COMPLIANCE WORLDWIDE INC.
TEST REPORT 151-16

In Accordance with the Requirements of

FCC PART 15.247, SUBPART C
INDUSTRY CANADA RSS-247, ISSUE 1

Low Power License-Exempt Radio Communication Devices
Intentional Radiators

Issued to

Garmin International, Inc.
1200 E. 151st St.
Olathe, KS 66062-3426

for the

Model Number A03009
2.4 GHz Bluetooth LE Interface
and ANT+ Wireless Technology

FCC ID: IPH-03009
IC: 1792A-03009

Report Issued on February 19, 2016

Tested by

Brian F. Breault

Reviewed by

Larry K. Stillings

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1. Scope

This test report certifies that the Garmin A03009 Bluetooth LE and ANT+ transmitter, as tested, meets the FCC Part 15.247**,** and Industry Canada RSS-247, Issue 1 requirements. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

2. Product Details

2.1. Manufacturer:	Garmin International, Inc.
2.2. Model Number:	A03009
2.3. Serial Number:	Radiated Mode Measurements - 39177 72231 Conducted Mode Measurements - 39177 72239
2.4. Description:	Bluetooth LE and ANT+ Transmitter
2.5. Power Source:	3.0 VDC (One CR1632 Lithium Battery)
2.6. Modulation Type:	Both Frequency Hopping Low Energy and ANT+ use GFSK modulation.
2.7. Hardware Revision:	Module : 011-04072-00 Rev 4 Main PCB : 012-03009-00 Rev A
2.8. Software Revision:	006-B2406-00 Rev 0
2.9. Operating Frequency:	2.4 GHz Nominal
2.10. EMC Modifications:	None

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3. Product Configuration

3.1. Operational Characteristics & Software

The Garmin A03009 firmware has been specifically programmed for setting the device in the two required test modes: Bluetooth Low Energy and ANT+.

Successive presses of the button on the front of the device will set the transmit mode (e.g. modulated, unmodulated, frequency hopping, etc.) and the required frequency or frequencies. The LCD display located above the button indicates the mode and frequency the device is currently set for.

During the measurement testing, the product was mounted on a polystyrene form to facilitate rotating the device through three orthogonal axes as required by ANSI C63.10-2013, section 5.10.1, for a hand held or body worn device. The three axes were defined as follows:

X-Axis Horizontal with the top of the A03009 facing to the left. The front of the device facing the antenna at 0º turntable azimuth.

Y-Axis Vertical with the top of the A03009 facing up. The front of the device facing the antenna at 0º turntable azimuth.

Z-Axis The front of the A03009 was facing up. The bottom of the device facing the antenna at 0º turntable azimuth.

X-Axis

Y-Axis

Z-Axis

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Frq (Hz)	Description/Function
Garmin	A03009	39177 72231 39177 72239	3.0 V	DC	BLE / ANT+ Transmitter

3.3. EUT Cables/Transducers

Manufacturer	Model/Part #	Length (m)	Shield Y/N	Description/Function
None				

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3. Product Configuration (continued)

3.4. Miscellaneous EUT Items

Manufacturer	Model/Part #	Qty	Description / Function
Energizer	1632	1	3 Volt Lithium Battery (for radiated mode measurements)

3.5. Support Equipment

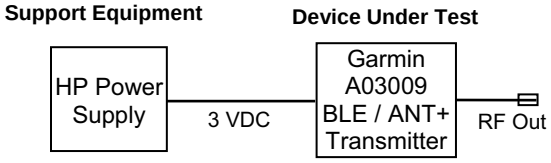
Device	Manufacturer	Model	Serial No.	Comment
Power Supply	Hewlett Packard	6296A	1929A03770	3 VDC for powering the device used for conducted mode measurements.

3.6. Support Equipment Cables

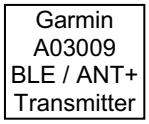
Part #	Shielded Y or N	Length	Description / Function
Pasternack	Y	3 in.	Shielded RF cable with an SMA male connector at one end. Directly connected to the DUT at the other end. Supplied for making conducted mode measurements.

3.7. Block Diagrams

Conducted Mode Measurements



Radiated Mode Measurements



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4. Measurements Parameters

4.1 Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
EMI Test Receiver, 9kHz - 7GHz [1]	Rohde & Schwarz	ESR7	101156	7/23/2017	2 Years
Spectrum Analyzer 20 Hz – 40 GHz [2]	Rohde & Schwarz	FSV40	100899	7/23/2017	2 Years
Spectrum Analyzer, 9 kHz to 40 GHz [3]	Rohde & Schwarz	FSVR40	100909	7/23/2017	2 Years
EMI Receiver, 9 kHz to 6.5 GHz	Hewlett Packard	8546A	3650A00360	6/4/2016	2 Years
Loop Antenna, 9 kHz to 30 MHz	EMCO	6512	9309-1139	9/23/2016	2 Years
Biconilog Antenna, 30 MHz to 2 GHz	Sunol Sciences Corp	JB1	25509	5/15/2016	3 Years
Horn Antenna, 960 MHz – 18 GHz	Electro-Metrics	RGA-50 / 60	2813	7/15/2016	2 Years
Horn Antenna, 18 GHz – 40 GHz	Com-Power	AH-840	3075	9/24/2016	2 Years
Preamplifier, 1 GHz to 26.5 GHz	Hewlett Packard	8449B	3008A01323	7/21/2017	2 Years
Power Sensor, 50 MHz to 18 GHz	Rohde & Schwarz	NRP-Z81	102782	8/19/2016	2 Years
LISN 50 Ω 50 µH, 9 kHz to 30 MHz	EMCO	3825/2	9109-1860	7/23/2016	1 Year
Digital Barometer	Control Company	4195	ID236	10/8/2017	2 Years
Temperature Chamber	Associated Research	E-0029	N/A	N/A	---

[1] ESR7 Firmware revision: V2.26, Date installed: 8/15/2014 Previous V2.17, installed 6/11/2014.
[2] FSV40 Firmware revision: V2.30 SP1 Date installed: 10/22/2014 Previous V2.30, installed 7/23/2014.
[3] FSVR40 Firmware revision: V2.23, Date installed: 10/20/2014 Previous V1.63 SP1, installed 8/28/2013.

4.2. Measurement & Equipment Setup

Test Dates:	Feb 8th 2015 – Feb 19th, 2016
Test Engineer:	Brian Breault
Normal Site Temperature (15 - 35°C):	21.6
Relative Humidity (20 - 75%RH):	35
Frequency Range:	30 kHz to 25 GHz
Measurement Distance:	3 Meters
EMI Receiver IF/Resolution Bandwidth:	100 kHz - 30 MHz to 1 GHz
	1 MHz - Above 1 GHz
EMI Receiver Average/Video Bandwidth:	300 kHz - 30 MHz to 1 GHz
	3 MHz - Above 1 GHz
Detector Function:	Peak, Quasi-Peak & Average

4.3. Measurement Procedure

Test measurements were made in accordance with FCC Part 15.247 and IC RSS-247 Annex II: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

The test methods used to generate the data in this test report is in accordance with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC OET 558074 D01 DTS Measurement Guidance v03r04, January 7, 2016.

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5. Antenna Requirement (15.203, RSS-GEN 7.1.2)

Requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

Status: A 2.4 GHz F-type sheet metal antenna is permanently bonded to the interior of the front case and connected to the PCB using spring contacts. This antenna is not accessible to the user. This antenna applies to both Bluetooth LE and ANT+ modes.

6. Measurements Summary

6.1 Bluetooth LE Mode

Test Requirement	FCC Rule Reference	IC Rule Reference	Test Report Section	Result
Antenna Requirement	15.203	RSS-GEN 7.1.2	5	Compliant
Minimum 6 dB (DTS) Bandwidth	15.247 (a) (2)	RSS-247 5.2 (1)	7.1	Compliant
Bandwidth of Momentary Signals (99% Bandwidth)	N/A	RSS-GEN 4.6.1	7.2	Compliant
Maximum Peak Conducted Output Power	15.247 (b) (1)	RSS-247 5.4 (4)	7.3	Compliant
Operation with directional antenna gains greater than 6 dBi	15.247 (b) (4)	RSS-GEN 7.1.2	7.4	Compliant
Spurious Radiated Emissions	15.247 (d)	RSS-GEN 8.9	7.5	Compliant
Harmonic Emissions in the Restricted Bands of Operation	15.247 (d)	N/A	7.6	Compliant
Emissions in Non-Restricted Frequency Bands	15.247 (d)	RSS-247 5.5	7.7	Compliant
Band Edge Measurements	15.247 (d)	RSS-247 5.5	7.8	Compliant
Peak Power Spectral Density	15.247(e)	RSS-247 5.2 (2)	7.9	Compliant
Conducted Emissions	15.207	RSS-GEN	NR	Battery Operated Device
Public Exposure to Radio Frequency Energy Levels	15.247(i) 1.1307 (b) (1)	RSS-GEN 5.5 RSS-102	7.10	Compliant

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6. Measurements Summary

6.2 ANT+ Mode

Test Requirement	FCC Rule Reference	IC Rule Reference	Test Report Section	Result
Antenna Requirement	15.203	RSS-GEN 7.1.2	5	Compliant
Minimum 6 dB (DTS) Bandwidth	15.247 (a) (2)	RSS-247 5.2 (1)	8.1	Compliant
Bandwidth of Momentary Signals (99% Bandwidth)	N/A	RSS-GEN 4.6.1	8.2	Compliant
Maximum Peak Conducted Output Power	15.247 (b) (1)	RSS-247 5.4 (4)	8.3	Compliant
Operation with directional antenna gains greater than 6 dBi	15.247 (b) (4)	RSS-GEN 7.1.2	8.4	Compliant
Spurious Radiated Emissions	15.247 (d)	RSS-GEN 8.9	8.5	Compliant
Harmonic Emissions in the Restricted Bands of Operation	15.247 (d)	N/A	8.6	Compliant
Emissions in Non-Restricted Frequency Bands	15.247 (d)	RSS-247 5.5	8.7	Compliant
Band Edge Measurements	15.247 (d)	RSS-247 5.5	8.8	Compliant
Peak Power Spectral Density	15.247(e)	RSS-247 5.2 (2)	8.9	Compliant
Conducted Emissions	15.207	RSS-GEN	NR	Battery Operated Device
Public Exposure to Radio Frequency Energy Levels	15.247(i) 1.1307 (b) (1)	RSS-GEN 5.5 RSS-102	8.10	Compliant

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7. Measurement Data - Bluetooth LE Mode

7.1. Minimum 6 dB (DTS) Bandwidth (15.247 (a) (2), RSS-247 5.2(1))

Requirement: Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

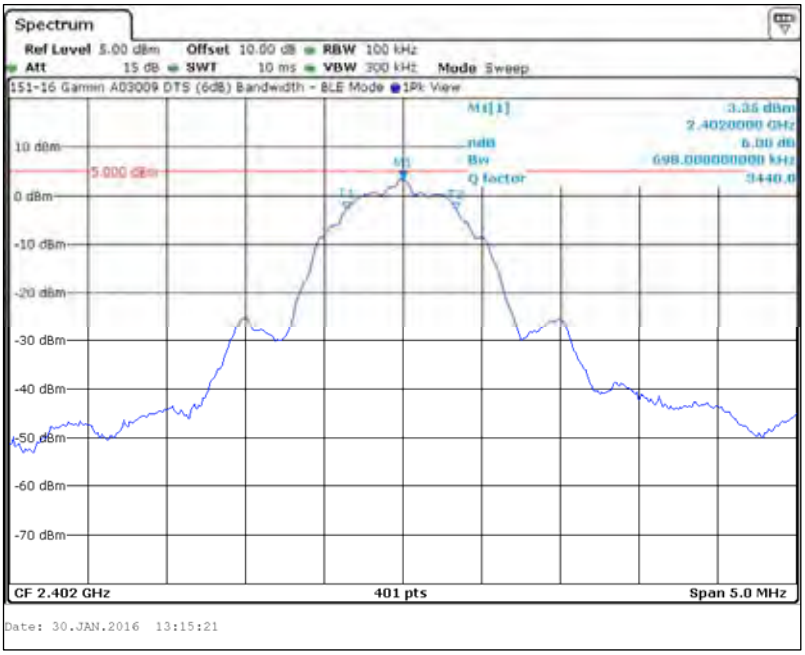
Procedure: Performed in accordance with FCC OET 558074 D01 DTS Measurement Guidance, v03r03, June 9, 2015, §8.0: DTS bandwidth.

Conclusion: The device under test meets the minimum 500 kHz 6 dB bandwidth requirement.

Measurement Results - Minimum 6 dB Bandwidth

Channel	Frequency (MHz)	-6 dB Bandwidth (kHz)	Min. -6 dB Bandwidth (kHz)	Result
Low	2402	698	>500	Compliant
Middle	2442	698	>500	Compliant
High	2480	698	>500	Compliant

7.1.1. Minimum 6 dB (DTS) Bandwidth – Low Frequency (2402 MHz)



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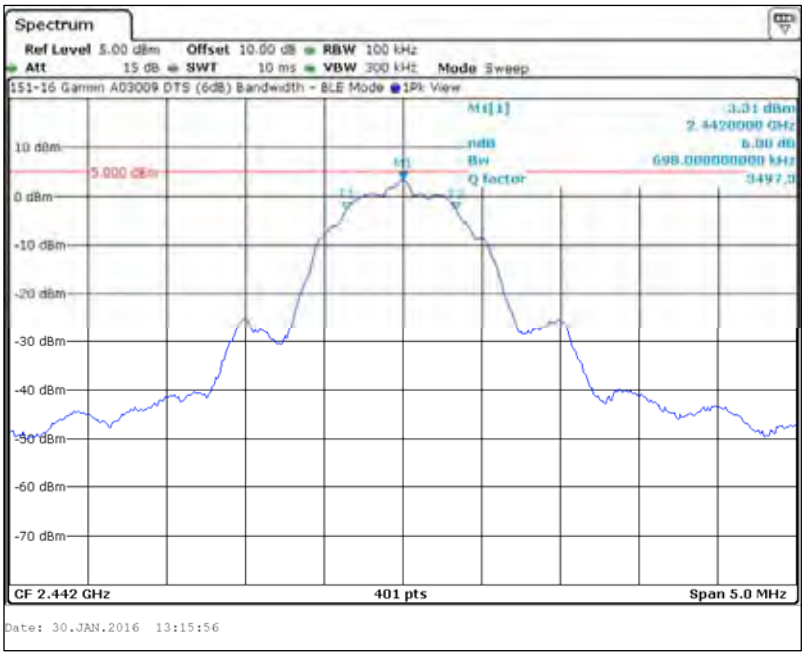
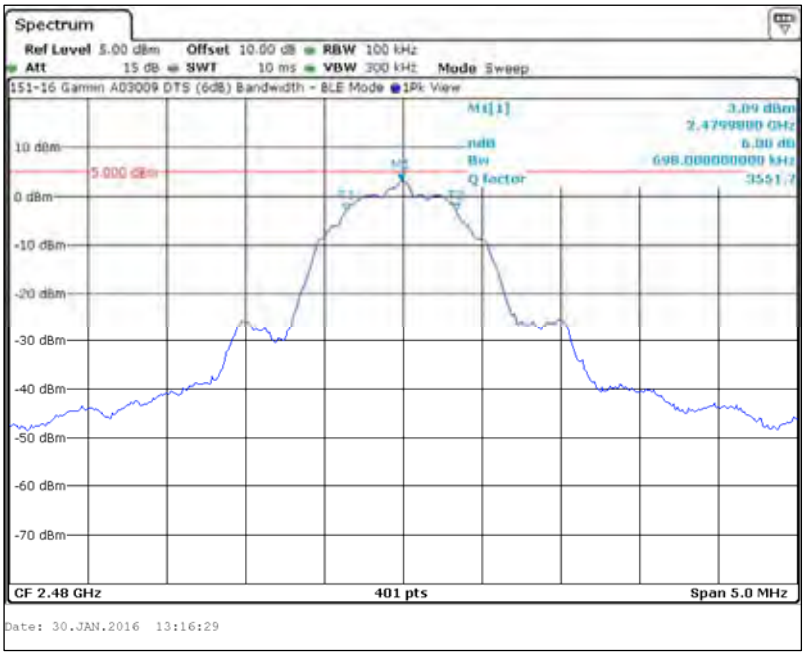
7. Measurement Data - Bluetooth LE Mode (continued)

7.1. Minimum 6 dB (DTS) Bandwidth (15.247 (a) (2), RSS-247 5.2(1))

7.1.2. Minimum 6 dB (DTS) Bandwidth – Middle Frequency (2442 MHz)



7.1.3. Minimum 6 dB (DTS) Bandwidth – High Frequency (2480 MHz)



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7. Measurement Data – Bluetooth LE Mode (continued)

7.2. Bandwidth of Momentary Signals

Requirement: When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.
The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth.

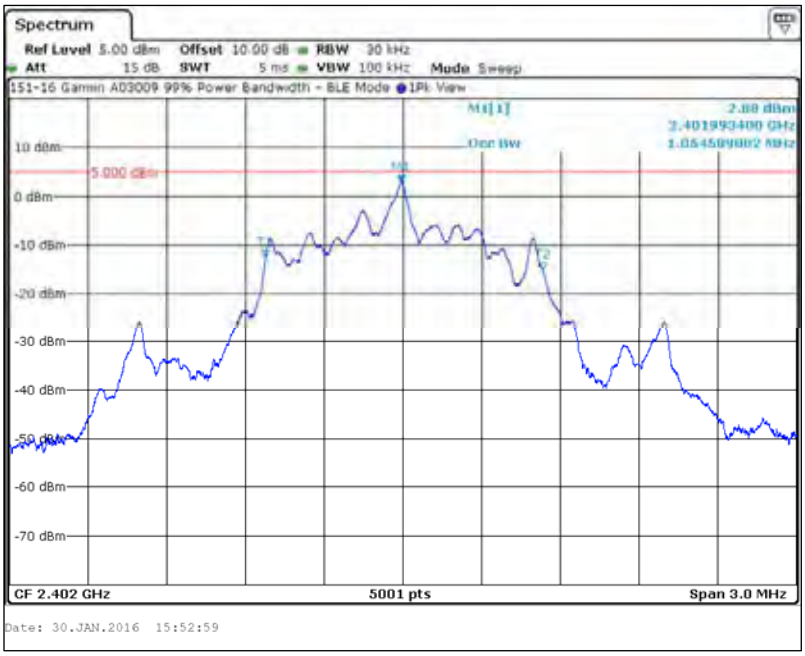
Procedure: This test was performed utilizing the automated 99% bandwidth function of the spectrum analyzer.

Conclusion: Compliant, for informational purposes.

Measurement Results - 99% Bandwidth

Channel	Channel Frequency (MHz)	99% Power Bandwidth (MHz)
Low	2402	1.054
Middle	2442	1.053
High	2480	1.055

7.2.1. 99% Bandwidth, Low Channel



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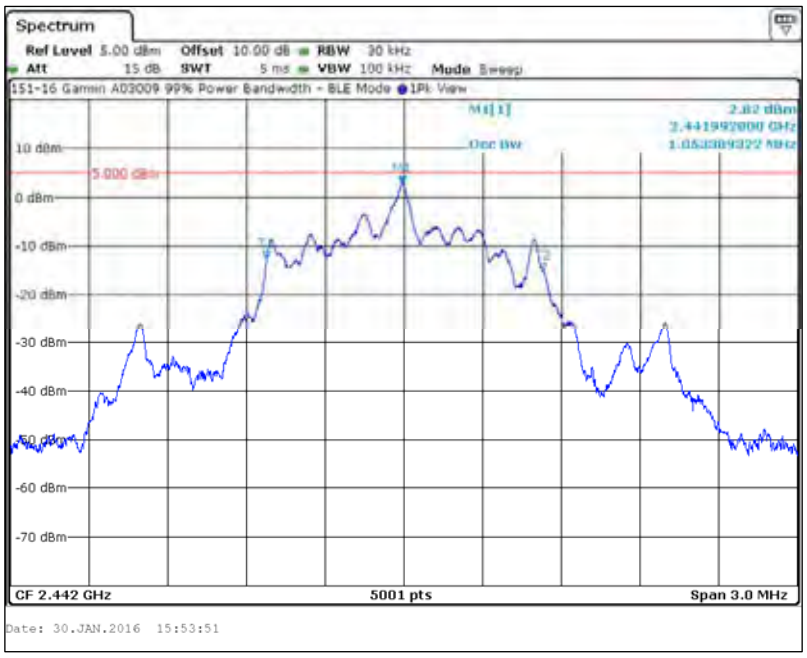
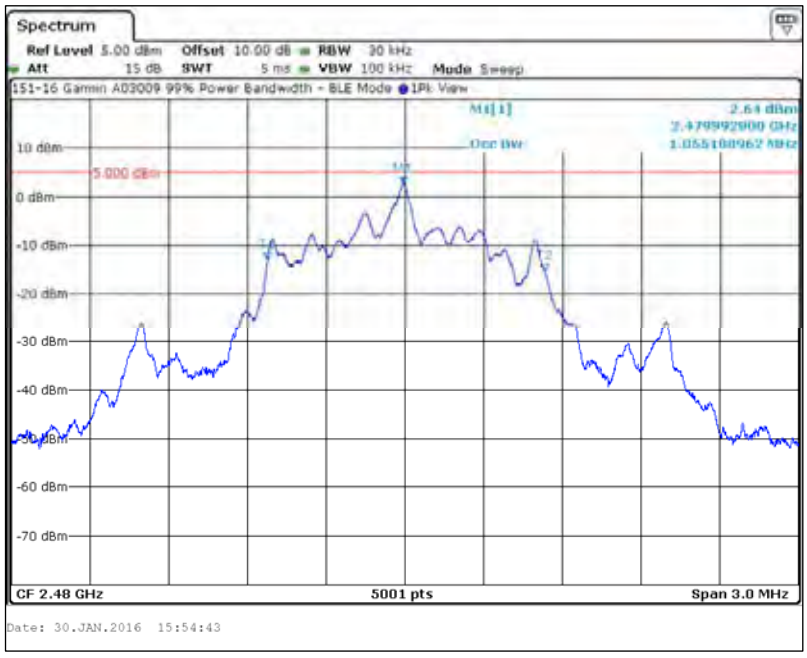
7. Measurement Data – Bluetooth LE Mode (continued)

7.2. Bandwidth of Momentary Signals

7.2.2. 99% Bandwidth, Middle Channel



7.2.3. 99% Bandwidth, High Channel



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7. Measurement Data - Bluetooth LE Mode (continued)

7.3. Maximum Peak Conducted Output Power (15.247 (b) (3), RSS-240 5.1 (4))

Requirement: For systems using digital modulation in the 902–928 MHz, 2400–2483.5MHz, and 5725–5850 MHz bands: 1 Watt.

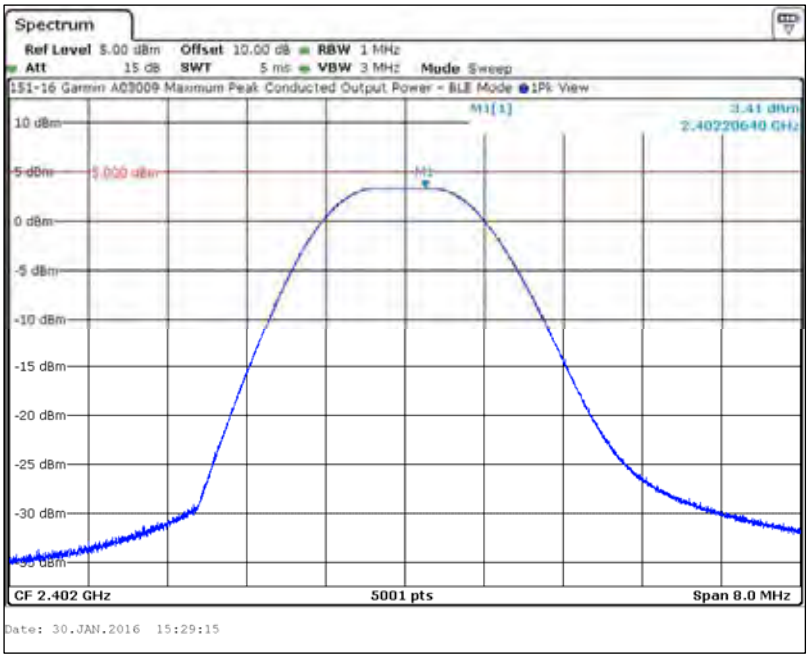
Procedure: Reference ANSI C63.10-2013, Section 11.9.1.1 - RBW ≥ DTS bandwidth.

Test Note: The measurements were performed with the device in three orthogonal positions in accordance with ANSI C63.10-2013, sections 5.10.1. Reference section 3.1 of this report for additional information.

Result: Compliant

Channel	Frequency	Measured Maximum Peak Conducted Output Power		Output Power Limit	Result
	(MHz)	(dBm)	(mW)	(mW)	
Low	2402	3.41	2.19	1000	Compliant
Middle	2442	3.37	2.17	1000	Compliant
High	2480	3.77	2.38	1000	Compliant

7.3.1. Maximum Peak Conducted Output Power – Low Frequency (2402 MHz)



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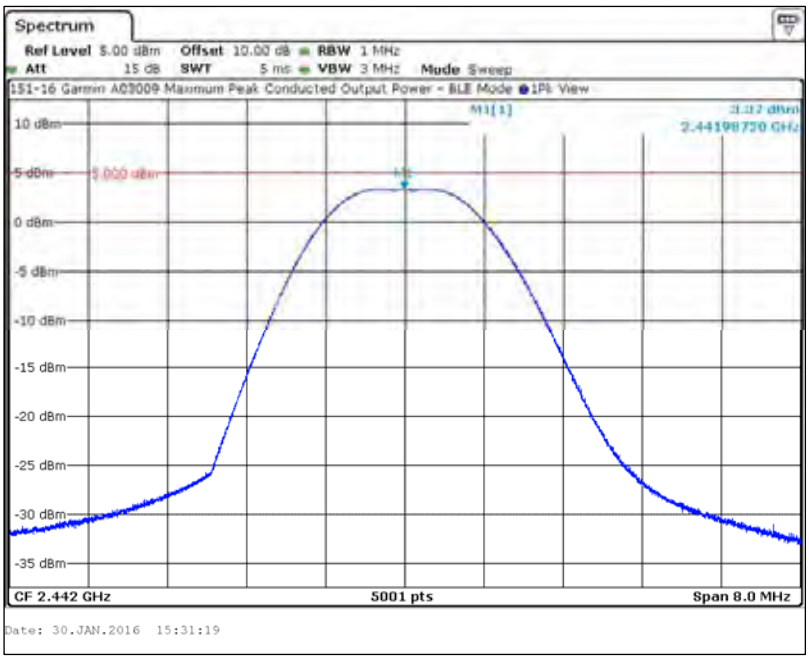
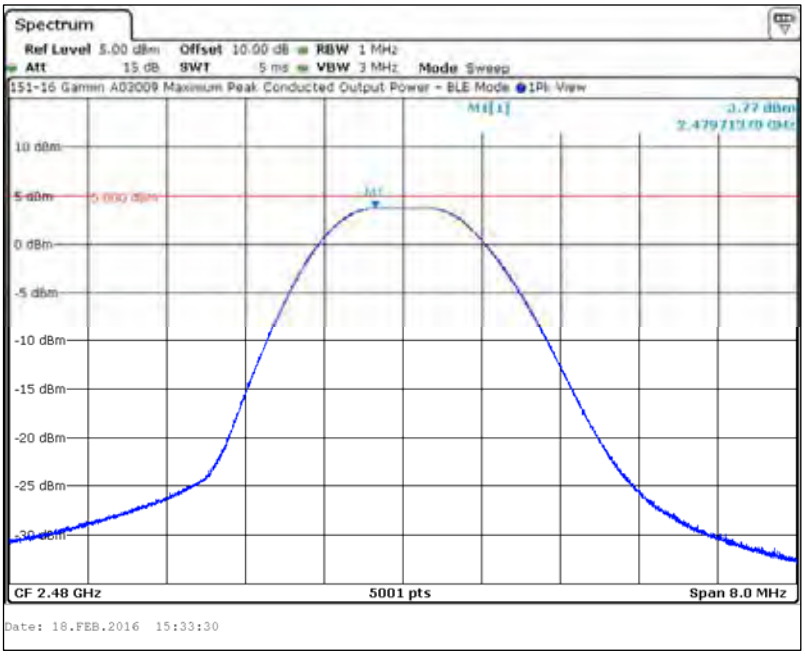
7. Measurement Data - Bluetooth LE Mode (continued)

7.3. Maximum Peak Conducted Output Power (15.247 (b) (1), RSS-240 5.1 (2))

7.3.2. Maximum Peak Conducted Output Power – Middle Frequency (2442 MHz)



7.3.3. Maximum Peak Conducted Output Power – High Frequency (2480 MHz)



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7. Measurement Data – Bluetooth LE Mode (continued)

7.4. Operation with directional antenna gains greater than 6 dBi (15.247 (b)(4))

Requirement: If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of FCC Part 15.247, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400 – 2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Conclusion: The antenna used in the device under test has a manufacturer stated gain of 0 dBi. This clause, therefore, does not apply to this device.

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7. Measurement Data – Bluetooth LE Mode (continued)

7.5. Transmitter Spurious Radiated Emissions (10 kHz to 25 GHz)

Requirement: (15.209) The Emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
0.009 to 0.490	3	128.5 to 93.8
0.490 to 1.705	3	73.8 to 63.0
1.705 to 30	3	69.5
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
>960	3	54.0

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Procedure: This test was performed in accordance with the procedure detailed in ANSI C63.10:2013, section 6.3: Radiated emissions testing—general requirements and FCC 47 CFR Part 15.209: Radiated Emission Limits; General Requirements.

Test measurements were made in accordance with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

Test Notes: The measurements were performed with the device in three orthogonal positions in accordance with ANSI C63.10-2013, sections 5.10.1. Reference section 3.1 of this report for additional information.

All measurements are peak. All limits are either Quasi-Peak or average.

Result: Compliant - The Emissions from the DUT did not exceed the FCC Part 15,209 field strength levels specified in the above table. Reference Appendix A for the transmitter spurious emission data.

Worst Case Measurements (Ranges as Tested)

Range	Frequency	Peak Field Strength	FCC 15.209 Limit	Margin	Result	Appendix A Reference
(MHz)	(MHz)	(dBµV/m)	(dBµV/m)	(dB)		
0.01 to 0.15	0.0307	99.78	126.76	-26.98	Compliant	A1.2
0.15 to 30.0	0.4925	54.78	72.91	-18.13	Compliant	A2.1
30 to 1000	952.1600	28.61	46.00	-17.39	Compliant	A3.5
1000 to 2400	2386.7000	44.10	54.00	-9.90	Compliant	A4.4
2483.5 to 10000	9847.4000	47.61	54.00	-6.39	Compliant	A5.3
10000 to 18000	17946.4000	52.18	54.00	-1.82	Compliant	A6.3
18000 to 25000	24702.6000	42.27	54.00	-11.73	Compliant	A7.5

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7. Measurement Data – Bluetooth LE Mode (continued)

7.6. Harmonic Emissions in the Restricted Bands of Operation (15.247 (d))

Requirement: Requirements for the harmonic emissions measurements follow the FCC Part 209 requirements detailed in Section 7.5 of this test report.

Test Note: The following table represents the worst case measurement of each harmonic emission, taking into account the ANSI C63.4 requirement of rotating the DUT through three orthogonal axes.

Measurement Results – Worst Case Harmonic Emissions

Frequency (MHz)	Field Strength (dBµV/m)[1]		Limit (dBµV/m)		Margin (dB)		Pol (H/V)	Results
	Peak	Avg	Peak	Avg	Peak	Avg		
4804	53.37	43.03	74.00	54.00	-20.63	-10.97	H	Compliant
4884	50.46	38.72	74.00	54.00	-23.54	-15.28	V	Compliant
4960	50.07	38.25	74.00	54.00	-23.93	-15.75	H	Compliant
7326	52.45	39.75	74.00	54.00	-21.55	-14.25	V	Compliant
7440	53.10	39.59	74.00	54.00	-20.90	-14.41	H	Compliant
12010	60.25	46.05	74.00	54.00	-13.75	-7.95	H	Compliant
12210	59.43	45.46	74.00	54.00	-14.57	-8.54	V	Compliant
12400	58.65	45.25	74.00	54.00	-15.35	-8.75	H	Compliant
19216	57.86	43.54	74.00	54.00	-16.14	-10.46	H	Compliant
19536	58.39	44.41	74.00	54.00	-15.61	-9.59	H	Compliant
19840	57.85	44.00	74.00	54.00	-16.15	-10.00	H	Compliant
22320	60.44	46.54	74.00	54.00	-13.56	-7.46	V	Compliant

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7. Measurement Data – Bluetooth LE Mode (continued)

7.7. Emissions in Non-Restricted Frequency Bands (15.247(d), RSS-247 5.4 (5))

Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Procedure: The procedure detailed in publication 558074 D01 - DTS Measurement Guidance v03r04, January 7, 2016, Section 11: *Emissions in non-restricted frequency bands* was used to perform the following measurements.

Test Notes: Reference Section 7.2, Screen Captures 7.2.1, 7.2.2 and 7.2.3 for the in-band references used to set the -20 dB limits for the measurements taken in this section.

Reference Appendix C for the emissions in non-restricted frequency bands screen captures.

Worst Case Measurements

Range	Frequency	Peak Power	W/C In-Band -20 dB	Margin	Result	Appendix B Reference
(MHz)	(MHz)	(dBm)	(dBm)	(dB)		
30 to 2400	2315.99	-52.11	-16.91	-35.20	Compliant	B1
2483.5 to 15000	4875.80	-39.25	-16.91	-22.34	Compliant	B2
15000 to 26000	18585.10	-56.86	-16.91	-39.95	Compliant	B3

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7. Measurement Data – Bluetooth LE Mode (continued)

7.8. Band Edge and Out of Band Measurements (15.247 d))

Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

Procedures: Lower Band Edge - ANSI C63.10:2013, section 6.10.4: Authorized-band band-edge measurements (-20 dB delta relative method).

Upper Band Edge – ANSI C63.10:2013, section 6.10.5: Restricted-band band-edge measurements.

Conclusion: The DUT meets the band edge requirements

Measurement Results

Lower Band Edge,

Unmodulated Carrier

Lowest Channel (MHz)	In-Band Peak Measurement (dBµV/m)		Band Edge Frequency (MHz)	Band Edge Measurement (dBµV/m)		Required Offset (dB)	Actual Offset (dB)	Result
	Peak	Average		Peak	Average			
2402	3.39	---	2400	-47.51	---	>20 dB	50.90	Compliant

Modulated Carrier

Lowest Channel (MHz)	In-Band Peak Measurement (dBµV/m)		Band Edge Frequency (MHz)	Band Edge Measurement (dBµV/m)		Required Offset (dB)	Actual Offset (dB)	Result
	Peak	Average		Peak	Average			
2402	3.36	---	2400	-47.82	---	>20 dB	51.18	Compliant

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7. Measurement Data – Bluetooth LE Mode (continued)

7.8. Band Edge Measurements (15.247 d)) (continued)

Measurement Results (continued)

Upper Band Edge and Worst Case Out of Band,

Unmodulated Carrier

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.5000	39.04	28.84	74	54	-34.96	-25.16	Compliant
2483.6542	42.06	28.76	74	54	-31.94	-25.24	Compliant

Modulated Carrier

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.5000	45.94	28.95	74	54	-28.06	-25.05	Compliant
2483.6550	45.68	28.76	74	54	-28.32	-25.24	Compliant

Lower Restricted Band (2310 MHz to 2390 MHz)

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2323.3490	44.29	31.86	74	54	-29.71	-22.14	Compliant

Upper Restricted Band (2483.5 MHz to 2500 MHz)

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.6369	45.15	28.74	74	54	-28.85	-25.26	Compliant

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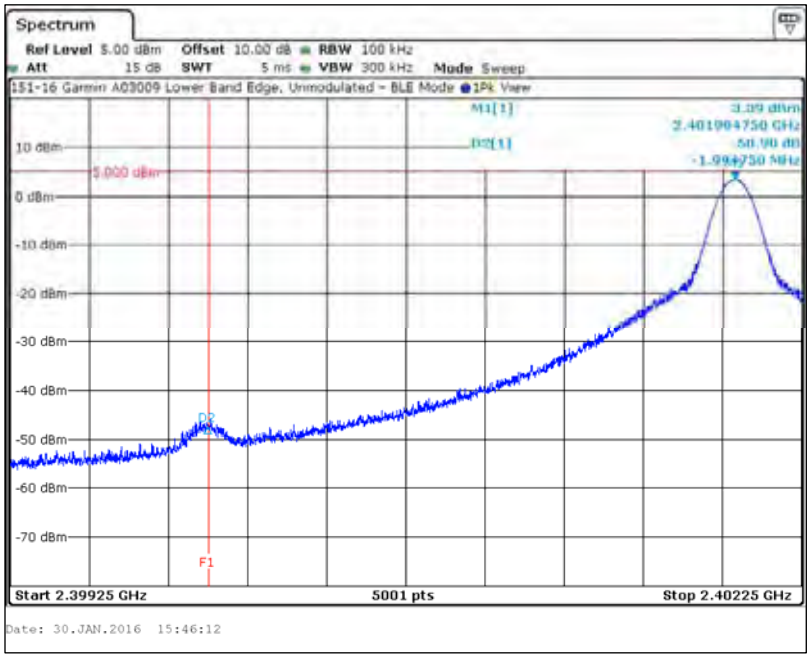
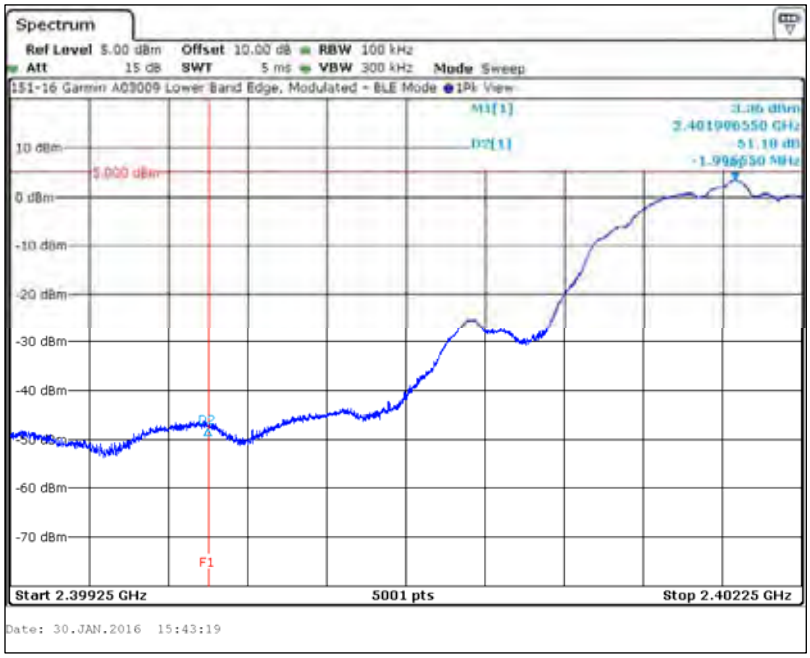
7. Measurement Data – Bluetooth LE Mode (continued)

7.8. Band Edge Measurements (15.247 d))

7.8.1. Lower Band Edge, Unmodulated Carrier



7.8.2. Lower Band Edge, Modulated Carrier



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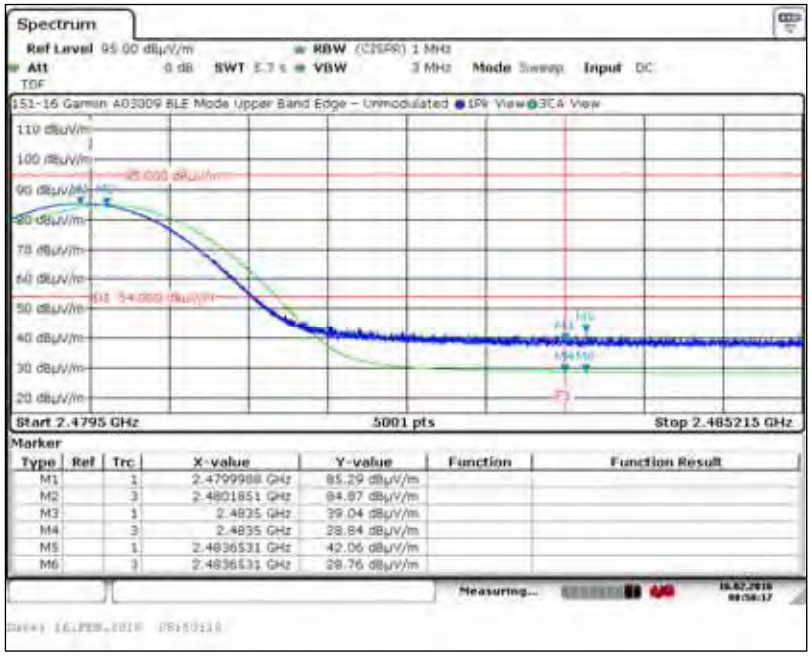
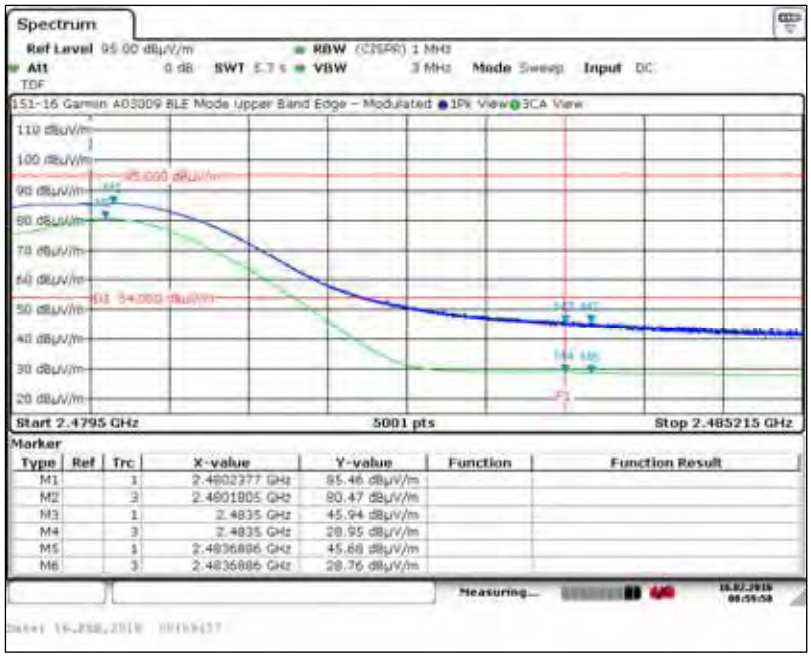
7. Measurement Data – Bluetooth LE Mode (continued)

7.8. Band Edge Measurements (15.247 d))

7.8.3. Upper Band Edge, Unmodulated Carrier



7.8.4. Upper Band Edge, Modulated Carrier



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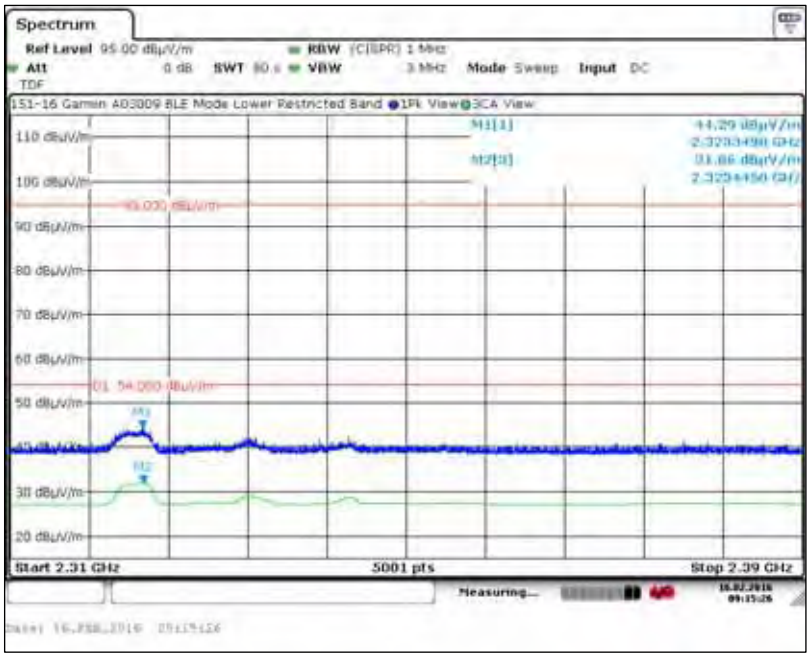
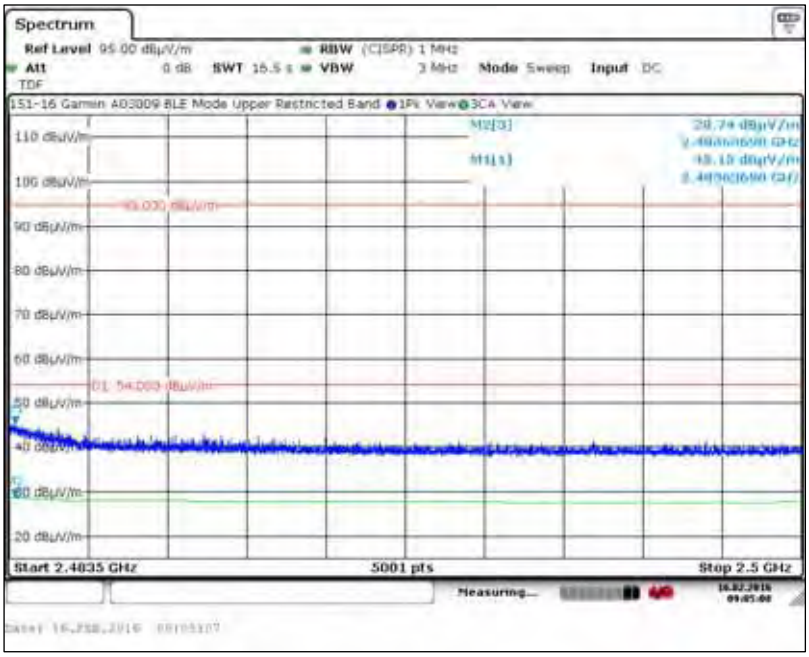
7. Measurement Data – Bluetooth LE Mode (continued)

7.8. Band Edge Measurements (15.247 d))

7.8.5. Lower Restricted Band



7.8.6. Upper Restricted Band



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7. Measurement Data – Bluetooth LE Mode (continued)

7.9. Peak Power Spectral Density (15.247(e), RSS-247 5.2 (2))

Requirement: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Procedure: This measurement was performed in accordance with FCC OET 558074 D01 DTS Measurement Guidance, v03r04, dated January 7, 2016, section 10.2: Method PKPSD (peak PSD).

Test Notes: The data presented in this test report represents the worst case receive antenna polarity and elevation and turntable position.

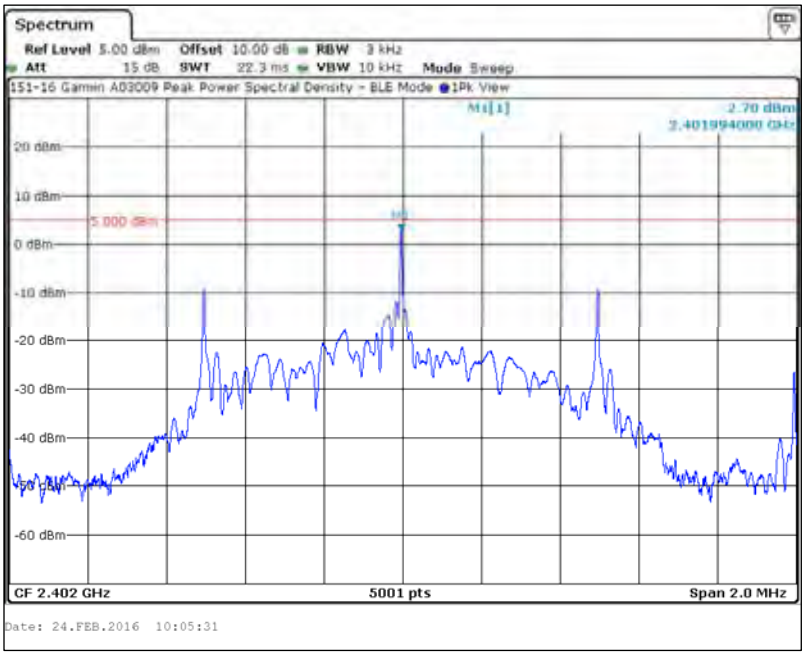
The method used to convert the field strength to power is detailed in the test notes in section 7.4 of this test report.

Conclusion: The DUT meets the Part 15.247(e) power spectral density requirement.

