



Applications

- Microwave antenna signal distribution
- Broadband delay-line and signal processing systems
- Frequency distribution systems
- Radar system calibration
- Phased array antenna systems, interferometric antenna arrays

Features

- 50 MHz – 40 GHz
- High dynamic range
- Fully integrated unit
- Bias control circuits for laser and modulator

Externally Modulated Transmitter SITU3040

0.05 – 40 GHz, 1550nm Externally Modulated Self-Contained Transmitter

The Emcore Small Integrated Transmitter Unit (SITU) is a high performance externally modulated transmitter for applications from 50 MHz to 40 GHz. The SITU3040 is a fully integrated unit that contains both the optics and the control electronics. Only DC input voltages and the RF signal are required for operation.

The units can be used to construct transparent links for antenna remoting. The broad bandwidth is intended for applications such as electronic warfare and Ka band systems. Other applications include delay lines and signal processing systems.

The system operates at a nominal wavelength of 1550 nm. Wavelength selected lasers on the ITU grid are also available for WDM applications.

Performance Highlights

	Min	Typical	Max	Units
Frequency Range	.05	--	40	GHz
RF input power dBm	0	--	+25	dBm
Wavelength		1550		nm
Optical Output Power	6	7	8	dBm
Temperature Range	-40	--	70	°C

See following pages for complete specifications and conditions.

For more information on this and other products:

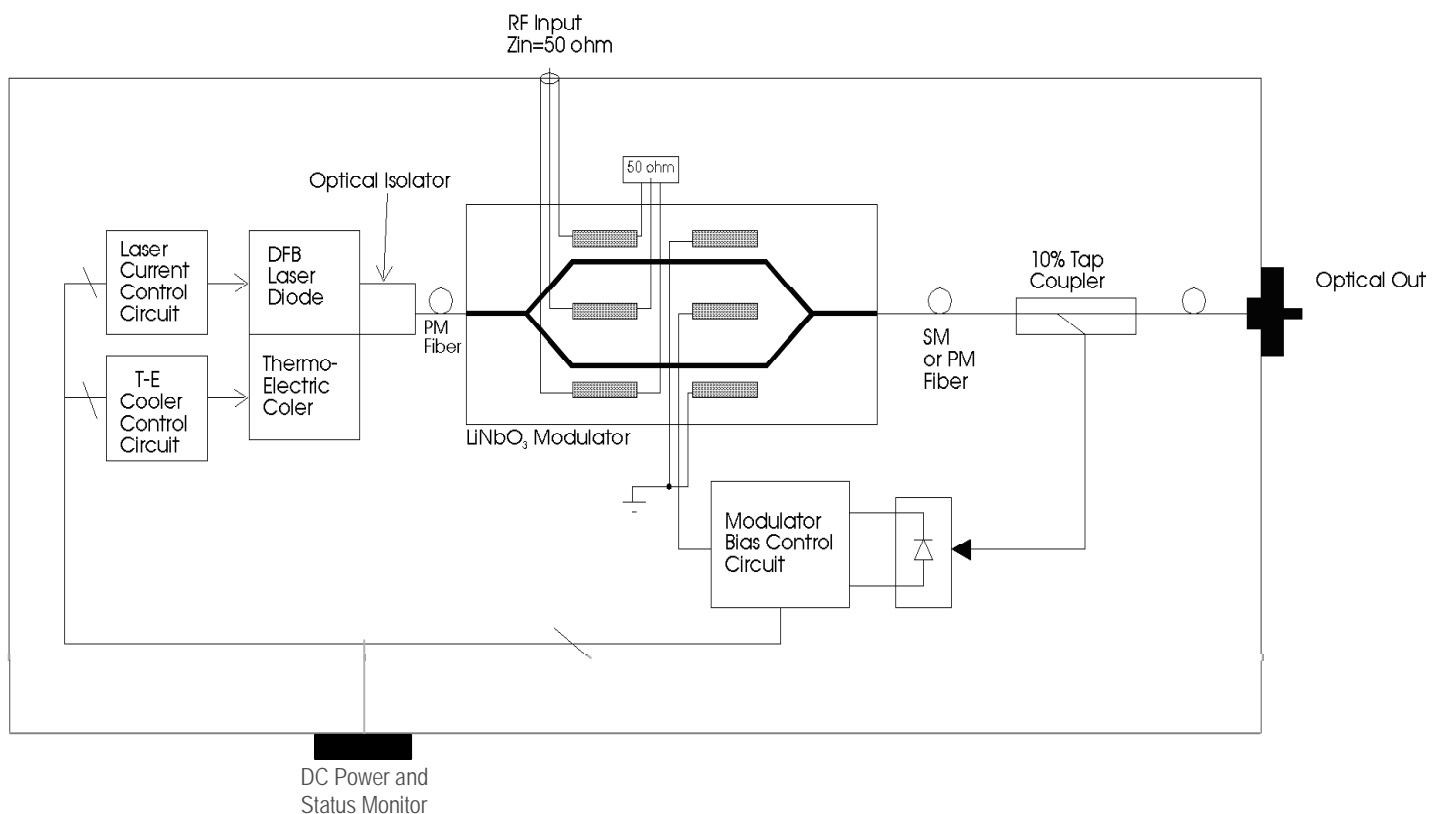
Contact Sales at Emcore 626-293-3400, or visit www.emcore.com.

