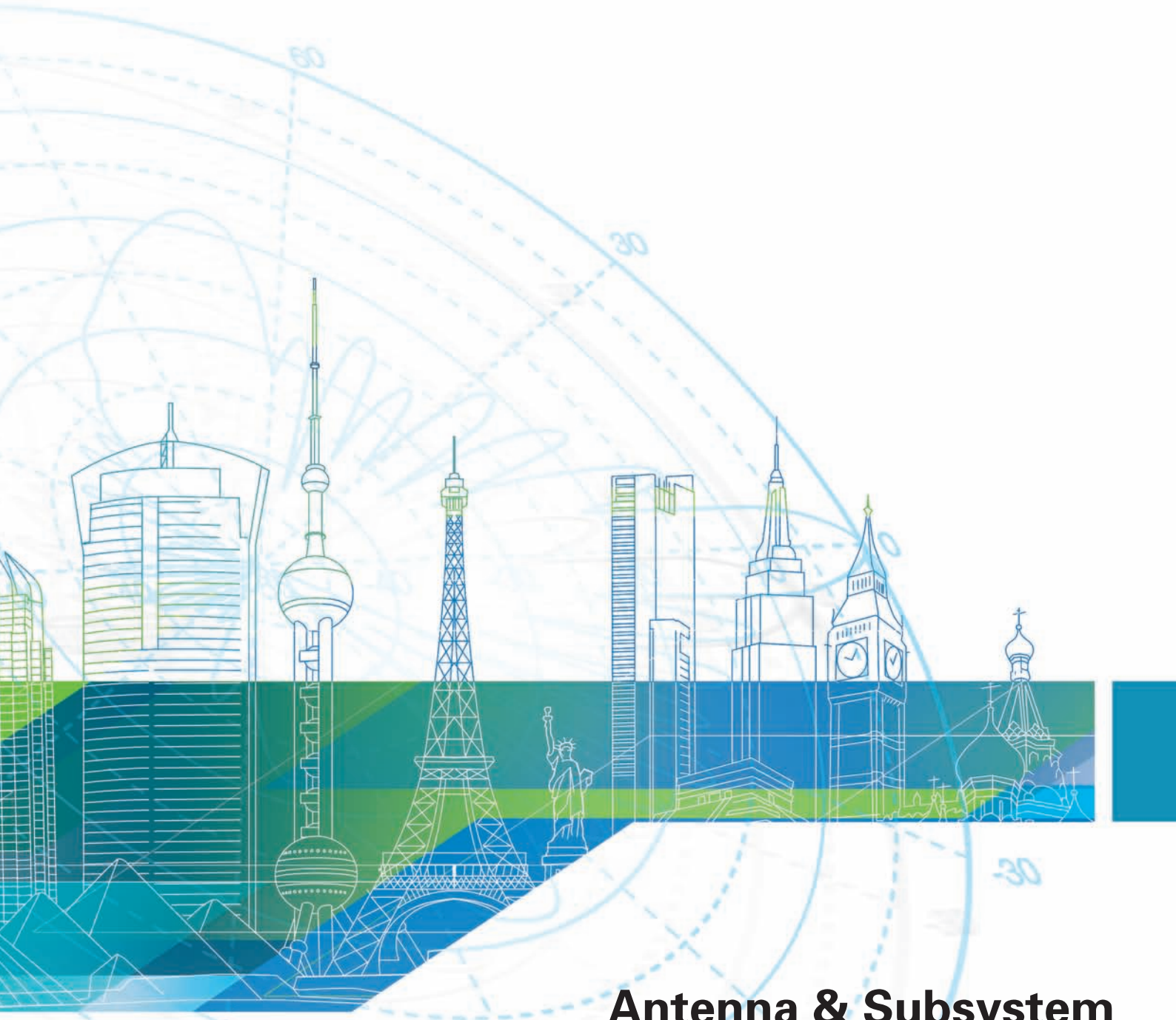
Comba



Antenna & Subsystem Product Catalog

Ver2.1 Dec 2012

Contents

Legal Disclaimer

Introduction

Comba Telecom is a leading supplier of infrastructure and wireless enhancement solutions to mobile operators and enterprises to enhance and extend their wireless communications networks. Established in 1997, and listed on the Hong Kong Stock Exchange in 2003, it has grown to become a global supplier with its extensive distribution network and 60+ offices covering Asia Pacific, EMEA (Europe, Middle East and Africa), and the Americas.

With a highly regarded team of research and development engineers and its state-of-the-art design tools and testing equipment, Comba is able to provide its innovative patented designs and yet cost-effective products to the customers. Its largest microwave anechoic chambers in the region, is located in Guangzhou, China, has been used by many customers around the world as an accredited testing facility for antenna performance benchmarking.

Comba Antenna & Subsystem Business Unit offers full range of wireless antenna and RF products for cellular systems, which include:

- Base Station Antenna
- Repeater/Microcell Antenna
- Indoor Antenna
- Remote Electrical Tilt System
- RF products
- TMA System

Comba is committed to quality consistency and environmental protection and is ISO9001 and ISO14001 certified. With its highly efficiency production lines in China and strict process control system, Comba's manufacturing facility is able to deliver high volume products with consistent quality.

Comba manufacturing facility in Guangzhou, China

Comba R&D Center in Guangzhou, China

Introduction



Antenna production facility


Summitek PIM test equipment and Microwave anechoic chamber




Product Selection Guide

A: BTS antenna

Model Number	Freq Range (MHz)	H-HPBW (°)	Pol.	Gain (dBi)	Electrical tilt (°)	Launch Time	Page
1) 800/900/1800/1900/2000 V-Pol							
ODP-065V17BXX	806-960	65	V-Pol	17.2	FET (0,6)	Available	11
ODP-065V18Bxx	806-960	65	V-Pol	18.2	FET (0,6)	Available	12
ODP-090V17Bxx	806-960	90	V-Pol	17.0	FET (0,6)	Available	13
ODP-065V18Kxx	1710-2170	65	V-Pol	18.0	FET (0,6)	Available	14
2) 800/900 X-Pol							
ODP-065R15Bxx	806-960	65	X-Pol	15.1	FET (0,6)	Available	15
ODP-065R17Bxx	806-960	65	X-Pol	17.1	FET (0,6)	Available	16
ODP-065R18Bxx	806-960	65	X-Pol	18.0	FET (0,6)	Available	17
ODP-065R18EXX(JS)	790-960	65	X-Pol	18.0	FET (0,6)	Available	18
ODP-090R17Bxx	806-960	90	X-Pol	17.1	FET (0,6)	Available	19
ODV-032R20E-G	790-960	32	X-Pol	19.3	VET(0-10)	2013 Q1	20
ODV-065R15E-G	790-960	65	X-Pol	15.2	VET(0-20)	2013 Q1	21
ODV-065R17E-G	790-960	65	X-Pol	16.6	VET(0-10)	2013 Q1	22
ODV-065R18E-G	790-960	65	X-Pol	17.5	VET(0-12)	2013 Q1	23
ODV-065R15B	806-960	65	X-Pol	15.5	VET (0-14)	Available	24
ODV-065R17B	806-960	65	X-Pol	17.0	VET (0-10)	Available	25
ODV-065R18B	806-960	65	X-Pol	17.6	VET (0-8)	Available	26
ODV-090R17E-G	790-960	90	X-Pol	16.5	VET (0-12)	2013 Q1	27
3) 1800/1900/2000/2600 X-Pol							
ODP-065R15Kxx-G	1710-2170	65	X-Pol	15.3	FET (0,6)	Available	28
ODP-065R18Kxx-G	1710-2170	65	X-Pol	18.0	FET (0,6)	Available	29
ODV-032R21K-G	1710-2170	32	X-Pol	20.8	VET (0-10)	Available	30
ODV-065R15K-G	1710-2170	65	X-Pol	15.3	VET (0-20)	2013 Q1	31
ODV-065R18K-G	1710-2170	65	X-Pol	18.0	VET (0-10)	Available	32
ODV-065R18K	1710-2170	65	X-Pol	18.0	VET (0-10)	Available	33
ODV-065R18J-G	1710-2690	65	X-Pol	18.0	VET (0-12)	2013 Q1	34
ODV-065R18J	1710-2690	65	X-Pol	18.0	VET (0-12)	Available	35
ODV-090R17K-G	1710-2170	90	X-Pol	16.5	VET (0-10)	2013 Q1	36
4) 800/900-1800/1900/2000/2600 XX-Pol							
ODP-065R17B18Kxxyy	806-960/1710-2170	65	XX-Pol	16.7/17.5	FET (0,6)	Available	37
ODV-065R14E17K-G	790-960/1710-2170	65	XX-Pol	14.0/16.8	VET (0-20/0-10)	2013 Q1	38
ODV-065R15E18K-G	790-960/1710-2170	65	XX-Pol	15.0/17.7	VET (0-20/0-10)	2013 Q1	39
ODV-065R17E18K-G	790-960/1710-2170	65	XX-Pol	16.7/17.7	VET (0-10/0-10)	Available	40
ODV-065R17E18K	790-960/1710-2170	65	XX-Pol	16.7/17.7	VET (0-10/0-10)	Available	41
ODV-065R18EK-G	790-960/1710-2170	65	XX-Pol	17.3/17.7	VET (0-10/0-10)	2013 Q1	42

ODV-065R18EK	790-960/1710-2170	65	XX-Pol	17.3/17.7	VET (0-10/0-10)	2013 Q1	43
ODV-065R15E18J-G	790-960/1710-2690	65	XX-Pol	14.8/18.0	VET (0-14/0-10)	2013 Q1	44
ODV-065R17E18J-G	790-960/1710-2690	65	XX-Pol	16.3/18.0	VET (0-10/0-10)	2013 Q1	45
ODV-065R18EJ-G	790-960/1710-2690	65	XX-Pol	17.3/18.0	VET (0-10/0-10)	2013 Q1	46
ODV2-065R18K-G	1710-2170/1710-2170	65	XX-Pol	18.0/18.0	VET (0-10/0-10)	Available	47
ODV2-065R18K	1710-2170/1710-2170	65	XX-Pol	18.0/18.0	VET (0-10/0-10)	Available	48
ODV2-065R18J-G	1710-2690/1710-2690	65	XX-Pol	17.7/17.7	0-12/0-12	2013 Q1	49
ODV2-065R18J	1710-2690/1710-2690	65	XX-Pol	17.7/17.7	0-12/0-12	Available	50
5) 800/900-1800/1900/2000/2600 XXX-Pol							
ODV-065R15B15J15J	806-960/1710-2690/ 1710-2690	65	XXX-Pol	15/15.5/ 15.5	VET(0-14/ 0-12/0-12)	Available	51
ODV-065R18EKK-G	790-960/1710-2170	65	XX-Pol	17.5/17.5/ 17.7	VET(0-10/ 0-10/0-10)	2013 Q1	52
ODV-065R15E18J18J-G	790-960/2x1710-2690	65	XXX-Pol	15.0/17.7/ 17.7	VET(0-14/ 0-12/0-12)	2013 Q1	53
ODV-065R17EJJ-G	790-960/2x1710-2690	65	XXX-Pol	16.3/16.3/ 16.8	VET(0-10/ 0-12/0-12)	2013 Q1	54
ODV-065R18EJJ-G	790-960/2x1710-2690	65	XXX-Pol	17.3/17.1/ 17.6	VET(0-10/ 0-12/0-12)	2013 Q1	55
6) 800/900-1800/1900/2000/2600 XXXX-Pol							
ODV2-065R15E18K-G	2 x 790-960 / 2 x 1710-2170	65	XXXX-Pol	2x15.0/ 2x17.7	VET 2x (0-20/0-10)	2013 Q1	56

B: Repeater/Microcell Antenna

Model Number	Freq Range(MHz)	H-HPBW (°)	Polarization	Gain (dBi)	Page
ODM-030V16K0-2	1710-2170	30	V-Pol	13.5	57
ODM-030V18B0	824-960	30	V-Pol	18.0	58
ODM-075V11N0	806-960/1710-2500	75	V-Pol	9.7/11.0	59
ODP-030V20K0	1710-2170	30	V-Pol	20.0	60
ODP-032V15N	790-960/1710-2690	32	V-Pol	11.0/15.0	61
OYI-040V12K0-2	1710-2170	40	V-Pol	12.5	62
OYI-040V13B0-2	806-960	40	V-Pol	13	63

C: Indoor Antenna

Model Number	Freq Range(MHz)	H-HPBW (°)	Polarization	Gain (dBi)	Mounting	Page
IWH-065V07N0	670-960/1710-2700	65	V-Pol	4.5/7.0	Wall mount	64
IWH-090V08N0-5	806-960/1710-2700	90	V-Pol	7.0/8.0	Wall mount	65
IXD-120V06N0-3	806-960/1710-2500	120	V-Pol	6.0/6.0	ceiling mount	66

IXD-360V03NN(05)	670-960/1710-2700	360	V-Pol	2.0/4.0	ceiling mount	67
IXD-360V03NN(U)	806-960/1710-2700	360	V-Pol	2.0/4.0	ceiling mount	68
IXD-360VH03NT	806-960/1710-2700	360	V-Pol & H-Pol	2.0/4.0	ceiling mount	69

D: RET system

Model Number	Product Description	Page
00-KX02(yy) AISG Cable	AISG Control Cable (yy=cable length in meter)	70
RCU-003	Remote Control Unit AISG v1.1 Compliant	71
RCU-V5002	Remote Control Unit AISG v2.0 Compliant	72
CCU-001AG CCU-003AG	Central Control Unit Fully compliant with AISG issue 1.1 & 2.0	73

E: RF product

Model Number	Product Description	Launch time	Page
1) Tower Mounted Amplifier			
TA-C12FS03	Single TMA, 824-849MHz/869-894MHz, 12dB Gain, CWA alarming	Available	75
TA-C12FDA-A	Dual TMA, 824-849MHz/869-894MHz, 12dB Gain, AISG 2.0 compliant	Available	77
TA-G12FS02	Single TMA, 890-915MHz/935-960MHz, 12dB Gain, CWA alarming	Available	79
TA-E12FS	Single TMA, 880-915MHz/925-960MHz, 12dB Gain, CWA alarming	Available	81
TA-E12FDA-A	Dual TMA, 880-915MHz/925-960MHz, 12dB Gain, AISG2.0 compliant	Available	83
TA-D12FS	Single TMA, 1710-1785MHz/1805-1880MHz, 12dB Gain, CWA alarming	Available	85
TA-D12FD-03	Dual TMA, 1710-1785MHz/1805-1880MHz, 12dB Gain, CWA alarming	Available	87
TA-D12FDA-A	Dual TMA, 1710-1785MHz/1805-1880MHz, 12dB Gain, AIS2.0 compliant	Available	89
TA-D12FDA	Dual TMA, 1710-1785MHz/1805-1880MHz, 12dB Gain, AISG1.1 compliant	Available	91
TA-P12FDA	Dual TMA, 1850-1910MHz/1930-1990MHz, 12dB Gain, AISG1.1 compliant	Available	93
TA-P12FDA-A	Dual TMA, 1850-1910MHz/1930-1990MHz, 12dB Gain, AISG2.0 compliant	Available	95
TA-W12FDA-A	Dual TMA, 1920-1980MHz/2110-2170MHz, 12dB Gain, AISG2.0 compliant	Available	97
TA-W12FDA-02	Dual TMA, 1920-1980MHz/2110-2170MHz, 12dB Gain, AISG1.1 compliant, available to upgrade software to compliance AISG2.0	2012 Q4	99
TA-W12FD	Dual TMA, 1920-1980MHz/2110-2170MHz, CWA alarming, 12dB Gain	Available	101
TA-Y12FDA-A	Dual TMA, 2500-2700MHz/2620-2690MHz, AISG2.0 compliant	Available	103
TA-C12G12FDA-A	Dual band TMA, LTE800 MHz and 900MHz full band, 2 input 2 output ports, Product Available	Available	105
BT-R1/R2	Bias Tee, 698-2700MHz	Available	108
BT-R1S1/R2S2	Smart Bias Tee, 698-2700MHz, AISG2.0 compliant	Available	109
PDM-001B/003B	Power distribution unit	Available	110
2) Combiner			
CM-BK2-IN1B	Indoor diplexer, 800-960/1710-2170MHz, 100W, N, Single unit	Available	112
CM-BDW2-IN1	Indoor diplexer, 800-960&1710-1880/1920-2170MHz, 200W, N, Single unit	Available	113
CM-BDW3-IN1B	Indoor triplexer, 800-960/1710-1880/1920-2170MHz, 100W, N, Single unit	Available	114
CM-DW2-IN1	Indoor diplexer, 1710-1880/1920-2170MHz, 100W, N, Single unit	Available	115
CM-KY2-IN1	Indoor diplexer, 1710-2170/2400-2700MHz, 250W, N, Single unit	Available	116

CM-ML2-IN2	Indoor diplexer, 50-2200/2400-2500MHz, 200W, N, Single unit	Available	117
CM-BK2(D)-ODXX	Outdoor diplexer, 806-960/1710-2170MHz, 250W, Din, Single (Double) unit	Available	118
CM-DW2(D)-ODXX	Outdoor diplexer, 1710-1880/1920-2170MHz, 250W, Din, Single (Double) unit	Available	119
CM-BDW3(D)-ODXX	Outdoor triplexer, 806-960/1710-1880/1920-2170MHz, 250W, Din, Single (Double) unit	Available	120
CM-KY2-OD4B	Outdoor diplexer, 1710-2170/2300-2700MHz, 250W, Din, Single unit	Available	121
CM-BKY3-OD6	Outdoor triplexer, 806-960/1710-2170/2300-2690MHz, 250W, Din, Single unit	Available	122
CM-BDWY4-OD8	Outdoor Quad-band combiner, 806-960/1710-1880/1920-2170/2500-2690MHz, 250W, Din, Single unit	Available	123
CM-MY2-OD4	Outdoor diplexer, 806-960 & 1710-2170/2300-2700MHz, 250W, Din, Single unit	Available	124
CM-PK2-OD4	Outdoor diplexer, 1850-1910&1930-1990/1710-1755/2110-2155MHz, 250W, Din, Single unit	Available	125
CM-FK2(D)-ODX	Outdoor diplexer, 380-960/1710-2700MHz, 250W, Din, Single (Double) unit	2013 Q1	126
CM-FDW3(D)-ODX	Outdoor triplexer, 380-960/1710-1880/1920-2170MHz, 250W, Din, Single (Double) unit	2013 Q1	127
CM-FKY3(D)-ODX	Outdoor triplexer, 380-960/1710-2170/2300-2690MHz, 250W, Din, Single (Double) unit	2013 Q1	128
CM-FDWY4(D)-ODX	Outdoor triplexer, 380-960/1710-1880/1920-2170/2500-2690MHz, 250W, Din, Single (Double) unit	2013 Q1	129
3) Filters and duplexer			
FP-G75-D01	Band-pass Filter, 885-915/930-960MHz	Available	130
FP-C59-D01	Band-pass Filter, 824-837.5/869-882.5MHz	Available	131
FP-G1216-D02(907-960)	Band-pass Filter, 907-960MHz	Available	132
FP-G1216-D01(903-960)	Band-pass Filter, 903-960MHz	Available	133
FP-G15D-OD01	Band-pass Filter, 900.1-907/945.1-952MHz	Available	134
FP-C22-D01	Band-pass Filter, 824-846.5/869-891.5MHz	Available	136
FP-C60-D01	Band-pass Filter, 824-884MHz	Available	137
DU-E7030-D01	EGSM900 Duplexer, 885-915/ 930-960MHz	Available	138
DU-D8005-D03	GSM1800 Duplexer, 1710-1785/ 1805-1880MHz	Available	139
FP-G11D-OD1	Band-pass Filter, 902.1-913.1/947.1-958.1MHz	Available	140
FP-G26D-OD1	Band-pass Filter, 890.1-903.7/935.1-948.7MHz	Available	142
4) Project components			
COM-BD21ODN3	2x3dB Hybrid Coupler Terminated with 100W low PIM Load, 698-2700MHz	Available	145
HC-R-OD150L	Indoor/Outdoor wideband hybrid coupler, 698-2700MHz, 150W, DIN-F	Available	147
HC-R-ON150L	Indoor/Outdoor wideband hybrid coupler, 698-2700MHz, 150W, N-F	Available	148
HC-x-D200L, HC-x-N200L	Indoor wideband hybrid coupler, 800-2500MHz, 200W, N-F, DIN-F	Available	149
HC-R4-ON60L HC-R4-OD60L	Indoor/Outdoor wideband hybrid coupler, 698-2700MHz, 60W, N-F, DIN-F	Available	150

PS-Rx-OD700C	Indoor/Outdoor wideband power splitter, 2way/3Way/4Way, 698-2700MHz, 700W, DIN-F	Available	151
PS-Rx-ON300C	Indoor/Outdoor wideband power splitter, 2way/3Way/4Way, 698-2700MHz, 300W, N-F	Available	152
PS-Rx-ON50M	Indoor/Outdoor wideband power splitter, 2way/3Way/4Way, 698-2700MHz, 50W, N-F	Available	153
PS-Nx-D700C	Indoor wideband power splitter, 2way/3Way/4Way, 800-2500MHz, 700W, Din-F	Available	154
PS-Nx-N50M	Indoor wideband power splitter, 2way/3Way/4Way, 800-2500MHz, 50W, N-F	Available	155
PS-Nx-N200C	Indoor wideband power splitter, 2way/3Way/4Way, 800-2500MHz, 200W, N-F	Available	156
PS-Zx-N200C	Indoor wideband power splitter, 2way/3Way/4Way, 824 – 960 / 1710 – 2700 MHz, 200W, N-F	Available	157
CO-Rxx-ON200C	Indoor/Outdoor coupler, 6/10/15/20/30/40dB, 698-2700MHz, 200W, N-F	Available	158
CO-Bxx-D200C CO-Dxx-D200C	Indoor coupler, 30/40/55dB, 820-960/1700-1900MHz, 200W, DIN-F	Available	159
DC-Rxx-OD200M	Indoor/Outdoor directional coupler, 5/6/7/8/10/13/15/20/30/40dB, 698-2700MHz, 200W, DIN-F	Available	160
DC-Rxx-ON200M	Indoor/Outdoor directional coupler, 5/6/7/8/10/13/15/20/30/40dB, 698-2700MHz, 200W, N-F	Available	162
DC-Nxx-D200M DC-Nxx-N200M	Indoor directional coupler, 6/10/15/20dB, 800-2500MHz, 200W, DIN-F, N-F	Available	164
DC-Nxx-N200C	Indoor directional coupler, 6/10/15/20dB, 800-2500MHz, 200W, N-F	Available	165
5) POI			
POI-TDA2ODN4SG	Singapore POI: 1x iDEN, 1x EGSM, 2x GSM900, 3x GSM1800, 3x UMTS2100 multi-band combiner	Available	166
POI-TDH2IDN1HK	HK Duplex POI: 4xGSM900,6xGSM1800,4xUMTS,3xLTE2.6G multi-band combiner	Available	167
POI-TSJ2IDN1HK-TX	HK Simplex POI-Tx unit: 6xGSM900 Tx, 6xGSM1800 Tx, 4xUMTS Tx,3xLTE2.6G Tx/Rx	Available	168
POI-TSJ2IDN1HK-RX	HK Simplex POI-Rx unit: 6xGSM900 Tx, 6xGSM1800 Tx, 4xUMTS Tx,3xLTE2.6G Tx/Rx	Available	169

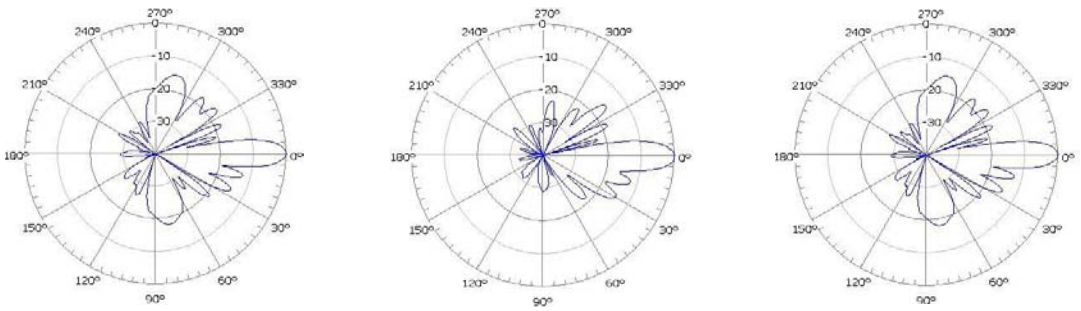
Technical Specifications

Electrical			
Frequency Range	MHz	806-880	880-960
Polarization		Vertical	
Gain	dBi	17.0	17.2
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	10	
Electrical Downtilt – Fixed(Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 18	
Front-To-Back Ratio	dB	> 28	
VSWR		≤ 1.5:1	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

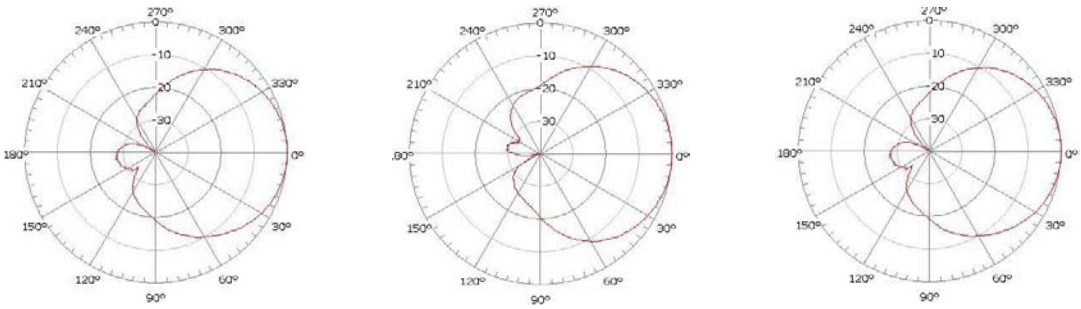
Mechanical		
Dimensions, HxWxD	mm (in)	2095x265x141 (76.2x10.4x5.5)
Weight, without Mounting Kit	kg (lb)	11 (24.3)
Weight, with Mounting Kit	kg (lb)	17.5 (38.6)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(12)
Connector Type and Location		7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2270×375 ×280 (89.4x14.7x11.0)
Shipping Weight	kg (lb)	23 (50.7)

Antenna Pattern

Vertical pattern



Horizontal pattern



820MHz @ 0° 870MHz @ 0° 960MHz @ 0°

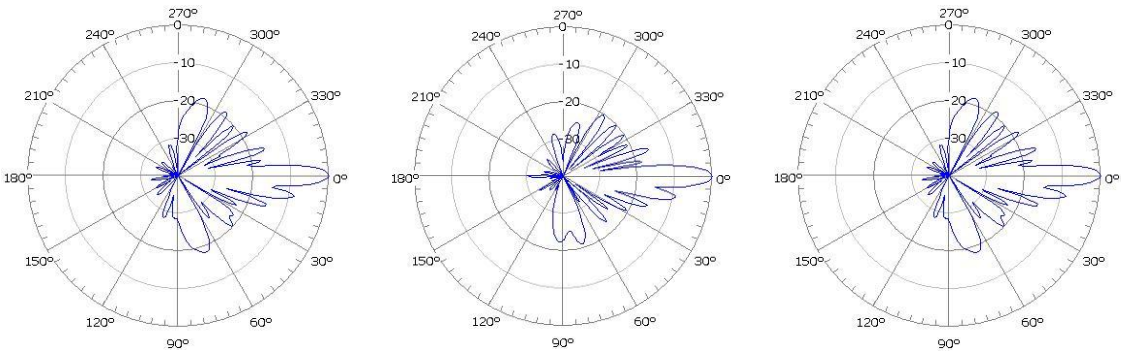
Technical Specifications

Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		Vertical	
Gain	dBi	17.7	18.2
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	6.5	
Electrical Downtilt – Fixed (Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 18	
Front-To-Back Ratio	dB	> 27	
VSWR		≤ 1.4:1	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

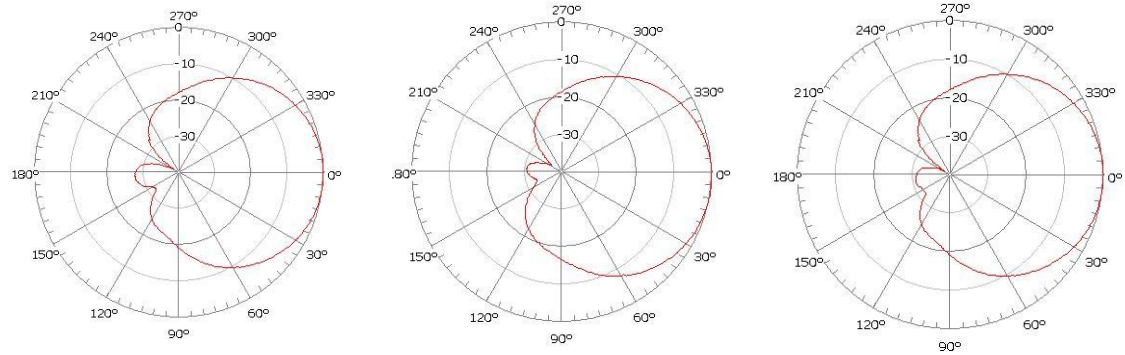
Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x141(102.7x10.4x5.5)
Weight, without Mounting kit	kg (lb)	16(35.3)
Weight, with Mounting kit	kg (lb)	22.5(49.6)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2915x375x280(114.5x14.7x10.9)
Shipping Weight	kg (lb)	28(61.8)

Antenna Pattern

Vertical pattern



Horizontal pattern



824MHz @ 0° 915MHz @ 0° 960MHz @ 0°

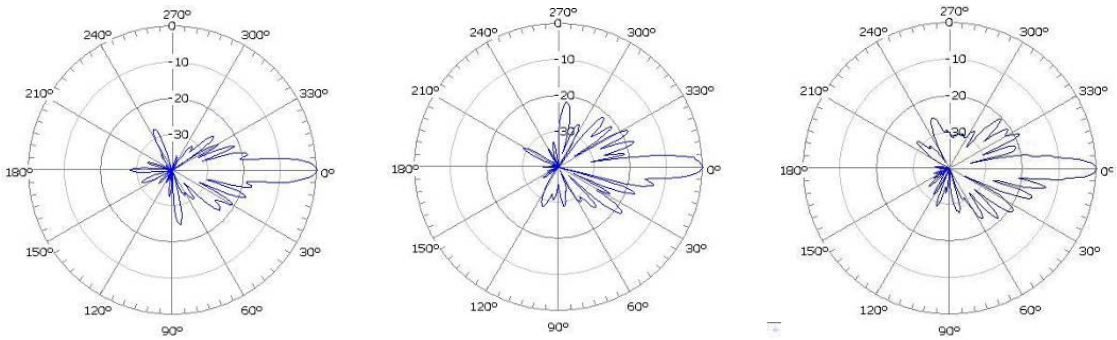
Technical Specifications

Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		Vertical	
Gain	dBi	16.7	17.0
Horizontal Beamwidth	deg	90	
Vertical Beamwidth	deg	7.5	
Electrical Downtilt – Fixed (Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 16	
Front-To-Back Ratio	dB	> 25	
VSWR		≤ 1.4:1	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

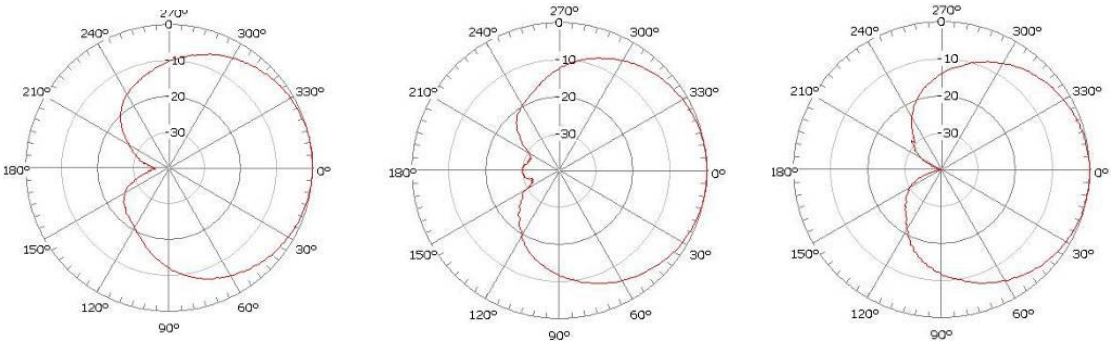
Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x145 (102.8x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	15 (33.1)
Weight, with Mounting Kit	kg (lb)	20 (44.1)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2915x375x280 (114.8x14.7x11.0)
Shipping Weight	kg (lb)	27 (59.5)

Antenna Pattern

Vertical pattern



Horizontal pattern



824MHz @ 0° 870MHz @ 0° 960MHz @ 0°

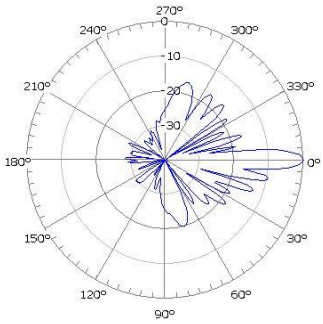
Technical Specifications

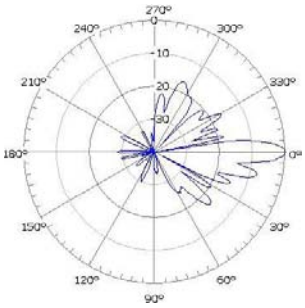
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		Vertical		
Gain	dBi	17.6	17.8	18.0
Horizontal Beamwidth	deg	65		
Vertical Beamwidth	deg	6.5		
Electrical Downtilt – Fixed (Optional)	deg	0, 6		
First Upper Sidelobe Suppression	dB	> 18		
Front-To-Back Ratio	dB	> 28		
VSWR		≤ 1.5:1		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power Per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

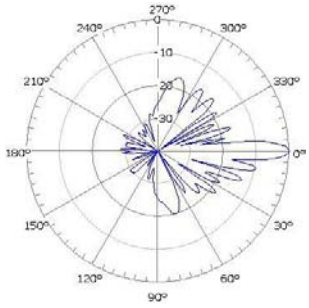
Mechanical		
Dimensions, HxWxD	mm (in)	1310x173x81 (51.5x6.8x3.1)
Weight, without Mounting Kit	kg (lb)	5.5 (12.1)
Weight, with Mounting Kit	kg (lb)	7 (15.4)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-14C(10)
Connector Type and Location		7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1435x230x210 (56.5x9.1x8.3)
Shipping Weight	kg (lb)	9.2 (20.3)

Antenna Pattern

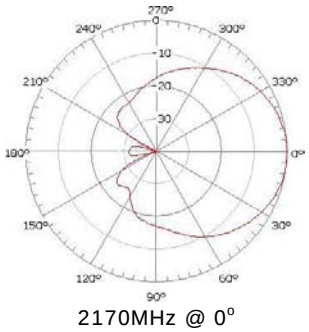
Vertical pattern







Horizontal pattern



1710MHz @ 0° 1850MHz @ 0° 2170MHz @ 0°

Technical Specifications

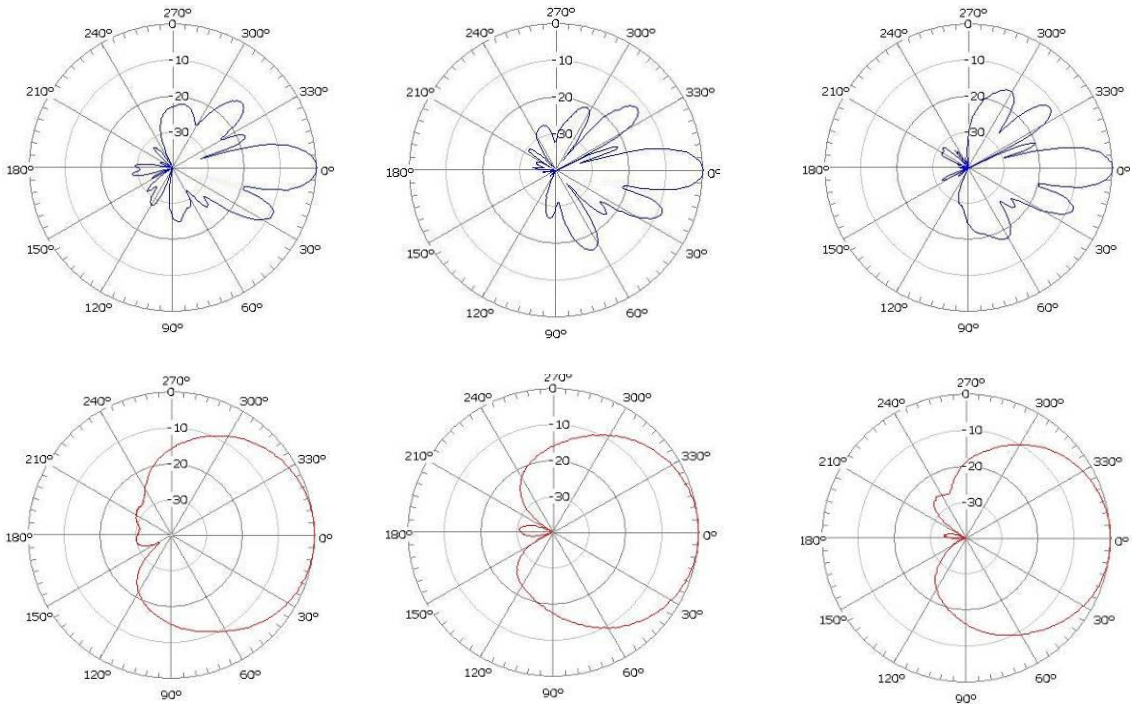
Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	14.6	15.1
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	14	13
Electrical Downtilt – Fixed (Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 15	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 17	
VSWR		≤ 1.4:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power Per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	1315x265x141 (51.6x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	9.5 (20.9)
Weight, with Mounting Kit	kg (lb)	15.5 (34.2)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1610x375x275 (63.4x14.8x10.8)
Shipping Weight	kg (lb)	18.3 (40.3)

Antenna Pattern

Vertical Pattern

Horizontal Pattern



824MHz @ 0° 915MHz @ 0° 960MHz @ 0°

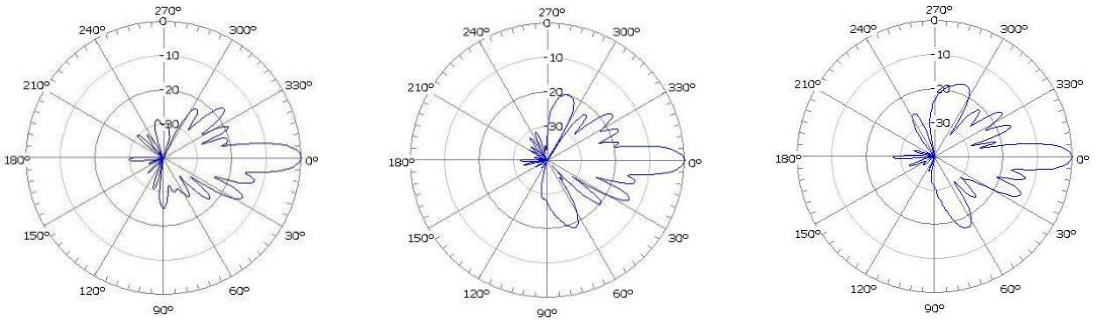
Technical Specifications

Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	16.7	17.1
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	9.8	
Electrical Downtilt – Fixed (Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 18	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 17	
VSWR		≤ 1.4:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

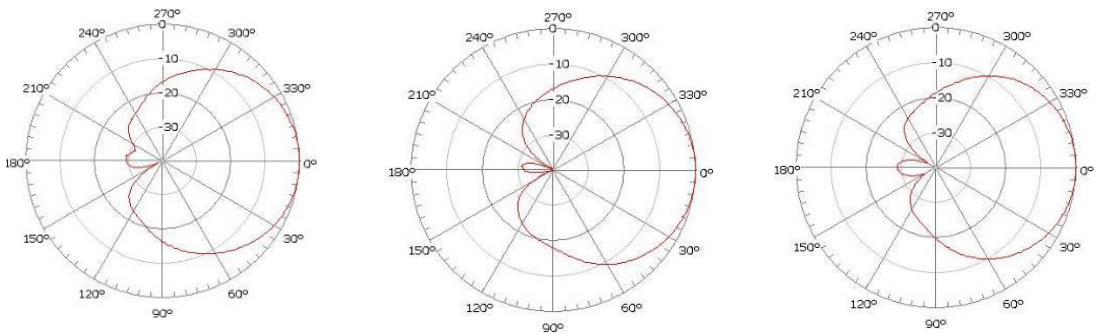
Mechanical		
Dimensions, HxWxD	mm (in)	1935x265x141 (76.1x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	13.8 (30.4)
Weight, with Mounting Kit	kg (lb)	19.8 (43.7)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(12)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2270x375x280 (89.4x14.8x11.0)
Shipping Weight	kg (lb)	26.5 (58.4)

Antenna Pattern

Vertical pattern



Horizontal pattern



870MHz @0° 915MHz @0° 960MHz @0°

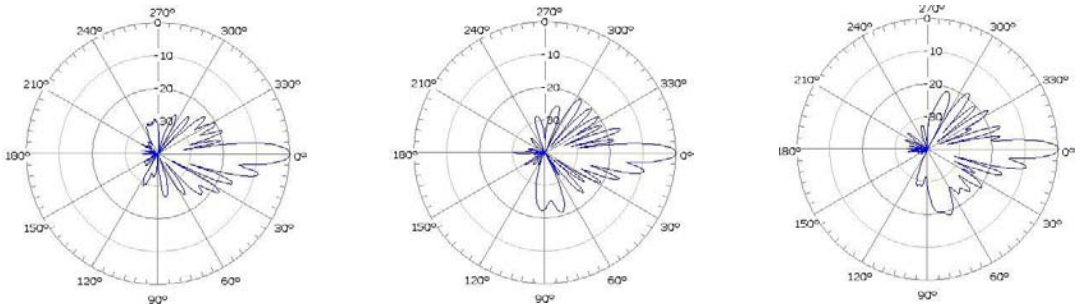
Technical Specifications

Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	17.8	18.0
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	7	
Electrical Downtilt – Fixed (Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 18	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 17	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x141 (102.7x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	18.5 (40.8)
Weight, with Mounting Kit	kg (lb)	24.0 (52.9)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2895x375x265 (114.0x14.8x10.4)
Shipping Weight	kg (lb)	30.7 (67.7)

Antenna Pattern

Vertical pattern



Horizontal pattern

824MHz @ 0° 915MHz @ 0° 960MHz @ 0°

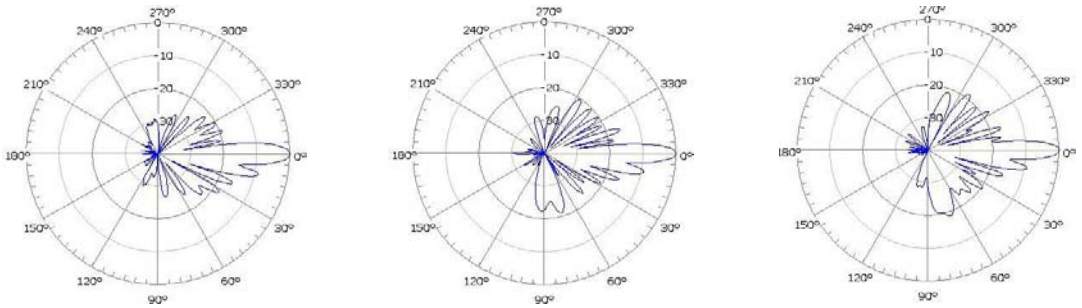
Technical Specifications

Electrical			
Frequency Range	MHz	790-896	870-960
Polarization		± 45	
Gain	dBi	17.6	18.0
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	7	
Electrical Downtilt – Fixed(Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 18	
Front-To-Back Ratio	dB	> 25	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
Cross-polar Discrimination @ 0°	dB	> 17	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x141 (102.7x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	19 (41.8)
Weight, with Mounting Kit	kg (lb)	25.5 (56.2)
Radome Material and Color		Fiberglass, Light grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		2 x 7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2895x375x265 (114.0x14.8x10.4)
Shipping Weight	kg (lb)	30.7 (67.7)

Antenna Pattern

Vertical pattern



Horizontal pattern

824MHz @ 0° 915MHz @ 0° 960MHz @ 0°

Technical Specifications

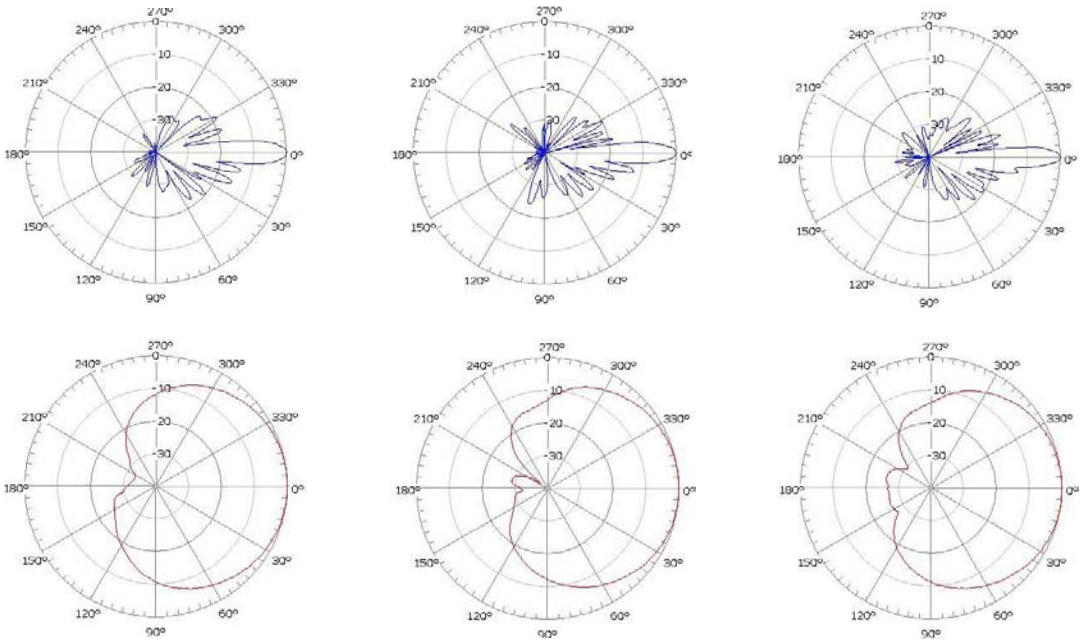
Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	16.7	17.1
Horizontal Beamwidth	deg	90	
Vertical Beamwidth	deg	7	
Electrical Downtilt – Fixed(Optional)	deg	0, 6	
First Upper Sidelobe Suppression	dB	> 18	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 17	
VSWR		≤ 1.4:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x141 (102.7x10.1x5.6)
Weight, without Mounting Kit	kg (lb)	18.5 (40.8)
Weight, with Mounting Kit	kg (lb)	24.0 (52.9)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2915x375x280 (114.8x14.8x11.0)
Shipping Weight	kg (lb)	31.5 (69.4)

Antenna Pattern

Vertical pattern

Horizontal pattern



824MHz @ 0° 870MHz @ 0° 960MHz @ 0°

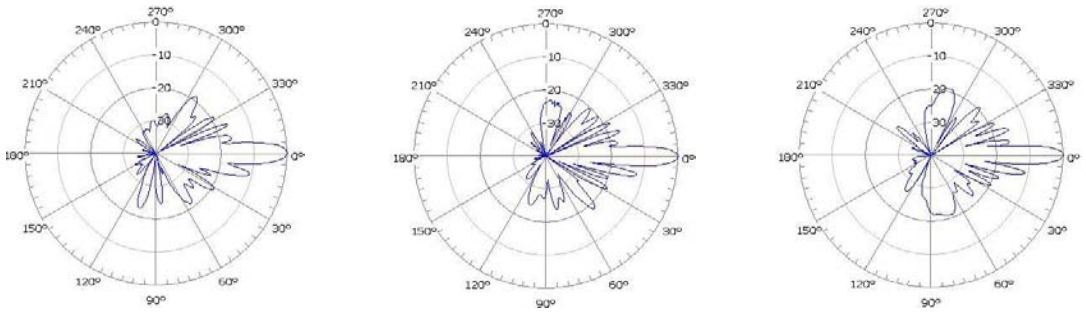
Technical Specifications

Electrical			
Frequency Range	MHz	790- 896	870- 960
Polarization		± 45	
Gain	dBi	18.8	19.3
Horizontal Beamwidth	deg	34	32
Vertical Beamwidth	deg	10	9.5
Electrical Downtilt Range	deg	0-10	
First Upper Sidelobe Suppression	dB	>17(0°), >16(5°), >16(10°)	
0-30° Upper Sidelobe Suppression		> 16	
Front-To-Back Ratio	dB	> 27(total power)	
Cross-polar Discrimination @ 0°	dB	> 18	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 28	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

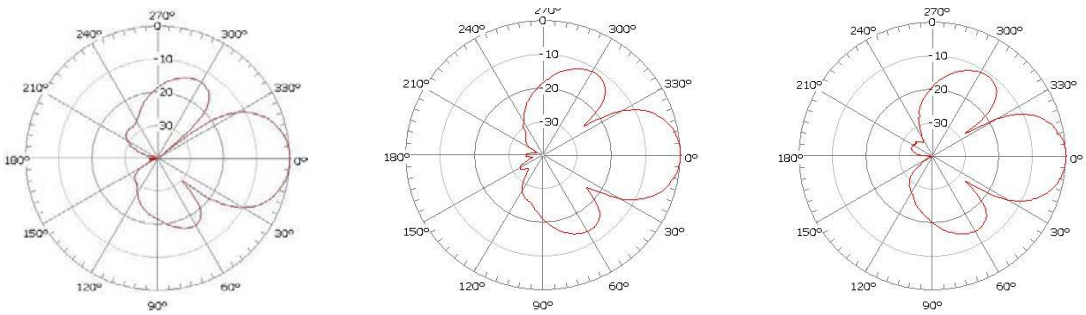
Mechanical		
Dimensions, HxWxD	mm (in)	1975x500x140 (77.8x19.7x5.5)
Weight, without Mounting Kit	kg (lb)	36 (79.4)
Weight, with Mounting Kit	kg (lb)	43 (94.8)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11(12)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2322x635x305 (91.4x25.0x12.0)
Shipping Weight	kg (lb)	50 (110)

Antenna Pattern

Vertical pattern



Horizontal pattern



790MHz @ 0° 875MHz @ 0° 960MHz @ 0°

Outdoor Directional Panel Antenna

ODV-065R15E-G XPol, 790-960MHz, 65°, 15.2dBi

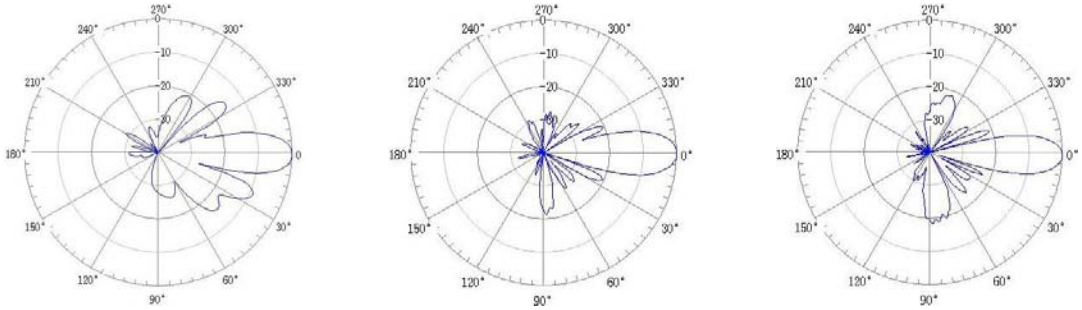
Technical Specifications

Electrical			
Frequency Range	MHz	790-896	880-960
Polarization		± 45	
Gain	dBi	14.7	15.2
Horizontal Beamwidth	deg	67	63
Vertical Beamwidth	deg	15	13
Electrical Downtilt Range	deg	0-20	
First Upper Sidelobe Suppression	dB	>18(0°), >16(10°), >16(20°)	
0-30 ° Upper Sidelobe Suppression	dB	>16	
Front-To-Back Ratio	dB	> 25(total power)	
Cross-polar Discrimination @ 0°	dB	> 18	
Cross-polar Discrimination @ ±60 °	dB	> 10	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

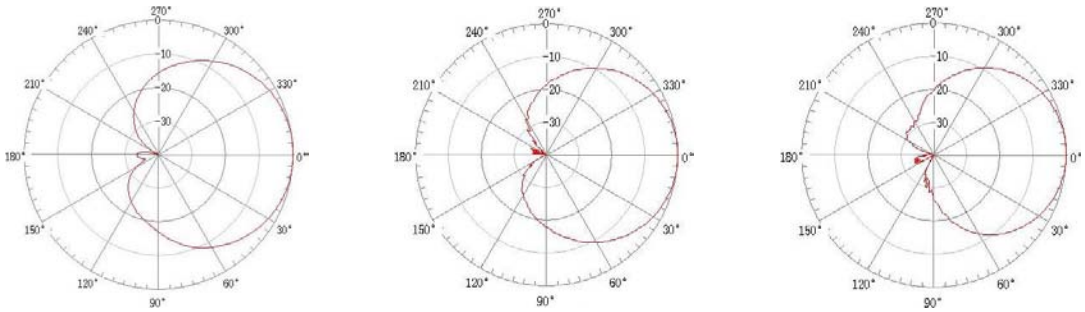
Mechanical		
Dimensions, HxWxD	mm (in)	1415x265x120 (55.7x10.4x4.7)
Weight,without Mounting Kit	kg (lb)	13.7 (30.2)
Weight,with Mounting Kit	kg (lb)	18.7 (41.2)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1725x375x255 (67.9x14.8x10.0)
Shipping Weight	kg (lb)	23.7 (52.2)

Antenna Pattern

Vertical pattern



Horizontal pattern



790MHz @ 0° 870MHz @ 0° 960MHz @ 0°

Outdoor Directional Panel Antenna

ODV-065R17E-G XPol, 790-960MHz, 65°, 16.6dBi

Technical Specifications

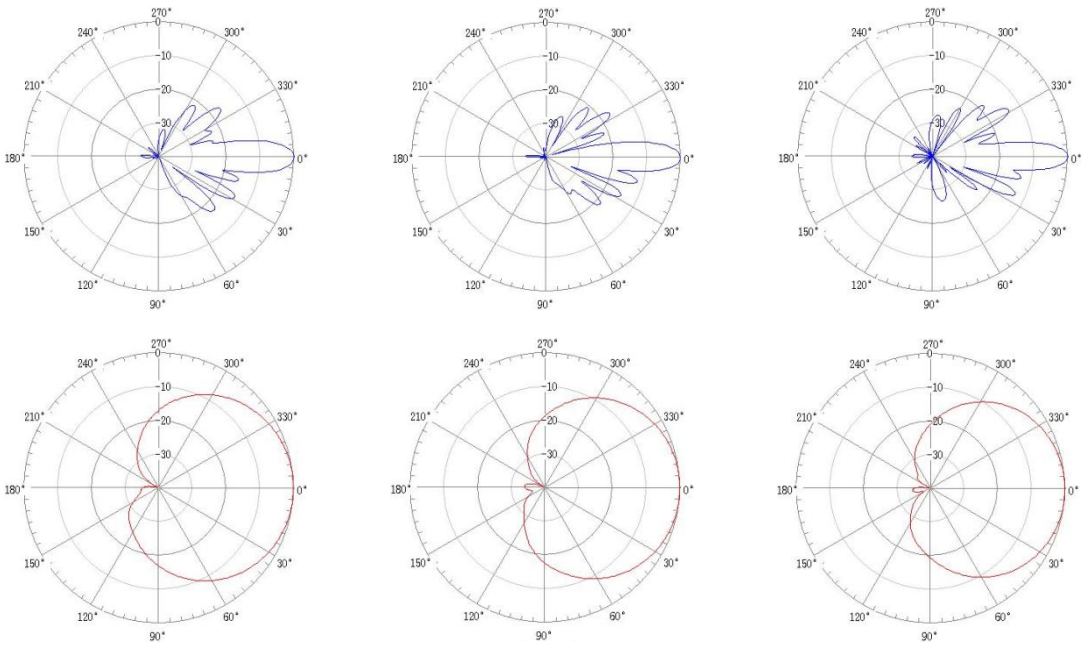
Electrical			
Frequency Range	MHz	790-896	880-960
Polarization		± 45	
Gain	dBi	16.2	16.6
Horizontal Beamwidth	deg	67	65
Vertical Beamwidth	deg	9.7	9.2
Electrical Downtilt Range	deg	0-10	
First Upper Sidelobe Suppression	dB	≥18	
0-30 °Upper Sidelobe Suppression	dB	≥16	
Front-To-Back Ratio	dB	> 25(total power)	
Cross-polar Discrimination @ 0°	dB	≥ 20	
Cross-polar Discrimination @ ±60°	dB	≥ 10	
VSWR		< 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	1975x265x125 (78.7x10.4x4.9)
Weight, without Mounting Kit	kg (lb)	19.5 (43.0)
Weight, with Mounting Kit	kg (lb)	24.5 (54.0)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-12R
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2285x375x255 (89.9x14.8x10.0)
Shipping Weight	kg (lb)	29.5 (65.0)

Antenna Pattern

Vertical pattern

Horizontal pattern



806MHz @ 0° 880MHz @ 0° 960MHz @ 0°

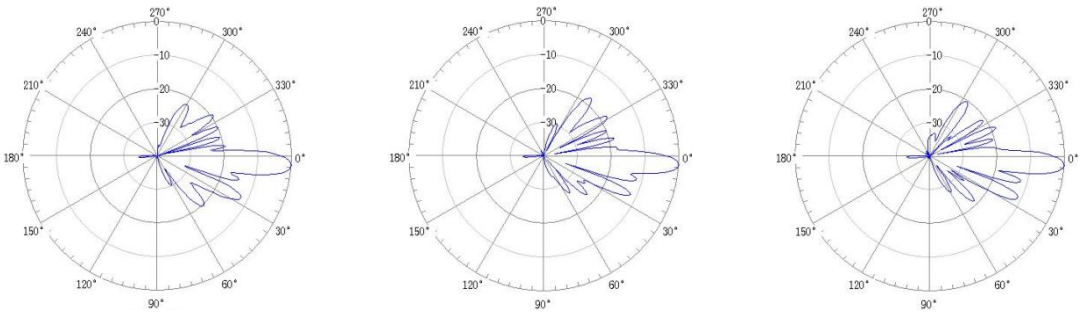
Technical Specifications

Electrical			
Frequency Range	MHz	790-896	880-960
Polarization		± 45	
Gain	dBi	17.0	17.5
Horizontal Beamwidth	deg	67	65
Vertical Beamwidth	deg	7.7	7.3
Electrical Downtilt Range	deg	0-12	
First Upper Sidelobe Suppression	dB	≥18(0 °), ≥18(4 °), ≥16(8 °), ≥16(12 °)	
Front-To-Back Ratio	dB	> 25(total power)	
Cross-polar Discrimination @ 0°	dB	≥ 20	
Cross-polar Discrimination @ ±60°	dB	≥ 10	
VSWR		< 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

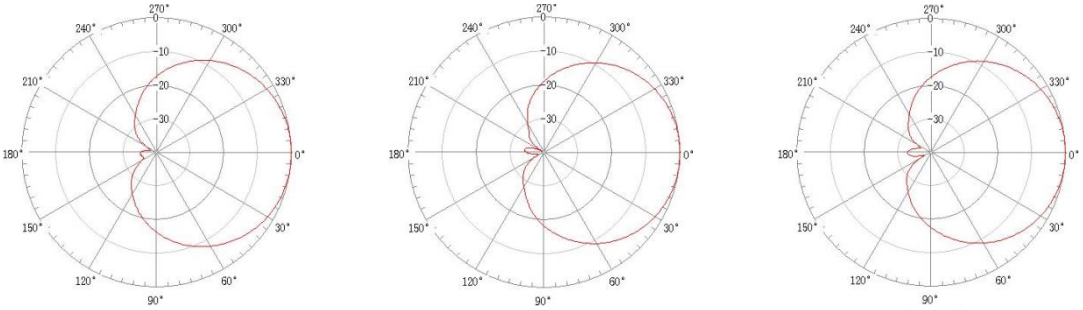
Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x145 (103.0x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	23 (50.7)
Weight, with Mounting Kit	kg (lb)	28.5 (62.8)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		2x7/16 DIN-Female, bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2915x375x275 (114.8x14.8x10.8)
Shipping Weight	kg (lb)	35 (77.2)

Antenna Pattern

Vertical pattern



Horizontal pattern



806MHz @ 0° 870MHz @ 0° 960MHz @ 0°

Outdoor Directional Panel Antenna

ODV-065R15B XPol, 806-960MHz, 65°, 15.5dBi

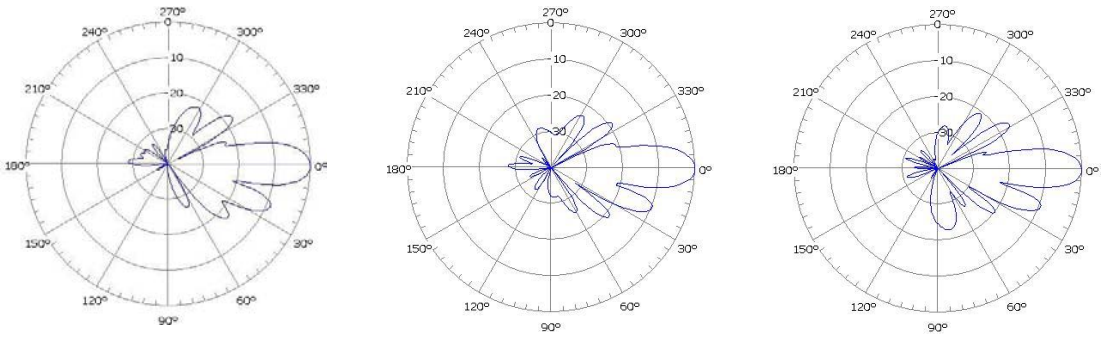
Technical Specifications

Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	15.0	15.5
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	14	
Electrical Downtilt Range	deg	0-14	
First Upper Sidelobe Suppression	dB	≥19(0°),≥17(7°),≥15(14°)	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 20	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

