

Remove 6



DB846F65ZAXY

Directed Dipole Antenna

Decibel®
Base Station Antennas

- Exceptional azimuth roll off reducing soft hand offs and improving capacity
- Strong null filling for below horizon RF penetration
- Extremely rugged, reliable design yet lightweight for low tower loading
- Air dielectric feed system

ELECTRICAL

Frequency (MHz) :	806 - 896	870 - 960
Polarization :	Vertical	Vertical
Gain (dBd/dBi) :	14.5/16.6	14.8/16.9
Azimuth BW (Deg.):	65	60
Elevation BW (Deg.):	11	10.5
Beam Tilt (Deg.):	0	0
USLS* (dB) :	15	15
Front-To-Back Ratio* (dB) :	40	40
VSWR :	<1.33:1	<1.33:1
PIM3 @ 2 x 20w (dBc) :	-150	-150
Max. Input Power (Watts) :	500	500
Impedance (Ohms) :	50	50
Lightning Protection :	DC Ground	DC Ground



MECHANICAL

Weight :	9.5 kg (21 lb)
Dimensions (LxWxD) :	1,829 x 254 x 216 mm (72 x 10 x 8.5 in)
Max. Wind Area :	0.15 m ² (1.6 ft ²)
Max. Wind Load (@ 100 mph) :	386.9 N (87 lbf)
Max. Wind Speed :	241 km/h (150 mph)
Hardware Material :	Galvanized Steel
Connector Type :	7-16 DIN - Female (1, Back)
Color :	Light Gray
Standard Mounting Hardware :	DB380
Standard Downtilt Mounting Hardware :	DB5083

Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A 75082-3521
Tel: 214.631.0310

Fax: 214.631.4706
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

* - Indicates Typical
4/13/2007
dbtech@andrew.com

Information correct at date of issue but may be subject to change without notice.



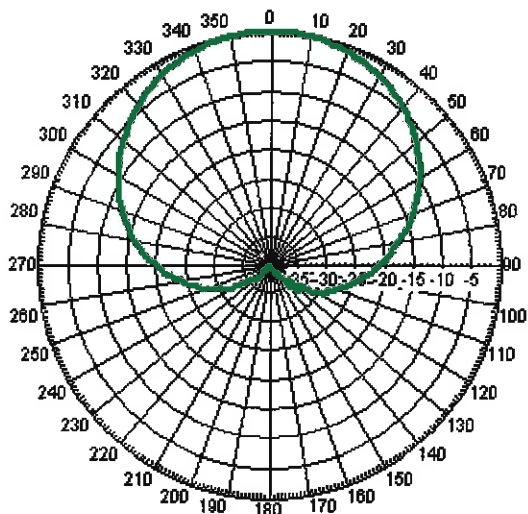
DB846F65ZAXY

Directed Dipole Antenna

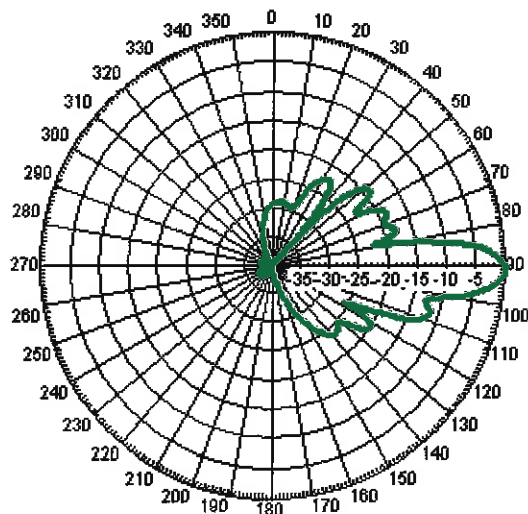
Decibel®
Base Station Antennas

AZIMUTH PATTERN

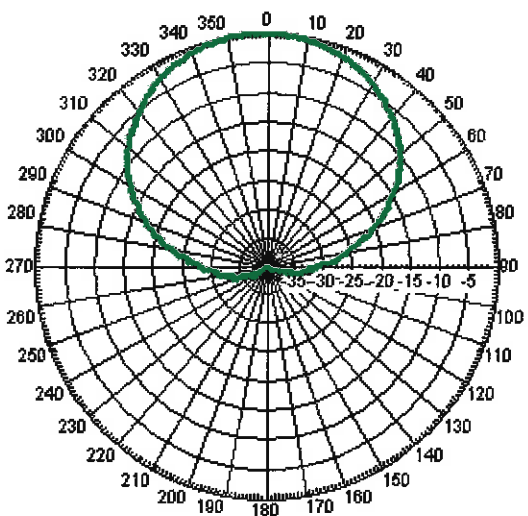
ELEVATION PATTERN



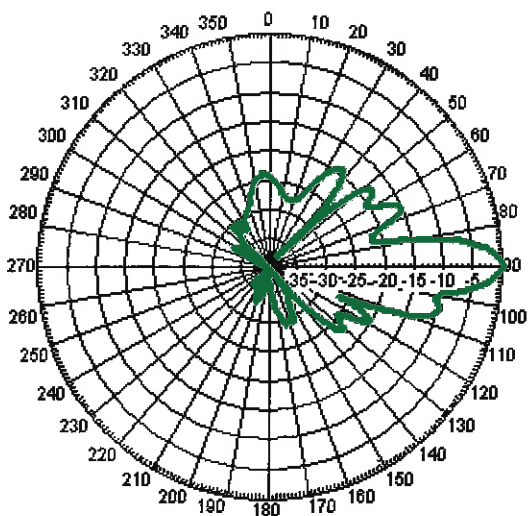
Freq: 850 MHz, Tilt: 0



Freq: 850 MHz, Tilt: 0



Freq: 940 MHz, Tilt: 0



Freq: 940 MHz, Tilt: 0

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4/13/2007
dbtech@andrew.com

Information correct at date of issue but may be subject to change without notice.

