

NWOG-8G50-10G55-17

8.5 – 10.55GHz

X-Band Synthesized Source

v 1.2

General Description

The *NWOG-8G50-10G55-17* (NWOG#G#-#G#-17) is a family of high performance frequency synthesizers that can be re-banded across the FCC radio navigation band 8.5GHz to 10.55GHz through replacement of drop in filters. The phase noise performance of the unit results in a source coherence of -50dBc over the integration bandwidth from 10Hz to 1MHz. A DDS based synthesizer core is used which enables frequency switching speeds down to 200ns and frequency tuning resolution below 1Hz whilst maintaining a spurious level of below -60dBc. The generic sources contain an internal high performance crystal oscillator to ensure frequency stability over temperature of ± 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.

Nanowave Technologies HMIC subassemblies are used throughout the design to ensure high reliability and compliance to environmental specification.



Figure 1- X-Band Source

Features

- Exceptionally low phase noise
- Flexible frequency ordering
- MIL-PRF-38534 construction
- Low G sensitivity

Applications

- Radar
- Radio Navigation
- High vibration environments

Typical Performance ($T=25^{\circ}\text{C}$)

Parameter	Unit	Min	Typ	Max	Remarks
Frequency range	GHz	8.55		10.55	In 200MHz bands for standard product.
Frequency stability over temperature	ppm			± 1	
Frequency ageing	ppm/year			+1	
High power port J3	dBm	+17			
Low power ports J1 & J2	dBm	+13			
Frequency switching time	ns	200			

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Parameter	Unit	Min	Typ	Max	Remarks
Carrier Offset	Phase Noise				
10Hz	dBc/Hz			-60	
100Hz	dBc/Hz			-90	
1KHz	dBc/Hz			-110	
10KHz	dBc/Hz			-115	
100KHz	dBc/Hz			-120	
1MHz	dBc/Hz			-130	
Coherence	dBc			-50	
Harmonics	dBc			-25	
Subharmonics	dBc			-60	
Spurious max	dBc			-60	
RS232 UART Frequency control (J5)					
Frequency step	Hz	<1			
Lock detect signal	TTL signal high from DB 9 indicates lock		Enables system check of unit lock status.		
Thumbwheel switch control					
Frequency step	MHz	1			
External lock detect light					
Reference output (J5)					
Reference frequency	MHz			10	
Reference power level	dBm	0			10MHz derived from internal reference
Reference stabilization time	min			5	
Input supply	V			15	
Input current	A			1.5	
Frequency range	GHz	8.55		10.55	In 200MHz bands for standard product.

Mechanical and Environmental Parameters

Parameter	Unit	Min	Typ	Max	Remarks
Dimensions max	inches			4.27" x 7.5" x 2.41"	
Environmental conditions					
Operating temperature range	°C	0		70	
Water proof housing and connectors		IP67			IP rating does not include thumb wheel switch unit.

Notes: Specifications subject to change without notice.

