DATA SHEET

Broadband Quadplexer Combiner

QPO-39182236-E-T2

- Combines the 390-960 MHz, 1710-1880 MHz, 1920-2170 MHz and 2300-2700 MHz bands onto a common port
- High power 200 W per port with low insertion loss in a small, lightweight enclosure
- AISG 2.0 pass-through on either input port with Smart DC with Autosense
- Low intermodulation with isolation of >50 dB port to port
- High reliability of >500K Hours MTBF and multi-strike lightning protection
- Twin or Single outdoor (IP67) Quadplexer with flexible pole or wall mounting options

Overview

The CCI Outdoor Broadband Quadplexer combines 390-960, 1710-1880, 1920-2170, and 2300-2700 bands onto a common port. Specifically intended for use in multi-band systems with limited feeder lines, this CCI Quadplexer facilitates the addition of new technologies including LTE and new spectrum onto existing sites, while providing a high degree of isolation between systems. Decreasing the number of feeder lines lowers tower loading, leasing and installation expenditures and the total cost to upgrade a site is significantly reduced. An optional twin unit with two Quadplexers mounted on a single bracket is also available.
The CCI Outdoor Quadplexer provides full band performance for each band with low insertion loss, low Intermodulation, and high power handling. Excellent return loss delivers the best match to the antennas and base station, saving precious transmit power. The Quadplexer enables full Remote Electrical Tilt (RET) and Tower Mount Amplifiers (TMA) capability by providing DC and AISG 2.0 compliant pass-through via Smart DC with autosense.

Technical Description:

The Outdoor Broadband Quadplexer consists of multiple filters and can be used as either a splitter or combiner to aggregate the 700/800/900, 1800, 2100 and 2600 bands on a common feeder line. The fully weatherproof tower mount outdoor Quadplexer provides DC and AISG signal pass-through, enabling power and control for TMA's & RET antennas. The Quadplexer is available with DC/AISG including Smart DC with autosense. The Smart Bias-Tee architecture passes the DC and AISG carrier frequency from any one of the input ports to the common port while blocking the DC and AISG signals from being re-injected into the other input ports. The Quadplexer has internal multi-strike lightning protection using a multi-stage surge protection circuit.
The unit has been designed to minimize insertion loss while maximizing isolation. Particular attention has been given to the intermodulation performance of the Quadplexer to minimize any passive intermodulation products from occurring. The Quadplexer housing is constructed from die cast aluminum and consists of an IP67 immersion proof enclosure, with IP67 immersion proof connectors suited to long-life masthead mounting. The Quadplexer can be pole or wall mounted with the included bracket. The RF ports are configured with 4.3-10 connectors.
CCI filter and combiner products are designed and produced to ISO 9001 certification standards for reliability and quality at our state-of-the-art engineering and manufacturing facilities.

SPECIFICATIONS

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Electrical Specification

RF Parameters	Ports	Frequency(MHz)	Specification
Return Loss	5 COMMON (COM)	390 - 960	18 dB minimum, 20 dB typical
		1710 - 1880	18 dB minimum, 20 dB typical
		1920 - 2170	18 dB minimum, 20 dB typical
		2300 - 2700	18 dB minimum, 20 dB typical
	1 (390-960)	390 - 960	18 dB minimum, 20 dB typical
	2 (1710-1880)	1710 - 1880	18 dB minimum, 20 dB typical
	3 (1920-2170)	1920 - 2170	18 dB minimum, 20 dB typical
	4 (2300-2700)	2300 - 2700	18 dB minimum, 20 dB typical
Insertion Loss	5 to 1 (COM to 390-960)	390 - 960	0.35 dB maximum, 0.25 dB typical
	5 to 2 (COM to 1710-1880)	1710 - 1880	0.35 dB maximum, 0.25 dB typical
	5 to 3 (COM to 1920-2170)	1920 - 2170	0.35 dB maximum, 0.25 dB typical
	5 to 4 (COM to 2300-2700)	2300 - 2700	0.35 dB maximum, 0.25 dB typical
Isolation	5 to 1 (COM to 390-960)	1710 - 1880	50 dB minimum, 55 dB typical
		1920 - 2170	50 dB minimum, 55 dB typical
		2300 - 2700	50 dB minimum, 55 dB typical
	5 to 2 (COM to 1710-1880)	390 - 960	50 dB minimum, 55 dB typical
		1920 - 2170	50 dB minimum, 55 dB typical
		2300 - 2700	50 dB minimum, 55 dB typical
	5 to 3 (COM to 1920-2170)	390 - 960	50 dB minimum, 55 dB typical
		1710 - 2170	50 dB minimum, 55 dB typical
		2300 - 2700	50 dB minimum, 55 dB typical
	5 to 4 (COM to 2300-2700)	390 - 960	50 dB minimum, 55 dB typical
		1710 - 1880	50 dB minimum, 55 dB typical
		1920 - 2170	50 dB minimum, 55 dB typical
Group Delay	COM to 390-960	390 - 960	7 ns maximum
	COM to 1710-1880	1710 - 1880	25 ns maximum
	COM to 1920-2170	1920 - 2170	25 ns maximum
	COM to 2300-2700	2300 - 2700	15 ns maximum
Group Delay Variation	COM to 390-960	390 - 960	4 ns maximum
	COM to 1710-1880	1710 - 1880	10 ns maximum
	COM to 1920-2170	1920 - 2170	7 ns maximum
	COM to 2300-2700	2300 - 2700	5 ns maximum