Remove 3

Product Specifications



This specification is PRELIMINARY

LNX-6514DS-VTM

DualPol® Antenna, 698-896 MHz, 65° horizontal beamwidth, RET compatible variable electrical tilt



- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site co-locations and tough zoning restrictions
- Excellent solution for site sharing and maximizing capacity
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol® Teletilt®
Operating Frequency Band	698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	13.7	14.2
Gain, dBi	15.8	16.3
Beamwidth, Vertical, degrees	12.0	12.0
Beam Tilt, degrees	0–12	0–12
Upper Sidelobe Suppression (USLS), typical, dB	17	17
Front-to-Back Ratio at 180°, dB	30	30
Isolation, dB	30	30
VSWR Return Loss, db	1.4:1 15.6	1.4:1 15.6
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	400	400
Polarization	±45°	±45°
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

LNX-6514DS-VTM



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Loading, maximum	186.0 lb/ft @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	180.3 mm 7.1 in
Length	1828.8 mm 72.0 in
Width	302.3 mm 11.9 in
Net Weight	15.0 kg 33.1 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	LNX-6514DS-R2M
RET System	Teletilt®

Included Products

4

- 600899A-2**
Downtilt Mounting Kit for 4.5 in (114.3 mm) OD round members

Remove 3

Product Specifications



HBX-6516DS-VTM

DualPol® Antenna, 1710–2170 MHz, 65° horizontal beamwidth, RET compatible variable electrical tilt



- Superior azimuth tracking and pattern symmetry
- Field adjustable electrical tilt
- Rugged, reliable design with excellent passive intermodulation suppression
- Fully compatible with Andrew remote electrical tilt system

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol® Teletilt®
Operating Frequency Band	1710 – 2170 MHz

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2170
Beamwidth, Horizontal, degrees	66	65	64
Gain, dBd	15.6	15.9	15.9
Gain, dBi	17.7	18.0	18.0
Beamwidth, Vertical, degrees	7.5	7.0	6.5
Beam Tilt, degrees	0–10	0–10	0–10
Upper Sidelobe Suppression (USLS), typical, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
Isolation, dB	30	30	30
VSWR	1.4:1	1.4:1	1.4:1
3rd Order IMD at 2 x 20 W, dBc	-153	-153	-153
Input Power, maximum, watts	250	250	250
Polarization	±45°	±45°	±45°
Impedance	50	50	50
Lightning Protection	dc Ground	dc Ground	dc Ground

Product Specifications



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Area, maximum	0.1 m ² 1.2 ft ²
Wind Loading, maximum	298.0 N @ 100 mph 67.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	83.8 mm 3.3 in
Length	1305.6 mm 51.4 in
Width	167.6 mm 6.6 in
Net Weight	4.5 kg 9.9 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed Actuator	HBX-6516DS-R2M
RET System	Teletilt®

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2002/95/EC	Compliant by Exemption
China RoHS SJ/T 11364-2006	Logo 2



Included Products



602030A

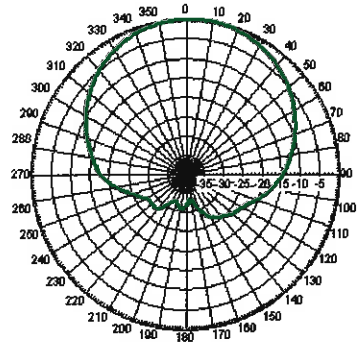
Downtilt Mounting Kit for 4.5 in (114.3 mm) OD round members

Product Specifications

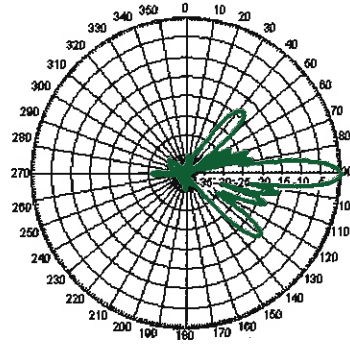


Horizontal Pattern

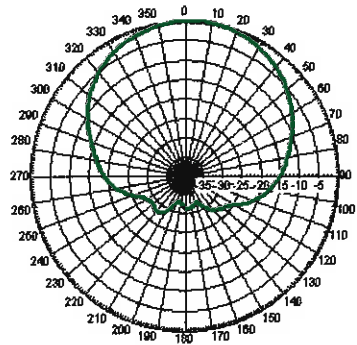
Vertical Pattern



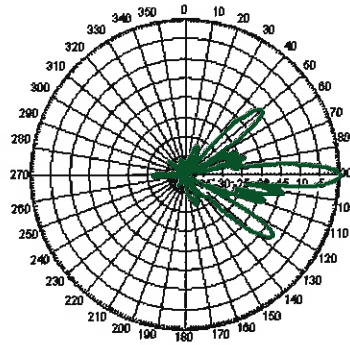
Freq: 1785 MHz, Tilt: 0



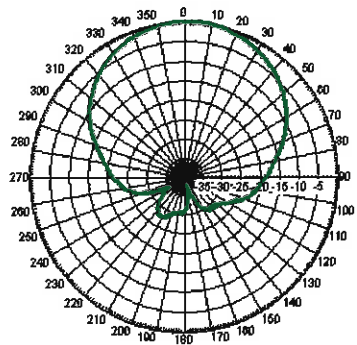
Freq: 1785 MHz, Tilt: 0



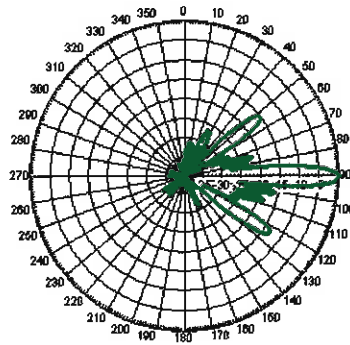
Freq: 1910 MHz, Tilt: 0



Freq: 1910 MHz, Tilt: 0



Freq: 2110 MHz, Tilt: 0



Freq: 2110 MHz, Tilt: 0

Add 4



X7C-FRO-660

58° Azimuth Beam, 72.0 inches

Directing our energies for you.

