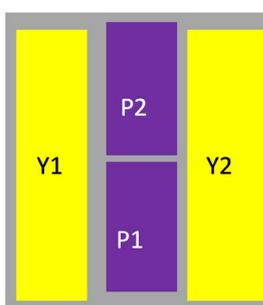
#### Vertical Pattern

Elevation Beam width (°)	16	16	15	14	15
First Upper Side Lobe Suppression(dB)	11				8

### General specifications

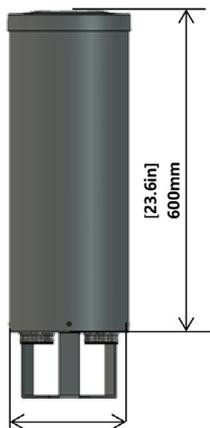
In-Band Cross Polar Port Isolation (dB)	>20				
Inter-Band Port Isolation (dB)	>25				
VSWR	1.5 : 1				
Polarization	±45°				
Intermodulation IM3 (dBc)	-153 (3rd Order, 2x20W)				-
Impedance (Ω)	50				
Max. Effective Power per Port (Watts)	100				

### Array information

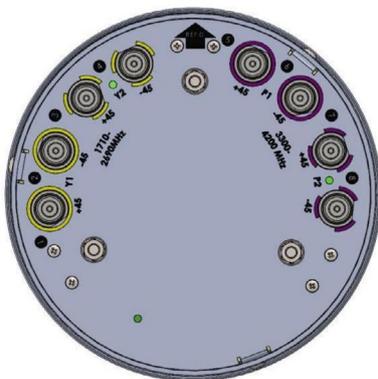


Array	Frequency(MHz)	Connectors
Y1-Y2	1710-2690	1-4
P1-P2	3300-4200	5-8

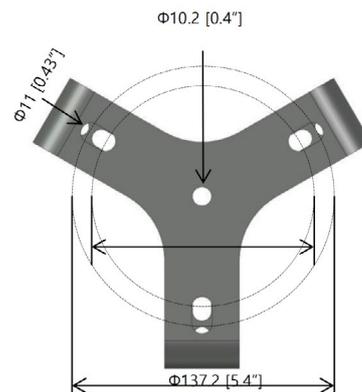
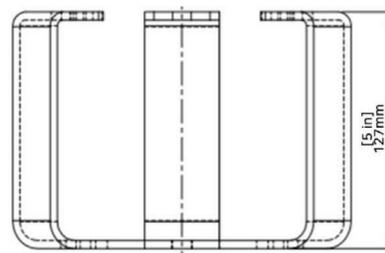
Outline



Bottom



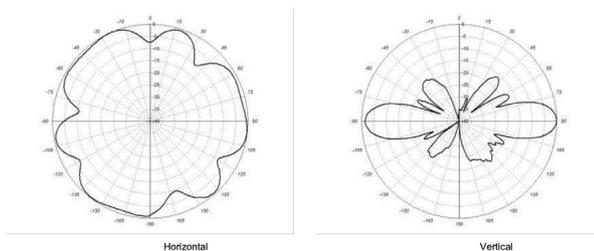
Bracket



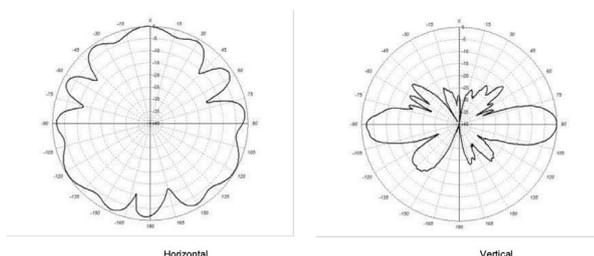
### Mechanical specifications

Connector Type & Quantity	8 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (WxD) (inch / mm)	Ø 9.4 x 23.6 / Ø 240 x 600
Weight (without Mounting Kit) (lb/kg)	22.15 / 10.05
Wind Load (@100 mph) (N)	230
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Gray)

Pattern File\_1710-2690 MHz



Pattern File\_3300-4200 MHz



# ECOSC4Y4P

**2-Ports 1H Antenna**  
**1x1710-2690MHz**

2-Ports 1H Antenna  
1x1710-2690MHz  
32°/32° 21/21dBi 1.399m·  
E-Tilt: 2-12, Integrated RCU

## Electrical specifications

Port Information	Y1-Y4				P1-P4
Frequency Range (Mhz)	1695-1910	1910-2180	2305-2360	2360-2700	3300-4200
Gain Max (dBi)	8.6	9.6	9.3	10.4	8.4
Gain Avg (dBi)	7.6	8.3	8.3	8.8	7.4

### Horizontal Pattern

Azimuth Beam width (°)	360				
GainOMNI Deviation (dB)	3.5	5	5	5	6

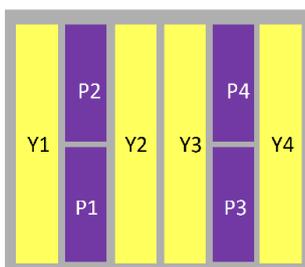
### Vertical Pattern

Elevation Beam width (°)	16	15	12	11	14
First Upper Side Lobe Suppression(dB)	11				8

## General specifications

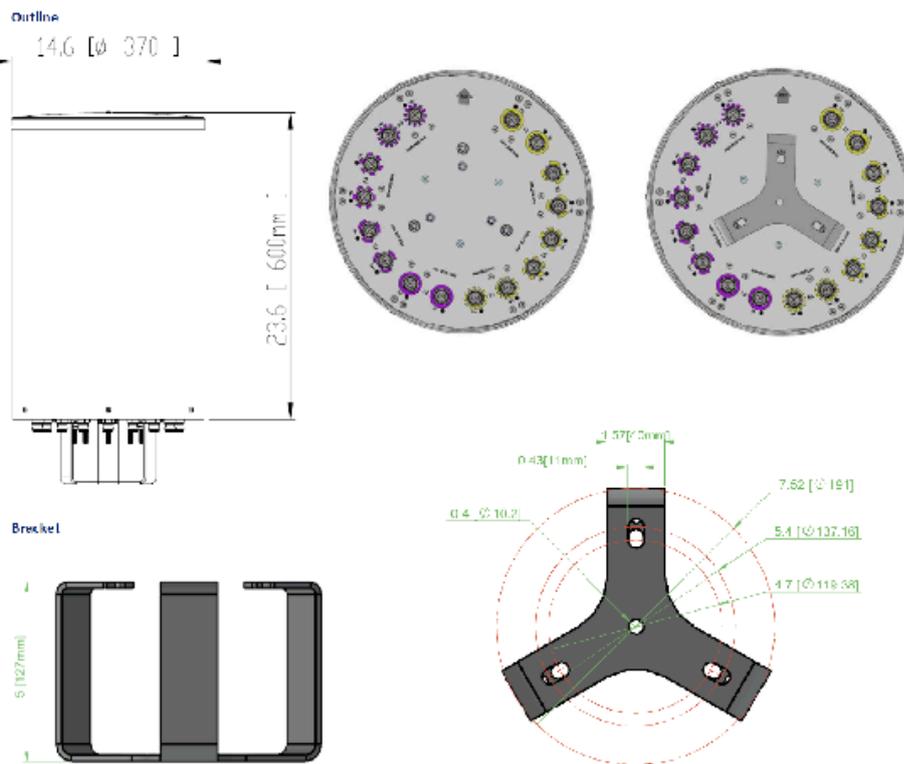
In-Band Cross Polar Port Isolation (dB)	>20
VSWR	1.5 : 1
Polarization	±45°
Intermodulation IM3 (dBc)	-153 (3rd Order, 2x20W)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	100

## Array information



Up	Array	Frequency(MHz)	Connectors
	Y1-Y4	1695-2700	1-8
	P1-P4	3300-4200	9-16

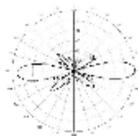
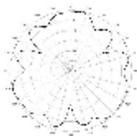
Down



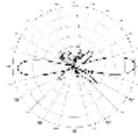
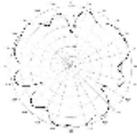
### Mechanical specifications

Connector Type & Quantity	8 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (WxD) (inch / mm)	14.6 X 23.6 / 370 X 600
Weight (without Mounting Kit) (lb/kg)	25.4 / 11.5
Wind Load (@100 mph) (N)	193
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Gray)

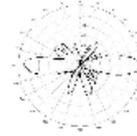
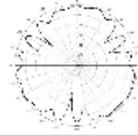
Pattern File: \*18V2 2055-2700 MHz



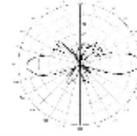
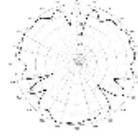
Pattern File: \*18V2 1095-2700 MHz



Pattern File: \*18P4 3300-4320 MHz



Pattern File: \*18P4 1000-4320 MHz



## ECOSC2Y2P/2

### BIDIRECTIONAL Small Cell Canister Antenna 4T4R

4-port x 1695-2700 MHz  
and 3300-4200 MHz (Diplexer)  
HPBW : 68 °, 60 °  
Gain : 11.1 dBi, 10.7 dBi

#### Electrical specifications

Port Information	Y1-Y2			
Frequency Range (Mhz)	1695-1920	1920-2180	2305-2360	2360-2700
Gain Max (dBi)	10.3	10.9	11.1	11
Gain Avg (dBi)	9.7	10.3	10.8	10.3
<b>Horizontal Pattern</b>				
Azimuth Beam width (°)	70	70	68	65
<b>Vertical Pattern</b>				
Elevation Beam width (°)	17	15	13	12
First Upper Side Lobe Suppression(dB)	13	13	13	13
Electrical Down Tilt (°)	Fixed tilt 0 °, 2 °, 6 ° (Optional)			

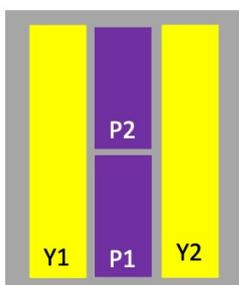
#### Electrical specifications

Port Information	P1-P2		
Frequency Range (Mhz)	3300-3550	3550-3700	3700-4200
Gain Max (dBi)	10.2	10.6	10.7
Gain Avg (dBi)	9.5	9.8	9.8
<b>Horizontal Pattern</b>			
Azimuth Beam width (°)	65	60	57
<b>Vertical Pattern</b>			
Elevation Beam width (°)	16	15	14
First Upper Side Lobe Suppression(dB)	13	13	13
Electrical Down Tilt (°)	Fixed tilt 0 °, 2 °, 6 ° (Optional)		

### General specifications

Port information	Y1-Y2	P1-P2
Isolation (dB)	>20	
VSWR	1.5 : 1	
Polarization	±45°	
Intermodulation IM3 (dBc)	-153 (3rd Order, 2x20W)	-
Impedance (Ω)	50	
Max. Power per Port (Watts)	100	

### Array information

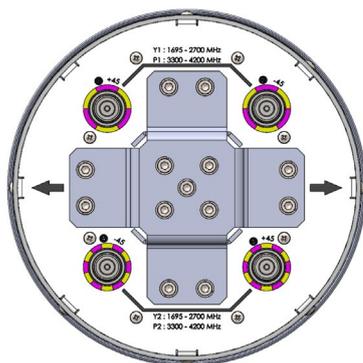
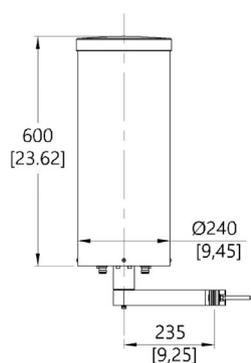


Array	Frequency(MHz)	Connectors
Y1/P1	1695-2700/3300-4200	1-2
Y2/P2	1695-2700/3300-4200	3-4

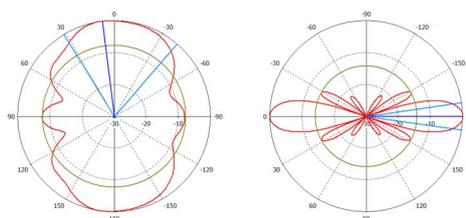
### Mechanical specifications

Connector Type & Quantity	4 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (WxD) (inch / mm)	Ø 9.4 x 23.6 / Ø 240 x 600
Weight (without Mounting Kit) (lb/kg)	15.4/ 7
Wind Load (@100 mph) (N)	127
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Gray)

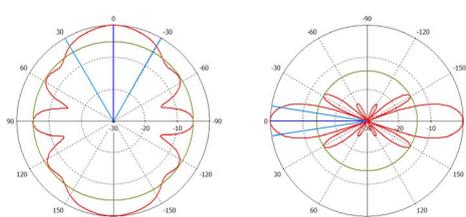
Outline



Pattern File\_1695-2700 MHz



Pattern File\_3300-4200 MHz



## ECOSC2Y2P/2S

### BIDIRECTIONAL Small Cell Canister Antenna

4-port x 1695-2700 MHz  
 4-port x 3300-4200 MHz  
 HPBW : 70°, 70°  
 Gain : 11.8 dBi, 10.9 dBi

#### Electrical specifications

Port Information	Y1-Y2			
Frequency Range (Mhz)	1695-1920	1920-2180	2305-2360	2360-2700
Gain Max. (dBi)	9.6	11.3	11.5	11.8
Gain Avg. (dBi)	8.6	8.8	10.4	10.2
<b>Horizontal Pattern</b>				
Azimuth Beam width (°)	94	73	62	62
<b>Vertical Pattern</b>				
Elevation Beam width (°)	17	15	13	12
First Upper Side Lobe Suppression (dBi)	13	13	13	13
Electrical Down Tilt	Fixed 2°			

#### Electrical specifications

Port Information	P1-P2		
Frequency Range (Mhz)	3300-3550	3550-3700	3700-4200
Gain Max. (dBi)	9.3	9.7	10.9
Gain Avg. (dBi)	8.3	9.2	9.9
<b>Horizontal Pattern</b>			
Azimuth Beam width (°)	80	70	61
<b>Vertical Pattern</b>			
Elevation Beam width (°)	16	16.1	13.8
First Upper Side Lobe Suppression (dBi)	13	13	13
Electrical Down Tilt	Fixed 2°		



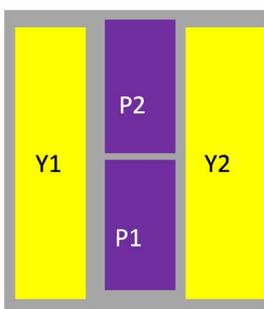
### General specifications

Port information	Y1-Y2	P1-P2
Isolation (dB)	>20	
VSWR	1.5 : 1	
Polarization	±45	
Intermodulation IM3 (dBc)	-153(3rd Order, 2x20W)	-
Impedance ( $\Omega$ )	50	
Max. Effective Power per Port (Watts)	100	

### Mechanical specifications

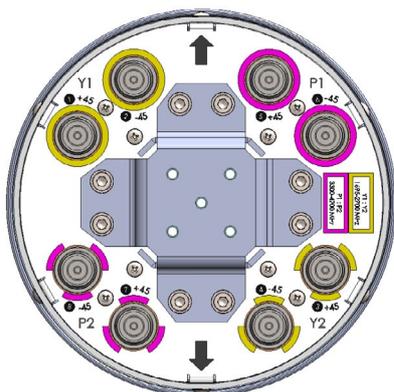
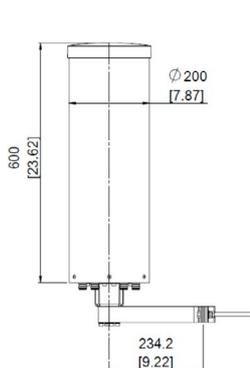
Connector Type & Quantity	8 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (D x H) (inch / mm)	$\varnothing$ 7.9 x 23.6 / $\varnothing$ 200 x 600
Weight (without Mounting Kit) (lb / kg)	11 / 5
Wind Load (@100 mph) (N)	107
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Light Gray)

### Array information

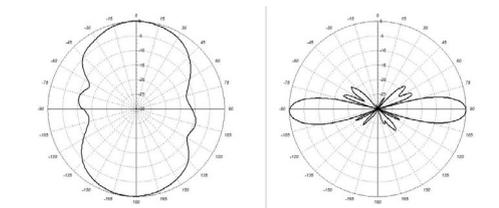


Array	Frequency(MHz)	Connectors
Y1-Y2	1965-2700	1-4
P1-P2	3300-4200	5-8

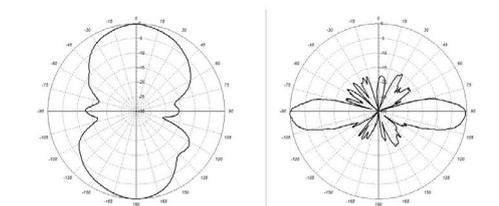
Outline



Pattern File\_1695-2700 MHz



Pattern File\_3300-4200 MHz

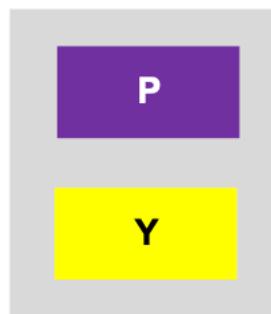


# 801112006

XXPOL 4Port  
 1695-2700 MHz / 3300-4200 MHz  
 HPBW : 68 °, 65 °  
 Gain : 9 dBi, 10 dBi

## BIDIRECTIONAL 4T4R Small Cell Canister Antenna

Type	8011120006	
Frequency Range (MHz)	1695-2700	3300-4200
Gain (dBi)	9.0	10.0
VSWR	≤ 1.7	≤ 1.8
Polarization	±45°	
PIM3 (dBc, @2x43dBm)	≤ -150	N/A
Isolation (dB)	≥ 22	≥ 22
Horizontal Beamwidth (°)	68	65
Vertical Beamwidth (°)	34	34
Input Impedance (ohm)	50	
Max. Input Power (W)	100	
Lightning Protection	DC Grounded	
Connector	4 x 4.3-10 Female	
Dimension (mm)	280 x 450	
Weight (kgs)	Approx. 10kg antenna and 7kg bracket	
Radome Material	UPVC white	
Max wind velocity	200Km/h	
Wind load (N, @150Km/h)	143.52	
Operating Temperature (°C)	-40 to +65	
Mounting	Pole mount bracket included Ø50- Ø80mm	
Optional accesory (*order separately)	Wall mount stand 70010023	

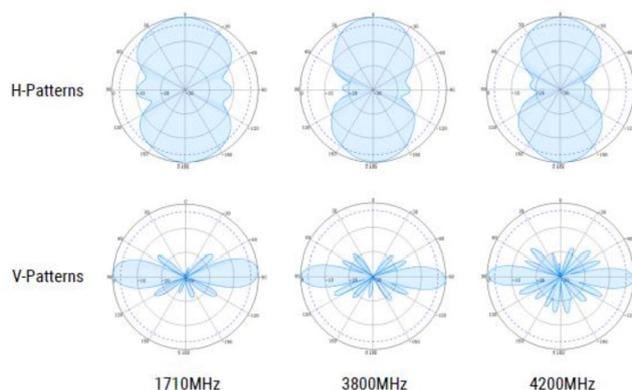
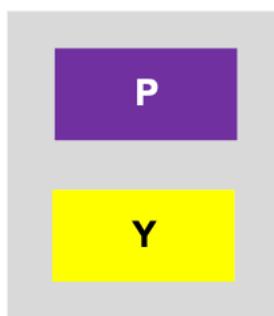


