

MP-8001-22 Series Low NF Unamplified Microwave Fiber Optic Transmitter

## 22 GHz Low Noise Figure Unamplified Microwave Fiber Optic Transmitter



### Broadband Microwave Analog Fiber Optic Transmitter Modules Provides Low Noise / High Link Gains.

The MP-8001-22-UTX RF/Fiber Optic Transmitter modules are designed to provide electrical-to-optical (E/O) conversion of broadband RF signals over a frequency range of 10 MHz to 22 GHz.

The utilization of the MP-8001-22-UTX, in conjunction with the appropriate MP-8000-RX-02 RF/Fiber Optic Receiver, forms a broadband link capable of supporting the transmission of RF signals over singlemode optical fiber for use in a wide array of scientific and communication applications. The link applications include antenna remoting, SATCOM, RF delay lines, telemetry tracking, and point-to-point RF transmission.

The transmitter utilizes a high efficiency Mach-Zehnder Lithium Niobate (LiNbO<sub>3</sub>) electro optic modulator, coupled with a high power Distributed Feedback (DFB) laser diode centered at 1550 nm or on customer specified ITU wavelengths. Use of a Z-cut modulator enhances the electro-optic efficiency of the modulator, lowering system noise figures. The laser temperature stability is microprocessor controlled using a thermal electric cooler and an advanced ditherless bias control loop. These features, coupled with the MP-8000-RX-02's companion Photonic Receiver's incorporation of a high-speed, low distortion PIN photodiode detector, assures low noise and high dynamic range link performance over varying frequency, temperature, and optical loss budgets.

The MP-8001-22-UTX series Transmitter application modules have advanced Built-In-Test (BIT) diagnostic capabilities which provides remote status and monitoring of critical parameters such as transmitted optical power, system power, modulator bias, temperature, amplifier current, attenuator setting and a summary alarm status.

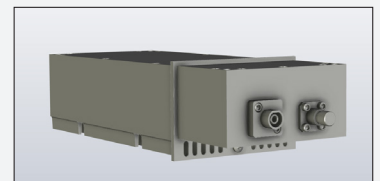
Information: Call us toll-free at 888-868-8967 or email [info@b2bphotonics.com](mailto:info@b2bphotonics.com)

### Applications:

- SATCOM Interfacility Links
- Microwave Antenna Remoting
- Electronic Counter Measure Systems
- Test and Measurement Applications
- Wideband Delay Line Applications
- Phased array Antenna Systems
- Secure Communication Systems

### Features:

- 10 MHz to 22 GHz Bandwidth
- Z-Cut LiNbO<sub>3</sub> Modulator
- Extended Operating Temperature
- High Optical Output +20 dBm
- High Speed Noise free Bias Loop
- Single Fiber DWDM Operation
- Small Form Factor Flange Mount
- Hot Swappable, Plug-In Module
- Compatible with MPS-1911 and MPS-1914 Rack Chassis Systems



1914 Plug-In Style Module



1914 Plug-In Style Module

Microwave Photonic Systems, Inc.

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## Specifications

## Optical:

Operational Wavelength	1555 +/- 5 nm or Customer Specified ITU Grid Channel
Optical Output Power (nom)	10mW / 20mW
Optical Fiber Type	Single Mode SMF-28
Optical Connector Type	FC/APC, SC/APC, E2000, PC/APC, AVIM, Others
Optical Back Reflections	-55 dB

## RF:

Frequency Response	10 MHz to 22 GHz
RF Input Impedance	50 Ohms
VSWR Input	2.5:1
RF Input Connector	2.92 mm (K) female
1 dB Input Comp. Level	+8.0 dBm <sup>(1)</sup>
Input IIP3	+16.0 dBm <sup>(1)</sup>
RF Link Gain	-21 dB <sup>(1)</sup> / -17 dB <sup>(2)</sup>
RF Link Gain Flatness	6 dB over 1 to 22 GHz Bandwidth <sup>(1)</sup> (Gain Equalized versions Available) ± 1.0 dB over any 500MHz Bandwidth <sup>(1)</sup>
RF Link Noise Figure	25.0 dB <sup>(1)</sup>
Spur Free Dynamic Range	109 dB Hz <sup>2/3 (1)</sup> / 110 dB Hz <sup>2/3 (2)</sup>
RF Input Power	+25.0 dBm, non-damage