General Characteristics	
Impedance	50 ohms
Continuous Average Power (RMS)	200 W max. per input port simultaneous
Peak Envelope Power	2 kW max.
Intermodulation Performance(all ports)	<-117 dBm (-160 dBc) typical (2 × +43 dBm tones) all bands

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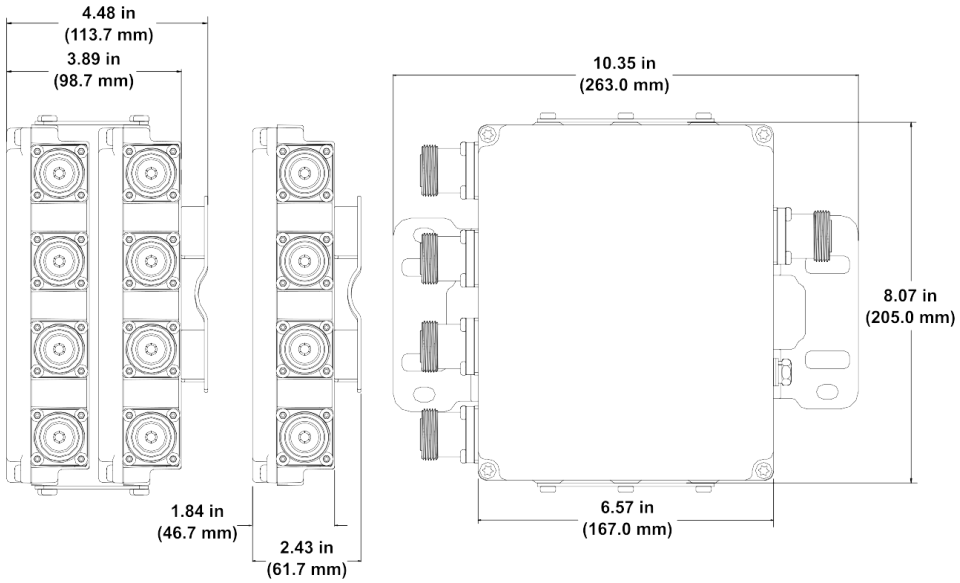
DC/AISG	
DC Autosense	DC path is automatically determined, when the unit is used as a combiner or splitter.
Combine mode priority	1. 1710 - 1880 MHz 2. 2300 - 2700 MHz 3. 1920 - 2170 MHz 4. 690 - 960 MHz
DC Autosense Combine Mode Operation	The port with DC voltage (7 to 30 V) is automatically passed to the common port. If more than one port has DC voltage present, the port with the highest priority is passed. If a short cicuit is detected on the Common Port DC/AISG is disabled for the entire unit.
DC Autosense Splitter Mode Operation	DC/AISG pass through will be disabled for ports where a short circuit is detected and DC/AISG wll be passed to all other ports.
DC Bypass Power-Up to Operationg Time	<100 ms
Current Consumption @TBD VDC	35 mA typical, 50 mA maximum (7..0 to 30 VDC)
Current (Single Path)	2.5 A maximum
Current Common	2.5 A maximum
AISG Signal	2.176 Mhz, per AISG 2.0

Environmental Specification

Operating Temperature	-40˚C to +65˚C
Ingress Protection	IP67
Relative Humidity	5 - 95%
MTBF/Design Life	>500,000 hours/10 years?
Lightning Protection	8/20us, ±10KA max, 10 strikes each, IEC61000-4-5

Mechanical Specification

Model	Single (4 In, 2 Out)	Twin (8 In, 2 Out)
Ports, in-line	4 × BTS, 1 × ANT	8 × BTS, 2 × ANT
Connectors	5 × 4.3-10 female	10 × 4.3-10 female
Dimensions w/Bracket	10.35 × 8.07 × 2.43 in. (263.0 × 205.0 × 61.7 mm)	10.35 × 8.03 × 4.48 in. (263.0 × 204.0 × 113.7 mm)
Housing Dimensions	6.57 x 7.95 × 1.84 in. (167.0 x 202.0 × 46.7 mm) - per Quadplexer	
Weight	6.6 lbs (3.0 kg)	13.2 lbs (6.0 kg)
Housing Ground Lug	1 × M8	1 × M8
Finish	Housing - Powder Coat Gray; Bracket(s) - 304 Stainless Steel (Passivated per ASTM A-967)	
Packaging Size	TBD	17.91 x 12.4 x 15.35 in. (455 x 315 x 390 mm) for 4 pcs.
Packaging Weight	TBD	60.5 Lbs. (27.5 kg) for 4 pcs.
Allowable Mast Diameter	3 to 6 inches (76.2 to 152.4 mm)	
Pole Mounting	Use integral mounting bracket and the 2 band clamps provided. (Orientation, the connectors will be in-line with mast)	
Wall Mounting	Use integral mounting bracket and appropriate fasteners. (Orientation, no restrictions)	



Outdoor Broadband Quadraplexer Outline Drawing

STANDARDS & CERTIFICATIONS

Broadband Quadplexer Combiner

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Parts & Accessories

QPO-39182236-E-S2	Single 390-960/1710-1880/1920-2170/2400-2700 Quadplexer with 4.3-10 connectors and Smart DC for DC/AISG pass through in either direction on any port
QPO-39182236-E-T2	Twin 390-960/1710-1880/1920-2170/2400-2700 Quadplexer with 4.3-10 connectors and Smart DC for DC/AISG pass through in either direction on any port

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, IEC61000-4-5, GR-63-CORE 4.3.1, EN 60529 IP67, IP68

Certifications

Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001