

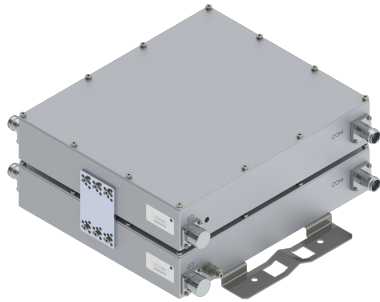


Filters & Combiners

DATA SHEET

PCS In-Band Low Loss Diplexer

IBO-19Zff-x-yy



- Combines two adjacent PCS band base station outputs onto a common port with no additional guard band
- Full PCS band support including PCS G Block
- High power 200 W per input port with low insertion loss of < 1.0 dB typical
- Low intermodulation with isolation of >30 dB port to port
- Compact outdoor in-band diplexer available in twin and single configurations
- AISG 2.0 compliant DC/AISG pass through on any input port with Smart Bias-T
- High reliability of >500K Hours MTBF and multi-strike lightning protection
- Fully passive in-band combiner with excellent temperature stable filter response

Overview

CCI's PCS in-band low loss diplexer with a "0" MHz guard band combines two base station sub-band outputs, any combination CDMA, UMTS and/or LTE, 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 low loss diplexer allows the TX/RX combining of any 5, 10 or 15 MHz segment in the PCS TX and RX Bands separated by a "0" MHz Guard Band. Complementary Bandpass/Bandstop filters maintain good isolation while minimizing insertion loss. 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 a fully weatherproof IP67 immersion proof enclosure, with IP67 rated connectors suited for long-life masthead mounting. The in-band diplexer is available in a twin or single configuration and provides protection against lightning strikes via a multi-stage surge protection circuit. The RF ports can be configured with either DIN 7-16 or 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.



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SPECIFICATIONS

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Electrical

RF Parameters	Ports	Frequency (MHz)	Specification
Return Loss	All Ports	1850 - 1915	20 dB typical, 18 dB minimum
		1930 - 1995	20 dB typical, 18 dB minimum
Insertion Loss	Port 1 (5 Mhz Pass Band) to COMMON	See 5 MHz Frequency Chart	< 1.0 dB typical < 1.5 dB maximum @ band edge
	Port 1 (10 MHz Pass Band) to COMMON	See 10 MHz Frequency Chart	< 0.8 dB typical < 1.3 dB maximum @ band edge
	Port 1 (15 MHz Pass Band) to COMMON	See 15 MHz Frequency Chart	< 0.7 dB typical < 1.2 dB maximum @ band edge
	Port 2 (Stop Band) to COMMON	1850 - 1915/ 1930 - 1995 Excluding pass band	<0.5 dB typical < 1.5 dB maximum @ band edge
Isolation	Port 1 to Port 2	1850 - 1915	≥ 30 dB typical
		1930 - 1995	≥ 30 dB typical

5 MHz Pass Band Models	Pass Band Blocks	Pass Band RX/TX (MHz)
IBO-19ZA1-S-xx	PCS A1 Block	1850 - 1855/1930 - 1935
IBO-19ZA2-S-xx	PCS A2 Block	1855 - 1860/1935 - 1940
IBO-19ZA3-S-xx	PCS A3 Block	1860 - 1865/1940 - 1945
IBO-19ZD-S-xx	PCS D Block	1865 - 1870/1945 - 1950
IBO-19ZB1-S-xx	PCS B1 Block	1870 - 1875/1950 - 1955
IBO-19ZB2-S-xx	PCS B2 Block	1875 - 1880/1955 - 1960
IBO-19ZB3-S-xx	PCS B3 Block	1880 - 1885/1960 - 1965
IBO-19ZE-S-xx	PCS E Block	1885 - 1890/1965 - 1970
IBO-19ZF-S-xx	PCS F Block	1890 - 1895/1970 - 1975
IBO-19ZC3-S-xx	PCS C3 Block	1895 - 1900/1975 - 1980
IBO-19ZC4-S-xx	PCS C4 Block	1900 - 1905/1980 - 1985
IBO-19ZC5-S-xx	PCS C5 Block	1905 - 1910/1985 - 1990
IBO-19ZG-S-xx	PCS G Block	1910 - 1915/1990 - 1995

