# NWO1570-12-02

15.7GHz
Phase Locked DRO
v 2.2

## GENERAL DESCRIPTION

The NANOWAVE NWO1570-12-02 is one of a product line consists of a series of fixed frequency phase locked dielectric resonator oscillators covering the range 6 to 35 GHz. This family of oscillators offers exceptionally low phase noise floors at microwave frequencies making them suitable for high performance RADAR systems.

This phase locked dielectric resonator oscillator is designed for applications demanding a fixed frequency low phase noise phase locked STALO such as in up and down converters for high performance RADAR and communications systems.


**Figure 1- Ku -Band PLDRO**

## FEATURES

- Low phase noise <-150dBc/Hz at 1MHz, <-170dBc/Hz at 10MHz
- Low spurious < -80dBc beyond 100 kHz.
- Wide operational temperature range 0°C to +70°C
- Low sensitivity to micro-phonic phase hits as a result of proprietary resonator structure
- Single +15V supply

## APPLICATIONS

- High data rate communication systems.
- High performance RADAR.
- High clutter rejection RADAR.

**NANOWAVE Technologies Inc.**
425 Horner Avenue
Etobicoke, ON M8W 4W3
Canada

Phone: +1 416 252-5602
Fax: +1 416 252-7077

## ELECTRICAL PARAMETERS

| Parameter | Unit | Min | Typ | Max | Remarks |
|---|---|---|---|---|---|
| **Frequency range** | GHz | | 15.7 | | Standard units available in 100MHz steps across the frequency range 6 – 35GHz. Phase noise dependent on frequency |
| **Output power** | dBm | 10 | 12 | 14 | Increased power available on request. |
| **Spurious fc+/-100kHz to fc+/-30MHz** | dBc | | | -80 | |
| **Phase noise** | Offset | | PN/[dBc/Hz] | | Phase noise under static vibration |
| | 100Hz | -60 | -55 | -50 | |
| | 1KHz | -65 | -55 | -50 | |
| | 10KHz | -90 | -85 | -80 | |
| | 100KHz | -120 | -115 | -110 | |
| | 1MHz | -150 | -145 | -135 | |
| | 10MHz | -170 | -165 | -160 | |
| | 100MHz | -170 | -165 | -160 | |
| **External reference frequency** | MHz | | 100 | | |
| **External reference power** | dBm | | 0 | | |
| **Lock detect** | TTL | TTL high when locked | | | |
| **DC voltage** | V | | | +15 | |
| **Steady state current** | A | | | 1.5 | |

## MECHANICAL AND ENVIRONMENTAL PARAMETERS

| Parameter | Unit | Min | Typ. | Max | Remarks |
|---|---|---|---|---|---|
| **Operating Temperature Range** | °C | 0 | 25 | +70 | Extended temperature on request |
| **Non-operating Temperature Range** | °C | -40 | | +85 | RF assemblies hermetically sealed |
| **Size (length, width, height)** | Inches | 3.8” x4.3” x 0.82” | | | See outline drawing |
| **RF Output Connector** | | SMA-F | | | |
| **100MHz reference input** | | SMA-F | | | |
| **DC Connector** | | Feed-thru filter pin | | | |
| **TTL lock detect** | | Feed-thru filter pin | | | |
| **Marking** | Manufacturer name, model, serial number, date code | | | | |

**Notes:** Specifications subject to change without notice.

**NANOWAVE Technologies Inc.**
425 Horner Avenue
Etobicoke, ON M8W 4W3
Canada
Phone: +1 416 252-5602
Fax: +1 416 252-7077

