



Applications

- Military RF over Fiber Link Systems
- Electronic Warfare Systems
- Interfacility Links
- Antenna Remoting
- Signal Processing Systems

Features

- Frequency Range: S,C-Band and Military X-Band (1 GHz – 8.5 GHz)
- Full-duplex Transceiver
- High spurious-free dynamic range (105 dB-Hz)
- 1550 nm DWDM laser (1310 nm / 1620 nm for WDM)
- Transceiver using two fiber cores
- Environmental standard (MIL STD 810G)
- EMI and EMC (MIL STD 461F)
- Laser safety standard (IEC 6085 1)
- DC12V – DC48V operation (Isolated DC power supply)

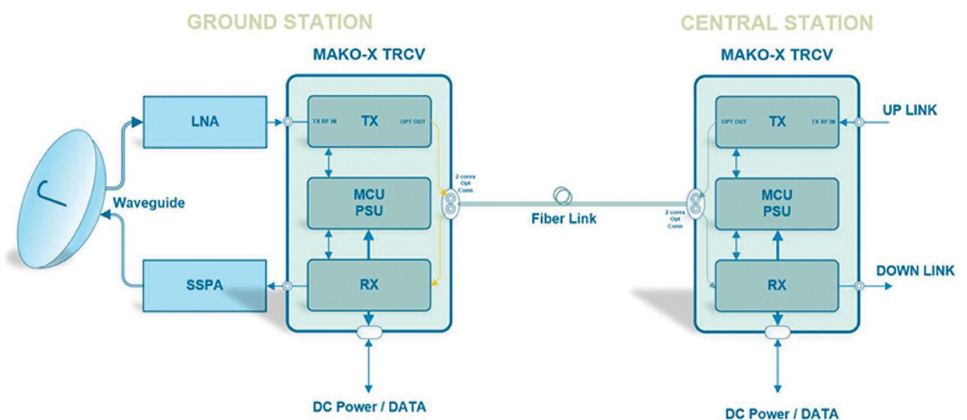
The MAKO-X C/X-Band RF over Fiber Transceiver is designed for high-speed fiber optics communications applications from 1 GHz to 8.5 GHz. Building on Ortel's 40-years of expertise in RF over fiber links, this new transceiver module combines C/X band transmitter and receiver capability in a single highly ruggedized flange-mount package that is tested to MIL-STD-810G & MIL-STD-461F standards. It features C-Band and X-Band frequency range, full-duplex transceiver, high spurious-free dynamic range of 105 dB-Hz, excellent phase noise of -100 dBc/Hz at 10 KHz, and 1550 nm DWDM laser (1310 nm/1620 nm for WDM).

Performance Highlights

Optical, Electrical, and Environmental

Parameter	Unit	Min	Typ	Max	Remarks
Laser Wavelength	nm	1310	1550	—	DWDM
Receiver PD Optical Wavelength	nm	1260	—	1600	
Tx optical Power output	dBm	6	7	8	
Rx Optical Power Input	dBm	—	—	11	
Operating Temperature	°C	-40	—	+70	Ambient
Storage Temperature	°C	-50	—	+85	Ambient
DC Power Supply	V	10	24	50	Isolated Power
Power Consumption	W	—	—	9	
Waterproof	—	—	IP 67	—	

C/X-Band Transceiver System Block Diagram



MAKO-X

C/X-Band RF Over Fiber Transceiver

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Performance Highlights (Continued)

Link (Tx to Rx)

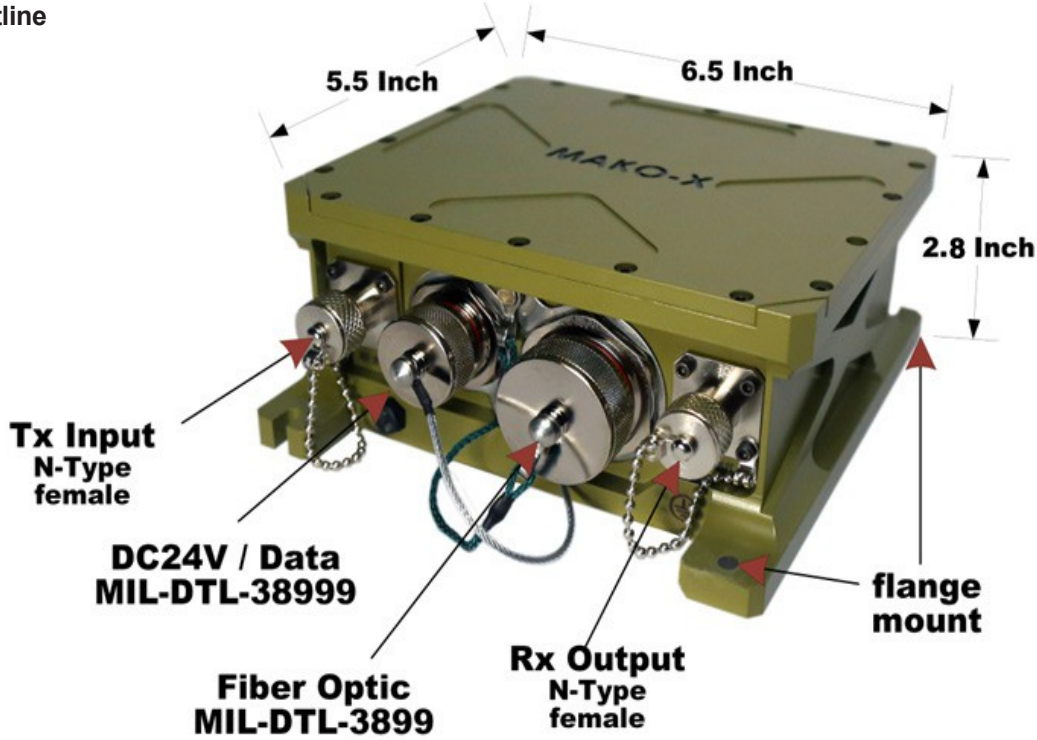
Parameter	Unit	Min	Typ	Max	Remarks
Frequency Range	GHz		1 to 8.5	—	
Gain	dB		20	—	at Max. Gain
Gain Flatness	dBp-p		—	5	
Tx and Rx Gain Variable Range	dB		25	—	
RF Input Range	dBm	25	—	10	
IIP3	dBm	5		—	at Max. Gain
OIP3	dBm	30		—	at Max. Gain
Noise Figure	dB			26	at Max. Gain
SFDR	dB-Hz		105	—	at Max. Gain
Input / Output Impedance	Ohms		50	—	
Input Return Loss	dB	-10		—	
Output Return Loss	dB	-10		—	
Spurious	dBc		—	-100	

Mechanical

Parameter	Units	Typical	Comments
Dimension	Inch	6.5(W) x 5.5(D) x 2.8 (H) (165mm x 140mm x 71.1 mm)	Mounting flanges excluded
Weight	lbs	5.68	(~2.6 kg)
RF Input / Output RF Connector	—	N-Type Female	
Optical Connector	—	MIL-DTL-38999	
DC Power and Data	—	MIL-DTL-38999	

Mechanical Configuration

Package Outline



Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. All versions of this laser are Class 1M laser product, tested according to IEC 60825 1:2007 / EN 60825 1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example: eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example: telescopes and binoculars) may pose an eye hazard.

