



Antennas

MultiPort Series

DATA SHEET

QuadBand Antenna

OPA65R-KE6C



- Six foot (1.8 m) QuadBand, eight port antenna with a 65° azimuth beamwidth covering 694-862, 876-960 MHz and 1695-2690 MHz frequencies
- Four wide high band ports covering 1695-2690 MHz and four frequency specific low band ports covering 694-862 MHz and 876-960 MHz (over a non-distributed diplexer) in a single antenna
- New enclosure with <12" (305 mm) width, narrowest enclosure in the industry
- Full Spectrum Compliance 694-960 MHz / 1695-2690 MHz
- LTE Optimized FBR and SPR performance, providing for an efficient use of valuable radio capacity
- LTE Optimized Boresight and Sector XPD and USL performance, essential for LTE Performance
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Ordering options for 2 or 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 1 External)

Overview

The CCI QuadBand array is an eight port antenna, with four wide high band ports covering 1695-2690 MHz and four frequency specific low band ports covering 694-862 MHz and 876-960 MHz. The antenna provides the capability to deploy 4x4 Multiple-input Multiple-output (MIMO) in the high band and 2x2 Multiple-input Multiple-output across each of the paired low band ports.

The CCI OctoPort allows independent tilt control between the low band ports and high band ports, with two RET configurations available, either two or three RET Controllers (Type 1 External).

In a two RET configuration, the 1st RET is dedicated for the Low Band ports and the 2nd RET is dedicated for the High Band ports. With the use of a single RET in the High Band, equal tilt is achieved across all four High Band ports, which ensures optimal 4x4 MIMO performance.

In a three RET configuration, the 1st RET is dedicated for the Low Band ports and the 2nd and 3rd RET is dedicated for the High Band ports. The paired High Band ports can be tilted independently, enabling maximum flexibility in network deployment.

CCI antennas are designed and produced to ISO 9001 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- 4x4 MIMO for the high band and 2x2 MIMO for each of the low bands
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs



SPECIFICATIONS

QuadBand Antenna

OPA65R-KE6C

Electrical

Ports	2 × Low Band Ports for 694-862 MHz		2 × Low Band Ports for 876-960 MHz
Frequency Range	694-806 MHz	790-862 MHz	876-960 MHz
Gain	14.2 dBi	14.3 dBi	14.3 dBi
Azimuth Beamwidth (-3dB)	66°	69°	61°
Elevation Beamwidth (-3dB)	12.9°	11.6°	10.4°
Electrical Downtilt	2° to 12°	2° to 12°	2° to 12°
Elevation Sidelobes (1st Upper)	<-18 dB	<-18 dB	<-18 dB
Front-to-Back Ratio @180°	> 33 dB	> 35 dB	> 33 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts	500 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground

BASTA Electrical Specifications*	694-806 MHz	790-862 MHz	876-960 MHz
Frequency Range	694-806 MHz	790-862 MHz	876-960 MHz
Gain over all Tilts (dBi)	13.8	13.8	14.0
Gain over all Tilts Tolerance (dB)	0.3	0.3	0.5
Gain at Low-Tilt (dBi)	14.0	14.0	14.2
Gain at Mid-Tilt (dBi)	13.9	13.9	14.1
Gain at High-Tilt (dBi)	13.5	13.6	13.7
Azimuth Beamwidth Tolerance (°)	2.7	5.6	2.9
Elevation Beamwidth Tolerance (°)	1.1	0.6	0.6
Electrical Downtilt Deviation (°)	0.7	0.3	0.4
First Upper Sidelobe Suppression (dB)	16.2	16.9	14.4
Upper Sidelobe Suppression Peak to 20° (dB)	16.9	18.8	15.6
Front-to-Back Ratio over ±20° (dB)	24.6	26.0	25.7
Cross-polar Discrimination at ±60° (dB)	11.8	11.3	12.6

* Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6. All specifications are subject to change without notice.



