



Test Report

Prepared for: Garmin International Inc

Model: A03063

Description: Handheld GPS

Serial Number: N/A

FCC ID: IPH-03063
IC: 1792A-03063

To

FCC Part 15.249

Date of Issue: May 10, 2016

On the behalf of the applicant:

Garmin International Inc
1200 E. 151st. Street
Olathe, KS 66062

Attention of:

Paul Phrommany, Compliance Engineer
Ph: (913)440-2012
E-mail: Paul.Phrommany@garmin.com

Prepared by
Compliance Testing, LLC
1724 S. Nevada Way
Mesa, AZ 85204
(480) 926-3100 phone / (480) 926-3598 fax
www.compliancetesting.com
Project No: p1630046

Kenneth Lee
Project Test Engineer

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All results contained herein relate only to the sample tested.

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	April 21, 2016	Kenneth Lee	Original Document

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ILAC / A2LA

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The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

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Testing Certificate Number: **2152.01**



FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

The applicant has been cautioned as to the following

15.21: Information to User

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a): Special Accessories

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.10-2013 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Pressure (mbar)
24	30.6	941.7

EUT Description

Model: A03063

Description: Handheld GPS

Firmware: N/A

Software: N/A

Serial Number: N/A

Additional Information:

The EUT incorporates both ANT and BT BR modulations.

EUT Operation during Tests

The EUT was put into a test mode installed on the device software. This test mode allowed the device to be set to the high, middle and low channels, while in CW, ANT or BT BR modulations.

Accessories: None

Cables: None

Modifications: None

15.203: Antenna Requirement:

- The antenna is permanently attached to the EUT
- The antenna uses a unique coupling
- The EUT must be professionally installed
- The antenna requirement does not apply

Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
15.249(a)	Fundamental Field Strength	Pass	
15.249(d)	Out of Band Spurious Emissions	Pass	
RSS-210	99% Occupied Bandwidth	Pass	

Fundamental Field Strength

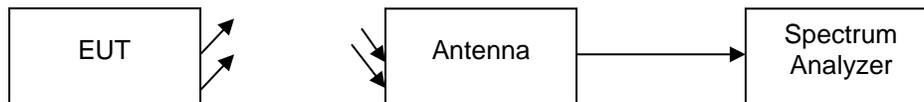
Engineer: Kenneth Lee

Test Date: 04/20/2016

Test Procedure

The EUT was tested in a semi- anechoic chamber at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Fundamental Field Strength. The antenna correction and distance correction factors were summed with the quasi-peak measurement to ensure correct readings. The following table indicates the highest emission in each of the indicated bands.

Test Setup



Spectrum Analyzer Settings

Detector Settings	RBW	VBW	Span
Peak	1 MHz	3 MHz	As Necessary
Average	1 MHz	3 MHz	As Necessary
Quasi – Peak	120 kHz	300 kHz	As Necessary

Sample Calculations:

Correction Factors include Antenna and cable insertion loss.

Measured Level includes correction factors that were entered into the spectrum analyzer before recording test data.

Fundamental Field Strength

BT BR Modulation

Tuned Frequency (MHz)	Peak Measured Level (dBuV/m)	Peak Limit (dBuV/m)	Result
2402	94.26	114.0	Pass
2441	94.41	114.0	Pass
2480	94.35	114.0	Pass

Tuned Frequency (MHz)	Avg. Measured Level (dBuV/m)	Avg. Limit (dBuV/m)	Result
2402	93.68	94.0	Pass
2441	93.89	94.0	Pass
2480	93.88	94.0	Pass

ANT Modulation

Tuned Frequency (MHz)	Peak Measured Level (dBuV/m)	Peak Limit (dBuV/m)	Result
2402	94.06	114.0	Pass
2441	94.13	114.0	Pass
2480	94.3	114.0	Pass