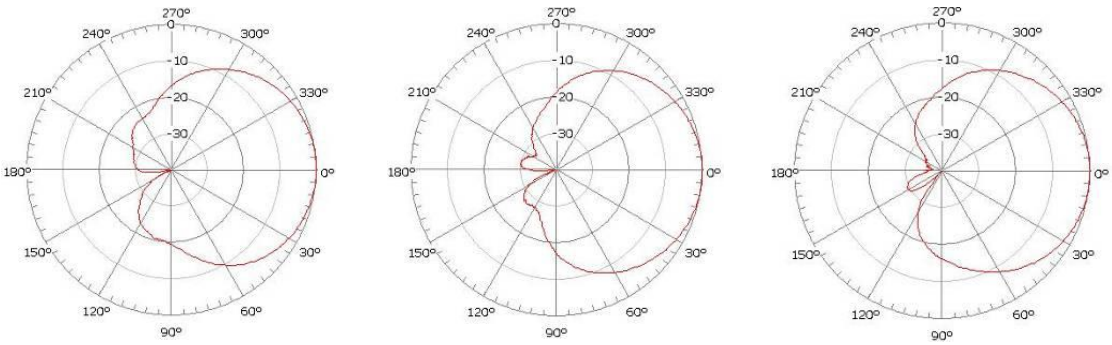
Mechanical		
Dimensions, HxWxD	mm (in)	1415x265x141 (55.7x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	16 (35.3)
Weight, with Mounting Kit	kg (lb)	21 (46.3)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1680x335x230 (66.1x13.2x9.1)
Shipping Weight	kg (lb)	23 (50.7)

Antenna Pattern

Vertical pattern



Horizontal pattern



840MHz @ 0° 870MHz @ 0° 930MHz @ 0°

Outdoor Directional Panel Antenna

ODV-065R17B XPol, 806-960MHz, 65°, 17.0dBi

Technical Specifications

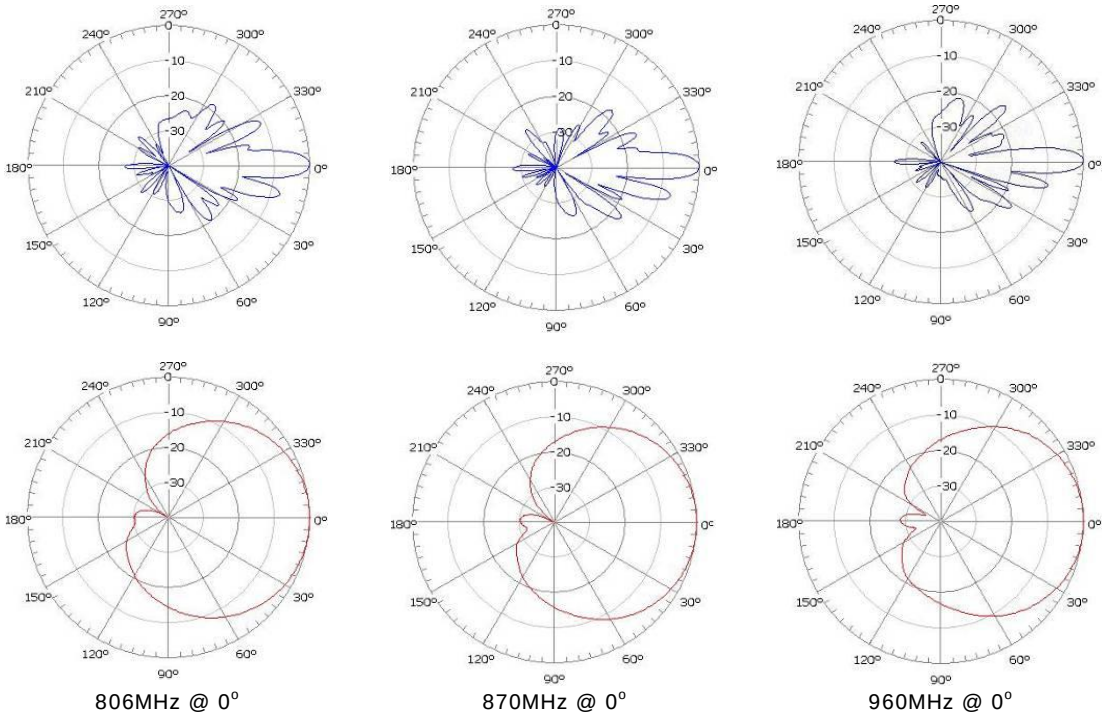
Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	16.5	17.0
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	10	
Electrical Downtilt Range	deg	0-10	
First Upper Sidelobe Suppression	dB	≥18(0°),≥16(4°),≥10(10°)	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 17	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	1975x265x141 (77.6x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	16.5 (36.4)
Weight, with Mounting Kit	kg (lb)	22.5 (60.0)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(12)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2265x375x265 (89.2x14.8x10.4)
Shipping Weight	kg (lb)	27 (59.5)

Antenna Pattern

Vertical pattern

Horizontal pattern



806MHz @ 0° 870MHz @ 0° 960MHz @ 0°

Technical Specifications

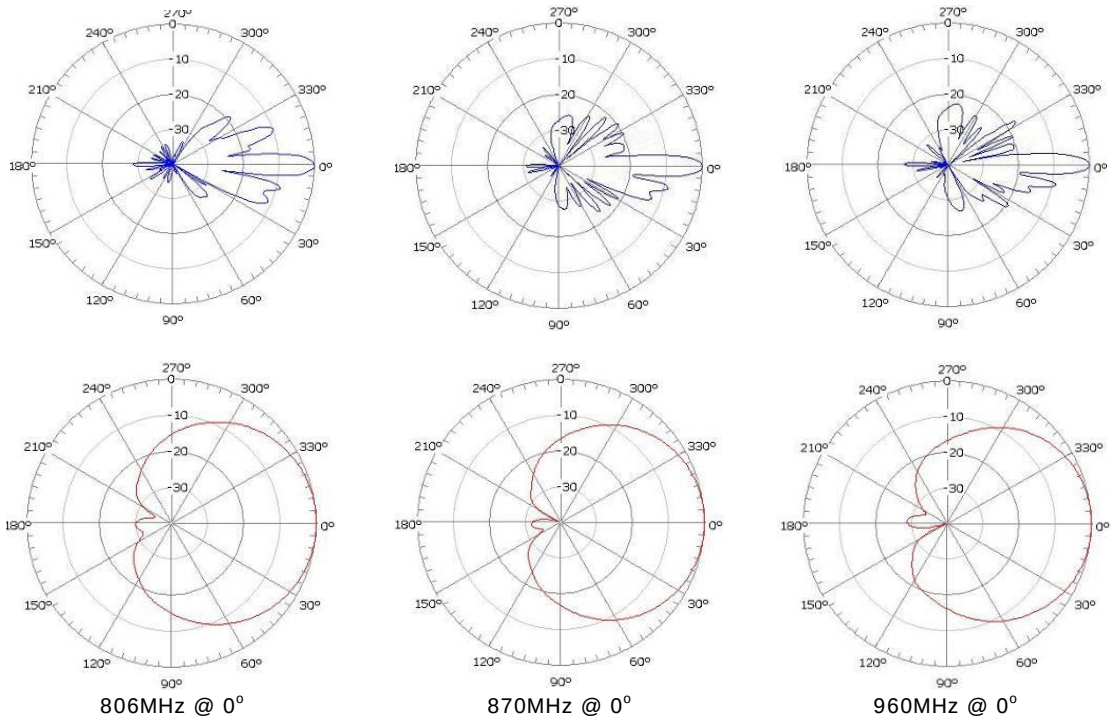
Electrical			
Frequency Range	MHz	806-896	870-960
Polarization		± 45	
Gain	dBi	17.1	17.6
Horizontal Beamwidth	deg	65	
Vertical Beamwidth	deg	7	
Electrical Downtilt Range	deg	0-8	
First Upper Sidelobe Suppression	dB	≥18(0°),≥15(4°),≥13(8°)	
Front-To-Back Ratio	dB	> 25	
Cross-polar Discrimination @ 0°	dB	> 20	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x141 (103.0x10.4x5.6)
Weight, without Mounting Kit	kg (lb)	20.0 (44.1)
Weight, with Mounting Kit	kg (lb)	25.5 (56.2)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2915x375x280 (114.6x14.7x11.0)
Shipping Weight	kg (lb)	32.0 (70.5)

Antenna Pattern

Vertical pattern

Horizontal pattern



806MHz @ 0° 870MHz @ 0° 960MHz @ 0°

Technical Specifications

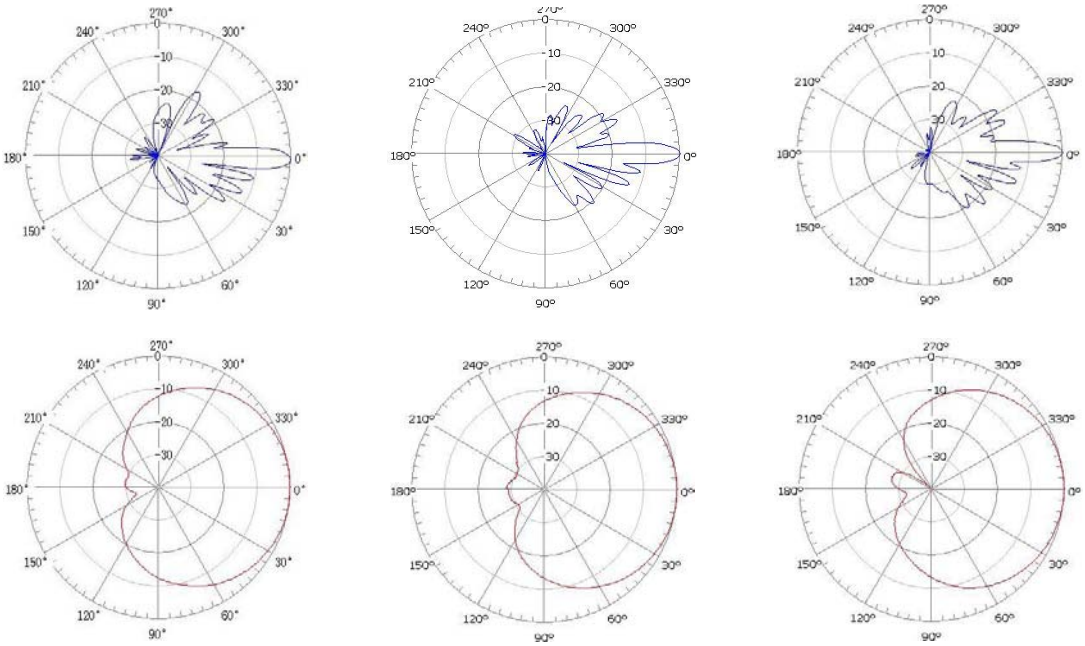
Electrical			
Frequency Range	MHz	790-896	880-960
Polarization		± 45	
Gain	dBi	16.0	16.5
Horizontal Beamwidth	deg	90	
Vertical Beamwidth	deg	7	
Electrical Downtilt Range	deg	0-12	
First Upper Sidelobe Suppression	dB	≥18(0°), ≥16(6°), ≥16(12°)	
Front-To-Back Ratio	dB	> 25(total power)	
Cross-polar Discrimination @ 0°	dB	> 17	
VSWR		≤ 1.5:1	
Isolation Between Ports	dB	> 30	
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150	
Maximum Power per Port	W	500	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

Mechanical		
Dimensions, HxWxD	mm (in)	2615x265x145 (102.9x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	25 (55.0)
Weight, with Mounting Kit	kg (lb)	30.5 (67.2)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2915x375x280 (114.8x14.8x11.0)
Shipping Weight	kg (lb)	35 (77.0)

Antenna Pattern

Vertical pattern

Horizontal pattern



820MHz @ 0° 930MHz @ 0° 960MHz @ 0°

Technical Specifications

Electrical

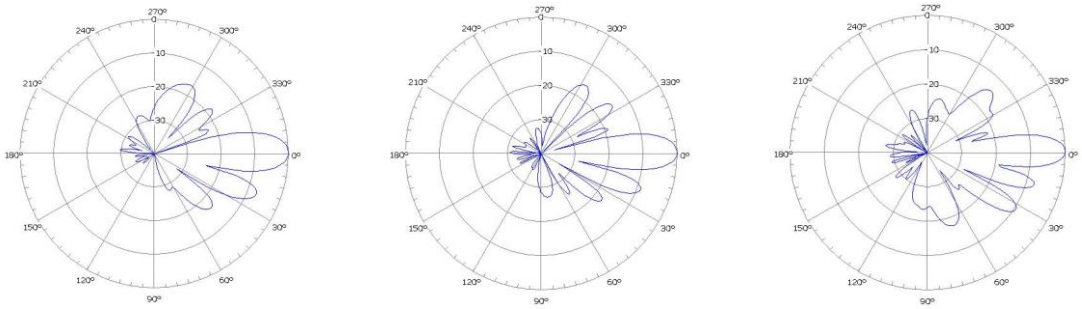
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	15.0	15.2	15.3
Horizontal Beamwidth	deg	65		
Vertical Beamwidth	deg	12		
Electrical Downtilt – Fixed(Optional)	deg	0, 6		
Upper Sidelobe Suppression @ 0°~30°	dB	> 16		
Front-To-Back Ratio	dB	> 25		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 30		
Cross-polar Discrimination @ 0°	dB	> 17		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical

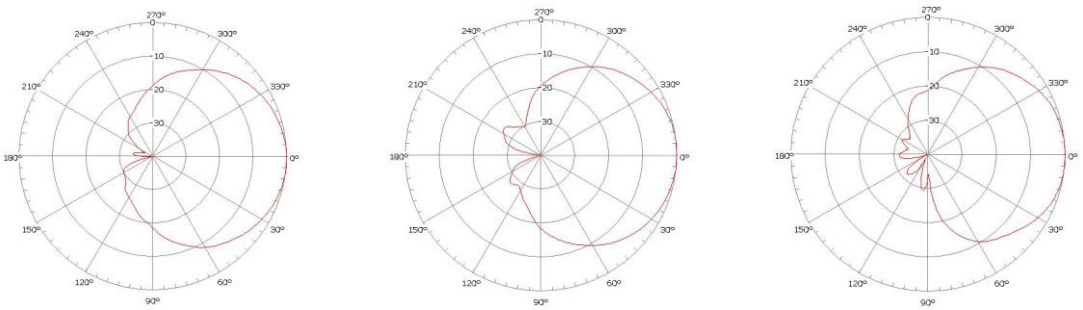
Dimensions, HxWxD	mm (in)	665x120x60 (26.2x4.7x2.4)
Weight, without Mounting Kit	kg (lb)	3.0 (6.6)
Weight, with Mounting Kit	kg (lb)	4.7 (10.4)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-14F
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	885x260x170 (34.8x10.2x6.7)
Shipping Weight	kg (lb)	5.6 (12.3)

Antenna Pattern

Vertical pattern



Horizontal pattern



1710MHz @ 0° 1920MHz @ 0° 2170MHz @ 0°

Technical Specifications

Electrical

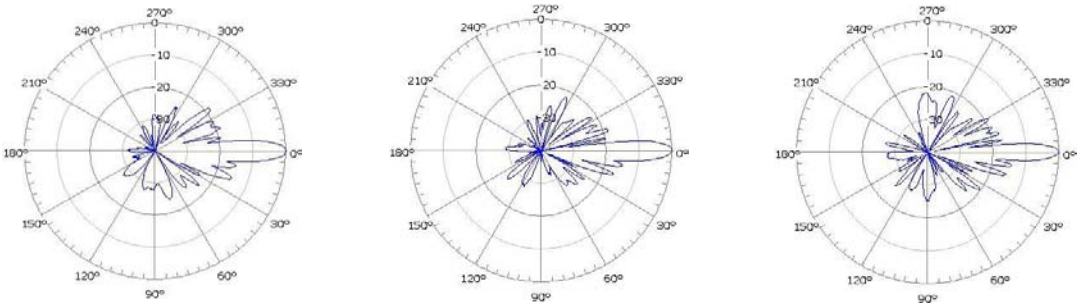
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	17.6	17.7	18.0
Horizontal Beamwidth	deg	65		
Vertical Beamwidth	deg	6.5		
Electrical Downtilt – Fixed(Optional)	deg	0, 6		
First Upper Sidelobe Suppression	dB	≥ 18		
Front-To-Back Ratio	dB	> 25(total power)		
VSWR		≤ 1.4:1		
Isolation Between Ports	dB	> 30		
Cross-polar Discrimination @ 0°	dB	> 17		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical

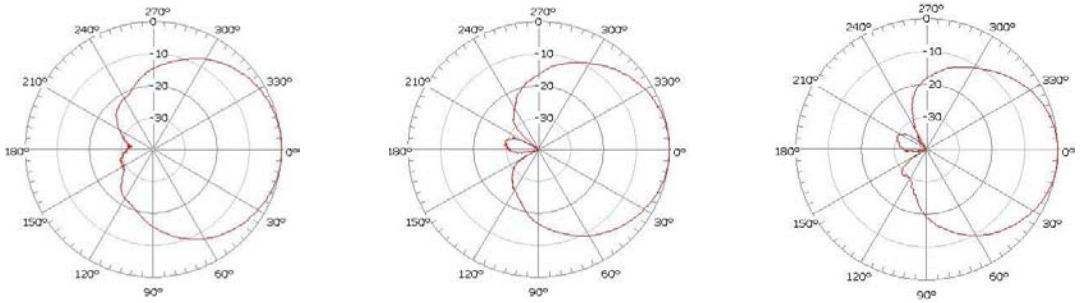
Dimensions, HxWxD	mm (in)	1310x120x60 (51.6x4.7x2.4)
Weight, without Mounting Kit	kg (lb)	5.5 (12.1)
Weight, with Mounting Kit	kg (lb)	7.2 (15.9)
Radome Material		Fiberglass, Light grey
Mounting Kit		SJA-B-14F(12)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1510x190x150 (59.4x7.5x5.9)
Shipping Weight	kg (lb)	9.2 (20.3)

Antenna Pattern

Vertical pattern



Horizontal pattern



1710MHz @ 0° 1920MHz @ 0° 2170MHz @ 0°

Technical Specifications

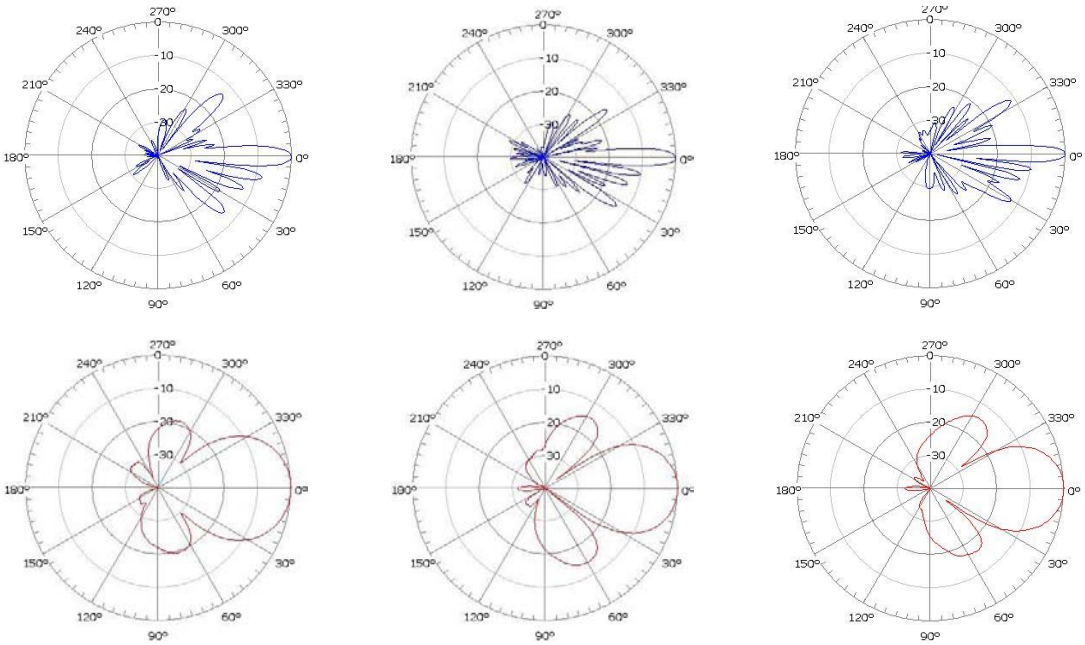
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	20.2	20.6	20.8
Horizontal Beamwidth	deg	34	32	30
Vertical Beamwidth	deg	6.8	6.5	6
Electrical Downtilt Range	deg	0-10		
First Upper Sidelobe Suppression	dB	>20(0^0), >17(5^0), >16(10^0)		
Front-To-Back Ratio	dB	> 25(total power)		
Cross-polar Discrimination @ 0^o	dB	> 18		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 30		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	1315x300x86 (51.8x11.8x3.4)
Weight, without Mounting Kit	kg (lb)	14.5 (32.0)
Weight, with Mounting Kit	kg (lb)	19.5 (43.0)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1595x415x215 (62.8x16.3x8.5)
Shipping Weight	kg (lb)	24.0 (52.9)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz @ 0^o 1990MHz @ 0^o 2170MHz @ 0^o

Technical Specifications

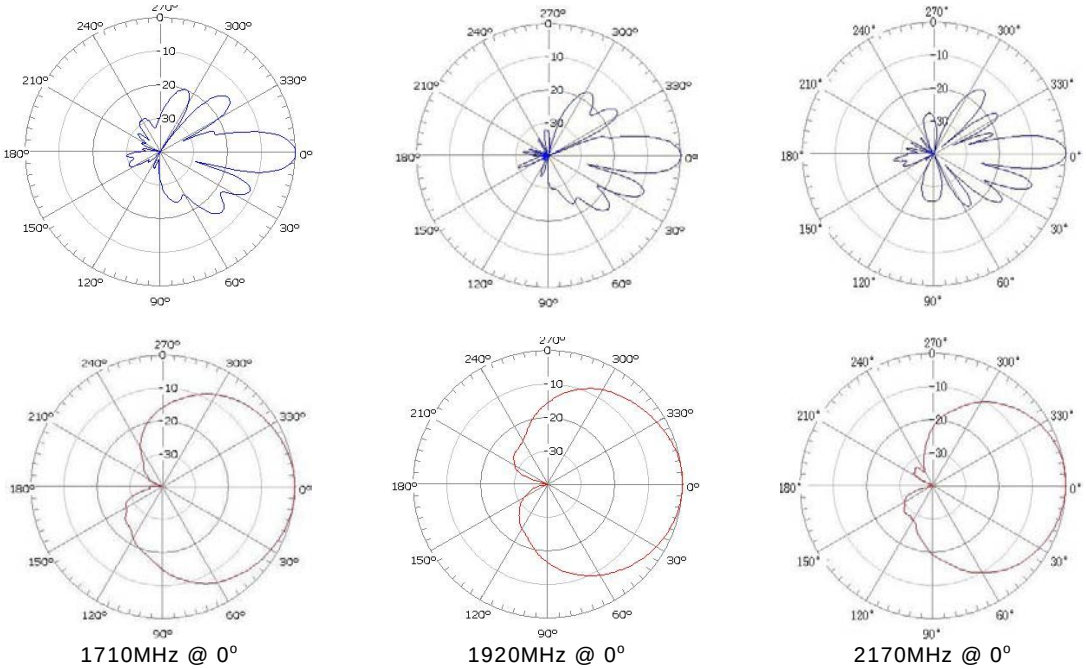
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	14.7	15.0	15.3
Horizontal Beamwidth	deg	65		
Vertical Beamwidth	deg	13	12.5	12
Electrical Downtilt Range	deg	0-20		
First Upper Sidelobe Suppression	dB	>17(0^0), >16(10^0), >16(20^0)		
Front-To-Back Ratio	dB	>25(0-15° total power); >23(15-20° total power)		
Cross-polar Discrimination @ 0°	dB	> 17		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 28		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	650x145x86 (25.6x5.7x3.4)
Weight, without Mounting kit	kg (lb)	5.6 (12.3)
Weight, with Mounting kit	kg (lb)	7.3 (16.1)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-14C(16)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	855x260x190 (33.7x10.2x7.5)
Shipping Weight	kg (lb)	9.1 (20.1)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz @ 0° 1920MHz @ 0° 2170MHz @ 0°

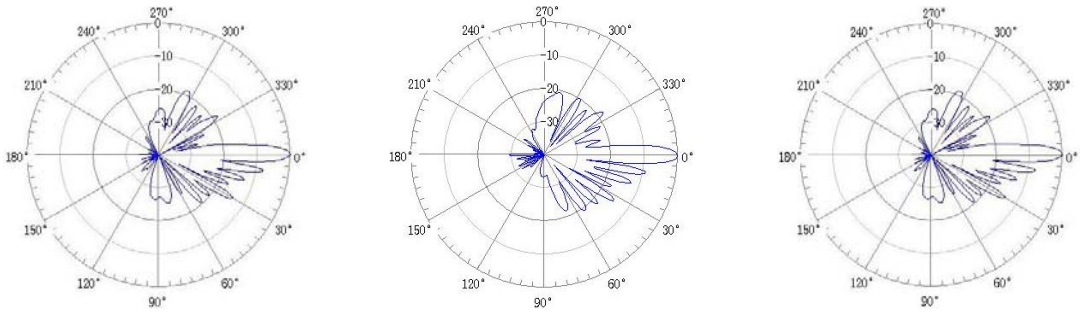
Technical Specifications

Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	17.5	17.7	18.0
Horizontal Beamwidth	deg	67	65	63
Vertical Beamwidth	deg	7.2	6.8	6.4
Electrical Downtilt Range	deg	0-10		
First Upper Sidelobe Suppression	dB	>20(0°), >17(5°), >16(10°)		
Front-To-Back Ratio	dB	≥ 25(total power)		
Cross-polar Discrimination @ 0°	dB	> 18		
Cross-polar Discrimination @ ±60°	dB	> 10(typ.)		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 30		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

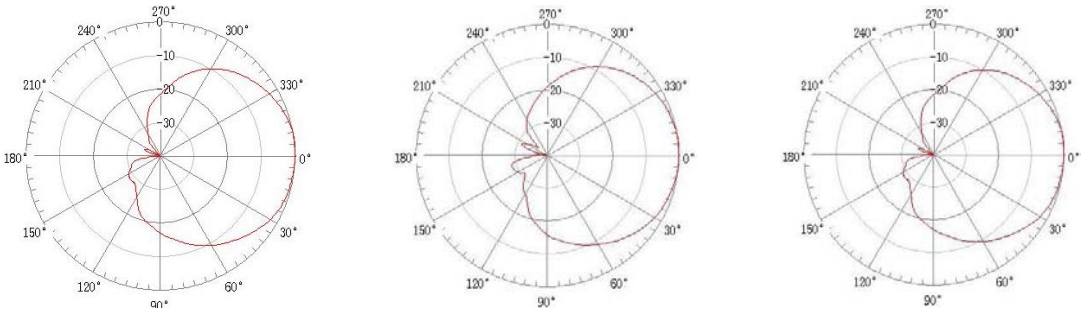
Mechanical		
Dimensions, HxWxD	mm (in)	1315x145x86 (51.8x5.7x3.4)
Weight, without Mounting Kit	kg (lb)	8.5 (18.7)
Weight, with Mounting Kit	kg (lb)	10.3 (22.7)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-14D(10)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1505x245x190 (59.2x9.6x7.5)
Shipping Weight	kg (lb)	13 (28.7)

Antenna Pattern

Vertical pattern



Horizontal pattern



1710MHz @ 0° 1990MHz @ 0° 2170MHz @ 0°

Technical Specifications

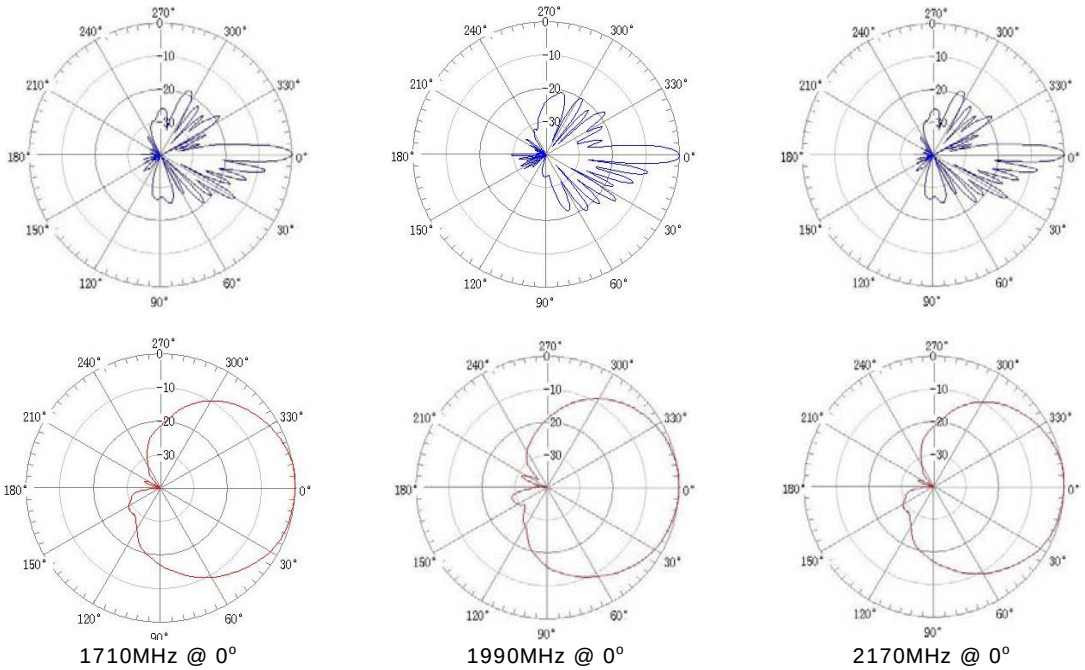
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	17.5	17.7	18.0
Horizontal Beamwidth	deg	67	65	63
Vertical Beamwidth	deg	7.2	6.8	6.4
Electrical Downtilt Range	deg	0-10		
First Upper Sidelobe Suppression	dB	>20(0°), >17(5°), >16(10°)		
Front-To-Back Ratio	dB	≥ 25(total power)		
Cross-polar Discrimination @ 0°	dB	> 18		
Cross-polar Discrimination @ ±60 °	dB	> 10(typ.)		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 30		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	1315x145x86 (51.8x5.7x3.4)
Weight, without Mounting Kit	kg (lb)	7.5 (16.5)
Weight, with Mounting Kit	kg (lb)	9.3 (20.5)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-14D(10)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1505x245x190 (59.2x9.6x7.5)
Shipping Weight	kg (lb)	12 (26.4)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz @ 0° 1990MHz @ 0° 2170MHz @ 0°

Outdoor Directional Ultra-Wide Band Antenna

ODV-065R18J-G XPol, 1710-2690MHz, 65°, 18.0dBi

Technical Specifications

Electrical

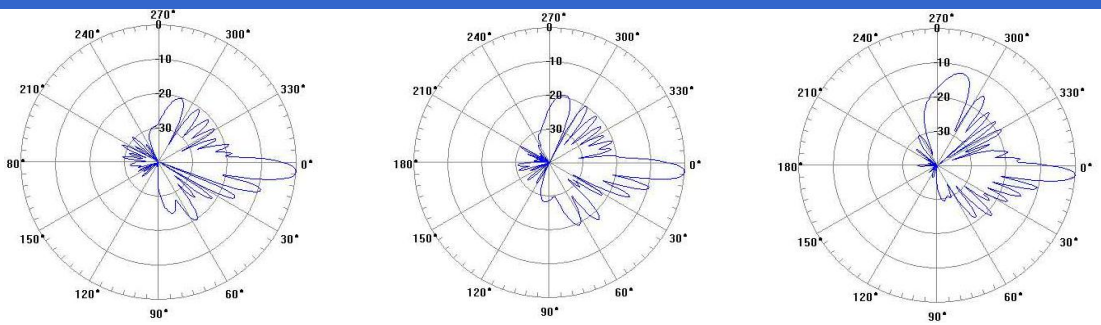
Frequency Range	MHz	1710-1880	1850-1990	1920-2170	2300-2500	2490-2690
Polarization		± 45				
Gain	dBi	17.4	17.6	17.8	18.0	17.8
Horizontal Beamwidth	deg	68	66	65	63	64
Vertical Beamwidth	deg	7.4	7.0	6.6	5.6	5.2
Electrical Downtilt Range	deg	0–12				
First Upper Sidelobe Suppression	dB	≥18(0°), ≥18(6°), ≥17(12°)			≥18(0°),≥17(6°), ≥16(12°)	
0-30° Upper Sidelobe Suppression	dB	≥15			≥14	
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	≥ 18 (typ.)				
VSWR		< 1.5:1				
Isolation Between Ports	dB	> 28				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power Per Port	W	250				
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

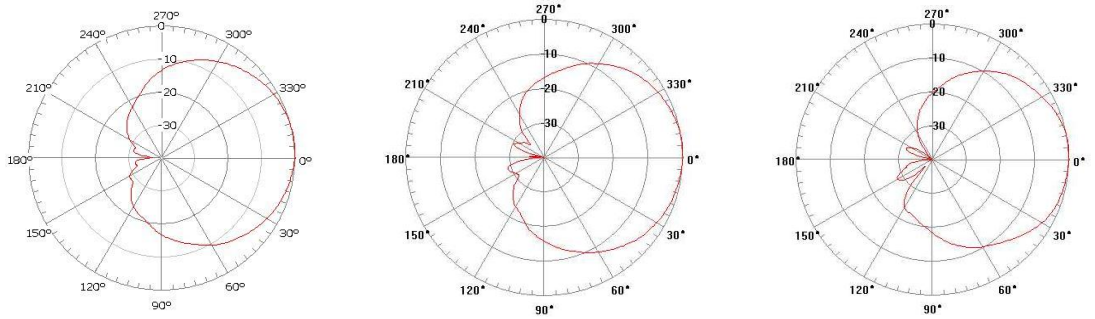
Dimensions, HxWxD	mm (in)	1375x160x83 (54.1x6.3x3.3)
Weight, without Mounting Kit	kg (lb)	10.5 (23.1)
Weight, with Mounting Kit	kg (lb)	12 (26.4)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-14D
Connector Type and Location		2 x 7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1563x245x180 (61.5x9.6x7.1)
Shipping Weight	kg (lb)	14.5 (31.9)

Antenna Pattern

Vertical pattern



Horizontal pattern



1710MHz @ 2° 1920MHz @ 2° 2500MHz @ 2°

Outdoor Directional Ultra-Wide Band Antenna

ODV-065R18J XPol, 1710-2690MHz, 65°, 18.0dBi

Technical Specifications

Electrical

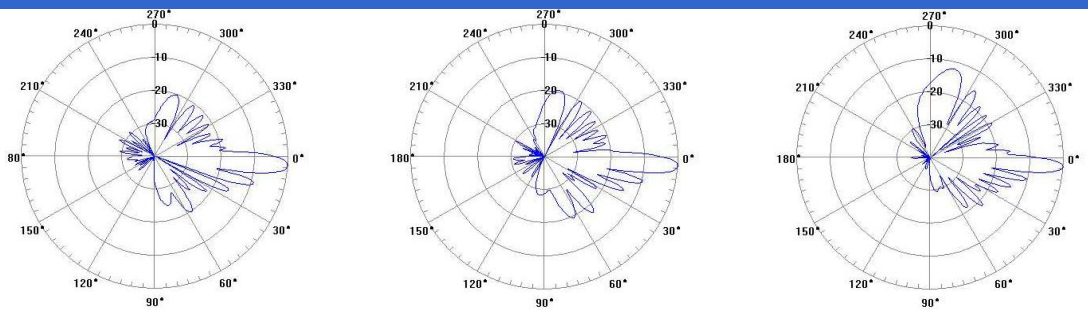
Frequency Range	MHz	1710-1880	1850-1990	1920-2170	2300-2500	2490-2690
Polarization		± 45				
Gain	dBi	17.4	17.6	17.8	18.0	17.8
Horizontal Beamwidth	deg	68	66	65	63	64
Vertical Beamwidth	deg	7.4	7.0	6.6	5.6	5.2
Electrical Downtilt Range	deg	0–12				
First Upper Sidelobe Suppression	dB	≥18(0°), ≥18(6°), ≥17(12°)			≥18(0°),≥17(6°), ≥16(12°)	
0-30° Upper Sidelobe Suppression	dB	≥15			≥14	
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	≥ 18(typ.)				
VSWR		< 1.5:1				
Isolation Between Ports	dB	> 28				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power Per Port	W	250				
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

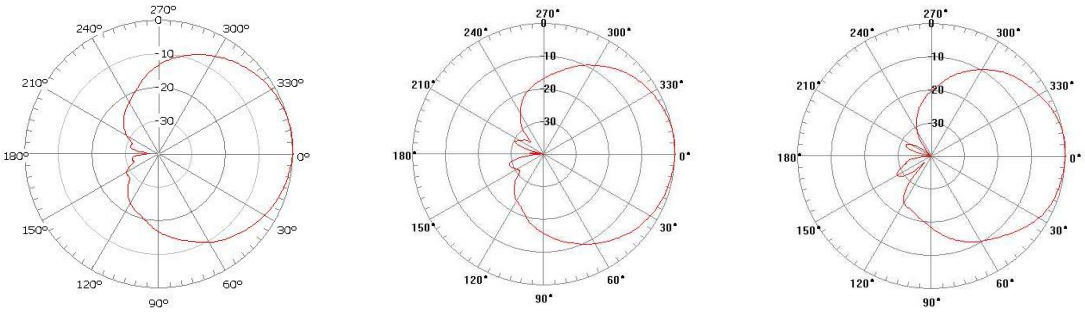
Dimensions, HxWxD	mm (in)	1375x160x83 (54.1x6.3x3.3)
Weight, without Mounting Kit	kg (lb)	9 (19.8)
Weight, with Mounting Kit	kg (lb)	10.5 (23.1)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-14D
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1563x245x180 (61.5x9.6x7.1)
Shipping Weight	kg (lb)	13 (28.7)

Antenna Pattern

Vertical pattern



Horizontal pattern



1710MHz @ 2° 1920MHz @ 2° 2500MHz @ 2°

Outdoor Directional Panel Antenna

ODV-090R17K-G XPol, 1710-2170MHz, 90°, 16.5dBi

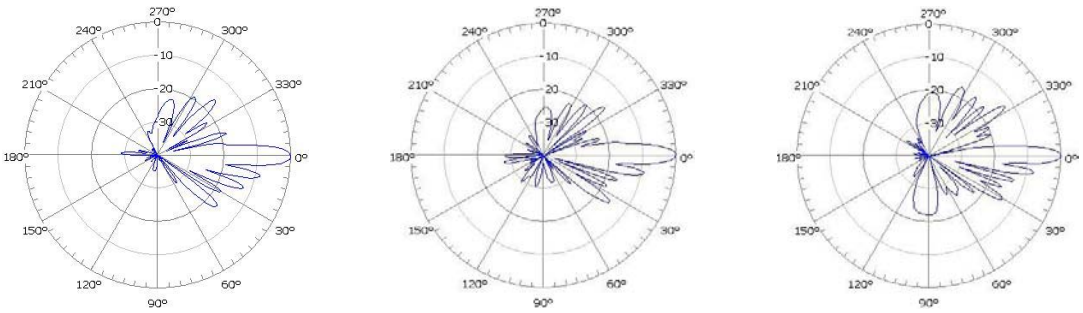
Technical Specifications

Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	16.3	16.4	16.5
Horizontal Beamwidth	deg	90		
Vertical Beamwidth	deg	7		
Electrical Downtilt Range	deg	0-10		
First Upper Sidelobe Suppression	dB	>18(0^0), >16(5^0), >16(10^0)		
Front-To-Back Ratio	dB	> 25(total power)		
Cross-polar Discrimination @ 0^o	dB	> 17		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 28		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power Per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	1310x173x81 (51.5x6.8x3.2)
Weight, without Mounting kit	kg (lb)	9.0 (19.8)
Weight, with Mounting kit	kg (lb)	10.8 (23.8)
Radome Material and Color		Fiberglass, Light Grey,
Mounting Kit		SJA-B-14C(10)
Connector Type and Location		2x7/16 DIN-Female, Bottom
Operational Temperature	^{o}C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1435x230x210 (56.5x9.1x8.3)
Shipping Weight	kg (lb)	12.8 (28.2)

Antenna Pattern

Vertical pattern



Horizontal pattern

1710MHz @ 0^o 1920MHz @ 0^o 2170MHz @ 0^o

Technical Specifications

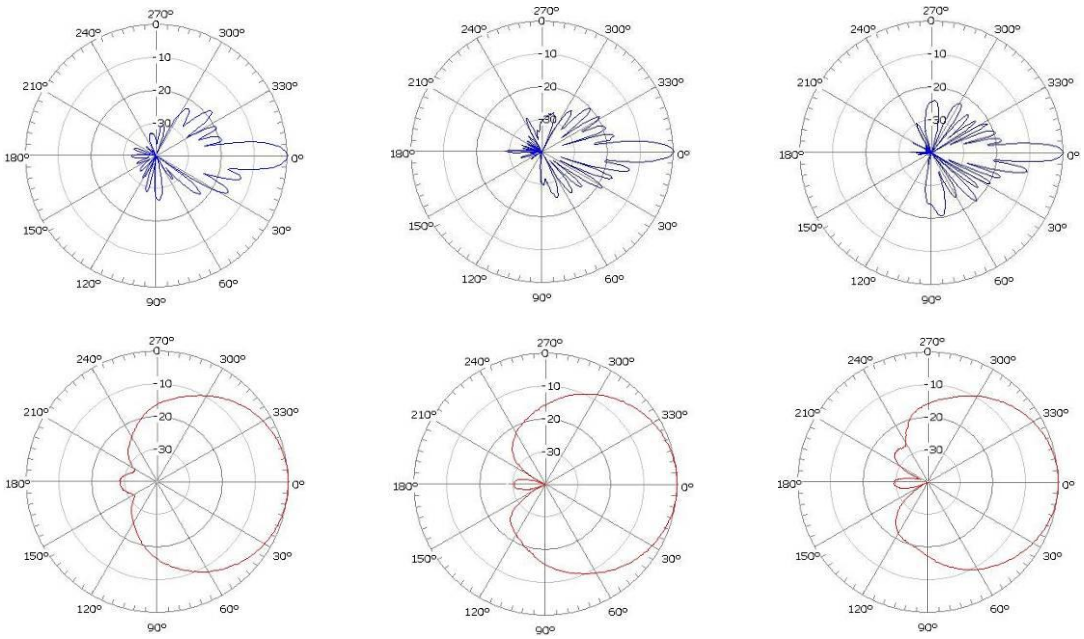
Electrical				
Frequency Range	MHz	806-896	870-960	1710-2170
Polarization		± 45		
Gain	dBi	16.3	16.7	17.5
Horizontal Beamwidth	deg	65		
Vertical Beamwidth	deg	10.0		5.5
Electrical Downtilt – Fixed (Optional)	deg	0/0, 6/6		
First Upper Sidelobe Suppression	dB	> 18(0°), > 16(6°)		
Front-To-Back Ratio	dB	> 25		
Cross-polar Discrimination @ 0°	dB	> 17		
VSWR		≤ 1.5:1		
Isolation Between Ports / Bands	dB	> 28 / > 40		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power per Port	W	500		250
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	1975x265x145 (77.8x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	18 (39.7)
Weight, with Mounting Kit	kg (lb)	24 (52.9)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(14)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2285x375x275 (90.0x14.8x10.8)
Shipping Weight	kg (lb)	30 (66.1)

Antenna Pattern

Vertical pattern

Horizontal pattern



870MHz @ 0° 1710MHz @ 0° 1880MHz @ 0°

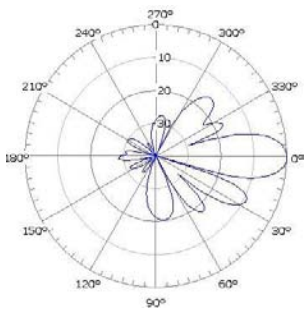
Technical Specifications

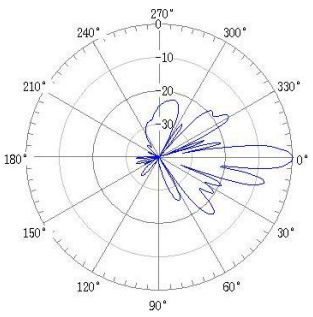
Electrical						
Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		± 45				
Gain	dBi	13.5	14.0	16.6	16.8	16.8
Horizontal Beamwidth	deg	68	65	65	64	63
Vertical Beamwidth	deg	18.6	17	8.2	7.6	7.2
Electrical Downtilt Range	deg	0-20		0-10		
First Upper Sidelobe Suppression	dB	≥17(0°),≥16(7°) ≥15(14°), ≥13(20°)		≥18(0°), ≥16(5°),≥14(10°)		
Front-To-Back Ratio	dB	≥ 25				
Cross-polar Discrimination @ 0°	dB	> 17				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	≥28 / ≥33				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

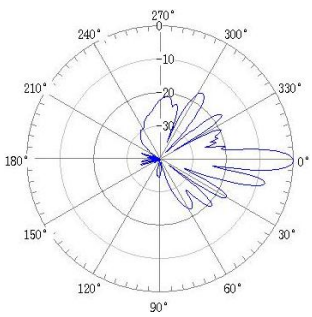
Mechanical		
Dimensions, HxWxD	mm (in)	1200x265x145 (47.2x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	16 (35.3)
Weight, with Mounting Kit	kg (lb)	22 (48.5)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1505x375x280 (59.3x14.8x11.0)
Shipping Weight	kg (lb)	26 (57.3)

Antenna Pattern

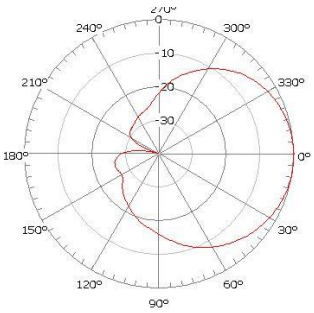
Vertical pattern



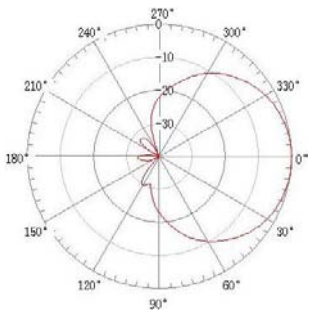




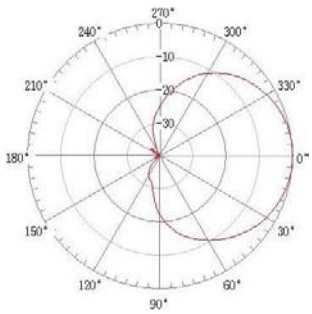
Horizontal pattern



900MHz @ 0°



1710MHz @ 0°



1920MHz @ 0°

Outdoor Directional Dual-band Antenna

ODV-065R15E18K-G XXPol, 790-960/1710-2170MHz, 65°, 15.0/17.7dBi

Technical Specifications

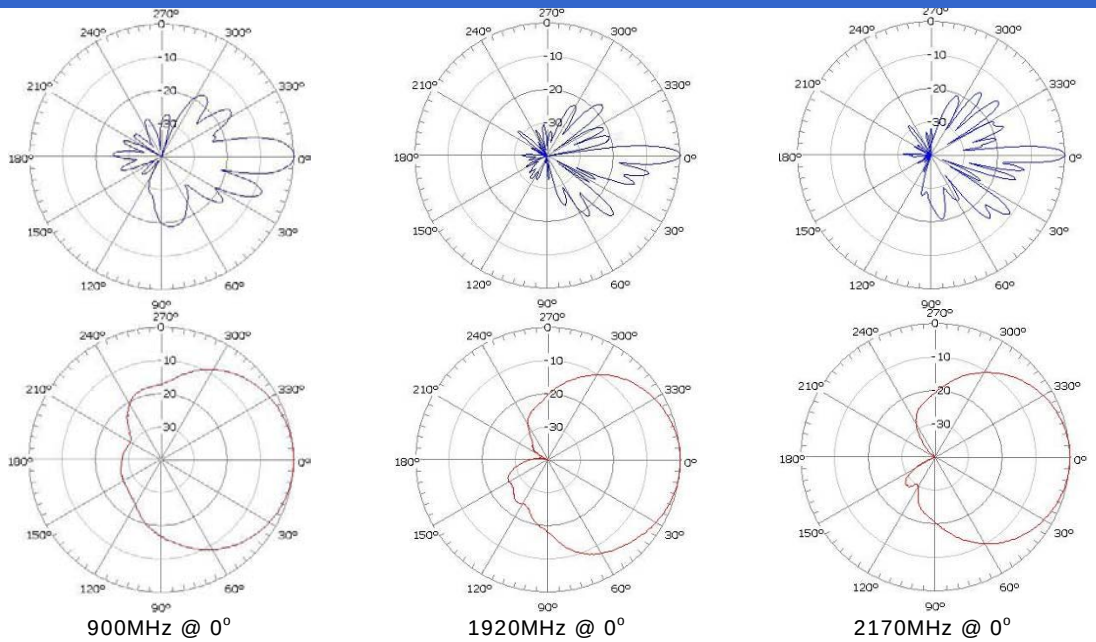
Electrical						
Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		± 45				
Gain	dBi	14.5	15.0	17.4	17.6	17.7
Horizontal Beamwidth	deg	68	65	65	64	63
Vertical Beamwidth	deg	14	13	6.6	6.2	5.8
Electrical Downtilt Range	deg	0-20		0-10		
First Upper Sidelobe Suppression	dB	≥18(0°),≥17(7°), ≥16 (14°),≥14(20°)		≥18(0°),≥17(5°),≥16(10°)		
0-30 ° Upper Sidelobe Suppression	dB	≥17(0°),≥16(7°), ≥15(14°),≥12(20°)		≥17(0°),≥15(5°),≥12(10°)		
Front-To-Back Ratio	dB	> 25(total power)				
Cross-polar Discrimination @ 0°	dB	≥ 18				
Cross-polar Discrimination @ ±60°	dB	≥10(typ.)				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 33				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical		
Dimensions, HxWxD	mm (in)	1515x265x145 (59.6x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	19.2 (42.3)
Weight, with Mounting Kit	kg (lb)	25.7 (56.7)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10(12)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1825x375x275 (71.9x14.8x10.8)
Shipping Weight	kg (lb)	29 (63.9)

Antenna Pattern

Vertical pattern

Horizontal pattern



900MHz @ 0° 1920MHz @ 0° 2170MHz @ 0°

Technical Specifications

Electrical

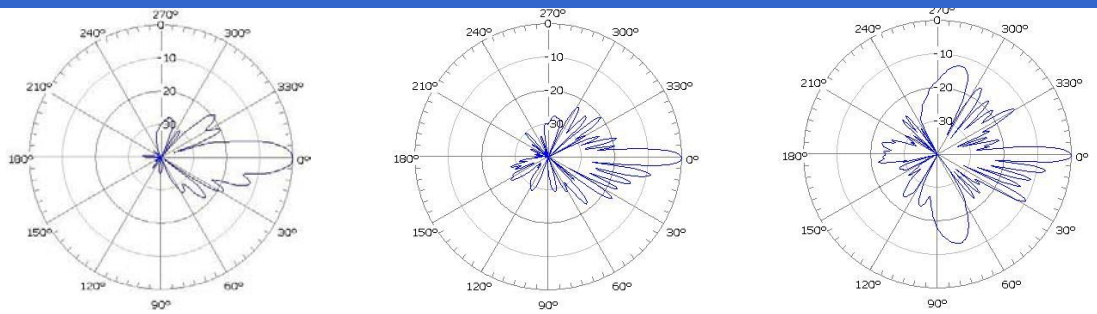
Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		± 45				
Gain	dBi	16.2	16.7	17.4	17.6	17.7
Horizontal Beamwidth	deg	68	65	65	64	63
Vertical Beamwidth	deg	10	9.3	6.6	6.2	5.8
Electrical Downtilt Range	deg	0-10		0-10		
First Upper Sidelobe Suppression	dB	≥18(0°), ≥16(5°),≥16(10°)		≥18(0°), ≥17(5°),≥16(10°)		
0-30 ° Upper Sidelobe Suppression	dB	≥16(0°), ≥14(5°),≥14(10°)		≥15(0°), ≥14(5°),≥10(10°)		
Front-To-Back Ratio	dB	> 25(total power)				
Cross-polar Discrimination @ 0°	dB	≥ 18				
Cross-polar Discrimination @ ±60°	dB	≥ 10				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 33				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

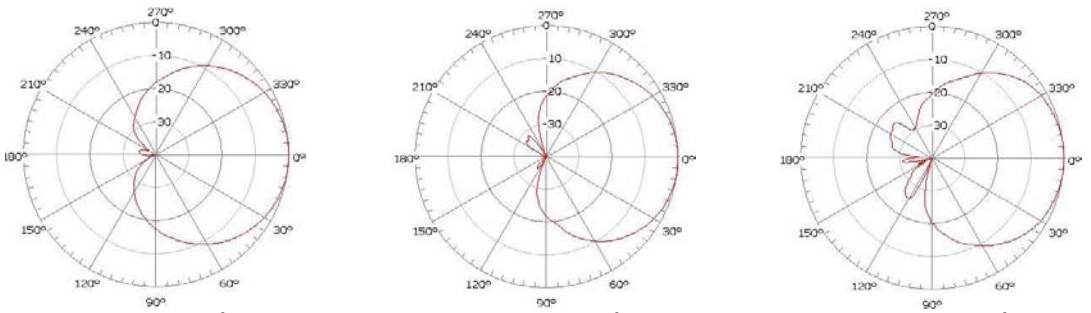
Dimensions, HxWxD	mm (in)	1975x265x145 (77.8x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	23.5 (51.8) ,
Weight, with Mounting Kit	kg (lb)	30 (66.1),
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10(14)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2280x375x275 (89.8x14.8x10.8)
Shipping Weight	kg (lb)	35.5 (78.3) ,

Antenna Pattern

Vertical pattern



Horizontal pattern



820MHz @ 0° 1850MHz @ 0° 2170MHz @ 0°

Outdoor Directional Dual-band Antenna

ODV-065R17E18K XXPol, 790-960/1710-2170MHz, 65°, 16.7/17.7dBi

Technical Specifications

Electrical

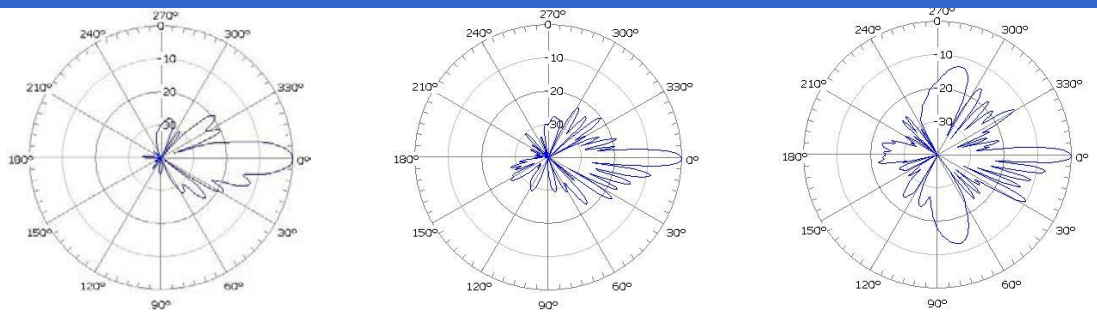
Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		± 45				
Gain	dBi	16.2	16.7	17.4	17.6	17.7
Horizontal Beamwidth	deg	68	65	65	64	63
Vertical Beamwidth	deg	10	9.3	6.6	6.2	5.8
Electrical Downtilt Range	deg	0-10		0-10		
First Upper Sidelobe Suppression	dB	≥18(0°), ≥16(5°),≥16(10°)		≥18(0°), ≥17(5°),≥16(10°)		
0-30 ° Upper Sidelobe Suppression	dB	≥16(0°), ≥14(5°),≥14(10°)		≥15(0°), ≥14(5°),≥10(10°)		
Front-To-Back Ratio	dB	> 25(total power)				
Cross-polar Discrimination @ 0°	dB	≥ 18				
Cross-polar Discrimination @ ±60°	dB	≥ 10				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 33				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

Dimensions, HxWxD	mm (in)	1975x265x145 (77.8x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	22.0 (48.5) ,
Weight, with Mounting Kit	kg (lb)	28.5 (62.8),
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(14)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2280x375x275 (89.8x14.8x10.8)
Shipping Weight	kg (lb)	34.0 (75.0) ,

Antenna Pattern

Vertical pattern



Horizontal pattern

820MHz @ 0° 1850MHz @ 0° 2170MHz @ 0°

Outdoor Directional Dual-band Antenna

ODV-065R18EK-G XXPol, 790-960/1710-2170MHz, 65°, 17.3/17.7dBi

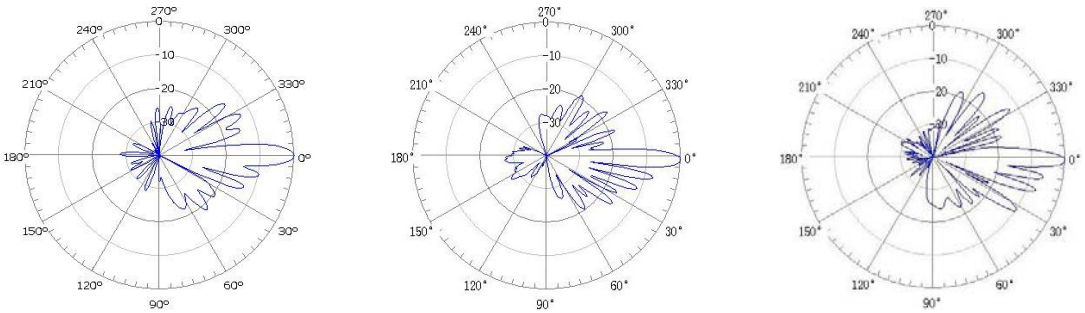
Technical Specifications

Electrical						
Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		± 45				
Gain	dBi	16.8	17.3	17.4	17.6	17.7
Horizontal Beamwidth	deg	68	65	65	64	63
Vertical Beamwidth	deg	8.0	7.5	6.6	6.2	5.8
Electrical Downtilt Range	deg	0-10		0-10		
First Upper Sidelobe Suppression	dB	≥17(0°),≥17(5°), ≥15(10°)		≥18(0°),≥17(5°),≥16(10°)		
Front-To-Back Ratio	dB	> 25(total power)				
Cross-polar Discrimination @ 0°	dB	≥ 18				
Cross-polar Discrimination @ ±60°	dB	≥ 10				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 33				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical		
Dimensions, HxWxD	mm (in)	2515x265x145 (99.0x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	26 (57.3)
Weight, with Mounting Kit	kg (lb)	32.5 (71.7)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2830x375x275 (111.4x14.8x10.8)
Shipping Weight	kg (lb)	39 (86.0)

Antenna Pattern

Vertical pattern



Horizontal pattern

900MHz @ 0° 1795MHz @ 2° 1990MHz @ 2°

Outdoor Directional Dual-band Antenna

ODV-065R18EK XXPol, 790-960/1710-2170MHz, 65°, 17.3/17.7dBi

Technical Specifications

Electrical

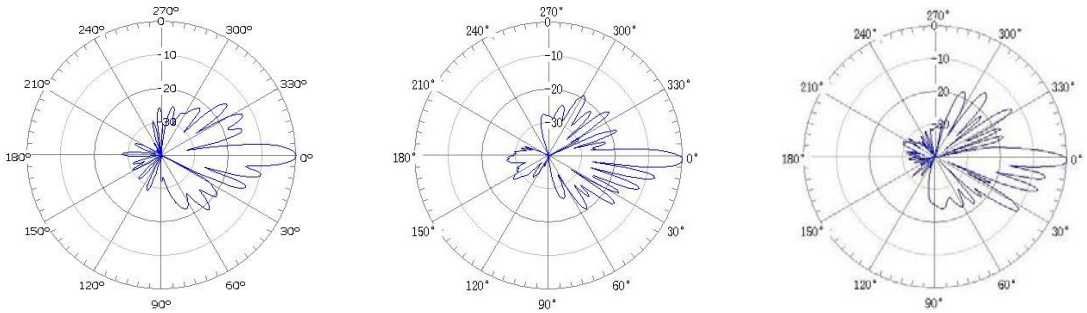
Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		± 45				
Gain	dBi	16.8	17.3	17.4	17.6	17.7
Horizontal Beamwidth	deg	68	65	65	64	63
Vertical Beamwidth	deg	8.0	7.5	6.6	6.2	5.8
Electrical Downtilt Range	deg	0-10		0-10		
First Upper Sidelobe Suppression	dB	≥17(0°),≥17(5°), ≥15(10°)		≥18(0°),≥17(5°),≥16(10°)		
Front-To-Back Ratio	dB	> 25(total power)				
Cross-polar Discrimination @ 0°	dB	≥ 18				
Cross-polar Discrimination @ ±60°	dB	≥ 10				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 33				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

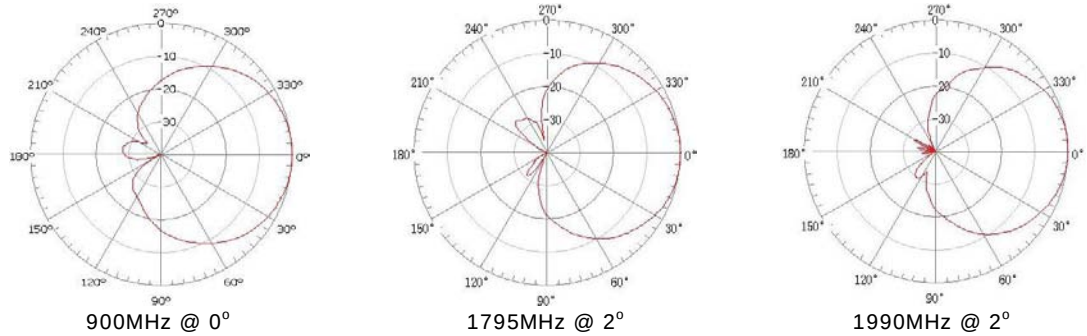
Dimensions, HxWxD	mm (in)	2515x265x145 (99.0x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	24 (52.9)
Weight, with Mounting Kit	kg (lb)	30.5 (67.2)
Radome Material and Color		UV Resistant PVC , Light Grey
Mounting Kit		00-ZJ10(08)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2830x375x275 (111.4x14.8x10.8)
Shipping Weight	kg (lb)	37 (81.6)

