



LT-12-E-M



DEVICE

12 GHz Low Drive Voltage Lightwave Transmitter

OVERVIEW

The Optilab LT-12-E-M Lightwave Transmitters (LT) utilize a linear, Electro Absorption Modulator (EAM) designed for RF over Fiber, antenna remoting and broadband RF transmission over optical fiber. This easy to drive module incorporates a low noise, 1550 nm distributed feedback (DFB) laser diode as a Continuous Wave (CW) light source. The input RF signal is applied to EAM directly for E/O conversion. The compact, cost-effective transmitter design provides a high spurious-free dynamic range and high modulation bandwidth. LT-12-E-M can be paired with PR-12-M or PD-30 for 12 GHz RFoF link applications. The LT-12-E-M requires a single ± 5 Volt DC power supply for operation. Contact Optilab for more information.

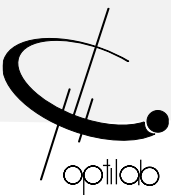
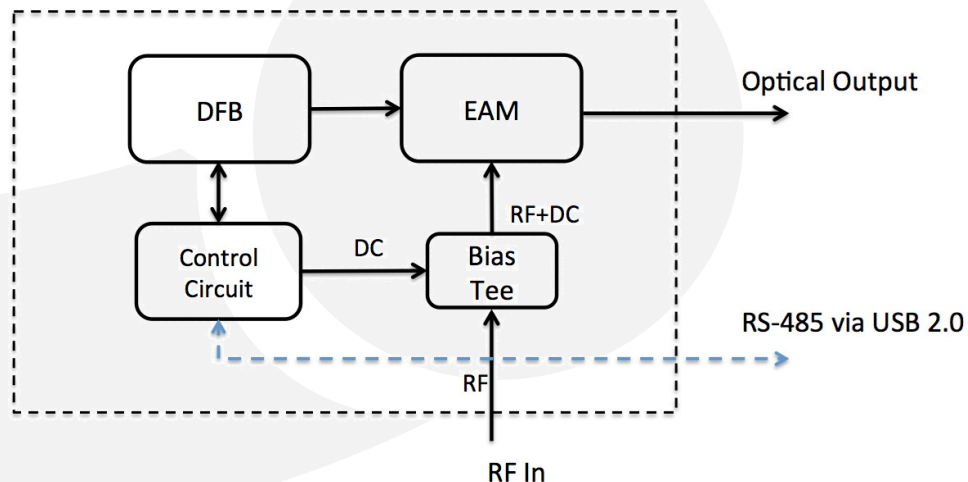
FEATURES

- 12 GHz operation bandwidth
- USB 2.0/RS-485 monitor interface
- Built in 10 GHz Bias tee
- Low RF drive voltage
- High dynamic range
- Labview driver included

USE IN

- Phased and interferometric array antenna
- Broadband delay-line and signal processing
- 12 GHz RF over Fiber
- RF/IF signal distribution
- Radar system link
- Satellite antenna signal distribution

FUNCTIONAL DIAGRAM





LT-12-E-M

SPECIFICATIONS

DFB Laser Wavelength	1550 nm ± 10 nm
S21 3 dB Bandwidth	10 GHz typ. (includes bias-T)
Optical Output Level	+ 0 dBm min @ 0V bias
Optical Return Loss	30 dB typ.
DFB Linewidth (FWHM)	3 MHz max.
DFB Side Mode Suppression Ratio	40 dB typ.
Relative Intensity Noise (RIN)	-135 dB/Hz max.
Input Impedance	50Ω
Frequency Response Flatness	< ± 0.5 dB in any 1 GHz bandwidth
VSWR	1.0 : 1 max.

GENERAL

Operational RF Bandwidth	12 GHz typ.
Max. RF Input	+ 13 dBm
1 dB Compression Point	+ 8 dBm
Harmonic Distortion	- 40 dBc typ. @ 0 dBm RF input
Input IP3	12 dBm typ.

ANALOG

Data Rate	12.5 Gb/s typ.
Drive Voltage	3 Vp-p typ.
Pulse Response	10% rise time 40 ps typ.
Extinction Response	10 dB typ.