Tuned Frequency (MHz)	Avg. Measured Level (dBuV/m)	Avg. Limit (dBuV/m)	Result
2402	93.63	94.0	Pass
2441	93.82	94.0	Pass
2480	93.83	94.0	Pass

Radiated Spurious Emissions

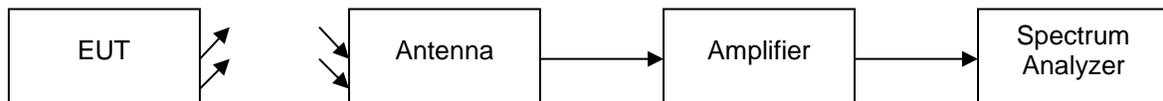
Engineer: Kenneth Lee

Test Date: 04/20/2016

Test Procedure

The EUT was tested in a semi-anechoic chamber set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the limits for Radiated Spurious Emissions. The antenna, band reject filter, amplifier and cable correction factors were input into the spectrum analyzer before recording data. The spectrum for each tuned frequency was examined to the 10th harmonic.

Test Setup



Analyzer Settings

Detector Settings	RBW	VBW	Span
Peak	1 MHz	3 MHz	As Necessary
Peak	1 MHz	30 Hz	As Necessary

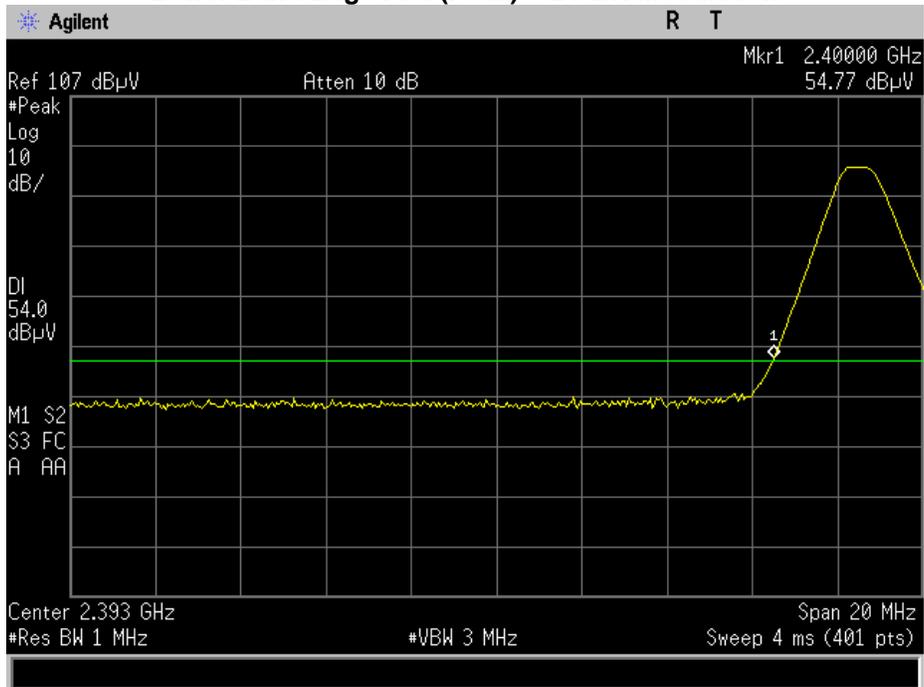
Sample Calculations:

Correction Factors include Antenna and cable insertion loss correction factors.

