



NoiseTech Microwaves Ltd.

Product Technical Specifications of 100 MHz to 6GHz impedance generator
(P/N IG0160C)
Rev. 4 – May 12, 2018

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2. General

NoiseTech Microwave's 0.1MHz to 6GHz impedance generator (P/N IG0160C) is specifically designed for "cold" noise-parameter measurements.

The small size and fully electronic design permit noise-parameter measurements of packaged and on-wafer devices extending to frequencies as low as 0.1 GHz. Proprietary wideband impedance generation method allows for quick and precise measurements of noise parameters for a large number of frequencies. On-board memory stores calibration data and documentation. A temperature sensor is included for monitoring IG0160C temperature for improved measurement accuracy.

The IG0160C frequency range is optimized for most commercial applications, such as WiFi, WiMax, LTE, 3G and 4G, Bluetooth wireless standards.



Fig. 1: IG0160C Impedance Generator.

3. Specifications

3.1 Physical specifications

Parameter	Specification	Note	Comment
Housing/Enclosure Dimensions			Excluding connectors.
Width	4cm		
Length	8cm		
Height	2.5cm		
RF connectors	Two RF connectors	Fig. 1	- SMA standard, N-type available
Non-RF connectors	USB 2.0 connector		

Total weight	125 g typ.		
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3.2 Electrical performance at 25C

3.2.1 Digital

Parameter	Specification	Note	Comment
Communication protocol	USB 2.0		Connection thru micro-B USB
Temperature accuracy	2°C typ		
On-board RAM	192kB min.		
FLASH memory	5 MB min.		
Maximum COM Baud Rate	115.2 kbps		

3.2.2 RF

Parameter	Specification	Note	Comment
Number of impedance states	4		Optimally selected for noise parameter measurements
Generated impedances within each of 4 regions	1		at each frequency within the operating range
THRU state return loss	20dB typ. 15dB min.		100MHz to 4GHz
	15dB typ. 10dB min.		4GHz to 6GHz
THRU state insertion loss	3dB typ		
Impedance switch time	1 ms max		
RMS repeatability	65 dB min	Fig. 2	Limited by repeatability of the measurement equipment
Input P1dB	33 dBm min		

3.2.3 Noise Source port

Parameter	Specification	Note	Comment
Connector	USB-A		
Vbus pin	Voltage: Same as IG0160C supply voltage Output current: 50 mA max		Noise source power supply
D+	Noise source control $V_{OL}=0.4V_{max}$ $V_{OH}=3.0V_{min}$		Output from IG0160C
D-	Noise source temperature input (0V to 3V) Internal 10k pull up to 3.3V		Input to IG0160C
GND	Ground		

3.2.4 Power supply

Parameter	Specification	Note	Comment
Supply voltage range	4.75V to 5.25V	1	Per USB2.0 standard
Current draw	35 mA typ. 90 mA max.	1	Noise source is not connected.

Note 1: power supplied through micro-B USB 2.0 receptacle, pin Vbus

3.2.5 Environmental

Parameter	Specification	Note	Comment
Ambient temperature	15°C to 30°C		
Operating relative humidity	20% to 80% non-condensing		
Storage relative humidity	20% to 80% non-condensing		
ESD	2 kV HBM		

3.2.6 Regulatory

Parameter	Specification	Ref	Comment
ICES-3	Compliant		
FCC Part 15, Subpart B, Class A	Compliant		

4. Repeatability

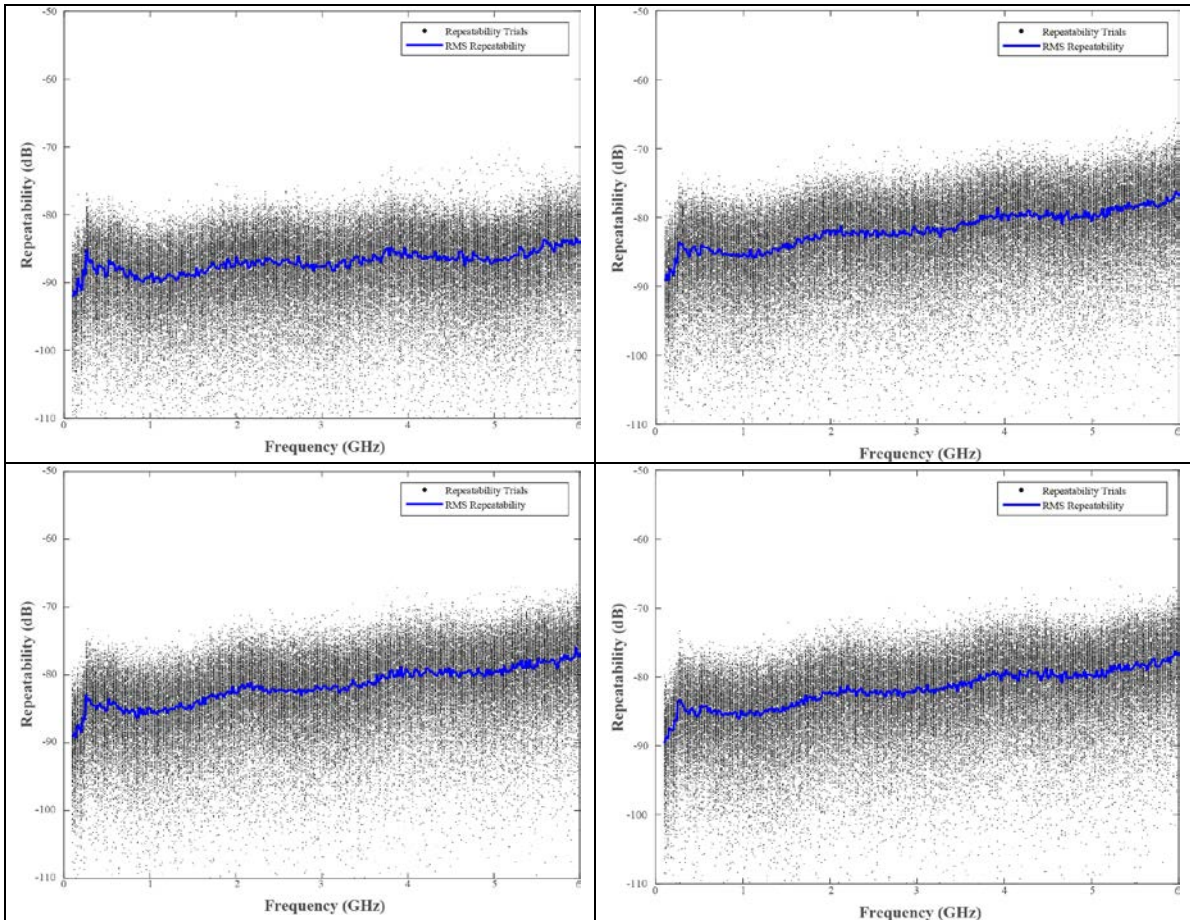


Fig. 2 Repeatability of the four tuner states (256 trials).

5. Revision notes

- 1). May 2, 2017: Regulatory specifications added
- 2). May 2, 2017: Noise source port specifications added
- 3). April 10, 2018: Updated Region A Return Loss specification.
- 4). April 10, 2018: Max power consumption specification increased to 90mA.
- 5). May 12, 2018: Updated repeatability plots.
- 6). May 12, 2018: Added compliance to FCC.