# 801112007

## BIDIRECTIONAL 4T4R Small Cell Canister Antenna

XXPOL 4Port  
1695-2700 MHz / 3300-4200 MHz  
HPBW : 39 °, 47 °  
Gain : 12 dBi, 12 dBi

Type	801112007	
Frequency Range (MHz)	1695-2700	3300-4200
Gain (dBi)	12.0	12.0
VSWR	≤ 1.7	≤ 1.8
Polarization	±45°	
PIM3 (dBc, @2x43dBm)	≤ -150	N/A
Isolation (dB)	≥ 22	≥ 22
Horizontal Beamwidth (°)	39	47
Vertical Beamwidth (°)	14	12
Input Impedance (ohm)	50	
Max. Input Power (W)	100	
Lightning Protection	DC Grounded	
Connector	4 x 4.3-10 Female	
Dimension (mm)	280 x 900	
Weight (kgs)	Approx. 12kg antenna and 8kg bracket	
Radome Material	UPVC white	
Max wind velocity	200Km/h	
Wind load (N, @150Km/h)	143.52	
Operating Temperature (°C)	-40 to +65	
Mounting	Pole mount bracket included Ø50- Ø80mm	

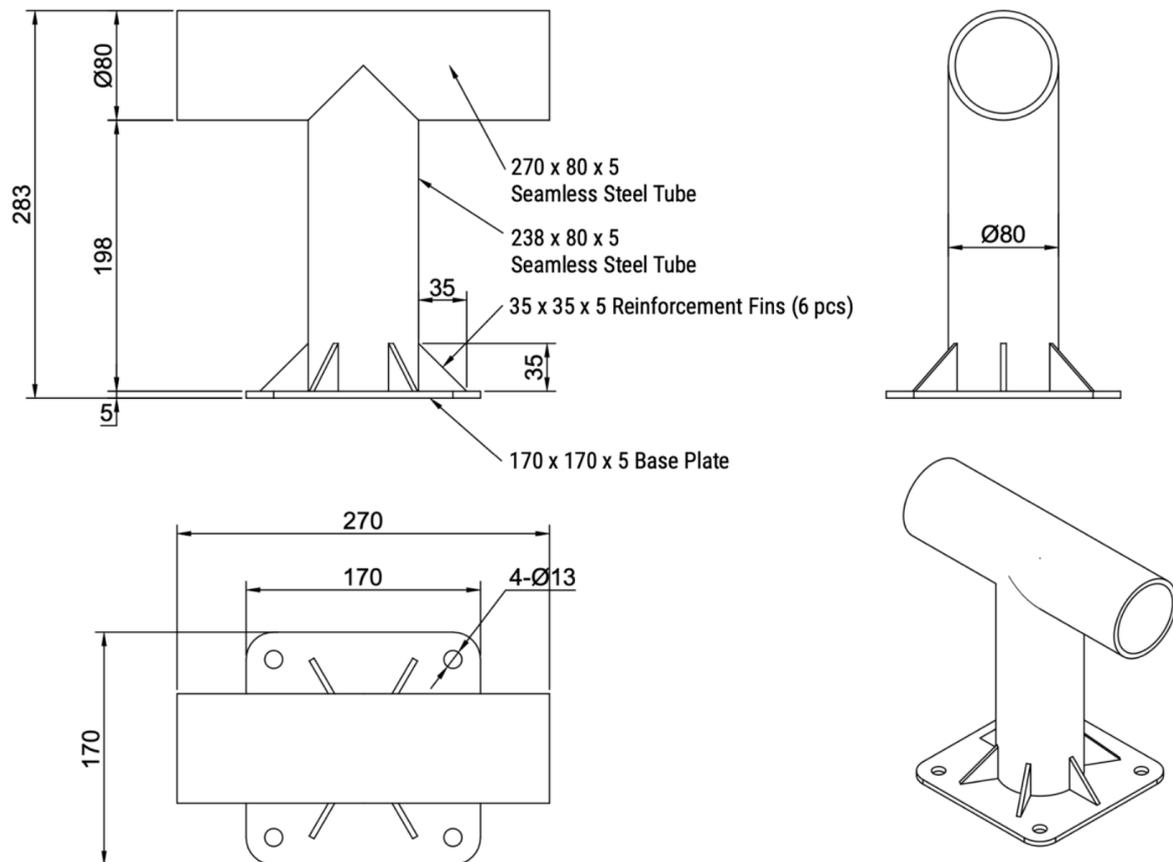


# 70010023

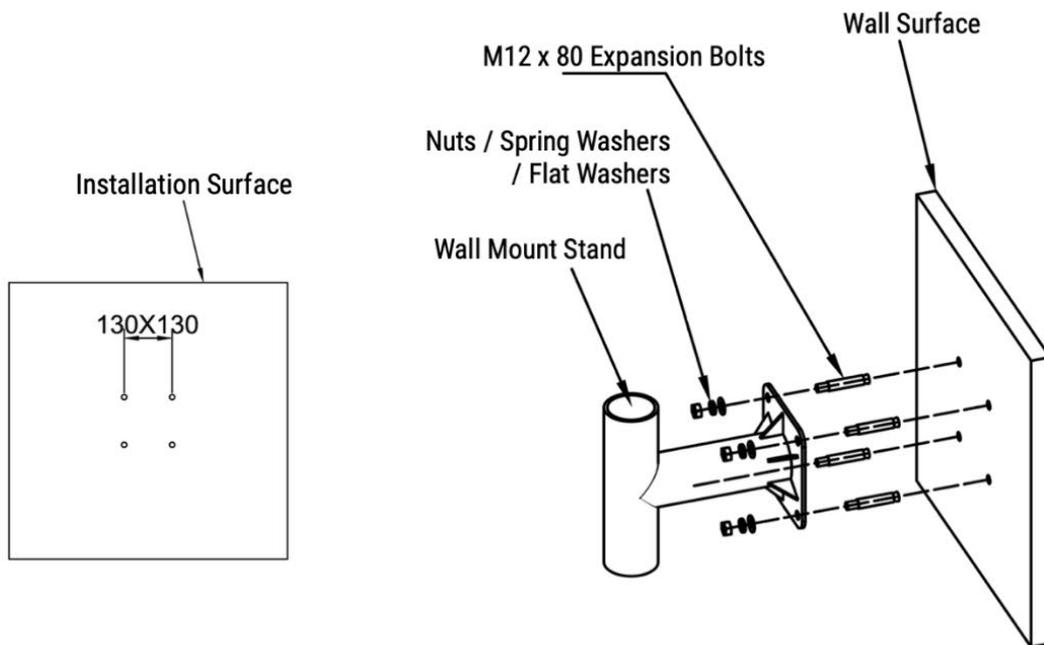
For Tri-Sector / Quasi Omni Antenna  
(Ø280 x 450)

## Wall Mount Stand

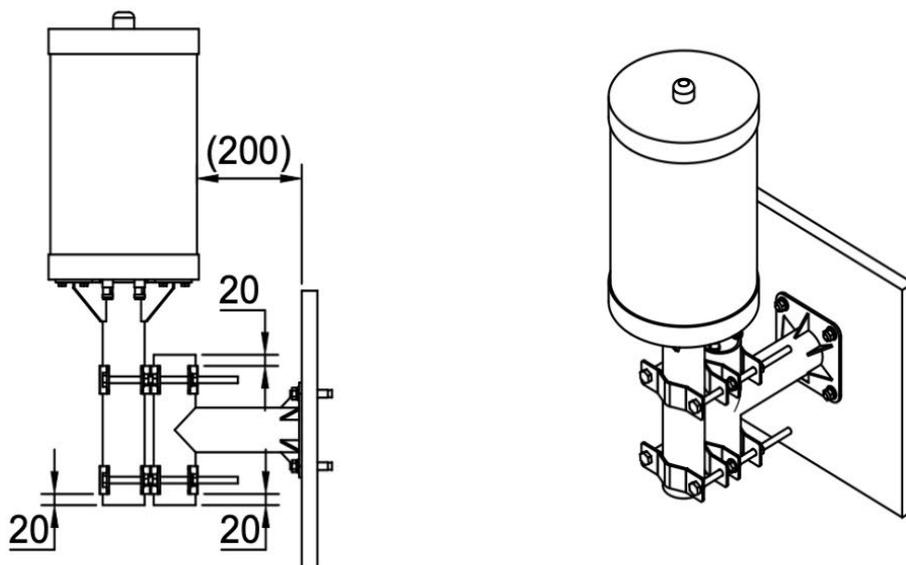
Type	70010023
Application	WallMountStandforwall-mountapplicationof quasi-omni / tri-sector / dual sector antennas Ø Antennasize:Ø280x450mm
Material	Hot dip galvanized steel
Size (reference only)	80 x 283 x 270mm
Accessories	4 sets of M12 x 80 Expansion Bolt, Nut and Washers (in 304 Stainless Steel)



### Installation Illustration



### Assembly of Antenna and Wall Mount Stand (Antenna Shown is Optional Item and Not Included in the Stand)

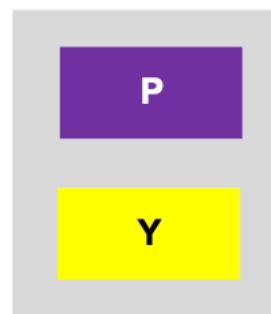


# 80110004

Trisector directional  
Antenna 12-port 3\*XX-  
Pol 12/12dBi 1695-2690  
/ 3300-4200

## 3\*XX-Pol Trisector antenna 1695-2690 / 3300-4200 12/12dBi

Type	80110004		
Band (per sector)	Y1	P1	
Frequency Range (MHz)	1695-2690	3300-3800	3800-4200
Gain (dBi)	11.5	11.5	11.5
VSWR	≤1.5	≤ 1.5	≤ 1.5
3rd Order PIM (dBc)	≤-153	NA	
Polarization	±45°		
Isolation (dB)	≥ 22	≥ 21	
Front to back ratio(dB)	22	22	
Horizontal Beamwidth (°)	68	65	
Vertical Beamwidth (°)	34	34	
Input Impedance (ohm)	50		
Max. Input Power (W)	100		
Lightning Protection	DC Grounded		
Connector Type	2 x 4.3-10 Female	2 x 4.3-10 Female	
Connection (per antenna)	12 x 4.3-10 Female		
Dimension (mm)	Ø280 x 450		
Weight (kgs)	6.5 approx		
Radome Material	UV-PVC (white)		
Wind load (N, @150Km/h)	143.52		
Operating Temperature (°C)	-40 to +65		
Max wind velocity	200Km/h		
Mounting	70010030 for pole size 50-80mm (Supplied)		



**ECOSD1R2Y2PLB****30 Ports Tri-Sector Antenna  
with Internal RET**

( 2 x 698-960 MHz, 4 x 1452-2690 MHz,  
4 x 3400-3800 MHz) x 3 sector  
· H 75 ° / H 65 ° / H 64 °  
· 16 dBi / 16.8 dBi / 17.3 dBi

**Electrical specifications (None beamforming)**

Port Information	R1-R3		
Frequency Range (Mhz)	698-862	790-862	880-960
Gain Max. (dBi)	15.6	16	15.7
Gain Avg. (dBi)	15.2+-0.4	15.6+-0.3	14.9+-0.7

**Horizontal Pattern**

Azimuth Beam width (°)	75.6+-6	74.2+-3.9	77+-5.3
Front-to-Back Ratio	20.2	23	23
Cross Polar Discrimination at Boresight	18.2	17.4	15.5

**Vertical Pattern**

Elevation Beam width (°)	11+-0.9	10.2+-0.5	9.2+-0.6
Electrical Downtilt continuously Adjustable	2-12		
First Upper Side Lobe Supression	>18.8	>19	>18.7

**Electrical specifications**

Port Information	Y1-Y6				
Frequency Range (Mhz)	1452-1492	1710-1990	1920-2170	2300-2400	2500-2690
Gain Max. (dBi)	14.5	15.8	16.6	16.8	16.3
Gain Avg. (dBi)	13.5+-0.7	15.1+-0.5	15.5+-0.9	15.7+-1.1	15.1+-1

**Horizontal Pattern**

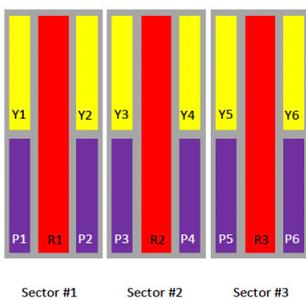
Azimuth Beam width (°)	74.1	66.1	61.7	58.5	68.8
Front-to-Back Ratio	20	22	22	21	20
Cross Polar Discrimination at Boresight	20	20	20	15	15

**Vertical Pattern**

Elevation Beam width (°)	8.8+-0.6	8.8+-0.6	7.5+-0.6	6.6+-0.7	6.1+-0.6
Electrical Downtilt continuously Adjustable	2-12				
First Upper Side Lobe Supression	18	16	16	18	16

Electrical specifications			General Specifications	
Port Information	P1-P6		Isolation (dB)	25
Frequency Range (Mhz)	3400-3600	3600-3800	Interband Isolation (dB)	30
Gain Max. (dBi)	17.3	17.3	VSWR	1.5:1
Gain Avg. (dBi)	16.1+-0.9	15.9+-0.9	Polarization (°)	+45
<b>Horizontal Pattern</b>			Intermodulation IM3 (dBc)	-153 (2x43 dBm carrier)
Azimuth Beam width (°)	64.5+-1.1	64.9+-11	Impedance	50
Front-to-Back Ratio	20.1	18.2	Max. Effective Power per port (Watts)	150
Cross Polar Discrimination at Boresight	21.3	21.5		
<b>Vertical Pattern</b>				
Elevation Beam width (°)	6.4+-0.4	6+-0.3		
Electrical Downtilt continuously Adjustable	2-12			
First Upper Side Lobe Supression	15.3	12.5		

Mechanical specifications	
Connector Type & Quantity	30 x 4.3-10 DIN Female
Connector Position	Bottom
Antenna Dimension (WxD) (inch / mm)	Ø 14.5 x 78.7 / Ø 370 x 2000
Weight (without Mounting Kit) (lb/kg)	101.4/ 46
Wind Load (@100 mph) (N)	Front 970, Side 970, Rear 970
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Gray)



Part	Array	Frequency (MHz)	AISG RET UID	Connectors
Sector#1 RET#1	R1	698-960	ES -RET#1R1xxxxxxxxx1	1-2
	Y1-Y2	1452-2690	ES-RET#1YYxxxxxxxxx3	3-6
	P1-P2	3400-3800	ES-RET#1PPxxxxxxxxx2	7-10
Sector#2 RET#2	R2	698-960	ES -RET#2R2xxxxxxxxx1	11-12
	Y3-Y4	1452-2690	ES-RET#2YYxxxxxxxxx3	13-16
	P3-P4	3400-3800	ES-RET#2PPxxxxxxxxx2	17-20
Sector#3 RET#3	R3	698-960	ES -RET#3R3xxxxxxxxx1	21-22
	Y5-Y6	1452-2690	ES-RET#3YYxxxxxxxxx3	23-26
	P5-P6	3400-3800	ES-RET#3PPxxxxxxxxx2	27-30

**Small Cell Pseudo Omni  
Conduit Canister Antenna**

**ECOSC2R4Y2P**

4-port x 698-960MHz  
 8-port x 1695-2700MHz  
 4-port x 3300-4200MHz  
 HPBW : 360°  
 Gain : 7.9 dBi, 9.4 dBi, 8.5 dBi

**Electrical specifications**

Port Information	R1-R2	
Frequency Range (Mhz)	698-806	806-960
Gain Max. (dBi)	7.1	7.9
Gain Avg. (dBi)	5.3	6.3

**Horizontal Pattern**

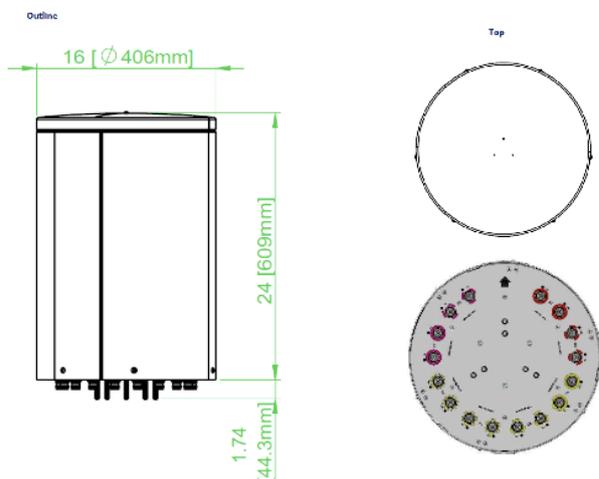
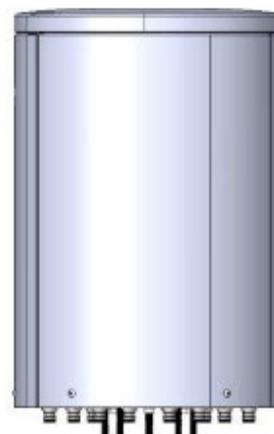
Azimuth Beam width (°)	360
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**Vertical Pattern**

Elevation Beam width (°)	360
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**General Specifications**

In-Band Cross Polar Port Isolation(dB)	>20
VSWR	1.5:1
Polarization (°)	+/-45°
Intermodulation IM3 (dBc)	-153 (2x43 dBm carrier)
Impedance	50
Max. Effective Power per port (Watts)	100



### Electrical specifications

Port Information	Y1-Y4				P1-P2
Frequency Range (Mhz)	1695-1850	1850-1910	1910-2180	2300-2700	3300-4200
Gain Max (dBi)	8.0	8.0	9.4	9.4	8.5
Gain Avg (dBi)	7.3	7.4	8	8.5	7

#### Horizontal Pattern

Azimuth Beam width (°)	360
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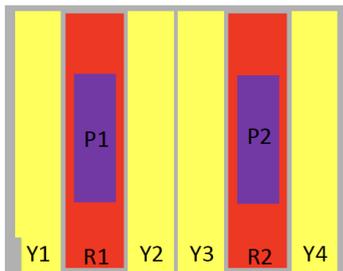
#### Vertical Pattern

Elevation Beam width (°)	16	15	12	11	14
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### General specifications

In-Band Cross Polar Port Isolation (dB)	>20
VSWR	1.5 : 1
Polarization	±45°
Intermodulation IM3 (dBc)	-153 (3rd Order, 2x20W)
Impedance (Ω)	50
Max. Effective Power per Port (Watts)	100

### Array information



Array	Frequency(MHz)	Connectors
R1-R2	698-960	1-4
Y1-Y4	1695-2700	5-12
P1-P2	3300-4200	13-16

### Mechanical specifications

Connector Type & Quantity	16 x 4.3-10 Female
Connector Position	Bottom
Antenna Dimension (D x H) (inch/mm)	Ø 16 x 24 / Ø 406 x 609
Weight (without Mounting Kit) (lb / kg)	29.1 / 13.2
Wind Load (@100 mph)	216
Max.Wind Speed (Survival Wind Speed) (mph)	150
Radome (Color)	ASA (Gray)

# Multi-Band Combiners

---

Multiband combiners are used to isolate two or more channels on different frequencies, thus allowing the common use of one antenna by several transmitters or receivers. Very low insertion loss, excellent signal isolation and superior intermodulation properties prevent mutual interference between adjacent systems. All diplexers, triplexers and quadruplexers, pentaplexers and hexaplexers are suited for indoor and outdoor installation. ESB designs and manufactures combiners under strict quality control with VSWR and PIM values in line with today's demanding 5G networks. Both versions (single and dual) are available with mainly 4.3-10 connectors but also N female connector.

