

# RFLL-40-H-1



MD-50



LTA-40-LD-V



EDFA-16-C



PD-50-DC

## 40 GHz RF over Fiber Lightwave Link Modules, H-1

The Optilab RFLL-40-H-1 RF over Fiber Lightwave Link is composed of a MD-50 RF amplifier, LTA-A-LD-V lightwave transmitter module, EDFA-16-C low drive consumption and a PD-50 receiver to form a high-performance RFoF link for up to 40 GHz applications.

### Features

- Amplified up to -18 dB link gain
- Bandwidth to 40 GHz
- Low Noise Figure
- High Linearity Receiver
- USB Monitor and Control Interface

### Applications

- Wideband RF Transmission over Fiber
- RF/IF Signal Distribution
- Satcom microwave antenna signal distribution
- Broadband delay-line and signal processing
- Phased and interferometric array antenna

### Link Performance Summary

|                        |   |
|------------------------|---|
| Analog Bandwidth       | 40 GHz  |
| Link Gain Vs Bandwidth | -18 dB / 20 GHz<br>-19 dB / 30 GHz<br>-22 dB / 40 GHz |
| Input 1dB Comp.        | -15.89 dBm Typical @ 1 GHz                            |
| Gain Flatness          | +/- 1 dB over 1 GHz                                   |
| Noise Figure           | 17.6 dB @ 10 GHz<br>18.3 dB @ 30 GHz                  |
| SFDR                   | 106.4 dBm x Hz <sup>2/3</sup>                         |
| IIP3                   | 3.9 dBm   |
| Group Delay            | +/- 49 ps   |