Measurement Results – Power Spectral Density

Channel	Frequency	Maximum PSD Frequency	Maximum PSD	Limit	Margin	Result
	(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	
Low	2402	2401.9940	2.70	8.00	-5.30	Compliant
Middle	2442	2441.9936	2.62	8.00	-5.38	Compliant
High	2480	2479.9360	2.51	8.00	-5.49	Compliant

7.9.1. Peak Power Spectral Density, Low Channel



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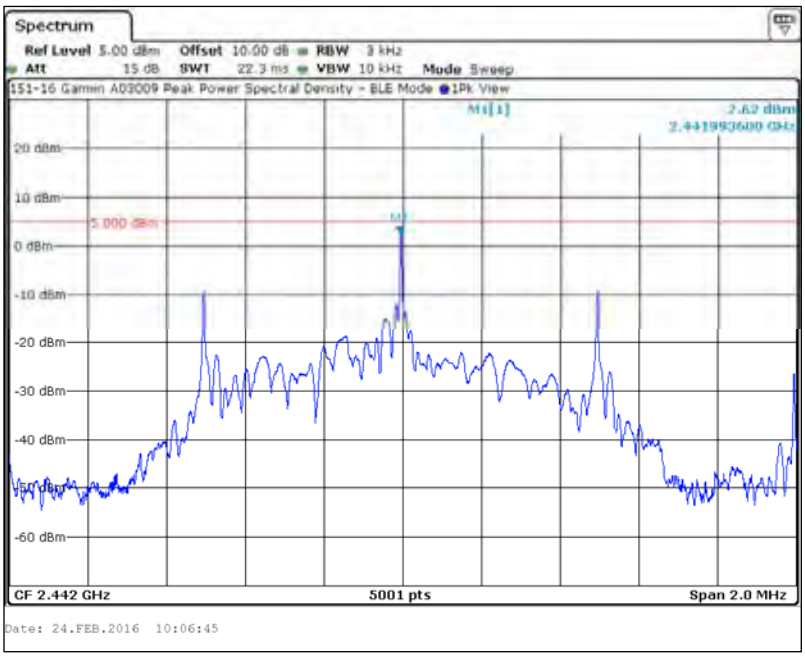
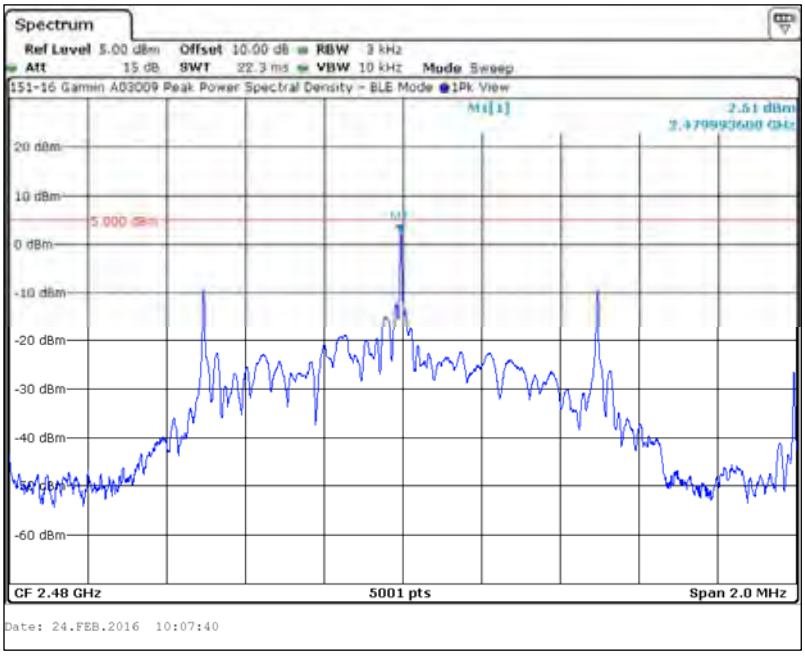
7. Measurement Data – Bluetooth LE Mode (continued)

7.9. Peak Power Spectral Density (15.247(e), RSS-247 5.2 (2)) (continued)

7.9.2. Peak Power Spectral Density, Middle Channel



7.9.3. Peak Power Spectral Density, High Channel



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7. Measurement Data – Bluetooth LE Mode (continued)

7.10. Public Exposure to Radio Frequency Energy Levels (15.247(i) (1.1307 (b)(1)) RSS-GEN, ISSUE 4 5.5, RSS 102)

7.10.1. 15.247(i) (1.1307 (b)(1) Requirements

Requirement: Portable devices are subject to radio frequency radiation exposure requirements.

For a 1-g SAR, the test exclusion result must be ≤ 3.0.

Test Notes: The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by the following formula:

$$\text{SAR Test Exclusion} = \frac{P_{MAX}}{d_{MIN}} \times \sqrt{f_{(GHz)}} \quad (1)$$

P_{MAX}	mW	Maximum power of channel, including tune-up tolerance
d_{MIN}	mm	Minimum test separation distance, mm (≤ 50 mm)
$f_{(GHz)}$	GHz	$f_{(GHz)}$ is the RF channel transmit frequency in GHz (>100 MHz and <6 GHz)

(1) FCC OET 447498 - Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

Conclusion: The device under test meets the exclusion requirement detailed in FCC OET 447498.

Input:	P_{MAX}[1]	(mW)	2.19	2.17	2.38
	d_{MIN}	(mm)	5.00	5.00	5.00
	$f_{(GHz)}$		2.402	2.442	2.480
Test Exclusion:			**0.68**	**0.68**	**0.75**
Limit Exemption:			**3.00**	**3.00**	**3.00**

[1] Taken from column 5 of the table in Section 7.4 of this test report.

7.10.2. RSS-102 Issue 5 Requirements

Requirement: SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1. Portable devices are subject to radio frequency radiation exposure requirements.

Test Notes: The limit was taken from Table 1 of RSS-102 Issue 5.

Frequency (MHz)	Separation Distance (mm)	Maximum Power (mW)	RSS-102 Limit (mW)	Result
2402.00	≤5	2.19	4.26	Compliant
2442.00	≤5	2.17	4.04	Compliant
2480.00	≤5	2.38	3.94	Compliant

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8. Measurement Data – ANT+ Mode

8.1. Minimum 6 dB (DTS) Bandwidth (15.247 (a) (2), RSS-247 5.2(1))

Requirement: Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

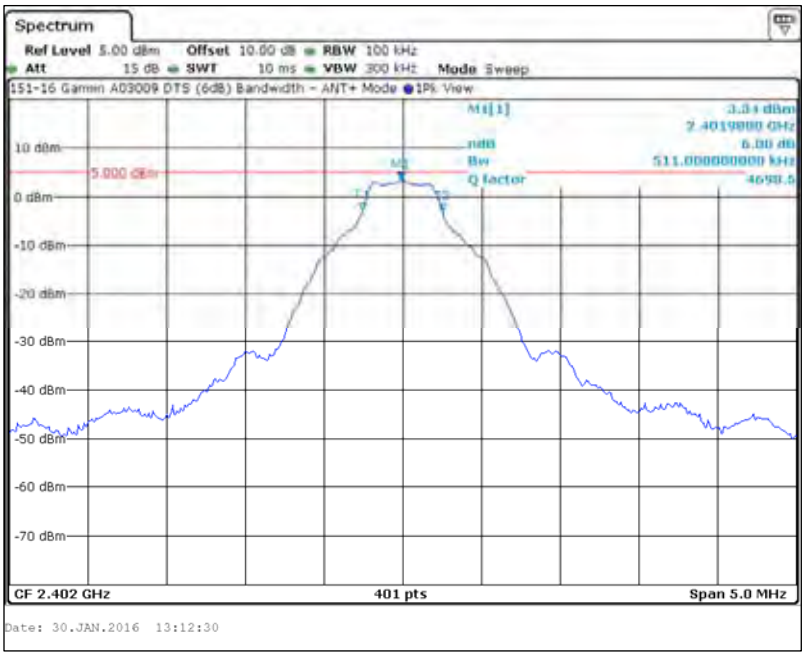
Procedure: Performed in accordance with FCC OET 558074 D01 DTS Measurement Guidance, v03r04, June 7, 2016, §8.0: DTS bandwidth.

Conclusion: The device under test meets the minimum 500 kHz 6 dB bandwidth requirement.

Measurement Results - Minimum 6 dB Bandwidth

Channel	Frequency (MHz)	-6 dB Bandwidth (kHz)	Min. -6 dB Bandwidth (kHz)	Result
Low	2402	511	>500	Compliant
Middle	2441	511	>500	Compliant
High	2480	511	>500	Compliant

8.1.1. -6 dB Bandwidth, Low Channel



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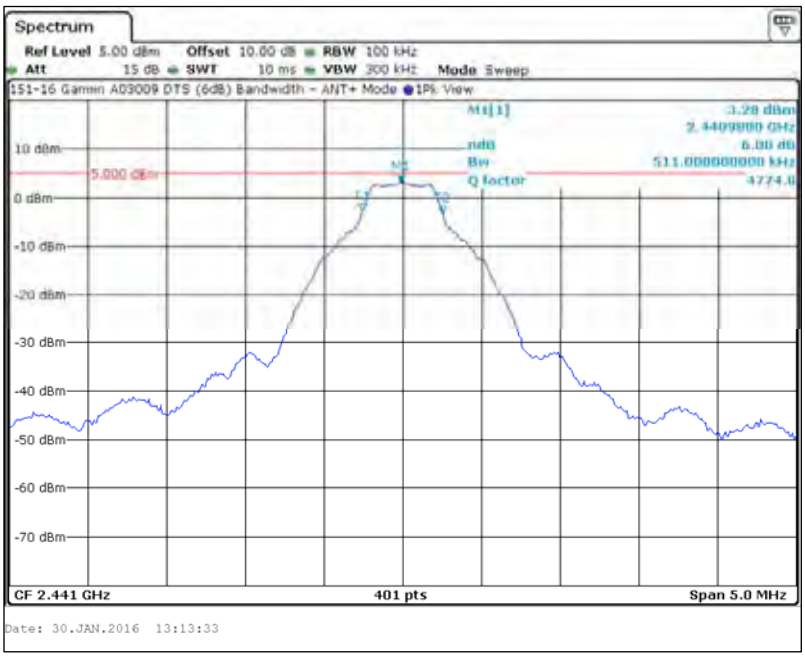
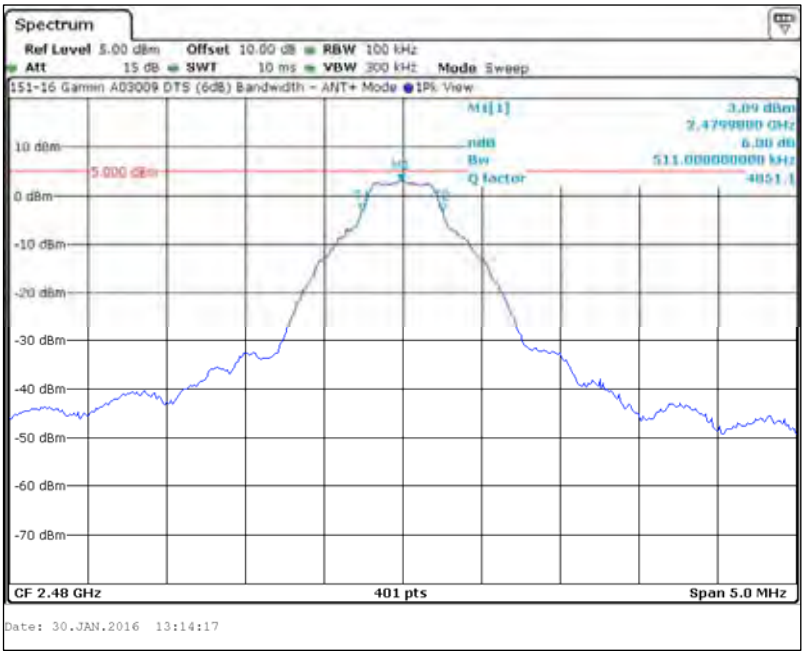
8. Measurement Data – ANT+ Mode (continued)

8.1. Minimum 6 dB (DTS) Bandwidth (15.247 (a) (2), RSS-247 5.2 (1)) (continued)

8.1.2. -6 dB Bandwidth, Middle Channel



8.1.3. -6 dB Bandwidth, High Channel



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8. Measurement Data – ANT+ Mode (continued)

8.2. Bandwidth of Momentary Signals

Requirement: When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.
The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth.

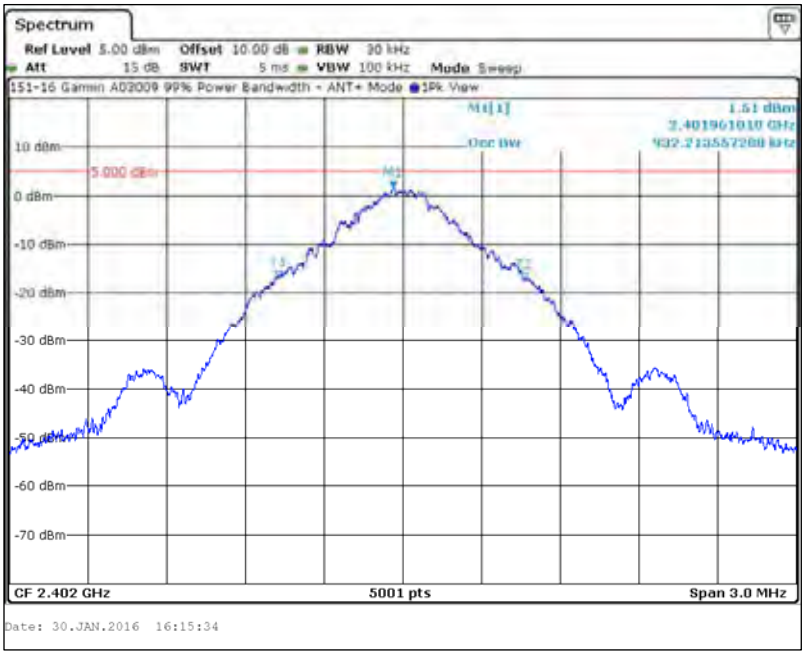
Procedure: This test was performed utilizing the automated 99% bandwidth function of the spectrum analyzer.

Conclusion: Compliant, for informational purposes.

Measurement Results - 99% Bandwidth

Channel	Channel Frequency (MHz)	99% Power Bandwidth (MHz)
Low	2405	0.932
Middle	2440	0.929
High	2480	0.932

8.2.1. 99% Bandwidth, Low Channel



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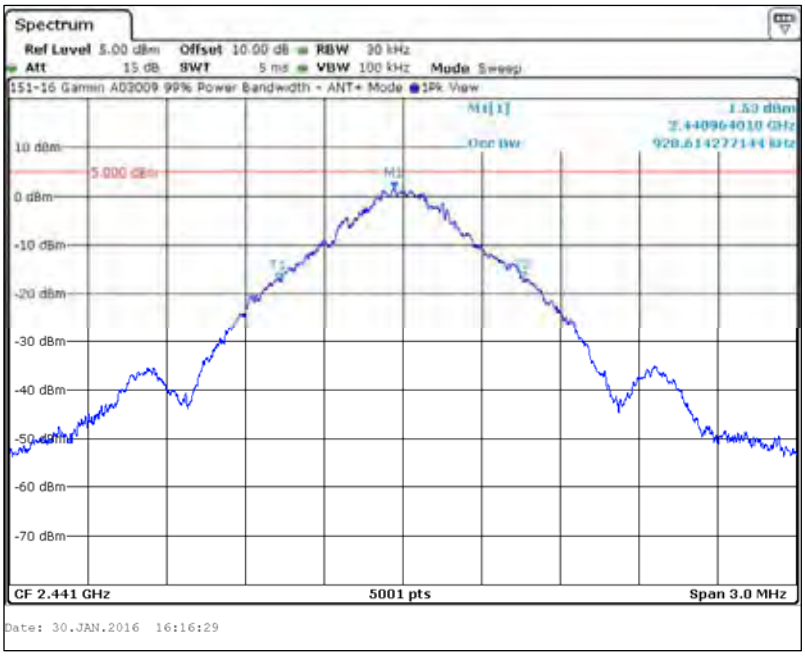
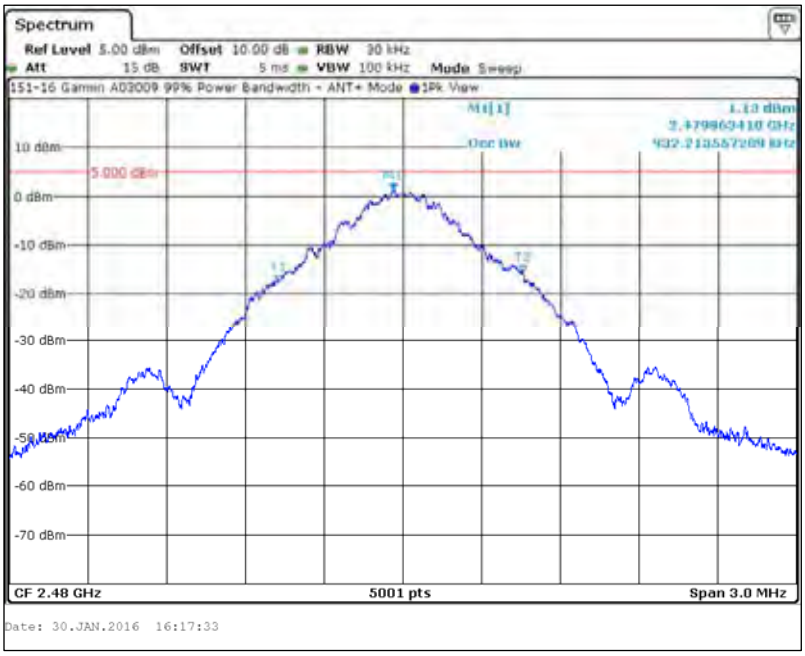
8. Measurement Data – ANT+ Mode (continued)

8.2. Bandwidth of Momentary Signals

8.2.2. 99% Bandwidth, Middle Channel



8.2.3. 99% Bandwidth, High Channel



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8. Measurement Data – ANT+ Mode (continued)

8.3. Maximum Peak Conducted Output Power (15.247 (b) (3), RSS-247 5.4 (4))

Requirement: For systems using digital modulation in the 902–928 MHz, 2400–2483.5MHz, and 5725–5850 MHz bands: 1 Watt.

Procedure: Reference ANSI C63.10-2013, Section 11.9.1.1 - RBW ≥ DTS bandwidth.

Result: Compliant

Measurement Results

ANT+ Mode Channel	Frequency	Maximum Peak Conducted Output Power		Peak Limit	Result
	(MHz)	(dBm)	(mW)	(mW)	
Low	2402	3.83	2.42	1000	Compliant
Middle	2441	3.82	2.41	1000	Compliant
High	2480	3.71	2.35	1000	Compliant

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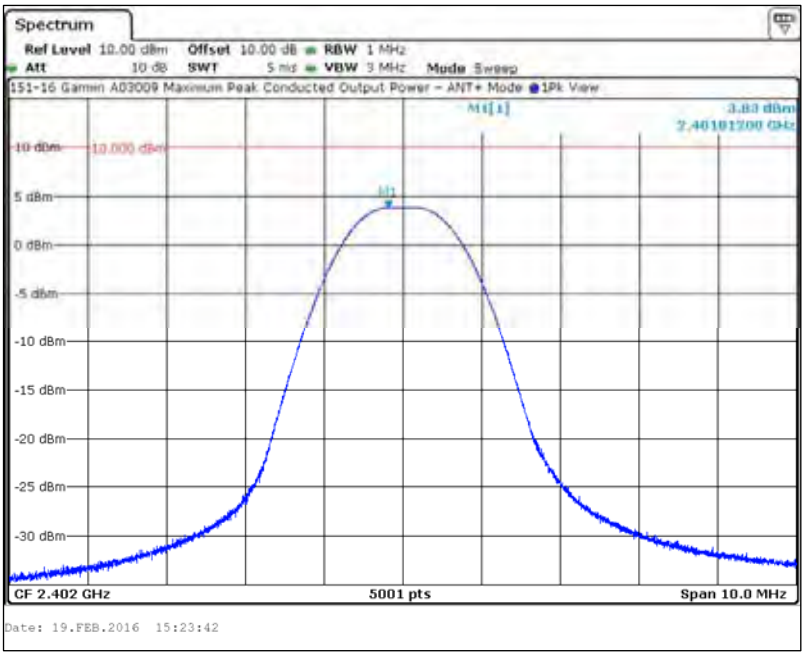
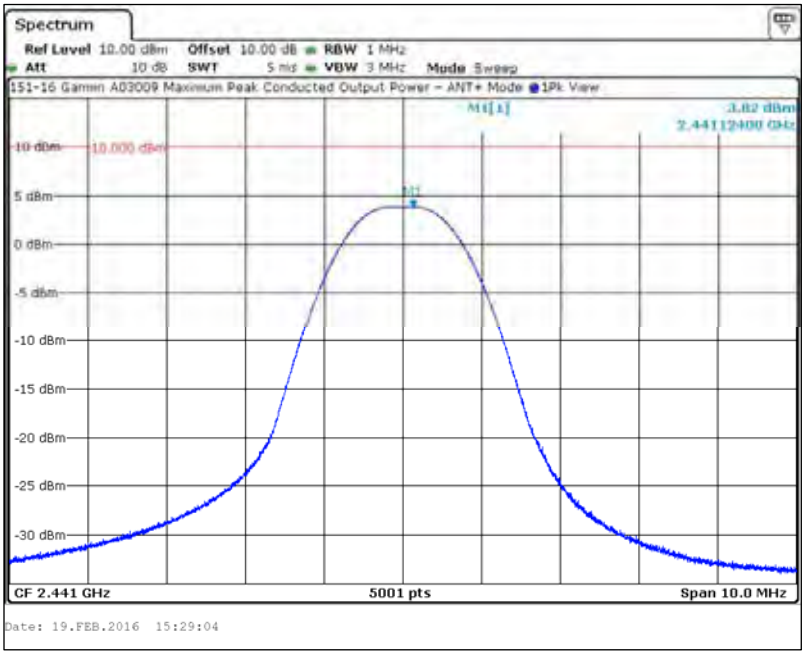
8. Measurement Data – ANT+ Mode (continued)

8.3. Maximum Peak Conducted Output Power (15.247 (b) (3), RSS-247 5.4 (4)) (cont.)

8.3.1. Maximum Conducted Output Power, Low Channel



8.3.2. Maximum Conducted Output Power, Middle Channel



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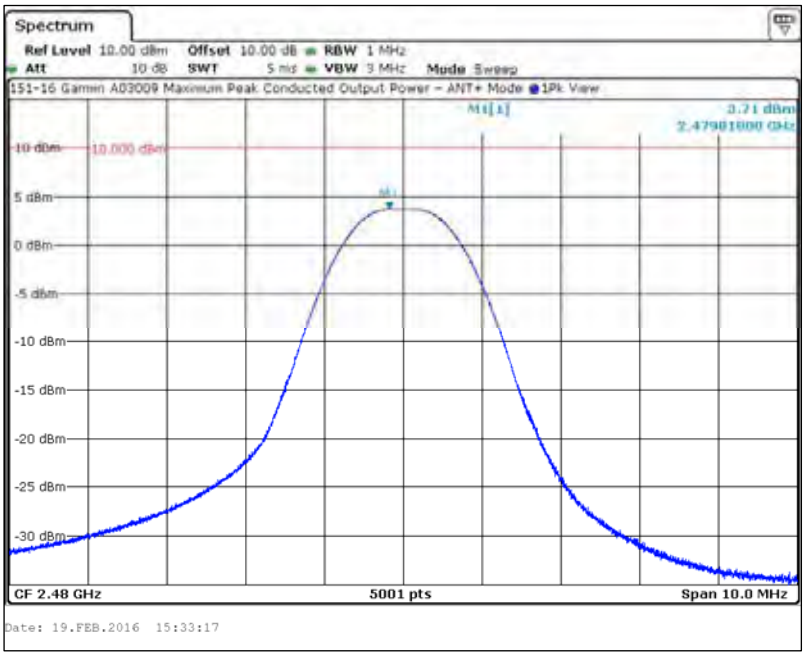
8. Measurement Data – ANT+ Mode (continued)

8.3. Maximum Peak Conducted Output Power (15.247 (b) (3), RSS-247 5.4 (4)) (cont.)

8.3.3. Maximum Conducted Output Power, High Channel



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8. Measurement Data – ANT+ Mode (continued)

8.4. Operation with directional antenna gains greater than 6 dBi (15.247 (b)(4))

Requirement: If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of FCC Part 15.247, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400 – 2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Conclusion: The antenna used in the device under test has a manufacturer stated gain of 0 dBi. This clause, therefore, does not apply to this device.

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8. Measurement Data – ANT+ Mode (continued)

8.5. Transmitter Spurious Radiated Emissions (10 kHz to 26 GHz)

Requirement: (15.209) The Emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
0.009 to 0.490	3	128.5 to 93.8
0.490 to 1.705	3	73.8 to 63.0
1.705 to 30	3	69.5
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
>960	3	54.0

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Procedure: This test was performed in accordance with the procedure detailed in ANSI C63.10:2013, section 6.3: Radiated emissions testing—general requirements and FCC 47 CFR Part 15.209: Radiated Emission Limits; General Requirements.

Test measurements were made in accordance with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

Test Notes: The measurements were performed with the device in three orthogonal positions in accordance with ANSI C63.10-2013, sections 5.10.1. Reference section 3.1 of this report for additional information.

All measurements are peak. All limits are either Quasi-Peak or average.

Result: Compliant - The Emissions from the DUT did not exceed the FCC Part 15,209 field strength levels specified in the above table. Reference Appendix A for the transmitter spurious emission data.

Worst Case Measurements (Ranges as Tested)

Range	Frequency	Peak Field Strength	FCC 15.209 Limit	Margin	Result	Appendix C Reference
(MHz)	(MHz)	(dBµV/m)	(dBµV/m)	(dB)		
.010 – .150	0.0101	100.04	114.40	-13.56	Compliant	C2.1.5
.150 – 30.00	1.6474	48.04	63.30	-15.26	Compliant	C2.2.3
30.00 – 1000.00	998.2500	29.68	54.00	-24.32	Compliant	C2.3.1
1000.00 – 2400.00	2274.4500	46.07	54.00	-7.93	Compliant	C1.4.5
2483.5 - 10000	7439.6000	41.75	54.00	-4.61	Compliant	C3.5.6
10000 - 18000	17898.6000	52.57	54.00	-1.43	Compliant	C2.6.6
18000 - 25000	24796.3000	41.82	54.00	-12.18	Compliant	C3.7.1

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8. Measurement Data – ANT+ Mode (continued)

8.6. Harmonic Emissions in the Restricted Bands of Operation (15.247 (d))

Requirement: Requirements for the harmonic emissions measurements follow the FCC Part 209 requirements detailed in Section 8.5 of this test report.

Test Note: The following table represents the worst case measurement of each harmonic emission, taking into account the ANSI C63.4 requirement of rotating the DUT through three orthogonal axes.

Measurement Results – Worst Case Harmonic Emissions

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Antenna Polarity (H/V)	Result
	Peak	Average	Peak	Average	Peak	Average		
4804	52.34	44.92	74.00	54.00	-21.66	-9.08	H	Compliant
4882	50.52	42.05	74.00	54.00	-23.48	-11.95	V	Compliant
4960	51.27	42.51	74.00	54.00	-22.73	-11.49	V	Compliant
7323	52.28	40.87	74.00	54.00	-21.72	-13.13	H	Compliant
7440	51.78	38.10	74.00	54.00	-22.22	-15.90	H	Compliant
12010	60.21	46.71	74.00	54.00	-13.79	-7.29	V	Compliant
12205	59.19	45.39	74.00	54.00	-14.81	-8.61	V	Compliant
12400	58.93	44.97	74.00	54.00	-15.07	-9.03	H	Compliant
19216	57.44	43.54	74.00	54.00	-16.56	-10.46	V	Compliant
19528	58.93	44.32	74.00	54.00	-15.07	-9.68	V	Compliant
19840	58.60	44.03	74.00	54.00	-15.40	-9.97	H	Compliant
22320	60.49	46.55	74.00	54.00	-13.51	-7.45	V	Compliant

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8. Measurement Data – ANT+ Mode (continued)

8.7. Emissions in Non-Restricted Frequency Bands (15.247(d), RSS-247 5.4 (5))

Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Procedure: The procedure detailed in publication 558074 D01 - DTS Measurement Guidance v03r04, January 7, 2016, Section 11: *Emissions in non-restricted frequency bands* was used to perform the following measurements.

Test Notes: Reference Section 7.2, Screen Captures 7.2.1, 7.2.2 and 7.2.3 for the in-band references used to set the -20 dB limits for the measurements taken in this section.

Reference Appendix D for the emissions in non-restricted frequency bands screen captures.

Worst Case Measurements

Channel Frequency	Range	Measured Frequency	Peak Power	-20 dB Out of Band Limit	Margin	Result	Appendix D Reference
(MHz)	(MHz)	(MHz)	(dBm)	(dBm)	(dB)		
2402	30 to 2400	2273.81	-45.82	-16.66	-29.16	Compliant	D1.1
	2483.5 to 15000	4804.50	-38.45	-16.66	-21.79	Compliant	D1.2
	15000 to 26000	19679.50	-56.95	-16.66	-40.29	Compliant	D1.3
2441	30 to 2400	2313.15	-45.71	-16.72	-28.99	Compliant	D2.1
	2483.5 to 15000	4882.00	-40.09	-16.72	-23.37	Compliant	D2.2
	15000 to 26000	25339.50	-56.49	-16.72	-39.77	Compliant	D2.3
2480	30 to 2400	2377.13	-45.39	-16.91	-28.48	Compliant	D3.1
	2483.5 to 15000	4882.00	-41.18	-16.91	-24.27	Compliant	D3.2
	15000 to 26000	25325.20	-56.81	-16.91	-39.90	Compliant	D3.3

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8. Measurement Data – ANT+ Mode (continued)

8.8. Band Edge Measurements (15.247 d))

Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

Procedures: Lower Band Edge - ANSI C63.10:2013, section 6.10.4: Authorized-band band-edge measurements (-20 dB delta relative method).

Upper Band Edge – ANSI C63.10:2013, section 6.10.5: Restricted-band band-edge measurements.

Conclusion: The DUT meets the band edge requirements

Measurement Results

Lower Band Edge,

Unmodulated Carrier

Lowest Channel (MHz)	In-Band Peak Measurement (dBµV/m)		Band Edge Frequency (MHz)	Band Edge Measurement (dBµV/m)		Required Offset (dB)	Actual Offset (dB)	Result
	Peak	Average		Peak	Average			
2402	3.35	---	2400	-57.27	---	>20 dB	60.62	Compliant

Modulated Carrier

Lowest Channel (MHz)	In-Band Peak Measurement (dBµV/m)		Band Edge Frequency (MHz)	Band Edge Measurement (dBµV/m)		Required Offset (dB)	Actual Offset (dB)	Result
	Peak	Average		Peak	Average			
2402	3.29	---	2400	-46.43	---	>20 dB	49.72	Compliant

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8. Measurement Data – ANT+ Mode (continued)

8.8. Band Edge Measurements (15.247 d)) (continued)

Measurement Results (continued)

Upper Band Edge and Worst Case Out of Band,

Unmodulated Carrier

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.5000	40.57	28.92	74	54	-33.43	-25.08	Compliant
2483.7944	42.33	25.76	74	54	-31.67	-28.24	Compliant

Modulated Carrier

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.5000	44.48	28.81	74	54	-29.52	-25.19	Compliant
2483.6268	45.23	28.73	74	54	-28.77	-25.27	Compliant

Lower Restricted Band (2310 MHz to 2390 MHz)

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2323.4130	43.04	31.69	74	54	-30.96	-22.31	Compliant

Upper Restricted Band (2483.5 MHz to 2500 MHz)

Freq. (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.5973	44.54	28.55	74	54	-29.46	-25.45	Compliant

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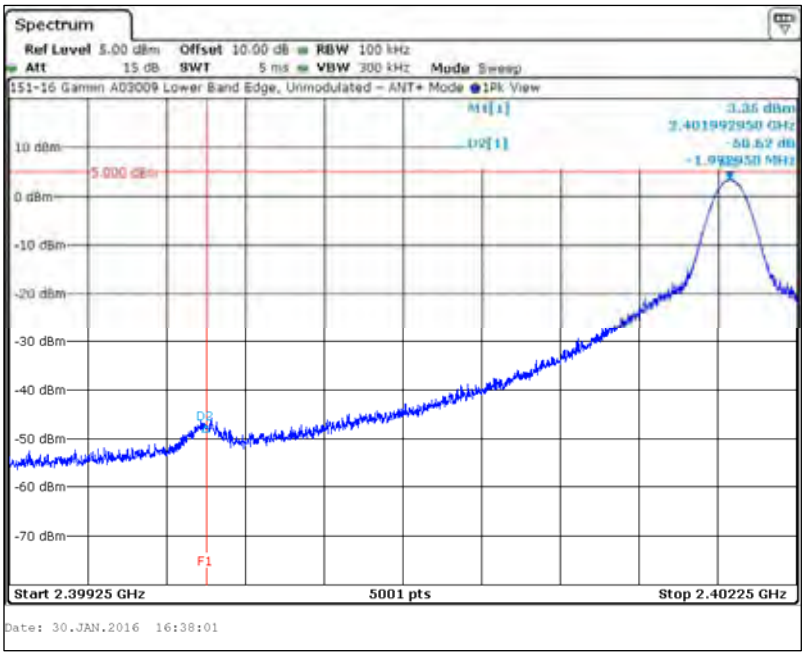
8. Measurement Data – ANT+ Mode (continued)

8.8. Band Edge Measurements (15.247 d))

8.8.1. Lower Band Edge, Unmodulated Carrier



8.8.2. Lower Band Edge, Modulated Carrier

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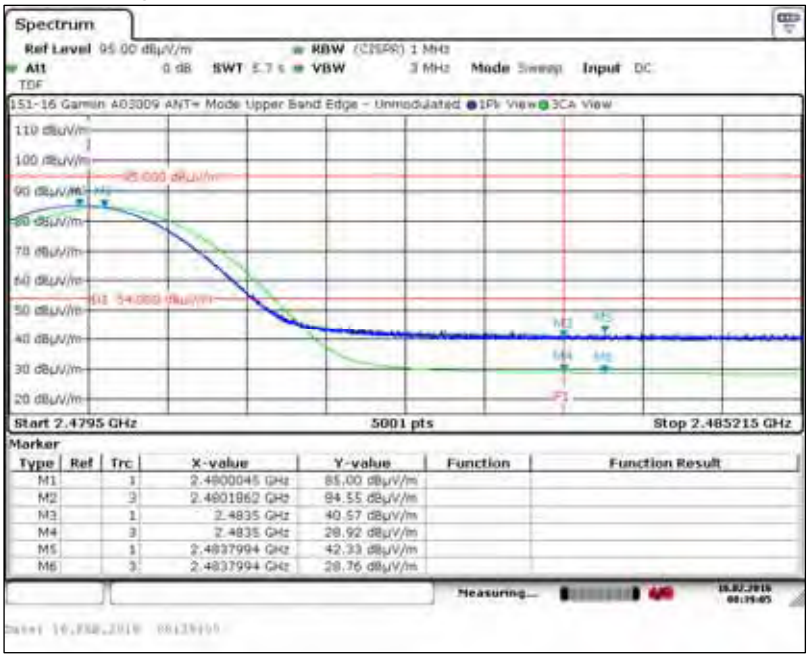
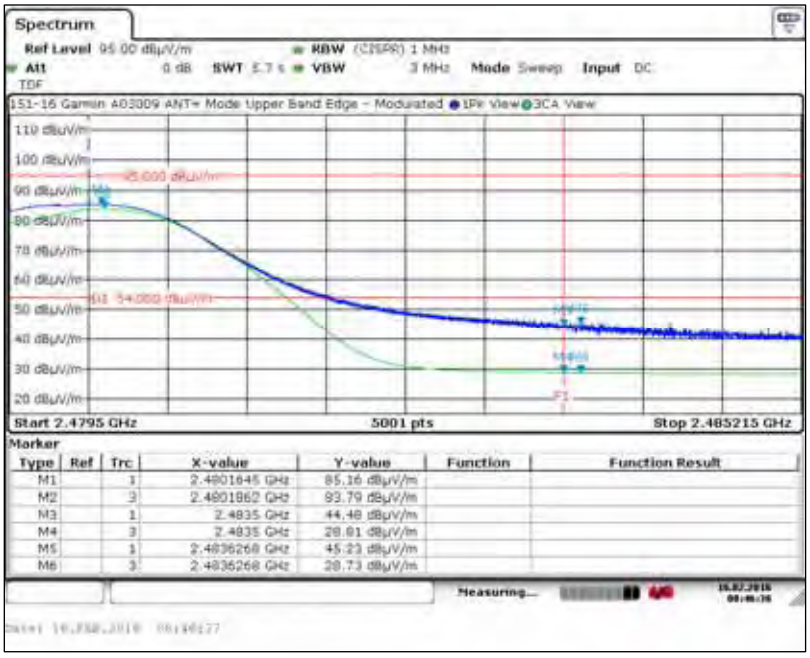
8. Measurement Data – ANT+ Mode (continued)

8.8. Band Edge Measurements (15.247 d))

8.8.3. Upper Band Edge, Unmodulated Carrier



8.8.4. Upper Band Edge, Modulated Carrier



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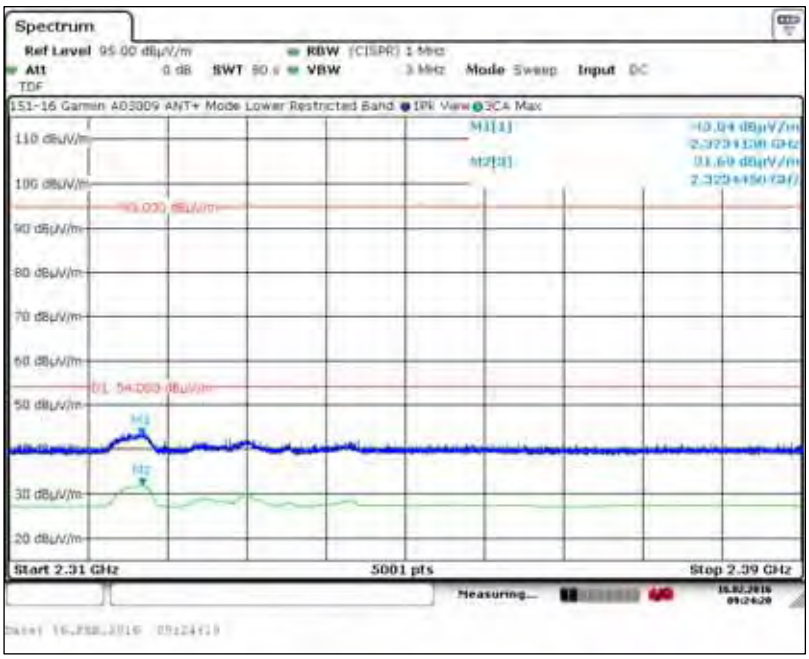
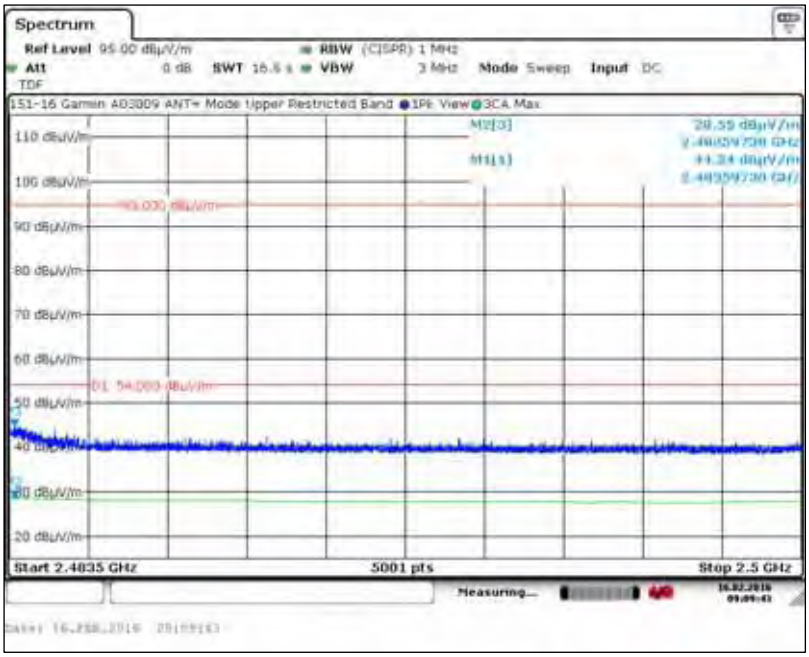
8. Measurement Data – ANT+ Mode (continued)

8.8. Band Edge Measurements (15.247 d))

8.8.5. Lower Restricted Band



8.8.6. Upper Restricted Band



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8. Measurement Data – ANT+ Mode (continued)

8.9. Peak Power Spectral Density (15.247(e), RSS-247 5.2 (2))

Requirement: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Procedure: This measurement was performed in accordance with FCC OET 558074 D01 DTS Measurement Guidance, v03r04, dated January 7, 2016, section 10.2: Method PKPSD (peak PSD).

Test Notes: The data presented in this test report represents the worst case receive antenna polarity and elevation and turntable position.

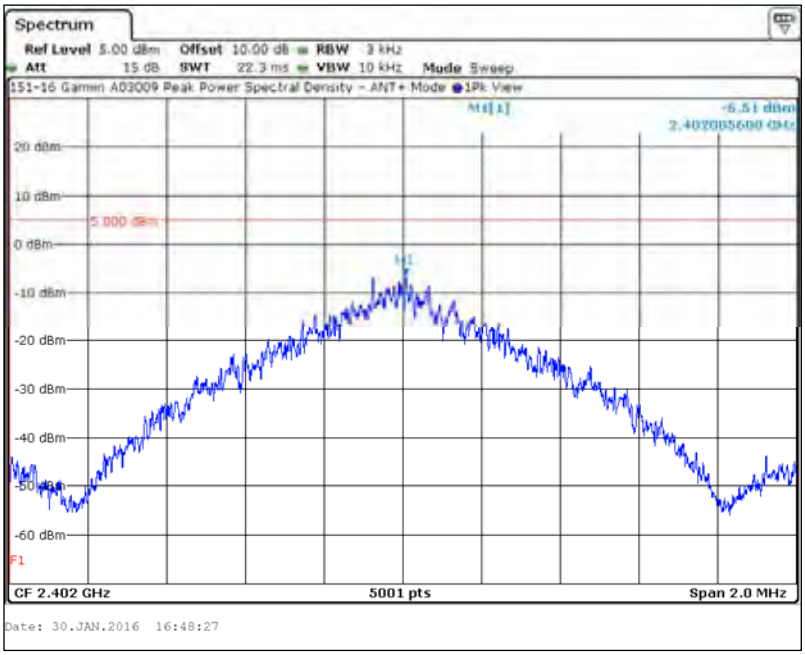
The method used to convert the field strength to power is detailed in the test notes in section 7.4 of this test report.

Conclusion: The DUT meets the Part 15.247(e) power spectral density requirement.

Measurement Results – Power Spectral Density

Channel	Frequency	Maximum PSD Frequency	Maximum PSD	Limit	Margin	Result
	(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	
Low	2402	2402.0056	-6.51	8.00	-14.51	Compliant
Middle	2441	2440.9992	-7.88	8.00	-15.88	Compliant
High	2480	2479.9868	-7.95	8.00	-15.95	Compliant

8.9.1. Peak Power Spectral Density, Low Channel



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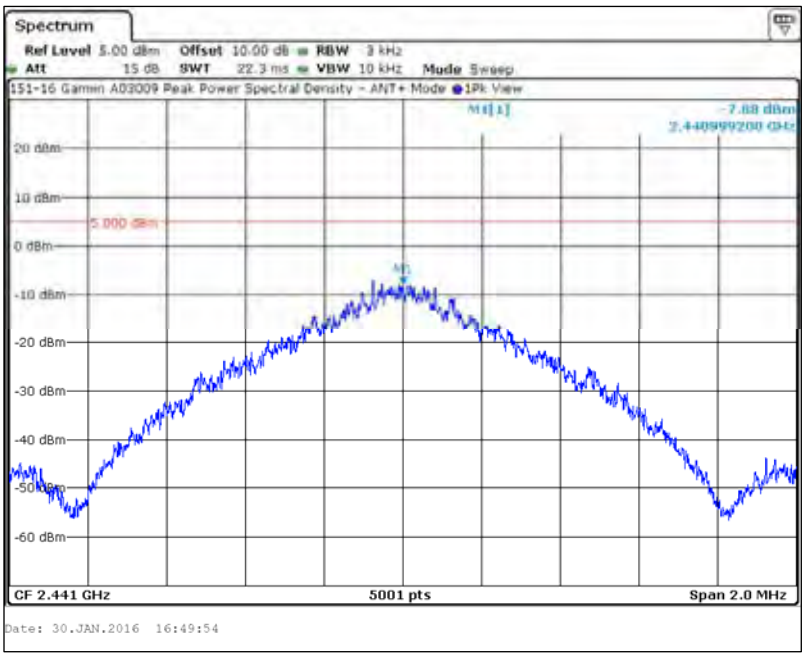
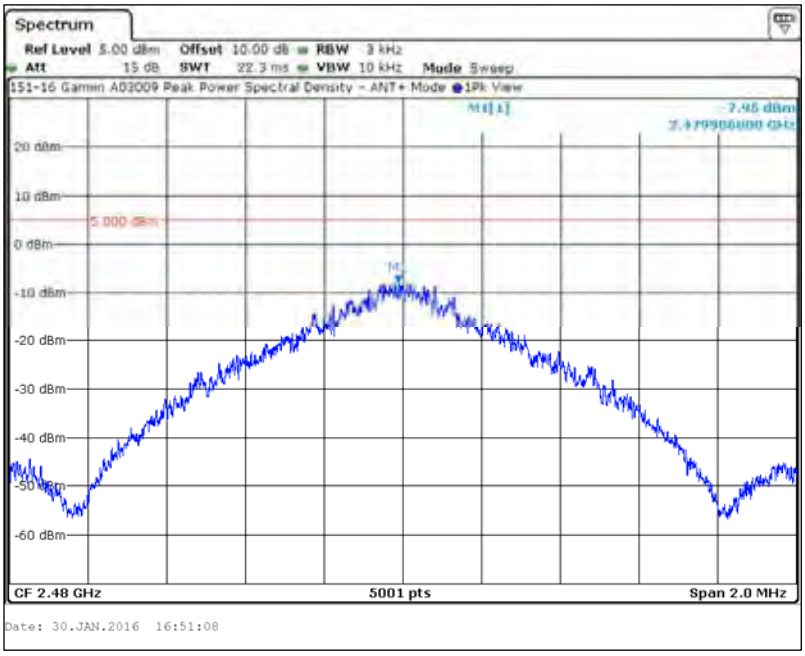
8. Measurement Data – ANT+ Mode (continued)

8.9. Peak Power Spectral Density (15.247(e), RSS-247 5.2 (2)) (continued)

8.9.2. Peak Power Spectral Density, Middle Channel



8.9.3. Peak Power Spectral Density, High Channel



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8. Measurement Data – ANT+ Mode (continued)

8.10. Public Exposure to Radio Frequency Energy Levels (15.247(i) (1.1307 (b)(1)) RSS-GEN, ISSUE 4 5.5, RSS 102)

8.10.1. 15.247(i) (1.1307 (b)(1) Requirements

Requirement: Portable devices are subject to radio frequency radiation exposure requirements.

For a 1-g SAR, the test exclusion result must be ≤ 3.0.

Test Notes: The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by the following formula:

$$\text{SAR Test Exclusion} = \frac{P_{MAX}}{d_{MIN}} \times \sqrt{f_{(GHz)}} \quad (1)$$

P_{MAX}	mW	Maximum power of channel, including tune-up tolerance
d_{MIN}	mm	Minimum test separation distance, mm (≤ 50 mm)
$f_{(GHz)}$	GHz	$f_{(GHz)}$ is the RF channel transmit frequency in GHz (>100 MHz and <6 GHz)

(1) FCC OET 447498 - Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

Conclusion: The device under test meets the exclusion requirement detailed in FCC OET 447498.

Input:	P_{MAX}[1]	(mW)	2.42	2.41	2.35
	d_{MIN}	(mm)	5.00	5.00	5.00
	$f_{(GHz)}$		2.402	2.441	2.480
Test Exclusion:			**0.75**	**0.75**	**0.74**
Limit Exemption:			**3.00**	**3.00**	**3.00**

[1] Taken from column 5 of the table in Section 7.4 of this test report.

8.10.2. RSS-102 Issue 5 Requirements

Requirement: SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1. Portable devices are subject to radio frequency radiation exposure requirements.

Test Notes: The limit was taken from Table 1 of RSS-102 Issue 5.

Frequency (MHz)	Separation Distance (mm)	Maximum Power (mW)	RSS-102 Limit (mW)	Result
2402.00	≤5	2.42	4.26	Compliant
2441.00	≤5	2.41	4.05	Compliant
2480.00	≤5	2.35	3.94	Compliant

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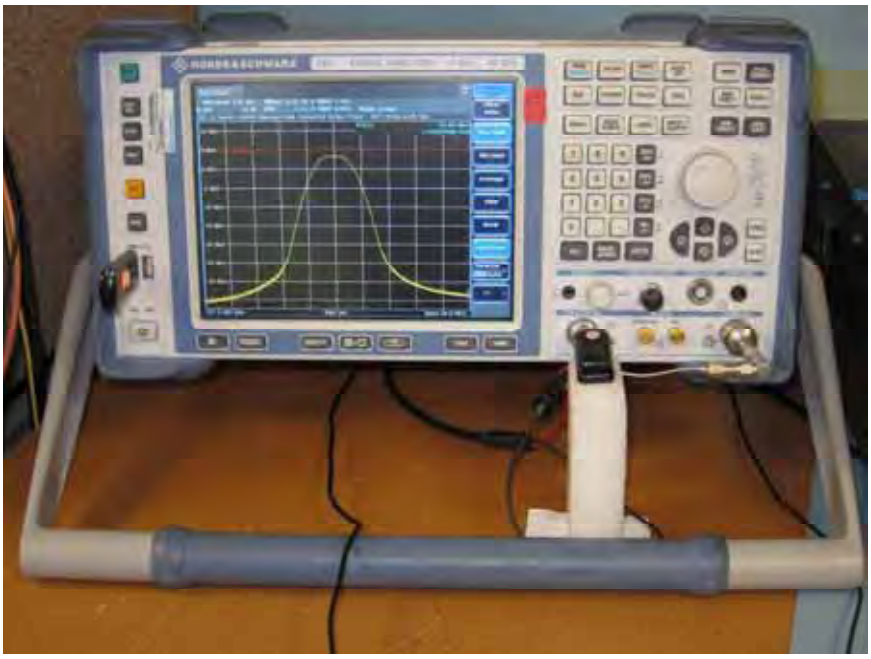
9. Test Setup Images

9.1. Conducted Mode Measurements 1

9.2. Conducted Mode Measurements 2



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9. Test Setup Images

9.3. Conducted Mode Measurements 3

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9. Test Setup Images

9.4. Radiated Emissions – Front View

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9. Test Setup Images

9.5. Radiated Emissions – Rear View Below 30 MHz

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9. Test Setup Images

9.6. Radiated Emissions – Rear View 30 MHz to 1 GHz

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9. Test Setup Images

9.7. Microwave Emissions – Front View

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9. Test Setup Images

9.8. Microwave Emissions – Rear View 1 GHz to 18 GHz

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9. Test Setup Images

9.9. Microwave Emissions – Rear View above 18 GHz

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10. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with Federal Communications Commission (FCC), Industry Canada, and Voluntary Control Council Interference (VCCI) standards. A description of the test sites is on file with the FCC (registration number US1091), Industry Canada (file number IC 3023A-1), and VCCI (Member number 3168), Registration numbers C-3673, G-167, R-3305 & T-1809.

Compliance Worldwide is also designated as a Phase 1 CAB under APEC-MRA (US0132) for Australia/New Zealand AS/NZS CISPR 22, Chinese-Taipei (Taiwan) BSMI CNS 13438 and Korea (RRA) KN 22.