QuadBand Antenna

OPA65R-KE6C

SPECIFICATIONS

Ports	4 x High Band Ports for 1695-2690 MHz				
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Gain	18.0 dBi	18.3 dBi	18.4 dBi	18.1 dBi	18.2 dBi
Azimuth Beamwidth (-3dB)	63°	62°	62°	61°	61°
Elevation Beamwidth (-3dB)	5.7°	5.1°	4.8°	4.0°	3.8°
Electrical Downtilt	0° to 8°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	<-18 dB	<-19 dB	<-18 dB	<-17 dB	<-16 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 18 dB	> 17 dB	> 18 dB	> 18 dB	> 18 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 watts	300 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

BASTA Electrical Specifications*					
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Gain over all Tilts (dBi)	17.2	17.5	17.7	17.3	17.1
Gain Tolerance over all Tilts (dB)	0.5	0.6	0.6	0.6	0.9
Gain at Low-Tilt (dBi)	17.0	17.1	17.3	16.9	16.7
Gain at Mid-Tilt (dBi)	17.2	17.6	17.9	17.6	17.4
Gain at High-Tilt (dBi)	17.3	17.8	18.0	17.4	17.2
Azimuth Beamwidth Tolerance (°)	3.0	3.2	2.9	6.5	4.2
Elevation Beamwidth Tolerance (°)	0.5	0.3	0.3	0.2	0.3
Electrical Downtilt Deviation (°)	0.5	0.5	0.5	0.6	0.6
First Upper Sidelobes Suppression (dB)	14.6	15.8	15.6	14.4	13.7
Upper Sidelobe Suppression Peak to 20° (dB)	14.3	14.9	14.0	11.9	12.6
Front-to-Back Ratio over±20° (dB)	28.0	29.3	29.9	30.0	30.3
Cross-polar Discrimination at ±60° (dB)	12.4	9.2	9.2	7.0	9.9

* Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6. All specifications are subject to change without notice.

Mechanical

Dimensions (LxWxD)	71.1x11.7x8.4 in (1807x297x214 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	201 lbs (894 N) @ 100 mph (161 kph)
Side Wind Load	160 lbs (714 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	7.9 ft ² (0.7 m ²)
Weight*	56.9 lbs (25.8 kg)
RET Weight	3.3 lbs (1.5 kg) for two RET's 5.0 lbs (2.3 kg) for three RET's
Connector	8x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