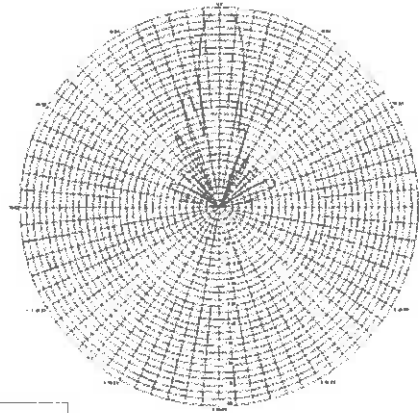
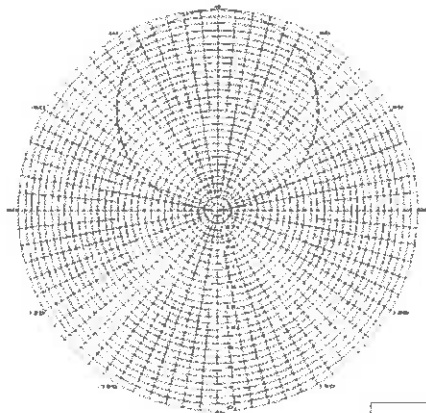
698-896 MHz Xpol

Electrical Specifications

Frequency	698-896 MHz
Polarization	Slant +/- 45
Gain @ 698 MHz	14.0 dBd
Gain @ 782 MHz	14.5 dBd
Gain @ 896 MHz	15.1 dBd
Horizontal Beam (3dB Points)	58°
Vertical Beam (3dB Points)	11°
Elect. Downtilt Range, 2° Increments	0-10°
VSWR (2°, 4° & 6°) / Return Loss	<1.40 / 15.6 dB
VSWR @ 0° & Opt "i" / Return Loss	<1.50 / 14.0 dB
Front-to-Back at Horizon	>30 dB
Upper Side Lobe Suppression	<-18 dB
Impedance	50 Ohms
Power Input Per Connector	500 CW at 800 MHz
Isolation	< -27 dB
Intermodulation (2x20W)	<-150 dBc

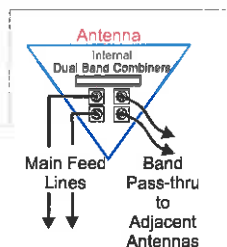
Mechanical Specifications

Input Connector (female)	Back 7/16 DIN (silver finish) or w/bot. opt.
Antenna Dimensions (LxWxD)	72.0 x 14.6 x 8.0 in. (1829 x 371 x 203mm)
*Antenna Weight	32.2 lbs
Bracket Weight	13.2 lbs
Lightning Protection	Direct Ground
RF Distribution	Printed Microstrip Substrate
Radome	Ultra High-Strength Luran
Weatherability	UV Stabilized, ASTM D1925
Radome Water Absorption	ASTM D570, 0.45%
Environmental	MIL-STD-810E
Wind Survival	150 mph
Front Wind Load @ 100MPH	208 lbs
Equivalent Flat Plate @ 100MPH	4.23 sq-ft (c=2)
Mounting Brackets	Fits 3.5 Inch Max O D Pipe
Mechanical Downtilt Range	0-12°
Clamps/Bolts	Hot Dip Galvanized Steel/Stainless Steel



Available with Opt "i"

- The Opt "i" antenna option provides Integrated Duplexers that reduce mainline cables and eliminate separate external devices.



Return Loss at pass-thru port into 50Ω load ≥17.7 dB

5 Year Warranty

Ordering Information & Options

- X7C-FRO-660-x "x" is a placeholder for the built-in fixed electrical downtilt in degrees, set to 0, 2, 4, 6, 8 or 10
- X7C-FRO-660-xi to add the Opt "i" option for integrated duplexers, add "i" to model number
- X7C-FRO-660-xi-bot for bottom mounted connectors, add "-bot" (otherwise antenna comes standard with back mounted connectors)
- X7C-FRO-660-xi-bot-# add a "-#" to add a 1/2" RF cable, where "#" is the cable length, "j2" is 2 meters, "j4" is 4 meters, "j6" is 6 meters...

*Antenna Weight may vary slightly with options such as back or bottom connector and integrated duplexers.

Add 4



X7CAP-665

65° Azimuth Beams, 72.0 inches

Directing our energies for you.