The radiated emissions test site is a 3 and 10 meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane required by EN 55022.

Both sites are designed to test products or systems 1.5 meters W x 1.5 meters L x 2.0 meters H, floor standing or table top.

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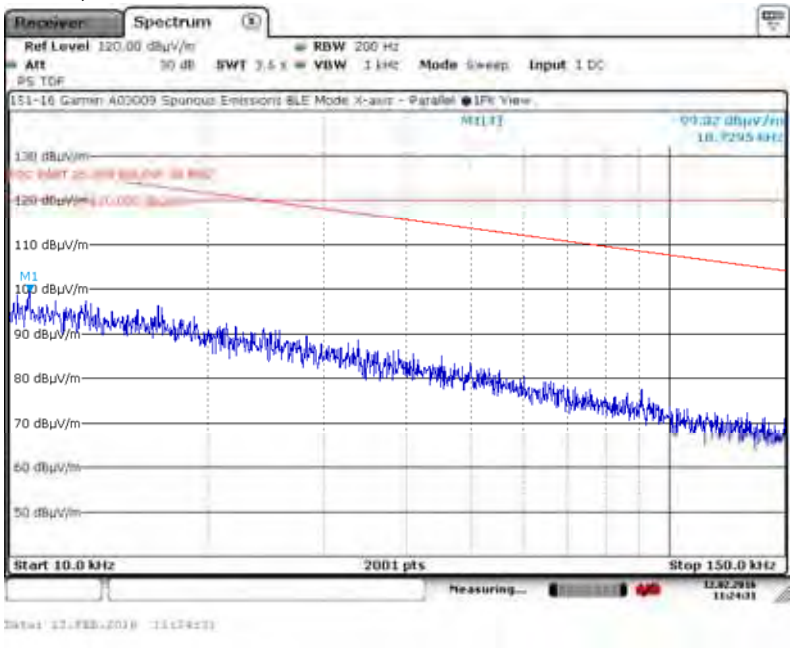
Appendix A – Bluetooth LE Mode (continued)

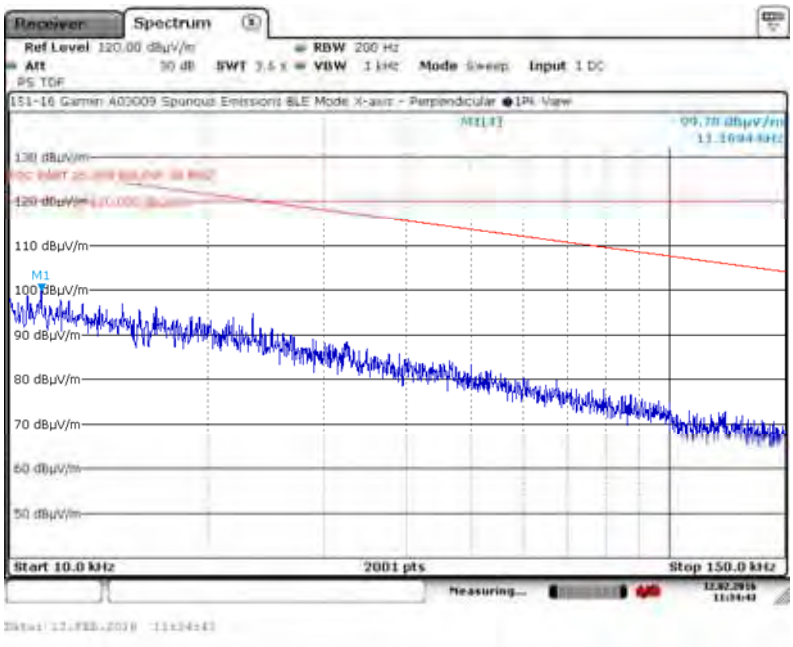
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A1. Measurement Results – 10 kHz to 150 kHz

A1.1. X-Axis, Parallel Antenna



A1.2. X-Axis, Perpendicular Antenna



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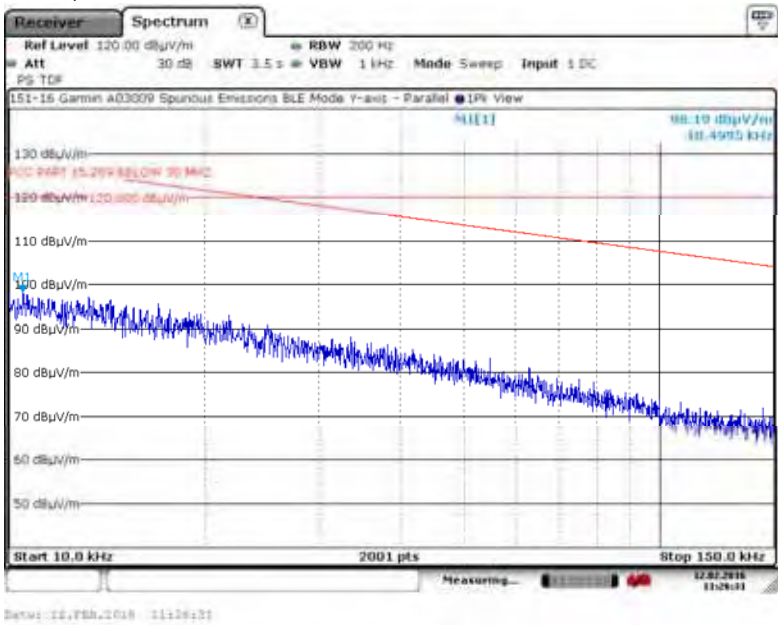
Appendix A – Bluetooth LE Mode (continued)

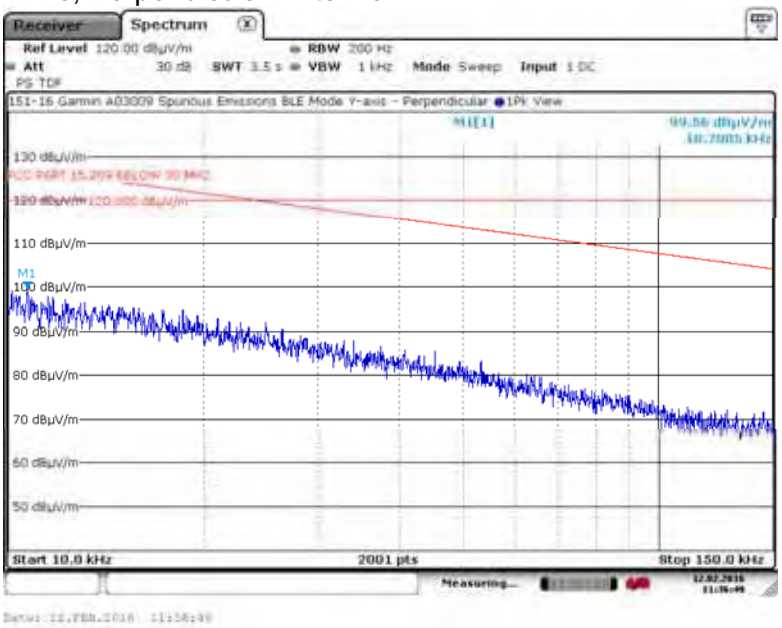
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A1. Measurement Results – 10 kHz to 150 kHz (continued)

A1.3. Y-Axis, Parallel Antenna



A1.4. Y-Axis, Perpendicular Antenna



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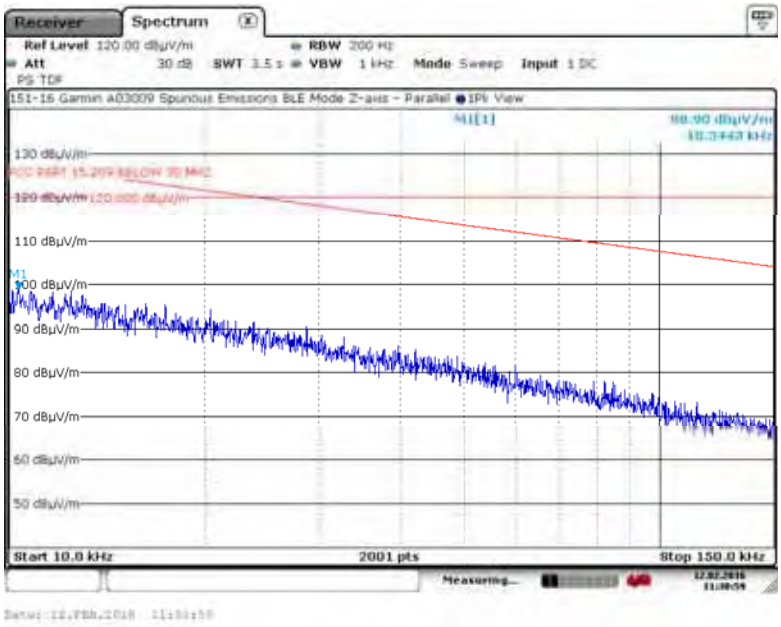
Appendix A – Bluetooth LE Mode (continued)

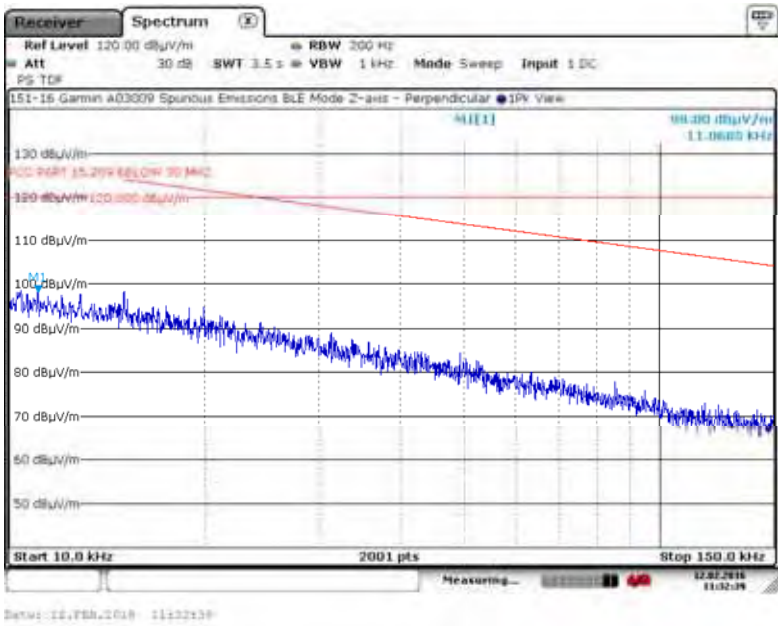
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A1. Measurement Results – 10 kHz to 150 kHz (continued)

A1.5. Z-Axis, Parallel Antenna



A1.6. Z-Axis, Perpendicular Antenna



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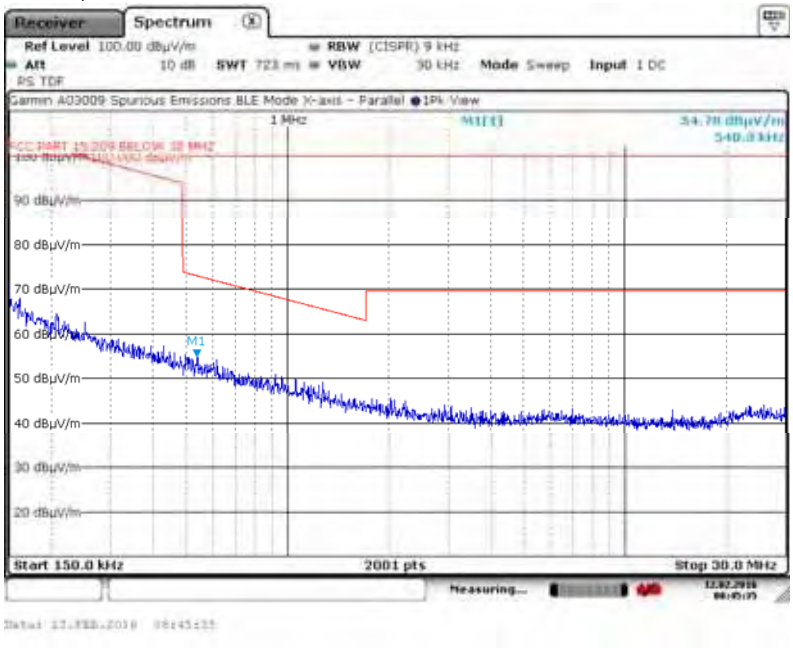
Appendix A – Bluetooth LE Mode (continued)

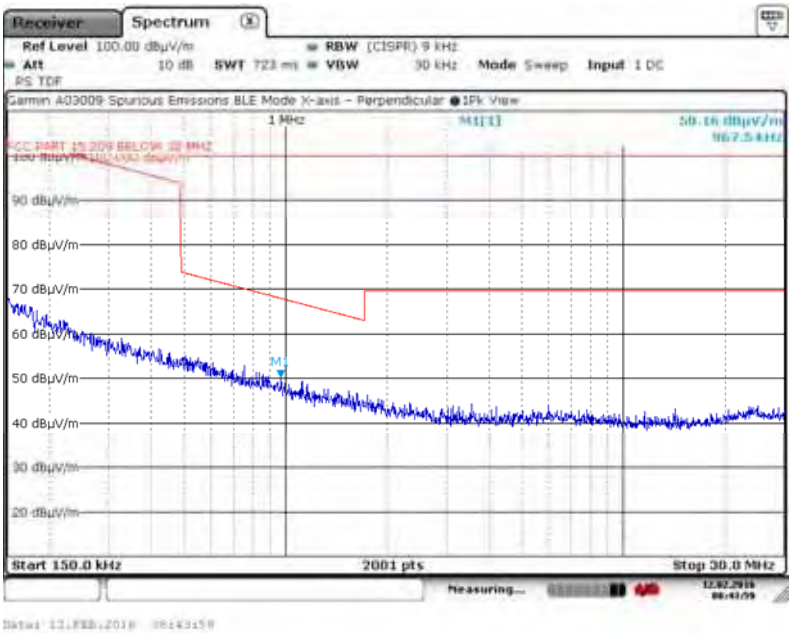
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A2. Measurement Results – 150 kHz to 30 MHz

A2.1. X-Axis, Parallel Antenna



A2.2. X-Axis, Perpendicular Antenna



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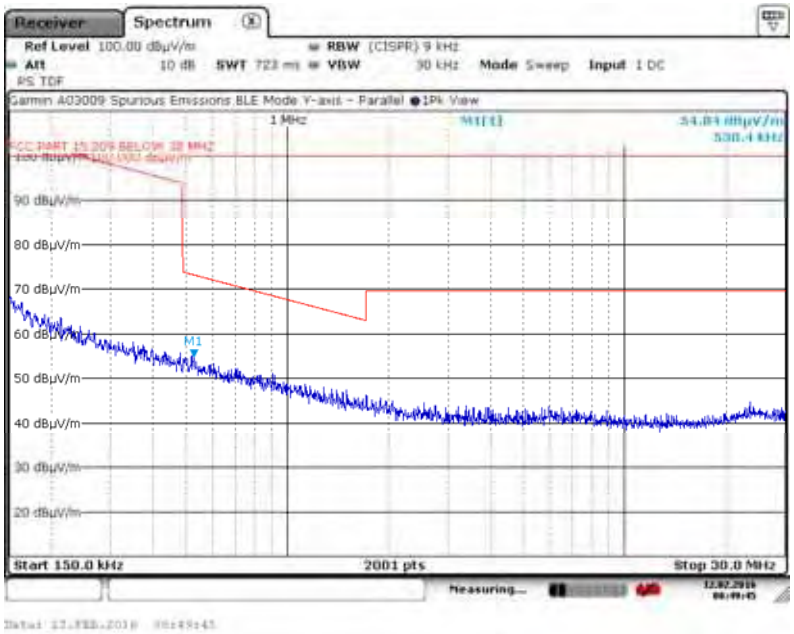
Appendix A – Bluetooth LE Mode (continued)

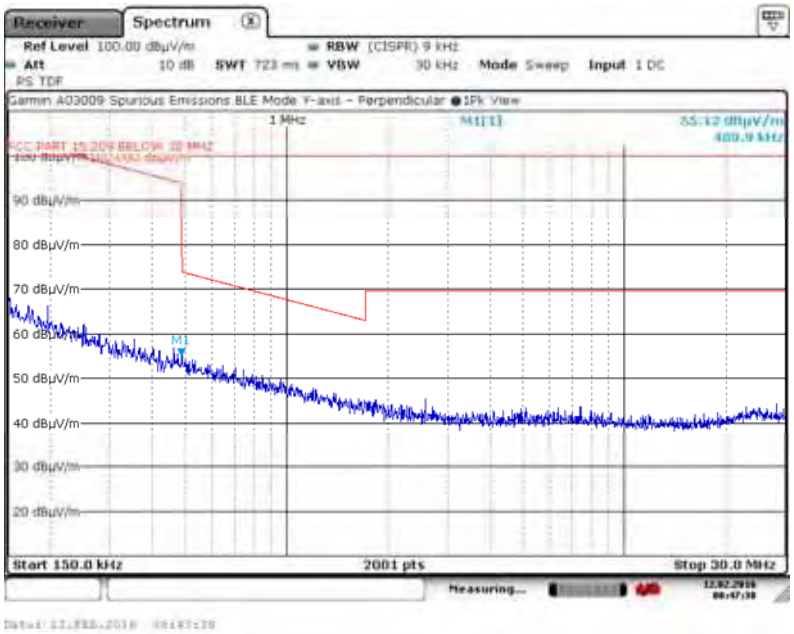
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A2. Measurement Results – 150 kHz to 30 MHz (continued)

A2.3. Y-Axis, Parallel Antenna



A2.4 Y-Axis, Perpendicular Antenna



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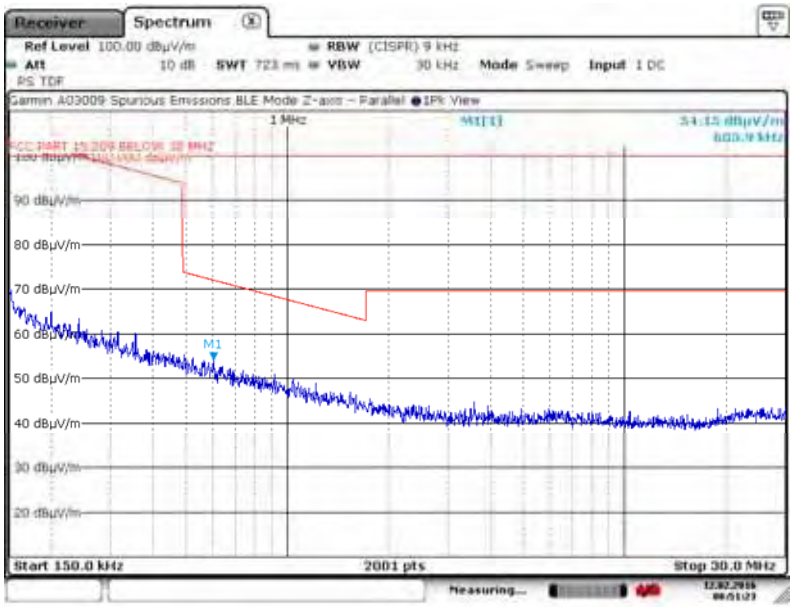
Appendix A – Bluetooth LE Mode (continued)

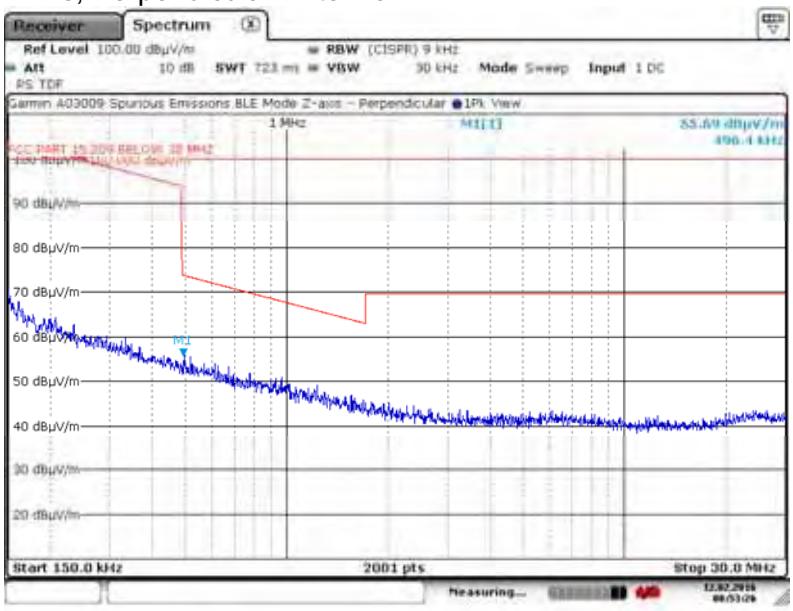
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A2. Measurement Results – 150 kHz to 30 MHz (continued)

A2.5. Z-Axis, Parallel Antenna



A2.6. Z-Axis, Perpendicular Antenna



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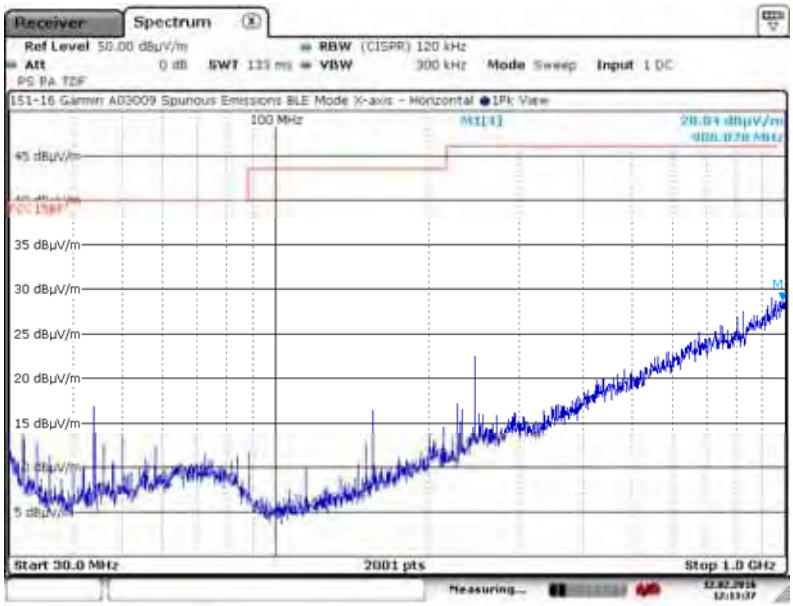
Appendix A – Bluetooth LE Mode (continued)

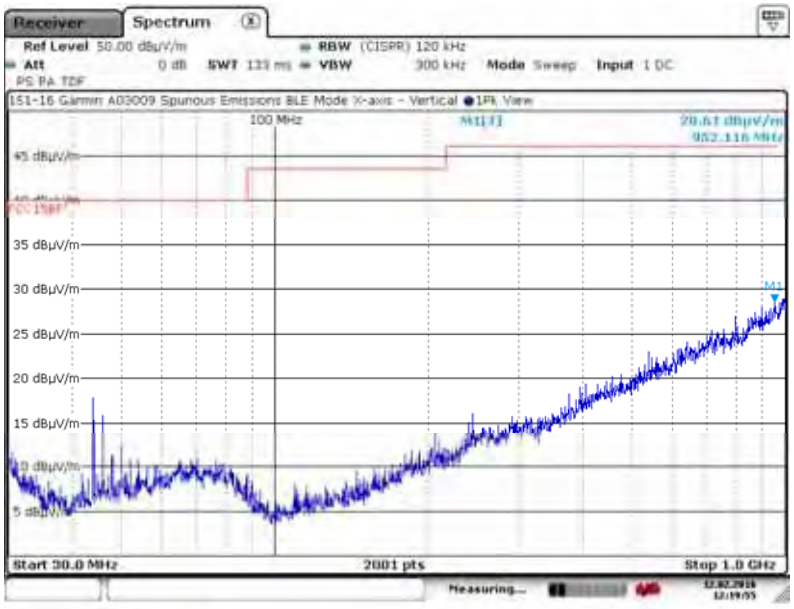
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A3. Measurement Results – 30 MHz to 1 GHz

A3.1. X-Axis, Horizontal Antenna



A3.2. X-Axis, Vertical Antenna



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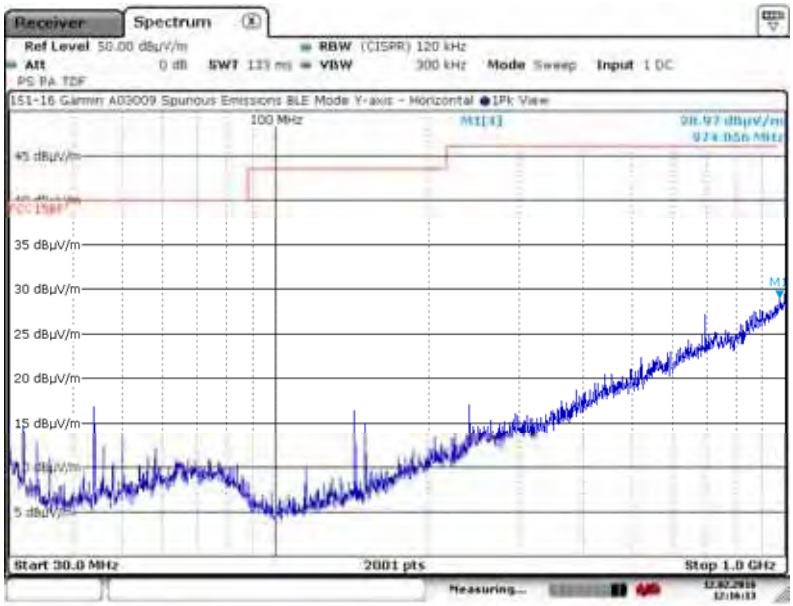
Appendix A – Bluetooth LE Mode (continued)

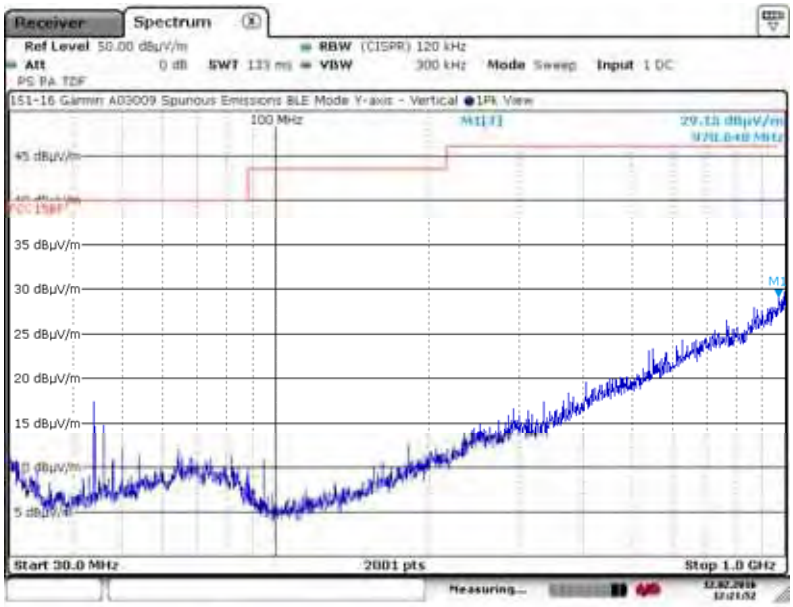
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A3. Measurement Results – 30 MHz to 1 GHz (continued)

A3.3. Y-Axis, Horizontal Antenna



A3.4. Y-Axis, Vertical Antenna



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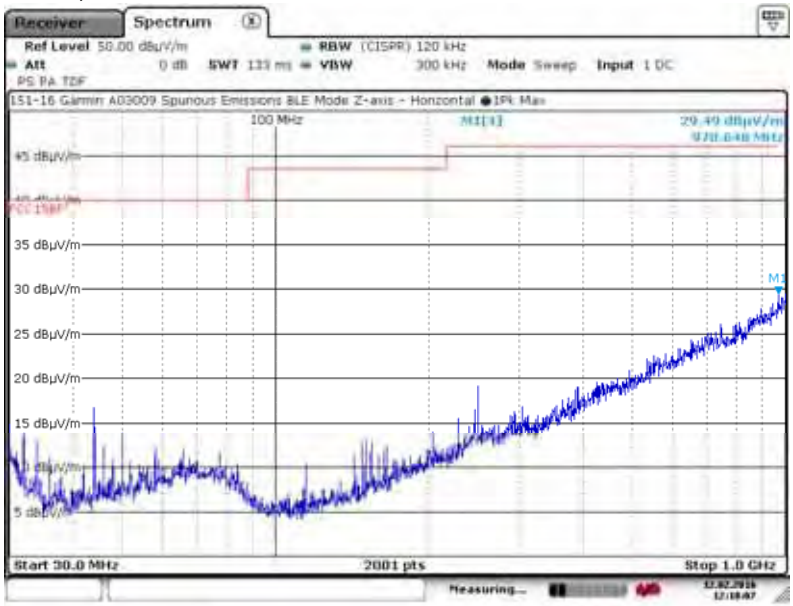
Appendix A – Bluetooth LE Mode (continued)

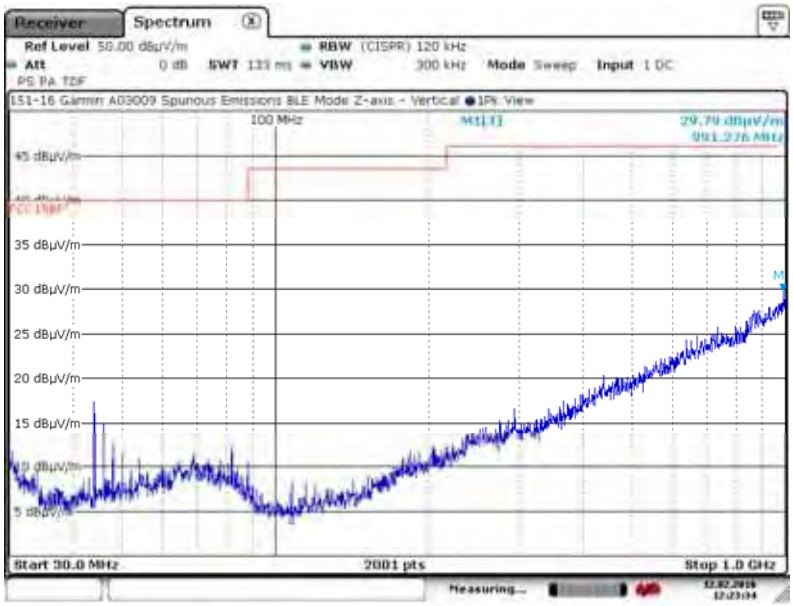
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A3. Measurement Results – 30 MHz to 1 GHz (continued)

A3.5. Z-Axis, Horizontal Antenna



A3.6. Z-Axis, Vertical Antenna



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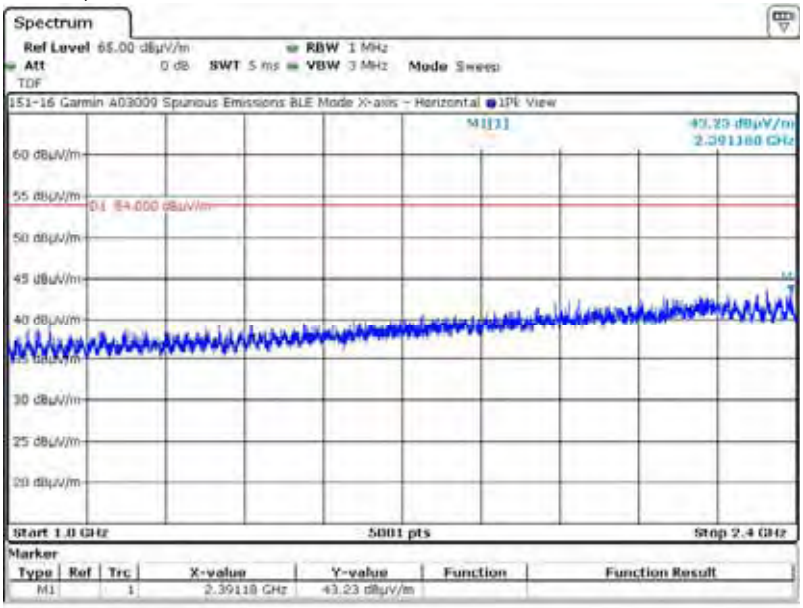
Appendix A – Bluetooth LE Mode (continued)

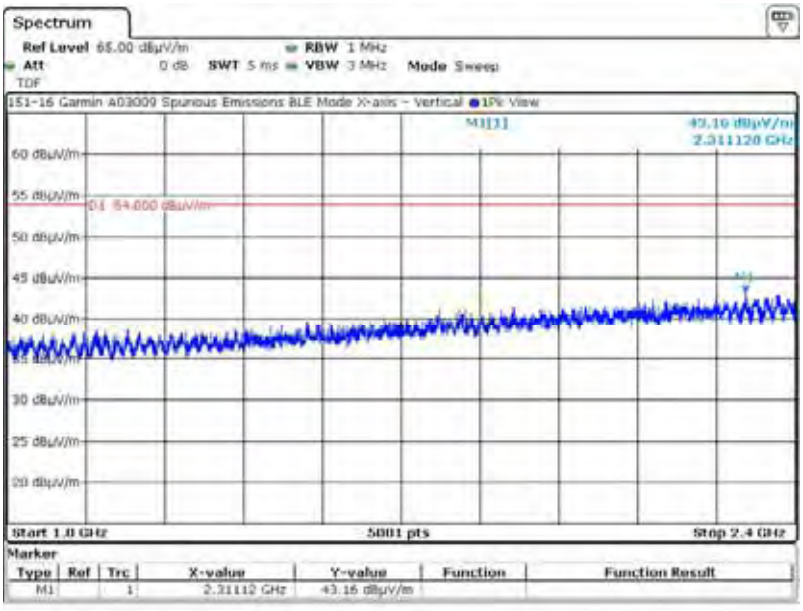
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A4. Measurement Results – 1 GHz to 2.4 GHz

A4.1. X-Axis, Horizontal Antenna



A4.2. X-Axis, Vertical Antenna



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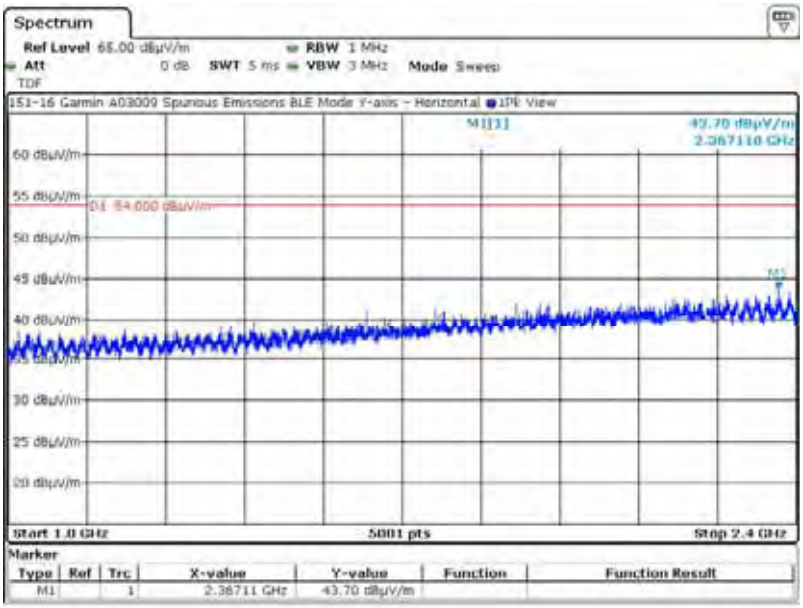
Appendix A – Bluetooth LE Mode (continued)

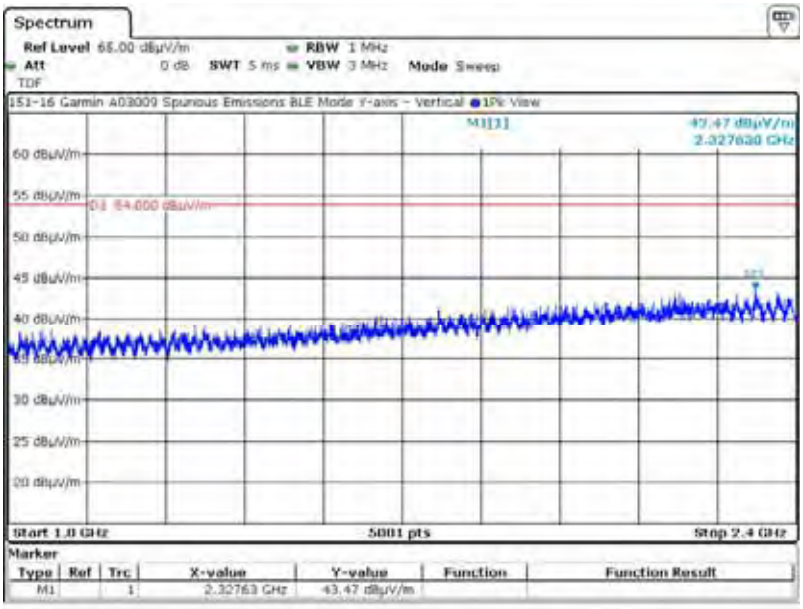
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A4. Measurement Results – 1 GHz to 2.4 GHz (continued)

A4.3. Y-Axis, Horizontal Antenna



A4.4. Y-Axis, Vertical Antenna



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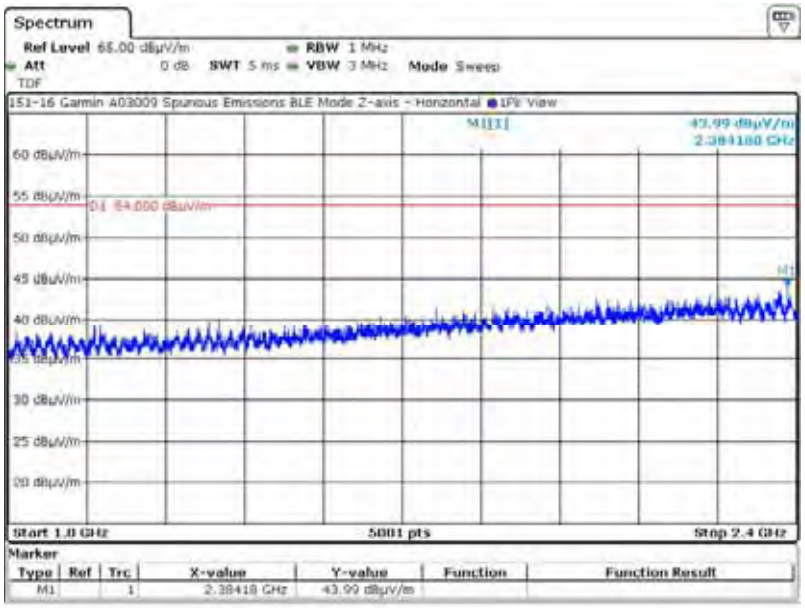
Appendix A – Bluetooth LE Mode (continued)

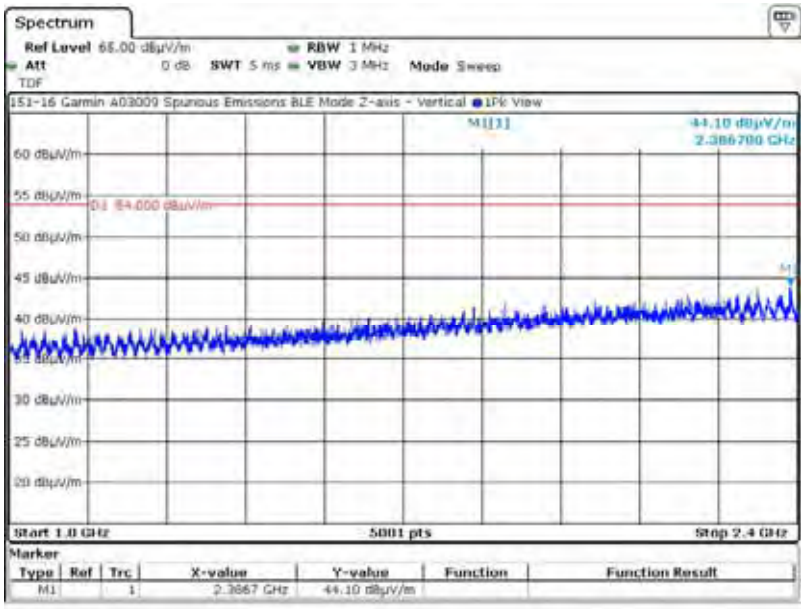
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A4. Measurement Results – 1 GHz to 2.4 GHz (continued)

A4.5. Z-Axis, Horizontal Antenna



A4.6. Z-Axis, Vertical Antenna



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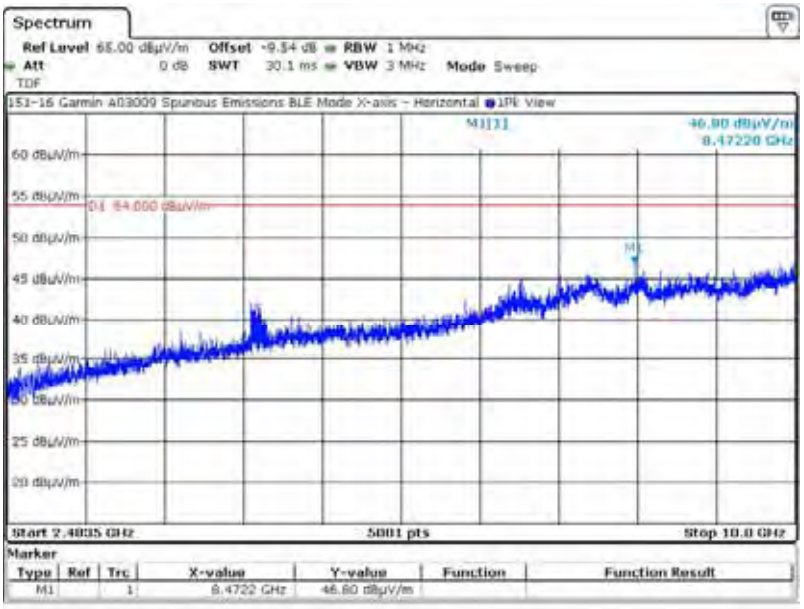
Appendix A – Bluetooth LE Mode (continued)

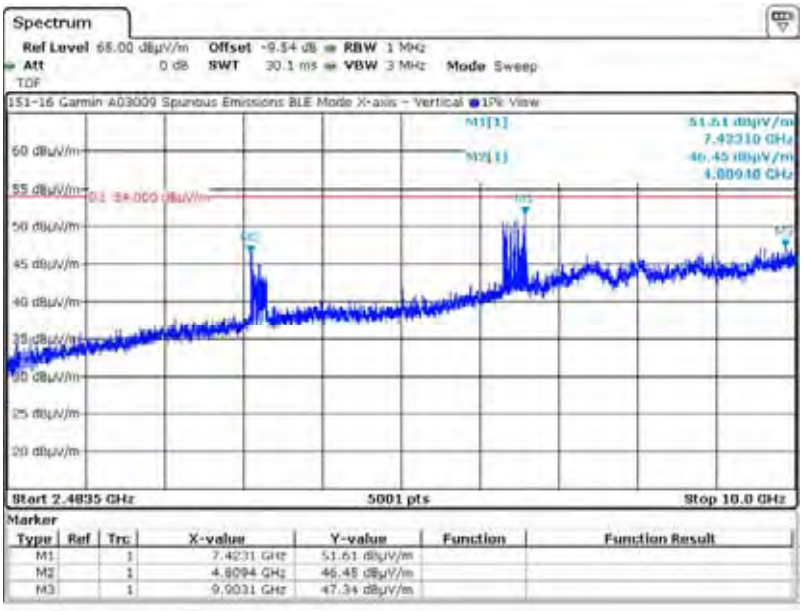
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A5. Measurement Results – 2.4835 GHz to 10 GHz

A5.1. X-Axis, Horizontal Antenna



A5.2. X-Axis, Vertical Antenna



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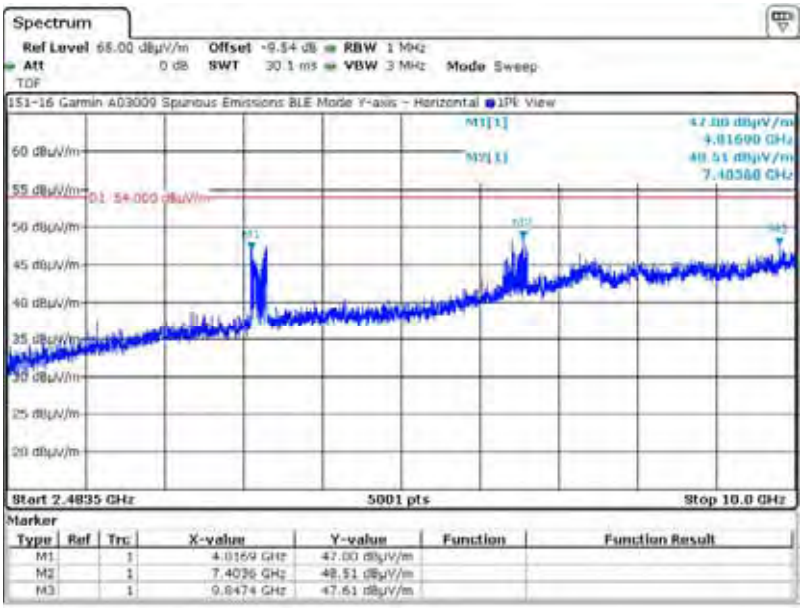
Appendix A – Bluetooth LE Mode (continued)

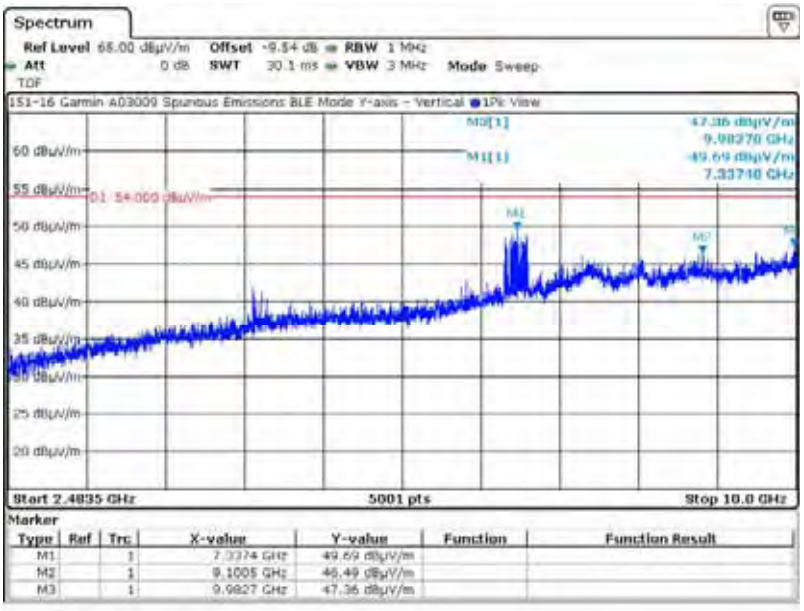
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A5. Measurement Results – 2.4835 GHz to 10 GHz (continued)

A5.3. Y-Axis, Horizontal Antenna



A5.4. Y-Axis, Vertical Antenna



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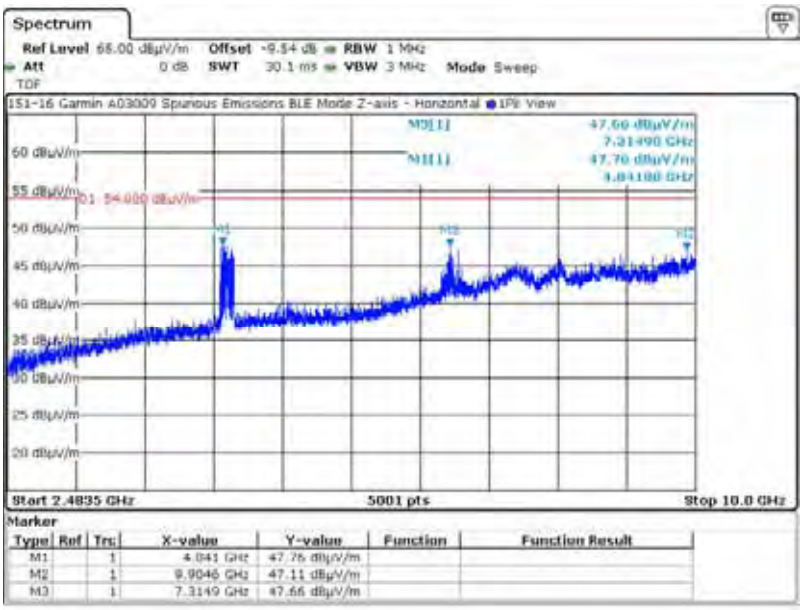
Appendix A – Bluetooth LE Mode (continued)

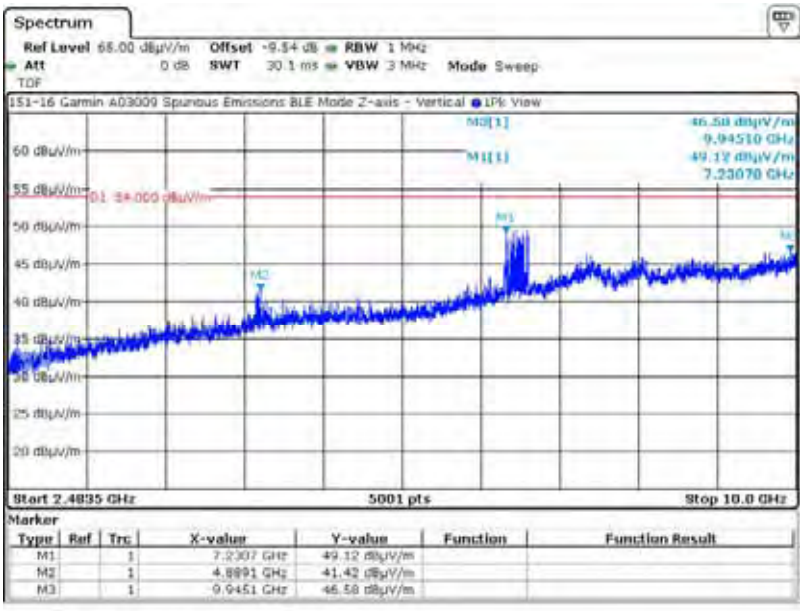
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A5. Measurement Results – 2.483.5 GHz to 10 GHz (continued)