* Weight excludes mounting and RET



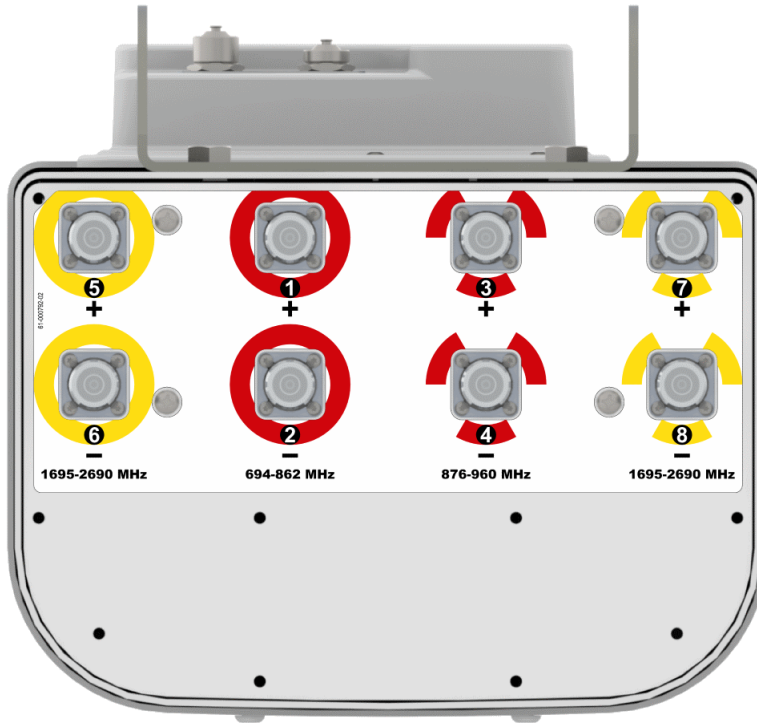
SPECIFICATIONS

QuadBand Antenna

OPA65R-KE6C

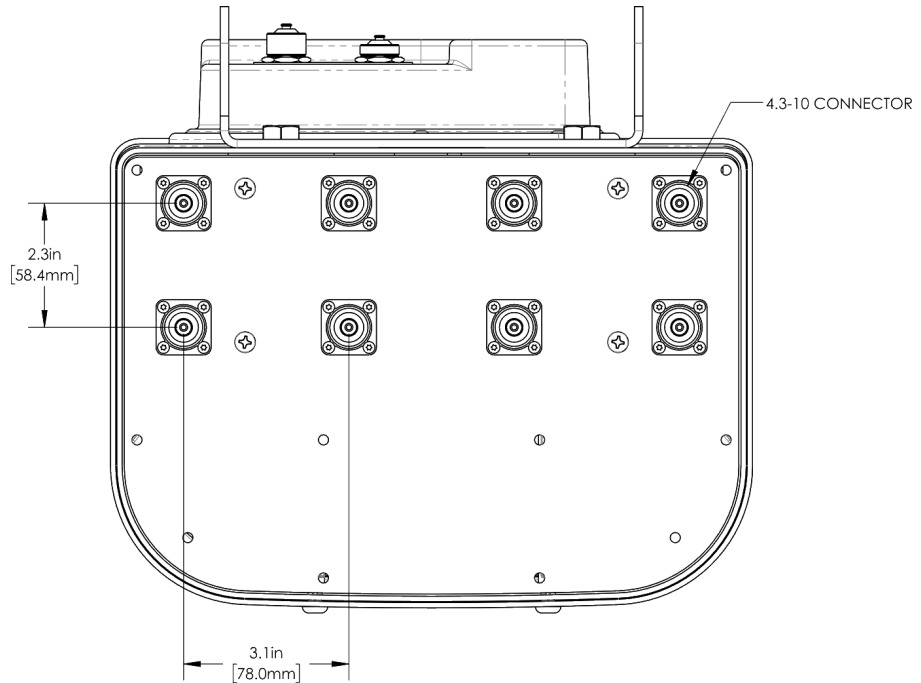
Bottom View

OPA65R-KE6C



Connection Spacing Diagram

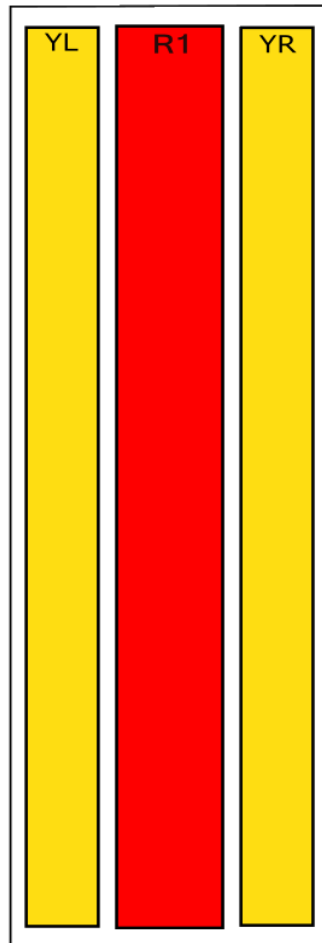
OPA65R-KE6C



RET to Element Configuration

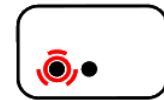
OPA65R-KE6CA Element and RET configuration

**Top of antenna
Viewed from rear
of antenna**



**RET placement
Viewed from rear
of antenna**

Top of antenna



**694-862
876-960
Ports 1, 2, 3 & 4
(R1)**



**1695-2690
Ports 7 & 8
(YR)**



**1695-2690
Ports 5 & 6
(YL)**

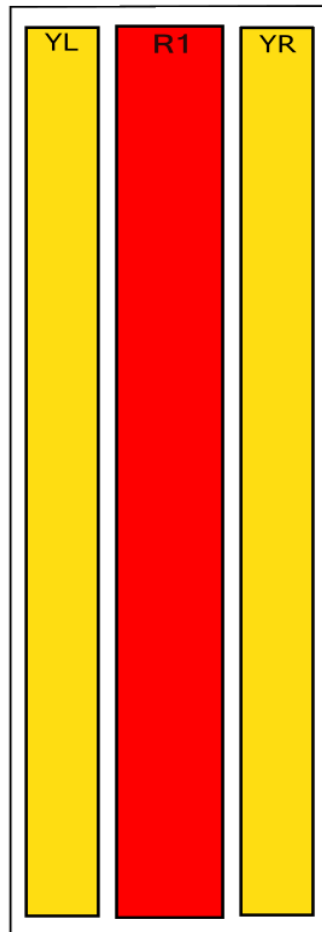
Array	Ports	Freq (MHz)	Ports controlled by common RET
R1	1, 2	694-862	1, 2, 3, 4
R1	3, 4	876-960	
YL	5, 6	1695-2690	5, 6
YR	7, 8	1695-2690	7, 8

