

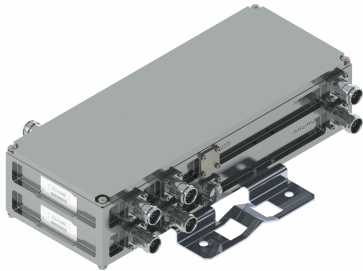


# Filters & Combiners

DATA SHEET

## Outdoor Broadband Triplexer

TPO-691973-xxx



- The Outdoor triplexer combines the frequency ranges 617-960 MHz, 1850-1995 MHz, and 1695-1780/2110-2360 MHz onto a common port.
- Supports the 600/700/850/900 bands on port 1, PCS band on port 2, and the AWS/WCS bands on port 3
- 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 Bias-T or optional AISG Modem and Port
- 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) Triplexer with flexible pole or wall mounting options

### Overview

The CCI Outdoor Broadband Triplexer combines the frequency ranges 617-960 MHz, 1850-1995 MHz, and 1695-1780/2110-2360 MHz 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 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 Triplexers mounted on a single bracket is also available.

The CCI Outdoor 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 enables full Remote Electrical Tilt (RET) and Tower Mount Amplifiers (TMA) control capability by providing DC and AISG 2.0 compliant pass-through on either input port using the Smart Bias-T or via an optional AISG modem and port.

### Technical Description:

The Outdoor Broadband Triplexer consists of multiple filters and can be used as either a splitter or combiner to aggregate the 600/700/850/900 bands on port 1, the PCS band on port 2, and the AWS/WCS bands on port 3 onto a common feeder line. The fully weatherproof tower mount outdoor Triplexer provides DC and AISG signal pass-through, enabling power and control for TMA's & RET antennas. The Triplexer is available with DC/AISG pass options including a smart bias-tee or AISG modem and output port. 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 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 housing is constructed from die cast aluminum and consists of an IP67 moisture proof enclosure, with IP68 moisture proof connectors suited to long-life masthead mounting. The Triplexer can be pole or wall mounted with the included bracket. The RF ports can be 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.



# Filters & Combiners

## SPECIFICATIONS

### Outdoor Broadband Triplexer

TPO-691973-xxx

#### Electrical Specification

RF Parameters	Ports	Frequency(MHz)	Specification	
Return Loss	Common	617 - 960	18 dB minimum, 20 dB typical	
		1695 - 1780	18 dB minimum, 20 dB typical	
		1850 - 1995	18 dB minimum, 20 dB typical	
		2110 - 2360	18 dB minimum, 20 dB typical	
	600/700/850/900	617 - 960	18 dB minimum, 20 dB typical	
		PCS	1850 - 1995	18 dB minimum, 20 dB typical
			1695 - 1780	18 dB minimum, 20 dB typical
		AWS/WCS	2110 - 2360	18 dB minimum, 20 dB typical
617 - 960	0.1 dB maximum			
Insertion Loss	COMMON to 600/700/850/900	1850 - 1995	0.35 dB typical, 0.45 dB maximum	
	COMMON to PCS	1695 - 1780	0.4 dB typical, 0.5 dB maximum	
	COMMON to AWS/WCS	2110 - 2360	0.3 dB typical, 0.4 dB maximum	
		617 - 960	50 dB minimum	
Isolation	COMMON to 600/700/850/900	1850 - 1995	50 dB minimum	
		2110 - 2360	50 dB minimum	
		617 - 960	50 dB minimum	
	COMMON to PCS	1695 - 1780	50 dB minimum	
		2110 - 2360	50 dB minimum	
		617 - 960	50 dB minimum	
	COMMON to AWS/WCS	617 - 960	50 dB minimum	
		1850 - 1995	50 dB minimum	

