

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 Translator / Jitter Attenuator Solution
- The Evaluation Board is provided with standard SMA connectors for 10MHz Reference In, Supply Voltage and Locked Output
- The Evaluation Board can be tested over -40°C to +85°C 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 <i>Or</i> 40.00		MHz	See options
Operating Temperature	-40		+85	°C	
Storage Temperature	-40		+85	°C	
Supply Voltage (V _{dd})	3.135	3.3	3.465	V	3.3V±5%
Input Signal Characteristics					Input signal must be with-in ±20.00 ppm from 10.00MHz carrier for the ABFT device to achieve lock
Frequency	9.999800	10.000000	10.000200	MHz	
Signal level	0.300		3.3	Vp-p	
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:			15 10	pF kΩ	
Rise Time (Tr)		853	1200	ps	
Fall Time (Tf)		526	1200	ps	
Symmetry		48/52	55	%	@1/2V _{dd}
Output Voltage (V _{OH})	0.9*V _{dd}			V	
Output Voltage (V _{OL})			0.1*V _{dd}	V	
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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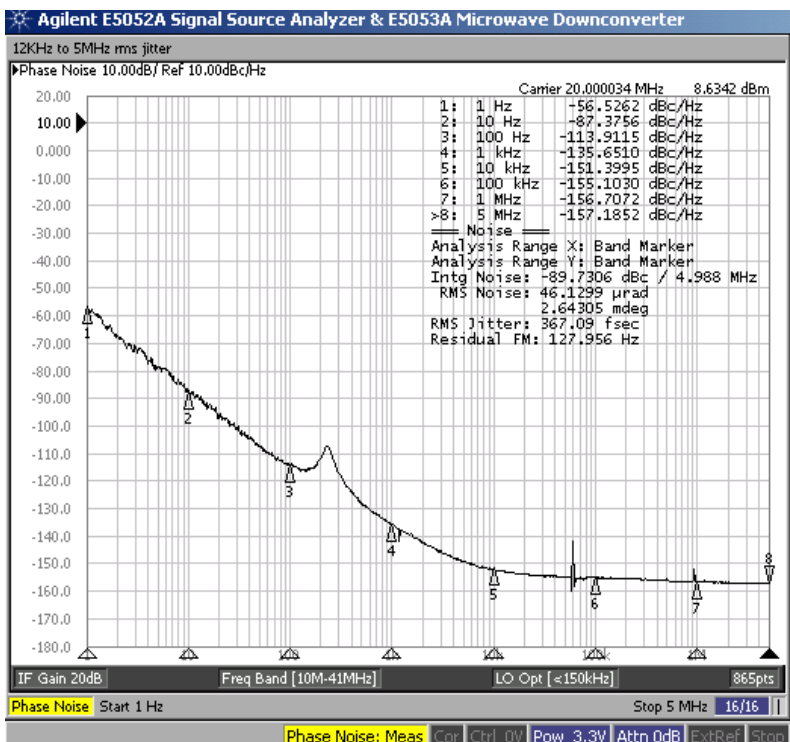


40 x 30 x 8mm

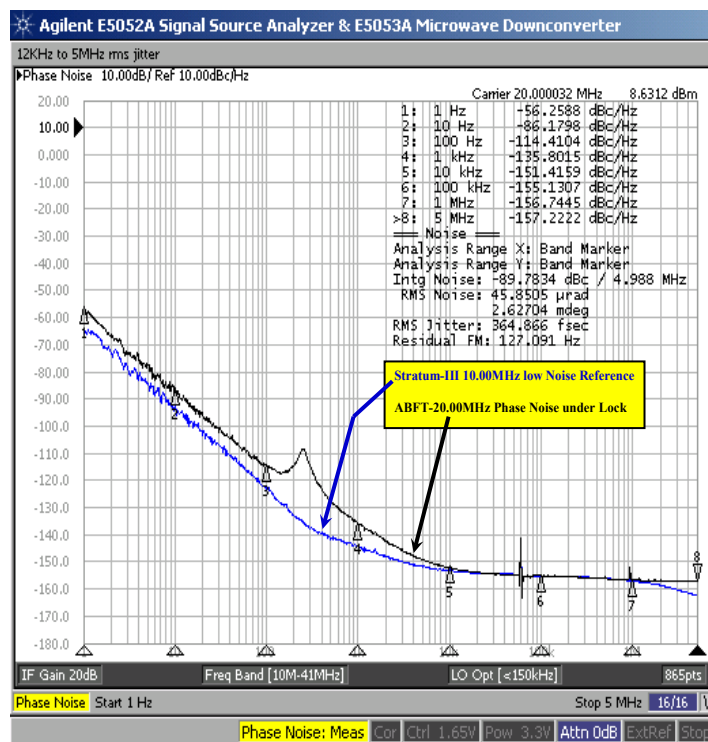
Parameters	Minimum	Typical	Maximum	Units	Notes
Phase Noise @ 20MHz carrier					Close to the carrier phase noise is dependent on the cleanliness of the input reference. However, at 1kHz offset and beyond, ABFT phase noise is practically independent of the input reference noise
1Hz offset from the carrier		-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)



