



The Power of Linking Together

**ABRACON
CORPORATION**

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Oscillators

Real-Time-Clocks

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Precision Timing

Magnetics

Engineered Solutions

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Introduction

Purpose:

Introduce the ABLNO series of Ultra Low Phase Noise, Fixed Frequency & VCXO's and the ABLNO-EVAL Board

Objectives:

- Explain the benefits of the ABLNO series of products
- Provide overview of the primary features
- Provide target market & applications
- Explain performance data

Content:

(10) Slides

Learning Time:

5-minutes



Welcome to Abracon's ABLNO series; Ultra Low Phase Noise Oscillators & Evaluation Board Training Module. This training session will provide an overview of the key features and benefits; as well as, discuss the applications of this product series.

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Key Features

- RF Output:** 3rd Overtone Crystal based, 80.000MHz to 156.250MHz range with (14) standard developed frequencies and eight frequencies in stock
- Phase Noise:** Exceptional close-to-the carrier phase noise, -155dBc/Hz
Maximum at 10kHz offset from the carrier (**100% Tested @ 25°C**)
- rms Jitter:** Maximum Guaranteed 75 fs *rms* jitter over 12kHz to 20MHz BW
- Stability:** ±28 ppm Maximum ALL Inclusive (including 10-year Aging)
- Power Consumption:** < 25mA Maximum up to 125.000MHz carrier
< 35mA Maximum up to 156.250MHz carrier
- Size:** 9.2 * 14.80 * 5.50 mm SMT Reflow-able RoHS Compliant package
- Symmetry:** 45% / 55% worst case

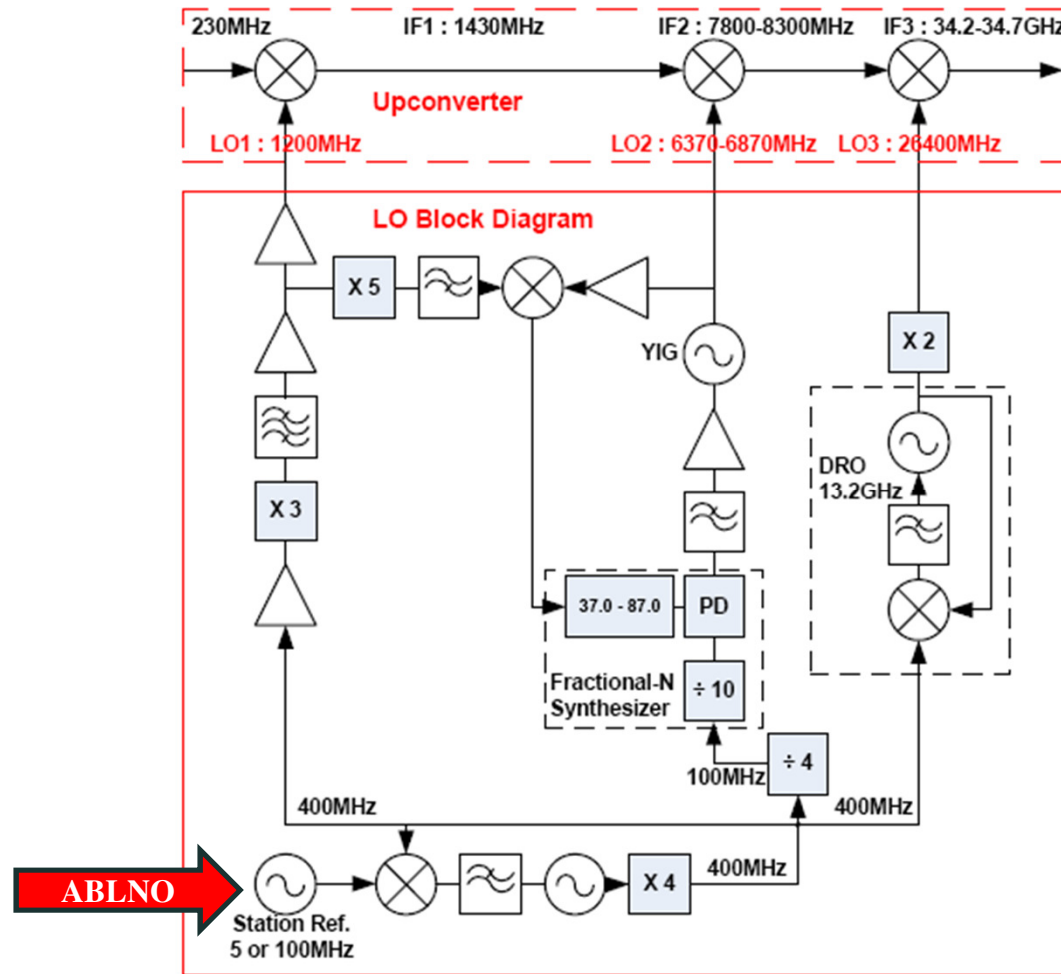
ABLNO Series is designed with High “Q”, 3rd Overtone Crystal Resonators, enabling exceptional close-to-the-carrier phase noise and wide-band jitter, ideally suited for noise sensitive applications. ABLNO oscillators in VCXO configuration provide sufficient frequency pull-ability to accommodate re-tuning of the oscillators to precise carrier frequency, over a 10-year product life. **ABLNO oscillators are 100% tested for Phase Noise compliance at room temperature**