Antenna Pattern

Vertical pattern



Horizontal pattern



900MHz @ 0° 1795MHz @ 2° 1990MHz @ 2°

Technical Specifications

Electrical

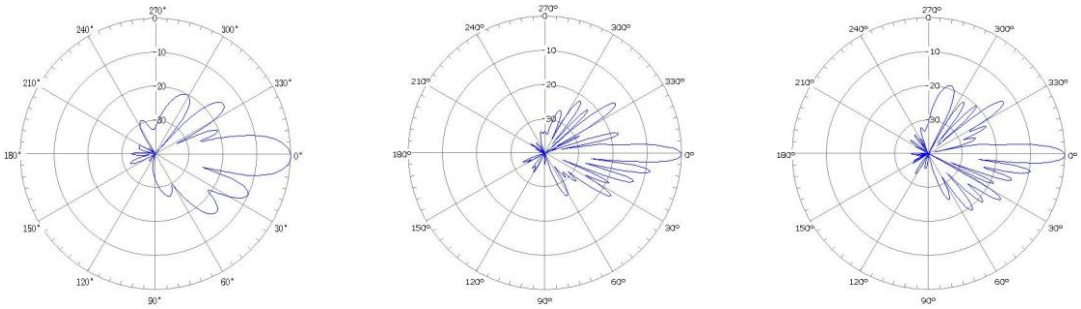
Frequency Range	MHz	790-896	880-960	1710-1850	1920-2170	2490-2690
Polarization		± 45				
Gain	dBi	14.5	14.8	16.8	17.3	18.0
Horizontal Beamwidth	deg	67	63	67	65	60
Vertical Beamwidth	deg	15	13.5	6.5	5.8	4.5
Electrical Downtilt Range	deg	0-14		0-10		
First Upper Sidelobe Suppression	dB	>17(0°), >16(7°), > 15(14°)		>17(0°), >15(5°), >14(10°)		
Front-To-Back Ratio	dB	> 25				
VSWR		≤ 1.5:1				
Isolation Between Ports	dB	> 28 / >30				
Cross-polar Discrimination @ 0°	dB	> 18 (typ.)				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		250		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

Dimensions, HxWxD	mm (in)	1570x320x145 (61.8x12.6x5.7)
Weight, without Mounting Kit	kg (lb)	23 (50.7)
Weight, with Mounting Kit	kg (lb)	28.5 (62.8)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1920x430x280 (75.6x16.9x11.0)
Shipping Weight	kg (lb)	35 (77.2)

Antenna Pattern

Vertical pattern



Horizontal pattern

790MHz @ 0° 1850MHz @ 0° 2690MHz @ 0°

Outdoor Directional Dual-band Antenna

ODV-065R17E18J-G XXPol, 790-960/1710-2690MHz, 65°, 16.3/18.0dBi

Technical Specifications

Electrical

Frequency Range	MHz	790-896	880-960	1710-1990	1920-2170	2490-2690
Polarization		± 45				
Gain	dBi	15.8	16.3	16.8	17.3	18.0
Horizontal Beamwidth	deg	66	63	67	65	60
Vertical Beamwidth	deg	10	9.5	6.5	5.8	4.5
Electrical Downtilt Range	deg	0-10		0-10		
First Upper Sidelobe Suppression	dB	≥18(0°), ≥17(5°),≥16(10°)		>17(0°), >15(5°), >14(10°)		
0-30° Upper Sidelobe Suppression	dB	≥15		≥14		
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°		> 18 (typ.)				
VSWR		≤ 1.5:1				
Isolation Between Ports	dB	> 28 / > 30				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		250		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

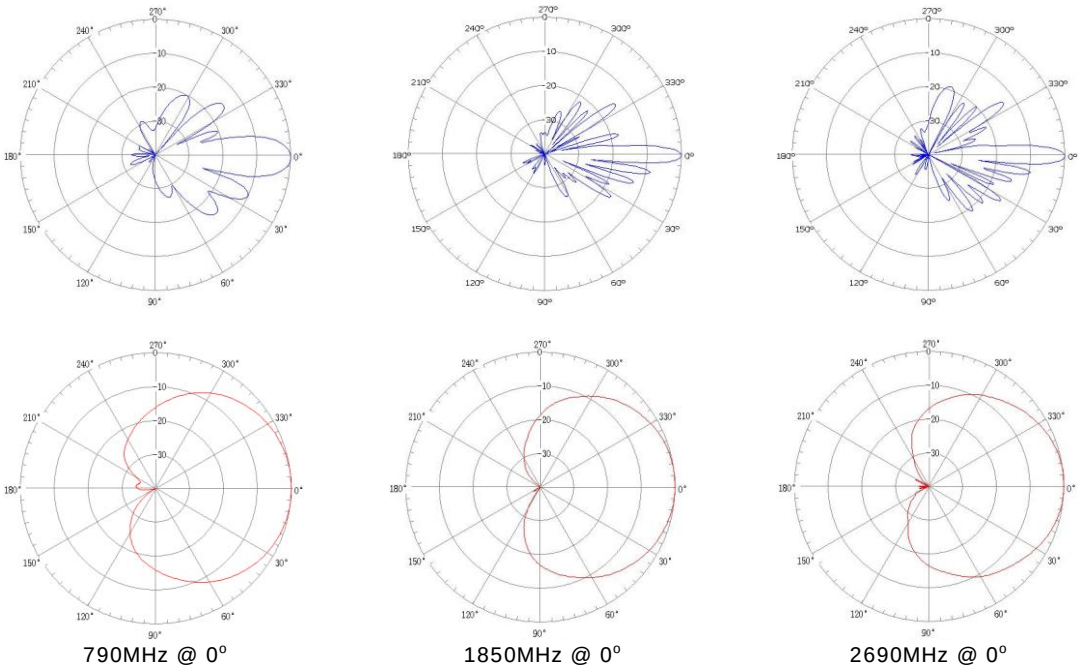
Mechanical

Dimensions, HxWxD	mm (in)	1995x320x145 (78.5x12.6x5.7)
Weight, without Mounting Kit	kg (lb)	28 (61.6)
Weight, with Mounting Kit	kg (lb)	33.5 (73.7)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2350x430x270 (92.5x16.9x10.6)
Shipping Weight	kg (lb)	40 (88.0)

Antenna Pattern

Vertical pattern

Horizontal pattern



790MHz @ 0° 1850MHz @ 0° 2690MHz @ 0°

Technical Specifications

Electrical

Frequency Range	MHz	790-896	880-960	1710-1990	1920-2170	2490-2690
Polarization		± 45				
Gain	dBi	16.6	17.3	16.8	17.3	18.0
Horizontal Beamwidth	deg	67	63	67	65	60
Vertical Beamwidth	deg	7.2	6.7	6.5	5.8	4.5
Electrical Downtilt Range	deg	0-10		0-10		
First Upper Sidelobe Suppression	dB	≥18(0°),≥17(5°), ≥16(10°)		≥18(0°), ≥17(5°), ≥16(10°)		
0-30° Upper Sidelobe Suppression	dB	≥15		≥14		
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	≥ 18(typ.)				
VSWR		< 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 30				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		250		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

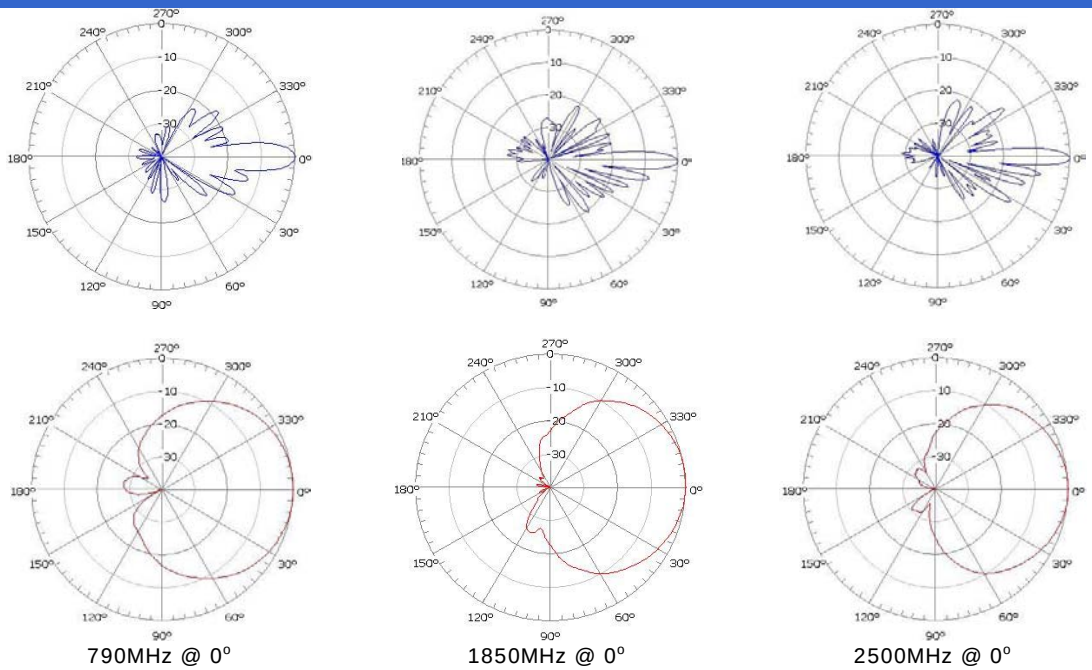
Mechanical

Dimensions, HxWxD	mm (in)	2750x320x145
Weight, without Mounting Kit	kg (lb)	32 (70.5)
Weight, with Mounting Kit	kg (lb)	42.5 (93.7)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11(08)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	3105x430x270 (122.2x16.9x10.6)
Shipping Weight	kg (lb)	49 (108)

Antenna Pattern

Vertical pattern

Horizontal pattern



790MHz @ 0° 1850MHz @ 0° 2500MHz @ 0°

Outdoor Directional Twin Antenna

ODV2-065R18K-G

XXPol, 1710-2170/1710-2170MHz, 65°/65°, 18.0/18.0dBi

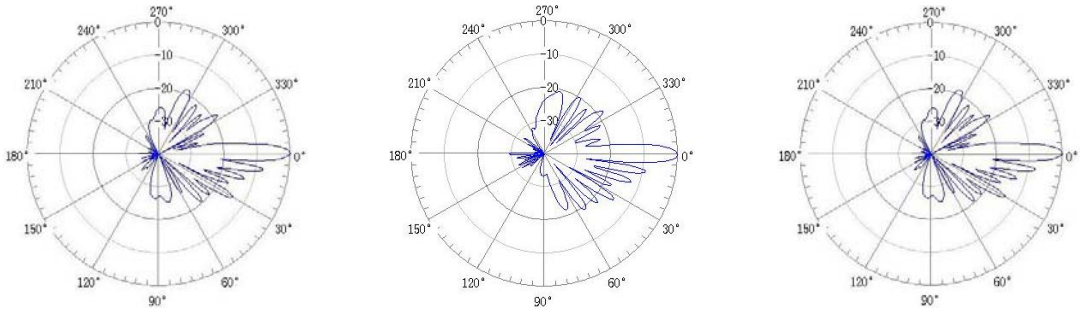
Technical Specifications

Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	17.5	17.7	18.0
Horizontal Beamwidth	deg	67	65	63
Vertical Beamwidth	deg	7.2	6.8	6.4
Electrical Downtilt Range	deg	0-10 / 0-10		
First Upper Sidelobe Suppression	dB	>20(0°), >17(5°), >16(10°)		
Front-To-Back Ratio	dB	≥ 25(total power)		
Cross-polar Discrimination @ 0°	dB	> 18		
Cross-polar Discrimination @ ±60°	dB	> 10(typ.)		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 30		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power Per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	1315x265x90 (51.8x10.4x3.5)
Weight, without mounting Kit	kg (lb)	15.5 (34.2)
Weight, with mounting Kit	kg (lb)	20.5 (45.2)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1595x375x215 (62.8x14.8x8.5)
Shipping Weight	kg (lb)	25.0 (55.1)

Antenna Pattern

Vertical pattern



Horizontal pattern

1710MHz @ 0° 1990MHz @ 0° 2170MHz @ 0°

Outdoor Directional Twin Antenna

ODV2-065R18K

XXPol, 1710-2170/1710-2170MHz, 65°/65°, 18.0/18.0dBi

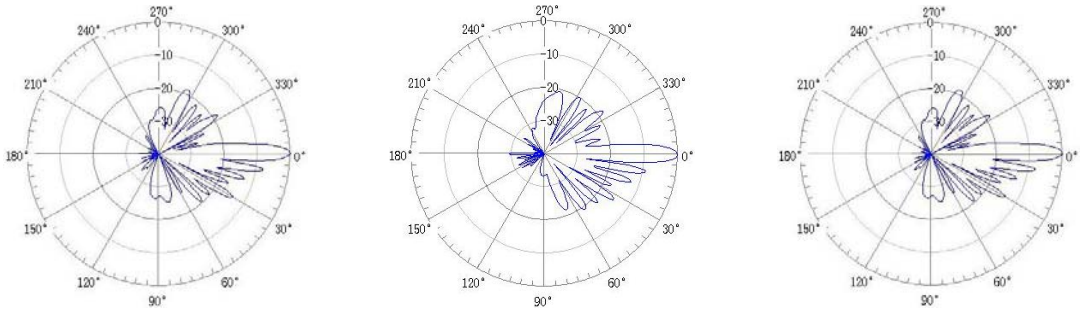
Technical Specifications

Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		± 45		
Gain	dBi	17.5	17.7	18.0
Horizontal Beamwidth	deg	67	65	63
Vertical Beamwidth	deg	7.2	6.8	6.4
Electrical Downtilt Range	deg	0-10 / 0-10		
First Upper Sidelobe Suppression	dB	>20(0°), >17(5°), >16(10°)		
Front-To-Back Ratio	dB	≥ 25(total power)		
Cross-polar Discrimination @ 0°	dB	> 18		
Cross-polar Discrimination @ ±60°	dB	> 10(typ.)		
VSWR		≤ 1.5:1		
Isolation Between Ports	dB	> 30		
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power Per Port	W	300		
Impedance	Ω	50		
Lightning Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm (in)	1315x300x86 (51.8x11.8x3.4)
Weight, without Mounting Kit	kg (lb)	14.5 (32.0)
Weight, with Mounting Kit	kg (lb)	19.5 (43.0)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1595x415x215 (62.8x16.3x8.5)
Shipping Weight	kg (lb)	24 (52.9)

Antenna Pattern

Vertical pattern



Horizontal pattern

1710MHz @ 0° 1990MHz @ 0° 2170MHz @ 0°

Outdoor Directional Twin Antenna

ODV2-065R18J-G

XXPol, 1710-2690/1710-2690MHz, 65°/65°, 17.7/17.7dBi

Technical Specifications

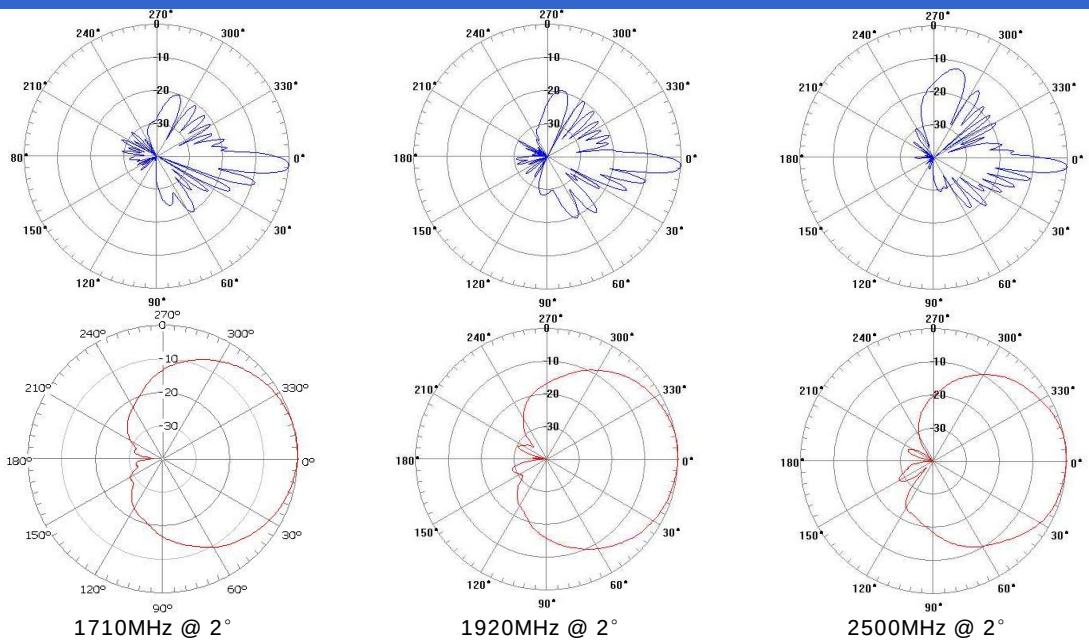
Electrical						
Frequency Range	MHz	1710-1880	1850-1990	1920-2170	2300-2500	2490-2690
Polarization		± 45				
Gain	dBi	16.8	17.2	17.4	17.7	17.6
Horizontal Beamwidth	deg	68	66	65	63	64
Vertical Beamwidth	deg	7.4	7.0	6.6	5.6	5.2
Electrical Downtilt Range	deg	0–12 / 0-12				
First Upper Sidelobe Suppression	dB	≥18(0°),≥16(6°), ≥15(12°)			≥17(0°),≥16(6°), ≥15(12°)	
0-30° Upper Sidelobe Suppression	dB	≥15			≥14	
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	≥ 18 (typ.)				
VSWR		< 1.5:1				
Isolation Between Ports	dB	> 28				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power Per Port	W	250				
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical		
Dimensions, HxWxD	mm (in)	1330x300x86 (52.4x11.8x3.4)
Weight, without Mounting Kit	kg (lb)	19.5 (42.9)
Weight, with Mounting Kit	kg (lb)	24.5 (53.9)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1615x415x215 (63.6x16.3x8.5)
Shipping Weight	kg (lb)	31.5 (69.3)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz @ 2° 1920MHz @ 2° 2500MHz @ 2°

Outdoor Directional Twin Antenna

ODV2-065R18J

XXPol, 1710-2690/1710-2690MHz, 65°/65°, 17.7/17.7dBi

Technical Specifications

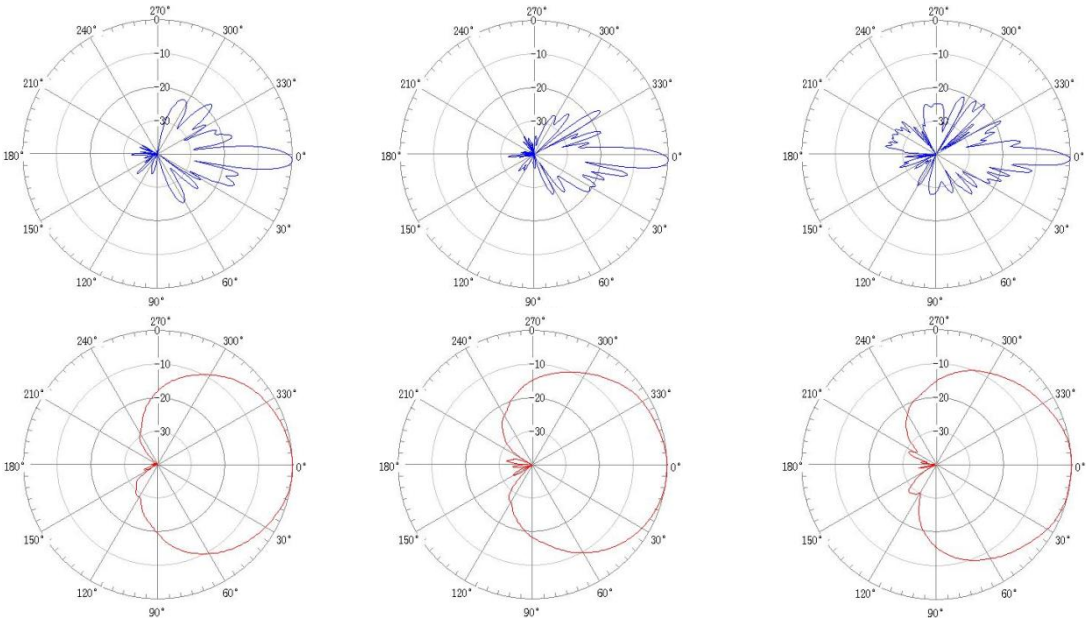
Electrical						
Frequency Range	MHz	1710-1880	1850-1990	1920-2170	2300-2500	2490-2690
Polarization		± 45				
Gain	dBi	16.8	17.2	17.4	17.7	17.6
Horizontal Beamwidth	deg	68	66	65	63	64
Vertical Beamwidth	deg	7.4	7.0	6.6	5.6	5.2
Electrical Downtilt Range	deg	0–12 / 0-12				
First Upper Sidelobe Suppression	dB	≥18(0°),≥16(6°), ≥15(12°)			≥17(0°),≥16(6°), ≥15(12°)	
0-30° Upper Sidelobe Suppression	dB	≥15			≥14	
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	≥ 18(typ.)				
VSWR		< 1.5:1				
Isolation Between Ports	dB	> 28				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power Per Port	W	250				
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical		
Dimensions, HxWxD	mm (in)	1330x300x86 (52.4x11.8x3.4)
Weight, without Mounting Kit	kg (lb)	18 (39.7)
Weight, with Mounting Kit	kg (lb)	23 (50.7)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		4x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40o +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1615x415x215 (63.6x16.3x8.5)
Shipping Weight	kg (lb)	30 (66.1)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz @ 2° 1990MHz @ 2° 2500MHz @ 2°

Outdoor Directional Tri-band Antenna

ODV-065R15B15J15J

XXXPol, 806-960/1710-2690/1710-2690MHz, 65°, 15.0/15.5/15.5dBi

Technical Specifications

Electrical

Frequency Range	MHz	806-896	870-960	1710-1880	1850-1990	1920-2170	2300-2500	2490-2690
Polarization	deg	±45						
Gain	dBi	15.0		15.0	15.2	15.5	15.0	
Horizontal Beamwidth	deg	65		67	65	63	61	60
Vertical Beamwidth	deg	14	13.5	14	13.7	13.5	12	11
Electrical Downtilt Range	deg	0-14		0-12/0-12				
First Upper Sidelobe Suppression	dB	17(0 °), 16(7 °), 15(14 °)		16(0 °), 15(6 °), 14(12 °)				
Front-To-Back Ratio	dB	> 25						
Cross-polar Discrimination @ 0 °	dB	> 17						
VSWR		≤ 1.5:1						
Isolation Between Ports	dB	> 28		> 25				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150						
Maximum Power per Port	W	500		250				
Impedance	Ω	50						
Lightning Protection		Direct Ground						

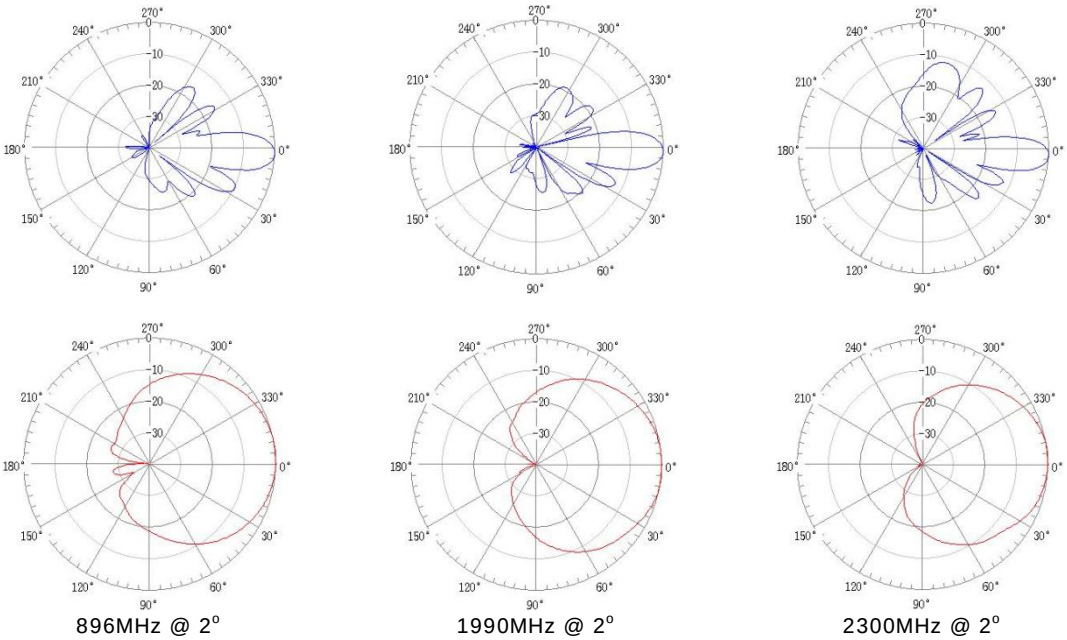
Mechanical

Dimensions, HxWxD	mm (in)	1415x335x145 (55.7x13.2x5.6)
Weight, without Mounting Kit	kg (lb)	19.5 (43.0)
Weight, with Mounting Kit	kg (lb)	25 (55.1)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		00-ZJ10(16)
Connector Type and Location		6x7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1740x450x270 (68.5x17.7x10.6)
Shipping Weight	kg (lb)	29 (63.9)

Antenna Pattern

Vertical pattern

Horizontal pattern



896MHz @ 2°　1990MHz @ 2°　2300MHz @ 2°

Technical Specifications

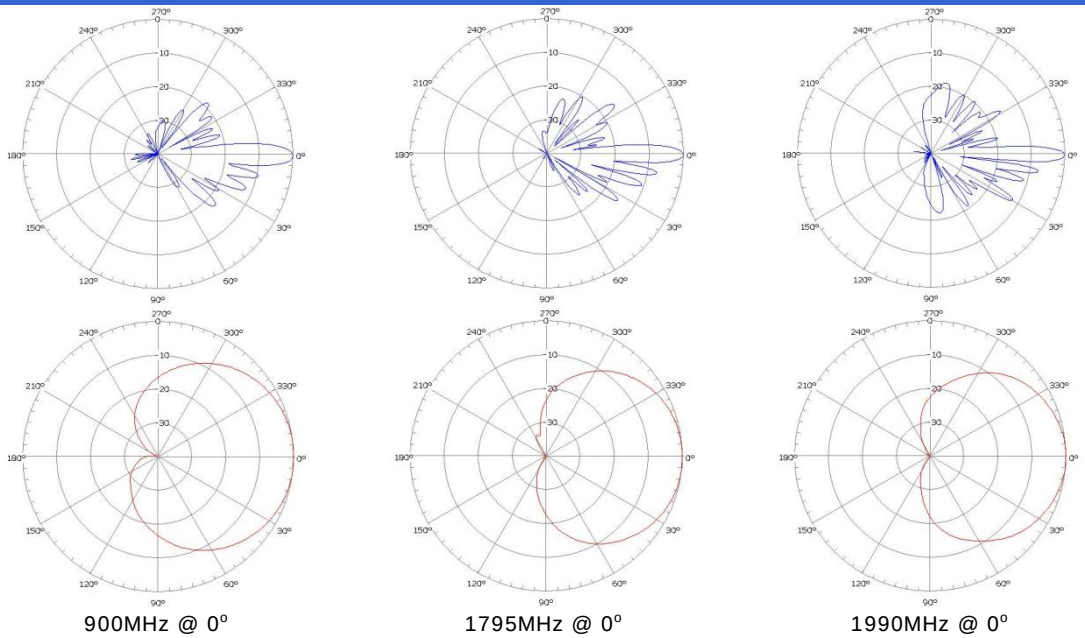
Electrical							
Frequency Range		MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization		deg	± 45		Quad ± 45		
Gain	Top	dBi	16.8	17.5	17.2	17.4	17.5
	Bottom				17.4	17.6	17.7
Horizontal Beamwidth		deg	68	65	65	64	63
Vertical Beamwidth		deg	8	7.5	6.8	6.2	5.8
Electrical Downtilt Range		deg	0-10		0-10 / 0-10		
First Upper Sidelobe Suppression		dB	≥18(0°), ≥16(5°), ≥16(10°)		≥18(0°), ≥17(5°), ≥16(10°)		
Front-To-Back Ratio		dB	> 25(total power)				
Cross-polar Discrimination @ 0°		dB	≥ 18				
Cross-polar Discrimination @ ±60°		dB	≥ 10				
VSWR			≤ 1.5:1				
Isolation Between Ports / Bands		dB	> 28 / > 33				
3rd Order Intermodulation @ 2x43 dBm		dBc	< -150				
Maximum Power per Port		W	500		300		
Impedance		Ω	50				
Lightning Protection			Direct Ground				

Mechanical		
Dimensions, HxWxD	mm (in)	2730x265x145 (107.5x10.4x5.7)
Weight, without Mounting Kit	kg (lb)	34.0 (75.0)
Weight, with Mounting Kit	kg (lb)	42.5 (93.7)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11(00)
Connector Type and Location		6x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	3045x375x275 (120.0x14.8x10.8)
Shipping Weight	kg (lb)	48.5 (106.9)

Antenna Pattern

Vertical pattern

Horizontal pattern



900MHz @ 0° | 1795MHz @ 0° | 1990MHz @ 0°

Outdoor Directional Tri-band Antenna

ODV-065R15E18J18J-G XXXPol, 790-960/1710-2690/1710-2690MHz, 65°, 15.0/17.7/17.7dBi

Technical Specifications

Electrical

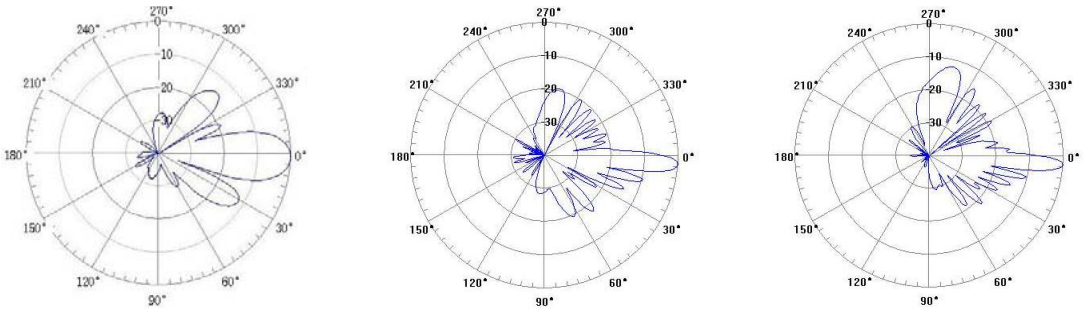
Frequency Range	MHz	790-896	880-960	1710-1990	1920-2170	2490-2690
Polarization	deg	± 45				
Gain	dBi	14.5	15.0	17.2	17.5	17.7
Horizontal Beamwidth	deg	65		67	65	61
Vertical Beamwidth	deg	14		7.3	6.5	5.3
Electrical Downtilt Range	deg	0-14		0-12 / 0-12		
First Upper Sidelobe Suppression	dB	>17(0 °), >16(7 °), >15(14 °)		>16(0°), >16(6°), >15(12°)		>18(0°), >15(6°), >14(12°)
0-30 ° Upper Sidelobe Suppression	dB	≥15		≥14		
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	≥ 18(typ.)				
VSWR		≤ 1.5:1				
Isolation Between Ports / Bands	dB	> 28 / > 30				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		250		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

Mechanical

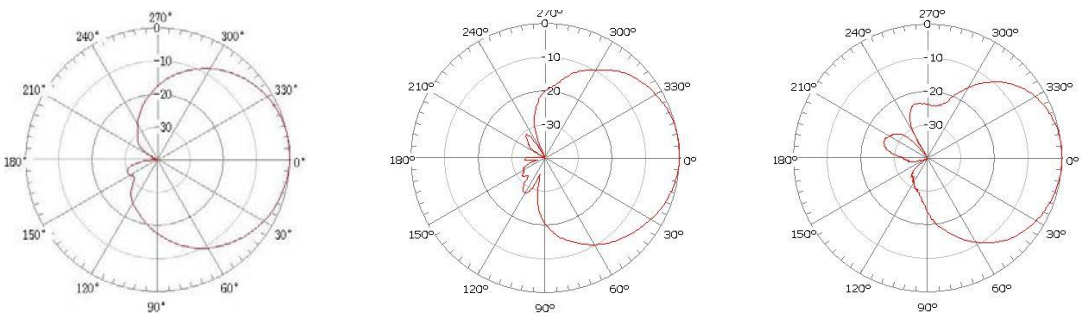
Dimensions, HxWxD	mm (in)	1415x500x140 (55.7x19.7x5.5)
Weight, without Mounting Kit	kg (lb)	32 (70.5)
Weight, with Mounting Kit	kg (lb)	37 (81.6)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11
Connector Type and Location		6x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1705x635x305 (67.1x25x12)
Shipping Weight	kg (lb)	43 (90.2)

Antenna Pattern

Vertical pattern



Horizontal pattern



790MHz @ 0 ° 1850MHz @ 4 ° 2500MHz @ 4 °

Outdoor Directional Tri-band Antenna

ODV-065R17EJJ-G

XXXPol, 790-960/1710-2690/1710-2690MHz, 65°, 16.3/16.3/16.8dBi

Technical Specifications

Electrical

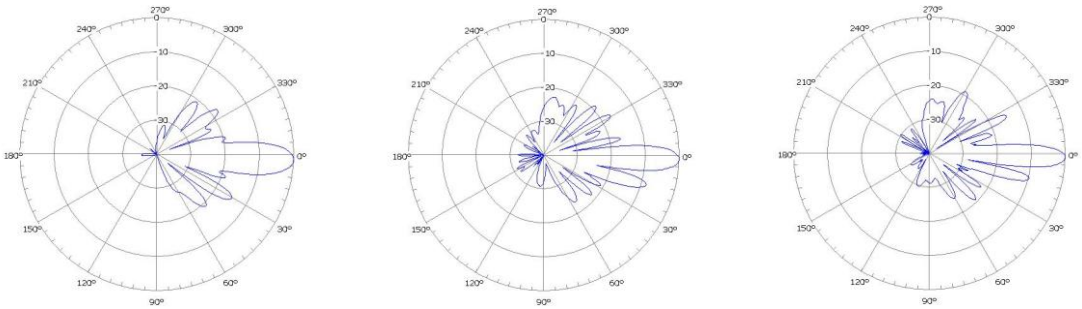
Frequency Range		MHz	790-896	880-960	1710-1990	1920-2170	2490-2690
Polarization			± 45		Quad ± 45		
Gain	Top	dBi	15.8	16.3	15.7	16.0	16.3
	Bottom				16.2	16.5	16.8
Horizontal Beamwidth		deg	67	64	66	64	61
Vertical Beamwidth		deg	10	9.5	8.5	8.0	6.3
Electrical Downtilt Range		deg	0-10		0-12 / 0-12		
First Upper Sidelobe Suppression		dB	≥18(0°), ≥17(5°),≥16(10°)		≥18(0°), ≥17(6°), ≥16(12°)		
0-30° Upper Sidelobe Suppression		dB	≥15		≥14		
Front-To-Back Ratio		dB	> 25(typ.)				
Cross-polar Discrimination @ 0°		dB	≥ 18(typ.)				
VSWR			< 1.5:1				
Isolation Between Ports / Bands		dB	> 28 / > 30				
3rd Order Intermodulation @ 2x43 dBm		dBc	< -150				
Maximum Power per Port		W	500		250		
Impedance		Ω	50				
Lightning Protection			Direct Ground				

Mechanical

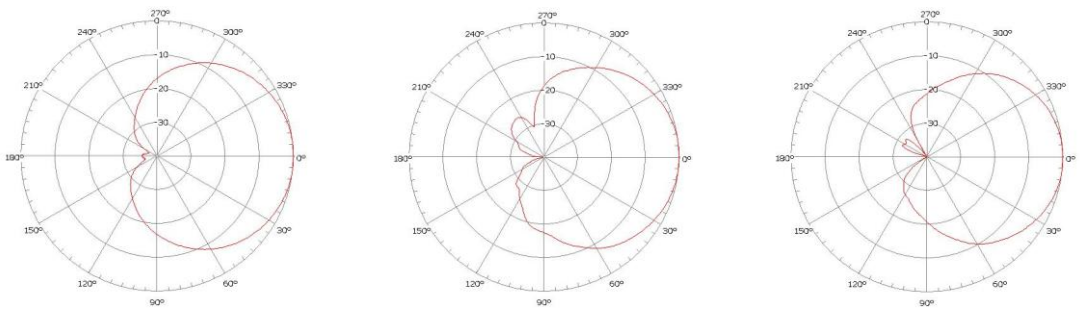
Dimensions, HxWxD	mm (in)	1995x320x145 (78.5x12.6x5.7)
Weight, without Mounting Kit	kg (lb)	31.0 (68.3)
Weight, with Mounting Kit	kg (lb)	36.5 (80.5)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11(08)
Connector Type and Location		6x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	2350x430x270 (92.5x16.9x10.6)
Shipping Weight	kg (lb)	42 (92.6)

Antenna Pattern

Vertical pattern



Horizontal pattern



790MHz @ 2° | 1850MHz @ 2° | 2690MHz @ 2°

Outdoor Directional Tri-band Antenna

ODV-065R18EJJ-G

XXXPol, 790-960/1710-2690/1710-2690MHz, 65°, 17.3/17.1/17.6dBi

Technical Specifications

Electrical

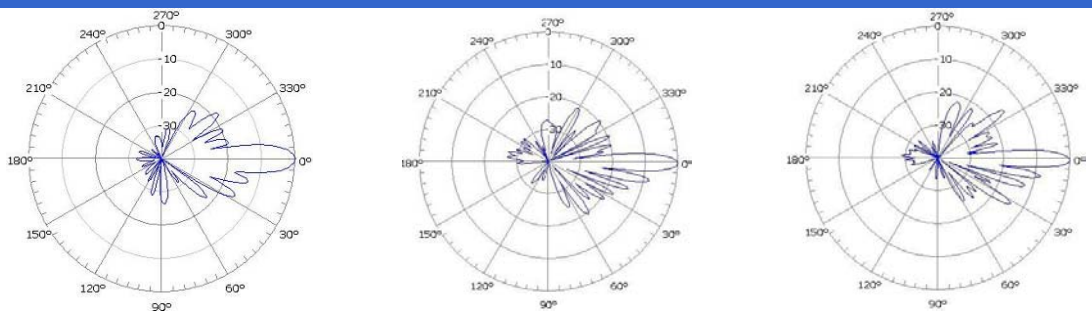
Frequency Range		MHz	790-896	880-960	1710-1990	1920-2170	2490-2690
Polarization			± 45		Quad ± 45		
Gain	Top	dBi	16.6	17.3	16.2	16.7	17.1
	Bottom				16.7	17.2	17.6
Horizontal Beamwidth		deg	67	63	67	65	61
Vertical Beamwidth		deg	7	6.5	7.2	6.6	5.2
Electrical Downtilt Range		deg	0-10		0-12		
First Upper Sidelobe Suppression		dB	≥18(0°),≥17(5°), ≥16(10°)		≥17(0°),≥16(6°), ≥15(12°)		
0-30° Upper Sidelobe Suppression		dB	≥15		≥14		
Front-To-Back Ratio		dB	> 25				
Cross-polar Discrimination @ 0°		dB	≥ 18(typ.)				
VSWR			< 1.5:1				
Isolation Between Ports / Bands		dB	> 28 / > 30				
3rd Order Intermodulation @ 2x43 dBm		dBc	< -150				
Maximum Power per Port		W	500		250		
Impedance		Ω	50				
Lightning Protection			Direct Ground				

Mechanical

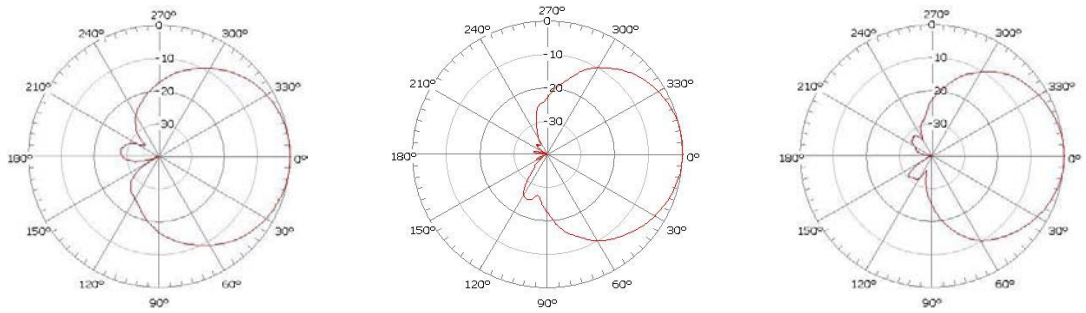
Dimensions, HxWxD	mm (in)	2750x320x145 (108.3x12.6x5.7)
Weight, without Mounting Kit	kg (lb)	37 (81.6)
Weight, with Mounting Kit	kg (lb)	47.5 (104.5)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11(08)
Connector Type and Location		6x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	3105x430x270 (122.2x16.9x10.6)
Shipping Weight	kg (lb)	53.5 (117.7)

Antenna Pattern

Vertical pattern



Horizontal pattern



790MHz @ 0° 2170MHz @ 0° 2500MHz @ 0°

Outdoor Directional Twin Antenna

ODV2-065R15E18K-G XXPol, 790-960/1710-2170MHz, 65°, 15.0/18.0dBi

Technical Specifications

Electrical

Frequency Range	MHz	790-896	880-960	1710-1880	1850-1990	1920-2170
Polarization	deg	± 45				
Gain	dBi	14.5	15.0	17.4	17.6	17.7
Horizontal Beamwidth	deg	69	67	66	65	60
Vertical Beamwidth	deg	14	13	6.6	6.2	5.8
Electrical Downtilt Range	deg	0-20		0-10		
First Upper Sidelobe Suppression	dB	≥18(0°),≥17(7°), ≥16(14°),≥15(20°)		≥18(0°), ≥16(5°), ≥15(10°)		
Front-To-Back Ratio	dB	> 25				
Cross-polar Discrimination @ 0°	dB	> 17				
VSWR		≤ 1.5:1				
Isolation Between Ports/ Bands	dB	> 28 / > 28				
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150				
Maximum Power per Port	W	500		300		
Impedance	Ω	50				
Lightning Protection		Direct Ground				

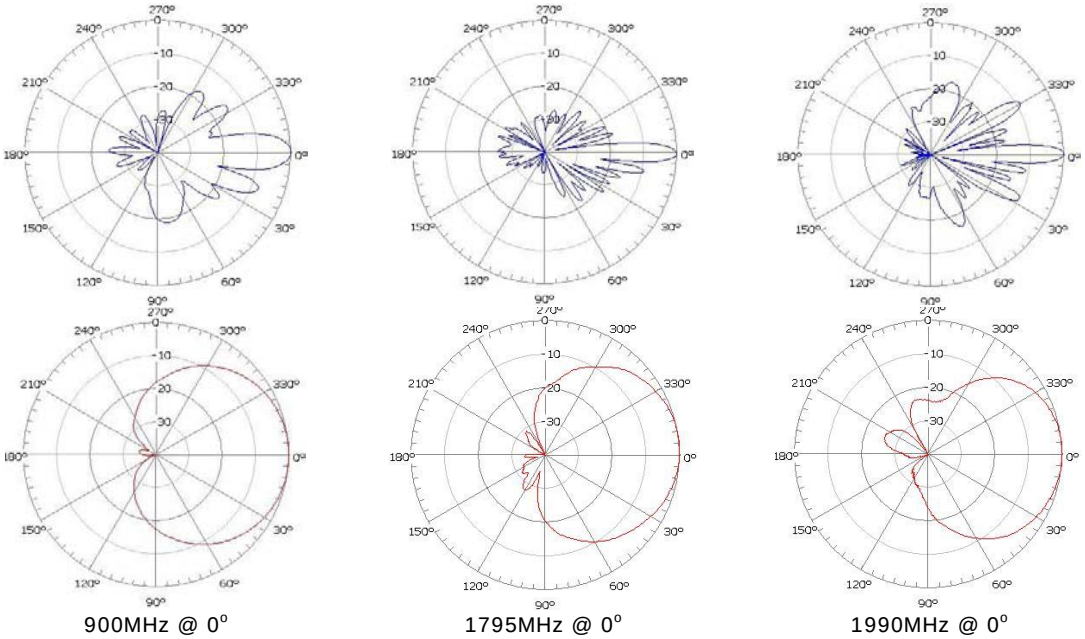
Mechanical

Dimensions, HxWxD	mm (in)	1515x500x140 (59.6x19.7x5.5)
Weight, without Mounting Kit	kg (lb)	38 (83.8)
Weight, with Mounting Kit	kg (lb)	46 (101.4)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ11(12)
Connector Type and Location		8x7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1850x635x305 (72.8x25x12)
Shipping Weight	kg (lb)	53 (117.0)

Antenna Pattern

Vertical pattern

Horizontal pattern



900MHz @ 0° 1795MHz @ 0° 1990MHz @ 0°

Outdoor Directional Antenna for Microcell

ODM-030V16K0-2 VPol, 1710-2170MHz, 30°, 13.5 dBi

Technical Specifications

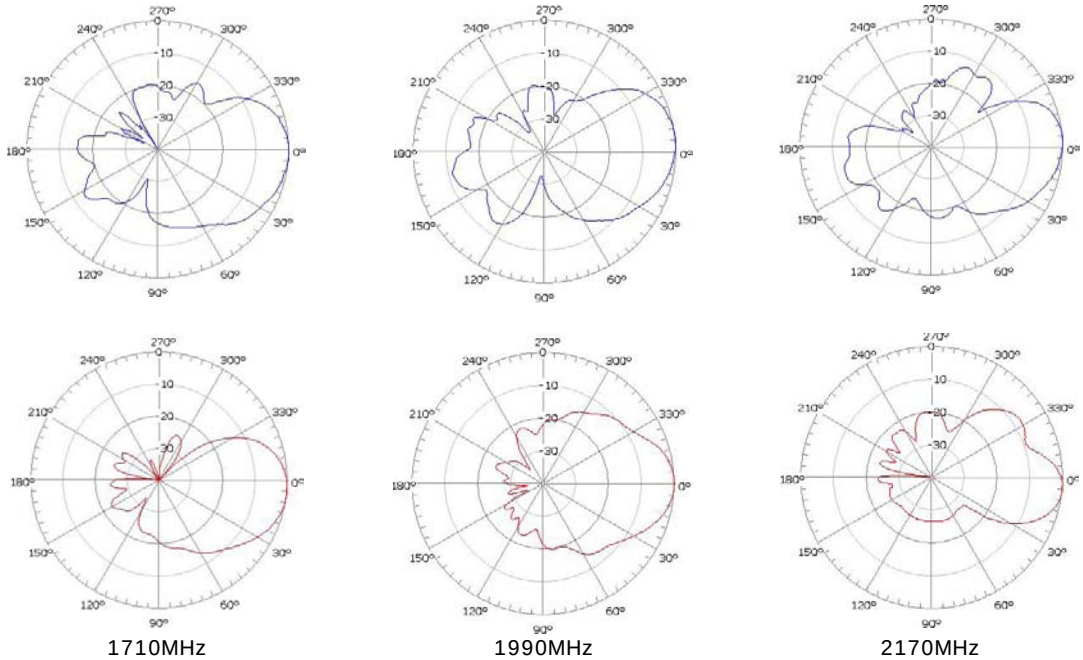
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		Vertical		
Gain	dBi	13.5		
Horizontal Beamwidth	deg	30		
Vertical Beamwidth	deg	30		
Front-To-Back Ratio	dB	> 24		
VSWR		≤ 1.6:1		
Maximum Power	W	100		
Impedance	Ω	50		

Mechanical		
Dimensions, HxWxD	mm (in)	280x280x50 (11.0x11.0x2.0)
Weight, without Mounting Kit	kg (lb)	1.5 (3.3)
Weight, with Mounting Kit	kg (lb)	1.7 (3.7)
Radome Material and Color		ABS, White
Mounting Kit		Pipe mount included
Connector Type and Location		TNC or N, Rear
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	290x280x120 (11.4x11.0x4.7)
Shipping Weight	kg (lb)	2.1 (4.6)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz 1990MHz 2170MHz

Outdoor Directional Antenna for Microcell

ODM-030V18B0 VPol, 824-960MHz, 30°, 18dBi

Technical Specifications

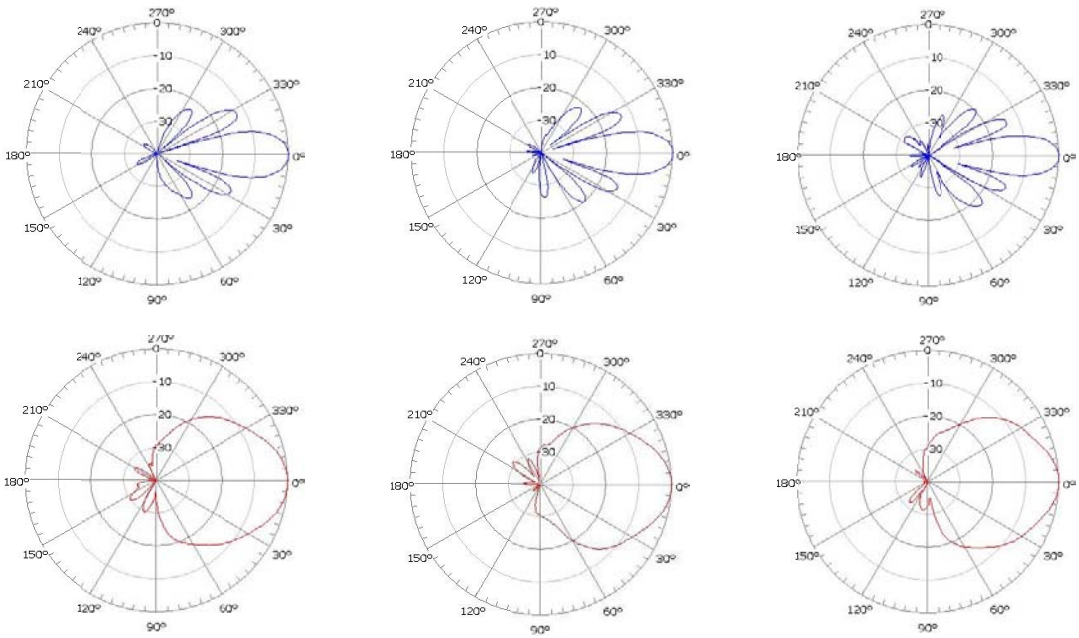
Electrical		
Frequency Range	MHz	824-960
Polarization		Vertical
Gain	dBi	18
Horizontal Beamwidth	deg	30
Vertical Beamwidth	deg	14
Front-To-Back Ratio	dB	> 33
VSWR		≤ 1.4:1
Maximum Power	W	200
Impedance	Ω	50
Lightning Protection		Direct Ground

Mechanical			
Dimensions, HxWxD (with reflector)		mm (in)	1251x796x474 (49.3x31.3x18.7)
Weight, without Mounting Kit		kg (lb)	20 (44.1)
Weight, with Mounting Kit		kg (lb)	25 (55.1)
Radome Material and Color			PVC, Light Grey
Mounting Kit			SJA-B-12R(16)
Connector Type and Location			N-Female, Bottom
Operational Temperature		°C	-30 to +55
Operational Humidity		%	≤ 95
Operational Wind Speed		km/h (mph)	150 (93.2)
Shipping Dimensions		mm (in)	1480x335x305 (58.3x13.2x12.0)
Shipping Weight	Antenna	kg (lb)	27 (59.5)
	Reflector		8 (17.6)

Antenna Pattern

Vertical pattern

Horizontal pattern



824MHz 870MHz 960MHz

Outdoor Directional Antenna for Microcell

ODM-075V11N0 VPol, 790-960/1710-2500MHz, 75°, 9.7/11.0dBi

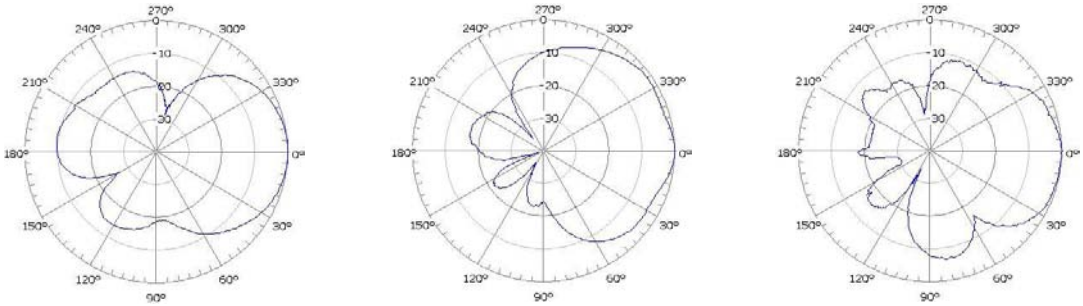
Technical Specifications

Electrical			
Frequency Range	MHz	790-960	1710-2500
Polarization		Vertical	
Gain	dBi	9.7	11.0
Horizontal Beamwidth	deg	75	68
Vertical Beamwidth	deg	58	48
Front-To-Back Ratio	dB	> 22	
VSWR		≤ 1.5:1	
Maximum Power	W	100	
Impedance	Ω	50	
Lightning Protection		Direct Ground	

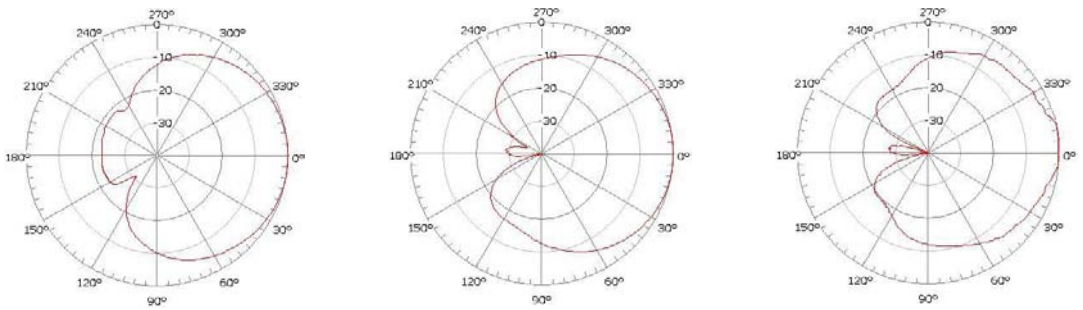
Mechanical		
Dimensions, HxWxD	mm (in)	480x282x54 (18.9x11.1x2.1)
Weight, without Mounting Kit	kg (lb)	1.5 (3.3)
Weight, with Mounting Kit	kg (lb)	1.7 (3.7)
Radome Material and Color		PVC, Light Grey
Mounting Kit		Wall or pole mount included
Connector Type and Location		N-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	575x408x158 (22.6x16.1x6.2)
Shipping Weight	kg (lb)	2.0 (4.4)

Antenna Pattern

Vertical pattern



Horizontal pattern



870MHz 1880MHz 2500MHz

Outdoor Directional Antenna for Microcell

ODP-030V20K0 VPol, 1710-2170MHz, 30°, 20.0dBi

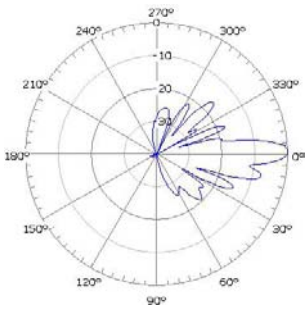
Technical Specifications

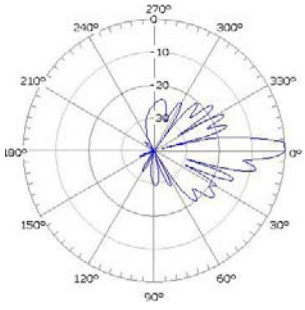
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		Vertical		
Gain	dBi	19.5	20.0	
Horizontal Beamwidth	deg	33		32
Vertical Beamwidth	deg	7.5		7.0
First Upper Sidelobe Suppression	dB	> 16		
Front-To-Back Ratio	dB	> 33(typ. 40)		
VSWR		≤ 1.4:1		≤ 1.5:1
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150		
Maximum Power	W	100		
Impedance	Ω	50		
Lighting Protection		Direct Ground		

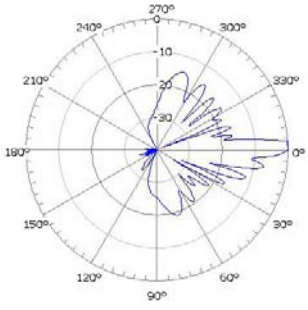
Mechanical		
Dimensions, HxWxD	mm (in)	1210x320x110 (47.6x12.6x4.3)
Weight, without Mounting Kit	kg (lb)	8.5 (18.7)
Weight, with Mounting Kit	kg (lb)	13 (28.7)
Radome Material and Color		PVC, Light Grey
Mounting Kit		SJA-B-12R(16)
Connector Type and Location		7/16 DIN-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	150 (93.2)
Shipping Dimensions, HxWxD	mm (in)	1495x395x200 (58.9x15.6x7.9)
Shipping Weight	kg (lb)	16 (35.3)

Antenna Pattern

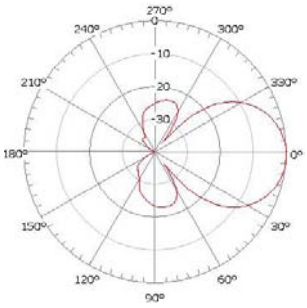
Vertical pattern

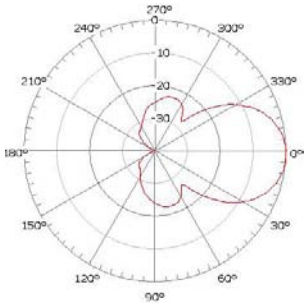


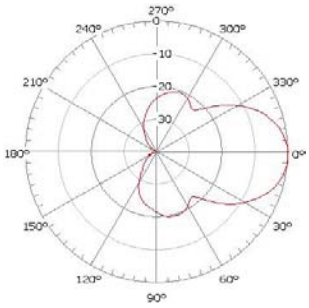




Horizontal pattern







1710MHz 1990MHz 2170MHz

Outdoor Directional Panel Antenna

ODP-032V15N

VPol, 806-960/1710-2170/2300-2690MHz, 32°, 11.0/15.0dBi

Technical Specifications

Electrical

Frequency Range	MHz	790-896	880-960	1710-1990	1920-2170	2300-2500	2490-2690
Polarization		Vertical					
Gain	dBi	11.0	10.8	12.5	13.5	14.0	15.0
Horizontal Beamwidth	deg	46	40	41	35	27	25
Vertical Beamwidth	deg	36	38	38	35	26	25
Front-To-Back Ratio	dB	> 25					
1st Upper Sidelobe Suppression	dB	> 18					
VSWR		≤ 1.5:1					
Isolation Between Bands	dB	> 25					
3rd Order Intermodulation @ 2x43 dBm	dBc	< -150					
Maximum Power	W	200				100	
Impedance	Ω	50					
Lighting Protection		Direct Ground					

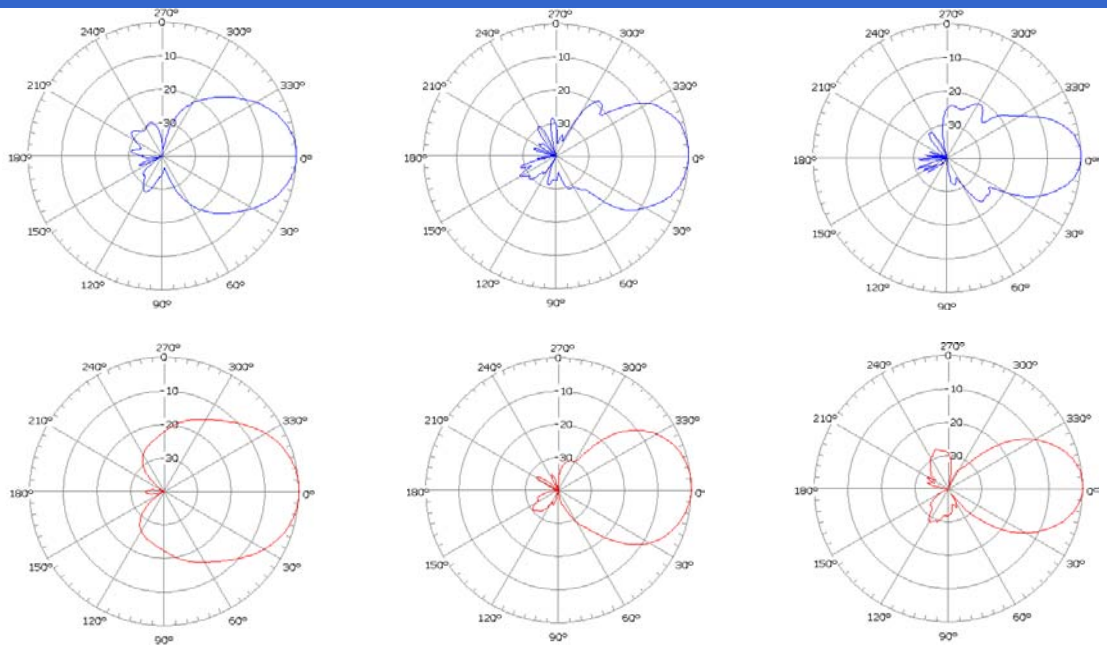
Mechanical

Dimensions, HxWxD	mm (in)	1095x500x140 (43.1x19.7x5.5)
Weight,	kg (lb)	22 (48.5)
Radome Material and Color		Fiberglass, Light Grey
Mounting Kit		00-ZJ10
Connector Type and Location		2×7/16 DIN-Female, Bottom
Operational Temperature	°C	-50 to +70
Operational Humidity	%	≤ 95
Operational Wind Speed	km/h (mph)	110 (68.31)
Shipping Dimensions, HxWxD	mm (in)	1375 x635x290 (54.1x24.8x11.3)
Shipping Weight	kg (lb)	32 (70.6)

