

# 35 GHz EAM Fiber Optical Transmitter



DATASHEET

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The EMTX is a 35 GHz fiber optic transmitter designed for RF-over-fiber, antenna remoting, and broadband digital communication, offering high-fidelity RF-to-optical signal conversion. It features a monolithically integrated distributed feedback (DFB) laser coupled with a high-speed electro-absorption modulator (EAM) for efficiently converting both analog and digital RF signals into optical signals with high fidelity. The module contains a precision laser and TEC controller and includes a built-in DC bias circuit to ensure a linear response, while a USB interface enables laser power adjustment, bias control voltage adjustment, and status monitoring. The EMTX operates on a low-noise  $\pm 5V$  DC power supply, available as an optional accessory.

The bias T voltage is adjustable via USB to optimize the performance.

## Features

- Wide Bandwidth up to 35 GHz
- USB Optical Power/Bias Control
- Integrated Bias-Tee
- Low RF Drive Voltage

## Applications

- 35 GHz RF over Fiber
- Phased and Interferometric Array Antenna
- 40 Gb/s NRZ / RZ Data Communication
- RF/IF Signal Distribution

## Specifications

Parameter	Min	Typical	Max	Unit
Output Wavelength	1525	1545	1565	nm
Output Power		8.5		dBm
Side Mode Suppression Ratio		40		dB
LD Operation Current		100		mA
RF Bandwidth (S21)		34		GHz
Low Cutoff Frequency			500	Hz
Electrical Return Loss (S22) @18GHz		-10		dB
RF Input Impedance		50		$\Omega$
Static Extinction Ratio	15			dB
EAM Operation Bias Voltage		-1.5		V
RF Input Amplitude			3	V
Operation Temperature		50		$^{\circ}C$
Storage Temperature		75		$^{\circ}C$
LD Forward Current		110		mA
EAM Bias Voltage		0.5		V
RF Input Power*		13.5		dBm
RF Output Connector	GPPO male			
Power Supply Requirement	$\pm 5$ VDC, 2A max			
Power Supply Connector	3-pin Molex Connector			
Remote Control	via USB			
Matching Power Supply	$\pm 5VDC$ Power Supply DPP55V (sold separately)			



