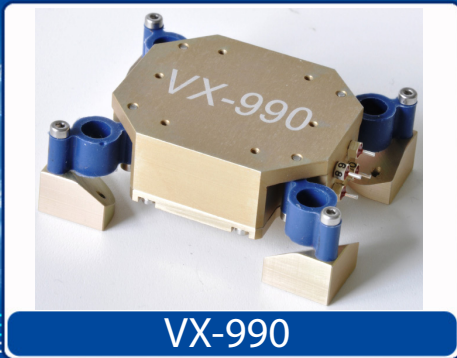


Helping Customers Innovate, Improve & Grow



VX-990

Features

- Ultra low Phase Noise
- Ultra low G-Sensitivity
- Vibration hardened
- Tight Tolerances
- Frequency Range 60 - 120MHz
- Standard Frequency 120MHz

Applications

- Vibration Environment
- Airborne and Military Equipment
- Portable Equipment
- Radar

Performance Specifications

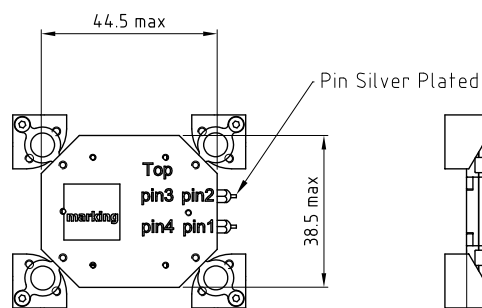
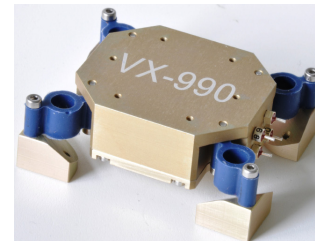
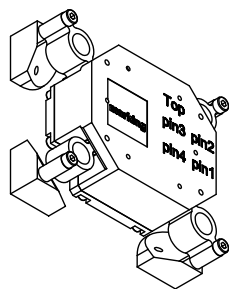
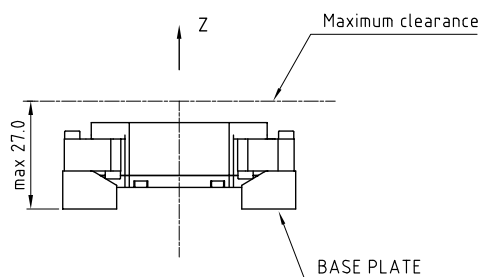
| Frequency Stabilities ¹ | | | | | | |
|-------------------------------------------------------------------|-------|---------|-------|-------|----------------------------|----------------------|
| Parameter | Min | Typical | Max | Units | Condition | Options ³ |
| vs. operating temperature range (referenced to nominal frequency) | -15.0 | | +15.0 | ppm | -20 to +70°C | |
| | -25.0 | | +25.0 | ppm | -40 to +85°C | |
| Initial tolerance | -15.0 | | +15.0 | ppm | 25°C | |
| vs. supply voltage change | -0.1 | | +0.1 | ppm | $V_s \pm 5\%$ static | |
| vs. load change | -0.1 | | +0.1 | ppm | Load $\pm 10\%$ static | |
| vs. aging / 1 year | -1.0 | | +1.0 | ppm | after 30 days of operation | |
| vs. aging / 10 years | -3.0 | | +3.0 | ppm | after 30 days of operation | |

