

- Frequency : 8MHz to 4GHz
- P<sub>1dB</sub> Output : +18dBm
- Phase Noise : -172dBc/Hz at 10kHz
- Gain : 14dB at 1GHz
- Power Supply : 6V<sub>DC</sub> to 12 V<sub>DC</sub> (80mA)
- Integrated Ultra Low Noise Bias Network



### SUMMARY

The Holzworth HX2400 is a broadband, Ultra Low Phase Noise RF Amplifier originally designed for use in laboratory and measurement applications where low phase noise and low additive jitter are critical. The proprietary circuitry allows for broadband, ultra low phase noise performance while being powered via a typical bench top power supply.

The HX2400 can be powered from bench top power supplies, a standard AC/DC adapter (available separately) or via a 6V<sub>DC</sub> to 12V<sub>DC</sub> battery. Battery operation is ideal for use in closed systems and ground isolated systems where low noise is absolutely critical. Furthermore, Hi-Rel design and manufacturing standards have been adopted ensuring a solid design for demanding OEM applications. Holzworth products are 100% final performance tested for phase noise verification<sup>1</sup>.

### SPECIFICATIONS<sup>2</sup>

PARAMETER	MIN	TYP	MAX	UNITS	COMMENTS
Frequency Range	8 M		4 G	Hz	
Gain	11	14	15	dB	
P <sub>1dB</sub>		18		dBm	100MHz
Phase Noise 100Hz offset		-160	-157	dBc	P <sub>OUT</sub> = +18dBm
10kHz offset		-172	-169	dBc	P <sub>OUT</sub> = +18dBm
DC Bias Voltage	6		12	Volts	Internally Regulated
Second Harmonic			-30	dBc	At P <sub>OUT</sub> = +14dBm
Third Harmonic			-30	dBc	At P <sub>OUT</sub> = +14dBm
Power Supply Rejection		-80		dB	At < 10kHz
DC Power Supply	6		12	V <sub>DC</sub>	80mA
Operating Temperature Range	0		50	C	
RF Connectors	SMA Female				
DC Connector	SMB Male				
Housing Dimensions (LxWxH)	1.75" x 1.5" x 0.5" (44.5mm x 38.1mm x 12.7mm)				

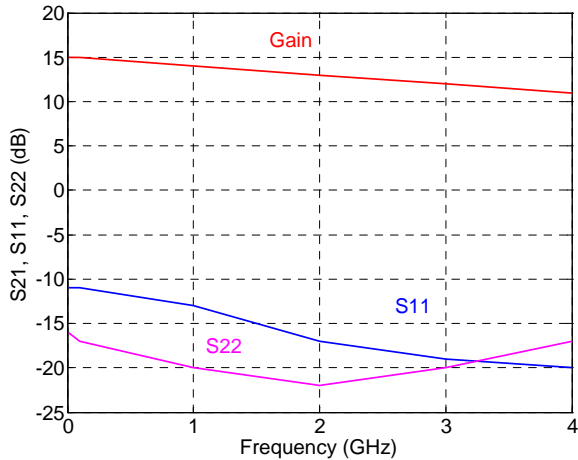
<sup>1</sup> Final performance verification at 100MHz, P<sub>IN</sub>=+4dBm, P<sub>OUT</sub>=+18dBm

<sup>2</sup> Specifications are subject to change per the discretion of Holzworth Instrumentation, Inc.

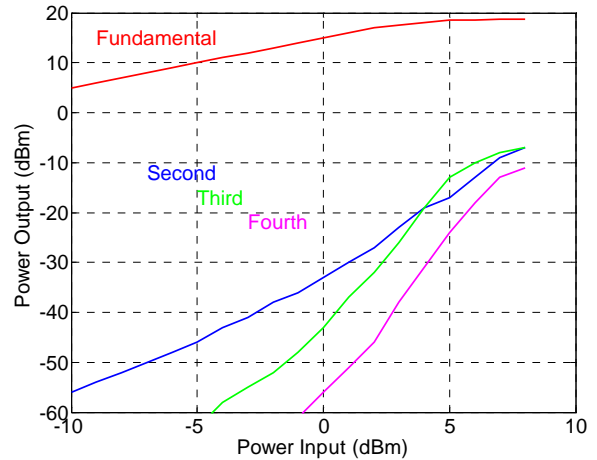
### RoHS Compliant

### HX2400 PERFORMANCE DATA

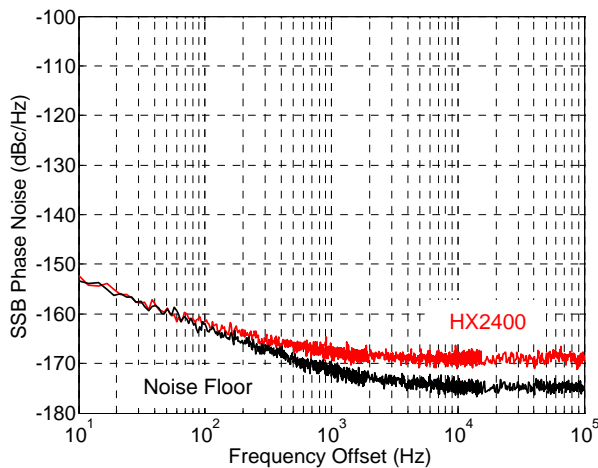
The data included here demonstrates typical performance of the HX2400 LPN RF Amplifier under ambient laboratory conditions. Broadband gain, low harmonics and excellent phase noise performance make the HX2400 a versatile amplifier for laboratory applications, while low power consumption also makes it an attractive choice for many OEM applications.