A5.5. Z-Axis, Horizontal Antenna



A5.6. Z-Axis, Vertical Antenna



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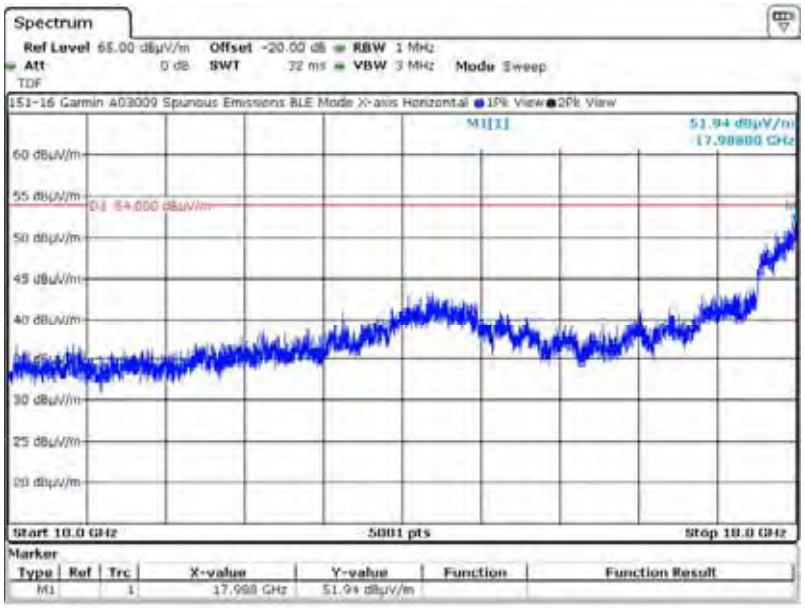
Appendix A – Bluetooth LE Mode (continued)

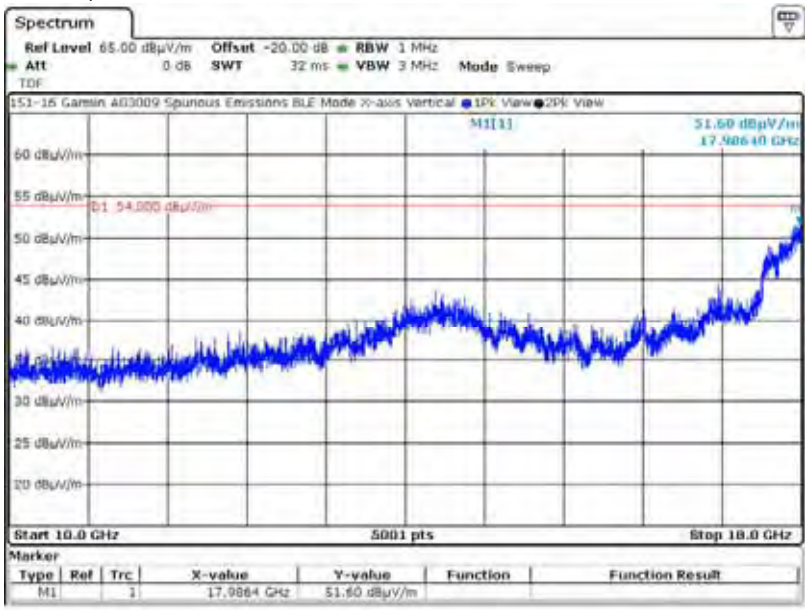
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A6. Measurement Results – 10 GHz to 18 GHz (continued)

A6.1. X-Axis, Horizontal Antenna



A6.2. X-Axis, Vertical Antenna



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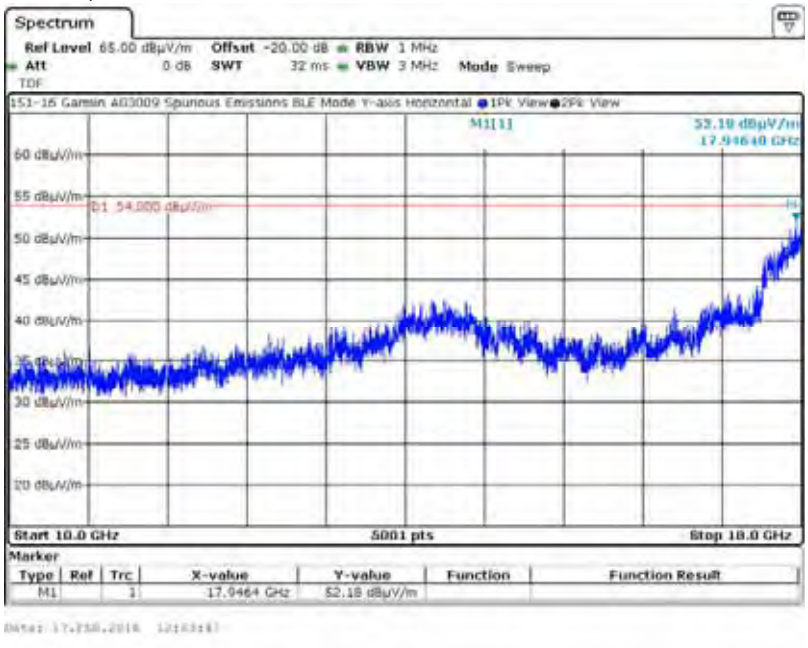
Appendix A – Bluetooth LE Mode (continued)

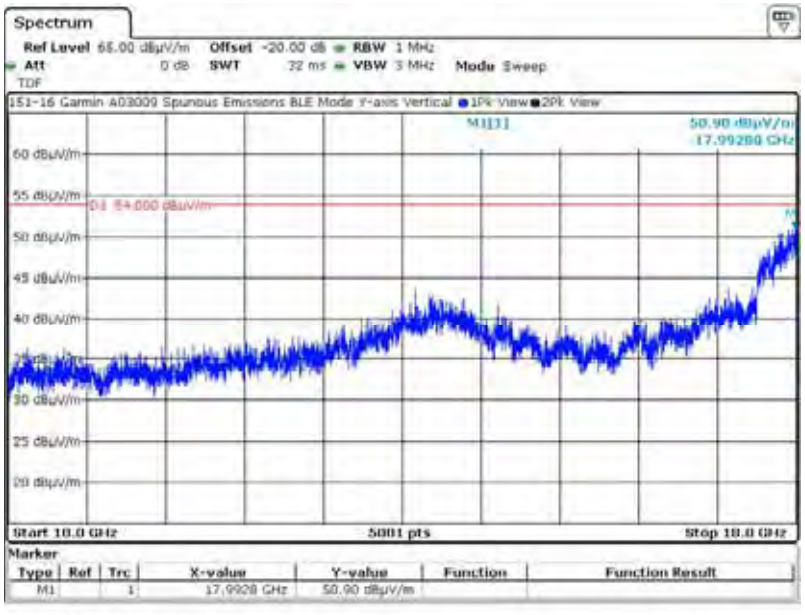
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A6. Measurement Results – 10 GHz to 18 GHz (continued)

A6.3. Y-Axis, Horizontal Antenna



A6.4. Y-Axis, Vertical Antenna



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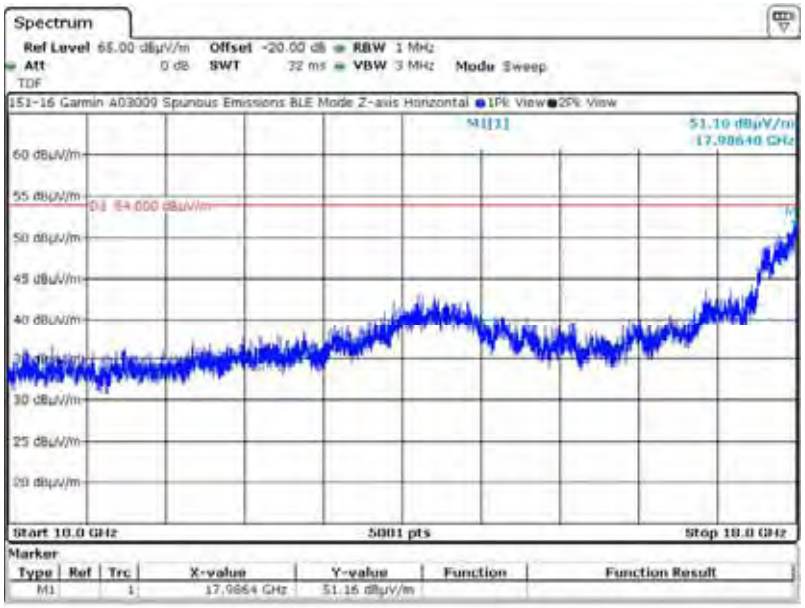
Appendix A – Bluetooth LE Mode (continued)

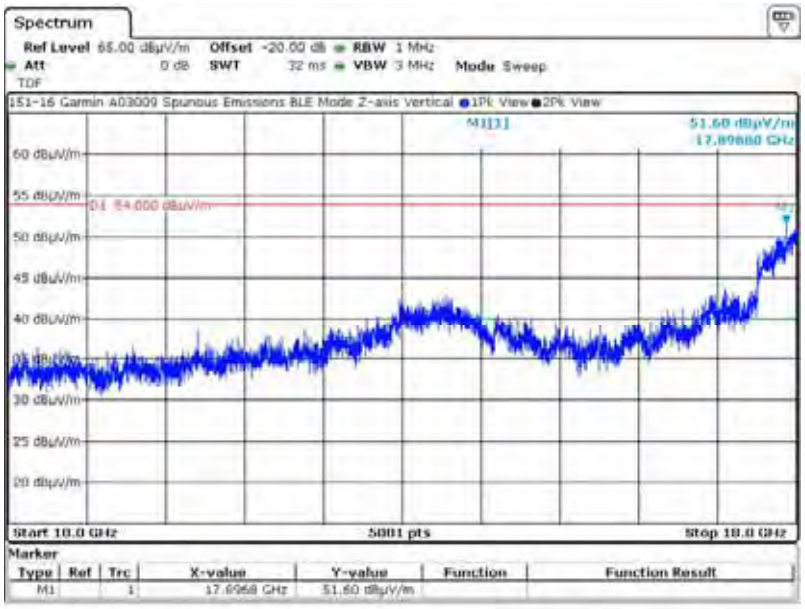
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A6. Measurement Results – 10 GHz to 18 GHz (continued)

A6.5. Z-Axis, Horizontal Antenna



A6.6. Z-Axis, Vertical Antenna



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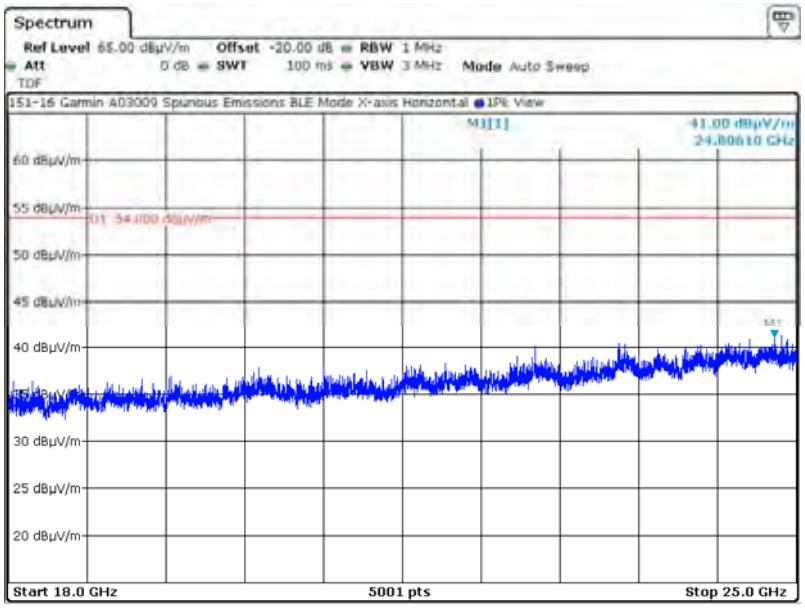
Appendix A – Bluetooth LE Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

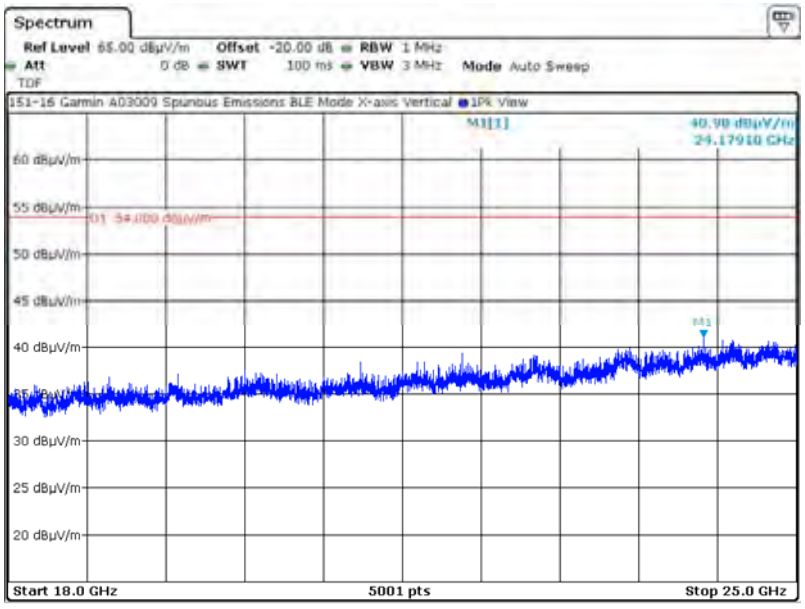
A7. Measurement Results – 18 GHz to 25 GHz

A7.1. X-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:02:22

A7.2. X-Axis, Vertical Antenna



Date: 17.FEB.2016 14:08:10

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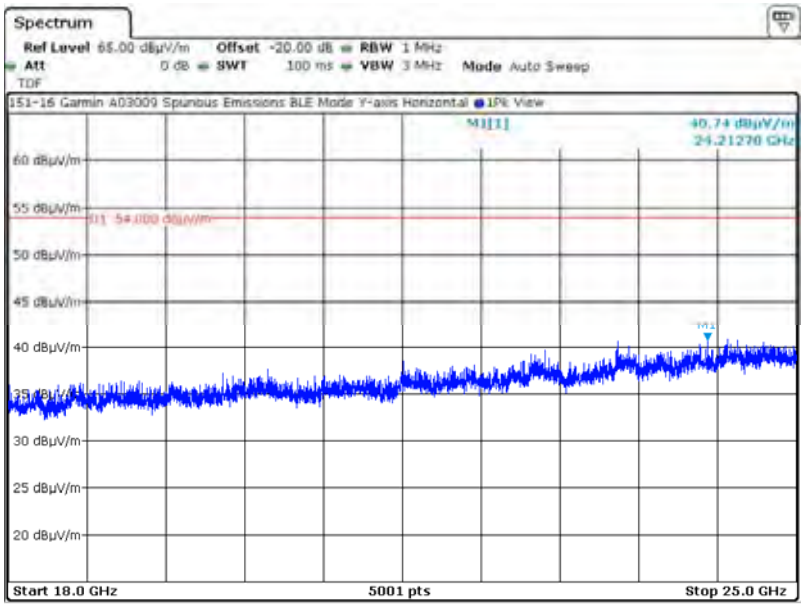
Appendix A – Bluetooth LE Mode (continued)

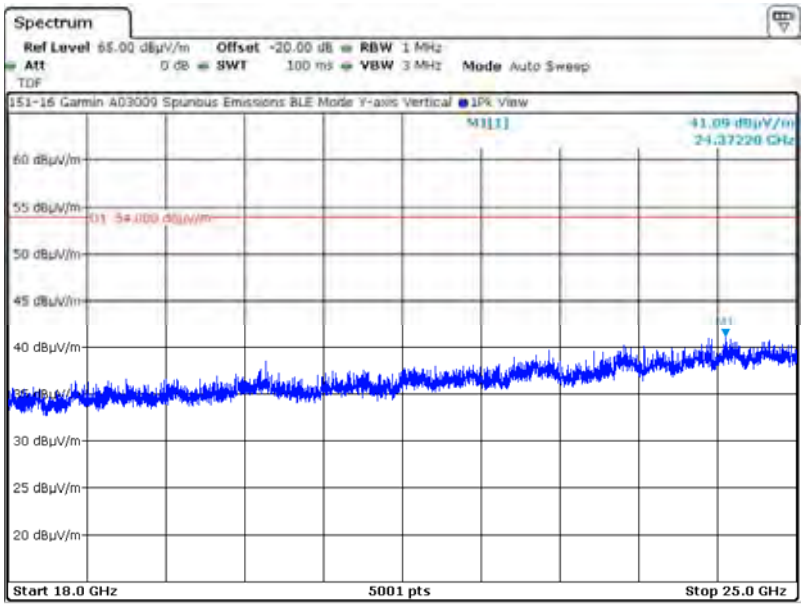
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

A7. Measurement Results – 18 GHz to 25 GHz (continued)

A7.3. Y-Axis, Horizontal Antenna



A7.4. Y-Axis, Vertical Antenna



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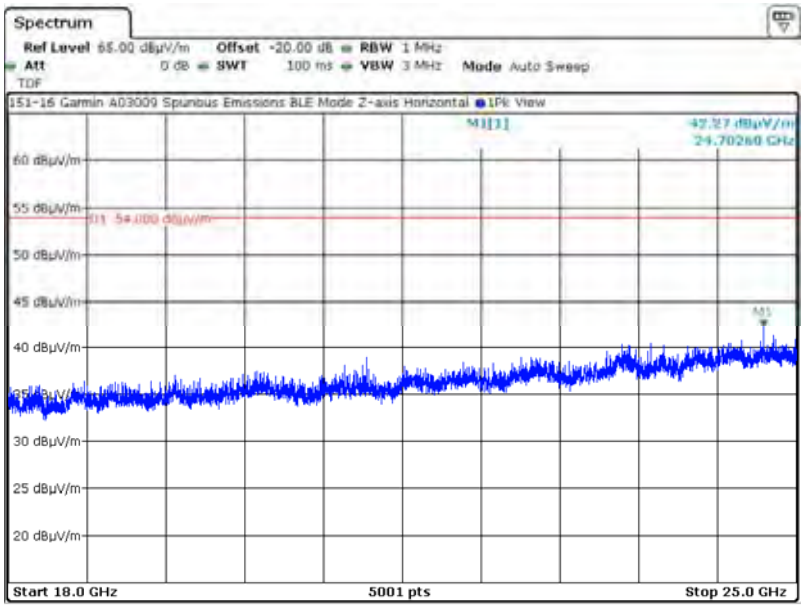
Appendix A – Bluetooth LE Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

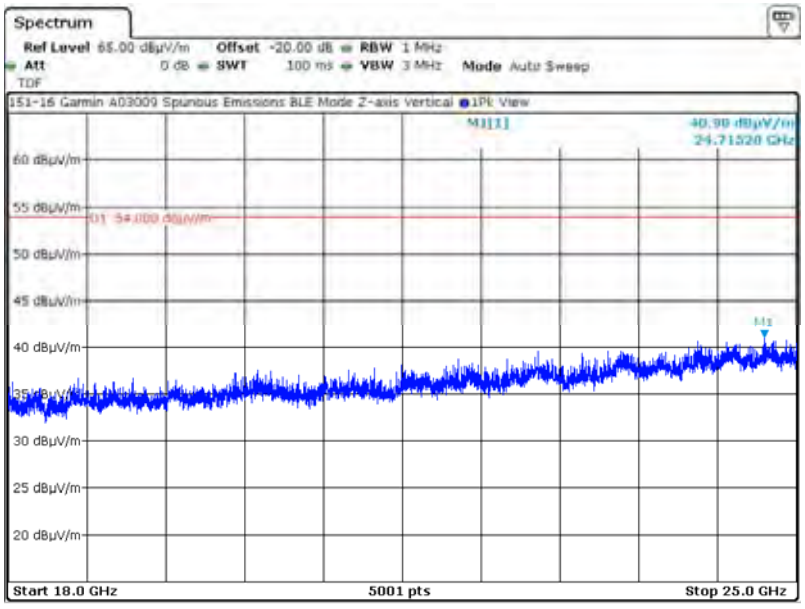
A7. Measurement Results – 18 GHz to 25 GHz (continued)

A7.5. Z-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:05:42

A7.6. Z-Axis, Vertical Antenna



Date: 17.FEB.2016 14:12:09

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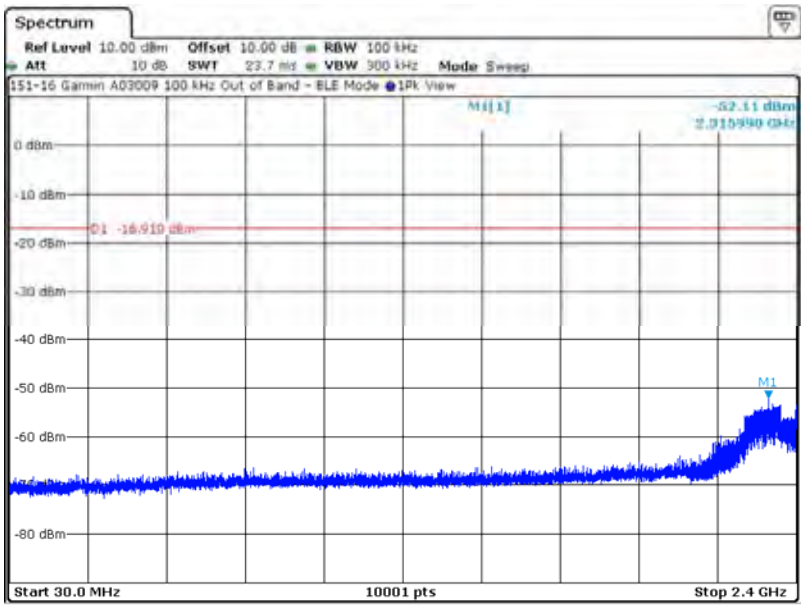
Appendix B – Bluetooth LE Mode (continued)

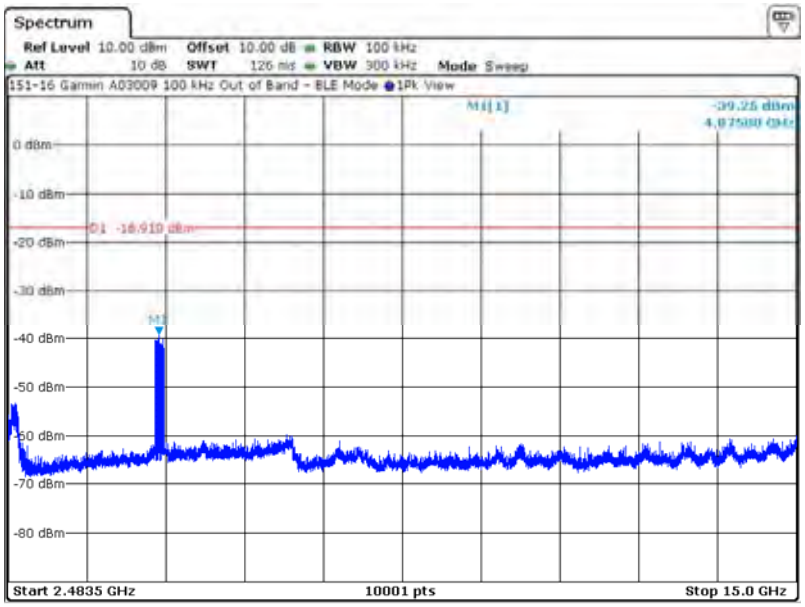
Emissions in Non-Restricted Frequency Bands (15.247(d)) (continued)

B1. Measurement Results – 30 MHz to 2.4 GHz



Date: 19.FEB.2016 11:54:59

B2. Measurement Results – 2.4 GHz to 15 GHz



Date: 19.FEB.2016 11:53:23

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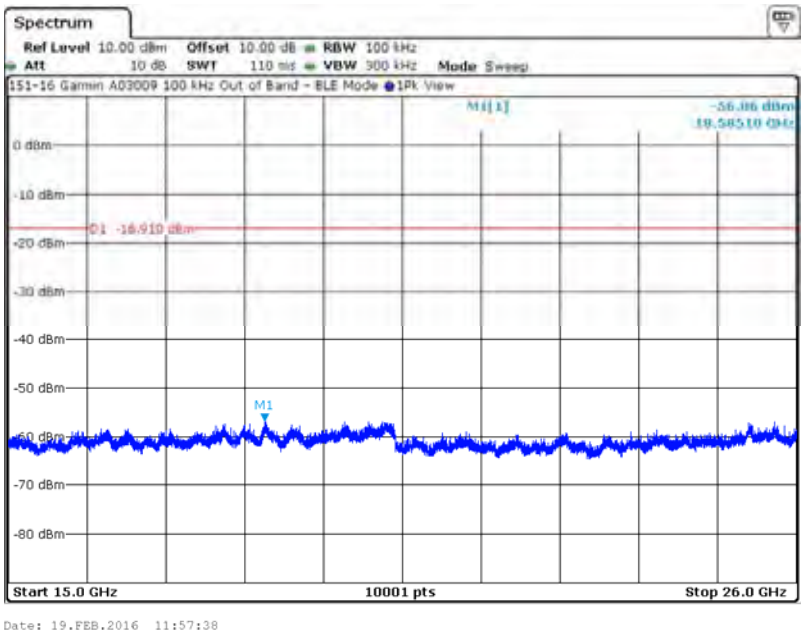
Appendix B – Bluetooth LE Mode (continued)

Emissions in Non-Restricted Frequency Bands (15.247(d)) (continued)

B3. Measurement Results – 15 GHz to 26 GHz



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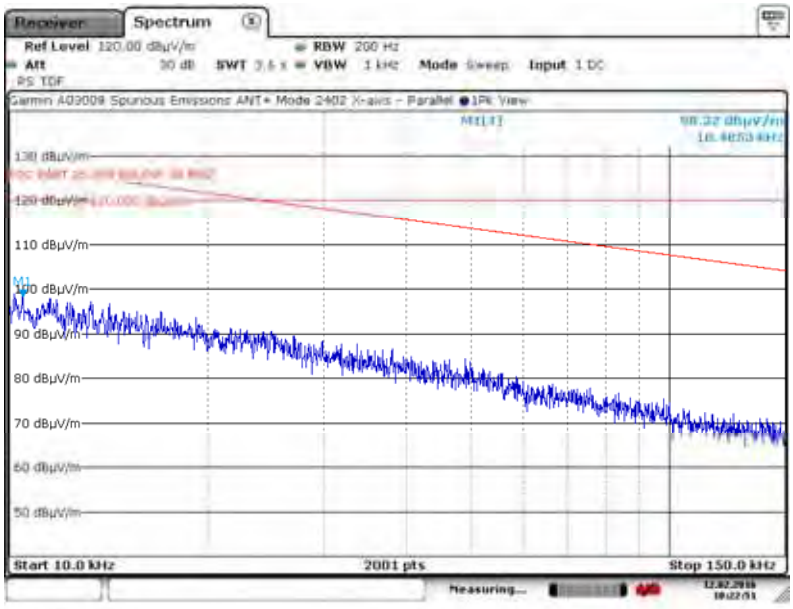
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

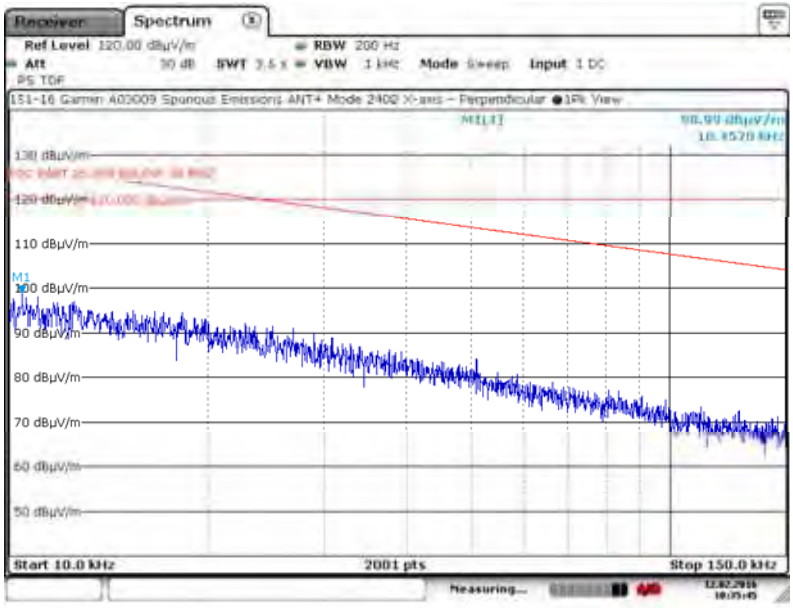
C1. Device Under Test Frequency – 2402 MHz

C1.1. Measurement Results – 10 kHz to 150 kHz

C1.1.1. X-Axis, Parallel Antenna



C1.1.2. X-Axis, Perpendicular Antenna



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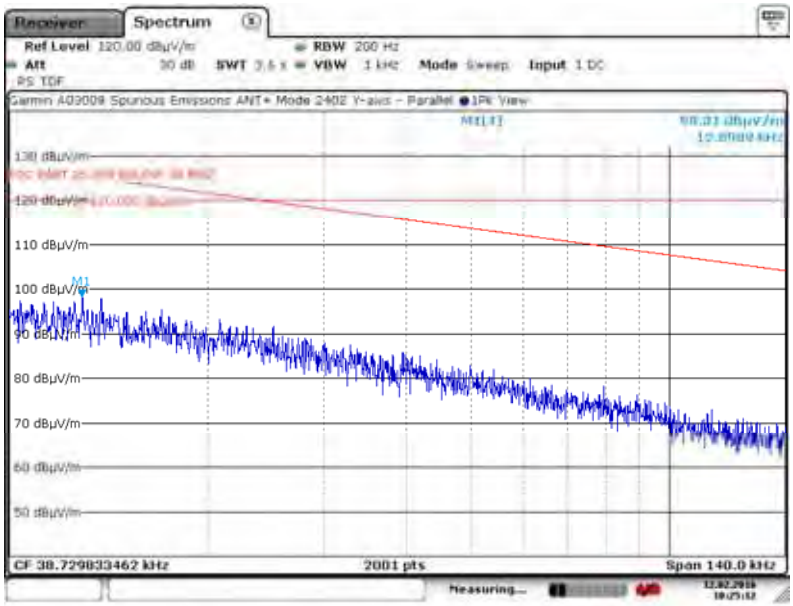
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

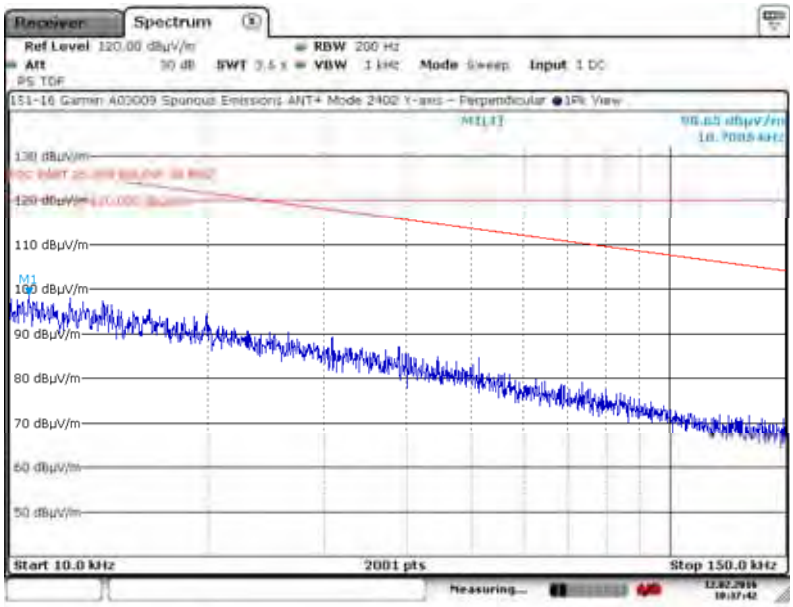
C1. Device Under Test Frequency – 2402 MHz

C1.1. Measurement Results – 10 kHz to 150 kHz

C1.1.3. Y-Axis, Parallel Antenna



C1.1.4. Y-Axis, Perpendicular Antenna



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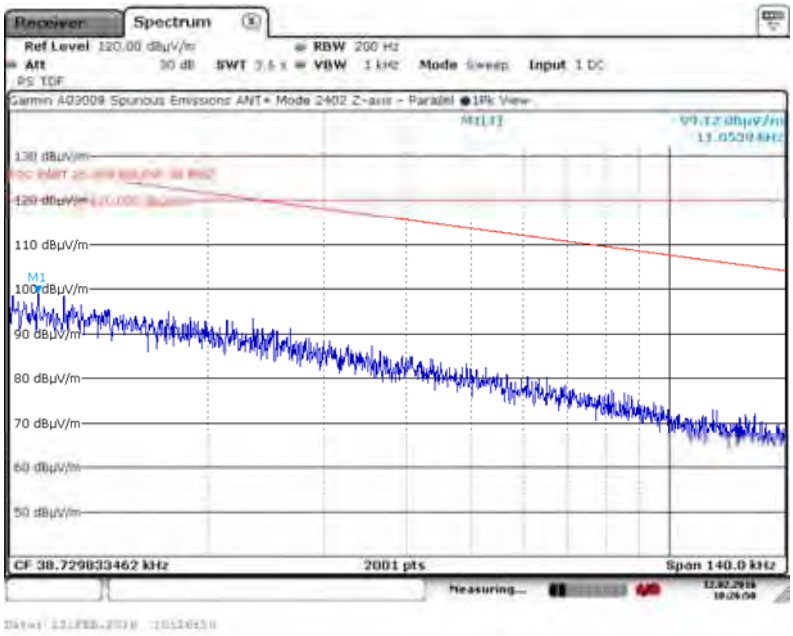
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

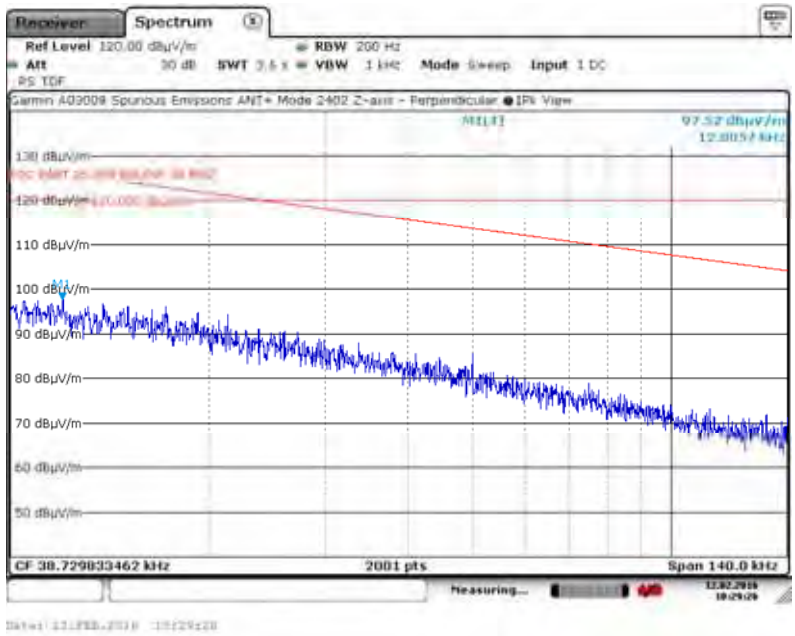
C1. Device Under Test Frequency – 2402 MHz

C1.1. Measurement Results – 10 kHz to 150 kHz

C1.1.5. Z-Axis, Parallel Antenna



C1.1.6. Z-Axis, Perpendicular Antenna



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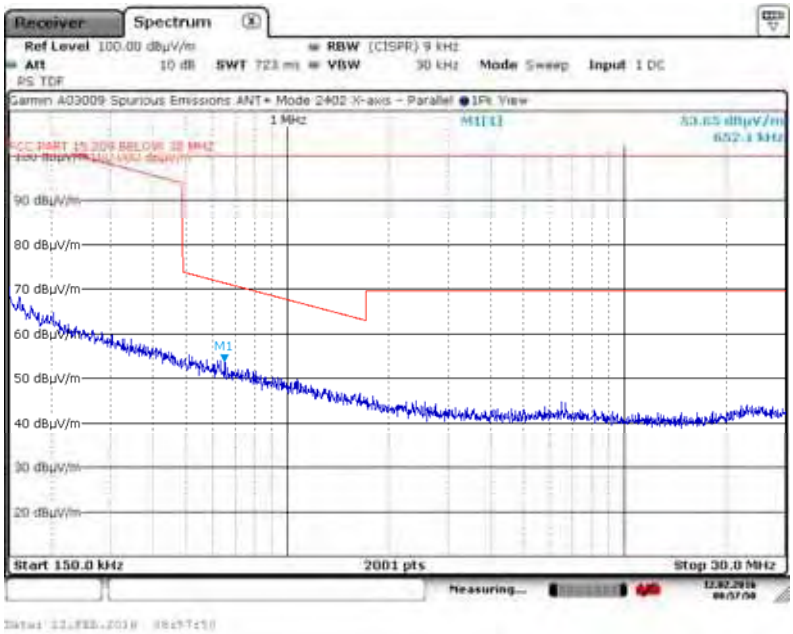
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

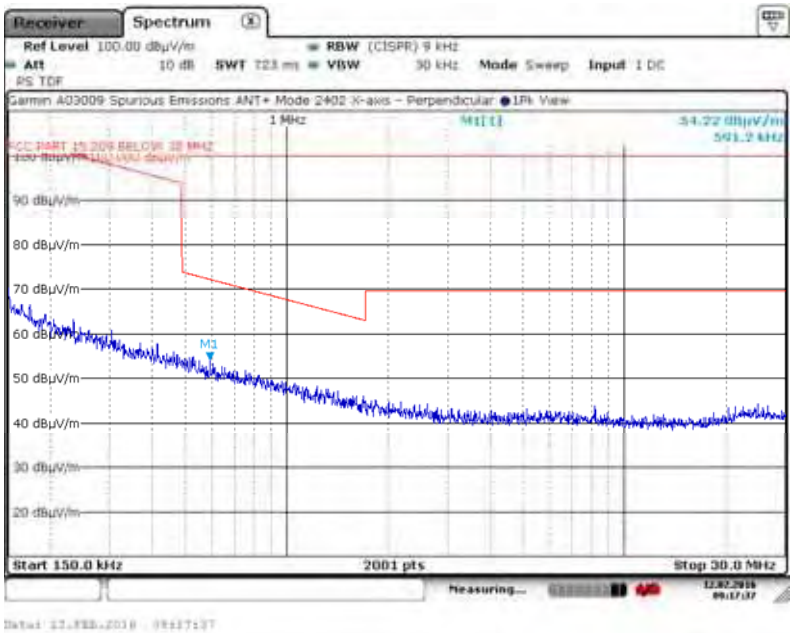
C1. Device Under Test Frequency – 2402 MHz

C1.2. Measurement Results – 150 kHz to 30 MHz

C1.2.1. X-Axis, Parallel Antenna



C1.2.2. X-Axis, Perpendicular Antenna



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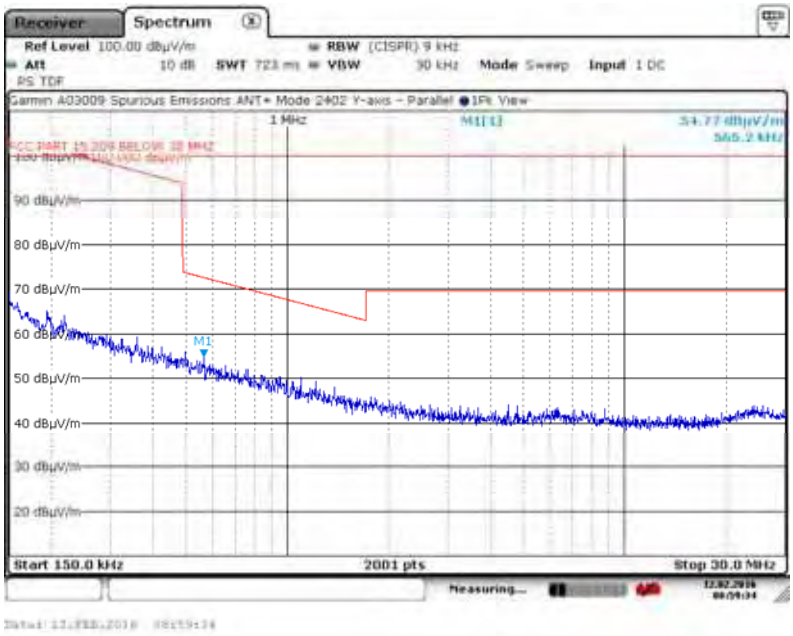
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

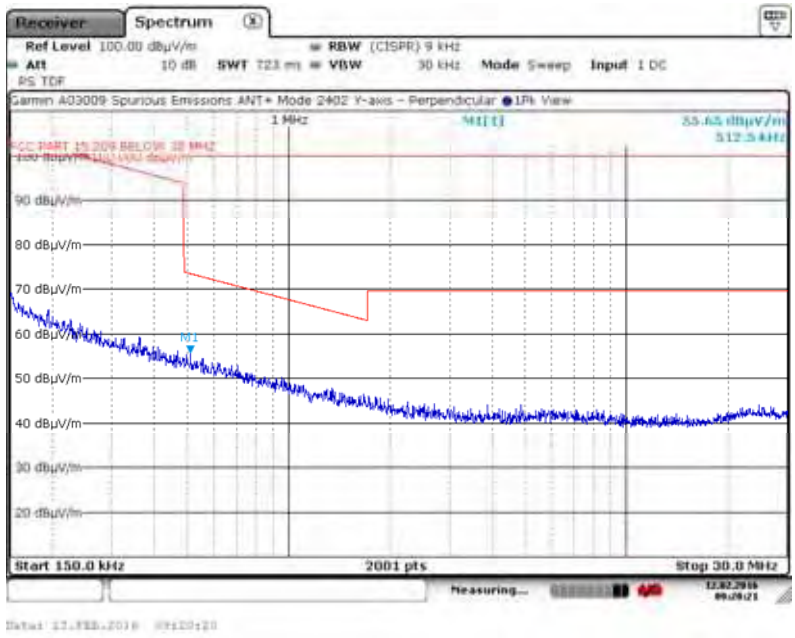
C1. Device Under Test Frequency – 2402 MHz

C1.2. Measurement Results – 150 kHz to 30 MHz

C1.2.3. Y-Axis, Parallel Antenna



C1.2.4. Y-Axis, Perpendicular Antenna



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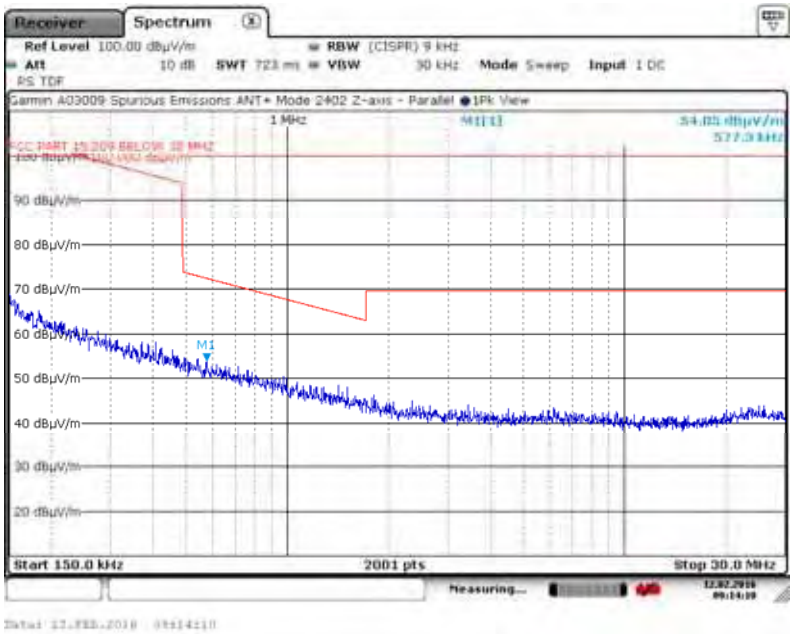
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

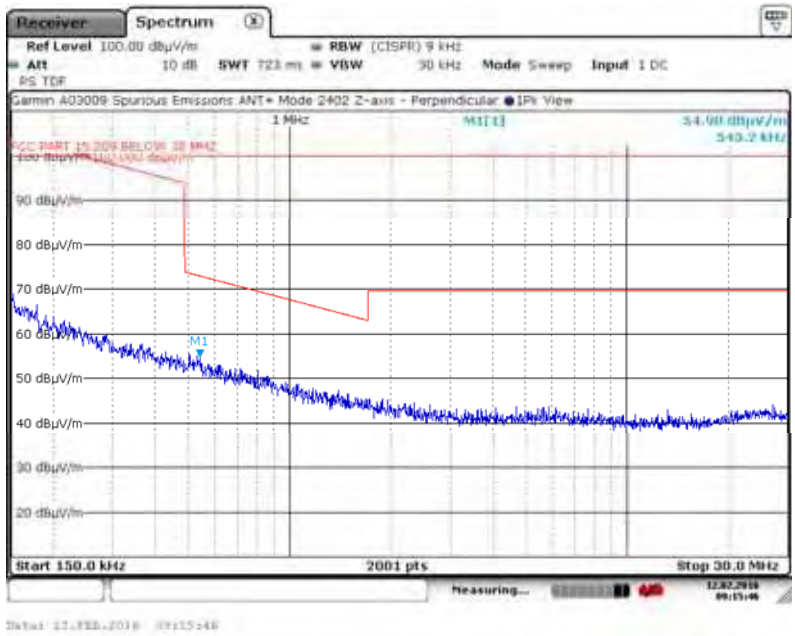
C1. Device Under Test Frequency – 2402 MHz

C1.2. Measurement Results – 150 kHz to 30 MHz

C1.2.5. Z-Axis, Parallel Antenna



C1.2.6. Z-Axis, Perpendicular Antenna



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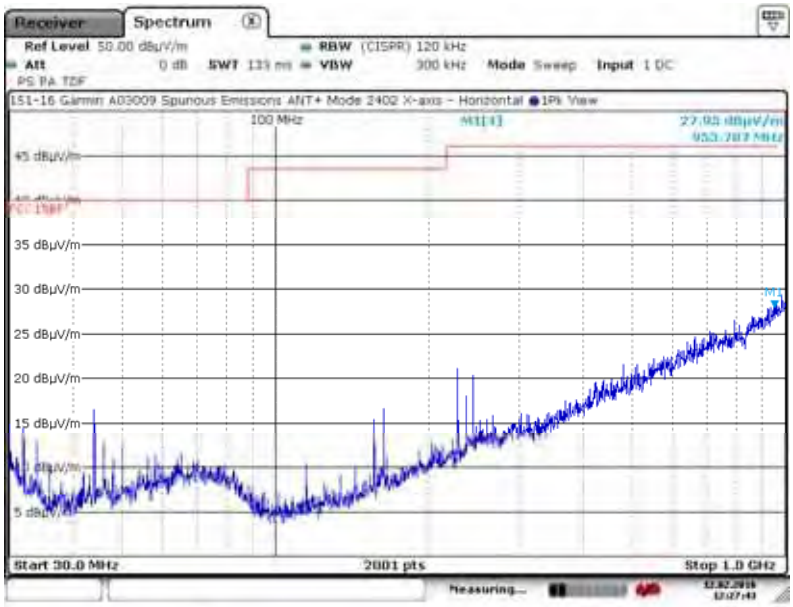
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

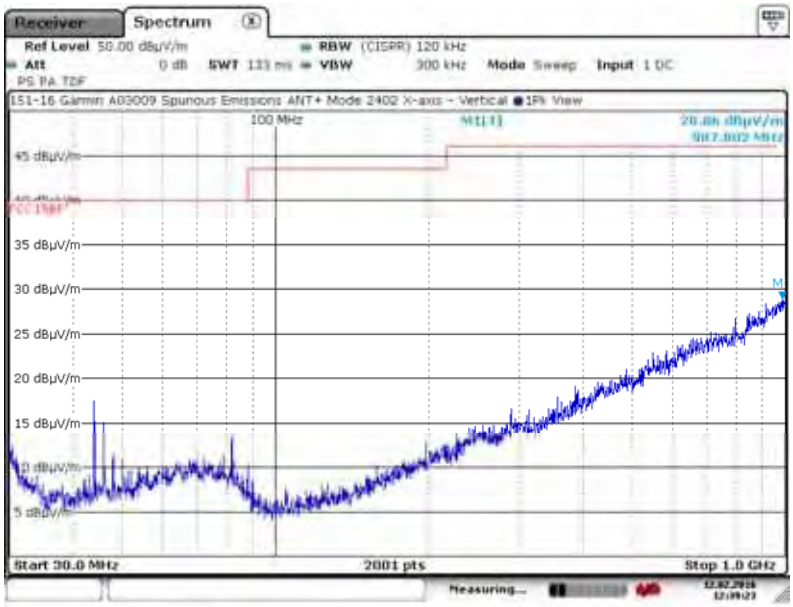
C1. Device Under Test Frequency – 2402 MHz

C1.3. Measurement Results – 30 MHz to 1 GHz

C1.3.1. X-Axis, Horizontal Antenna



C1.3.2. X-Axis, Vertical Antenna



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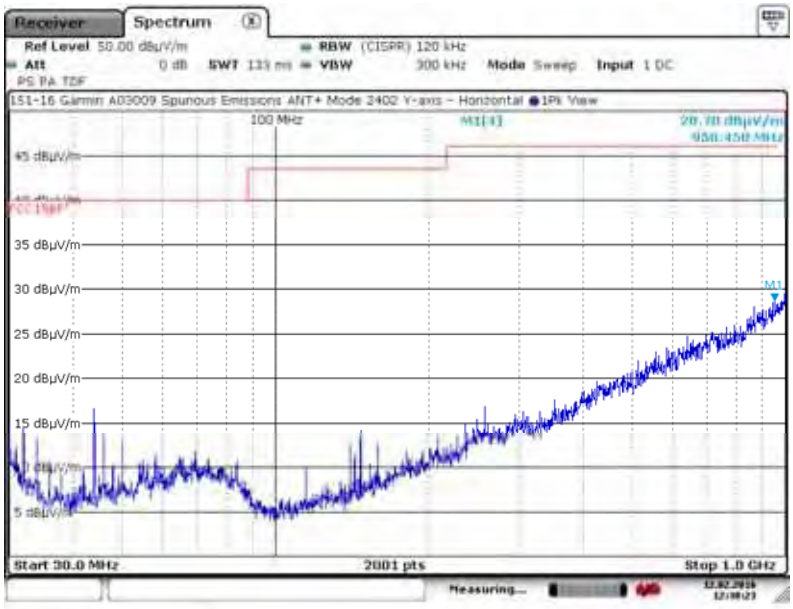
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

