



Lightwave Transmitter for QPSK/QAM

OVERVIEW

The Optilab LT-QPSK-R is a high-performance Quadrature Phase Shift Key (QPSK) lightwave transmitter designed for optical communication up to 80 Gb/s or beyond using polarization maintaining (PM) optical fiber. The incorporated internal PM laser source couples into a dual IQ drive speed MZI modulator for QPSK modulation, with dual broadband modulator drivers which provide high-quality, single-ended voltages to drive the QPSK LiNbO₃ modulator, with independent control and monitoring on both amplified signals. Adjustable RF gain and eye crossing through the front panel interface and LabVIEW software can be performed. The LT-QPSK-R has a built-in Automatic Bias Controller (ABC) which allows for stable long-term operation. The LT-QPSK-R can also be used for Quadrature Amplitude Modulation (QAM). Contact Optilab for more information.

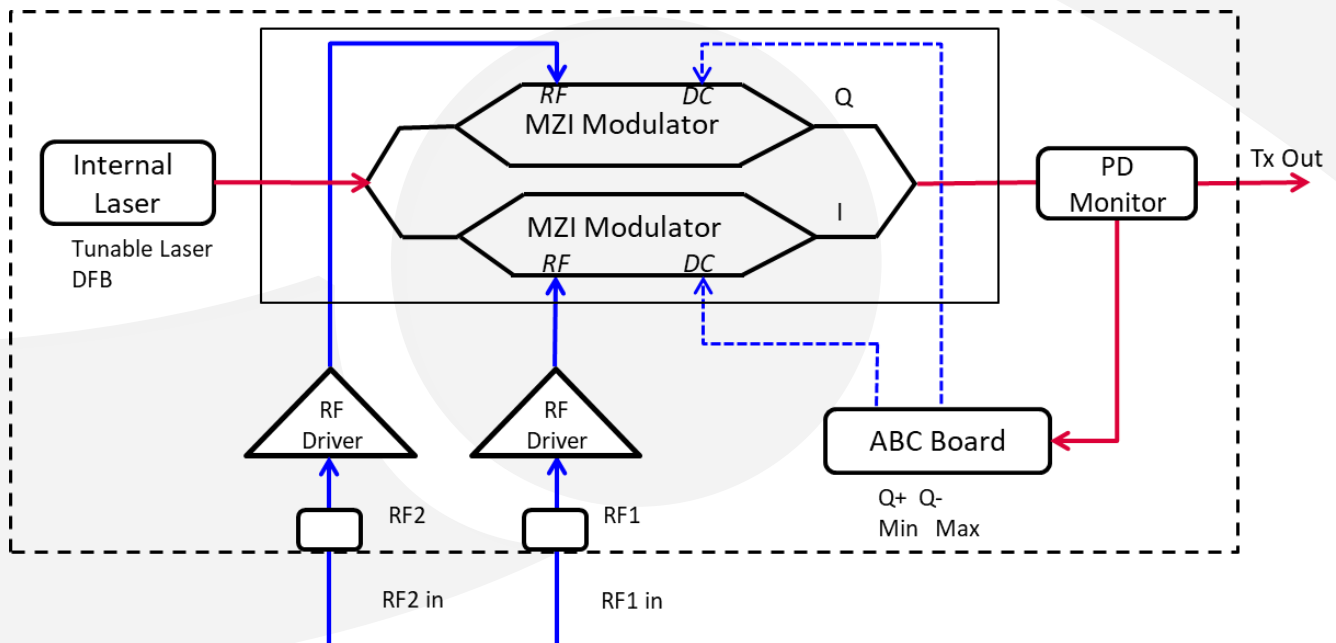
FEATURES

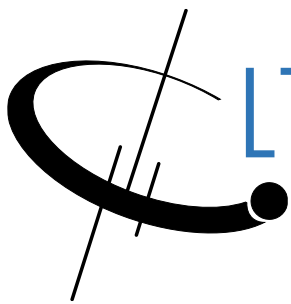
- Up to 80 Gb/s Data Rate
- Dual IQ Modulator
- Integrated Modulator Driver
- Integrated DFB or Tunable Laser
- Automatic Bias Control
- USB Interface