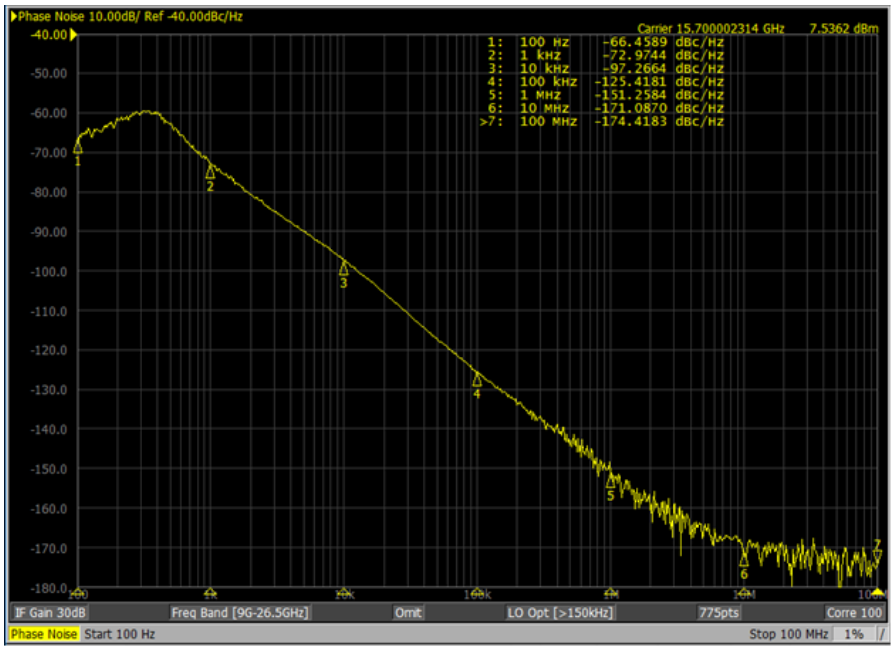


**Fig 2: Measured Phase noise Performance at 25°C**

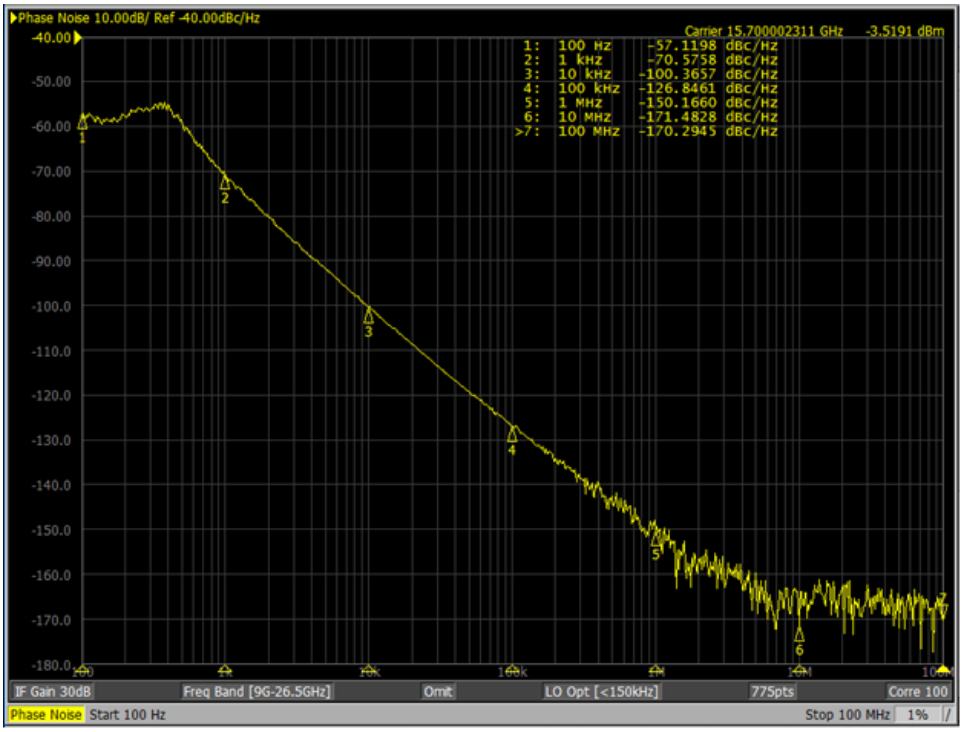


**Fig 3: Measured Phase noise Performance at 70°C**

**NANOWAVE Technologies Inc.**
425 Horner Avenue
Etobicoke, ON M8W 4W3
Canada
Phone: +1 416 252-5602
Fax: +1 416 252-7077

