Small Integrated Transmitter Unit SITU2300

0.01 – 3 GHz, 1550nm Directly Modulated Self-Contained Transmitter

With 30 dB Integrated RF Preamplifier

The Emcore Small Integrated Transmitter Unit (SITU2300) is a high-performance, directly modulated transmitter for applications with guaranteed performance over the 10 MHz to 3 GHz frequency band. The SITU2300 is a fully integrated unit that contains both the optics and the control electronics. Only a single DC input voltage and the RF input signal are required for operation. An input RF amplifier increases link performance.

The unit can be used to construct transparent optical links for antenna remoting, microwave delay lines and other applications where it is necessary to transport RF over long distances without signal degradation.

The unit operates at a nominal optical wavelength of 1550 nm and ITU wavelengths are available for CWDM and DWDM applications.

Applications

- **Cellular and PCS Antenna-Remoting**
- **Microwave Delay Lines**
- **Frequency Distribution Systems**
- **Radar System Calibration**
- **Phased Array Antenna Systems**

Features

- **Integrated high-powered 1550 nm DFB laser and bias control circuitry - Only DC input voltage and RF input required**
- **Integrated 20 dB GaAs FET Preamplifier**
- **High Dynamic Range**

Specifications

Electrical

Frequency Range	0.01 to 3 GHz
Max RF Input Power (Operational)	0 dBm
Max RF Input Power (Damage Threshold)	+23 dBm
Power Requirements	+15 V @ 1 A max – Single DC Input
RF Connector	SMA (female)
2^{nd} Harmonics (@ 0 dBm RF input)	< -35 dBc
Input IP1 (1 dB Compression Point)	-4 dBm (@ 2.5 GHz)
RF Input Impedance	50 Ω nominal
RF Return Loss	≥ 10 dB

Optical

Wavelength	1550 ± 6 nm; Specific ITU wavelengths available
Optical Connector	FC/APC
Optical Output Power	+8 - +10 dBm

Physical

Configuration	Environmentally Sealed Unit
Dimensions	1.0” H x 5.0” W x 4.0” D
Operating/Storage Temperature	-40 °C to +70 °C

For more information on this and other products:

Contact Sales at Emcore 626-293-3400, or visit www.emcore.com.

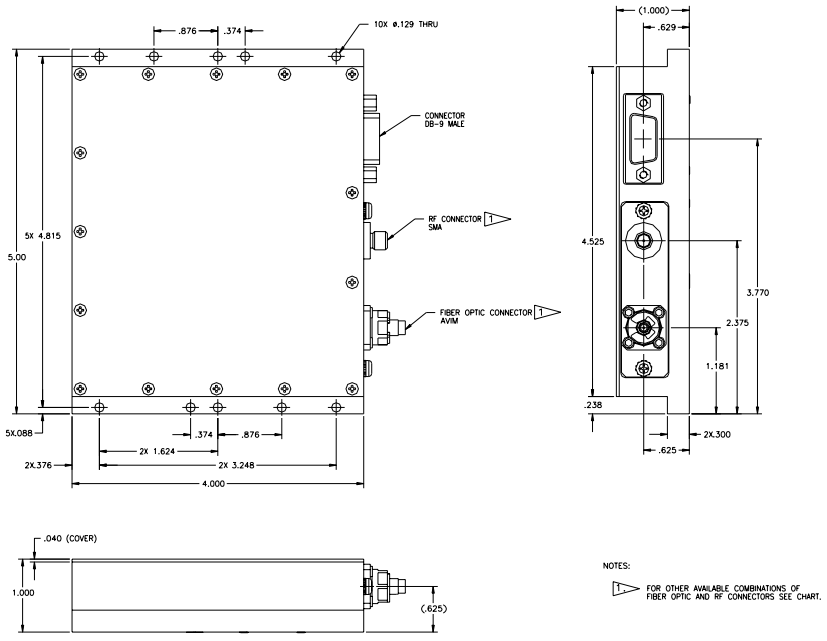
Link Performance Characteristics (SITU2300 TX with 0 dBm Optical Input to Emcore SIRU2300 RX)

@ 25C Unless otherwise specified

Parameter	Symbol	Frequency			Unit	Conditions
		-40C	25C	70C		
Frequency Range		.01 to 3			GHz	
Minimum Link Gain		1 2	0 1	-1 0	dB	@ .1 GHz @ 2.5 GHz Notes (1) & (2)
Gain Ripple		5			dB	p-p
Gain Slope		5			dB	
Link Noise Figure	NF	40			dB	Notes (1) and (3)
Input 1 dB Compression Point	P1dB	-4 -6	-2 -4	0 -2	dBm	@ 0.1 GHz @ 2.5 GHz
3rd Order Intercept Point	IP3	+28			dBm	Input IP3
Spur Free Dynamic Range	SFDR	108			dB-Hz$^{2/3}$	
Return Loss, Minimum	S11	10			dB	

(1) RF Power Level = -40 dBm, Laser output optical power = 8 ± 1 dBm; Fiber loss = 8 ± 1dB, Optical power level at the photodetector = 0 dBm; Detector responsivity = 0.86 A/W
(2) RF Link gain will change 2 dB for each 1 dB change in RX optical input power
(3) Link NF will typically improve 1 dB for each 1 dB increase in RX optical input power

Package Outline Drawing



Ordering Information

SITU-2300 0.1 – 3 GHz Directly Modulated Transmitter, Flange Mount

D-Connector Pin Out

1	+15 V
2	n/c
3	n/c
4	GND
5	n/c
6	Optical Power Monitor
7	Low Power Alarm
8	n/c
9	n/c

Laser Safety

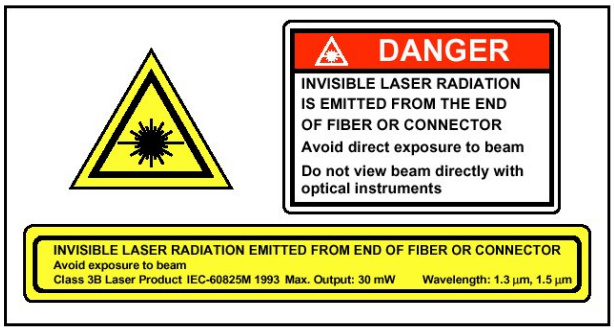
Class IIIb Laser Product

FDA/CDRH Class IIIb laser product. All transmitter versions are Class IIIB laser products per CDRH, 21 CFR 2040 Laser Safety requirements. All versions are Class 3B laser products per IEC*60825-1:1993.

Maximum Power = 10 dBm

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

*IEC is a registered trademark of the International Electrotechnical Commission.



EMCORE
2015 Chestnut Street
Alhambra, California 91803-1542
Tel: 626-293-3400
Fax: 626-293-3428
www.emcore.com

For more information on this and other products:

Contact Sales at Emcore 626-293-3400
or visit www.emcore.com.