USE IN

- Optical Networks
- Coherent Communication
- Research and Development
- Test and Measurement

FUNCTIONAL DIAGRAM





LT-QPSK-R

SPECIFICATIONS

GENERAL

Bit Rate / Bandwidth	See Table I
Operation Wavelengths	1520 nm to 1610 nm
Internal Laser	DFB or Tunable Laser
Optical Output Power	2 dBm min. @ 14 dBm input
Input RF Power	250 mV to 750 mV typ.
Eye Crossing Adjustment	Available
Driving Voltage (2V π)	7 V typ. @ 22 Gb/s
Modulator Bias Mode	Automatic bias control for QPSK / QAM
Bias Operation Point	Null

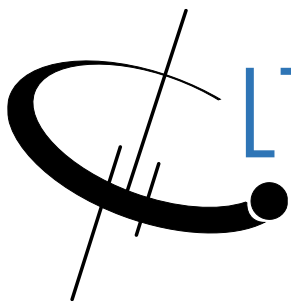
Table I. Bandwidth Options

Model #	Bit Rate	Analog Bandwidth
LT-QPSK-40-R	40 Gb/s min.	15 GHz typ. for each modulator
LT-QPSK-60-R	60 Gb/s min.	25 GHz typ. for each modulator
LT-QPSK-80-R	80 Gb/s min.	35 GHz typ. for each modulator

MECHANICAL

Operating Temperature	-10°C to + 60°C
Storage Temperature	-50°C to +90°C
Operating Humidity	0% to 85% Relative Humidity
Power Supply	100 – 240 VAC, 50 – 60 Hz
Housing Dimensions	1RU, 482.60mm x 470.57mm x 44.00mm
RF Input Connector	K type Female ; V type Available
Optical Connectors	FC/APC; Other Options are Available
Optical Input Fiber Type	PANDA PM
Optical Output Fiber Type	PANDA PM
Remote Control Interface	RS232 Communication





LT-QPSK-R

TUNABLE LASER SPECIFICATIONS

Laser Wavelength	1527 nm to 1607 nm (C or L or C+L band)
Wavelength Accuracy	1 pm
Wavelength Setting Resolution	1 pm (continuous)
Wavelength Stability	1 pm over 24 hours
Output Power	40 mW typ.
Output Stability	0.02 dB over 8 hours
Laser Linewidth (FWHM)	< 100 kHz Optional
Carrier to Noise Ratio (CNR)	50 dBc typ. @ -5 dBm
Side Mode Suppression Ratio	55 dB typ.
Relative Intensity Noise (RIN)	-157 dB/Hz @ 13 dBm
Polarization Extinction Ratio	20 dB min.
Optical Isolation	30 dB min.
Fiber Type	Panda 1550 PM

