Frequency Translator-Evaluation Board

ABFT-20.000MHz-EVAL

RoHS Compliant

40 x 30 x 8mm

Moisture Sensitivity Level (MSL)–This product is not Moisture Sensitive MSL = N/A: Not Applicable

FEATURES:

- The ABFT Evaluation Boards are available with either the 20MHz or the 40MHz Translator on-board
- These boards provide a convenient means to conduct engineering evaluation of Abracon's Frequency Tranlator / Jitter Attenuator Solution
- The Evaluation Board is provided with standard SMA connectors for 10MHz Reference In, Supply Voltage and Locked Output
- The Evalautation Board can be tested over -40ºC to +85ºC Industrial Operating Temperature Range - to quantify frequency tracking over temperature capability of Abracon's solution

APPLICATIONS:

- Frequency translation, clock smoothing and jitter attenuation of the input 10MHz reference
- Datacom - DSLAM, DSLAR, Access Nodes
- Cable modem head end
- Base Station - GSM, CDMA
- Telecom - SONET/SDH/ATM

GENERAL DESCRIPTION

ABFT Evaluation Boards comprise of the Ultra Low Jitter ABFT Frequency Translator / Jitter Attenuator, which is ideally suited to improve the Jitter characteristics of the input signal. This device is designed to provide input clock smoothing - while providing Phase and Frequency Locked higher frequency translated output. Typical application will take a 10MHz reference frequency and phase & frequency lock it to either a 20MHz or a 40MHz Low Jitter VCXO. The implemented technology significantly attenuates the jitter content of the 10MHz reference signal; while keeping the higher frequency RF Output - Frequency and Phase Coherent with the input 10MHz reference signal.

STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes
Resonant Frequency		20.000 *Or* 40.00		MHz	See options
Operating Temperature	-40		+85	°C	
Storage Temperature	-40		+85	°C	
Supply Voltage (Vdd)	3.135	3.3	3.465	V	3.3V±5%
Input Signal Characteristics Frequency Signal level	 9.999800 0.300	 10.000000	 10.000200 3.3	 MHz Vp-p	Input signal must be with-in ±20.00 ppm from 10.00MHz carrier for the ABFT device to achieve lock
Lock Time		< 20	50	ms	
Frequency Stability Over Temperature (Note # 1)	-25.00		+25.00	ppb	Referenced to the stable input reference of 10.00MHz (such as a Stratum-III TCXO or an OCXO)
Internal Frequency Pull Range	±100.00			ppm	This is the internal pull range of the ABFT device providing sufficient correction range to account for internal aging, stand-alone temperature variation, etc.
Supply Current (I_{DD})		< 14.0	20.00	mA	Under Lock
RF output Characteristics Output Load: Rise Time (Tr) Fall Time (Tf) Symmetry Output Voltage (V_{OH}) Output Voltage (V_{OL})	 45 0.9*Vdd 	 853 526 48/52 	 15||10 1200 1200 55 0.1*Vdd	 pF||kΩ ps ps % V V	 @1/2Vdd
Stand alone Aging (Note # 2)	-5.0		+5.0	ppm	@+25°C First year
	-12.0		+12.0		@+25°C After 10 years

(Note # 1): The frequency stability over temperature of the ABFT device is greatly dependant on the short term perturbations of the input reference signal.
(Note # 2): The Aging characteristics of the Quartz used inside the ABFT solution are such that, the stand-alone aging will not exceed ±12.00 ppm over a 10-year product life; referenced to the initial measured frequency post reflow in end application

