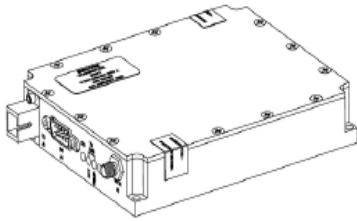


# 5021T 22 GHz DFB Transmitter



The 5021T 22 GHz transmitter delivers unmatched performance for radar testing, signal processing, phased antenna array, and phase noise testing. This rugged device eliminates many of the problems that are inherent in alternative transmitter technologies. When used in conjunction with an Emcore fiber optic receiver it offers superior performance.



## Features

- Bandwidth to 22 GHz
- Cooled, isolated direct-mod DFB laser
- High dynamic range
- -40 to +65 C
- 1310 nm
- Flat frequency response
- Low phase noise
- CE Certified

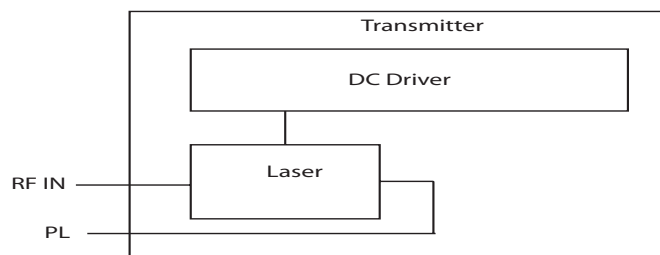
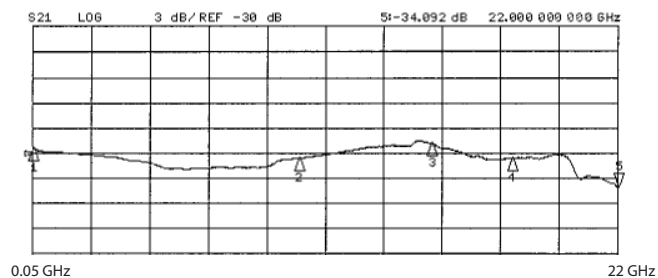
## Applications

- Radar testing
- Signal processing
- Phased antenna array
- Phase noise processing
- Antenna remoting
- Military communications
- Telemetry, Tracking & Control (TT&C)

Ortel's fiber-optic transmitters provide bandwidth that is essentially independent of fiber length, loss or delay, and triple transit signals that are immeasurable. In addition to enhanced electrical performance, the transmitter provide several mechanical advantages. Ortel's technology takes advantage of the rigid yet flexible properties of fiber-optic cable to provide repeatable, enhanced phase and group delay characteristics. The small size of these components allows for a compact package with superior temperature stability.

## Ordering Information

Model Number	Description
5021T-E-1309-SA	Transmitter, 22 GHz, SMA, 1310 nm, 9 dBm, SC/APC
5021T-E-1309-FA	Transmitter, 22 GHz, SMA, 1310 nm, 9 dBm, FC/APC



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## 22 GHz DFB Transmitter



MICROWAVE

### Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min	Max	Units
Operating Temperature Range of Baseplate:	T <sub>OP</sub>	continuous	-40	+65	°C
Storage Temperature	T <sub>STG</sub>	-	-55	+85	°C
RF Input Power	P <sub>IN</sub>	60 seconds	-	20	dBm

### DC Interface Characteristics

Pin Number	Min	Typ	Max	Max Ripple	Current
1	11V	-	16V	100 mV p-p	0.3 A max
2	4.5V	-	5.5V	200 mV p-p	1.6 A max

### Front Panel LEDs

- Power On
- Laser Temperature Stable
- Laser Power Stable

### Pin/Package Information

Nine-Pin, Male D-sub Connector

Pin Number	Min
1	+15 Vdc
2	+5 Vdc
3	Aux DC
4	Ground
5	Ground
6	Not Used
7	Alarm Common
8	Laser Current Monitor
9	Alarm

### Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class IIIb laser product. This device has been classified with the FDA/CDRH under accession number 0220191.

All Versions of this laser are Class 3B laser product, tested according to IEC 60825-1:1993 + A1:1997 + A2:2001 / EN 60825-1:1994 + A2:2001 + A1:2002

Single-mode fiber pigtail with connectors (standard).

Wavelength = 1.3 μm.

Maximum power = 30 mW.

Caution: Use of controls, adjustments and procedures other than those specified herein may result in hazardous laser radiation exposure.