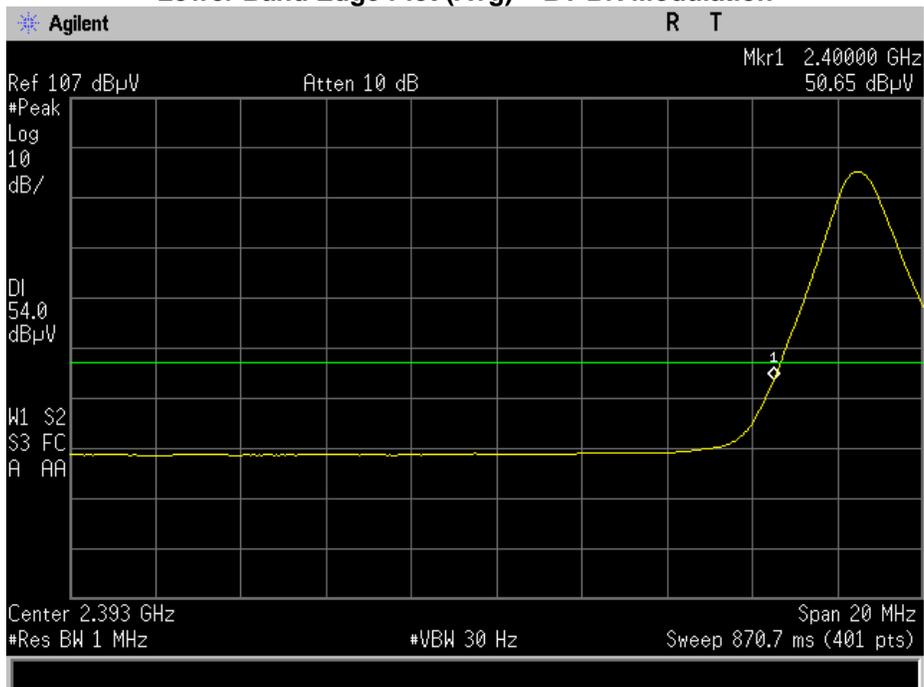
Measured Level includes correction factors that were input to the spectrum analyzer before recording test data