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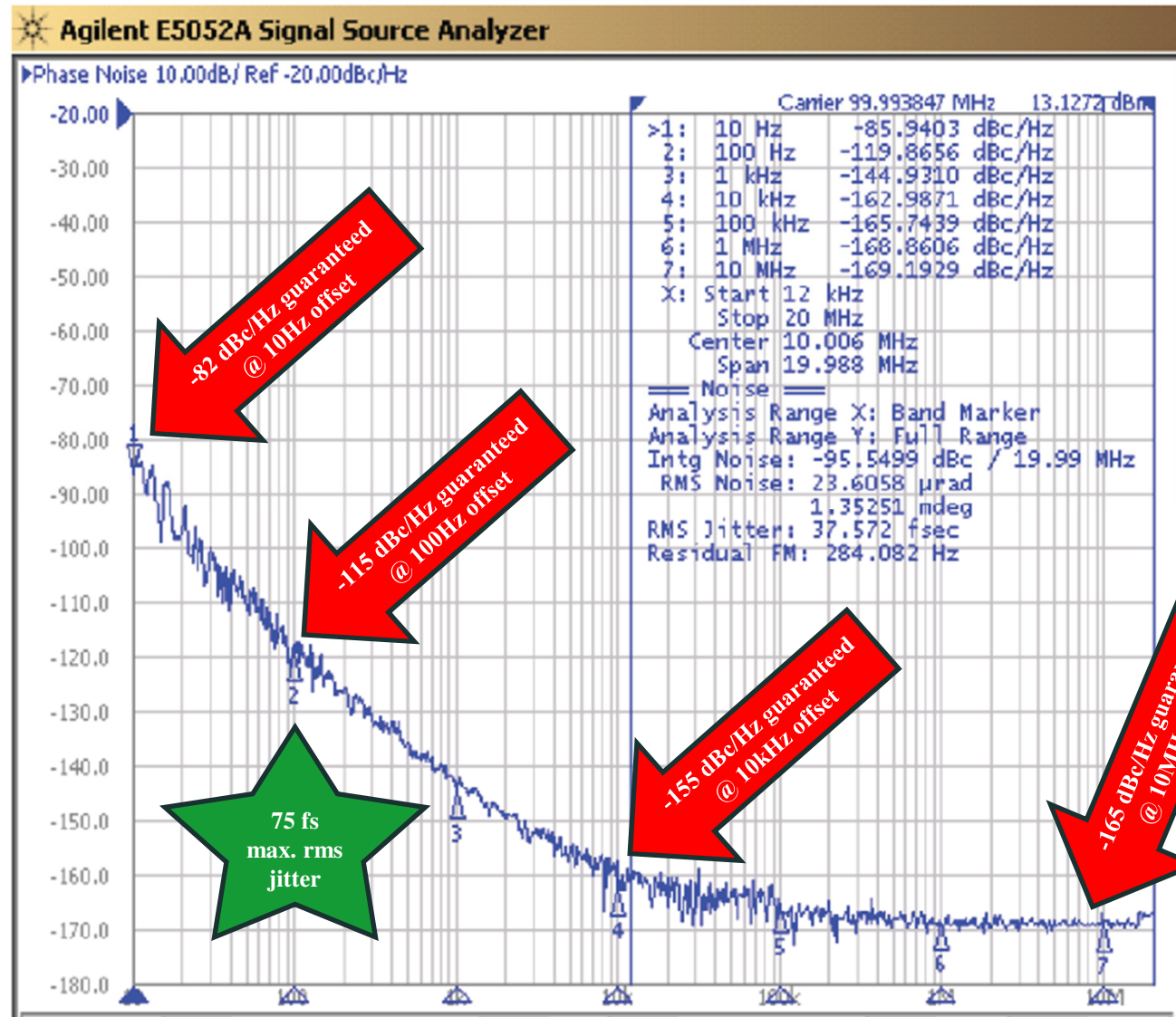


