GENERAL DESCRIPTION

The NWO08012-10 is a fully integrated X-band airborne synthesizer module. The unit requires an external 100MHz reference and delivers an average output power of +10 dBm. The phase noise is exceptionally low with -108 dBc/Hz @ 100 kHz offset measured at 12 GHz output frequency and spurious lower than -55 dBc.

The NANOWAVE in-house manufacturing process is used within the design to meet a high level of reliability whilst ensuring a small form factor. This makes the NWO0812-10 an ideal choice for airborne radar systems.

Fig 1: X-Band Synthesizer Drop-In

FEATURES

- Full X-band operation.
- Low phase noise -108dBc/Hz at 100kHz,
- Low spurious < -55dBc
- Industrial operational temperature range (-40°C to +85°C)

APPLICATIONS

- Airborne radar

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ELECTRICAL PARAMETERS

Parameter	Unit	Min	Typ	Max	Remarks
Operating Frequency Range	GHz	8.0		12	
Step Size	MHz	1.0e-6	5	4000	
Output Power Level	dBm		+10.0		
Phase Noise at 12 GHz					1)
@ 10 Hz	dBc/Hz		-57	-50	2)
@ 100 Hz	dBc/Hz		-85	-80	
@ 1kHz	dBc/Hz		-97	-90	
@ 10 kHz	dBc/Hz		-105	-100	
@ 100 kHz	dBc/Hz		-108	-100	
@ 1MHz	dBc/Hz		-115	-110	
@ 10 MHz	dBc/Hz		-143	-138	
@ 100 MHz	dBc/Hz		-156	-150	
Spurious Level	dBc		-60.0	-55.0	3)
Harmonics Level	dBc	-40.0			4)
Frequency Settling Time	µs		200	300.0	5)
Output Return Loss	dB		15.0		
Reference Input Frequency	MHz		100.0		
Reference Power Level	dBm	-5.0		+5.0	
Reference Waveform Type			Sine		
DC voltage	V		+6		
DC power consumption	W			4.5	6)

Notes:

1) Performance at offset frequencies below 10 kHz is subject to change with different 100 MHz reference.

2) Typical phase noise based on measured data recorded at room temperature.

3) Worst case Spurious at 5 MHz frequency steps. Spurious can be optimized for specific narrow band and step size.

4) Low pass filtering can be added on request for better harmonics performance.

5) Frequency settling time dependent on frequency step size.

6). Maximum power accounts for thermal variation.

COMMUNICATION AND CONTROL INTERFACE

The synthesizer provides monitor and control of the lock status and output frequency. Interface can be customized to meet system interface requirements.

Parameter	Description	Remarks
Monitor and control	Frequency set	
Tele command	Lock detect	
Telemetry	CANBUS/ RS232/RS422/UART	
Digital interface signaling	Frequency set	Interface can be customized to support typical digital signalling protocols: CANBUS/ RS232/RS422/UART

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MECHANICAL AND ENVIRONMENTAL PARAMETERS

Parameter	Unit	Min	Typ.	Max	Remarks
Operating Temperature Range	°C	-40	25	+85	
Storage Temperature Range	°C	-55		+100	
RF output connector		GPO			Physical interface can be customized to meet system requirements.
Reference connector		GPO			
Monitor and Control		WIRE HARNESS			
DC Power		WIRE HARNESS			
Size (length, width, height)	Inches	4.90” x 3.90” x 0.60”			
Marking	Manufacturer name, model, serial number, date code				

Notes: Specifications subject to change without notice.