# 40 GHz RF over Fiber Lightwave Link Modules, H-1

## Configuration Diagram



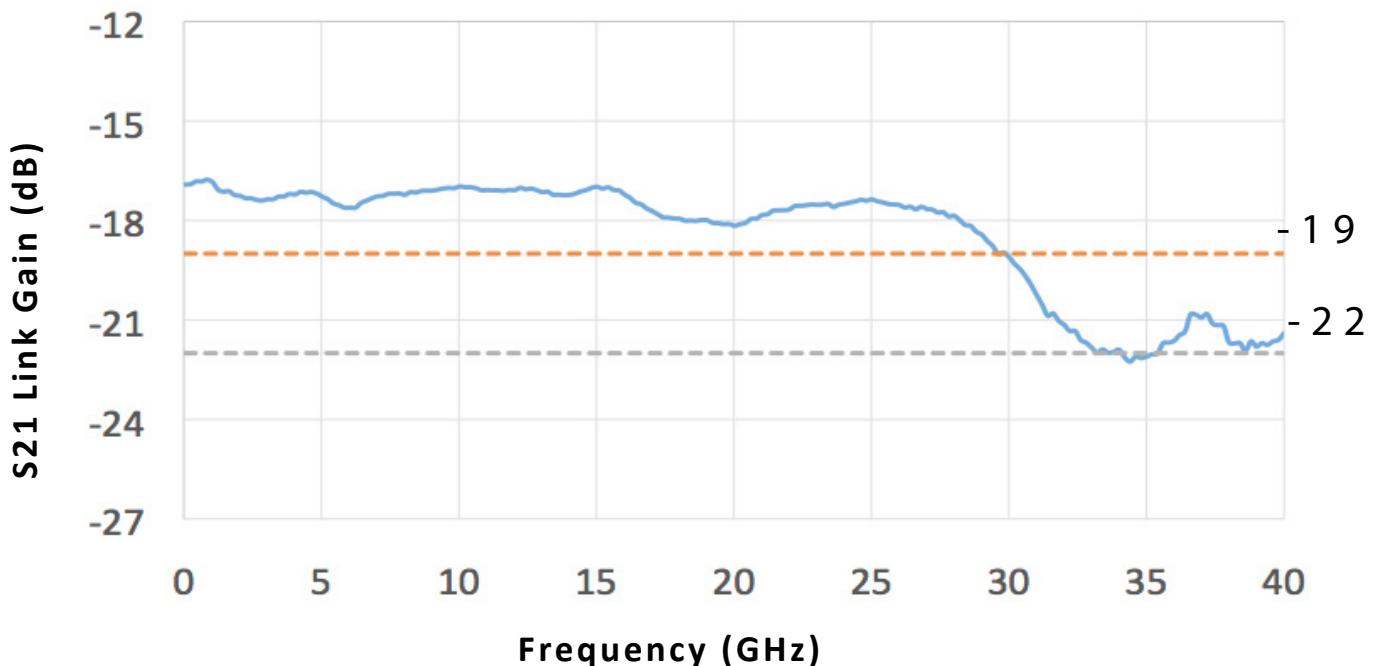
RF Input Power  
-20 dBm

Transmitter Output Power  
6 dBm

Receiver Input Power  
-1.1 dBm

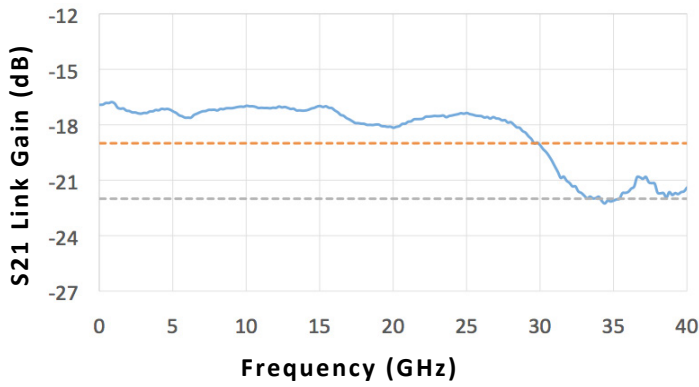
- **MD-50**, 50 GHz Modulator Driver/RF Amplifier ([Datasheet](#))  
The Modulator Driver (MD) is a 50 GHz Bandwidth RF Amplifier in a compact and user friendly module that provides a high-quality, single-ended voltage to drive an external LiNbO3 modulator.
- **LTA-40-LD-V**, 40 GHz Lightwave Transmitter Module for RFoF ([Datasheet](#))  
The unit is a high performance Lightwave Transmitter Module designed for analog photonics applications from DC to 40 GHz.
- **EDFA-16-C**, EDFA Module with Low Current Consumption ([Datasheet](#))  
The EDFA-16-C with a Low Drive Consumption (LD) is an ideal building block for photonic subsystems and OEM system integration.
- **PD-50-DC**, 50 GHz Linear InGaAs PIN Photodetector, Module ([Datasheet](#))  
The Optilab PD-50-M is a 50 GHz bandwidth PIN receiver module designed for RF over Fiber, antenna remoting, and broadband analog photonics link.