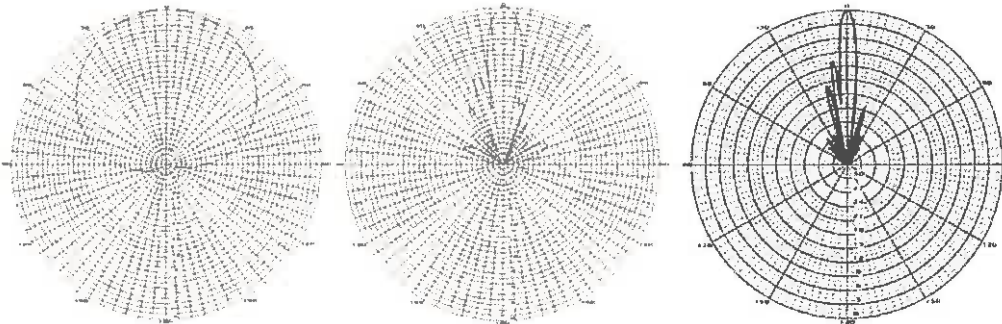
698-896 & 1710-2170 MHz DB Xpol

Electrical Specifications

Frequency	698-896 & 1710-2170 MHz
Polarization	Slant +/- 45
Gain @ 698 MHz	15.3 dBi
Gain @ 896 MHz	15.9 dBi
Gain @ 1710 MHz	18.1 dBi
Gain @ 2155 MHz	18.7 dBi
Horizontal Beam (3dB Points)	65° & 65°
Vertical Beam (3dB Points)	11° & 5°
Elect. Downtilt Range, 2° Increments	0-10° low, 0-6° high band
VSWR / Return Loss	<1.40 / 15.6 dB
VSWR Opt "i" / Return Loss	<1.50 / 14.0 dB
Front-to-Back at Horizon	>27 dB & >27 dB
Upper Side Lobe Suppression	<-18 dB & <-18 dB
Impedance	50 Ohms
Power Input Per Connector	500 CW at 800MHz and 250 CW at 1900 MHz
Isolation	< -28 dB
Intermodulation (2x20W)	<-150 dBc

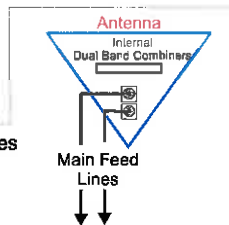
Mechanical Specifications

Input Connector (female)	Back 7/16 DIN (silver finish) or w/bot. opt.
Antenna Dimensions (LxWxD)	72.0 x 12.5 x 7.1 in. (1829 x 318 x 180mm)
*Antenna Weight	37 lbs
Bracket Weight	13.2 lbs
Lightning Protection	Direct Ground
RF Distribution	Printed Microstrip Substrate
Radome	Ultra High-Strength Luran
Weatherability	UV Stabilized, ASTM D1925
Radome Water Absorption	ASTM D570, 0.45%
Environmental	MIL-STD-810E
Wind Survival	150 mph
Front Wind Load @ 100MPH	177.4 lbs
Equivalent Flat Plate @ 100MPH	3.6 sq-ft (c=2)
Mounting Brackets	Fits 3.5 Inch Max. O.D. Pipe
Mechanical Downtilt Range	0-12°
Clamps/Bolts	Hot Dip Galvanized Steel/Stainless Steel



Available with Opt "i"

- The Opt "i" antenna option provides Integrated Diplexers that reduce mainline cables and eliminate separate external devices.



1 Year Warranty

Ordering Information & Options

- X7CAP-665-xy "xy" is a placeholder for the built-in fixed electrical downtilt in degrees, "x" for low band, y for high band.
- X7CAP-665-xyi to add the Opt "i" option for integrated diplexers, add "i" to model number
- X7CAP-665-xyi-bot for bottom mounted connectors, add "-bot" (otherwise antenna comes standard with back mounted connectors)
- X7CAP-665-xyi-bot-j# add a "-j#" to add a 1/2" RF cable, where "#" is the cable length, "j2" is 2 meters, "j4" is 4 meters, "j6" is 6 meters...

*Antenna Weight may vary slightly with options such as back or bottom connector and integrated diplexers.

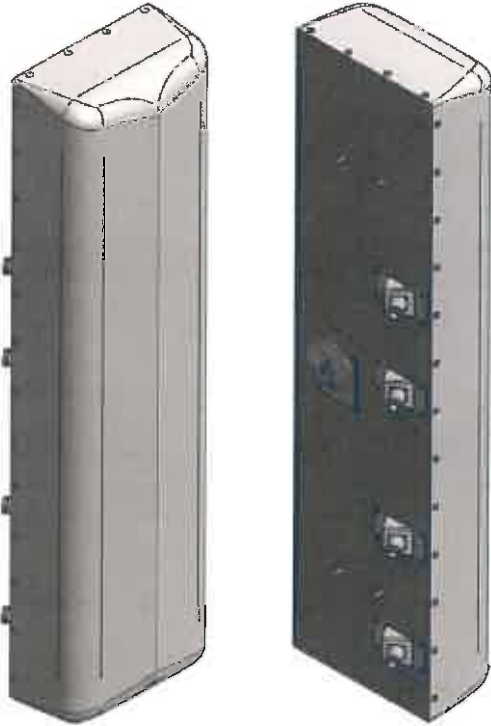
Add 8



PRELIMINARY

QAP-460-V

Quad-Polarization, 1710-2170 MHz, 4 FT, 60° Azimuth
RET/MET



- Broad Band Radiator
- Macro Cell High Gain antenna
- Suitable for LTE/CDMA/UMTS/GSM
- AISG v2.0 RET or Manual (MET) Tilt Control

Electrical Specifications

Frequency Band, MHz	1710-1880	1850-1990	1920-2170
Horizontal Beamwidth, 3dB points <i>est.</i>	60°	60°	60°
Gain, dBi <i>est.</i>	17	17.2	17.2
Vertical Beamwidth, 3dB points <i>est.</i>	7.4°	7.2°	7.0°
Front-to-Back at 180°, dB <i>est.</i>	>28		
Upper Sidelobe Suppression, Typical, dB <i>est.</i>	< -18		
Polarization	+/-45°		
Electrical Downtilt	0-6° or 4-10°		
VSWR/Return Loss, dB, Maximum	1.5:1/-14.0		
Isolation Between Ports, dB, Mimimum	>28		
Intermodulation (2x20w), IM3, dBc, Maximum	-150		
Impedance, ohms	50		
Maximum Power Per Connector, CW	250		

Mechanical Specifications

www.cssantenna.com

410-612-0080

customerservice@cssantenna.com

All Specifications are subject to change.

