



# Filters & Combiners

DATA SHEET

## Outdoor Low Loss Diplexer

LLC-1721-FTU-0-CD-EX



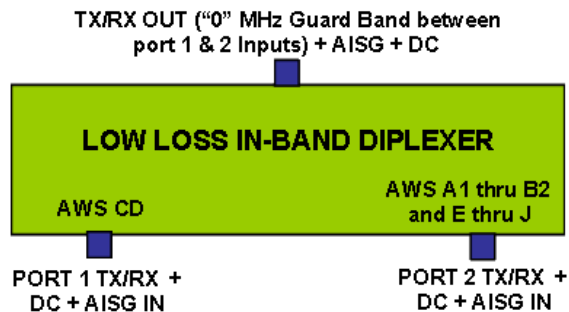
- Low Loss Combining
- Full Transmit and Receive Combining
- Typ. 0.7 dB Insertion Loss
- AISG 2.0 compliant
- High Reliability Design
- High Power Handling
- Excellent Filter Response
- Temperature Stable
- Fully Passive
- Low Intermodulation
- Optional Wall Mount Kit Available

### Overview

CCI's AWS In-Band Low Loss Diplexer with a "0" MHz Guard Band combines two UMTS or LTE AWS Base Station sub-band outputs band onto a single feeder without the insertion loss normally associated with hybrid combiners. The unit is fully passive and delivers a matched low insertion loss solution for the sharing of common feeder lines and antennas. The unit is completely passive and provides automatic routing of DC and AISG signals from the individual input ports to the common port. The unit is housed in a weatherproof outdoor enclosure suitable for tower mount application.

### Technical Description:

This In-Band Diplexer allows the TX/RX combining of AWS CD Band with AWS A1 thru B2 Bands and E thru J Bands separated by a "0" MHz Guard Band. Internal duplexers deliver signal to independent Tx and Rx filter combiners, enabling a high level of control and performance to maintain good isolation while minimizing insertion loss. Stages are kept to a minimum to maximize power and efficiency. Transmit paths are fully isolated from Receive paths to prevent intermodulation products. The fully weatherproof tower mount unit incorporates a unique intelligent Bias-T architecture which passes the DC and AISG carrier frequency from any 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 tower mount unit consists of multiple band-pass filters which are all housed in an IP68 immersion proof enclosure, with IP68 immersion proof connectors suited for long-life masthead mounting. The unit provides protection against lightning strikes via a multi-stage surge protection circuit.





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## SPECIFICATIONS

### Outdoor Low Loss Diplexer

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#### Electrical

RF Parameters	Ports	Frequency(MHz)	Specification	
Return Loss	Common and Bandstop	1710 - 1780	18 dB min., 20 dB typ.	
		2110 - 2180	18 dB min., 20 dB typ.	
	Bandpass	1710 - 1780	18 dB min., 20 dB typ.	
		2110 - 2180	18 dB min., 20 dB typ.	
	Insertion Loss	Common to Bandpass	1730 - 1740	0.7 dB typ.
			2130 - 2140	0.7 dB typ.
		Common to Bandstop	1710 - 1730	0.7 dB typ.
			1740 - 1780	0.7 dB typ.
			2110 - 2130	0.7 dB typ.
			2140 - 2180	0.7 dB typ.
	Isolation	Bandstop to Bandpass	1710 - 1730	≥ 30 dB typ.
			1730.56 - 1739.44	≥ 30 dB typ.
1740 - 1780			≥ 30 dB typ.	
2110 - 2130			≥ 30 dB typ.	
2130.56 - 2139.44			≥ 30 dB typ.	
2140 - 2180			≥ 30 dB typ.	