Part Number	Description	Page
78210264	DBC 50-2200/2400-2500MHz N(f) SU	164
728956	DBC 68-470/870-970MHz N(f) SU	166
728959	DBC 68-470/698-2700MHz N(f) SU	167
78311460	DBC 380-960/1427-3800MHz 4.3-10 SU	168
78311461	DBC 380-960/1427-3800MHz 4.3-10 DU	168
78311430	DBC 694-862/880-960MHz 4.3-10 SU	170
78311431	DBC 694-862/880-960MHz 4.3-10 DU	170
78311790	DBC 1427-2200/2300-2690MHz 4.3-10 SU	172
78311791	DBC 1427-2200/2300-2690MHz 4.3-10 DU	172
78321001v02	DBC 698-2700/3300-4000MHz 4.3-10 SU	174
78322001v02	DBC 698-2700/3300-4000MHz 4.3-10 DU	174
78321002	DBC 1710-1880/1920-2700MHz 4.3-10 SU	175
78322002	DBC 1710-1880/1920-2700MHz 4.3-10 DU	175
78311620	DBC 1427-1880/1920-2690MHz 4.3-10 SU	176
78311621	DBC 1427-1880/1920-2690MHz 4.3-10 DU	176
78321005	DBC 698-960 & 1710-1880 / 1920-2690 4.3-10 SU	178
78322005	DBC 698-960 & 1710-1880 / 1920-2690 4.3-10 DU	178
78311180	DBC 690-2180 / 2400-2700MHz 4.3-10	180
78311470	DBC 703-788 / 791-960 4.3-10 SU	182
78311471	DBC 703-788 / 791-960 4.3-10 DU	182
78321003	TBC 703-788/791-960/1427-3800MHz 4.3-10 SU	184
78322003	TBC 703-788/791-960/1427-3800MHz 4.3-10 DU	184
78331004	TBC 703-788 / 791-862 / 880-960 4.3-10 SU	186
78332004	TBC 703-788 / 791-862 / 880-960 4.3-10 DU	186
78311820	TBC 690-862 / 880-960 / 1427-3800Mhz SU	188
78311821	TBC 690-862 / 880-960 / 1427-3800Mhz DU	188
78311450	TBC 380-960 / 1427-2200 / 2300-2690 SU	190
78311451	TBC 380-960 / 1427-2200 / 2300-2690 DU	190
78311560	TBC 380-960 / 1427-1880 / 1920-2690Mhz SU	192
78311561	TBC 380-960 / 1427-1880 / 1920-2690Mhz DU	192
78331002	TBC 690-960/1710-2700/3300-3800MHz 4.3-10 SU	194
78332002	TBC 600-960/1710-2700/3300-3800MHz 4.3-10 DU	194
78331003v01	TBC 703-788/791-960/1427-3800MHz 4.3-10 SU	196
78332003v01	TBC 703-788/791-960/1427-3800MHz 4.3-10 DU	196
78311690	TBC 1427-1880 / 1920-2360 / 2496-2690 4.3-10 SU	198
78311691	TBC 1427-1880 / 1920-2360 / 2496-2690 4.3-10 DU	198
78311340	QBC 690-862 / 880-960 / 1427-1880 / 1920-2690MHz 4.3-10 SU	200
78311341	QBC 690-862 / 880-960 / 1427-1880 / 1920-2690MHz 4.3-10 DU	200
78341002v01	QBC 703-788 / 791-862 / 880-960 / 1710-2170 SU	202

<b>Part Number</b>	<b>Description</b>	<b>Page</b>
78342002v01	QBC 703-788 / 791-862 / 880-960 / 1710-2170 DU	202
78311580	QBC 380-960/1427-1880/1920-2200/2300-2690MHz SU	204
78311581	QBC 380-960/1427-1880/1920-2200/2300-2690MHz DU	204
78341001	QBC 1695-1880/1920-2200/2300-2700/3300-3800MHz 4.3-10 SU	206
78342001	QBC 1695-1880/1920-2200/2300-2700/3300-3800MHz 4.3-10 DU	206
78341004	QBC 380-470 / 698-862 / 880-960 & 1710-2170 / 3300-3800 SU	208
78351001	PBC 690-862/880-960/1710-1880/1920-2170/2490-2690MHz 4.3-10 SU	210
78352001	PBC 690-862/880-960/1710-1880/1920-2170/2490-2690MHz 4.3-10 DU	210
78351002	PBC 690-960/1710-1880/1920-2170/2500-2700/3300-3800MHz 4.3-10 SU	212
78352002	PBC 690-960/1710-1880/1920-2170/2500-2700/3300-3800MHz 4.3-10 DU	212
78361001	HBC 600-960/1695-1880/1920-2200/2300-2400/2500-2690/3300-3800MHz 4.3-10 SU	214
78362001	HBC 600-960/1695-1880/1920-2200/2300-2400/2500-2690/3300-3800MHz 4.3-10 DU	214

# 78210264

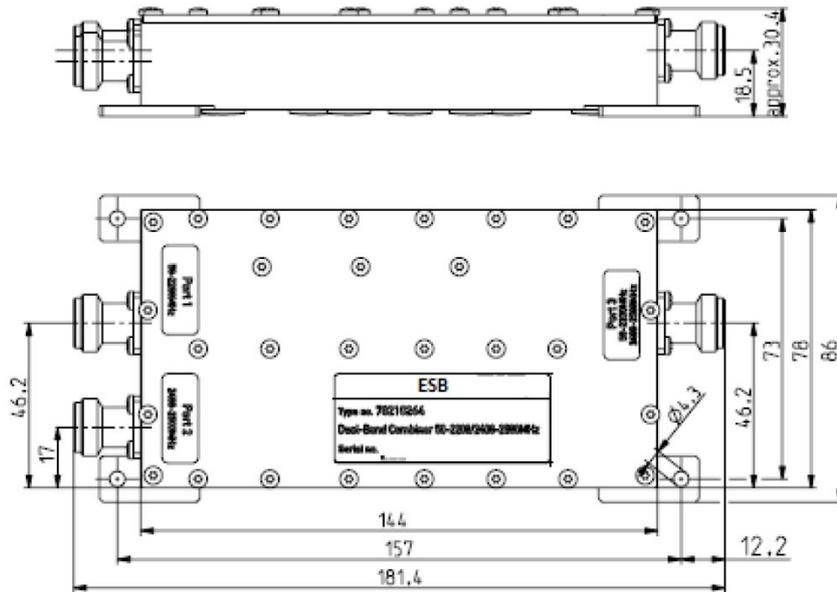
## Dual Band Combiner 50-2200 / 2400-2500Mhz

Dual Band Combiner  
50-2200 / 2400-2500

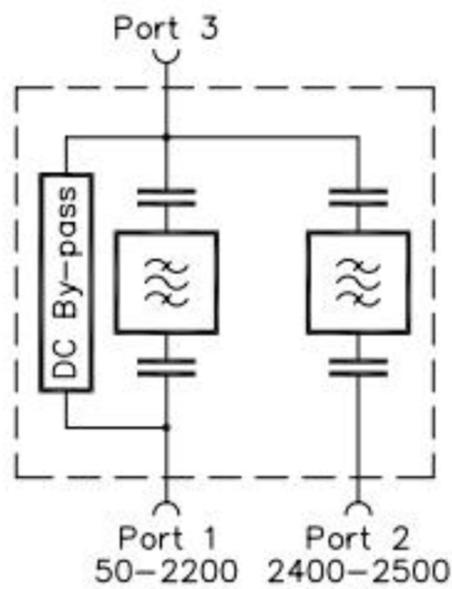
Type	78210264 Single Unit
Frequency (MHz) Band 1 Band 2	50-2200 2400-2500
Insertion Loss (dB)	Port1-3: < 0.1 dB (50 – 2200 MHz) Port2-3: < 0.2 dB (2400 – 2500 MHz)
Isolation (dB)	≥ 50
PIM3 (dBc, @2x43dBm)	≤ -150
VSWR	< 1.25 (50 – 2200 / 2400 – 2500 MHz)
Input Impedance (ohm)	50
Max. Input Power (W)	200 per Port
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	DC By-pass (max 2500mA) Built-in DC Stop
Connectors	N Female
Dimension (mm)*	86 mm x 30.4 mm x 181.4 mm (including connectors and mounting feet)
Weight (kgs)	Approx 0.5
Ingress Protection Class	Indoor
Operational RH (%)	≤ 95
Operating Temperature (°C)	-30 to +60
Storage Temperature (°C)	-40 to +85



## Dimensions



## Block Diagram



# 728956

## Dual Band combiner 68-470/870-970MHz

Dual-band combiner  
68-470/870-970Mhz

Type	728956
Frequency (MHz) Band 1 Band 2	68-470 870-970
Insertion Loss (dB)	≤ 0.5
Isolation (dB)	≥ 45
Input Impedance (ohm)	50
Max. Input Power (W)	50 per Port
Connectors	N Female
Dimension (mm)	152 x 120 x 37
Weight (kgs)	1.2
Ingress Protection Class	IP65
Operational RH (%)	≤ 95
Operating Temperature (°C)	-20 to +70
Storage Temperature (°C)	-40 to +85

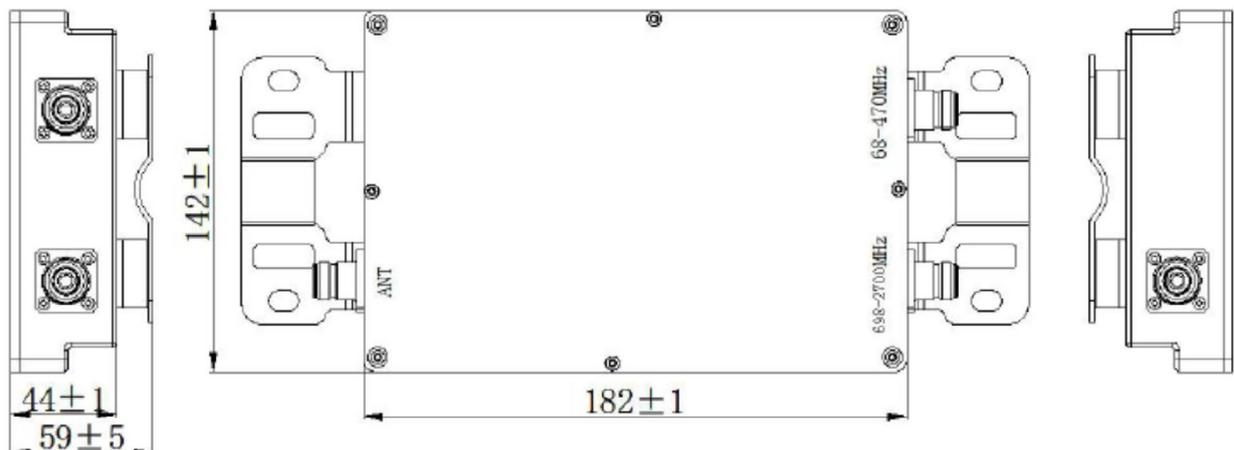
### Dimensions



**728959**
**Dual Band Combiner  
68-470 / 698-2700**

 Dual Band Combiner  
68-470 / 698-2700

Type	728959
Frequency (MHz) Band 1 Band 2	68-470 698-2700
Insertion Loss (dB)	≤ 0.5
Isolation (dB)	≥ 40
VSWR	1.4
Input Impedance (ohm)	50
Max. Input Power (W)	50 per Port
Connectors	N Female
Dimension (mm)	188 x 142 x 44
Weight (kgs)	TBD
Ingress Protection Class	IP65
Operational RH (%)	≤ 95
Operating Temperature (°C)	-20 to +75
Storage Temperature (°C)	-40 to +85

**Dimensions**


# 7831146x

## Dual Band Combiner 380-960 / 1427-3800

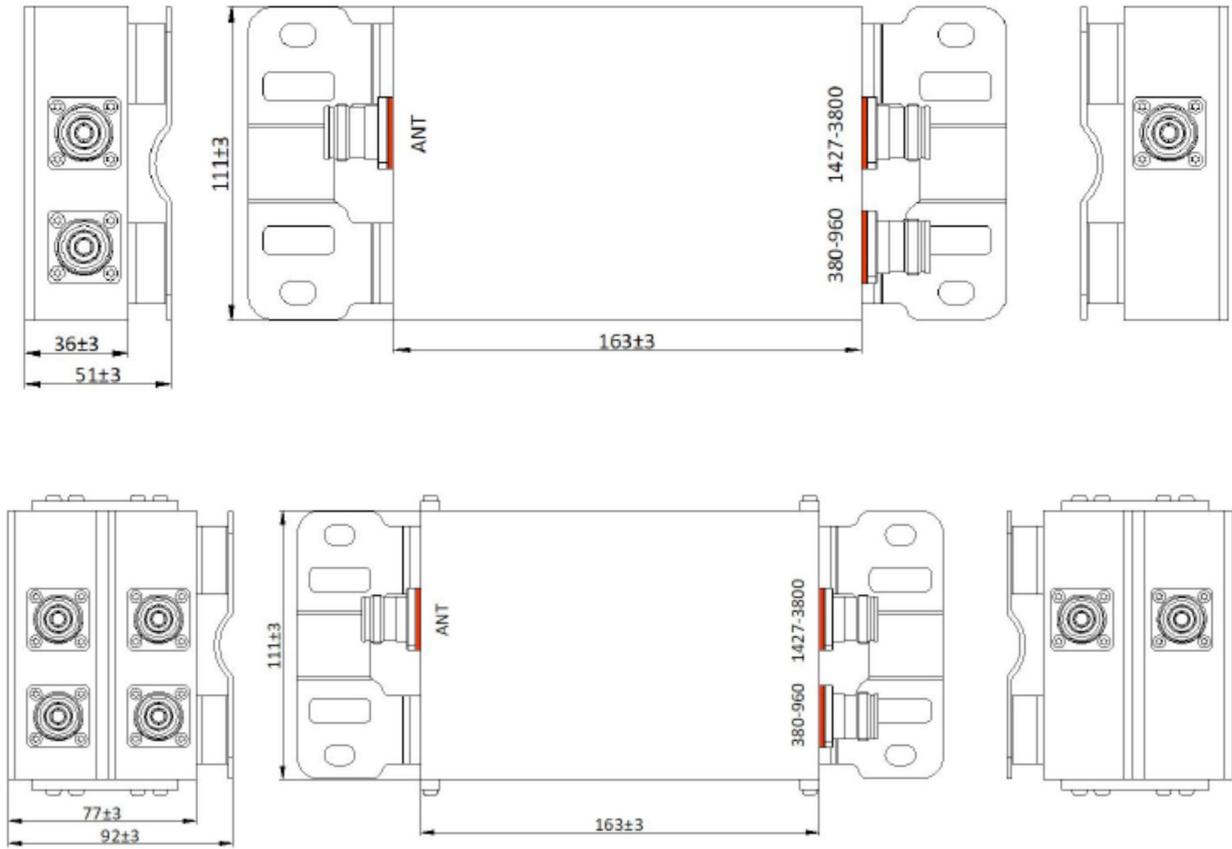
Dual Band Combiner  
380-960 / 1427-3800

Type	78311460 Single Unit	78311461 Double Unit
Frequency (MHz) Band 1 Band 2	380 - 960 1427- 3800	
Insertion Loss (dB)	≤ 0.2	
Isolation (dB)	≥ 40	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	163 x 111 x 36	163 x 111 x 77
Weight (kgs)	2.0	4.0
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Barometric Pressure (kPa)	10kA@8/20µS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Colour	Light grey	



\*excluding connectors and clamp

## Dimensions



# 7831143x

## Dual Band Combiner 694-862 / 880-960

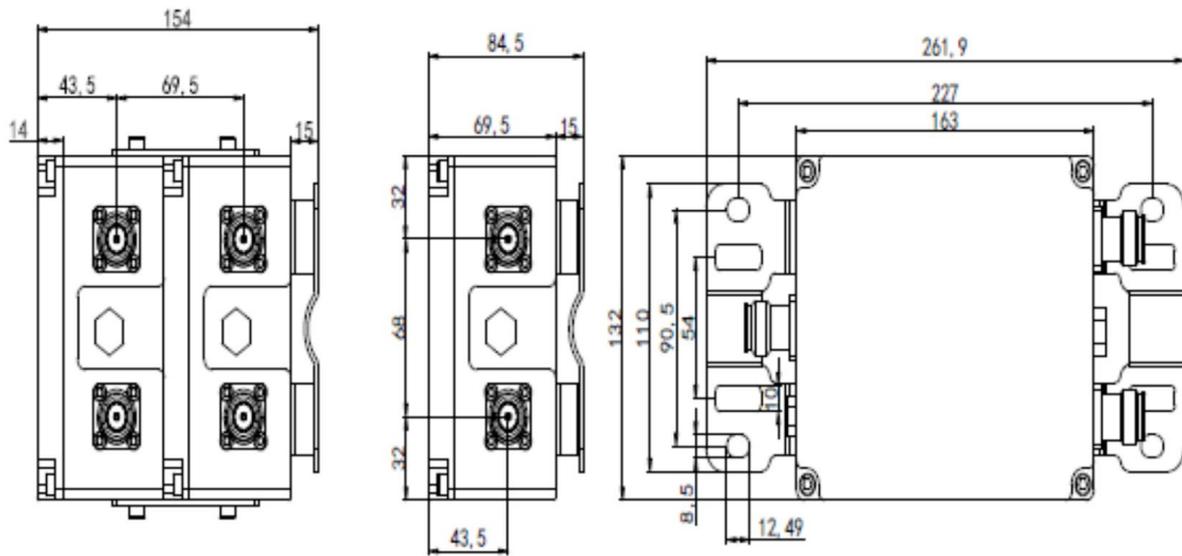
Dual Band Combiner  
694-862 / 880-960

Type	78311430 Single Unit	78311431 Double Unit
Frequency (MHz)		
Band 1	694-862	
Band 2	880-960	
Insertion Loss (dB)	≤ 0.5	
VSWR	≤ 1.3	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	163 x 132 x 69.5	163 x 132 x 154
Weight (kgs)	3.0	6.2
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	5kA; 8/20 μs pulse	
Barometric Pressure (kPa)	10kA@8/20μS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Colour	Light grey	



