

# NWO9296-13

9.20 – 9.60GHz Source  
Frequency Synthesizer  
v 1.2

## GENERAL DESCRIPTION

The NWO9296-13 is one of a family of high performance X- band frequency synthesizers that operates from 9.0 to 10GHz. The phase noise performance of the unit results in a source coherence of -50dBc over the integration bandwidth from 10Hz to 1MHz. A fractional-N based synthesizer core is used which enables frequency switching speed below 100us and frequency tuning resolution below 1Hz. Output spurious level of the source is below -60dBc at the standard frequency step of 10MHz. The source contains an internal high performance crystal oscillator to ensure frequency stability over temperature of  $\pm 1$ ppm and g-sensitivity below 0.5ppb/g. The unit provides a 10MHz reference output as standard for use as a system clock or as a synchronization signal for test equipment.

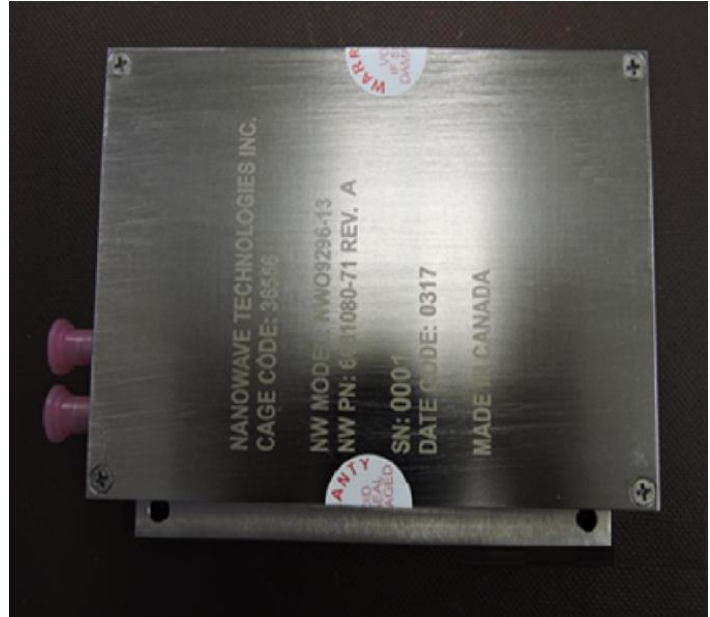


Figure 1- Compact X-Band Source

Operation of the unit is from a +12V supply with control and monitoring via RS232 digital interface.

## FEATURES

- Exceptionally low phase noise
- Flexible frequency ordering across S-band
- MIL-PRF-38534 construction

## APPLICATIONS

- Coastal Surveillance Radar
- Ground Station Radar
- Naval applications

## ELECTRICAL PARAMETERS

Parameter	Unit	Min	Typ	Max	Remarks
Frequency range	GHz	9.20		9.60	Unit available for frequencies across X- band in 200MHz bands for standard product.
Frequency stability over temperature	ppm			$\pm 1$	
Frequency ageing	ppm/year			+1	
High power port J1	dBm	+13			
Frequency switching time	ns	200			

### NANOWAVE Technologies Inc.

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Parameter	Unit	Min	Typ	Max	Remarks
Carrier Offset	Phase Noise				
10Hz	dBc/Hz			-55	
100Hz	dBc/Hz			-85	
1KHz	dBc/Hz			-100	
10KHz	dBc/Hz			-100	
100KHz	dBc/Hz			-105	
1MHz	dBc/Hz			-120	
Coherence	dBc			-50	
Harmonics	dBc			-25	
Subharmonics	dBc			-60	
Spurious max	dBc			-60	
Frequency control (J3)	RS232 UART				
Frequency step	Hz	<1			Enables system setting of frequency.
Lock detect signal	TTL signal high indicates lock				Enables system check of unit lock status.
Reference output (J2)					
Reference frequency	MHz			10	
Reference power level	dBm	0			10MHz internal reference
Reference stabilization time	min			5	
Input supply	V			12	
Input current	A			1.5	
DC power dissipation	W			22.5	
Frequency stability over temperature	ppm			±1	
Frequency ageing	ppm/year			+1	

## MECHANICAL AND ENVIRONMENTAL PARAMETERS

Parameter	Unit	Min	Typ.	Max	Remarks
Operating Temperature Range	°C	0		+70	Extended temperature on request
Non-operating Temperature Range	°C	0		+85	
Ingress Protection	IP		60		
Size (length, width, height)	Inches		5 x 4.5 x 1.5		
Weight	g		670		
RF Output Connectors			SMA-F		
Digital/Power			DB9-M		
Marking	Manufacturer name, model, serial number, date code				