## General

	+8.0 to + 24 VDC, 9 Watts (max)
Power Supply	-20°C to +50°C
Operating Temperature (std)	-40°C to +70°C
Operating Temperature (extended)	-45°C to +85°C
Storage Temperature	95% Non-condensing
Operating Humidity	50,000 ft
Storage Altitude	LED: Bit Fault & Optical Power Failure (Plug-In Version Only)
Local Alarm	Open Collector and Serial Interface
Remote Alarms	
Dimensions:	
Flange Mount TX	6.5" x 2.5" x 1.25"
Chassis Mount	MPS-1911 or MPS-1914 Compatible

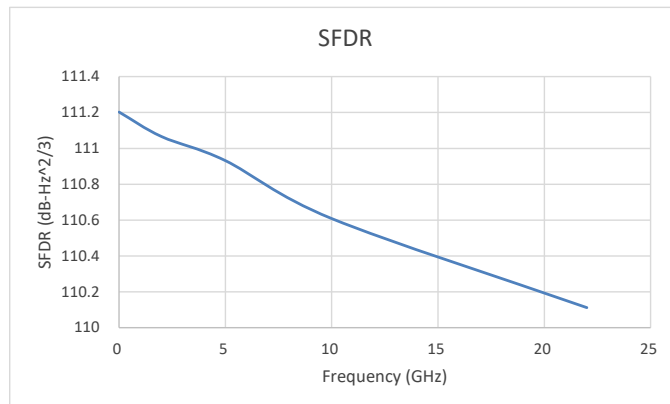
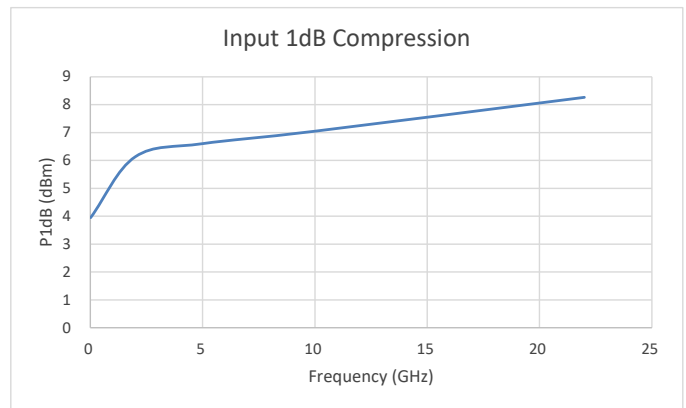
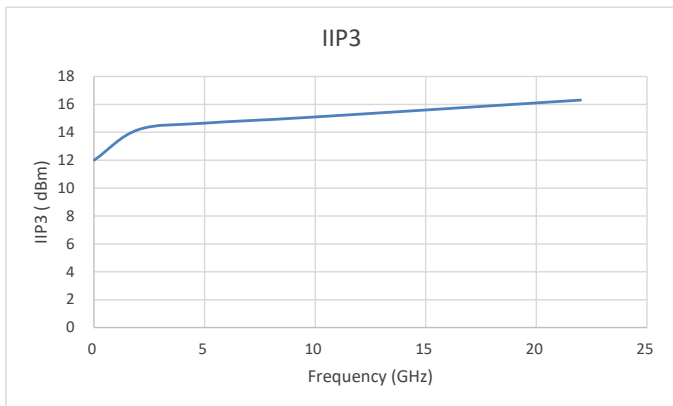
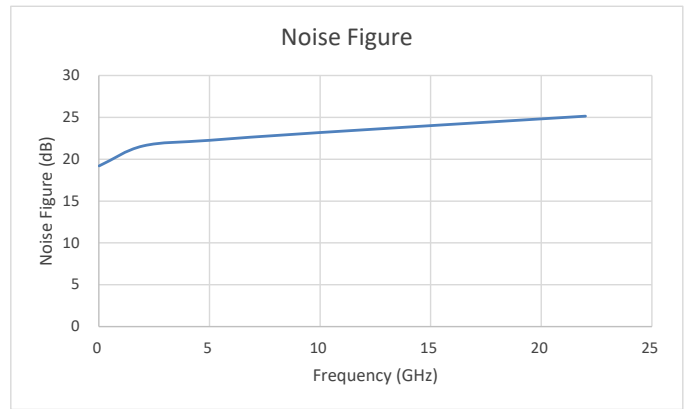
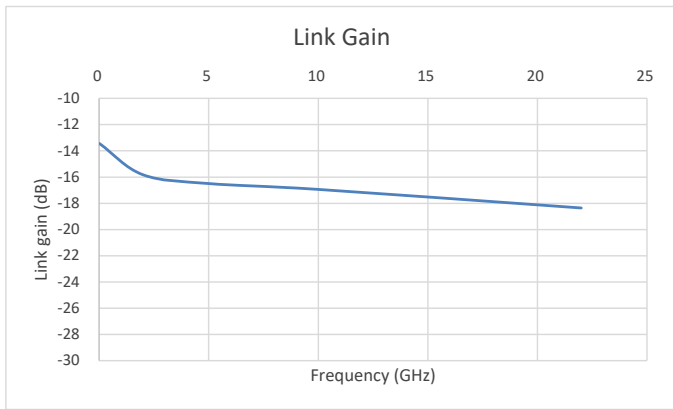
Note (1) : Typical Performance stated with 10mW dBo RX Optical Input applied to MP-8000-RX-00 Receiver Module