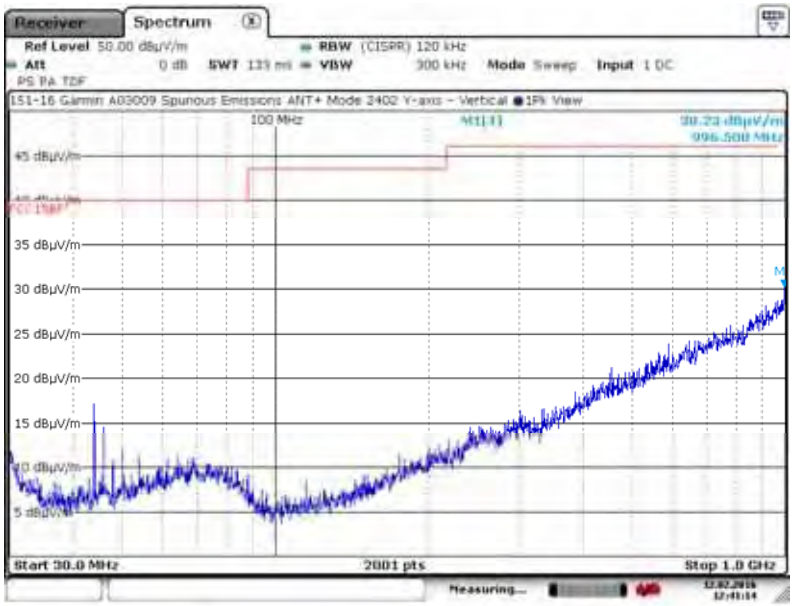
C1. Device Under Test Frequency – 2402 MHz

C1.3. Measurement Results – 30 MHz to 1 GHz

C1.3.3. Y-Axis, Horizontal Antenna



C1.3.4. Y-Axis, Vertical Antenna



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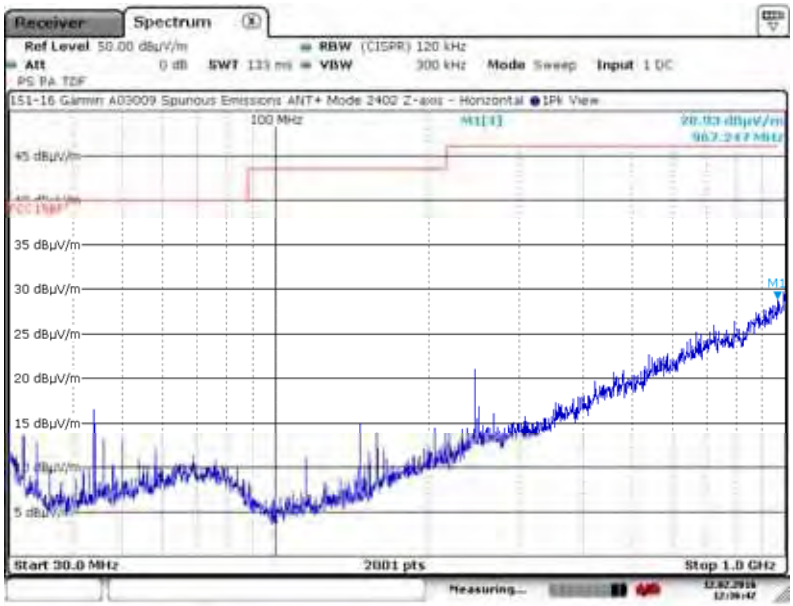
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

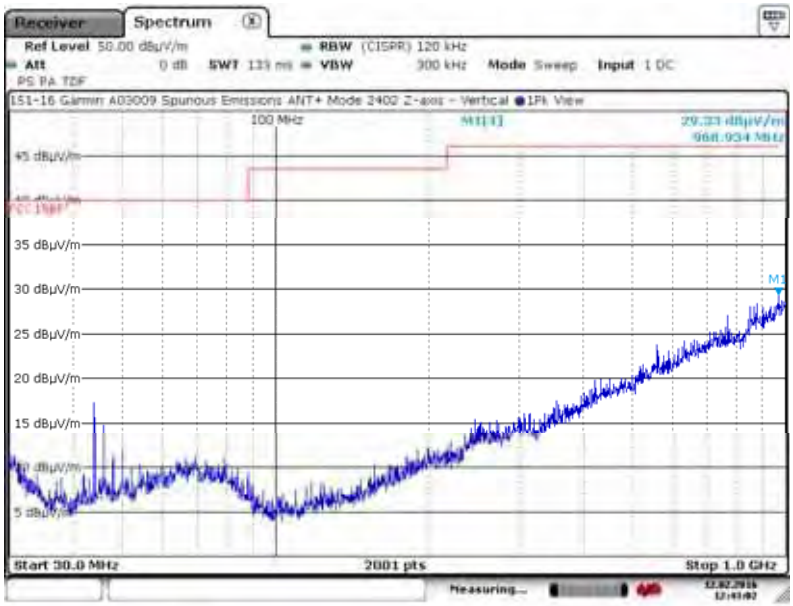
C1. Device Under Test Frequency – 2402 MHz

C1.3. Measurement Results – 30 MHz to 1 GHz

C1.3.5. Z-Axis, Horizontal Antenna



C1.3.6. Z-Axis, Vertical Antenna



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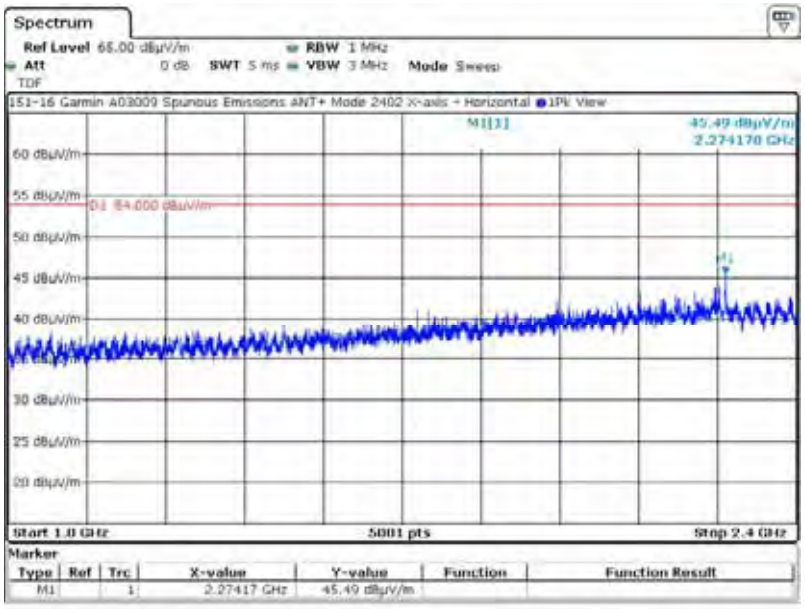
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

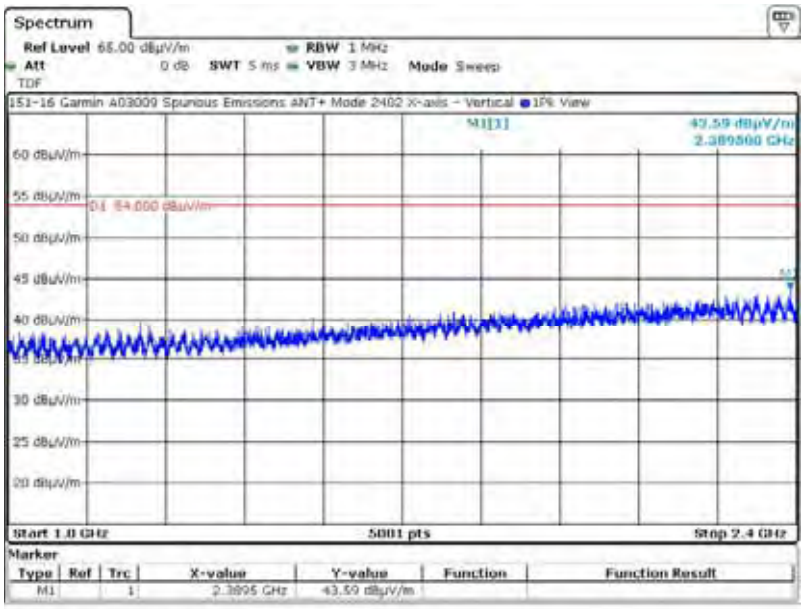
C1. Device Under Test Frequency – 2402 MHz

C1.4. Measurement Results – 1 GHz to 2.4 GHz

C1.4.1. X-Axis, Horizontal Antenna



C1.4.2. X-Axis, Vertical Antenna



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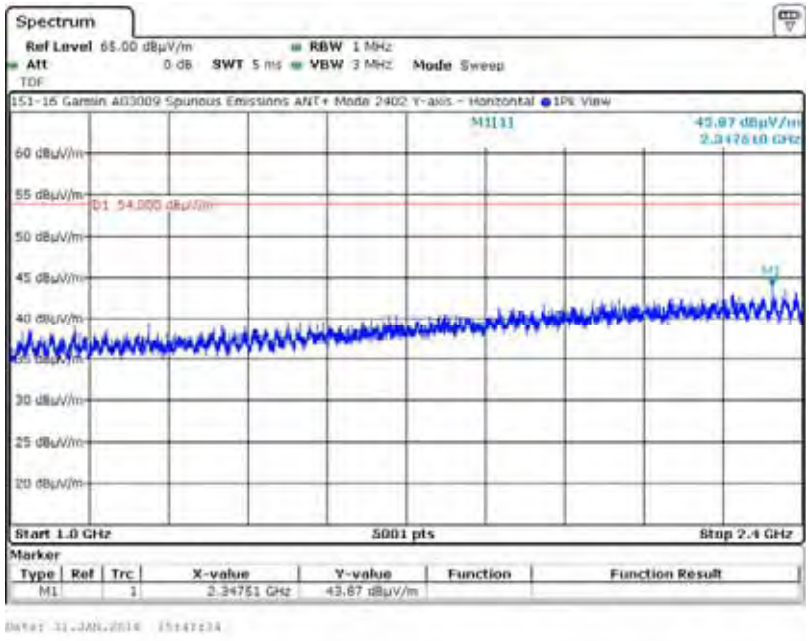
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

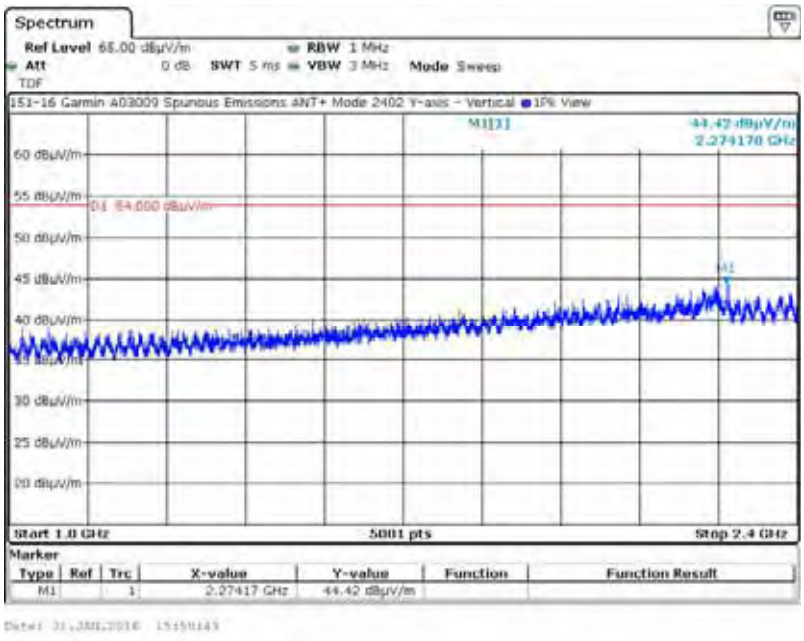
C1. Device Under Test Frequency – 2402 MHz

C1.4. Measurement Results – 1 GHz to 2.4 GHz

C1.4.3. Y-Axis, Horizontal Antenna



C1.4.4. Y-Axis, Vertical Antenna



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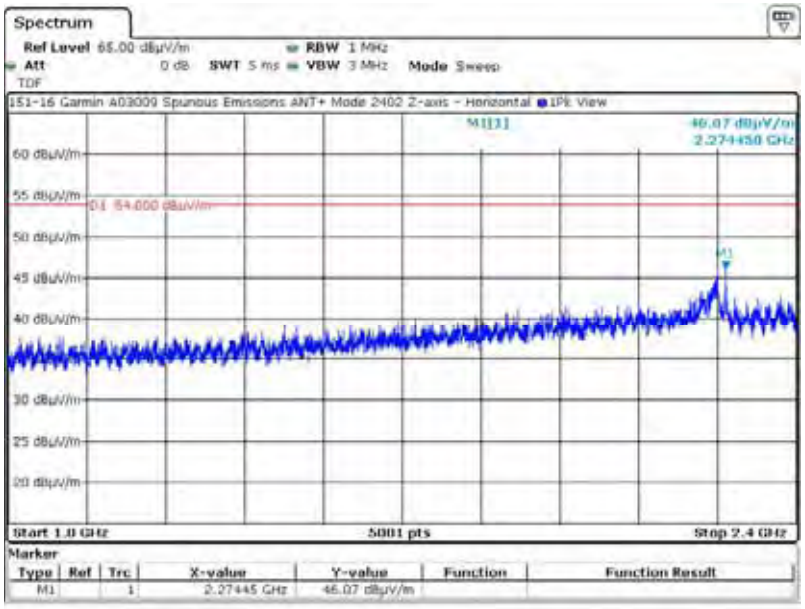
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

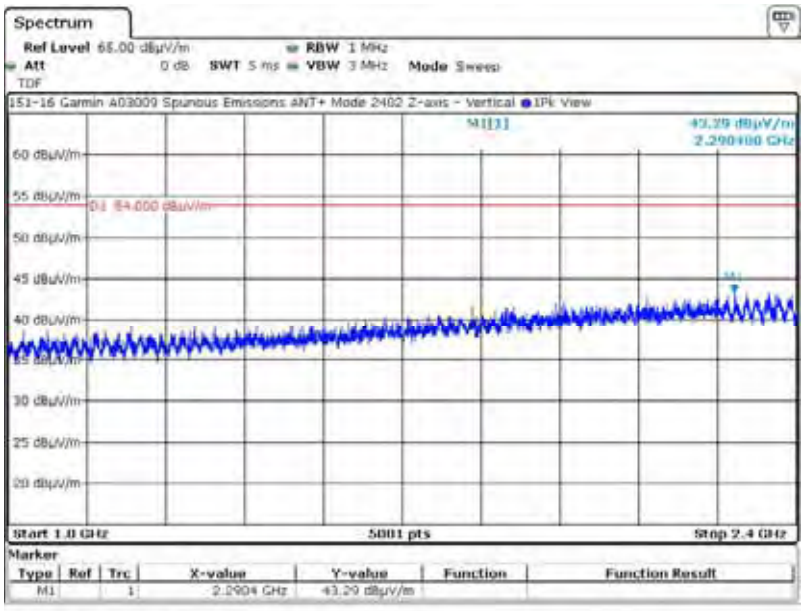
C1. Device Under Test Frequency – 2402 MHz

C1.4. Measurement Results – 1 GHz to 2.4 GHz

C1.4.5. Z-Axis, Horizontal Antenna



C1.4.6. Z-Axis, Vertical Antenna



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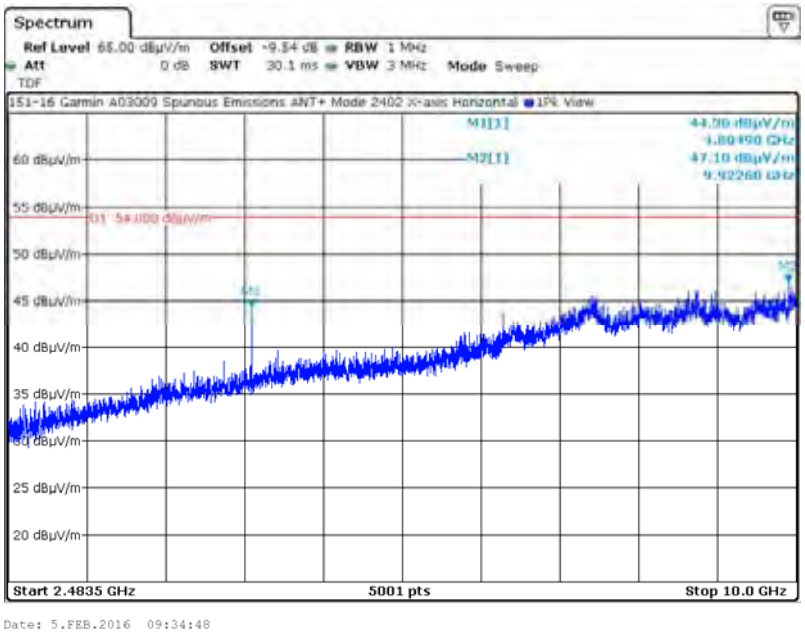
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C1. Device Under Test Frequency – 2402 MHz

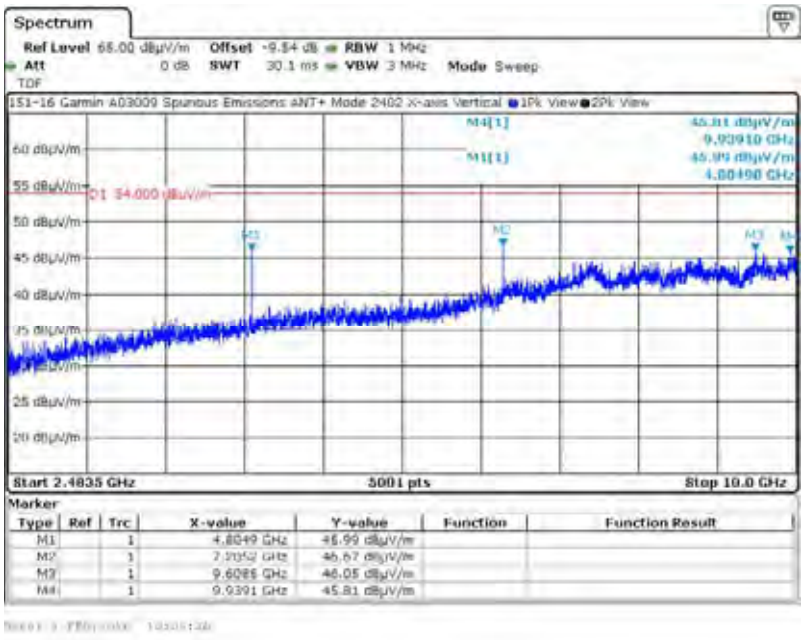
C1.5. Measurement Results – 2.4835 GHz to 10 GHz

C1.5.1. X-Axis, Horizontal Antenna



Date: 5.FEB.2016 09:34:48

C1.5.2. X-Axis, Vertical Antenna



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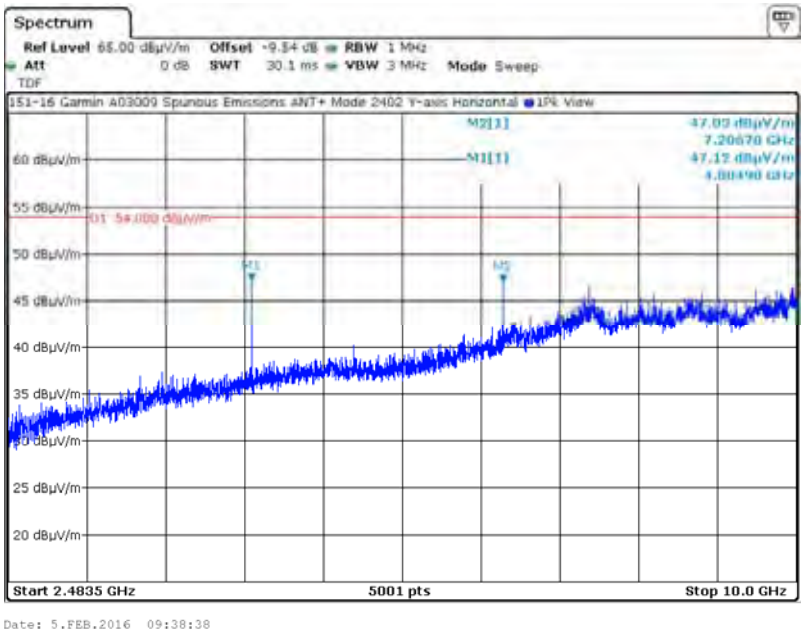
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C1. Device Under Test Frequency – 2402 MHz

C1.5. Measurement Results – 2.4835 GHz to 10 GHz

C1.5.3. Y-Axis, Horizontal Antenna



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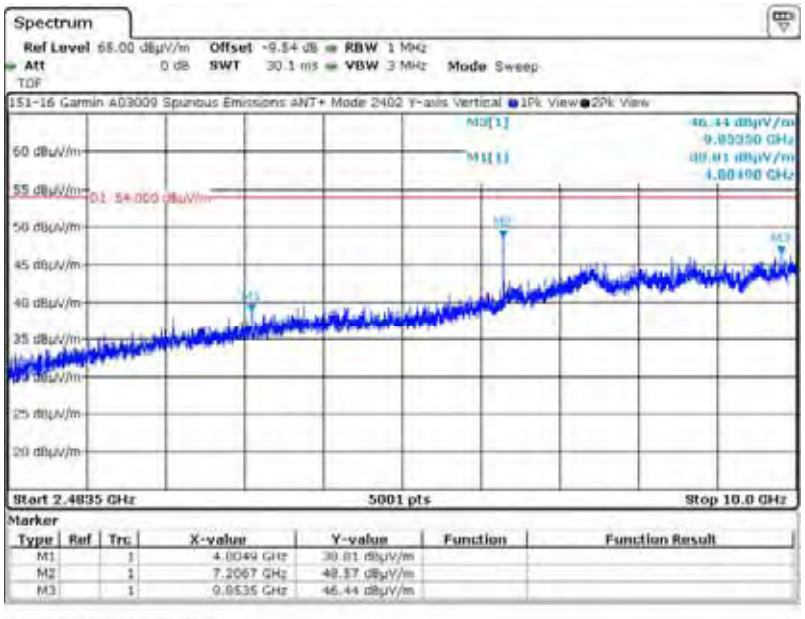
C1.5.4. Y-Axis, Vertical Antenna



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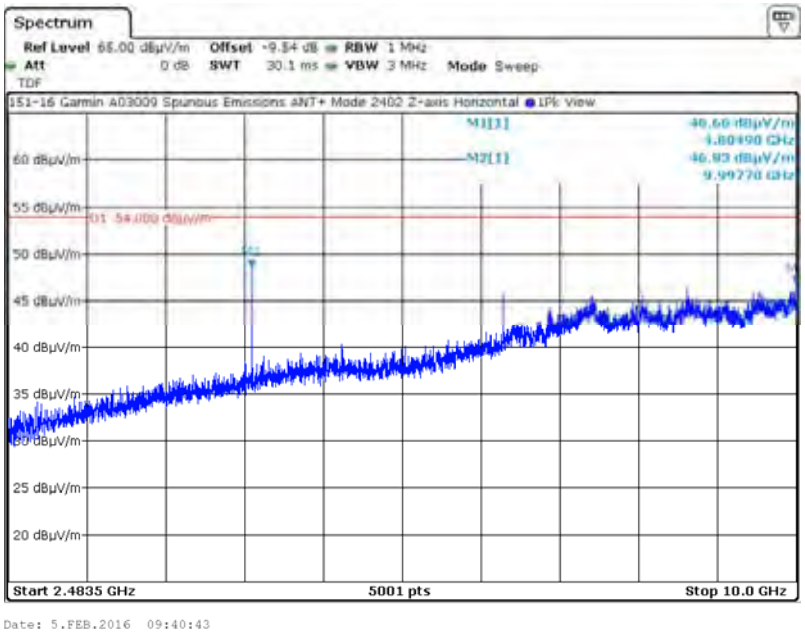
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

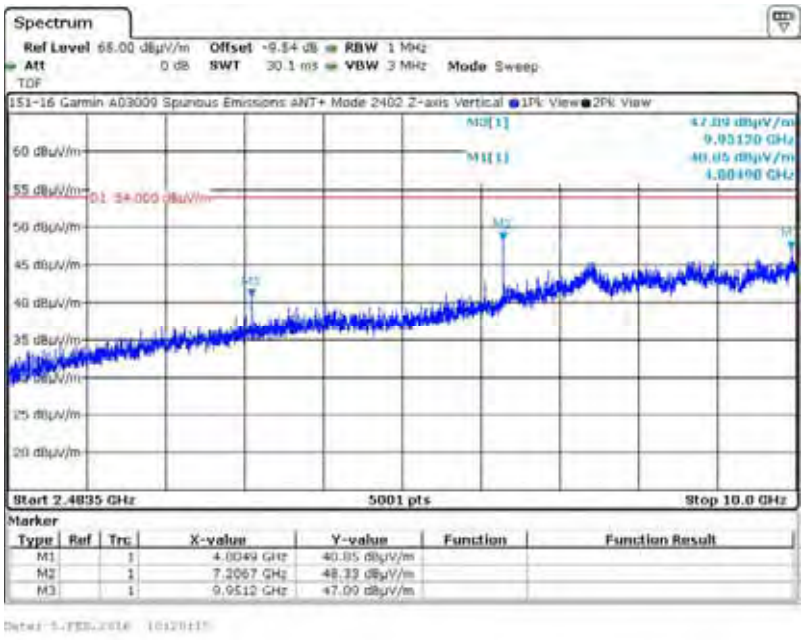
C1. Device Under Test Frequency – 2402 MHz

C1.5. Measurement Results – 2.4835 GHz to 10 GHz

C1.5.5. Z-Axis, Horizontal Antenna



C1.5.6. Z-Axis, Vertical Antenna



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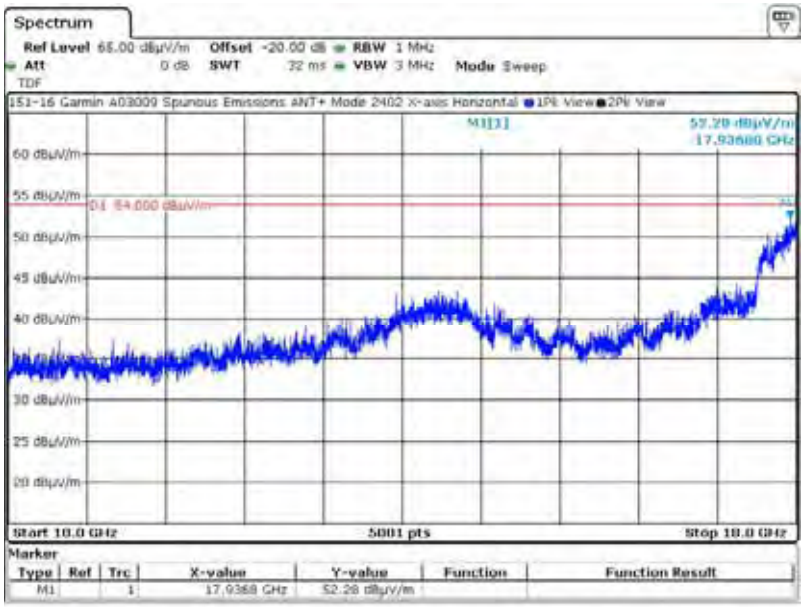
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

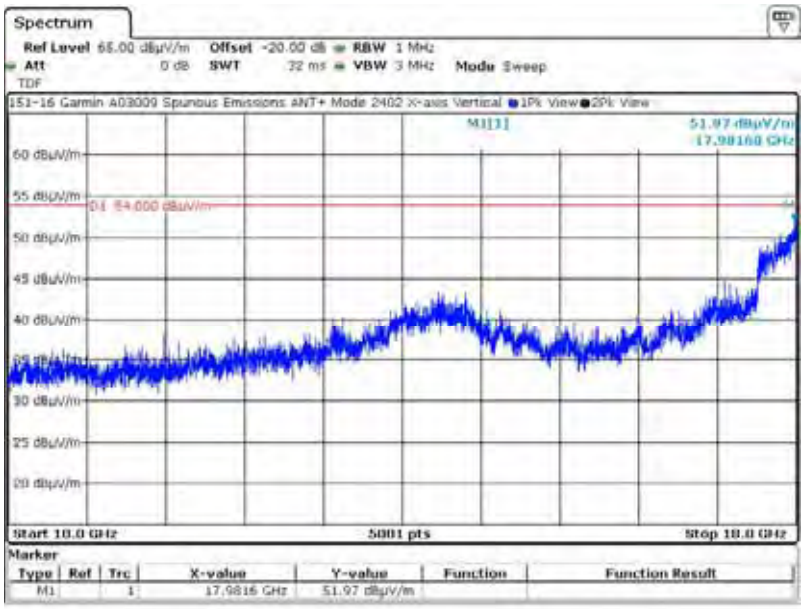
C1. Device Under Test Frequency – 2402 MHz

C1.6. Measurement Results – 10 GHz to 18 GHz

C1.6.1. X-Axis, Horizontal Antenna



C1.6.2. X-Axis, Vertical Antenna



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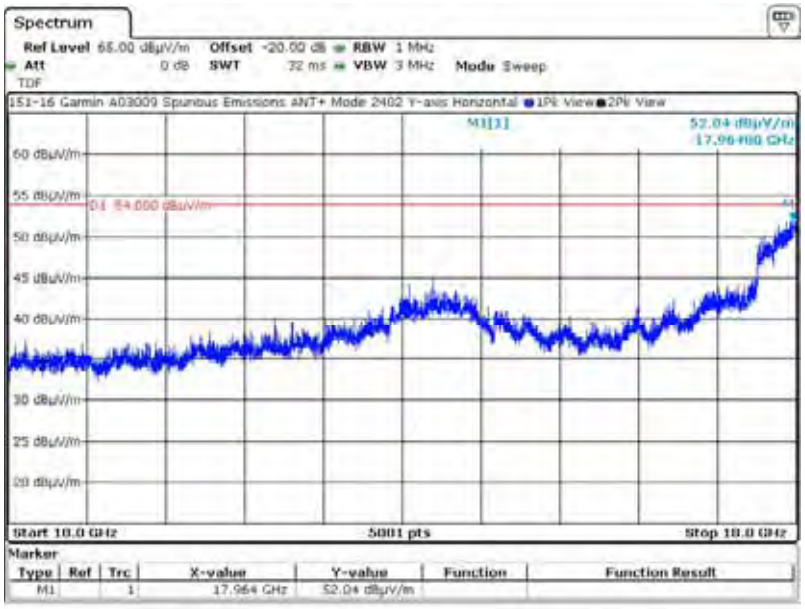
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

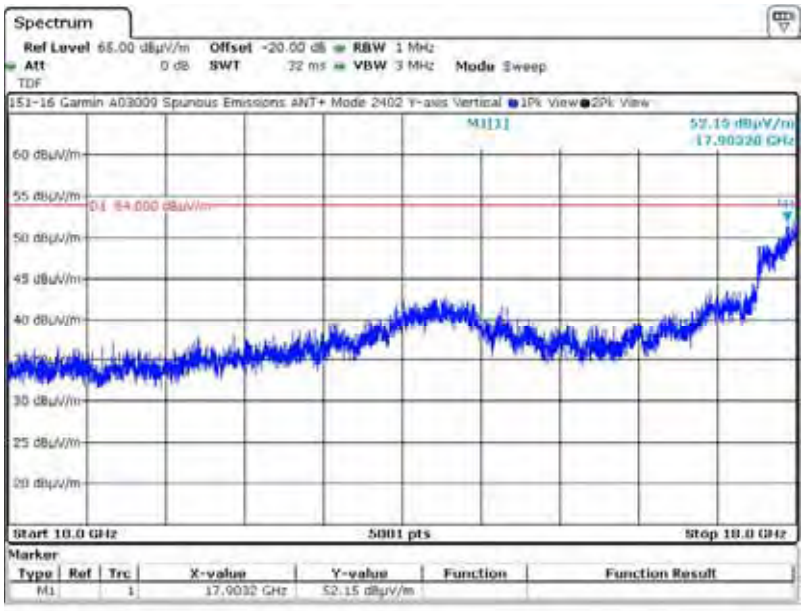
C1. Device Under Test Frequency – 2402 MHz

C1.6. Measurement Results – 10 GHz to 18 GHz

C1.6.3. Y-Axis, Horizontal Antenna



C1.6.4. Y-Axis, Vertical Antenna



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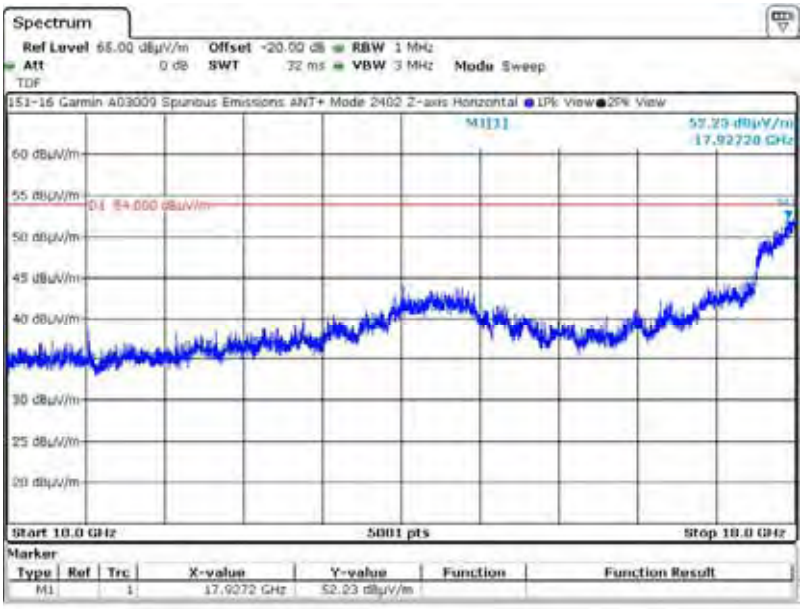
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

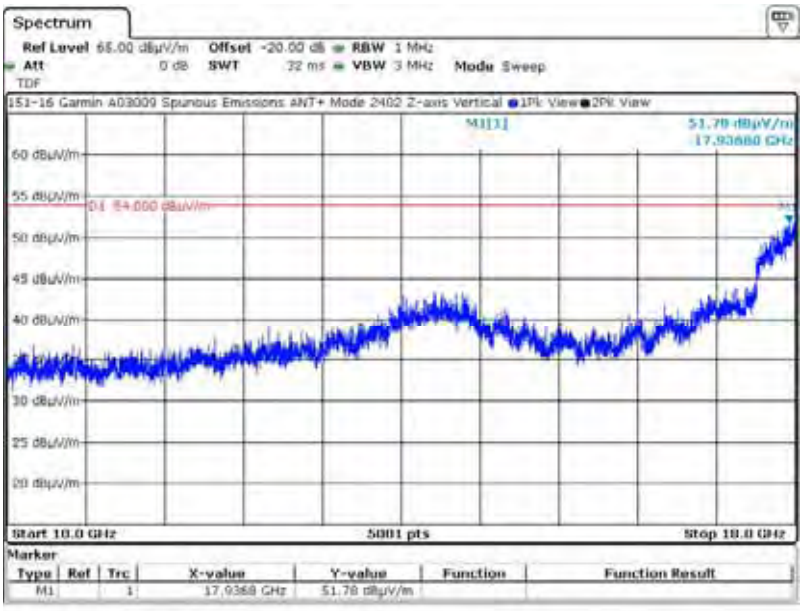
C1. Device Under Test Frequency – 2402 MHz

C1.6. Measurement Results – 10 GHz to 18 GHz

C1.6.5. Z-Axis, Horizontal Antenna



C1.6.6. Z-Axis, Vertical Antenna



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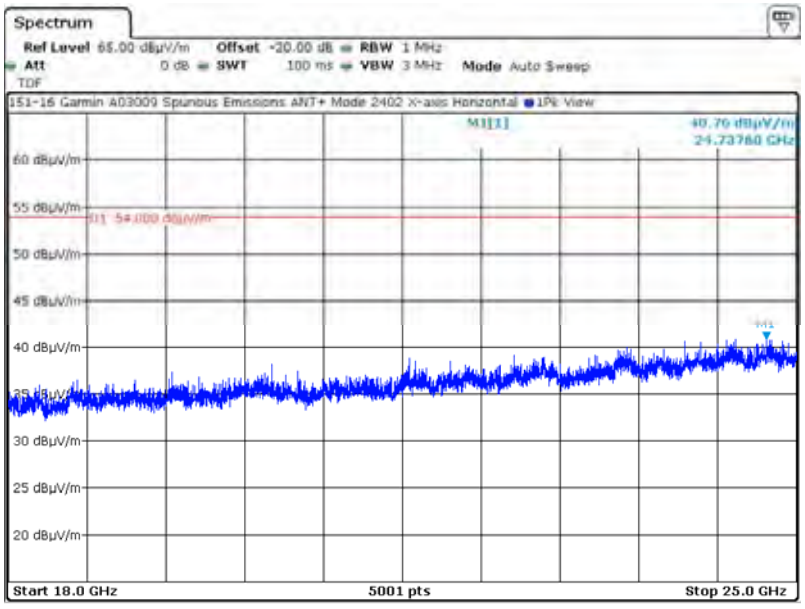
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C1. Device Under Test Frequency – 2402 MHz

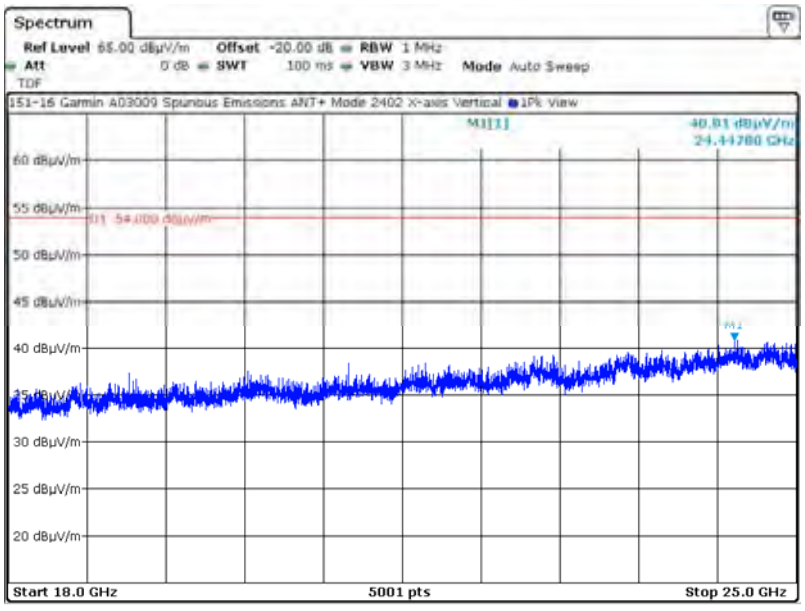
C1.7. Measurement Results – 18 GHz to 25 GHz

C1.7.1. X-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:24:07

C1.7.2. X-Axis, Vertical Antenna



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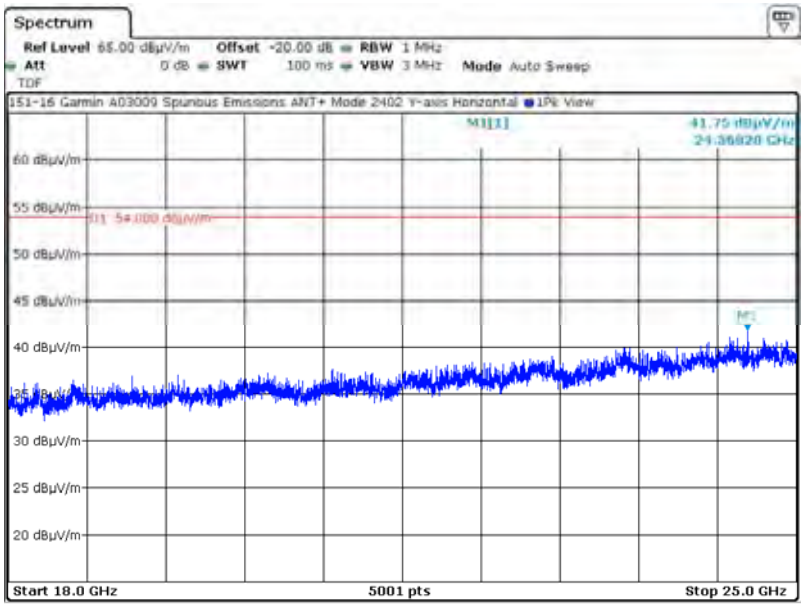
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

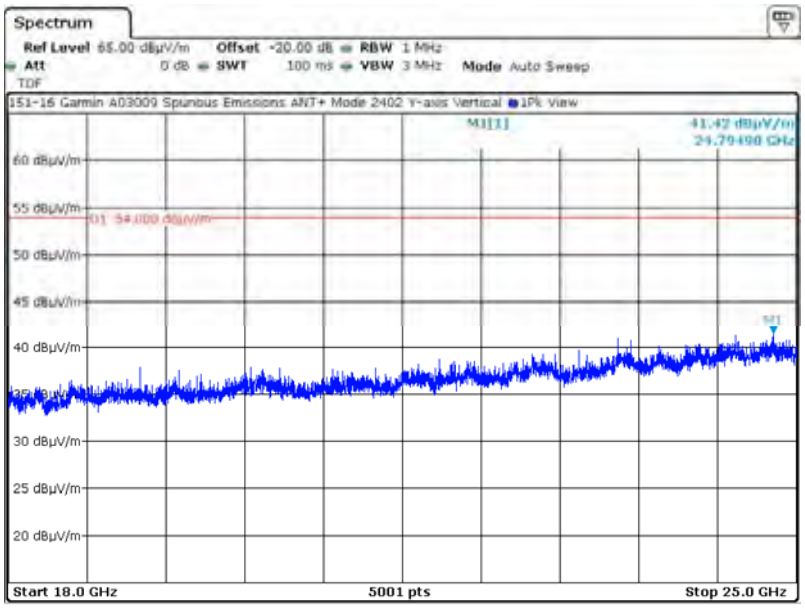
C1. Device Under Test Frequency – 2402 MHz

C1.7. Measurement Results – 18 GHz to 25 GHz

C1.7.3. Y-Axis, Horizontal Antenna



C1.7.4. Y-Axis, Vertical Antenna



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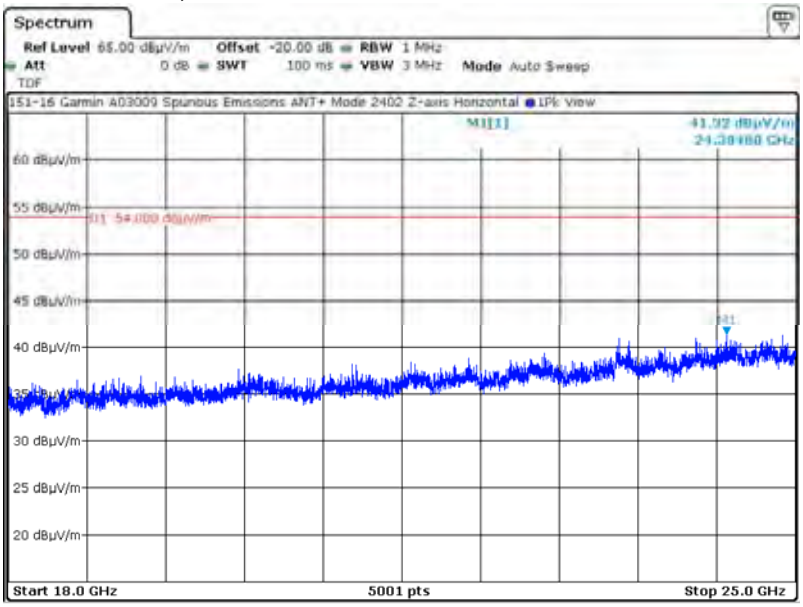
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

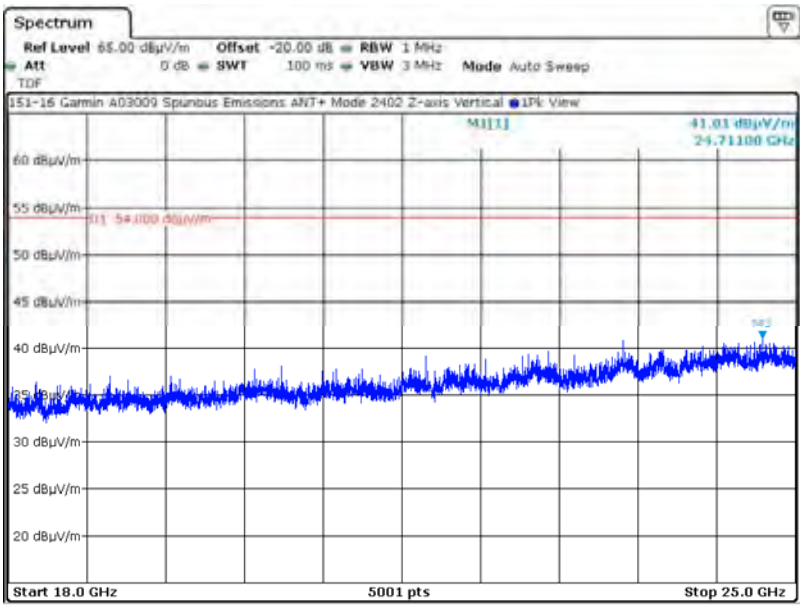
C1. Device Under Test Frequency – 2402 MHz

C1.7. Measurement Results – 18 GHz to 25 GHz

C1.7.5. Z-Axis, Horizontal Antenna



C1.7.6. Z-Axis, Vertical Antenna



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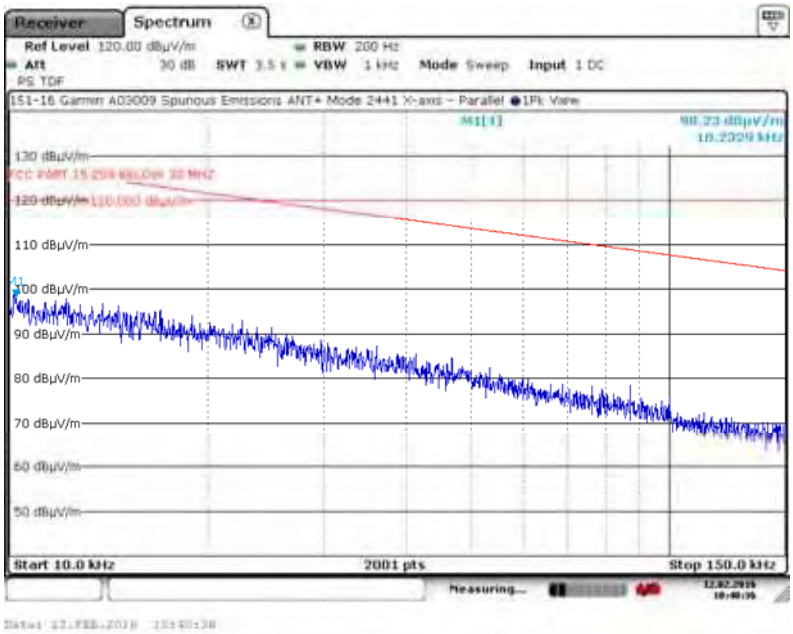
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

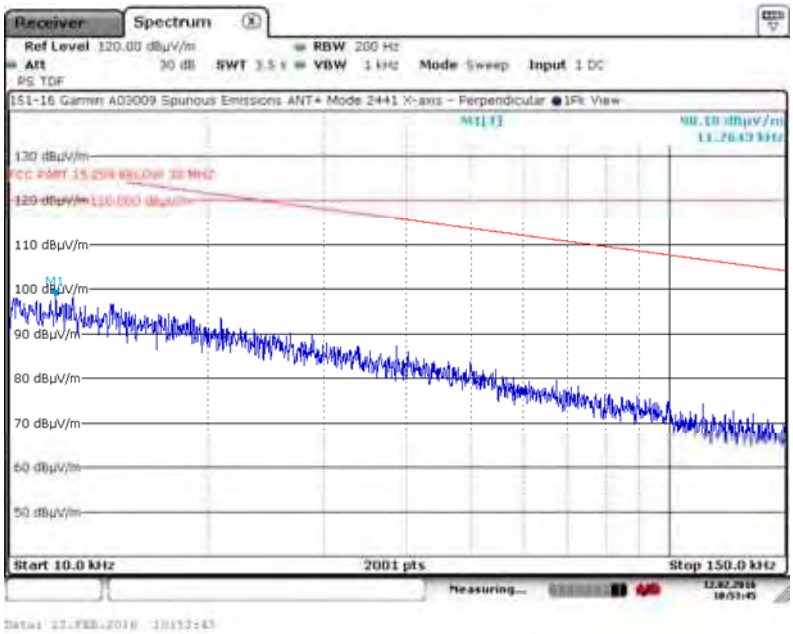
C2. Device Under Test Frequency – 2441 MHz

C2.1. Measurement Results – 10 kHz to 150 kHz

C2.1.1. X-Axis, Parallel Antenna



C2.1.2. X-Axis, Perpendicular Antenna



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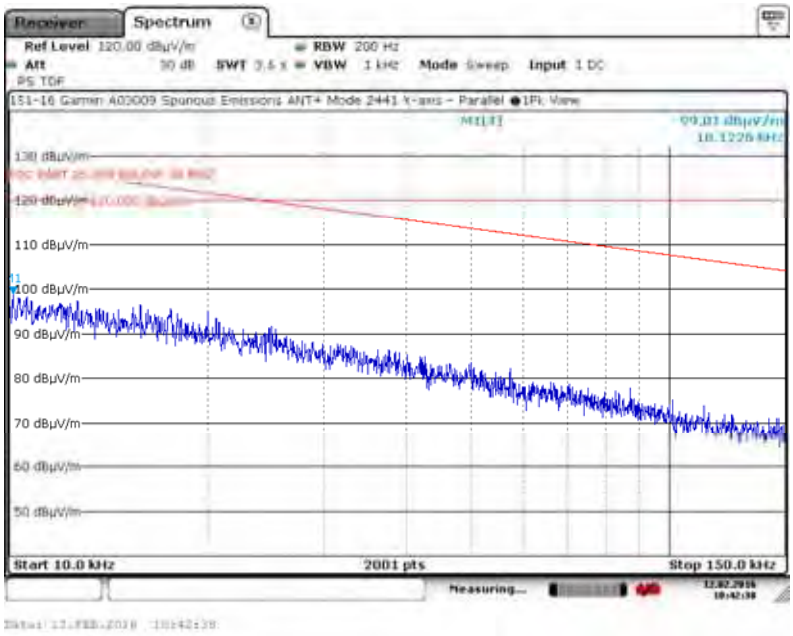
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