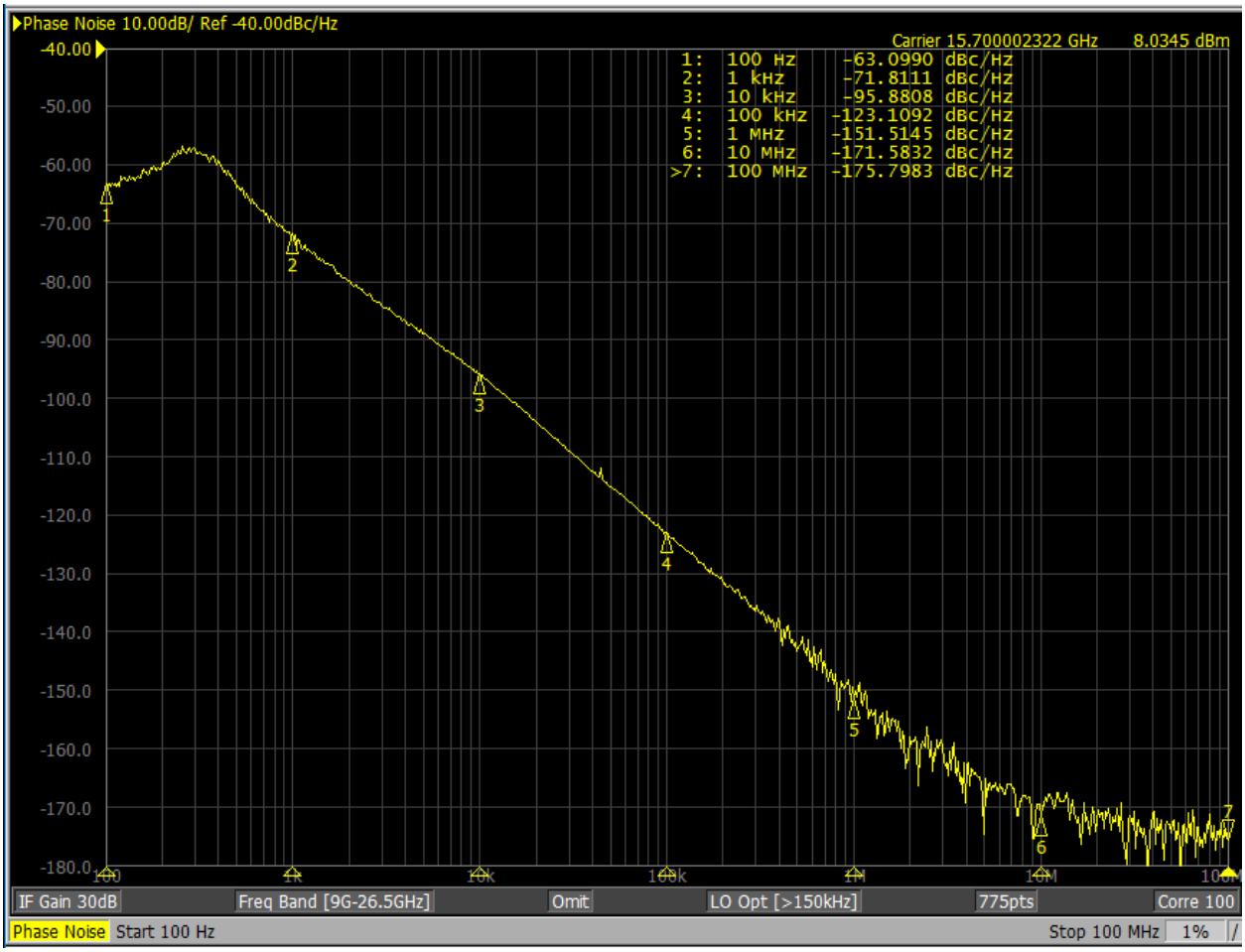


**Fig 4: Measured Phase noise Performance at 0°C**

## *COMMUNICATION AND CONTROL INTERFACE*

The PLDRO lock status is monitored through a TTL level brought to a feedthrough pin. Power is similarly applied through a feedthrough pin whilst the RF signal and reference input signal are connected via SMA connectors. Additional monitoring function such as supply current and voltage can be added on request.