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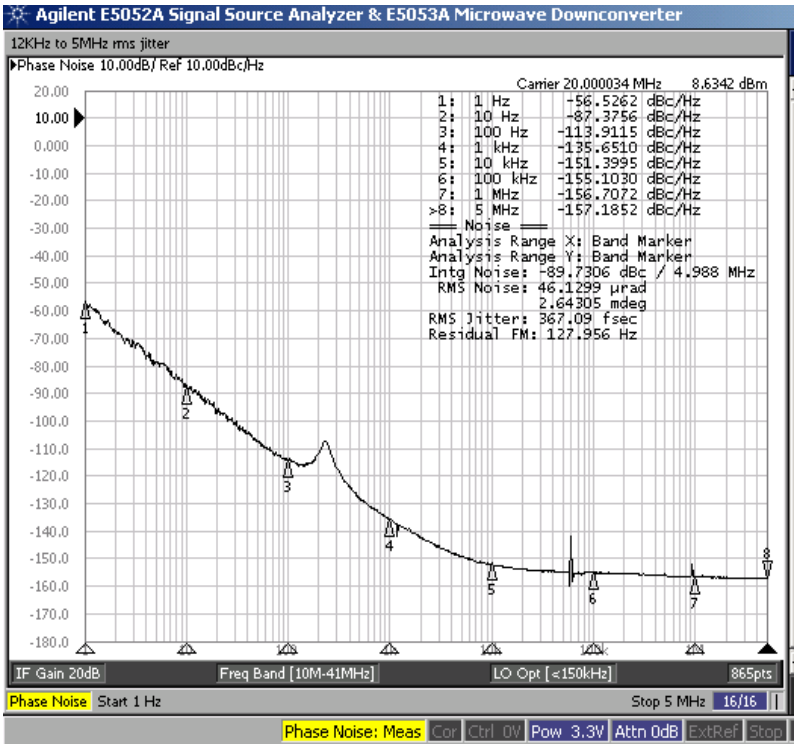
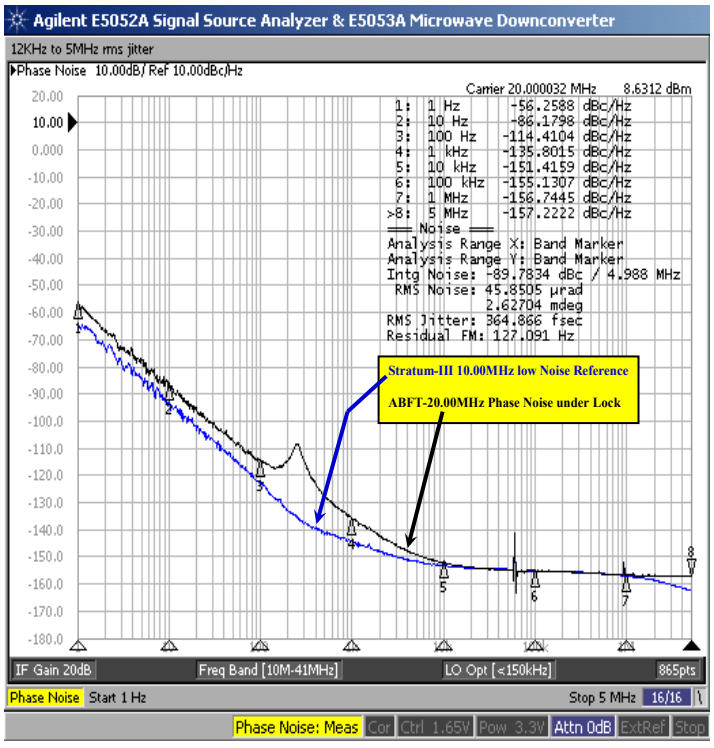
Parameters	Minimum	Typical	Maximum	Units	Notes
Phase Noise @ 20MHz carrier					Close to the carrier phase noise is dependent on the cleanliness of the input reference. However, at 1kHz offset and beyond, ABFT phase noise is ***practically independent*** of the input reference noise
1Hz offset from the carrier		-56		dBc/Hz	
10Hz offset from the carrier		-87			
100Hz offset from the carrier		-113			
1,000Hz offset from the carrier		-135	-130		
10,000Hz offset from the carrier		-151	-145		
100,000Hz offset from the carrier		-155	-150		
1,000,000Hz offset from the carrier		-156	-150		
5,000,000Hz offset from the carrier		-157	-155		

PHASE NOISE

Phase Noise under lock (ABFT-20.00MHz with input connected to a low noise, stable 10.00MHz Stratum-III reference signal)



DetailedComparative Phase Noise Plot (Stratum-III 10.0MHz as Reference)