See Annex A for test data

Lower Band Edge Plot (Peak) – BT BR Modulation

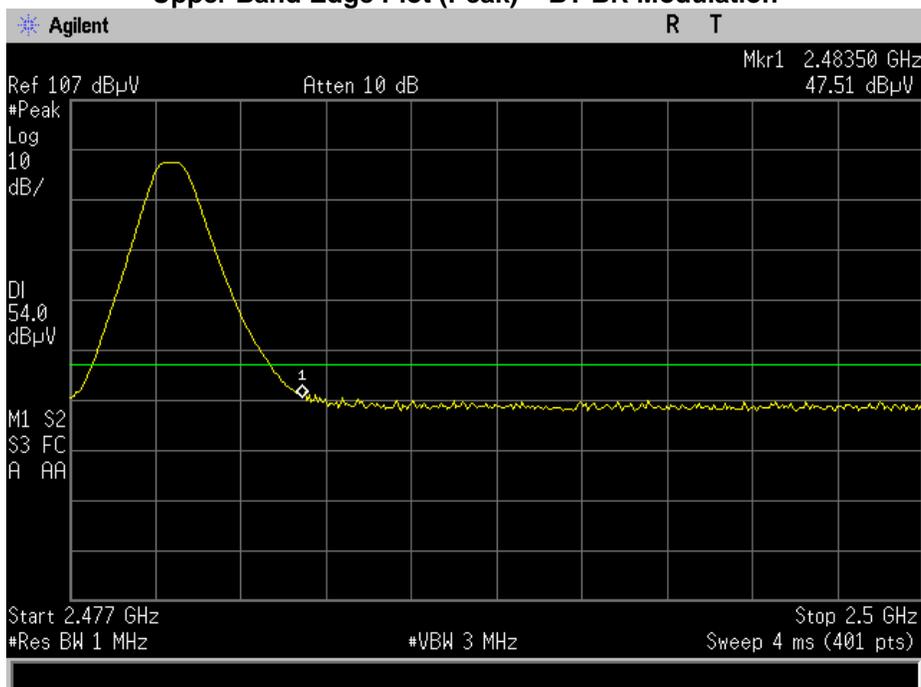


Lower Band Edge Plot (Avg) – BT BR Modulation

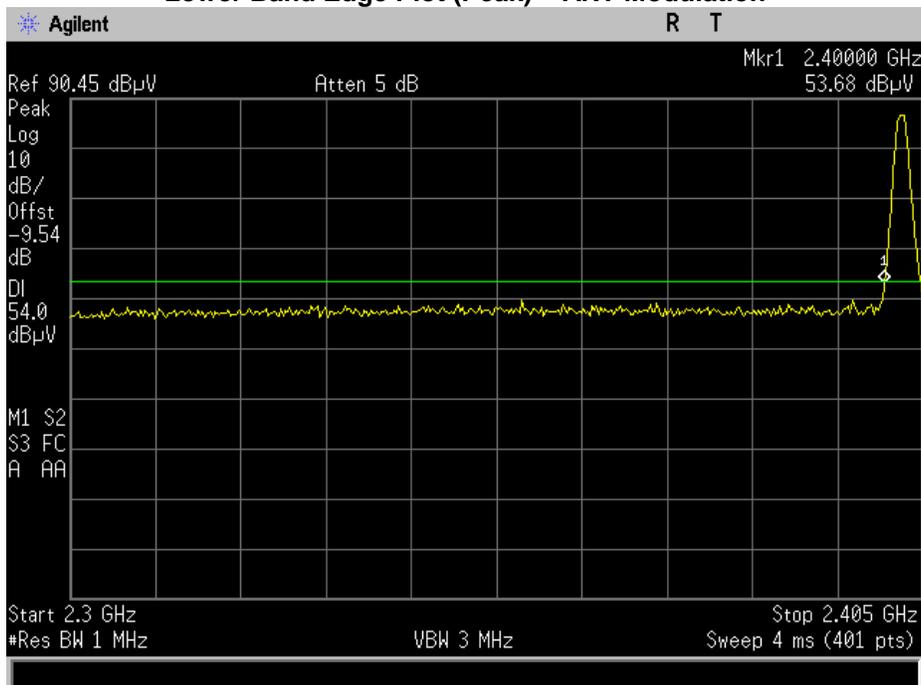




Upper Band Edge Plot (Peak) – BT BR Modulation



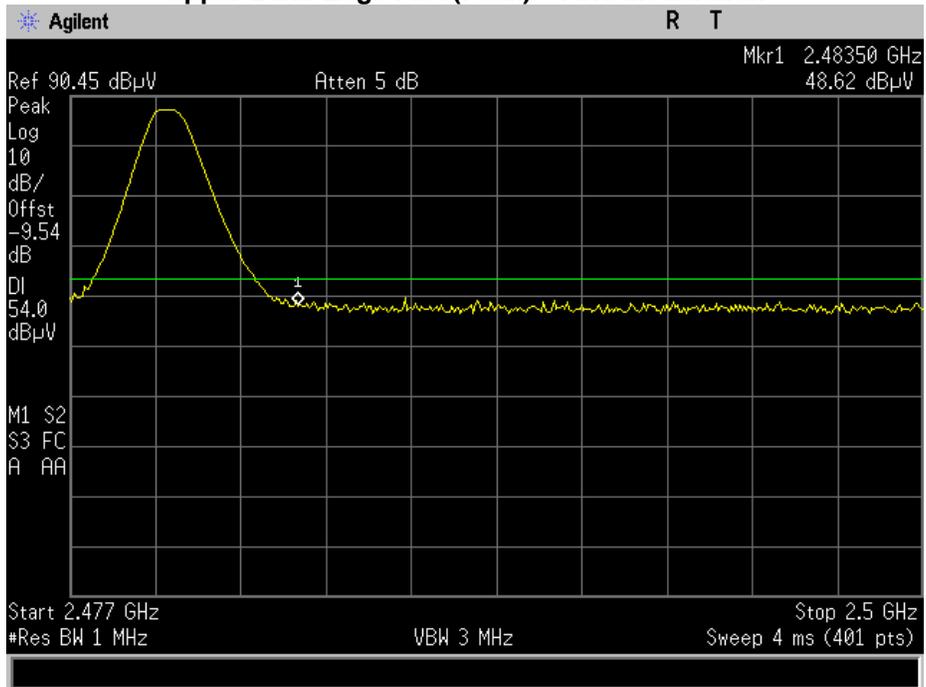
Lower Band Edge Plot (Peak) – ANT Modulation