RET to Element Configuration

OPA65R-KE6CB Element and RET configuration

**Top of antenna
Viewed from rear
of antenna**

**RET placement
Viewed from rear
of antenna**



Top of antenna



**694-862
876-960
Ports 1, 2, 3 & 4
(R1)**



**1695-2690
Ports 5, 6, 7 & 8
(YL & YR)**

Array	Ports	Freq (MHz)	Ports controlled by common RET
R1	1, 2	694-862	1, 2, 3, 4
R1	3, 4	876-960	
YL	5, 6	1695-2690	5, 6, 7, 8
YR	7, 8	1695-2690	



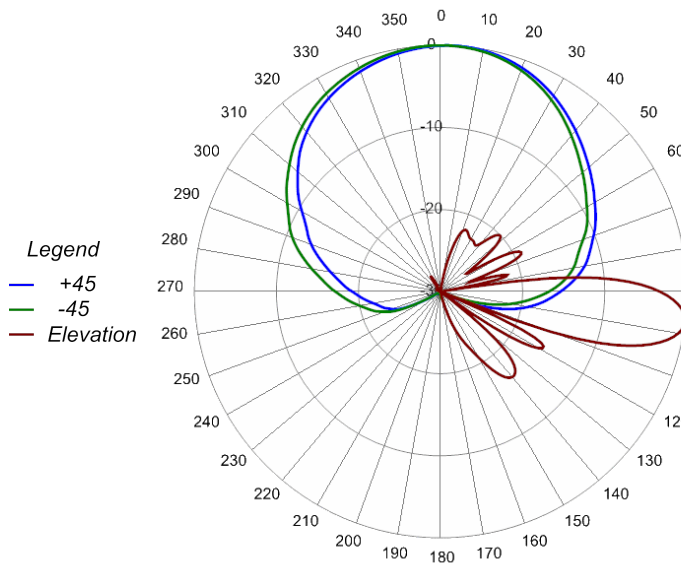
QuadBand Antenna

OPA65R-KE6C

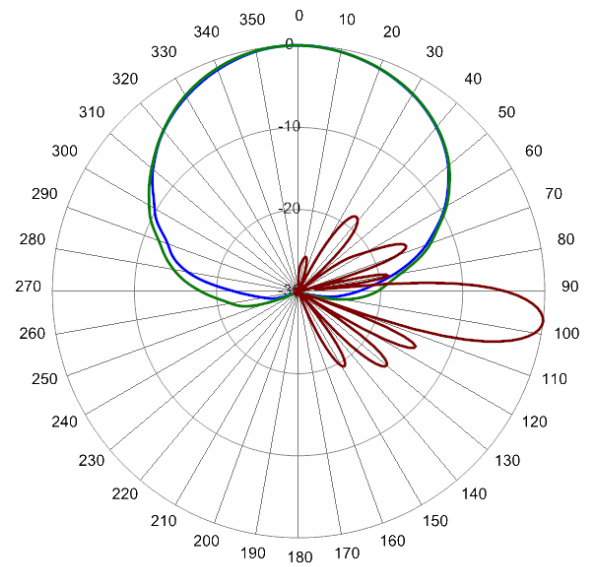
SPECIFICATIONS

Typical Antenna Patterns

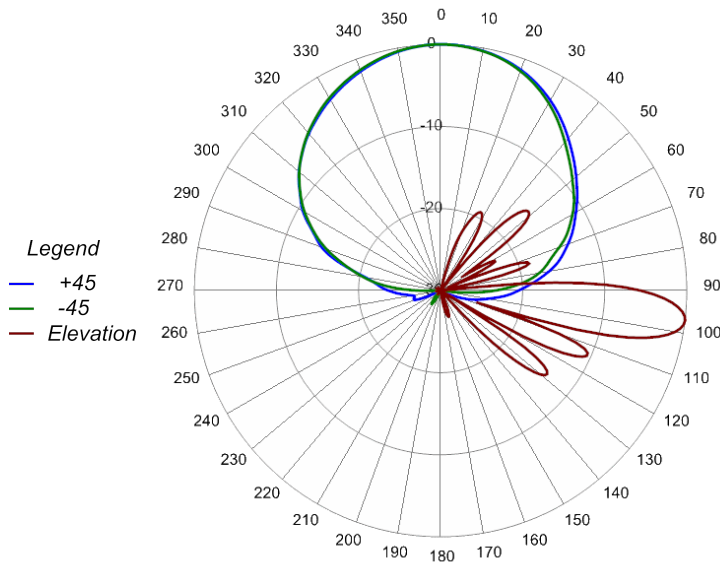
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