DIGITAL

Operating Temperature	-20 °C to +70 °C
Storage Temperature	-55 °C to +85 °C
Operating Humidity	85%
Power Supply Requirements	± 5 V DC, 2 A max.
Optical Connector	FC/APC, other optional
RF Input Connector	SMA, Female
Electrical Power Connector	4-pin Molex
Remote Interface	RS-485 via USB
Dimensions	115 mm x 106 mm x 24.5 mm
Accessories Included	Matching power supply

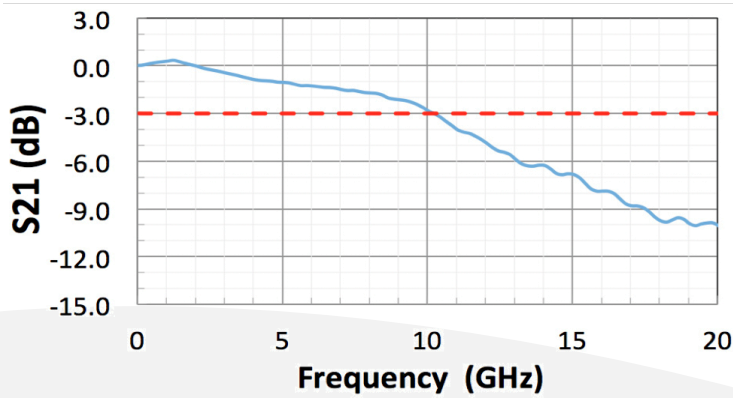
MECHANICAL



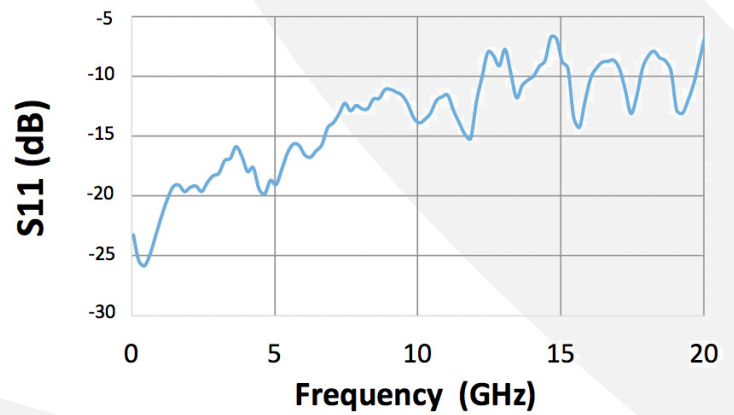


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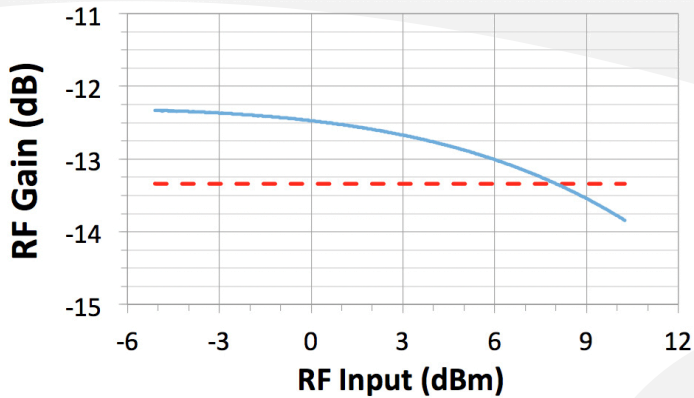
TYPICAL S21 RESPONSE