\*excluding connectors and clamp

## Dimensions



# 7831179x

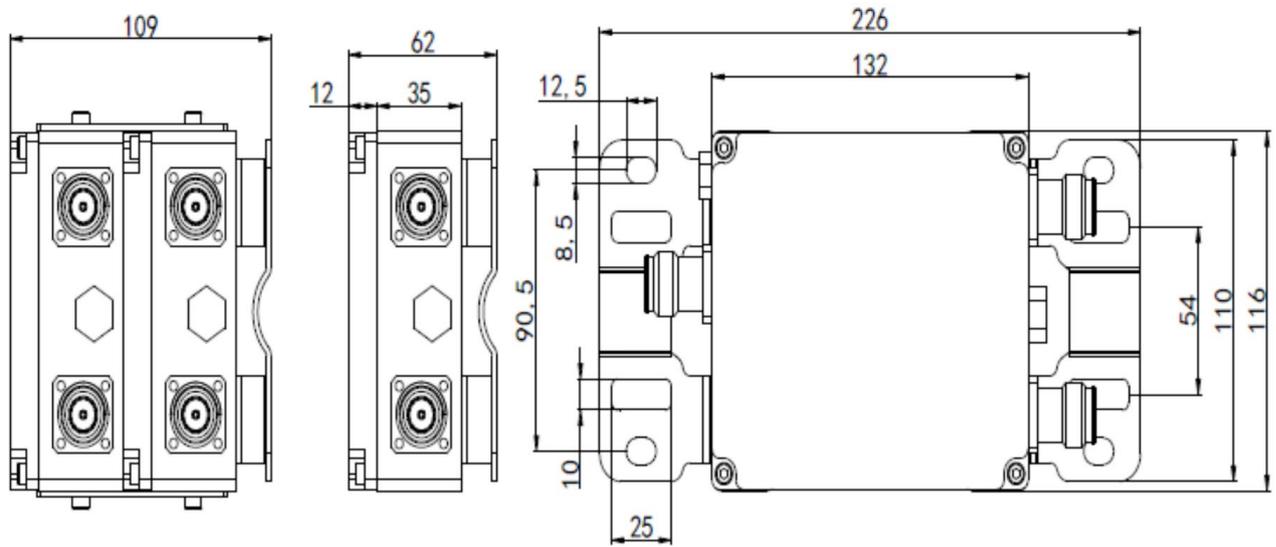
## Dual Band Combiner 1427-2200 / 2300-2690

Dual Band Combiner  
1427-2200 / 2300-2690

Type	78311790 Single Unit	78311791 Double Unit
Frequency (MHz) Band 1 Band 2	1427-2200 2300-2690	
Insertion Loss (dB)	≤ 0.5	
VSWR	≤ 1.3	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	132 x 116 x 35	132 x 116 x 100
Weight (kgs)	2.0	4.0
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	5kA; 8/20 μs pulse	
Barometric Pressure (kPa)	10kA@8/20μS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Colour	Light grey	



## Dimensions

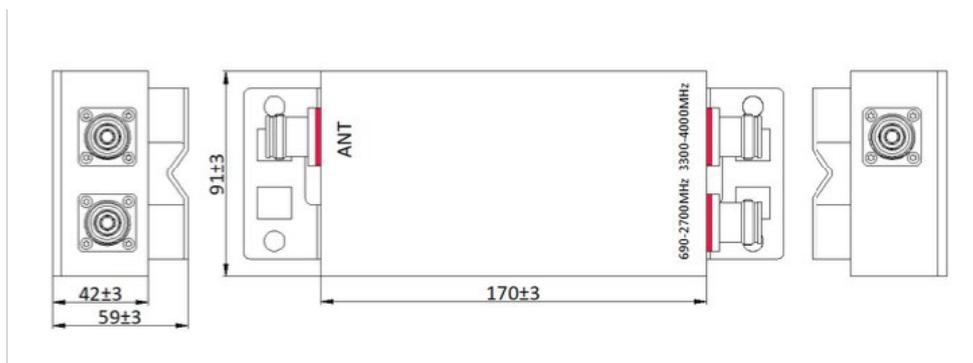


# 7832x001v02

## Dual Band Combiner 690-2700 / 3300-4200

Dual Band Combiner  
690-2700 / 3300-4200

Type	78321001v02 Single Unit	78322001v02 Double Unit
Frequency (MHz)		
Band 1	698-2700 3300-4200	
Band 2		
Insertion Loss (dB)	≤ 0.5	
Isolation (dB)	≥ 50	
Return loss (dB)/VSWR	≤18/1.3:1	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at Band 1 (690-2700)	Stop at Band 2 (3300-4200)
Connectors	4.3-10 Female	
Dimension (mm)*	146 x 106 x 41	146 x 106 x 85
Weight (kgs)	1.2	2.3
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +60	
Storage Temperature (°C)	-40 to +85	
Lightning Protection	5kA@8/20µS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	

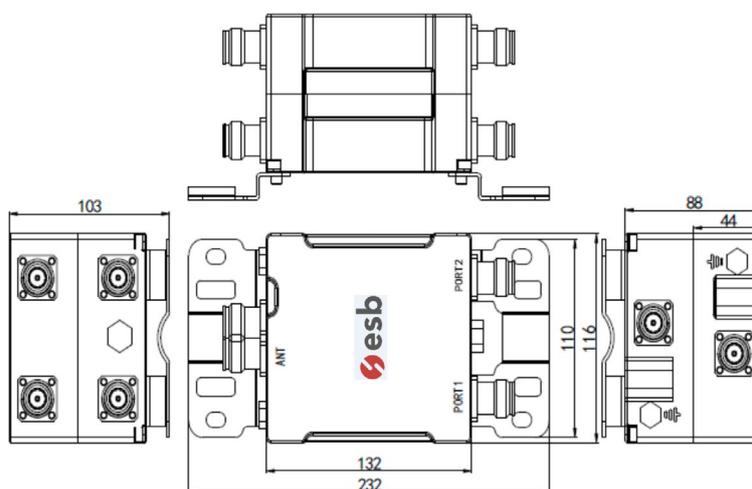


# 7832x002

## Dual Band Combiner 1710-1880 / 1920-2700

Dual Band Combiner  
1710-1880 / 1920-2700

Type	78321002 Single Unit	78322002 Double Unit
Frequency (MHz) Band 1 Band 2	1710-1880 1920-2700	
Insertion Loss (dB)	≤ 0.5	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass	
Connectors	4.3-10 Female	
Dimension (mm)*	132 x 116 x 44	132 x 116 x 88
Weight (kgs)	1.8	3.8
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +60	
Storage Temperature (°C)	-40 to +85	
Lightning Protection	3kA@10/350µS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	



# 7831162x

## Dual Band Combiner 1427-1880 / 1920-2690

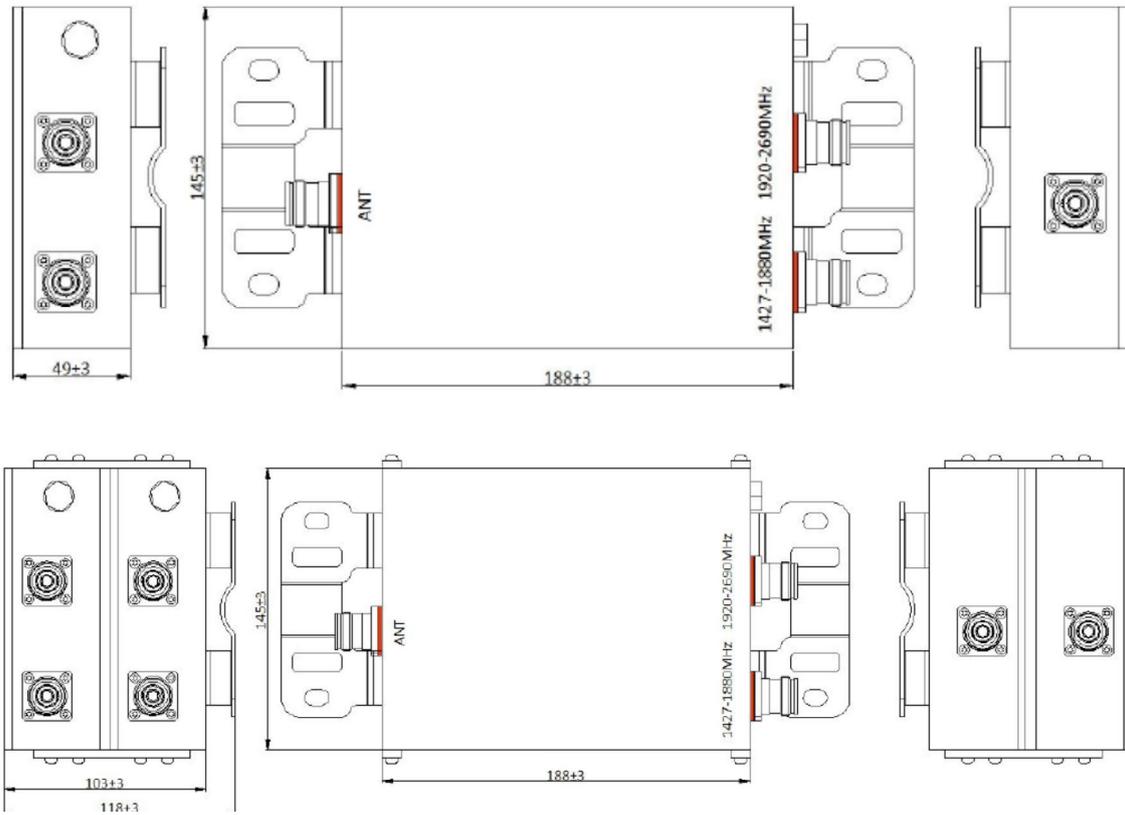
Dual Band Combiner  
1427-1880 / 1920-2690

Type	78311620 Single Unit	78311621 Double Unit
Frequency (MHz) Band 1 Band 2	1427-1880 1920-2690	
Insertion Loss (dB)	≤ 0.35	
VSWR	≤ 1.25	
Isolation (dB)	≥ 40	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Input Power rating (W)	200W per port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	188 x 145 x 49	188 x 145 x 103
Weight (kgs)	2.0	4.0
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	3, 10/350 µs pulse	
Barometric Pressure (kPa)	55 KPa-106KPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Colour	Light grey	



\*excluding connectors and clamp

## Dimensions



# 7832x005

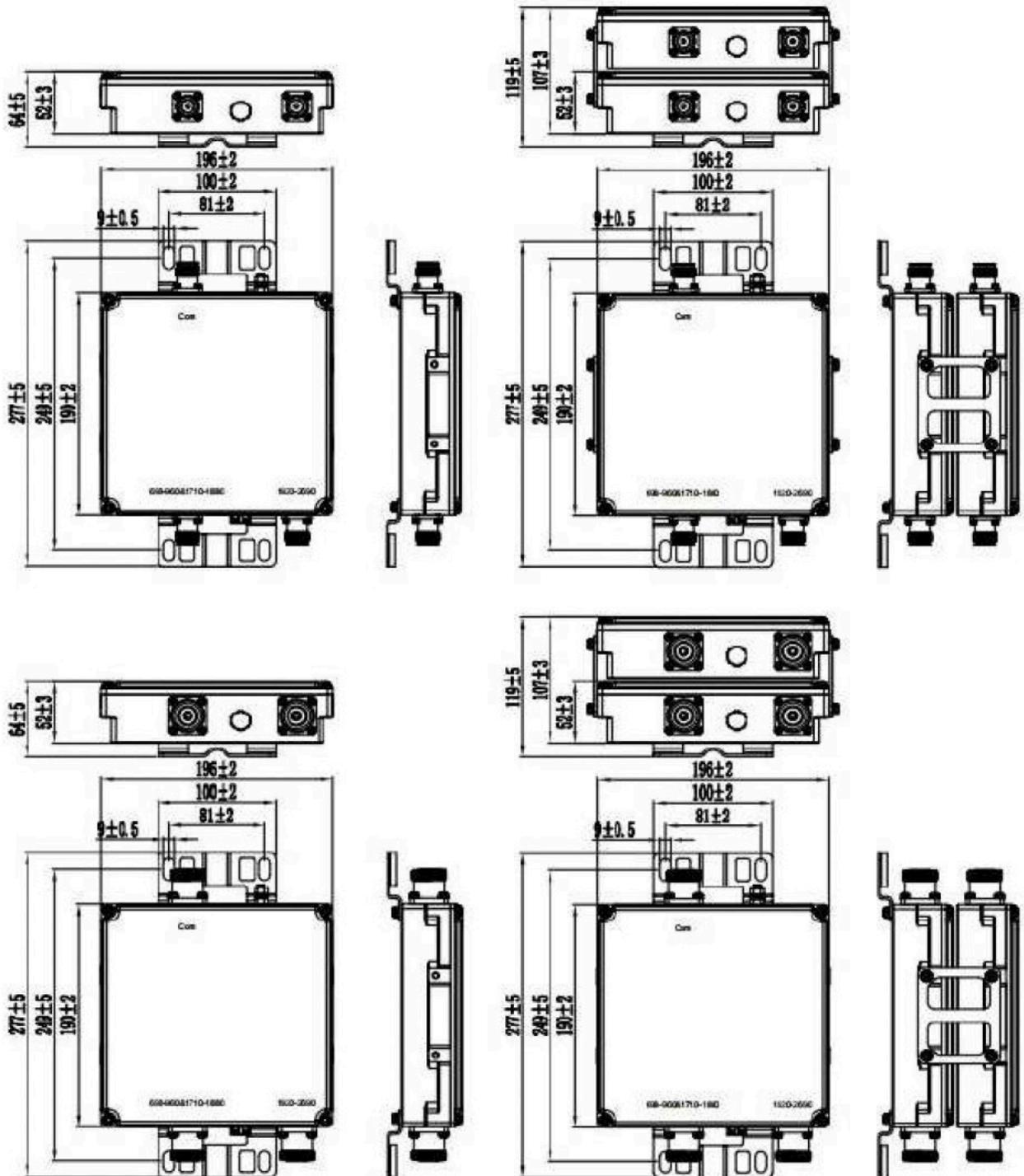
## Dual Band Combiner 698-960 & 1710 -1880 / 1920-2690

Dual Band Combiner  
698-960 & 1710-1880 / 1920-2690

Type	78321005 Single Unit	78322005 Double Unit
Frequency(MHz)		
Band 1		
Band 2	698-960 & 1710-1880 1920-2690	
Insertion Loss (dB)	≤ 0.35	
Return Loss (dB)/VSWR	≥ 20	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
DC/AISG by Pass	All ports	
Input Impedance (ohm)	50	
Input Power rating	200W	
Peak Power	2000W	
Connectors	4.3-10 Female	
Dimension (mm)	196 x 190 x 52	196 x 190 x 107
Weight (kgs)	2.5	5.0
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +60	
Storage Temperature (°C)	-40 to +85	
Lightning protection	5KA;8/20µs pulse	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-135mm)	



**Dimensions**



# 78311180

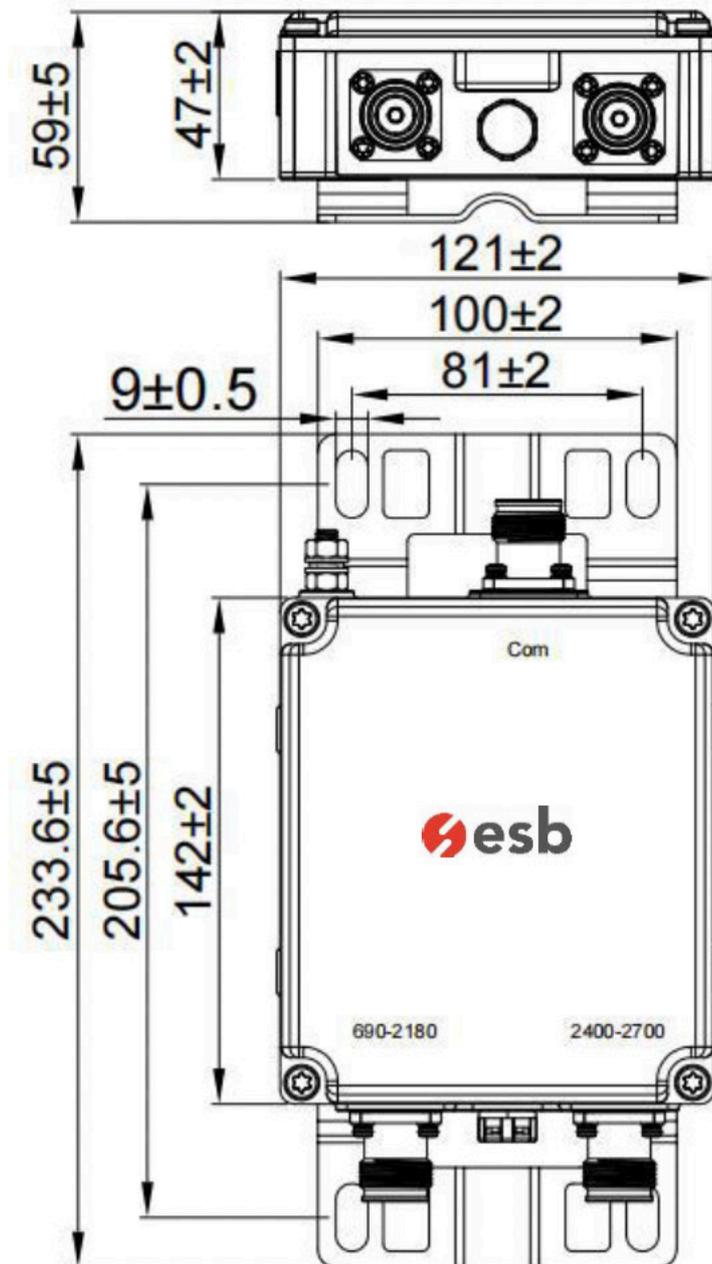
## Dual Band Combiner 690-2180 / 2400 -2700MHz

Dual Band Combiner  
690-2180 / 2400-2700MHz

Type	78311180
Frequency Range (MHz)	
Band 1	6902180 24002700
Band 2	
Insertion Loss (dB)	≤0.3
Isolation (dB)	≤ 50
Return Loss(dB) / VSWR	≤20/1.23:1
PIM3 (dBc, @2x43dBm)	≤160
Input Impedance (ohm)	50
Max. Input Power (W)	300
ASIG/DC Bypass	ByPass at all ports
Connectors	4.310 Female
Dimension (mm)*	142 x 121 x 47
Weight (kgs)	1.42
Ingress Protection Class	IP67
Operational RH (%)	≤ 95
Operating Temperature (°C)	40 to +65
Lightning Protection	8kA; 8/20 μs pulse
Mounting	Pole (clamps included for 35135mm pole) or Wall Mounted