10 MHz Pass Band Models	Pass Band Blocks	Pass Band RX/TX (MHz)
IBO-19ZA1A2-S-xx	PCS A1 & A2 Blocks	1850 - 1860/1930 - 1940
IBO-19ZA2A3-S-xx	PCS A2 & A3 Blocks	1855 - 1865/1935 - 1945
IBO-19ZA3D-S-xx	PCS A3 & D Blocks	1860 - 1870/1940 - 1950
IBO-19ZDB1-S-xx	PCS D & B1 Blocks	1865 - 1875/1945 - 1955
IBO-19ZB1B2-S-xx	PCS B1 & B2 Blocks	1870 - 1880/1950 - 1960
IBO-19ZB2B3-S-xx	PCS B2 & B3 Blocks	1875 - 1885/1955 - 1965
IBO-19ZB3E-S-xx	PCS B3 & E Blocks	1880 - 1890/1960 - 1970
IBO-19ZEF-S-xx	PCS E & F Blocks	1885 - 1895/1965 - 1975
IBO-19ZFC3-S-xx	PCS F & C3 Blocks	1890 - 1900/1970 - 1980
IBO-19ZC3C4-S-xx	PCS C3 & C4 Blocks	1895 - 1905/1975 - 1985
IBO-19ZC4C5-S-xx	PCS C4 & C5 Blocks	1900 - 1910/1980 - 1990
IBO-19ZC5G-S-xx	PCS C5 & G Blocks	1905 - 1915/1985 - 1995



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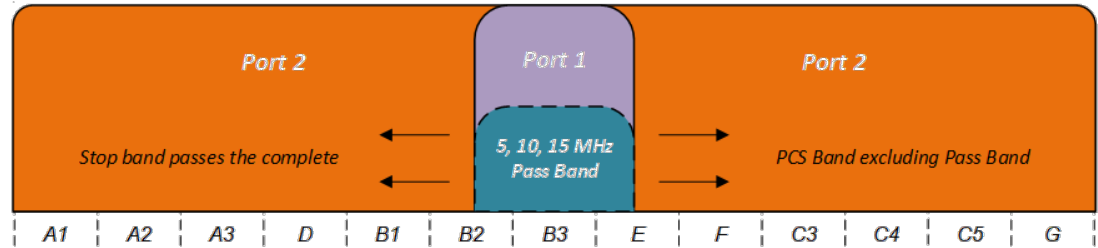
15 MHz Pass Band Models	Pass Band Blocks	Pass Band RX/TX (MHz)
IBO-19ZA1A3-S-xx	PCS A1 through A3 Blocks	1850 - 1865/1930 - 1945
IBO-19ZA2D-S-xx	PCS A2 through D Blocks	1855 - 1870/1935 - 1950
IBO-19ZA3B1-S-xx	PCS A3 through B1 Blocks	1860 - 1875/1940 - 1955
IBO-19ZDB2-S-xx	PCS D through B2 Blocks	1865 - 1880/1945 - 1960
IBO-19ZB1B3-S-xx	PCS B1 through B3 Blocks	1870 - 1885/1950 - 1965
IBO-19ZB2E-S-xx	PCS B2 through E Blocks	1875 - 1890/1955 - 1970
IBO-19ZB3F-S-xx	PCS B3 through F Blocks	1880 - 1895/1960 - 1975
IBO-19ZEC3-S-xx	PCS E through C3 Blocks	1885 - 1900/1965 - 1980
IBO-19ZFC4-S-xx	PCS F through C4 Blocks	1890 - 1905/1970 - 1985
IBO-19ZC3C5-S-xx	PCS C3 through C5 Blocks	1895 - 1910/1975 - 1990
IBO-19ZC4G-S-xx	PCS C4 through G Blocks	1900 - 1915/1980 - 1995

