

Wide Bandwidth E-band Signal Verification with Spectrum Master™ MS2760A



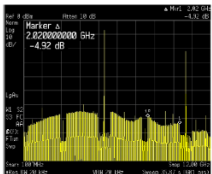
Background

There is a movement in the industry to higher frequencies, such as E-band (60 to 90 GHz), to take advantage of wider available bandwidths. Applications aiming to capitalize include:

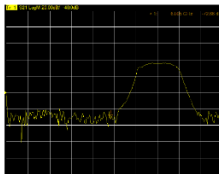
- 5G Communications
- Microwave Radio Links / Backhaul
- Automotive Radar
- IEEE 802.11ad (WiGig)
- Ka-band / V-band
- Satellite Communications

Historically, the cost of manufacturing and test of millimeter-wave (mmWave) components outweighed the advantage of the added available bandwidth in many cases. However, with the data requirements expected from applications such as 5G and the Internet of Things (IOT), as well as the movement for all automobiles to include advanced driver assist technologies (rather than just luxury models), companies need to find a way to produce and test these products cost effectively. Companies such as Anritsu, Astronics (US solutions provider for Tabor Electronics), and OML are rising to the challenge. At IMS 2017, these companies showcased wideband mmWave signal generation and measurement. The following configuration was used.

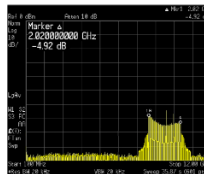
Images in L, S, C and X Band



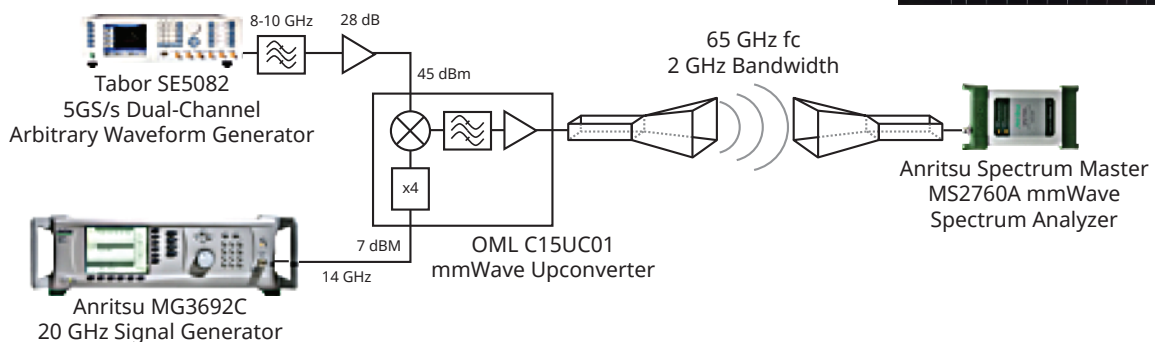
X Band BPF Characteristics



X Band BPF Image



V-Band Signal – 2 GHz BW



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Solution

Tabor Electronics has released a new SE5082 5 GS/s Dual-Channel, Arbitrary Microwave Generator (AMG). When combined with an OML mmWave model C15UC01 upconverter using the Anritsu MG3692C Microwave Analog Signal Generator, Tabor can provide users with cost effective, yet high-performance wideband E-band signal generation. To verify proper operation of this or any other similar mmWave transmitter, engineers are turning to



the Anritsu Spectrum Master MS2760A Ultraportable mmWave Spectrum Analyzer.

The Anritsu MS2760A is the world's first handheld mmWave spectrum analyzer to provide continuous coverage from 9 kHz up to 110 GHz. Leveraging Anritsu's patented NLTL technology, the Spectrum Master MS2760A shatters the cost, size, and performance barriers associated with traditional larger instruments. Not only does it offer best-in-class dynamic range, sweep speed, and amplitude accuracy, its ultraportable size enables users to get very close or even direct connect with almost any device-under-test (DUT) – eliminating the need for lossy expensive cables or minimizing over-the-air path loss.