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	Min	Max	Units
Operating Temperature (within specifications)	T_{OP}	-40	70	°C
Storage Temperature	T_{STG}	-40	70	°C
RF Input	S_{in}	0	25	dBm

Reference Block Diagram



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Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Wavelength	λ	-	1530	1550	1565	nm
Optical Output Power	P_L	-	6	7	8	dBm
Connector Return Loss	-	-	65	--	--	dB
Optical Connector Type		FC/APC				

Note: In order to prevent reflection-induced distortion degradation, the laser should be connected to an optical cable having a return loss of at least 55 dB for discrete reflections and 30 dB for distributed reflections.

RF Characteristics

Parameter	Condition	Min	Typ	Max	Unit
Operational Bandwidth	-	0.05		40	GHz
RF Input Impedance	-		50	-	Ω
RF Return Loss		9	15		dB
2 nd Harmonic Suppression	RF input 0 dBm		-75	-45	dBc
1 dB Compression Point	@20 GHz		+20		dBm
	@40 GHz		+25		
RF Connector	K (Female) Type				

Link Performance

SITU3040 transmitter with 0 dBm RF input and SIRU3040 receiver with 0 dBm optical input

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Link Gain	G	@ 20 GHz		-48		dB
		@ 40 GHz		-53		
Noise Figure	NF	@ 20 GHz		55		dB
		@40 GHz		59		
Input IP3	IIP3	@ 20 GHz		+29		dBm
		@ 40 GHz		+34		
Spurious Free Dynamic Range	SFDR	@ 0 dBm RX Optical Input		100		dB/Hz ^{2/3}
		@ +10 dBm RX Optical Input		105		
Gain Variation		50 MHz to 1 GHz			5	dB
		1 GHz to 40 GHz			15	

DC Power

Input Voltage	Max Current
+5	2 A
+15	0.1 A
-5	0.4 A
-15	0.1 A

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For more information on this and other products:

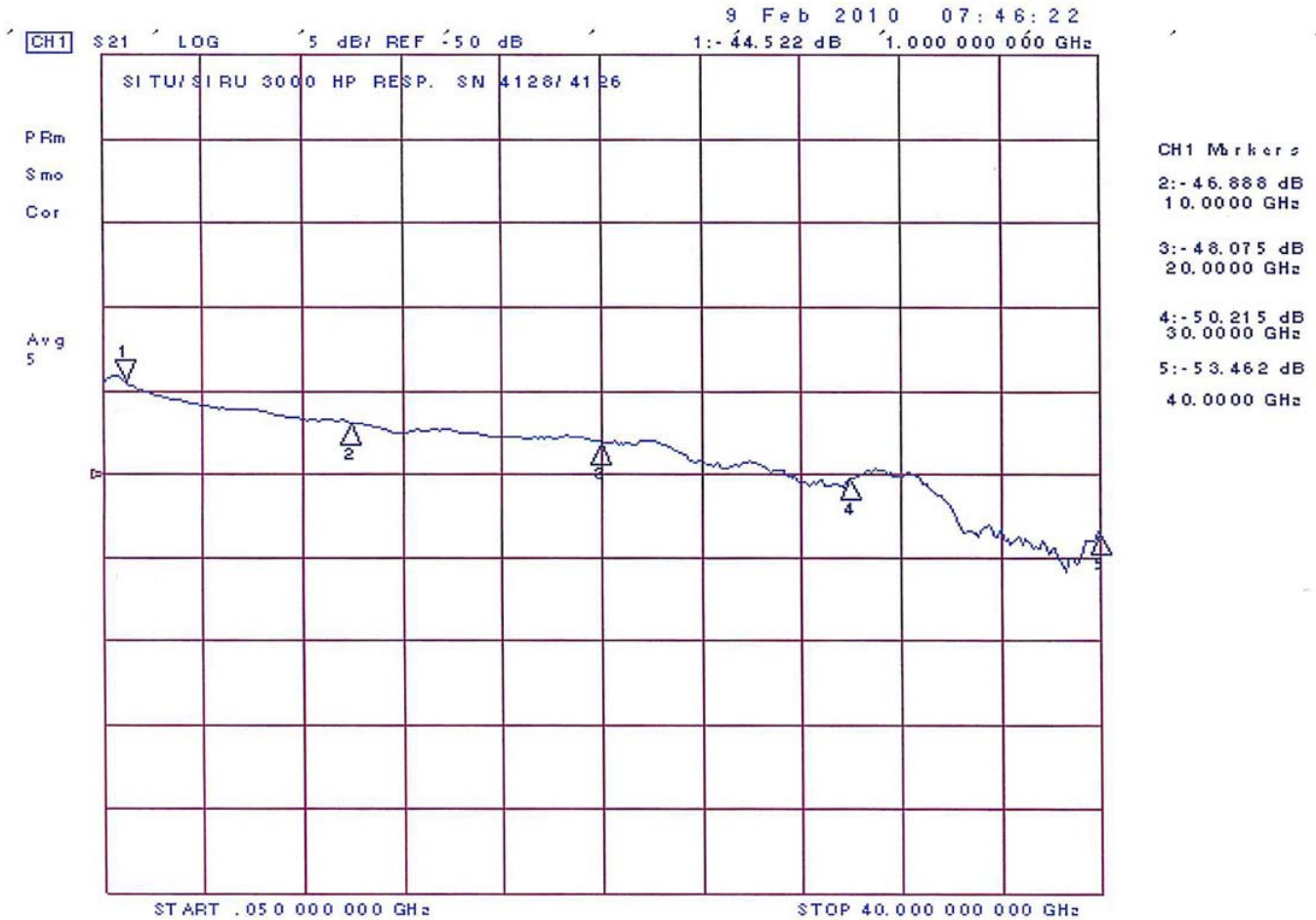
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Typical Frequency Response

(SITU3040 transmitter with 0 dBm RF input and SIRU3040 receiver with 0 dBm optical input)