General Characteristics	
Impedance	50 ohms
Continuous Average Power	200 W maximum (input ports), 500 W maximum (Common port)
Peak Envelope Power	1 kW maximum (input ports) 5 kW maximum (Common port)
IM Performance(all ports)	<-117 dBm (-160 dBc) typical (2x +43 dBm tones) all bands
DC Pass Current/AISG Pass (Any Port to COMMON port)	3A/AISG signal (2.176 Mhz) per AISG 2.0
Modem Option	9600 Baud per AISG 2.0/3GPP TS 25.461

#### Environmental Specification

Operating Temperature	-40 °C to +65 °C
Ingress Protection	IP67
Relative Humidity	0 - 99%
MTBF	>500,000 hours
Lightning Protection	8/20us, ±10KA max, 10 strikes each, IEC61000-4-5



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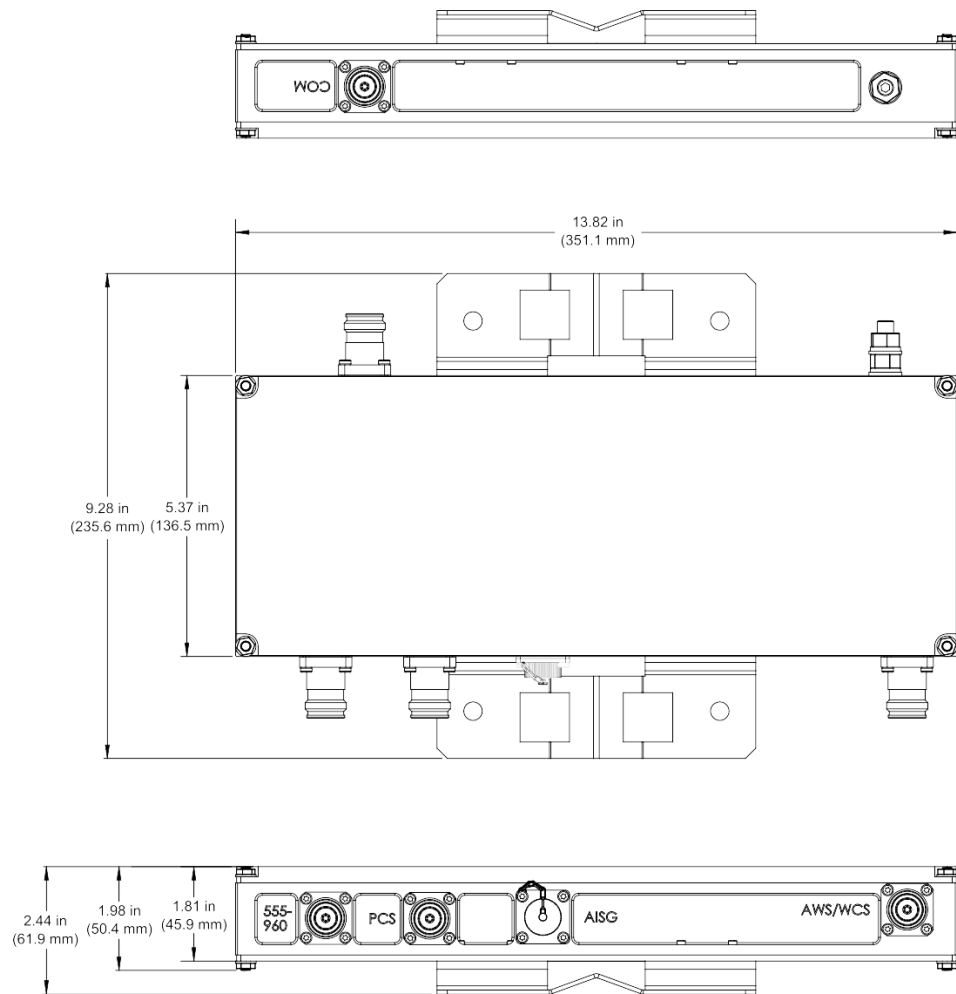
## SPECIFICATIONS

