Optiva OTS-2L10 10 MHz / L-Band Fiber Optic Link

PRELIMINARY DATASHEET | OCTOBER 2014 SATCOM

Applications

- VSAT Antenna Signal Transport

Features

- Simultaneous Transport of 10 MHz and L-Band Signals
- Supports 10 km Links
- 50 Ohm SMA
- Tx & Rx RF Power Monitors via LED, SMA & SNMP
- Receiver DC Output
- SNMP Monitoring and Control
- Optically-Isolated Uncooled DFB Lasers Enable High-Dynamic-Range Links
- Fits in Optiva Enclosures, Which Support Daisy Chain Video, Audio, and Data Links
  -16, 6, & 2 Slot Enclosures Available
- CE & CSA Certified, RoHS Compliant

EMCORE's Optiva OTS-2L10 10 MHz / L-Band Fiber Optic Links are optimized to provide transparent, simultaneous 10 MHz and L-Band signal transport for VSAT antenna applications. The Optiva OTS-2L10 provides excellent isolation of the 10 MHz reference signal from L-Band signals at the transmitter and receiver with very low phase noise, which facilitates greater flexibility to locate VSAT antennas for optimum performance.

The Optiva OTS-2L10 is designed with optically-isolated uncooled DFB lasers that enable high-dynamic-range links with fixed gain up to 10 km. Connection is via 50 Ohm SMA and the OTS-2L10 includes receiver DC output for the BUC upconverter with transmitter and receiver RF power monitoring via LED, SMA & SNMP.

Optiva satellite and microwave transmitters and receivers are SNMP compliant. They can be housed in the same chassis and monitored by the same Network Management System (NMS) as Optiva HD video, audio, serial data, and USB extension / distribution cards to provide multiple format and frequency transport in a single flexible platform.

System Design

The Optiva platform includes a wide range fiber optic transport products for satellite and microwave communications from 1 MHz to 40 GHz. These units can be used to construct transparent inter- and intra-facility links from 1 meter to >100 km for RF and microwave signal transport, antenna remoting, video transport, electronic warfare systems and other high-dynamic-range applications.

Optiva is a completely modular, hot-swappable platform. Both 19" rack-mount and compact tabletop, or wall-mountable enclosures are available. The 3 RU 19" rack-mount, fan-cooled enclosures (Model OT-CC-16 and OT-CC-16F) can support up to 16 insert cards and utilize two dual-redundant, hot-swappable, 100 or 200 watt power supplies. The 1 RU 19" rack-mount, fan-cooled enclosure (Model: OT-CC-6-1U) can accommodate 6 insert cards and utilizes two hot-swappable 60 watt power supplies. Compact two-slot (OT-DTCR-2) enclosures are also available that use an external wall-mount power supply.

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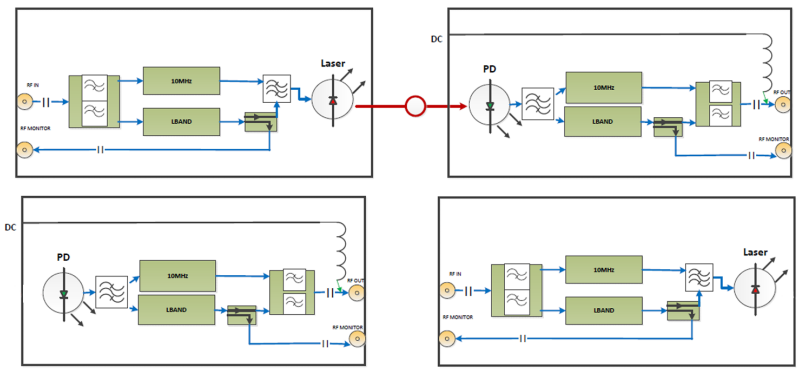
Block Diagram



