

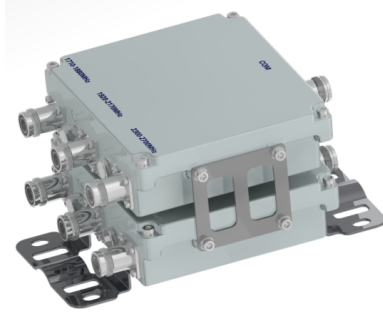


# Filters & Combiners

DATA SHEET

Broadband Triplexer

TPO-182236-E-T2



- Combines DCS (1710-1880), UMTS 2100 (1920-2170) and 2300/2600 (2300-2700) bands
- High power 200 W per port with low insertion loss
- Low intermodulation with isolation of >50 dB per band
- AISG 2.0 pass-through on either port with Smart DC with Autosense
- Triplexer includes outdoor pole/wall mount bracket
- High reliability of >500K Hours MTBF and multi-strike lightning protection

## Overview

The CCI Broadband Triplexer combines three bands, DCS (1710-1880), UMTS 2100 (1920-2170) and 2300/2600 band (2300-2700) onto a common port. Specifically intended for use in multi-band systems with limited feeder lines, this CCI Triplexer facilitates the addition of new technologies including LTE and new spectrum including LTE 2600 to 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.

The CCI Broadband Triplexer 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 Triplexer offers the option of full Remote Electrical Tilt (RET) and Tower Mount Amplifiers (TMA) capability by providing multiple options for DC and AISG 2.0 compliant pass-through via Smart DC with autosense.

## Technical Description:

The Triplexer consists of multiple filters and can be used as either a splitter or combiner to aggregate the DCS, UMTS 2100, and 2300/2600 bands on a common feeder line. The fully weatherproof tower mount outdoor triplexer is orderable with DC block on all ports or DC and AISG signal pass-through on any of the band specific ports. When configured with pass-through the Triplexer provides power and control for TMA's & RET antennas. DC/AISG pass options include Smart DC with autosense. The triplexer 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 Triplexer to minimize any passive intermodulation products from occurring. The Triplexer can be pole or wall mounted with the included bracket and the unit body is rated for IP67. All RF ports are configured with 4.3-10 connectors, which are IP67 rated.

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.



# Filters & Combiners

## SPECIFICATIONS

### Broadband Triplexer

TPO-182236-E-T2

#### Electrical Specification

RF Parameters	Ports	Frequency(MHz)	Specification	
Return Loss	Common	1710 - 1880	20 dB minimum	
		1920 - 2170	20 dB minimum	
		2300 - 2700	20 dB minimum	
	DCS	1710 - 1880	20 dB minimum	
		UMTS 2100	1920 - 2170	20 dB minimum
		LTE Band	2300 - 2700	20 dB minimum
Insertion Loss	COM to DCS	1710 - 1880	0.4 dB typical, 0.5 dB maximum	
	COM to UMTS 2100	1920 - 2170	0.4 dB typical, 0.5 dB maximum	
	COM to LTE Band	2300 - 2700	0.4 dB typical, 0.5 dB maximum	
Isolation	COM to DCS	1920 - 2170	50 dB minimum	
		2300 - 2700	50 dB minimum	
	COM to UMTS 2100	1710 - 1880	50 dB minimum	
		2300 - 2700	50 dB minimum	
	COM to LTE Band	1710 - 1880	50 dB minimum	
		1920 - 2170	50 dB minimum	
Group Delay	COM to DCS	1710 - 1880	25 ns	
	COM to UMTS 2100	1920 - 2170	27 ns	
	COM to LTE Band	2300 - 2700	17 ns	
Group Delay Variation	COM to DCS	1710 - 1880	10 ns	
	COM to UMTS 2100	1920 - 2170	8 ns	
	COM to LTE Band	2300 - 2700	7 ns	

#### General Characteristics

Impedance	50 ohms
Continuous Average Power (RMS)	200 W (+53 dBm) per input port
Peak Envelope Power	2 kW (+63 dBm) maximum at COMMON
Intermodulation Performance (all ports)	<-117 dBm (-160 dBc) typical all bands, 2x +43 dBm carriers

#### 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 is automatically passed to the COMMON Port. If more than one port has DC voltage, the port with the highest priority is passed. If a short circuit 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 where a short circuit is detected and DC/AISG will be passed to all other ports
DC Bypass Power-Up to Operating Time	<100 ms
Current Consumption @ TBD voltage	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



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#### Environmental Specification