Key Specifications

Performance	
Frequency Range	MS2760A-0032 9 kHz — 32 GHz MS2760A-0044 9 kHz — 44 GHz MS2760A-0050 9 kHz — 50 GHz MS2760A-0070 9 kHz — 70 GHz MS2760A-0090 9 kHz — 90 GHz MS2760A-0110 9 kHz — 110 GHz
Dynamic Range	> 103 dB at 110 GHz
Phase Noise	-116 dBc/Hz @ 10 kHz offset at 1 GHz
RF Connector	K (m) connector MS2760A-0032, MS2760A-0044 V (m) connector MS2760A-0050, MS2760A-0070 W (m) connector MS2760A-0090, MS2760A-0110
Amplitude Accuracy	±1 dB, typical
Frequency Accuracy	Accuracy: ± 0.2 ppm (25° C ± 25° C) + aging Aging: ± 1.0 ppm/years
General	
Save/Recall	Save As, Save (Measurement, Set-up PNGm Limit Line), Recall, Save on Event (Crossing Limit, Sweep Complete, Save at Interval)
USB Interface	USB 3.0, type C Connector
External Reference In	MCX(f), 50 Ω, 10 MHz
Display Resolution	16:9/16:10 Aspect Ratio (>1280 x 720/1280 x 800)
Operating System	Windows® 7, 8.1, 10
Minimum Configuration	Quad Core i7 fourth generation or higher CPU, 16 GB RAM, 128 GB Data Storage, USB 3.0
Operating Temperature	-10° C to 50° C
Maximum Humidity	95% non-condensing
Storage	-40° C to 71° C
Warranty	Standard three-year warranty
Size	155mm x 84mm x 27mm (6.1 in x 3.3 in x 1.1 in)
Weight	255g (9.0 oz)

For more information on Tabor Electronics arbitrary waveform generators:

US Sales & Support (via Astronics Corp.)
Address: 4 Goodyear Irvine, CA 92618
Phone: (800) 722 2528, Fax: (949) 859 7139
E-mails: info@taborelec.com

Ordering Information

Part Number	Description
MS2760A-0032	Spectrum Master, ultraportable spectrum analyzer, 9 kHz to 32 GHz
MS2760A-0044	Spectrum Master, ultraportable spectrum analyzer, 9 kHz to 44 GHz
MS2760A-0050	Spectrum Master, ultraportable spectrum analyzer, 9 kHz to 50 GHz
MS2760A-0070	Spectrum Master, ultraportable spectrum analyzer, 9 kHz to 70 GHz
MS2760A-0090	Spectrum Master, ultraportable spectrum analyzer, 9 kHz to 90 GHz
MS2760A-0110	Spectrum Master, ultraportable spectrum analyzer, 9 kHz to 110 GHz
2300-1859-R	USB 3.0 Type C to Type A Cable
2300-1605-R	BNC(m) to MCX(m) Cable (qty 2), Certificate of Calibration and Conformance

Accessories

Part Number	Description
2000-1888-R	10m USB 3.0 Active Extension Cable
34VFK50	DC to 40 GHz, V(f) to K(m) Coax Adapter, 50 Ω
34WV50	DC to 70 GHz, W1(f) to V(m) Coax Adapter, 50 Ω
35WR15VF	50.0 to 65.0 GHz, WR15 to V(f) Waveguide Adapter
1091-401-R	60.5 to 92 GHz, WR12 to W(f) Waveguide Adapter
35WR10WF	75 to 110 GHz, WR10 to W(f) Waveguide Adapter
2000-1871-R	49.9 to 75.8 GHz, WR15 Horn Antenna, 25 dBi gain
2000-1872-R	60.0 to 90.0 GHz, WR12 Horn Antenna, 25 dBi gain
2000-1873-R	75.0 to 110.0 GHz, WR10 Horn Antenna, 25 dBi gain

Product Options

Part Number	Description
MS2760A-0xxx-0098	Standard Calibration (ISO/IEC 17025 and ANSI/NCSL Z540-1)
MS2760A-0xxx-0099	Premium Calibration (ISO/IEC 17025 and ANSI/NCSL Z540-1 plus test data)

For more information on OML upconverters:

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US Sales & Support
Address: 300 Digital Drive, Morgan Hill, CA 95037
Phone: (408) 779 2698, Fax: (408) 778 0491
E-mails: <https://www.omlinc.com/contact-1/contact-oml>

