

NWAFS800012000-10

8 – 12GHz

Wideband Synthesizer Drop-in

v 1.2

GENERAL DESCRIPTION

The NWAFS800012000-10 is one of a family of high performance, wideband airborne frequency synthesizers that can operate across the frequency band 8GHz to 12GHz.

The NWAFS800012000-10 is a fully integrated X-band airborne synthesizer module based on hybrid architecture that combines high speed Digital Direct Synthesis with indirect synthesis techniques into one compact hermetic package. The unit requires an external 100MHz reference and delivers an average output power of +10 dBm. The phase noise is exceptionally low with -110 dBc/Hz @ 100 kHz offset measured at 10 GHz output frequency with spurious lower than -55 dBc.



Figure 1- X-Band Airborne Frequency Synthesizer

The NANOWAVE in-house HMIC process is used within the design to meet a high level of reliability in harsh uncontrolled environmental conditions whilst ensuring a small form factor. This makes the NWAFS series synthesizers an ideal choice for airborne radar systems.

FEATURES

- Low phase noise
- Wide operating frequency
- Wide operating temperature range
- MIL-PRF-38534 construction

APPLICATIONS

- Airborne Radar
- Naval Radar applications

ELECTRICAL PARAMETERS

Parameter	Unit	Min	Typ	Max	Remarks
Operating Frequency Range	GHz	8.0		12.0	
Step Size	Hz	1.0			
Output Power Level	dBm		+10.0		
Phase Noise @ 12 GHz at offset:					1)
@ 10 Hz	dBc/Hz	-74	-71	-68	
@ 100 Hz	dBc/Hz	-89	-86	-83	
@ 1kHz	dBc/Hz	-103	-101	-98	
@ 10 kHz	dBc/Hz	-113	-100	-97	

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Parameter	Unit	Min	Typ	Max	Remarks
@ 100 kHz	dBc/Hz	-116	-113	-110	
@ 1MHz	dBc/Hz	-116	-113	-110	
@ 10 MHz	dBc/Hz	-134	-131	-128	
@ 100 MHz	dBc/Hz	-155	-152	-149	
Spurious Level	dBc	-55.0	-60.0		2)
Harmonics Level	dBc	-40.0			3)
Frequency Settling Time	μs			100.0	4)
Output Return Loss	dB		15.0		
Reference Input Frequency	MHz		100.0		
Reference Power Level	dBm	-5.0		+5.0	
Reference Waveform Type			Sine		

Notes:

- 1) Performance at offset frequencies below 10 kHz is subject to change with different 100 MHz reference.
- 2) Worst case Spurious at 5 MHz frequency steps.
- 3) Low pass filtering can be added on request for better harmonics performance.
- 4) Frequency settling time measured for 1GHz step.

MECHANICAL AND ENVIRONMENTAL PARAMETERS

Parameter	Unit	Min	Typ.	Max	Remarks
Operating Temperature Range	°C	-40		+85	Extended temperature on request
Non-operating Temperature Range	°C	-55		+100	
Enclosure sealing		Hermetic			
Size (length, width, height)	Inches	4.9 x 3.9 x 4.1x 0.6			
Weight	g		336		
RF Output Connector			GPO		
Reference input connector			GPO		
Marking	Manufacturer name, model, serial number, date code				

Notes: Specifications subject to change without notice.