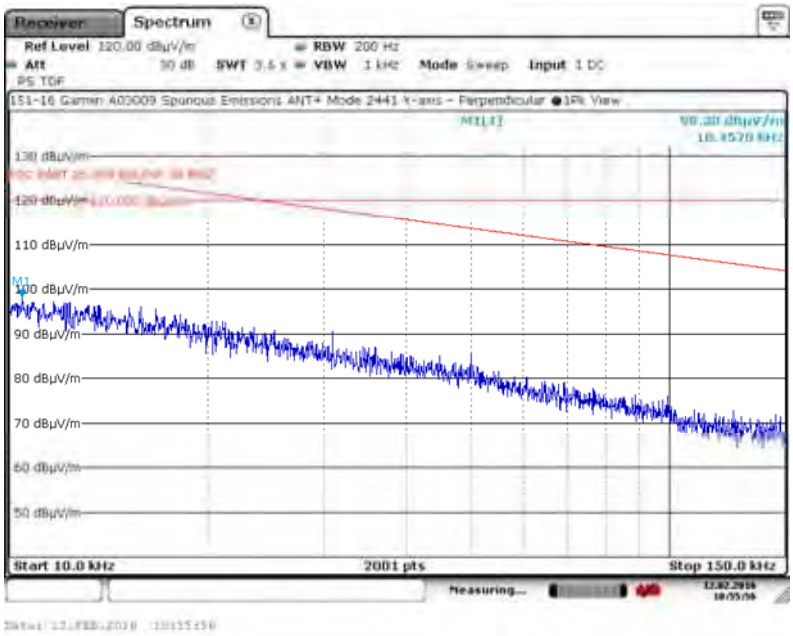
C2. Device Under Test Frequency – 2441 MHz

C2.1. Measurement Results – 10 kHz to 150 kHz

C2.1.3. Y-Axis, Parallel Antenna



C2.1.4. Y-Axis, Perpendicular Antenna



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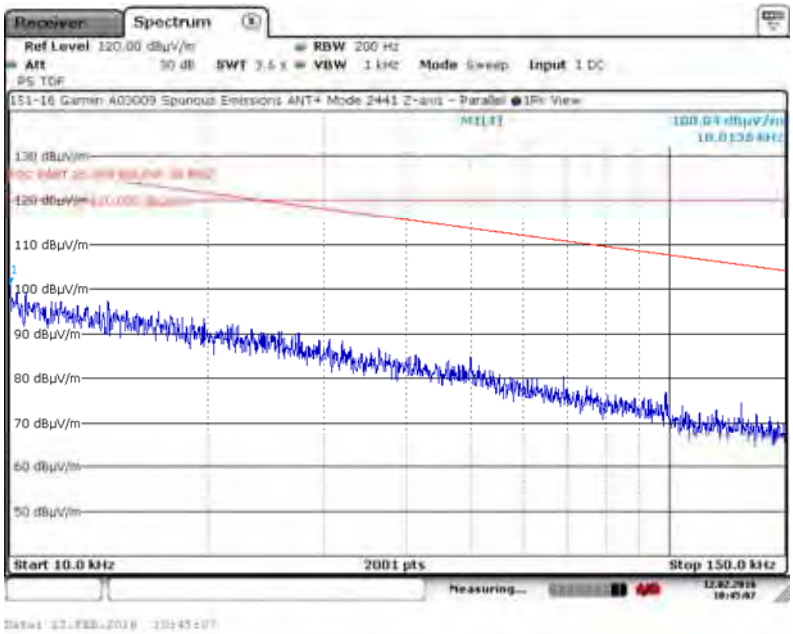
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

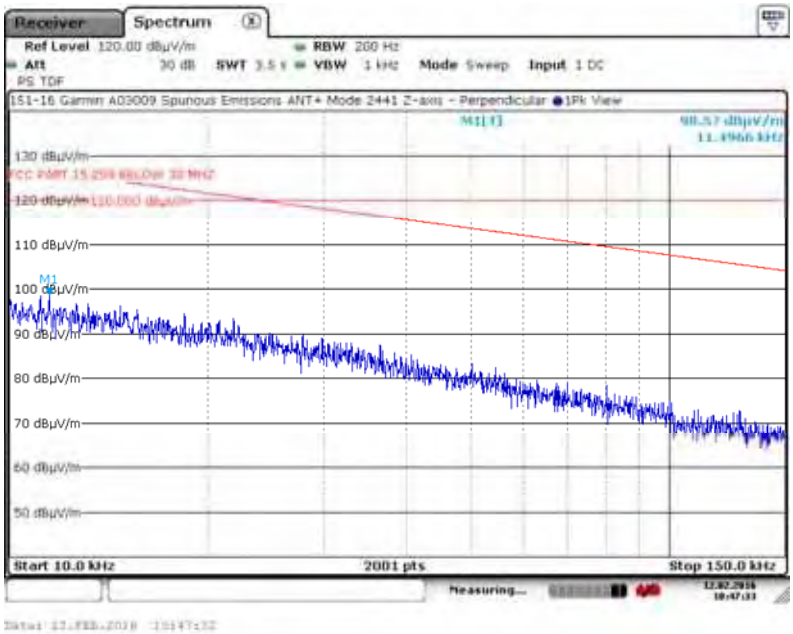
C2. Device Under Test Frequency – 2441 MHz

C2.1. Measurement Results – 10 kHz to 150 kHz

C2.1.5. Z-Axis, Parallel Antenna



C2.1.6. Z-Axis, Perpendicular Antenna



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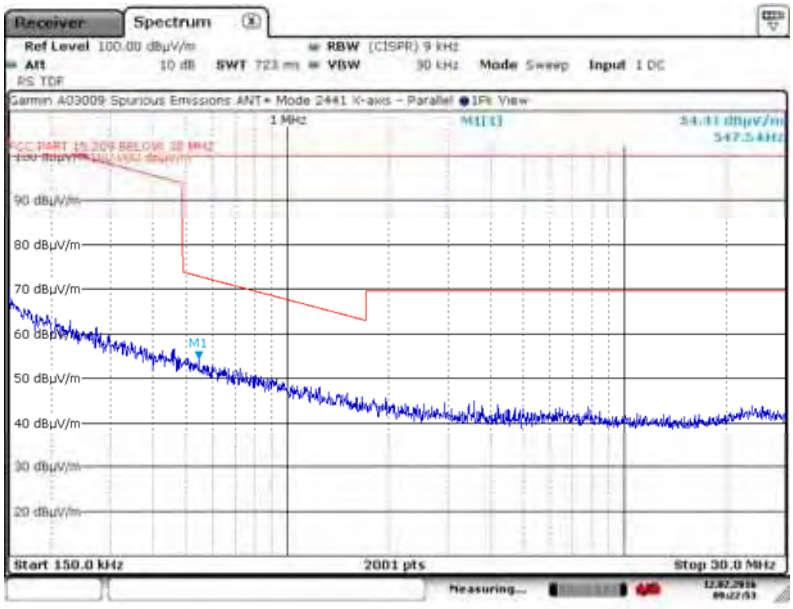
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

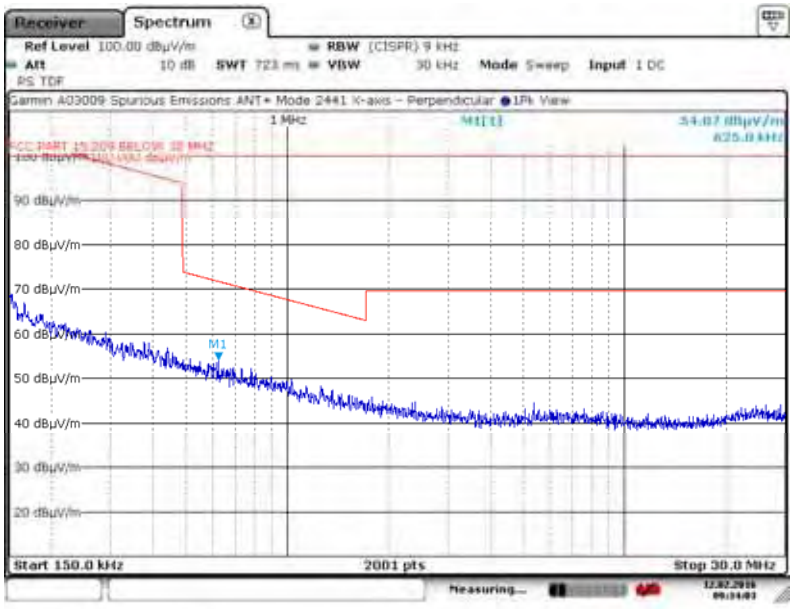
C2. Device Under Test Frequency – 2441 MHz

C2.2. Measurement Results – 150 kHz to 30 MHz

C2.2.1. X-Axis, Parallel Antenna



C2.2.2. X-Axis, Perpendicular Antenna



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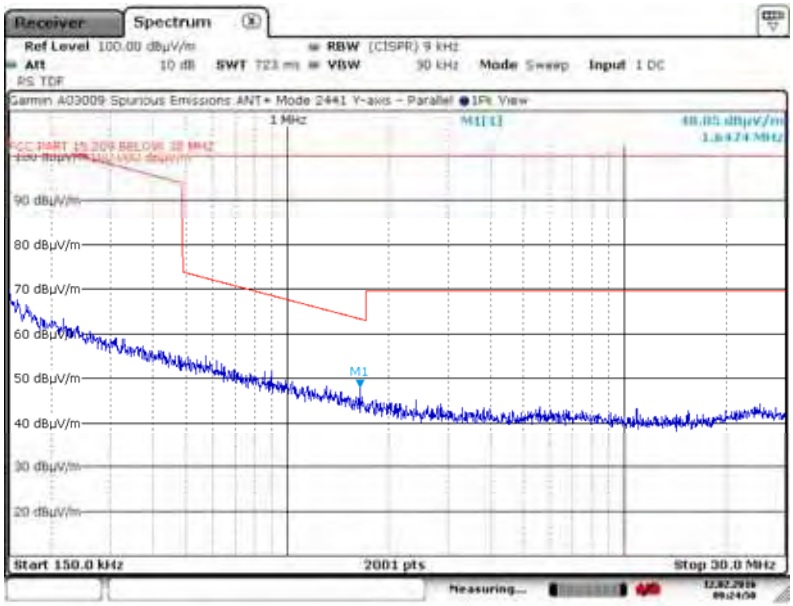
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

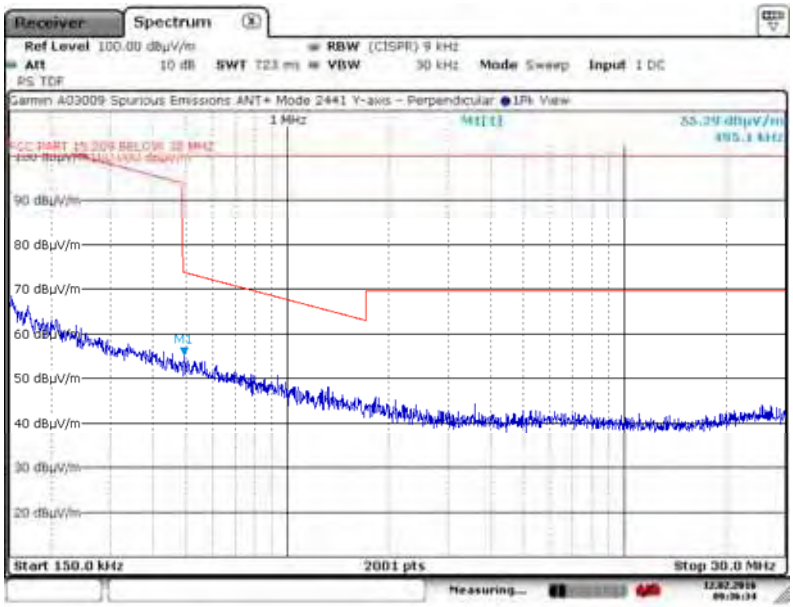
C2. Device Under Test Frequency – 2441 MHz

C2.2. Measurement Results – 150 kHz to 30 MHz

C2.2.3. Y-Axis, Parallel Antenna



C2.2.4. Y-Axis, Perpendicular Antenna



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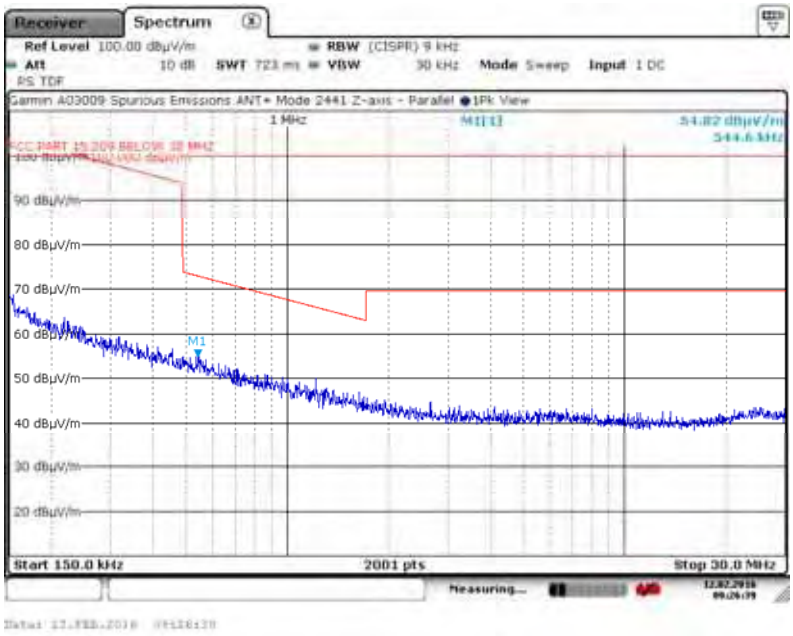
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

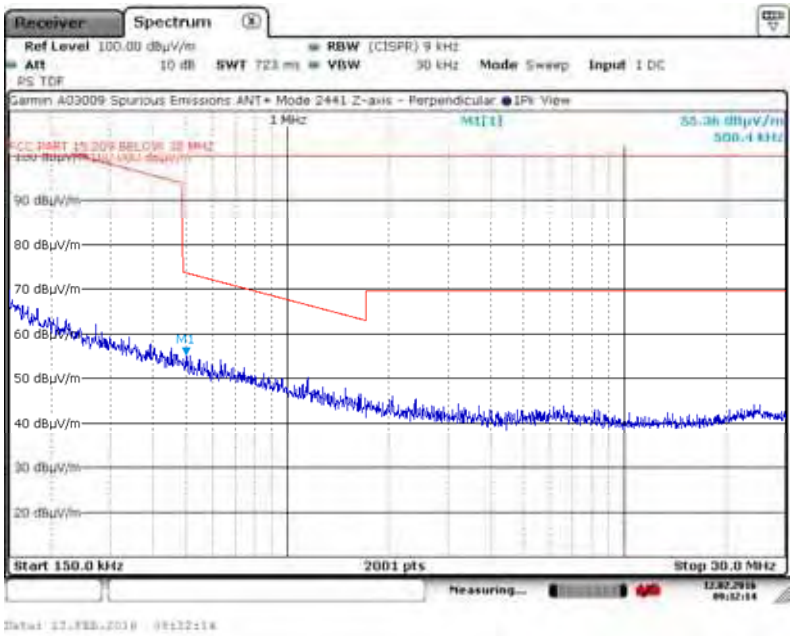
C2. Device Under Test Frequency – 2441 MHz

C2.2. Measurement Results – 150 kHz to 30 MHz

C2.2.5. Z-Axis, Parallel Antenna



C2.2.6. Z-Axis, Perpendicular Antenna



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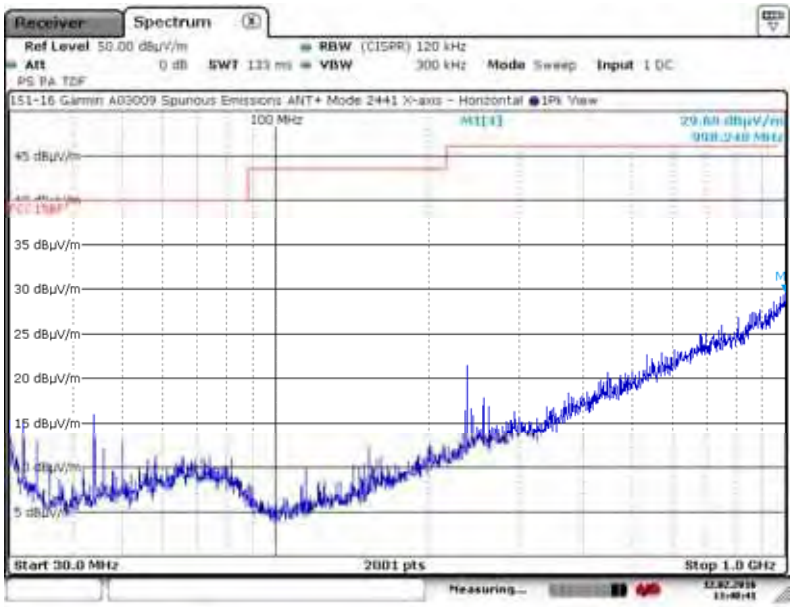
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

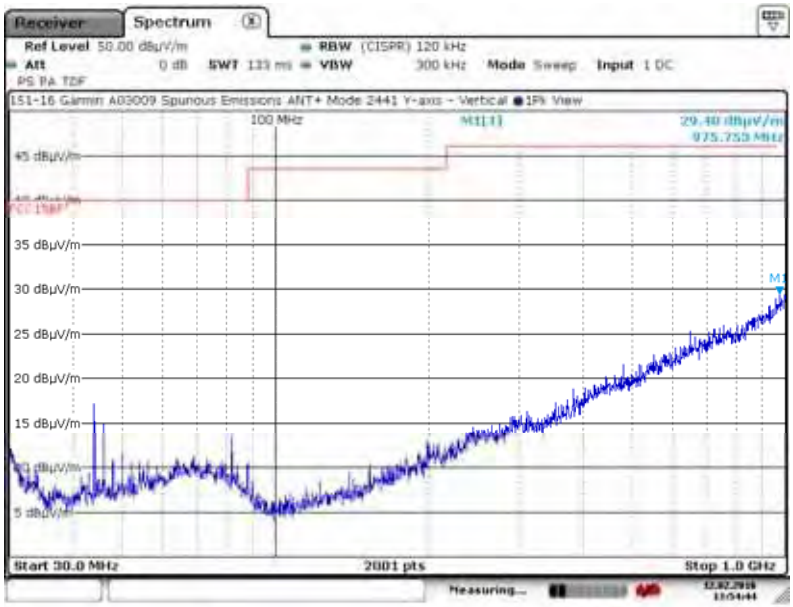
C2. Device Under Test Frequency – 2441 MHz

C2.3. Measurement Results – 30 MHz to 1 GHz

C2.3.1. X-Axis, Horizontal Antenna



C2.3.2. X-Axis, Vertical Antenna



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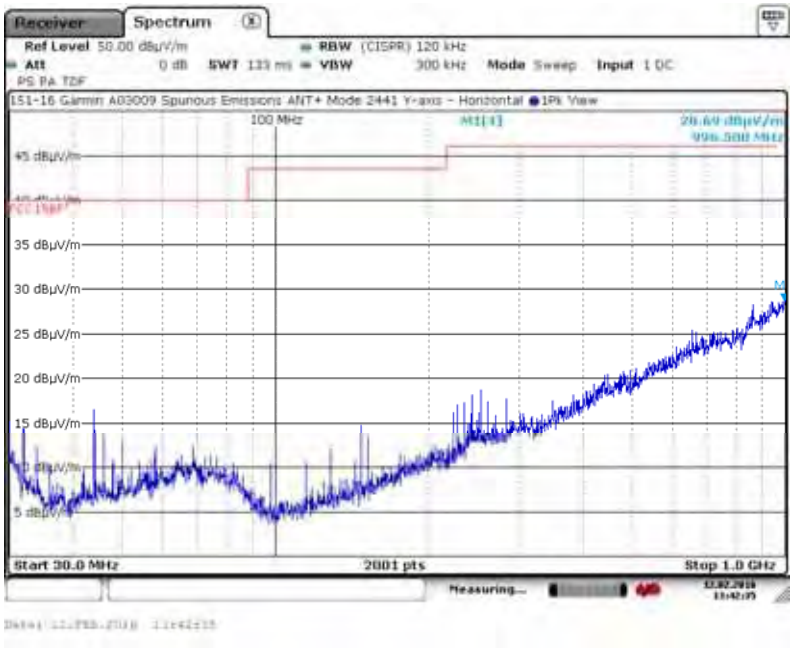
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

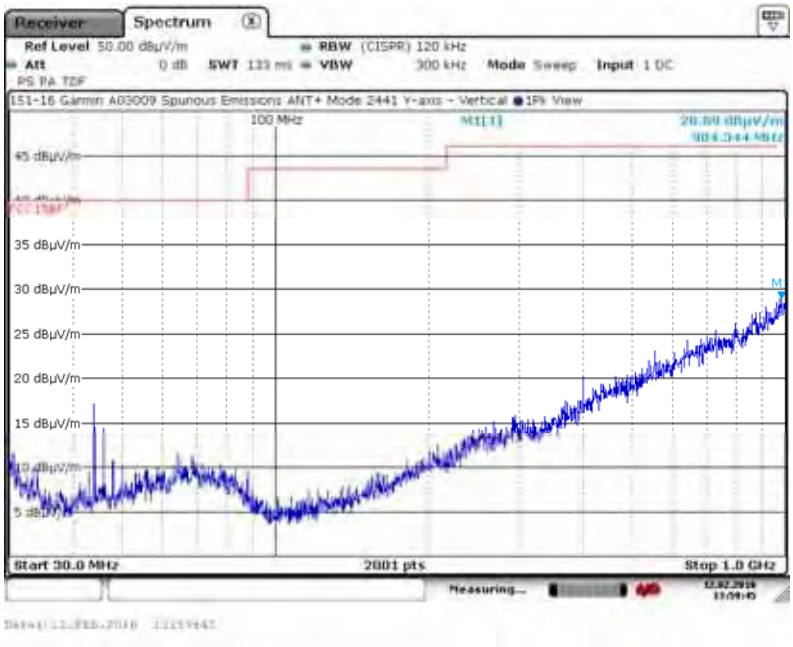
C2. Device Under Test Frequency – 2441 MHz

C2.3. Measurement Results – 30 MHz to 1 GHz

C2.3.3. Y-Axis, Horizontal Antenna



C2.3.4. Y-Axis, Vertical Antenna



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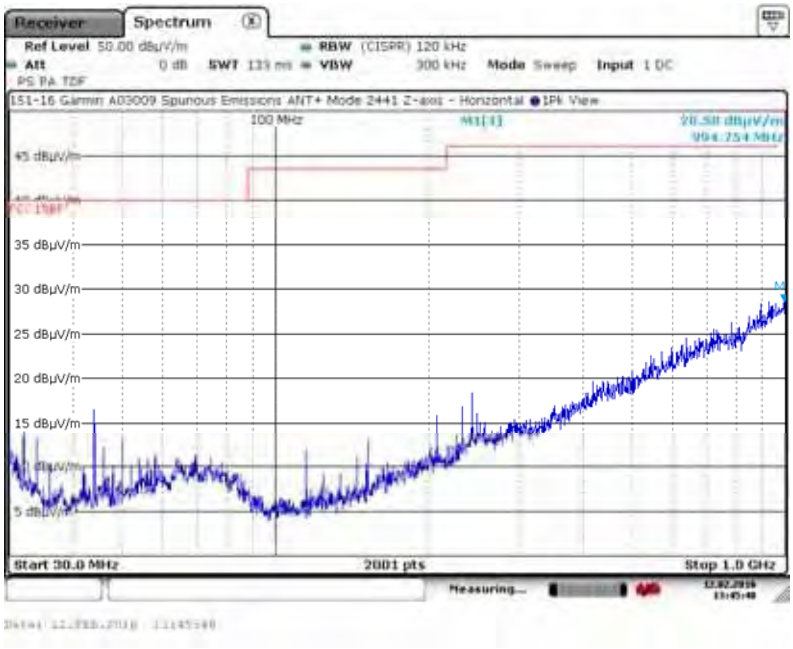
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

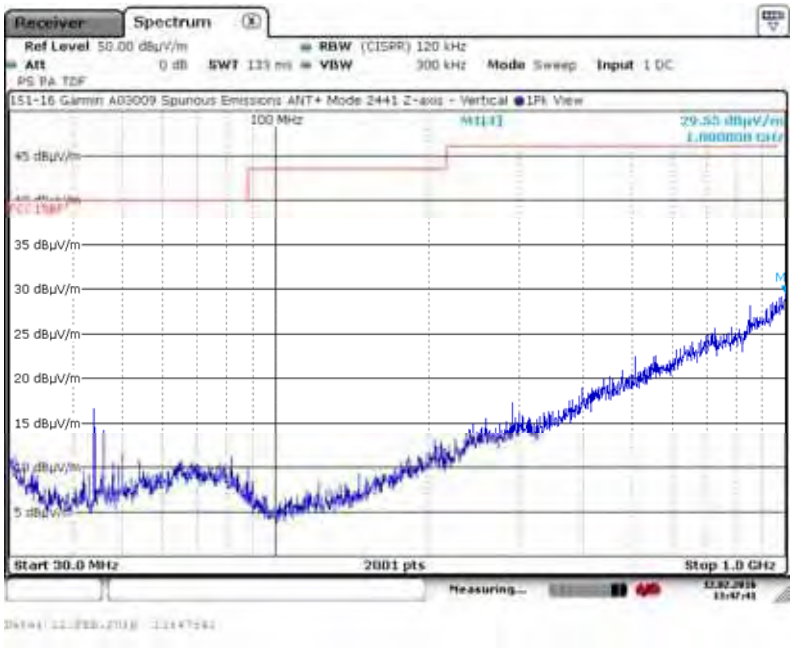
C2. Device Under Test Frequency – 2441 MHz

C2.3. Measurement Results – 30 MHz to 1 GHz

C2.3.5. Z-Axis, Horizontal Antenna



C2.3.6. Z-Axis, Vertical Antenna



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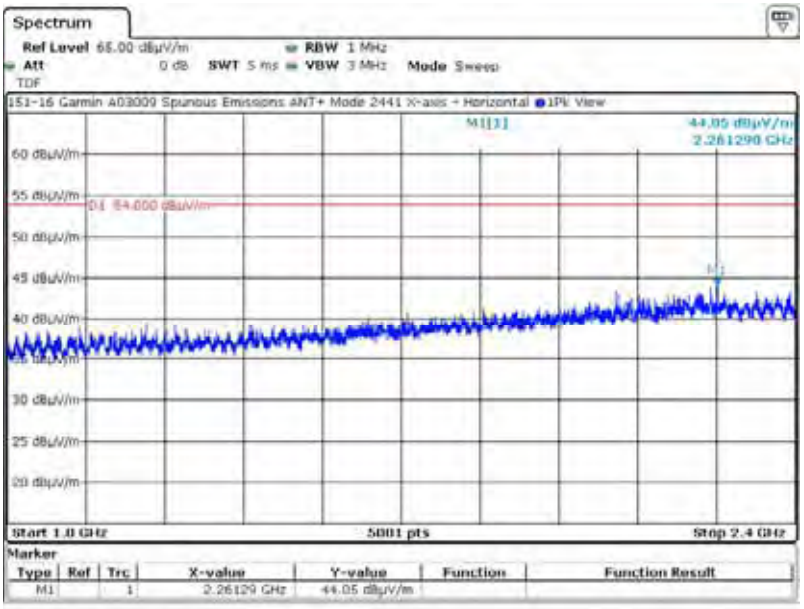
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

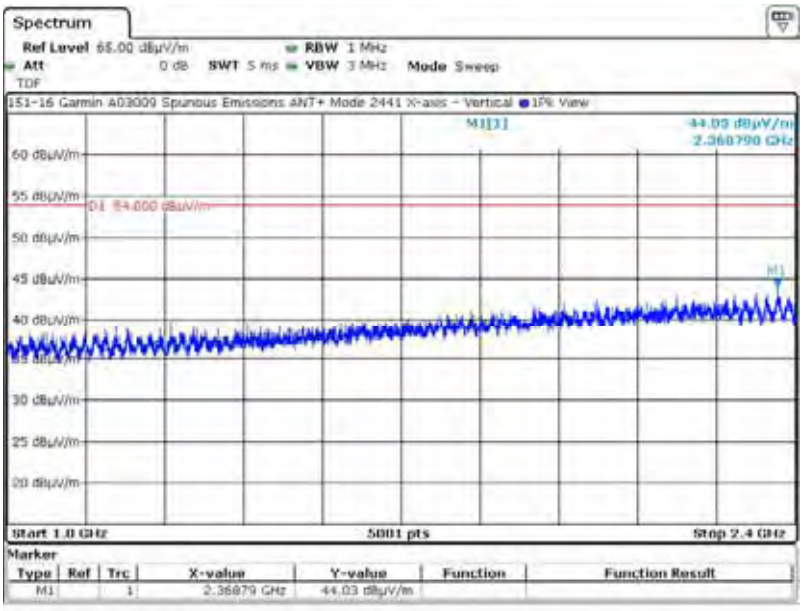
C2. Device Under Test Frequency – 2441 MHz

C2.4. Measurement Results – 1 GHz to 2.4 GHz

C2.4.1. X-Axis, Horizontal Antenna



C2.4.2. X-Axis, Vertical Antenna



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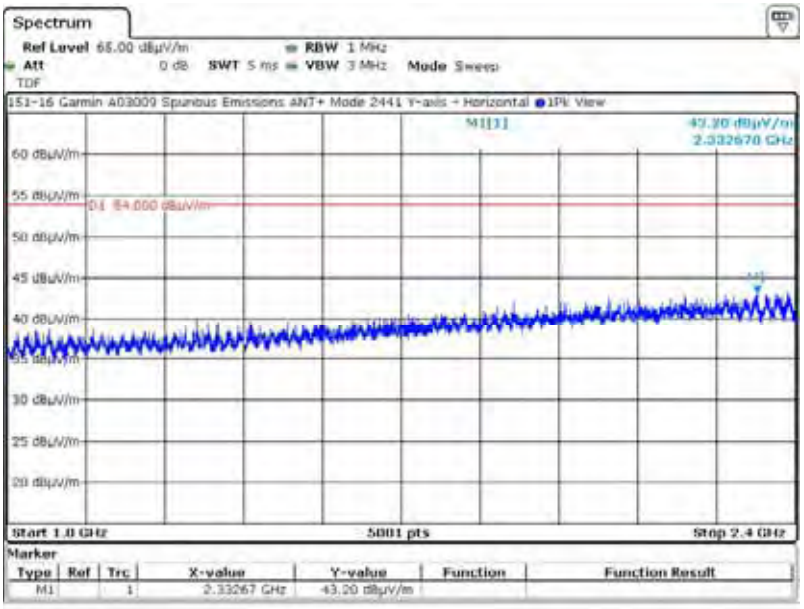
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

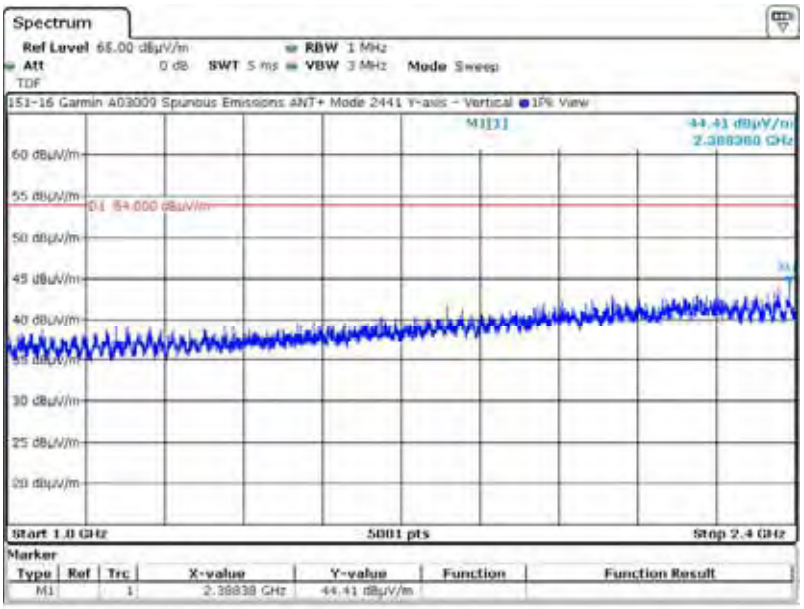
C2. Device Under Test Frequency – 2441 MHz

C2.4. Measurement Results – 1 GHz to 2.4 GHz

C2.4.3. Y-Axis, Horizontal Antenna



C2.4.4. Y-Axis, Vertical Antenna



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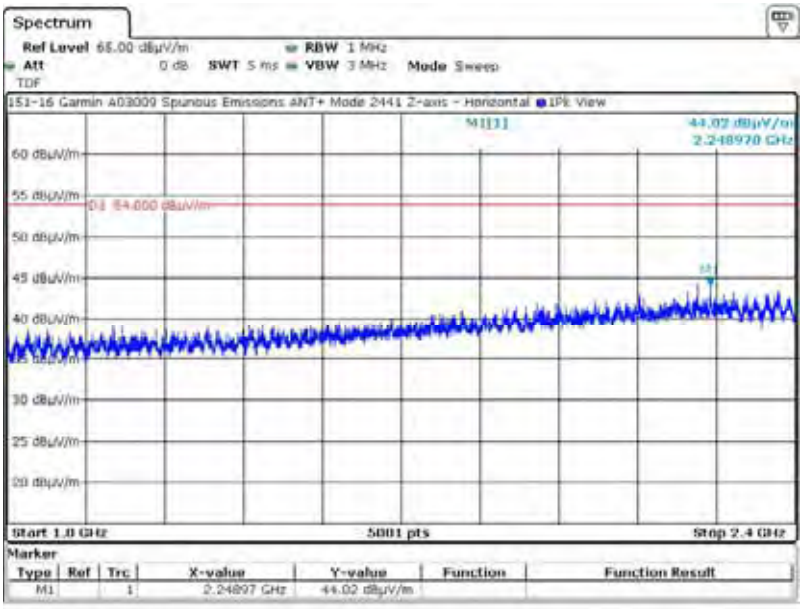
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

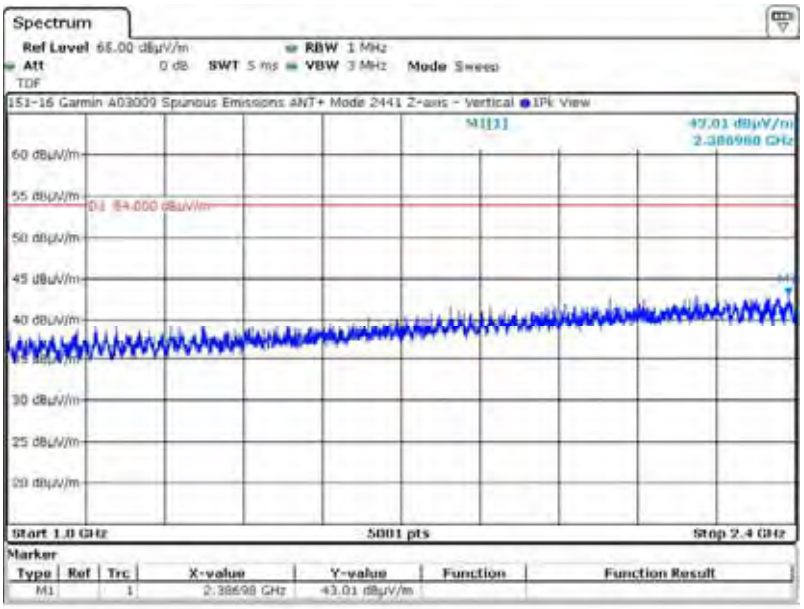
C2. Device Under Test Frequency – 2441 MHz

C2.4. Measurement Results – 1 GHz to 2.4 GHz

C2.4.5. Z-Axis, Horizontal Antenna



C2.4.6. Z-Axis, Vertical Antenna



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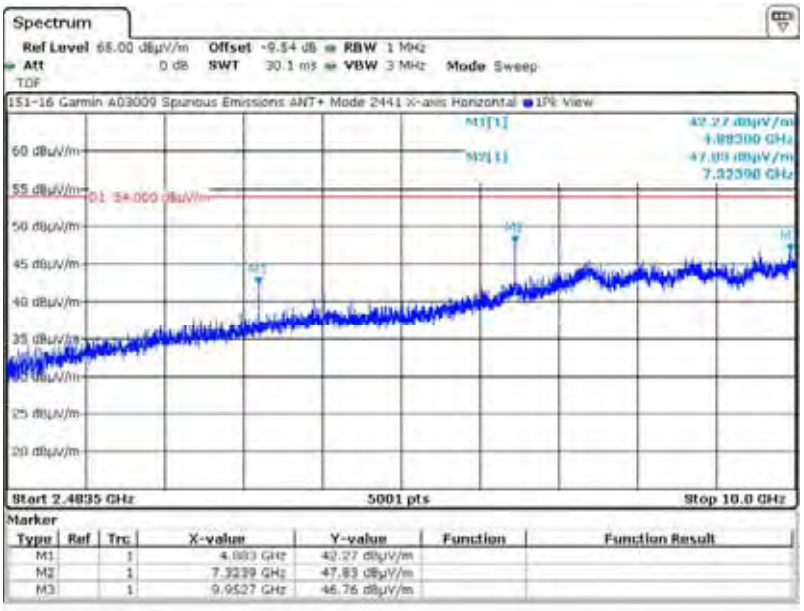
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

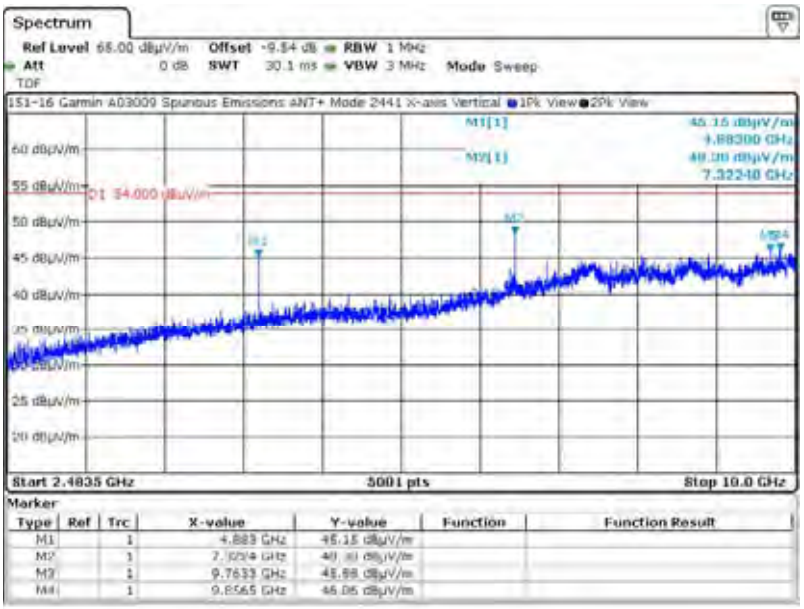
C2. Device Under Test Frequency – 2441 MHz

C2.5. Measurement Results – 2.4835 GHz to 10 GHz

C2.5.1. X-Axis, Horizontal Antenna



C2.5.2. X-Axis, Vertical Antenna



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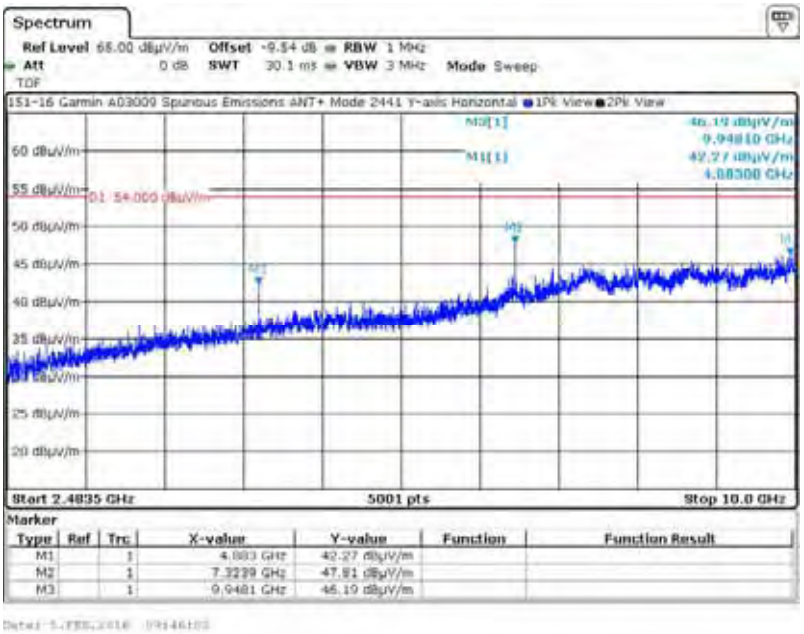
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

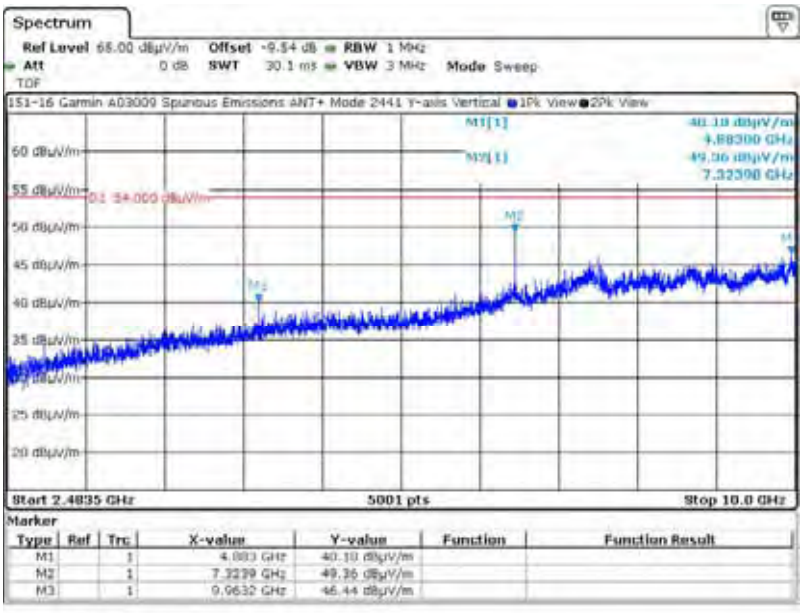
C2. Device Under Test Frequency – 2441 MHz

C2.5. Measurement Results – 2.4835 GHz to 10 GHz

C2.5.3. Y-Axis, Horizontal Antenna



C2.5.4. Y-Axis, Vertical Antenna



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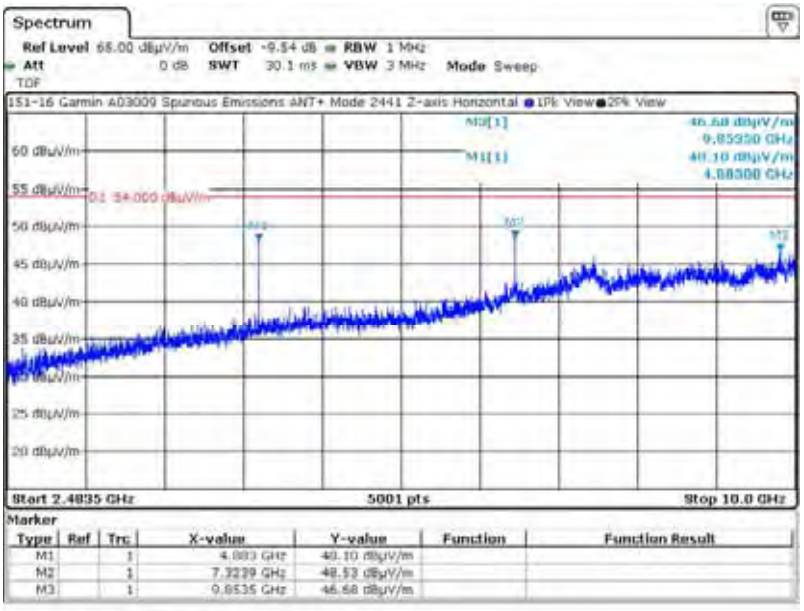
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

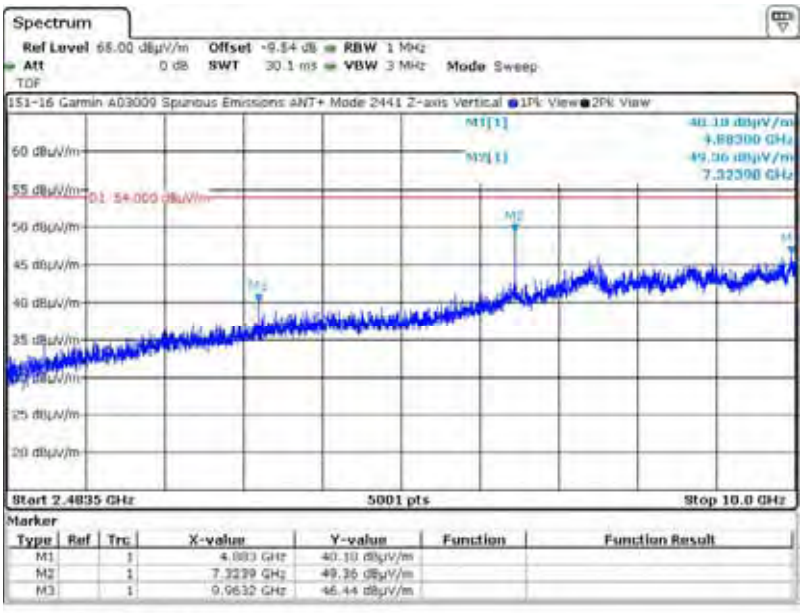
C2. Device Under Test Frequency – 2441 MHz

C2.5. Measurement Results – 2.4835 GHz to 10 GHz

C2.5.5. Z-Axis, Horizontal Antenna



C2.5.6. Z-Axis, Vertical Antenna



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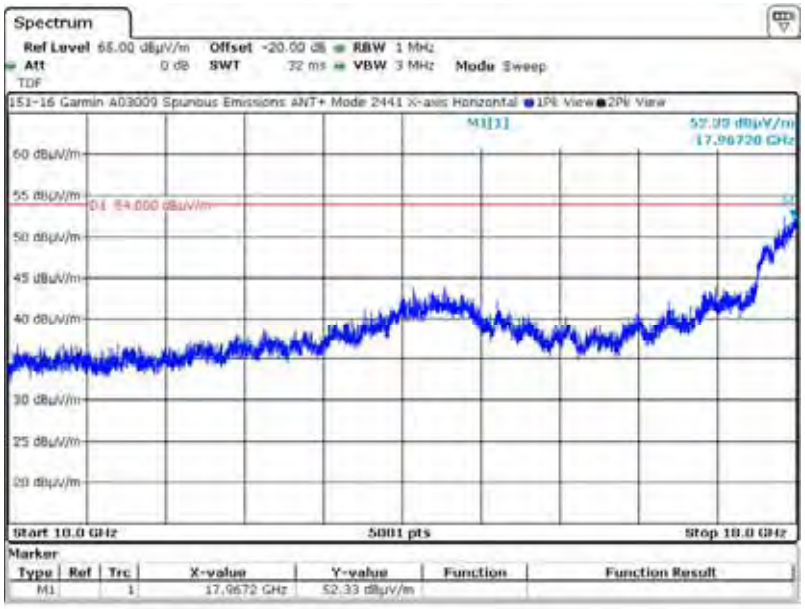
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

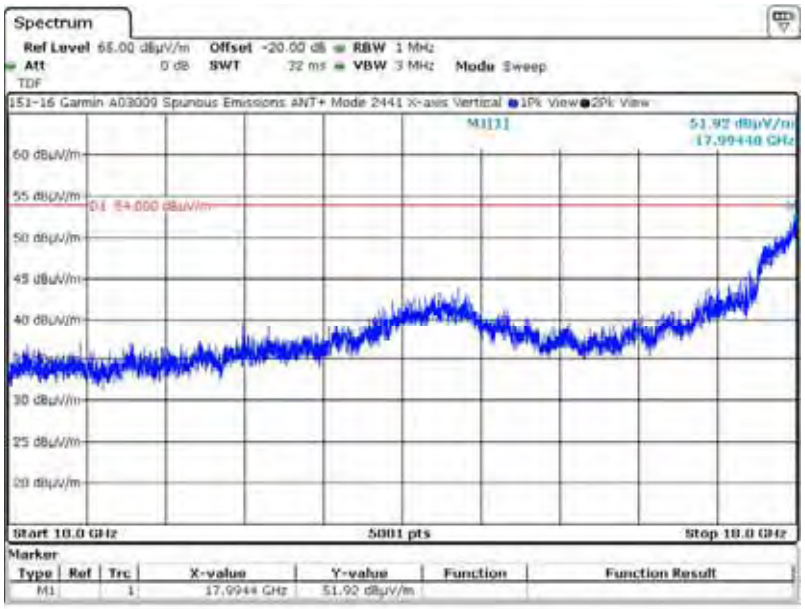
C2. Device Under Test Frequency – 2441 MHz

C2.6. Measurement Results – 10 GHz to 18 GHz

C2.6.1. X-Axis, Horizontal Antenna



C2.6.2. X-Axis, Vertical Antenna



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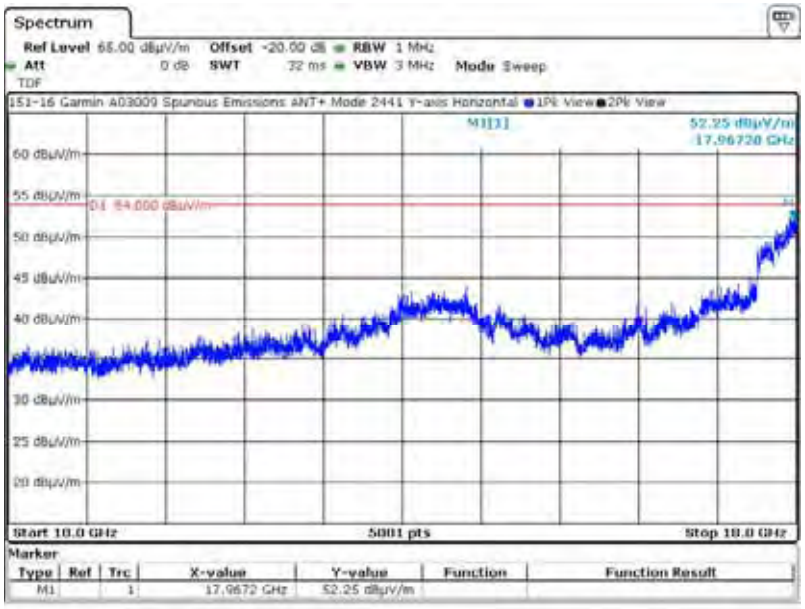
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

