

SOP-05301213-SF-BB

Phase Locked Oscillator, 5 GHz, +13 dBm, Combined Internal and External Reference

SOP-05301213-SF-BB is a phase locked oscillator with high performance DRVCO (Dielectric Resonator Voltage Controller Oscillator) technology to generate a clean and high-quality microwave signals. The oscillator is designed and fabricated to be phase locked to the high quality 10 MHz external reference oscillator so that the superior phase noise performance can be achieved. The oscillator delivers a typical output power of +13 dBm and has nominal harmonic and spurious levels of -25 dBc and -80 dBc, respectively. The oscillator has a built-in voltage regulator to further improve the signal quality and prevent possible damage due to the over voltage operation. The oscillator is hermetically sealed to offer the maximum environmental performance.



Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency		5 GHz	
Output Power		+13 dBm	
Phase Noise (Internal Reference)		-105 dBc/Hz @ 10 kHz	
		-110 dBc/Hz @ 100 kHz	
		-125 dBc/Hz @ 1 MHz	
Phase Noise (External Reference)	Reference Source +20 LOG (N) +3 dB		
Internal Reference Frequency		100 MHz	
External Reference Frequency		10 MHz	
External Reference Input Power	-3 dBm	0 dBm	+3 dBm
Sub-Harmonics			-60 dBc
Harmonic		-25 dBc	-20 dBc
Spurious		-80 dBc	-70 dBc
Phase Locked Indicator (Lock)		TLL "High"	
Phase Error Voltage (V _T)		0 to +10 V _{DC}	
DC Voltage		+12 V _{DC}	+15 V _{DC}
DC Supply Current		550 mA	
Frequency Stability		±5 ppm	
Specification Temperature		+25°C	
Operating Temperature	-40°C		+70°C

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FEATURES

- High Output Power
- Low Phase Noise
- Low Harmonic Components

APPLICATIONS

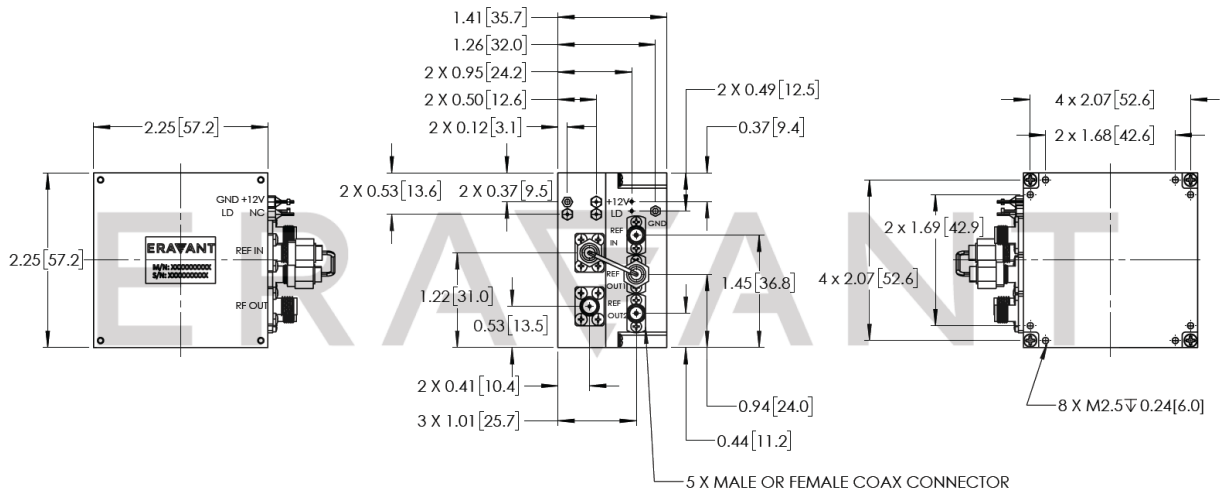
- Radar Systems
- Communication Links
- Transmitters/Receivers



Mechanical Specifications:

Item	Specification
RF Output	SMA (F) Connector
REF Input	SMA (F) Connector
REF Output	SMA (F) Connector
DC Bias Port (V_{CC})	Feedthru Pin
Phase Lock Indicator Port (LD)	Feedthru Pin
Phase Error Voltage (V_T)	Feedthru Pin
Case Material	Aluminum
Finish	Nickel Plated and Bare Aluminum
Package	Hermetically Sealed
Weight	4.0 Oz
Outline	OP-EC-SM1

Mechanical Outline: Unless otherwise specified, all dimensions are in inches [millimeters]



NOTE:

- Test data provided is collected from a sample lot. Actual data may vary slightly from unit to unit. Phase noise testing is performed under +25 °C room temperature.
- Eravant reserves the right to change the information presented without notice.