**Notes:** Specifications subject to change without notice.

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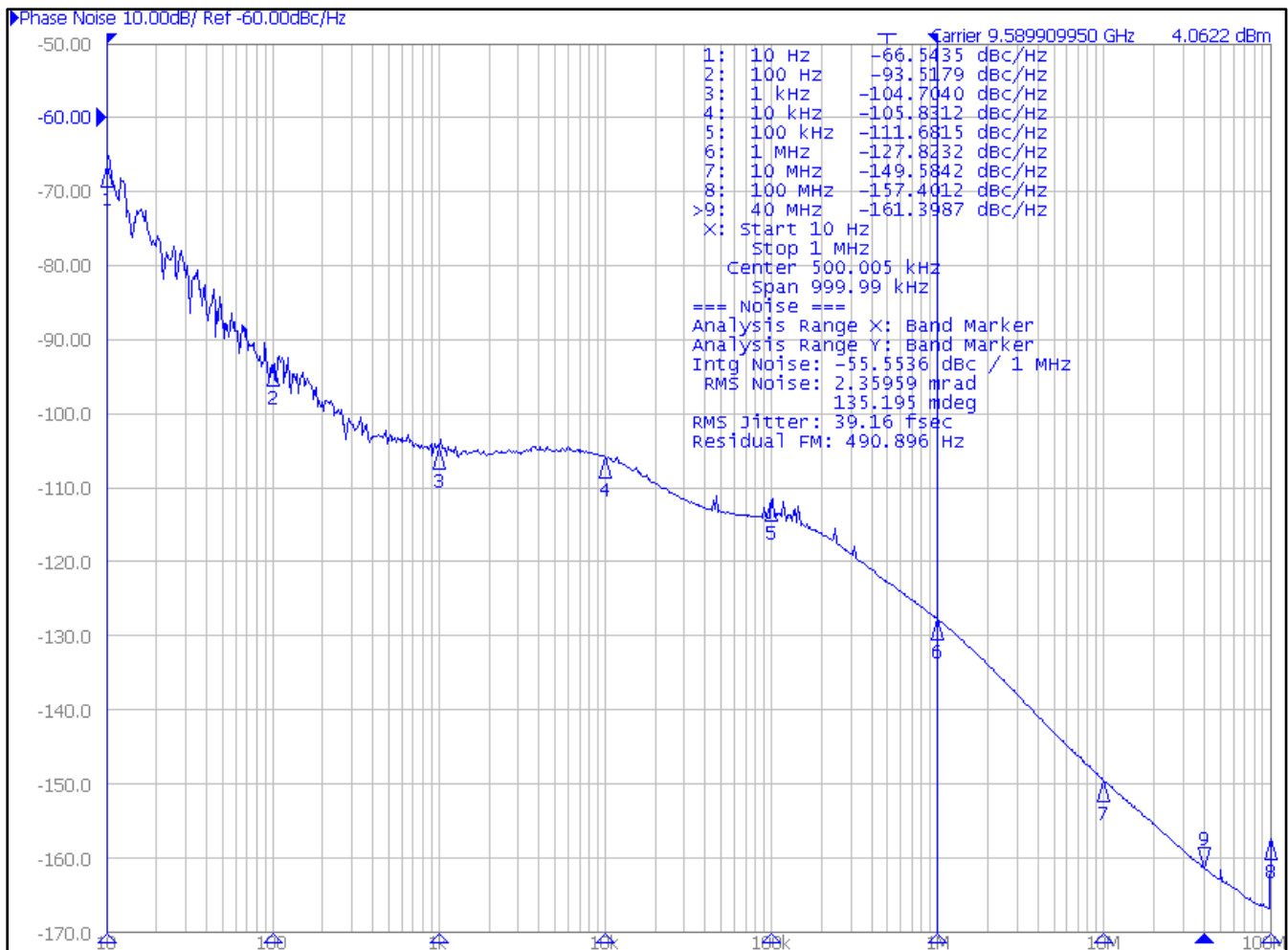


Fig 2: Typical Phase Noise performance

## COMMUNICATION AND CONTROL INTERFACE

The STALO can be monitored and controlled via a Graphical User Interface (GUI). The communication is conducted using an RS-232 interface allowing frequency to be set from a host computer. The unit's lock status and internal temperature can also be monitored.

