OTS-1LC

CWDM Wideband Optical Link

DATASHEET | DECEMBER 2012 SATCOM

Features

- 50 to 3000 MHz Optimized for IF, L and S-Band Satellite Signals
- Supports 20 km Links
- 8-Channel CWDM
- 30dB Adjustable Gain Range Provides Perfect Level Match for Signal Distribution
- Unique Peak Optimizer and SmartGain™ Control
- 50 & 75 Ohm BNC or 50 Ohm SMA
- Tx & Rx RF Power Monitors Via LED, SMA & Remote
- LNB Power
- SNMP Monitoring and Control
- High-Dynamic-Range, Optically-Isolated DFB Lasers Run Cooler and Require Less Power
- Fits in Optiva enclosures, which support Daisy Chain™ Video, Audio and Data Links
- Hot Swap Redundant Power Supplies Virtually Eliminate Downtime
- 16, 6, 2, & 1 Slot Enclosures Available
- CE & CSA Certified, ROHS

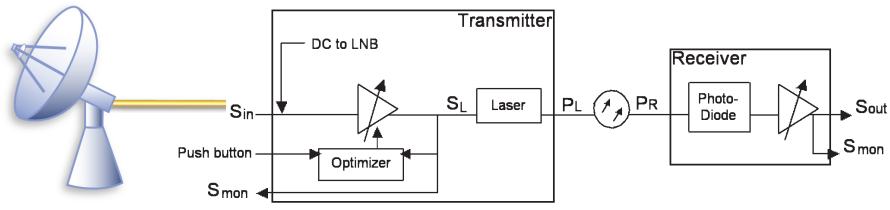
50 MHz to 3000 MHz CWDM Wideband Optical Link

Optiva Wideband fiber-optic links are optimized to perform in the 50 to 3000 MHz frequency range providing transparent signal transportation for satellite antenna applications. The unique features of the OTS-1LC series include simple push button peaking for optimum performance and our patent-pending SmartGain™ Control, which ensures consistent performance over varied signal conditions.

As with all EMCORE optical products, the highest quality components and modern production techniques insure that intra-facility links provide the highest performance as a cost-effective alternative to coaxial cable. They provide much longer transmission distances than copper cables, simplify network design, ease installation and even enhance immunity from EMI, RFI and lightning. These transmitters and receivers take the high RF performance and diverse features of EMCORE's Ortel technology and combine them into a compact package compatible with the Optiva family of OT-CC and OT-DTCR enclosures.

System Design

Optiva is a completely modular hot-swappable platform. Both 19" rack mount and compact tabletop or wall-mountable enclosures are available. The 19" rack-mount enclosure (Model OT-CC-16F-XXX) can support up to 16 insert cards and provides a single power supply (Model PS-200), or a dual-redundant, hot-swappable power supply option. Compact enclosures are available with 1, 2 or 6 slots. The one slot (OT-DTCR-1) and two slot (OT-DTCR-2) enclosures both use an external power supply (PS-9012) and optionally have a standard 2-pin DC power connector for more custom applications. Like the OT-CC-16F the six-slot 1 RU enclosure (OT-CC-6) has hot swap redundant power supply. The Optiva family's existing wide range of video, audio and data transport products include a unique Daisy-Chain™ feature that multiplexes multiple electrical inputs onto a single fiber, thus resulting in an extremely capable, yet conveniently flexible, signal transport system.



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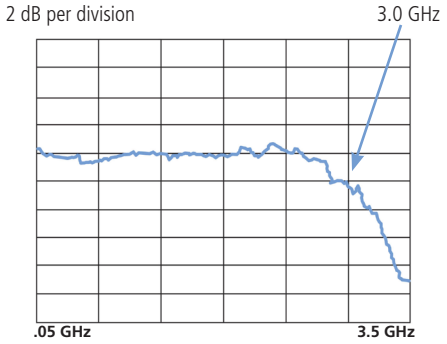
Performance Highlights

