GENERAL DESCRIPTION

The NANOWAVE NWO115135-10 is a Direct Digital Synthesizer (DDS) based VHF clock source capable of frequency generation over the VHF range from 115MHz to 135MHz with a frequency resolution to 1Hz whilst maintaining spurious levels below -80dBc. The oscillator offers exceptionally low phase noise floor and frequency stability making it suitable as an adjustable clock reference for high performance RADAR systems.

Figure 1 - VHF DDS clock source

The NWO115135-10 DDS based clock source is designed for applications demanding a high accuracy, low phase noise, low spurious reference source that can be preconfigured for different output frequencies via site telemetry or preinstall factory setting. The re-configurability makes the source applicable to systems requireing site specific reference frequencies.

FEATURES

- Low phase noise <-130dBc/Hz at 10kHz, <-140dBc/Hz at 1MHz
- Low jitter <2ps rms integrated over from 10Hz to 1MHz
- Low spurious < -80dBc in band spurious
- Configurable -10 to +10dBm output power control range with +/-0.4dB accuracy.
- Industrial operational temperature range (-40°C to +85°C)

APPLICATIONS

- Communication system clock source.
- RADAR reference clock source.
- Test and measurement adjustable reference.

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ELECTRICAL PARAMETERS

Parameter	Unit	Min	Typ	Max	Remarks
Frequency range	MHz	115		135	Increased frequency range available on request.
Frequency accuracy	ppm	-5		+5	
Output power	dBm	-10		10	Power controlled to within +/-0.4dB.
In band spurious	dBc			-80	
Phase noise	Offset	Phase Noise /[dBc/Hz]			Phase noise under static vibration
	10Hz			-90	
	100Hz			-110	
	1KHz			-120	
	10KHz			-130	
	100KHz			-130	
	1MHz			-130	
RMS jitter	ps			2	Integration bandwidth 10Hz to 1MHz
2nd Harmonic	dBc			-40	
3rd Harmonic	dBc			-60	
Output power fault	mV	-320	-300	-280	Output power inside 10dBm+/-0.5dB
	mV	-150			Output power outside 10dBm+/-0.5dB
DC power consumption	V / mA	15 / 500			Maximum steady state power rail requirement
	V / mA	-18 / 400			Maximum steady state power rail requirement

COMMUNICATION AND CONTROL INTERFACE

The synthesizer frequency and power can be configured using an RS232 interface accessed through the unit DB9 connector.

1. Configurable output power level setting over the range -10dBm to +10dBm
2. ALC closed loop power levelling to +/-0.4 dB accuracy over operational temperature and frequency.
3. UART based control interface using standard SPCI command format.
4. Customizable control interface RS422 transceiver for robust communication in harsh environment.

Software Configuration Options

1. PC based control GUI.
2. Enhanced output power stability to +/-0.1dB.

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MECHANICAL AND ENVIRONMENTAL PARAMETERS

Parameter	Unit	Min	Typ.	Max	Remarks
Operating Temperature Range	°C	-40	25	+85	
Non-operating Temperature Range	°C	-40		+85	
Size (length, width, height)	Inches	4.25” x2.1” x 1.16”			See outline drawing
RF Output Connector	D-type, 5X1 4+1 COAX, MALE				
PIN 1	+15V				
PIN 2	FAULT				Power Output Level
PIN 3	-18V				
PIN 4	GND				
Coax connection	RF Output				
Control interface	Female Micro DB-9				
PIN 1	RXD				RS232
PIN 2	NC				
PIN 3	TXD				RS232
PIN 4	GND				
PIN 5	NC				
PIN 6	NC				
PIN 7	NC				
PIN 8	NC				
PIN 9	NC				
Marking	Manufacturer name, model, serial number, date code				

Notes: Specifications subject to change without notice.