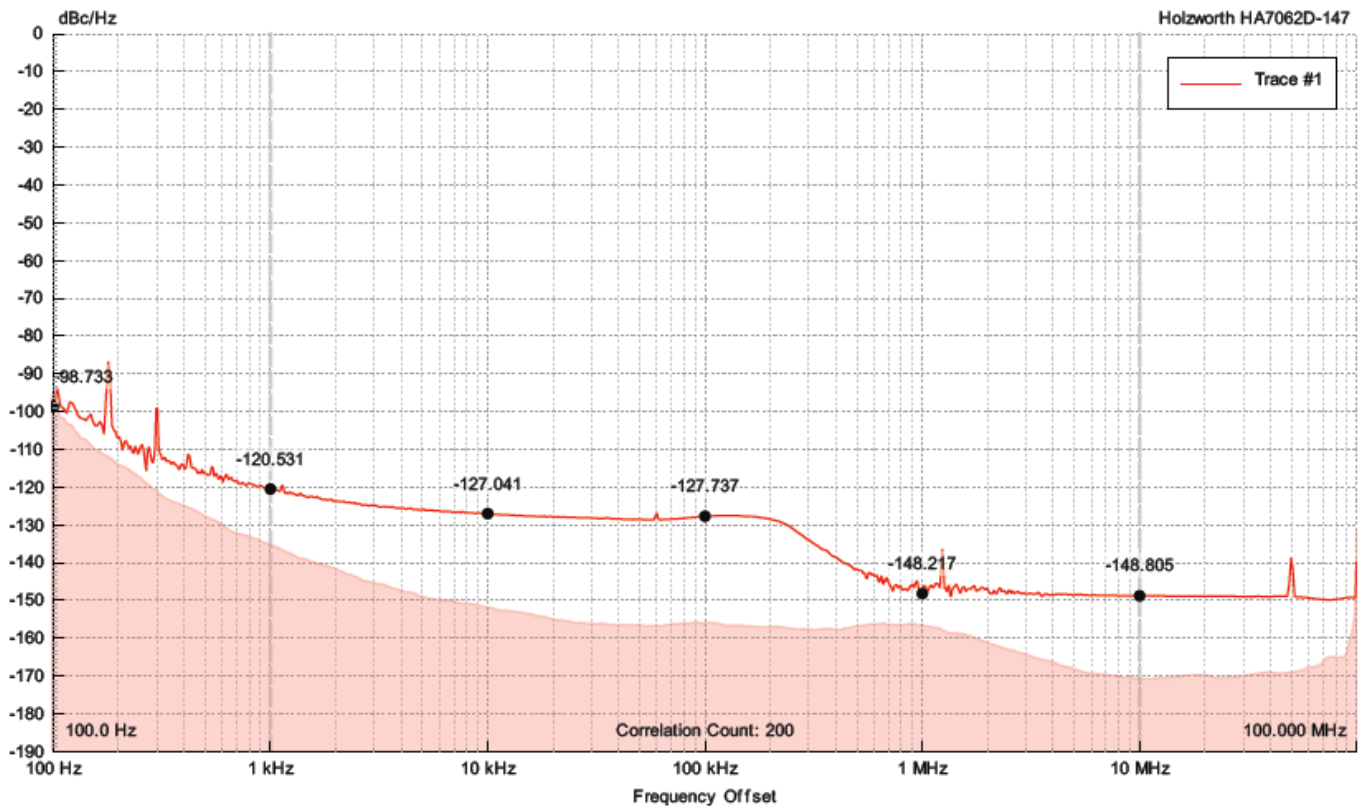
CAUTION:

- For 1.35 mm, 1.85 mm, 2.4 mm, 2.92 mm, and SMA connectors proper torque should be applied: 8.0 \pm 0.15 inch-pounds (0.90 \pm 0.02 Nm). Torque wrench model [SCH-08008-S1](#) is highly recommended.

Measured Data:

Parameter	Operating Temperature		
	-45°C	+25°C	+75°C
Output Frequency	5 GHz	5 GHz	5 GHz
Output Power	14 dBm	15.3 dBm	14.3 dBm
Spurious	-76 dBc	-75 dBc	-76 dBc
Harmonics	-28 dBc	-30 dBc	-29 dBc
Voltage (V)	12	12	12
Current (mA)	490	340	280

Measured Phase Noise (100 MHz Internal Reference)