Antenna Pattern

Vertical pattern

Horizontal pattern



880MHz @ 0°

1850MHz @ 0°

2400MHz @ 0°

Outdoor Yagi Antenna

OYI-040V12K0-2 VPol, 1710-2170MHz, 40°, 12.5dBi

Technical Specifications

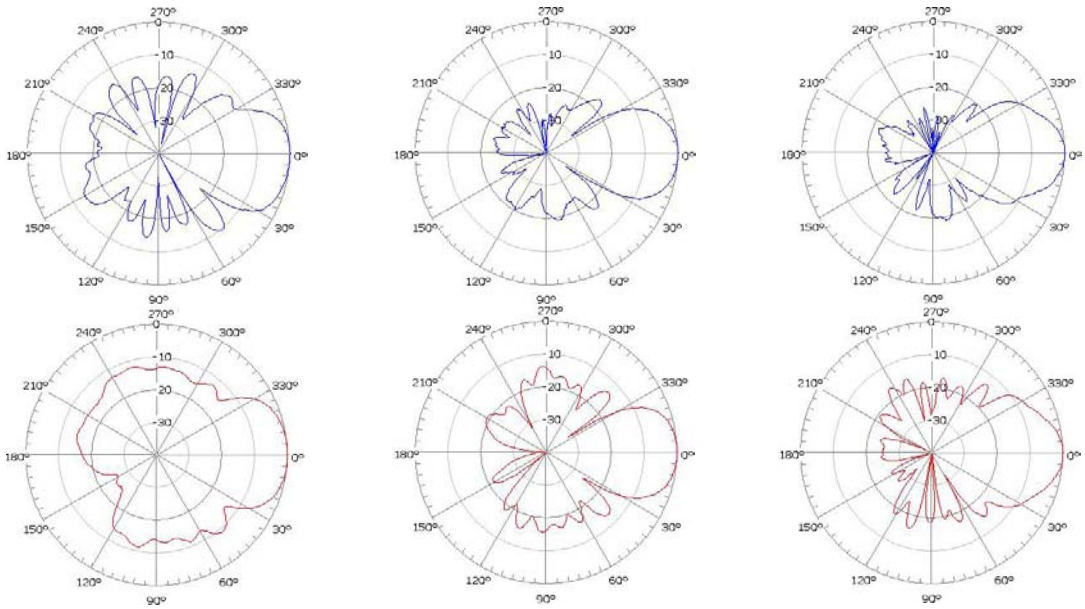
Electrical				
Frequency Range	MHz	1710-1880	1850-1990	1920-2170
Polarization		Vertical		
Gain	dBi	11	12.0	12.5
Horizontal Beamwidth	deg	40	36	
Vertical Beamwidth	deg	38	32	
Front-To-Back Ratio	dB	> 15		
VSWR		≤ 1.5:1		
Maximum Power	W	100		
Impedance	Ω	50		
Lighting Protection		Direct Ground		

Mechanical		
Dimensions, HxWxD	mm(in)	595x150x90 (23.4x5.9x3.5)
Weight, without Mounting Kit	kg	0.9 (2.0)
Radome Material and Color		UV Resistant PVC, Light Grey
Mounting Kit		Pole Mount included
Connector Type and Location		N-Female, Bottom
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Survival Wind Speed	km/h	200 (124.3)
Shipping Dimensions, HxWxD	mm(in)	606x161x107 (23.9x6.3x4.2)
Shipping Weight	kg (lb)	1.4 (3.1)

Antenna Pattern

Vertical pattern

Horizontal pattern



1710MHz 1920MHz 2170MHz

Outdoor Yagi Antenna

OYI-040V13B0-2 VPol, 806-960MHz, 40°, 13dBi

Technical Specifications

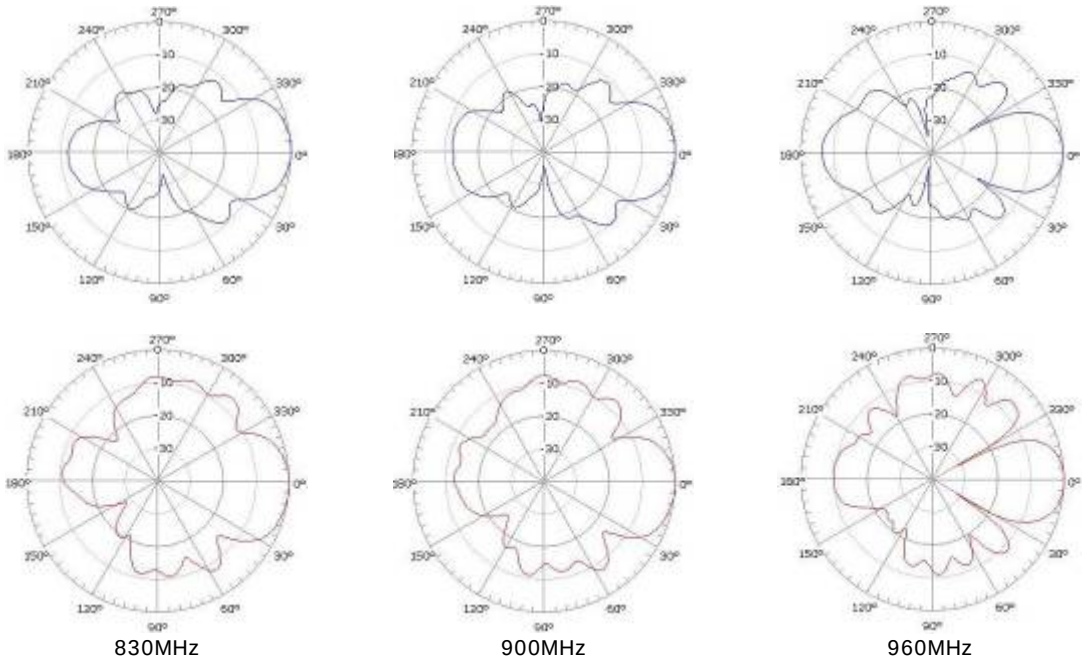
Electrical		
Frequency Range	MHz	806-960
Polarization		Vertical
Gain	dBi	13
Horizontal Beamwidth	deg	30
Vertical Beamwidth	deg	30
Front-To-Back Ratio	dB	> 18
VSWR		≤ 1.5:1
Maximum Power	W	100
Impedance	Ω	50
Lighting Protection		Direct Ground

Mechanical		
Dimensions, HxWxD	mm (in)	990x195x105 (39.0x7.8x4.1)
Weight, without Mounting Kit	kg (lb)	1.25 (2.8)
Weight, with Mounting Kit	kg (lb)	1.35 (3.0)
Mounting Kit		Pole Mount included
Connector Type		N-Female
Operational Temperature	°C	-40 to +60
Operational Humidity	%	≤ 95
Survival Wind Speed	km/h (mph)	200 (124.3)
Shipping Dimensions, HxWxD	mm (in)	1000x200x110 (39.4x15.7x4.3)
Shipping Weight	kg (lb)	1.45 (3.2)

Antenna Pattern

Vertical pattern

Horizontal pattern



830MHz 900MHz 960MHz

Indoor Directional Wall Mounted Antenna

IWH-065V07N0 VPol, 670-960/1710-2700, 65°, 7dBi

Technical Specifications

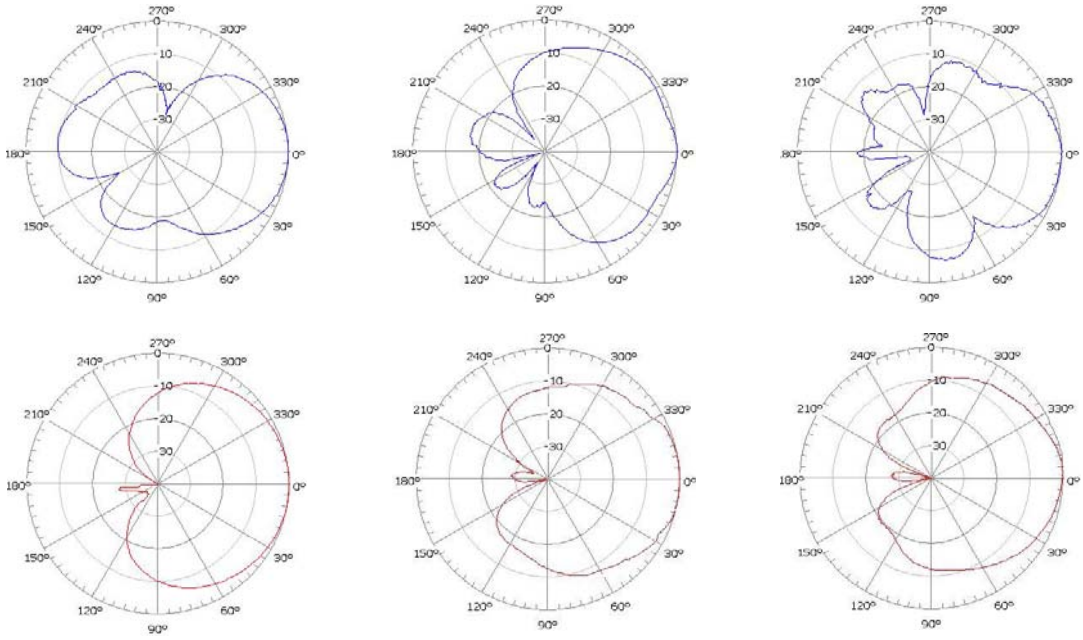
Electrical					
Frequency Range	MHz	670-800	800-960	1710-2500	2500-2700
Polarization		Vertical			
Gain	dBi	4.5		7.0	
Horizontal Beamwidth	deg	75		60	
Vertical Beamwidth	deg	70		50	
VSWR		≤ 2.0:1	≤ 1.5:1		≤ 1.8:1
Power Handling	W	≤ 50			
Impedance	Ω	50			

Mechanical		
Dimensions, HxWxD	mm (in)	210x180x43 (8.3x7.1x1.7)
Weight	kg (lb)	0.5 (1.1)
Radome Material and Color		PVC, White
Mount		Wall
Reflector Material		Aluminum
Radiating Element Material		Printed Circuit Board
Connector Type		N-Female
Environmental Class		Indoor
Shipping Dimensions, HxWxD	mm (in)	250x190x60 (9.8x7.5x2.4)
Shipping Weight	kg (lb)	0.8 (1.8)

Antenna Pattern

Vertical pattern

Horizontal pattern



870MHz 1880MHz 2500MHz

Indoor Directional Wall Mounted Antenna

IWH-090V08N0-5 VPol, 806-960/1710-2700, 90°, 8dBi

Technical Specifications

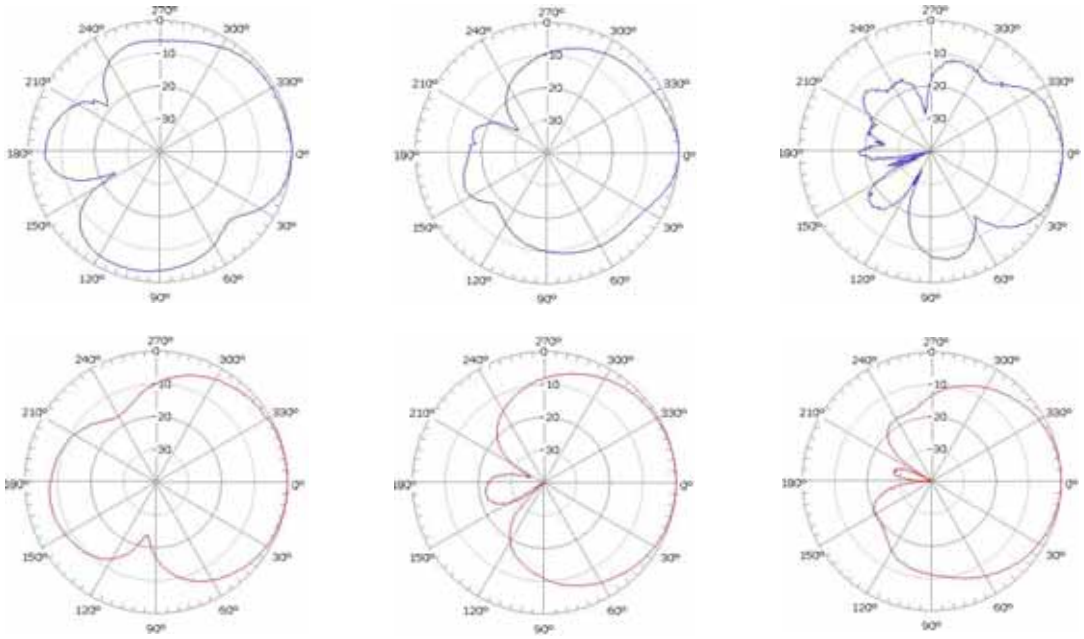
Electrical				
Frequency Range	MHz	806-960	1710-2500	2500-2700
Polarization		Vertical		
Gain	dBi	7	8	7
Horizontal Beamwidth	deg	90	75	65
Vertical Beamwidth	deg	65		
VSWR		≤ 1.5:1		
3rd Order Intermodulation @ 2x33 dBm	dBc	-140		
Power Handling	W	100		
Impedance	Ω	50		

Mechanical		
Dimensions, HxWxD	mm (in)	273x173x52 (10.7x6.8x2.0)
Weight	kg (lb)	0.6 (1.3)
Radome Material and Color		ABS, Light Grey, RAL7035
Mount		Wall
Reflector Material		Aluminum
Radiating Element Material		Aluminum
Connector Type		N-Female
Environmental Class		Indoor
Shipping Dimensions, HxWxD		338x221x80 (13.3x8.7x3.1)
Shipping Weight		0.8 (1.8)

Antenna Pattern

Vertical pattern

Horizontal pattern



806MHz 1710MHz 2500MHz

Indoor Directional Ceiling Mounted Antenna

IXD-120V06N0-03 VPol, 806-960/1710-2500, 120°, 6dBi

Technical Specifications

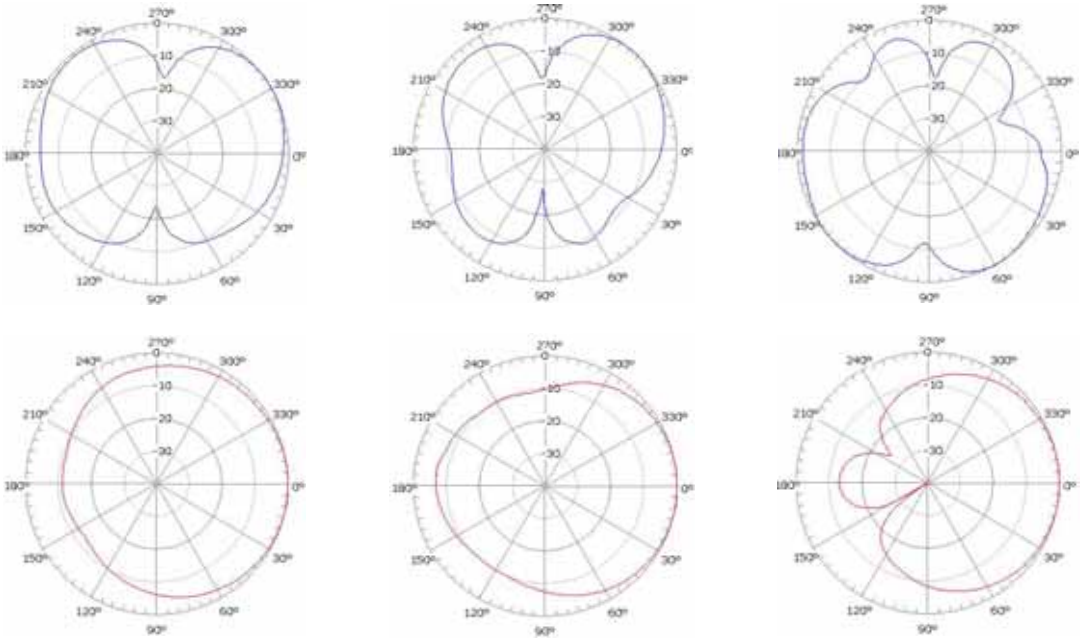
Electrical			
Frequency Range	MHz	806-960	1710-2500
Polarization		Vertical	
Gain	dBi	6	
Horizontal Beamwidth	deg	120	
Vertical Beamwidth	deg	100-120	
VSWR		≤ 1.5:1	
Power Handling	W	100	
Impedance	Ω	50	

Mechanical		
Dimensions, HxDia	mm (in)	170x70 (6.7x2.8)
Weight	kg(lb)	0.5 (1.1)
Radome Material and Color		PS, Light Grey/ Semi-transparent
Mount		Ceiling
Reflector Material		Aluminum
Radiating Element Material		Aluminum
Connector Type		N-Female
Environmental Class		Indoor
Shipping Dimensions, HxWxD	mm (in)	176x176x152 (6.9x6.9x6.0)
Shipping Weight	kg (lb)	0.6 (1.3)

Antenna Pattern

Vertical pattern

Horizontal pattern



1880MHz 2170MHz 2500MHz

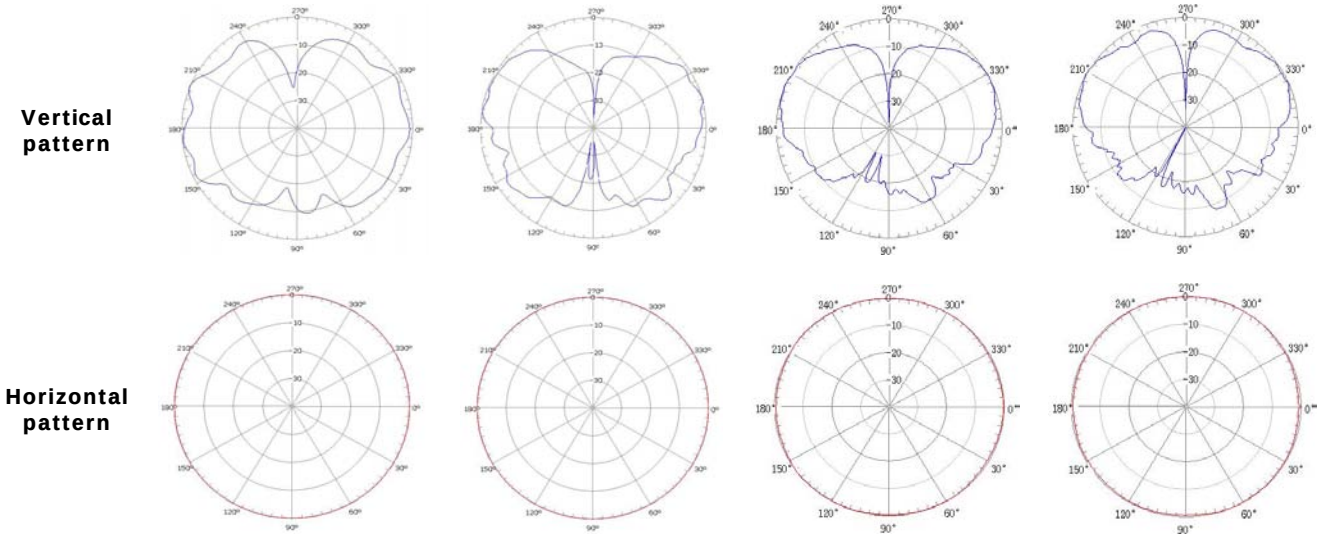
Indoor Omni-directional Ceiling Mounted Antenna

IXD-360V03NN(05) V-Pol, 670-960/1710-2700, 360°, 2/4dBi

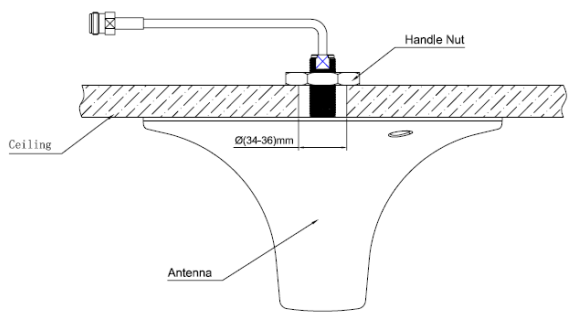
Technical Specifications

Electrical							
Frequency Range		MHz	670-696	696-806	806-960	1710-2500	2500-2700
Gain (Peak)		dBi	2			4	
Polarization			Vertical				
Power Handling		W	100				
Beamwidth	Vertical	deg	100 - 120			30 - 65	
	Horizontal		360				
VSWR			< 2.5:1	< 2.0:1	< 1.5:1		
3rd Order Intermodulation @ 2x33 dBm		dBc	<-150				
Impedance		Ω	50				
Mechanical							
Dimensions, Diameter x Depth		mm(in)	Φ208x115 (8.2x4.5)				
Weight		kg(lb)	0.4 (0.88)				
Radome Material and Color			ABS, white				
Mount			Ceiling mounted (via handle nut or via 3 screws)				
Reflector Material			Aluminum				
Radiating Element Material			Aluminum				
Connector Type			N-Female				
Environmental Class			Indoor				

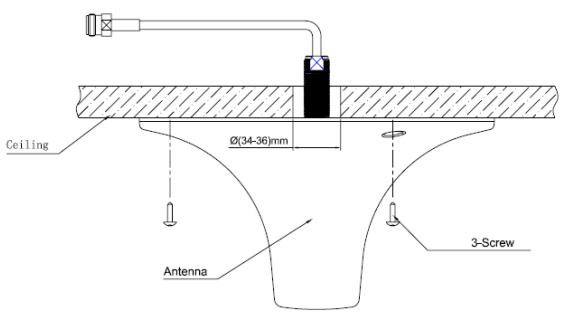
Antenna Patterns



Installation Plots



Installation via handle nut



Installation via 3 screws

Indoor Omni-directional Ceiling Mounted Antenna

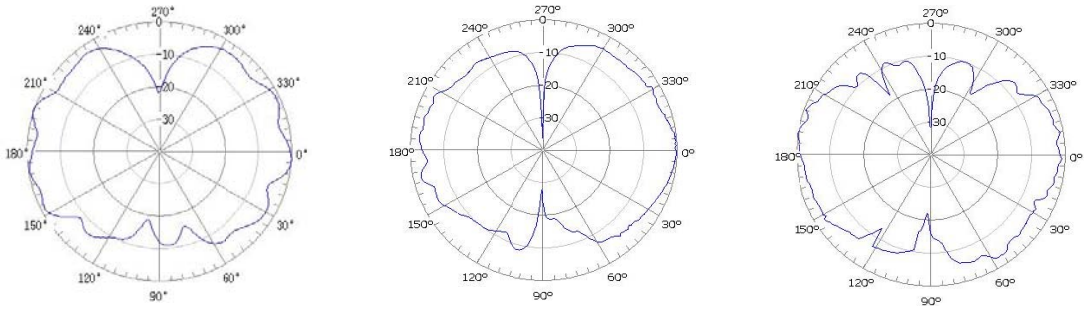
IXD-360V03NN(U) VPol, 806-960/1710-2700, 360°, 2.0/4.0dBi

Technical Specifications

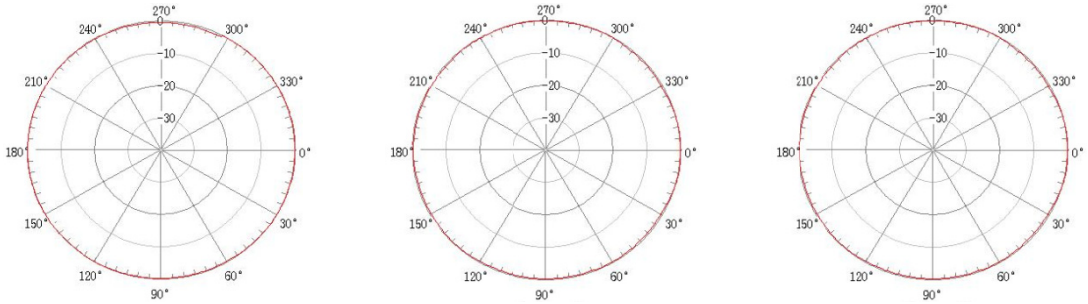
Electrical					
Frequency Range		MHz	806 - 960	1710 - 2500	2500 - 2700
Gain		dBi	2.0	4.0	
Polarization			Vertical		
Power Handling		W	100		
Beamwidth	Vertical	deg	100 - 120	30 - 65	
	Horizontal		360		
VSWR			< 1.5:1		
3rd Order Intermodulation @ 2x33 dBm		dBc	< -140		
Impedance		Ω	50		
Mechanical					
Dimensions, Diameter x Depth		mm(in)	Φ208x115 (8.2x4.5)		
Weight		kg(lb)	0.4 (0.88)		
Radome Material and Color			ABS, white		
Mount			Ceiling Mounted		
Reflector Material			Aluminum		
Radiating Element Material			Aluminum		
Connector Type			N-Female		
Environmental Class			Indoor		

Antenna Patterns

Vertical pattern



Horizontal pattern



960MHz 1710MHz 2500MHz

Indoor Omni-directional Ceiling Mounted Antenna

IXD-360VH03NT

V-Pol, 806-960/1710-2700, 360°, 2/4dBi
H-pol, 1710-2700, 360°, 4dBi

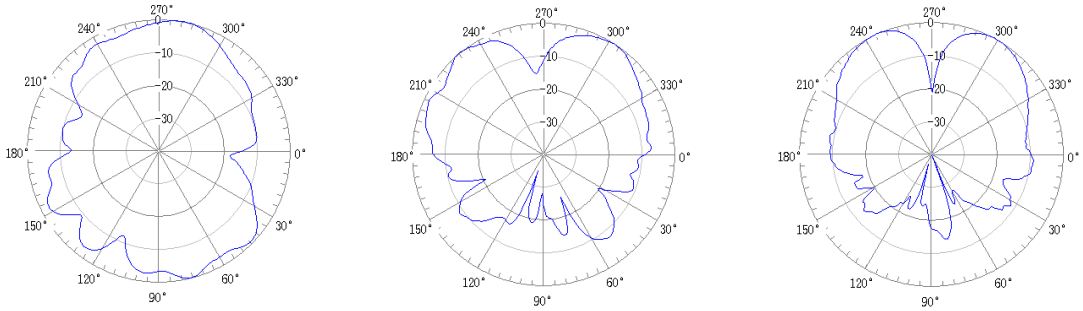
Technical Specifications

Electrical				
Frequency Range	MHz	806-960	1710-1880	1850-2700
Gain	dBi	2	4	
Polarization		Vertical	Vertical&Horizontal	
Horizontal Beamwidth	deg	360		
Vertical Beamwidth	deg	100-120	40-65	
VSWR		≤ 2.0:1		
Isolation	dB	/	≥ 22	
3rd Order Intermodulation @ 2x33 dBm	dBc	<-140		
Power Handling	W	50		
Impedance	Ω	50		

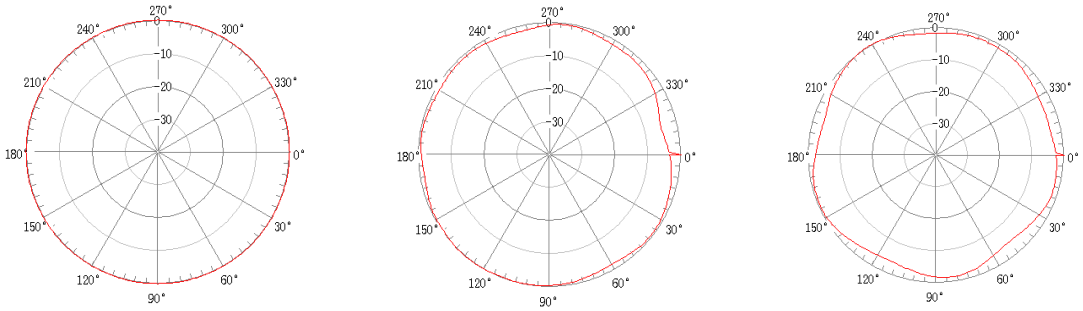
Mechanical		
Dimensions, Dia x H	mm (in)	Φ178x112 (7.0x4.4)
Weight	kg(lb)	0.42 (1.1)
Radome Material		ABS
Mount		Ceiling, via hole (standard)
Reflector Material		Aluminum
Connector Type		2 x N-Female
Environmental Class		Indoor
Shipping Dimensions, HxWxD	mm (in)	175x175x175 (6.9x6.9x6.9)
Shipping Weight	kg (lb)	0.5 (1.1)

Antenna Pattern

Vertical pattern



Horizontal pattern



960MHz 1710MHz 2500MHz

AISG Control Cable

00-KX02(yy) (yy=cable length in meter)

Features and Product Description

- A 5-core cable use for connection between AISG antenna line devices
- Compliance with AISG1.1 and AISG2.0
- 8-pin Circular connector type
- Weather resistance
- Supply in various length

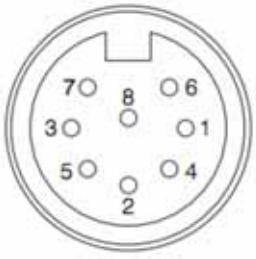
Technical Specifications

Electrical		
Operating Voltage	V	250
Operating Current @40°C	A	5 (Conform to IEC60512-3)
Pulsating Voltage	V	1200 (Conform to IEC60664-1)
Insulation Resistance	Ω	$>3x10^9$ (Conform to IEC60512-2 Test 3a)
Contact Resistance	mΩ	<5 (Conform to IEC60512-2 Test 2a)
Mechanical		
Cable Specification		2C x 0.32 + 3C x 0.75
Connector Type		2 x 8 pin circular connector, 1 Male + 1 Female (Conform to IEC60130-9)
Operating Temperature	°C	-40 to +85
Operating Humidity	%	≤ 95
Environmental Class		IP67

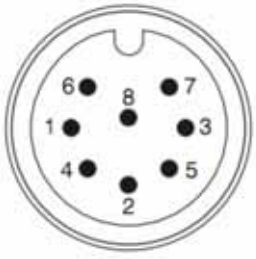
Note: Measurements taken at room temperature, unless otherwise stated.

Part Numbers		
00-KX02(0.5)	m (in)	0.5 (19.7)
00-KX02(01)	m (in)	1 (39.4)
00-KX02(03)	m (in)	3 (118.1)
00-KX02(05)	m (in)	5 (196.9)
00-KX02(10)	m (in)	10 (393.7)
00-KX02(20)	m (in)	20 (787.4)
00-KX02(30)	m (in)	30 (1,181.1)
00-KX02(40)	m (in)	40 (1,574.8)
00-KX02(50)	m (in)	50 (1,968.5)
00-KX02(60)	m (in)	60 (2,362.2)
00-KX02(70)	m (in)	70 (2,755.9)
00-KX02(80)	m (in)	80 (3,149.6)

Connector Outline Drawing



Female



Male

	Signal
1	+12VDC nominal
2	Not connected
3	RS485 B
4	Not connected
5	RS485 A
6	10V-30V DC
7	DC Return
8	Not connected

RCU-003
Remote Control Unit

Features

- AISG v1.1 Compliance
- Connection to AISG Compatible CCU, TMAs and Smart Bias Tee
- Industry standard Bus – RS485
- Compact and light weight

Technical Specifications

Electrical		
Connectors to CCU		8 pin connector, Male, conform to AISG Layer 1
Connectors to RCU		8 pin connector, Female, conform to AISG Layer 1
Power Supply	V	+10~+30 DC
Power Consumption	W	< 1 (stand by); < 10 (operating)
Protocol to CCU/TMA		HDLC hex-code command set, conform to AISG Layer 2
Adjustment Time	sec	30
Adjustment Cycles		> 50,000
Mechanical		
Dimensions, HxWxD	mm (in)	170x52x47 (6.7x2.0x1.8)
Weight	kg (lb)	0.46 (1.0)
Housing Material and Color		Aluminum, Light Gray
Operating Temperature	°C	-40 to +60
Environment Class		IP24

Side Views

Top View of RCU

Bottom View of RCU

RCU-V5002
Remote Control Unit

Features

- AISG v2.0 Compliance
- Compatible with Ericsson RBS3206 / RBS3418 and firmware version P6.1
- Compatible with Nokia Siemens Flexi WCDMA Node B and firmware version WN4.0.6.7-273
- Compatible with Huawei DBS3900
- Compact and light weight
- IP65 protection class

Technical Specifications

Electrical		
Connectors to CCU		8 pin connector, Male, conform to AISG Layer 1
Connectors to RCU		8 pin connector, Female, conform to AISG Layer 1
Power Supply	V	+10~+30 DC
Power Consumption	W	< 1 (stand by); < 10 (operating)
Protocol to CCU/TMA		HDLC hex-code command set, conform to AISG Layer 2
Adjustment Time	sec	30
Adjustment Cycles		> 50,000
Mechanical		
Dimensions, HxWxD	mm (in)	170x52x47 (6.7x2.0x1.8)
Weight	kg (lb)	0.46 (1.0)
Housing Material and Color		Aluminum, Light Gray
Operating Temperature	°C	-40 to +60
Environment Class		IP65

**Note: RCU requires power supply >+24VDC to work optimally under low temperature condition of <-10°C.*

Side Views

Top View of RCU

Bottom View of RCU

CCU-001AG, CCU-003AG

RET Central Control Unit. Hardware version 2.0

Features

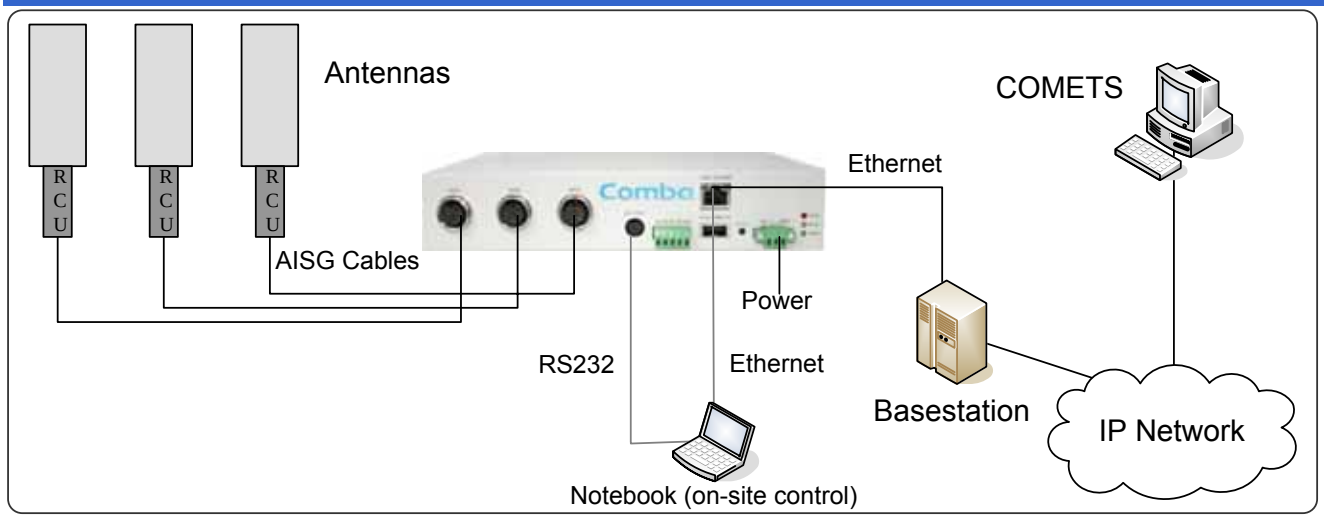
- Compliant with AISG 1.1 & 2.0 standards
- Designed specifically to interface with AISG compliant actuators
- Web-based application
- Built-in watchdog timer and supports USB 2.0
- Built-in LPD (Lightning Protection Device)
- Wall/Rack mountable
- Self-diagnosable
- With over load, surge, and short circuit protection
- Available in single or three AISG port version
- Compliant with CE, FCC and RoHS standards

Picture shows CCU-003AG

Technical Specifications

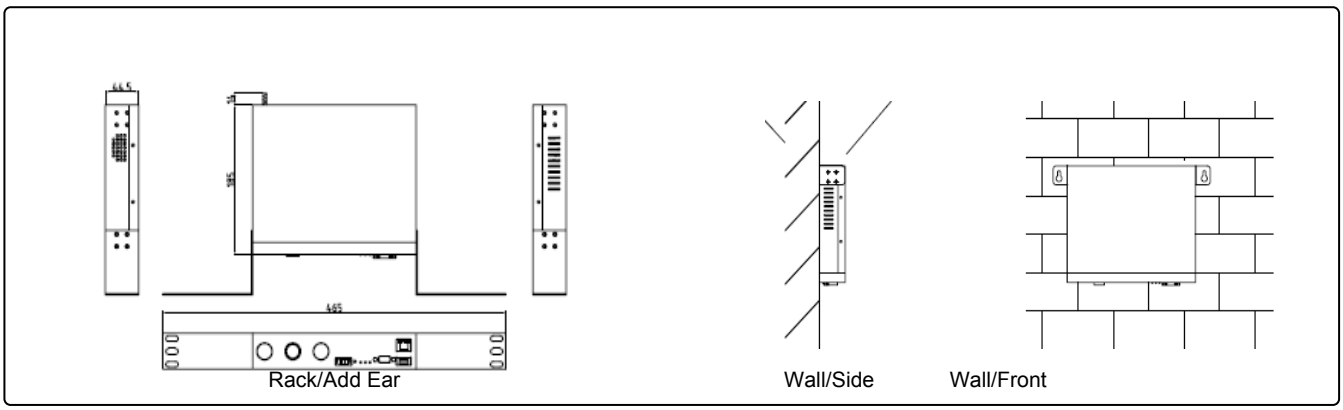
Electrical		
AISG Connectors	CCU-001AG	1 x 8 pin connector, Female, conform to AISG Layer 1
	CCU-003AG	3 x 8 pin connectors, Female, conform to AISG Layer 1
Power Supply to AISG Devices	V	1 x +28VDC/ max 1.7A, or 1 x +13VDC/ max 3.3A
		Software Selectable
Power Supply Input	V	-48 DC/max 1.5A
Total Output Power	W	50W
Alarm Interface		3 outputs (Open collector); 1 input (Open/Close)
LED Indicators		Alarm, Run, Power
Interface to RCU/TMA		RS-485 / Power Supply
Protocol to RCU/TMA		HDLC hex-code command set, conform to AISG Layer 2
Max. Number of RET*		Up to 24 RCUs (depending on cable configuration)
Max. Number of TMA*		Up to 6 TMAs (depending on cable configuration)
Interface for Remote Control		Ethernet 10/100M adaptable
Communication Ports		RS-232, USB 2.0
Protocols to BTS		TCP/IP, HTTP/HTML, SNMP, FTP, Telnet
Protection		Built-in LPD, Over Load, Surge, Short Circuit
Mechanical		
Mounting		1U 19 inch rack-mount or wall mount
Dimensions, HxWxD	mm	44x220x185
Weight	kg	1.5
RS232 Connector		9-PIN Mini-DIN PS/2
Housing Material and Color		Aluminum, Light Gray
Operating Temperature	°C	0 to +55
Operating Humidity	%	< 95
Packing Size	mm	83x280x253
Shipping Weight (Approx)	kg	1.9

System Structure



Note: Comba COMETS is a software tool that provides comprehensive features for OMC. For more information, please kindly refer to the COMETS datasheet.

Mounting Guide



Single 850MHz Tower Mounted Amplifier
TA-C12FS03

Features

- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF

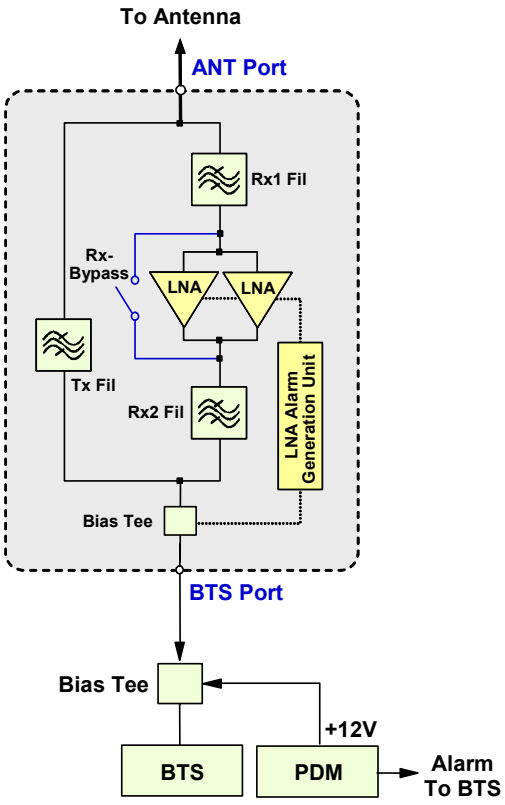
Product Description

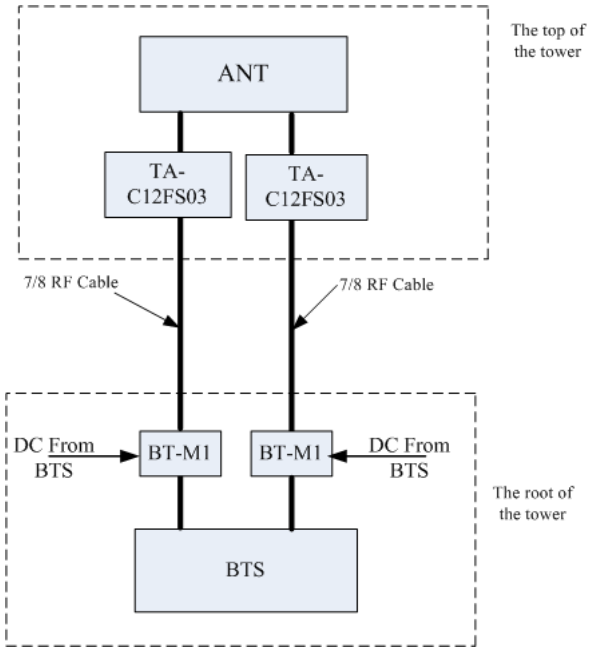
The TA-C12FS03 is a single 850MHz tower mounted amplifier designed for use with a vertical or cross-pole antenna. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-C12FS03 will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The TA-C12FS03 comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external bias tees that connect between the TA-C12FS03 and the PDM. Each PDM is constructed into a 19" 1U form factor, and can provide power for up to six units of TA-C12FS03.

Typical Block Diagram





Technical Specifications			
Electrical - Uplink			
Frequency Range		MHz	824-849
Bandwidth		MHz	25
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.8 (typ. 1.4)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 1.8
Output 3rd Order Intercept Point (OIP3)		dBm	≥22
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Alarm Management	Minor Alarm	mA	230±20mA(Operation)
	Major Alarm		330±20mA(By-pass Mode)
Group Delay		ns	≤ 200
Electrical – Downlink			
Frequency Range		MHz	869-894
Bandwidth		MHz	25
Insertion Loss		dB	≤ 0.6
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW); 58.6 (Peak)
7th order PIM		dBm	≤-110 (2 TX carriers at +43dBm)
Group Delay		ns	≤ 70
Power, Mechanical & Environmental			
Connectors Type			7/16 DIN-Female
Operating Voltage		V	+10 to +15
Operating Current		mA	120@+12V
Power Consume		W	≤ 1.5
Dimensions, LxWxH (excluding connector and mounting brackets)		mm (in)	223x194x60(8.8x7.7x2.4)
Weight		kg (lb)	4(8.8)
Mounting			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Lightning Protection	RF		8kA, 8/20μs
Environmental Class			IP66
MTBF		hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 850MHz AISG2.0 Tower Mounted Amplifier

TA-C12FDA-A

Features

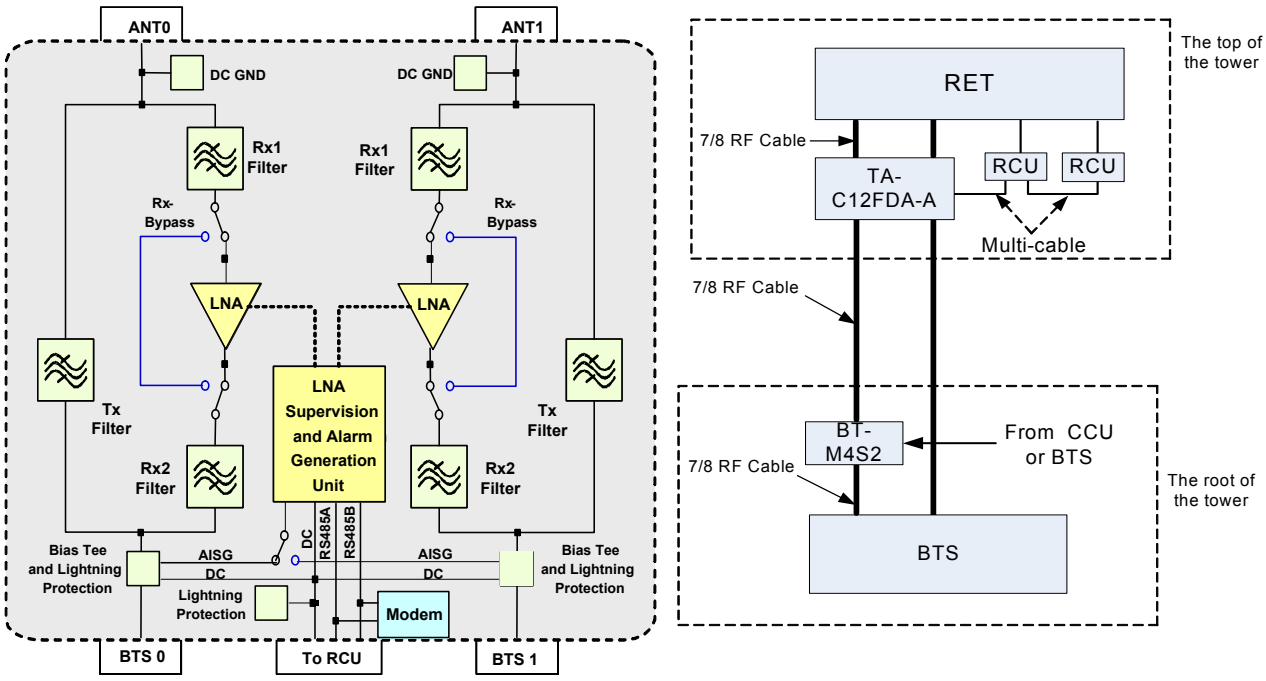
- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation will be generated when AISG signal is not available
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 2.0 Compatible

Product Description

The TA-C12FDA-A is a 850MHz twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-C12FDA-A will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Typical Block Diagram



Technical Specifications			
Electrical - Uplink			
Frequency Range		MHz	824-849
Bandwidth		MHz	25
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.8 (typ. 1.4)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 1.8
Output 3rd Order Intercept Point (OIP3)		dBm	≥22
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Group Delay		ns	≤ 200
Alarm Management in AISG Mode			Compatible with AISG 2.0
Electrical – Downlink			
Frequency Range		MHz	869-894
Bandwidth		MHz	25
Insertion Loss		dB	≤ 0.6
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW); 58.6(Peak)
7th order PIM		dBm	≤-110 (2 TX carriers at +43dBm)
Group Delay		ns	≤ 70
Power, Mechanical & Environmental			
Modem Characteristics			According to AISG Standard 2.0 (Data rate:9.6kB)
Connectors Type	ANT/BTS		7/16 DIN-Female
	AISG		8-pin Female IEC60130-9 (Pin3:RS485B, Pin5:RS485A,Pin6:+24V, Pin7:DC return; other pins: not connected)
Operating Voltage		V	10 to +30
Operating Current		mA	150 ± 20@+24V
Power Consume		W	≤ 4
Operation Mode			DC/OOK BTS0 or BTS1
Dimensions, LxWxH (excluding connector and mounting brackets)		mm (in)	223x194x119 (8.8x7.7x4.7)
Weight		kg (lb)	8 (17.6)
Mounting			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Lightning Protection	RF		8kA, 8/20μs
	AISG		RS485A. RS485 B Different mould 3kA. Common mould 5kA, DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		hr	> 1,000,000 per unit
Note: Measurements taken at room temperature, unless otherwise stated.			

Single 900MHz Tower Mounted Amplifier
TA-G12FS02

Features

- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF

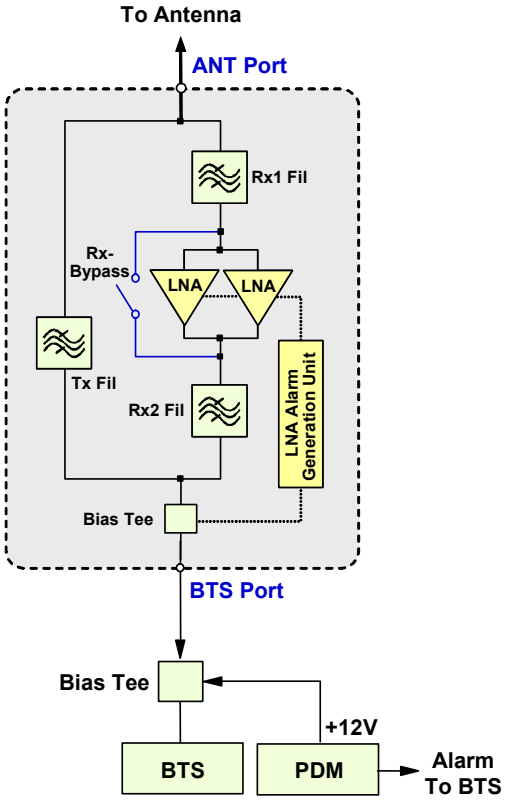
Product Description

The TA-G12FS02 is a GSM900 tower mounted amplifier designed for use with a vertical or cross-pole antenna. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-G12FS02 will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The TA-G12FS02 comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external bias tees that connect between the TA-G12FS02 and the PDM. Each PDM is constructed into a 19" 1U form factor, and can provide power for up to six units of TA-G12FS02.

Typical Application Block Diagram



Technical Specifications

Electrical - Uplink

Frequency Range		MHz	890-915
Bandwidth		MHz	25
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.8 (typ. 1.4)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 1.8
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 22
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode	dB	≥ 14
Alarm Management	Minor Alarm	mA	> 230 ± 20 (Operation)
	Major Alarm	mA	> 330 ± 20 (By-pass Mode)

Electrical - Downlink

Frequency Range	MHz	935-960
Bandwidth	MHz	25
Insertion Loss	dB	≤ 0.5
Return Loss	dB	≥ 18
Absolute Maximum RF Input Power	dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band	dBm	≤ -110 (2 TX carriers at +43dBm)

Power, Mechanical & Environmental

Operating Voltage	V	+10 to +15
Operating Current	mA	120 @+12V
Power Consume	W	≤ 1.5
Dimensions, LxWxH (excluding connectors & mounting brackets)	mm(in)	246x182x58 (9.7x7.2x2.3)
Weight	kg(lb)	≤ 3.5 (7.7)
Mounting		Wall mounting: with 4 screws
		Mast mounting: with clamp set
Connector Type		7/16 DIN-Female
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature	°C	-40 to +65
Operating Humidity	%	≤ 95
EMC		ETS 300 342-3
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Environmental Class		IP66
MTBF	hr	> 1000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Full band Single 900MHz Tower Mounted Amplifier
TA-E12FS

Features

- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF

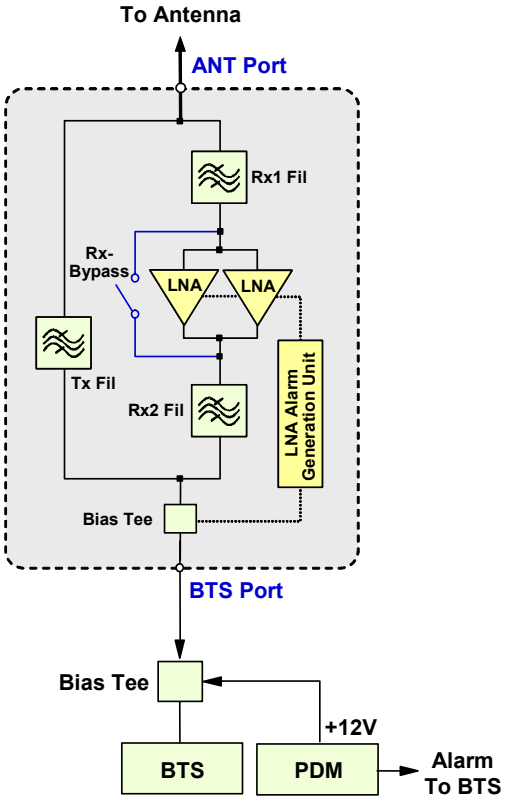
Product Description

The TA-E12FS is an EGSM900 tower mounted amplifier designed for use with a vertical or cross-pole antenna. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-E12FS will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The TA-E12FS comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external bias tees that connect between the TA-E12FS and the PDM. Each PDM is constructed into a 19" 1U form factor, and can provide power for up to six units of TA-E12FS.

Typical Application Block Diagram



Technical Specifications

Electrical - Uplink

Frequency Range		MHz	880-915
Bandwidth		MHz	35
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.8 (typ. 1.4)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 1.9
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 22
Return loss	Active Mode	dB	≥ 18
	Bypass Mode	dB	≥ 14
Alarm Management	Minor Alarm	mA	≥ 230 (Operation)
	Major Alarm	mA	≥ 330 (By-pass Mode)

Electrical - Downlink

Frequency Range	MHz	925-960
Bandwidth	MHz	35
Insertion Loss	dB	≤ 0.6
Return Loss	dB	≥ 18
Absolute Maximum RF Input Power	dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band	dBm	≤ -110 (2 TX carriers at +43dBm)

Power, Mechanical & Environmental

Operating Voltage	V	+10 to +15
Operating Current	mA	120 ± 10 @+12V
Power Consume	W	≤ 2
Dimensions, LxWxH (excluding connectors & mounting brackets)	mm(in)	252x180x61 (9.9x7.1x2.4)
Weight	kg(lb)	≤ 3.5 (7.7)
Mounting		Wall mounting: with 4 screws
		Mast mounting: with clamp set
Connector Type		7/16 DIN-Female
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature	°C	-40 to +65
Operating Humidity	%	≤ 95
EMC		ETS 300 342-3
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Environmental Class		IP66
MTBF	hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Full Band Twin 900MHz AISG2.0 Tower Mounted Amplifier

TA-E12FDA-A

Features

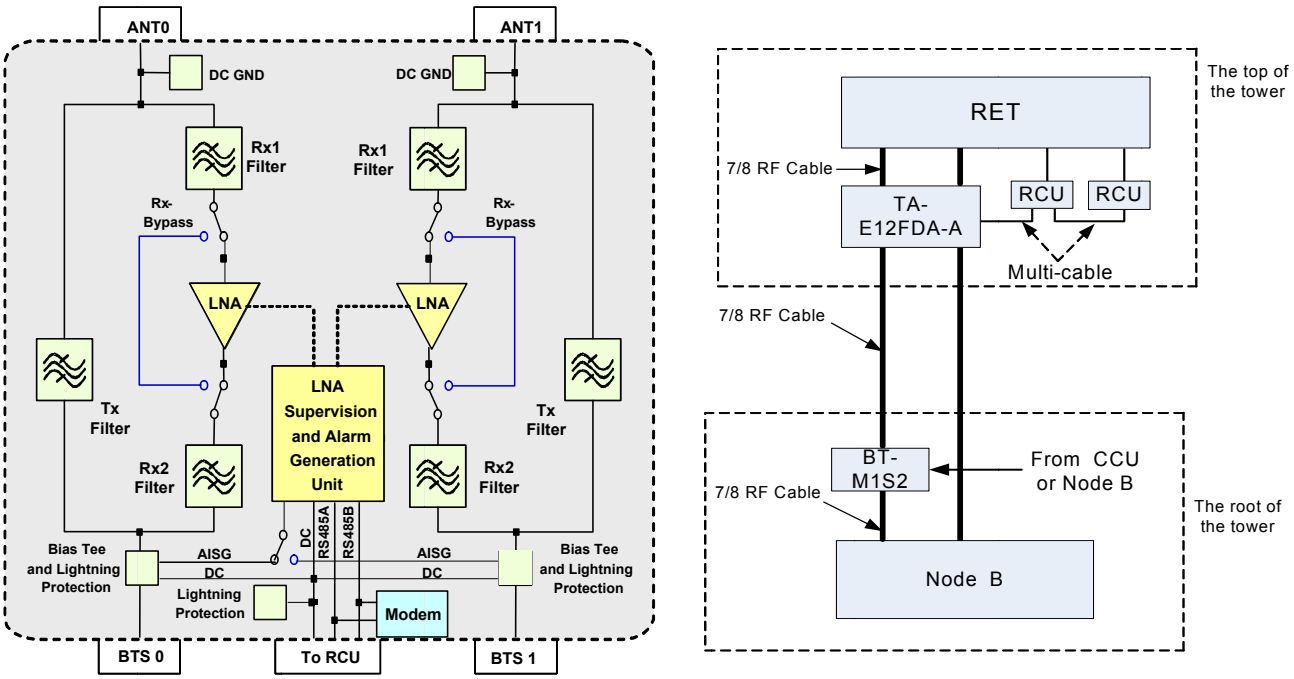
- Two TMA units in one enclosure
- Power failure bypass for high reliability
- Alarm management: DC current load simulation will be generated when AISG signal is not available
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 2.0 Compatible

Product Description

The TA-E12FDA-A is an EGSM900 twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-E12FDA-A will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Typical Application Block Diagram



Technical Specifications

Electrical - Uplink			
Frequency Range		MHz	880-915
Bandwidth		MHz	35
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.8 (typ. 1.4)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 1.9
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 22
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Alarm Management			Compatible with AISG 2.0
Electrical – Downlink			
Frequency Range		MHz	925-960
Bandwidth		MHz	35
Insertion Loss		dB	≤ 0.6
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	50 (CW); 58.6 (Peak)
Inter-modulation Products in Rx Band		dBm	≤ -110 (2 TX carriers at +43dBm)
Power, Mechanical & Environmental			
Modem Characteristics			According to AISG Standard 2.0 (Data rate:9.6kB)
Connectors Type	RF		7/16 DIN-Female
	AISG		8-pin Female IEC60130-9 (Pin6:+24V, Pin3:RS485B, Pin5:RS485A, Pin7:DC return; other pins: not connected)
Operating Voltage		V	+10 to +30
Operating Current with Single Port		mA	150 ± 20@+24V
Power Consume		W	≤ 4
Operation Mode			DC/OOK Node B0
Dimensions, LxWxH (excluding connector and mounting brackets)		mm (in)	252x179x119 (9.9x7x4.7)
Weight		kg (lb)	6.5 (14.3)
Mounting			Wall mounting: with 4 screws
			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Lightning Protection	RF		8kA, 8/20μs
	AISG		RS485A. RS485 B Different mould 3kA. Common mould 5kA, DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		hr	> 1,000,000(per unit)

Note: Measurements taken at room temperature, unless otherwise stated.

Single 1800MHz Tower Mounted Amplifier
TA-D12FS

Features

- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF

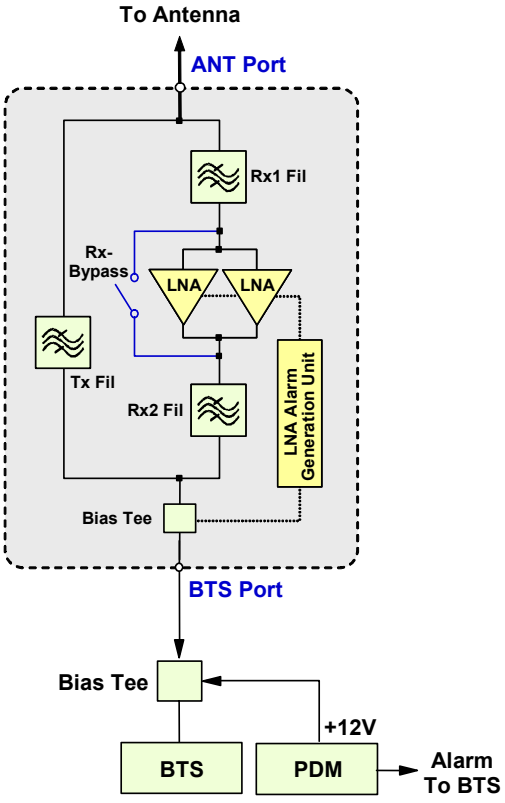
Product Description

The TA-D12FS is a DCS1800 tower mounted amplifier designed for use with a vertical or cross-pole antenna. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-D12FS will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The TA-D12FS comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and bypass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external bias tees that connect between the TA-D12FS and the PDM. Each PDM is constructed into a 19" 1U form factor, and can provide power for up to six units of TA-D12FS.

Typical Application Block Diagram



Technical Specifications

Electrical - Uplink

Frequency Range		MHz	1710-1785
Bandwidth		MHz	75
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.9 (typ. 1.5)
Pass Band Ripple		dB	≤ 1.2
Insertion Loss in By-pass Mode		dB	2.2
Output 3rd Order Intercept Point		dBm	≥ 25
Return Loss	Normal Operation	dB	≥ 18
	Bypass Mode		≥ 14
Alarm Management	Alarm window	mA	≤ 70 or ≥ 155

Electrical - Downlink

Frequency Range	MHz	1805-1880
Bandwidth	MHz	75
Insertion Loss	dB	≤ 0.6
Return Loss	dB	≥ 18
Absolute Maximum RF Input Power	dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band	dBm	≤ -110 (2 TX carriers at +43dBm)

Power, Mechanical & Environmental

Operating Voltage	V	+10 to +15
Operating Current	mA	110 ± 10 @12V
Power Consume	W	≤ 1.5
Dimensions, LxWxH (excluding connectors & mounting brackets)	mm(in)	250x121x60 (9.8x4.8x2.4)
Weight	kg(lb)	≤ 3 (6.6)
Mounting		Wall mounting: With 4 screws
		Mast mounting: With clamp set
Connector Type		7/16 DIN-Female
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature	°C	-40 to +65
Operating Humidity	%	≤ 95
EMC		ETS 300 342-3
Lightning protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Environmental Class		IP66
MTBF	hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 1800MHz Tower Mounted Amplifier
TA-D12FD-03

Features

- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance
- IP66 with Gore Tex ventilation membrane
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF

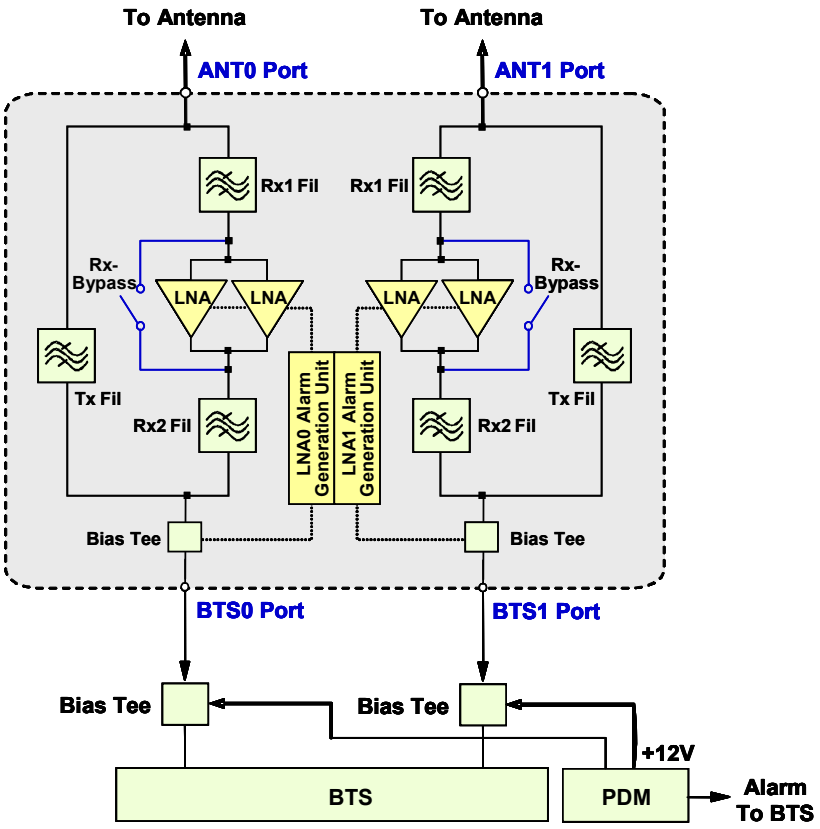
Product Description

The TA-D12FD-03 is a full band DCS1800 twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-D12FD-03 will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external bias tees that connect between the TA-D12FD-03 and the PDM. Each PDM is constructed into a 19" 1U form factor, and can provide power for up to three units of TA-D12FD-03.