Performance Specifications

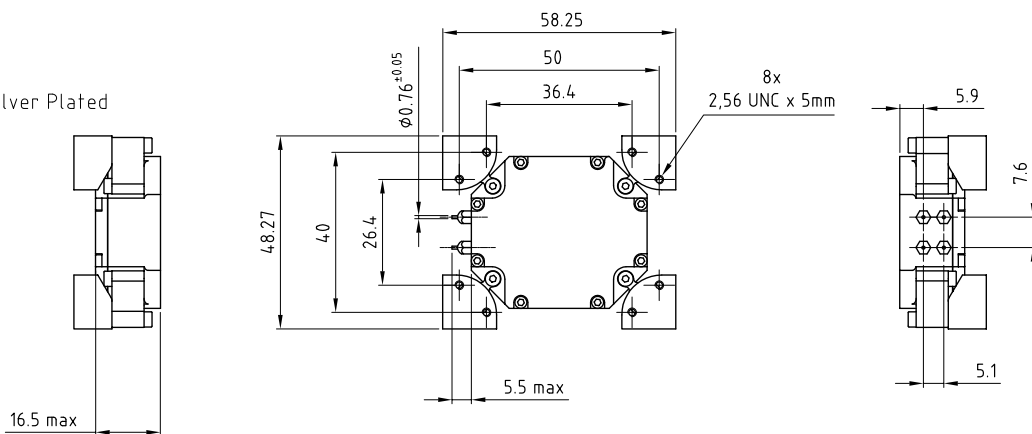
| Supply Voltage (Vs) | | | | | | |
|-------------------------------------|---------------------------------------------------------------------------------------------------------|---------|-------|--------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Parameter | Min | Typical | Max | Units | Condition | |
| Supply voltage (standard) | 14.25 | 15 | 15.75 | VDC | | |
| Current consumption | | | 100 | mA | | |
| RF Output | | | | | | |
| Signal [standard] | Sinewave | | | | 50 Ω load | |
| Load | 45 | 50 | 55 | Ohm | | |
| Output Power | 10 | 13 | 16 | dBm | 50 Ω load | |
| Harmonics | | | -30 | dBc | 50 Ω load | |
| Spurious | | | -80 | dBc | 50 Ω load | |
| Frequency Tuning (EFC) | | | | | | |
| Absolute Pulling Range | ±0.0 | | | ppm | Pulling range is sufficient to tune the oscillator over lifetime of 10 years and all circumstances to nominal frequency | |
| Tuning Slope | Positive | | | | | |
| Control Voltage Range | -4 | 0 | +4 | VDC | | |
| Frequency control input impedance | 50 | | | kOhm | | |
| Additional Parameters | | | | | | |
| Phase Noise ² | | -90 | | dBc/Hz | 10 Hz | @ 120 MHz 13 dBm sinewave no vibration |
| | | -125 | | dBc/Hz | 100 Hz | |
| | | -153 | | dBc/Hz | 1 kHz | |
| | | -167 | | dBc/Hz | 10 kHz | |
| | | -173 | | dBc/Hz | 100 kHz | |
| | | -175 | | dBc/Hz | 1 MHz | |
| G-Sensitivity | | 0.5 | | ppb/g | without shock absorbers ³ | |
| Weight | | 55 | 75 | g | | |
| Processing & Packing | Handling & Processing Note | | | | | |
| Additional Environmental Conditions | | | | | | |
| Random Vibration | MIL-STD-202G; Method 214A; Cond H | | | | | |
| Shock | MIL-STD-202G; Method 213B; 15 g / 20 ms (for softest shock absorber i.e. lowest resonance frequency) | | | | | |
| Solderability | JEDEC J-STD-002: non RoHS compliant | | | | | |
| Solvent Resistance | non-washable device | | | | | |
| Absolute Maximum Ratings | | | | | | |
| Supply voltage (Vs) | | | 16.0 | V | | |
| Output Load | 45 | | 55 | Ω | | |
| Operable Temperature Range | -40 | | +85 | °C | | |
| Storage Temperature Range | -40 | | +105 | °C | | |

Outline Drawing / Enclosure

| Parameter | Min | Typical | Max | Units | Condition |
|--------------------------------------------------------------------|-----|---------|-----|-------|-----------------------------------------------------------------------------|
| G295 including vibration isolators. Mechanical resonance frequency | 35 | | 110 | Hz | Please specify vibration profile and phase noise max values under vibration |



