July 2nd, 2021
Nihon Dempa Kogyo Co., Ltd.
Representative Director and President
Hiromi Katoh

Development of floor noise-185 dBc/ Hz at 100kHz ultra-low phase noise 100MHz OCXO

Nihon Dempa Kogyo Co., Ltd. has developed an ultra-low phase noise 100MHz OCXO (crystal oscillator with temperature chamber) "NH37M28LP" and is planning to ship samples from October 2021.

By adopting our unique low-noise circuitry for applications such as measurement instruments, radar systems, medical equipment, and microwave reference signals, this product will become the second release of our Low Noise OCXO in Ultimate series(*1), which achieves the world's highest level (*2) of low-floor noise (-185 dBc/Hz or lower at 100kHz).

In the IoT social in recent years, various kinds of information are rapidly increasing, and in order to process these large amounts of data at high speed, a high frequency reference signal source with low noise and high purity is required in radio equipment and measurement instruments.

Current measurement instruments generally use a 10MHz OCXO as a reference signal source, but there have been challenges in which the floor noise deteriorates by multiplying the frequency in the equipment and increasing the frequency. This has resulted in complicated circuitry, such as the additional filters components are needed.

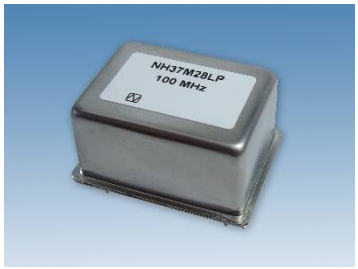
In addition to our low-noise crystal oscillator circuit technology, we have added a circuit that suppresses noise from the inside and outside of the oscillator circuit by placing a crystal unit with a filter effect in the oscillator loop.
In the output section, we use our unique sine wave output circuit to output the oscillation signal with minimal noise.
This makes it possible to multiply the frequency from 100MHz inside the equipment. In addition to the advantages (theoretical conversion at 1GHz) of 20dB compared to the conventional multiplication from 10MHz, considering the low floor noise characteristics of this product, the performance can be expected to be improved by approximately 30 to 50dB compared to the conventional product, and the circuit size can be reduced.

The reference signal source with ultra-low phase noise characteristics realized by this product contributes to a greatly improvements in equipment performance not only in measurement equipment and radar equipment, but also in new fields such as audio products and special applications.

We will continue to contribute to the realization of a safe, secure and comfortable society through our quartz device and crystal application equipment businesses.

*1: Our survey as of March 2021
*2: The first Ultimate series. Ultimate low Noise VCXO (announced on our website in May 2021)

[Exterior Photo]

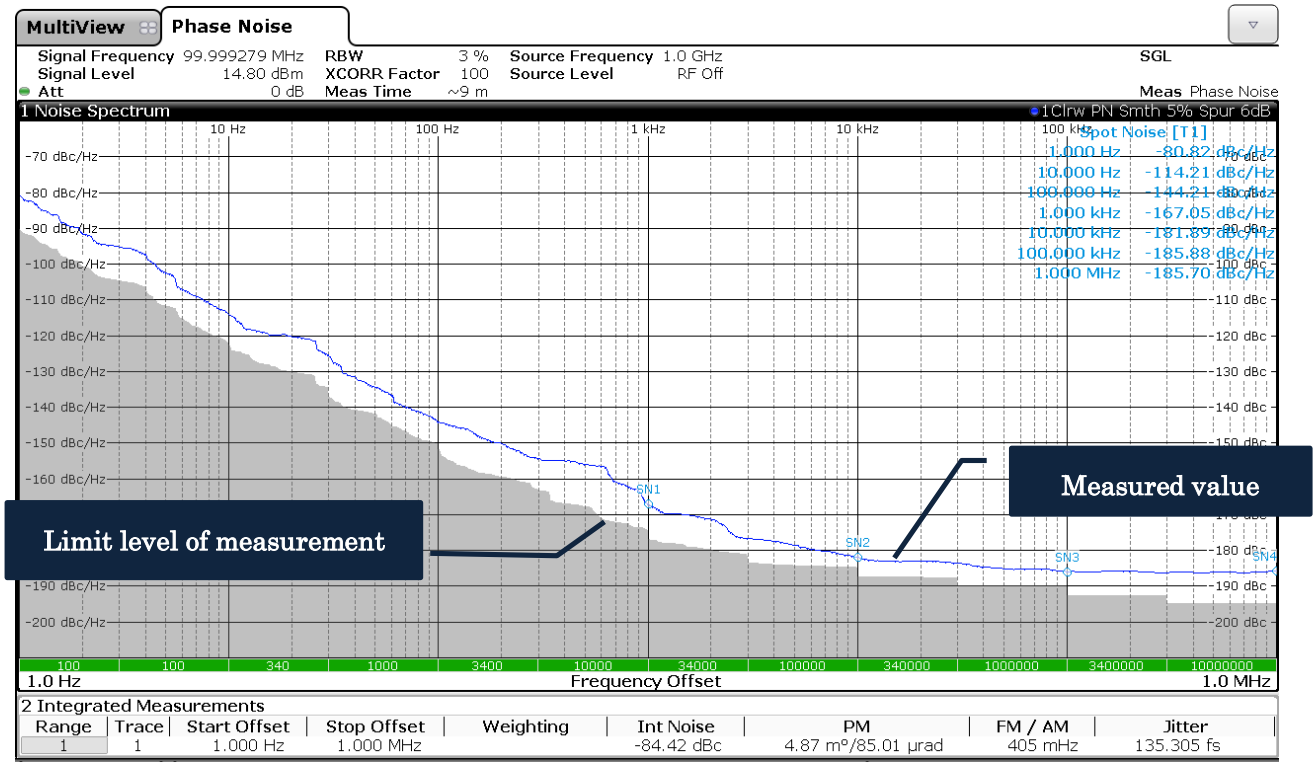


[Sample and mass production]
The sample (ES) is scheduled in October 2021 and for mass production in January 2022.

[Specifications/Characteristics]

Model	NH37M28LP
Size	36×27.0×19 mm
Nominal frequency range	100MHz
Output support	Sine wave
Operating temperature range	-20deg.C～＋70deg.C (Option : -40deg.C～＋85deg.C)
Frequency Temperature Characteristics	Max.±100×10^{-9}
Power supply voltage [V_{CC}]	+5V
Phase noise characteristics	Typ. -114 dBc/Hz at 10Hz offset Typ. -185 dBc/Hz at 100kHz offset

Phase noise characteristic data
Condition: Nominal frequency 100MHz, power supply voltage [V_{CC}] +5V, temperature +25deg.C



For inquiries regarding products, please contact [Contact] below.

【Contact】

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