Refer to www.cssantenna.com for the most current information

Page 1 of 8

2/16/2012



PRELIMINARY

QAP-460-V

Quad-Polarization, 1710-2170 MHz, 4 FT, 60° Azimuth

RET/MET

Dimensions, Length/Width/Depth	50.5/12.5/7.1 in. (1282/318/180mm)
Connector (Quantity) Type	(4) 7-16 DIN Female
Connector Torque	220-265 lbf-in (23-30 N-m)
Connector Location	Back
Antenna Weight	28.1 lb (12.7 kg) ESTIMATED
Bracket Weight	13.2 LB (6.0 kg)
Standard Bracket Kit	Included, Part # 919011
Mechanical Downtilt Range	0-12°
Radome Material	High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	124.4 lbf (553.4 N) @100mph
Equivalent Flat Plate	2.53 sq-ft (c=2) @ 100mph

RET Information

Model	CSS-RET-200
Mounting Location	Rear of Antenna
Weight	1.2 lb (0.54 kg)
Communication Standard	AISG 2.0
Control System	CSS-PCU-220



Order Information

Model	Description
QAP-460-VR0	Quad-Pol, antenna with motor for remote electrical tilt (RET) range of 0-6°
QAP-460-VR4	Quad-Pol, antenna with motor for remote electrical tilt (RET) range of 4-10°
QAP-460-VM0	Quad-Pol, antenna with manual adjust wheel for electrical tilt (MET) range of 0-6°
QAP-460-VM4	Quad-Pol, antenna with manual adjust wheel for electrical tilt (MET) range of 4-10°

Typical Pattern @ 1710-1880 MHz

www.cssantenna.com

410-612-0080

customerservice@cssantenna.com

Add 4

Product Data Sheet DB-B1 and DB-T1 Series



DC and Fiber Management Distribution Boxes for HYBRIFLEX™ Cable

Product Description

RFS' flexible Tower, Base Stations and Rooftop protection and Distribution products provide protection for up to 6 Remote Radio Heads/Integrated Antennas. The solutions mitigate the risk of damage due to lightning and provide high levels of availability and reliability to radio equipment.

Features

- Employs the Strikesorb® 30-V1-HV Surge Protective Device (SPD) specifically designed for the Remote Radio Head (RRH) installation environment and certified for use in DC applications and at low DC operating voltages (48V).
- The Strikesorb 30-V1-HV is a Class I SPD, certified by VDE per the IEC 61643-1 standard as suitable for installation in areas where direct lightning exposure is expected. Strikesorb 30-V1-HV is able to withstand direct lightning currents of up to 5kA (10/350) and induced surge currents of up to 60kA (8/20).
- Provides very low let through / clamping voltage – unique for a Class I product – as it does not employ spark gaps or other switching elements. Strikesorb offers unique protection levels to the RRH equipment as well as the Base Band Units.
- Alarms for SPD sacrifice, Moisture detection and Intrusion.
- Fully recognized to the UL 1449 3rd Edition Safety Standard.
- Patent pending design



Tower / Base / Rooftop / Rooftop Distribution Models:
DB-T1-6Z-12AB-0Z
DB-B1-6C-12AB-0Z

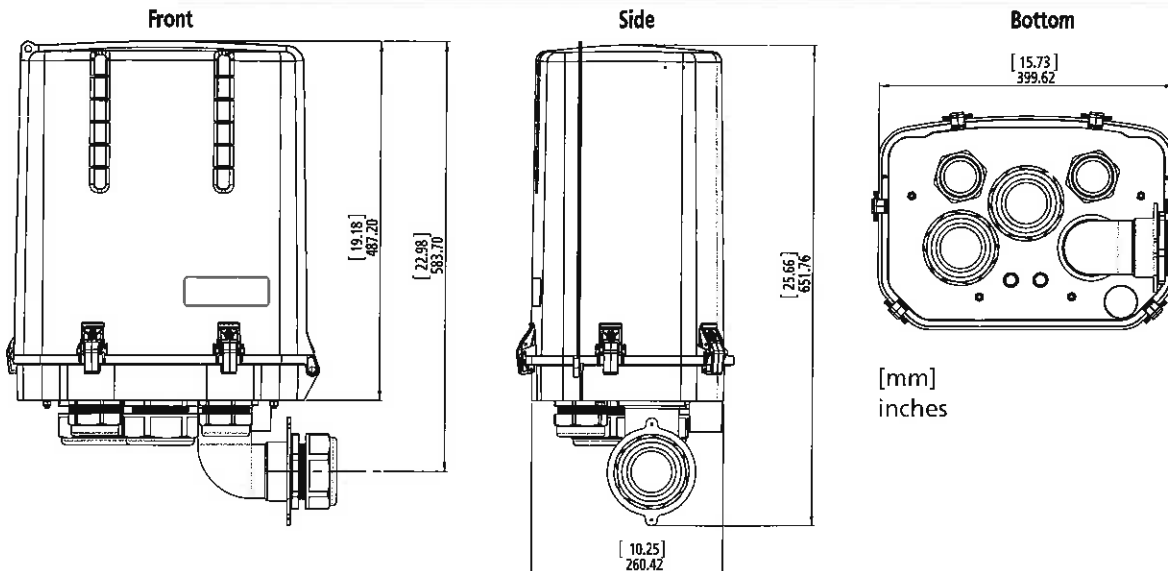


Companion Sector Model:
DB-E1-2C-4AB-0Z

Benefits

- Offers unique maintenance-free protection against direct lightning currents.
- Protects up to 6 Remote Radio Heads and connects up to 12 fiber pairs.
- Utilizes an IP67 rated enclosure, allowing for indoor or outdoor installation on a roof or tower top.
- Configurable cable ports are designed to accommodate varying diameters of hybrid (combined power and fiber optic) or standard cables with diameters up to 2" (will fit most standard 15/8" coax class cables) depending upon port configuration.
- Lightweight aerodynamic design provides maximum flexibility for tower top installation.