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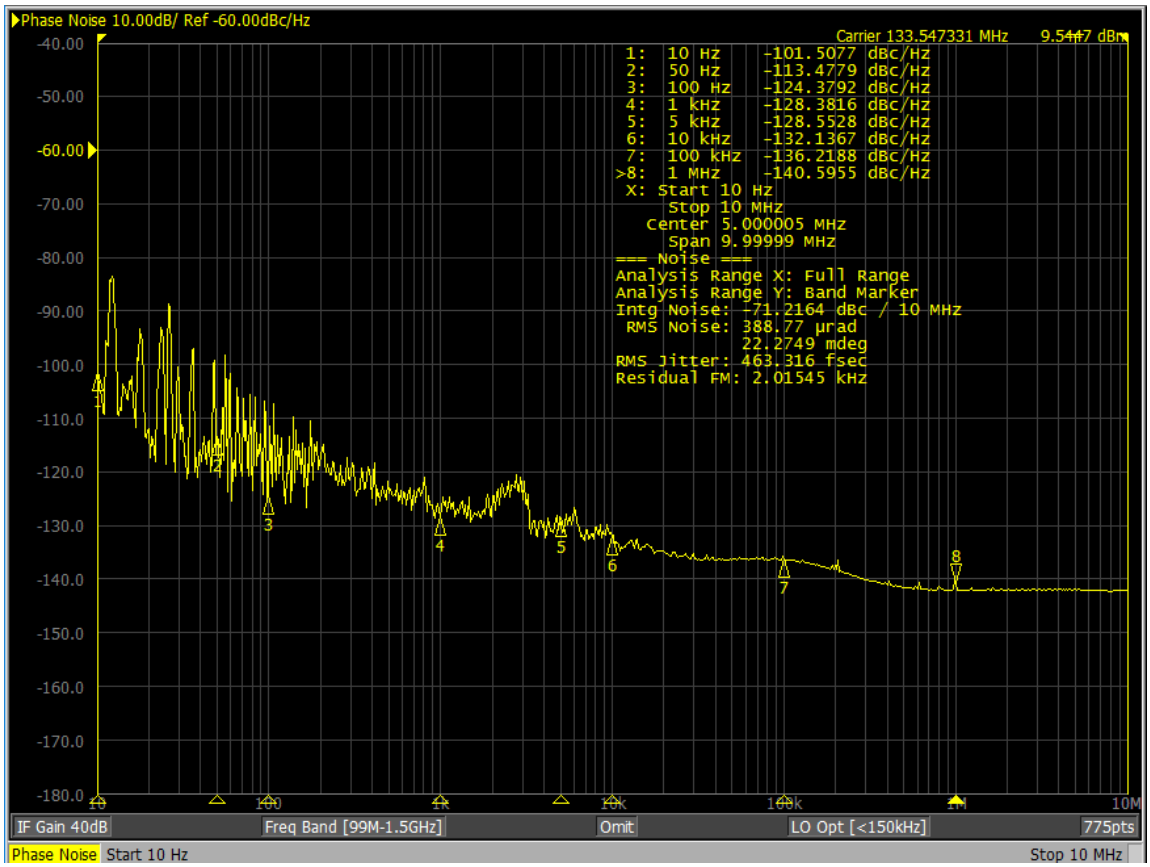

Fig 2: Measured Phase noise and jitter performance at 25°C

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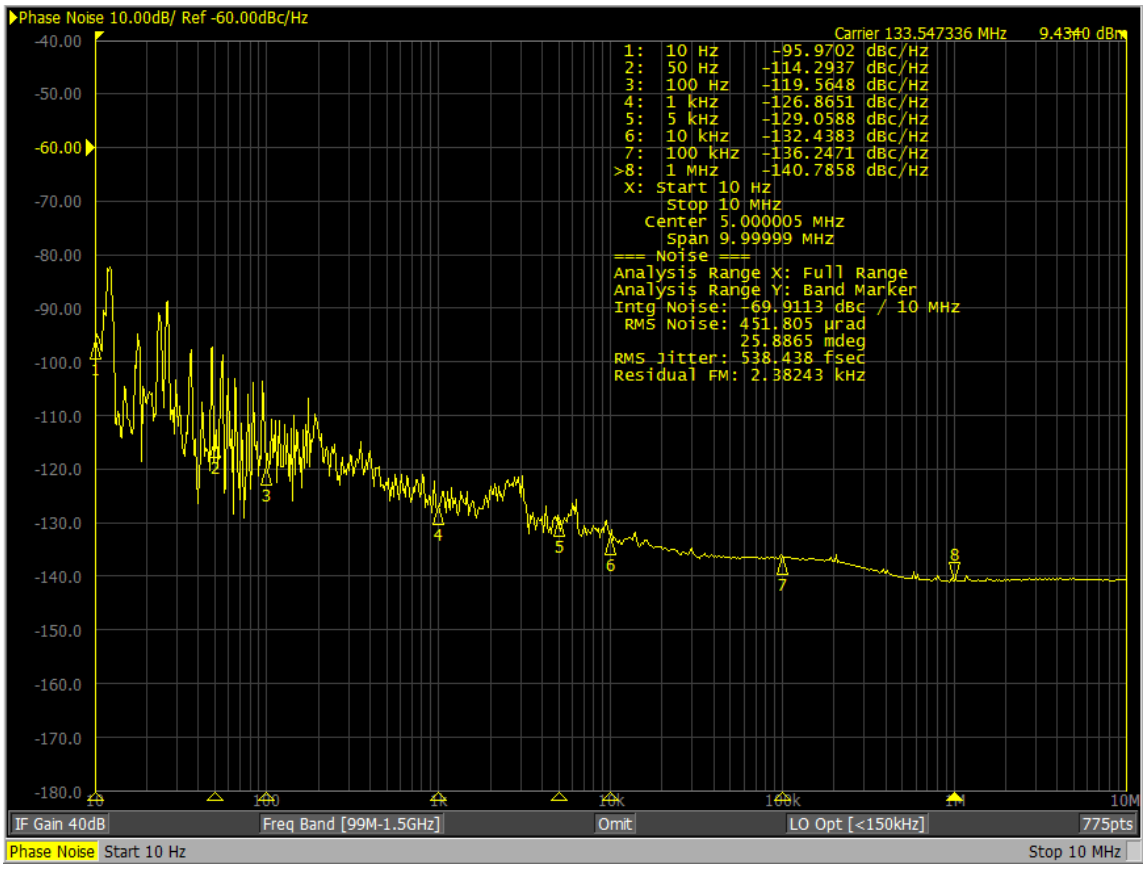