General Characteristics	
Impedance	50 ohms
Guard Band	No additional guard band required beyond the built in guard band for UMTS and/or LTE (5 MHz or greater)
Port 1 EVM (UMTS)	<5% Over 3.84 MHz Channel
Port 2 EVM (LTE)	<1.0% (Per TS36.104)
Continuous Average Power	200 W max. (all ports)
Peak Envelope Power	2 kW max. (all ports)
Intermodulation Performance	<-117 dBm (-160 dBc) typical (2 x +43 dBm tones) all bands
DC/AISG Pass	3A/AISG signal (2.176 MHz) per AISG 2.0
DC/AISG Smart Bias-T	Auto senses DC/AISG voltage and passes either port to COMMON



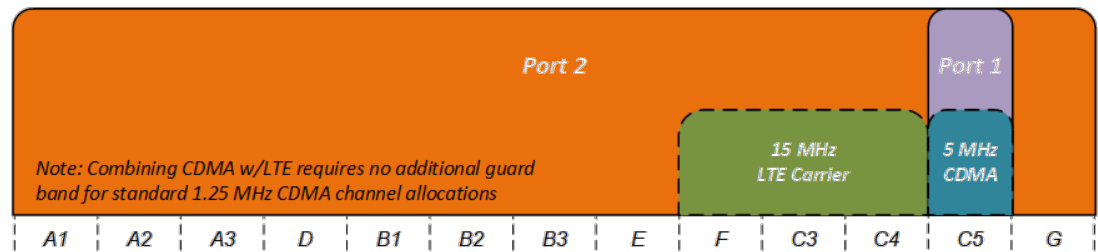
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PCS Zero Guard Band Combiner



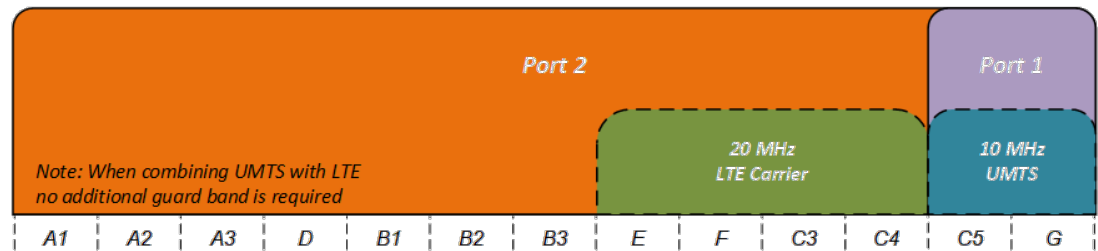
IBO-19Zff-x-yy covers the full PCS band and allows a 5, 10, 15 or 20 MHz band pass from A1 to G

PCS Blocks F-C5 Sample Band Plan with a Block C5 Pass Band for 5 MHz of CDMA



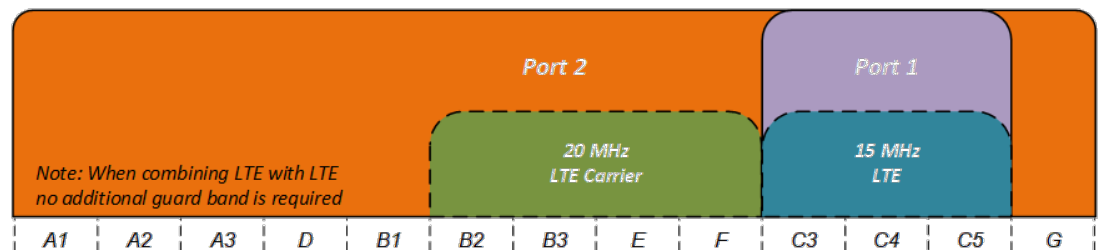
IBO-19ZC5-S-xx covers the full PCS band and allows 5 MHz band pass at PCS C block

PCS Blocks E-G Sample Band Plan with Blocks C5-G as Pass Band for 10 MHz of UMTS



IBO-19ZC5G-S-xx covers the full PCS band and allows 10 MHz band pass at PCS C5-G blocks