Product Diagram



* This data is provisional and subject to change.

All information contained in the present datasheet is subject to confirmation at time of ordering.



Technical Specifications

Electrical Specifications

Model Numbers	DB-T1-6Z-12AB-0Z	DB-B1-6C-12AB-0Z
Nominal Operating Voltage		48 VDC
Nominal Discharge Current [I _n]		20 kA 8/20 μs
Maximum Surge Current [I _{max}]		60 kA 8/20 μs
Maximum Impulse (Lightning) Current per IEC 61643-1		5 kA 10/350 μs
Maximum Continuous Operating Voltage [U _c]		75 VDC
Voltage Protection Rating (VPR) per UL 1449 3rd Edition		400V
Protection Class as per IEC 61643-1		Class I
SPD Alarm		Upon sacrifice
Intrusion Sensor		Microswitch
Moisture Sensor		Infrared moisture detector
Strikesorb Module Type	No Strikesorb modules installed <i>(used as Distribution Unit only)</i>	30-V1-HV – Strikesorb modules installed to protect 6 RRHs

Mechanical Specifications

Suppression Connection Method	Compression lug, #20-#6 AWG (0.5 mm ² -16 mm ²)	
Fiber Connection Method	LC-LC Single mode	
Pressure Equalizing Vent	Gore™ Vent	
Environmental Rating	IP 67	
Operating Temperature	-40° C to +80° C	
UV Resistant	Yes	
Weight	System: 16.0 lbs (7.25 kg) Mount: 5.5 lbs (2.49 kg) Total: 21.5 lbs (9.75 kg)	System: 21.4 lbs (9.70 kg) Mount: 5.5 lbs (2.49 kg) Total: 26.9 lbs (12.20 kg)
Combined Wind Loading	150mph (sustained): 200 lbs (889.6 N)	

Standards Compliance

Standards (Strikesorb modules ONLY)	Not Applicable	ANSI/UL 1449 3rd Edition IEEE C62.41, NEMA LS-1 IEC 61643-1:2005 2nd Ed (Class I Protection) IEC 61643-12 EN 61643-11:2002 (including A11:2007)
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* This data is provisional and subject to change.

All information contained in the present datasheet is subject to confirmation at time of ordering.

Functional description

General description

The 2 x 40W 700MHz RRH specified here supports 3GPP E-UTRAN Upper Band 13 (List 1). The RRH includes an amplifier with two transmitters, four receivers, and filter all within one chassis. The RRH supports 2 x 2 MIMO and 2 x 4 MIMO within one module. RRH units can be combined to support 4 x 4 MIMO. The nominal transmit power is 40 Watts at the filter output for each of the two transmit paths. The RRH supports one carrier at up to 10 MHz instantaneous bandwidth. The RRH is a zero footprint, weatherized, self-contained module that relies on natural convection cooling (no fans). The RRH is light weight, with high power efficiency. The interfaces to the RRH include DC power, two antenna connections, two CPRI interface ports, two auxiliary RX input/output ports, two TX monitor ports, one Ethernet port for on-site configuration, an ALD port to support Antenna Line Devices, two user alarm ports, and a serial port for troubleshooting purposes. The two CPRI connections can be configured to support either metallic or optical interfaces. Up to 6 RRH units can be daisy chained. The RRH requires no field calibration, and supports antenna sharing applications. The RRH is field replaceable, but not field repairable. The RRH shall be compliant with all applicable 3GPP, 3GPP2, FCC, and regional requirements.