728 MHz Azimuth with Elevation 7°



840 MHz Azimuth with Elevation 7°



945 MHz Azimuth with Elevation 7°

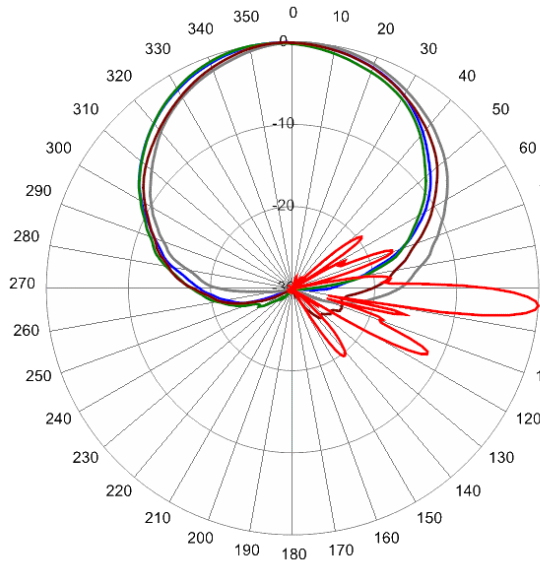


SPECIFICATIONS

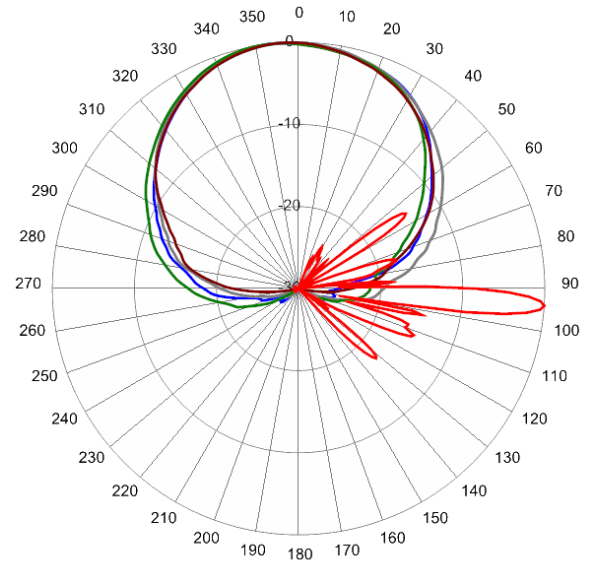
QuadBand Antenna

OPA65R-KE6C

- Legend
- +45 Left
 - -45 Left
 - +45 Right
 - -45 Right
 - Elevation

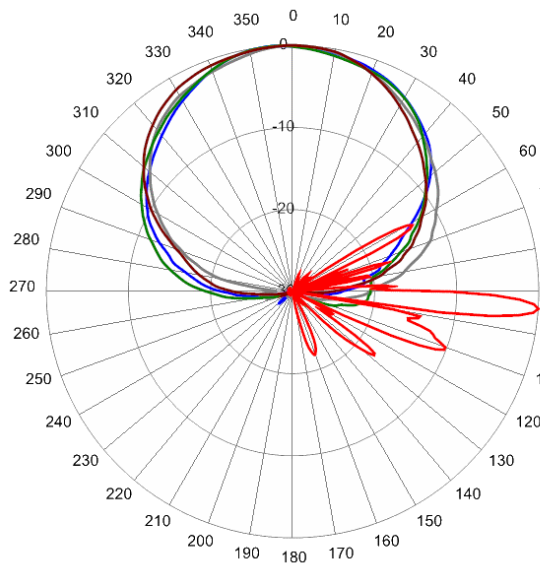


1740 MHz Azimuth with Elevation 4°

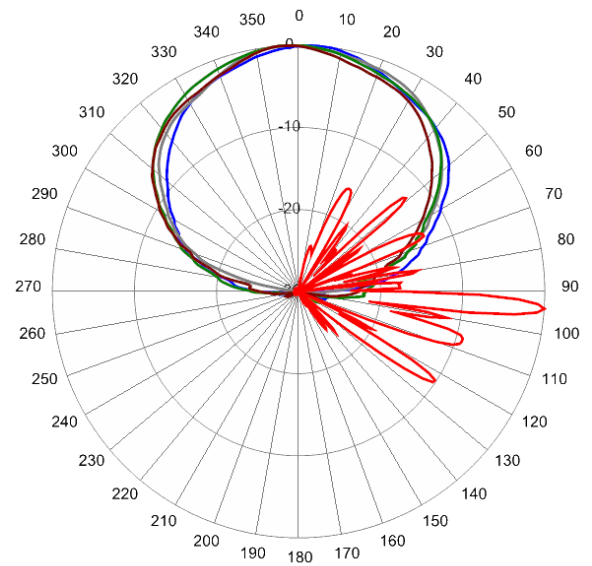


1970 MHz Azimuth with Elevation 4°

- Legend
- +45 Left
 - -45 Left
 - +45 Right
 - -45 Right
 - Elevation



2155 MHz Azimuth with Elevation 4°



2500 MHz Azimuth with Elevation 4°



Parts & Accessories

OPA65R-KE6CA-K	Six foot (1.8 m) OctoPort antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET200 RET actuators and MBK-01 mounting bracket
OPA65R-KE6CB-K	Six foot (1.8 m) OctoPort antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 2 factory installed BSA-RET200 RET actuators and MBK-01 mounting bracket
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Remote electrical tilt actuator