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Upper Band Edge Plot (Peak) – ANT Modulation



99% Occupied Bandwidth

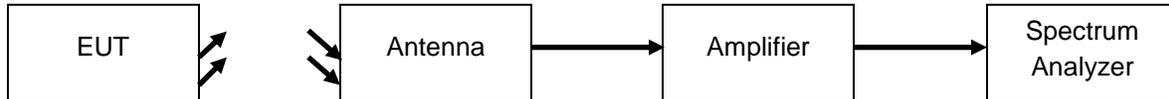
Engineer: Kenneth Lee

Test Date: 04/20/2016

Test Procedure

The EUT was tested in a semi-anechoic chamber at a distance of 3 meter from the receiving antenna. The Span was set wide enough to capture the entire transmit spectrum and the resolution bandwidth was set to at least 1% of the span. The analyzer was set to max hold while the 99% bandwidth was measured.

Test Setup



Occupied Bandwidth Summary

BT BR Modulation

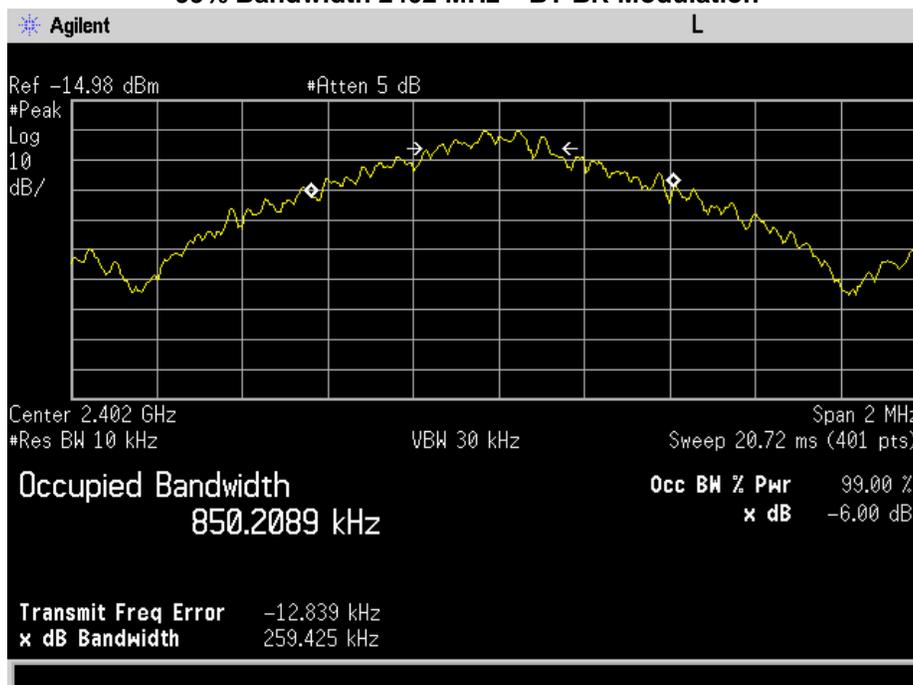
Frequency MHz	Recorded Measurement	Result
2402	850.208 kHz	Pass
2441	851.770 kHz	Pass
2480	857.235 kHz	Pass