### dc Monitor Voltages

- Laser dc current, pin 8:  
1V/100mA (into 1 MOhm load)

### Alarm Circuits

- Summary Alarm, pins 7&9. Closed when unit is OK. Open if faulted or no DC power.

The alarm is a dry form A contact. The alarm is a summary of :

1. +5 VDC regulator
2. Laser temperature
3. Laser optical power

### Optical Characteristics

Parameter	Specifications	Unit
Fiber	Single mode (9/125)	μm
Optical Connectors	SC/APC or FC/APC	-
5021 Optical Transmitter Output Power	9 to 11	dBm
Delay	7.5	ns, max

# 5021T

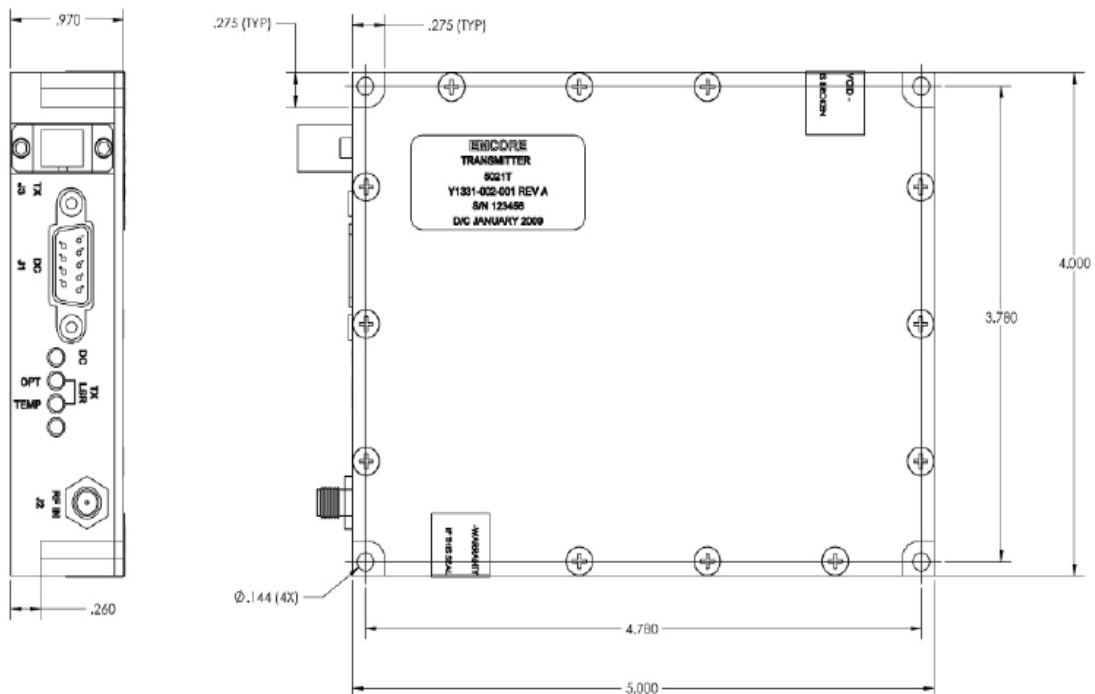
## 22 GHz DFB Transmitter

### Electrical Characteristics<sup>1</sup>

Parameter	5021E	Unit
RF Connectors	SMA	-
Upper Band Edge Frequency, min	22	GHz
Lower Band Edge Frequency, max	0.01	GHz
Transmitter Gain (TG) @ 1 GHz <sup>2</sup>	-17	dB (W/A)
Amplitude Flatness, max <sup>3</sup>	7.0	dB p-p
Input RF Return Loss, max <sup>3</sup>		dB
0.05 - 13 GHz	-7.0	
13 - 22 GHz	-4.0	
Impedance, typ.	50	ohm
Input 1 dB Compression, min <sup>3</sup>	+20	dBm
Input Third Order Intercept <sup>3</sup>		dBm
0.05 GHz - 7.0 GHz	+30	
7.0 GHz - 22 GHz	+25	
Noise Figure, max. <sup>3</sup>		dB
0.05 GHz - 3.0 GHz	44	
3.0 GHz - 7.0 GHz	50	
7.0 GHz - 13.0 GHz	54	
13.0 GHz - 18.0 GHz	59	
18.0 GHz - 22.0 GHz	61	

1. Tested at 25 °C unless noted otherwise
2. Gain = TG + RG - 2\* L<sub>opt</sub> (assumes R<sub>in</sub> = R<sub>out</sub>)
3. Performance applies only within frequency band specified by the model number

### Outline Drawing



Rev. December 13, 2010