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



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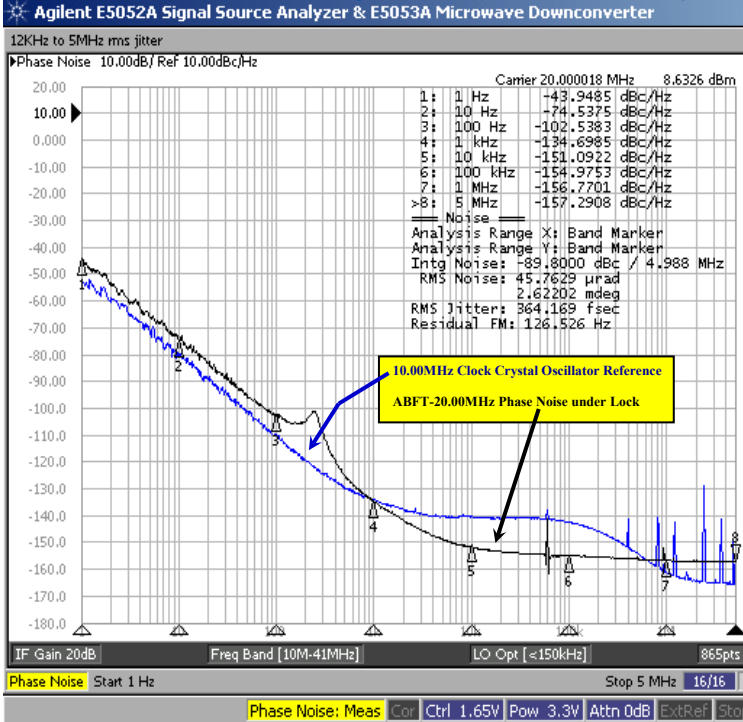
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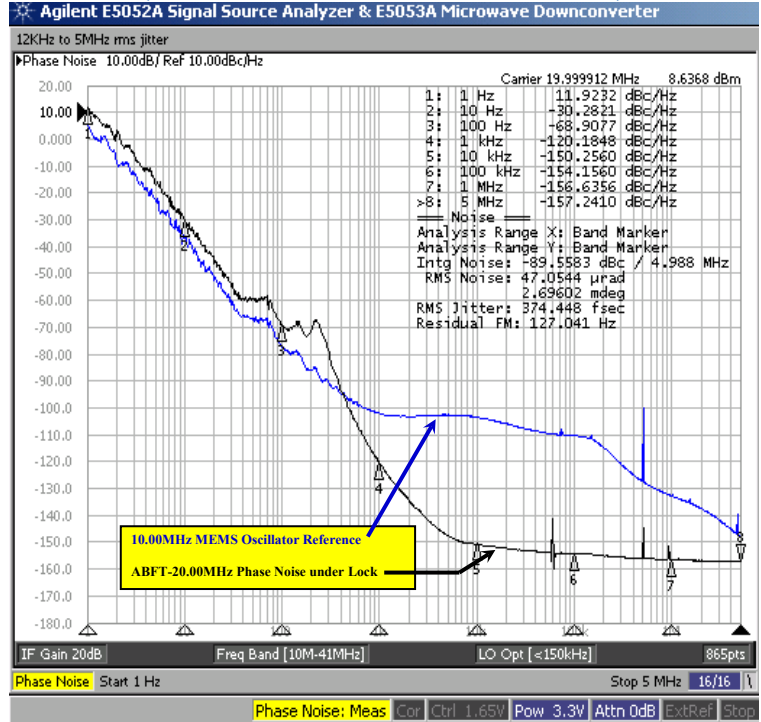
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PHASE NOISE