PCS Blocks B2-C5 Sample Band Plan with Blocks C3-C5 as Pass Band for 15 MHz of LTE



IBO-19ZC1C3C5-S-xx covers the full PCS band and allows 15 MHz band pass at PCS C3-C5 blocks



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PCS In-Band Low Loss Diplexer

IBO-19Zff-x-yy

Environmental

Operating Temperature	-40 °C to +65 °C
Relative Humidity	5% to 100%
Enclosure	IP67 (Unit Body), IP67 (Connector)
MTBF	>500,000 hours
Lightning Protection	8/20us, ±10KA max, 10 strikes, per IEC61000-4-5

Mechanical

Model	Single	Twin
Connectors	3 × 7-16 DIN female or 3 × 4.3-10 female	6 × 7-16 DIN female or 6 × 4.3-10 female
Dimensions w/Bracket	13.70 × 15.24 × 3.39 in. (348.0 × 387.0 × 86.0 mm)	14.17 × 15.24 × 6.34 in. (360.0 × 387.0 × 161.0 mm)
Housing Dimensions	13.70 × 11.61 × 2.76 in. (348.0 × 295.0 × 70.0 mm)	14.17 × 11.61 × 5.71 in. (360.0 × 295.0 × 145.0 mm)
Weight	23.7 lbs (10.7 kg)	47.1 lbs (21.1 kg)
Frontal Wind Load	348.8 N @150km/hour	348.8 N @150km/hour
Lateral Wind Load	67.1 N @150km/hour	134.3 N @150km/hour