### Outdoor Broadband Triplexer

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#### Mechanical Specification

Model	Single	Twin
Connectors	4 x 4.3-10 female	8 x 4.3-10 female
Dimensions w/Bracket	13.82 x 9.28 x 2.44 in. (351.1 x 235.6 x 61.9 mm)	13.82 x 9.28 x 3.82 in. (351.1 x 236.6 x 96.94 mm)
Housing Dimensions	13.82 x 5.37 x 1.98 in. (351.1 x 136.5 x 50.4 mm)	13.82 x 5.37 x 3.36 in. (351.1 x 136.5 x 85.4 mm)
Weight	7.4 lbs (3.354 kg)	12.6 lbs (5.73 kg)
Frontal Wind Load	204.9 N @150km/hour	204.9 N @150km/hour
Lateral Wind Load	21.3 N @150km/hour	37.5 N @150km/hour



Outdoor Broadband Single Triplexer Outline Drawing

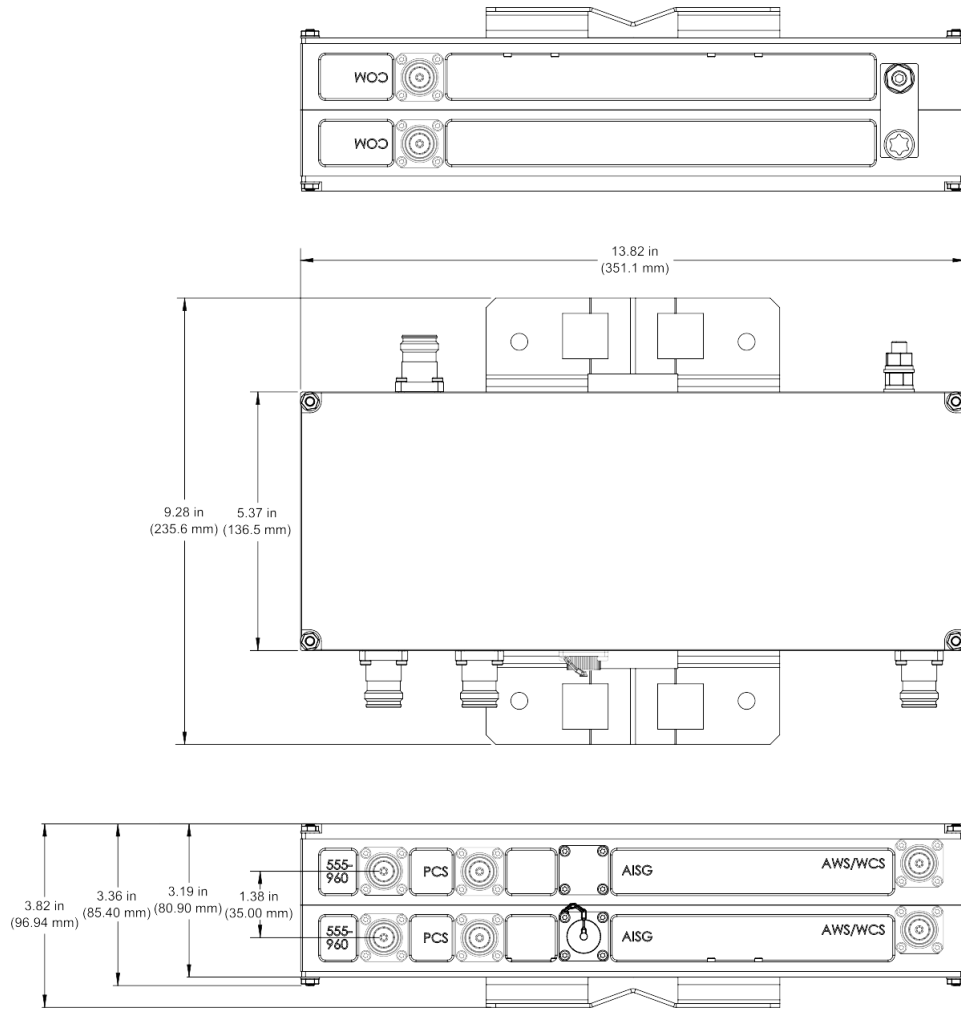


# Filters & Combiners

SPECIFICATIONS

Outdoor Broadband Triplexer

TPO-691973-xxx



Outdoor Broadband Twin Triplexer Outline Drawing



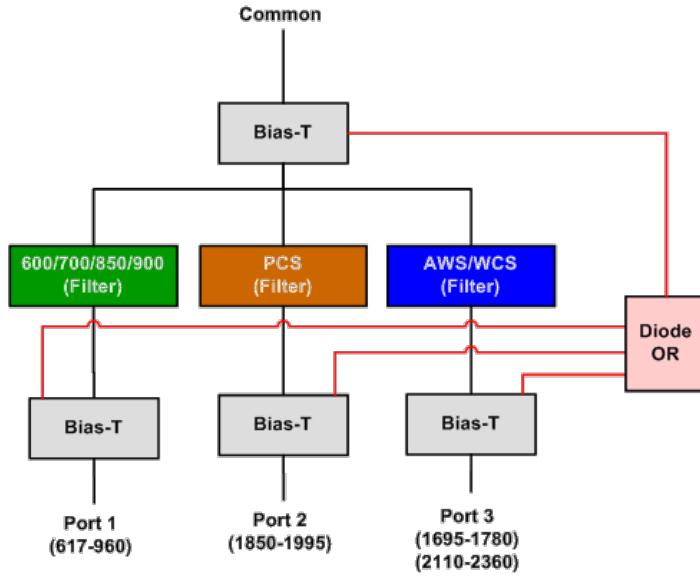
# Filters & Combiners

SPECIFICATIONS