Parameters monitored/controlled via RS-232:

- Frequency
- Temperature
- Lock Status

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## OUTLINE DRAWING

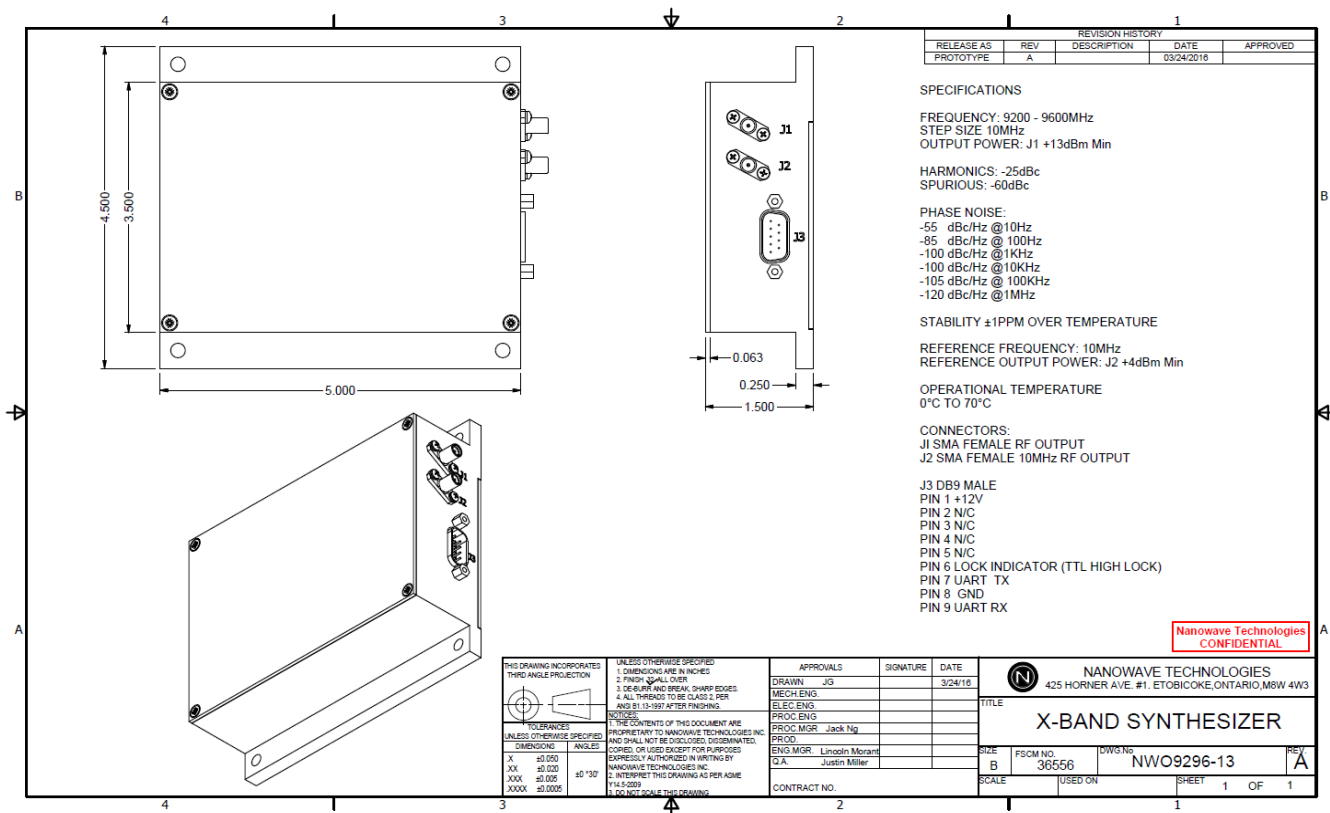


Fig 1: Outline Drawing of 9.36GHz – 9.60GHz RADAR Frequency Synthesizer

Table 1: List of Connectors

J1	RF O/P +13dBm
J2	RF O/P +13dBm
J3	RF O/P +17dBm
J4	10MHz REF Out
J5	Digital Control and Power

**Notes:**

The outline of this source unit is customizable. Arbitrary shapes are possible to accommodate form-fit functionality.

**Additional features:**

- Marking: The unit is marked with manufacturer part no., date code, and Serial Number.
- All plating and painting is RoHS compliant

For further information please contact NANOWAVE Technologies Inc. at [sales@nanowavetech.com](mailto:sales@nanowavetech.com) , or call at (+1) 416-252-5602