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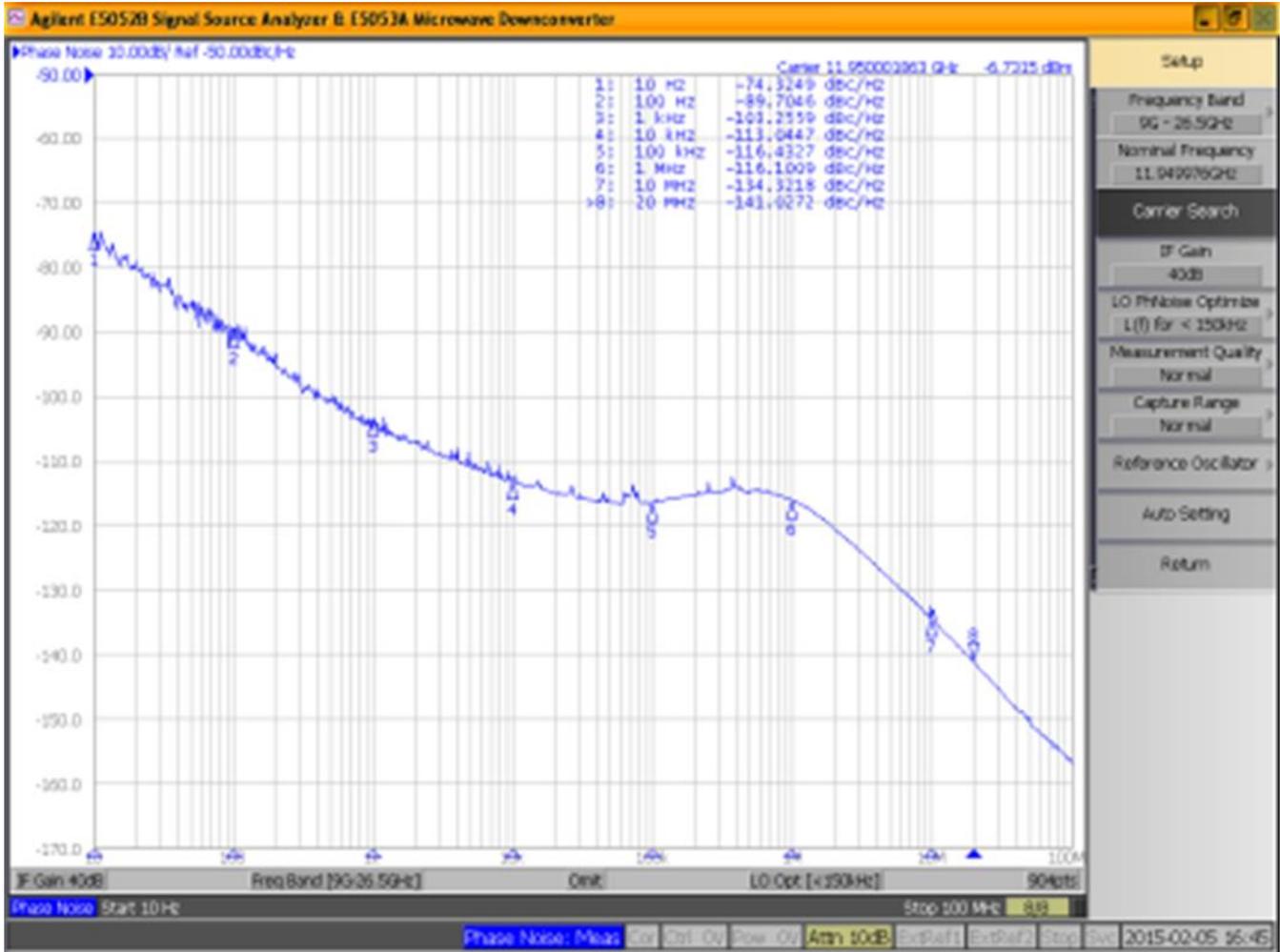