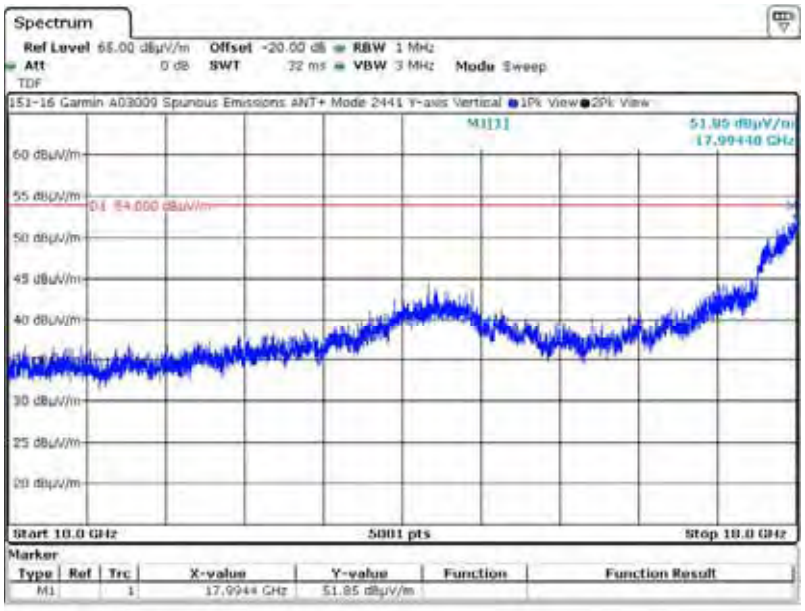
C2. Device Under Test Frequency – 2441 MHz

C2.6. Measurement Results – 10 GHz to 18 GHz

C2.6.3. Y-Axis, Horizontal Antenna



C2.6.4. Y-Axis, Vertical Antenna



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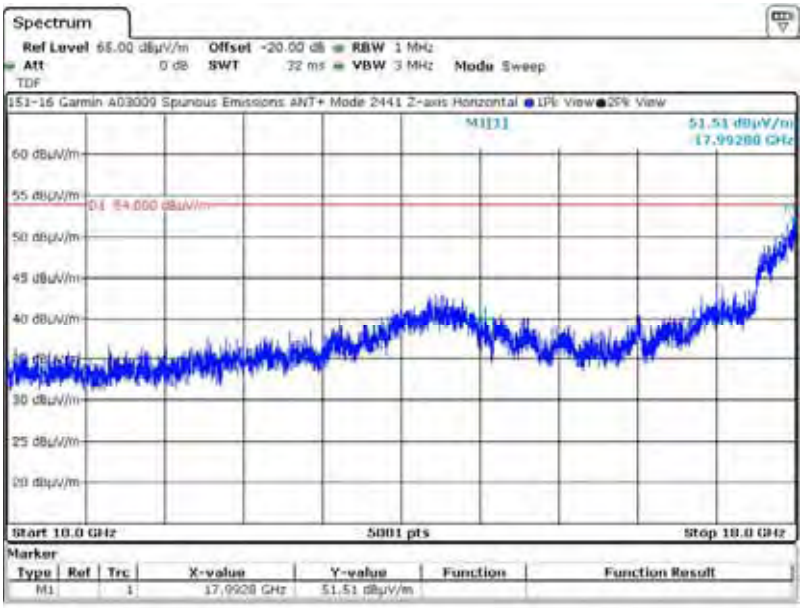
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

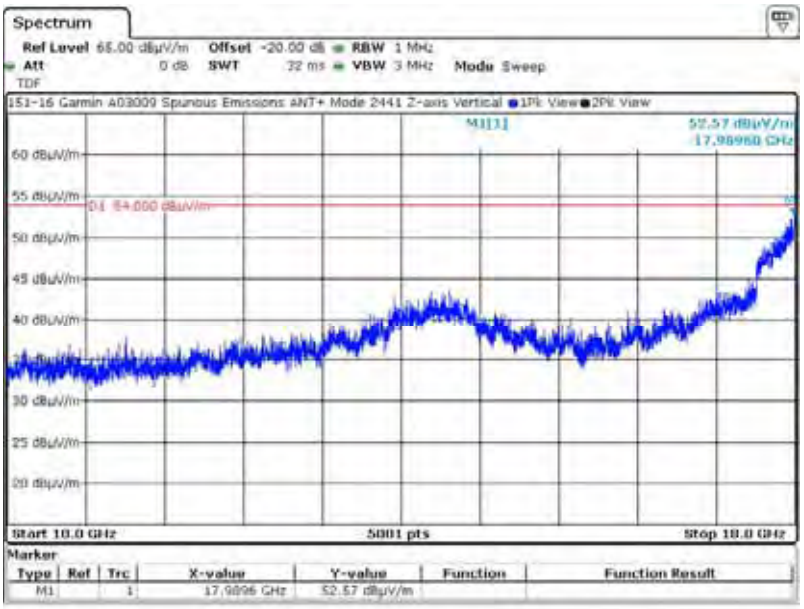
C2. Device Under Test Frequency – 2441 MHz

C2.6. Measurement Results – 10 GHz to 18 GHz

C2.6.5. Z-Axis, Horizontal Antenna



C2.6.6. Z-Axis, Vertical Antenna



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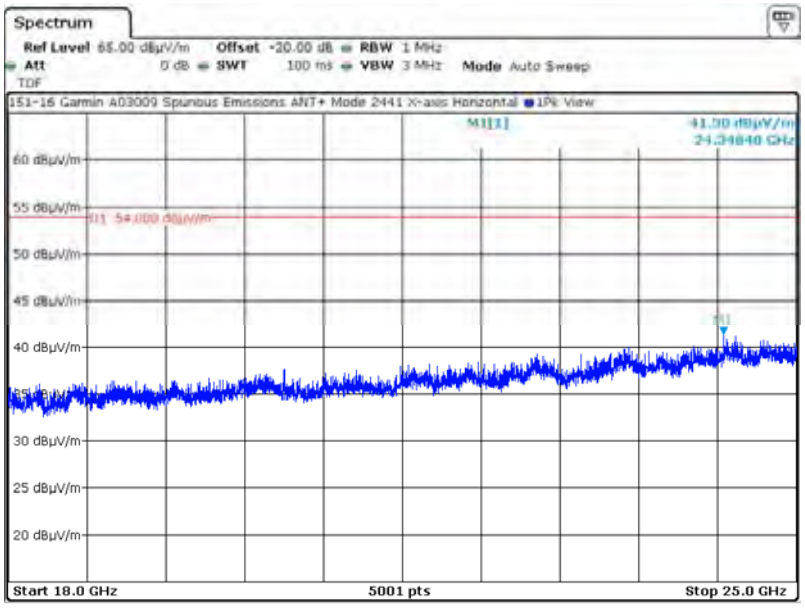
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C2. Device Under Test Frequency – 2441 MHz

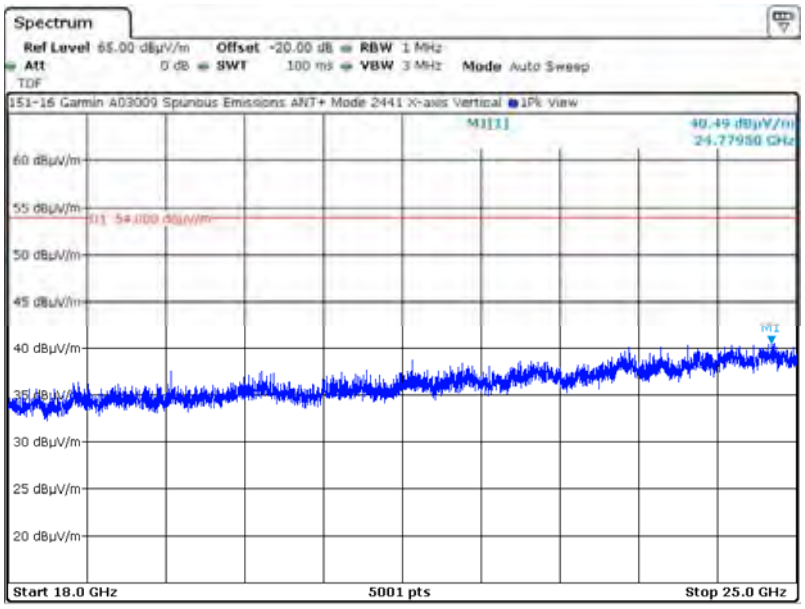
C2.7. Measurement Results – 18 GHz to 25 GHz

C2.7.1. X-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:29:55

C2.7.2. X-Axis, Vertical Antenna



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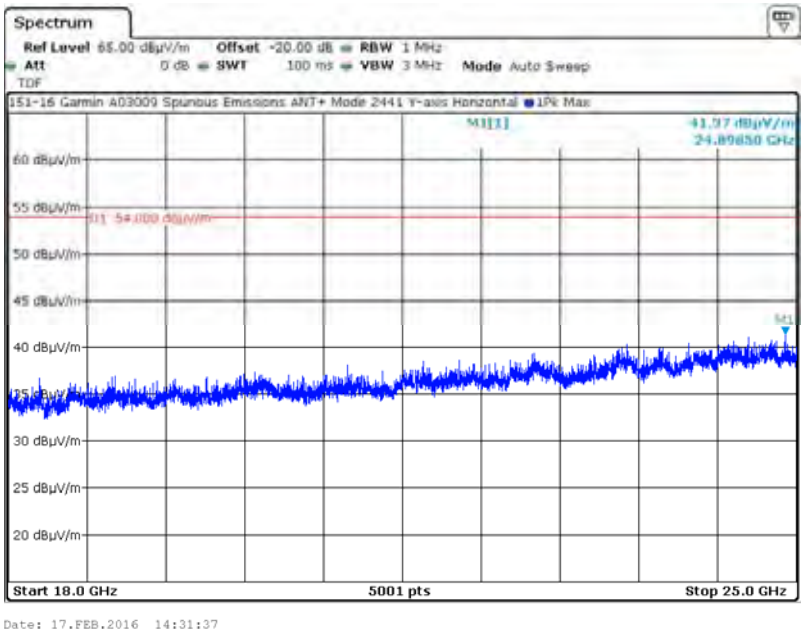
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C2. Device Under Test Frequency – 2441 MHz

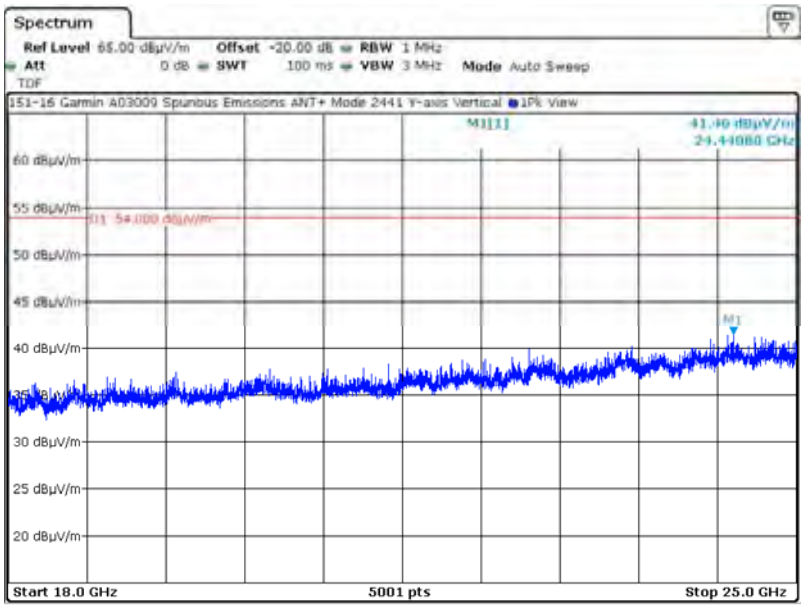
C2.7. Measurement Results – 18 GHz to 25 GHz

C2.7.3. Y-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:31:37

C2.7.4. Y-Axis, Vertical Antenna



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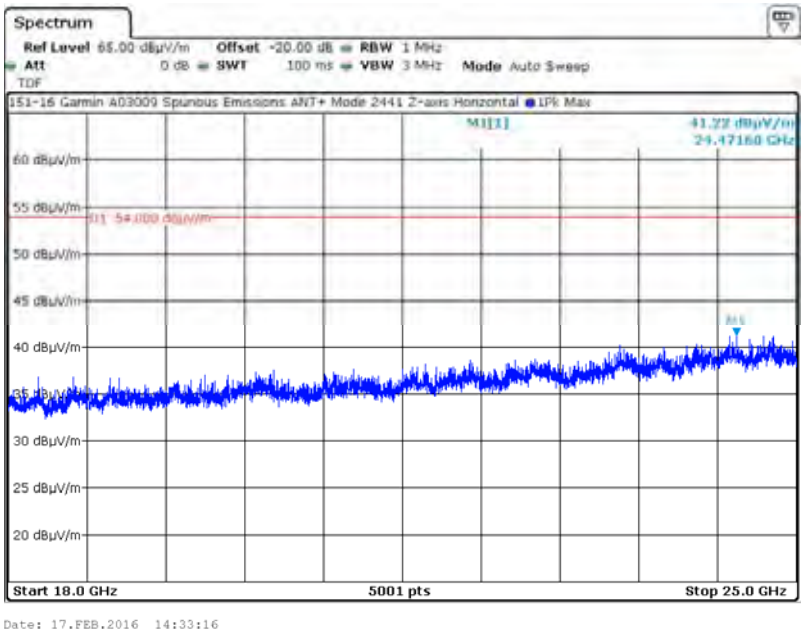
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

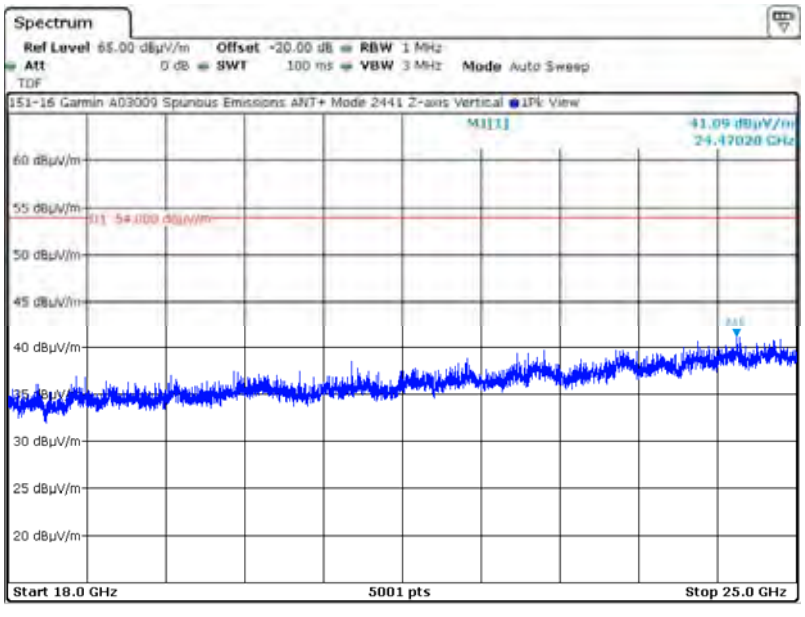
C2. Device Under Test Frequency – 2441 MHz

C2.7. Measurement Results – 18 GHz to 25 GHz

C2.7.5. Z-Axis, Horizontal Antenna



C2.7.6. Z-Axis, Vertical Antenna



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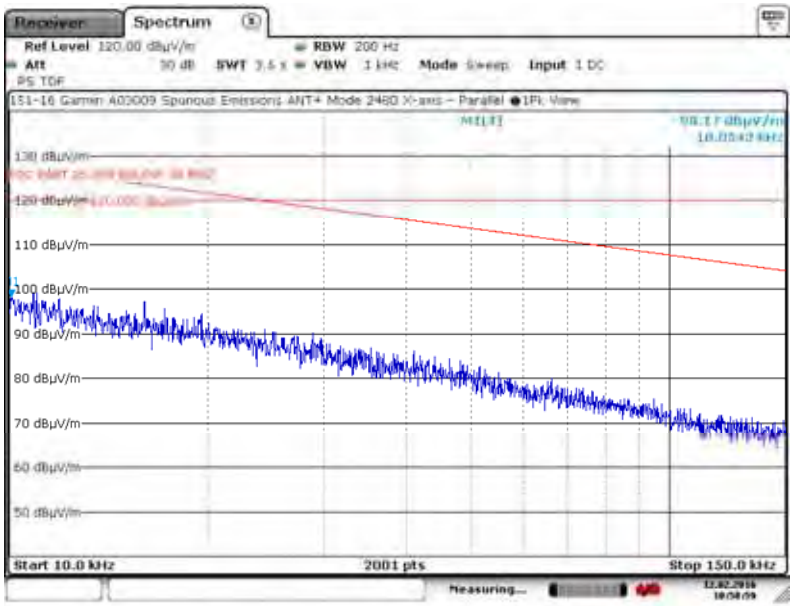
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

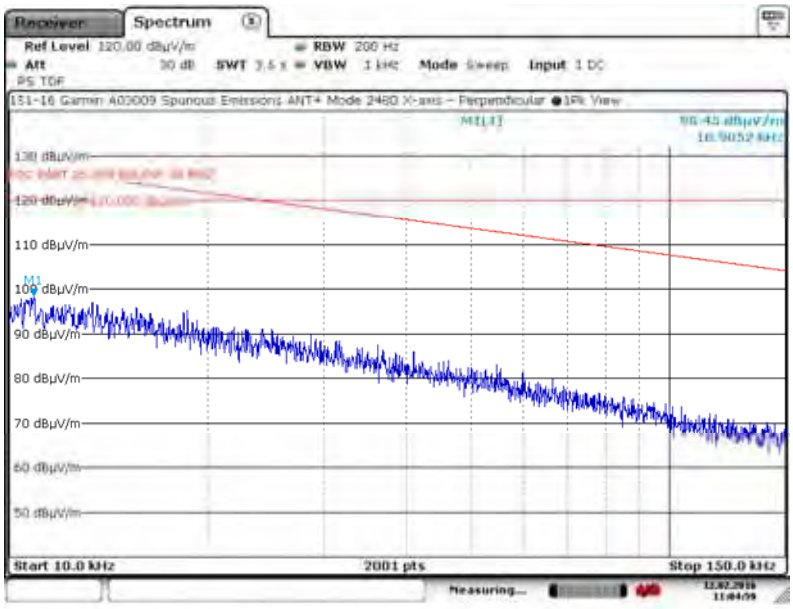
C3. Device Under Test Frequency – 2480 MHz

C3.1. Measurement Results – 10 kHz to 150 kHz

C3.1.1. X-Axis, Parallel Antenna



3.1.2. X-Axis, Perpendicular Antenna



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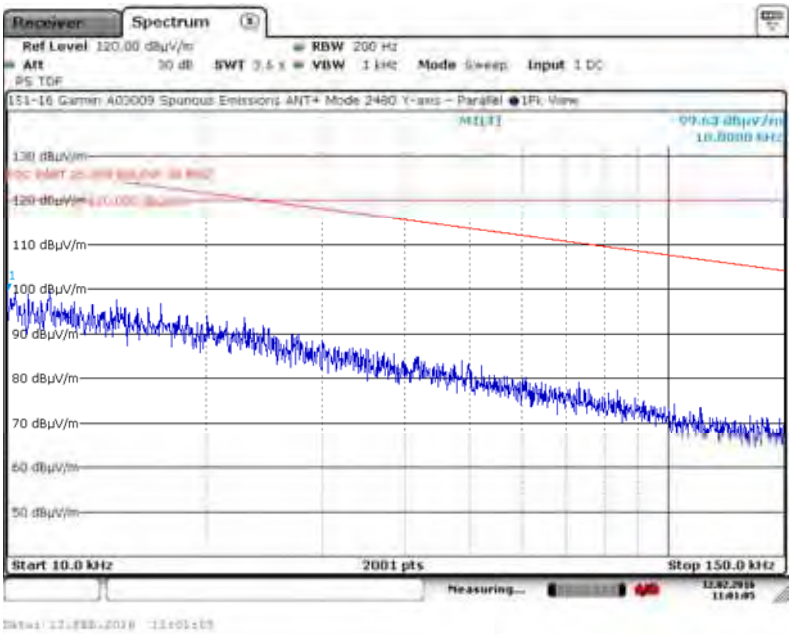
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

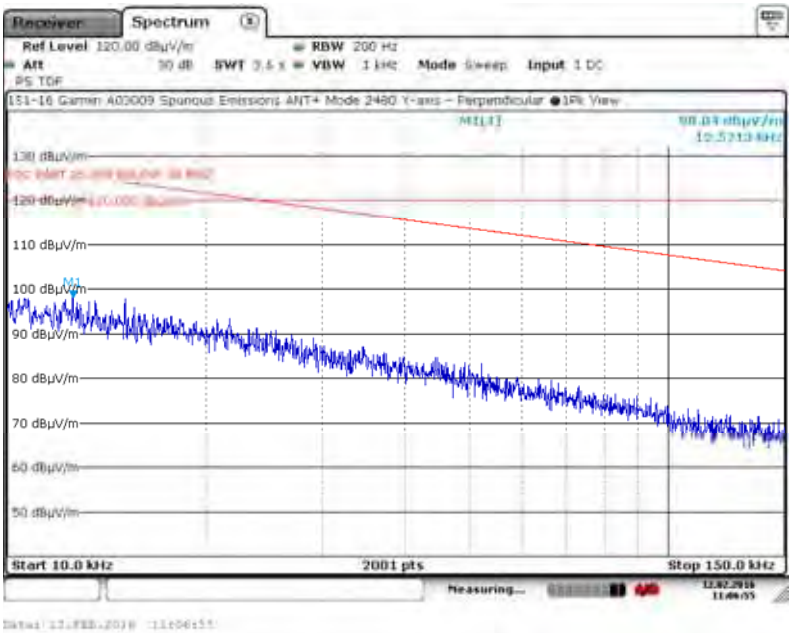
C3. Device Under Test Frequency – 2480 MHz

C3.1. Measurement Results – 10 kHz to 150 kHz

C3.1.3. Y-Axis, Parallel Antenna



C3.1.4. Y-Axis, Perpendicular Antenna



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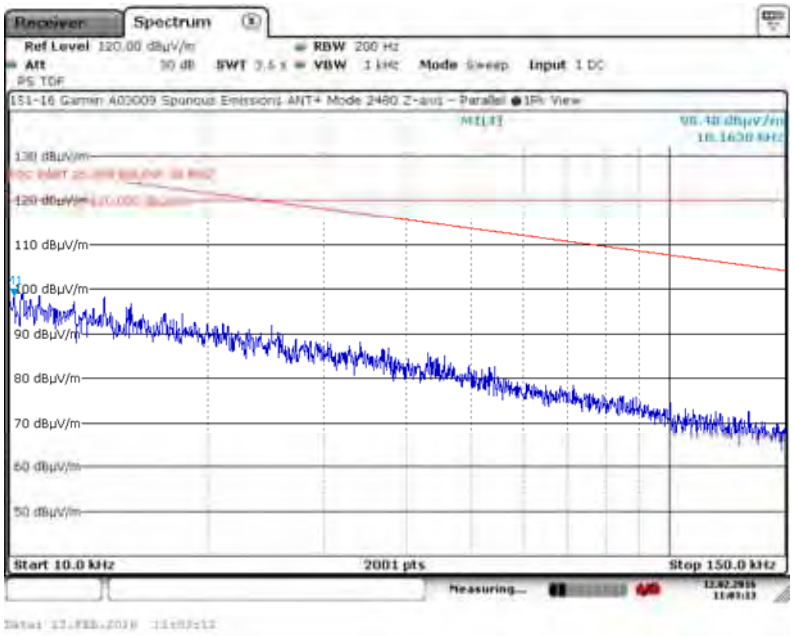
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

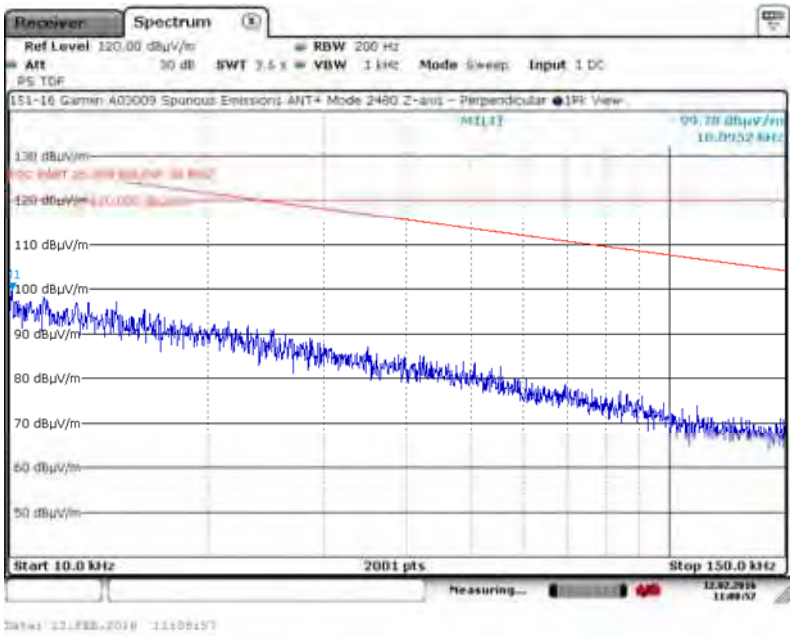
C3. Device Under Test Frequency – 2480 MHz

C3.1. Measurement Results – 10 kHz to 150 kHz

C3.1.5. Z-Axis, Parallel Antenna



C3.1.6. Z-Axis, Perpendicular Antenna



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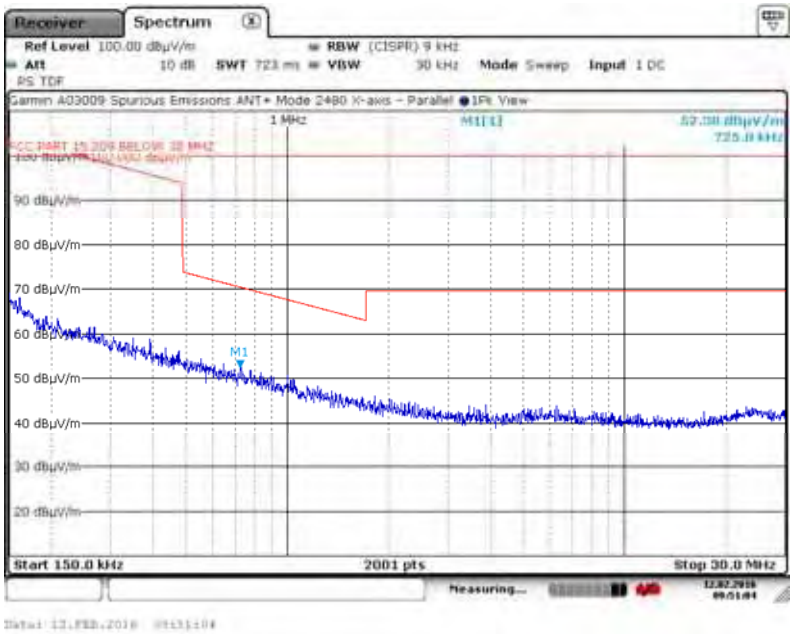
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

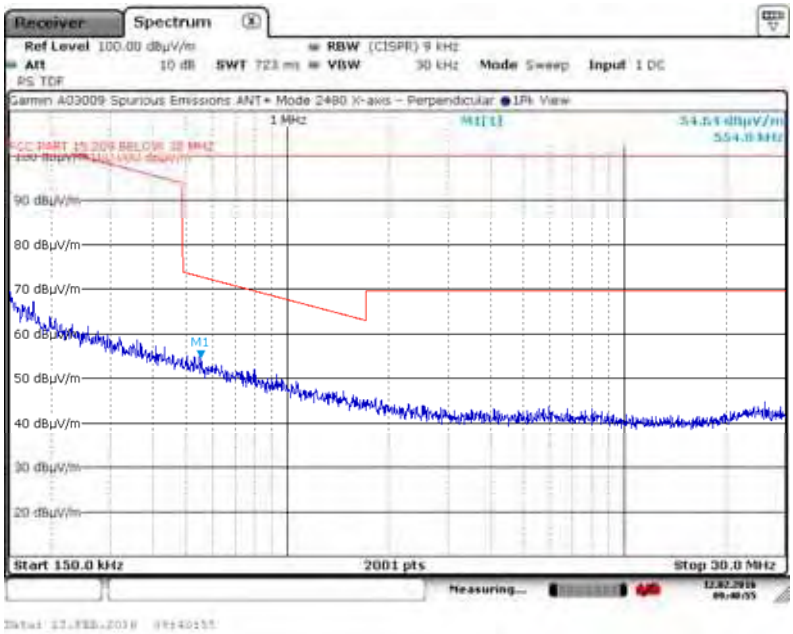
C3. Device Under Test Frequency – 2480 MHz

C3.2. Measurement Results – 150 kHz to 30 MHz

C3.2.1. X-Axis, Parallel Antenna



C3.2.2. X-Axis, Perpendicular Antenna



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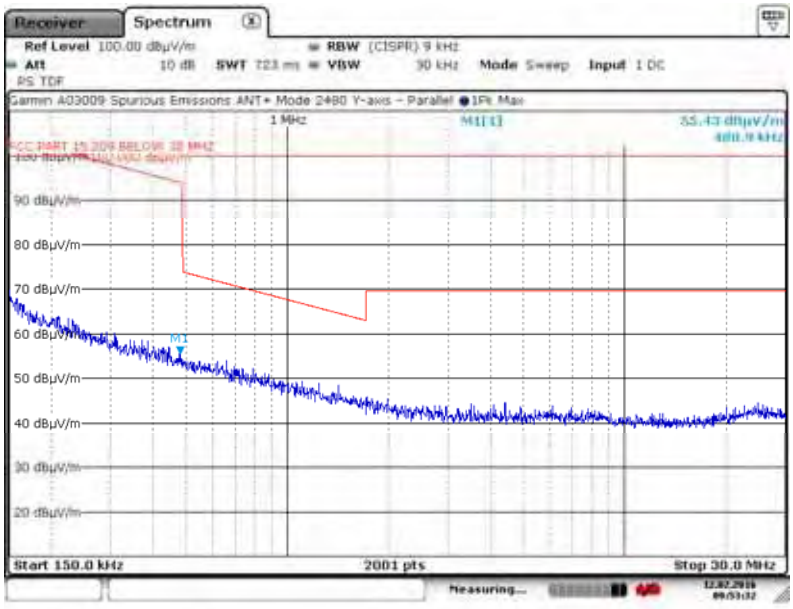
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

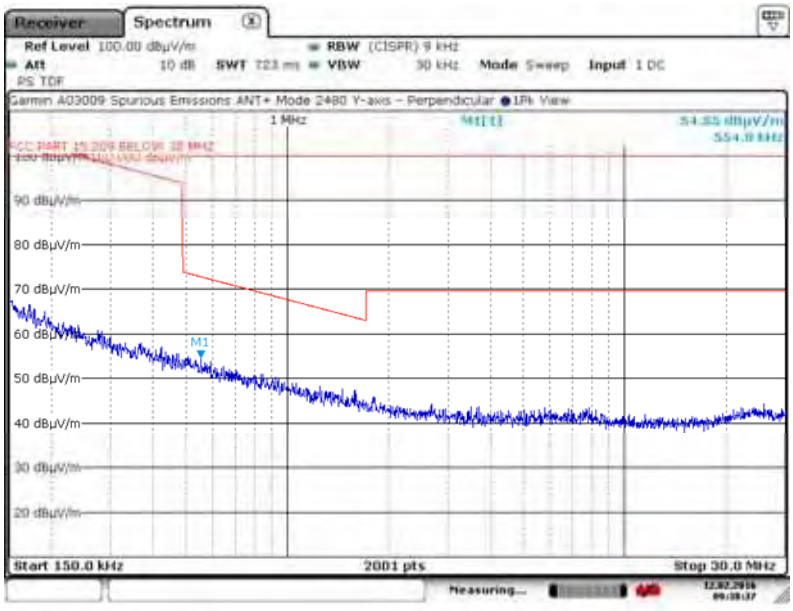
C3. Device Under Test Frequency – 2480 MHz

C3.2. Measurement Results – 150 kHz to 30 MHz

C3.2.3. Y-Axis, Parallel Antenna



C3.2.4. Y-Axis, Perpendicular Antenna



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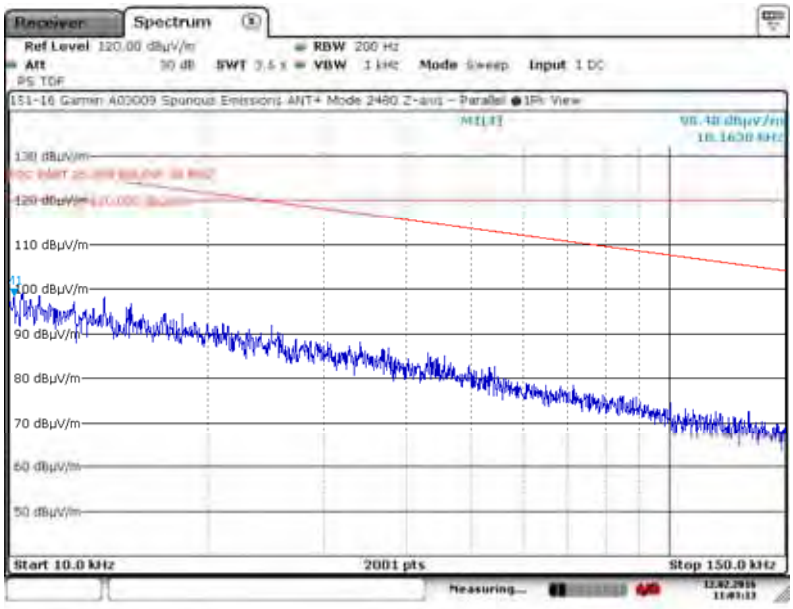
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C3. Device Under Test Frequency – 2480 MHz

C3.2. Measurement Results – 150 kHz to 30 MHz

C3.2.5. Z-Axis, Parallel Antenna



C3.2.6. Z-Axis, Perpendicular Antenna

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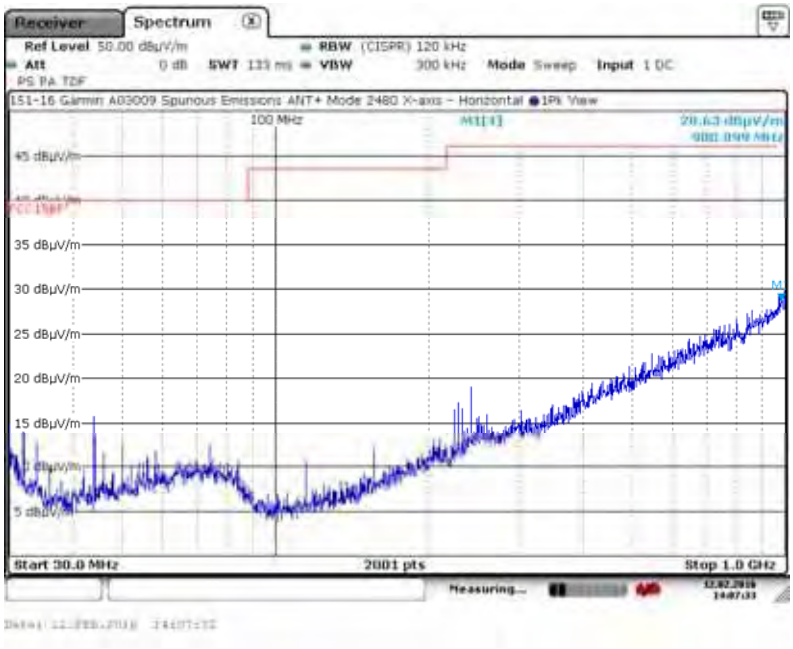
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

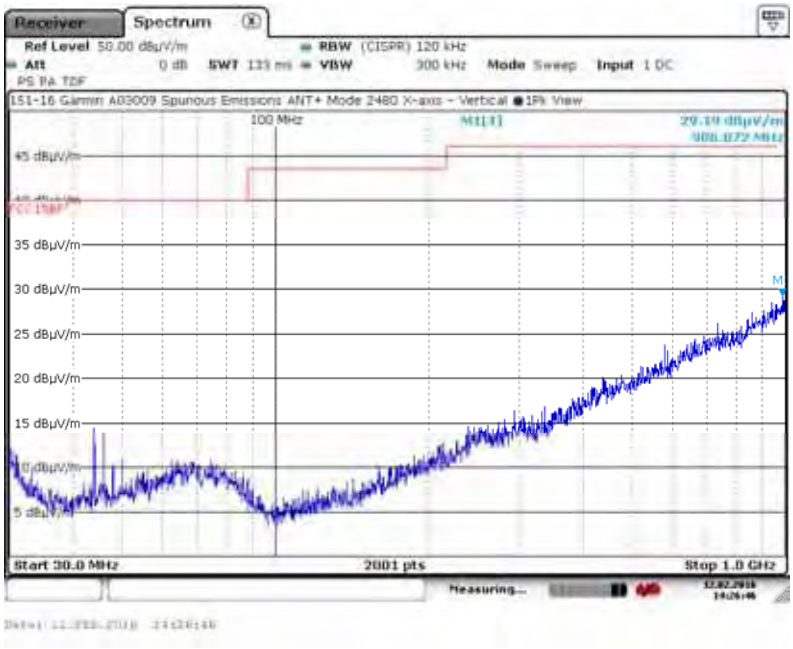
C3. Device Under Test Frequency – 2480 MHz

C3.3. Measurement Results – 30 MHz to 1 GHz

C2.3.1. X-Axis, Horizontal Antenna



C3.3.2. X-Axis, Vertical Antenna



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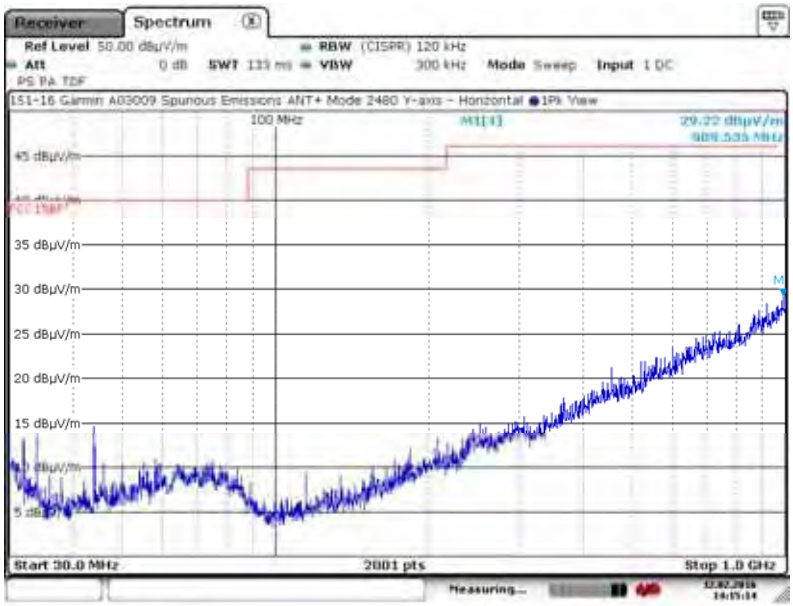
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

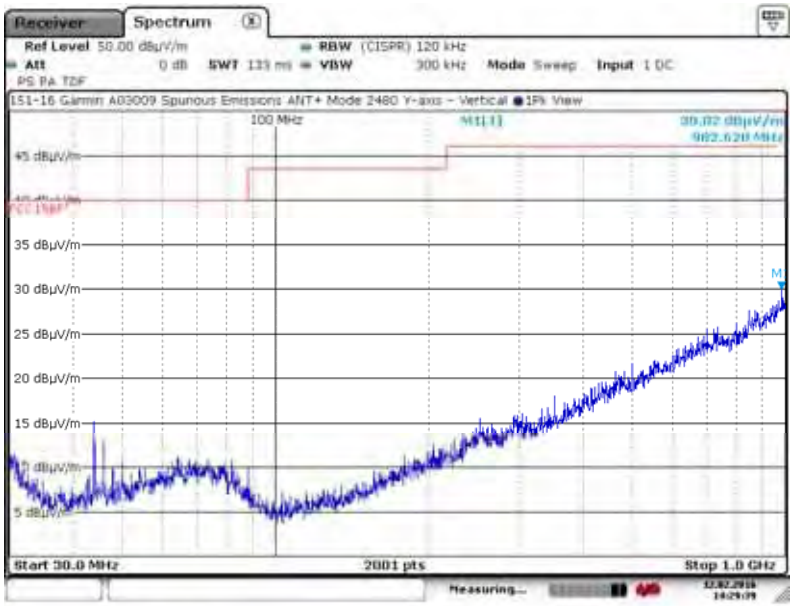
C3. Device Under Test Frequency – 2480 MHz

C3.3. Measurement Results – 30 MHz to 1 GHz

C3.3.3. Y-Axis, Horizontal Antenna



C3.3.4. Y-Axis, Vertical Antenna



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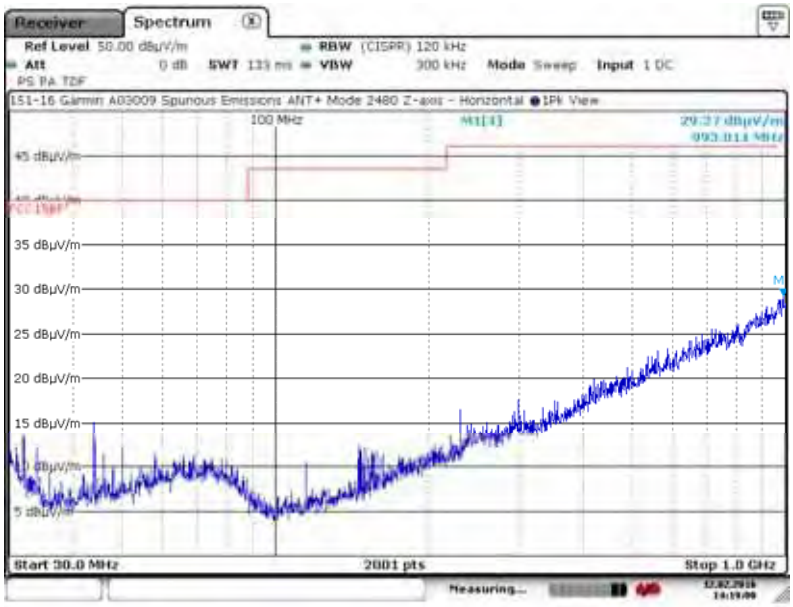
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

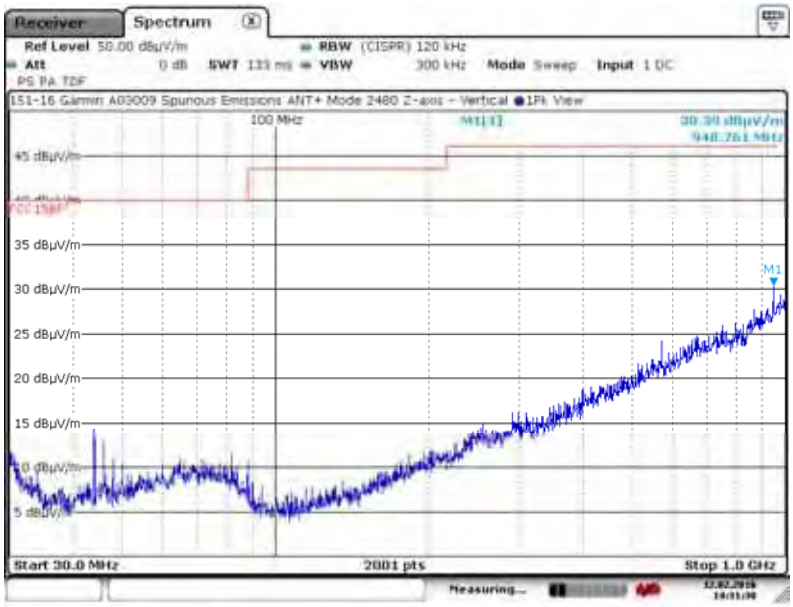
C3. Device Under Test Frequency – 2480 MHz

C3.3. Measurement Results – 30 MHz to 1 GHz

C2.3.5. Z-Axis, Horizontal Antenna



C3.3.6. Z-Axis, Vertical Antenna



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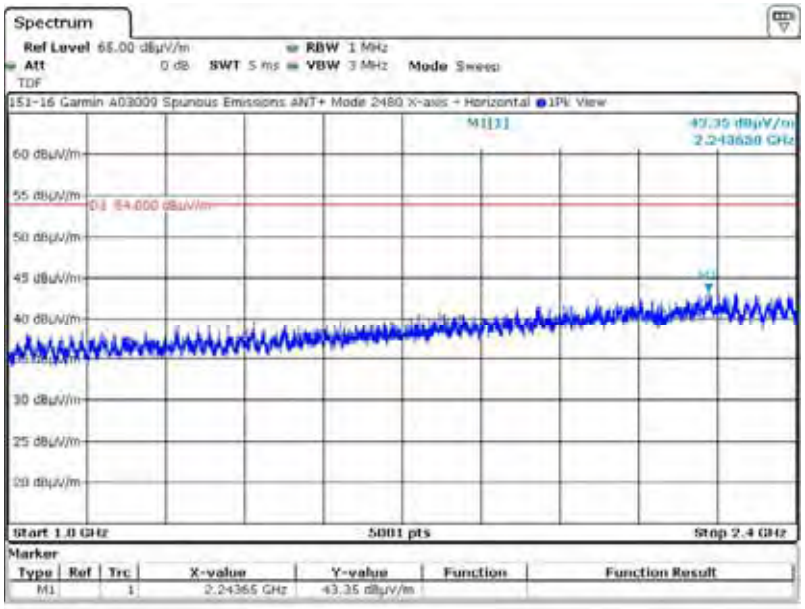
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

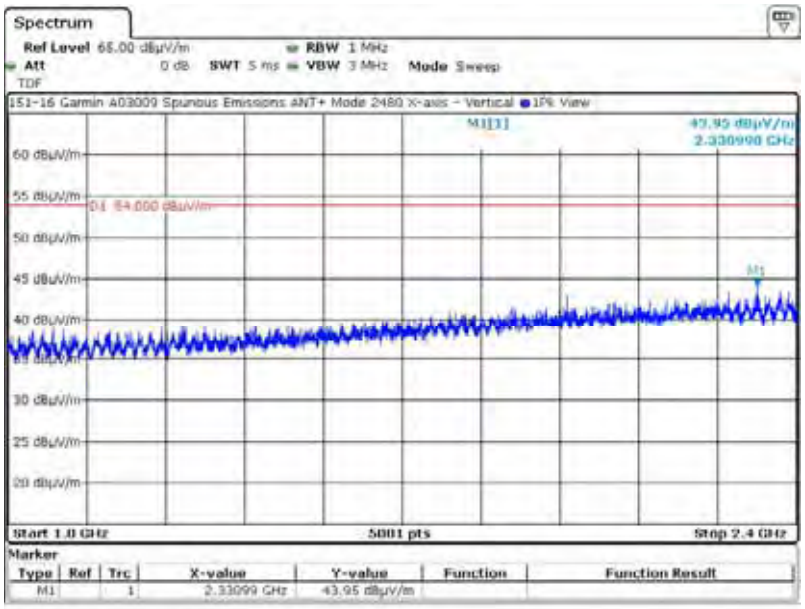
C3. Device Under Test Frequency – 2480 MHz

C2.4. Measurement Results – 1 GHz to 2.4 GHz

C3.4.1. X-Axis, Horizontal Antenna



C3.4.2. X-Axis, Vertical Antenna



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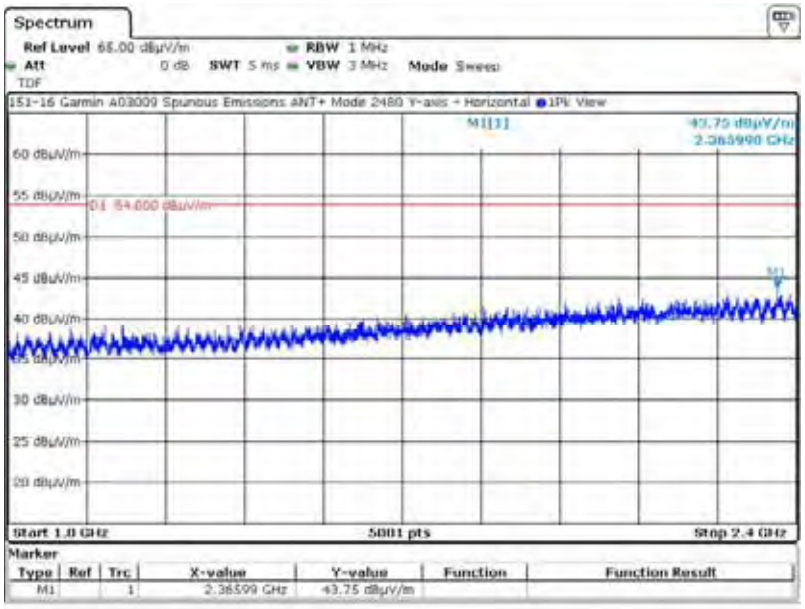
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