General Characteristics	
Impedance	50 ohms
Guard Band	No additional guard band required beyond the built in guard band for UMTS and/or LTE (10 MHz or greater)
EVM	< 4% over each 3.84 MHz UMTS channel
Group Delay	100 nS - 190 nS over each 3.84 MHz UMTS channel
Continuous Average Power	200 W max. (all ports)
Peak Envelope Power	2 kW max. (all ports)
Intermodulation Performance(all ports)	<-110 dBm (-153 dBc) typical (2 × +43 dBm tones) all bands
DC Pass-Through	Self detecting*
AISG Pass-Through	Follows detected DC*

*\*If DC is detected for ANT-Tx1/Rx1, then AISG is passed-through as well, and DC is blocked for ANT-Tx2/Rx2 path, and vice versa*

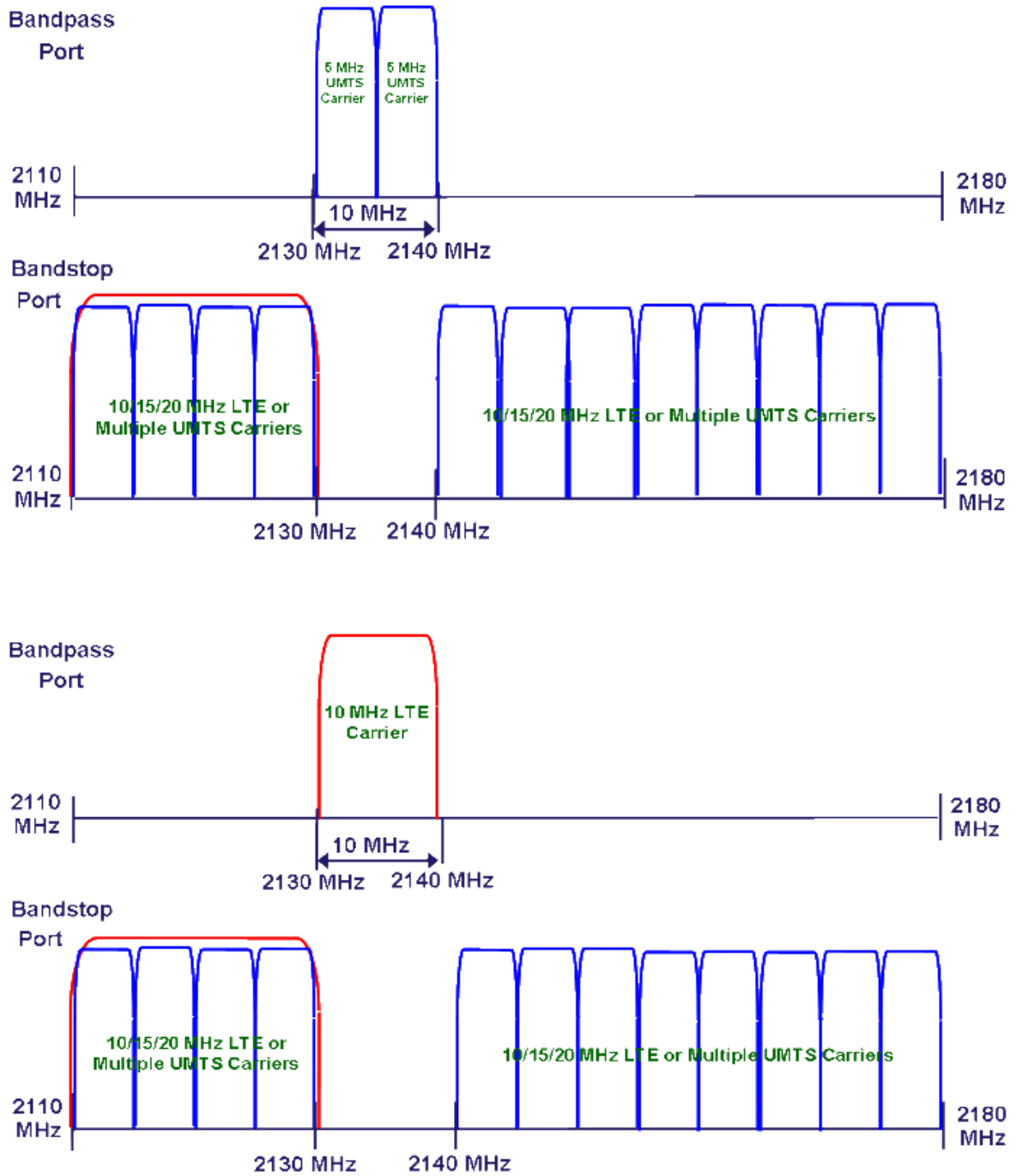


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"0 MHz" Guard Band Low Loss Diplexer Typical Applications for UMTS & LTE