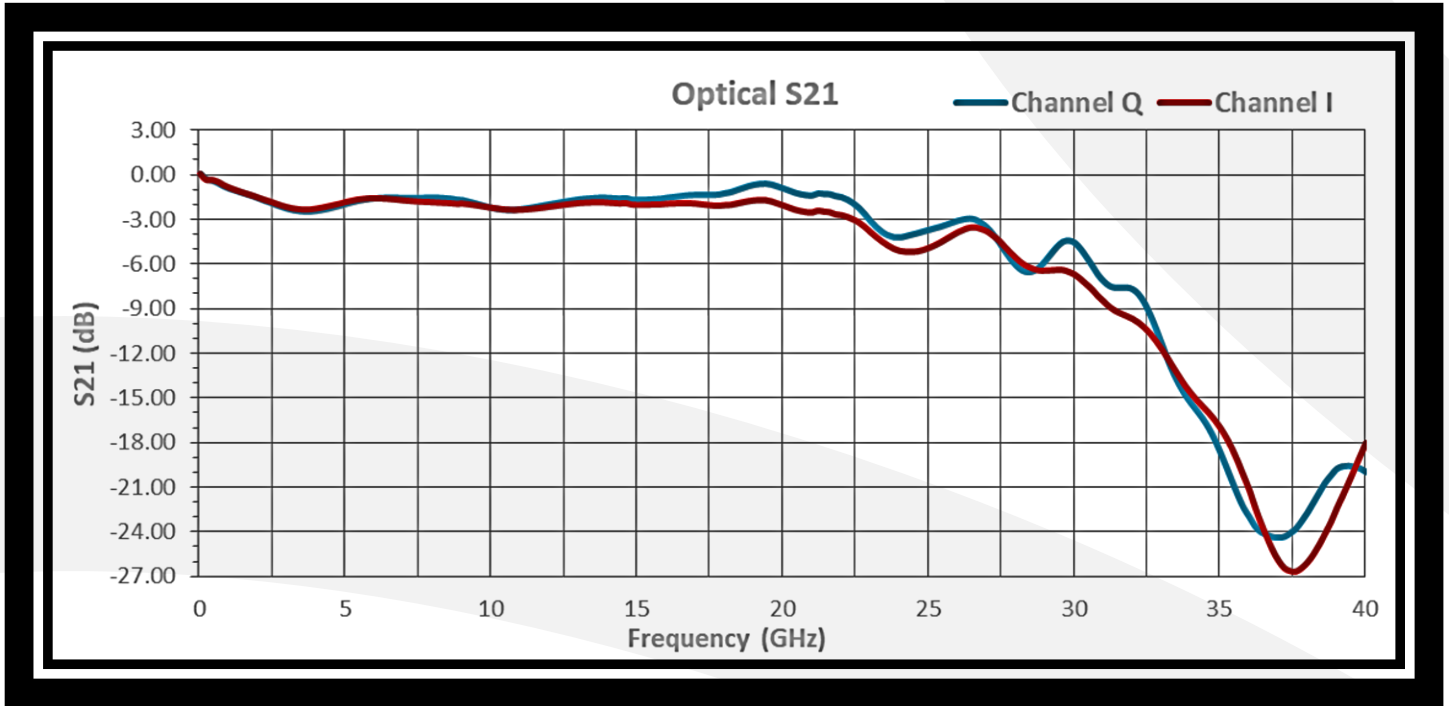
Table II. Laser Source Options

Model #	Laser Source	Wavelength	Linewidth
LT-QPSK-R-DC	DFB, C band	1550±5 nm	3 MHz typ.
LT-QPSK-R-DL	DFB, L band	1580±5 nm	3 MHz typ.
LT-QPSK-R-TC	Tunable C band	1527 - 1567 nm	2MHz typ. < 100 kHz Optional *
LT-QPSK-R-TL	Tunable L band	1570 - 1608 nm	2MHz typ. < 100 kHz Optional *
LT-QPSK-R-CL	Tunable C+L band	1527 - 1608 nm	2MHz typ. < 100 kHz Optional *