## Dimensions



# 7831147x

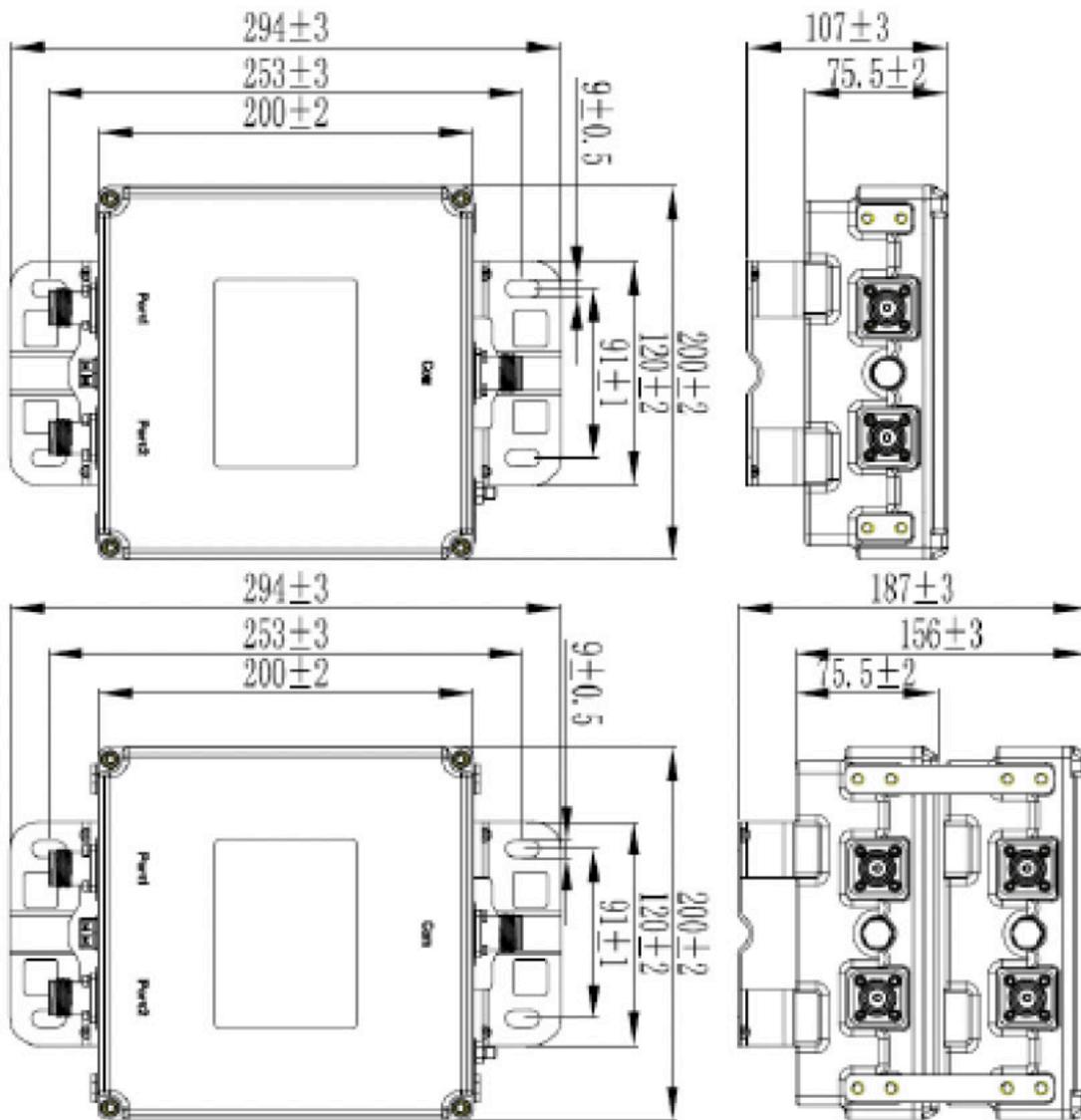
## Dual Band Combiner 703-788 / 791-960

Dual Band Combiner  
703-788 / 791-960

Type	78311470 Single Unit	78311471 Double Unit
Frequency (MHz) Band 1 Band 2	703788 791960	
Insertion Loss (dB)	Port 1 $\leq 0.7$ (703785) / $< 1.0$ (785787) / $< 1.5$ (787788MHz) Port 2 $< 1.5$ (791793) / $< 1.0$ (793800) / $< 0.7$ (800960MHz)	
Return Loss (dB)	$\geq 19$	
Isolation (dB)	$\geq 40$	
PIM3 (dBc, @2x43dBm)	$\leq 160$	
Input Impedance (ohm)	50	
Max. Input Power (W)	100 per Port	
Peak Power (W)	$\leq 1500$	
ASIG/DC Bypass	Bypass at All Ports	
Connectors	4.310 Female	
Dimension (mm)*	200 x 200 x 75.5	200 x 200 x 156
Weight (kgs)	3.4	6.7
Ingress Protection Class	IP66	
Operational RH (%)	$\leq 95$	
Operating Temperature (°C)	40 to +60	
Storage Temperature (°C)	50 to +85	
Lightning protection	5kA; 8/20 $\mu$ s pulse	
Barometric Pressure (kPa)	10kA@8/20 $\mu$ S	
Mounting	Wall Mount or Pole Mount (Pole Size: $\varnothing$ 35125mm)	
Color	Light grey	



**Dimensions**



# 7832x003

## Dual Band Combiner 617-960 & 1695 -2200 & 2496-2700 / 2300-2400

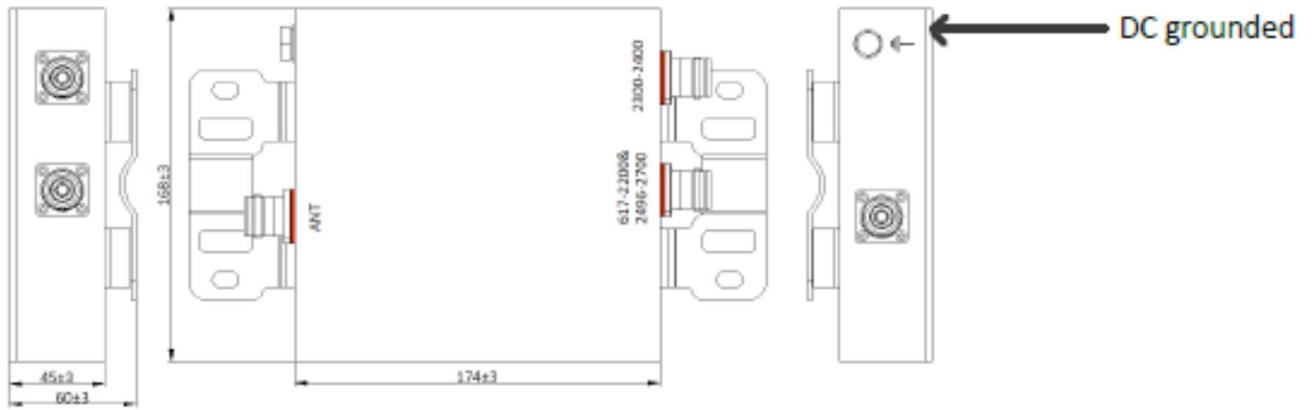
Dual Band Combiner  
617-960 & 1695-2200 &  
2496-2700 / 2300-2400

Type	78321003 Single Unit	78322003 Double Unit
Frequency (MHz) Band 1 Band 2	617-960&1695-2200&2496-2700 2300-2400	
Insertion Loss (dB)	≤ 0.5	
VSWR	≤ 1.3	
Isolation (dB)	≥50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Input Power rating	100W/AVG	
Connectors	4.3-10 Female	
Dimension (mm)*	174 x 168 x 45	174 x 168 x 100
Weight (kgs)	1.8	3.9
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +60	
Storage Temperature (°C)	-40 to +85	
Barometric Pressure (kPa)	55 KPa-106KPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	



\*excluding connectors and clamp

## Dimensions



# 7833x004

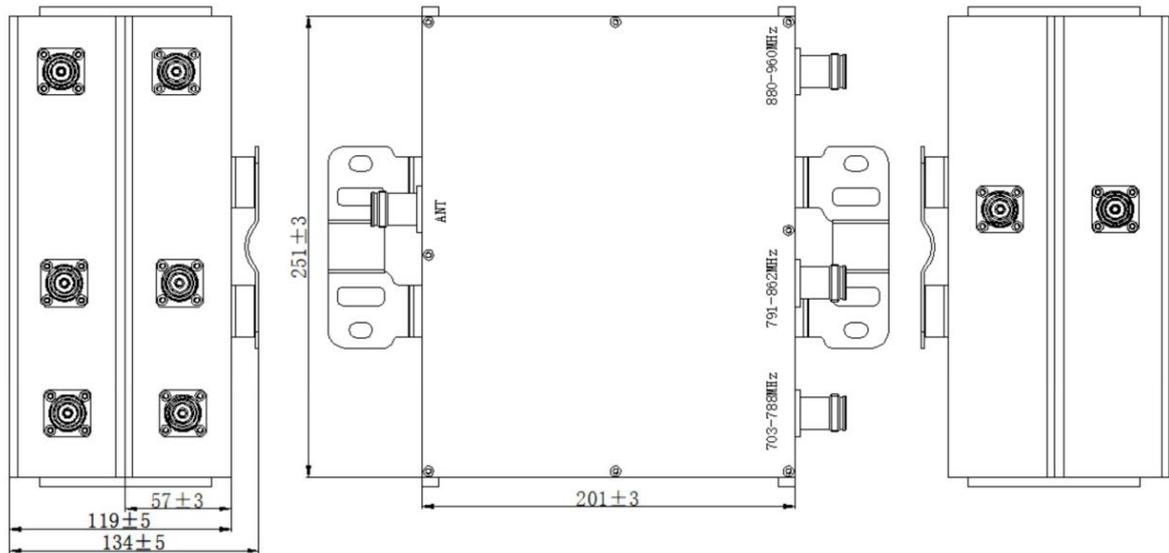
## Triple Band Combiner 703-788 / 791-862 / 880-960

Triple Band Combiner  
703-788 / 791-862 / 880-960

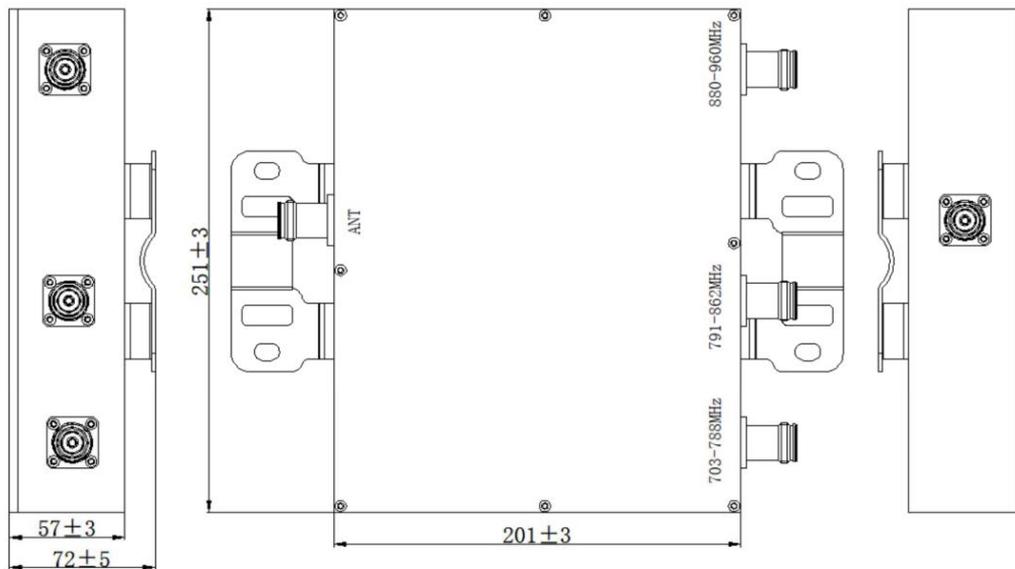
Type	78331004 Single Unit	78332004 Double Unit
Frequency (MHz) Band 1 Band 2 Band 3	703-788 791-862 880-960	
Insertion Loss (dB)	Port 1: $\leq 0.5$ dB (703-780)/ $\leq 1.0$ (780-787)/ $\leq 1.5$ (787-788) Port 2: $\leq 1.5$ dB (791-792)/ $\leq 1.0$ (792-794)/ $\leq 0.5$ (794-862) Port 3: $\leq 0.5$ (880-960)	
Isolation (dB)	$\geq 40$	
PIM3 (dBc, @2x43dBm)	$\leq -160$	
VSWR	$\leq 1.25$	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	TBD	TBD
Weight (kgs)	TBD	TBD
Ingress Protection Class	IP66	
Operational RH (%)	$\leq 95$	
Operating Temperature (°C)	-40 to +65	
Storage Temperature (°C)	-50 to +85	
Barometric Pressure (kPa)	TBD	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	

## Dimensions

### Double unit 78332004



### Single unit 78331004



# 7831182x

## Triple Band Combiner 690-862 / 880-960 / 1427-3800

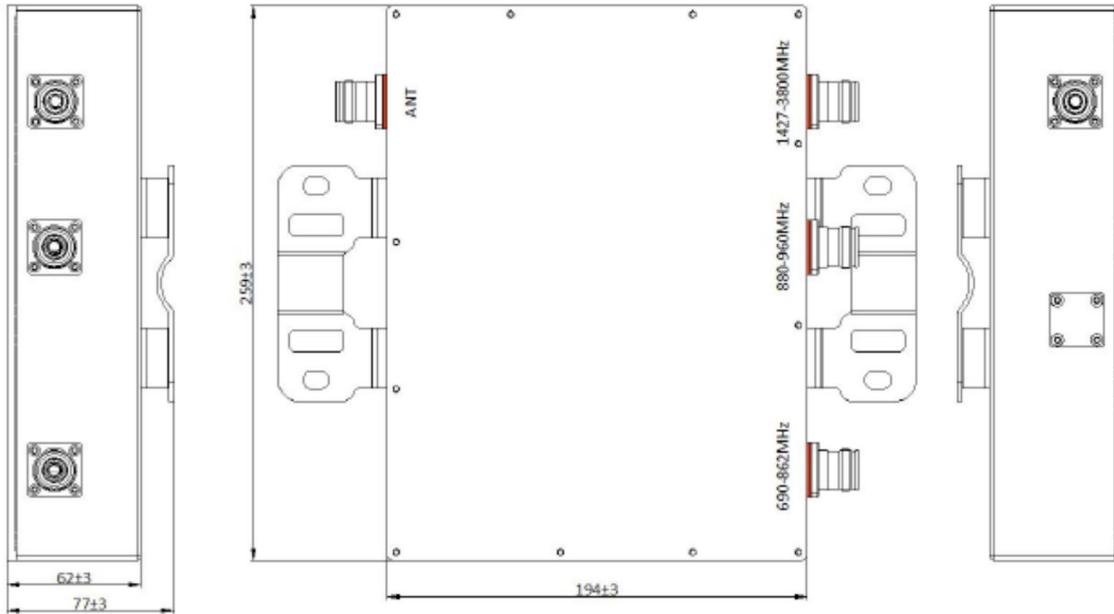
Triple Band Combiner  
690-862 / 880-960 / 1427-3800

Type	78311820 Single Unit	78311821 Double Unit
Frequency (MHz) Band 1 Band 2 Band 3	690-862 880-960 1427-3800	
Insertion Loss (dB)	≤ 0.5 (690-862) & (880-960MHz) ≤0.3 (1427-3800MHz)	
VSWR	≤1.25	
Isolation (dB)	≥ 45	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	194 x 259 x 67	194 x 259 x 130
Weight (kgs)	5	11
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	3, 10/350 μs pulse	
Barometric Pressure (kPa)	55kPA-106KPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



\*excluding connectors and clamp

## Dimensions



# 7831145x

## Triple Band Combiner 380-960 / 1427-2200 / 2300-2690

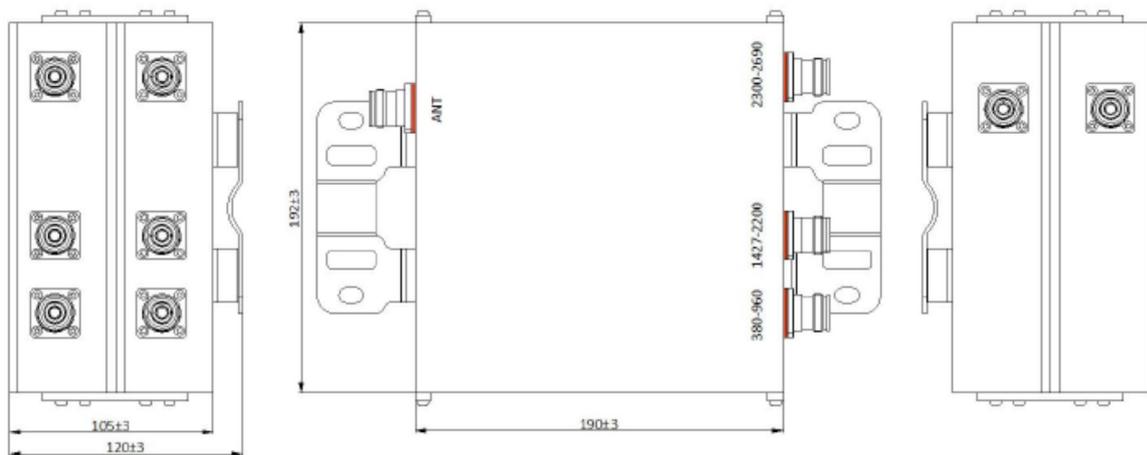
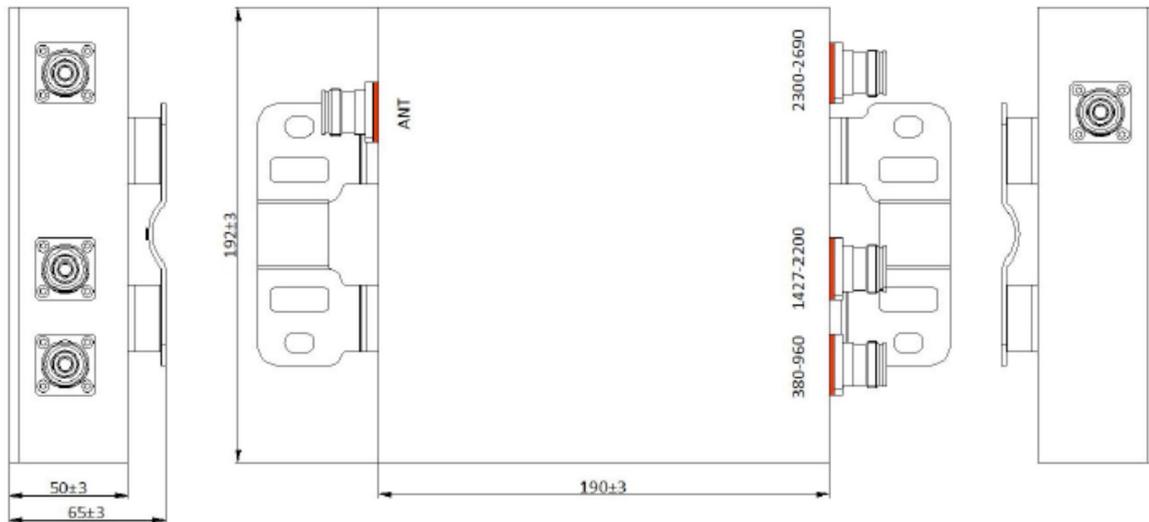
Triple Band Combiner  
380-960 / 1427-2200 / 2300-2690

