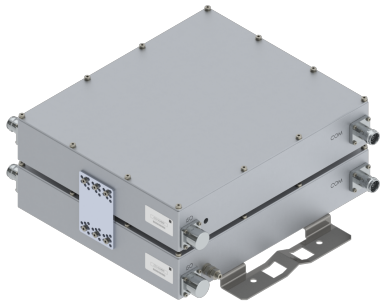
DATA SHEET

AWS In-Band Low Loss Diplexer

IBO-22Zff-S-yy



- Combines two adjacent 2100 MHz band base station outputs onto a common port with no additional guard band
- Full 2100 MHz band support
- 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 same 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 same band combiner with excellent temperature stable filter response

Overview

CCI's 2100 MHz same 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 AWS 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 same 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	1920 - 1980	20 dB typical, 18 dB minimum
		2110 - 2170	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	1920 - 1980/ 2110 - 2180 Excluding pass band	<0.5 dB typical < 1.5 dB maximum @ band edge
Isolation	Port 1 to Port 2	1920 - 1980	≥ 30 dB typical
		2110 - 2170	≥ 30 dB typical

5 MHz Bandpass Models	Pass Band Blocks	Pass Band RX/TX (MHz)
IBO-22ZA-S-yy	2100 A Block	1920 - 1925/2110 - 2115
IBO-22ZB-S-yy	2100 B Block	1925 - 1930/2115 - 2120
IBO-22ZC-S-yy	2100 C Block	1930 - 1935/2120 - 2125
IBO-22ZD-S-yy	2100 D Block	1935 - 1940/2125 - 2130
IBO-22ZE-S-yy	2100 E Block	1940 - 1945/2130 - 2135
IBO-22ZF-S-yy	2100 F Block	1945 - 1950/2135 - 2140
IBO-22ZG-S-yy	2100 G Block	1950 - 1955/2140 - 2145
IBO-22ZH-S-yy	2100 H Block	1955 - 1960/2145 - 2150
IBO-22ZI-S-yy	2100 I Block	1960 - 1965/2150 - 2155
IBO-22ZJ-S-yy	2100 J Block	1965 - 1970/2155 - 2160
IBO-22ZK-S-yy	2100 K Block	1970 - 1975/2160 - 2165
IBO-22ZL-S-yy	2100 L Block	1975 - 1980/2165 - 2170

10 MHz Bandpass Models	Pass Band Blocks	Pass Band RX/TX (MHz)
IBO-22ZAB-S-yy	2100 A & B Blocks	1920 - 1930/2110 - 2120
IBO-22ZAB-S-yy	2100 B & C Blocks	1925 - 1935/2115 - 2125
IBO-22ZAB-S-yy	2100 C & D Blocks	1930 - 1940/2120 - 2130
IBO-22ZAB-S-yy	2100 D & E Blocks	1935 - 1945/2125 - 2135
IBO-22ZAB-S-yy	2100 E & F Blocks	1940 - 1950/2130 - 2140
IBO-22ZAB-S-yy	2100 F & G Blocks	1945 - 1955/2135 - 2145
IBO-22ZAB-S-yy	2100 G & H Blocks	1950 - 1960/2140 - 2150
IBO-22ZAB-S-yy	2100 H & I Blocks	1955 - 1965/2145 - 2155
IBO-22ZAB-S-yy	2100 I & J Blocks	1960 - 1970/2150 - 2160
IBO-22ZAB-S-yy	2100 J & K Blocks	1965 - 1975/2155 - 2165
IBO-22ZAB-S-yy	2100 K & L Blocks	1970 - 1980/2160 - 2170