Typical Application Block Diagram



Technical Specifications

Electrical - Uplink

Frequency Range		MHz	1710-1785
Bandwidth		MHz	75
System Gain		dB	12 ±1
Noise Figure		dB	≤ 1.9 (typ. 1.5)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 2.2
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 25
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Alarm Management	Minor Alarm	mA	≥ 230 (Operation)
	Major Alarm		≥ 330 (By-pass Mode)

Electrical - Downlink

Frequency Range	MHz	1805-1880
Bandwidth	MHz	75
Insertion Loss	dB	≤0.6
Return Loss	dB	≥ 18
Absolute Maximum RF Input Power	dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band	dBm	≤-110 (2 TX carriers at +43dBm)

Power, Mechanical & Environmental

Operating Voltage	V	+10 to +15
Operating Current per Port	mA	120 @+12V
Power Consume per Port	W	≤ 1.5
Dimensions, LxWxH (excluding connectors & mounting brackets)	mm(in)	250x224x60.5 (9.9x8.9x2.4)
Weight	kg(lb)	≤ 6 (13.2)
Mounting		Wall mounting: with 4 screws
		Mast mounting: with clamp set
Connector Type		7/16 DIN-Female
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature	°C	-40 to +65
Operating Humidity	%	≤ 95
EMC		ETS 300 342-3
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Environmental Class		IP66
MTBF (per Unit)	hr	> 1,000,000(per unit)

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 1800MHz AISG2.0 Tower Mounted Amplifier
TA-D12FDA-A

Features

- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation and AISG alarm management
- Light weight and compact design
- Salt spray resistance
- IP66 with Gore Tex ventilation membrane
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- 3GPP/AISG 2.0 Compatible

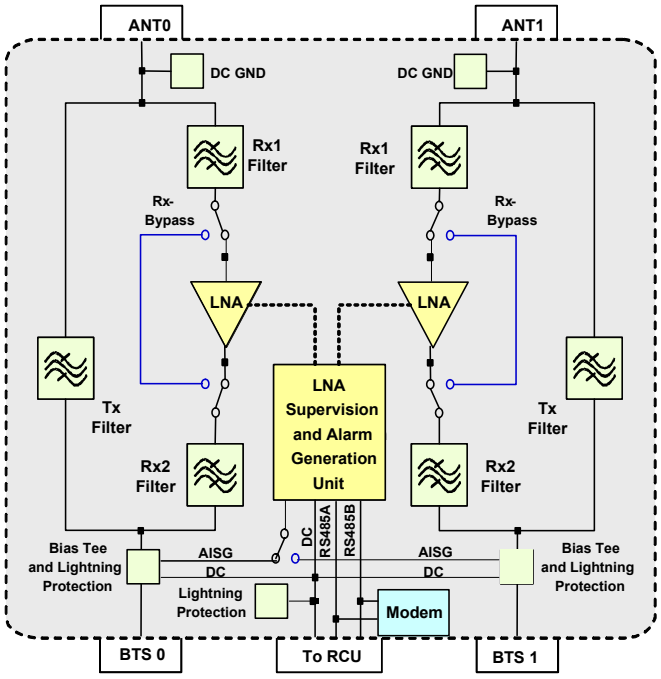
Product Description

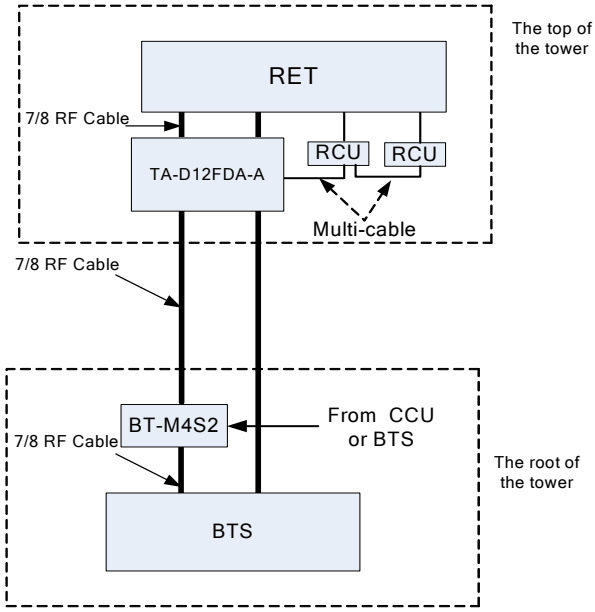
The TA-D12FDA-A is a full band GSM1800 twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-D12FDA-A will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and bypass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external smart bias tee that connects between TA-D12FDA-A and BTS. AISG signals pass through smart bias tee and are transmitted to other antenna line devices via TA-D12FDA-A.

Typical Application Block Diagram





Technical Specifications

Electrical - Uplink			
Frequency Range		MHz	1710-1785
Bandwidth		MHz	75
System Gain		dB	12 ± 1
Noise Figure		dB	≤1.9 (typ. 1.5)
Pass Band Gain Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 2.2
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 25
Return Loss	Normal Operation	dB	≥ 18
	Bypass Mode		≥ 14
Alarm Management in AISG Mode			Compatible with 3GPP/AISG 2.0
Electrical - Downlink			
Frequency Range		MHz	1805-1880
Bandwidth		MHz	75
Insertion Loss		dB	≤ 0.6(typ.0.5)
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band		dBm	≤ -110 (2 TX carriers at +43dBm)
Group Delay		ns	≤ 50
Power, Mechanical & Environmental			
Modem Characteristics			According to AISG standard 2.0 (Data rate:9.6kB)
Connectors Type	RF		7/16 DIN-Female
	AISG		8-pin Female IEC60130-9 (Pin6:+24V, Pin3:RS485B, Pin5:RS485A, Pin7:DC return; other pins: not connected)
Operating Voltage		V	+10 to +30
Operating Current with Single Port Power Supply		mA	160 ± 20 @+24V
Power Consume		W	≤ 3.5
DC Supply			Through BTS0 Port or BTS1 Port
Dimensions, LxWxH (excluding connectors & mounting brackets)		mm(in)	250x224x59.5 (9.8x8.8x2.4)
Weight		kg(lb)	6 (13)
Mounting			Wall mounting: with 4 screws
			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Lightning Protection	RF Ports		Comply with IEC 61000-4-5; 8kA, 8/20μs
	AISG Port		RS485A，RS485 B Different mould 3kA，Common mould 5KA ,DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		h	> 1,000,000(per unit)

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 1800MHz AISG1.1 Tower Mounted Amplifier
TA-D12FDA

Features

- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance
- IP66 with Gore Tex ventilation membrane
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 1.1 Compatible

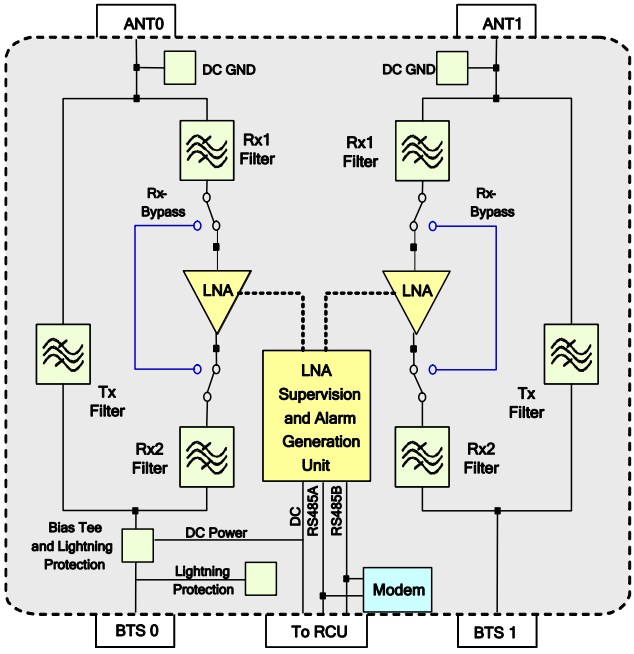
Product Description

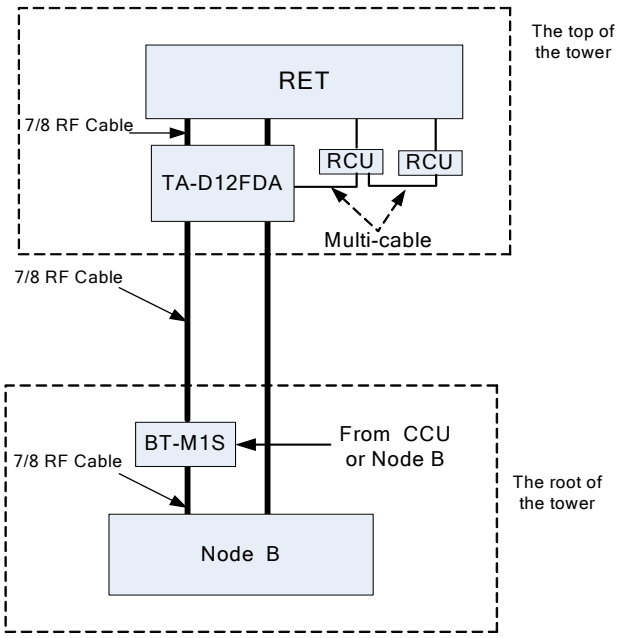
The TA-D12FDA is a full band GSM1800 twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-D12FDA will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and bypass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external smart bias tee that connects between TA-D12FDA and Node B. AISG signals pass through smart bias tee and are transmitted to other antenna line devices via TA-D12FDA.

Typical Application Block Diagram





Technical Specifications

Electrical - Uplink			
Frequency Range		MHz	1710-1785
Bandwidth		MHz	75
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.9 (typ. 1.5)
Pass Band Ripple		dB	≤ 1.2
Insertion Loss in By-pass Mode		dB	≤ 2.2
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 25
Return Loss	Normal Operation	dB	≥ 18
	Bypass Mode		≥ 14
Alarm Management in Normal Mode	Minor Alarm	mA	> 230 ± 20@+12V (Operation)
	Major Alarm		> 330 ± 20@+12V (By-pass Mode)
Alarm Management in AISG Mode			Compatible with AISG 1.1
Electrical - Downlink			
Frequency Range		MHz	1805-1880
Bandwidth		MHz	75
Insertion Loss		dB	≤ 0.6
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band		dBm	≤ -110 (2 TX carriers at +43dBm)
Power, Mechanical & Environmental			
Modem Characteristics			According to AISG standard 1.1 (Data rate:9.6kB)
Connectors Type	RF		7/16 DIN-Female
	AISG		8-pin Female IEC60130-9 (Pin1:+12V ,Pin3:RS485B, Pin5:RS485A, Pin7:DC return; other pins: not connected)
Operating Voltage		V	+10 to +15
Operating Current with Dual Ports Power Supply		mA	140 ± 10 @+12V
Operating Current with Single Port Power Supply (AISG Mode)		mA	250 ± 10 @+12V
Power Consume		W	≤ 3.5(dual units)
Operation Mode			DC/OOK Node B0
			DC Node B1
Dimensions, LxWxH (excluding connectors & mounting brackets)		mm(in)	250x224x60 (9.8x8.8x2.4)
Weight		kg(lb)	5 (11)
Mounting			Wall mounting: with 4 screws
			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature			-40 to +65
Operating Humidity		%	≤ 95
EMC		°C	ETS 300 342-3
Lightning Protection	RF Ports		Comply with IEC 61000-4-5; 8kA, 8/20μs
	AISG Port		RS485A，RS485 B Different mould 3kA，Common mould 5KA ,DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		hr	> 1,000,000(per unit)

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 1900MHz AISG1.1 Tower Mounted Amplifier
TA-P12FDA

Features

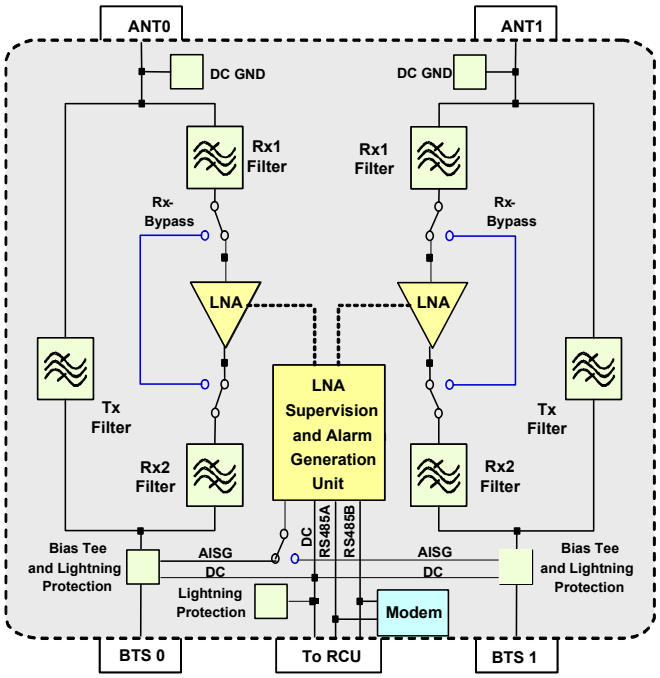
- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation will be generated when AISG signal is not available
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG1.1 compliance

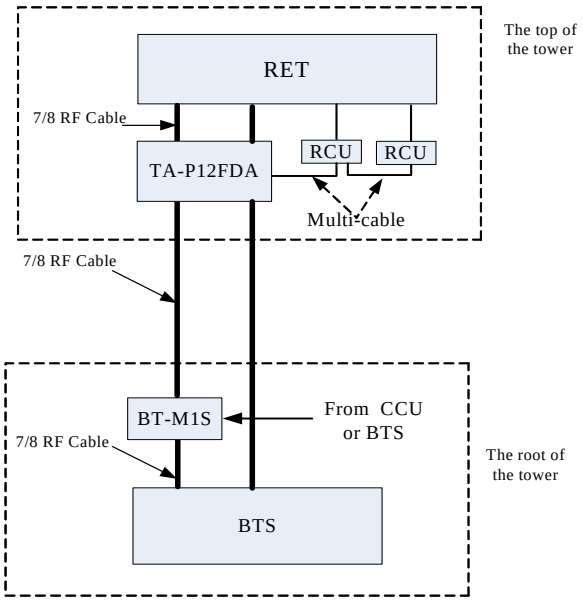
Product Description

The TA-P12FDA is a 1900 MHz twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-P12FDA will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Typical Block Diagram





Technical Specifications			
Electrical – Uplink			
Frequency Range		MHz	1850-1910
Bandwidth		MHz	60
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.9 (typ. 1.5)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 2.2
Output 3rd Order Intercept Point (OIP3)		dBm	≥25
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Alarm Management(None AISG mode)	Minor Alarm	mA	230±20mA(Operation)
	Major Alarm		330±20mA(By-pass Mode)
Group Delay		ns	≤ 100
Electrical – Downlink			
Frequency Range		MHz	1930-1990
Bandwidth		MHz	60
Insertion Loss		dB	≤ 0.6
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW); 58.6 (Peak)
7th order PIM		dBm	≤-110 (2 TX carriers at +43dBm)
Group Delay		ns	≤ 50
Power, Mechanical & Environmental			
Modem Characteristics			According to AISG Standard 1.1 (Data rate:9.6kB)
Operating Voltage		V	+9 to +15
Operating Current at single port		mA	140±10@+12V
Power Consume		W	≤ 1.8
Dimensions, LxWxH (excluding connector and mounting brackets)		mm (in)	250x224x59.5(9.9x8.8x2.4)
Weight		kg (lb)	6(13.2)
Mounting			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Connectors Type	RF		7/16 DIN-Female
	AISG		8-pin AISG-Female Pin1:+12V,Pin3:RS485B, Pin5:RS485A, Pin6:+24V,Pin7:DC return, other pins: not connected
Lightning Protection	RF		8kA, 8/20μs
	AISG		RS485A. RS485 B Different mould 3kA. Common mould 5kA, DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 1900MHz AISG2.0 Tower Mounted Amplifier
TA-P12FDA-A

Features

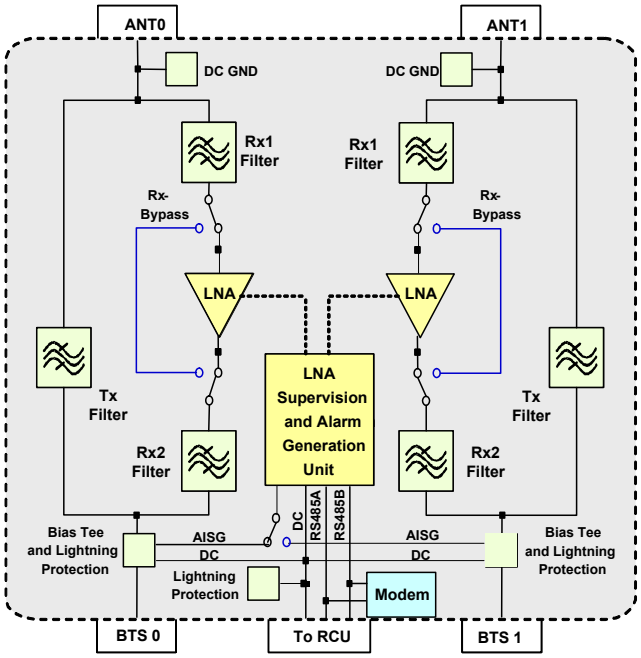
- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation will be generated when AISG signal is not available
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 2.0 Compatible

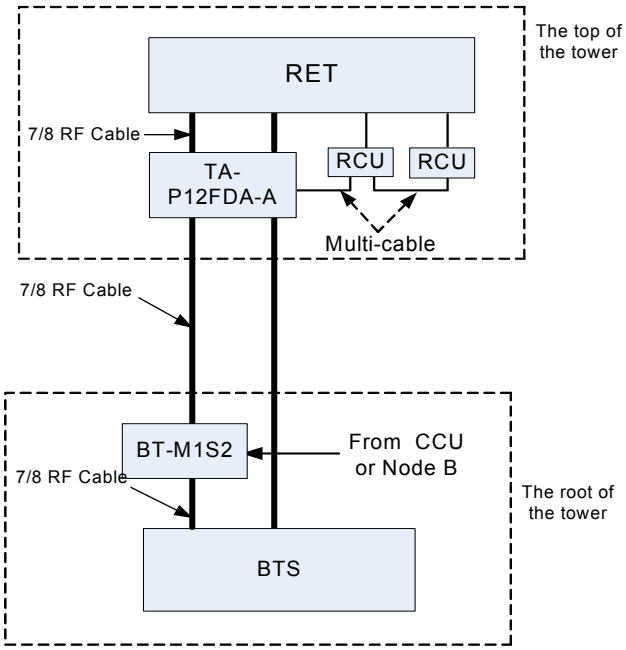
Product Description

The TA-P12FDA-A is a PCS1900/CDMA1900 twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-P12FDA-A will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Typical Application Block Diagram





Technical Specifications

Electrical - Uplink

Frequency Range		MHz	1850-1910
Bandwidth		MHz	60
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.9 (typ. 1.5)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 2.2
Output 3rd Order Intercept Point(OIP3)		dBm	≥ 25
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Alarm Management(None AISG mode)	Minor Alarm	mA	120±20mA@+24V(Operation)
	Major Alarm		200±20mA@+24V(By-pass Mode)
Group Delay		ns	≤ 100
Alarm Management in AISG Mode			Compatible with AISG 2.0

Electrical - Downlink

Frequency Range		MHz	1930-1990
Bandwidth		MHz	60
Insertion Loss		dB	≤ 0.6
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW);58.6(Peak)
Inter-modulation Products in RX Band		dBm	≤ -110 (2 TX carriers at +43dBm)
Group Delay		ns	≤ 50

Power, Mechanical & Environmental

Modem Characteristics			According to AISG Standard 2.0 (Data rate:9.6kB)
Operating Voltage		V	+9 to +30
Operating Current with single port		mA	70 ± 10@+24V
Power Consume with single port		W	≤ 1.8
Operation Mode (Only Node B0 pass DC/OOK)			
Dimensions, LxWxH (excluding connectors & mounting brackets)		mm(in)	250x224x59.5 (9.8x8.8x2.3)
Weight		kg(lb)	≤ 6 (13.2)
Mounting			Wall mounting: with 4 screws
			Mast mounting: with clamp set
Connector Type	RF		7/16 DIN-Female
	AISG		8-pin Female IEC60130-9 (Pin6:+24V, Pin3:RS485B, Pin5:RS485A, Pin7:DC return; other pins: not connected)
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Lightning Protection	RF		8kA, 8/20μs
	AISG		RS485A. RS485 B Different mould 3kA. Common mould 5kA, DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Twin 2100MHz AISG2.0 Tower Mounted Amplifier

TA-W12FDA-A

Features

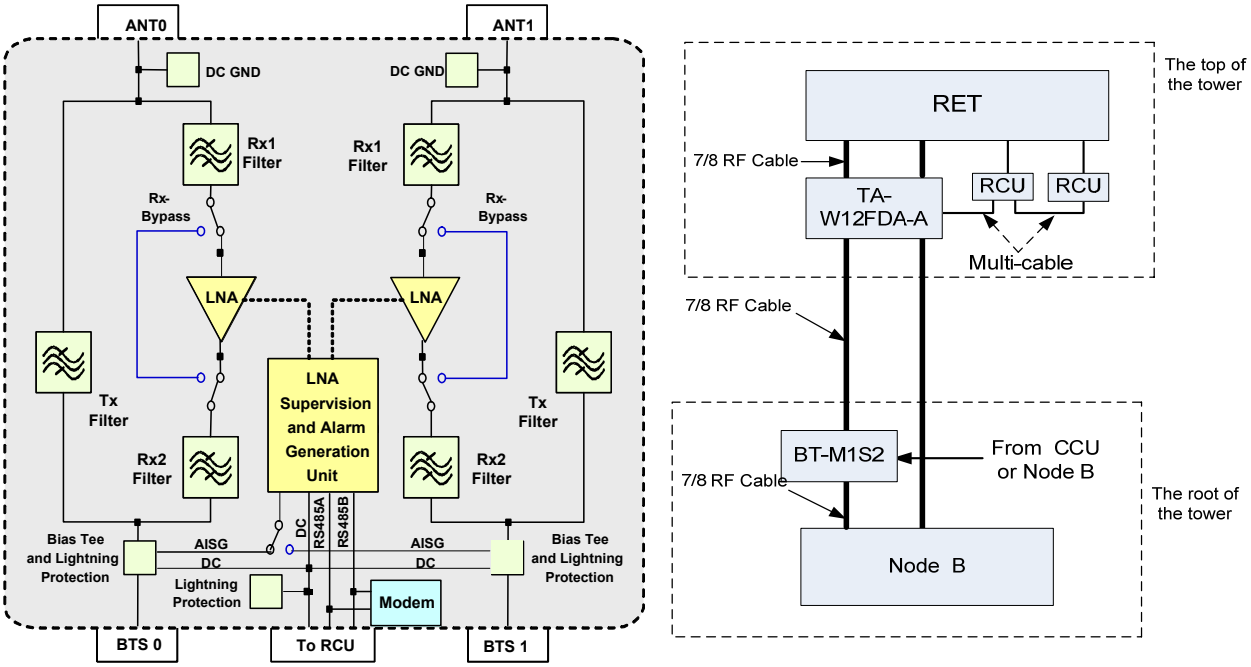
- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation will be generated when AISG signal is not available
- Light weight and compact design
- Salt spray resistance, IP66
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 2.0 Compatible

Product Description

The TA-W12FDA-A is a WCDMA2100MHz twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-W12FDA-A will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Typical Application Block Diagram



Technical Specifications			
Electrical - Uplink			
Frequency Range		MHz	1920-1980
Bandwidth		MHz	60
System Gain		dB	12± 1
Noise Figure		dB	≤ 1.9 (typ. 1.7)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 2.4
Output 3rd Order Intercept Point (OIP3)		dBm	≥25
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Group Delay		ns	≤ 80
Alarm Management in AISG Mode			Compatible with AISG 2.0
Electrical – Downlink			
Frequency Range		MHz	2110-2170
Bandwidth		MHz	60
Insertion Loss		dB	≤ 0.5
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power		dBm	52 (CW); 58.6(Peak)
7th order PIM		dBm	≤-117 (2 TX carriers at +43dBm)
Group Delay		ns	≤ 25
Power, Mechanical & Environmental			
Modem Characteristics			According to AISG Standard 2.0 (Data rate:9.6kB)
Connectors Type	RF		7/16 DIN-Female
	AISG		8-pin Female IEC60130-9 (Pin6:+24V, Pin3:RS485B, Pin5:RS485A, Pin7:DC return; other pins: not connected)
Operating Voltage		V	+9 to +30
Operating Current		mA	150 ± 20@+24V
Power Consume		W	≤ 4
Operation Mode (Only Node B0 pass DC/OOK)			DC/OOK Node B0
Dimensions, LxWxH (excluding connector and mounting brackets)		mm (in)	200x194x54.3(7.9x7.7x2.1)
Weight		kg (lb)	4.0(8.8)
Mounting			Mast mounting: with clamp set
Enclosure Color			Light Grey
Enclosure Material			Aluminum
Operating Temperature		°C	-40 to +65
Operating Humidity		%	≤ 95
EMC			ETS 300 342-3
Lightning Protection	RF		8kA, 8/20μs
	AISG		RS485A. RS485 B Different mould 3kA. Common mould 5kA, DC and GND Different mould 3kA
Environmental Class			IP66
MTBF		hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Twin UMTS2100 Tower Mounted Amplifier
TA-W12FDA-02

Features

- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Light weight and compact design
- Salt spray resistance, IP67
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 1.1 Compatible and can be updated to AISG 2.0 remotely.

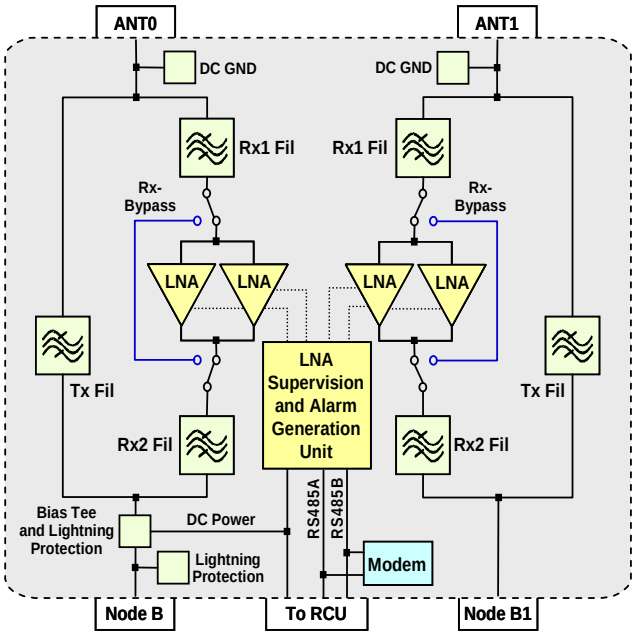
Photo for reference

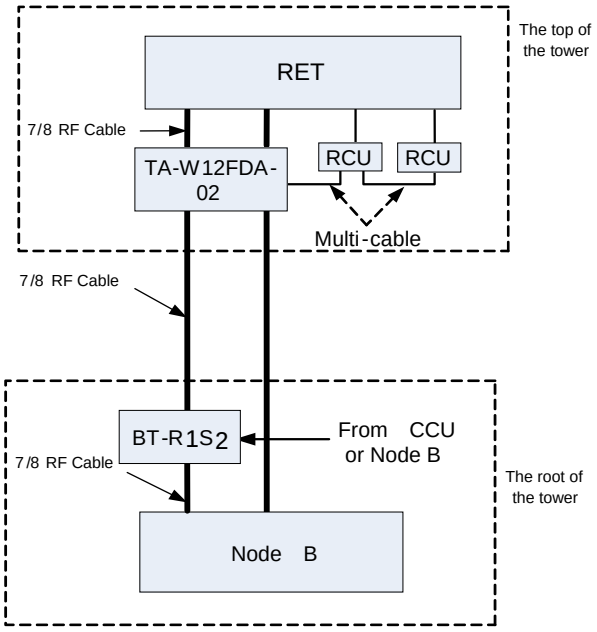
Product Description

The TA-W12FDA-02 is a UMTS2100MHz twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-W12FDA-02 will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Typical Application Block Diagram





Technical Specifications

Electrical - Uplink

Frequency Range		MHz	1920-1980
Bandwidth		MHz	60
System Gain		dB	≥12
Noise Figure		dB	2.0 dB(Typical 1.7)
Gain Ripple		dB	≤ 0.5
Insertion Loss in By-pass Mode		dB	≤ 2.3
Output 3rd Order Intercept Point (OIP3)		dBm	≥25
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 16
Tx-Rejection		dB	≥ 75
Group Delay		ns	≤ 150
Impedance		Ω	50

Electrical – Downlink

Frequency Range		MHz	2110-2170
Bandwidth		MHz	60
Insertion Loss		dB	≤ 0.5
Return Loss		dB	≥ 18
Rx-rejection		dB	> 45
Average operating power, max.		W	200 (+53dBm)
Power Handling Survival		W	500 (+57dBm)
Intermodulation in Rx band @2x43dBm		dBm	≤-120
Impedance		Ω	50

Power, Mechanical & Environmental

DC and Alarm port				DC and monitor signal only form Node B0 port
AISG Compatible				AISG1.1 (can be updated to AISG2.0 remotely)
Dimensions, LxWxH excluding connectors			mm(in)	200×194×55 (7.88x7.64x2.2)
Weight			kg(lb)	3.0(6.6)
Mounting Kit				Pole mounting
Connectors Type	RF	ANT		7/16 DIN-Female
		Node B		7/16 DIN-Female
	AISG			8-pin Female IEC60130-9 (Pin1:+12V ,Pin3:RS485B, Pin5:RS485A, Pin6:+24v,Pin7:DC return; other pins: not connected)
Enclosure Color				Light Grey, NCS 1502-R
Enclosure Material				Aluminum
Operating Temperature			°C	-40 to +65
Operating Humidity			%	≤ 100
EMC and Safety Approvals				ETS 300 342-3
Lightning Protection				IEC 1312-1, 8/20 μs pulse, 8kA
Weather Protection				DIN 400 50: IP67. ETS 300 019-1-4
MTBF			hr	> 500,000

Twin 2100MHz Tower Mounted Amplifier
TA-W12FD

Features

- Two TMA units in one enclosure
- Balanced LNA design and power failure bypass for high reliability
- Alarm management: DC current load simulation
- Light weight and compact design
- Salt spray resistance
- IP66 with Gore Tex ventilation membrane
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF

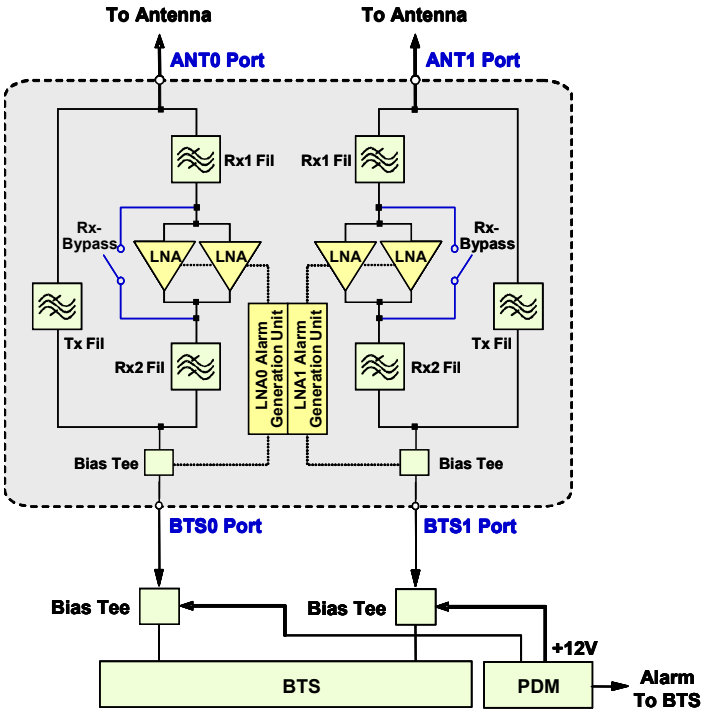
Product Description

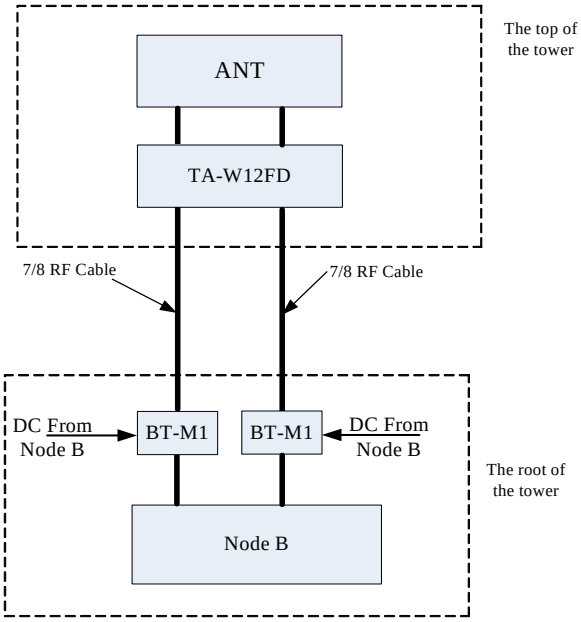
The TA-W12FD is a WCDMA2100MHz twin tower mounted amplifier for both main and diversity branch and fits with cross-pole antennas. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-W12FD will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, lightning protection and bypass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

Power is supplied via external bias tees that connect between the TA-W12FD and the PDM. Each PDM is constructed into a 19" 1U form factor, and can provide power for up to three units of TA-W12FD.

Typical Application Block Diagram





Technical Specifications

Electrical - Uplink

Frequency Range		MHz	1920-1980
Bandwidth		MHz	60
System Gain		dB	12 ± 1
Noise Figure		dB	≤ 1.9 (typ. 1.5)
Pass Band Ripple		dB	≤ 1.0
Insertion Loss in By-pass Mode		dB	≤ 2.3(typ. 1.7)
Output 3rd order Intercept Point		dBm	≥ 25
Return Loss	Normal Operation	dB	≥ 18
	Bypass Mode		≥ 14
Group Delay		ns	≤ 80
Group Delay per 5MHz Band		ns	≤ 20
Alarm Management	Minor Alarm	mA	≥ 230 (Operation)
	Major Alarm		≥ 330 (By-pass Mode)

Electrical – Downlink

Frequency Range	MHz	2110-2170
Bandwidth	MHz	60
Insertion Loss	dB	≤ 0.5
Return Loss	dB	≥ 18
Absolute Maximum RF Input Power	dBm	52 (CW); 58.6 (Peak)
Inter-modulation Products in RX Band	dBm	≤ -117 (2 TX carriers at +43dBm)
Group Delay	ns	≤ 25
Group Delay per 5MHz Band	ns	≤ 5

Power, Mechanical & Environmental

Operating Voltage	V	9 to +15
Operating Current per Port	mA	110±10 @+12V
Power Consume per Port	W	≤ 1.5
Dimensions, LxWxH (excluding connectors & mounting brackets)	mm(in)	192x196x54 (7.5x7.7x2.1)
Weight	kg(lb)	4 (8.8)
Mounting		Wall mounting: with 4 screws
		Mast mounting: with clamp set
Connector Type		7/16 DIN-Female
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature	°C	-40 to +65
Operating Humidity	%	≤ 95
EMC		ETS 300 342-3
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Environmental Class		IP66
MTBF	hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Twin LTE2.6G AISG2.0 Tower Mounted Amplifier
TA-Y12FDA-A

Features

- Two TMA units in one enclosure.
- Bypass mode ensures minimal disruption to uplink signal during power failure.
- Light weight and compact design.
- Built-in lightning protection.
- Ventilated design using GORE-TEX membrane helps prevent moisture from building up within enclosure.
- AISG 2.0 Compatible.

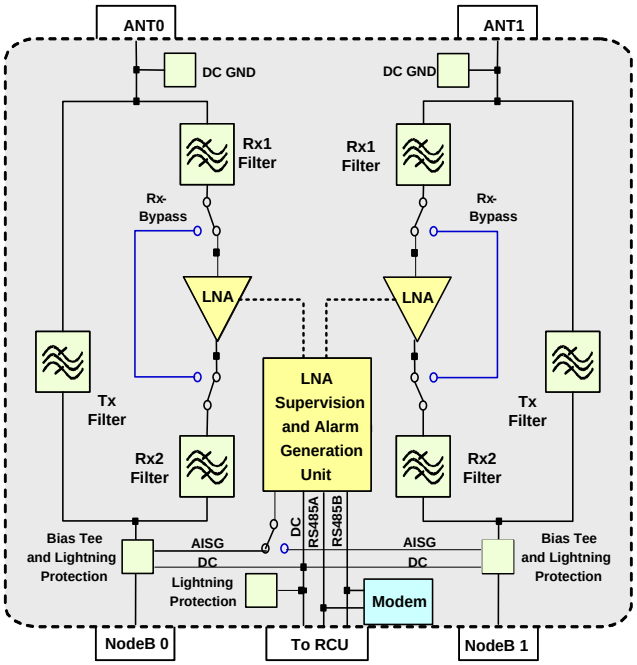
Photo for reference

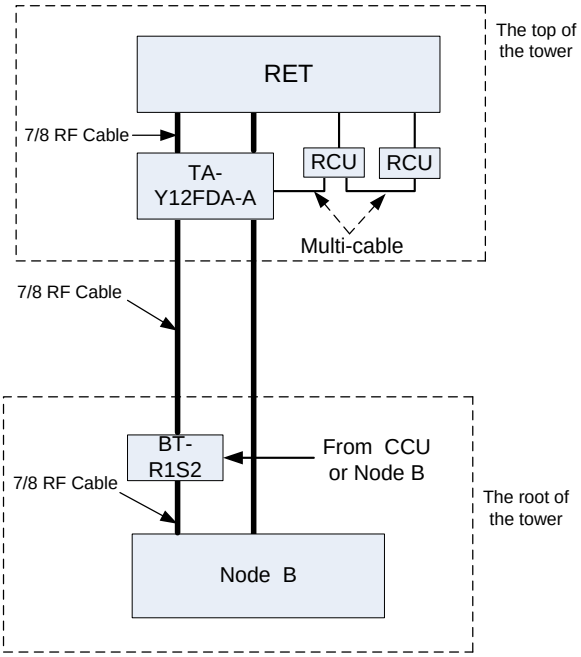
Product Description

TA-Y12FDA-A is a LTE2.6G twin tower mounted amplifier for both main and diversity branch of a cell sector. The unit is installed near the antenna at the tower top to improve receive sensitivity of base station. The usage of TA-Y12FDA-A will result in increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. RF quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

TA-Y12FDA-A is made of high quality band-pass filters, low noise amplifier (LNA), bias tee, and lightning protection and bypass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system. An AISG port is located beneath the TMA for connection to other AISG compliant line devices.

Typical Application Block Diagram





Technical Specifications

Electrical - Uplink

Frequency Range		MHz	2500-2570
Bandwidth		MHz	70
System Gain		dB	12 ± 1
Noise Figure	Room temperature	dB	≤ 1.9 (typ. 1.6)
	-40 °C to +65 °C	dB	≤ 2.1
Insertion Loss in By-pass Mode		dB	≤ 2.2
Output 3rd Order Intercept Point (OIP3)		dBm	≥ 24
Return Loss	Normal Operation	dB	≥ 18
	Bypass Mode		≥ 14
Alarm Management in AISG Mode			Compatible with AISG 2.0

Electrical - Downlink

Frequency Range	MHz	2620-2690
Bandwidth	MHz	70
Insertion Loss	dB	≤ 0.5
Return Loss	dB	≥ 18
Absolute Maximum RF Input Power	dBm	50 (Avg.); 58.6 (Peak)
Inter-modulation Products in RX Band	dBm	≤ -110 (2 TX carriers at +43dBm)

Power, Mechanical & Environmental

Modem Characteristics		According to AISG Standard 2.0 (Data rate:9.6kB)
Operating Voltage	V	+10 to +30
Operating Current	mA	140 ± 10@+24V
Power Consume	W	≤ 3.5
Alarm management		AISG
Dimensions, LxWxH (Including connectors and mounting kits)	mm (in)	272x194x83.8(10.6x7.7x3.3)
Weight(Including connectors and mounting kits)	kg (lb)	4 (8.8)
Mounting, max. 8mm diameter		Wall mounting: with 4 screws
		Mast mounting: with clamp set
Connectors Type — RF		7/16 DIN-Female
Connectors Type — AISG		8-pin Female IEC60130-9 (Pin6:+24V, Pin3:RS485B, Pin5:RS485A, Pin7:DC return; other pins: not connected)
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature Range	°C	-40 to +65
Operating Humidity	%	≤ 95
EMC		ETS 300 342-3
Lightning Protection — RF		8kA, 8/20μs
Lightning Protection — AISG		RS485A. RS485B different mould 3kA. Common mould 5kA, DC and GND different mould 3kA
Environmental Class		IP66
MTBF	hr	> 1,000,000

Note: Measurements taken at room temperature, unless otherwise stated.

Dual Band Tower Mounted Amplifier

TA-C12G12FDA-A

Features

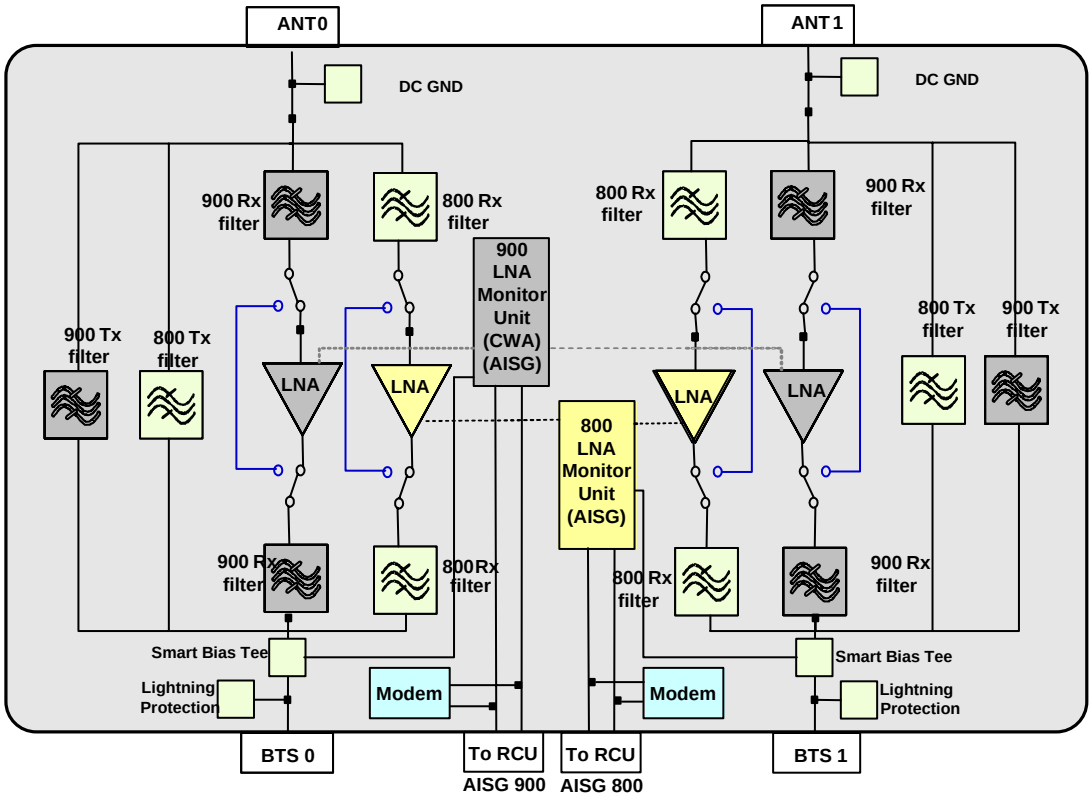
- Dual band 800/900 full duplex TMA
- Alarm for LNA 800MHz will be reported through AISG protocol
- Alarm for LNA 900MHz will be reported through current window(CWA) or AISG protocol
- For deploying 800MHz on top of existing 900MHz antenna line system without the need to rely on additional jumpers or feeders.
- Salt spray resistance, IP67
- Built-in lightning protection and vented enclosure design
- EMP protection with excellent MTBF
- AISG 2.0 Compatible

Product Description

The TA-C12G12FDA-A is a dual band tower mounted amplifier aims to provide tower top LNA functionalities for both 800MHz and 900MHz for antenna line systems equipped with one pair of feeders on both antenna and BTS ports. The unit is installed near the antenna at the tower top to improve receiver sensitivity of the base station. The usage of TA-C12G12FDA-A will result in an increase of successful call attempts, reduction of call drops, maximized data transmission rate, improved call quality and extended handset talk time. Quality improvements will lead to increased traffic volume and user satisfaction, hence increasing network revenue. It is recommended for use in new network roll-outs to minimize base station count, or for upgrading of existing base stations to improve signal quality and drop call performance.

The system comprises high quality band-pass filters, low noise amplifiers (LNA), bias tee, and lightning protection and by-pass circuitries. The LNA bypass circuitry is activated when the DC supply is switched off or when there is a fault in the system.

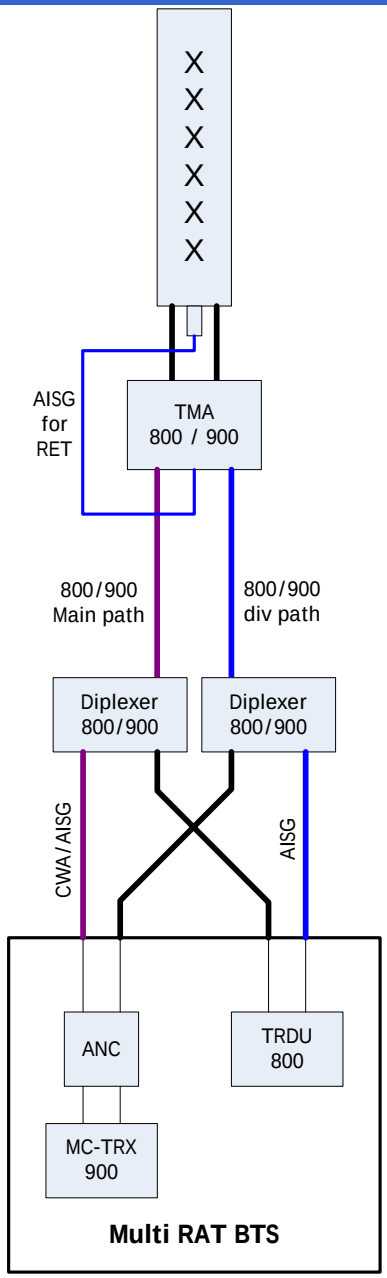
Block Diagram

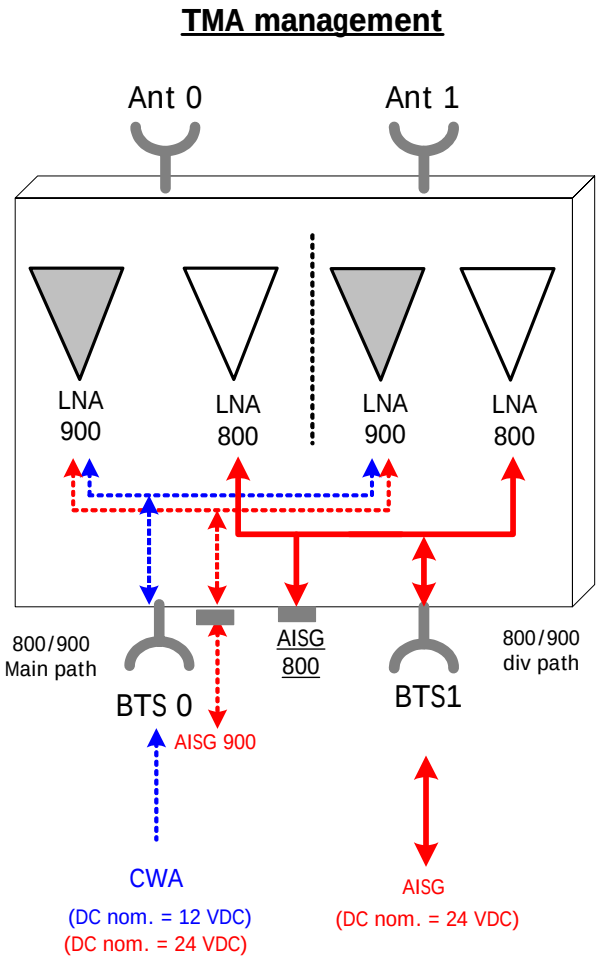


Technical Specifications

Electrical – Uplink			
Frequency Range(900MHz band)		MHz	890-915
Frequency Range(800MHz band) for High frequency HW variant		MHz	842-862
System Gain		dB	12±1.0
Noise Figure		dB	typ. 1.5 / max. 1.8
Insertion Loss in By-pass Mode		dB	typ. 3.0/max. 3.5
Input 1-dB compression point		dBm	≥0
Input 3rd order intercept point		dBm	≥14
Return Loss	Normal Operation	dB	≥ 18
	By-pass Mode		≥ 14
Maximum input power for RX input		dBm	0
Electrical – Downlink			
Frequency Range(900MHz band)		MHz	935-960
Frequency Range(800MHz band) for High frequency HW variant		MHz	801-821
Insertion Loss		dB	max. 0.7
Return Loss		dB	≥ 18
Absolute Maximum RF Input Power @800MHz		dBm	48(CW); 57(Peak)
Absolute Maximum RF Input Power @900MHz		dBm	49(CW); 58(Peak)
DC and Alarm Characteristics for 800MHz			
Alarm management		-	Per AISG2.0
Modem Characteristics		-	According to AISG Standard 2.0
Operating Voltage		V	+10 to +30
Operating current consumption in CWA mode		W	< 2(<80@ +24V)
DC and Alarm Characteristics for 900MHz			
Alarm management		-	CWA or AISG2.0 compliance
Nominal voltage range(in CWA mode)		V	+10.5 to +13.5
Operating current in CWA mode		mA	<150(maximum in voltage range +10.5V to 13.5V)
Current alarm window		mA	220±20
Nominal voltage range(in AISG mode)		V	+10 to +30
Operating current consumption in CWA mode		W	< 2(<80@ +24V)
Mechanical & Environmental Characteristics			
Dimensions, LxWxH (excluding the connectors and the mounting brackets)		mm	< 230 x210 x 140
Weight		kg	<12
Mounting		-	Pole mounting: with clamp set Wall mounting: with 4 screws
Enclosure Color		-	Light Grey
Enclosure Material		-	Aluminum
Operating Temperature		ºC	-40 to +55
Operating Humidity		%	≤ 100
EMC		-	ETS 300 342-3
Connectors Type	RF	-	7/16 DIN-Female
	AISG	-	8-pin female, IEC 60130-9 (pin3: RS485B, pin5: RS485A, pin6: +24V, pin7: DC return, other pins: not connected)
Lightning Protection	ANT port	-	DC Ground
	BTS port		10kA, 8/20μs
Environmental Class		-	IP67
MTBF		hr	> 1,000,000

Application diagram





Wide-band OOK Bias Tee

BT – R1, BT-R2

Features and Product Description

- Wide-band design covers 698-2700MHz range
- Injects DC voltage and OOK signal (2.176 MHz) to ALDs
- Complies with AISG 2.0/3GPP
- Extremely low insertion loss and VSWR
- Provides lightning protection for BTS
- Suitable for operating in high or low temperature, humidity and other bad environment

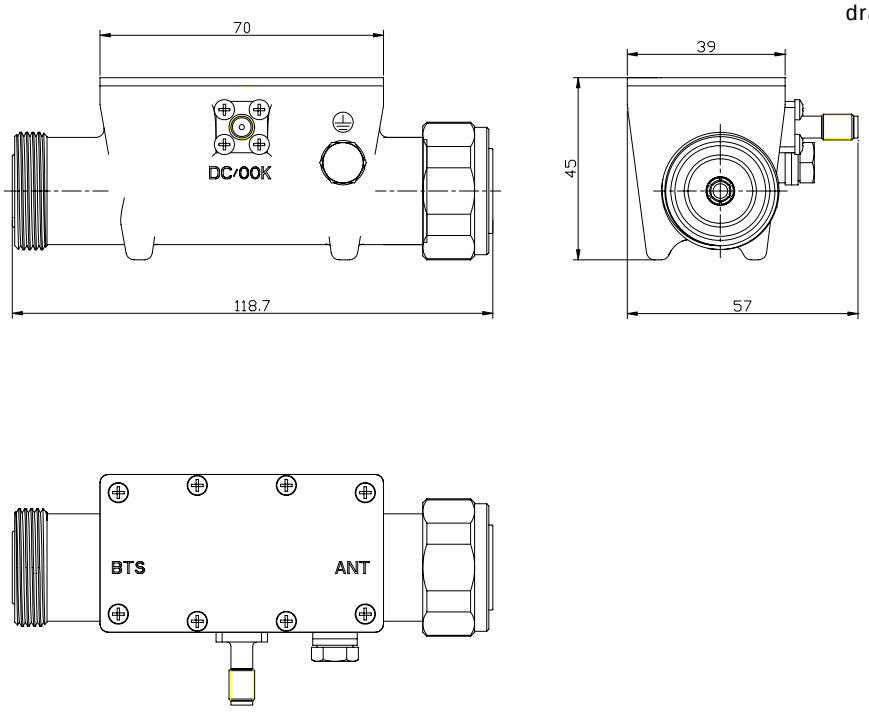
BT-R2 photo shown for reference

Technical Specifications

Electrical			BT-R1	BT-R2
Frequency Range		MHz	698-2700	
Insertion Loss		dB	≤ 0.2	
VSWR			≤ 1.2	
Inter-modulation Products		dBc	≤ -153 @2x43dBm	
Power Handling		W	≥ 120	
Current Capacitance		A	2.3	
Operational Voltage		V	9-30	
Impedance		Ω	50	
Mechanical				
Dimensions, LxWxH (including connectors)		mm(in)	119×57×45(4.7×2.2×1.8)	
Weight		kg(lb)	0.5 (1.1)	
Connectors	BTS/Node B Port		7/16 Male	7/16 Female
	ANT Port		7/16 Female	7/16 Male
Operational Humidity		%	<95	
Temperature Range		°C	-40 to +60	
Environmental Class			IP66 (Indoor or Outdoor)	
Lightning Protection			8kA, 8/20μs	
EMC			ETS 300 342-3	

Outline Drawing

BT-R2 outline drawing reference



Wide-band Smart Bias Tee (AISG 2.0)

BT–R1S2, BT–R2S2

Features and Product Description

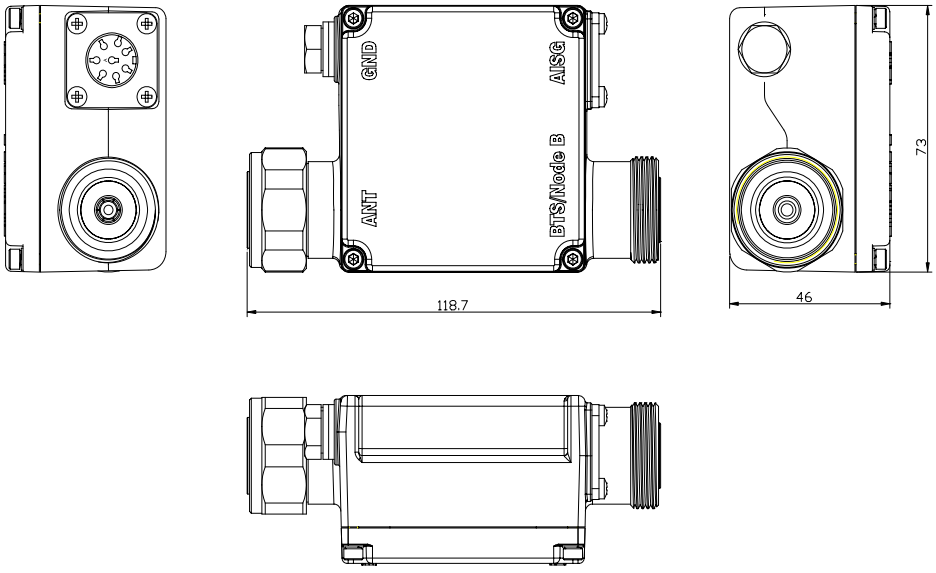
- Designed to cover 698-2700MHz
- Provides DC voltage as well as remote control signals via RF feeder cable to TMA or Antenna Line Devices (ALD)
- Complies with AISG2.0 standard
- Extremely low insertion loss and VSWR
- Provides lightning protection for BTS/Node B
- BT-R1S2 is commonly installed close to BTS/Node B and BT-R2S2 is installed on the tower close to VET antenna when no TMA is in use

BT-R2S2 photo shown for reference

Technical Specifications

Electrical			**BT-R1S2**	**BT-R2S2**
Frequency Range		MHz	698-2700	
Insertion Loss		dB	≤ 0.2	
VSWR			≤ 1.2	
Modem Carrier Frequency		MHz	2.176	
Inter-modulation Products		dBc	≤ -153 @2x43dBm	
Power Handling		W	≥ 120	
Current Capacity		A	2.3	
Power Consume		W	0.8	
Operational Voltage		V	10-30	
Model			+24V (AISG port in,ANT port out)	+24V (BTS/Node B port in, AISG port out)
Impedance		Ω	50	
Mechanical				
Dimensions, LxWxH (including connectors)		mm (in)	119×73×46(4.7×2.9×1.8)	
Weight		kg (lb)	0.45 (0.99)	
Connectors	BTS/Node B Port		7/16 DIN Male	7/16 DIN Female
	ANT Port		7/16 DIN Female	7/16 DIN Male
	DC/AISG Port		8-pin Male Connector	8-pin Female Connector
Operational Humidity		%	5 - 95	
Temperature Range		°C	-40 to +65	
Environmental Class			IP66 (Indoor or Outdoor)	
Lightning Protection			8kA, 8/20μs	
EMC			ETS 300 342-3	

Outline Drawing



BT-R2S2 outline drawing reference

Features and Product Description

- Provide constant +12VDC power via Bias Tee and alarm handling for up to 6 TMAs
- Can be powered by +24VDC or -48VDC alternatively
- Two variants available: PDM-001B and PDM-003B
- TMA operation status can be monitored by the PDM LED indicator
- Light weight and compact design
- Standard 1U 19'' form factor

PDM-003B

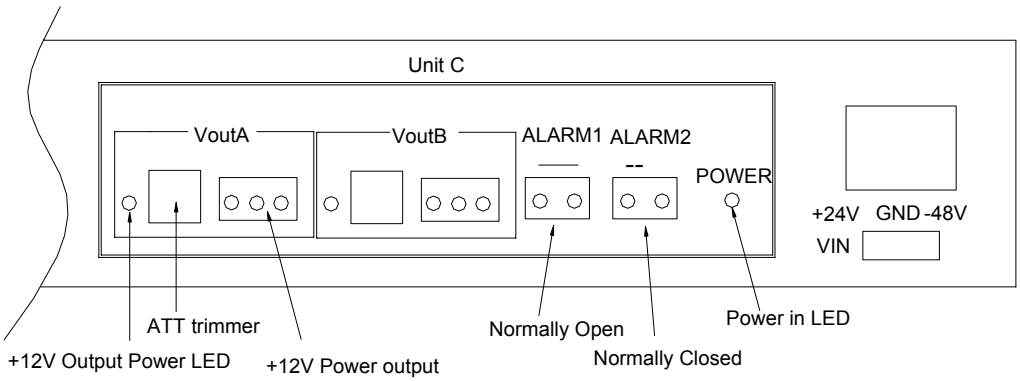
Technical Specifications

Input power		
Supply Voltage	VDC	-48 or +24
Input Voltage Fluctuation	%	20
Output Power		
Output Voltage	VDC	+12
Maximum Output Current per Output	mA	350
Number of Outputs		2 or 6
Power, Mechanical & Environmental		
Dimensions, HxWxD	mm (in)	45x482x152 (1.8x18.9x6.0)
Weight	kg (lb)	2.5 (5.5)
Enclosure Color		Light Grey
Enclosure Material		Aluminum
Operating Temperature	°C	-10 to +50
Operating Humidity	%	<95
EMC		ETS 300 342-3
Environmental Class		Indoor Application

Note: Measurements taken at room temperature

PDM Connectors

All connectors are polarized to ensure correct cable is used and fitted properly. The description of each pin is shown in Table 1. Pin number is labelled from left to right whilst looking into the front panel.



PDM-003B front-panel

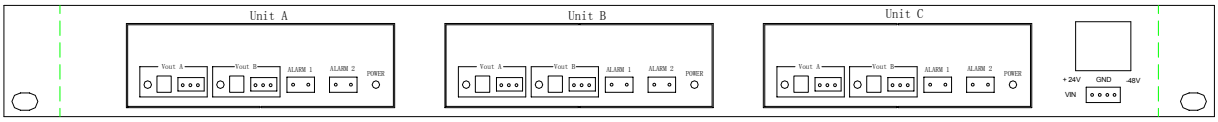
Connectors	PIN			
	1	2	3	4
VIN (input to PDM)	+24VDC	Ground	Ground	-48VDC
+12VDC Power Outputs	Ground	+12V Power Output	Ground	
ALARM1	Normally Open(when used will not used ALARM2)			
ALARM2	Normally Closed(when used will not used ALARM1)			

Table 1: Definitions of connectors on the PDM front-panel

Connector	Descriptions
VIN	Four-pin power input connector. The PDM is fed with -48VDC or +24VDC via this port.
+12VDC Power Output	This three-pin connector provides DC power supply to the TMA. It is connected to the +12VDC power input connector (SMA-J) of the Bias Tee
ALARM1	This Two-pin connector connects to the BTS alarm terminal for alarm reporting purposes. When connect to BTS Normally open, connect this PIN, Alarm is sent to the BTS using relay*. This occurs when LNA is faulty or when PDM output voltage is outside the range of 11.75V to 12.25V. Under this condition, the auto bypass switch will be activated to ensure that the UL signals are still received by the BTS.
ALARM2	This Two-pin connector connects to the BTS alarm terminal for alarm reporting purposes. When connect to BTS Normally Closed, connect this PIN, Alarm is sent to the BTS using relay*. This occurs when LNA is faulty or when PDM output voltage is outside the range of 11.75V to 12.25V. Under this condition, the auto bypass switch will be activated to ensure that the UL signals are still received by the BTS.