Type	78311450 Single Unit	78311451 Double Unit
Frequency (MHz)		
Band 1	380-960	
Band 2	1427-2200	
Band 3	2300-2690	
Insertion Loss (dB)	≤ 0.4	
VSWR	≤ 1.3	
Isolation (dB)	≥ 40	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	190 x 192 x 50	190 x 192 x 105
Weight (kgs)	3.5	6.8
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	5kA; 8/20 µs pulse	
Barometric Pressure (kPa)	55kPa-106kPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



\*excluding connectors and clamp

## Dimensions



# 7831156x

## Triple Band Combiner 380-960 / 1427-1880 / 1920-2690

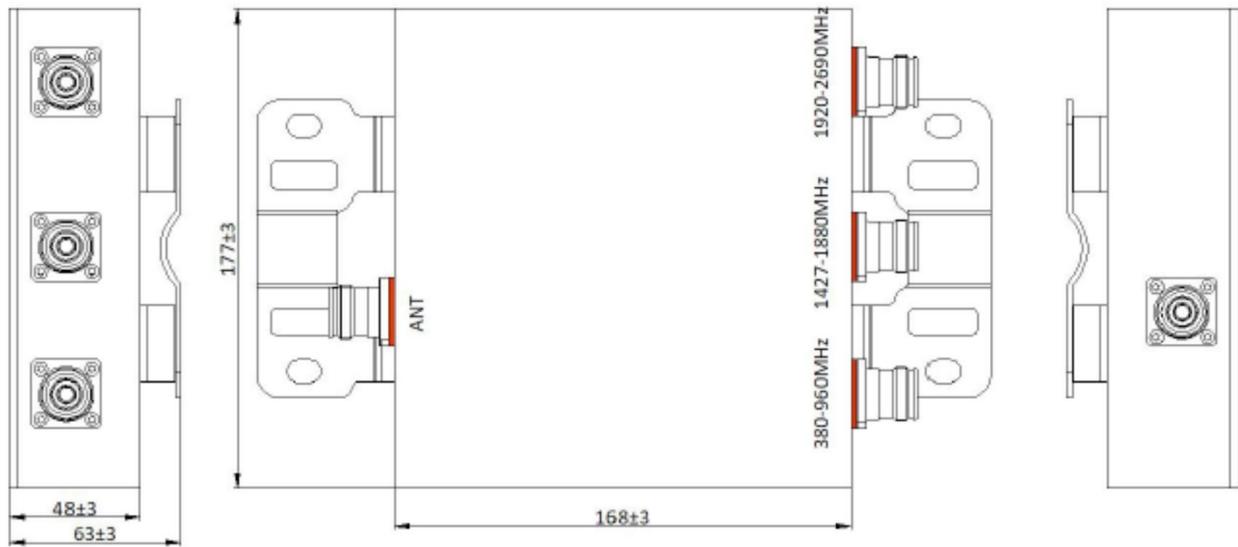
Triple Band Combiner  
380-960 / 1427-1880 / 1920-2690

Type	78311560 Single Unit	78311561 Double Unit
Frequency (MHz)		
Band 1	380-960	
Band 2	1427-1880	
Band 3	1920-2690	
Insertion Loss (dB)	≤ 0.5	
VSWR	≤ 1.3	
Isolation (dB)	≥ 40	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	168 x 177 x 48	168 x 177 x 100
Weight (kgs)	3.5	6.8
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	5kA; 8/20 µs pulse	
Barometric Pressure (kPa)	55kPa-106kPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



\*excluding connectors and clamp

## Dimensions



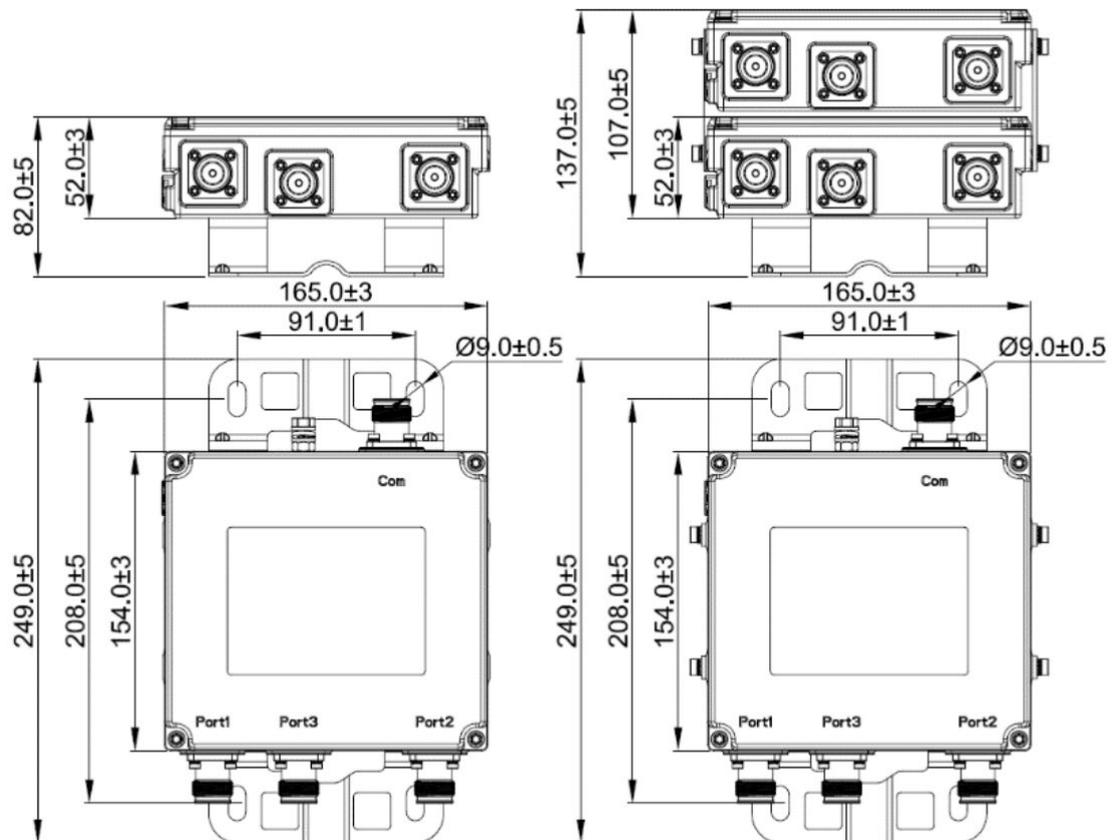
# 7833x002

## Triple Band Combiner 600-960 / 1710-2700 / 3300-3800

Triple Band Combiner  
600-960 / 1710-2700 / 3300-3800

Type	78331002 Single Unit	78332002 Double Unit
Frequency (MHz)		
Band 1	600-960	
Band 2	1710-2700	
Band 3	3300-3800	
Insertion Loss (dB)	≤ 0.5	
Isolation (dB)	> 70	
PIM3 (dBc, @2x43dBm)	≤ -160 (690-2700) ≤ 155 (3300-3800)	
VSWR	≥ 20	
Input Impedance (ohm)	50	
Max. Input Power (W)	250 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	165 x 154 x 52	165 x 154 x 107
Weight (kgs)	2.2	4.4
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-40 to +65	
Lightning Protection	IEC 61000-4-5: 3kA @ 10/350µs / 10kA @ 8/20µs	
Storage Temperature (°C)	-50 to +85	
Barometric Pressure (kPa)	10kA@8/20µS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	

## Dimensions



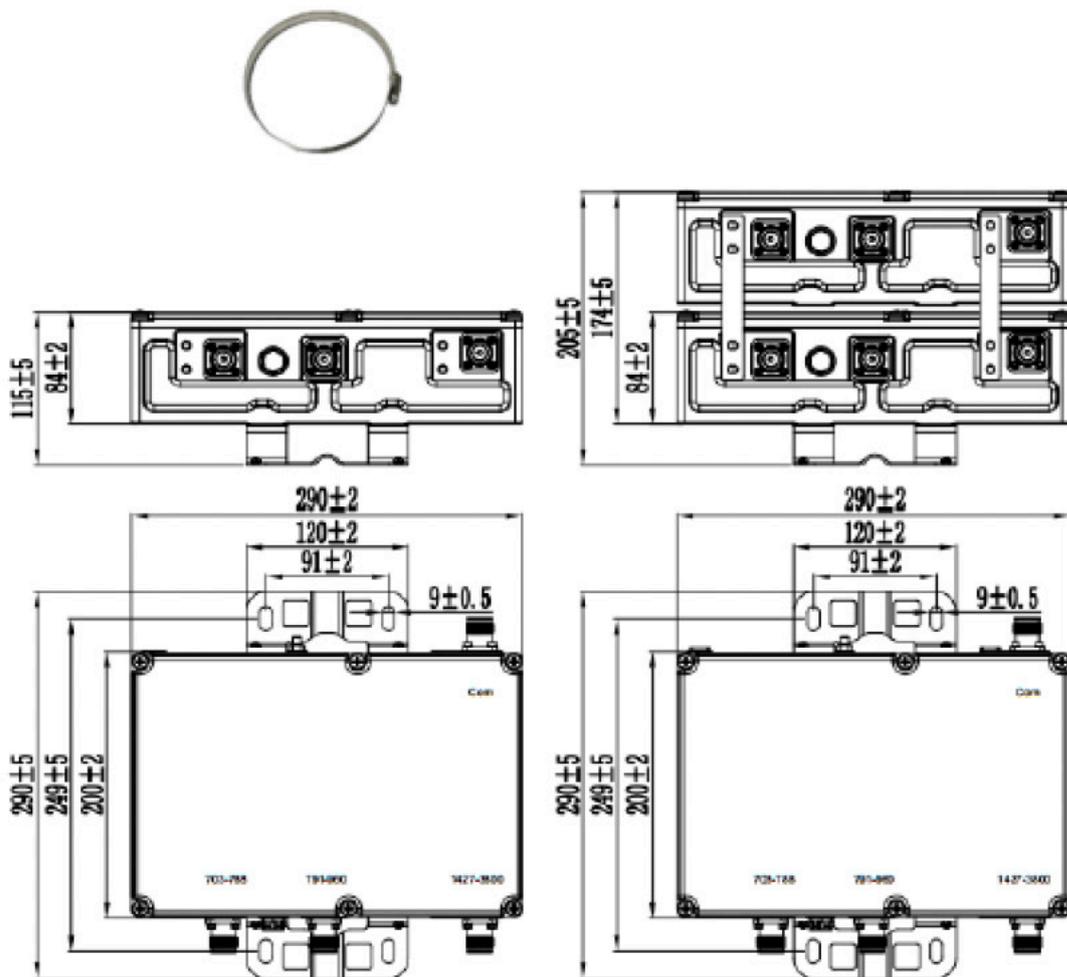
# 7833x003v01

## Triple Band Combiner 703-788 / 791-960 / 1427-3800

Triple Band Combiner  
703-788 / 791-960 / 1427-3800

Type	78331003v01 Single Unit	78332003v01 Double Unit
Frequency (MHz) Port 1 Port 2 Port 3	703-788 791-960 1427-3800	
Insertion Loss (dB)	Port 1: $\leq 0.7$ (703-785) / $\leq 1.0$ (785-787) / $\leq 1.5$ (787-788) Port 2: $\leq 1.5$ (791-792) / $\leq 1.0$ (792-800) / $\leq 0.7$ (800-960) Port 3: $\leq 0.3$ (1427-3800)	
Isolation (dB)	$\geq 40$	
Return Loss (dB)	$\geq 19$	
PIM3 (dBc, @2x43dBm)	$\leq -150$	
VSWR	$\leq 1.25$	
Input Impedance (ohm)	50	
Max. Input Power (W)	Port 1: $\leq 200$ @703-786.5MHz, $\leq 100$ @786.5-787.5MHz, $\leq 787.5$ -788MHz Port 2: $\leq 200$ Port 3: $\leq 200$ (1427-2700) / $\leq 100$ (2700-3800)	
ASIG/DC By-pass	Bypass at Port 2 (Max. 2500mA)	
Connectors	4.3-10 Female	
Dimension (mm)*	290 x 200 x 84	290 x 200 x 174
Weight (kgs)	5.7	11.3
Ingress Protection Class	IP66	
Operational RH (%)	$\leq 95$	
Operating Temperature (°C)	-40 to +60	
Storage Temperature (°C)	-40 to +85	
Barometric Pressure (kPa)	55 to 106	
Mounting	Wall or pole Mount (clamps included)	

## Dimensions



# 7831169x

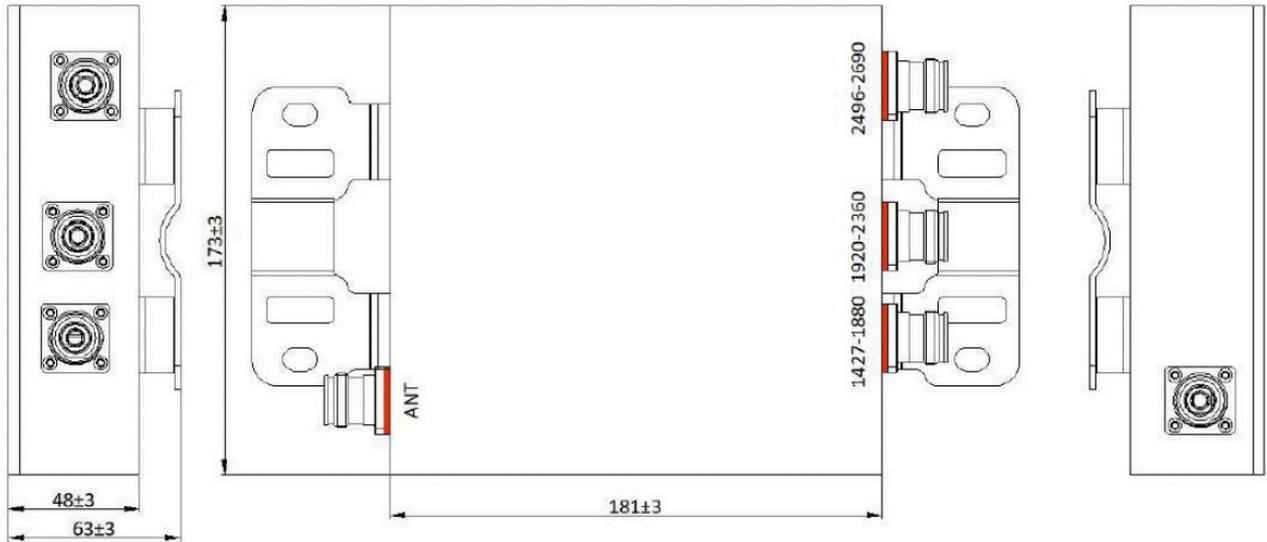
## Triple Band Combiner 1427-1880 / 1920-2360 / 2496-2690

Triple Band Combiner  
1427-1880 / 1920-2360 / 2496-2690

Type	78311690 Single Unit	78311691 Double Unit
Frequency (MHz)	1427-1880 1920-2360 2496-2690	
Band 1		
Band 2		
Band 3		
Insertion Loss (dB)	≤ 0.5	
VSWR	≤ 1.3	
Isolation (dB)	≥45	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	181 x 173 x 48	181 x 173 x 100
Weight (kgs)	3.1	6.5
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	3, 10/350 μs pulse	
Barometric Pressure (kPa)	55kPA-106KPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



## Dimensions



# 7831134x

## Quad Band Combiner 690-862 / 880-960 / 1427-1880 / 1920-2690

Quad Band Combiner  
690-862 / 880-960 /  
1427-1880 / 1920-2690

Type	78311340 Single Unit	78311341 Double Unit
Frequency (MHz)		
Band 1	690-862	
Band 2	880-960	
Band 3	1427-1880	
Band 4	1920-2690	
Insertion Loss (dB)	≤ 0.45 @690-860 and 880-960Mhz ≤0.35dB @1427-1880Mhz	
Isolation (dB)	≥ 40	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	188 x 289 x 57	188 x 289 x 119
Weight (kgs)	4.5	9.2
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	3, 10/350 μs pulse	
Barometric Pressure (kPa)	55kPA-106KPa	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