<b>Operating Temperature</b>	-20 °C to +60 °C
<b>Relative Humidity</b>	5% - 95%
<b>Ingress Protection</b>	IP67
<b>MTBF/Design Life</b>	>500,000 hours/10 years?
<b>Lightning Protection</b>	8/20us, ±10KA max, 10 strikes per IEC61000-4-5

#### Mechanical Specification

Model	TPO-182236-S-Sx (3 In, 1 Out)	TPO-182236-S-Tx (6 In, 2 Out)
<b>Modularity</b>	Single	Twin
<b>Ports, In-Line</b>	3 x BTS, 1 x ANT	6 x BTS, 2 x ANT
<b>Connectors</b>	4 x 4.3-10 female	8 x 4.3-10 female
<b>Dimensions with brackets</b>	237.0x 169.0 x 63.5 mm	237.0 x 169.0 x 117.5mm
<b>Housing Dimensions</b>	146.0 x 169.0 x 48.5 mm - per Diplexer	
<b>Weight with brackets</b>	2.3 Kg	4.8 Kg
<b>Housing Ground Lug</b>	1 x M8	1 x M8
<b>Finish</b>	Housing - Powder Coat Gray; Bracket(s) - 304 Stainless Steel (Passivated per ASTM A-967)	
<b>Packaging Size</b>	TBD	17.91 x 12.4 x 15.35 in. (455 x 315 x 390 mm) for 4 pcs.
<b>Packaging Weight</b>	TBD	45.3 Lbs. (20.6 kg) for 4 pcs.
<b>Available Mast Diameter</b>	3 to 6 inches (76.2 to 152.4 mm)	
<b>Pole Mounting</b>	Use integral mouting bracket and the 2 band clamps provided (Orientation, the connectors will be in-line with mast)	
<b>Wall Mounting</b>	Use integral mouting bracket and appropriate fasteners (Orientation, no restrictions)	

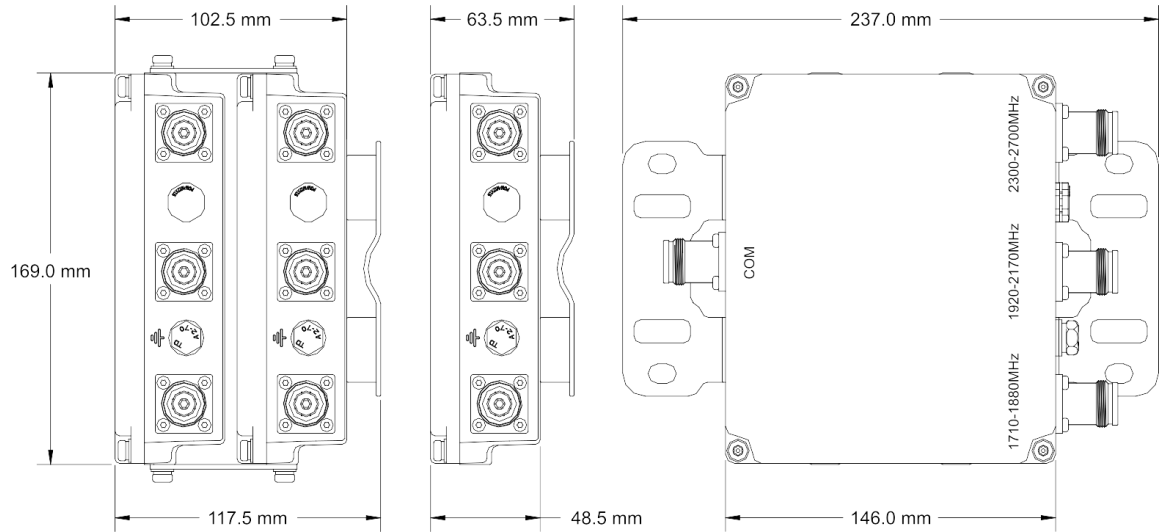


# Filters & Combiners

## SPECIFICATIONS

### Broadband Triplexer

TPO-182236-E-T2



Outdoor Broadband Triplexer Outline Drawing



# Filters & Combiners

## STANDARDS & CERTIFICATIONS

### Broadband Triplexer

TPO-182236-E-T2

#### Parts & Accessories

- TPO-182236-E-S2** Single 1710-1880/1920-2170/2300-2700 Triplexer with 4.3-10 connectors and Smart DC for DC/AISG pass through in either direction on any port
- TPO-182236-E-T2** Twin 1710-1880/1920-2170/2300-2700 Triplexer 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

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

