COMPLIANCE WORLDWIDE INC.
TEST REPORT 458-16

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

Ringly, Inc.
39 West 14th Street – Suite 202
New York, New York 10011
860-912-2047

for the

Bracelet and Charging Box
2.4 GHz BLE Transmitter

FCC ID: 2AB9V-0015
IC: 11926A-0015

Report Issued on October 14, 2016

Tested by

Brian F. Breault

Reviewed by

Larry K. Stillings

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1. Scope

This test report certifies that the Ringly Bracelet and Charging Box 2.4 GHz BLE 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: Ringly, Inc.
2.2. Model Number: Bracelet and Charging Box
2.3. Serial Number: N/A
2.4. EUT Description: Ringly connects to your phone via Bluetooth and lets you receive customized notifications through vibration and a subtle light on the side of the bracelet.
2.5. Power Source: Built-in 3.7 volt nominal lithium polymer battery
2.6. Hardware Rev.: Rev A
2.7. Software Rev.: v2.1.2
2.8. Modulation Type: GFSK
2.9. Product Changes: Antenna trace on old board routs on bottom layer only all the way to the antenna. New board vias to an internal layer for the bend and vias out after the bend of the flexible circuit board / very minor layout changes / the copper is 1/2 ounce thickness instead of 1 oz. Both versions of the antenna are 50Ω impedance matched. Pi filter components are as follows:

- C9 - 1.8nH
- C10 - not populated
- C11 - 0.7pF

2.10. EMC Modifications: Refer to Section 2.9 above.

3. Product Configuration

3.1. Operational Characteristics & Software

Operating Instructions:

nRFgo Studio software was used to exercise the device under test during measurements. Bluetooth – Direct Test Mode was selected from the Features dropdown menu. The other settings were as follows:

Set up on (Program):	Not used.
Com port:	COM7
Mode:	Transmit
Channel:	Single
Channel Selected:	0, 19, or 39
Payload model:	PRBS9
Payload length:	1 byte

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3. Product Configuration (continued)

3.2 EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Frq (Hz)	Description/Function
Ringly	Bracelet	N/A	3.7 V	DC	Activity Tracking Bracelet

3.3. EUT Hardware/software/Firmware Revision Level

Manufacturer	Description	Hardware	Software	Firmware
N/A				

3.4. EUT Cables/Transducers

Manufacturer	Model/Part #	Length (m)	Shield Y/N	Description/Function
Ringly	N/A	1	Y	USB to Micro USB cable

3.5. Support Equipment

Manufacturer	Model/Part # Options	Serial Number	Input Voltage	Input Frq.	Description/Function
Dell	Vostro	00196-120-140-982	19.5	DC	Laptop for downloading test parameters. Not connected during measurements.
Dell	AC/DC Adapter	CN-0KD8HY-48052-0AR-0404-A02	100-240	50/60	Dell Vostro Power Supply
Samsung	EP-TA10JWE	SE1D930YS/B-E	100-240	50/60	5.3 VDC 0.35A Power Adapter. For conducted emissions measurements.

3.6. Support Equipment Cables/Transducers

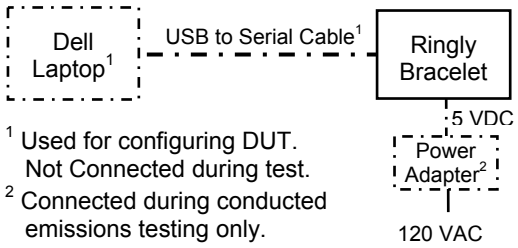
Manufacturer	Model/Part #	Length (m)	Shield Y/N	Description/Function
Generic	N/A	1	Y	USB to serial cable. For for downloading test parameters. Not connected during measurements.

3.7. Miscellaneous (e.g., consumables, test fixtures, etc.):

Manufacturer	Model/Part #	Qty	Description/Function
None			

3. Product Configuration (continued)

3.8. Block Diagram:



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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	Hewlett Packard	8546A	3330A00115	6/4/2017	3 Years
Loop Antenna	EMCO	6512	9309-1139	9/23/2017	2 Years
Combilog Antenna, 30 MHz to 2 GHz	Com-Power	AC-220	25509	5/12/2018	2 Years
LISN 50 Ω 50 µH, 9 kHz to 30 MHz	EMCO	3825/2	9109-1860	7/21/2017	1 Year
Horn Antenna, 960 MHz to 18 GHz	Electro-Metrics	EM-6961	6337	5/2/2018	1 Year
2.4 GHz Band Reject Filter	Micro-Tronics	BRM50702	150	6/1/2017	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: 08/15/2014 Previous V2.17, installed 6/11/2014.
[2] FSV40 Firmware revision: V2.30 SP4, Date installed: 05/04/2016 Previous V2.30 SP1, installed 10/22/2014.
[3] FSVR40 Firmware revision: V2.23, Date installed: 10/20/2014 Previous V1.63 SP1, installed 8/28/2013.

Manufacturer	Software Description	Title or Model #	Rev.	Report Sections
Compliance Worldwide	Test Report Generation Software	Test Report Generator	1.0	7.10 – Conducted Emissions

4.2. Measurement & Equipment Setup

Test Dates:	Sep 30th 2016 – Oct 14th, 2016
Test Engineer:	Brian Breault
Normal Site Temperature (15 - 35°C):	21.6
Relative Humidity (20 -75%RH):	35
Frequency Range:	10 kHz to 26 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 Functions:	Peak, Quasi-Peak & Average

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4. Measurements Parameters

4.3. Measurement Procedure

Testing was performed in accordance with the requirements detailed in ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. In addition, FCC OET 558074, D01: DTS Measurement Guidance v03r05, April 8th, 2016 was referenced for the testing detailed in this report. All references to this document refer to this version.

Test measurements were made in accordance with FCC Part 15.247, ANSI C63.10-2013 and IC RSS-247 Annex A: 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 for Testing Unlicensed Wireless

The device under test is capable of utilizing 40 channels. In accordance with ANSI C63.10, section 5.6, three channel frequencies were selected for measurement:

Channel	0	2402 MHz (Low)
Channel	19	2440 MHz (Middle)
Channel	39	2480 MHz (High)

During the measurement testing, the device under test 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	The gem was horizontally oriented with the alert LED facing up. The bracelet's gem was facing the antenna at 0º turntable azimuth.
Y-Axis	The bracelet's gem was vertically oriented with the alert LED facing to the left. The bracelet's gem was facing the antenna at 0º turntable azimuth.
Z-Axis	The bracelet's gem was facing straight up and the alert LED was facing to the left. The Y-Axis lower side was facing the antenna at 0º turntable azimuth.

X-Axis

Y-Axis

Z-Axis

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4. Measurements Parameters

4.4. Measurement Uncertainty

The following uncertainties are expressed for an expansion/coverage factor of K=2.

RF Frequency	$\pm$ 1x10^{-8}
Radiated Emission of Transmitter	$\pm$ 4.55 dB
Radiated Emission of Receiver	$\pm$ 4.55 dB
Temperature	$\pm$ 0.91^{o} C
Humidity	$\pm$ 5%

5. Choice of Equipment for Test Suits

5.1 Choice of Model

This test report is based on the test sample supplied by the manufacturer and is reported by the manufacturer to be equivalent to the production units.

5.2 Presentation

This test sample was tested complete with all required ancillary equipment. Refer to Section 3 of this report for product equipment configuration.

5.3 Choice of Operating Frequencies

The Device under test, utilizes 40 channels. Refer to Section 4.3, paragraph four for the selected test frequencies.

5.4 Modes of Operation

The modulation mode for all tested frequencies was GFSK and the selected data rate was 1 Mbps.

The data rates and data patterns were selected to maximize the data output and duty cycle of the product.

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6. Measurement Summary

Test Requirement	FCC Rule Reference	IC Rule Reference	Test Report Section	Result
Antenna Requirement	15.203	RSS-GEN 7.1.2	7.1	Compliant
Minimum DTS (6 dB) Bandwidth	15.247 (a) (2)	RSS-247 5.2 (1)	7.2	Compliant
Bandwidth of Momentary Signals (99% Bandwidth)	N/A	RSS-GEN 4.6.1	7.3	N/A
Maximum Peak Conducted Output Power	15.247 (b) (1)	RSS-247 5.4 (4)	7.4	Compliant
Operation with directional antenna gains greater than 6 dBi	15.247 (b) (4)	RSS-GEN 7.1.2	7.5	Compliant
Transmitter Spurious Radiated Emissions	15.247 (d)	RSS-GEN 8.9	7.6	Compliant
Harmonic Emissions in the Restricted Bands of Operation	15.247 (d)	N/A	7.7	Compliant
Unwanted Emissions in Non-Restricted Frequency Bands	15.247 (d)	RSS-GEN 8.9	7.8	Compliant
Band Edge Measurements	15.247 (d)	RSS-247 5.5	7.9	Compliant
Peak Power Spectral Density	15.247(e)	RSS-247 5.2 (2)	7.10	Compliant
Conducted Emissions	15.207	RSS-GEN	7.11	Battery Operated Device
Public Exposure to Radio Frequency Energy Levels	15.247(i) 1.1307 (b) (1)	RSS-GEN 5.5 RSS-102	7.12	Compliant

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7. Measurement Data

7.1. 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: The device under test utilizes an internal, inaccessible antenna. The housing of the device under test is completely sealed.

7.2. Minimum DTS (6 dB) 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.

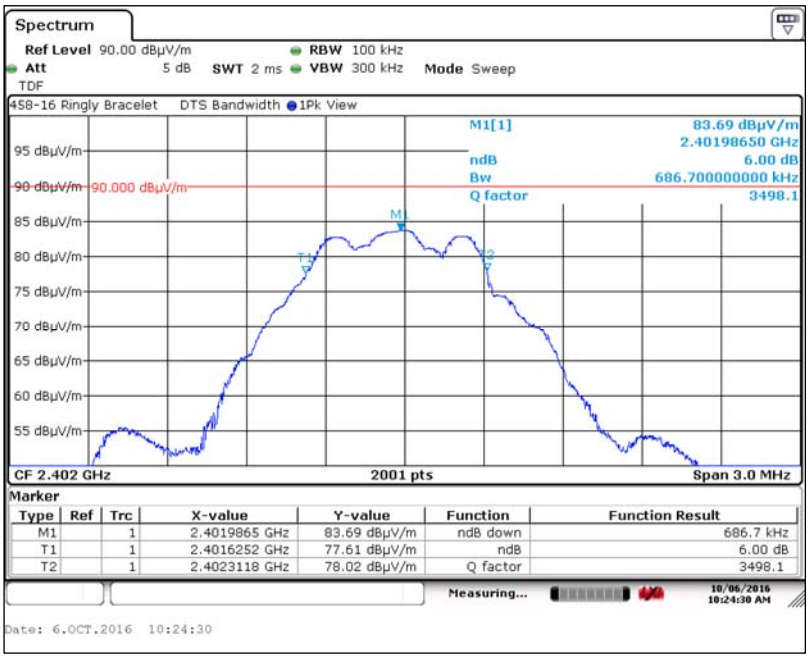
Procedure: Performed in accordance with FCC OET 558074 D01: DTS Measurement Guidance, Section 8.0: DTS bandwidth.