Table 2: Descriptions of connectors on the PDM front-panel

Outline Drawing



Note: The figure above shows front panel of the PDM-003B. The connections within each unit are the same. Each unit has one LED indicator with one LED indicator for every output. PDM-001B just has one unit (Unit A).

Indoor Diplexer
CM-BK2-IN1B

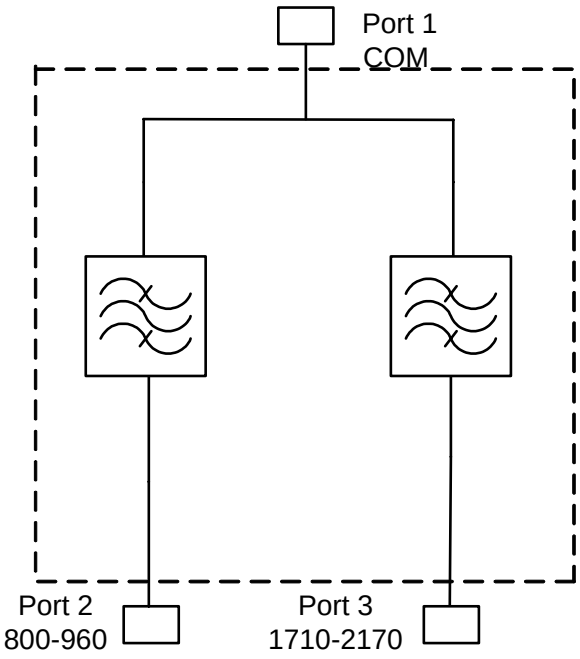
Features and Product Description

- Compact and cost effective solutions for combining two different input frequency bands into one common output.
- Combines GSM/CDMA and DCS/WCDMA bands.
- Low loss – maximizes system performance.
- High isolation – minimizes interference.
- Fast and easy installation.

Technical Specification

Electrical			
Frequency Range	MHz	800 – 960(Port 2)	1710 – 2170(Port 3)
Bandwidth	MHz	160	460
Isolation between Bands	dB	≥ 80@1710MHz-2170MHz	≥ 80@800MHz-960MHz
Input Power	W	≤ 100	
Insertion Loss	dB	≤ 0.3	
Return Loss	dB	≥ 20	
3rd Order Intermodulation	dBc	≤ -140 @2x43dBm	
Impedance	Ω	50	
Mechanical			
Dimension (LxWxH)	mm (in)	198x88x40 (7.8x3.5x1.6)	
Weight	kg (lb)	2.5 (5.5)	
Material and Color		Aluminum, Grey	
Connector Type		N-Female	
Operational Temperature	°C	-25 to 65	
Operational Humidity	%	< 95	
Environmental Class		Indoor	

Block Diagram



Indoor Diplexer
CM-BDW2-IN1

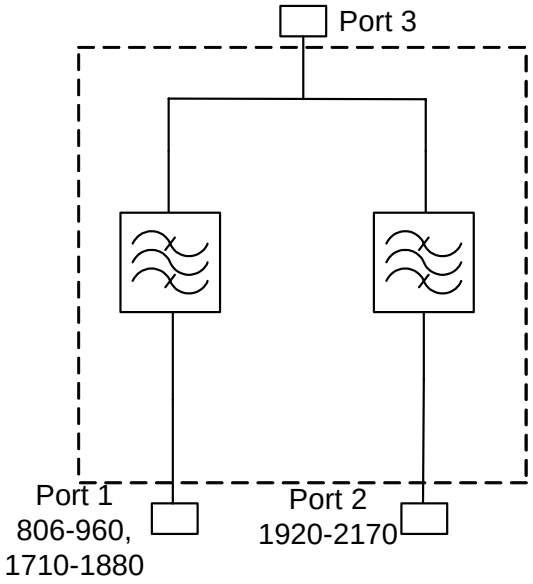
Features and Product Description

- Compact and cost effective solutions for combining two different input frequency bands into one common output.
- Combines CDMA800, GSM, UMTS and 3G bands.
- High power handling and low loss – maximizes system performance.
- High isolation – minimizes interference.
- Use for integrating new services into existing CDMA800/GSM900 in-building systems.

Technical Specification

Electrical				
Frequency Range		MHz	800-960, 1710-1880	1920-2170
Input Power		W	≤ 200	
Insertion Loss	800 – 960 MHz	dB	≤ 0.4	
	1710 – 1880 MHz		≤ 0.6	
	1920 – 2170 MHz		≤ 0.6	
Return Loss		dB	≥ 18	
Isolation between Bands		dB	≥ 60	
Pass Band Ripple	800 – 960 MHz	dB	≤ 0.3	
	1710 – 1880 MHz		≤ 0.4	
	1920 – 2170 MHz		≤ 0.4	
Impedance		Ω	50	
Mechanical				
Dimension, LxWxH		mm (in)	198x166x48 (7.8x6.5x1.9)	
Weight		kg (lb)	1.8 (4.0)	
Material and Color			Aluminum, Painted Grey	
Connector Type			Type N-Female	
Operational Temperature		°C	-35 to +70	
Operational Humidity		%	< 95	
Environmental Class			Indoor	

Block Diagram



Indoor Triplexer

CM-BDW3-IN1B

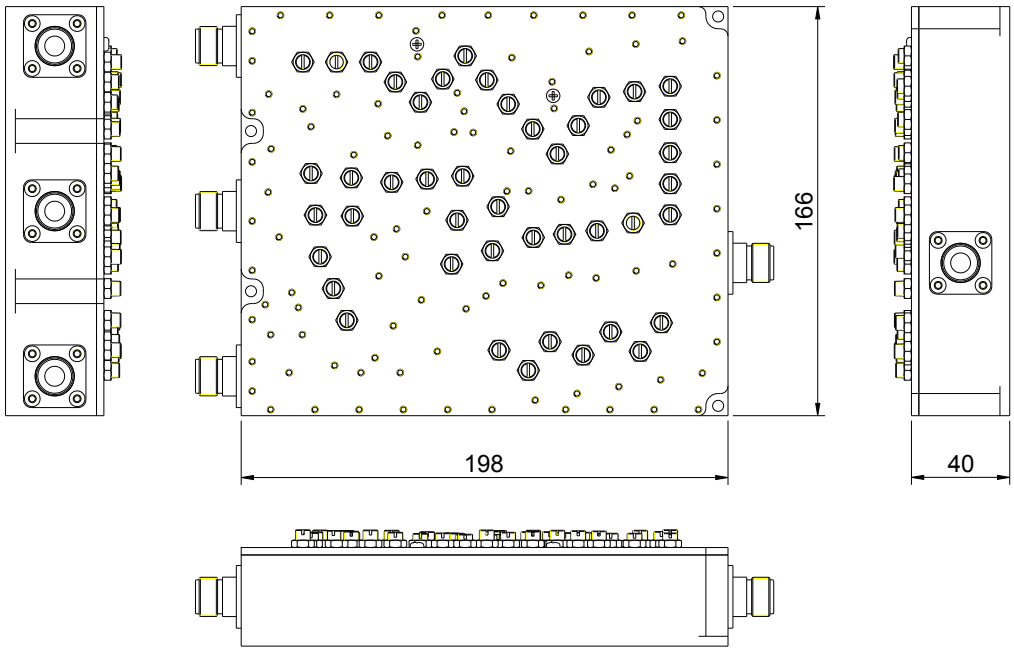
Features and Product Description

- Compact and cost effective combining of CDMA800, GSM900, GSM1800 and UMTS signals.
- 100W power handling capability.
- Low loss – maximizes system performance.
- High isolation – minimizes interference.
- Provide solutions for combining three different input frequency bands into one common output.
- Use for integrating new UMTS services into existing 2G in-building antenna distribution systems.

Technical Specification

Electrical					
Frequency Range		MHz	800 – 960	1710 – 1880	1920 – 2170
Input Power		W	100		
Insertion Loss		dB	≤ 0.4	≤ 0.6	≤ 0.6
Return Loss		dB	≥ 18		
Isolation between Bands	2G / 2G	dB	≥ 80		
	DCS / 3G		≥ 65		
	GSM / 3G		≥ 80		
Pass Band Ripple		dB	≤ 0.35	≤ 0.4	≤ 0.4
Impedance		Ω	50		
Mechanical					
Dimension (L x W x H, excluding connector)		mm	198 x 166 x 40		
Weight		kg	≤3.5		
Material and Color			Aluminum, Grey		
Connector Type			Type N-Female		
Operational Temperature		°C	-40 to +85		
Operational Humidity		%	< 95		
Environmental Class			Indoor		

Ordering Outline drawing



Indoor Diplexer

CM-DW2-IN1

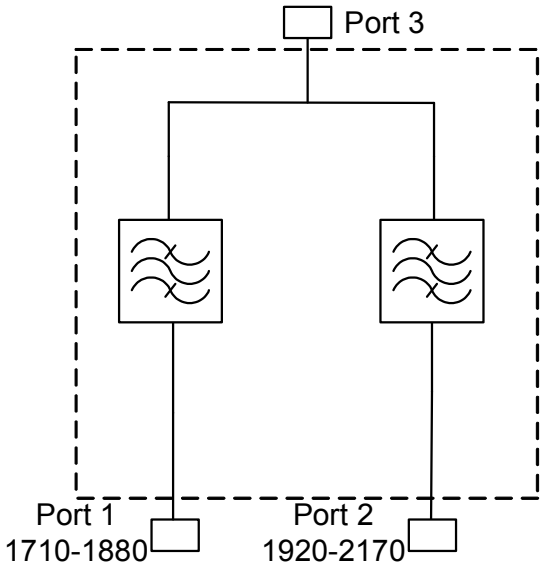
Features and Product Description

- Compact and cost effective solutions for combining GSM1800 and UMTS2100 bands.
- Low loss – maximizes system performance.
- High isolation – minimizes interference.
- Fast and easy installation.

Technical Specification

Electrical			
Frequency Range	MHz	1710 - 1880	1920 - 2170
Insertion Loss	dB	≤ 0.6	
Isolation between Bands	dB	> 60	
Input Average Power	W	≤ 100	
Return Loss	dB	≥ 20	
Intermodulation@2x43dBm in Tx		≤ -140	
Impedance	Ω	50	
Mechanical			
Dimension, LxWxH (excluding connectors)	mm (in)	142x112x34 (5.6x4.4x1.3)	
Weight	kg (lb)	2.0 (4.4)	
Material and Color		Aluminum, Grey	
Connector Type		N-Female	
Operational Temperature	°C	-40 to +65	
Operational Humidity	%	< 95	
Environmental Class		Indoor	

Block Diagram



Diplexer

CM-KY2-IN1

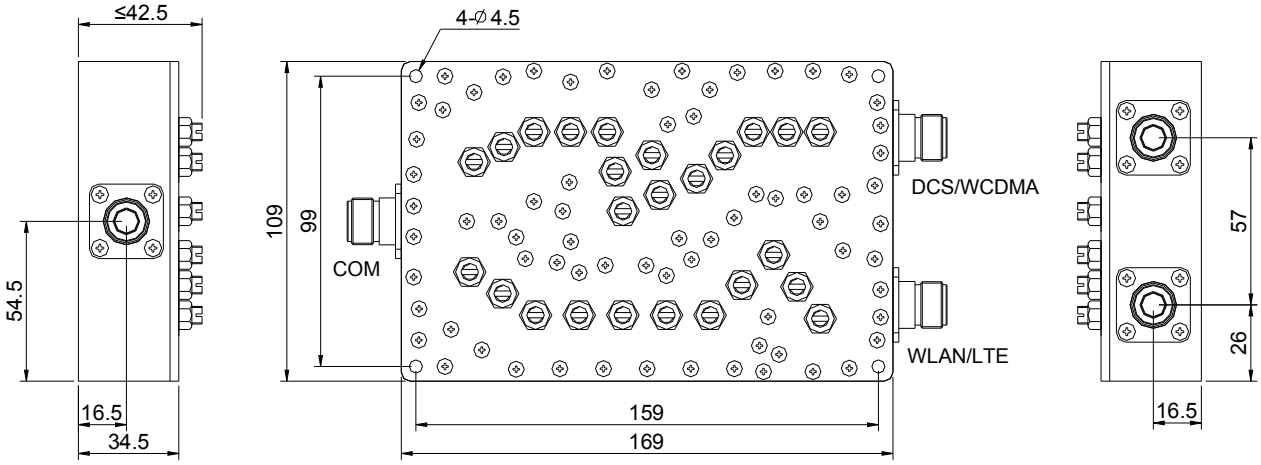
Features and Product Description

- Compact and cost effective solutions for combining GSM1800/UMTS2100 and LTE frequency bands.
- Low loss – maximizes system performance.
- High isolation – minimizes interference.
- Fast and easy installation.

Technical Specification

Electrical			
Frequency Range	MHz	1710-2170	2400-2700
Insertion Loss	dB	≤ 0.2	
Isolation between Bands	dB	> 50	
Input Power	W	≤ 250	
Return Loss	dB	≥ 20	
Intermodulation@2x43dBm in Tx		≤ -140	
Impedance	Ω	50	
Mechanical			
Dimension (LxWxH, excluding connectors)	mm (in)	169x109x42.5 (6.7x4.3x1.7)	
Weight	kg (lb)	2.0 (4.4)	
Material and Color		Aluminum, Grey	
Connector Type		N-Female	
Operational Temperature Range	°C	-40 to +65	
Operational Humidity	%	< 95	
Environmental Class		Indoor	

Outline Drawing



Indoor Diplexer

CM-ML2-IN2

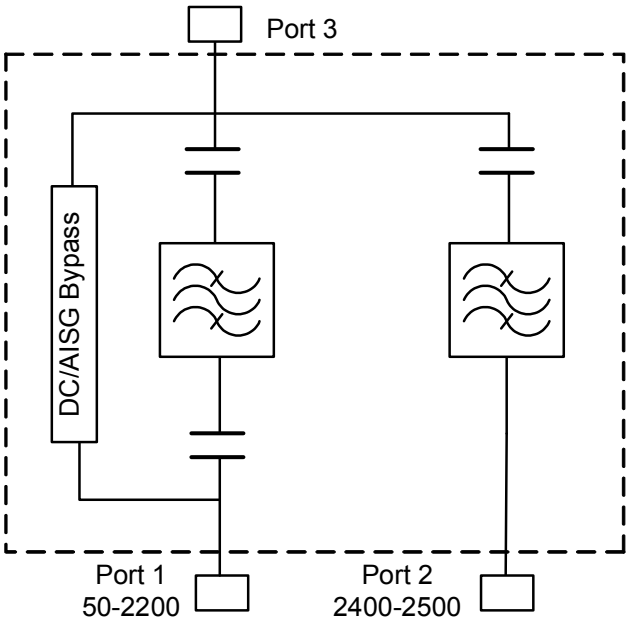
Features and Product Description

- Compact and cost effective solutions for combining two different input frequency bands into one common output.
- Designed for in-house multi-band distribution networks.
- Low loss- maximizes system performance.
- High isolation- minimizes interference.
- DC by-pass between low frequency band port and COM port.

Technical Specification

Electrical			
Frequency Range	MHz	50 - 2200	2400 - 2500
Insertion Loss	dB	≤ 0.4	
Isolation between Bands	dB	> 50	
Input Power	W	200	
Return Loss	dB	≥ 20	
PIM	dBc	≤ -140 @2x43dBm	
Impedance	Ω	50	
Mechanical			
Dimension (LxWxH)	mm (in)	153.5x86x37.4 (6.0x3.4x1.5)	
Weight	kg (lb)	2.0 (4.4)	
Material and Color		Aluminum, Grey	
Connector Type		N-Female	
Operational Temperature	°C	-20 to +65	
Operational Humidity	%	< 95	
Environmental Class		Indoor	

Block Diagram



Wideband Diplexer

CM-BK2-ODxx, CM-BK2D-ODxx (x= 1, 2, 3 or 4, Preconfigured DC-pass)

Features and Product Description

- Wide-band design to enable feeder sharing between systems in the 806-960MHz range and the 1710-2170MHz range
- Fast and easy installation
- High power handling and low loss – maximizes system performance
- 500W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC bypass, to be used with Tower Mounted Amplifiers and AISG devices
- Available as a single unit or double unit

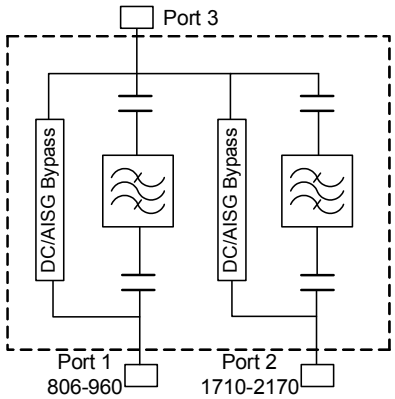
CM-BK2D-ODxC shown

Technical Specifications

Electrical				
Pass Band Frequency Range		MHz	806-960	1710-2170
Insertion Loss		dB	≤ 0.2	≤ 0.3
Isolation between Bands		dB	≥ 60 @806-960MHz	
			≥ 80 @1710-2170MHz	
Return Loss		dB	≥ 21	
Maximum input power pre port		W	250	250
Maximum output power at Common Port		W	500	
Intermodulation Products		dBc	≤ -155 @2x43dBm	
Impedance		Ω	50	
Mechanical				
Dimensions, LxWxH (including mounting brackets)	Single unit	mm (in)	309x105x89 (12.2x4.1x3.5)	
	Double unit		303x133x124 (11.9x5.2x4.9)	
Weight (including mounting brackets)	Single unit	kg (lb)	2.5 (5.5)	
	Double unit		4.0 (8.8)	
Colors			Light Grey	
Housing			Aluminum	
RF Connectors			7/16 DIN-Female	
Mounting Kit			Pole (clamps included for Φ 35-125mm) or wall mounted	
Environmental Characteristics				
Operating Temperature Range		°C	-40 to +65	
Operational Humidity		%	<95	
Environment Class			IP66 (Indoor or Outdoor)	
EMC			ETS 300 342-3	
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs	
MTBF		hr	> 1,000,000	

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-BK2-OD1C	CM-BK2D-OD1C	No DC Path
CM-BK2-OD2C	CM-BK2D-OD2C	DC Path in Low Frequency Band
CM-BK2-OD3C	CM-BK2D-OD3C	DC Path in High Frequency Band
CM-BK2-OD4C	CM-BK2D-OD4C	Full DC Path



Example: View of single unit CM-BK2-OD4C

Diplexer

CM-DW2-ODxx, CM-DW2D-ODxx (x= 1, 2, 3 or 4, Preconfigured DC-pass)

Features and Product Description

- Enables feeder sharing between DCS1800 and UMTS system
- Compact design suitable for indoor and outdoor application
- Fast and easy installation
- High power handling and low loss – maximizes system performance
- 500W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC bypass, to be used in applications with or without Tower Mounted Amplifiers installed
- Available as a single unit or double unit

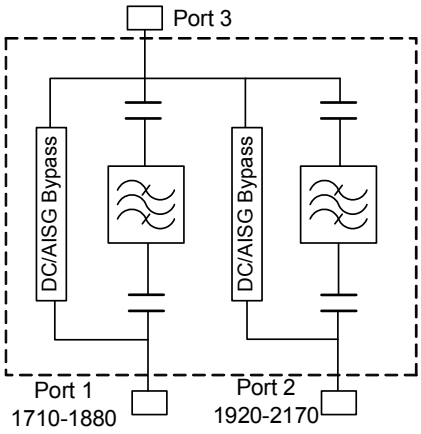
CM-DW2D-ODxC shown

Technical Specifications

Electrical				
Pass Band Frequency Range		MHz	1710-1880	1920-2170
Insertion Loss		dB	≤ 0.3	≤ 0.3
Isolation between Bands		dB	≥ 50	
Return Loss		dB	≥ 20	
Maximum input power pre port		W	250	250
Maximum output power at Common Port		W	500	
Intermodulation Products		dBc	≤ -155 @2x43dBm	
Impedance		Ω	50	
Mechanical				
Dimensions, LxWxH (including mounting brackets)	Single Unit	mm (in)	332x146x86 (13.1x5.7x3.4)	
	Double Unit	mm (in)	303x173x106 (11.9x6.8x4.2)	
Weight (including mounting brackets)	Single Unit	kg (lb)	3.5 (7.7)	
	Double Unit	kg (lb)	6.0 (13.2)	
Colors			Light Grey	
Housing			Aluminum	
Connector Type			7/16 DIN-Female	
Mount Kit			Pole (clamps included for Φ35-125mm Pole) or Wall mount	
Environmental Characteristics				
Operating Temperature Range		°C	-40 to +65	
Operational Humidity		%	<95	
Environmental Class			IP66 (Indoor or Outdoor)	
EMC			ETS 300 342-3	
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs	
MTBF		hr	> 1,000,000	

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-DW2-OD1C	CM-DW2D-OD1C	No DC Path
CM-DW2-OD2C	CM-DW2D-OD2C	DC Path in Low Frequency Band
CM-DW2-OD3C	CM-DW2D-OD3C	DC Path in High Frequency Band
CM-DW2-OD4C	CM-DW2D-OD4C	Full DC Path



Example: View of single unit CM-DW2-OD4C

Triple-band Combiner

CM-BDW3-ODxx, CM-BDW3D-ODxx (x= 1, 2… or 6, Preconfigured DC-pass)

Features and Product Description

- Designed for feeder sharing and co-location purpose
- High power handling and low loss – maximizes system performance
- 750W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC (AISG signals) bypass
- Available as a single unit or double unit

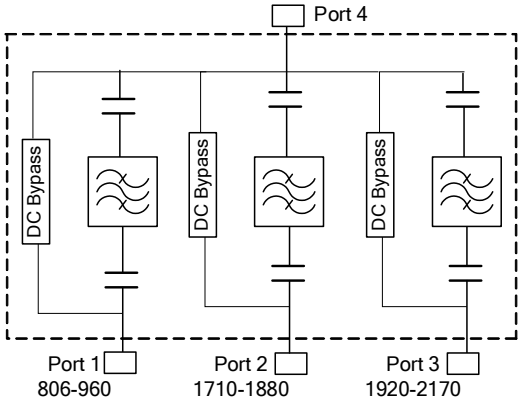
CM-BDW3D-ODxC shown

Technical Specifications

Electrical					
Pass Band Frequency Range		MHz	806-960	1710-1880	1920-2170
Insertion Loss		dB	≤ 0.2	≤ 0.3	≤ 0.3
Isolation between Bands		dB	≥ 50 (806-960/1710-1880MHz)		
			≥ 50 (806-960/1920-2170MHz)		
			≥ 50 (1710-1880/1920-2170MHz)		
Return Loss		dB	≥ 20		
Maximum input power pre port		W	250	250	250
Maximum output power at Common Port		W	750		
Intermodulation Products		dBc	≤ -155 @2x43dBm		
Impedance		Ω	50		
Mechanical					
Dimensions, LxWxH (including mounting brackets)	Single Unit	mm (in)	326x185x87 (12.8x7.3x3.4)		
	Double Unit	mm (in)	316x202x112 (12.4x8.0x4.4)		
Weight (including mounting brackets)	Single Unit	kg (lb)	4 (8.8)		
	Double Unit	kg (lb)	7 (15.4)		
Colors			Light grey		
Housing			Aluminum		
RF Connectors			7/16 DIN-Female		
Mount Kit			Pole (clamps included for Φ35-125mm Pole) or Wall mount		
Environmental Characteristics					
Operating Temperature Range		°C	-40 to +65		
Operational Humidity		%	<95		
Environment Class			IP66 (Indoor or Outdoor)		
EMC			ETS 300 342-3		
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs		
MTBF		hr	> 1,000,000		

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-BDW3-OD1C	CM-BDW3D-OD1C	No DC Path
CM-BDW3-OD2C	CM-BDW3D-OD2C	DC Path in Low Frequency Band
CM-BDW3-OD3C	CM-BDW3D-OD3C	DC Path in Mid Frequency Band
CM-BDW3-OD4C	CM-BDW3D-OD4C	DC Path in High Frequency Band
CM-BDW3-OD5C	CM-BDW3D-OD5C	DC Path in Mid and High Frequency Band
CM-BDW3-OD6C	CM-BDW3D-OD6C	Full DC Path



Example: View of Single unit CM-BDW3-OD6C

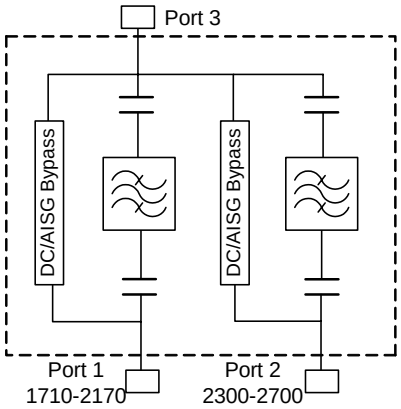
Features and Product Description

- Wide-band design enables feeder sharing between systems in the 1710-2170MHz range and the 2300-2700MHz range.
- Long connectors allow ease of waterproofing.
- High power handling and low loss – maximizes system performance.
- 500W maximum output power rating
- High isolation – minimizes interference.
- Built with full band DC bypass, to be used with Tower Mounted Amplifiers and AISG compliant devices.

Technical Specifications

Electrical			
Pass Band Frequency Range	MHz	1710-2170	2300-2700
Insertion Loss	dB	≤ 0.3	≤ 0.3
Isolation between Bands	dB	≥ 70	
Return Loss	dB	≥ 20	
Power Handling	W	300	
Intermodulation Products	dBc	≤ -155 @2 x 43dBm	
Impedance	Ω	50	
Mechanical			
Dimension (LxWxH including mounting brackets)	mm (in)	275x121x90(10.8x4.8x3.5)	
Weight	kg (lb)	2.3(5.1)	
Colors		Light grey	
Housing		Aluminum	
RF Connectors		DIN 7/16 female	
Mounting Kit		Pole (clamps included for Φ 35-125mm) or wall mounted	
Environmental Characteristics			
Operating Temperature Range	°C	-40 to +65	
Operational Humidity	%	<95	
Environment Class		IP67	
EMC		ETS 300 342-3	
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs	
MTBF	hr	> 1,000,000	

Block Diagram



Triple-band Combiner

CM-BKY3-OD6

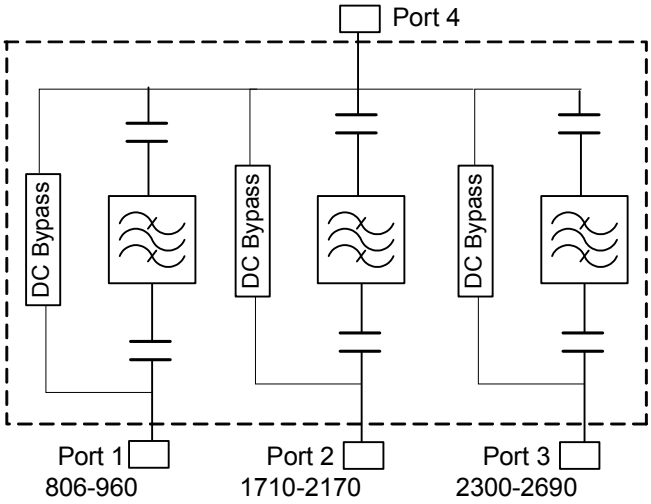
Features and Product Description

- Designed for feeder sharing and co-location purpose
- High power handling and low loss – maximizes system performance
- 750W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC (AISG signals) bypass
- Available as a single unit or double unit

Technical Specifications

Electrical				
Pass Band Frequency Range	MHz	806-960	1710-2170	2300-2690
Insertion Loss	dB	≤ 0.3		
Isolation between Bands	dB	≥ 80 (806-960/1710-2170MHz)		
		≥ 80 (806-960/2300-2690MHz)		
		≥ 70 (1710-2170/2300-2690MHz)		
Return Loss	dB	≥ 20		
Maximum input power per port	W	250	250	250
Maximum output power at common port	W	750		
Intermodulation Products	dBc	≤ -155 @2x43dBm		
Impedance	Ω	50		
Mechanical				
Dimensions, LxWxH (excluding connectors and mounting brackets)	mm (in)	142×156×57(5.59×6.14×2.24)		
Weight (including mounting brackets)	kg (lb)	2.5(5.51)		
Colors		Light grey		
Housing		Aluminum		
RF Connectors		7/16 DIN-Female		
Mount Kit		Pole (clamps included for Φ35-125mm Pole) or Wall mount		
Environmental Characteristics				
Operating Temperature Range	°C	-40 to +65		
Operational Humidity	%	<95		
Environment Class		IP66		
EMC		ETS 300 342-3		
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs		
MTBF	hr	> 1,000,000		

Ordering Information and Block Diagram



Quad-band Combiner

CM-BDWY4-OD8

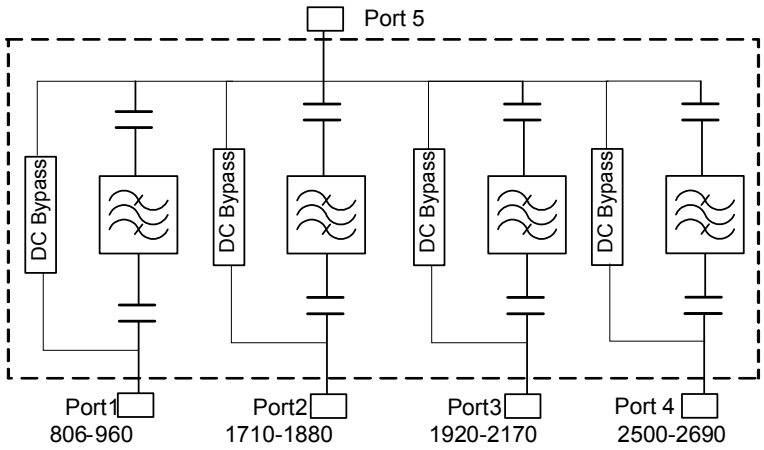
Features and Product Description

- Designed for feeder sharing and co-location purpose
- High power handling and low loss – maximizes system performance
- 500W maximum output power rating
- High isolation – minimizes interference
- Built with full band DC bypass, to be used with Tower Mounted Amplifiers and AISG compliant devices.
- Available as a single unit or double unit

Technical Specifications

Electrical					
Pass Band Frequency Range	MHz	806-960	1710-1880	1920-2170	2500-2690
Insertion Loss	dB	≤ 0.3			
Isolation between Bands	dB	≥ 50			
Return Loss	dB	≥ 20			
Maximum input power per port	W	250	250	250	250
Intermodulation Products	dBc	≤ -155 @2x43dBm			
Impedance	Ω	50			
Mechanical					
Dimensions, LxWxH (excluding connectors and mounting brackets)	mm (in)	239x210x59.5(9.5x8.3x2.4)			
Weight(approx.)	kg (lb)	4.2(9.2)			
Colors		Light grey			
Housing		Aluminum			
RF Connectors		7/16 DIN-Female			
Environmental Characteristics					
Operating Temperature Range	°C	-40 to +65			
Operational Humidity	%	<95			
Environment Class		IP66(Indoor or Outdoor)			
EMC		ETS 300 342-3			
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs			
MTBF	hr	> 1,000,000			

Block Diagram



Wideband Diplexer

CM-MY2-OD4

Features and Product Description

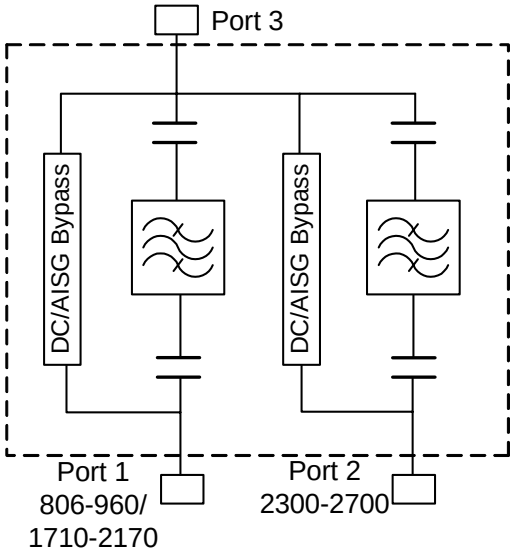
- Wide-band design to enable feeder sharing between systems in the 806-960MHz&1710-2170MHz range and the 2300-2700MHz range
- Fast and easy installation
- 500W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC bypass, to be used with Tower Mounted Amplifiers and AISG devices
- Available as a single unit or double unit

Photo for reference

Technical Specifications

Electrical			
Pass Band Frequency Range	MHz	806-960/1710-2170	2300-2700
Insertion Loss	dB	≤ 0.3	
Isolation between Bands	dB	≥70	
Return Loss	dB	≥ 20	
Maximum input power per port	W	250	250
Maximum output power at common port	W	500	
Intermodulation Products	dBc	≤ -155 @2x43dBm	
Impedance	Ω	50	
Mechanical			
Dimensions, LxWxH (including mounting brackets)	mm (in)	142×156×57(5.59×6.14×2.24)	
Weight (including mounting brackets)	kg (lb)	2.4(5.29)	
Colors		Light Grey	
Housing		Aluminum	
RF Connectors		7/16 DIN-Female	
Mounting Kit		Pole (clamps included for Φ 35-125mm) or wall mounted	
Environmental Characteristics			
Operating Temperature Range	°C	-40 to +65	
Operational Humidity	%	<95	
Environment Class		IP66	
EMC		ETS 300 342-3	
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs	
MTBF	hr	> 1,000,000	

Ordering Information and Block Diagram



Dual-Band Combiner
CM-PK2-OD4

Features and Product Description

- Wide-band design enables feeder sharing between systems in the 1850-1910/1930-1990MHz range and the 1710-1755/2110-2155MHz range.
- Long connectors allow ease of waterproofing.
- High power handling and low loss – maximizes system performance.
- High isolation – minimizes interference.
- Built with full band DC bypass, to be used with Tower Mounted Amplifiers and AISG compliant devices.

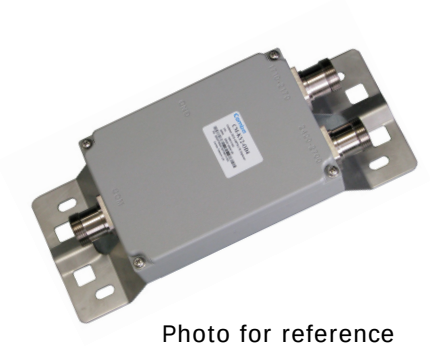
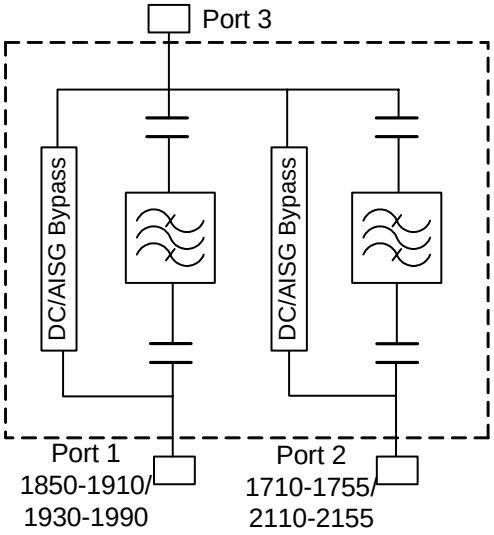


Photo for reference

Technical Specifications

Electrical			
Pass Band Frequency Range	MHz	1850-1910/1930-1990	1710-1755/2110-2155
Insertion Loss	dB	≤ 0.3	≤ 0.2
Isolation between Bands	dB	≥ 50	
Return Loss	dB	≥ 20	
Power Handling Continuous	W	≤ 250	≤ 250
Power Handling Continuous at Common Port	W	500 average	
Intermodulation Products	dBc	≤ -155 @2 x 43dBm	
Impedance	Ω	50	
Mechanical			
Dimension (LxWxH including mounting brackets)	mm (in)	302x143x79(11.9x5.6x3.1)	
Weight	kg (lb)	2.1(4.6)	
Colors		Light grey	
Housing		Aluminum	
RF Connectors		DIN 7/16 female	
Mounting Kit		Pole (clamps included for Φ 35-125mm) or wall mounted	
Environmental Characteristics			
Operating Temperature Range	°C	-40 to +65	
Operational Humidity	%	<95	
Environment Class		IP66 (Indoor or Outdoor)	
EMC		ETS 300 342-3	
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs	
MTBF	hr	> 1,000,000	

Block Diagram



Wideband Diplexer

Band 1: 380-960MHz Band 2: 1710-2700MHz

CM-FK2-ODx, CM-FK2D-ODx (x= 1, 2, 3 or 4, Preconfigured DC-pass)

Features and Product Description

- Extra wideband design for feeder sharing between systems in the 380-960MHz range and the 1710-2700MHz range.
- Long connectors allow ease of waterproofing.
- High power handling and low loss – maximizes system performance..
- Built with optional DC bypass, to be used with Tower Mounted Amplifiers and AISG compliant devices.
- Wall or pole mounting available
- Available as a single unit or double unit

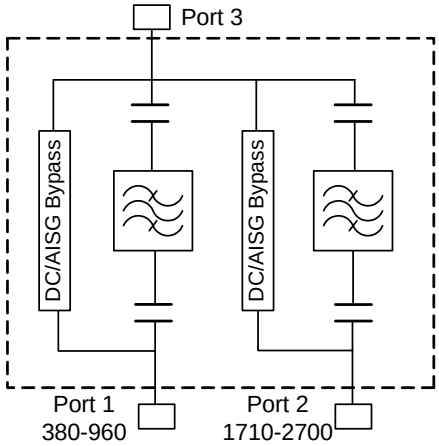
Single unit Photo for reference

Technical Specifications

Electrical				
Pass Band Frequency Range		MHz	380-960	1710-2700
Insertion Loss		dB	≤ 0.2	≤ 0.2
Isolation between Bands		dB	≥ 60	
Return Loss		dB	≥ 20	
Maximum input power per port		W	300	500
Intermodulation Products		dBc	≤ -155 @2 x 43dBm	
Impedance		Ω	50	
Mechanical				
Dimension (LxWxH) (including connectors and mounting kits)	Single unit	mm (in)	309x110x82(12.2x4.3x3.2)	
	Double unit		309x110x135(12.2x4.3x5.3)	
Weight (include connectors and mounting kits)	Single unit	kg (lb)	3.0(6.6)	
	Double unit		5.5(12.1)	
Colors			Light grey	
Housing			Aluminum	
RF Connectors			DIN 7/16 female	
Mounting Kit			Pole (clamps included for Φ 35-125mm) or wall mounted	
Environmental Characteristics				
Operating Temperature Range		°C	-40 to +65	
Operational Humidity		%	<95	
Environment Class			IP66	
EMC			ETS 300 342-3	
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs	
MTBF		hr	> 1,000,000	

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-FK2-OD1	CM-FK2D-OD1	No DC Path
CM-FK2-OD2	CM-FK2D-OD2	DC Path in Low Frequency Band
CM-FK2-OD3	CM-FK2D-OD3	DC Path in High Frequency Band
CM-FK2-OD4	CM-FK2D-OD4	Full DC Path



Example: View of single unit CM-FK2-OD4

Triple-band Combiner

Band 1: 380-960MHz Band 2: 1710-1880MHz Band3:1920-2170MHz

CM-FDW3-ODx, CM-FDW3D-ODx (x= 1, 2... or 6, Preconfigured DC-pass)

Features and Product Description

- Designed for feeder sharing and co-location purpose
- High power handling and low loss – maximizes system performance
- 750W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC (AISG signals) bypass
- Available as a single unit or double unit

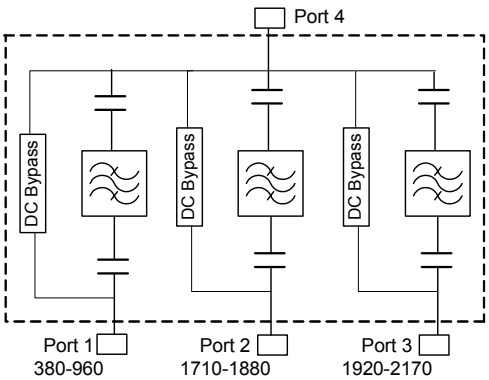
Dual Unit photo for reference

Technical Specifications

Electrical					
Pass Band Frequency Range		MHz	380-960	1710-1880	1920-2170
Insertion Loss		dB	≤ 0.3	≤ 0.3	≤ 0.3
Isolation between Bands		dB	≥ 50 (380-960/1710-1880MHz)		
			≥ 50 (380-960/1920-2170MHz)		
			≥ 50 (1710-1880/1920-2170MHz)		
Return Loss		dB	≥ 20		
Maximum input power pre port		W	250	250	250
Intermodulation Products		dBc	≤ -155 @2x43dBm		
Impedance		Ω	50		
Mechanical					
Dimensions, LxWxH (including mounting brackets)	Single Unit	mm (in)	349x190x84(13.7x7.5x3.3)		
	Double Unit	mm (in)	349x190x136(13.7x7.5x5.4)		
Weight (including mounting brackets)	Single Unit	kg (lb)	3.2(7.1)		
	Double Unit	kg (lb)	6.4(14.1)		
Colors			Light grey		
Housing			Aluminum		
RF Connectors			7/16 DIN-Female		
Mount Kit			Pole (clamps included for Φ35-125mm Pole) or Wall mount		
Environmental Characteristics					
Operating Temperature Range		°C	-40 to +65		
Operational Humidity		%	<95		
Environment Class			IP66 (Indoor or Outdoor)		
EMC			ETS 300 342-3		
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs		
MTBF		hr	> 1,000,000		

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-FDW3-OD1	CM-FDW3D-OD1	No DC Path
CM-FDW3-OD2	CM-FDW3D-OD2	DC Path in Low Frequency Band
CM-FDW3-OD3	CM-FDW3D-OD3	DC Path in Mid Frequency Band
CM-FDW3-OD4	CM-FDW3D-OD4	DC Path in High Frequency Band
CM-FDW3-OD5	CM-FDW3D-OD5	DC Path in Mid and High Frequency Band
CM-FDW3-OD6	CM-FDW3D-OD6	Full DC Path



Example: View of Single unit CM-FDW3-OD6

Triple-band Combiner

Band 1: 380-960MHz Band 2: 1710-2170MHz Band3:2300-2690MHz

CM-FKY3-ODx, CM-FKY3D-ODx (x= 1, 2... or 6, Preconfigured DC-pass)

Features and Product Description

- Designed for feeder sharing and co-location purpose
- High power handling and low loss – maximizes system performance
- 750W maximum output power rating
- High isolation – minimizes interference
- Build with optional DC (AISG signals) bypass
- Available as a single unit or double unit

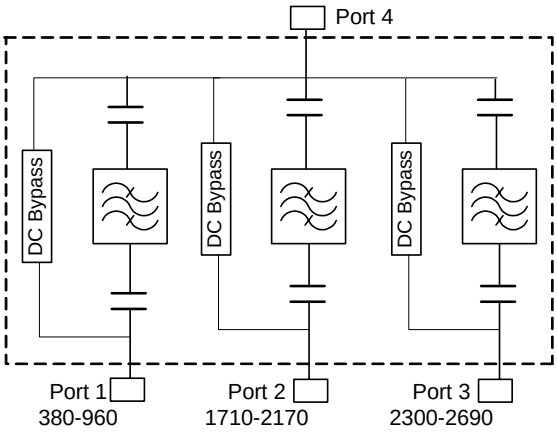
Single Unit photo for reference

Technical Specifications

Electrical					
Pass Band Frequency Range		MHz	380-960	1710-2170	2300-2690
Insertion Loss		dB	≤ 0.3		
Isolation between Bands		dB	≥ 60 (380-960/1710-2170MHz)		
			≥ 60 (380-960/2300-2690MHz)		
			≥ 55 (1710-2170/2300-2690MHz)		
Return Loss		dB	≥ 20		
Maximum input power per port		W	250	250	250
Intermodulation Products		dBc	≤ -155 @2x43dBm		
Impedance		Ω	50		
Mechanical					
Dimensions, LxWxH (including mounting brackets)	Single Unit	mm (in)	321x167x81(12.6x6.6x3.2)		
	Double Unit		321x167x130(12.6x6.6x5.1)		
Weight (including mounting brackets)	Single Unit	kg (lb)	2.7(5.9)		
	Double Unit		5.6(12.3)		
Colors			Light grey		
Housing			Aluminum		
RF Connectors			7/16 DIN-Female		
Mount Kit			Pole (clamps included for Φ35-125mm Pole) or Wall mount		
Environmental Characteristics					
Operating Temperature Range		°C	-40 to +65		
Operational Humidity		%	<95		
Environment Class			IP66		
EMC			ETS 300 342-3		
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs		
MTBF		hr	> 1,000,000		

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-FKY3-OD1	CM-FKY3D-OD1	No DC Path
CM-FKY3-OD2	CM-FKY3D-OD2	DC Path in Low Frequency Band
CM-FKY3-OD3	CM-FKY3D-OD3	DC Path in Mid Frequency Band
CM-FKY3-OD4	CM-FKY3D-OD4	DC Path in High Frequency Band
CM-FKY3-OD5	CM-FKY3D-OD5	DC Path in Mid and High Frequency Band
CM-FKY3-OD6	CM-FKY3D-OD6	Full DC Path



Example: View of Single unit CM-FKY3-OD6

Quad-band Combiner

Band 1: 380-960MHz Band 2: 1710-1880MHz Band3:1920-2170MHz
Band4:2500-2690MHz
CM-FDWY4-ODx,CM-FDWY4D-ODx(x= 1, 2... or 8, Preconfigured DC-pass)

Features and Product Description

- Designed for feeder sharing and co-location purpose
- High power handling and low loss – maximizes system performance
- High isolation – minimizes interference
- Built with full band DC bypass, to be used with Tower Mounted Amplifiers and AISG compliant devices.
- Available as a single unit or double unit

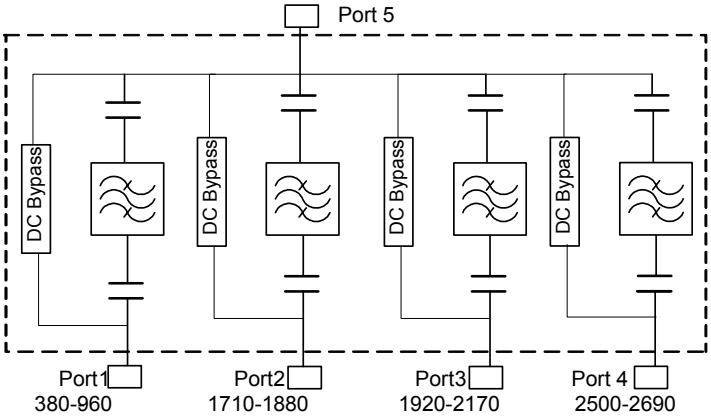
Single Unit photo for reference

Technical Specifications

Electrical						
Pass Band Frequency Range		MHz	380-960	1710-1880	1920-2170	2500-2690
Insertion Loss		dB	≤ 0.3			
Isolation between Bands		dB	≥ 50			
Return Loss		dB	≥ 20			
Maximum input power per port		W	250	250	250	250
Intermodulation Products		dBc	≤ -155 @2x43dBm			
Impedance		Ω	50			
Mechanical						
Dimensions, LxWxH(including connectors and mounting brackets)	Single Unit	mm (in)	370x210x84(14.6x8.3x3.3)			
	Double Unit		370x210x138(14.6x8.3x5.4)			
Weight(approx.)	Single Unit	kg (lb)	3.8(8.4)			
	Double Unit		7.8(17.2)			
Colors			Light grey			
Housing			Aluminum			
RF Connectors			7/16 DIN-Female			
Mount Kit			Pole (clamps included for Φ35-125mm Pole) or Wall mount			
Environmental Characteristics						
Operating Temperature Range		°C	-40 to +65			
Operational Humidity		%	<95			
Environment Class			IP66(Indoor or Outdoor)			
EMC			ETS 300 342-3			
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs			
MTBF		hr	> 1,000,000			

Ordering Information and Block Diagram

Single unit Model Number	Double unit Model Number	DC Bypass Optional
CM-FDWY4-OD1	CM-FDWY4D-OD1	No DC Path
CM-FDWY4-OD2	CM-FDWY4D-OD2	DC Path in 'F' Frequency Band
CM-FDWY4-OD3	CM-FDWY4D-OD3	DC Path in 'D' Frequency Band
CM-FDWY4-OD4	CM-FDWY4D-OD4	DC Path in 'W' Frequency Band
CM-FDWY4-OD5	CM-FDWY4D-OD5	DC Path in 'Y' Frequency Band
CM-FDWY4-OD8	CM-FDWY4D-OD8	Full DC Path

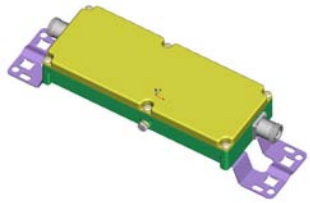


Example: View of Single unit CM-FDWY4-OD8

FP-G75-D01

885-915/930-960MHz Band Pass Filter

Features and Product Description

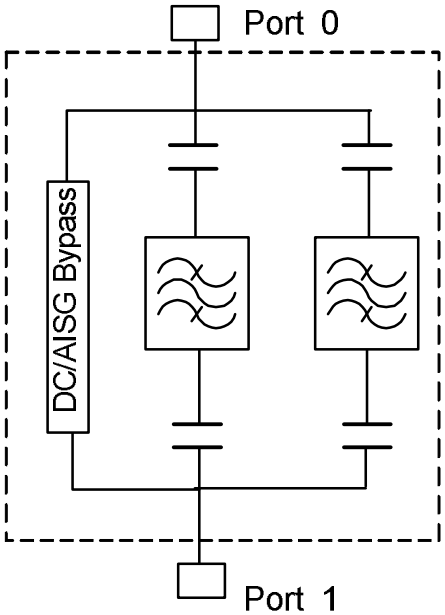


- 100W High power handling.
- Low Return Loss – maximizes system performance.
- Low Intermodulation.
- Compact – minimizes space requirements

Technical Specifications

Electrical			
Pass band		MHz	Uplink: 885-915
			Downlink:930-960
Out band rejection		MHz	≥45dB@869-882.5
Insertion Loss	Rx (886-915 MHz)	dB	≤1.0
	Rx (885-886 MHz)		≤1.5
	Tx (930-960 MHz)		≤0.5
VSWR			≤1.3
Power Handling(average)		W	≥100
Peak power handling		W	≥500@+60°C 1atm
PIM		dBc	< -155 @2 x 43dBm
Impedance		Ω	50
Mechanical			
Dimension (L x W x H) with mounting bracket		mm	445x126x92
Weight (approx.)		kg	2.8
DC / ASIG By-Pass			By pass available, 40V / 3A
Material			Aluminum
Connector Type			7/16 DIN-Female
Operational Humidity		%	< 95
Operational Temperature		°C	-10 to +60
Environmental Class			Indoor
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs
Installation			Wall or Pole
MTBF		hr	> 500,000

Block Diagram



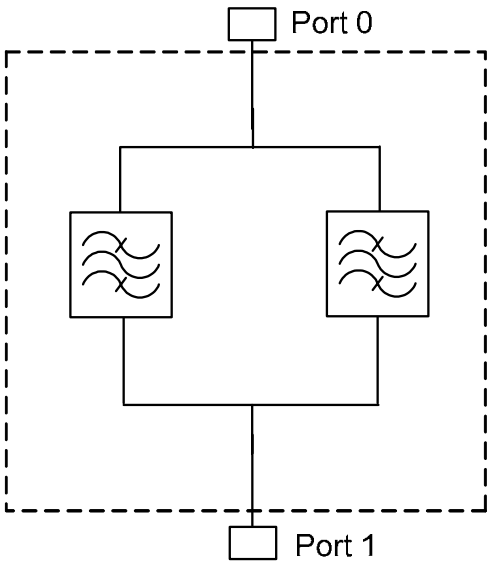
Features and Product Description

- 100W High power handling.
- Low Return Loss – maximizes system performance.
- Low Intermodulation.
- Compact – minimizes space requirements

Technical Specifications

Electrical		
Pass band	MHz	Uplink: 824-837.5
		Downlink:869-882.5
Out band rejection	MHz	⩾50dB@885-915
Insertion Loss	dB	⩽3.5 the lower the better
VSWR		⩽1.3
Power Handling(average)	W	≥100
Peak power handling	W	≥500@+60°C 1atm
PIM	dBc	< -155 @2 x 43dBm
Impedance	Ω	50
Mechanical		
Dimension (L x W x H) (exclude connectors and brackets)	mm	278x100x47
Weight (approx.)	kg	<5
Material		Aluminum
Connector Type		7/16 DIN-Female
Bypass function		No
Operational Humidity	%	< 95
Operational Temperature	°C	0 to +60
Environmental Class		Indoor
Lightning Protection		No
Installation		Wall or Pole
MTBF	hr	> 500,000

Block Diagram



FP-G1216-D02

907-960MHz GSM Band Pass Filter

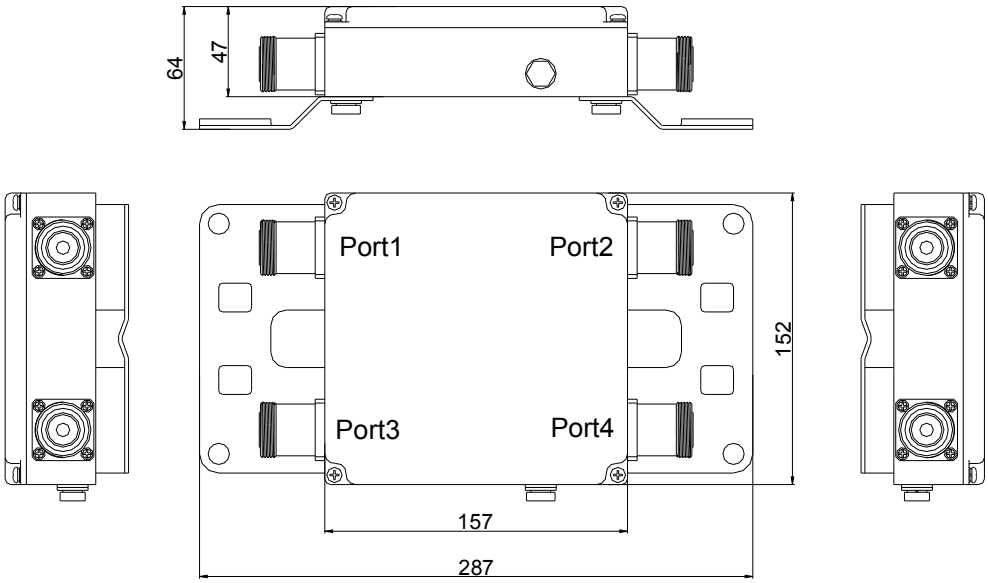
Features and Product Description

- 100W High Power.
- No tuning required.
- Low Return Loss – maximizes system performance.
- Low Intermodulation.
- Compact – minimizes space requirements

Technical Specifications

Electrical		
Frequency Range	MHz	Uplink: 907-915 Downlink: 952-960
Bandwidth	MHz	53
Power Handling	W	≥100
Insertion Loss	dB	≤ 1.0
Return Loss	dB	≥ 18
In-Band Ripple	dB	≤0.8
Out-of-Band Rejection	dB	≥ 50 @ 869-894MHz
PIM	dBc	≤ -155 @2 x 43dBm
Impedance	Ω	50
Mechanical		
Dimension (L x W x H)	mm	287x150x66（including mounting brackets）
Weight (approx.)	kg	5
Material		Aluminum
Connector Type		7/16 DIN-Female
Operational Humidity	%	< 95
Operational Temperature	℃	-40 to +85
Environmental Class		Outdoor, IP65

Outline Drawing



FP-G1216-D01

903-915/ 948-960MHz GSM Band Pass Filter

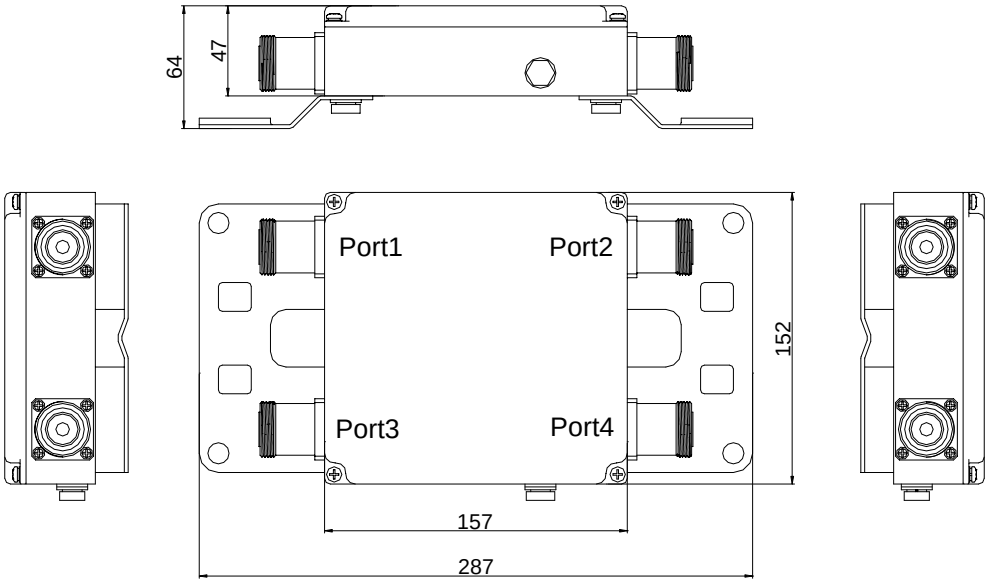
Features and Product Description

- 100W High Power.
- No tuning required.
- Low Return Loss – maximizes system performance.
- Low Intermodulation.
- Compact – minimizes space requirements

Technical Specifications

Electrical		
Frequency Range	MHz	Uplink: 903-915 Downlink: 948-960
Bandwidth	MHz	12
Power Handling	W	≥100
Insertion Loss	dB	≤ 1.0
Return Loss	dB	≥ 18 ≥ 17(-40°C to +85°C)
In-Band Ripple	dB	≤0.8
Out-of-Band Rejection at normal temperature	dB	≥ 48 @ 869-894MHz
Out-of-Band Rejection at -40°C and +85°C	dB	≥ 45 @ 869-894MHz
PIM	dBc	≤ -150 @2 x 43dBm
Impedance	Ω	50
Mechanical		
Dimension (L x W x H)	mm	287x150x66 (including mounting brackets)
Weight (approx.)	kg	5
Material		Aluminum
Connector Type		7/16 DIN-Female
Operational Humidity	%	< 95
Operational Temperature	°C	-40 to +85
Environmental Class		Outdoor, IP65

Outline Drawing



FP-G15D-0D01

900.1-915/945.1-960MHz Band Pass Filter

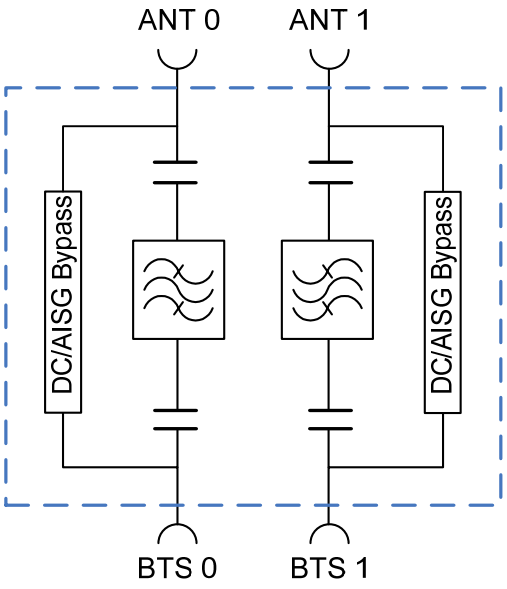
Features and Product Description

- 100W High power handling.
- Low Insertion Loss – maximizes system performance.
- Low Passive Intermodulation.
- Compact – minimizes space requirements.
- Dual units design.