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15 MHz Bandpass Models	Pass Band Blocks	Band RX/TX (MHz)
IBO-22ZAC-S-yy	2100 A through C Blocks	1920 - 1935/2110 - 2125
IBO-22ZBD-S-yy	2100 B through D Blocks	1925 - 1940/2115 - 2130
IBO-22ZCE-S-yy	2100 C through E Blocks	1930 - 1945/2120 - 2135
IBO-22ZDF-S-yy	2100 D through F Blocks	1935 - 1950/2125 - 2140
IBO-22ZEG-S-yy	2100 E through G Blocks	1940 - 1955/2130 - 2145
IBO-22ZFH-S-yy	2100 F through H Blocks	1945 - 1960/2135 - 2150
IBO-22ZGI-S-yy	2100 G through I Blocks	1950 - 1965/2140 - 2155
IBO-22ZHJ-S-yy	2100 H through J Blocks	1955 - 1970/2145 - 2160
IBO-22ZIK-S-yy	2100 I through K Blocks	1960 - 1975/2150 - 2165
IBO-22ZJL-S-yy	2100 J through L Blocks	1965 - 1980/2155 - 2170

General Characteristics	
Impedance	50 ohms
Guard Band	No additional guard band required beyond the buillt 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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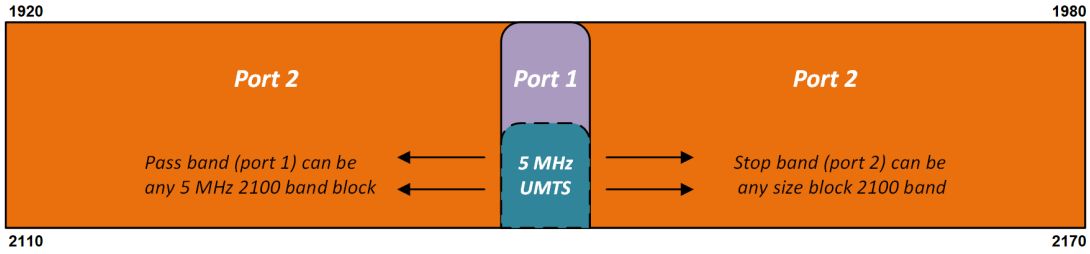
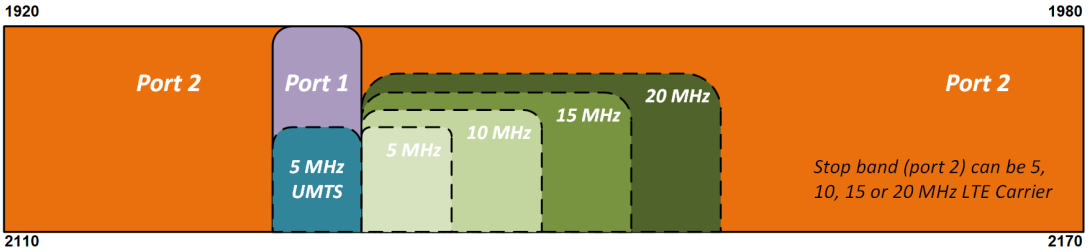
IBO-22Zff-S-xx 2100 In Band Zero Guard Band Combiner