Conclusion: Compliant - 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	686.7	>500	Compliant
Middle	2440	689.7	>500	Compliant
High	2480	713.6	>500	Compliant

7.2.1. -6 dB Bandwidth, Low Channel 0



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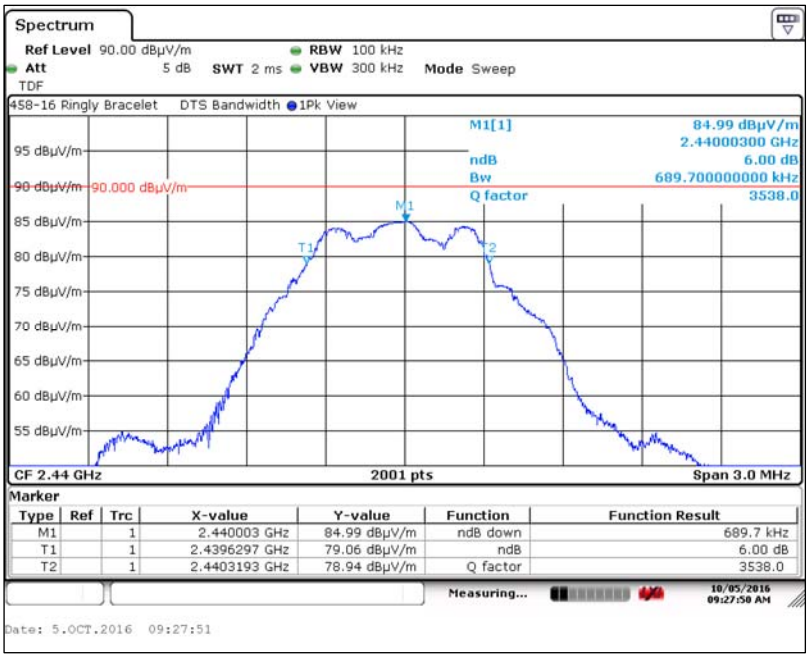
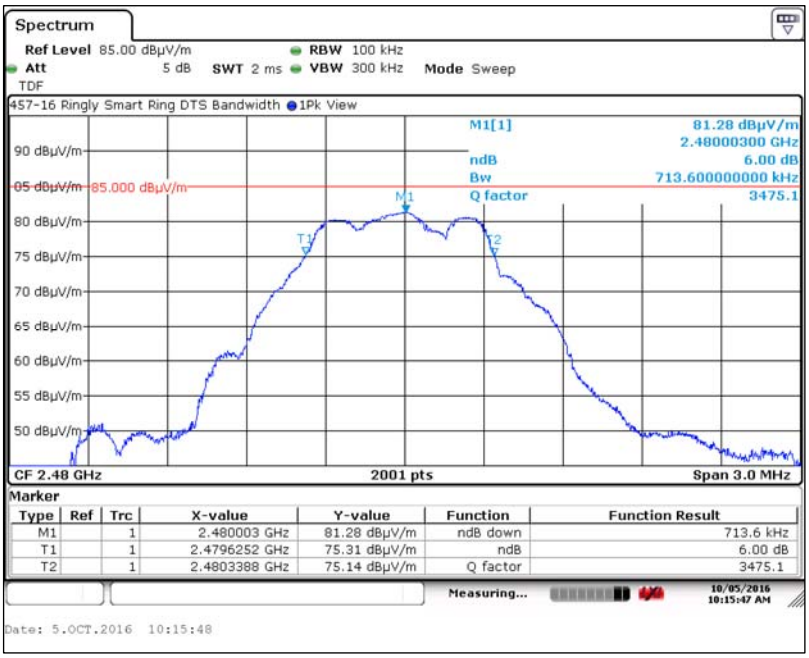
7. Measurement Data

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

7.2.2. -6 dB Bandwidth, Middle Channel 19



7.2.3. -6 dB Bandwidth, High Channel 39



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7. Measurement Data (continued)

7.3. 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.

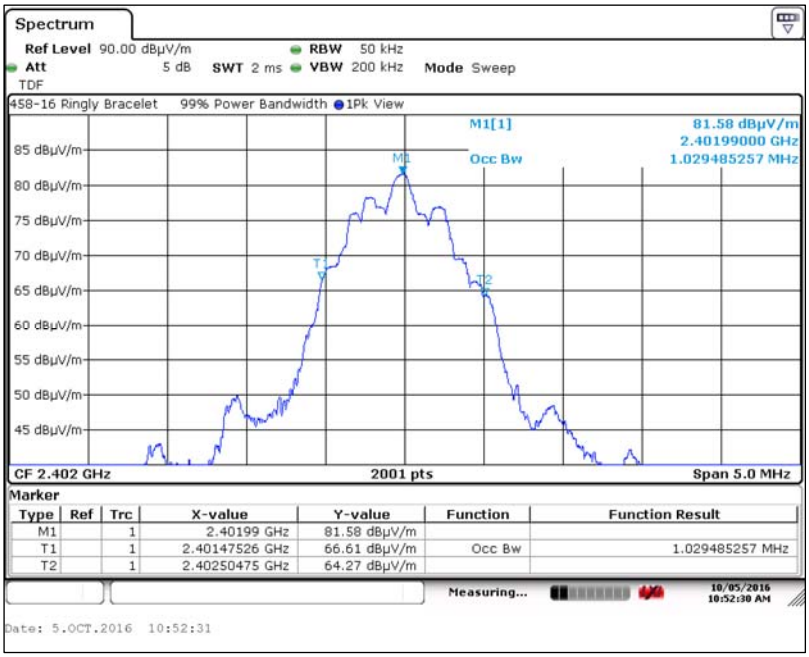
Procedure: This test was performed utilizing the automated 99% bandwidth function of the spectrum analyzer.

Conclusion: Compliant - for informational purposes.

Measurement Results - 99% Bandwidth

Channel	Channel Frequency (MHz)	99% Power Bandwidth (MHz)
Low	2402	1.0295
Middle	2440	1.0295
High	2480	1.0470

7.3.1. 99% Bandwidth, Low Channel 0



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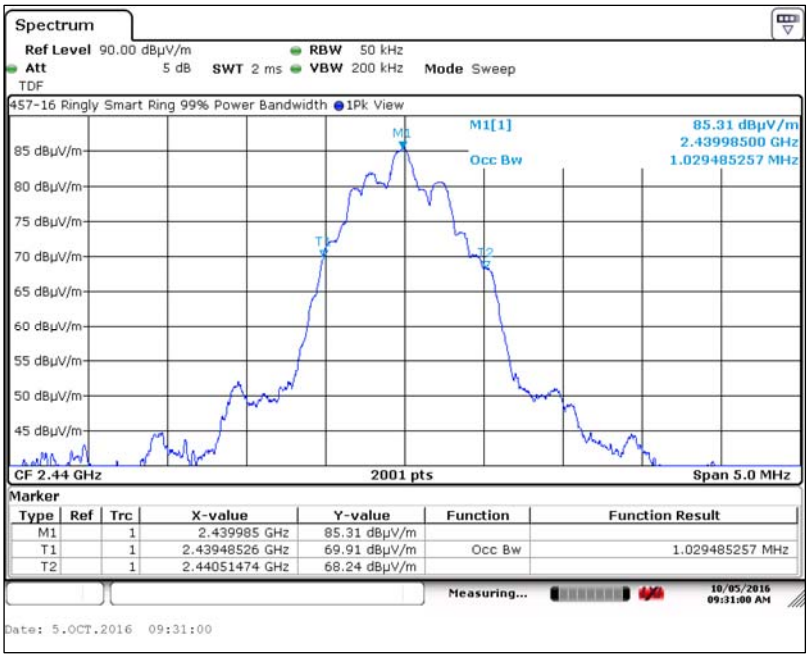
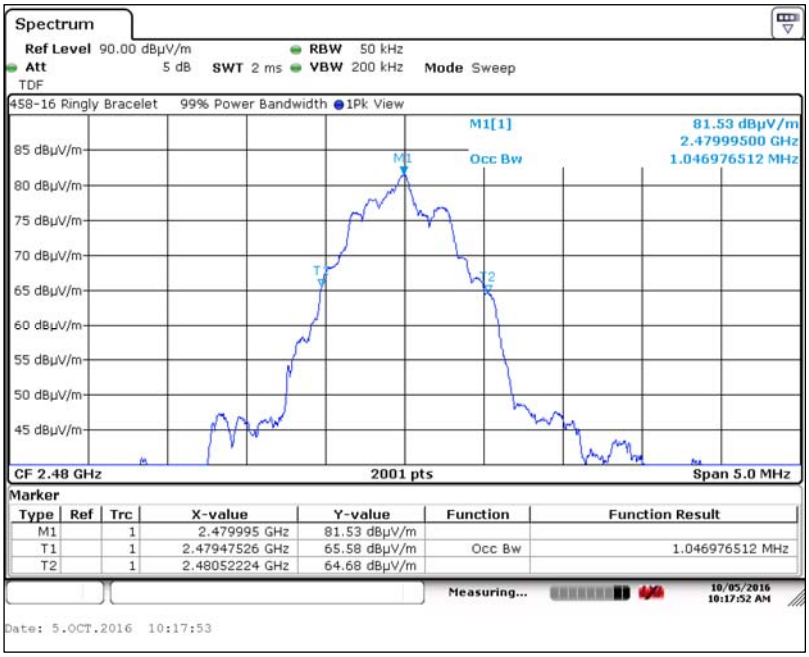
7. Measurement Data (continued)

7.3. Bandwidth of Momentary Signals

7.3.2. 99% Bandwidth, Middle Channel 19



7.3.3. 99% Bandwidth, High Channel 39



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7. Measurement Data (continued)

7.4. Maximum Peak Conducted Output Power (15.247 (b) (1), RSS-247 5.4 (4))

Requirement: The maximum peak conducted output power of the intentional radiator shall not exceed the following: For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Procedure: FCC OET 558074 D01: DTS Measurement Guidance, Section 9.1.1: Maximum peak conducted output power, RBW ≥ DTS bandwidth, was referenced for the maximum peak conducted output power measurements detailed in this section of this report.

Test Notes: The device under test does not have an accessible antenna port and therefore does not facilitate conducted power measurements. Radiated field strength measurements were made and converted to units of power using the following formula[1]:

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$$

EIRP = the equivalent isotropically radiated power in dBm.
E_{Meas} = the measured maximum field strength in dBµV/m.
d_{Meas} = the field strength measurement distance, in meters.

[1] Reference ANSI C63.10-2013, Section 9.5.: Equations to calculate EIRP

Conclusion: Compliant – the device under test meets the requirements of Fcc Part 15.247 (b)(1).

EIRP Measurement Results

Frequency	Peak Field Strength (E_{Meas})	Distance (d_{Meas})	Equivalent Isotropic Radiated Power (EIRP)		Output Power Limit	Result
(MHz)	(dBµV/m)	(Meters)	(dBm)	(mW)	(mW)	
2402	83.51	3.0	-11.65	0.068	1000.0	Compliant
2440	85.35	3.0	-9.81	0.105	1000.0	Compliant
2480	85.66	3.0	-9.50	0.112	1000.0	Compliant

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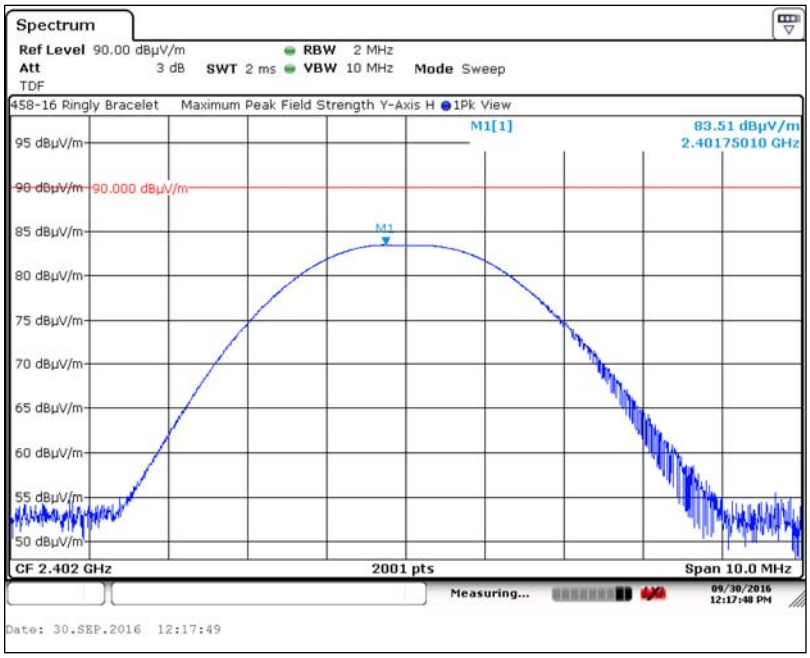
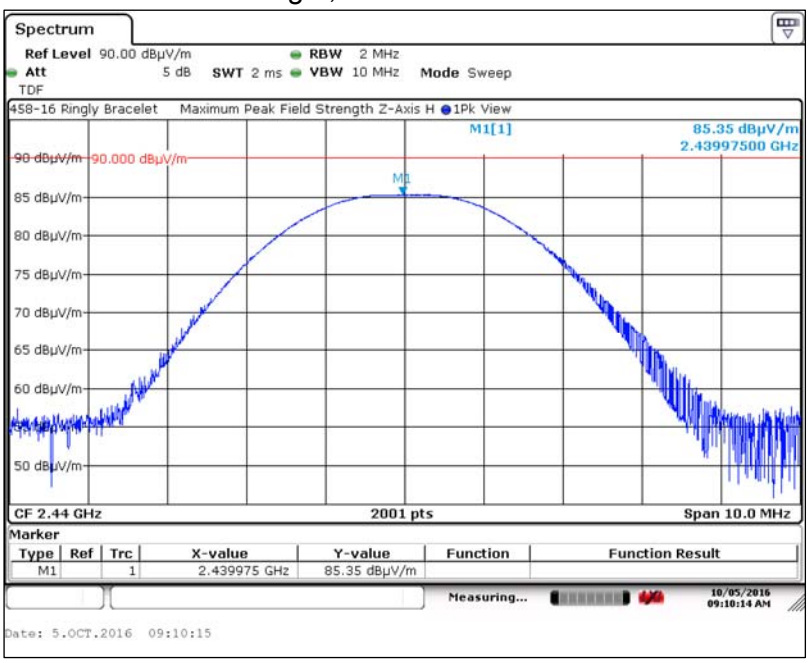
7. Measurement Data (continued)