Fig 3: Measured Phase noise and jitter performance at -40°C

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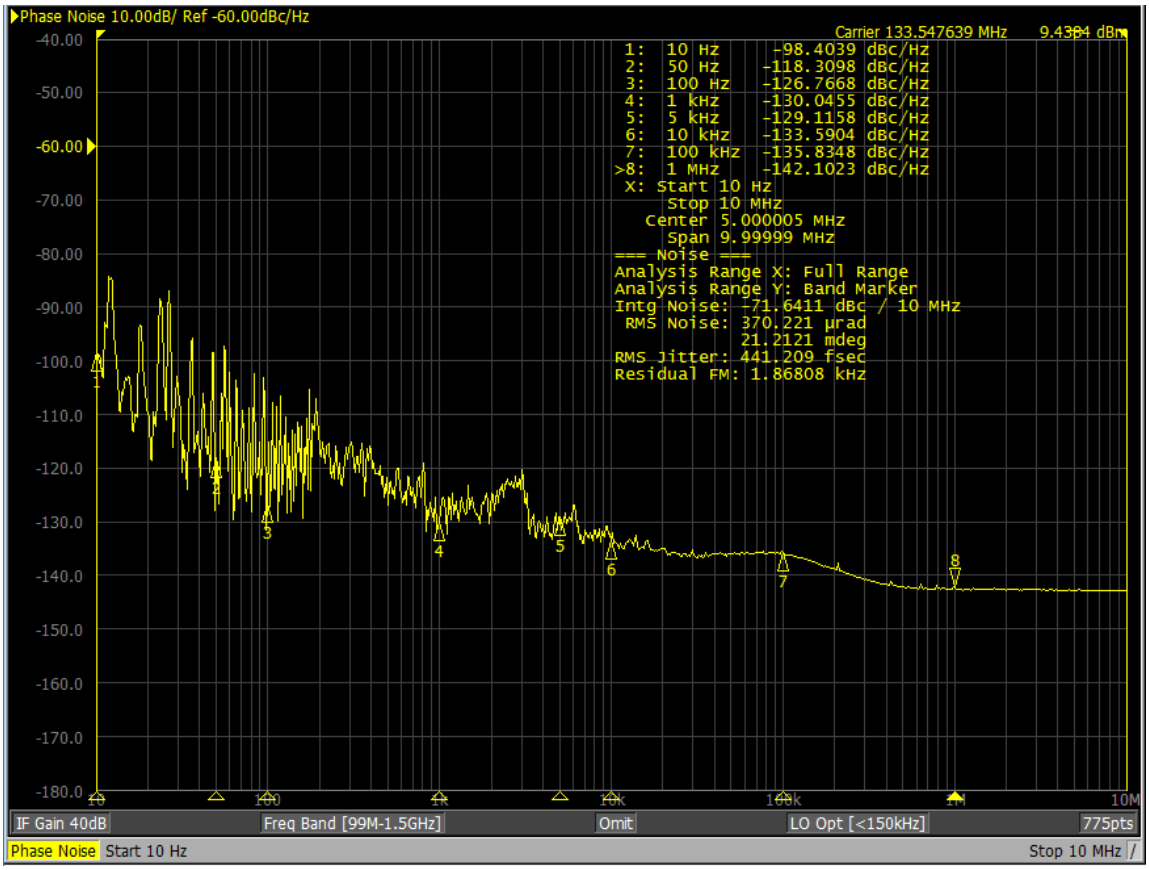