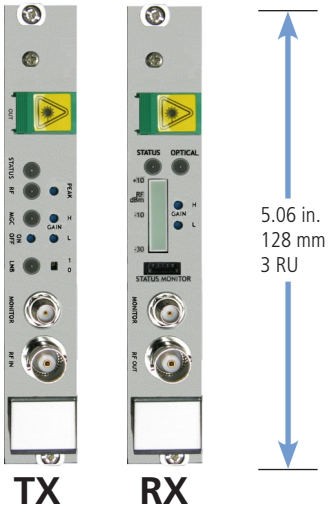
	Parameter	Min	Typical	Max	Units
Link	Frequency Range 50 Ohm 75 Ohm	 50 50	 - -	 3000 2500	 MHz MHz
	Fiber Distance	0	-	20	Km
	Optical Loss	0	-	8	dBo
	Air Temperature	-10	-	50	˚C
TX	RF Input within SGC range[1]	-	0 to -35	-	dBm
	TX Gain (TG) at max, 1 GHz[2]	0	8	-	dB (W/A)
	TG Adjustment Range (reduction from max)	30	-	-	dB
	Noise Figure (TG at max, 2150 MHz, 1dBo loss) Noise Figure (TG at min, 2150 MHz, 1dBo loss)	19 40	13 35	-- --	dB
	Input IP3		-5		dBm
	Spur Free Dynamic Range (1dBo loss)	100	103-108	-	dB/Hz$^{2/3}$
	Wavelengths (See center Wavelength table for specific channel center)	1470	-	1610	nm
	Input Return Loss 50 - 200 MHz 950 - 2150 MHz 50 MHz - 3000 MHz	 - - -	 10 12 10	 - - -	dB
	LNB Voltage Current	16 -	17 -	19 350	V mA
	Optical Power	3	4	5	dBmo
	DC Power LNB Off	- -	12 -	- 350	V mA
RX	RF Output (Tx at peak, 1 dBmo into Rx)	-	-8 to -25	-	dBm
	RX Gain (RG), at max, 1 GHz[2]	20	22	-	dB (A/W)
	RG Adjustment Range (reduction from max)	30	-	-	dB
	Output IP3 (2150 MHz)	20	25	-	dBm
	Output 1dB compression (2150 MHz)	-	15	-	dBm
	Receiver Sensitivity	-	-20	-	dBmo
	Output Return Loss 50 - 200 MHz 950 - 2150 MHz 50 MHz - 3000 MHz	 10	 15	 - - -	dB
	Optical Input Optimal	-12 -6	- -	10 10	dBmo dBmo

1. Wider RF inputs are acceptable, but will set the RF amp gain to its limit.
2. Link RF Gain$_{dB}$ = TG + RG – 2*FiberLoss$_{dBo}$ (assumes Rin = Rout)
3. dBmo & dBo indicate optical power & loss to minimize confusion with RF dBm & dB

Typical S21



OTS-1L (TX & RX)



Enclosure Options


OT-CC-16F


OT-CC-6


OT-DTCR-1


OT-DTCR-2

FCC PART 15 COMPLIANT CE MADE IN USA

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emcore
empower with light

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Center Wavelengths

Channel	nm
47	1470
49	1490
51	1510
53	1530 - Wavelength compatible with DWDM and can be passed thru an EDFA
55	1550 - Wavelength compatible with DWDM and can be passed thru an EDFA
57	1570
59	1590
61	1610

Ordering Information

Product Code	Specifications
OTS-1LCT/S5-XX03-SA-IC	Transmitter, 50-3000 MHz, SMA 50 ohm, CWDM Channel XX, 3dBm (min), SC/APC
OTS-1LCT/B5-XX03-SA-IC	Transmitter, 50-3000 MHz, BNC 50 ohm, CWDM Channel XX, 3dBm (min), SC/APC
OTS-1LCT/B7-XX03-SA-IC	Transmitter, 50-2500 MHz, BNC 75 ohm, CWDM Channel XX, 3dBm (min), SC/APC
OTS-1LR/S5-SA-IC	Receiver, 50-3000 MHz, SMA 50 ohm, SC/APC
OTS-1LR/B5-SA-IC	Receiver, 50-3000 MHz, BNC 50 ohm, SC/APC
OTS-1LR/B7-SA-IC	Receiver, 50-2500 MHz, BNC 75 ohm, SC/APC
OPV-CTLR-IC	NMS SNMP Controller Card & MIB for Optiva Family
OTP-1ETR-A2/A2	Optical Tcvr, 1Ch, Ethernet, SM, Dual LC
OT-CC-16F-XXX	Chassis, Rack Mount, 16 Slot, 3RU -- See OT-CC-16F data sheet for exact models
PS-200-XX	Power Supply, 12 Vdc, 100 to 240 Vac, 50/60 Hz -- See PS-200F data sheet for exact models
OT-CC-6-1U	Chassis, Rack Mount, 6 Slot, 1RU -- See OT-CC-6 data sheet for exact models
OT-DTCR-1 / OT-DTCR-2	Chassis, flange-mount, w/ Power Supply, 1 slot / 2 slot

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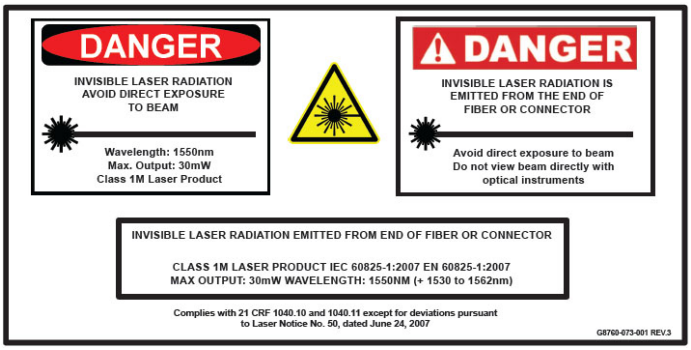
Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. 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.

Wavelength = 1.3/1.5 µm.

Maximum power = 30 mW.



*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
*IEC is a registered trademark of the International Electrotechnical Commision.