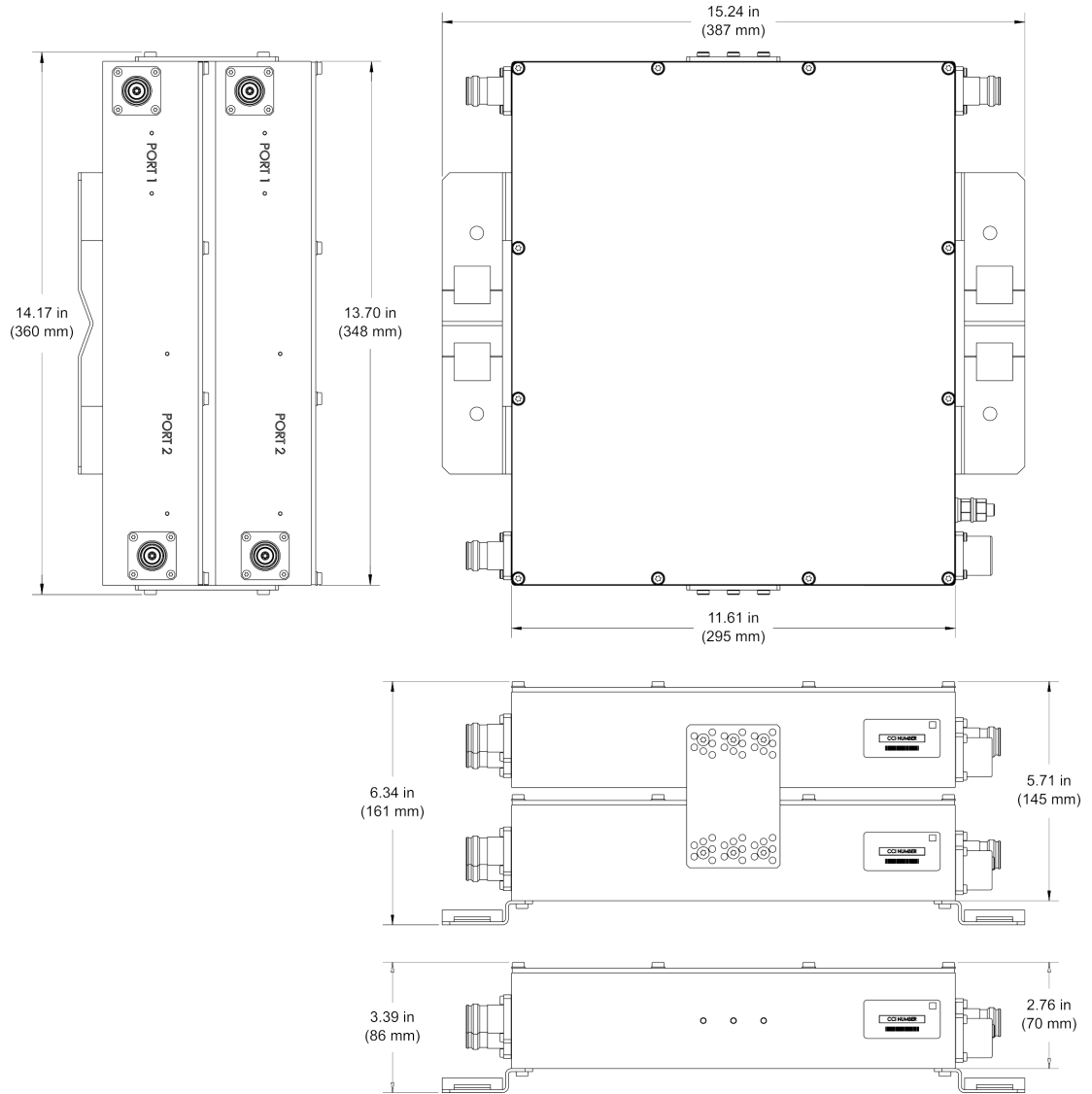


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PCS In-Band Low Loss Diplexer Outline Drawing



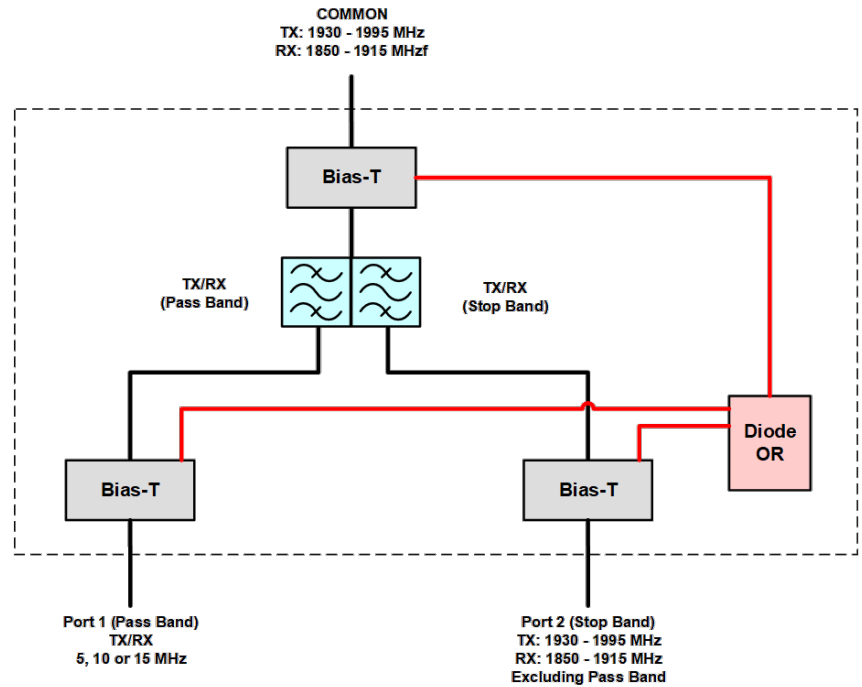
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SPECIFICATIONS