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

7.4.1. Maximum Peak Field Strength, Low Channel 0



7.4.2. Maximum Peak Field Strength, Middle Channel 19



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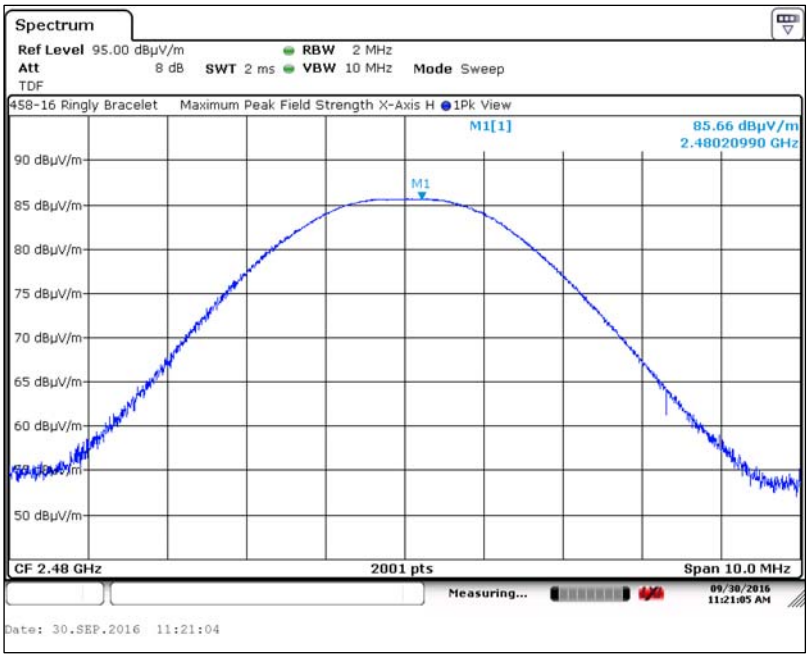
7. Measurement Data (continued)

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

7.4.3. Maximum Peak Field Strength, High Channel 39



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7. Measurement Data (continued)

7.5. Operation with Directional Antenna Gains Greater than 6 dBi (15.247 (b)(4))

Requirement: If a transmitting antenna with a directional gain greater than 6 dBi is 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 with the device under test has a peak gain of approximately 1 dBi (average = -1.5 dBi). Therefore, FCC Part 15.247, section (b)(4)) does not apply.

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7. Measurement Data (continued)

7.6. Transmitter Spurious Radiated Emissions (30 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 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 4.3 of this report for additional information.

Conclusion: 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.

Non-Harmonic Worst Case Measurements

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	0.010344	99.49	128.403	-28.91	Compliant	A2.1.2
0.15 to 30.0	0.51380	61.28	73.588	-12.31	Compliant	A1.2.5
30 to 1000	947.12300	40.40	54.000	-13.60	Compliant	A2.1.2
1000 to 2400	1129.7500	45.25	54.000	-8.75	Compliant	A1.4.5
2483.5 to 10000	9993.2000	46.72	54.000	-7.28	Compliant	A1.5.3
10000 to 18000	17964.0000	53.00	54.000	-1.00	Compliant	A2.6.4
18000 to 25000	26.4601	45.73	54.000	-8.27	Compliant	A3.7.3

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Measurement Data (continued)

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

Requirement: 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 and tabled in Section 7.6 of this report.

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 Note: The measurements were performed with the device in three orthogonal positions in accordance with ANSI C63.10-2013, sections 5.10.1. Refer to section 4.3 of this report for additional information.

Conclusion: The Emissions from the DUT did not exceed the FCC Part 15.209 field strength requirements.

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		
4804.000	50.68	36.95	74.00	54.00	-23.32	-17.05	H	Compliant
4880.000	50.41	35.91	74.00	54.00	-23.59	-18.09	H	Compliant
4960.000	49.69	35.37	74.00	54.00	-24.31	-18.63	H	Compliant
7320.000	51.56	37.37	74.00	54.00	-22.44	-16.63	H	Compliant
7440.000	49.50	36.24	74.00	54.00	-24.50	-17.76	V	Compliant
12010.000	57.11	43.13	74.00	54.00	-16.89	-10.87	V	Compliant
12200.000	56.02	42.54	74.00	54.00	-17.98	-11.46	H	Compliant
12400.000	57.37	43.52	74.00	54.00	-16.63	-10.48	V	Compliant
19216.000	57.96	44.26	74.00	54.00	-16.04	-9.74	V	Compliant
19520.000	58.04	44.21	74.00	54.00	-15.96	-9.79	V	Compliant
19840.000	58.09	44.15	74.00	54.00	-15.91	-9.85	H	Compliant
22320.000	61.11	47.45	74.00	54.00	-12.89	-6.55	V	Compliant

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7. Measurement Data (continued)

7.8. Unwanted Emissions in Non-Restricted Frequency Bands (15.247(d), RSS-GEN 8.9)

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 v03r05, Section 11: *Emissions in non-restricted frequency bands* was used to perform the following measurements.

Test Notes: Reference Section 7.2, Screen Capture 7.2.3 for the in-band reference used to set the -20 dB limit for the measurements used in this section. The Channel 39 100 kHz measurement level of 81.28 dBµV/m was used as the worst-case reference for the out of band measurements.

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

Result: The device under test met the spurious emissions requirements.

Worst Case Measurements

Range	Frequency	Peak Field Strength	W/C In-Band -20 dB	Margin	Result	Appendix B Reference
(MHz)	(MHz)	(dBµV/m)	(dBµV/m)	(dB)		
30 to 1000	993.0110	40.79	61.280	-20.49	Compliant	B1.5
1000 to 18000	17979.5000	58.17	61.280	-3.11	Compliant	B2.1
18000 to 26500	26190.3000	49.72	61.280	-11.56	Compliant	B3.3

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7. Measurement Data (continued)

7.9. 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: Compliant - The DUT meets the band edge requirements

Measurement Results

Lower Band Edge

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	83.27	---	2400	38.71	---	>20	44.56	Compliant

Upper Band Edge

Highest Channel Frequency (MHz)	Field Strength (dBµV/m)		Band Edge Frequency (MHz)	Field Strength (dBµV/m)		FCC Part 15.209 Limit (dBµV/m)		Margin (dB)		Result
	Peak	Avg		Peak	Avg	Peak	Avg	Peak	Avg	
2480	84.53	71.34	2483.500	48.08	32.07	74.00	54.00	-25.92	-21.93	Compliant

Lower Restricted Band

Frequency (MHz)	Field Strength (dBµV/m)		FCC Part 15.209 Limit (dBµV/m)		Margin (dB)		Result
	Peak	Average	Peak	Average	Peak	Average	
2322.4540	47.2	36.56	74.00	54.00	-26.80	-17.44	Compliant

Upper Restricted Band

Frequency (MHz)	Field Strength (dBµV/m)		FCC Part 15.209 Limit (dBµV/m)		Margin (dB)		Result
	Peak	Average	Peak	Average	Peak	Average	
2484.0424	49.88	31.78	74.00	54.00	-24.12	-22.22	Compliant

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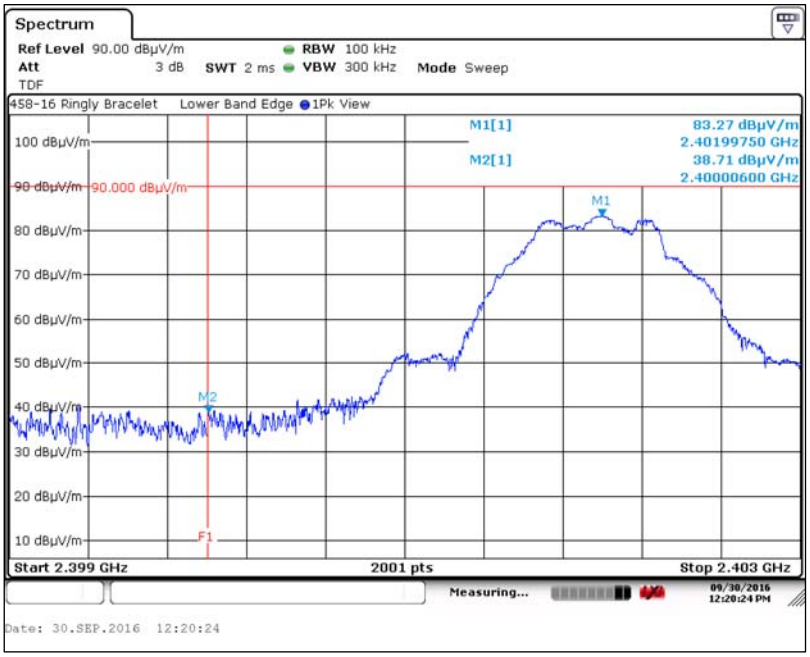
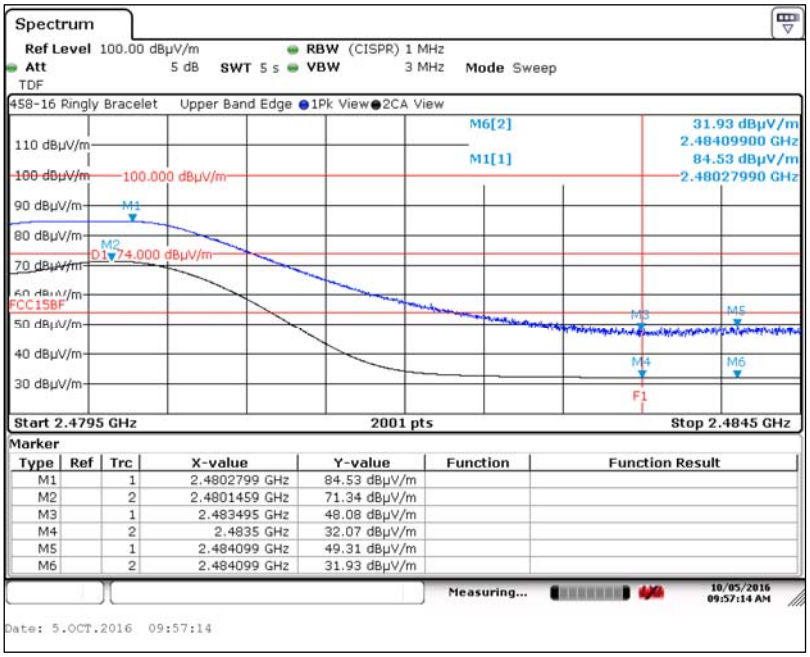
7. Measurement Data (continued)

