

## Phase Locked Oscillator, 29.35 GHz, +13 dBm, Combined Internal and External

**SOP-29310015-SF-E8-2** is a phase locked oscillator based on a high performance DRVCO (Dielectric Resonator Voltage Controlled Oscillator) technology to generate a clean and high-quality microwave signal. The oscillator has a built-in 100 MHz internal Oven Controlled Crystal Oscillator (OCXO) reference. This highly stable OCXO delivers phase noise as low as  $-130$  dBc/Hz at a 100 Hz offset, making the oscillator an outstanding choice as a reference source for other frequency synthesizers. The oscillator is designed and fabricated to be phase locked to the internal reference OCXO automatically if the 10 MHz external reference is absent. The oscillator delivers a typical output power of +13 dBm and has a nominal harmonic and spurious levels of -20 dBc and -75 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		29.35 GHz	
Output Power		+13 dBm	
Phase Noise (Internal Reference)		-100 dBc/Hz @ 1 kHz -108 dBc/Hz @ 10 kHz -104 dBc/Hz @ 100 kHz -123 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	
Externally Referenced Input Power	-3 dBm	0 dBm	+3 dBm
Sub-Harmonics			-60 dBc
Harmonic		-20 dBc	-10 dBc
Spurious		-75 dBc	-70 dBc
Phase Locked Indicator (Lock)		TLL "High"	
Phase Error Voltage ( $V_T$ )		0 to +10 V <sub>DC</sub>	
DC Voltage		+12 V <sub>DC</sub>	+15 V <sub>DC</sub>
DC Supply Current		550 mA	
Frequency Stability		$\pm 5$ ppm	
Specification Temperature		+25°C	
Operating Temperature	-40°C		+70°C



### ECCN

EAR99

### FEATURES

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

### APPLICATIONS

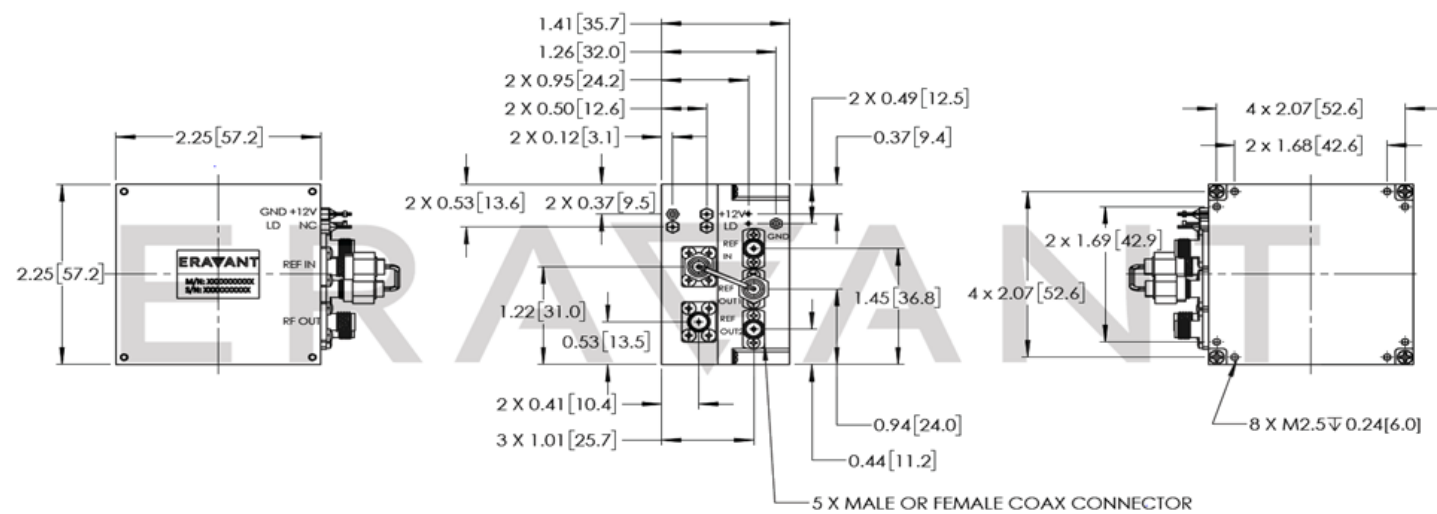
- Radar Systems
- Communication Links
- Transmitters/Receivers



Mechanical Specifications:

Item	Specification
RF Output	K (F) Connector
REF Input	SMA (F) Connector
REF Output	SMA (F) Connector
DC Bias Port (V <sub>CC</sub> )	Feedthru Pin
Phase Lock Indicator Port (LD)	Feedthru Pin
Phase Error Voltage (V <sub>T</sub> )	Feedthru Pin
Case Material	Aluminum
Finish	Nickel Plated and Bare Aluminum
Package	Hermetically Sealed
Weight	4.0 Oz
Size	2.25" (L) x 2.25" (W) x 1.41" (H)
Outline	OP-EC-SM1

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



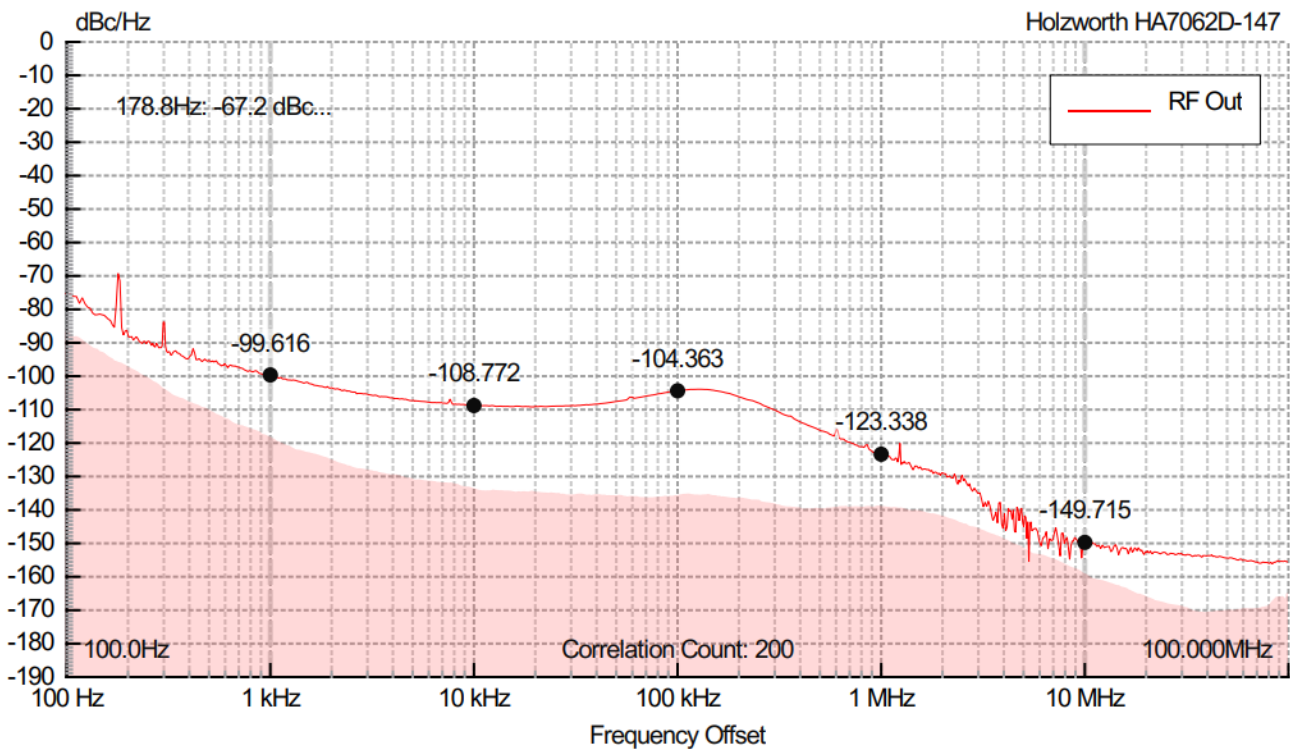
NOTE:

- 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.
- Other mechanical configurations are available under different model numbers.