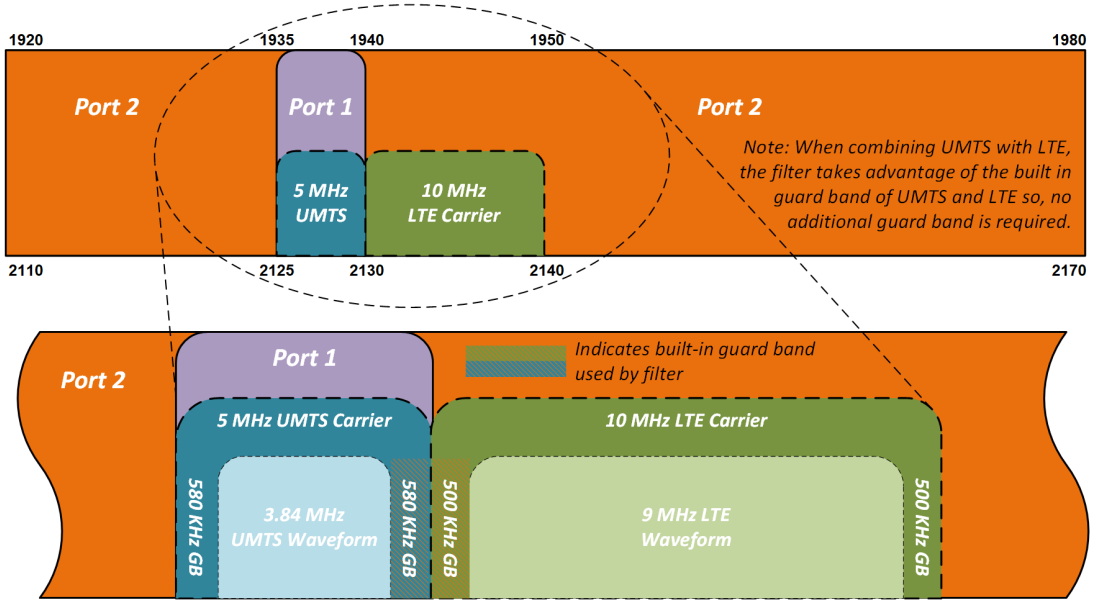


IBO-22Zff-S-xx covers the full 2100 band and allows 5 MHz band pass at any 5 MHz block



IBO-22Zff-S-xx supports any size block in the Stop Band including 5, 10, 15 or 20 MHz LTE Carrier

IBO-22ZD-S-T2 Pass Band at 2125-2140/1935-1950 MHz Sample Band Plan



Environmental

Operating Temperature	-40˚C to +65˚C
Relative Humidity	5% to 100%
Enclosure	IP68 (Unit Body), IP67 (Connector)
MTBF	>500,000 hours
Lightning Protection	8/20us, ±10KA max, 10 strikes, per IEC61000-4-5

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IBO-22Zff-S-yy

Mechanical

Model	Single	Twin
Connectors	3 x 7-16 DIN female or 3 x 4.3-10 female	6 x 7-16 DIN female or 6 x 4.3-10 female
Dimensions w/Bracket	13.70 x 15.24 x 3.39 in. (348.0 x 387.0x 86.0 mm)	14.17 x 15.24 x 6.34 in. (360.0 x 387.0 x 161.0 mm)
Housing Dimensions	13.70x 11.61 x 2.76 in. (348.0 x 295.0 x 70.0 mm)	14.17 x 11.61 x 5.71 in. (360.0 x 295.0 x 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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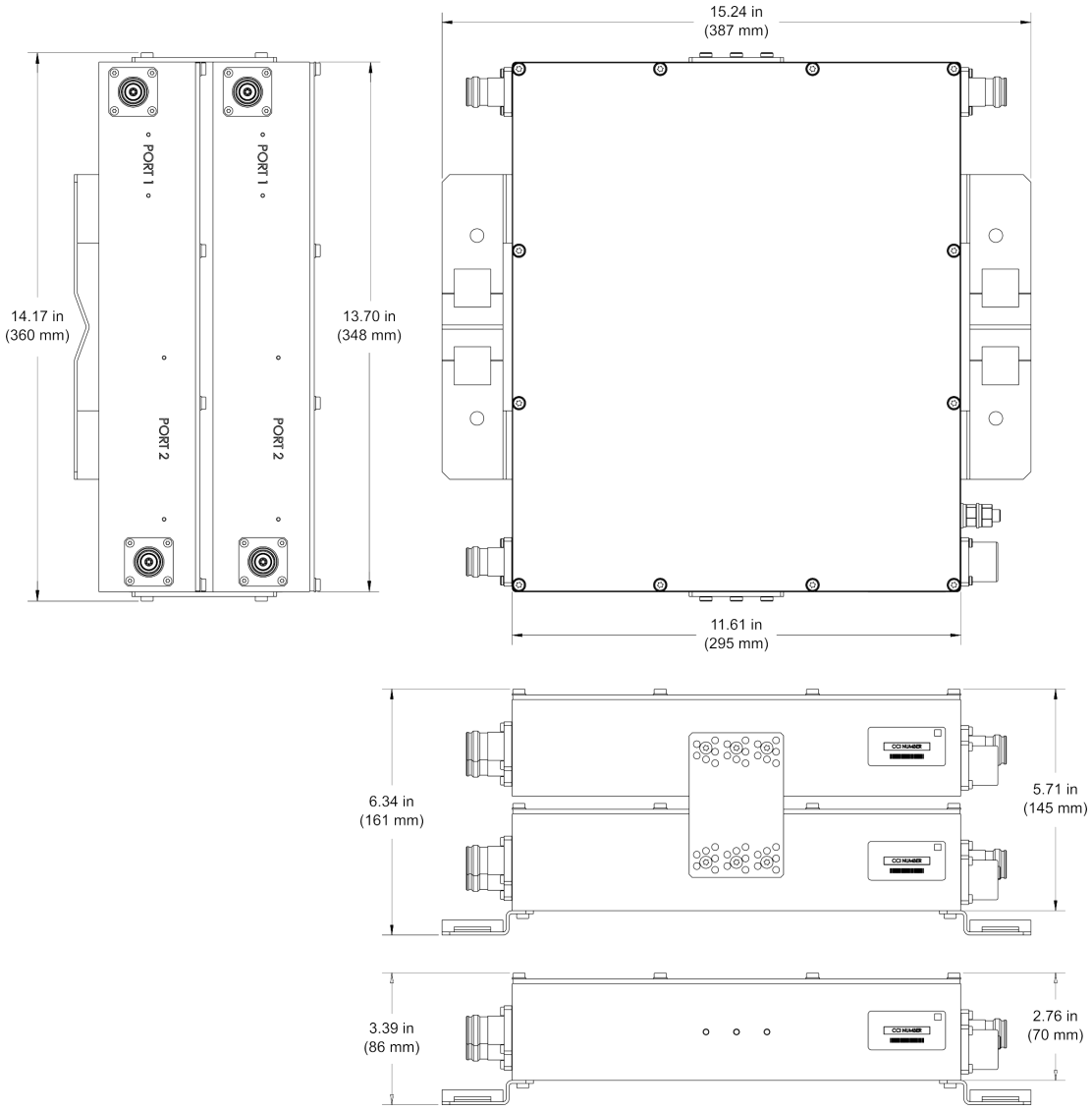