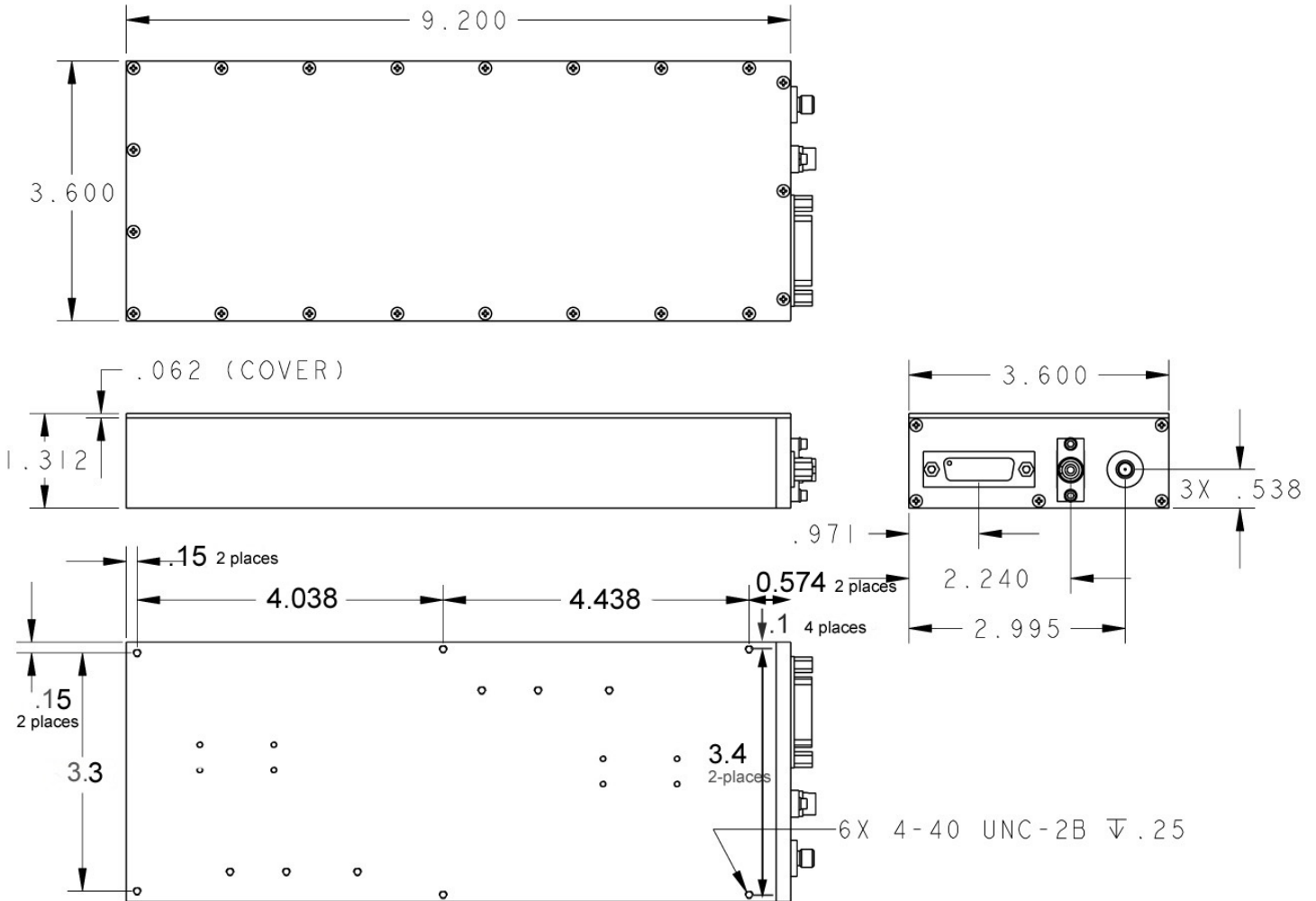
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Ordering Information

SITU3040

Mechanical Dimensions



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Laser Safety

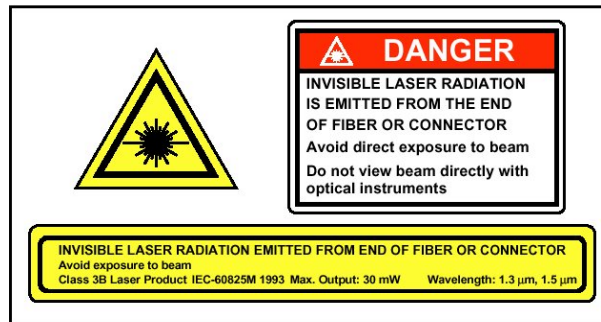
Class IIIb Laser Product

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 = 8 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.



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