Performance Highlights

	Parameter	Min	Typical	Max	Units^
Link	Frequency Range 50 Ohm	10	-	2700	MHz
	Link Gain (L-Band), 1 dBo Loss @ Max Gain**	-	29	-	dB
	Noise Figure (TG at max, 2150 MHz, 1 dBo loss)	-	12	-	dB
	Input IP3 (TG max, 2150 MHz, 1 dBo loss)	-	1	-	dBm
	Spur Free Dynamic Range (1 dBo loss)	-	108	-	$dB/Hz^{2/3}$
	Operating Temperature (Air)	-10	-	50	°C
TX	RF Input	-	0 to -35	-	dBm
	Tx Gain (TG) at max, 1 GHz	-6	2	-	dB (W/A)
	Frequency Response Any 36 MHz 950-2150 MHz 50-2700 MHz	 - - -	 +/- 0.2 +/- 1.5 +/- 2.0	 - - -	 dB dB dB
	Input Return Loss 10 MHz 950-2150 MHz 50-2700 MHz	 12 10 8	 - - -	 - - -	 dB
	Optical Power	-	5	-	dBmo
	DC Power	- -	12 -	- 300	V mA
RX	RF Output (Tx at peak, 1 dBmo into Rx)	-	-8 to -25	-	dBm
	Rx Gain (RG) @ max, 1 GHz	25	29	-	dB
	Output IP3 (2150 MHz)	23	25	-	dBm
	Output 1dB compression (2150 MHz)	-	15	-	dBm
	Output Return Loss 10MHz 950-2150 MHz 50-2700 MHz	 12 10 8	 - - -	 - - -	 dB
	DC Power	- -	12 -	- 300	V mA

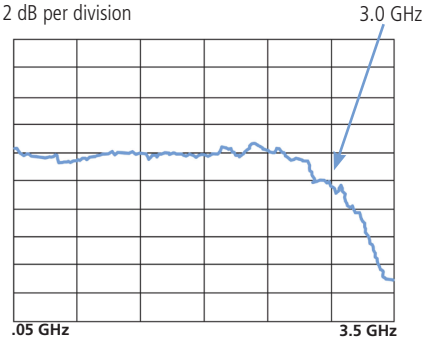
*Wider RF inputs are acceptable, but will set the RF amp gain to its limit.

**Link RF $Gain_{dB}$ = TG + RG – 2*Fiber $Loss_{dBo}$ (assumes Rin = Rout)

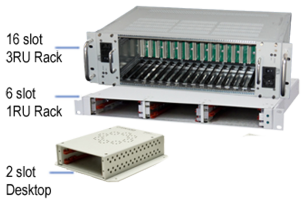
^dBmo and dBo indicate optical power and loss, in order to minimize confusion with RF dBm and dB

OTS-2L10 (Tx & Rx)

Typical S21



Enclosure Options



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Ordering Information

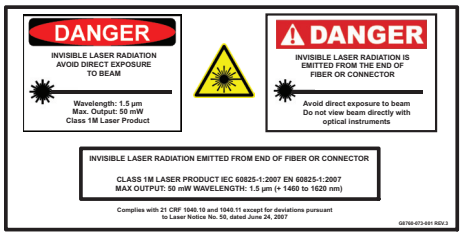
Product Code	Specifications
OTS-2L10T/S5-1304-LA-RM	Transmitter, Frequency Reference, 10 MHz/L-Band, 1310 nm, 4 dBmo, 50 Ohm SMA, LC/APC, Rack-Mount
OTS-2L10R/S5-LA-RM	Receiver, Frequency Reference, 10 MHz/L-Band, 50 Ohm SMA, LC-APC, Rack-Mount
OTS-2L10TR/S5-1304-LA-FM	Optiva 10/L Transceiver - Flange-Mount
OTS-@L10T/S5-1304-LA-FM	Optiva 10/L Tx - Flange-Mount
OTS-2L10R/S5-LA-FM	Optiva 10/L Rx - Flange-Mount
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, 3 RU -- See OT-CC-16F data sheet for exact models
PS-200F-XX	Power Supply, 12 VDC, 100 to 240 VAC, 50/60 Hz. - See PS-200F datasheet for exact models
OT-CC-6-XX	Chassis, Rack-Mount, 6-Slot, 1 RU -- See OT-CC-6 data sheet for exact models
OT-DTCR-2	Chassis, Flange-Mount, w/Power Supply, 2 slot

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.

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