Dimensions in mm



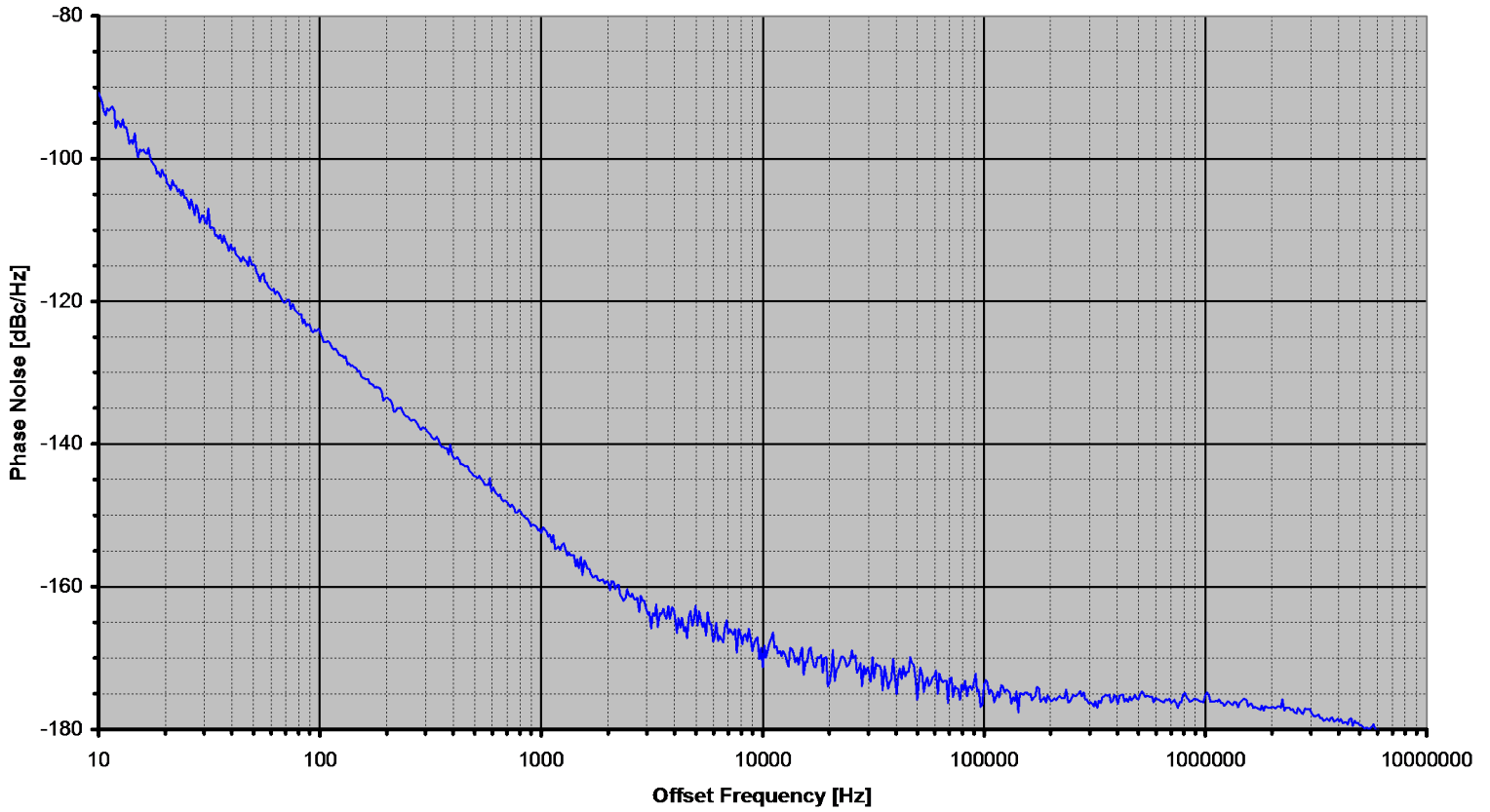
| Pin Connections | |
|-----------------|----------------------------|
| 1 | Control Voltage Input (Vc) |
| 2 | Supply Voltage (Vs) |
| 3 | RF-Output |
| 4 | Ground (Case) |

Housing Options

| Parameter | Note |
|----------------------------------------|------------------------------------------------------------------------------------|
| G295 Standard with vibration isolators | Option please specify vibration profile and phase noise max values under vibration |
| G313 without vibration isolators | Option please specify vibration profile and phase noise max values under vibration |