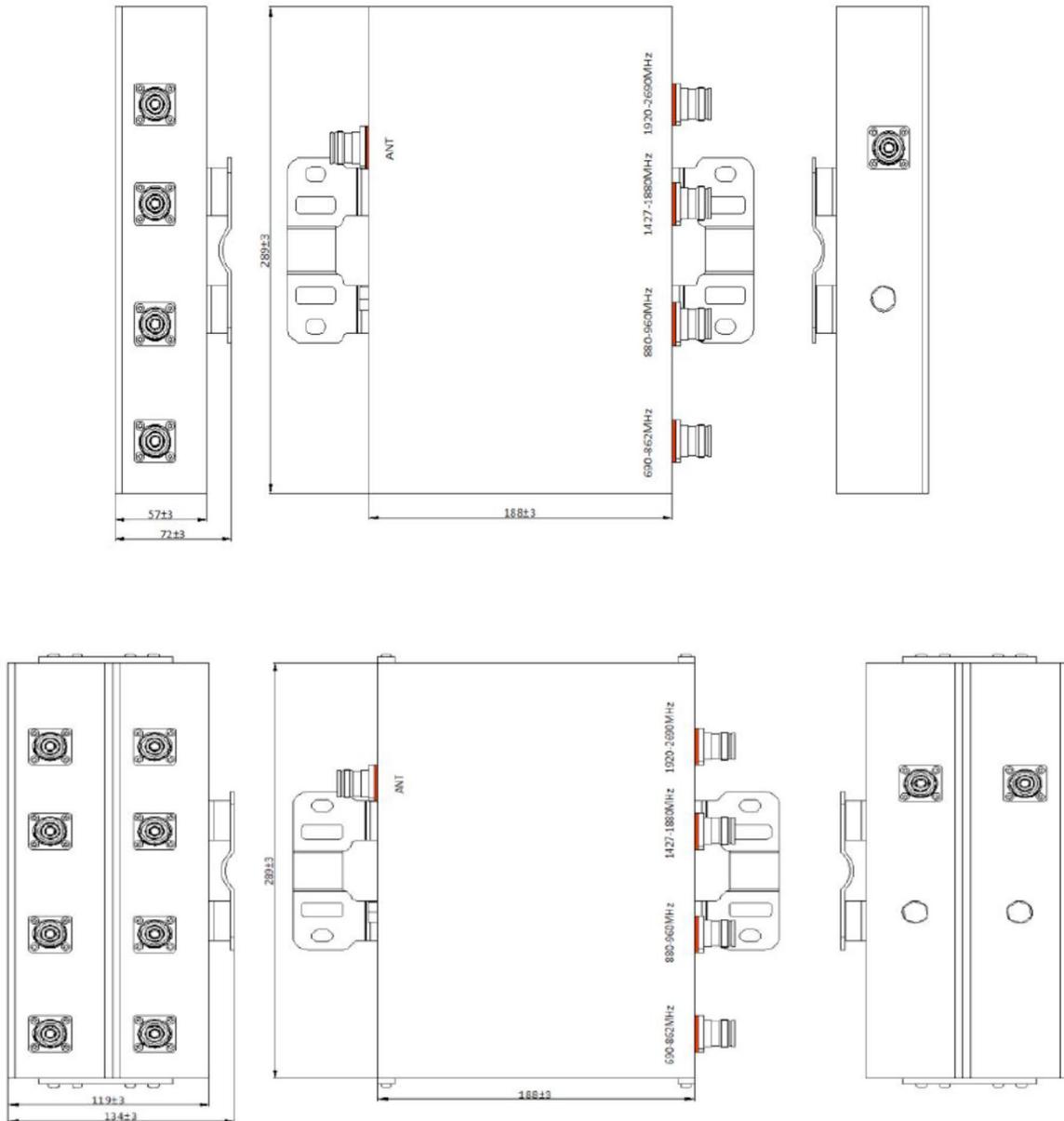
Single Unit



Double Unit

\*excluding connectors and clamp

## Dimensions



# 7834x002v01

## Quad Band Combiner 690-862 / 880-960 / 1427-1880 / 1920-2690

Quad Band Combiner  
703-788 / 791-862 /  
880-960 / 1710-2170

Type	78341002v01 Single Unit	78342002v01 Double Unit
Frequency (MHz)		
Band 1	703-788	
Band 2	791-862	
Band 3	880-960	
Band 4	1710-2170	
Insertion Loss (dB)	≤ 1.8 @703-862MHz/ 791-862, ≤0.5@880 - 960MHz, ≤0.4@1710-2170MHz	
Isolation (dB)	≥30dB between Port1 Port2 Port3 ≥50dB between Port4 to other Port	
PIM3 (dBc, @2x43dBm)	≤ -160	
Return Loss (dB)	≥ 18	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	234 x 288 x 58	234 x 288 x 119
Weight (kgs)	4.2	8.5
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-40 to +65	
Storage Temperature (°C)	-50 to +85	
Lightning protection	5kA; 8/20 μs pulse	
Barometric Pressure (kPa)	10kA@8/20μS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



Single Unit

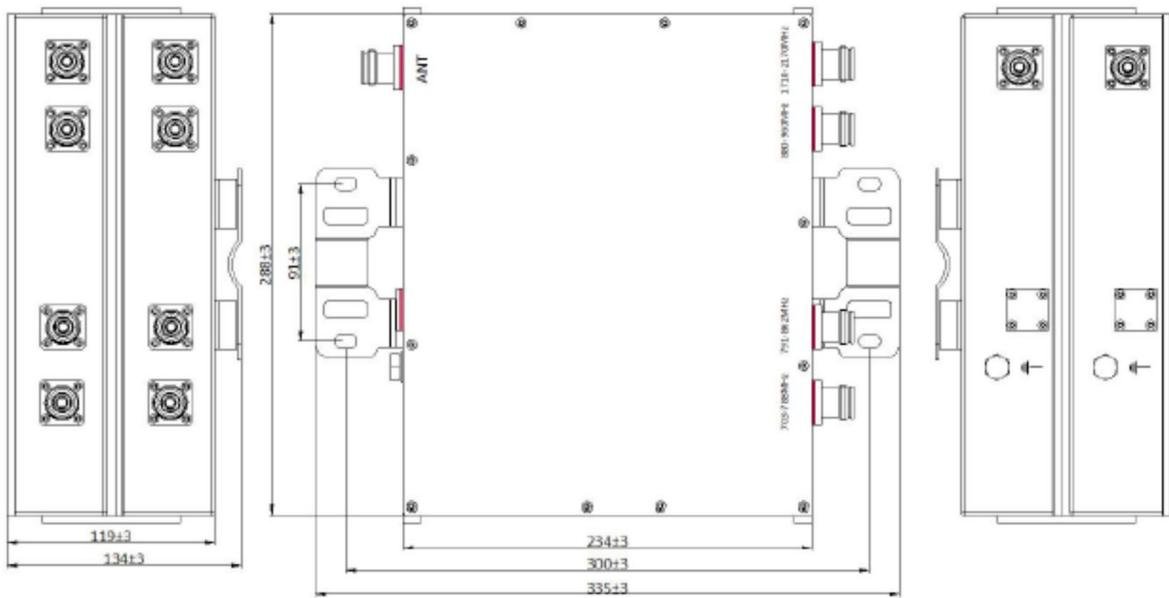


Double Unit

\*excluding connectors and clamp

## Dimensions

### Double unit



# 7831158x

## Quad Band Combiner 380-960 / 1427-1880 / 1920-2200 / 2300-2690

Quad Band Combiner  
380-960 / 1427-1880 /  
1920-2200 / 2300-2690

Type	78311580 Single Unit	78311581 Double Unit
Frequency (MHz)		
Band 1	380-960	
Band 2	1427-1880	
Band 3	1920-2200	
Band 4	2300-2690	
Insertion Loss (dB)	≤ 0.4	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Return Loss (dB)	≥ 18	
Input Impedance (ohm)	50	
Max. Input Power (W)	200 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	260 x 195 x 52	260 x 195 x 104
Weight (kgs)	4.2	8.5
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-30 to +80	
Storage Temperature (°C)	-50 to +85	
Lightning protection	5kA; 8/20 μs pulse	
Barometric Pressure (kPa)	10kA@8/20μS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	
Color	Light grey	



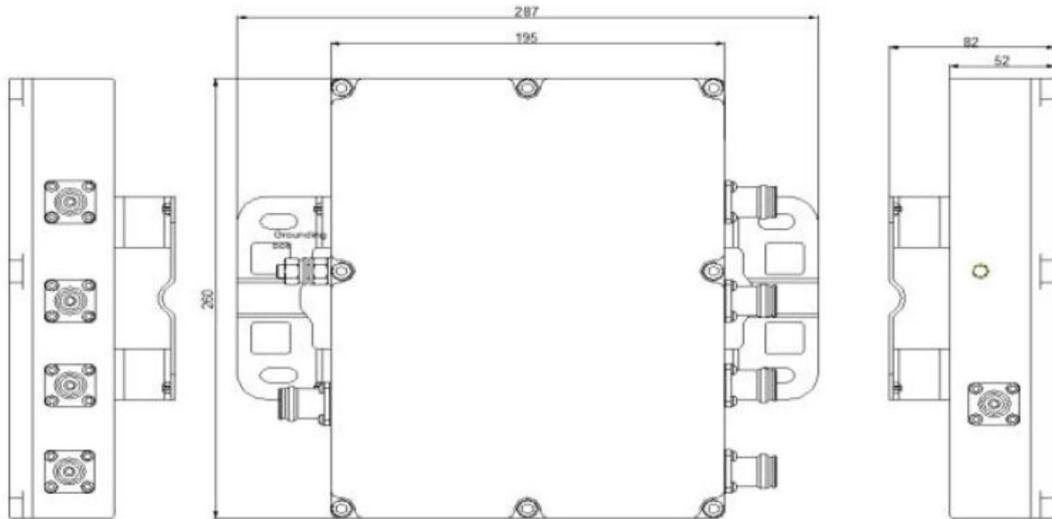
Single Unit



Double Unit

\*excluding connectors and clamp

## Dimensions



Outline drawing may change , for reference only!

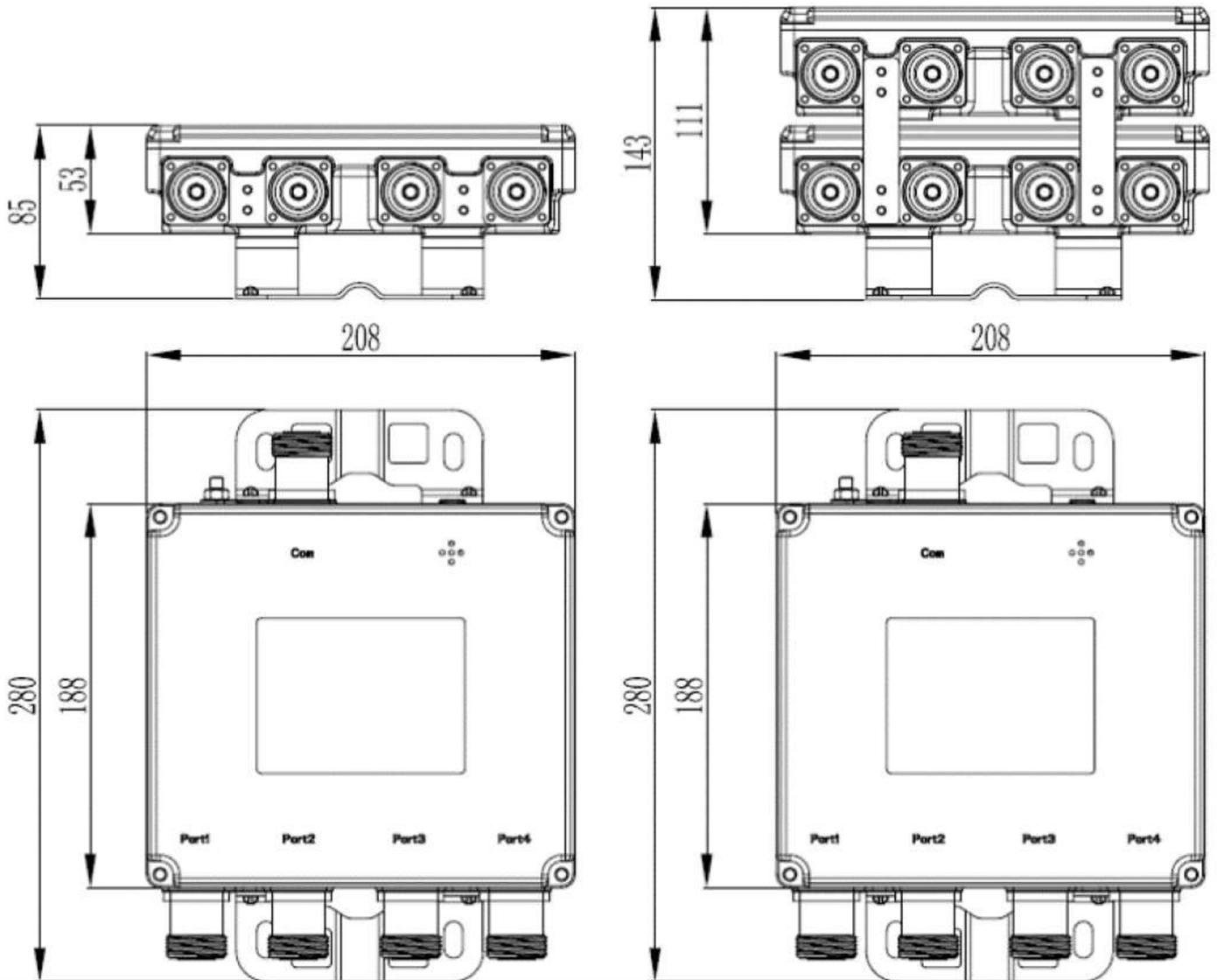
# 7834x001

**Quad Band Combiner**  
**1695-1880 / 1920-2200 / 2300-2700 /**  
**3300-3800**

Quad Band Combiner  
 1695-1880 / 1920-2200 / 2300-  
 2700 / 3300-3800

Type	78341001 Single Unit	78342001 Double Unit
Frequency (MHz)		
Band 1	1695-1880	
Band 2	1920-2200	
Band 3	2300-2700	
Band 4	3300-3800	
Insertion Loss (dB)	≤ 0.3	
Isolation (dB)	> 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Return Loss (dB)	≥ 20	
Input Impedance (ohm)	50	
Max. Input Power (W)	250 per Port	
ASIG/DC By-pass	Bypass at All Ports	
Connectors	4.3-10 Female	
Dimension (mm)*	208 x 188 x 53	208 x 188 x 111
Weight (kgs)	2.7	5.5
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-40 to +65	
Storage Temperature (°C)	-50 to +85	
Barometric Pressure (kPa)	10kA@8/20µS	
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)	

**Dimensions**



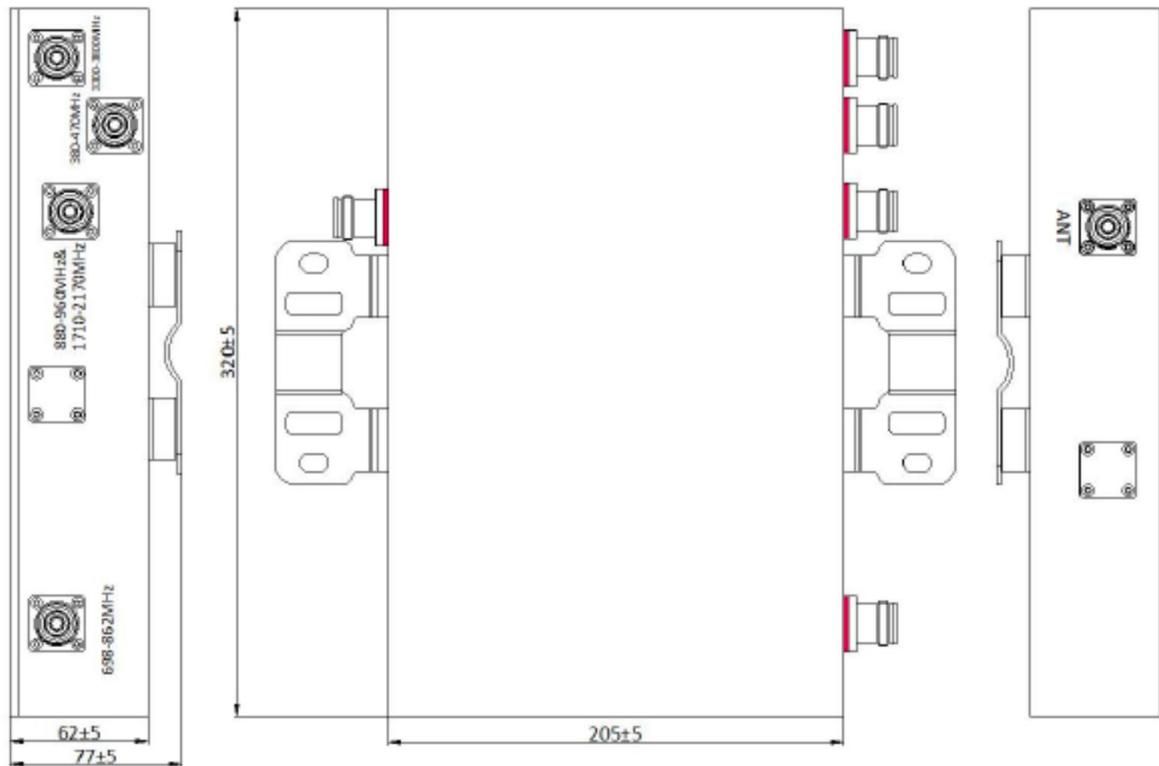
# 78341004

## Quad Band Combiner 380-470 / 698-862 / 880-960 & 1710-2170 / 3300-3800

Quad Band Combiner  
380-470 / 698-862 /  
880-960 & 1710-  
2170 / 3300-3800

Type	78341004 Single Unit
Frequency (MHz) Band 1 Band 2 Band 3 Band 4	380-470 698-862 880-960 & 1710-2170 3300-3800
Insertion Loss (dB)	≤ 0.6
Isolation (dB)	>40
VSWR	≤1.4
PIM3 (dBc, @2x43dBm)	≤ -155
Input Impedance (ohm)	50
Power handling	100W (average) per port
ASIG/DC By-pass	Bypass (max 2500mA) all ports
Connectors	4.3-10 Female
Dimension (mm)*	205 x 320 x 62
Weight (kgs)	4.2
Ingress Protection Class	IP65
Operational RH (%)	≤ 95
Operating Temperature (°C)	-10 to +65
Storage Temperature (°C)	-50 to +85
Barometric Pressure (kPa)	5kA; 8/20 µs pulse
Mounting	Wall Mount or Pole Mount (Pole Size: Ø35-125mm)
Colour	Light grey

## Dimensions



# 7835x001

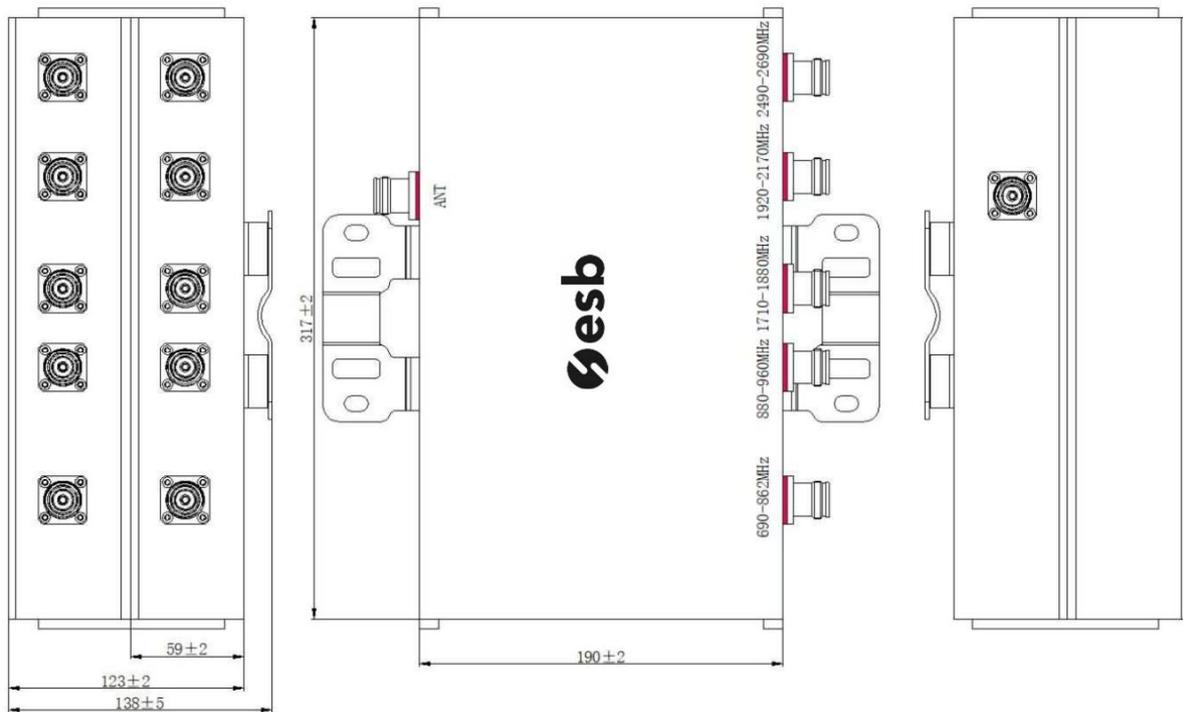
## Penta Band Combiner

Penta-Band Combiner  
690-862 / 880-960 / 1710-1880 /  
1920-2170 / 2490-2690

Designed for co-siting purposes | Can be used at the BTS side or the antenna side  
Suitable for indoor and outdoor applications | Built-in lightning protection | Wall or pole mounting