**NANOWAVE Technologies Inc.**
425 Horner Avenue
Etobicoke, ON M8W 4W3
Canada
Phone: +1 416 252-5602
Fax: +1 416 252-7077

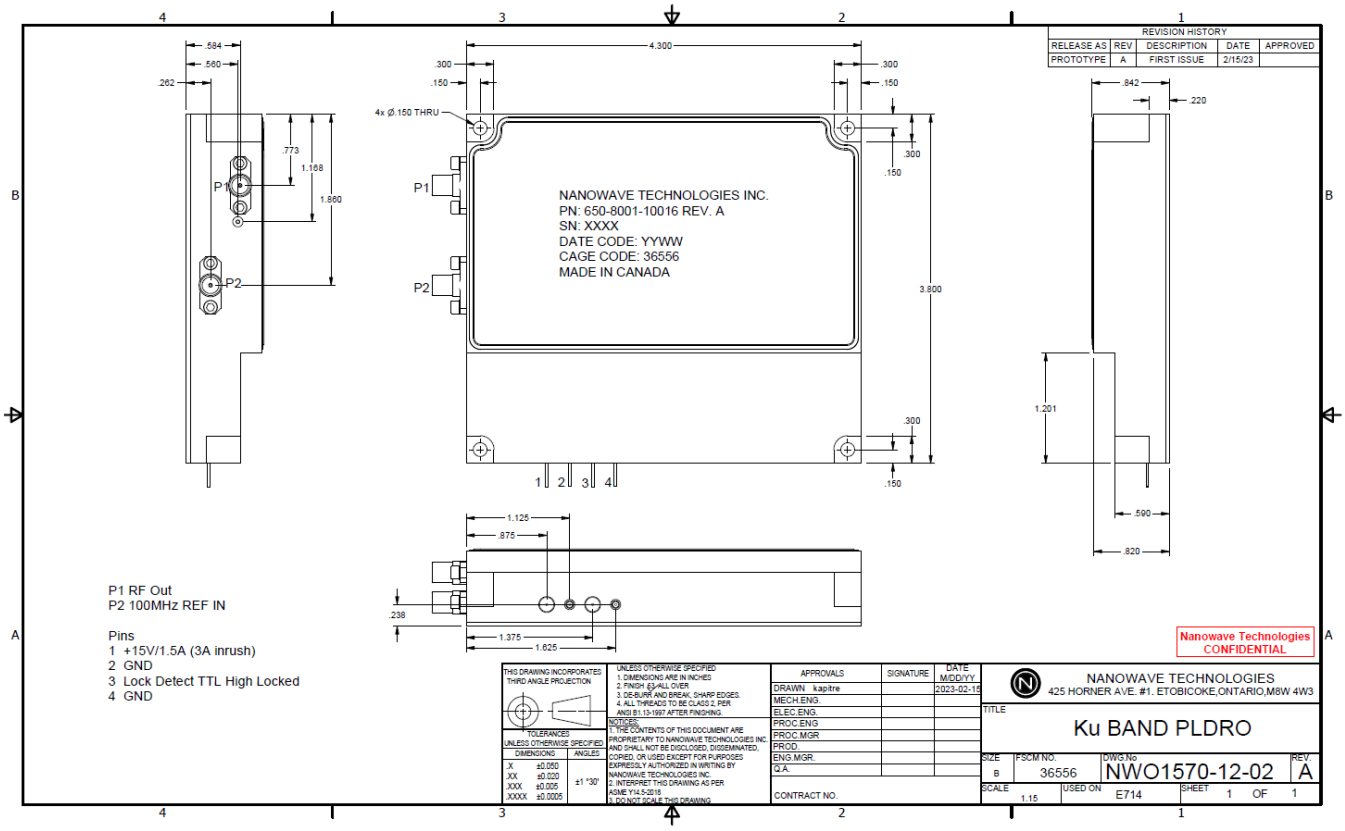


**Fig 5: Outline Drawing of 15.7GHz Phase Locked Dielectric Resonator Oscillator**

**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

For further information please contact NANOWAVE Technologies Inc. at *sales@nanowavetech.com* , or call at (+1) 416-252-5602

**NANOWAVE Technologies Inc.**
425 Horner Avenue
Etobicoke, ON M8W 4W3
Canada
Phone: +1 416 252-5602
Fax: +1 416 252-7077