2100 In-Band Low Loss Diplexer Outline Drawing

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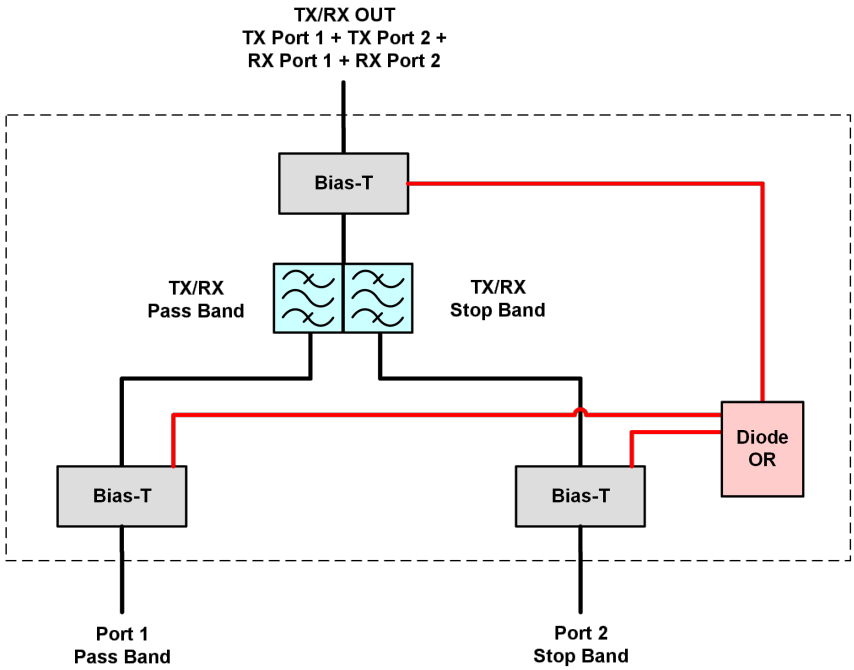
SPECIFICATIONS