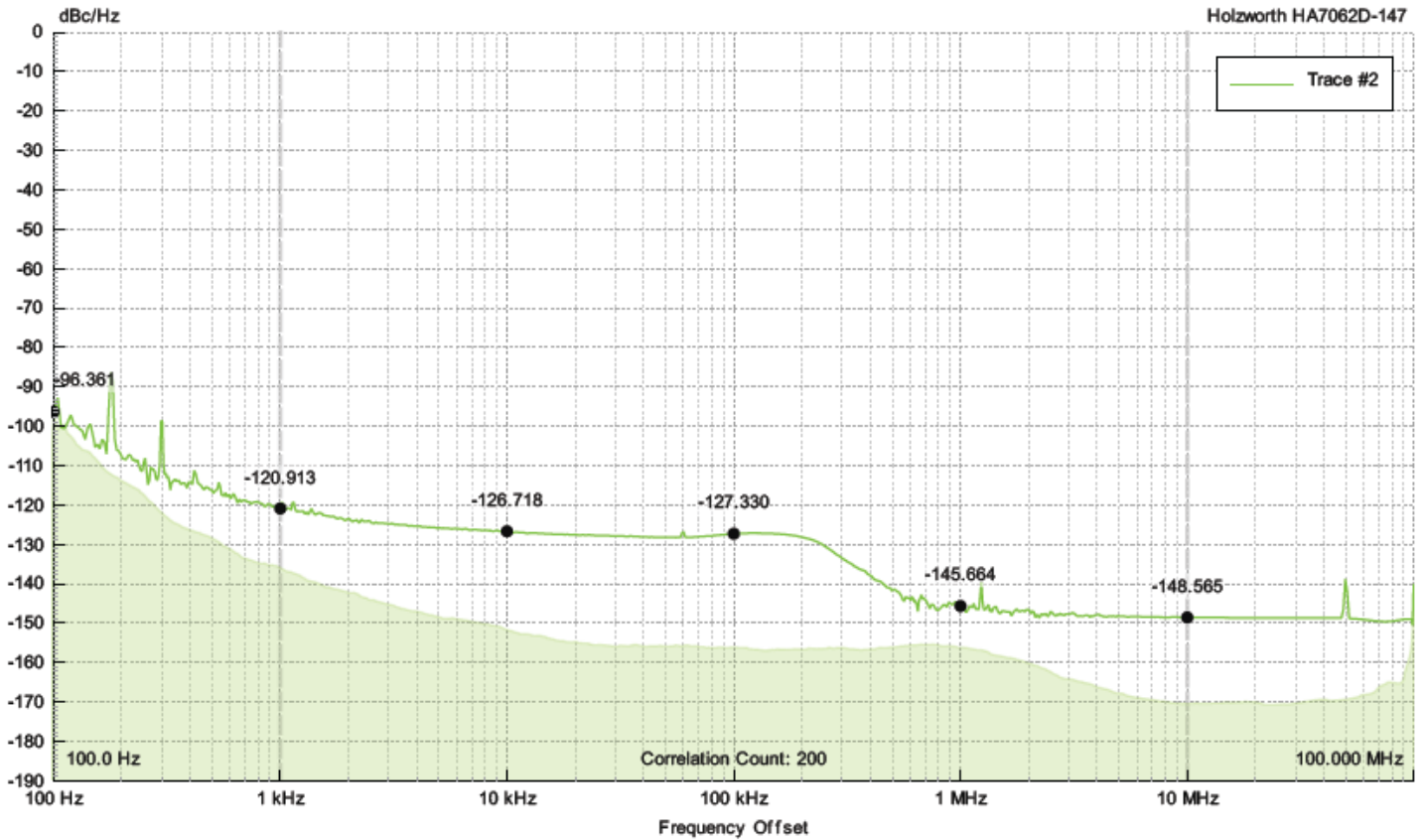


Trace #1	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq: 4.9999977200 GHz	Start: 1.00 kHz	100.0 Hz	-98.73	178.8 Hz	-84.74
Type: Absolute	Power: 14.100 dBm	Stop: 10.000 MHz	1.00 kHz	-120.53	298.0 Hz	-97.00
Date: 2021-09-23	Gain: 42 dB	Jitter: 10.989 fs	10.00 kHz	-127.04		
Time: 15:28:56	Acq: 53.687 s	Noise: 1.978e-02°	100.00 kHz	-127.74		
Temp: 32.13°C	Offset: 100.0 Hz		1.000 MHz	-148.22		
Limit Test: None	# Correlations: 200		10.000 MHz	-148.80		

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Measured Phase Noise (10 MHz External Reference*)

*For externally referenced phase locked oscillators, phase noise is reference source dependent. Phase noise can be estimated theoretically using 'Reference Source + 20 Log (N) + 3 dB' formula. The phase noise data shown here is tested with Wenzel model 501-27501-32



Trace #2	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq: 5.0000000400 GHz	Start: 1.00 kHz	100.0 Hz	-96.36	178.8 Hz	-84.30
Type: Absolute	Power: 13.980 dBm	Stop: 10.000 MHz	1.00 kHz	-120.91	301.7 Hz	-96.62
Date: 2021-09-23	Gain: 42 dB	Jitter: 11.416 fs	10.00 kHz	-126.72		
Time: 15:34:25	Acq: 53.687 s	Noise: 2.055e-02°	100.00 kHz	-127.33		
Temp: 34.39°C	Offset: 100.0 Hz		1.000 MHz	-145.66		
Limit Test: None	# Correlations: 200		10.000 MHz	-148.57		

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