HPA-CBK-AG-RRU	RRU AISG cable kit for 3 RET antenna
HPA-CBK-RA-AG-RRU	RRU AISG right angle cable kit for 3 RET antenna
QPA-CBK-AG-RRU	RRU AISG cable kit for 2 RET antenna
QPA-CBK-RA-AG-RRU	RRU AISG right angle cable kit for 2 RET antenna

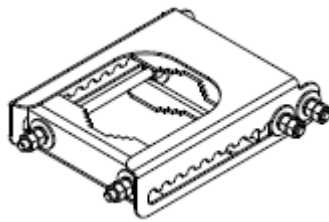


Mounting Bracket Kit

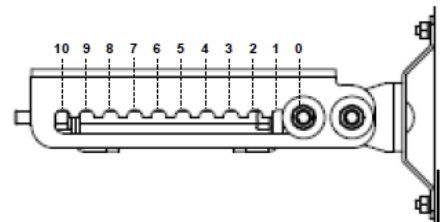
MBK-01

Mechanical

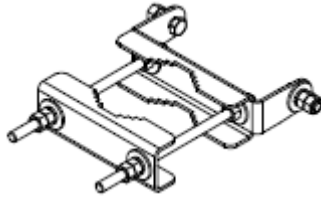
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket



Remote Electrical Tilt Actuator (RET)

BSA-RET200

General Specifications

Part Number	BSA-RET200
Protocols	AISG 2.0
RET Type	Type 1
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

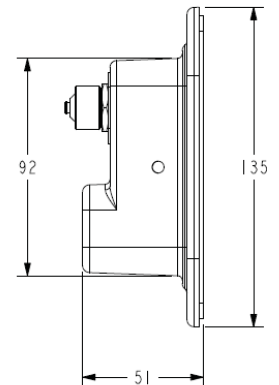
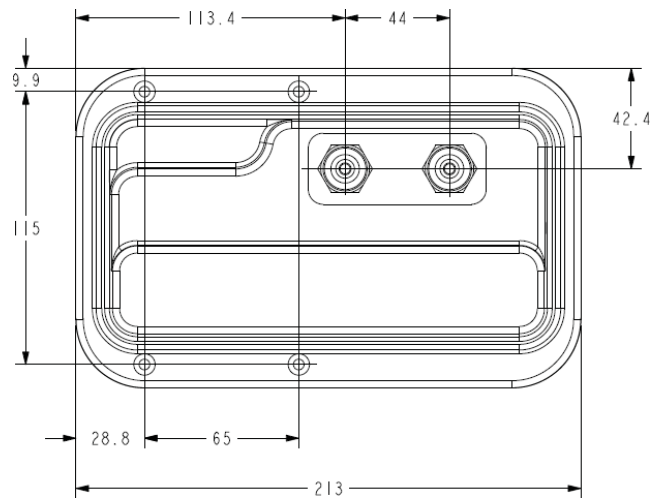
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	120 mA at $V_{in}=24$
Current Consumption Idle	55 mA at $V_{in}=24$
Hardware Interface	AISG-RS 485 A/B
Input Connector	Male 1 × 8 pin Daisy Chain
Output Connector	Female 1 × 8 pin Daisy Chain