7.9. Band Edge Measurements (15.247 d))

7.9.1. Lower Band Edge



7.9.2. Upper Band Edge



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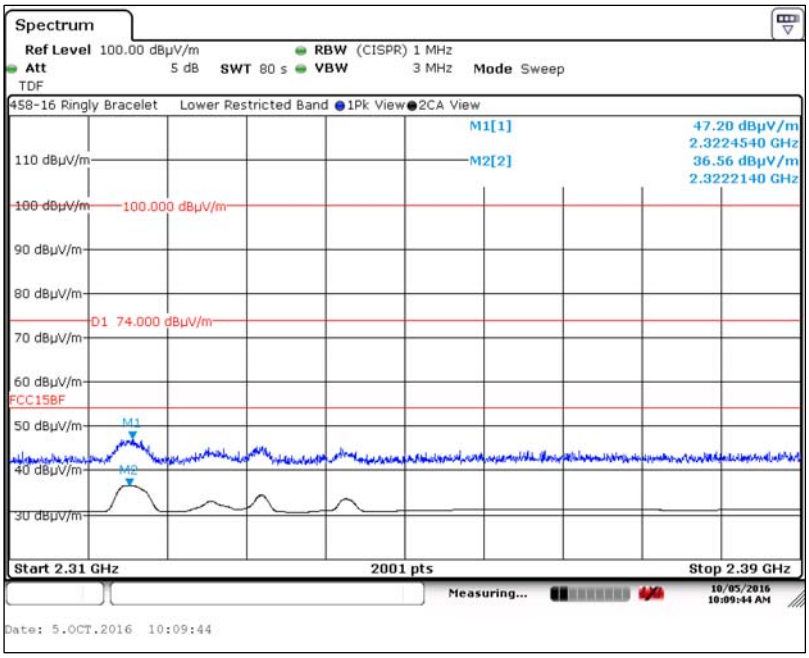
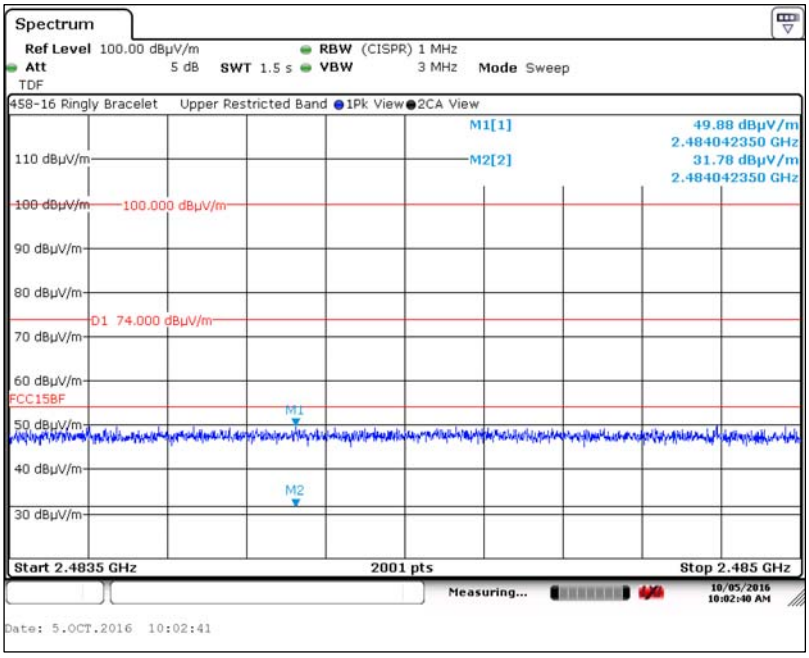
7. Measurement Data (continued)

7.9. Band Edge Measurements (15.247 d))

7.9.3. Lower Restricted Band



7.9.4. Upper Restricted Band



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7. Measurement Data (continued)

7.10. 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 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.

Channel 39 is an advertising channel. Channels 0 and 19 are not.

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

Measurement Results – Power Spectral Density

Channel Frequency	Measured Frequency	Peak Power Spectral Density	Distance	Peak Power Spectral Density		Output Power Limit	Result
(MHz)	(MHz)	(dBµV/m)	(Meters)	(dBm)	(mW)	(dBm)	
2402	2401.9920	68.66	3.0	-26.50	0.002	8.0	Compliant
2440	2439.9450	72.08	3.0	-23.08	0.005	8.0	Compliant
2480	2479.9950	70.91	3.0	-24.25	0.004	8.0	Compliant

7.10.1. Peak Power Spectral Density, Low Channel 0

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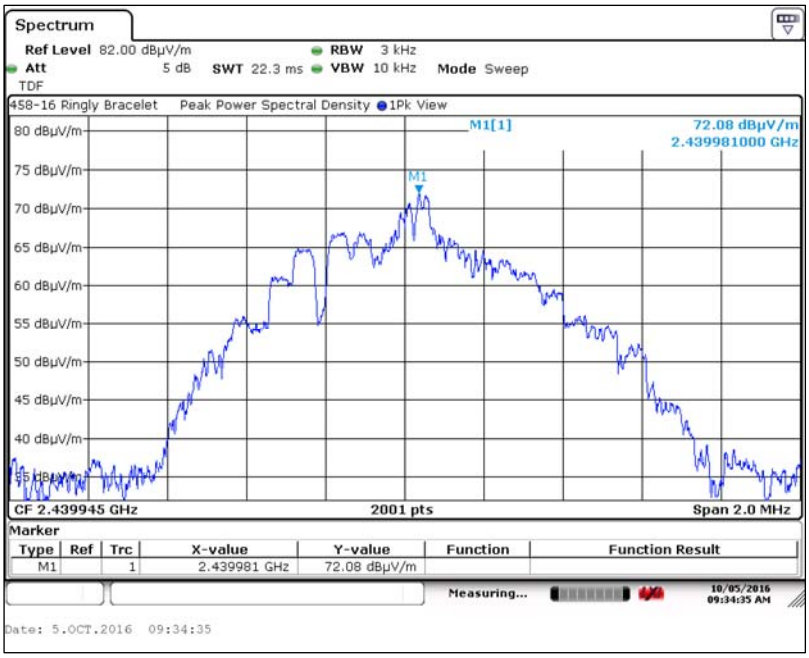
7. Measurement Data (continued)

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

7.10.2. Peak Power Spectral Density, Middle Channel 19



7.10.2. Peak Power Spectral Density, High Channel 39

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7. Measurement Data (continued)

7.11. Conducted Emissions

Regulatory Limit: FCC Part 15.207

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50
* Decreases with the logarithm of the frequency.		

Measurement Equipment Used to Perform Test

Device	Manufacturer	Model	Serial No.	Cal Due	Interval
LISN	EMCO	3825/2	9109-1860	7/21/2017	1 Year
EMI Receiver	Hewlett Packard	8546A	3330A00115	6/4/2017	3 Years

Manufacturer	Software Description	Title/Model #	Rev.
Compliance Worldwide	Test Report Generation Software	Test Report Generator	1.0

Measurement & Equipment Setup

Test Date:	10/12/2016
Test Engineer:	Brian Breault
Site Temperature (°C):	21
Relative Humidity (%RH):	37
Frequency Range:	0.15 MHz to 30 MHz
EMI Receiver IF Bandwidth:	9 kHz
EMI Receiver Avg Bandwidth:	30 kHz
Detector Functions:	Peak, Quasi-Peak & Average

Test Procedure

Test measurements were made in accordance with ANSI C63.10-2013, Section 6.2: Standard test method for ac power-line conducted emissions from unlicensed wireless devices

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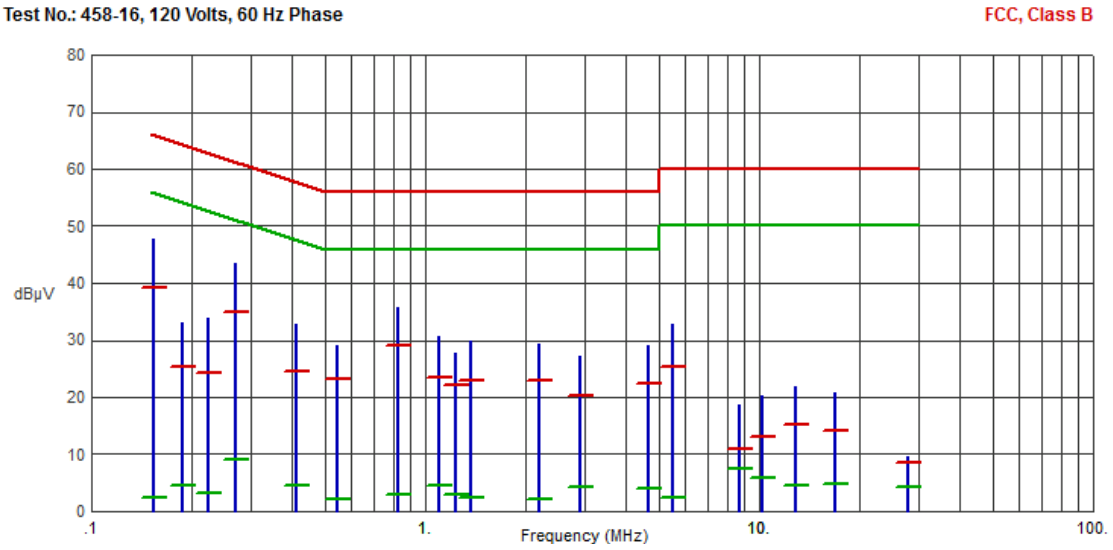
7. Measurement Data (continued)

7.11. Conducted Emissions

7.11.1. 120 Volts, 60 Hz Phase



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1532	47.73	39.24	65.82	-26.58	2.43	55.82	-53.39	
.1876	33.16	25.24	64.14	-38.90	4.43	54.14	-49.71	
.2244	33.99	24.34	62.65	-38.31	3.08	52.65	-49.57	
.2699	43.54	34.99	61.12	-26.13	9.00	51.12	-42.12	
.4113	32.91	24.59	57.62	-33.03	4.48	47.62	-43.14	
.5478	29.10	23.33	56.00	-32.67	2.10	46.00	-43.90	
.8259	35.71	29.14	56.00	-26.86	2.97	46.00	-43.03	
1.0981	30.77	23.42	56.00	-32.58	4.62	46.00	-41.38	
1.2388	27.84	22.12	56.00	-33.88	2.88	46.00	-43.12	
1.3759	29.75	22.92	56.00	-33.08	2.50	46.00	-43.50	
2.2008	29.39	22.89	56.00	-33.11	2.15	46.00	-43.85	
2.8959	27.13	20.36	56.00	-35.64	4.37	46.00	-41.63	
4.6515	29.15	22.27	56.00	-33.73	3.98	46.00	-42.02	
5.4923	32.88	25.26	60.00	-34.74	2.34	50.00	-47.66	
8.6953	18.61	11.05	60.00	-48.95	7.40	50.00	-42.60	
10.2251	20.38	12.94	60.00	-47.06	5.84	50.00	-44.16	
12.8347	21.83	15.12	60.00	-44.88	4.56	50.00	-45.44	
16.9346	20.86	14.24	60.00	-45.76	4.69	50.00	-45.31	
27.8426	9.66	8.57	60.00	-51.43	4.16	50.00	-45.84	

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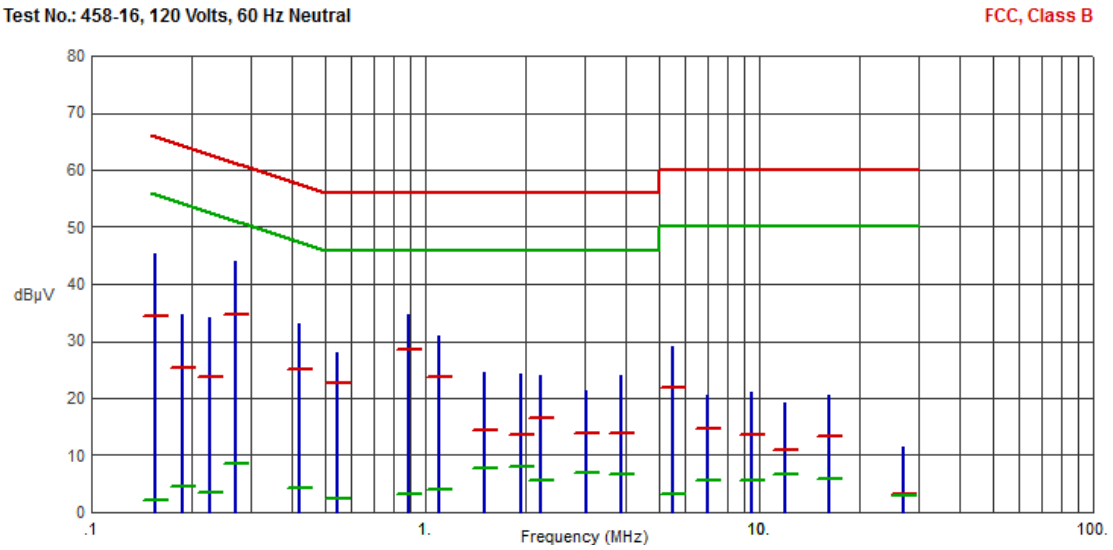
7. Measurement Data (continued)

7.11. Conducted Emissions

7.11.2. 120 Volts, 60 Hz Neutral



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1553	45.33	34.33	65.71	-31.38	2.23	55.71	-53.48	
.1869	34.59	25.31	64.17	-38.86	4.57	54.17	-49.60	
.2252	34.26	23.65	62.62	-38.97	3.51	52.62	-49.11	
.2703	44.08	34.73	61.11	-26.38	8.40	51.11	-42.71	
.4201	33.11	24.96	57.45	-32.49	4.38	47.45	-43.07	
.5470	28.07	22.79	56.00	-33.21	2.29	46.00	-43.71	
.8917	34.66	28.41	56.00	-27.59	3.16	46.00	-42.84	
1.0999	30.95	23.77	56.00	-32.23	4.12	46.00	-41.88	
1.5084	24.65	14.44	56.00	-41.56	7.69	46.00	-38.31	
1.9329	24.19	13.55	56.00	-42.45	7.91	46.00	-38.09	
2.2064	23.93	16.52	56.00	-39.48	5.50	46.00	-40.50	
3.0332	21.27	13.85	56.00	-42.15	7.00	46.00	-39.00	
3.8599	23.92	13.80	56.00	-42.20	6.68	46.00	-39.32	
5.4914	29.05	21.96	60.00	-38.04	3.13	50.00	-46.87	
6.9988	20.50	14.66	60.00	-45.34	5.50	50.00	-44.50	
9.5292	20.97	13.52	60.00	-46.48	5.52	50.00	-44.48	
11.9320	19.27	10.90	60.00	-49.10	6.75	50.00	-43.25	
16.2407	20.61	13.34	60.00	-46.66	5.98	50.00	-44.02	
27.0510	11.45	3.29	60.00	-56.71	3.01	50.00	-46.99	

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7. Measurement Data (continued)

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

7.12.1. 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: Compliant - The device under test meets the exclusion requirement detailed in FCC OET 447498.

