MAKO-X
C/X-Band RF Over Fiber Transceiver

PRELIMINARY DATASHEET | MAY 2022 SATCOM

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)

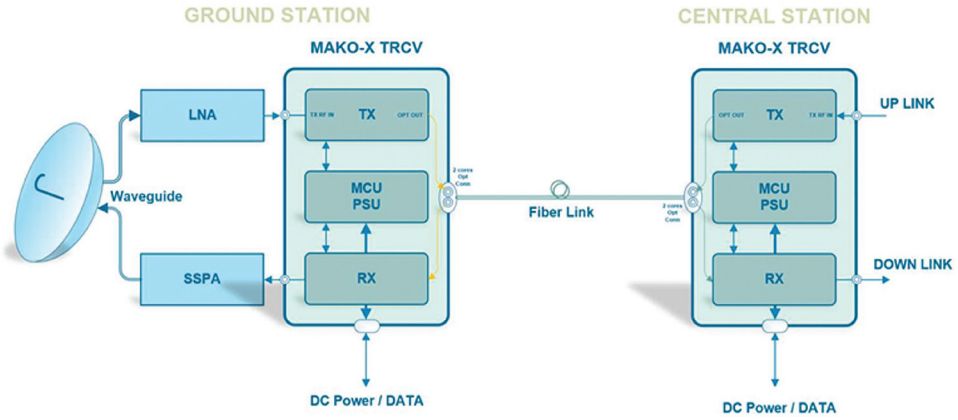
The MAKO-X C/X-Band RF over Fiber Transceiver is designed for high-speed fiber optics communications applications from 1 GHz to 8.5 GHz. Building on EMCORE's 40-years of expertise in RF over fiber links, this new transceiver module combines C/X band transmitter and receiver capability in a single highly 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



© 2022 EMCORE Corporation | REV 2022.05
P +1 626-293-3400 E satcom-sales@emcore.com W www.emcore.com

Information contained herein is deemed to be reliable and accurate as of the issue date. EMCORE reserves the right to change the design or specifications at any time without notice.
EMCORE is a registered trademark of EMCORE Corporation in the U.S. and other countries.

MAKO-X
C/X-Band RF Over Fiber Transceiver

emcore®

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	

© 2022 EMCORE Corporation | REV 2022.05

P +1 626-293-3400 E satcom-sales@emcore.com W www.emcore.com

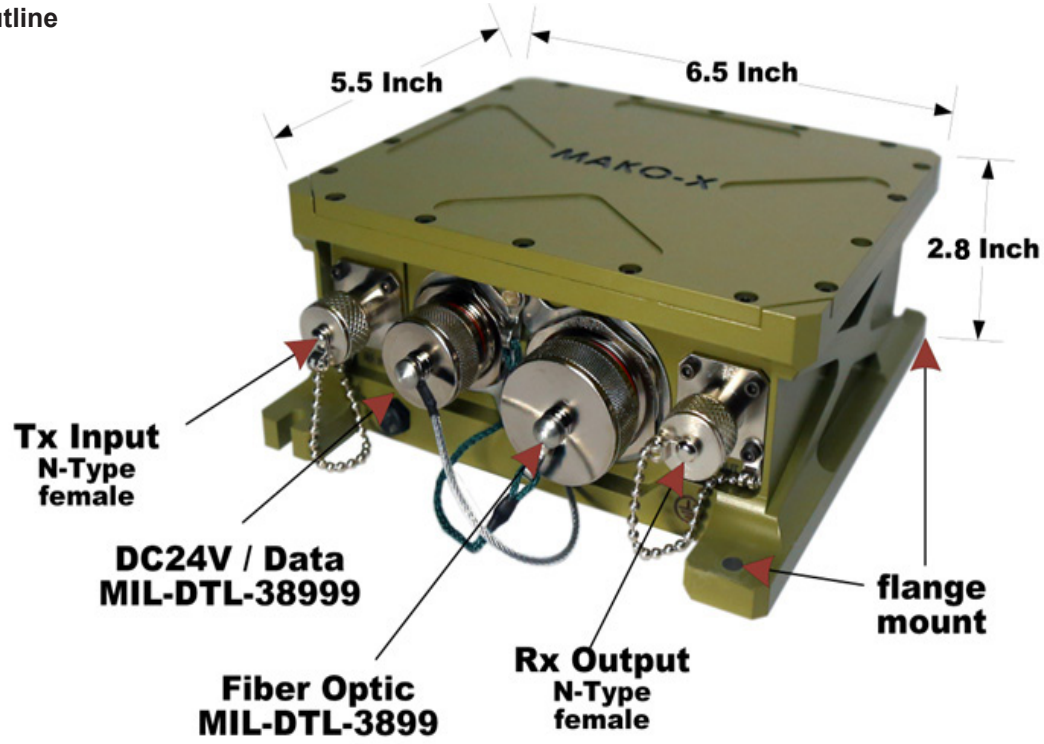
Information contained herein is deemed to be reliable and accurate as of the issue date. EMCORE reserves the right to change the design or specifications at any time without notice.
EMCORE is a registered trademark of EMCORE Corporation in the U.S. and other countries.

MAKO-X
C/X-Band RF Over Fiber Transceiver

PRELIMINARY DATASHEET | MAY 2022 SATCOM

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.

FCC PART 15 COMPLIANT CE MADE IN USA

Information contained herein is deemed to be reliable and accurate as of the issue date. EMCORE reserves the right to change the design or specifications at any time without notice.
EMCORE is a registered trademark of EMCORE Corporation in the U.S. and other countries.