ANT Modulation

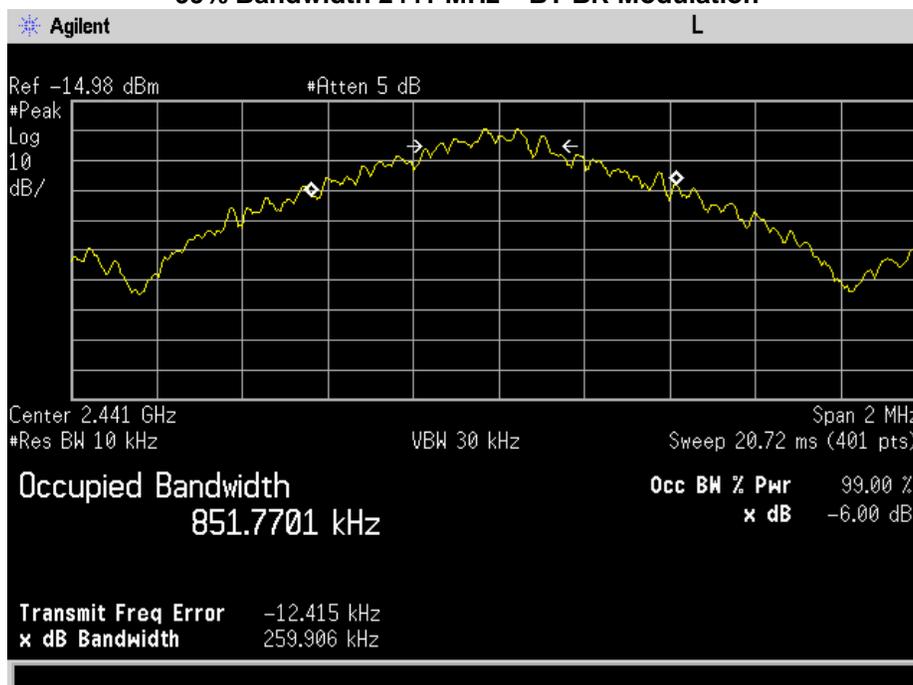
Frequency MHz	Recorded Measurement	Result
2402	849.206 kHz	Pass
2441	861.265 kHz	Pass
2480	859.628 kHz	Pass