Channel:			0	19	39
Input:	P_{MAX}[1]	(mW)	0.07	0.10	0.11
	d_{MIN}	(mm)	5.00	5.00	5.00
	$f_{(GHz)}$		2.402	2.440	2.480
Test Exclusion:			**0.02**	**0.03**	**0.04**
Limit Exemption:			**3.00**	**3.00**	**3.00**

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

7.12.2. 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	≤5	0.07	4.26	Compliant
2440	≤5	0.10	4.05	Compliant
2480	≤5	0.11	3.94	Compliant

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8. Test Setup Images

8.1. Radiated Emissions – Front View

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8. Test Setup Images

8.2. Radiated Emissions – Rear View below 30 MHz

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8. Test Setup Images

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

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8. Test Setup Images

8.4. Microwave Emissions – Front View

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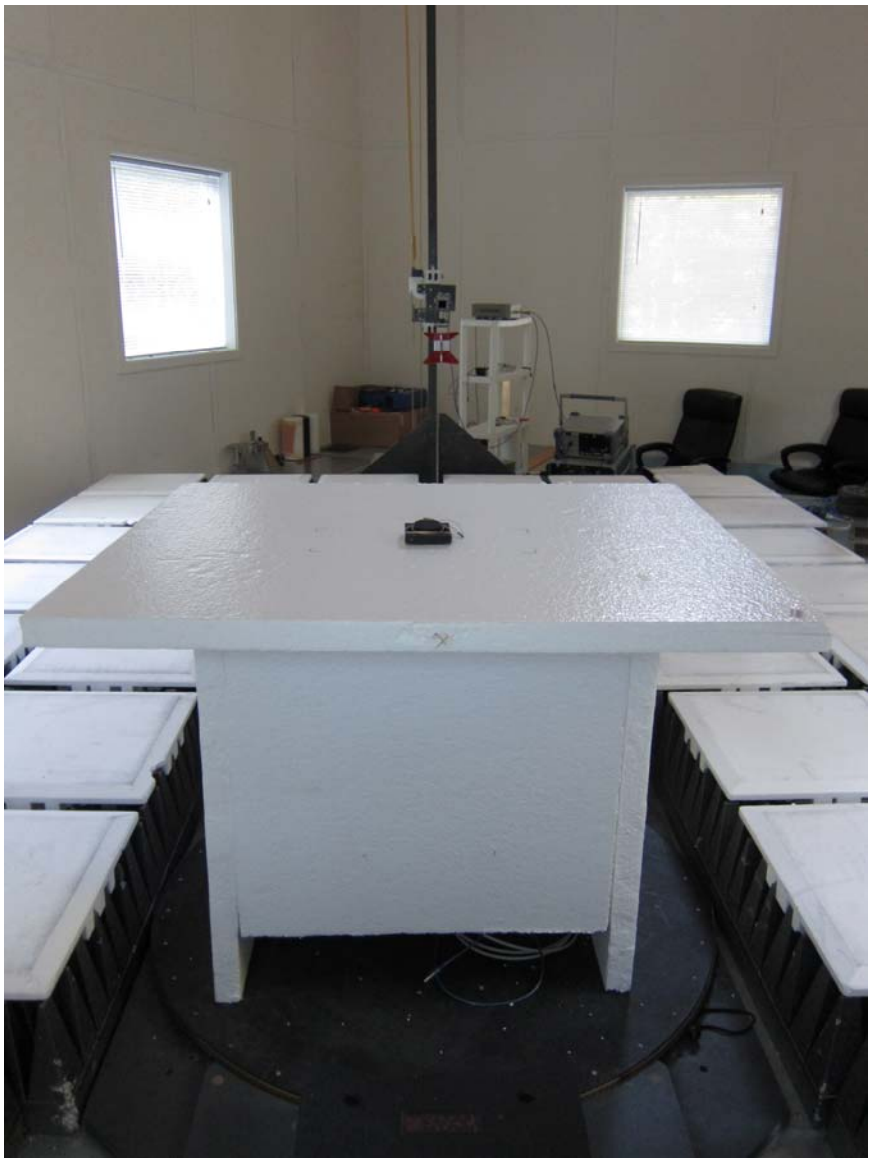
8. Test Setup Images

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



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8. Test Setup Images

8.6. Microwave Emissions – Rear View above 18 GHz

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8. Test Setup Images

8.7. Conducted Emissions – Front View

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8. Test Setup Images

8.8. Conducted Emissions – Rear View

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9. 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) and Industry Canada standards. Through our American Association for Laboratory Accreditation (A2LA) ISO Guide 17025:2005 Accreditation our test sites are designated with the FCC (designation number **US1091**), Industry Canada (file number **IC 3023A-1)** and VCCI (Member number 3168) under registration number A-0208.

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 11, KN 13, KN 14-1, KN 22, KN 32, KN 61000-6-3, KN 61000-6-4.

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. A second conducted emissions site is also located in the basement of the OATS site with a 2.3 x 2.5 meter ground plane and a 2.4 x 2.4 meter vertical wall.

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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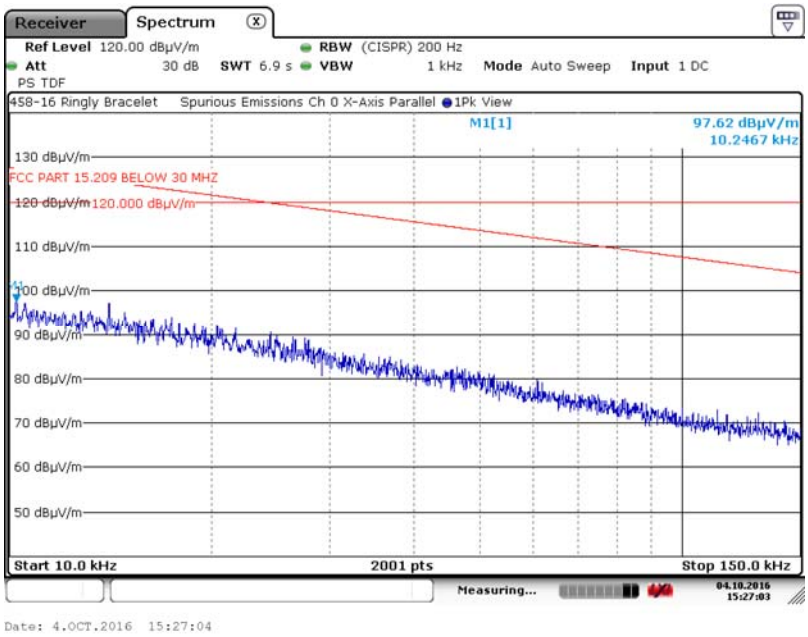
Appendix A

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

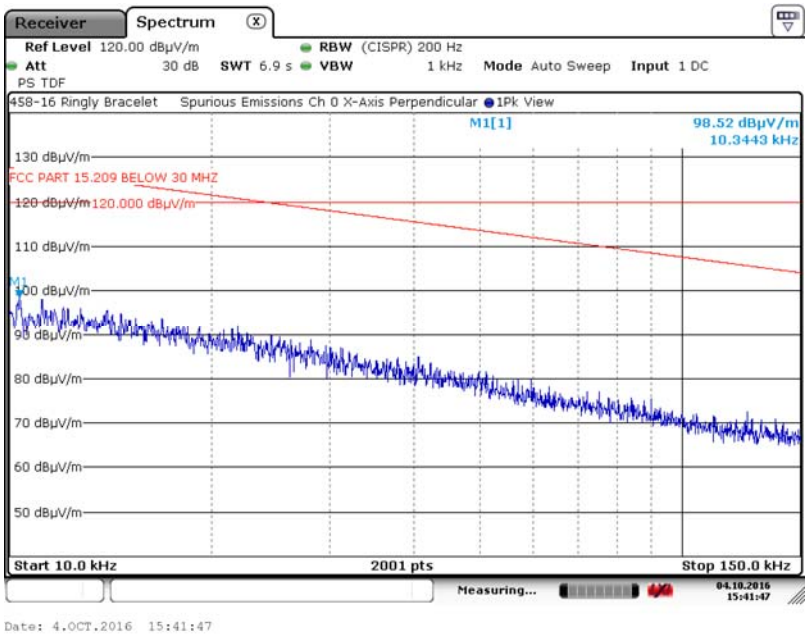
A1. Channel 0

A1.1. Measurement Results – Channel 0, 10 kHz to 150 kHz

A1.1.1. X-Axis, Parallel Antenna



A1.1.2. X-Axis, Perpendicular Antenna



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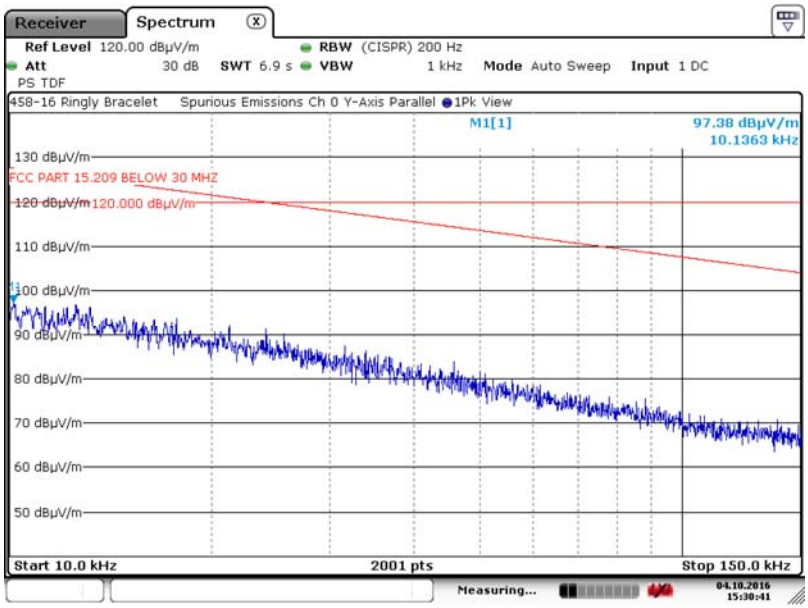
Appendix A (continued)

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

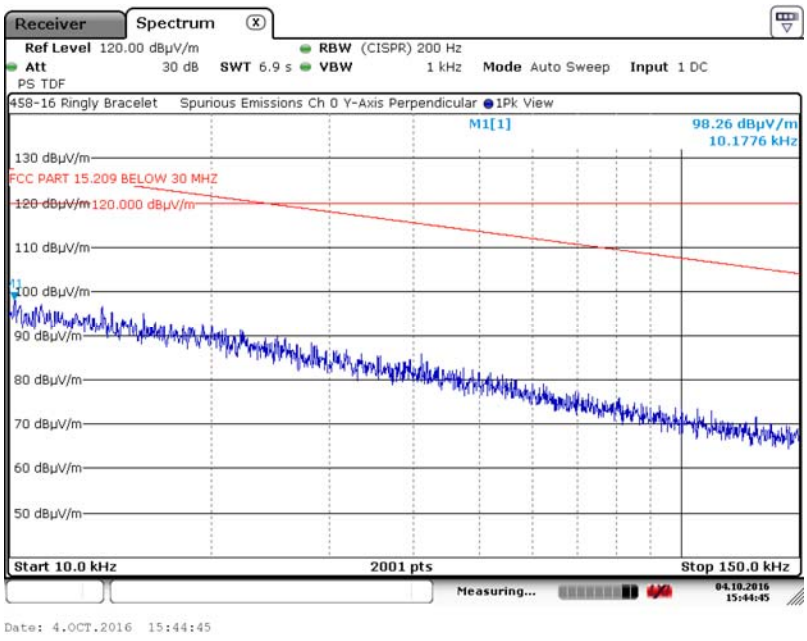
A1. Channel 0

A1. Measurement Results – Channel 0, 10 kHz to 150 kHz (continued)