Product capabilities

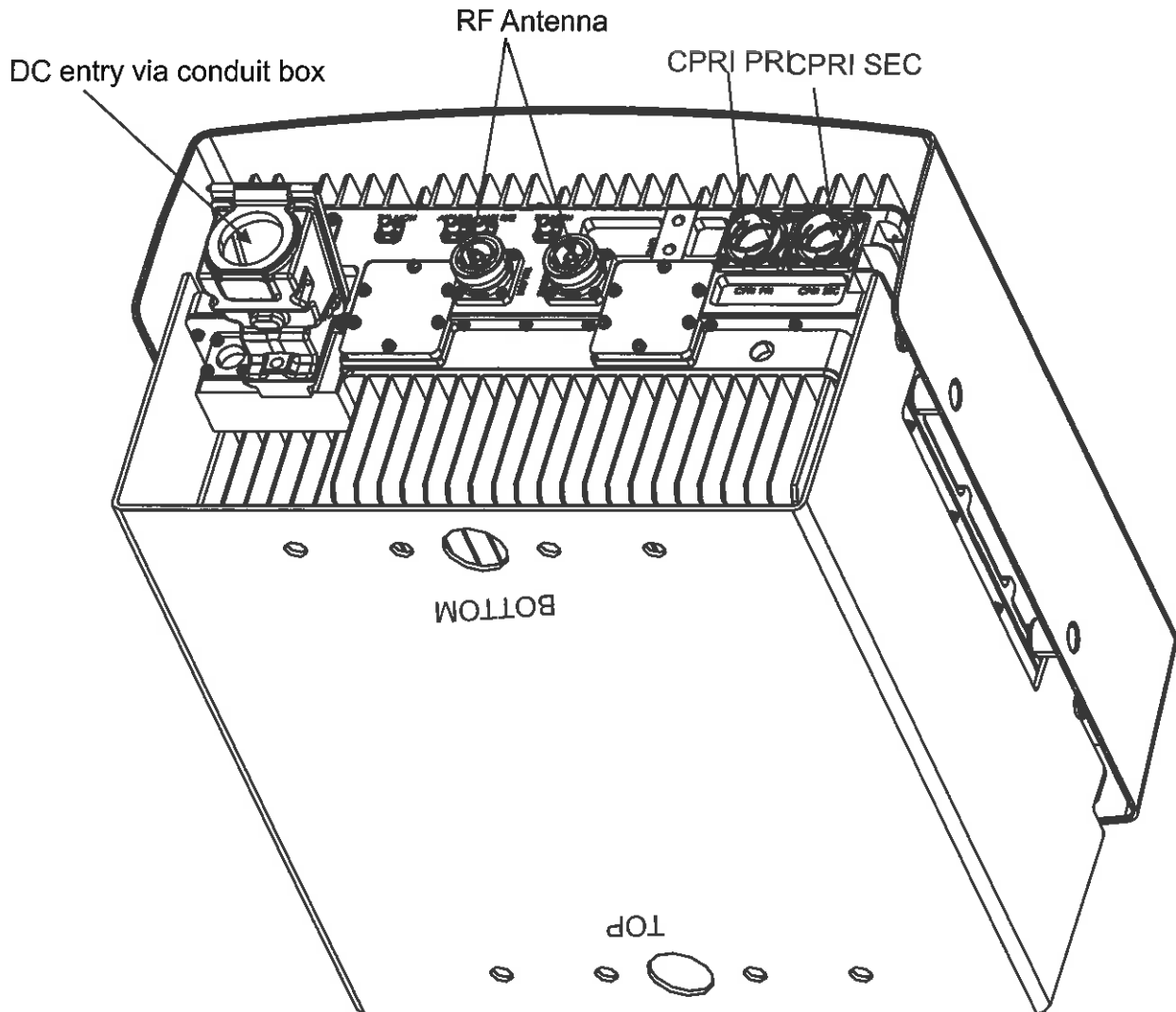
The product capabilities in this release are:

- Outdoor, -48 V DC
- Transmit Power 2 Tx at 40W each
- 700 MHz
- 1 sector, 2x2 MIMO per RRH
- Supports up to six user alarms for each RRH
- Support one LTE carrier at 10 MHz bandwidth
- RRH Mounting:
 - pole
 - wall
 - Floor stand
- Front access installation and service
- Bottom I/O panel access

RRH description

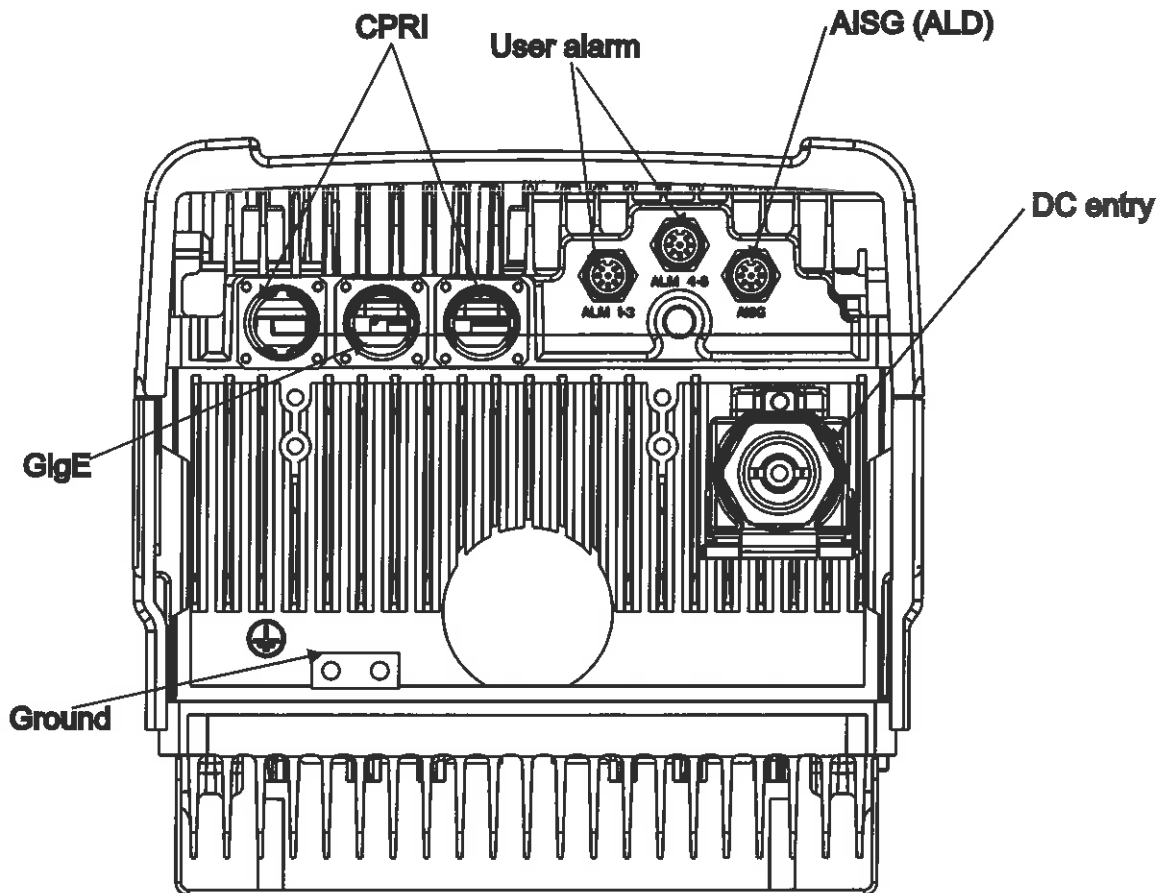
RRH bottom-view (external)

The following figure shows the bottom external view of the 700 MHz RRH.