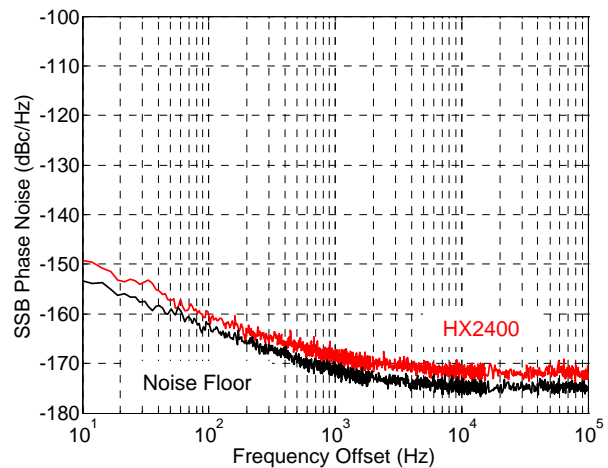
**Figure 1: Gain vs. Frequency**



**Figure 2:  $P_{OUT}$  vs.  $P_{IN}$  at 100MHz**  
(Fundamental, 2<sup>ND</sup>, 3<sup>RD</sup> and 4<sup>TH</sup> Harmonics)



**Figure 3: SSB Phase Noise at 100MHz**  
( $P_{IN} = -1$  dBm)

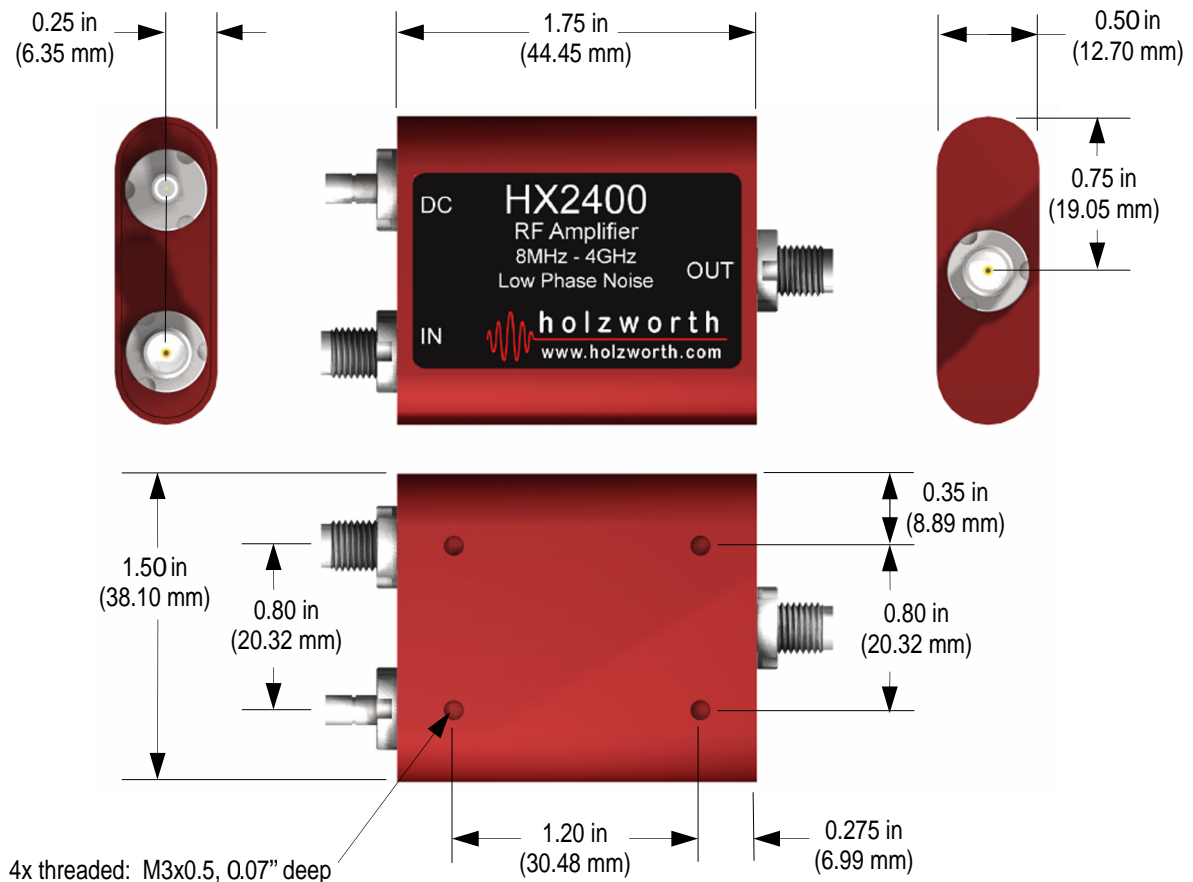


**Figure 4: SSB Phase Noise at 100MHz**  
( $P_{IN} = +4$  dBm)

Need performance that varies from what's shown here? Contact Holzworth for custom OEM solutions.

**MECHANICAL**

The HX2400 LPN RF Amplifier comes in a compact, shielded housing complete with threaded mounting holes for ease of system integration into various test sets. It operates off of a variety of power sources, making it a versatile low phase noise amplifier option.



**RoHS Compliant**

**WARRANTY**

All Holzworth amplifiers come with a 90 day 100% product warranty covering manufacturing defects. All product repairs and maintenance must be performed by Holzworth Instrumentation. Holzworth reserves the right to invalidate the warranty for any product that has been tampered with or used improperly. Refer to Holzworth Terms & Conditions of Sales for more details.