A1.1.3. Y-Axis, Parallel Antenna



A1.1.4. Y-Axis, Perpendicular Antenna



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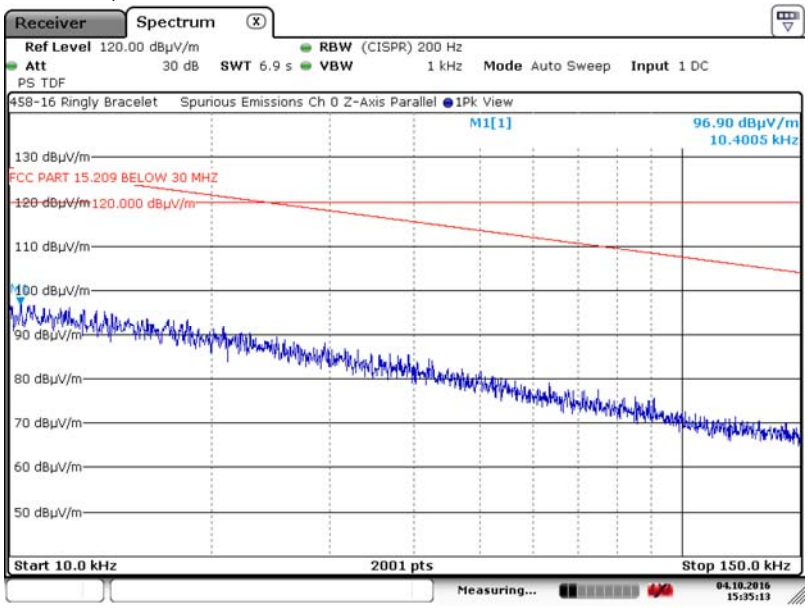
Appendix A (continued)

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

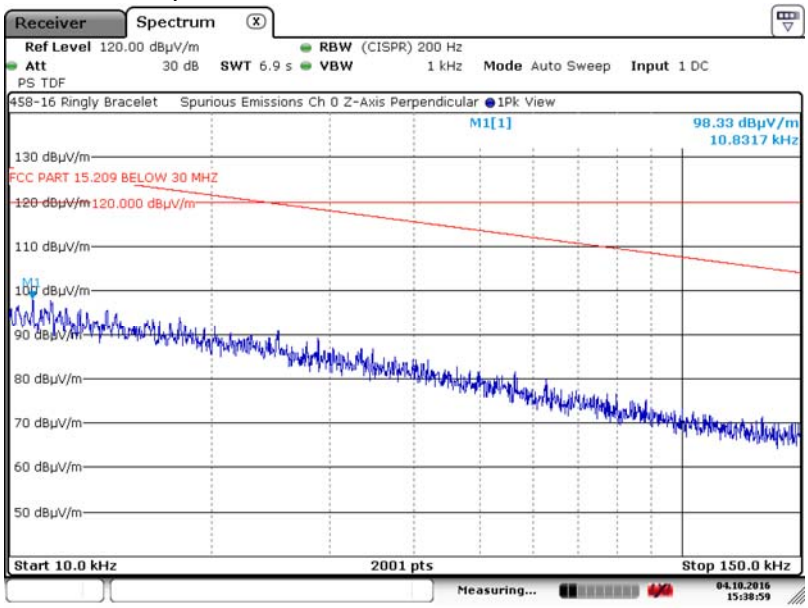
A1. Channel 0

A1.1. Measurement Results – Channel 0, 10 kHz to 150 kHz (continued)

A1.1.5. Z-Axis, Parallel Antenna



A1.1.6. Z-Axis, Perpendicular Antenna



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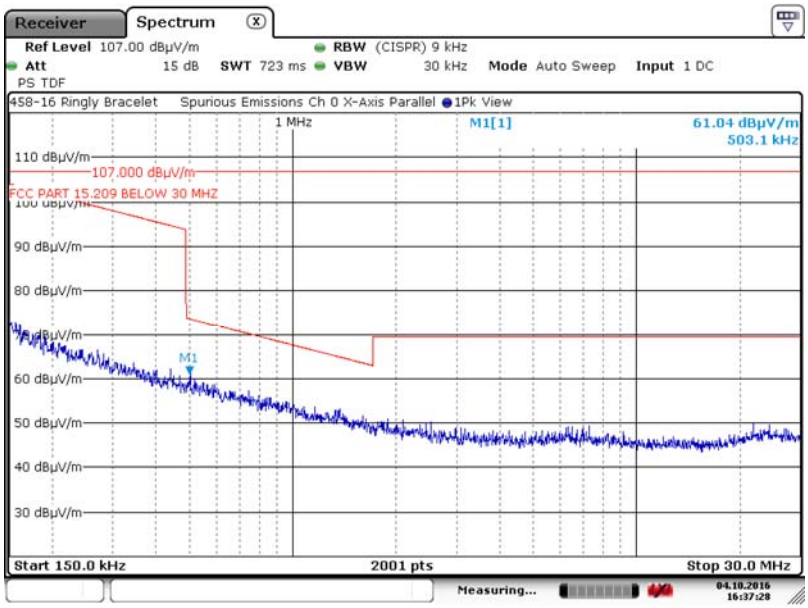
Appendix A (continued)

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

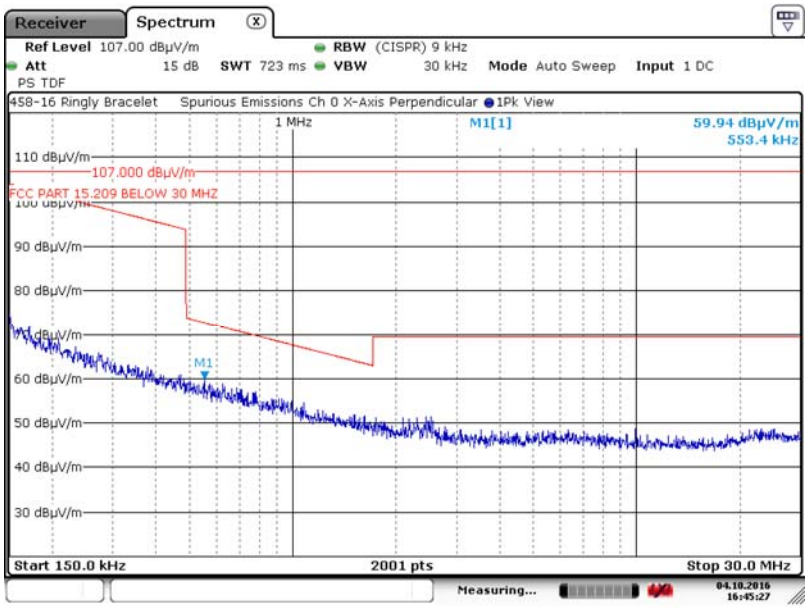
A1. Channel 0

A1.2. Measurement Results – Channel 0, 150 kHz to 30 MHz

A1.2.1. X-Axis, Parallel Antenna



A1.2.2. X-Axis, Perpendicular Antenna



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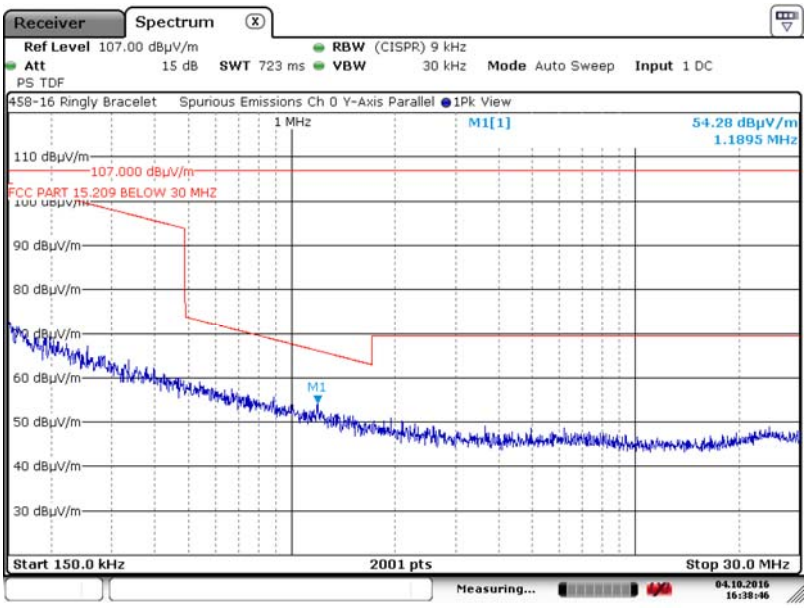
Appendix A (continued)

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

A1. Channel 0

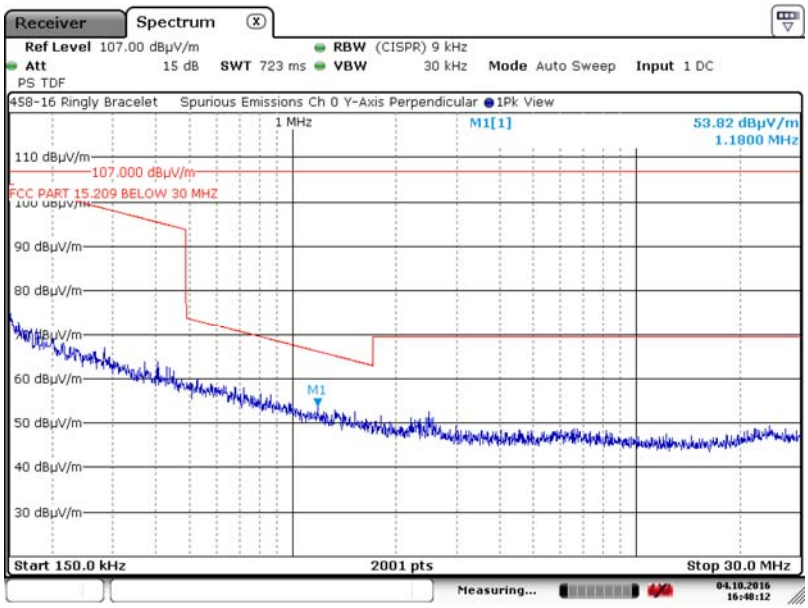
A1. Measurement Results – Channel 0, 150 kHz to 30 MHz (continued)

A1.2.3. Y-Axis, Parallel Antenna



Date: 4.OCT.2016 16:38:46

A1.2.4 Y-Axis, Perpendicular Antenna



Date: 4.OCT.2016 16:48:12

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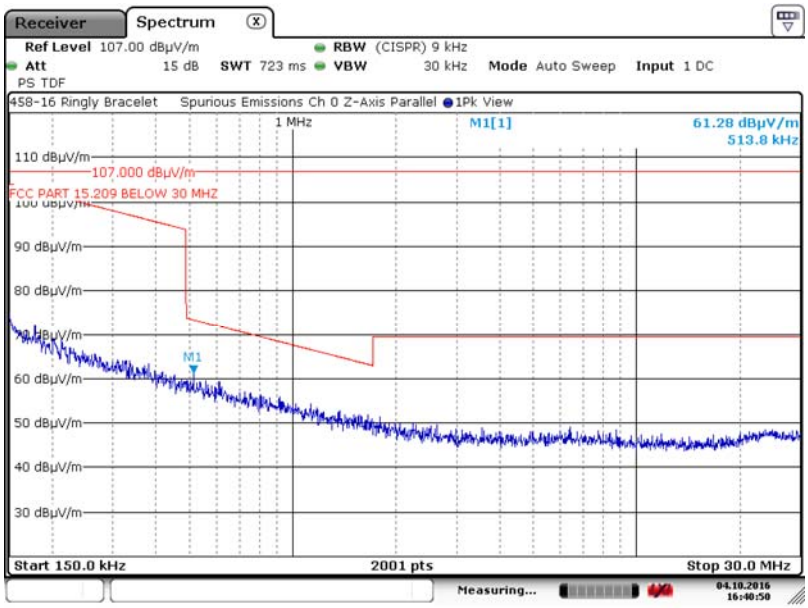
Appendix A (continued)