RRH cable interfaces (bottom view)

The following figure shows the cable interfaces on the bottom of the RRH.


Cable interfaces

At the bottom of the RRH, the following cable interface points are found:

- *-48V DC power connector:*
- *Two (2) Optical connectors:* One optical interface to connect the RRH and the second optical interface to support daisy-chain
- *Two (2) External Alarm Connectors:* (8-pin Circular Male connector)
- *One ALD (RS485) Connector:* (8-pin Circular Din Female connector)
- *Two (2) RF Antennas* (7/16 DIN coaxial female connector)
- *Two (2) SMA connectors:* (For testing TX main and TX Diversity)

The top of the RRH allows access for connecting RF cables.

RRH weights and dimensions

Weights and dimensions

This topic covers the RRH weights and dimensions.

RRH weights and dimensions

The following table provides weights and dimensions for the RRHs.

RRH configuration	Estimated maximum installed weight, kg (lb)	Overall dimensions height x width x depth, mm (inches)
RRH 2x40 700 MHz Upper	23 (50.7)	498 x 426 x 257 (19.6 x 16.8 x 10.1)

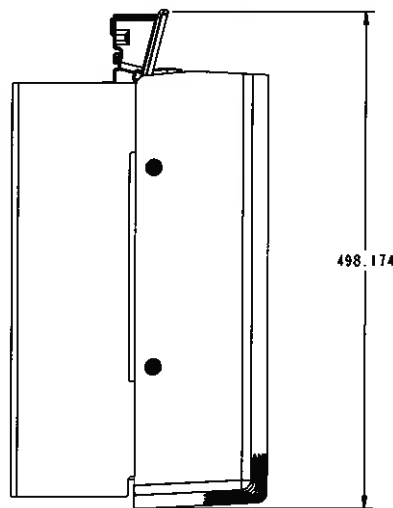
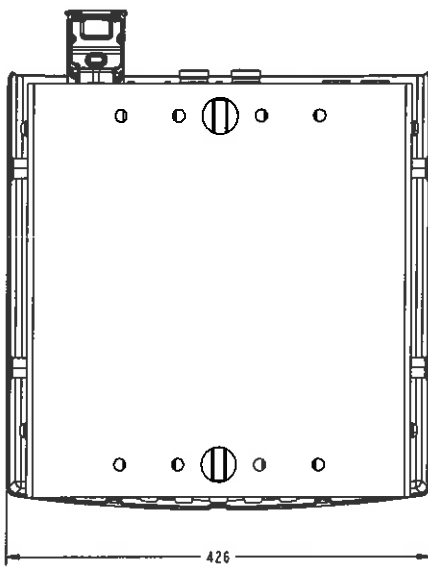
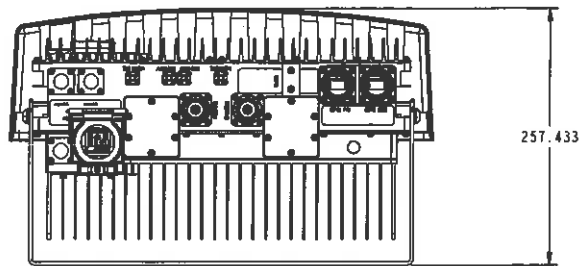
Miscellaneous hardware weights

The following table provides approximate weights for other miscellaneous hardware.

Item	Weight kg (lb.)
Shipping box	5 (11)
Wall bracket (RRH)	4.1 (9)
Pole brackets (2) (standard)	2.73 (6)
Pole Bands (2)	1.8 (4)

RRH overall dimensions

The following figure shows the overall dimensions for the RRH.



Add 4

ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET

B4 RRH2X60-4R FOR AWS BAND APPLICATIONS

The Alcatel-Lucent B4 RRH2x60-4R is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent B4 RRH2x60-4R is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent B4 RRH2x60-4R integrates all the latest

technologies. This allows operators to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent B4 RRH2x60-4R is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent B4 RRH2x60-4R is a very cost-effective solution to deploy LTE MIMO.

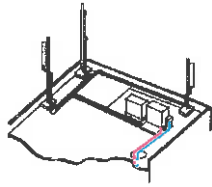
EASY INSTALLATION

The B4 RRH2x60-4R includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

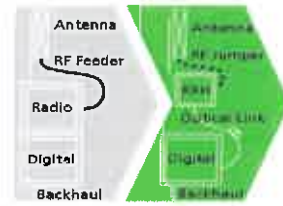
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent B4 RRH2x60-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent B4 RRH2x60-4R is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

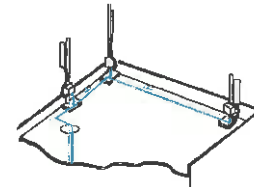
Installation can easily be done by a single person as the Alcatel-Lucent B4 RRH2x60-4R is compact and weighs about 25 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- B4 RRH2x60-4R integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- B4 RRH2x60-4R is optimized for LTE operation
- B4 RRH2x60-4R is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and

silent solutions, with minimum impact on the neighborhood, which ease the deployment

- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 930x270x146 mm (with solar shield)
- Weight : 25 kg (55 lbs) (with solar shield)

Electrical Data

- Power Supply : -48V DC (-38 to -57V)
- Power Consumption: 346W typ. @2x30W (100%RF), 560W typ. @2x60W (100%RF)

RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity

- Two CPRI (3-6) optical ports for daisy chaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 300m using MM fiber, up to 15km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Four external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65

- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B
- Health : EN 50385

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