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Block Diagram



PCS In-Band Low Loss Diplexer Block Diagram



Filters & Combiners

ORDERING

PCS In-Band Low Loss Diplexer

IBO-19Zff-x-yy

Parts & Accessories

5 MHz Bandpass Models	Description
IBO-19ZA1-x-yy	PCS Same Band Diplexer, pass band A1 Block
IBO-19ZA2-x-yy	PCS Same Band Diplexer, pass band A2 Block
IBO-19ZA3-x-yy	PCS Same Band Diplexer, pass band A3 Block
IBO-19ZD-x-yy	PCS Same Band Diplexer, pass band D Block
IBO-19ZB1-x-yy	PCS Same Band Diplexer, pass band B1 Block
IBO-19ZB2-x-yy	PCS Same Band Diplexer, pass band B2 Block
IBO-19ZB3-x-yy	PCS Same Band Diplexer, pass band B3 Block
IBO-19ZE-x-yy	PCS Same Band Diplexer, pass band E Block
IBO-19ZF-x-yy	PCS Same Band Diplexer, pass band F Block
IBO-19ZC3-x-yy	PCS Same Band Diplexer, pass band C3 Block
IBO-19ZC4-x-yy	PCS Same Band Diplexer, pass band C4 Block
IBO-19ZC5-x-yy	PCS Same Band Diplexer, pass band C5 Block
IBO-19ZG-x-yy	PCS Same Band Diplexer, pass band G Block

10 MHz Bandpass Models	Description
IBO-19ZA1A2-x-yy	PCS Same Band Diplexer, pass band A1 & A2 Blocks
IBO-19ZA2A3-x-yy	PCS Same Band Diplexer, pass band A2 & A3 Blocks
IBO-19ZA3D-x-yy	PCS Same Band Diplexer, pass band A3 & D Blocks
IBO-19ZDB1-x-yy	PCS Same Band Diplexer, pass band D & B1 Blocks
IBO-19ZB1B2-x-yy	PCS Same Band Diplexer, pass band B1 & B2 Blocks
IBO-19ZB2B3-x-yy	PCS Same Band Diplexer, pass band B2 & B3 Blocks
IBO-19ZB3E-x-yy	PCS Same Band Diplexer, pass band B3 & E Blocks
IBO-19ZEF-x-yy	PCS Same Band Diplexer, pass band E & F Blocks
IBO-19ZFC3-x-yy	PCS Same Band Diplexer, pass band F & C3 Blocks
IBO-19ZC3C4-x-yy	PCS Same Band Diplexer, pass band C3 & C4 Blocks
IBO-19ZC4C5-x-yy	PCS Same Band Diplexer, pass band C4 & C5 Blocks
IBO-19ZC5G-x-yy	PCS Same Band Diplexer, pass band C5 & G Blocks

15 MHz Bandpass Models	Description
IBO-19ZA1A3-x-yy	PCS Same Band Diplexer, pass band A1, A2 & A3 Blocks
IBO-19ZA2D-x-yy	PCS Same Band Diplexer, pass band A2, A3 & D Blocks
IBO-19ZA3B1-x-yy	PCS Same Band Diplexer, pass band A3, D & B1 Blocks
IBO-19ZDB2-x-yy	PCS Same Band Diplexer, pass band D, B1 & B2 Blocks
IBO-19ZB1B3-x-yy	PCS Same Band Diplexer, pass band B1, B2 & B3 Blocks
IBO-19ZB2E-x-yy	PCS Same Band Diplexer, pass band B2, B3 & E Blocks
IBO-19ZB3F-x-yy	PCS Same Band Diplexer, pass band B3, E & F Blocks
IBO-19ZEC3-x-yy	PCS Same Band Diplexer, pass band E, F & C3 Blocks
IBO-19ZFC4-x-yy	PCS Same Band Diplexer, pass band F, C3 & C4 Blocks
IBO-19ZC3C5-x-yy	PCS Same Band Diplexer, pass band C3, C4 & C5 Blocks
IBO-19ZC4G-x-yy	PCS Same Band Diplexer, pass band C4, C5 & G Blocks



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ORDERING

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Ordering Options (-x)	Description
-0	No DC/AISG Pass through and No DC Block
-S	Smart Bias-T DC/AISG Pass through on either port

Ordering Options (-yy)	Description
-T2	Twin Diplexer with 4.3-10 connectors
-T1	Twin Diplexer with 7-16 DIN connectors
-S2	Single Diplexer with 4.3-10 connectors
-S1	Single Diplexer with 7-16 DIN connectors



Filters & Combiners

STANDARDS & CERTIFICATIONS

PCS In-Band Low Loss Diplexer

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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