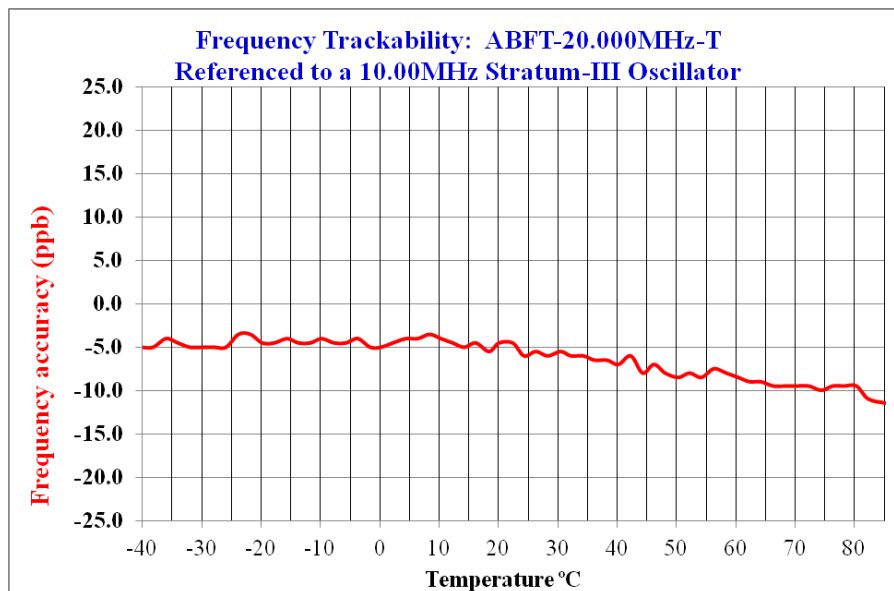
Detailed Comparative Phase Noise Plot
(10.0MHz Clock Crystal Oscillator as Reference)



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



FREQUENCY TRACKING OVER TEMPERATURE



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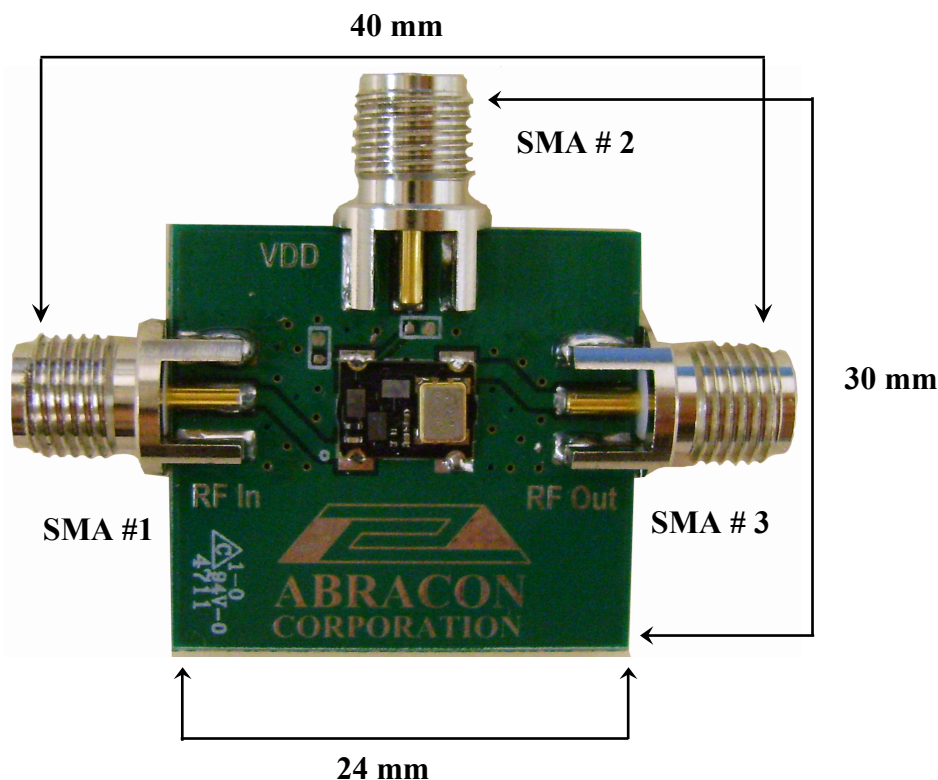
PART IDENTIFICATION

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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