Note (2) : Typical Performance stated with 20mW dBo RX Optical Input applied to MP-8000-RX-00 Receiver Module

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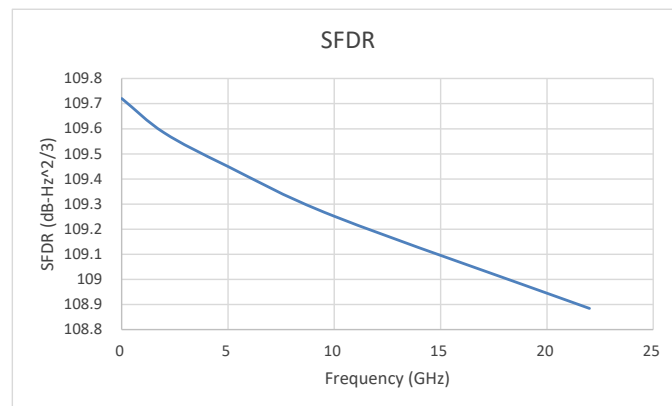
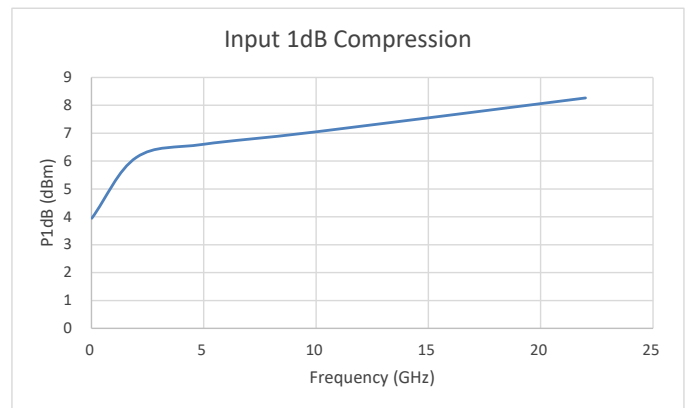
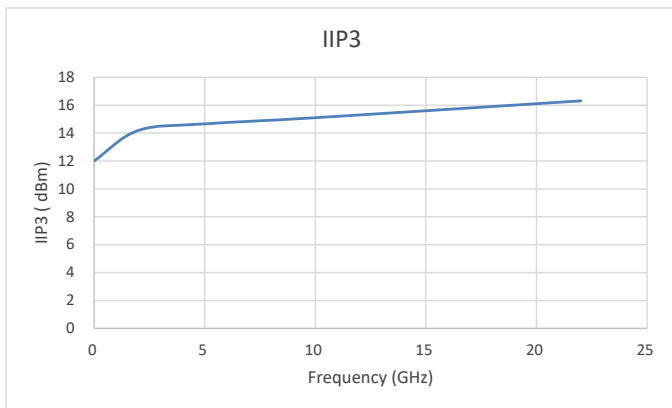
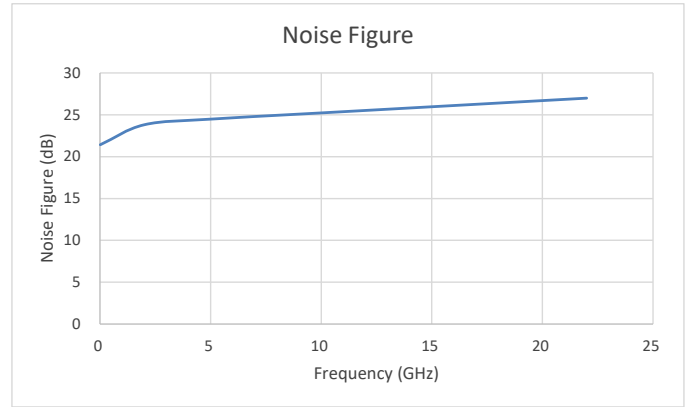
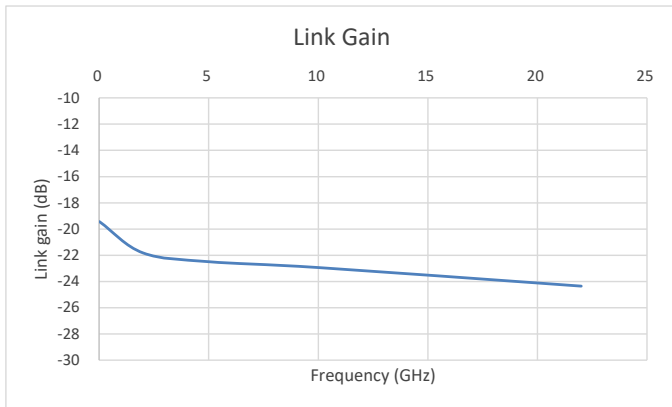
Typical Performance Plots - 0 dBo Link Loss