## Link Gain

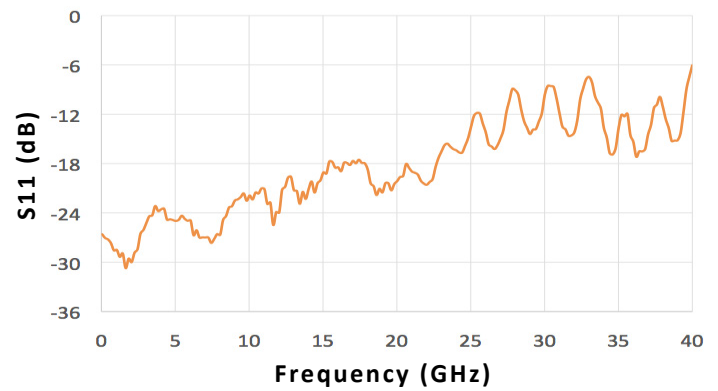


# 40 GHz RF over Fiber Lightwave Link Modules, H-1

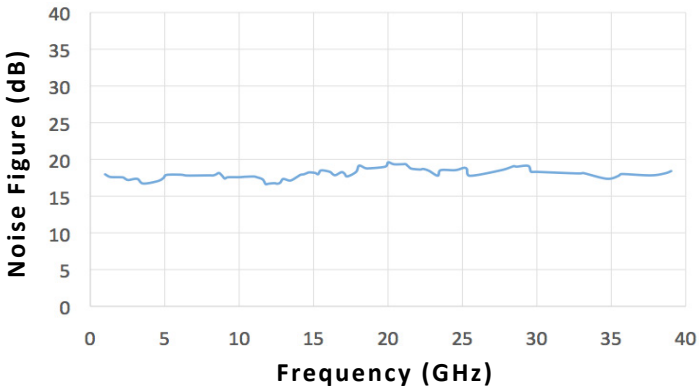
### Link Gain



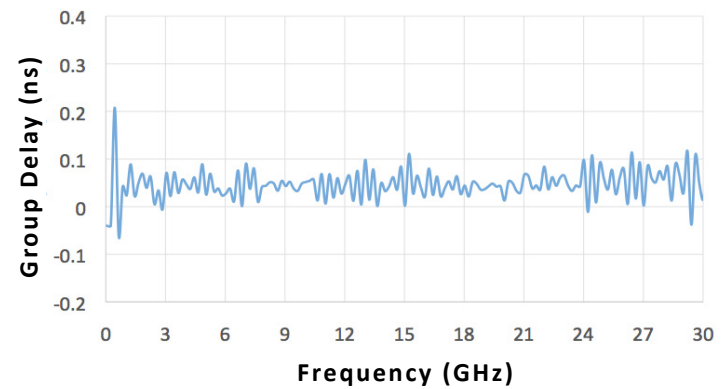
### S11 Response



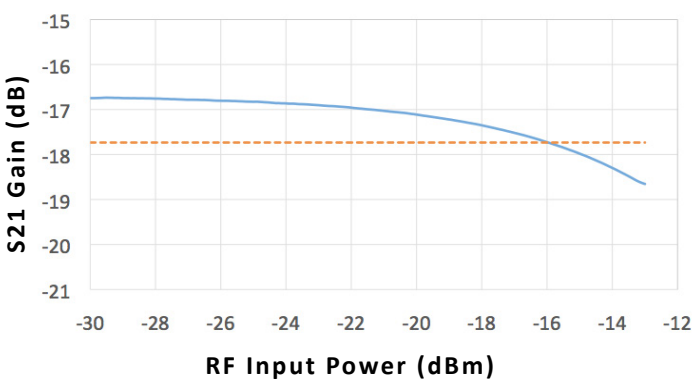
### Noise Figure



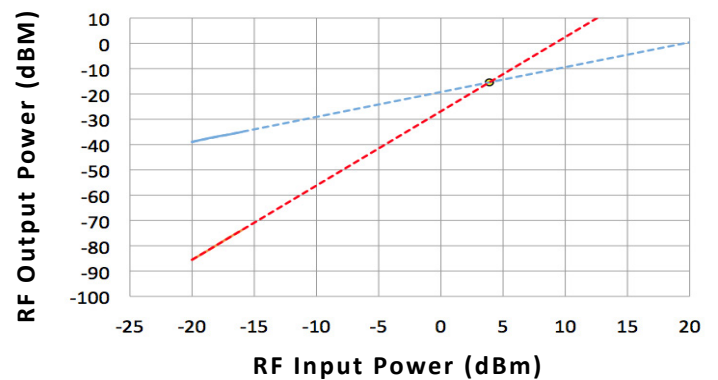
### Group Delay



### 1 dB Compression



### IIP3 Plot



# 40 GHz RF over Fiber Lightwave Link Modules, H-1

## General Specifications

| MD-50                     |                         | LTA-40-LD-V               |                             |
|---------------------------|-------------------------|---------------------------|-----------------------------|
| Power Supply Requirements | +5 V DC, 500 mA max.    | Power Supply Requirements | ±5V, 1A typ.                |
| Dimensions                | 82 mm x 60 mm x 26.5 mm | Dimensions                | 206 mm x 102.4 mm x 31.5 mm |
| Accessories               | PS-5 & Cables           | Accessories               | PS-5 & Cables               |
| EDFA-16-C                 |                         | PD-50-DC                  |                             |
| Power Supply Requirements | ±5V, 1A typ.            | Power Supply Requirements | +5 V DC, 500 mA max.        |
| Dimensions                | 90 mm x 70 mm x 18 mm   | Dimensions                | 82 mm x 60 mm x 26.5 mm     |
| Accessories               | PS-5 & Cables           | Accessories               | USB adaptor & Cables        |

## RF Specifications

|                       |   |                       |   |
|-----------------------|---|-----------------------|---|
| <b>S11 Reflection</b> | From DC to 25 GHz <-12 dB<br>From 25 GHz to 40 GHz <-5 dB | <b>S22 Reflection</b> | From DC to 25 GHz <-11 dB<br>From 25 GHz to 40 GHz <-5 dB |
|-----------------------|---|-----------------------|---|

## Control Software

A LabView™ based control software is used to set the RF over Fiber system parameters and monitors system performance.

Configuration | LTA-40-LD-V | MD-50

Com Port #  
COM23

Stop

**Optilab**

**RFL-40-H-1 Remote Control System Software**  
Version: 0.1

| Module         | 485 ID | S/N        |
|----------------|--------|------------|
| LTA-40-LD-V #1 | 0      | OE1603L101 |
| LTA-40-LD-V #2 | 1      | OE1603L102 |
| LTA-40-LD-V #3 | 2      | OE1603L103 |
| LTA-40-LD-V #4 | 3      | OE1603L104 |
|                |        |            |
|                |        |            |
|                |        |            |
|                |        |            |

| Module   | 485 ID | S/N        |
|----------|--------|------------|
| MD-50 #1 | 4      | OE1603M101 |
| MD-50 #2 | 5      | OE1603M102 |
| MD-50 #3 | 6      | OE1603M103 |
| MD-50 #4 | 7      | OE1603M104 |
|          |        |            |
|          |        |            |
|          |        |            |
|          |        |            |

Temperature 1 (°C)  
0

Temperature 2 (°C)  
0

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