* Intrinsic linewidth

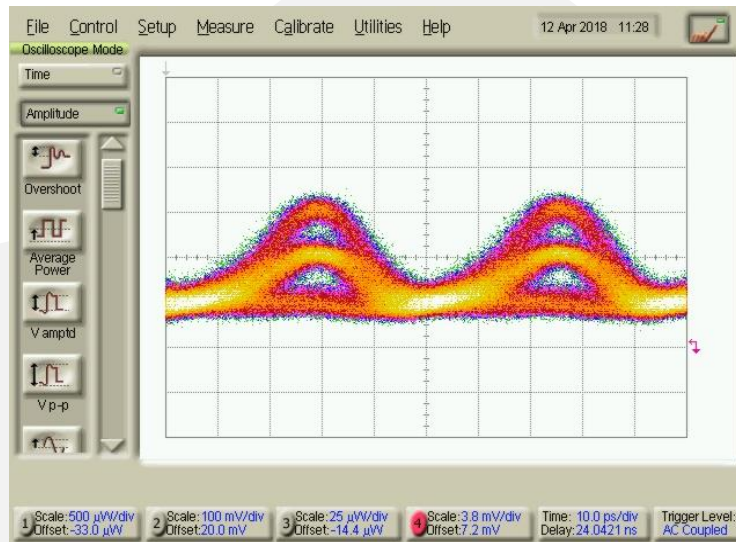


Typical Frequency Response: S21 for LT-QPSK-60-R



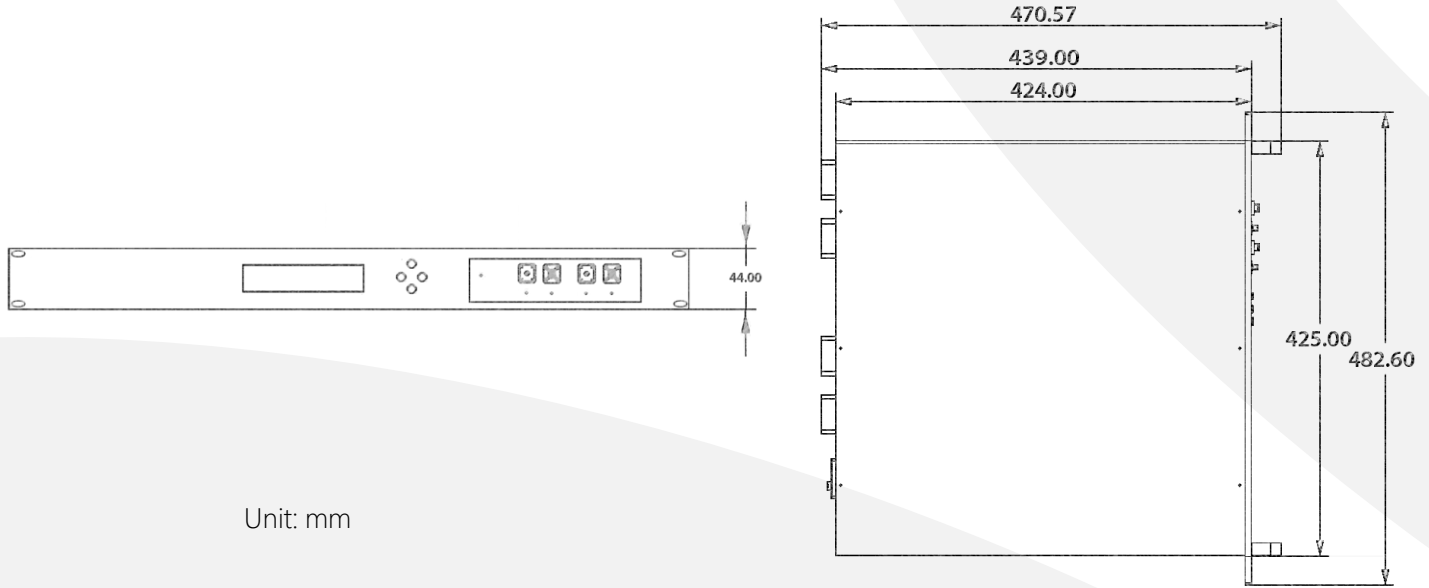
Typical Eye Diagram

43 Gb/s Eye



LT-QPSK-R

Mechanical Drawing



Related Item

- LM-QPSK-R



The Optilab LM-QPSK-R is a high-performance Quadrature Phase Shift Key (QPSK) lightwave modulator solution designed for optical communication up to 80 Gb/s or beyond with optional user's external laser selection. Contact Optilab for more information.