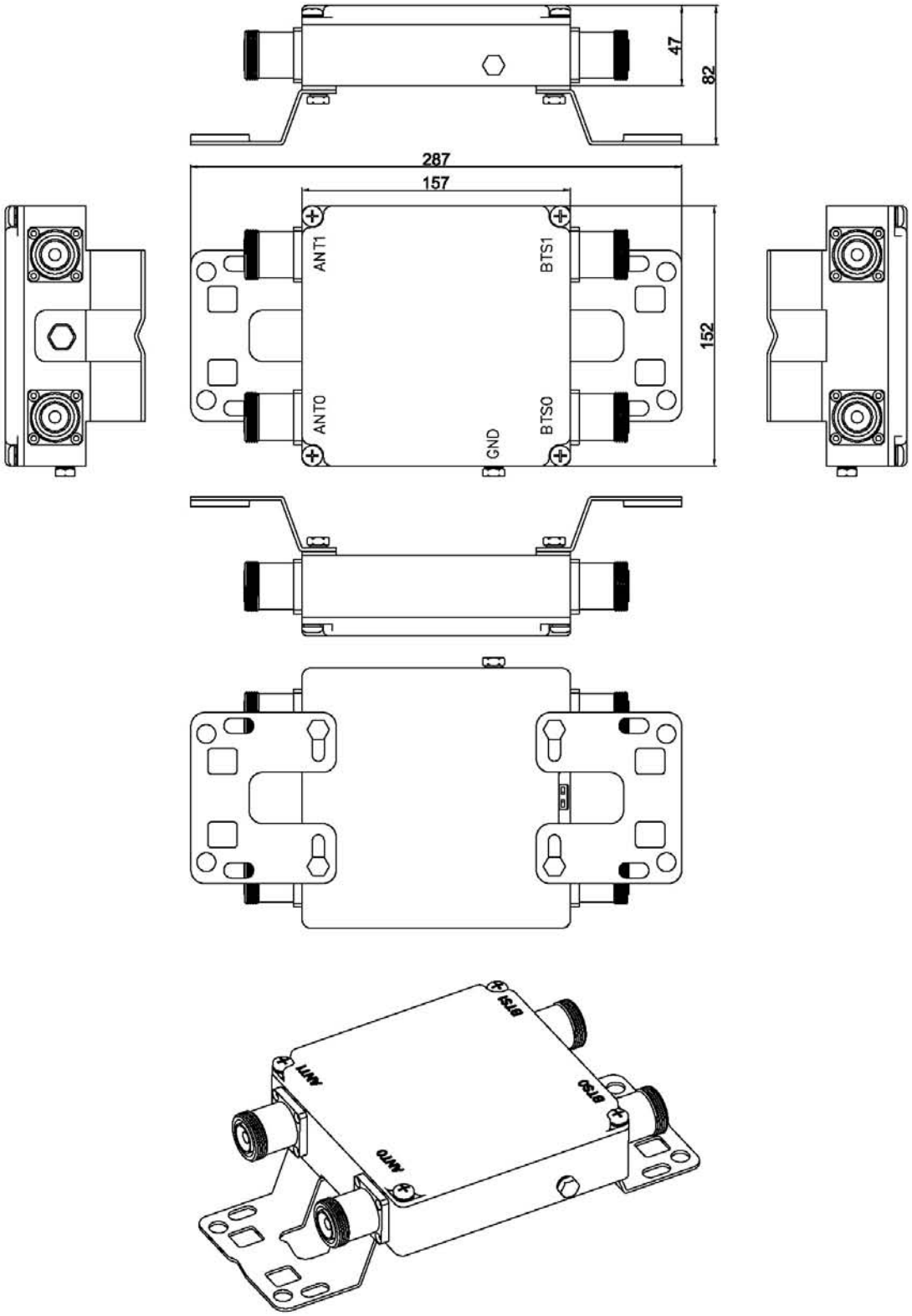
Technical Specifications

Electrical Characteristics			
Pass band		MHz	RX:900.1-915
			TX:945.1-960
Out band rejection		MHz	≥30dB@869-894
Insertion Loss	Rx (900.1-915 MHz)	dB	≤1.0
	Tx (945.1-960 MHz)		≤0.4
Return Loss		dB	≥20
Power Handling(average)		W	≥100
Peak power handling		W	≥800
PIM		dBc	<-150@2 x 43dBm
Impedance		Ω	50
Mechanical Characteristics			
Dimension (L x W x H, without mounting bracket and connectors)		mm	157 x 152 x 47
Weight (approx.)		kg	3
DC / AISG By-Pass			By pass available, 40V / 3A
Material			Aluminum
Connector Type			7/16 DIN-Female
Operational Humidity		%	< 95
Operational Temperature		°C	-40 to +65
Environmental Class			Outdoor
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs
Installation			Wall or Pole
MTBF		hr	> 500,000

Block Diagram



Outline Drawing



FP-C22-D01

824-846.5/869-891.5MHz Band Pass Filter

Features and Product Description

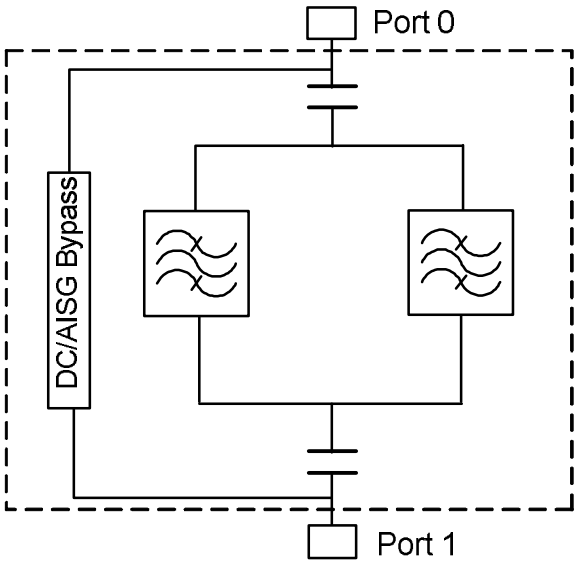
- 100W High power handling.
- Low Return Loss – maximizes system performance.
- Low Intermodulation.
- Compact – minimizes space requirements

Photo for reference

Technical Specifications

Electrical		
Stop band Frequency Range	MHz	Uplink: 824-846.5
		Downlink:869-891.5
Bandwidth	MHz	22.5
Insertion Loss	dB	< 1.4
Return Loss	dB	> 18
Power Handling(average)	W	≥100
Peak power handling	W	≥800
Out-of-Band Rejection	dB	> 54@ 851-866MHz
PIM	dBc	< -155 @2 x 46dBm
Impedance	Ω	50
Mechanical		
Dimension (L x W x H)	mm	250x250x61(without brackets and connectors)
Weight (approx.)	kg	6
Material		Aluminum
Connector Type		7/16 DIN-Female
Bypass function		DC&AISG, 12-30V
Max DC bypass current	A	>2.3
Operational Humidity	%	< 95
Operational Temperature	°C	-40 to +65
Environmental Class		Outdoor, IP67
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Installation		Wall or Pole
MTBF	hr	> 500,000

Block Diagram



FP-C60-D01

824-884 UMTS850 Band Pass Filter

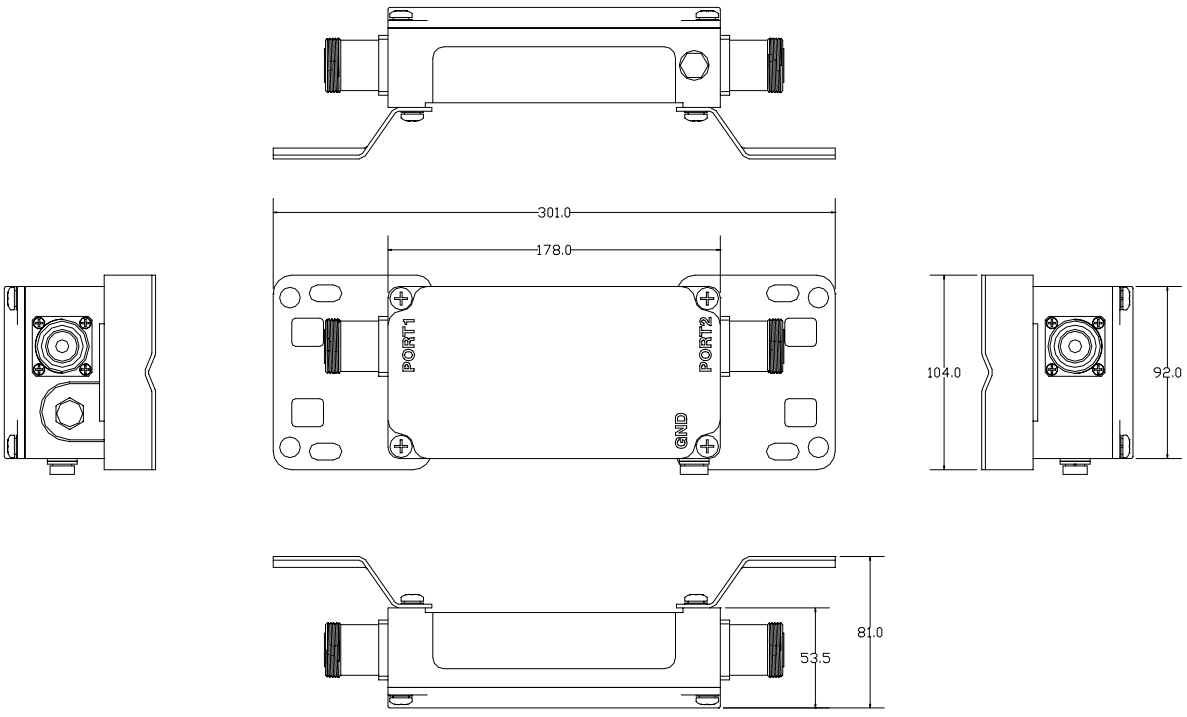
Features and Product Description

- No tuning required.
- Low Return Loss – maximizes system performance.
- Good Intermodulation.
- Compact – minimizes space requirements
- Outdoor application.

Technical Specifications

Electrical		
Pass Band Frequency Range	MHz	824-884
Stop Band	MHz	897.5-915
Power Handling	W	>80W (average power WCDMA signal, 869 - 884 MHz) >400W (peak power, 869 - 884 MHz)
Insertion Loss	dB	≤ 1.0
VSWR	dB	<1.35
Out-of-Band Rejection	dB	≥ 50 @ 897.5-915MHz
PIM	dBc	IM3:<-150dBc @2x43dBm carrier IM7:<-160dBc @2x43dBm carrier
Impedance	Ω	50
Mechanical		
Dimension (L x W x H)	mm	178x92x53.5
Weight (approx.)	kg	2
Material		Sliver plated aluminum unpainted
Connector Type		7/16 DIN-Female
DC, AISG by-pass		Support
Lightning Protection		Comply with IEC 61000-4-5; 8kA, 8/20μs
Operational Humidity	%	< 95
Operational Temperature	°C	0 to +65
Environmental Class		Outdoor(IP66)

Mechanical Outline Drawing



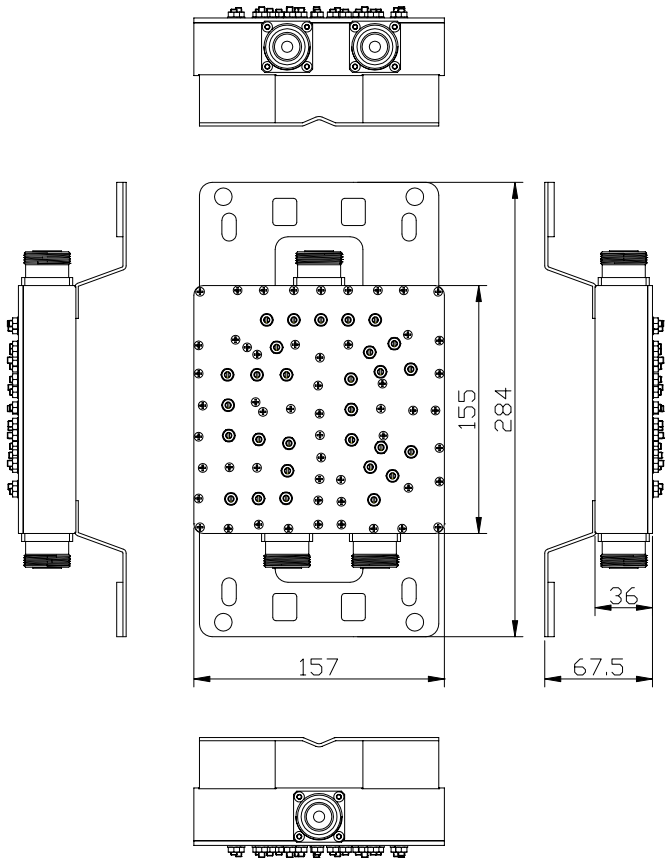
Features and Product Description

- 150W High Power.
- No tuning required.
- Low Return Loss – maximizes system performance.
- Compact – minimizes space requirements.

Technical Specifications

Electrical			
Frequency Range	RX	MHz	885-915
	TX		930-960
Bandwidth		MHz	30
Average Power Handling		W	150
Insertion Loss		dB	≤ 1.0
Return Loss		dB	≥ 18
TX/RX Isolation		dB	≥ 70
PIM @2x43dBm		dBc	< -155（REVERSE）
Impedance		Ω	50
Mechanical			
Dimension (L x W x H) (approx.)		mm	157x284x76.5
Weight (approx.)		kg	2.5
Material			Aluminum
Connector Type			7/16 Din-Female
Mounting Bracket			Wall Mount/Pole Mount
Operational Humidity		%	< 95
Operational Temperature		°C	-20 to +60
Environmental Class			Indoor

Mechanical Outline Drawing



DU-D8005-D03

1710-1785/ 1805-1880MHz GSM1800 Duplexer

Features and Product Description

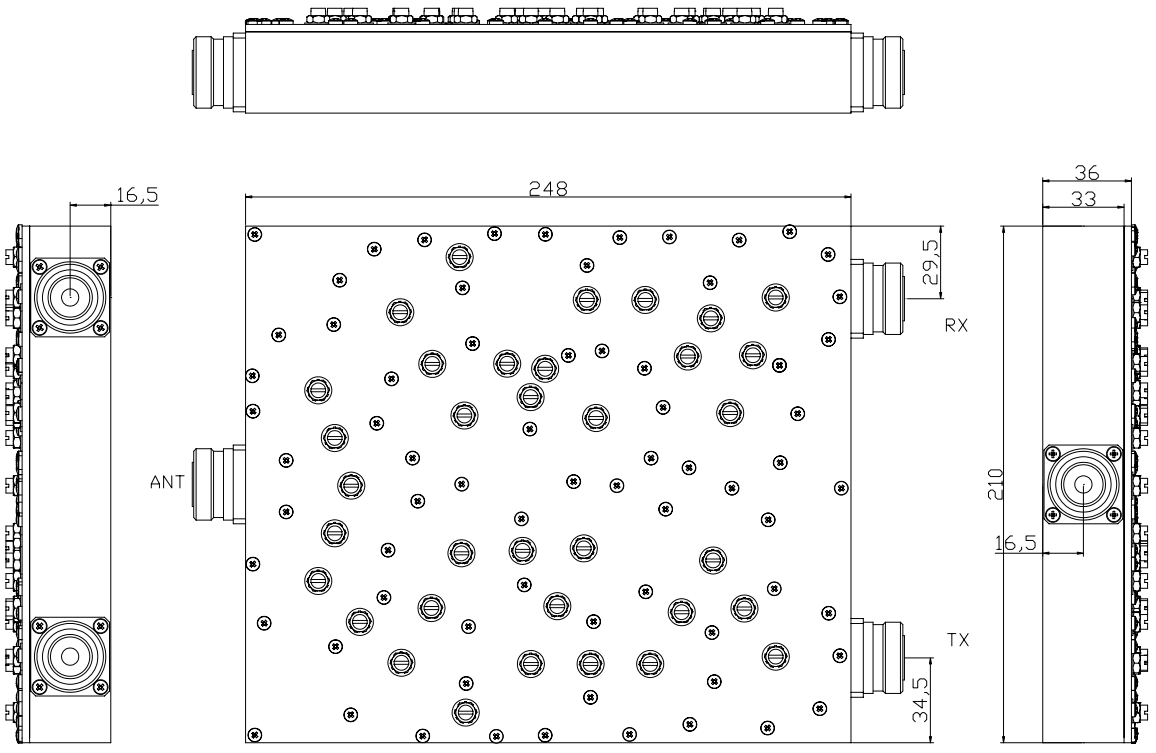
- 100W average power handling.
- No tuning required.
- Low Return Loss – maximizes system performance.
- Compact – minimizes space requirements.

Technical Specifications

Electrical			
Frequency Range	RX	MHz	1710-1785
	TX		1805-1880
Bandwidth		MHz	75
Average Power Handling		W	100
Insertion Loss		dB	≤ 0.6
Return Loss		dB	>20
TX/RX Isolation		dB	≥ 80
PIM		dBc	< -150@2x43dBm
Impedance		Ω	50
Mechanical			
Dimension (L x W x H)		mm	248x210x36
Weight (approx.)		kg	3.0
Material			Aluminum
Connector Type			7/16 Din-Female
Operational Humidity		%	< 95
Operational Temperature		°C	-10 to +50
Environmental Class			Indoor

Note: Measurements taken at room temperature, unless otherwise stated.

Mechanical Outline Drawing



FP-G11D-0D01

902.1-913.1/947.1-958.1MHz Band Pass Filter

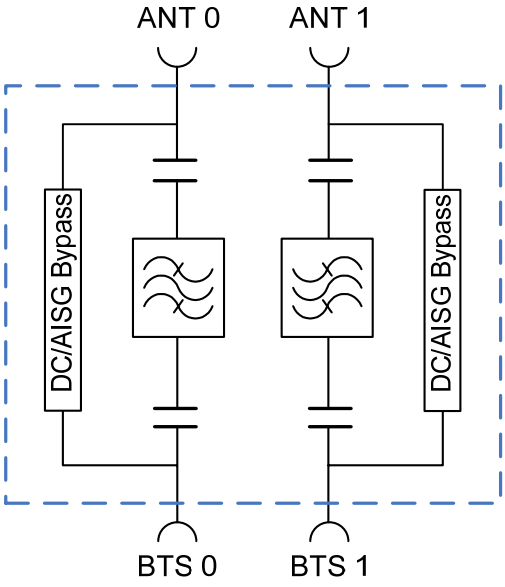
Features and Product Description

- 100W High power handling.
- Low Insertion Loss – maximizes system performance.
- Low Passive Intermodulation.
- Compact – minimizes space requirements.
- Dual units design.

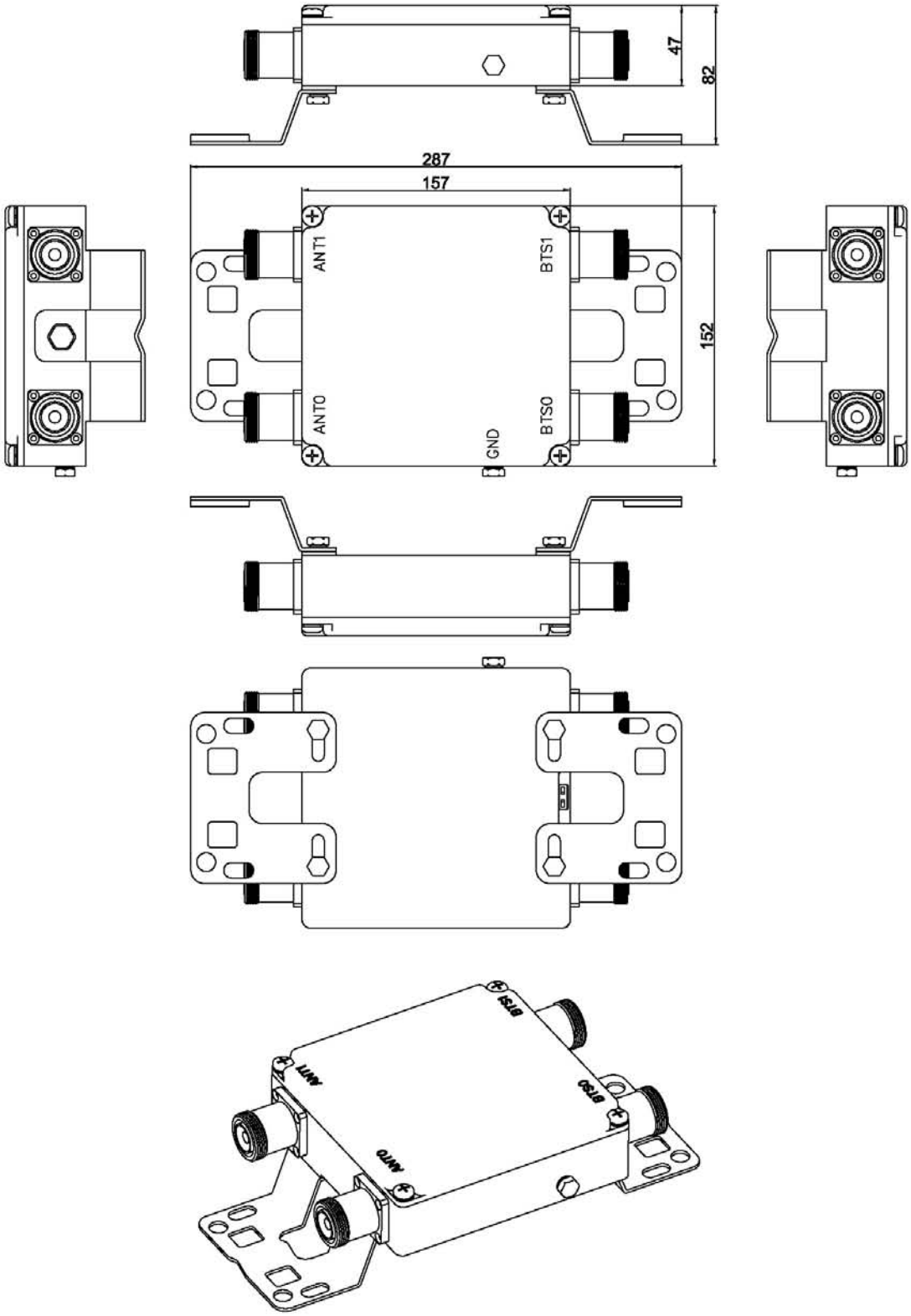
Technical Specifications

Electrical Characteristics			
Pass band		MHz	RX:902.1-913.1
			TX:947.1-958.1
Out band rejection		MHz	≥35dB@869-894
Insertion Loss	Rx (902.1-913.1 MHz)	dB	≤1.0
	Tx (947.1-958.1 MHz)		≤0.4
Return Loss		dB	≥20
Power Handling(average)		W	≥100
Peak power handling		W	≥800
PIM		dBc	<-150@2 x 43dBm
Impedance		Ω	50
Mechanical Characteristics			
Dimension (L x W x H, excluding mounting bracket and connectors)		mm (in)	157x152x47(6.2x6.0x1.9)
Weight (approx.)		kg (lb)	3(6.6)
DC / AISG By-Pass			By pass available, 40V / 3A
Material			Aluminum
Connector Type			7/16 DIN-Female
Operational Humidity		%	< 95
Operational Temperature		°C	-40 to +65
Environmental Class			Outdoor
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs
Installation			Wall or Pole
MTBF		hr	> 500,000

Block Diagram



Outline Drawing



FP-G26D-D01

890.1-903.7/935.1-948.7 900MHz Band Pass Filter

Features and Product Description

- No tuning required.
- Low Return Loss – maximizes system performance.
- Good Intermodulation.
- Compact – minimizes space requirements
- Outdoor application.
- Dual Unit.

Technical Specifications

Electrical			
Pass Band Frequency Range	RX Band	MHz	890.1-903.7(Factory tunable from 887 to 903.7MHz)
	TX Band		935.1-948.7(Factory tunable from 932 to 948.7MHz)
Out-of-Band Rejection		dB	≥ 40 @ 800-889.515MHz (Note: guard band of 585kHz must be maintained)
Insertion Loss	890.1-903.7MHz	dB	≤ 1.5 @ band edge 0.3(typ.)
	935.1-948.7MHz		≤ 0.4, 0.3(typ.)
Insertion Loss Variation	890.1-903.7MHz	dB	≤ 1.2
	935.1-948.7MHz		≤ 0.15
Return Loss		dB	≥ 19
Power Handling(Avg./Peak)		W	100/1000
PIM		dBc	≤-160(IM3@2x43dBm)
Group Delay Variation (any 200KHz) in RX		ns	≤400,10(typ.)
Group Delay Variation across pass band in RX		ns	≤900
Absolute Delay in RX		ns	≤1100
Impedance		Ω	50
Mechanical			
Dimension (L x W x H) (excluding connectors and brackets)		Mm(in)	334x395x176(13.1x15.6x6.9)
Weight (approx.)		Kg(lb)	21(46.3)
Material			Sliver plated aluminum unpainted
Connector Type			Port 1:BTS 7/16 DIN-Female Port 2:ANT 7/16 DIN-Female
Mount Kit			Pole (clamps included for Φ35-125mm Pole) or Wall mount
DC/AISG by-pass			
Compliant to			3GPP TS 25.466 version 9.2.0 Release 9
Passband		MHz	0-3
Insertion Loss		dB	≤1
Return Loss		dB	≥12
Input Voltage/Current			±33V max, 1A max
Environmental Characteristics			
Operating Temperature Range		°C	-10 to +60
Operational Humidity		%	<95
Environment Class			Outdoor(IP67)
EMC			ETS 300 342-3
Lightning Protection			Comply with IEC 61000-4-5; 8kA, 8/20μs
MTBF		hr	> 1,000,000

Mechanical Outline Drawing

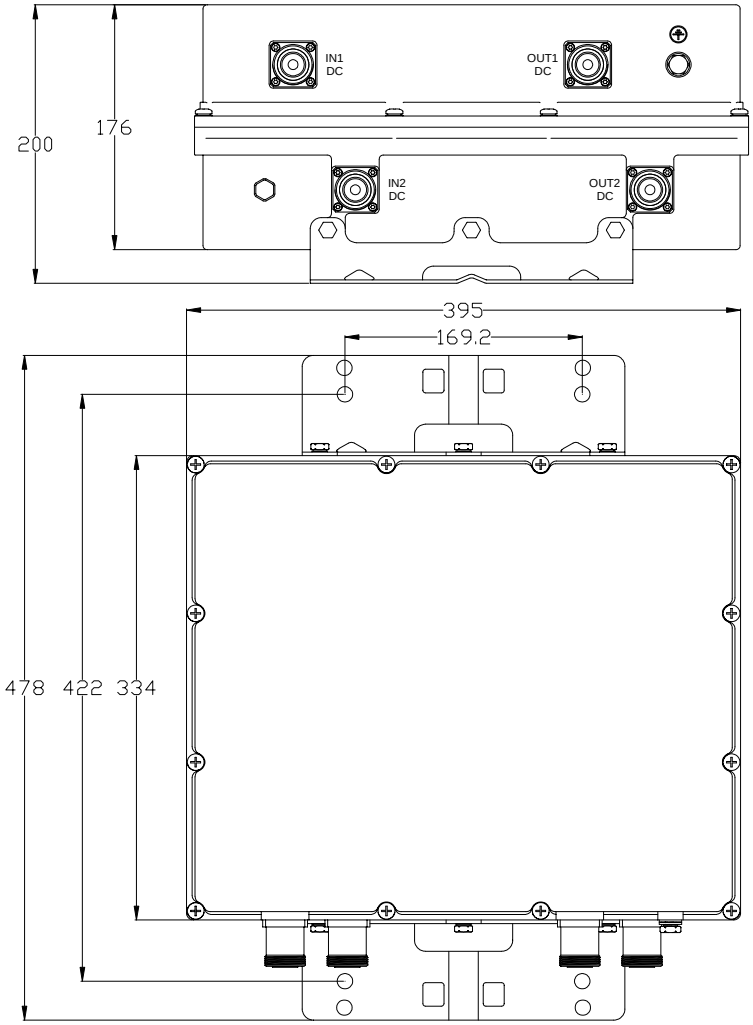


Fig 1 Outline Drawing

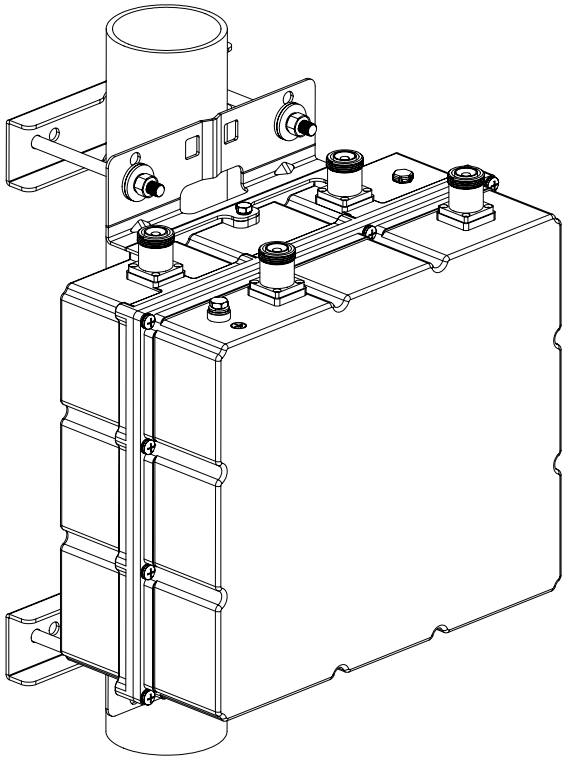


Fig 2 Pole Mounting

Simulation Curves

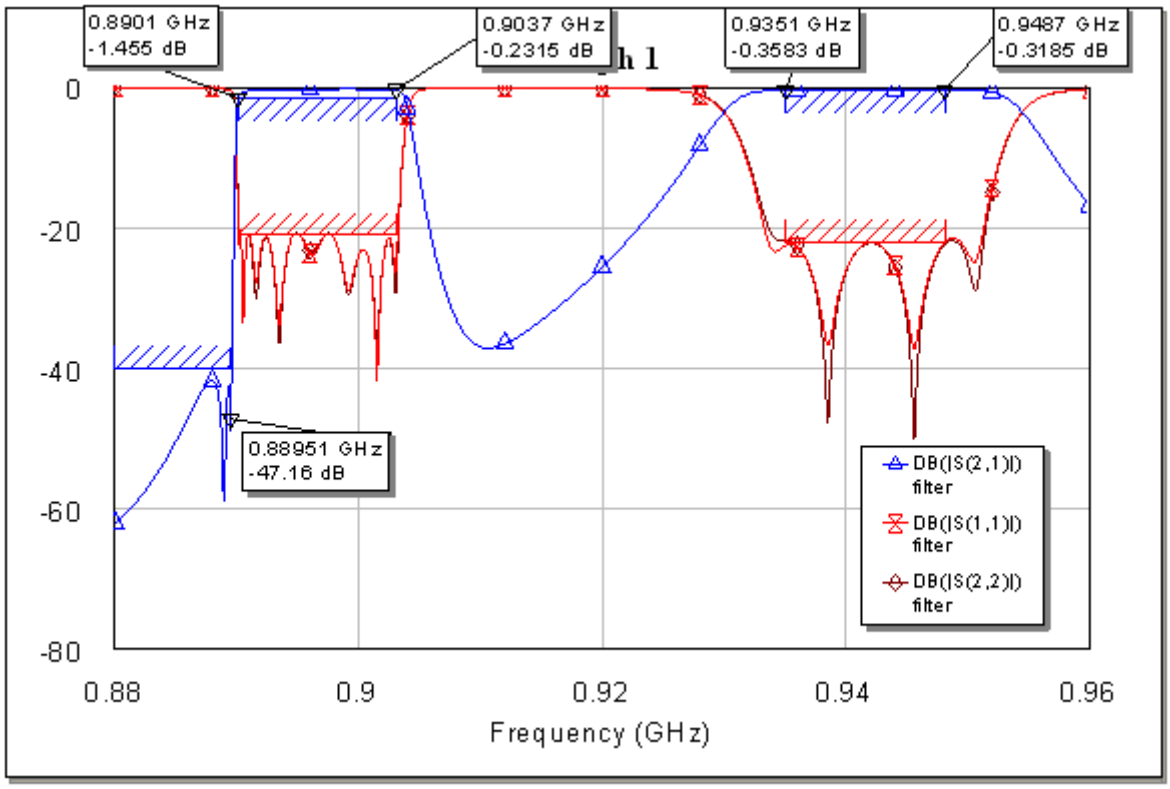


Fig 3 Simulation Curves

2:1 Hybrid Combiner

698-2700MHz

COM-BD21ODN3

Features and Product Description

- 698-2700MHz Frequency Range.
- 100W average power handling capability per port.
- Low insertion loss.
- Terminated with Low PIM performance using cable load.
- Integrating two operators' services into an existing in-building antenna distribution system.
- RoHS Compliant.

Photo for reference

Technical Specifications

Electrical

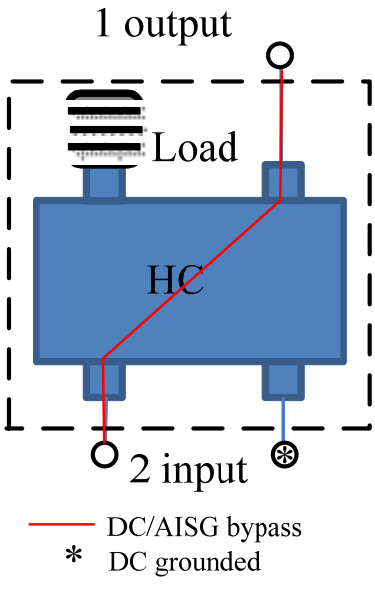
Frequency Range		MHz	698-2700
Input Avg. Power, max at each port		W	100
Input Peak Power at each port		W	1500
Coupling Attenuation	698-806MHz	dB	3.1±0.6
	806-2700MHz	dB	3.1±0.5
Isolation between Bands	698-2170MHz	dB	≥ 25*
	2170-2700MHz	dB	≥ 23*
Return Loss		dB	≥ 18
PIM(3rd Order)		dBc	≤ -155 @2x43dBm
Impedance		Ω	50

Mechanical

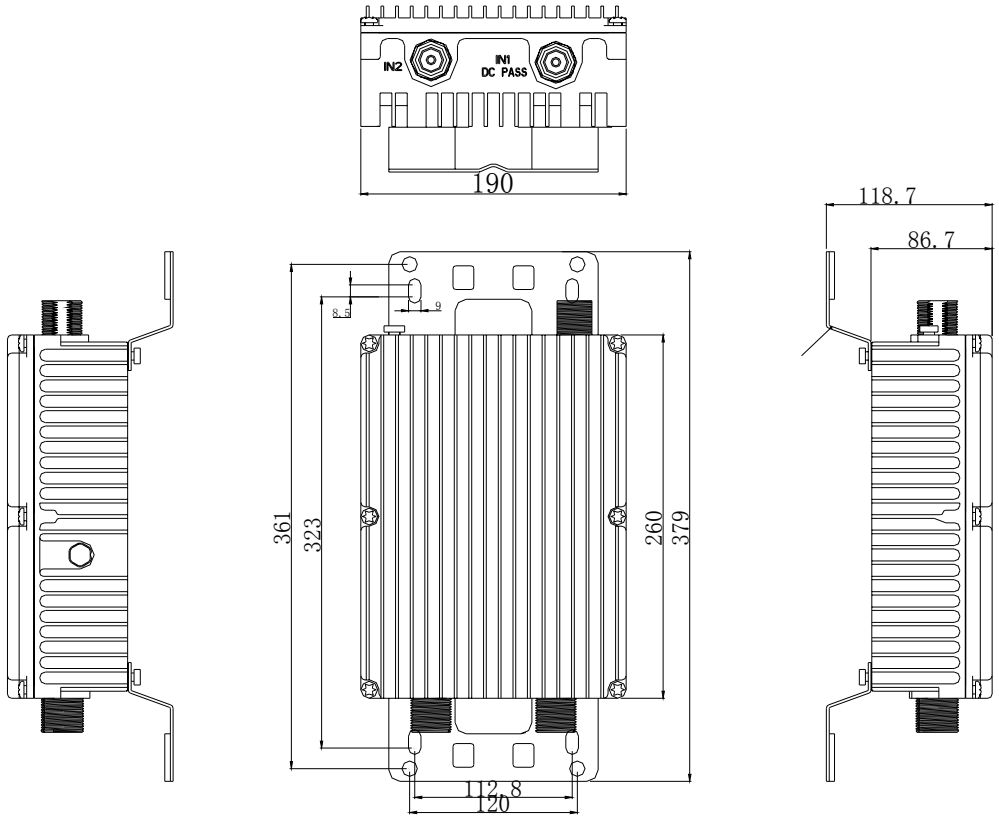
Dimension, LxWxH (Excluding connectors and brackets) ,approx.	mm (in)	260x190x86(10.3x7.5x3.4)
Weight, approx.	kg (lb)	6.6(14.5)
Material		Aluminum
Inner Plating		Silver
Connector Type		7/16 DIN-Female
Operational Temperature	°C	-40 to +65
Operational Humidity	%	< 95
Environmental Class		Indoor or Outdoor,IP66
Mounting Kit		Pole (clamps included for Φ 35-125mm) or wall mounted

* Valid if all ports are terminated with 50Ω load

Block Diagram



Outline Drawing



3dB Wideband Hybrid Coupler

698-2700MHz, 7-16 DIN-Female,150W

HC-R-OD150L

Features and Product Description

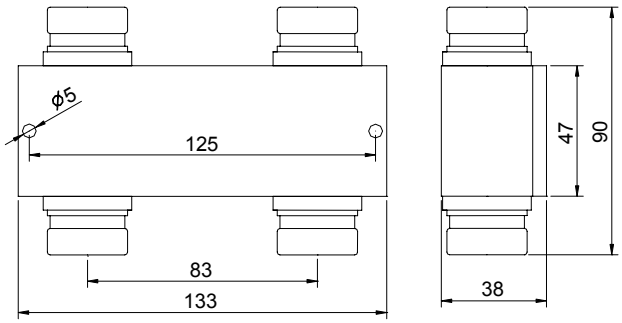
- Wideband covering 698-2700MHz.
- 150Watt per port input power handling capability.
- Suitable for both indoor and outdoor applications.
- Compact and cost effective solution for combining two bands.
- Low insertion loss and VSWR, high isolation.
- Integrating two operators' services into an existing in-building antenna distribution system.
- High reliability.
- RoHS Compliant.

Technical Specifications

Electrical		
Frequency Range	MHz	698-2700
Input Avg. Power, max at each port	W	150
Peak Power, maximum	W	1000
Insertion Loss	dB	≤ 0.2
Coupling Value	dB	3.1
Coupling Tolerance	dB	±0.5
Isolation between Bands	dB	≥ 23*
VSWR		≤ 1.2*
PIM	dBc	≤ -140 @2x43dBm
Impedance	Ω	50
Mechanical		
Dimension, LxWxH	mm (in)	133x90x38 (5.2x3.5x1.5)
Weight	kg (lb)	1.0 (2.2)
Material		Aluminum
Inner Plating		Silver
Connector Type		7-16 DIN-Female
Operational Temperature	°C	-25 to +65
Operational Humidity	%	< 95
Environmental Class		Indoor/Outdoor IP65

* Valid if all ports are terminated with 50Ω load

Outline Drawing



HC-R-OD150L

3dB Wideband Hybrid Coupler

698-2700MHz, N-Female,150W

HC-R-ON150L

Features and Product Description

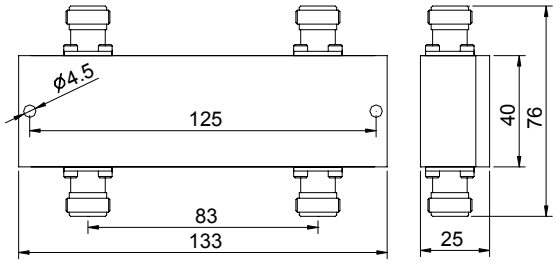
- 698-2700MHz Multi-band Frequency Range.
- 200Watt average power handling capability.
- Suitable for both indoor and outdoor applications.
- Compact and cost effective solution for combining two bands.
- Low insertion loss and VSWR, high isolation and good PIM performance.
- Integrating two operators' services into an existing in-building antenna distribution system.
- High reliability.
- RoHS Compliant.

Technical Specifications

Electrical		
Frequency Range	MHz	698-2700
Input Avg. Power, max at each port	W	150
Peak Power, maximum	W	1000
Insertion Loss	dB	≤ 0.2
Coupling Value	dB	3.1
Coupling Tolerance	dB	±0.5
Isolation between Bands	dB	≥ 23*
VSWR		≤ 1.2*
PIM	dBc	≤ -140 @2x43dBm
Impedance	Ω	50
Mechanical		
Dimension, LxWxH	mm (in)	133x76x25 (5.2x3.0x1.0)
Weight	kg (lb)	0.5 (1.1)
Material		Aluminum
Inner Plating		Silver
Connector Type		N-Female
Operational Temperature	°C	-25 to +65
Operational Humidity	%	< 95
Environmental Class		Indoor/Outdoor IP65

* Valid if all ports are terminated with 50Ω load

Outline Drawing



HC-R-ON150L

Hybrid Coupler

HC-x-D200L, HC-x-N200L

Features and Product Description

- Compact and cost effective combining of CDMA, GSM and UMTS signals.
- 200W power handling capability and inter-band isolation.
- Low insertion loss.
- Two combined output ports for split cable systems.
- Integrating two operators' services into an existing in-building antenna distribution system.

HC-M-D200L shown

Technical Specification

Electrical			'B' band	'K' band	'M' band
Frequency Range		MHz	800 – 960	1710 – 2200	800 – 2500
Input Power		W	200		
Dissipative Loss		dB	≤ 0.15	≤ 0.2	≤ 0.3
Coupling Value		dB	3		
Isolation between Bands		dB	≥ 35	≥ 30	≥ 25
Group Delay		nsec	≤ 1		
Pass Band Ripple		dB	≤ 0.5		
VSWR			≤ 1.10 : 1	≤ 1.15 : 1	≤ 1.20 : 1
Impedance		Ω	50		
Mechanical					
Dimension (L x W x H)	7/16 DIN-Female	mm	95 x 79.8 x 37	92 x 101 x 37	133 x 90 x 38
	Type N-Female		88 x 66 x 20	88 x 87 x 20	133 x 76 x 23
Weight	7/16 DIN-Female	kg	0.7	0.6	1
	Type N-Female		0.2	0.3	0.5
Material			Aluminum		
Operational Temperature		°C	-30 to +75		
Operational Humidity		%	< 95		
Environmental Class			Indoor		IP65

Ordering Information

Freq Band	7/16 DIN connector	Type N connector
800 – 960 MHz	HC-B-D200L	HC-B-N200L
1710 – 2200 MHz	HC-K-D200L	HC-K-N200L
800 – 2500 MHz	HC-M-D200L	HC-M-N200L

4in 4 out Hybrid Coupler

HC-R4-ON60L, HC-R4-OD60L

Features and Product Description

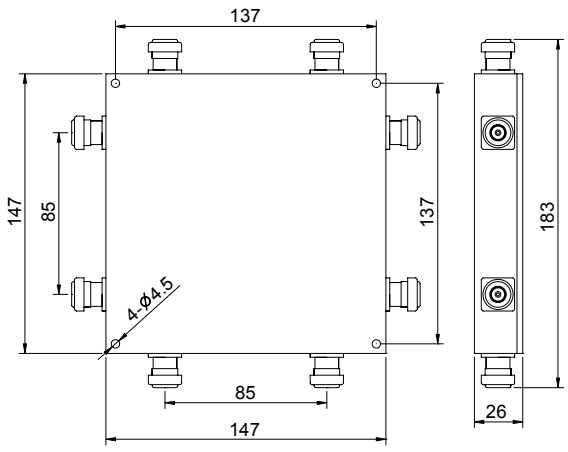
- Compact and cost effective same band combining of 698-2700MHz signals.
- High inter-band isolation.
- Low insertion loss.
- The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50Ω loads, unused output ports have to be terminated with high-power 50Ω loads.
- Suitable for indoor or outdoor applications

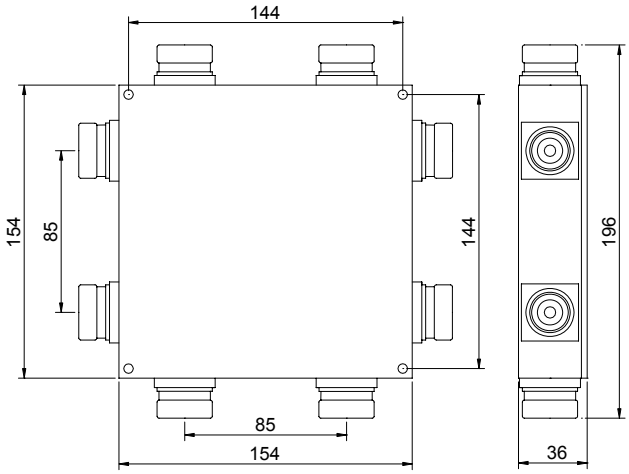
Technical Specification

Electrical			
Frequency Range		MHz	698-2700
Input Power		W	60 max at each port
Insertion Loss		dB	≤ 0.5
Coupling Value		dB	6.2
Coupling Tolerance		dB	±1.1
Isolation between Bands		dB	≥ 20*
VSWR			≤ 1.2*
Impedance		Ω	50
Mechanical			
Dimensions (L x W x H)	7/16 DIN-Female	mm	196x196xx36
	Type N-Female		183x183x26
Weight	7/16 DIN-Female	kg	3.1
	Type N-Female		1.7
Material			Aluminum
Operational Temperature		°C	-25 to +65
Operational Humidity		%	< 95
Environmental Class			Indoor/Outdoor(IP65)

* Valid if all ports are terminated with 50Ω load

Outline Drawing





Wideband Reactive Power Splitter

2/3/4way,698-2700MHz,7-16 DIN-Female, 700W

PS-R2-OD700C,PS-R3-OD700C,PS-R4-OD700C

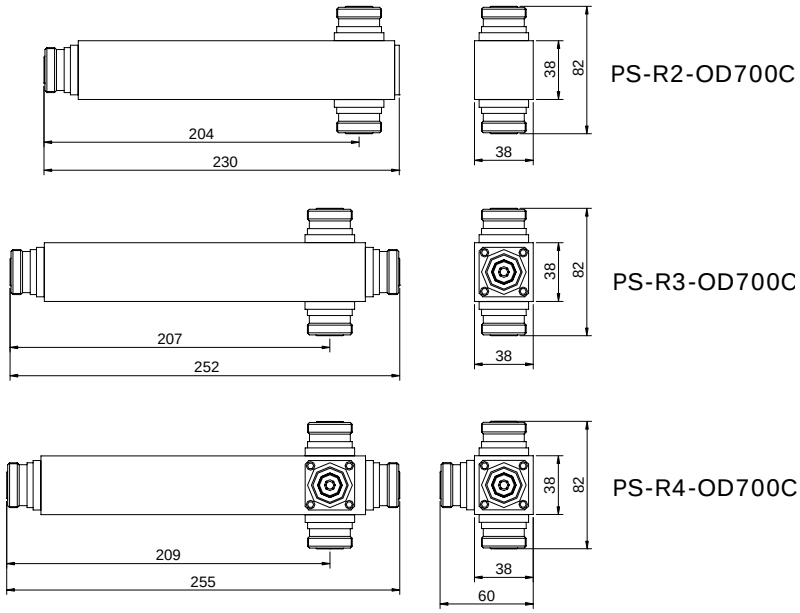
Features and Product Description

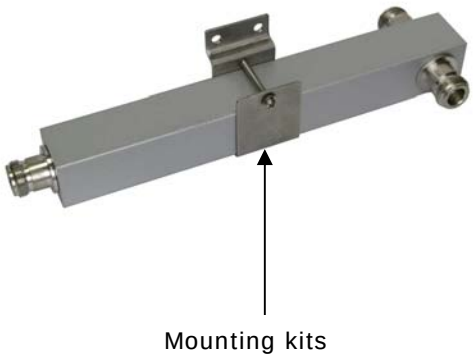
- Wideband covering 698-2700MHz.
- 700Watt input power handling capability.
- Low loss, flat response and even output.
- Suitable for both indoor and outdoor applications.
- High reliability.
- RoHS Compliant.

Technical Specifications

Electrical		PS-R2-OD700C	PS-R3-OD700C	PS-R4-OD700C
No. of Ways		2-way	3-way	4-way
Frequency Range	MHz	698-2700		
Average Power, maximum	W	700		
Peak Power	W	3000		
Splitting Loss	dB	3.0	4.8	6.0
In-band Ripple	dB	≤ 0.2		
Insertion loss	dB	≤ 0.1		
Input Port VSWR		< 1.20	< 1.25	< 1.30
PIM	dBc	≤ -140 @2x43dBm		
Impedance	Ω	50		
Mechanical				
Dimension, LxWxH	mm (in)	230x82x38 (9.1x3.2x1.5)	252x82x38 (9.9x3.2x1.5)	255x82x60 (10.0x3.2x2.4)
Weight	kg (lb)	1.05 (2.3)	1.2 (2.7)	1.32 (2.9)
Material		Aluminum		
Inner Plating		Silver		
Connector Type		7-16 DIN-Female		
Operational Temperature	°C	-35 to +65		
Mounting		Wall mounted bracket provided		
Operational Humidity	%	< 95		
Environmental Class		Indoor/Outdoor IP65		

Outline Drawing





Mounting kits

Wideband Reactive Power Splitter

2/3/4way,698-2700MHz, N-Female, 300W

PS-R2-ON300C,PS-R3-ON300C,PS-R4-ON300C

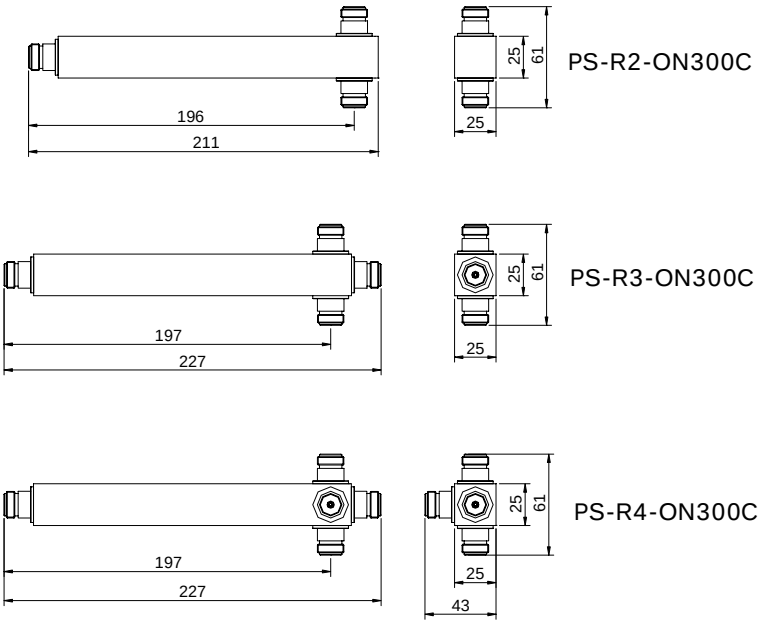
Features and Product Description

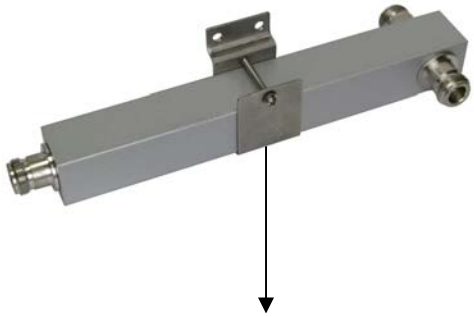
- Wideband covering 698-2700MHz.
- 300Watt input power handling capability.
- Low loss, flat response and even output.
- Suitable for both indoor and outdoor applications.
- High reliability.
- RoHS Compliant.

Technical Specifications

Electrical		PS-R2-ON300C	PS-R3-ON300C	PS-R4-ON300C
No. of Ways		2-way	3-way	4-way
Frequency Range	MHz	698-2700		
Average Power, maximum	W	300		
Peak Power	W	3000		
Splitting Loss	dB	3.0	4.8	6.0
In-band Ripple	dB	≤ 0.2		
Insertion loss	dB	≤ 0.1		
Input Port VSWR		< 1.20	< 1.25	< 1.30
PIM	dBc	≤ -140 @2x43dBm		
Impedance	Ω	50		
Mechanical				
Dimension, LxWxH	mm (in)	211x61x25 (8.3x2.4x1.0)	227x61x25 (8.9x2.4x1.0)	227x61x43 (8.9x2.4x1.7)
Weight	kg (lb)	0.38 (0.8)	0.42 (0.9)	0.46 (1.0)
Material		Aluminum		
Inner Plating		Silver		
Connector Type		N-Female		
Operational Temperature	°C	-35 to +65		
Mounting		Wall mounted bracket provided		
Operational Humidity	%	< 95		
Environmental Class		Indoor/Outdoor IP65		

Outline Drawing





Mounting kits

Wideband In-line Wilkinson Power Splitter

2/3/4way,698-2700MHz ,N-Female, 50W

PS-R2-ON50M, PS-R3-ON50M, PS-R4-ON50M

Features and Product Description

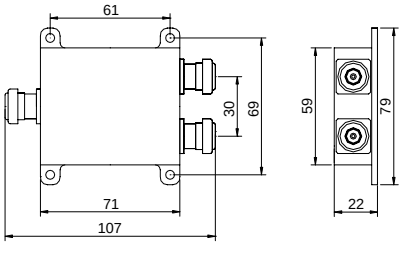
- 698-2700MHz Multi-band Frequency Range.
- 50W power handling capability.
- Low loss, flat response and even output.
- Suitable for both indoor and outdoor applications.
- RoHS compliant
- 20dB isolation

Technical Specifications

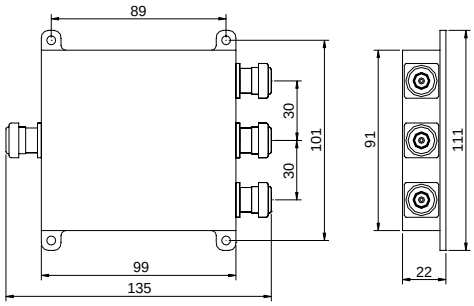
Electrical		PS-R2-ON50M	PS-R3-ON50M	PS-R4-ON50M
No. of Ways		2-way	3-way	4-way
Frequency Range	MHz	698-2700		
Average Power at Input Port, maximum	W	50*		
Splitting Loss	dB	3.0	4.8	6.0
Insertion loss	dB	≤ 0.4	≤ 0.7	≤ 0.6
Input Port VSWR		< 1.25		< 1.30
Isolation between Ports	dB	> 20		> 18
PIM	dBc	≤ -130 @2x43dBm		
Impedance	Ω	50		
Mechanical				
Dimension, LxWxH	mm (in)	107x59x22 (4.2x2.3x0.9)	135x91x22 (5.3x3.6x0.9)	129x121x22 (5.1x4.8x0.9)
Weight	kg (lb)	0.2 (0.4)	0.5 (1.1)	0.6 (1.3)
Material		Aluminum		
Inner Plating		Silver		
Connector Type		N-Female		
Operational Temperature	°C	-25 to +65		
Operational Humidity	%	< 95		
Environmental Class		Indoor and Outdoor (IP65)		

*when output ports terminated to load(s) with VSWR<1.5:1

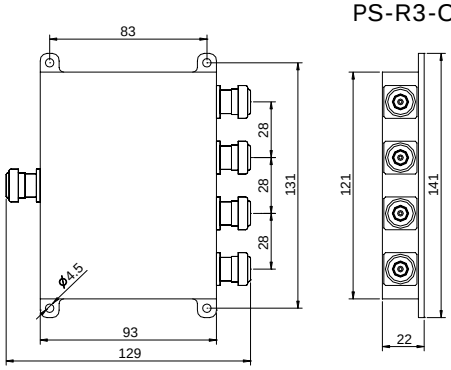
Outline Drawing



PS-R2-ON50M



PS-R3-ON50M



PS-R4-ON50M

Power Divider, 700W
PS-N2-D700C, PS-N3-D700C, PS-N4-D700C

Features and Product Description

- Wideband operation in all frequency bands from 800-2500MHz.
- 700W power handling capability.
- Low intermodulation.
- Low loss, flat response and good balance.
- Suitable for in-building systems.

Technical Specifications

Electrical		2-way	3-way	4-way
Frequency Range	MHz	800 – 2500		
Input Power	W	700		
Dissipative loss	dB	0.2		
Splitting Loss	dB	3.0	4.8	6.0
VSWR		< 1.20 : 1		
3rd Order Intermodulation @ 2 × 43dBm Carrier	dBc	≤ -140		
Impedance	Ω	50		
Mechanical				
Dimension (L x W x H)	mm	230 x 82 x 38	259 x 82 x 38	259 x 82 x 60
Weight	kg	1.13	1.25	1.36
Material		Aluminum		
Connector Type		7/16 DIN-Female		
Operational Temperature	°C	-30 to +75		
Operational Humidity	%	< 95		
Environmental Class		Indoor		

Ordering Information

	7/16 DIN connector	**Type N connector**
2-way	PS-N2-D700C	
3-way	PS-N3-D700C	
4-way	PS-N4-D700C	

Power Divider, 50W

PS-N2-N50M, PS-N3-N50M, PS-N4-N50M

Features and Product Description

- Wideband designed for operating in all frequency bands from 800-2500MHz.
- 50W power handling capability.
- Low loss, flat response and good balance.
- Used for in-building systems.

Technical Specifications

Electrical			2-way	3-way	4-way
Frequency Range		MHz	800 – 2500		
Input Power		W	≤ 50		
Dissipative Loss	800 – 960, 1710 – 2170MHz	dB	≤ 0.3	≤ 0.5	≤ 0.4
	2200 – 2500MHz		≤ 0.8	≤ 0.8	≤ 0.8
Splitting Loss		dB	3.0	4.8	6.0
Output Isolation	800 – 960, 1710 – 2170 MHz	dB	≥ 20		
	2200 – 2500 MHz		≥ 18		
VSWR	800 – 960, 1710 – 2170 MHz		≤ 1.2 : 1		
	2200 – 2500 MHz		≤ 1.4 : 1		
Impedance		Ω	50		
Mechanical					
Dimension (L x W x H)		mm	107.2 x 57 x 21	129.2 x 89 x 22	129.2 x 119 x 22
Weight		kg	0.30	0.48	0.64
Material			Aluminum		
Connector Type			Type N-Female		
Operational Temperature		°C	-30 to +75		
Operational Humidity		%	< 95		
Environmental Class			Indoor		

Ordering Information

	7/16 DIN connector	Type N connector
2-way		PS-N2-N50M
3-way		PS-N3-N50M
4-way		PS-N4-N50M

Power Divider, 200W

PS-N2-N200C, PS-N3-N200C, PS-N4-N200C

Features and Product Description

- Wideband designed for operating in all frequency bands from 800-2500MHz.
- 200W power handling capability.
- Low intermodulation.
- Low loss, flat response and good balance.
- Suitable for in-building systems.

Technical Specifications

Electrical		2-way	3-way	4-way
Frequency Range	MHz	800 – 2500		
Input Power	W	200,avg; 1500,peak		
Dissipative Loss	dB	≤0.1@800-2200MHz ≤0.15@2200-2500MHz		
Splitting Loss	dB	≤ 3.0	≤ 4.8	≤ 6.0
In-Band Ripple	dB	≤ 0.5		
VSWR		< 1.20 : 1		
3rd Order Intermodulation @ 2 x 43dBm Carrier	dBc	≤ -140		
Impedance	Ω	50		
Mechanical				
Dimension (L x W x H)	mm	211 x 61 x 25	229 x 61 x 25	236 x 61 x 43
Weight	kg	0.29	0.34	0.39
Material		Aluminum		
Connector Type		Type N-Female		
Operational Temperature	°C	-25 to +75		
Operational Humidity	%	< 95		
Environmental Class		Indoor		

Ordering Information

	7/16 DIN connector	**Type N connector**
2-way		PS-N2-N200C
3-way		PS-N3-N200C
4-way		PS-N4-N200C

Power Divider, 200W

PS-Z2-N200C, PS-Z3-N200C, PS-Z4-N200C

Features and Product Description

- Wideband designed for operating in all frequency bands between 800-2700MHz.
- 200W power handling capability.
- Low loss, flat response and good balance.
- Low intermodulation.
- Suitable for in-building systems.

Technical Specifications

Electrical		**2-way**	**3-way**	**4-way**
Frequency Range	MHz	824 – 960 / 1710 – 2700		
Input Power	W	≤ 200		
Dissipative Loss	dB	0.2 (Typ.)		
Splitting Loss	dB	3.0	4.8	6.0
VSWR		< 1.30 : 1		
3rd Order Intermodulation @ 2 × 43dBm Carrier	dBc	≤ -140		
Impedance	Ω	50		
Mechanical				
Dimension (L x W x H)	mm	191 x 61 x25	222.8 x 61 x 25	222.8 x 61 x 43
Weight	kg	0.26	0.31	0.37
Material		Aluminum		
Connector Type		Type N-Female		
Operational Humidity	°C	-35 to +75		
Operational Temperature	%	< 95		
Environmental Class		IP55		

Ordering Information

	Type N connector	**7/16 DIN connector**
2-way	PS-Z2-N200C	
3-way	PS-Z3-N200C	
4-way	PS-Z4-N200C	

Wideband Coupler

6,10,15,20,30,40dB,698-2700MHz,N-Female, 200W

CO-Rxx-ON200C (xx=06, 10...or 40, Preconfigured Coupling Value)

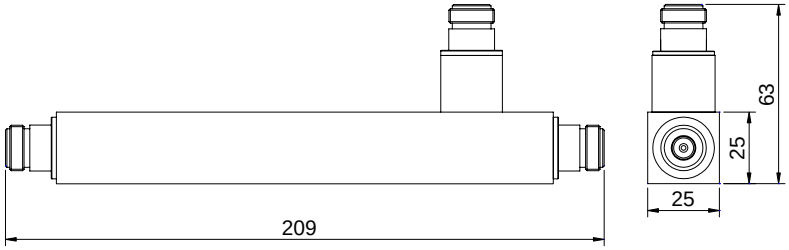
Features and Product Description

- Wideband covering 698-2700MHz.
- 6, 10, 15, 20, 30 & 40dB coupling value.
- 200Watt average main line power handling capability.
- Low insertion loss with high reliability.
- Suitable for both indoor and outdoor applications.
- RoHS Compliant.