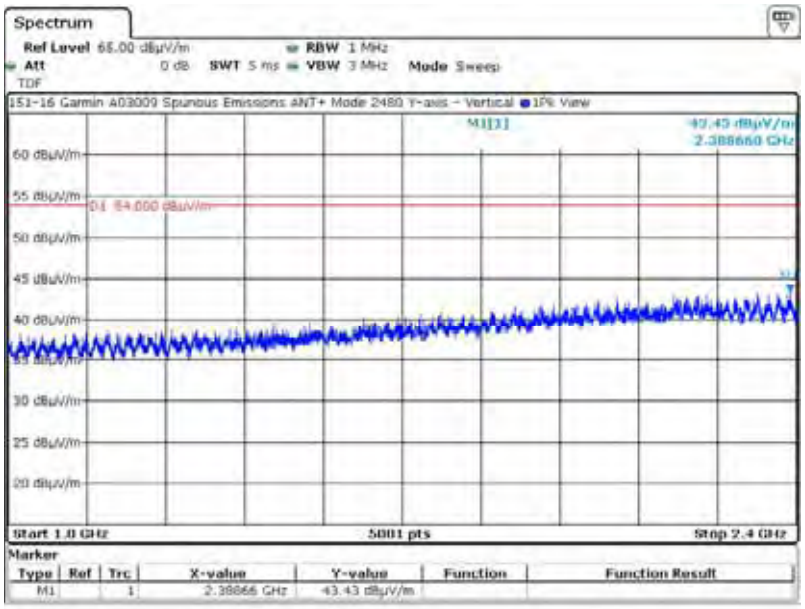
C3. Device Under Test Frequency – 2480 MHz

C3.4. Measurement Results – 1 GHz to 2.4 GHz

C3.4.3. Y-Axis, Horizontal Antenna



C3.4.4. Y-Axis, Vertical Antenna



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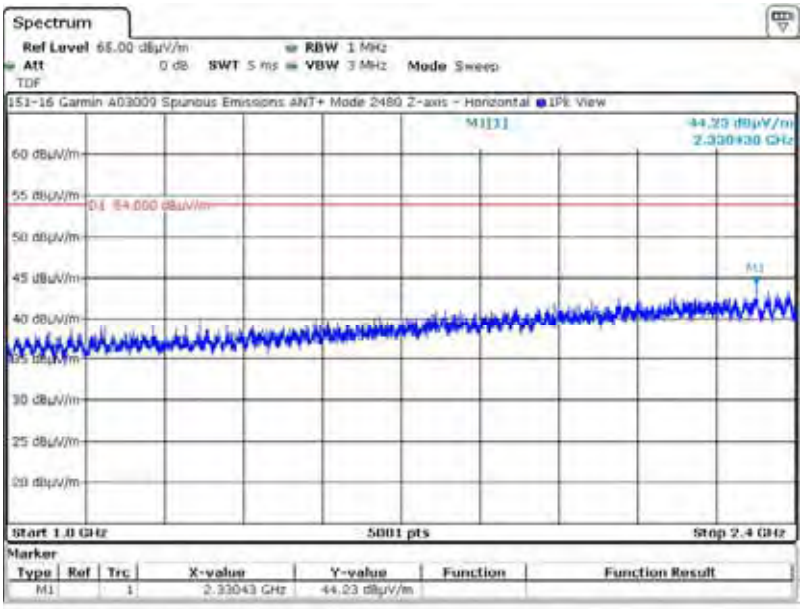
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

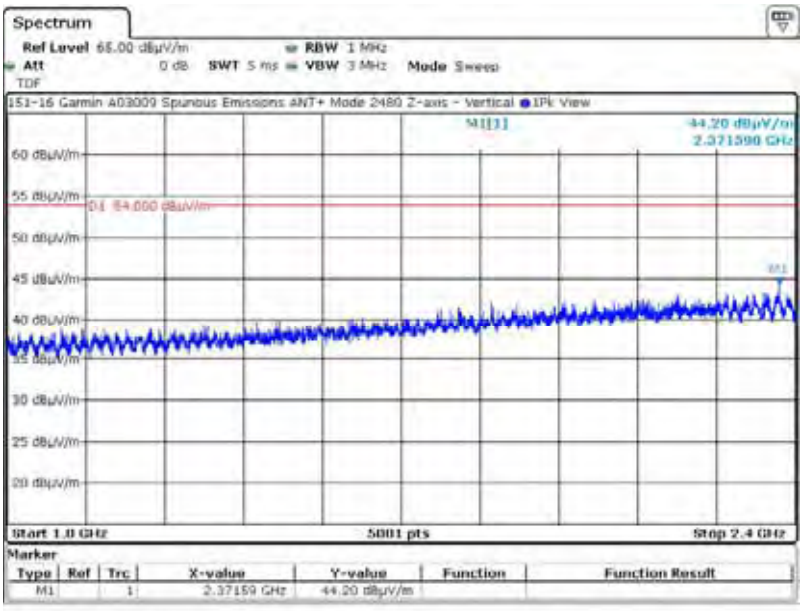
C3. Device Under Test Frequency – 2480 MHz

C3.4. Measurement Results – 1 GHz to 2.4 GHz

C3.4.5. Z-Axis, Horizontal Antenna



C3.4.6. Z-Axis, Vertical Antenna



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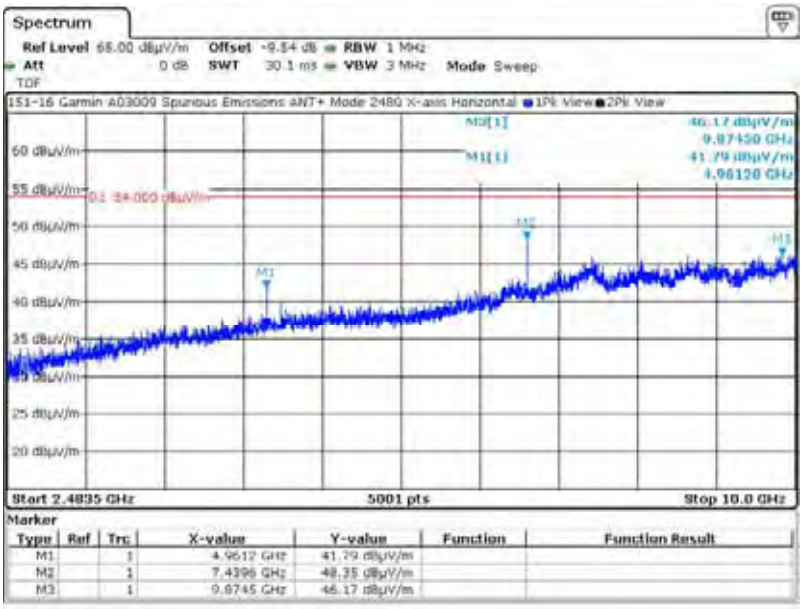
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

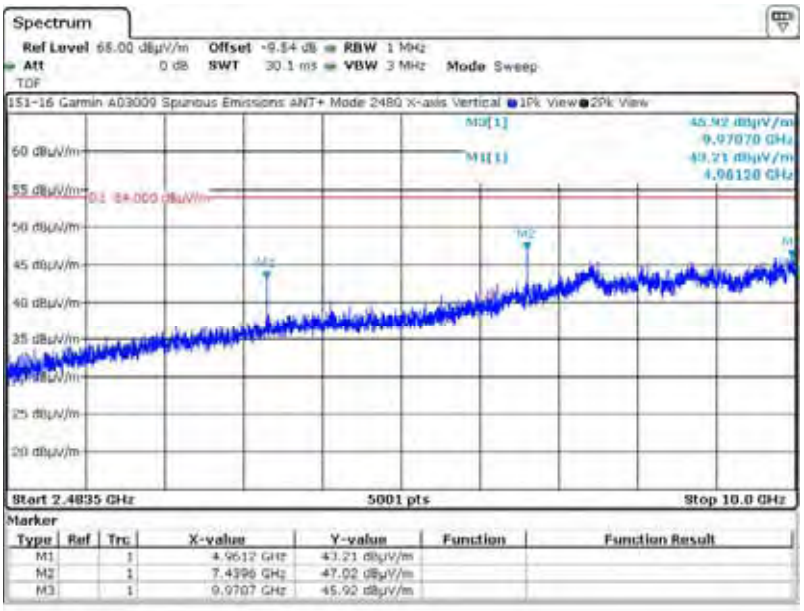
C3. Device Under Test Frequency – 2480 MHz

C3.5. Measurement Results – 2.4835 GHz to 10 GHz

C3.5.1. X-Axis, Horizontal Antenna



C3.5.2. X-Axis, Vertical Antenna



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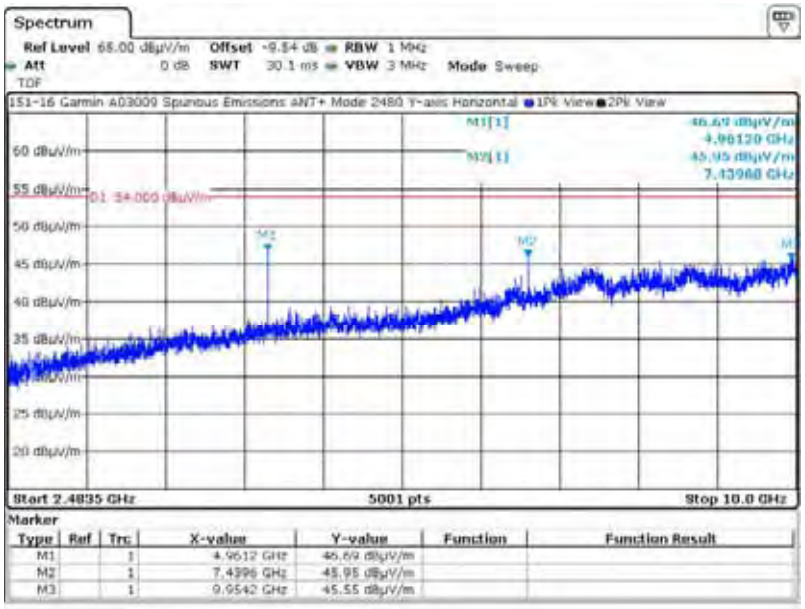
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

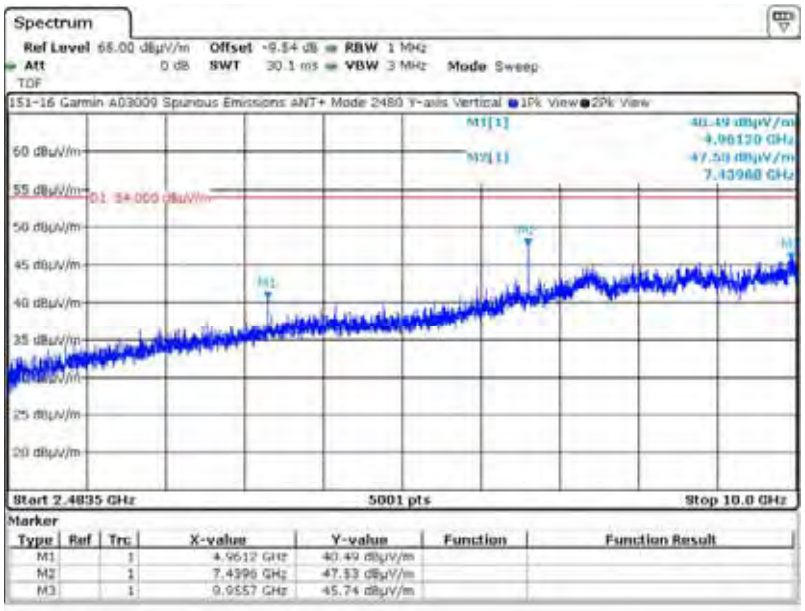
C3. Device Under Test Frequency – 2480 MHz

C3.5. Measurement Results – 2.4835 GHz to 10 GHz

C3.5.3. Y-Axis, Horizontal Antenna



C3.5.4. Y-Axis, Vertical Antenna



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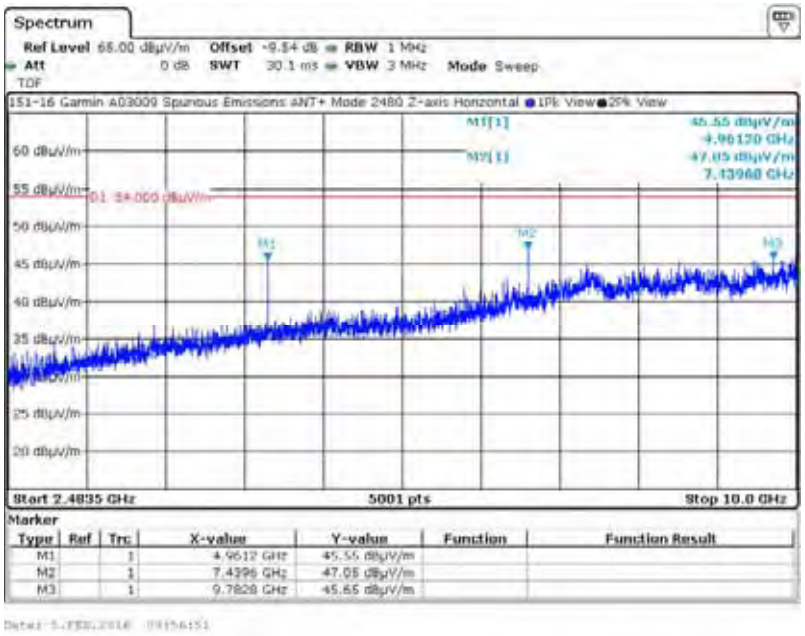
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

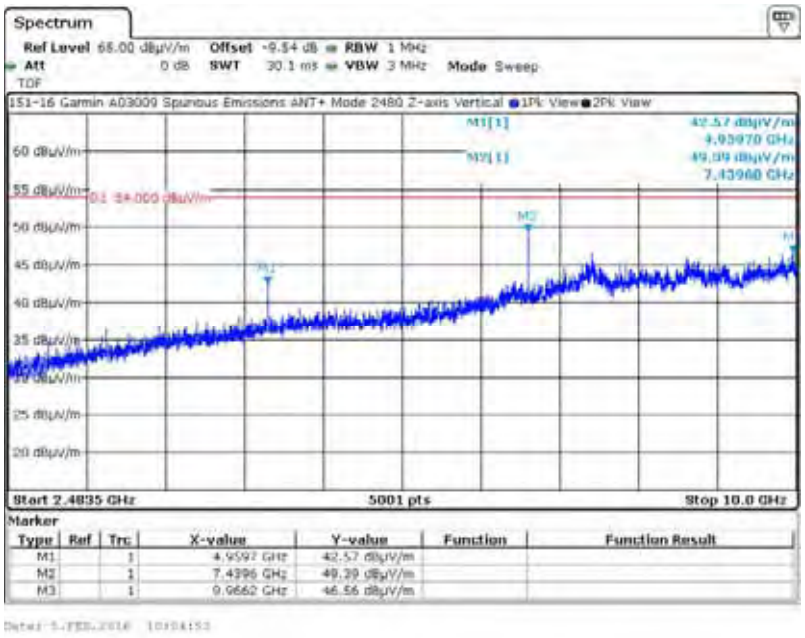
C3. Device Under Test Frequency – 2480 MHz

C3.5. Measurement Results – 2.4835 GHz to 10 GHz

C3.5.5. Z-Axis, Horizontal Antenna



C3.5.6. Z-Axis, Vertical Antenna



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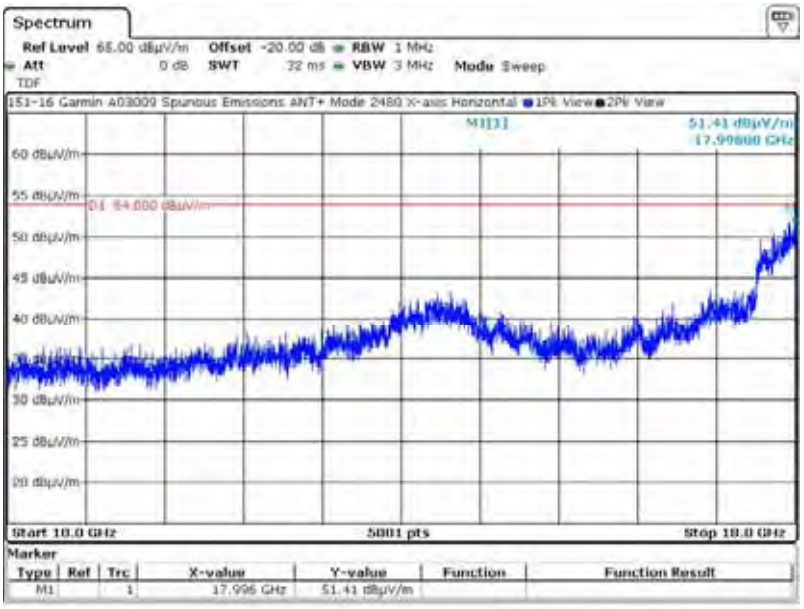
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

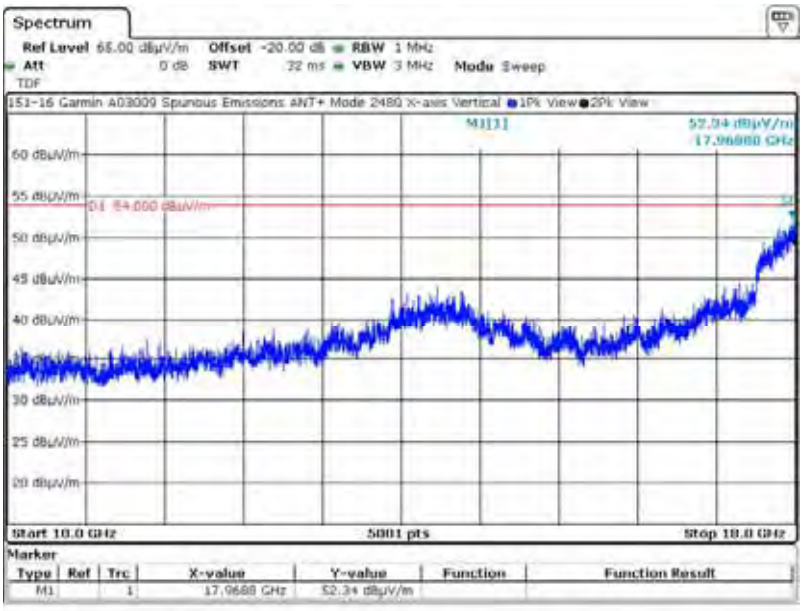
C3. Device Under Test Frequency – 2480 MHz

C3.6. Measurement Results – 10 GHz to 18 GHz

C3.6.1. X-Axis, Horizontal Antenna



C3.6.2. X-Axis, Vertical Antenna



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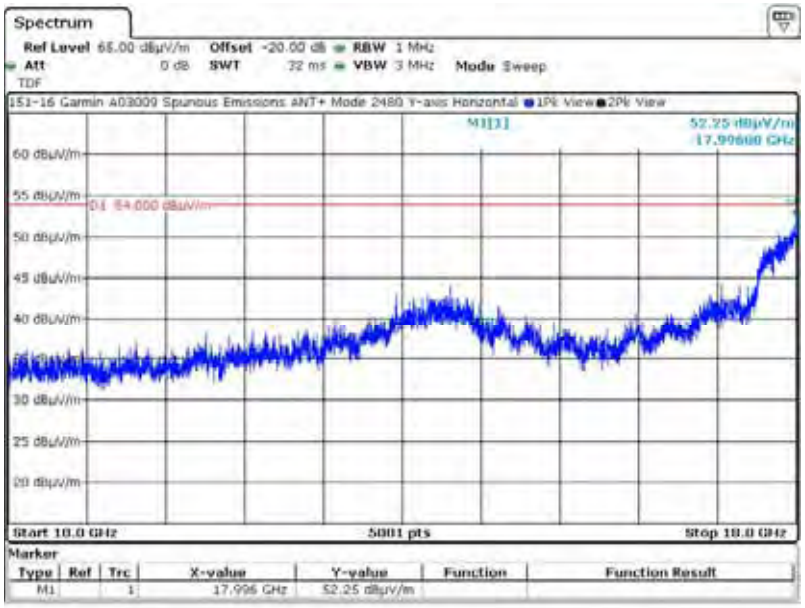
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

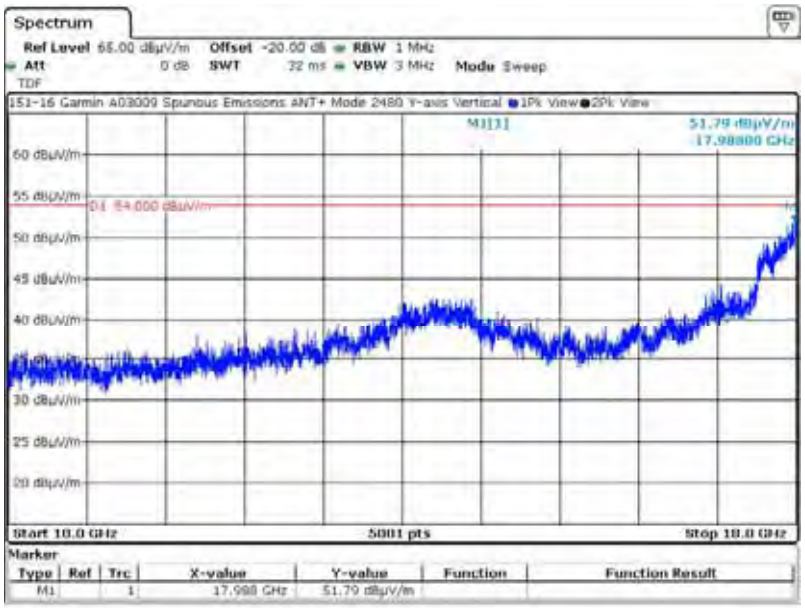
C3. Device Under Test Frequency – 2480 MHz

C3.6. Measurement Results – 10 GHz to 18 GHz

C3.6.3. Y-Axis, Horizontal Antenna



C3.6.4. Y-Axis, Vertical Antenna



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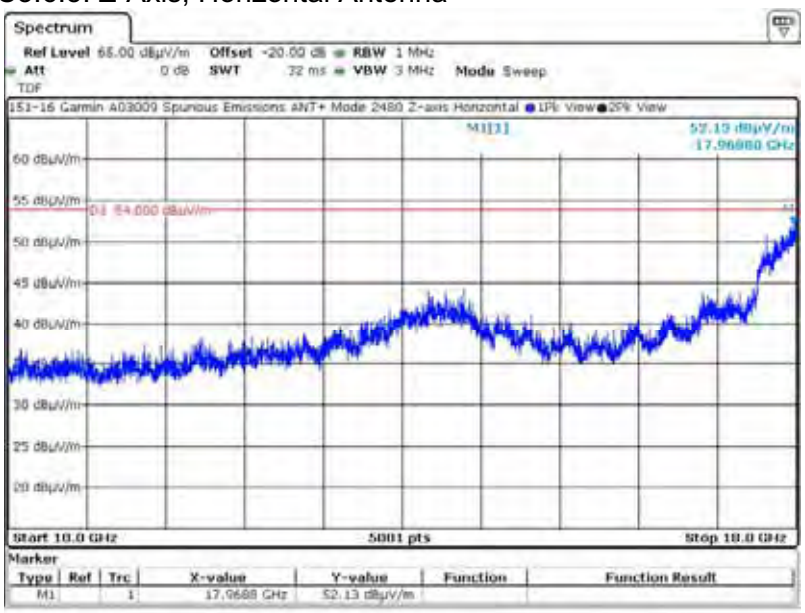
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

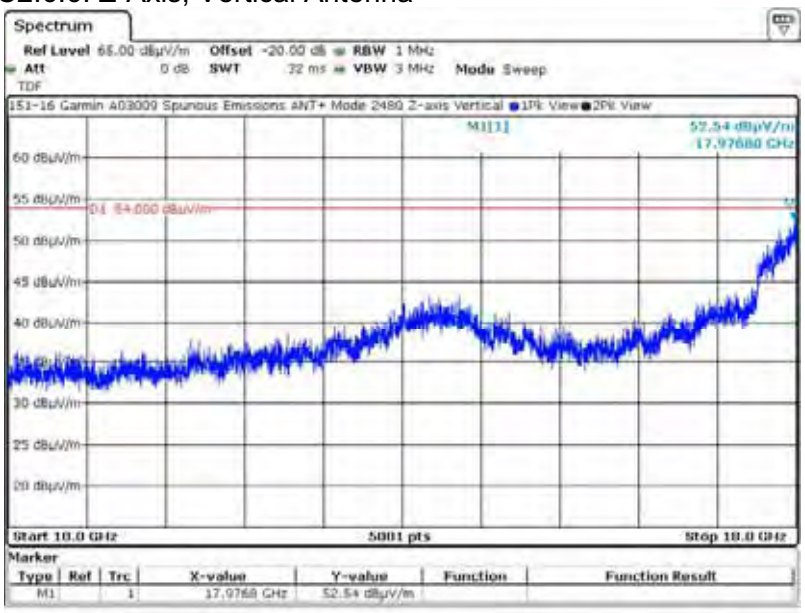
C3. Device Under Test Frequency – 2480 MHz

C3.6. Measurement Results – 10 GHz to 18 GHz

C3.6.5. Z-Axis, Horizontal Antenna



C2.6.6. Z-Axis, Vertical Antenna



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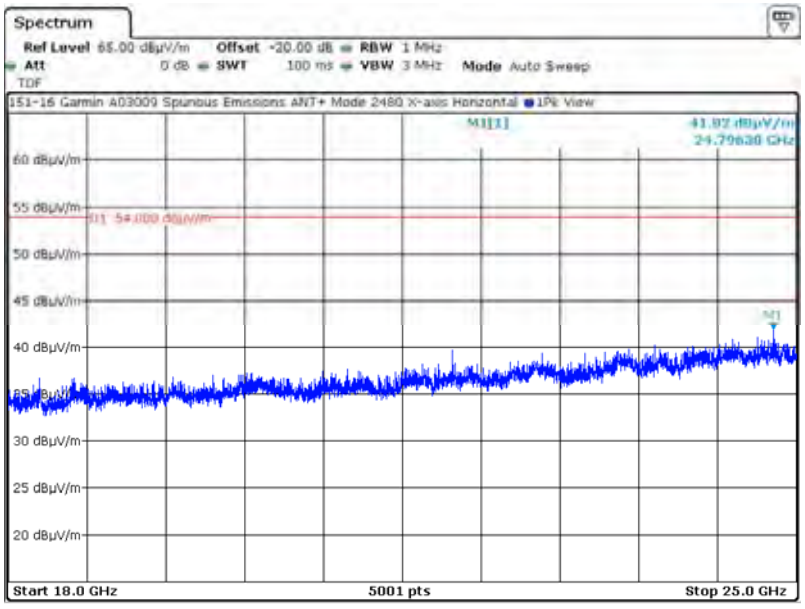
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C3. Device Under Test Frequency – 2480 MHz

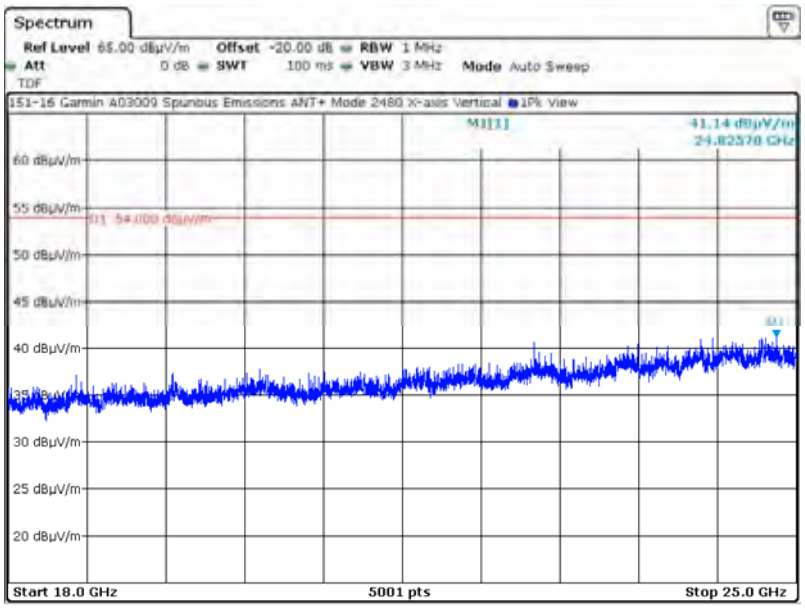
C3.7. Measurement Results – 18 GHz to 25 GHz

C3.7.1. X-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:45:52

C3.7.2. X-Axis, Vertical Antenna



Date: 17.FEB.2016 14:40:38

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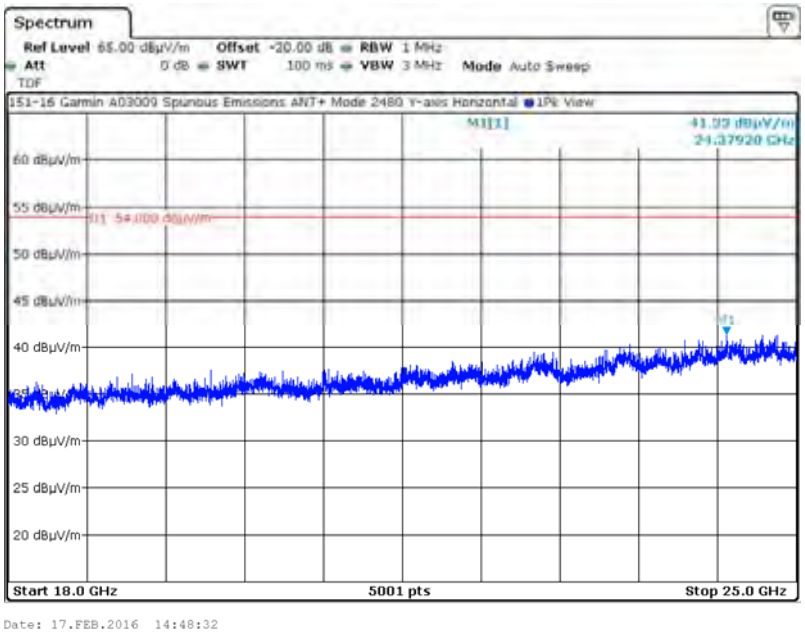
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

C3. Device Under Test Frequency – 2480 MHz

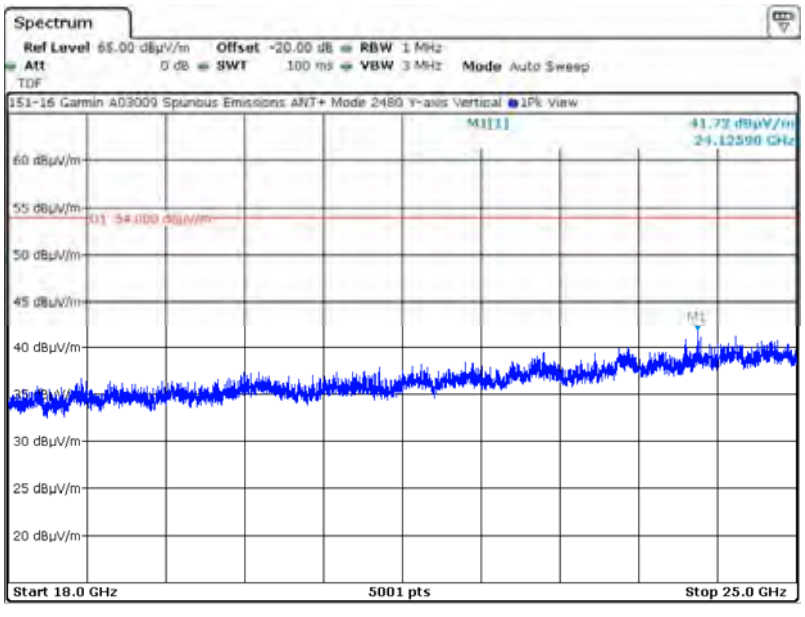
C3.7. Measurement Results – 18 GHz to 25 GHz

C3.7.3. Y-Axis, Horizontal Antenna



Date: 17.FEB.2016 14:48:32

C3.7.4. Y-Axis, Vertical Antenna



Date: 17.FEB.2016 14:42:16

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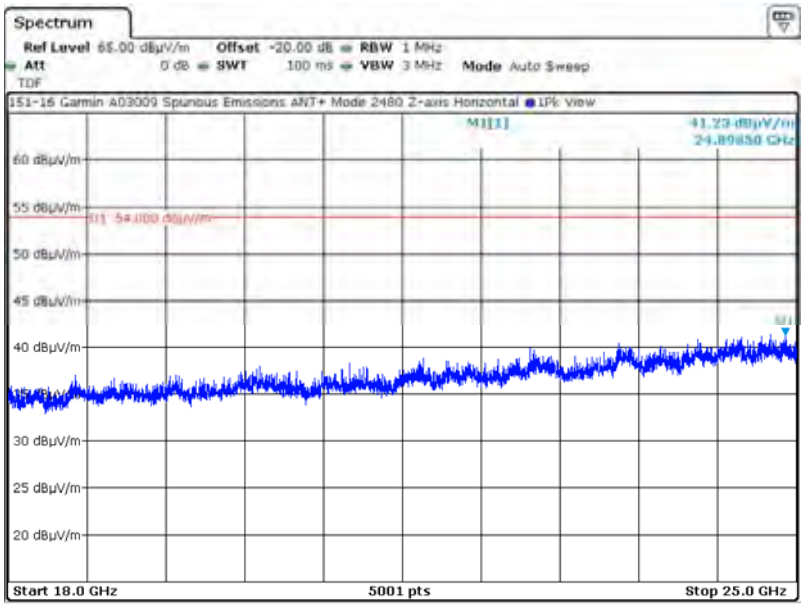
Appendix C – ANT+ Mode (continued)

Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN, ISSUE 4

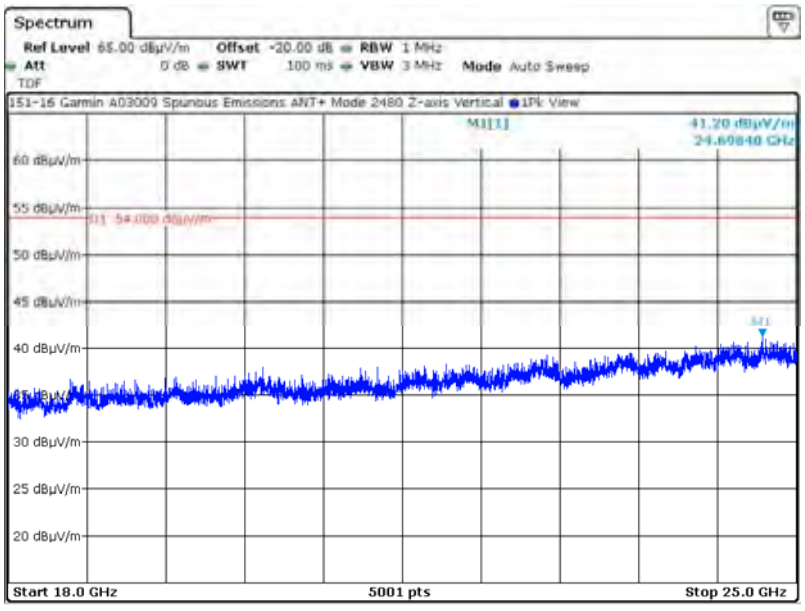
C3. Device Under Test Frequency – 2480 MHz

C3.7. Measurement Results – 18 GHz to 25 GHz

C3.7.5. Z-Axis, Horizontal Antenna



C3.7.6. Z-Axis, Vertical Antenna



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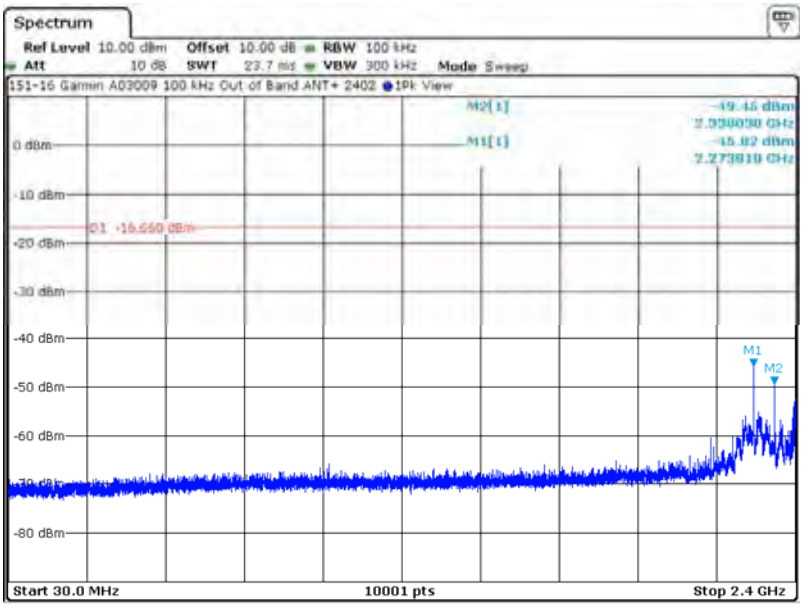
Appendix D – ANT+ Mode

Emissions in Non-Restricted Frequency Bands (15.247(d))

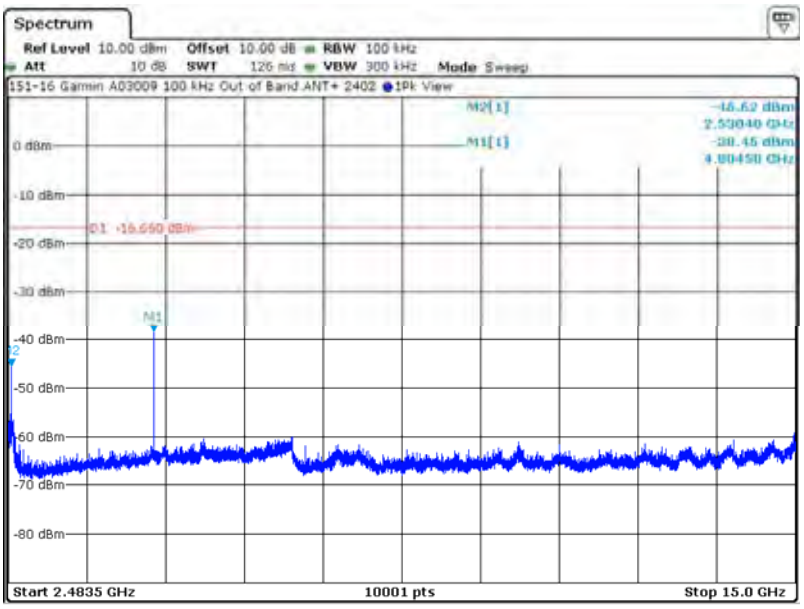
D1. Device Under Test Frequency – 2402 MHz

D1.1. Measurement Results – 30 MHz to 2.4 GHz



Date: 18.FEB.2016 10:32:53

D1.2. Measurement Results – 2483.50 MHz to 15 GHz



Date: 18.FEB.2016 10:34:13

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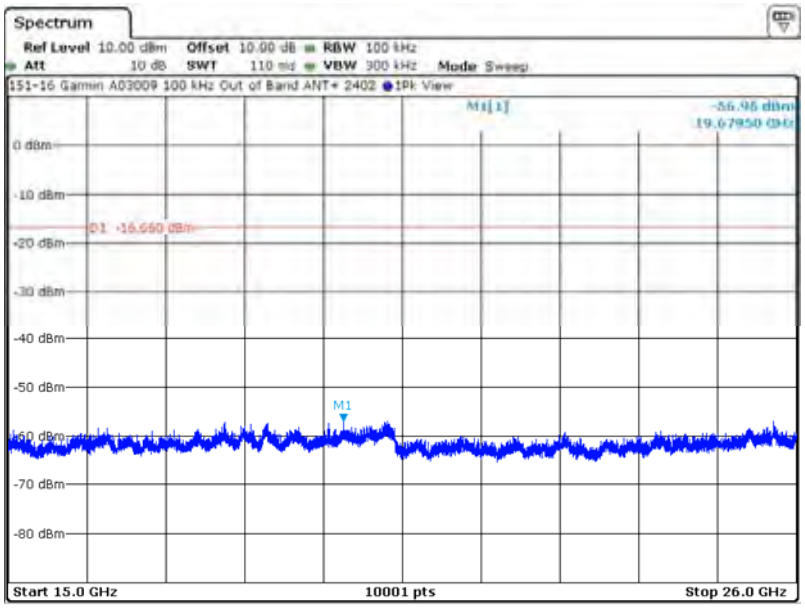
Appendix D – ANT+ Mode (continued)

Emissions in Non-Restricted Frequency Bands (15.247(d)) (continued)

D1. Device Under Test Frequency – 2402 MHz

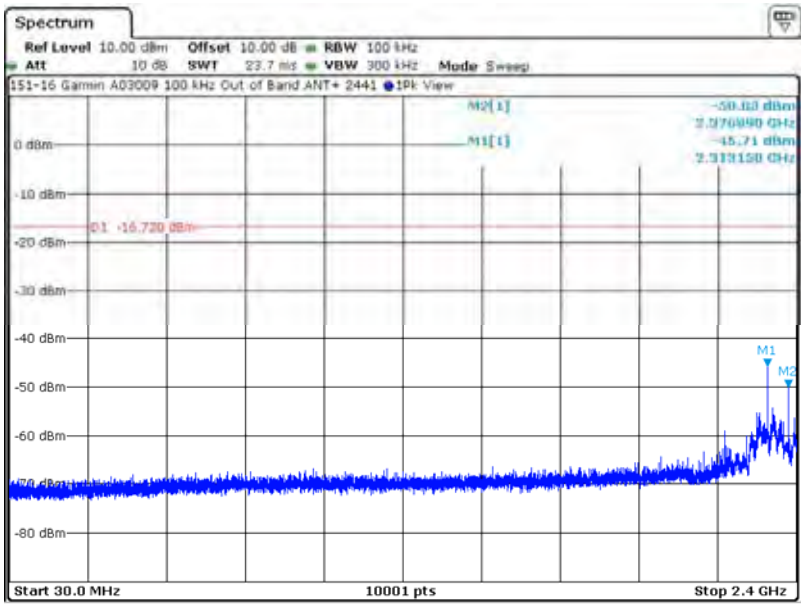
D1.3 Device Under Test Frequency – 15 GHz to 26 GHz



Date: 18.FEB.2016 10:31:57

D2. Device Under Test Frequency – 2441 MHz

D2.1. Measurement Results – 30 MHz to 2.4 GHz



Date: 18.FEB.2016 10:42:07

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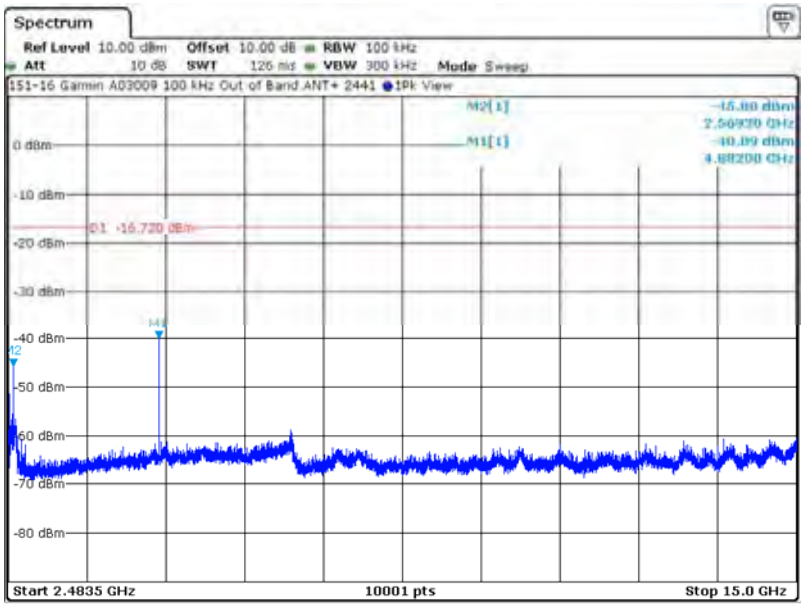
Appendix D – ANT+ Mode

Emissions in Non-Restricted Frequency Bands (15.247(d))

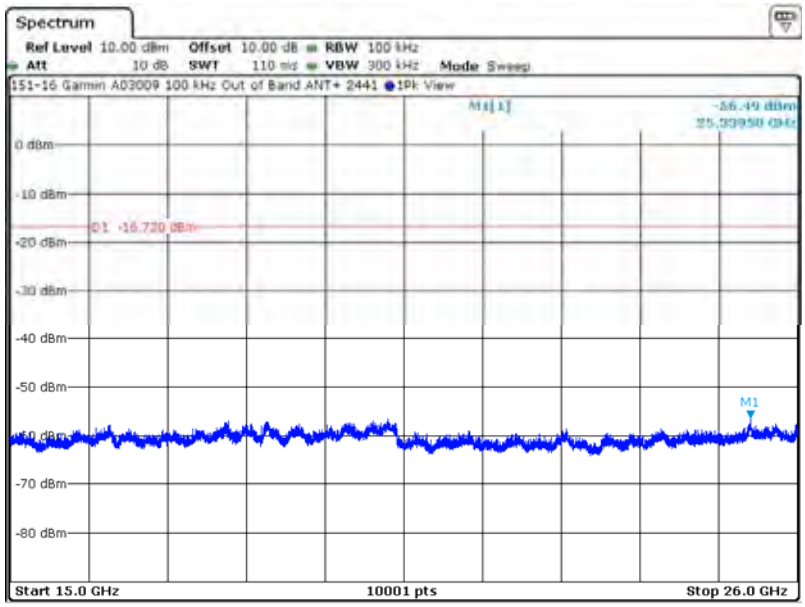
D2. Device Under Test Frequency – 2441 MHz

D2.2. Measurement Results – 2483.50 MHz to 15 GHz



Date: 18.FEB.2016 10:43:18

D2.3. Measurement Results – 15 GHz to 26 GHz



Date: 18.FEB.2016 10:41:24

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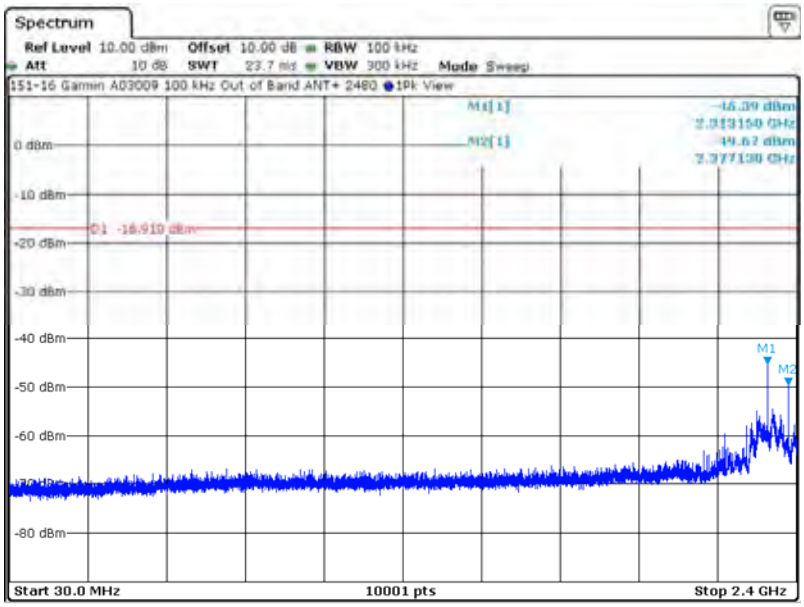
Appendix D – ANT+ Mode

Emissions in Non-Restricted Frequency Bands (15.247(d))

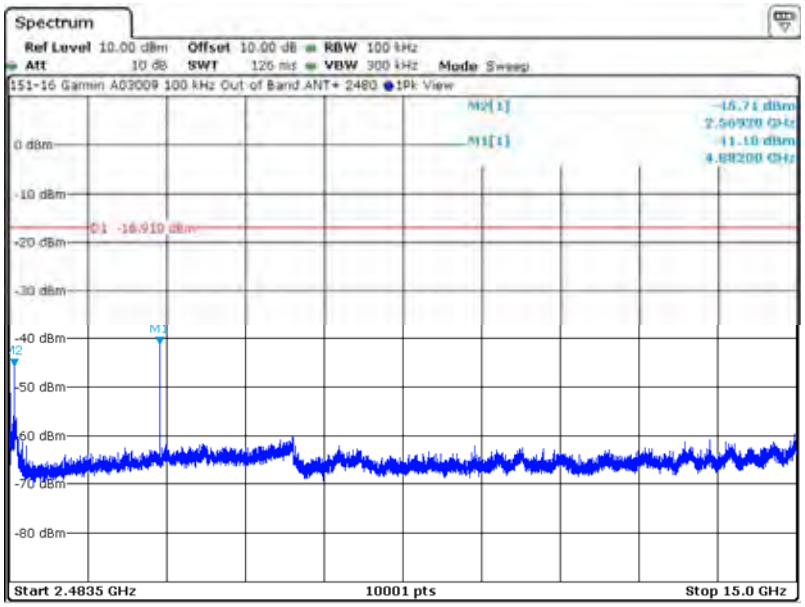
D1. Device Under Test Frequency – 2480 MHz

D3.1. Measurement Results – 30 MHz to 2.4 GHz



Date: 18.FEB.2016 10:46:56

D3.2. Measurement Results – 2483.50 MHz to 15 GHz



Date: 18.FEB.2016 10:45:22

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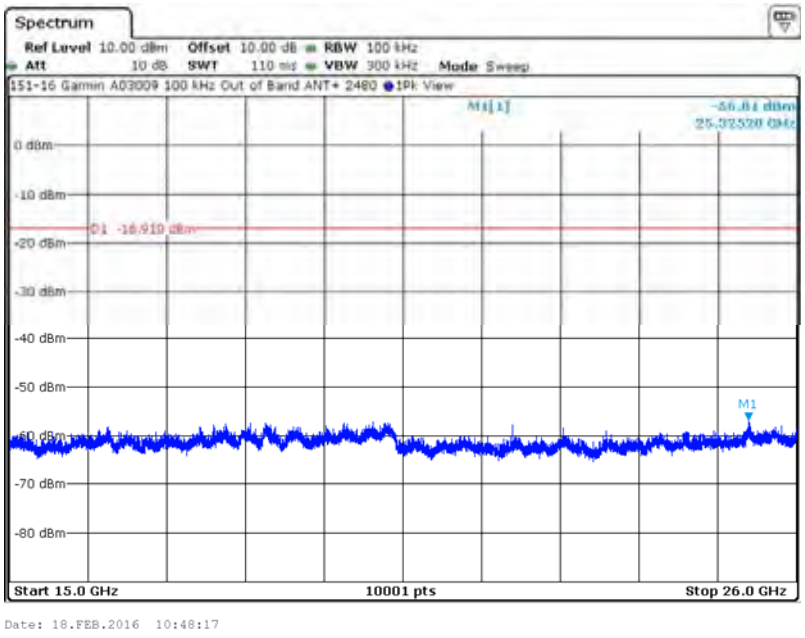
Appendix D – ANT+ Mode (continued)

Emissions in Non-Restricted Frequency Bands (15.247(d)) (continued)

D3. Device Under Test Frequency – 2480 MHz

D3.3 Device Under Test Frequency – 15 GHz to 26 GHz



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