Fig 2: Typical Phase noise Performance at 12GHz

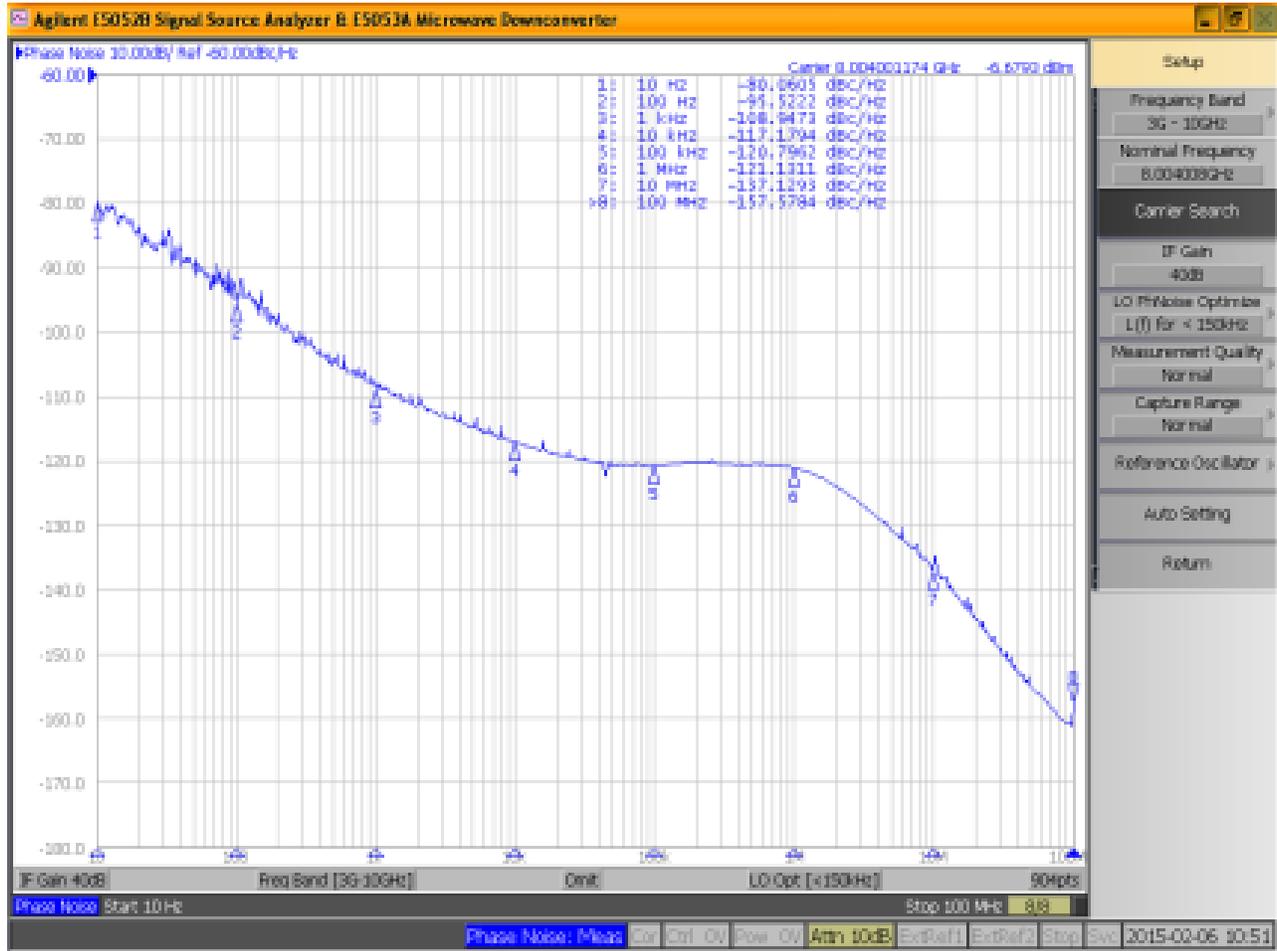


Fig 3: Typical Phase noise Performance at 8GHz

COMMUNICATION AND CONTROL INTERFACE

The STALO can be monitored and controlled via a Graphical User Interface (GUI) for the purpose of test. Communication to the unit is conducted using an SPI interface allowing frequency to be set from the system. The unit's lock status and internal temperature and supply voltage can also be monitored as part of a built in self-test capability.

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OUTLINE DRAWING

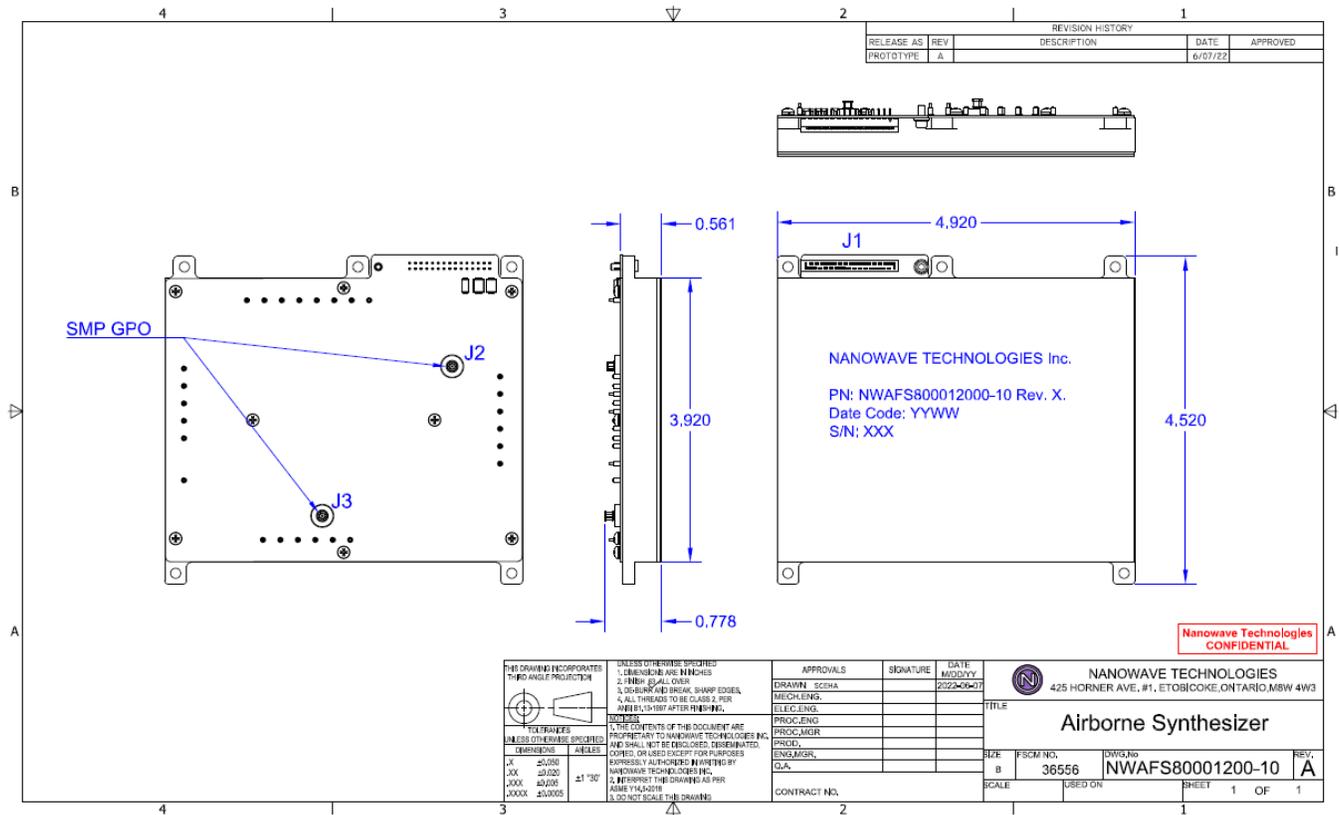


Fig 4: Outline Drawing of 8GHz – 10GHz RADAR Frequency Synthesizer

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, or call at (+1) 416-252-5602