Example Application : Ka-Band Frequency Up-Converter



In this example, the Ka-Band Up-Converter would greatly benefit from the Ultra Low Phase Noise performance of the ABLNO reference oscillator at 100MHz; yielding a much cleaner up-converted Microwave Spectrum

Performance Data

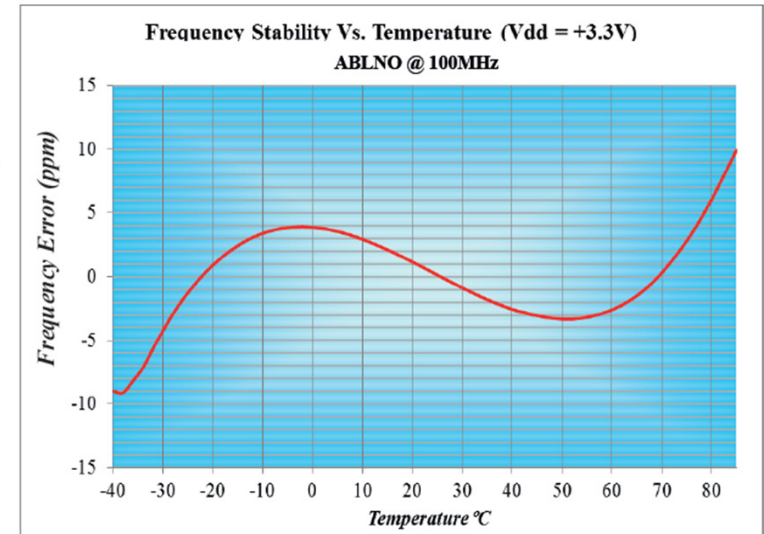
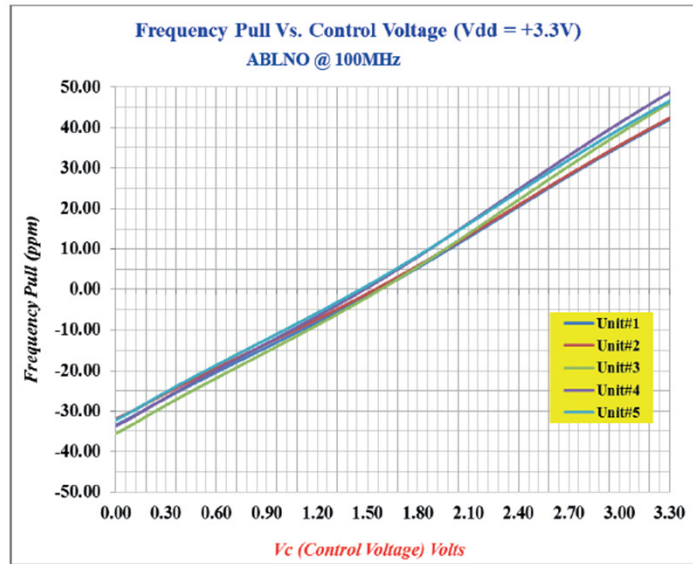


ABLNO devices are guaranteed to have Exceptional Phase Noise of -155dBc/Hz @ 10kHz offset, with < 40 femto seconds of typical rms jitter; and guaranteed maximum jitter of 75 femto seconds - over a 12kHz to 20MHz Bandwidth. ABLNO oscillators are 100% tested for Phase Noise compliance at room temperature

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Performance Data ... *continued*



Abrakon's ABLNO solution offers Linear, Monotonic Frequency Pull to accommodate frequency correction over a 10-year product life. Further, state-of-the-art Quartz Crystal processing techniques yield minimal & consistent frequency variation over -40°C to +85°C operating temperature range; with $< \pm 12$ ppm typical and ± 18 ppm guaranteed maximum variation over temperature