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

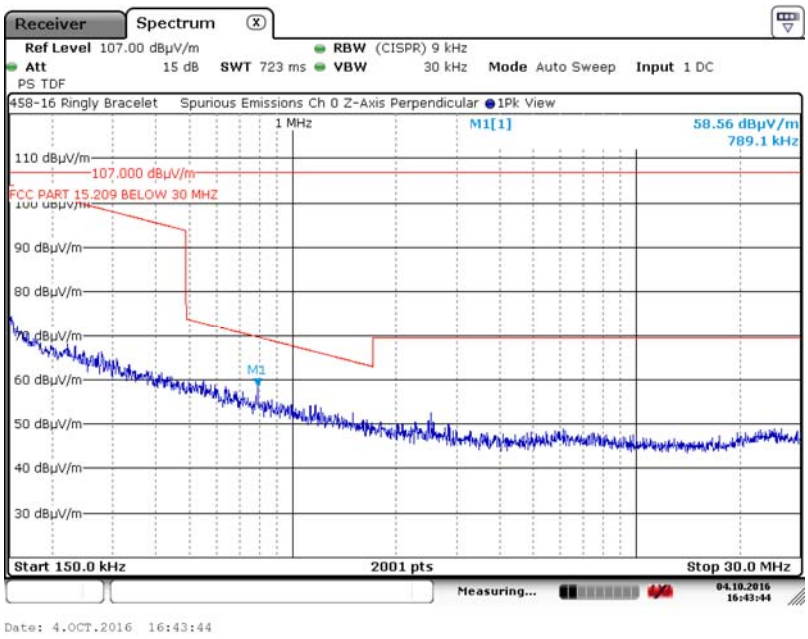
A1. Channel 0

A1.2. Measurement Results – Channel 0, 150 kHz to 30 MHz (continued)

A1.2.5. Z-Axis, Parallel Antenna



A1.2.6. Z-Axis, Perpendicular Antenna



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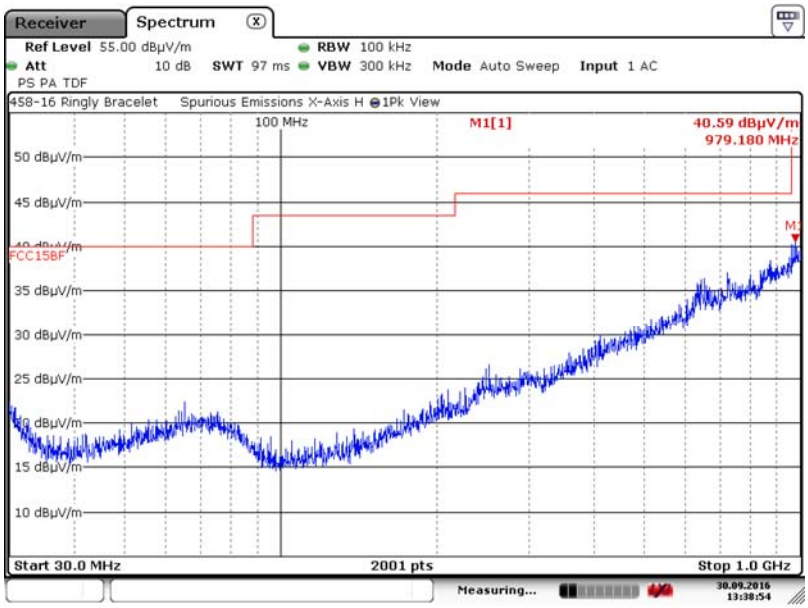
Appendix A (continued)

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

A1. Channel 0

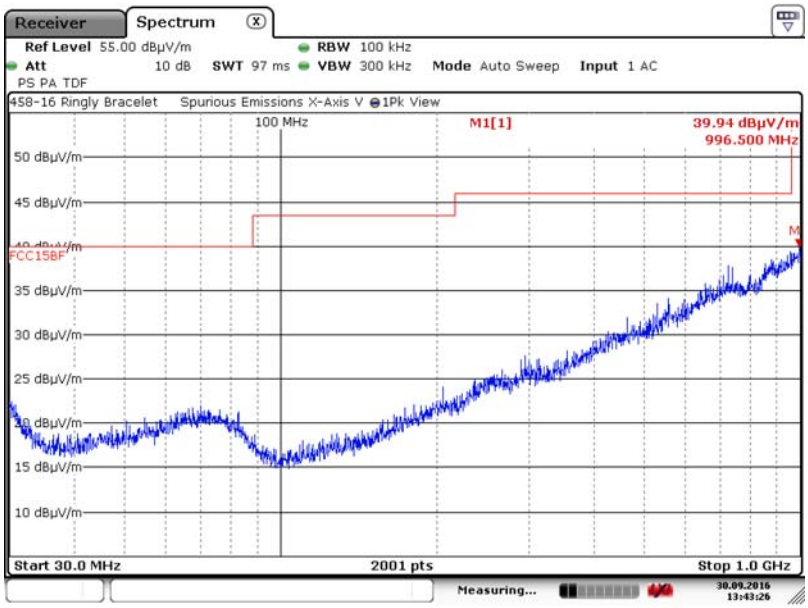
A1.3. Measurement Results – Channel 0, 30 MHz to 1 GHz

A1.3.1. X-Axis, Horizontal Antenna



Date: 30.SEP.2016 13:38:54

A1.3.2. X-Axis, Vertical Antenna



Date: 30.SEP.2016 13:43:25

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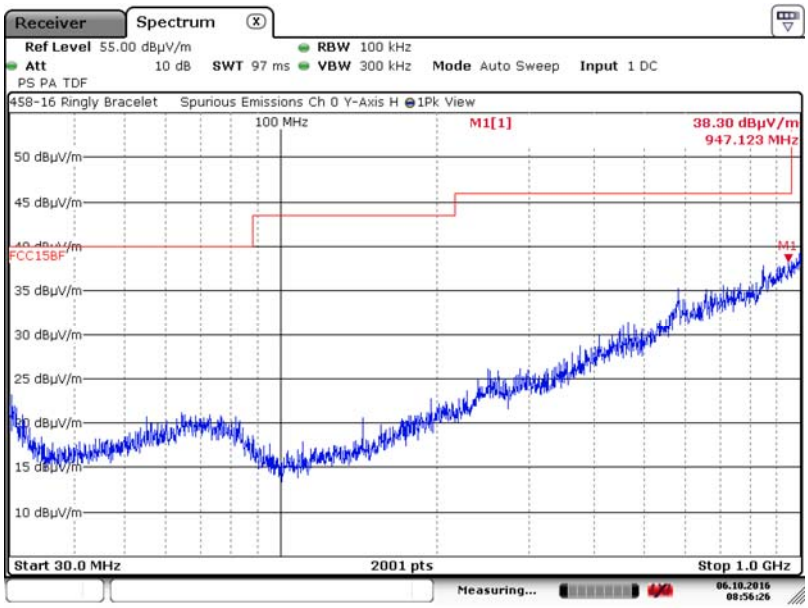
Appendix A (continued)

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

A1. Channel 0

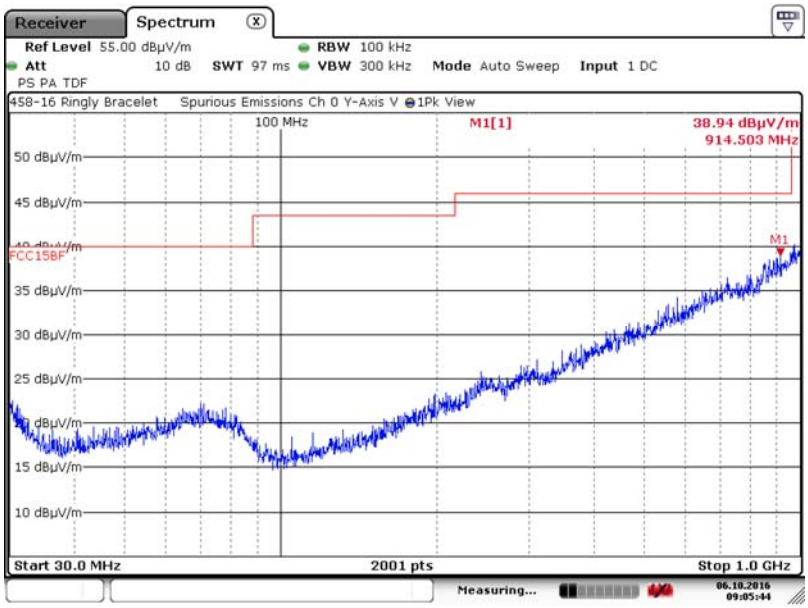
A1.3. Measurement Results – Channel 0, 30 MHz to 1 GHz (continued)

A1.3.3. Y-Axis, Horizontal Antenna



Date: 6.OCT.2016 08:56:25

A1.3.4. Y-Axis, Vertical Antenna



Date: 6.OCT.2016 09:05:43

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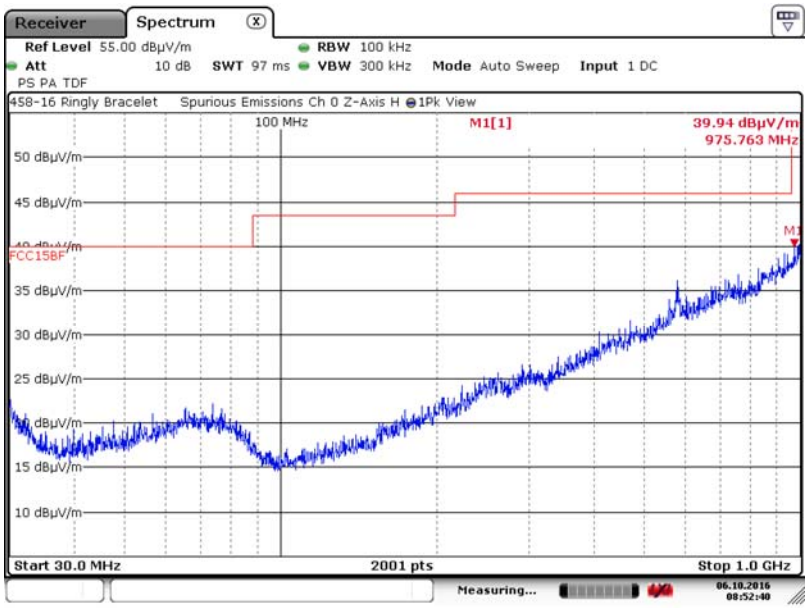
Appendix A (continued)

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

A1. Channel 0

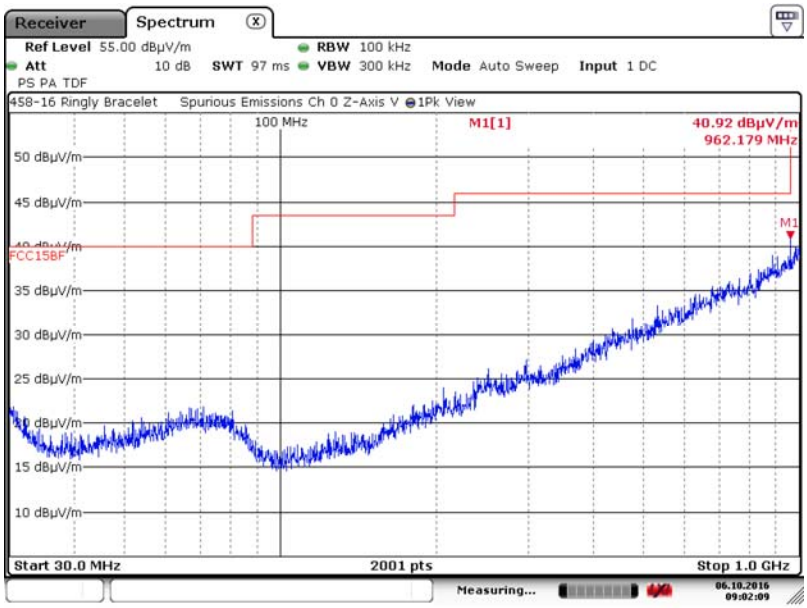
A1.3. Measurement Results – Channel 0, 30 MHz to 1 GHz (continued)

A1.3.5. Z-Axis, Horizontal Antenna



Date: 6.OCT.2016 08:52:40

A1.3.6. Z-Axis, Vertical Antenna



Date: 6.OCT.2016 09:02:09

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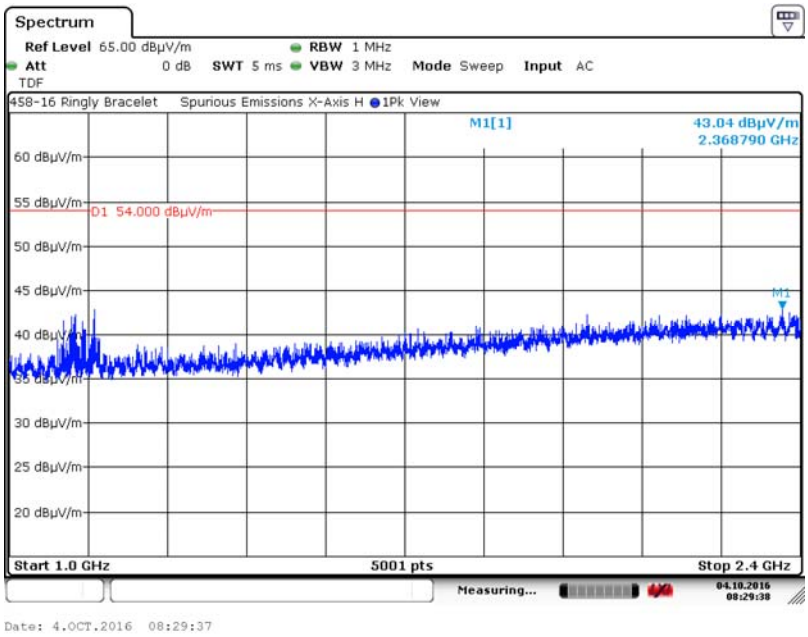
Appendix A (continued)