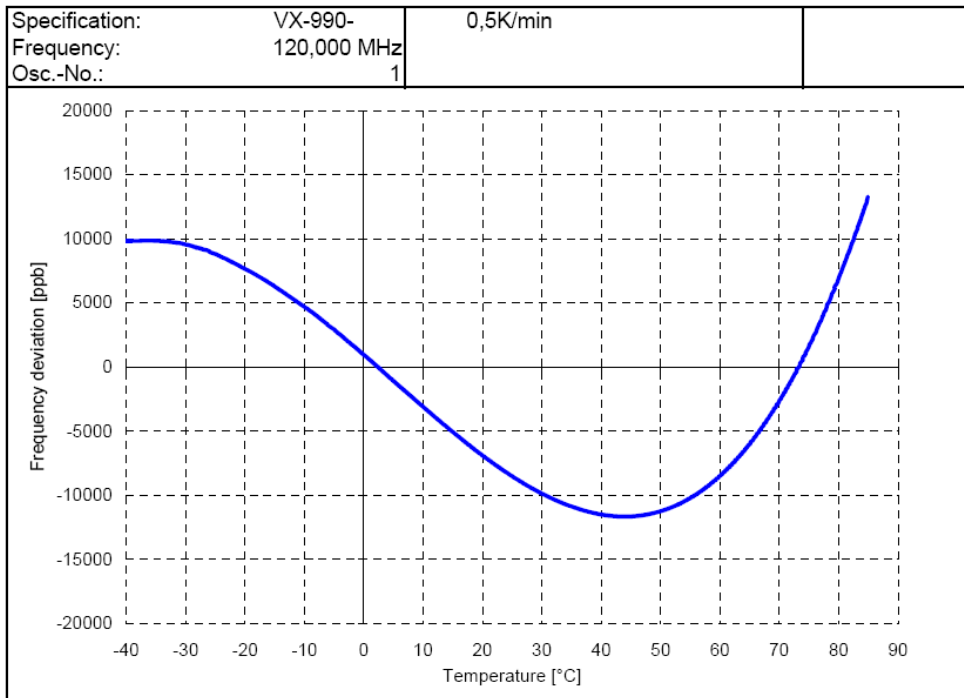
Note: Customized housings are possible. Please specify housing and vibration profile and phase noise max values under vibration

Typical Phase Noise @ 120 MHz without vibration

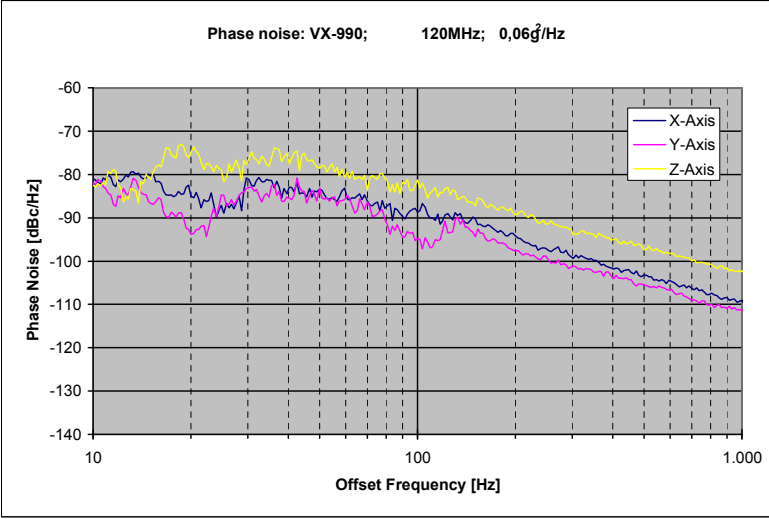
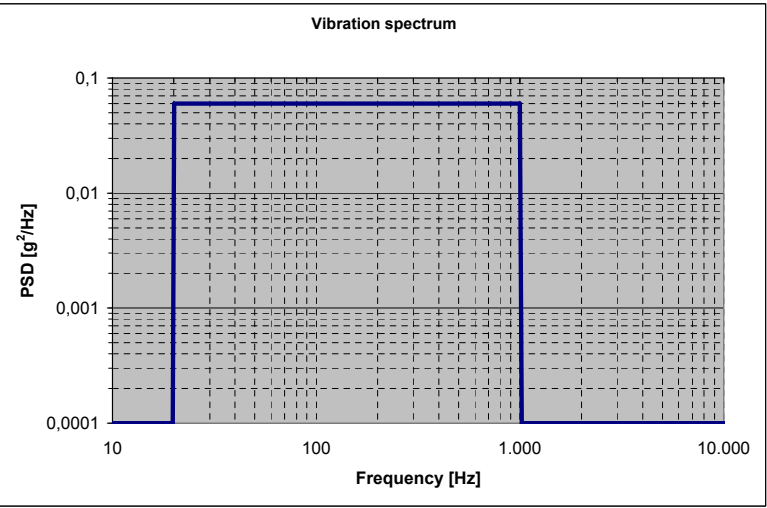
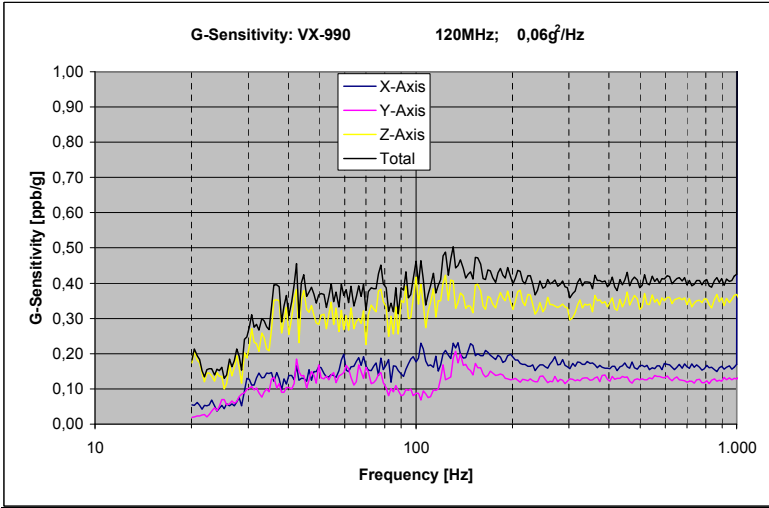