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#### Environmental

<b>Operating Temperature</b>	-40 °C to +65 °C
<b>Relative Humidity</b>	5% to 100%
<b>Enclosure</b>	IP68 (Unit Body), IP68 (Connector)
<b>MTBF</b>	>500,000 hours
<b>Lightning Protection</b>	8/20us, ±20KA max, 10 strikes, per IEC61000-4-5

#### Mechanical

<b>Connectors</b>	3 x 7-16 DIN female
<b>Dimensions (body only)(HxWxD)</b>	10.43 x 10.43 x 5.12 in. (265 x 265 x 130 mm)
<b>Dimensions (incl. bracket and conn.)(HxWxD)</b>	10.43 x 12.91 x 11.9 in. (265 x 328 x 302 mm)
<b>Weight</b>	41 lbs (18.6 kg)
<b>Mounting</b>	Pole/Wall mounting bracket

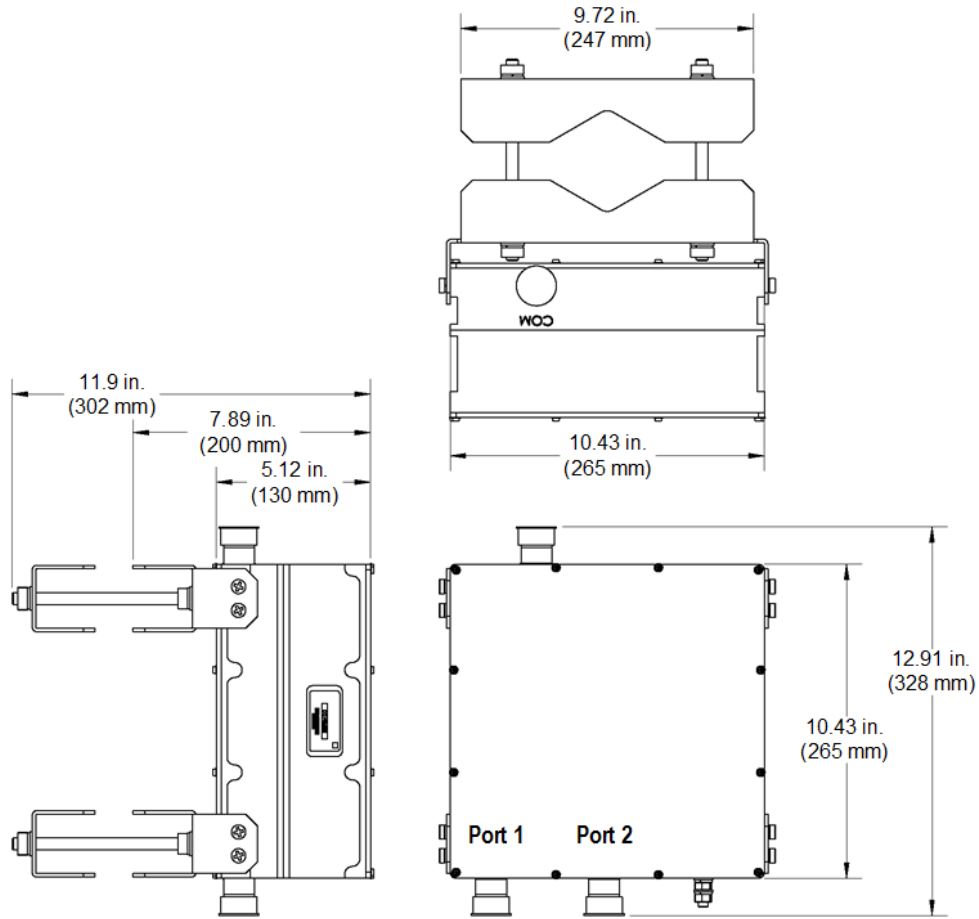


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SPECIFICATIONS

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AWS In-Band Low Loss Diplexer Outline Drawing