Fig 4: Measured Phase noise and jitter performance at 85°C

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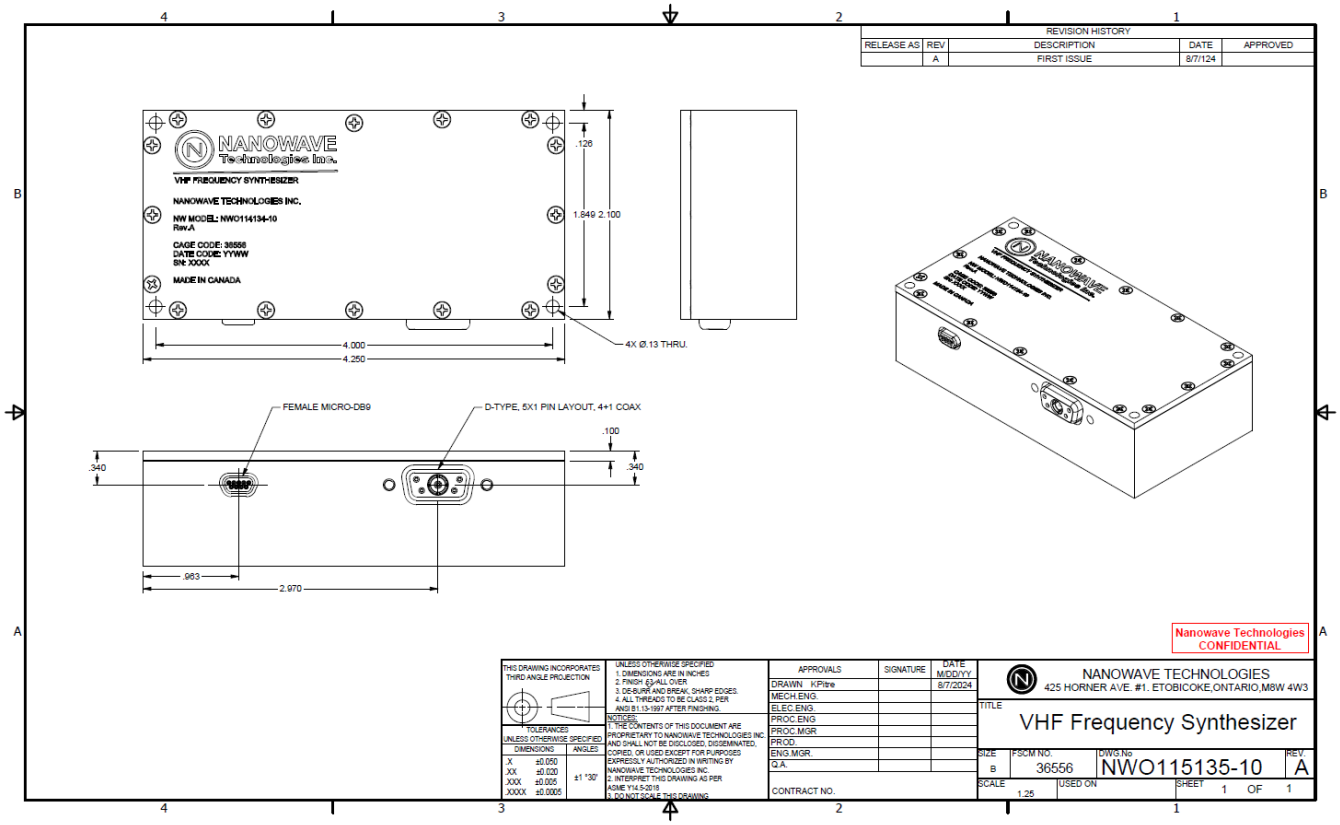

Fig 5: Outline Drawing VHF Frequency Synthesizer NWO115135-10

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

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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