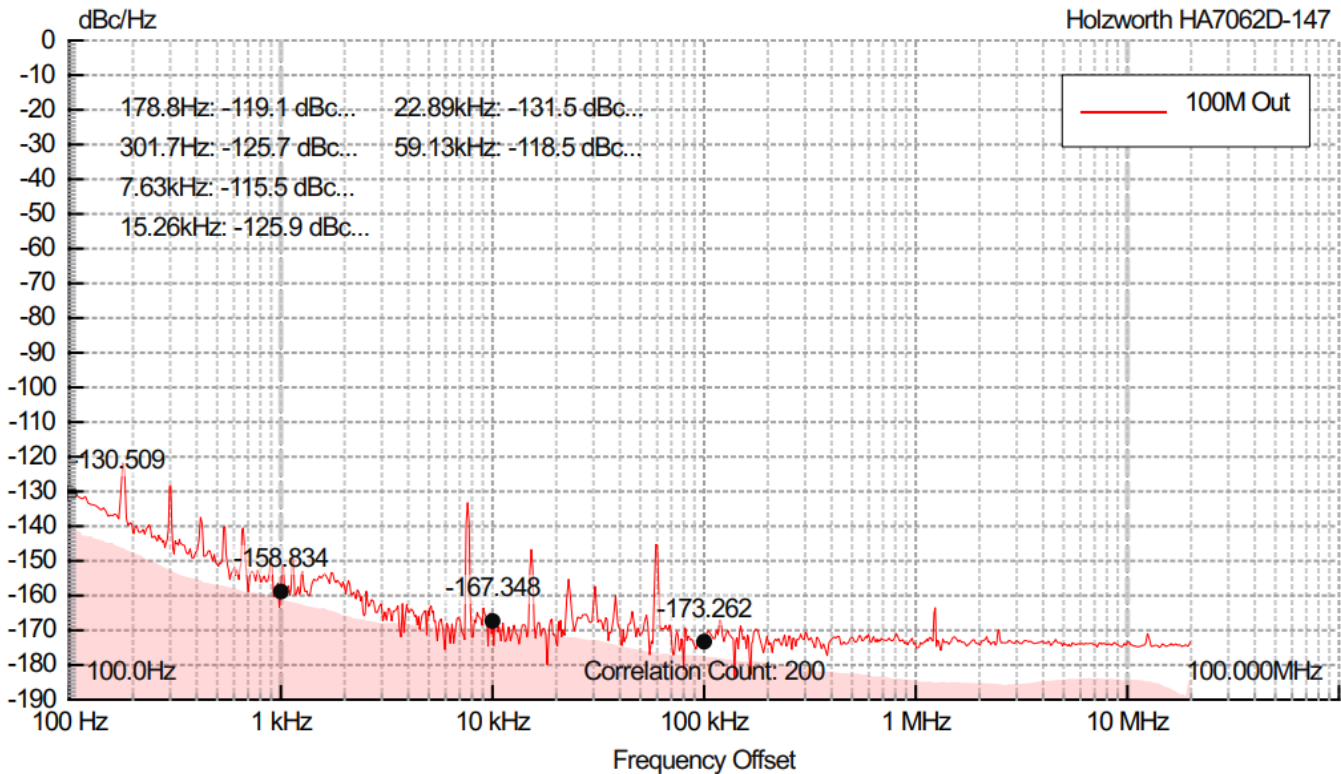
CAUTION:

- Exceeding absolute maximum ratings shown will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- The case temperature of the device shall never exceed **+70 °C**. Use additional heatsink or fan if necessary.
- Proper torque, 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

Measure Phase Noise:



RF Out	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq: 29.3500160800GHz	Start: 1.00kHz	1.00kHz	-99.62	178.8Hz	-67.16
Type: Absolute	Power: -0.520 dBm	Stop: 10.000MHz	10.00kHz	-108.77		
Date: 2025-05-01	Gain: 42 dB	Jitter: 23.121 fs	100.00kHz	-104.36		
Time: 11:46:19	Acq: 53.687 s	Noise: 2.443e-01°	1.000MHz	-123.34		
Temp: 32.92°C	Offset: 100.0Hz		10.000MHz	-149.72		
Limit Test: None	# Correlations: 200					



100M Out	DUT Info	Jitter Stats	Marker Freq	Value [dBc/Hz]	Spur Freq	Value [dBc]
S/N: HA7062D-147	Freq:	Start: 1.00kHz	100.0Hz	-130.51	178.8Hz	-119.08
Type: Absolute	99.9999700MHz	Stop: 10.000MHz	1.00kHz	-158.83	301.7Hz	-125.73
Date: 2025-05-01	Power: -2.420 dBm	Jitter: 17.502 fs	10.00kHz	-167.35	7.63kHz	-115.47
Time: 11:59:31	Gain: 42 dB	Noise: 6.301e-04°	100.00kHz	-173.26	15.26kHz	-125.95
Temp: 34.96°C	Acq: 53.687 s				22.89kHz	-131.54
Limit Test: None	Offset: 100.0Hz				59.13kHz	-118.50
	# Correlations: 200					