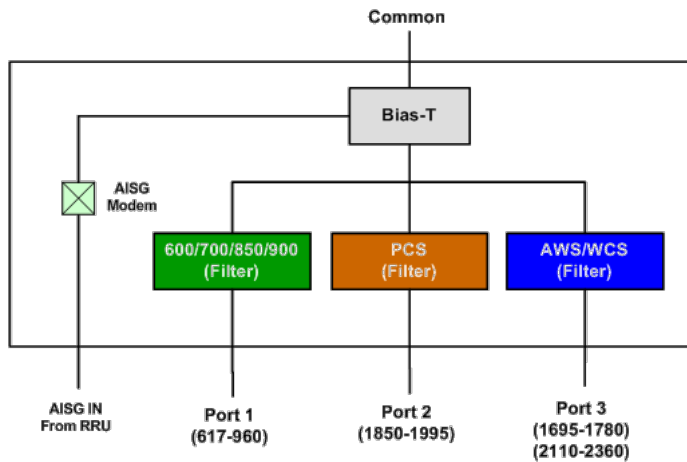
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Block Diagram



Outdoor Broadband Triplexer with Smart Bias-T Block Diagram



Outdoor Broadband Triplexer with AISG Modem Block Diagram



# Filters & Combiners

## STANDARDS & CERTIFICATIONS

### Outdoor Broadband Triplexer

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#### Parts & Accessories

- TPO-691973-S-S2** Single 600-900/PCS/AWS-WCS Triplexer with 4.3-10 connectors and Smart Bias-T for DC/AISG pass through
- TPO-691973-S-T2** Twin 600-900/PCS/AWS-WCS Triplexer with 4.3-10 connectors and Smart Bias-T for DC/AISG pass through
- TPO-691973-M-S2** Single 600-900/PCS/AWS-WCS Triplexer with 4.3-10 connectors and AISG Modem and Output Port
- TPO-691973-M-T2** Twin 600-900/PCS/AWS-WCS Triplexer with 4.3-10 connectors and AISG Modem and Output 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 9001:2008