**Note:** The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

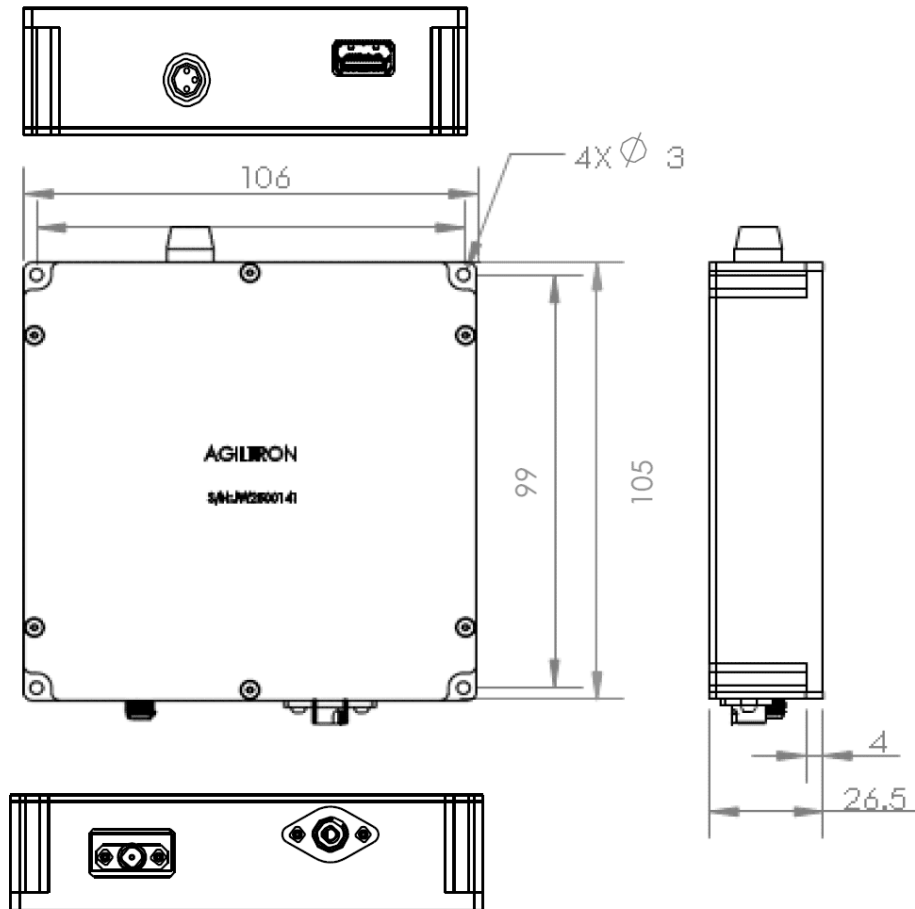
Rev 07/18/25

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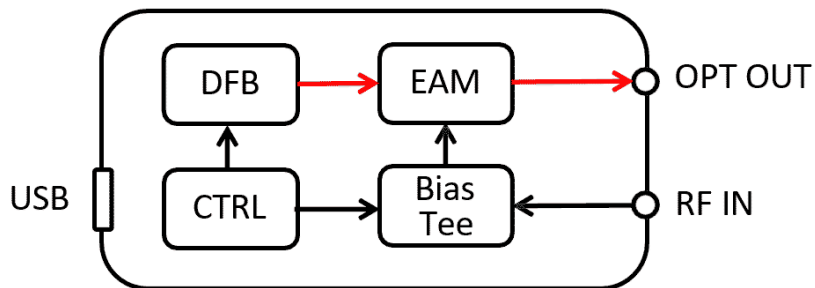
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### Mechanical Drawing (mm)



\*Due to our continuous product improvement program, specifications are subject to change without notice.

### Functional Diagram

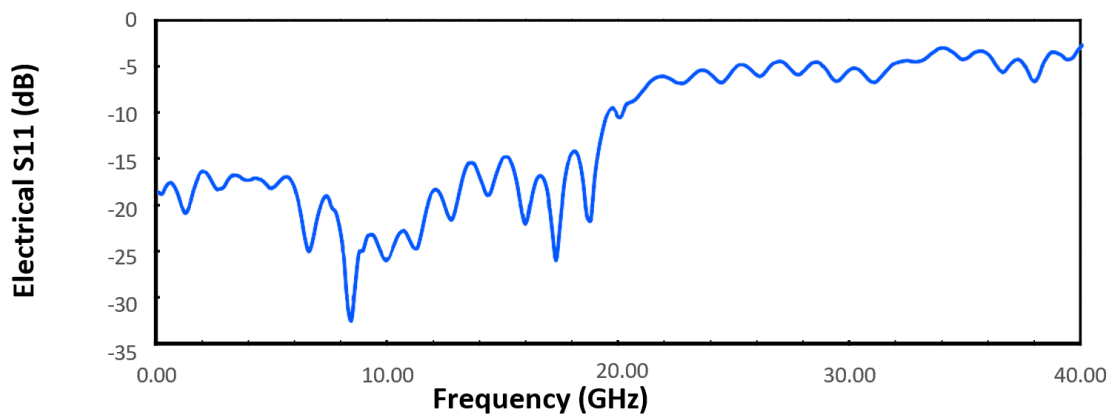
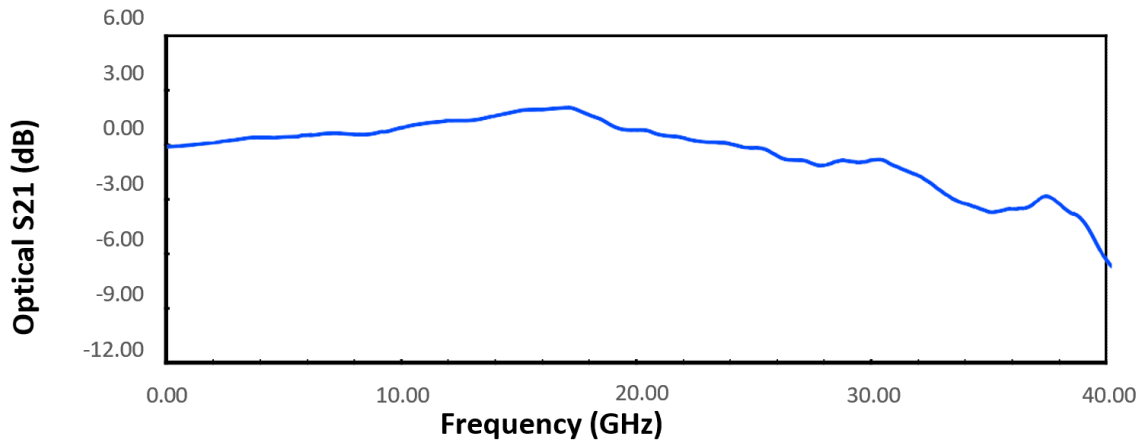