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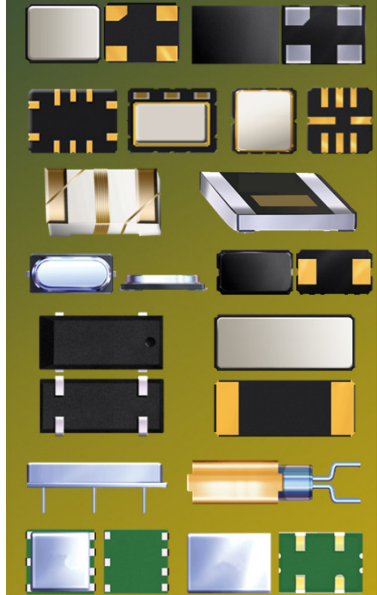


Target Markets & Typical Applications

- Satellite Modem Communications Systems
- Point-to-Point Microwave Backhaul
- COTS – Military Communication Circuitry
- Low Phase Noise Signal Sources (RF & Microwave)
- High Definition TV
- Test & Measurement Equipment
- Ultra Low Phase Noise or rms jitter, RF Communications Circuitry
- Avionics
- A/D and D/A Converters
- DDS based architecture
- Phase Locked Loops
- High-End Networking Equipment

ABLNO series is ideally suited for a variety of markets and applications, where Ultra Low Phase Noise and Exceptionally Low rms jitter is of critical importance. Some of these applications include Satellite Modems, Point-to-Point Microwave Backhaul, Avionics, PLL's and Networking equipment

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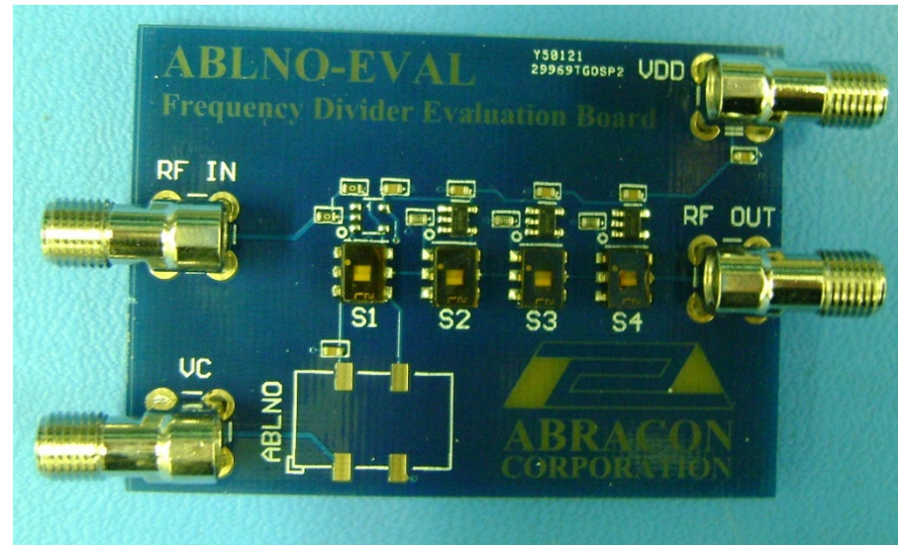
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ABLNO Evaluation Board

Abracon Part #:

ABLNO-EVAL



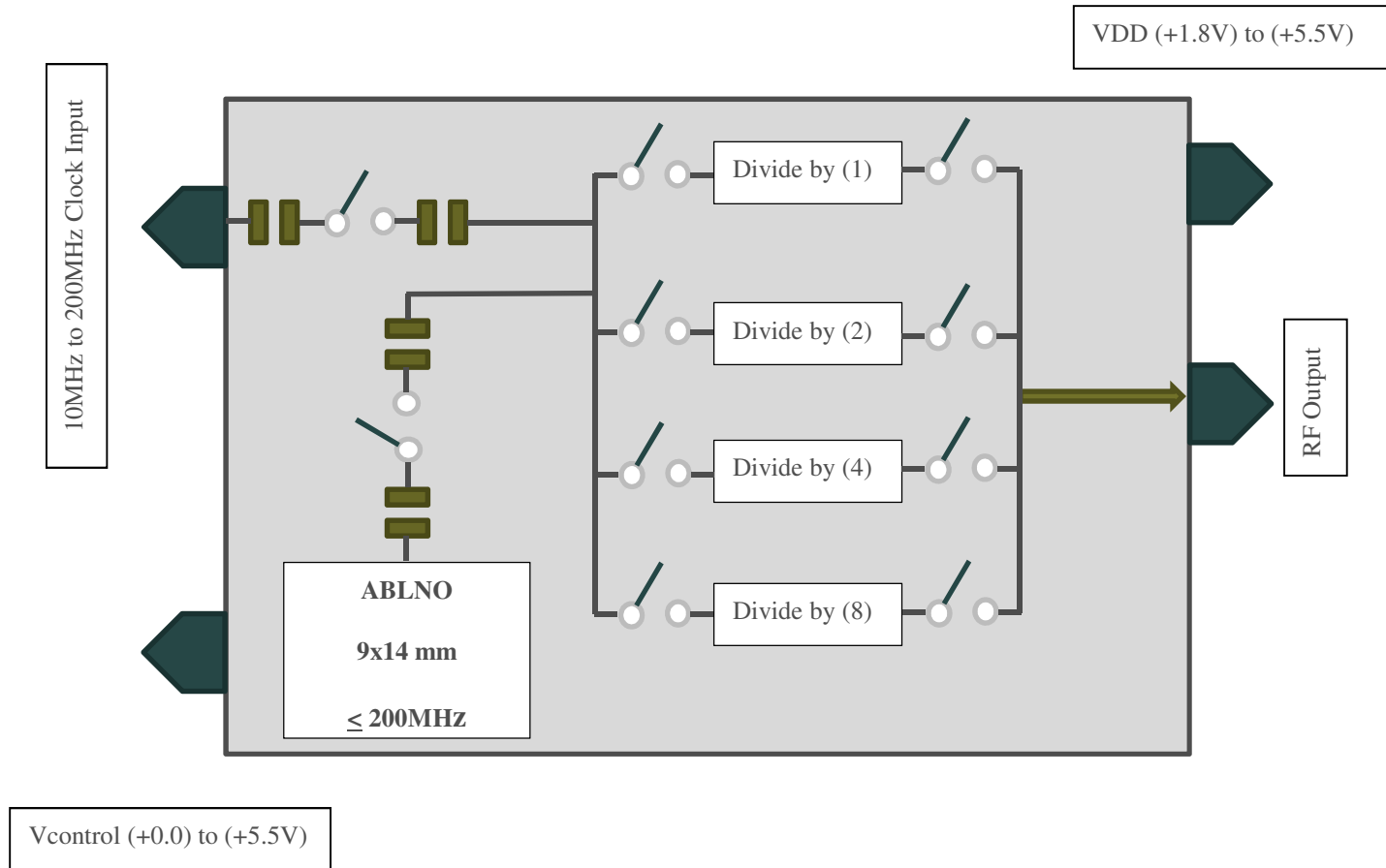
Abracon also offers an Evaluation Board to assist engineers & technicians with quick evaluation of the ABLNO oscillators. This evaluation board can also be used to characterize reference clocks, other than the ABLNO. Please download a comprehensive data sheet by visiting this link: <http://www.abracon.com/PrecisionTiming/ABLNO-EVAL.pdf>



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ABLNO Divider Evaluation Board Concept