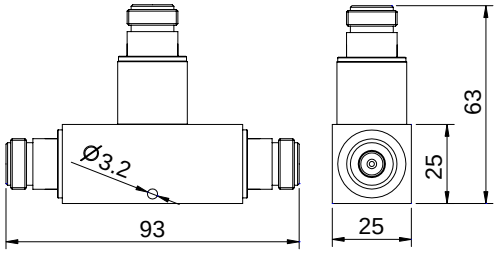
Technical Specifications

Electrical		CO-R06-ON200C	CO-R10-ON200C	CO-R15-ON200C	CO-R20-ON200C	CO-R30-ON200C	CO-R40-ON200C
Frequency Range	MHz	698-2700					
Input Average Power	W	200 (Maximum)					
Peak Power	W	1000					
Coupling Value	dB	6	10	15	20	30	40
Coupling tolerance	dB	±1.2	±1.2	±1.2	±1.5	±1.5	±1.5
Main Line Loss	dB	≤ 1.7	≤ 0.8	≤ 0.4	≤ 0.2	≤ 0.2	≤ 0.2
Input port VSWR		< 1.4			< 1.2		
Insertion Loss	dB	≤ 0.1					
PIM	dBc	≤ -140 @2x43dBm					
Impedance	Ω	50					
Mechanical							
Dimension, LxWxH	mm (in)	209x63x25 (8.2x2.5x1.0)			93x63x25 (3.7x2.5x1.0)		
Weight	kg (lb)	0.4 (0.9)			0.2 (0.4)		
Material		Aluminum					
Inner Plating		Silver					
Connector Type		N-Female					
Temperature Range	°C	-35 to +65					
Humidity	%	< 95					
Environmental Class		Indoor/Outdoor IP65					

Outline Drawing



CO-R06-ON200C, CO-R10-ON200C, CO-R15-ON200C



CO-R20-ON200C, CO-R30-ON200C, CO-R40-ON200C

Indoor Coupler

30,40,55dB,820-960/1700-1900MHz,7/16 Din-Female,200W
CO-Bxx-D200C, CO-Dxx-D200C(xx=06, 10...or 40, Preconfigured Coupling Value)

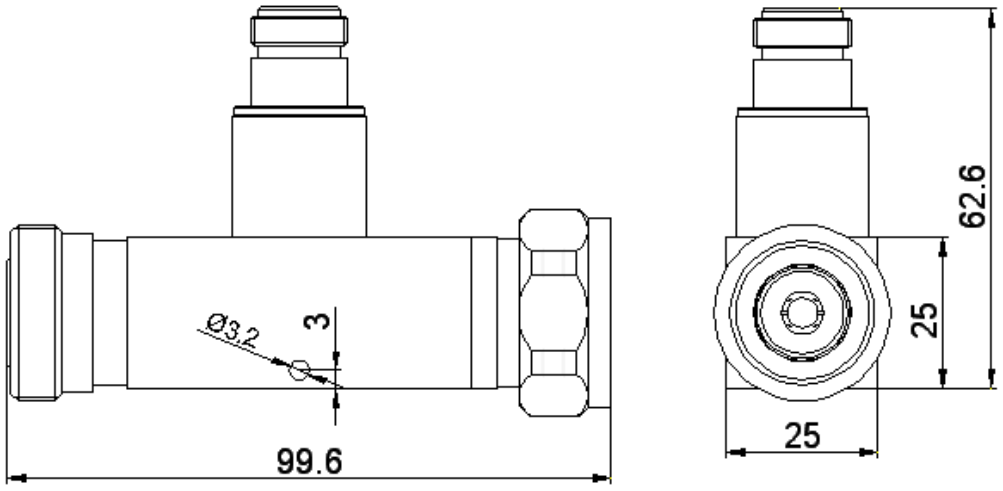
Features and Product Description

- Designed for CDMA800, GSM900 or GSM1800 band.
- 200W Power handling.
- Low intermodulation.
- High coupling values, low loss and flat coupling.
- Compact design and high reliability.
- Suitable for using in optical master unit as a coupler for RF power.

Technical Specifications

Electrical			'B' band	'D' band
Frequency Range		MHz	820 – 960	1700 – 1900
Input Power		W	≤ 200	
Coupling Value		dB	30 ± 1.5, 40 ± 1.5, 55 ± 2.0	
Insertion Loss		dB	≤ 0.2	
VSWR			< 1.20 : 1	
3rd Order Intermodulation @ 2 × 43dBm Carrier		dBc	≤ -140	
Impedance		Ω	50	
Mechanical				
Dimension (L x W x H)		mm	99.6 x 62.6 x 25	
Weight		kg	0.4	
Material			Aluminum	
Connector Type	Through ports		7/16 DIN	
	Couple port		Type N-Female	
Operational Temperature		°C	-30 to +65	
Operational Humidity		%	< 95	
Environmental Class			Indoor	

Outline Drawing & Ordering Information



'xx' Coupling Value	820 – 960 MHz	1700 – 1900 MHz
30dB	CO-B30-D200C	CO-D30-D200C
40dB	CO-B40-D200C	CO-D40-D200C
55dB	CO-B55-D200C	CO-D55-D200C

Wideband Directional Coupler

5,6,7,8,10,13,15,20,30,40dB,698-2700MHz, 7-16 DIN-Female, 200W

DC-Rxx-OD200M (xx=05, 06…or 40, Preconfigured Coupling Value)

Features and Product Description

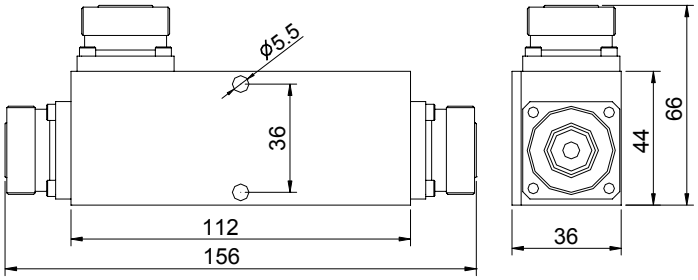
- Wideband covering 698-2700MHz.
- 5, 6,7,8,10,13,15,20,30 & 40dB coupling value.
- 200Watt average main line power handling capability.
- Low main line loss with high reliability.
- Suitable for both indoor and outdoor applications.
- RoHS Compliant.

Technical Specifications

Electrical		DC-R05-OD200M	DC-R06-OD200M	DC-R07-OD200M	DC-R08-OD200M	DC-R10-OD200M
Frequency Range	MHz	698-2700				
Input Average Power	W	200 (Maximum)				
Peak Power	W	1000				
Coupling Value	dB	5	6	7	8	10
Coupling tolerance	dB	±0.8	±0.8	±0.8	±0.8	±1
Main Line Loss	dB	≤ 2.3	≤ 1.7	≤ 1.5	≤ 1.2	≤ 0.8
Isolation	dB	> 25	> 26	> 27	> 28	> 30
Input port VSWR		< 1.25				
PIM	dBc	≤ -140 @2x43dBm				
Impedance	Ω	50				
Mechanical						
Dimension, LxWxH	mm (in)	156x66x36 (6.1x2.6x1.4)				
Weight	kg (lb)	0.75 (1.7)				
Material		Aluminum				
Inner Plating		Silver				
Connector Type		7-16 DIN-Female				
Temperature Range	°C	-25 to +75				
Humidity	%	< 95				
Environmental Class		Indoor/Outdoor IP65				

*13,15,20,30,40dB specs listed in next page

Outline Drawing



DC-R05-OD200M, DC-R06-OD200M,
DC-R07-OD200M, DC-R08-OD200M,
DC-R10-OD200M

Wideband Directional Coupler

5,6,7,8,10,13,15,20,30,40dB,698-2700MHz, 7-16 DIN-Female, 200W

DC-Rxx-OD200M (xx=05, 06…or 40, Preconfigured Coupling Value)

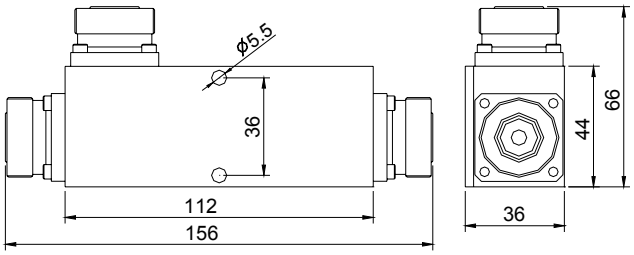
Features and Product Description

- Wideband covering 698-2700MHz.
- 5, 6,7,8,10,13,15,20,30 & 40dB coupling value.
- 200Watt average main line power handling capability.
- Low main line loss with high reliability.
- Suitable for both indoor and outdoor applications.
- RoHS Compliant.

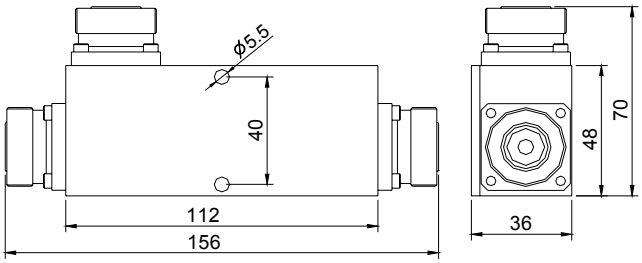
Technical Specifications

Electrical		DC-R13-OD200M	DC-R15-OD200M	DC-R20-OD200M	DC-R30-OD200M	DC-R40-OD200M
Frequency Range	MHz	698-2700				
Input Average Power	W	200 (Maximum)				
Peak Power	W	1000				
Coupling Value	dB	13	15	20	30	40
Coupling tolerance	dB	±1	±1	±1	±1.2	±1.5
Main Line Loss	dB	≤ 0.5	≤ 0.4	≤ 0.3	≤ 0.2	≤ 0.2
Isolation	dB	> 33	> 35	> 40	> 33	> 43
Input port VSWR		< 1.25				
PIM	dBc	≤ -140 @2x43dBm				
Impedance	Ω	50				
Mechanical						
Dimension, LxWxH	mm (in)	156x66x36 (6.1x2.6x1.4)			156x70x36 (6.1x2.8x1.4)	
Weight	kg (lb)	0.75 (1.7)			0.85 (1.9)	
Material		Aluminum				
Inner Plating		Silver				
Connector Type		7-16 DIN-Female				
Temperature Range	°C	-25 to +75				
Humidity	%	< 95				
Environmental Class		Indoor/Outdoor IP65				

Outline Drawing



DC-R13-OD200M,
DC-R15-OD200M,
DC-R20-OD200M



DC-R30-OD200M,
DC-R40-OD200M

Wideband Directional Coupler

5,6,7,8,10,13,15,20,30,40dB,698-2700MHz, N-Female, 200W

DC-Rxx-ON200M (xx=05, 06...or 40, Preconfigured Coupling Value)

Features and Product Description

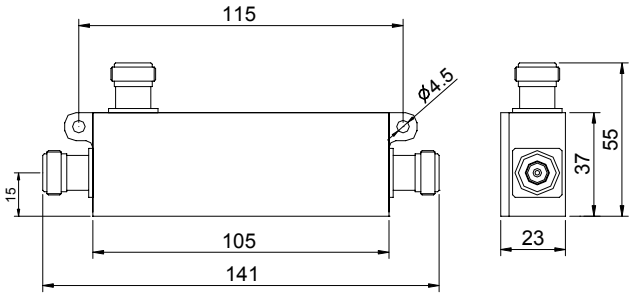
- Wideband covering 698-2700MHz.
- 5, 6,7,8,10,13,15,20,30 & 40dB coupling value.
- 200Watt average main line power handling capability.
- Low main line loss with high reliability.
- Suitable for both indoor and outdoor applications.
- RoHS Compliant.

Technical Specifications

Electrical		DC-R05-ON200M	DC-R06-ON200M	DC-R07-ON200M	DC-R08-ON200M	DC-R10-ON200M
Frequency Range	MHz	698-2700				
Input Average Power	W	200 (Maximum)				
Peak Power	W	1000				
Coupling Value	dB	5	6	7	8	10
Coupling tolerance	dB	±0.8	±0.8	±0.8	±0.8	±1
Main Line Loss	dB	≤ 2.3	≤ 1.7	≤ 1.5	≤ 1.2	≤ 0.8
Isolation	dB	> 25	> 26	> 27	> 28	> 30
Input port VSWR		< 1.25				
PIM	dBc	≤ -140 @2x43dBm				
Impedance	Ω	50				
Mechanical						
Dimension, LxWxH	mm (in)	141x55x23 (5.6x2.2x0.9)				
Weight	kg (lb)	0.30 (0.7)				
Material		Aluminum				
Inner Plating		Silver				
Connector Type		N-Female				
Temperature Range	°C	-25 to +75				
Humidity	%	< 95				
Environmental Class		Indoor/Outdoor IP65				

*13,15,20,30,40dB specs listed in next page

Outline Drawing



DC-R05-ON200M, DC-R06-ON200M,
DC-R07-ON200M, DC-R08-ON200M,
DC-R10-ON200M

Wideband Directional Coupler

5,6,7,8,10,13,15,20,30,40dB,698-2700MHz, N-Female, 200W

DC-Rxx-ON200M (xx=05, 06…or 40, Preconfigured Coupling Value)

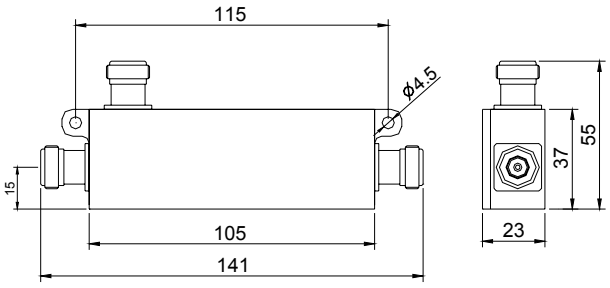
Features and Product Description

- Wideband covering 698-2700MHz.
- 5, 6,7,8,10,13,15,20,30 & 40dB coupling value.
- 200Watt average main line power handling capability.
- Low main line loss with high reliability.
- Suitable for both indoor and outdoor applications.
- RoHS Compliant.

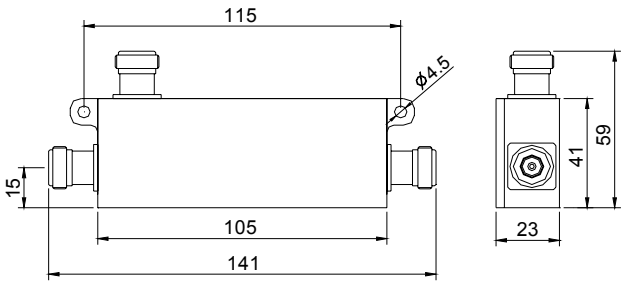
Technical Specifications

Electrical		DC-R13-ON200M	DC-R15-ON200M	DC-R20-ON200M	DC-R30-ON200M	DC-R40-ON200M
Frequency Range	MHz	698-2700				
Input Average Power	W	200 (Maximum)				
Peak Power	W	1000				
Coupling Value	dB	13	15	20	30	40
Coupling tolerance	dB	±1	±1	±1	±1.2	±1.5
Main Line Loss	dB	≤ 0.5	≤ 0.4	≤ 0.3	≤ 0.2	≤ 0.2
Isolation	dB	> 33	> 35	> 40	> 33	> 43
Input port VSWR		< 1.25				
PIM	dBc	≤ -140 @2x43dBm				
Impedance	Ω	50				
Mechanical						
Dimension, LxWxH	mm (in)	141x55x23 (5.6x2.2x0.9)			141x59x23 (5.6x2.3x0.9)	
Weight	kg (lb)	0.30 (0.7)			0.40 (0.9)	
Material		Aluminum				
Inner Plating		Silver				
Connector Type		N-Female				
Temperature Range	°C	-25 to +75				
Humidity	%	< 95				
Environmental Class		Indoor/Outdoor IP65				

Outline Drawing



DC-R13-ON200M,
DC-R15-ON200M,
DC-R20-ON200M



DC-R30-ON200M,
DC-R40-ON200M

Directional Coupler

DC-Nxx-D200M, DC-Nxx-N200M

Features and Product Description

- Wideband designed for operating in all frequency bands from 800-2500MHz.
- 200W power handling capability.
- Low loss and flat coupling.
- Available with 7/16 DIN or Type N connector.
- Used for power coupling with in-building systems.

Technical Specifications

Electrical			6dB	10dB	15dB	20dB
Frequency Range		MHz	800 – 2500			
Input Power		W	≤ 200			
Dissipative Loss		dB	≤ 0.2			
Coupling Value		dB	6	10	15	20
Main Line Loss		dB	≤ 1.7	≤ 0.7	≤ 0.4	≤ 0.3
Directivity		dB	> 20			
VSWR			< 1.25 : 1			
Impedance		Ω	50			
Mechanical						
Dimension (L x W x H)	7/16 DIN-Female	mm	155 x 65 x 36			
	Type N-Female		141 x 55 x 22			
Weight	7/16 DIN-Female	kg	0.75			
	Type N-Female		0.3			
Material			Aluminum			
Operational Temperature		°C	-30 to +75			
Operational Humidity		%	< 95			
Environmental Class			Indoor			

Ordering Information

'xx' Coupling Value	7/16 DIN connector	Type N connector
6dB	DC-N06-D200M	DC-N06-N200M
10dB	DC-N10-D200M	DC-N10-N200M
15dB	DC-N15-D200M	DC-N15-N200M
20dB	DC-N20-D200M	DC-N20-N200M

Indoor wideband Coupler

6,10,15,20dB,800-2500MHz, N-Female, 200W

DC-Nxx-N200C (xx=06, 10...or 20, Preconfigured Coupling Value)

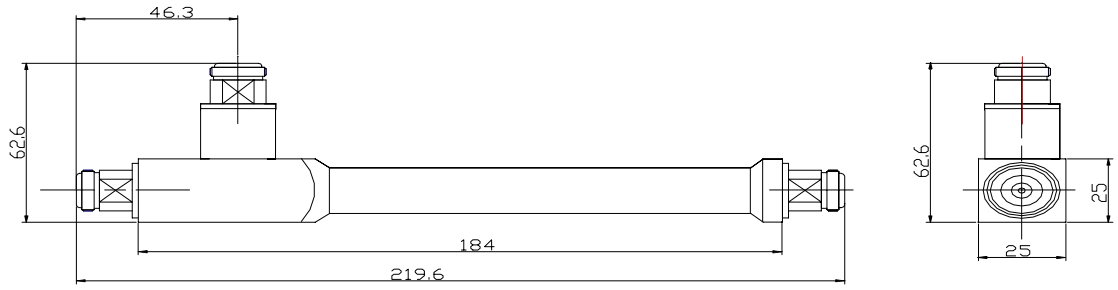
Features and Product Description

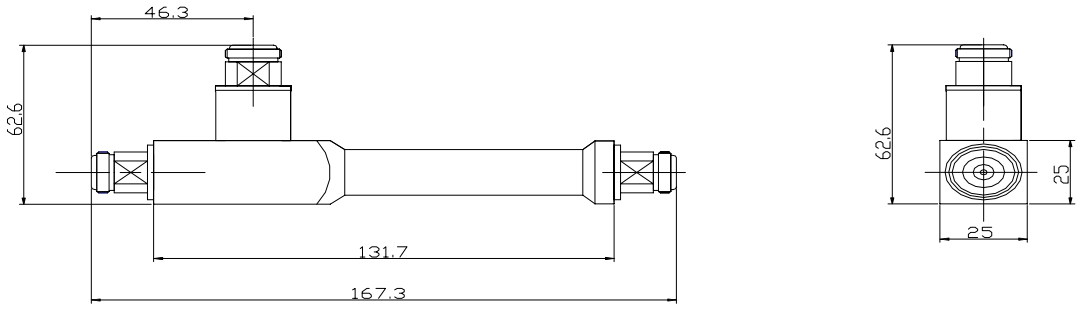
- Wideband designed for operating in all frequency bands from 800-2500MHz.
- 200W power handling capability.
- Low loss, flat coupling and intermodulation.
- Used for power coupling with in-building systems.

Technical Specifications

Electrical		6dB	10dB	15dB	20dB
Frequency Range	MHz	800 – 2500			
Input Power	W	≤ 200			
Coupling Value	dB	6	10	15	20
Main Line Loss	dB	≤ 1.6	≤ 0.7	≤ 0.3	≤ 0.3
VSWR		< 1.30 : 1			
3rd Order Intermodulation @ 2 × 43dBm Carrier	dBc	≤ -140			
Impedance	Ω	50			
Mechanical					
Dimension (L x W x H)	mm	220 x 63 x 25			167 x 63 x 25
Weight	kg	0.3			0.25
Material		Aluminum			
Operational Temperature	°C	-35 to +75			
Operational Humidity	%	< 95			
Environmental Class		Indoor			

Outline Drawing





POI-TDA2ODN4SG

Multi Operator Combiner - 1x iDEN, 1x EGSM, 2x GSM900, 3x GSM1800, 3x UMTS2100

Features

- High input power of 100W and 150W (iDEN)
- Permits combining of 1x iDEN, 1x EGSM, 2xGSM900, 3x GSM1800, and 3x UMTS2100.
- Low insertion loss and passive intermodulation.
- High inter-band isolation.
- IP-65 chassis for outdoor mounting.

Product Description

POI-TDA2ODN4SG is a multi-operator combiner that is designed for cost effective antenna sharing solution. This high power combiner is designed to combine 1x iDEN, 1x EGSM, 2x GSM900, 3x GSM1800 and 3x UMTS2100 for in-building common antenna system. It can be deployed in places such as convention centers, exhibition halls, airports, underground tunnels and other large buildings.

Comba is capable of providing solutions for any combination of frequency bands while keeping insertion loss to a minimum

Technical Specifications

Electrical

Frequency Range – [MHz]		
- iDEN	RX/TX(A):	806-825/851-870
- EGSM	RX/TX(A):	880-890/925-935
- GSM900	RX/TX(A):	890-900/935-945
	RX/TX(B)	900-915/945-960
- GSM1800	RX/TX(A):	1710-1715/1805-1810
	RX/TX(B):	& 1720-1740/1815-1835 1740-1760/1835-1855
	RX/TX(C):	& 1715-1720/1810-1815 1760-1785/1855-1880
- UMTS2100	RX/TX(A):	1920-1935.1/2110.3-2125.1& 1974.9-1979.7/2164.9-2169.7
	RX/TX(B):	1935.1-1950.1/2125.1-2140.1 &1969.9-1974.9/2159.9-2164.9
	RX/TX(C):	1950.1-1969.9/2140.1-2159.9
Insertion Loss – [dB]		< 6.0
Isolation – [dB]		
- GSM900/GSM900/EGSM		> 33
- GSM1800/GSM1800		> 33
- UMTS2100/ UMTS2100		> 33
- Cross band		> 91
Return Loss – [dB]		
- Input port		> 20
- Output port		> 14
PIM product in RX band (@2x 43dBm) – [dBc]		< -153
Impedance – [ohm]		50
Input Power Rating Per Port [W]		
- GSM900,GSM1800,UMTS2100		100
- iDEN		150

Mechanical

Dimension LxWxH – [mm] (approx.)	600×500×300
Weight (approx.) – [kg]	49
Number of Output Ports – Duplex	2
Number of Input Ports - Duplex	10
Number of Monitor Ports	2
Signal Output at Monitor – [dBc]	-30 ± 2
Connector Type – Input / Output	7/16 DIN-Female
Temperature Range – [°C]	0 to +50
Operating Humidity – [%]	< 95
Mounting	Wall Mount
Environmental Class	IP-65

Shipping Information

Dimensions, H x W x D – [mm] *	850×750×500
Weight – [kg]	70

* Shipping in wooden crate

POI-TDH2IDN1HK

Multi Operator Combiner - 4xGSM900,6xGSM1800,4xUMTS,3xLTE2.6G

Features

- High input power of 150W.
- Permits combining of GSM900, GSM1800, WCDMA2100 and LTE2.6G services.
- Low insertion loss.
- High inter-band isolation.
- Compact size.

Photo for reference

Product Description

The POI-TDH2IDN1HK is one of a range of compact, low intermodulation, cellular combiners for cost effective, multi-band in-building combining systems. This high power combiner is designed to combine GSM900, GSM1800, WCDMA2100 and LTE2.6G to share the same system, while providing >80dB isolation among GSM900, GSM1800, WCDMA2100 and LTE2.6G system. Main applications for this product include: convention centers, exhibition halls, airports, underground tunnels and other large buildings.

With extensive range of passive components, Comba is capable of providing solutions for almost any combination of frequency bands while keeping insertion loss to a minimum.

Technical Specifications

Electrical

Frequency Range – [MHz]		
- GSM900	RX/TX(A):	890-897.5/935-942.5
	RX/TX(B):	897.5-907.5/942.5-952.5
	RX/TX(C):	907.5-915/952.5-960
	RX/TX(D):	885-890/930-935
- GSM1800	RX/TX(A):	1720.1-1730.1/1815.1-1825.1
	RX/TX(B):	1730.1-1740.1/1825.1-1835.1
	RX/TX(C):	1740.1-1750.1/1835.1-1845.1
	RX/TX(D):	1750.1-1760.1/1845.1-1855.1
	RX/TX(E):	1760.1-1770.1/1855.1-1865.1
	RX/TX(F):	1770.1-1780.1/1865.1-1875.1
- WCDMA,	RX/TX(A):	1920.3-1935.1/2110.3-2125.1
	RX/TX(B):	1935.1-1949.9/2125.1-2139.9
	RX/TX(C):	1950.1-1964.9/2140.1-2154.9
	RX/TX(D):	1964.9-1979.7/2154.9-2169.7
- LTE2.6G	RX/TX(A):	2500-2515/2620-2635
	RX/TX(B):	2540-2555/2660-2675
	RX/TX(C):	2555-2570/2675-2690

Insertion Loss – [dB]	≤ 6
Isolation – [dB]	
-Same band	> 40
-Cross Band	> 80
Return Loss – [dB]	> 18
PIM – [dBc] (@2x43dBm carriers)	<-155(REVERSE)

Electrical

Input Power Rating Per Port – [W]	150
Impedance – [ohm]	50

Mechanical

Dimension LxWxH – [mm]	600x400x800
Weight (approx.) – [kg]	88
Number of Output Ports-Combined Duplex	2
Number of Input Ports - Duplex	17
Connector Type – Input	7/16 Din-Female
Connector Type - Output	7/16 Din-Female
Operational Temperature – [℃]	0 to +60
Operating Humidity	<95
Mounting	Floor Stand
Environmental Class	Indoor

Shipping Information

(Wooden Crate)

Dimensions, H x W x D – [mm]	860x600x1060
Weight (approx.) – [kg]	115

POI-TSJ2IDN1HK-TX

Multi Operator Combiner - 6xGSM900 Tx, 6xGSM1800 Tx, 4xUMTS Tx,3xLTE2.6G Tx/Rx

Features

- Permits combining of GSM900, GSM1800, WCDMA2100 and LTE2.6G services.
- Low insertion loss.
- High inter-band isolation.
- POI downlink unit.

Tx Unit Photo for reference

Product Description

The POI-TSJ2IDN1HK-TX is one of a range of compact, low intermodulation, cellular combiners for cost effective, multi-band in-building combining systems. This high power combiner is designed to combine GSM900, GSM1800, WCDMA2100 and LTE2.6G to share the same system, while providing >80dB isolation among GSM900, GSM1800, WCDMA2100 and LTE2.6G system. Main applications for this product include: convention centers, exhibition halls, airports, underground tunnels and other large buildings.

With extensive range of passive components, Comba is capable of providing solutions for almost any combination of frequency bands while keeping insertion loss to a minimum.

Technical Specifications

Electrical

Frequency Range – [MHz]		
- GSM900	TX1:	935.0-942.5
	TX2:	942.5-952.5
	TX3:	952.5-960.0
	TX4:	930-935
- UMTS850	TX1:	877.5-882.5
- CDMA2000	TX1:	870-877.5
- PCS1800	TX1:	1815.1-1825.1
	TX2:	1825.1-1835.1
	TX3:	1835.1-1845.1
	TX4:	1845.1-1855.1
	TX5:	1855.1-1865.1
	TX6:	1865.1-1875.1
- WCDMA2100	TX1:	2110.3-2125.1
	TX2:	2125.1-2139.9
	TX3:	2140.1-2154.9
	TX4:	2154.9-2169.7
- LTE2.6G	TX1/RX1:	2500-2515/2620-2635
	TX2/RX2:	2540-2555/2660-2675
	TX3/RX3:	2555-2570/2675-2690

Insertion Loss – [dB]	≤ 6
Isolation – [dB]	
-In band	> 40
-Cross Band	> 80
Return Loss – [dB]	> 18
PIM – [dBc]@2x43dBm carries	<-155(REVERSE)

Electrical

Input Power Rating Per Tx Port – [W]	150
Impedance – [ohm]	50

Mechanical

Dimension LxWxH – [mm]	600x400x650
Weight (approx.) – [kg]	60
Number of Output Ports-Combined Simplex	2TX
Number of Input Ports – 2G&3G Simplex	16TX
– LTE2.6G Duplex	3TX/Rx
Number of Monitors Ports – 30±6dB	2TX
Connector Type – Input	7/16 Din-Female
Connector Type - Output	7/16 Din-Female
Connector Type - Monitors ports	N-Female
Operational Temperature – [℃]	-10 to +65
Operating Humidity	<95
Mounting	Floor Stand
Environmental Class	Indoor

Shipping Information

(Wooden Crate)

Dimensions, H x W x D – [mm] –TX/RX	750x490x960
Weight (approx.) – [kg]	85

POI-TSJ2IDN1HK-RX

Multi Operator Combiner - 6xGSM900 Rx, 6xGSM1800 Rx,4xUMTS Rx, 3xLTE2.6G Tx/RX

Features

- Permits combining of GSM900, GSM1800, WCDMA2100 and LTE2.6G services.
- Low insertion loss.
- High inter-band isolation.
- POI uplink unit

Rx Unit Photo for reference

Product Description

The POI-TSJ2IDN1HK-RX is one of a range of compact, low intermodulation, cellular combiners for cost effective, multi-band in-building combining systems. This high power combiner is designed to combine GSM900, GSM1800, WCDMA2100 and LTE2.6G to share the same system, while providing >80dB isolation among GSM900, GSM1800, WCDMA2100 and LTE2.6G system. Main applications for this product include: convention centers, exhibition halls, airports, underground tunnels and other large buildings.

With extensive range of passive components, Comba is capable of providing solutions for almost any combination of frequency bands while keeping insertion loss to a minimum.

Technical Specifications

Electrical

Frequency Range – [MHz]		
- GSM900	RX1:	890.0-897.5
	RX2:	897.5-907.5
	RX3:	907.5-915.0
	RX4:	885-890
- UMTS850	RX1:	832.5-837.5
- CDMA2000	RX1:	825.0-832.5
- GSM1800	RX1:	1720.1-1730.1
	RX2:	1730.1-1740.1
	RX3:	1740.1-1750.1
	RX4:	1750.1-1760.1
	RX5:	1760.1-1770.1
	RX6:	1770.1-1780.1
- WCDMA2100	RX1:	1920.3-1935.1
	RX2:	1935.1-1949.9
	RX3:	1950.1-1964.9
	RX4:	1964.9-1979.7
- LTE2.6G	TX1/RX1:	2500-2515/2620-2635
	TX2/RX2:	2540-2555/2660-2675
	TX3/RX3:	2555-2570/2675-2690
Insertion Loss – [dB]		≤ 6
Isolation – [dB]		
-In band		> 40
-Cross Band		> 80
Return Loss – [dB]		> 18

Electrical

Input Power Rating Per – [W]	150
Impedance – [ohm]	50

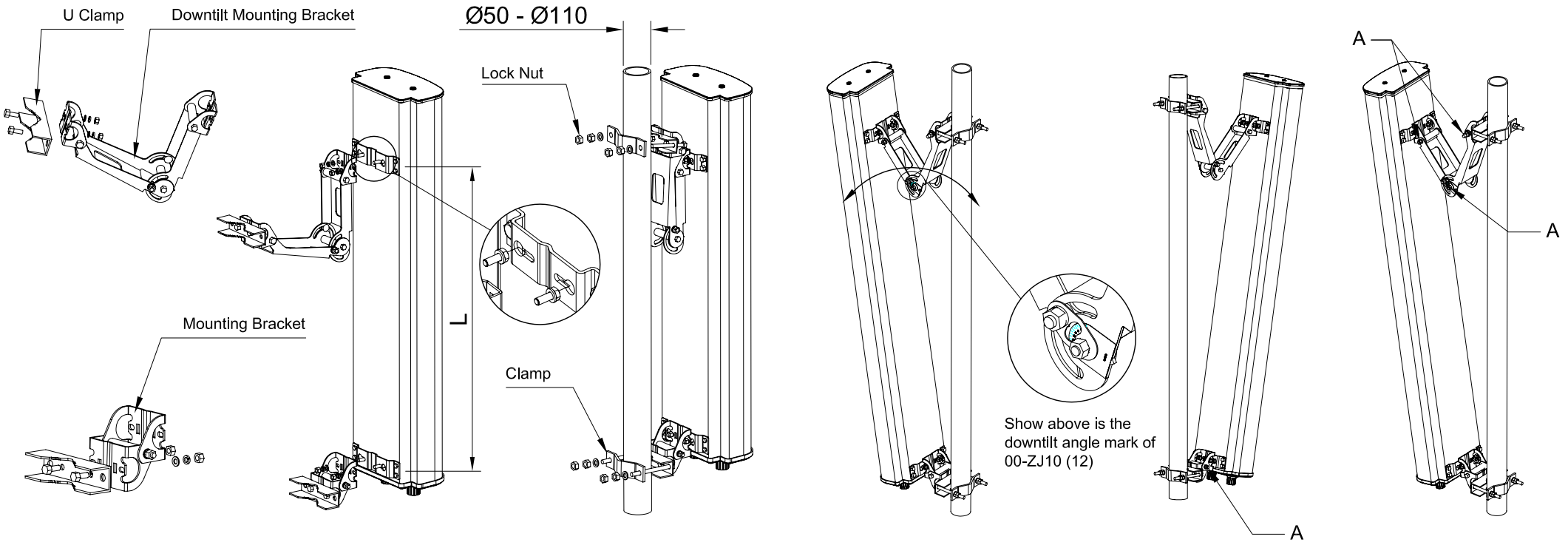
Mechanical

Dimension LxWxH – [mm]	600x400x650
Weight (approx.) – [kg]	60
Number of Output Ports-Combined Simplex	2RX
Number of Input Ports – 2G&3G Simplex – LTE2.6G Duplex	16RX 3TX/Rx
Number of Monitors Ports – 30±6dB	2RX
Connector Type – Input	7/16 Din-Female
Connector Type - Output	7/16 Din-Female
Connector Type - Monitors ports	N-Female
Operational Temperature – [℃]	-10 to +65
Operating Humidity	<95
Mounting	Floor Stand
Environmental Class	Indoor

Shipping Information

(Wooden Crate)

Dimensions, H x W x D – [mm] –TX/RX	750x490x960
Weight (approx.) – [kg]	85



Step 1: Identify and assemble mounting brackets. Secure the U Clamp with M8 bolts.

Step 2: Attach mounting brackets to antenna. Secure it with M8 bolts.

Step 3: Mount the antenna to pole and tighten M10 bolts (25Nm).

Step 4: Adjust downtilt mounting bracket to achieve required downtilt.

Step 5: Tighten "A" to lock antenna in position (25Nm).

Packing List

Description	Qty
Antenna	1
Downtilt Mounting Bracket	1
Mounting Bracket	1
U Clamp	2
Clamp	2
Hex Bolt (M10 x 150)	4
Nut (M10)	8
Plain Washer (M10)	4
Hex Bolt (M8 x 25)	8
Nut (M8)	8
Plain Washer (M8)	8
Spring Washer (M8)	8

Installation Preparation:

- Check each package against packing list.
- Observe safe working at heights.
- Ensure lightning protection is applied.
- Annual maintenance is recommended to antenna system.

Mechanical Downtilt Range

Mounting Bracket	L (mm)	Downtilt Range
00-ZJ10 (08)	1900	0~8°
00-ZJ10 (09)	2520	0~9°
00-ZJ10 (12)	1450	0~12°
00-ZJ10 (14)	1550	0~14°
00-ZJ10 (16)	1088	0~16°
00-ZJ10 (30)	558	0~30°

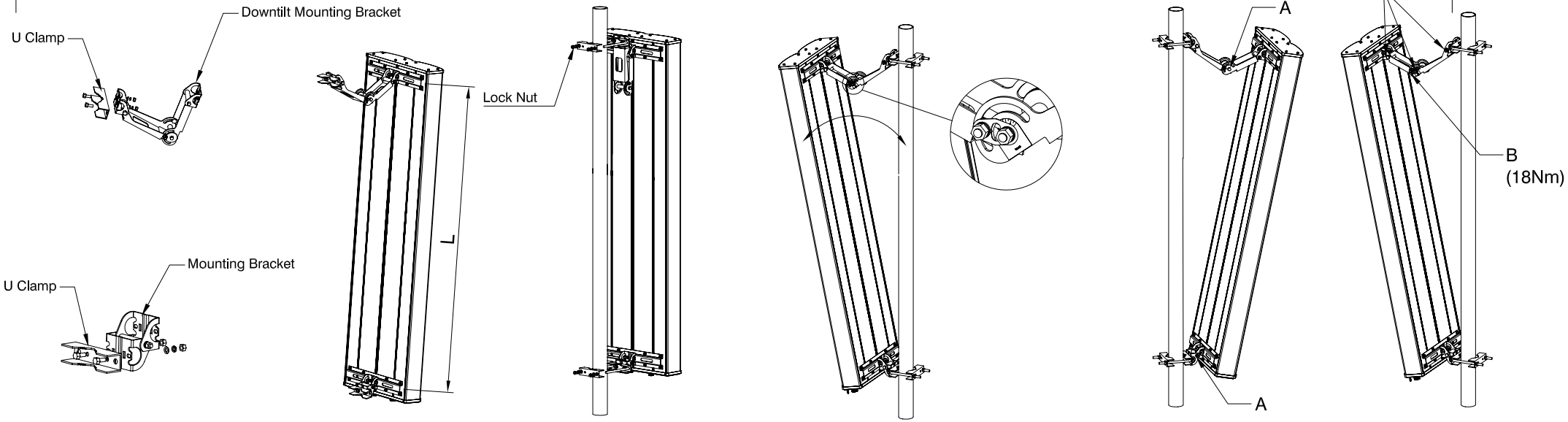
- Antenna was inward tested, which complying with Comba Enterprise Standard (Q/GZ JXTX 1-2004: QB440100).

Test Engineer: _____ Date: _____

Comba Installation Instruction

00-ZJ10 QD 1-2-1

With Mechanical Downtilt



Step 1: Identify and assemble mounting brackets. Secure the U Clamp with M10 bolts.

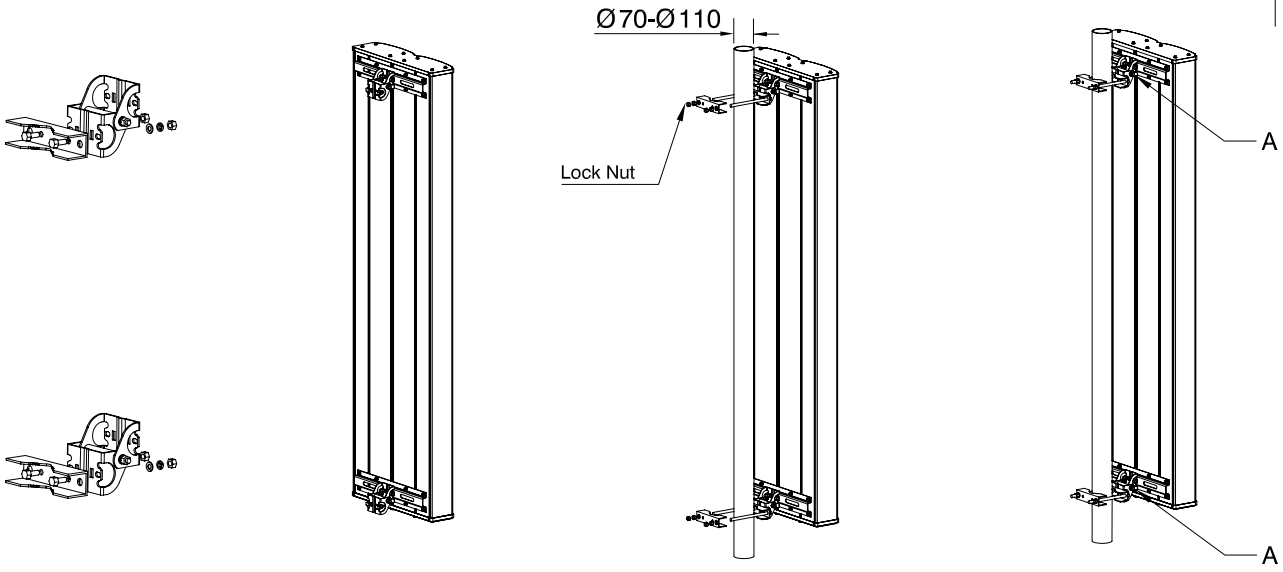
Step 2: Attach mounting brackets to antenna. Secure it with M10 bolts.

Step 3: Mount the antenna to pole and tighten M12 bolts.

Step 4: Adjust downtilt mounting bracket to achieve required downtilt.

Step 5: Tighten "A" and "B" to lock antenna in position.

Without Mechanical Downtilt



Step 1: Identify and assemble mounting brackets. Secure the U Clamp with M10 bolts.

Step 2: Attach mounting brackets to antenna. Secure it with M10 bolts.

Step 3: Mount the antenna to pole and tighten M12 bolts.

Step 4: Tighten "A" to lock antenna in position (25Nm).

Installation Preparation:

- Check each package against packing list.
- Observe safe working at heights.
- Ensure lightning protection is applied.
- Annual maintenance is recommended to antenna system.

Packing List

Description	Qty	
Antenna	1	
Kit of Parts	00-ZJ11 (00)	00-ZJ11 (xx)
Downtilt Mounting Bracket(set)	0	1
Mounting Bracket(set)	2	1
U Clamp	4	4
Hex Bolt (M12x 200)	4	4
Nut (M12)	8	8
Plain Washer (M12)	4	4
Hex Bolt (M10 x 25)	8	8
Nut (M10)	8	8
Plain Washer (M10)	8	8
Spring Washer (M10)	8	8

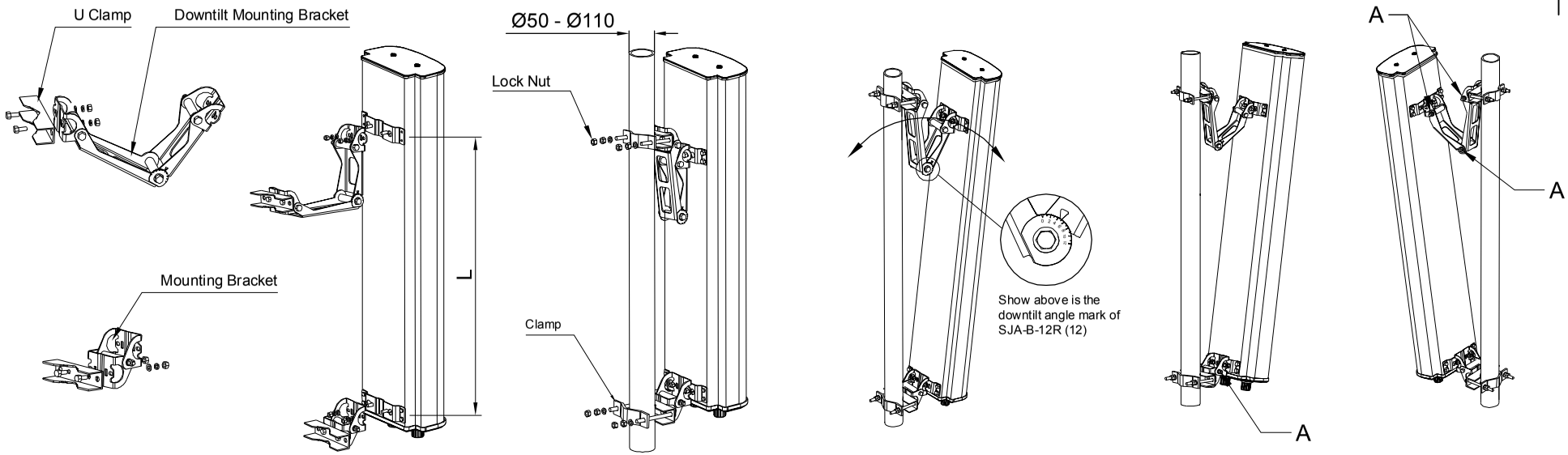
Mechanical Downtilt Range

Mounting Bracket	L (mm)	Downtilt Range
00-ZJ11 (00)		0°
00-ZJ11 (12)	1420	0~12°
00-ZJ11 (16)	1088	0~16°

- Antenna was inward tested, which complying with Comba Enterprise Standard (Q/GZ JXTX 1-2004: QB440100).

Test Engineer: _____ Date: _____

With Mechanical Downtilt



Step 1: Identify and assemble mounting brackets. Secure the U Clamp with M8 bolts.

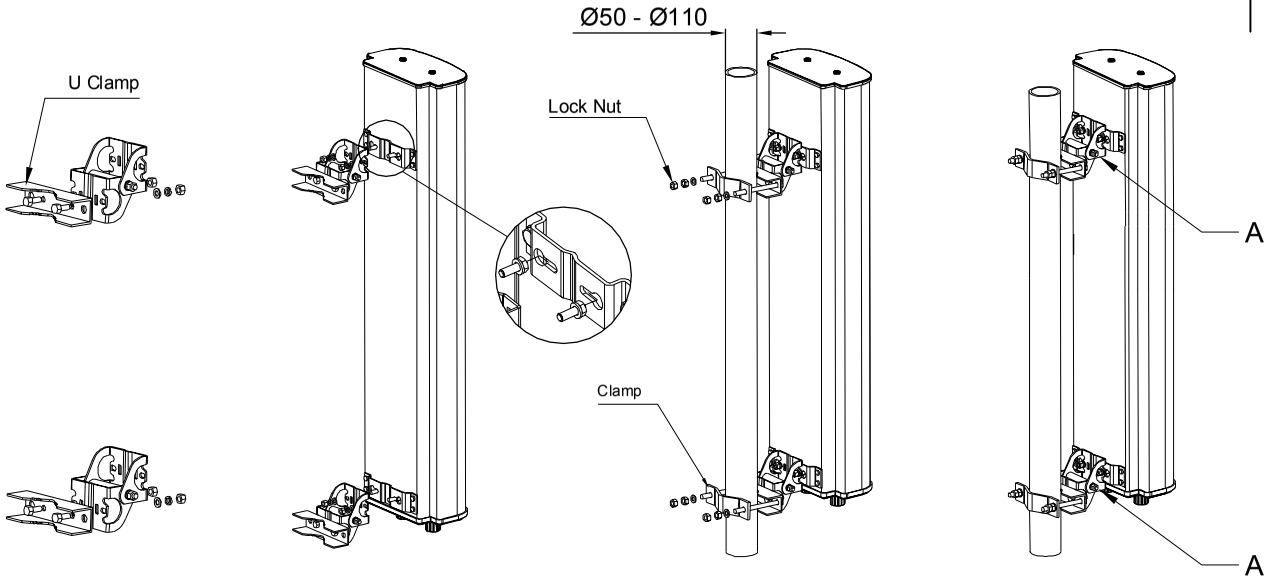
Step 2: Attach mounting brackets to antenna. Secure it with M8 bolts.

Step 3: Mount the antenna to pole and tighten M10 bolts (25Nm).

Step 4: Adjust downtilt mounting bracket to achieve required downtilt.

Step 5: Tighten "A" to lock antenna in position (25Nm).

Without Mechanical Downtilt



Step 1: Identify and assemble mounting brackets. Secure the U Clamp with M8 bolts.

Step 2: Attach mounting brackets to antenna. Secure it with M8 bolts.

Step 3: Mount the antenna to pole and tighten M10 bolts (25Nm).

Step 4: Tighten "A" to lock antenna in position (25Nm).

Installation Preparation:

- Check each package against packing list.
- Observe safe working at heights.
- Ensure lightning protection is applied.
- Annual maintenance is recommended to antenna system.

Packing List

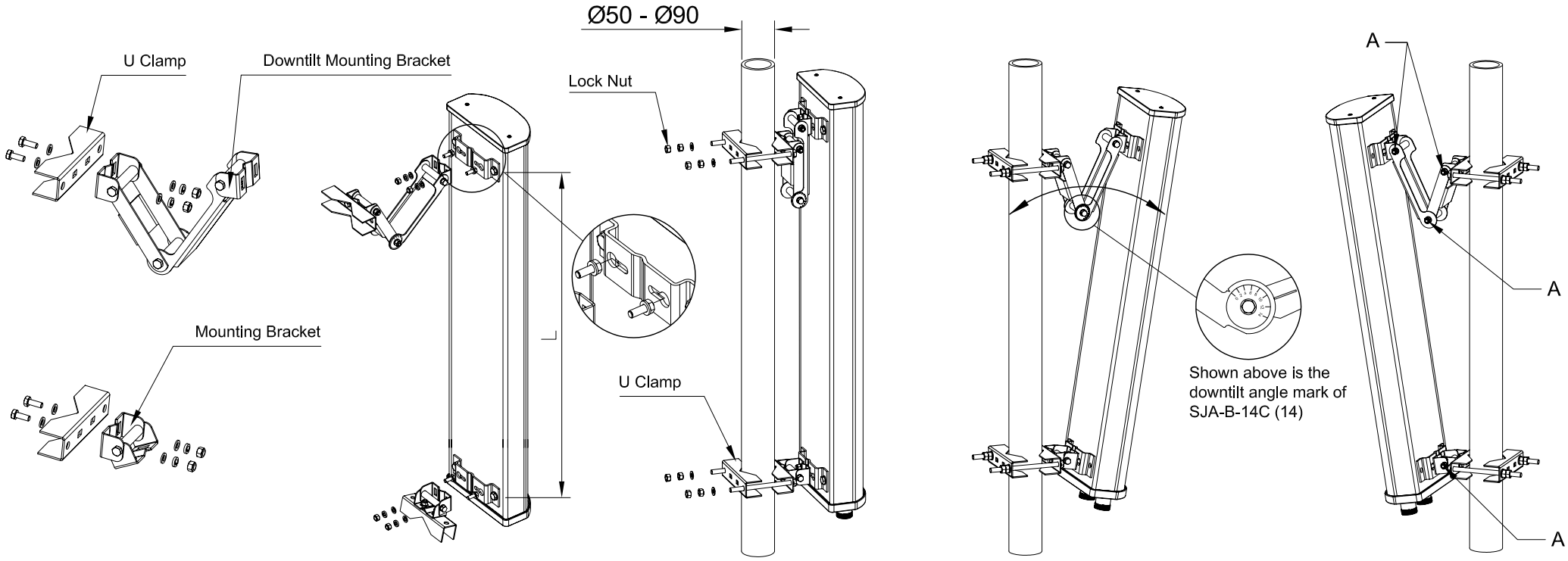
Description	Qty	
Antenna	SJA-B-12R (00)	SJA-B-12R (xx)
Downtilt Mounting Bracket	0	1
Mounting Bracket	2	1
U Clamp	2	2
Clamp	2	2
Hex Bolt (M10 x 150)	4	4
Nut (M10)	8	8
Plain Washer (M10)	4	4
Hex Bolt (M8 x 25)	8	8
Nut (M8)	8	8
Plain Washer (M8)	8	8
Spring Washer (M8)	8	8

Mechanical Downtilt Range

Mounting Bracket	L (mm)	Downtilt Range
SJA-B-12R (00)		0°
SJA-B-12R (08)	1900	0~8°
SJA-B-12R (12)	1450	0~12°
SJA-B-12R (16)	1088	0~16°
SJA-B-12R (17)	1219	0~17°
SJA-B-12R (28)	662	0~28°
SJA-B-12R (32)	558	0~32°

- Antenna was inward tested, which complying with Comba Enterprise Standard (Q/GZ JXTX 1-2004: QB440100).

Test Engineer: _____ Date: _____



Step 1: Identify and assemble mounting brackets. Secure the U Clamp with M8 bolts.

Step 2: Attach mounting brackets to antenna. Secure it with M6 bolts.

Step 3: Mount the antenna to pole and tighten M8 bolts (18Nm).

Step 4: Adjust downtilt mounting bracket to achieve required downtilt.

Step 5: Tighten "A" to lock antenna in position (10Nm).

Packing List

Description	Qty
Antenna	1
Downtilt Mounting Bracket	1
Mounting Bracket	1
U Clamp	4
Hex Bolt (M8 x 150)	4
Nut (M8)	8
Plain Washer (M8)	4
Hex Bolt (M6 x 16)	8
Nut (M6)	8
Plain Washer (M6)	8
Spring Washer (M6)	8

Installation Preparation:

- Check each package against packing list.
- Observe safe working at heights.
- Ensure lightning protection is applied.
- Annual maintenance is recommended to antenna system.

Mechanical Downtilt Range

Mounting Bracket	L (mm)	Downtilt Range
SJA-B-14C (10)	1035	0~10°
SJA-B-14C (14)	745	0~14°
SJA-B-14C (16)	680	0~16°
SJA-B-14C (20)	545	0~20°
SJA-B-14C (25)	500	0~25°
SJA-B-14C (35)	370	0~35°

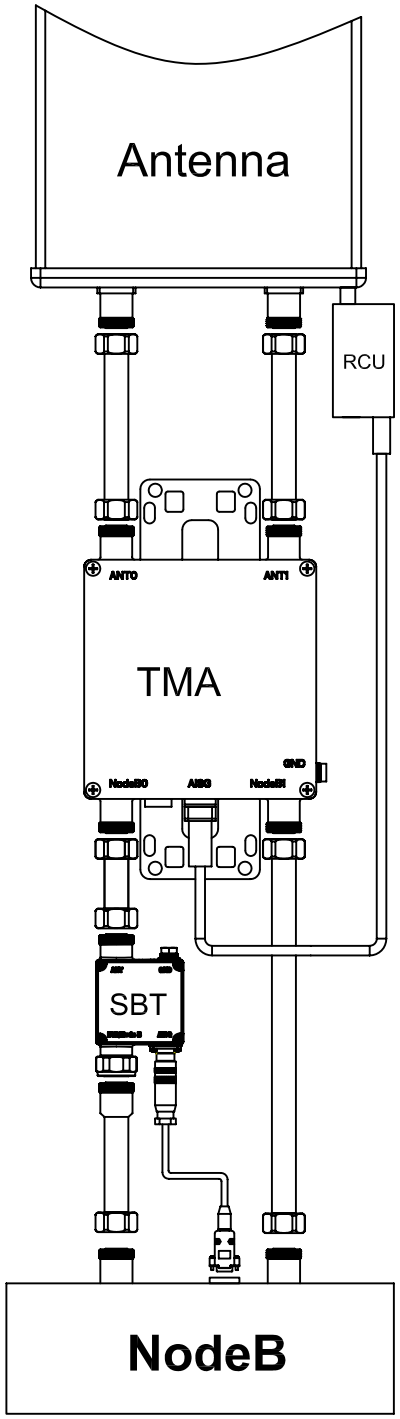
- Antenna was inward tested, which complying with Comba Enterprise Standard (Q/GZ JXTX 1-2004: QB440100).

Test Engineer: _____ Date: _____

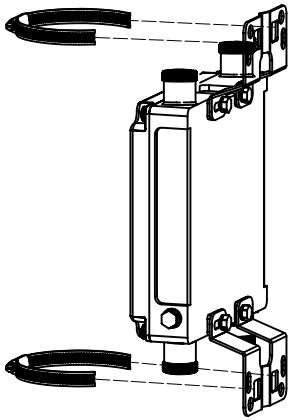
Comba Installation Instruction

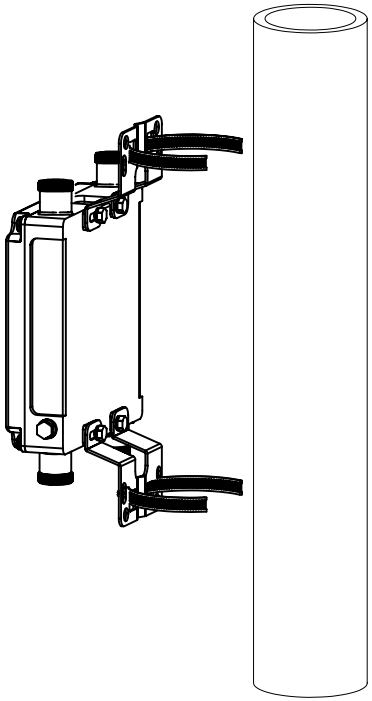
SJA-B-14C QD 1-2-1

System Connection:

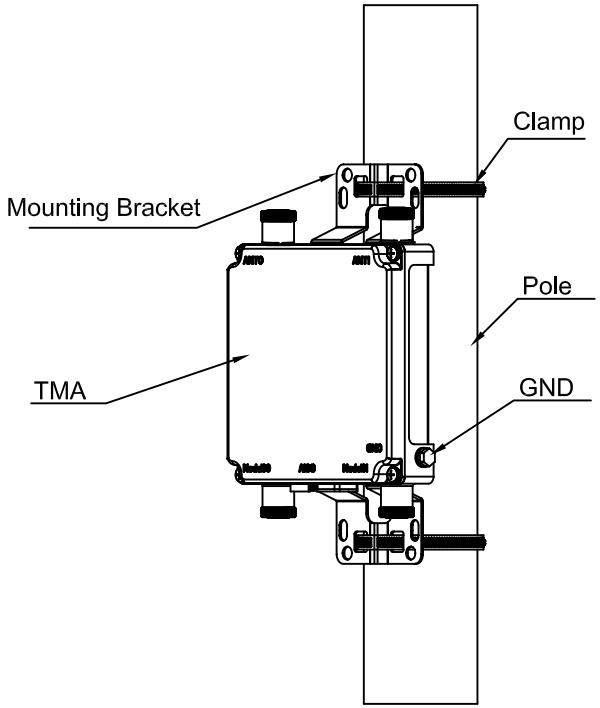


Pole Mounting:





Step 1: Insert ring clamp into mounting bracket.



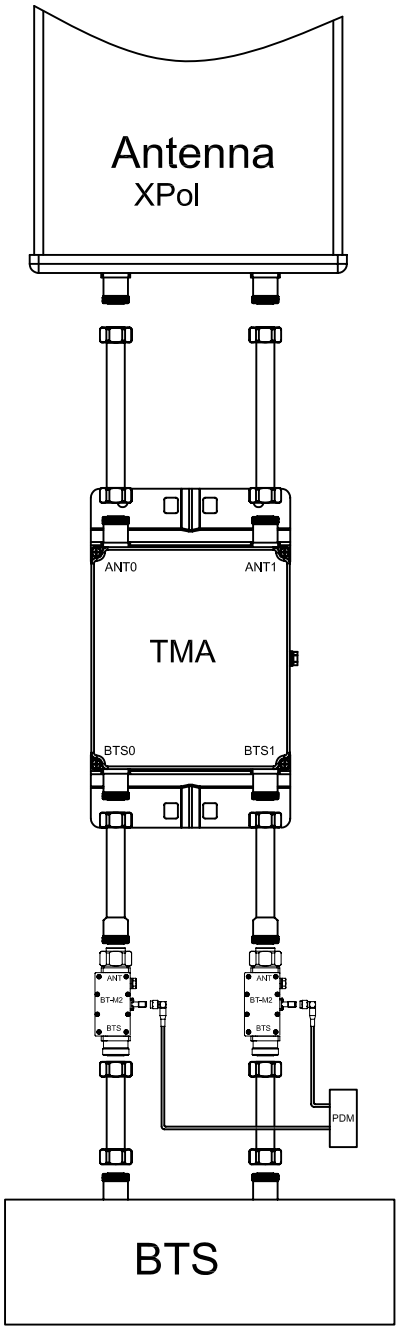
Step 2: Secure TMA by tightening ring clamp around the pole.

Note:

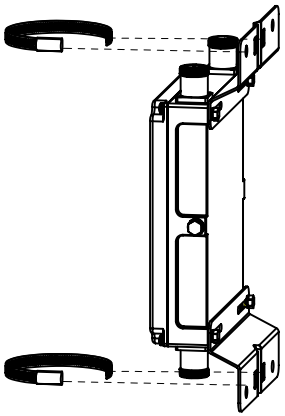
- Ensure all TMA connectors are properly waterproof after installation.
- No lightening protection device is to be installed between Bias tee and TMA.
- Any lighting protection device used should be installed between Bias tee and BTS.

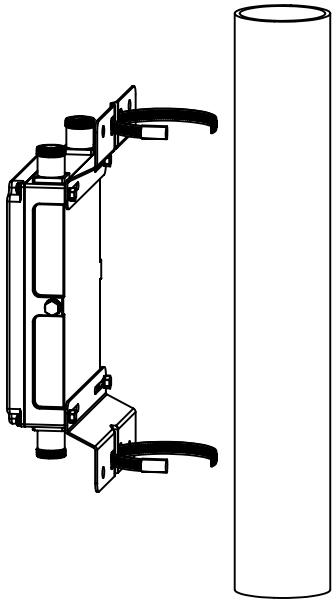
Comba	COMBA TELECOM LTD.
Installation Instruction	
DUAL AISG TMA with SBT QD 1-0-0	

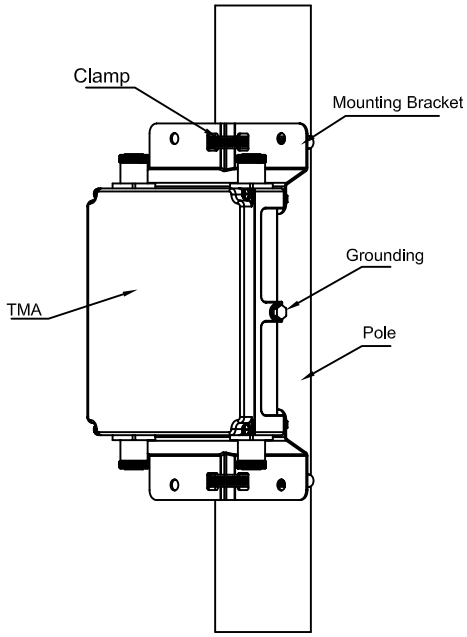
System Connection:



Pole Mounting:







Step 1: Insert ring clamp into mounting bracket.

Step 2: Secure TMA by tightening ring clamp around the pole.

Note:

- Ensure all TMA connectors are properly waterproof after installation.
- No lightening protection device is to be installed between Bias tee and TMA.
- Any lighting protection device used should be installed between Bias tee and BTS.

Comba	COMBA TELECOM LTD.
Installation Instruction	
Dual TMA without AISG	

Comba
Enhancing Communications

Corporate Headquarters
Comba Telecom Systems Holdings Ltd.

611 East Wing, No.8 Science Park West Avenue,
Hong Kong Science Park,
Tai Po
Hong Kong

Tel: +852 2636 6861
Fax: +852 2637 0966

China Headquarters
Comba Telecom Systems (China) Ltd.

No. 10 Shenzhou Road,
Guangzhou Science City,
Guangzhou
China

Tel: +86 20 2839 0000
Fax: +86 20 2839 0136

Europe Headquarters
Comba Telecom Systems AB

Gustavslundsvagen 147,
SE-167 51 Bromma,
Stockholm
Sweden

Tel: +46 8 253 870
Fax: +46 8 253 871

Middle East Headquarters
Comba Telecom Ltd.

Unit 112, Building 5, Gold and Diamond Park, Al Qouz,
Dubai,
U.A.E.

Tel: +971 (0) 4 346 7277
Fax: +971 (0) 4 346 7288

India Headquarters
Comba Telecom India (P) Ltd.,

E-172, Greater Kailash Part – I,
New Delhi -110048.
India

Tel: +91 11 4173 9997 / 8
Fax: +91 11 4173 9996

North America Headquarters
Comba Telecom Inc.

235 Charcot Ave,
San Jose,
CA 95131
USA

Tel: +1 408 526 0180
Fax: +1 408 526 0181

CALA Headquarters
Comba Telecom Ltda

Rua Helena, 235 – Conj 91 - Edifício Atrium II,
04552-050 Vila Olímpia,
Sao Paulo
BRAZIL

Tel: +55 11 3509 4800
Fax: +55 11 3509 4833

For local office details, please visit the Comba website or contact the regional headquarters.

Website: www.comba-telecom.com
Email: comba@comba-telecom.com