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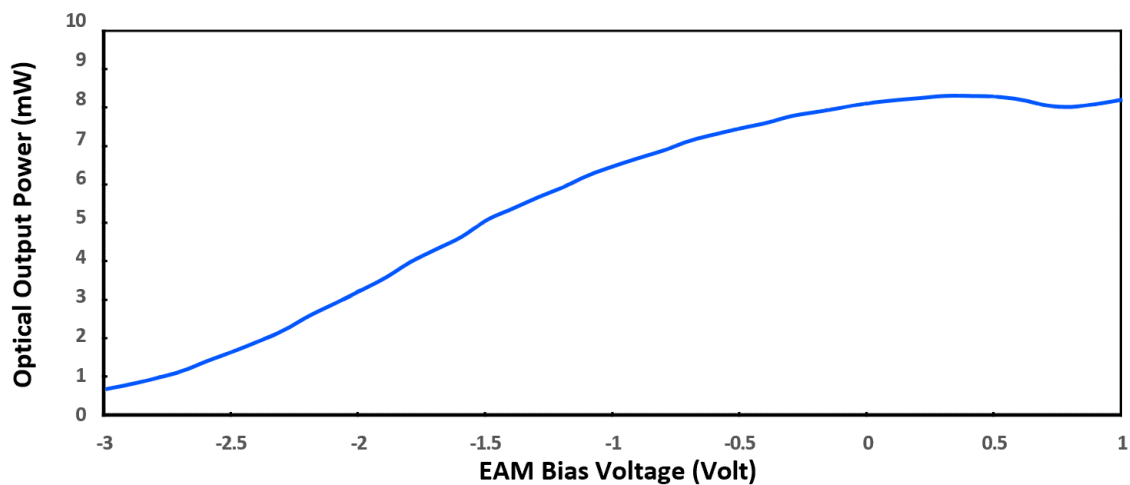


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### Typical S21 and S11 Response



### Typical Transfer Function



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### Ordering Information (Part Number)

Prefix	Bandwidth	Wavelength	DC Power Supply *	Package	Fiber Type	Connector <sup>[1]</sup>
EMTX-	35GHz = 35	1550nm = 5	Non = 1 DPPS5V = 2	Standard = 111	SM28 = 1 PM1550 = 2 Special = 0	FC/APC = 3 Special = 0

\* DPPS5V wall pluggable DC power supply is \$165 ea

[1]. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

### Caution Electrostatic Sensitivity



- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots



### 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 products, 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  $\mu$ m.

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 Commission.