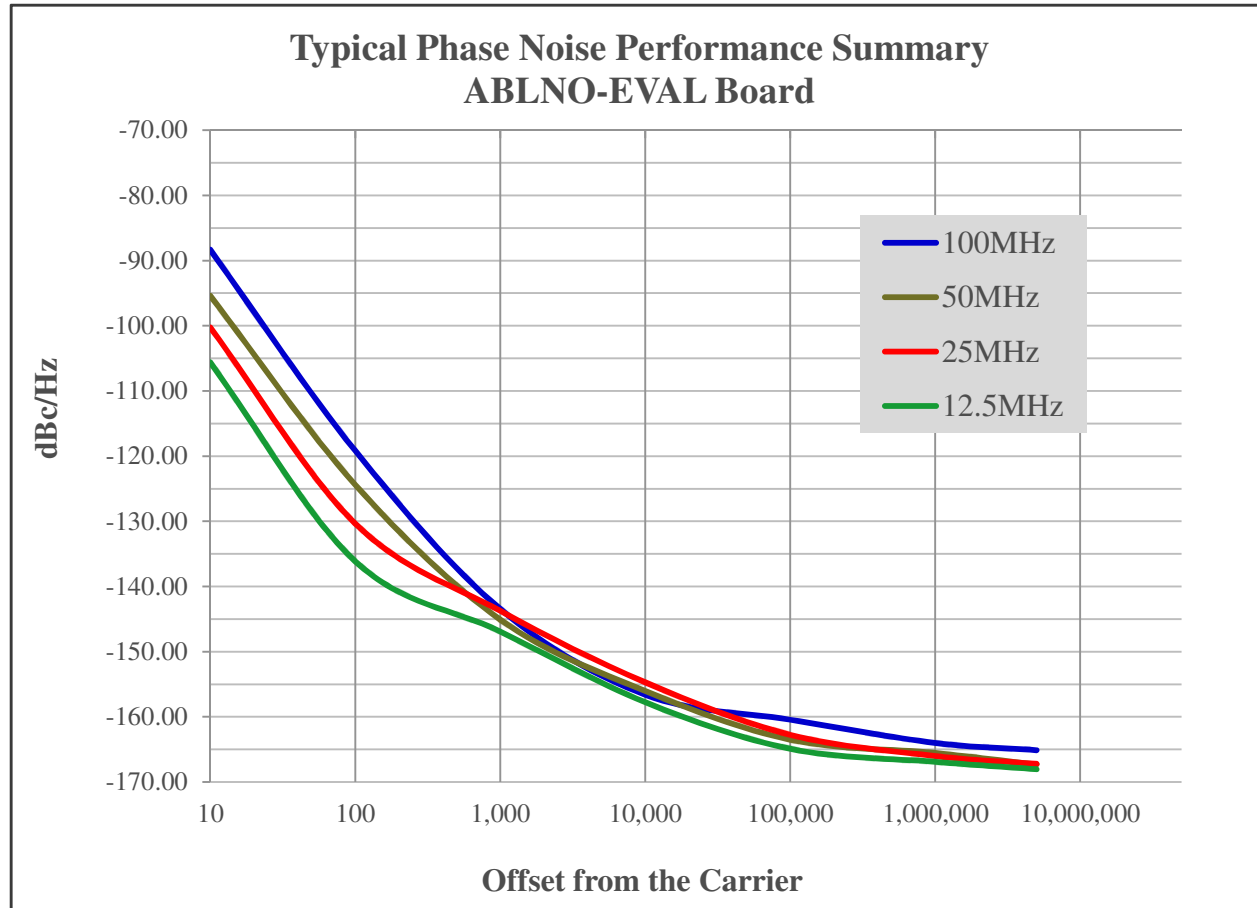
The Evaluation Board's Divider Circuitry is impedance matched and optimized for Best-in-Class Phase Noise Performance; while minimizing Additive Jitter. Stand-alone ABLNO devices typically hold -162dBc/Hz Phase Noise @ 10kHz offset @ 100MHz carrier; and a guaranteed -165dBc/Hz Phase Noise Floor @ 10MHz offset



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ABLNO Evaluation Board



	Additive Jitter from the Divider Scheme			
Carrier	100MHz	50MHz	25MHz	12.5MHz
Measured Jitter (12kHz to 20MHz) in femto seconds	30.22	47.86	95.01	168.15
Additive rms Jitter (12kHz to 20MHz) in femto seconds		17.64	64.80	137.93

ABLNO Evaluation Board is designed to minimize additive jitter, while providing a means to evaluate the ABLNO oscillator's RF Output in divide by 1, 2, 4 and 8 modes. For detail information on this evaluation board, please download the data sheet by visiting this link:

<http://www.abracon.com/Precisiontiming/ABLNO-EVAL.pdf>



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Summary

- ABLNO series is best-in-class for AT-Strip Crystal based Fixed & Voltage Controlled Oscillators
- It offers exceptional ALL Inclusive Stability of ± 28 ppm Maximum
- Ideally suited for applications and systems where Ultra Low Phase Noise and Exceptionally Low rms Jitter is of Critical importance
- (8) standard stocked frequencies with a total of (14) developed frequencies are available
- Custom frequencies will be considered , please contact Abracon
- ABLNO-EVAL Boards are also available to facilitate quick engineering evaluation
- Abracon offers in-depth Application Engineering expertise to aid customers with their particular application

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