Typical Frequency Stability vs Temperature

Frequency vs. Temperature



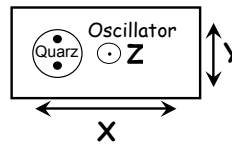
Typical G-Sensitivity @120 MHz without shock absorber



Calculation equation according to Vig-Tutorial

$$\text{g-sensitivity: } G = \frac{2 \cdot f_v}{A_{peak} \cdot f_0} \cdot 10^{\frac{L(f_v)}{20}}$$

$$\text{Peak g-level: } A_{peak} = \sqrt{PSD \cdot 2}$$



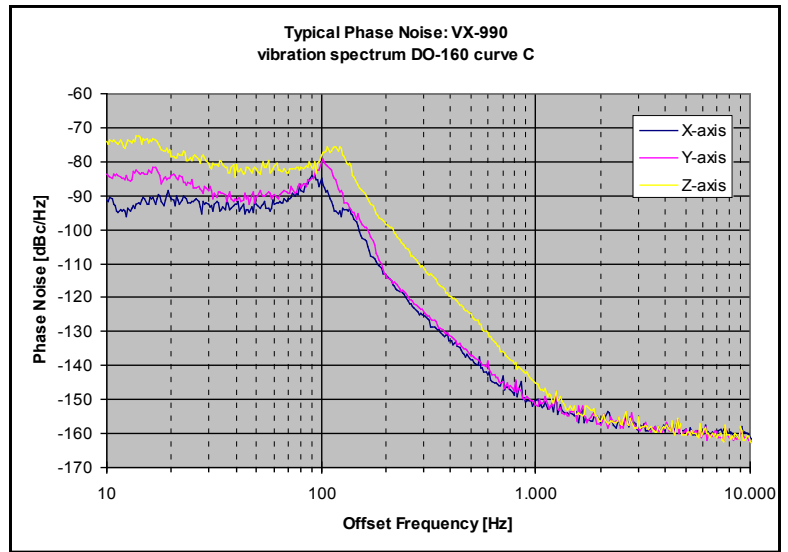
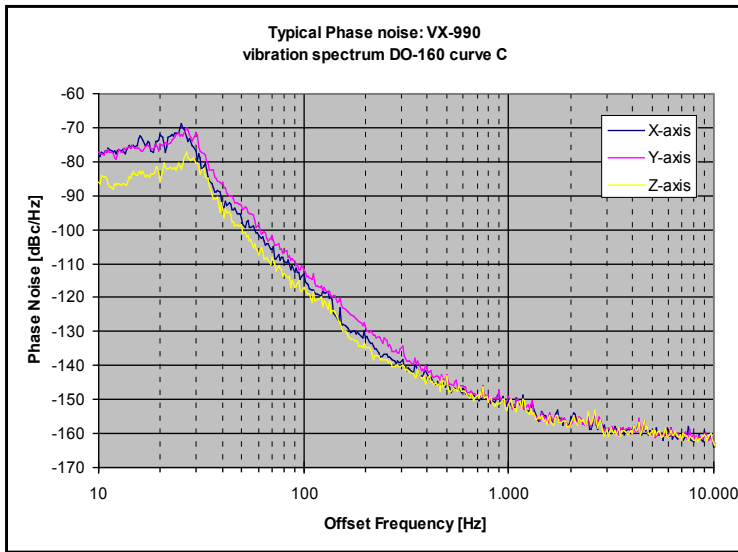
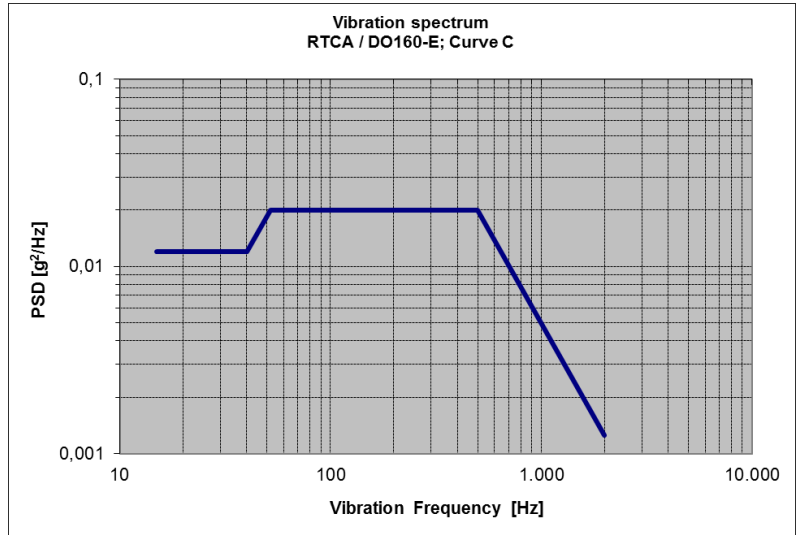
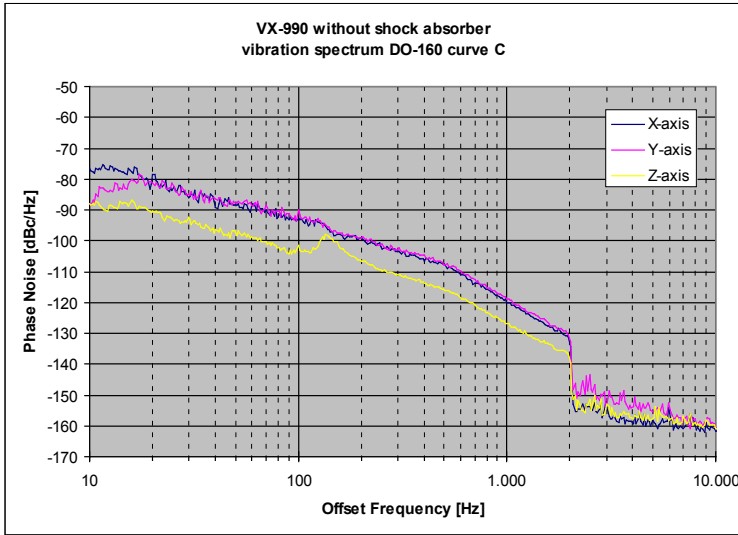
Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Phase noise degrades with increasing output frequency.
3. Contact factory for availability.

Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).

Subject to technical modification.

Typical Phase Noise @ 120 MHz with vibration



Ordering Information

All Oscillators from the 990s Product Group are Customized. Please include your complete specification, including vibration profile and required phase noise and phase noise under vibration to your inquiry.

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