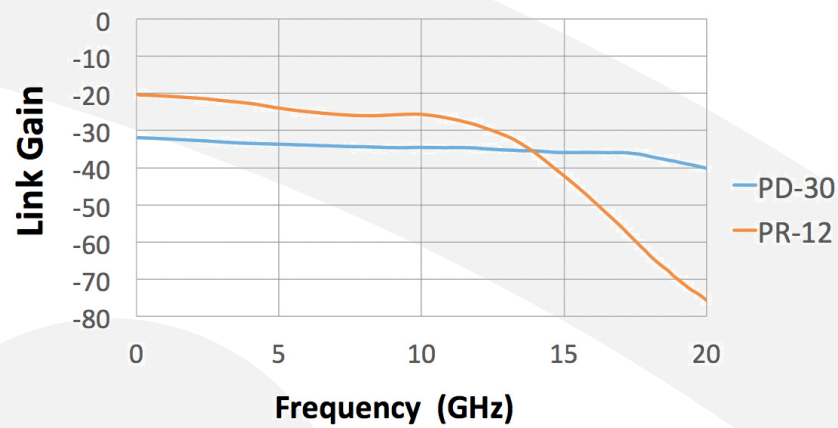
TYPICAL S11 RESPONSE



1 DB COMPRESSION

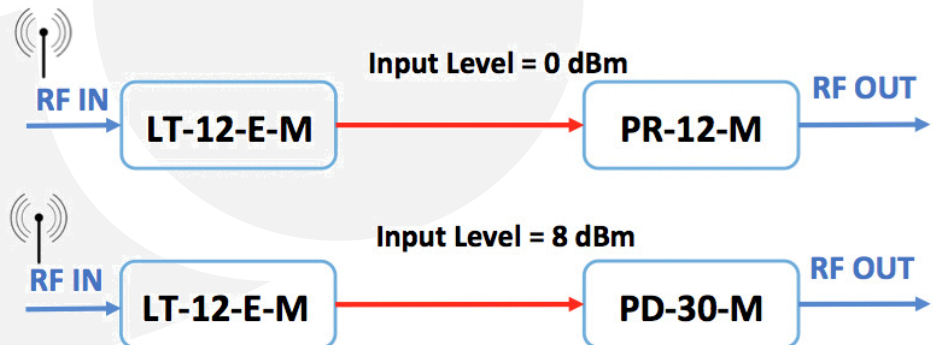


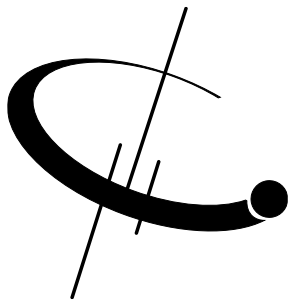
LINK GAIN COMPARISON



TEST CONDITIONS & LINK GAIN MEASUREMENTS

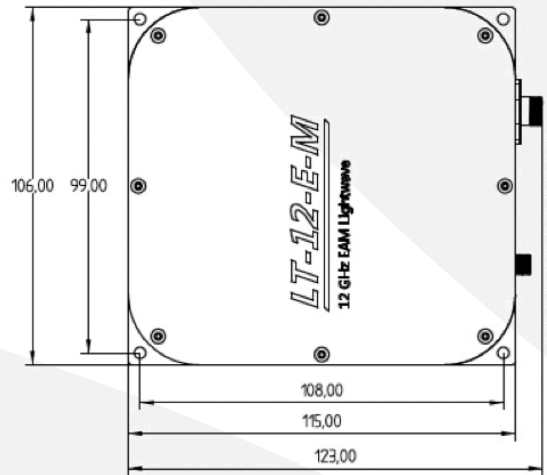
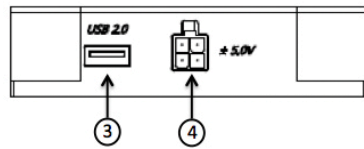
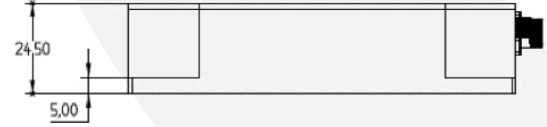
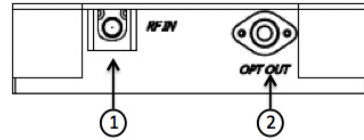
LT-12-E-M Output = 3.5 dBm
 Link Gain w/PR-12 = -20 dB @ 1 GHz
 Link Gain w/PD-30 = -32 dB @ 1 GHz





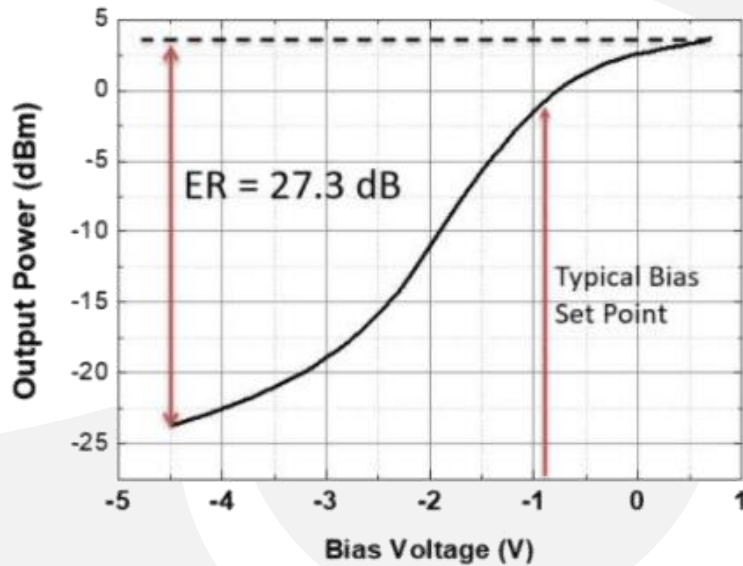
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MECHANICAL DRAWING



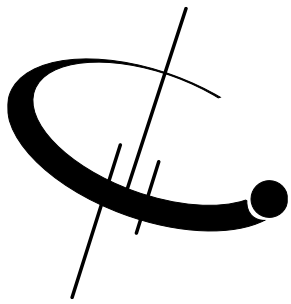
1	RF input
2	Optical output
3	USB 2.0
4	± 5 VDC input

TRANSFER FUNCTION



Note: Max bias rating of LT-12-E is -5 ~ 1 V. Exceeding this range may damage the device.





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REMOTE LABVIEW INTERFACE

Optilab offers remote interface via Labview software, for parameter adjustment and status monitoring, contact Optilab for more details.