99% Bandwidth 2402 MHz – BT BR Modulation

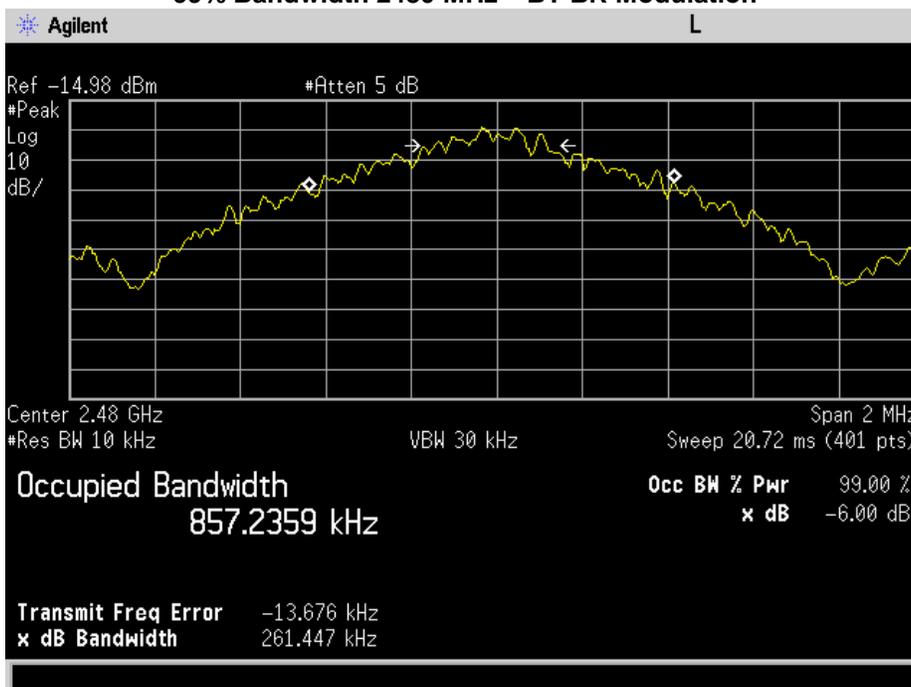


99% Bandwidth 2441 MHz – BT BR Modulation

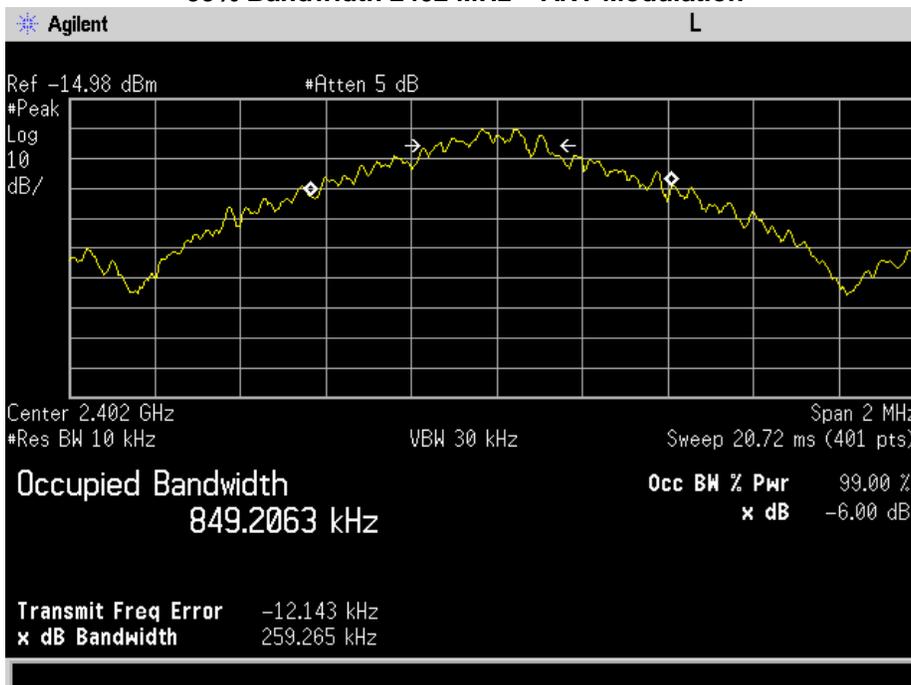




99% Bandwidth 2480 MHz – BT BR Modulation

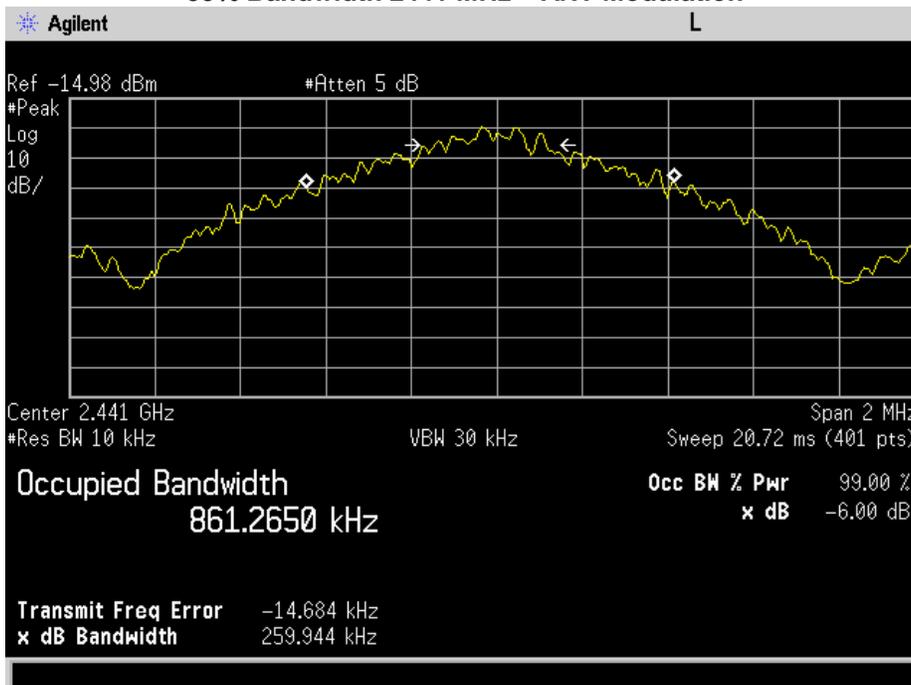


99% Bandwidth 2402 MHz – ANT Modulation

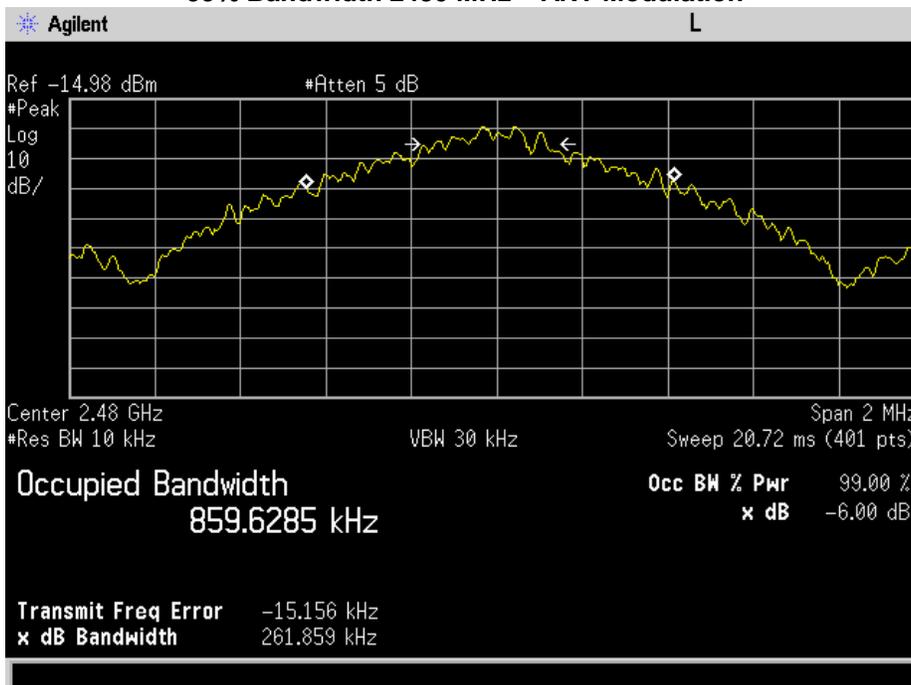




99% Bandwidth 2441 MHz – ANT Modulation



99% Bandwidth 2480 MHz – ANT Modulation



Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
EMI Receiver	HP	8546A	i00033	3/29/16	3/29/17
Transient Limiter	Com-Power	LIT-153	i00123	Verified on: 04/11/2016	
Horn Antenna, Amplified	ARA	DRG-118/A	i00271	5/8/14	5/8/16
Horn Antenna, Amplified	ARA	MWH-1826/B	i00273	4/22/15	4/22/18
Spectrum Analyzer	Agilent	E4407B	i00331	9/18/15	9/18/16
Horn Antenna	EMCO	3115	i00103	1/20/15	1/20/17
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	10/19/15	10/19/17
EMI Analyzer	Agilent	E7405A	i00379	2/11/16	2/11/17
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	7/27/14	7/27/16
LISN	COM-Power	LI-125A	i00447	7/25/14	7/25/16
LISN	COM-Power	LI-125A	i00449	8/28/15	8/28/17
PSA Spectrum Analyzer	Agilent	E4445A	i00471	8/26/15	8/26/16

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation

END OF TEST REPORT