



PNCS-1 1 GHz Phase Noise Clock Standard Product Manual

Signal Hound PNCS-1 User Manual

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Contents

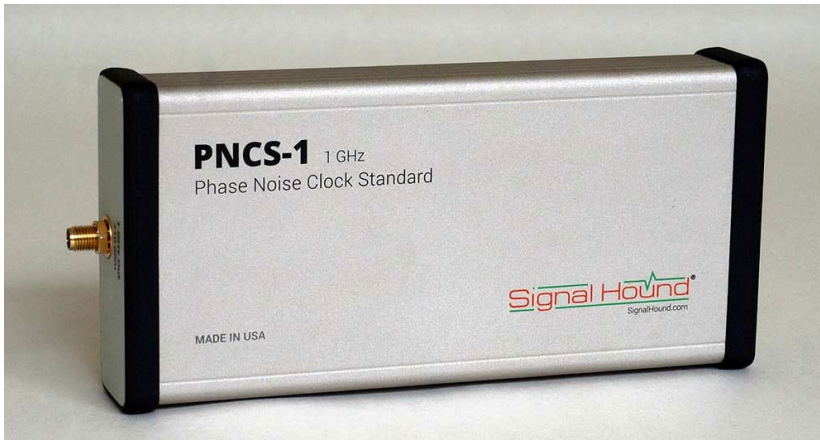
1 Overview	4
2 Preparation	4
2.1 Initial Inspection	4
2.2 Connecting Your PNCS-1.....	4
3 Understanding the PNCS-1 Hardware	4
3.1 Spurious Signals.....	4
4 Calibration and Adjustment	5
5 PNCS-1 Performance	5
6 Warranty and Disclaimer	6
6.1 Warranty	6
6.2 Warranty Service	6
6.3 Limitation of Warranty.....	6
6.4 Exclusive Remedies	7
6.5 Certification.....	7

1 Overview

This document outlines the operation and functionality of the PNCS-1 1 GHz phase noise clock standard.

The PNCS-1 is an ultra-low phase noise oscillator. It can be mechanically tuned to $1 \text{ GHz} \pm 25 \text{ Hz}$ using the included adjustment tool. The output power is $+10 \text{ dBm} \pm 2 \text{ dB}$.

2 Preparation



2.1 INITIAL INSPECTION

Check your package for shipping damage before opening. Your box should contain a PNCS-1, a slotted adjustment tool, and a 13.5V AC-DC wall power adapter.

2.2 CONNECTING YOUR PNCS-1

Plug the power jack into the PNCS-1 DC power in. Wait 30 minutes for the OCXO to warm up. The 10 Hz phase noise offset requires this time to stabilize.

3 Understanding the PNCS-1 Hardware

The PNCS-1 uses an ultra-low phase noise, 100 MHz OCXO. It doubles the frequency to 200 MHz, filters, multiplies the frequency by 5, filters using a 1 GHz SAW filter, and then amplifies it to +10 dBm.

3.1 SPURIOUS SIGNALS

Harmonics of 1 GHz will be present at the output. Harmonic will typically be lower than 30 dB down ($\leq -30\text{dBc}$). Smaller spurs at multiples of 100 MHz will be present at high frequencies as well.

4 Calibration and Adjustment

The output frequency may be mechanically adjusted using the included slotted adjustment tool. Contact Signal Hound for more information regarding calibration, or to schedule a calibration.

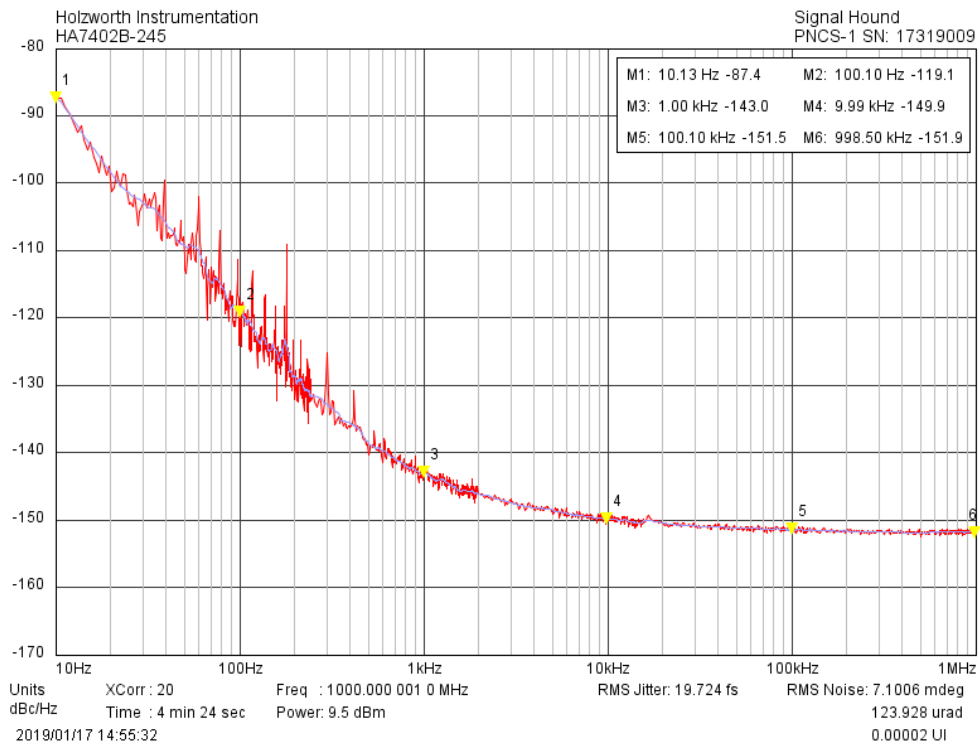
5 PNCS-1 Performance

Frequency Range 1 GHz \pm 1 kHz, adjustable from rear panel (slotted adjustment tool included)

Output Power +10 dBm \pm 2 dB

Timebase Accuracy $\pm 5 \times 10^{-9}$ per day for aging (after 30 days of continuous operation)

Typical SSB Phase Noise at 1GHz Center Frequency (see chart below)



Offset Frequency	dBc/Hz (spec)	dBc/Hz (typical)
10Hz	-84	-90
100Hz	-113	-118
1kHz	-137	-141
10kHz	-144	-148
100kHz	-147	-150
1MHz	-148	-150

Operating Temperature (ambient)	32°F to 122°F (0°C to +50°C)
Power Consumption	6.5 watts during warmup, 4.5 watts after 3 minutes 13.5 volt DC wall transformer included
Spurious Signals	
Harmonics	< -30 dBc typical
Non-harmonic spurious	< -50 dBc typical (100 MHz multiples)

6 Warranty and Disclaimer

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6.1 WARRANTY

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6.2 WARRANTY SERVICE

For warranty service or repair, this product must be returned to Signal Hound. The Buyer shall pay shipping charges to Signal Hound and Signal Hound shall pay UPS Ground, or equivalent, shipping charges to return the product to the Buyer. However, the Buyer shall pay all shipping charges, duties, and taxes, to and from Signal Hound, for products returned from another country.

6.3 LIMITATION OF WARRANTY

The foregoing warranty shall not apply to defects resulting from improper use by the Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product. No other warranty is expressed or implied. Signal Hound specifically disclaims the implied warranties or merchantability and fitness for a particular purpose.

6.4 EXCLUSIVE REMEDIES

The remedies provided herein are the Buyer's sole and exclusive remedies. Signal Hound shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

6.5 CERTIFICATION

Signal Hound certifies that, at the time of shipment, this product conformed to its published specifications.