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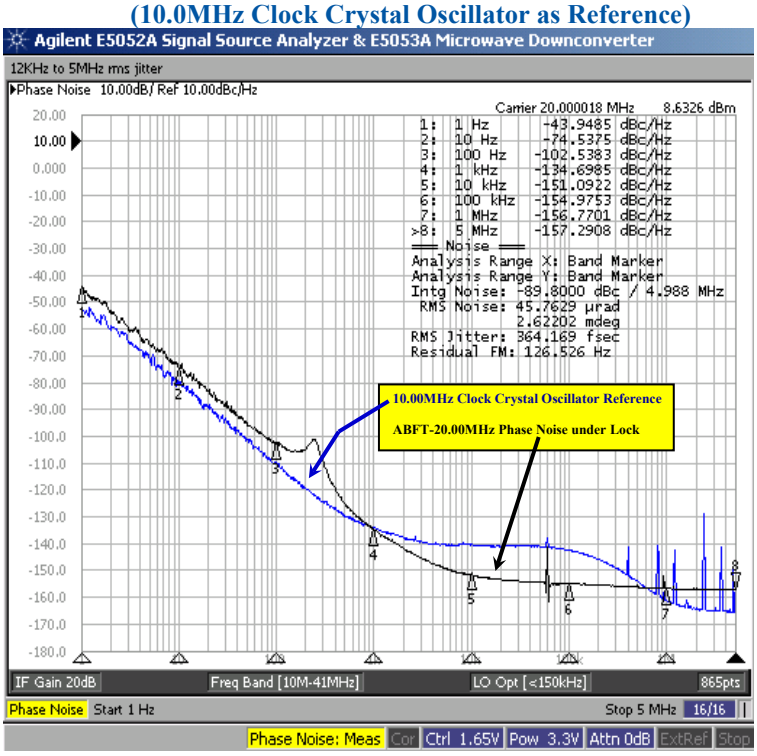
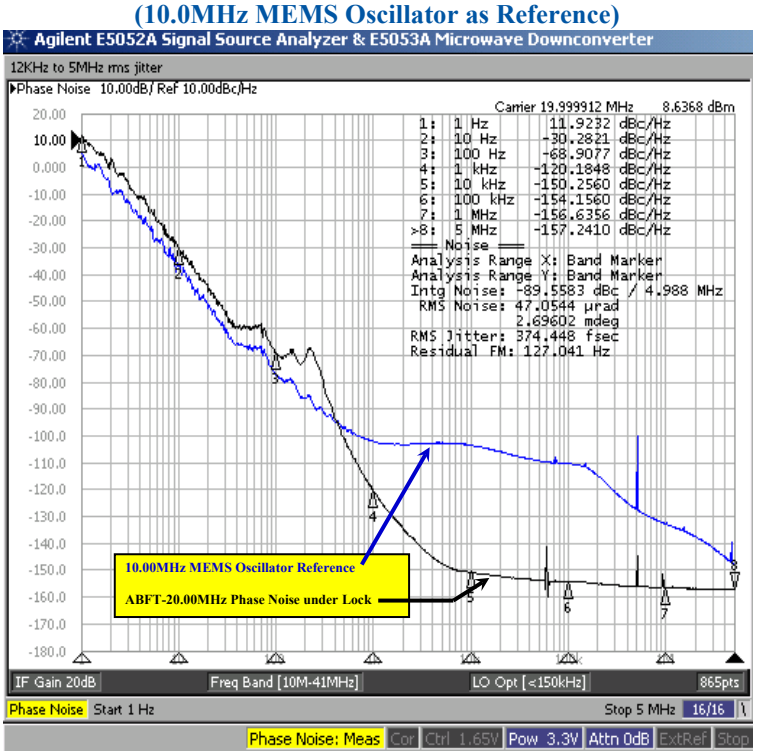
PHASE NOISE