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.7 lbs (0.75 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylonitrile Butadiene Styrene



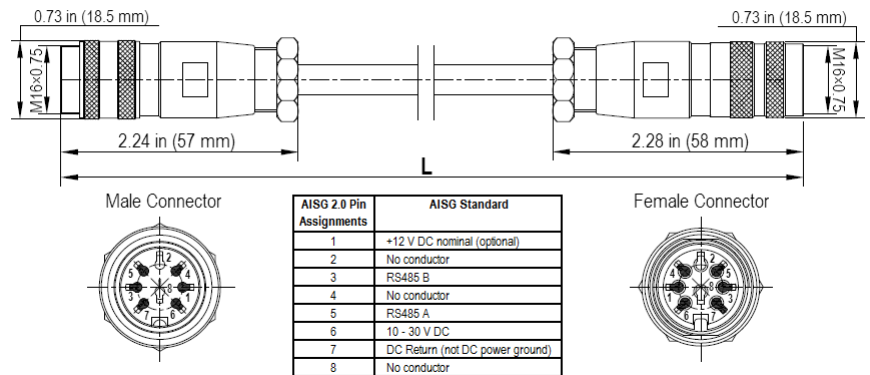


Electrical Specifications

Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Cable style	UL2464	UL2464
Protocol	AISG 1.1 and AISG 2.0	AISG 1.1 and AISG 2.0
Maximum voltage	300 V	300 V
Rated current	5 A at 104° F (40° C)	5 A at 104° F (40° C)

Mechanical Specifications

Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Cables per kit	2	2
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	2 x 8 pin IEC 60130-9 Straight male/straight female
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N-m)	Hand tighten only ≈ 1.84 ft-lbs (2.5 N-m)
Construction	Shielded (Tinned Copper Braid)	Shielded (Tinned Copper Braid)
Braid coverage	85%	85%
Jacket Material	Matte Polyurethane (Black)	Matte Polyurethane (Black)
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464
Cable Diameter	0.307 in (7.8 mm)	0.307 in (7.8 mm)
Length	18 - 20 in (457 - 508 mm)	120 in (3048 mm)
Weight	0.27 lbs (0.12 kg)	0.69 lbs (.31 kg)
Minimum bend radius	3.9 in (100 mm)	3.9 in (100 mm)



AISG-Male to AISG-Female Jumper Cable

Environmental Specifications

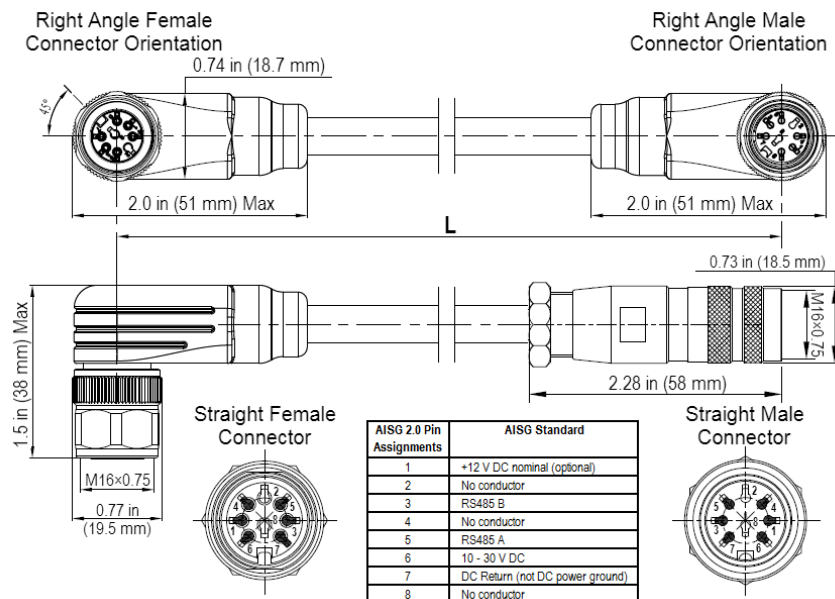
Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Temperature Range	-40° to 80° C	-40° to 80° C
Flammability	UL 1581 VW-1	UL 1581 VW-1
Ingress Protection	IEC 60529:2001, IP67	IEC 60529:2001, IP67



Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female	2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	20 in (508 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	2	2

Mechanical Specifications



Right Angle to Right Angle and Right Angle to Straight Jumper Cable



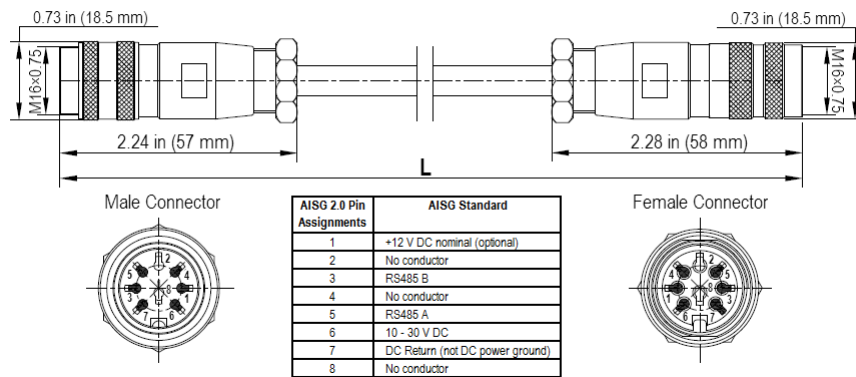
Quad Port AISG Cable Kit

QPA-CBK-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	
Length	18-20 in (457-508)	120 in (3048 mm)
Weight	0.27 lbs (0.12 kg)	0.69 lbs (0.31 kg)
Cables per kit	1	2

Mechanical Specifications



AISG-Male to AISG-Female Jumper Cable



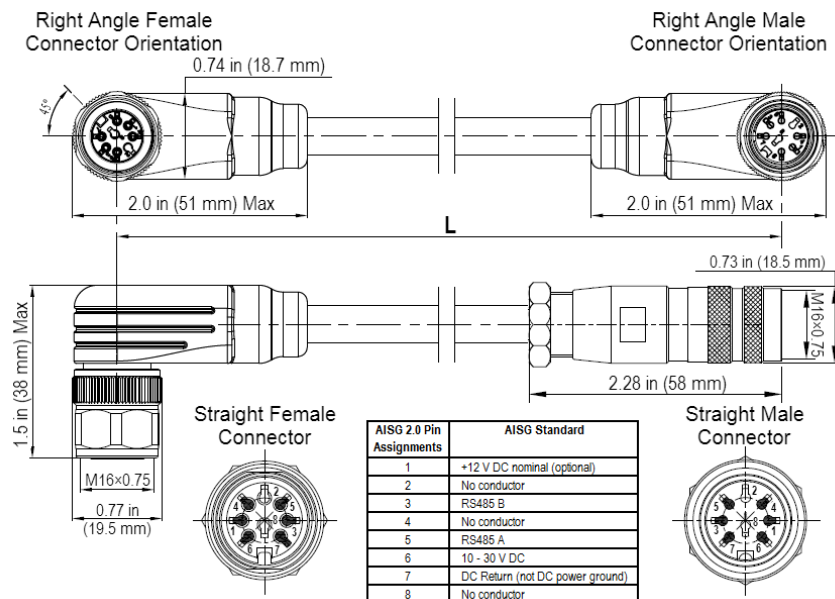
Quad Port AISG Cable Kit

QPA-CBK-RA-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female	2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	20 in (508 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	1	2

Mechanical Specifications



Right Angle to Right Angle and Right Angle to Straight Jumper Cable



STANDARDS & CERTIFICATIONS

QuadBand Antenna

OPA65R-KE6C

Standards & Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN 60529, IP 24

Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001