Type	78351001 Single Unit	78352001 Double Unit
Frequency (MHz)		
Band 1	690-862	
Band 2	880-960	
Band 3	1710-1880	
Band 4	1920-2170	
Band 5	2490-2690	
Insertion Loss (dB)	≤ 0.5	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -155	
Input Impedance (ohm)	50	
Power Average (W)	150	
Return Loss	≥18dB	
Max. Input Power (W)	200W	
Peak Power (W)	1000W	
ASIG/DC By-pass	All ports	
Colour	Cool grey	
Connectors	4.3-10F	
Dimension (mm)*	317 x 190 x 59	317 x 190 x 123
Weight (kgs)	5kg	10kg
Ingress Protection Class	IP65	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-20 to +65	

## Dimensions



# 7835x002

Penta-Band Combiner  
690-960/1710-1880/1920-  
2170/2500-2700/3300-3800MHz

## Penta Band Combiner

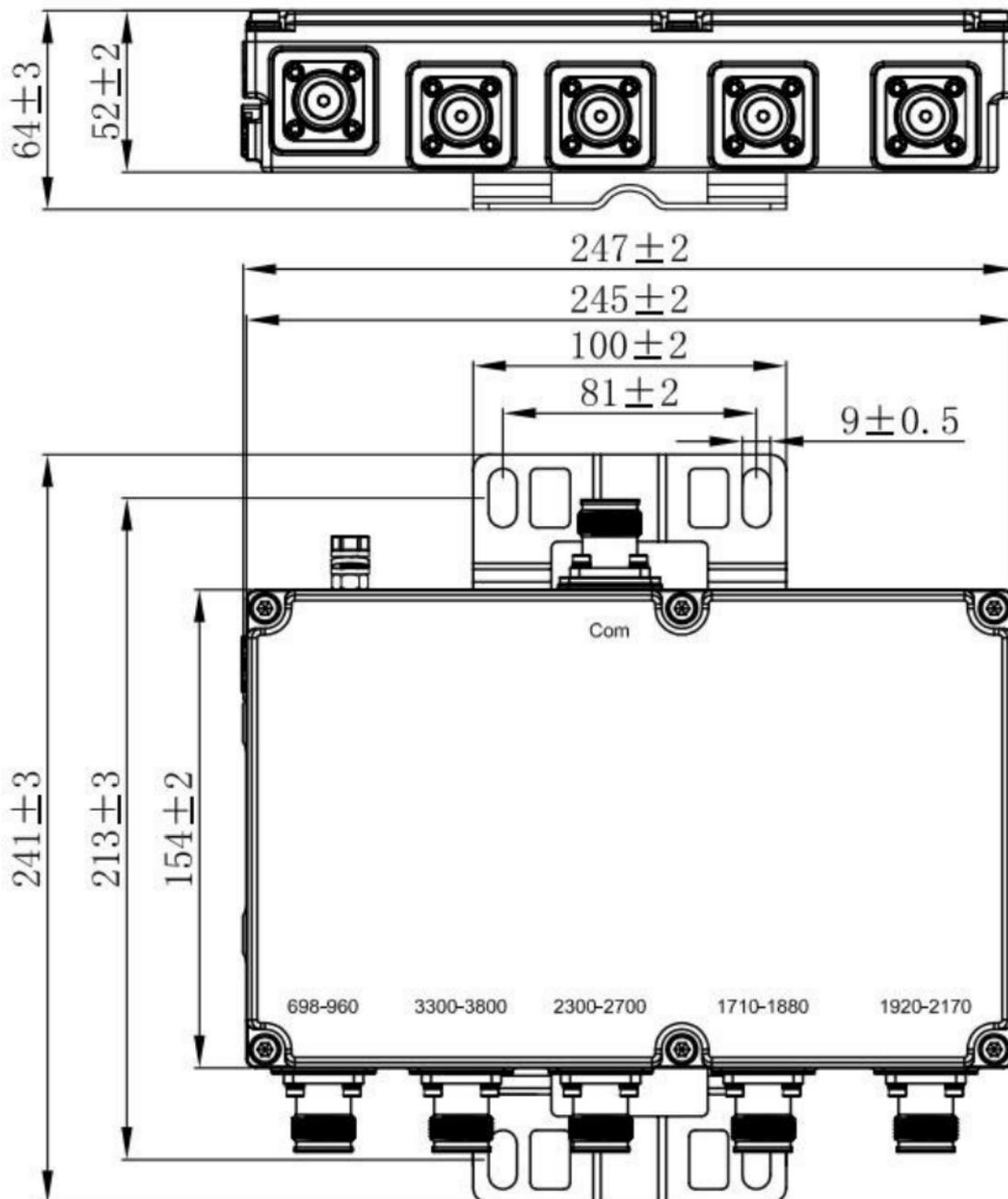
Type	78351002 Single Unit	78352002 Double Unit
Frequency (MHz)		
Band 1	690-960	
Band 2	1710-1880	
Band 3	1920-2170	
Band 4	2500-2700	
Band 5	3300-3800	
Insertion Loss (dB)	≤ 0.5	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Input Impedance (ohm)	50	
Power Average (W)	150	
Return Loss	≥18dB	
Max. Input Power (W)	≤ 500W	
Peak Power (W)	≤ 2000W	
ASIG/DC By-pass	All ports	
Colour	Cool grey	
Connectors	4.3-10F	
Dimension (mm)*	245 x 154 x 52	245 x 104 x 104
Weight (kgs)	3kg	6kg
Ingress Protection Class	IP65	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-20 to +65	

### Accessories(order separately)

Type no.	Description
734365	Hose clamp



**Dimensions**



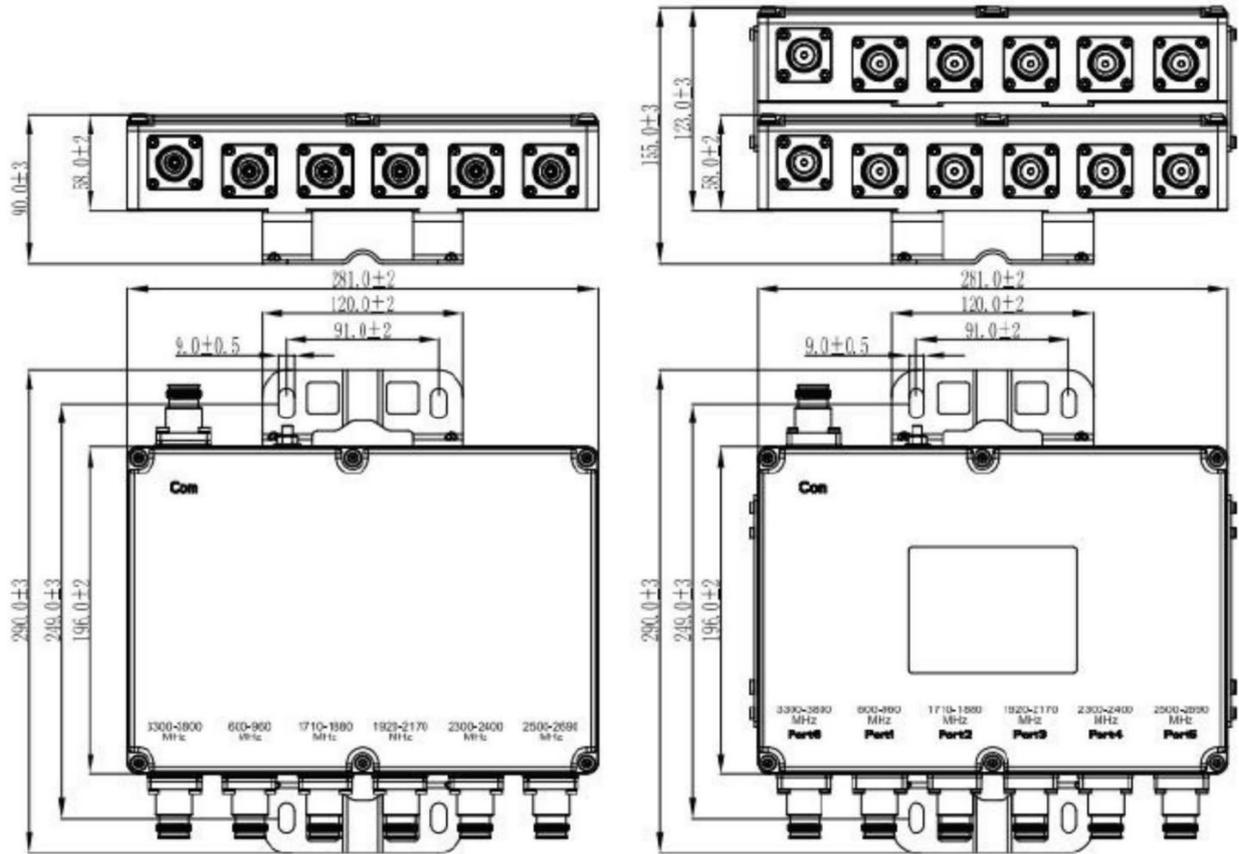
# 7836x001

Hexa-Band Combiner  
 600-960 / 1695-1880 / 1920-2200/  
 2300-2400 / 2500-2690 / 3300-3800

## Hexa-Band Combiner

Type	78361001 Single Unit	78362001 Double Unit
Frequency (MHz)		
Band 1	600-960	
Band 2	1695-1880	
Band 3	1920-2200	
Band 4	2300-2400	
Band 5	2500-2690	
Band 6	3300-3800	
Insertion Loss (dB)	≤ 0.5	
Isolation (dB)	≥ 50	
PIM3 (dBc, @2x43dBm)	≤ -160	
Return Loss (dB)	≥ 19	
Input Impedance (ohm)	50	
Max. Input Power (W)	300	
Peak Power (W)	2,000	
ASIG/DC By-pass	NA	
Connectors	4.3-10F	
Dimension (mm)	281 x 196 x 58	281 x 196 x 123
Weight (kgs)	4.4	8.5
Ingress Protection Class	IP66	
Operational RH (%)	≤ 95	
Operating Temperature (°C)	-10 to +65	

## Dimensions



# **System components and accessories**

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<b>Part Number</b>	<b>Description</b>	<b>Page</b>
78311592	Smart Bias Tee 340-3800Mhz 4.3-10 Antenna-feeder	218
78311593	Smart Bias Tee 340-3800Mhz 4.3-10 Antenna-feeder	218
78211002	DC STOP 250-3800Mhz 4.3-10	220
78710054	86010054 RCU Control Cable 0.5m black 2 x 8 Pin	221
78710007	86010007 RCU Control Cable 1m black 2 x 8 Pin	221
78710008	86010008 RCU Control Cable 2m black 2 x 8 Pin	221
78710029	86010029 RCU Control Cable 3m black 2 x 8 Pin	221
78710009	86010009 RCU Control Cable 5m black 2 x 8 Pin	221
78710010	86010010 RCU Control Cable 10m black 2 x 8 Pin	221
78710031	86010031 RCU Control Cable 15m black 2 x 8 Pin	221
78710032	86010032 RCU Control Cable 20m black 2 x 8 Pin	221
78710011	86010011 RCU Control Cable 25m black 2 x 8 Pin	221
78710012	86010012 RCU Control Cable 40m black 2 x 8 Pin	221
78710033	86010033 RCU Control Cable 50m black 2 x 8 Pin	221
78710013	86010013 RCU Control Cable 60m black 2 x 8 Pin	221
78710014	86010014 RCU Control Cable 80m black 2 x 8 Pin	221
78710015	86010015 RCU Control Cable 100m black 2 x 8 Pin	221

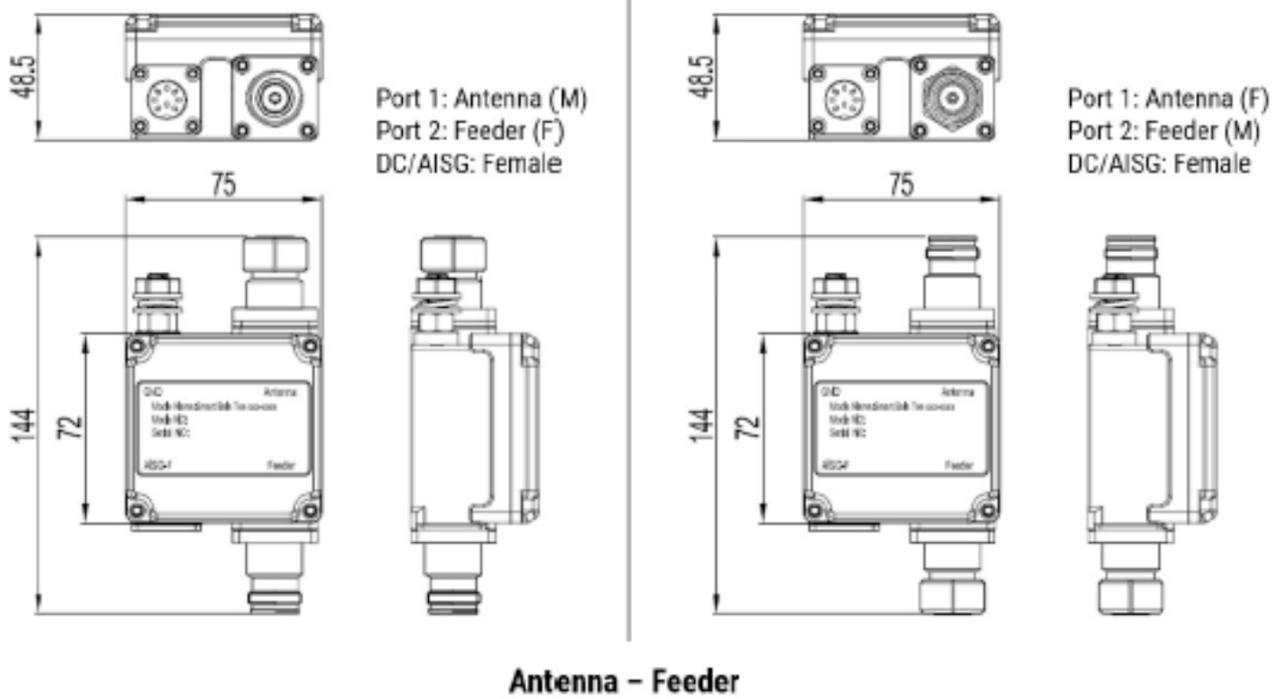
# 7831159x

## Smart Bias Tee PIM -160dBc 340-3800

Smart Bias Tee  
PIM -160dBc  
340-3800MHz

Type	78311593 Antenna-feeder	78311592 Antenna-feeder
Frequency (MHz)	340-3800	
Connector Port 1 (RF)	4.3-10 Male	4.3-10 Female
Connector Port 2 (RF)	4.3-10 Female	4.3-10 Male
Connector DC/AISG	RS485 Female	RS485 Female
PIM3 (dBc, @2x43dBm)	≤ -160	
VSWR	≤1.25	
Input Impedance (ohm)	50	
Insertion Loss (dB)	≤ 0.3	
DC Isolation (dB)		
Port 1 -Port 2	>60	
Port 1 – DC/AISG	>60	
Port 2 – DC/AISG	0	
Dimension (mm)*	75 x 72 x 48.5	
Weight (kgs)	0.63	
Ingress Protection Class	IP67	
Operational RH (%)	≤ 95	
Power consumption (W)	0.6 (typical)	
Power Handling		
Port 1 – Port 2	500W (average) / 1500W (peak)	
DC/AISG	2.5A max. / +10 to +30Vdc	
Operating Temperature (°C)	-30 to +60	
Storage Temperature (°C)	-40 to +85	
Lightning Protection	3kA@10/350µS	
EMC Compliance	Comply with ETS 300 342-3	
MTBF (Hours)	> 1.000.000	
AISG Standard	Comply with 3GPP TS 25.461	

## Dimensions



# 78211002

DC STOP  
250-3800MHz

Type	78211002	
Connector	4.3-10 Male-Female	
Frequency (MHz)	250-3800	
Insertion Loss (dB)	≤ 0.1	
VSWR	≤ 1.5 @ 250-380MHz	≤ 1.25 @ 380-3800MHz
Isolation (dB)	STOP @DC	>23 @AISG (2.176MHz)
PIM3 (dBc), (@2x43dBm)	≤ -160	
Max Power Handling (W)	1500	
DC Voltage (V)	≤ 3,000	
Impedance (Ω)	50	
Dimension (mm), excluding connector	Ø28.3 x 44	
Weight (kgs)	0.25	
Operating Temperature (°C)	-25 to +65	
Operating RH (%)	≤ 95	
Ingress Protection Class	IP67	
Operating Barometric Pressure (kPa)	55 – 106	



\*picture only as reference

**860100xx**

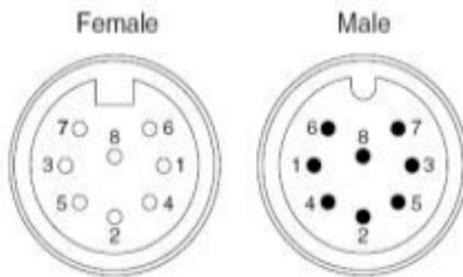
Connecting  
cable for Remote  
Electrical Tilt (RET)  
System

**RCU control cable  
2 x 8 pin connector**

### Electrical specifications

Standard	AISG / IEC60130-9
Connectors	
Rated Voltage	4.3-10 Female
Rated current	RS485 Female
Withstanding voltage	≤ -160
Insulation resistance	≤1.25
Contact resistance	50
Weight	≤ 0.3
Operating temperature range	0
Operating humidity range	75 x 72 x 48.5
Waterproof	0.63

Length	Type n°
0.5	86010054
1	86010007
2	86010008
3	86010029
5	86010009
10	86010010
15	86010031
20	86010032
25	86010011
40	86010012
50	86010033
60	86010013
80	86010014
100	86010015



Pin	Signal
1	+12V DC
2	Not connected
3	RS485 B
4	Not connected
5	RS485 A
6	+24V DC
7	DC return
8	Not connected



Shaping the  
connected world