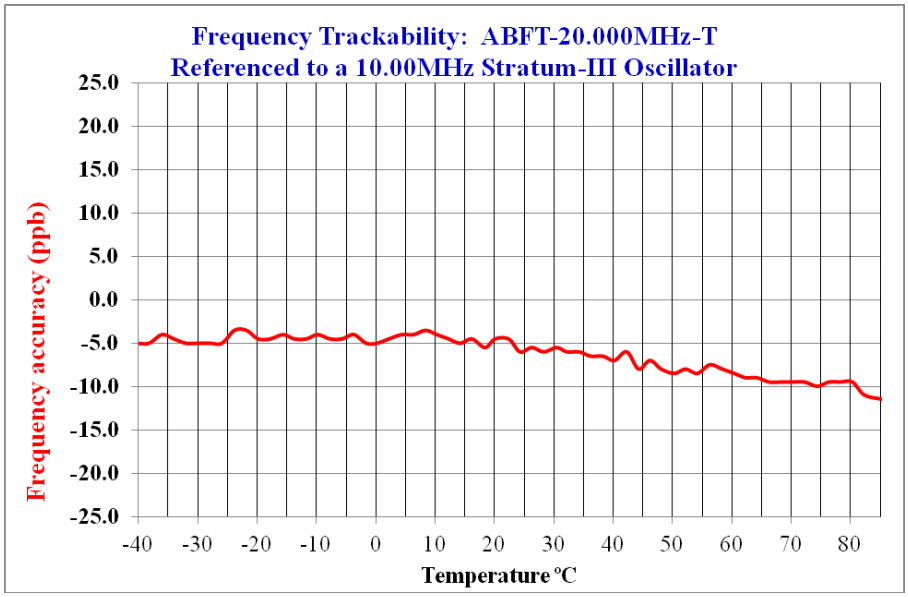
Detailed Comparative Phase Noise Plot (10.0MHz Clock Crystal Oscillator as Reference)



Detail Comparative Phase Noise Plot (10.0MHz MEMS Oscillator as Reference)



FREQUENCY TRACKING OVER TEMPERATURE



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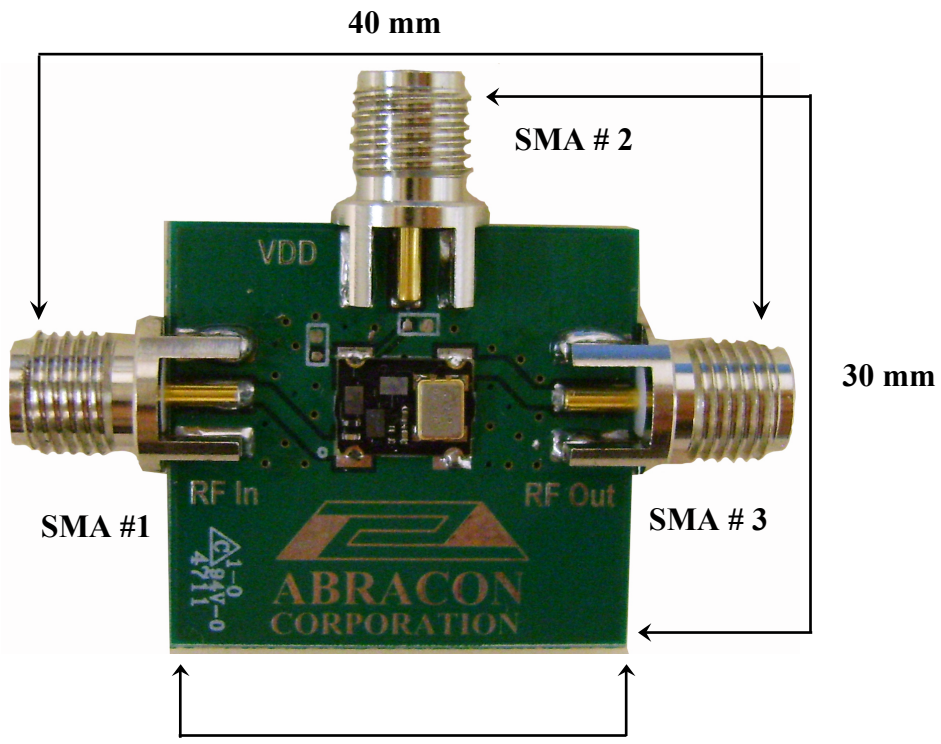
PART IDENTIFICATION

ABFT - [ ] MHz - [EVAL]

Frequency in MHz
20.000 MHz Or 40.000 MHz

OUTLINE DIMENSIONS:



SMA Connector #	Name	Description
1	RF In	10MHz Reference Signal to be connected to this port
2	VDD	+3.3V (±5%) DC Voltage to be connected to this port to bias the Frequency Translator
3	RF Out	Either a 20MHz or a 40MHz LVCMOS signal is present at this port, phase and frequency locked to the 10MHz Reference Signal present on SMA # 1

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