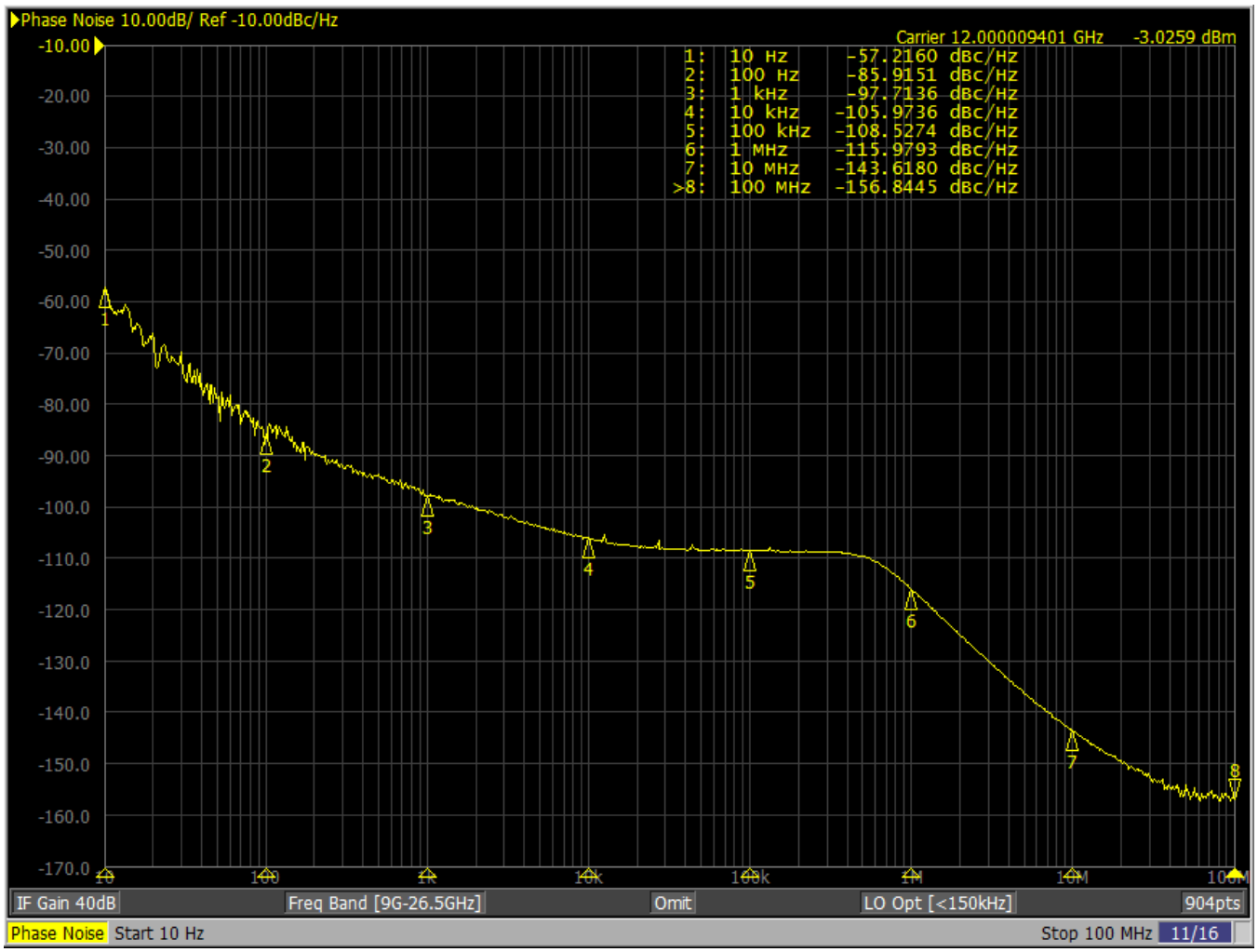

Fig 2: Measured Phase noise at 12GHz

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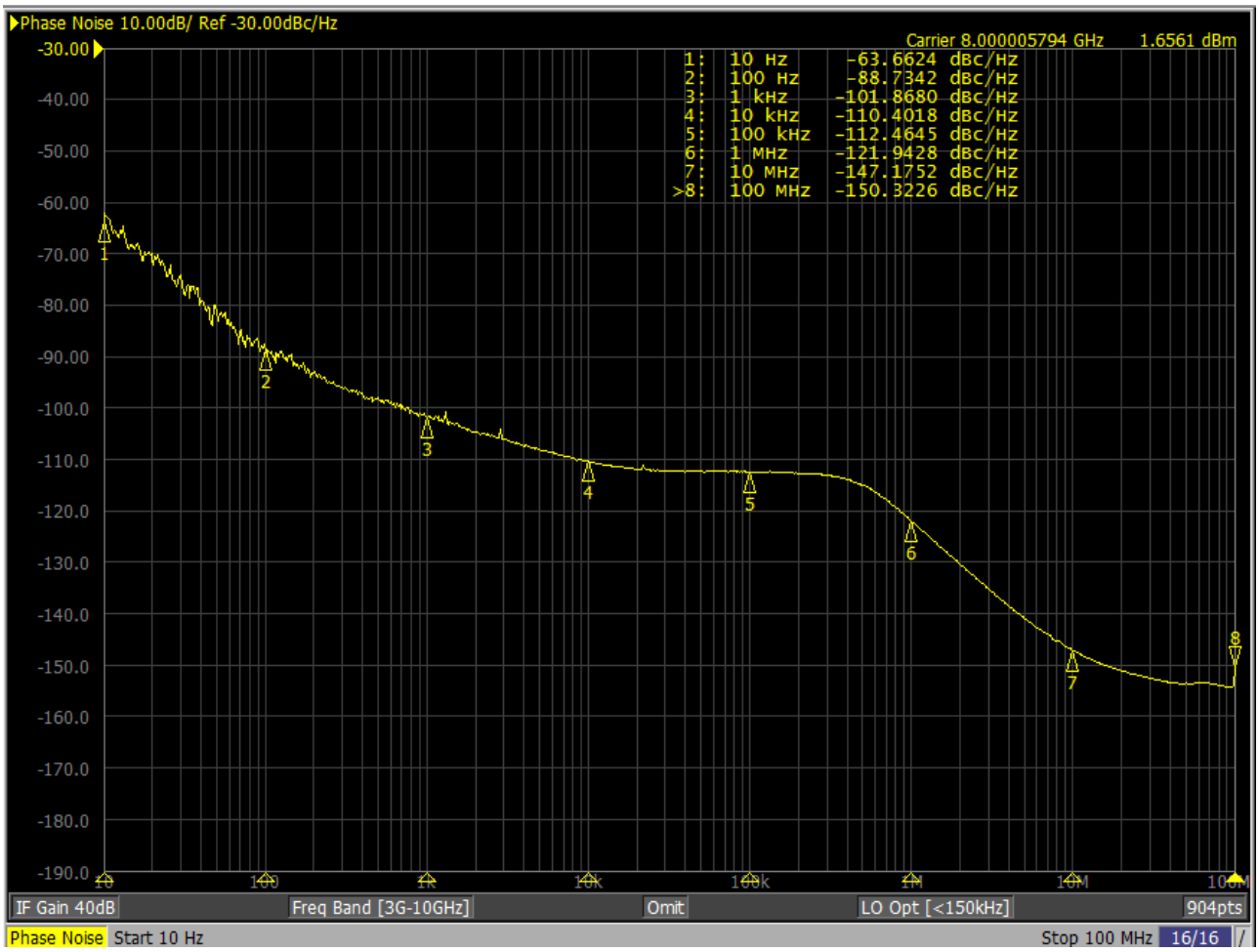

Fig 3: Measured Phase noise at 8GHz

Additional features:

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

This product is made to order. For customization options, lead times or further information please contact NANOWAVE Technologies Inc. at *sales@nanowavetech.com* , or call at (+1) 416-252-5602

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