AWS In-Band Low Loss Diplexer

IBO-22Zff-S-yy

Block Diagram



2100 mhZ In-Band Low Loss Diplexer Block Diagram

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ORDERING

AWS In-Band Low Loss Diplexer

IBO-22Zff-S-yy

Parts & Accessories

5 MHz Bandpass Models	Description
IBO-22ZA-S-yy	2100 Same Band Diplexer, pass band A Block
IBO-22ZB-S-yy	2100 Same Band Diplexer, pass band B Block
IBO-22ZC-S-yy	2100 Same Band Diplexer, pass band C Block
IBO-22ZD-S-yy	2100 Same Band Diplexer, pass band D Block
IBO-22ZE-S-yy	2100 Same Band Diplexer, pass band E Block
IBO-22ZF-S-yy	2100 Same Band Diplexer, pass band F Block
IBO-22ZG-S-yy	2100 Same Band Diplexer, pass band G Block
IBO-22ZH-S-yy	2100 Same Band Diplexer, pass band H Block
IBO-22ZI-S-yy	2100 Same Band Diplexer, pass band I Block
IBO-22ZJ-S-yy	2100 Same Band Diplexer, pass band J Block
IBO-22ZK-S-yy	2100 Same Band Diplexer, pass band K Block
IBO-22ZL-S-yy	2100 Same Band Diplexer, pass band L Block

10 MHz Bandpass Models	Description
IBO-22ZAB-S-yy	2100 Same Band Diplexer, pass band A-B Blocks
IBO-22ZBC-S-yy	2100 Same Band Diplexer, pass band B-C Blocks
IBO-22ZCD-S-yy	2100 Same Band Diplexer, pass band C-D Blocks
IBO-22ZDE-S-yy	2100 Same Band Diplexer, pass band D-E Block
IBO-22ZEF-S-yy	2100 Same Band Diplexer, pass band E-F Blocks
IBO-22ZFG-S-yy	2100 Same Band Diplexer, pass band F-G Blocks
IBO-22ZGH-S-yy	2100 Same Band Diplexer, pass band G-H Blocks
IBO-22ZHI-S-yy	2100 Same Band Diplexer, pass band H-I Blocks
IBO-22ZIJ-S-yy	2100 Same Band Diplexer, pass band I-J Blocks
IBO-22ZJK-S-yy	2100 Same Band Diplexer, pass band J-K Blocks
IBO-22ZKL-S-yy	2100 Same Band Diplexer, pass band K-L Blocks

15 MHz Bandpass Models	Description
IBO-22ZAC-x-yy	2100 Same Band Diplexer, pass band A-C Blocks
IBO-22ZBD-x-yy	2100 Same Band Diplexer, pass band B-D Blocks
IBO-22ZCE-x-yy	2100 Same Band Diplexer, pass band C-E Blocks
IBO-22ZDF-x-yy	2100 Same Band Diplexer, pass band D-F Blocks
IBO-22ZEG-x-yy	2100 Same Band Diplexer, pass band E-G Blocks
IBO-22ZFH-x-yy	2100 Same Band Diplexer, pass band F-H Blocks
IBO-22ZGI-x-yy	2100 Same Band Diplexer, pass band G-I Blocks
IBO-22ZHJ-x-yy	2100 Same Band Diplexer, pass band H-J Blocks
IBO-22ZIk-x-yy	2100 Same Band Diplexer, pass band I-K Blocks
IBO-22ZIk-x-yy	2100 Same Band Diplexer, pass band I-K Blocks
IBO-22ZIk-x-yy	2100 Same Band Diplexer, pass band J-L Blocks

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ORDERING

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IBO-22Zff-S-yy

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 Combiner with 4.3-10 connectors
-T1	Twin Combiner with 7-16 DIN connectors
-S2	Single Combiner with 4.3-10 connectors
-S1	Single Combiner with 7-16 DIN connectors

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STANDARDS & CERTIFICATIONS

AWS 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

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