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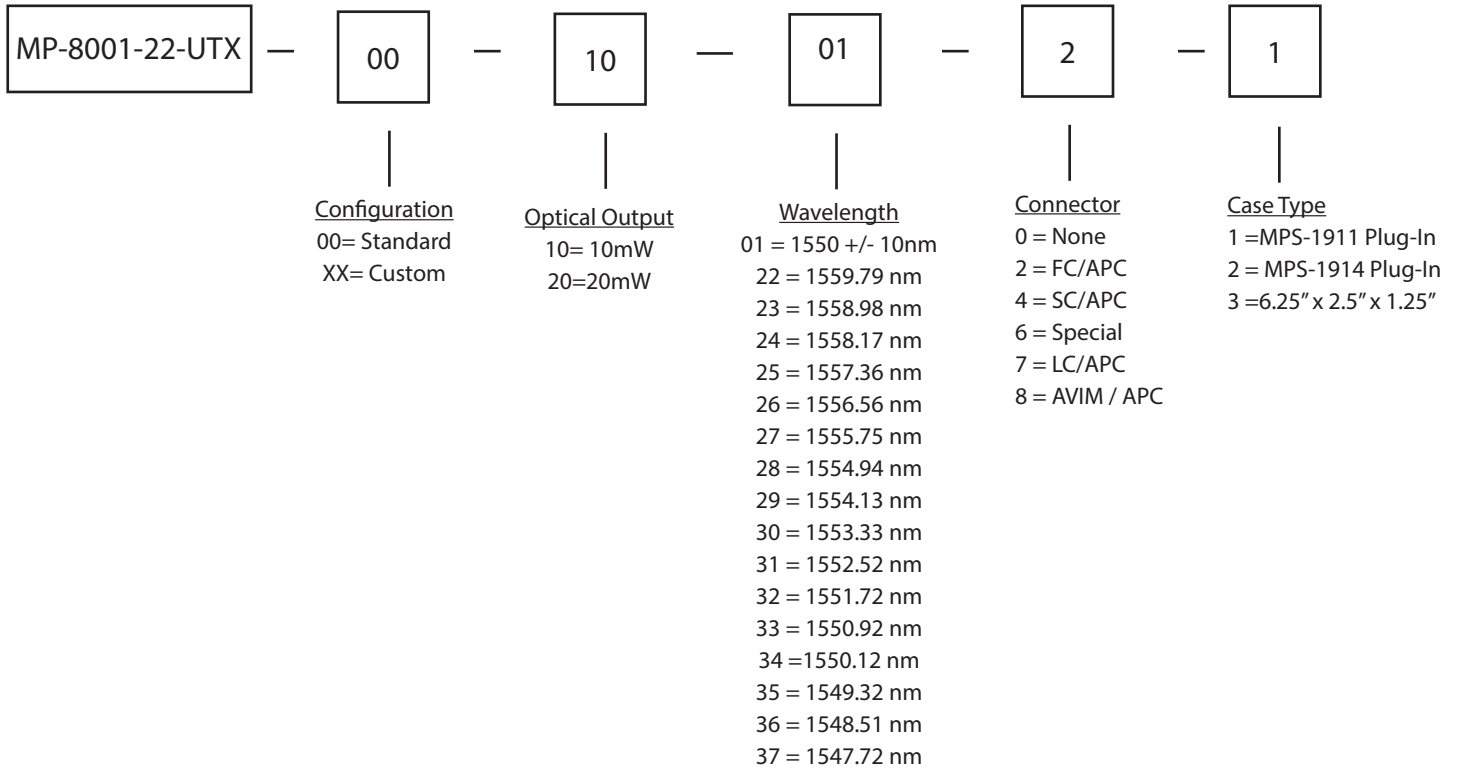
Typical Performance Plots - 3 dBo Link Loss



MP-8001-22 Series Low NF Unamplified Microwave Fiber Optic Transmitter

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Transmitter Part Number Generator



Note (1) : Other Frequency Bandwidths Available on Request