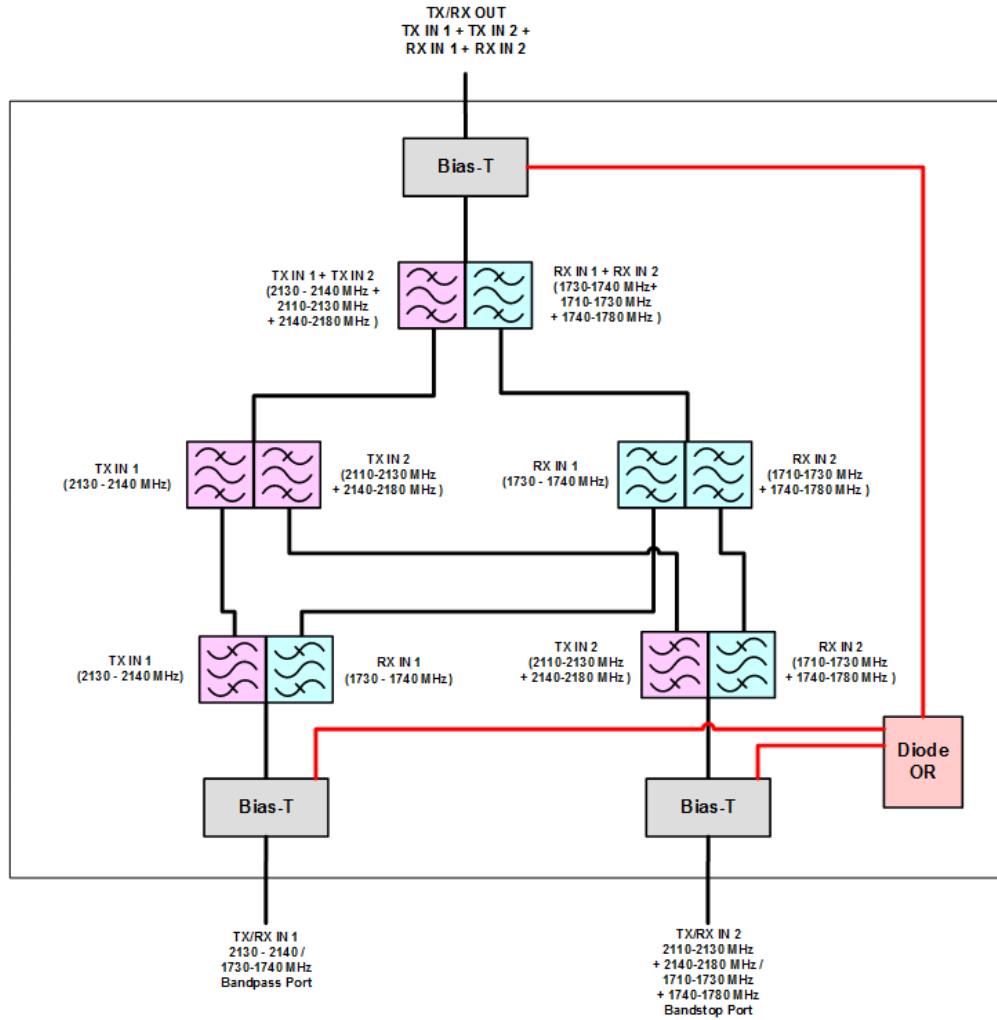
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SPECIFICATIONS

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Block Diagram



AWS In-Band Low Loss Diplexer Detailed Block Diagram



# Filters & Combiners

ORDERING

Outdoor Low Loss Diplexer

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Parts & Accessories

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**LLC-1721-FTU-0-CD-EX** AWS In-Band Low Loss Diplexer with "0" MHz Guard Band with bracket  
(Consult factory for alternate bandpass frequencies)

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# Filters & Combiners

STANDARDS &  
CERTIFICATIONS

Outdoor Low Loss Diplexer

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Certifications

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