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

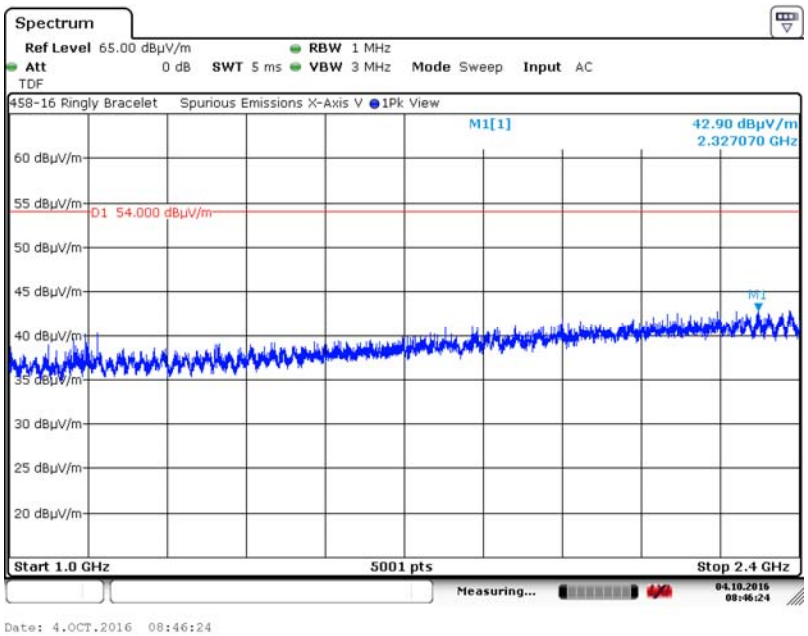
A1. Channel 0

A1.4. Measurement Results – Channel 0, 1 GHz to 2.4 GHz

A1.4.1. X-Axis, Horizontal Antenna



A1.4.2. X-Axis, Vertical Antenna



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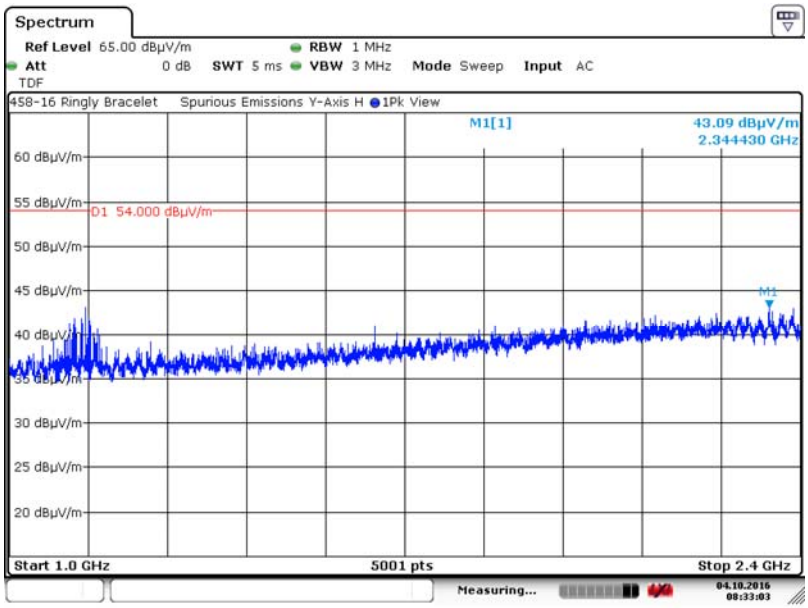
Appendix A (continued)

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

A1. Channel 0

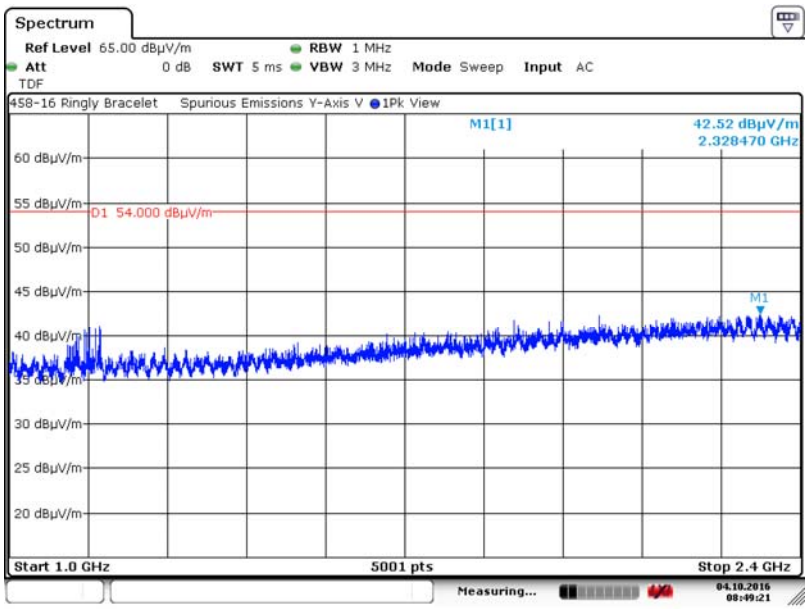
A1.4. Measurement Results – Channel 0, 1 GHz to 2.4 GHz (continued)

A1.4.3. Y-Axis, Horizontal Antenna



Date: 4.OCT.2016 08:33:03

A1.4.4. Y-Axis, Vertical Antenna



Date: 4.OCT.2016 08:49:20

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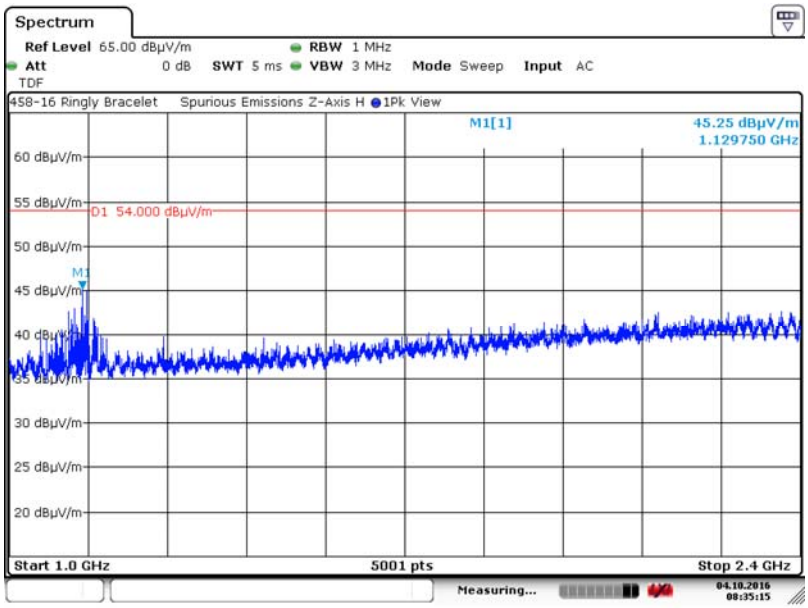
Appendix A (continued)

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

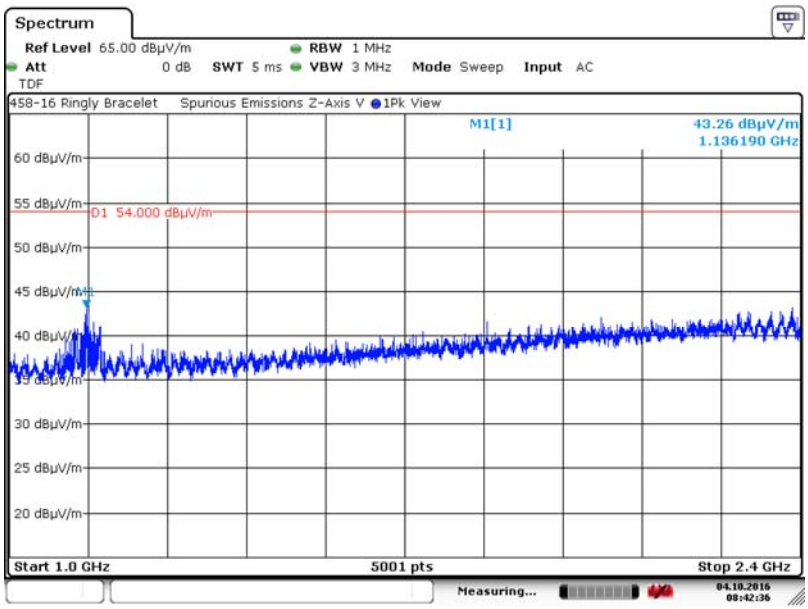
A1. Channel 0

A1.4. Measurement Results – Channel 0, 1 GHz to 2.4 GHz (continued)

A1.4.5. Z-Axis, Horizontal Antenna



A1.4.6. Z-Axis, Vertical Antenna



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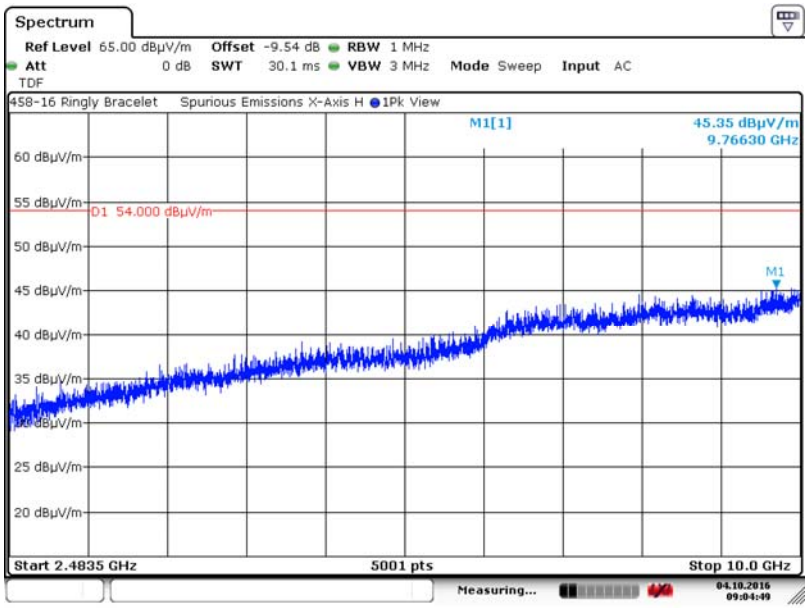
Appendix A (continued)

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

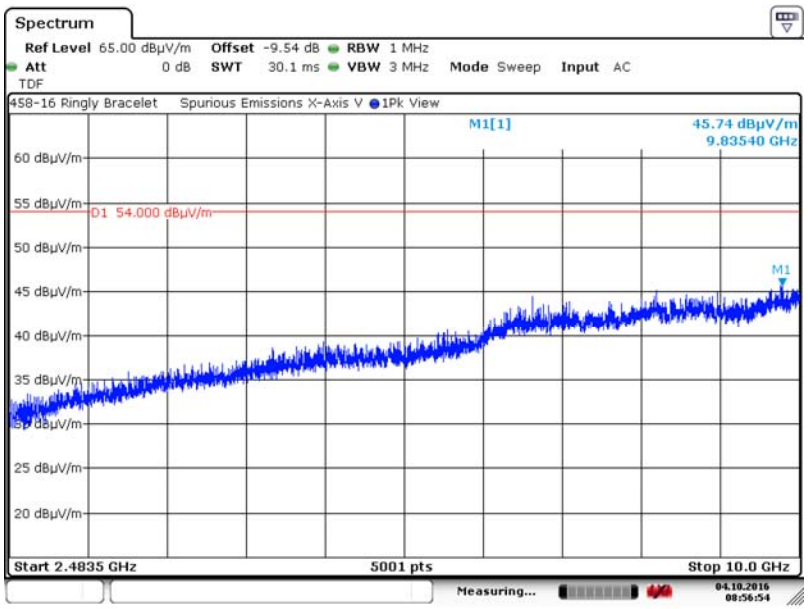
A1. Channel 0

A1.5. Measurement Results – Channel 0, 2.4835 GHz to 10 GHz

A1.5.1. X-Axis, Horizontal Antenna



A1.5.2. X-Axis, Vertical Antenna



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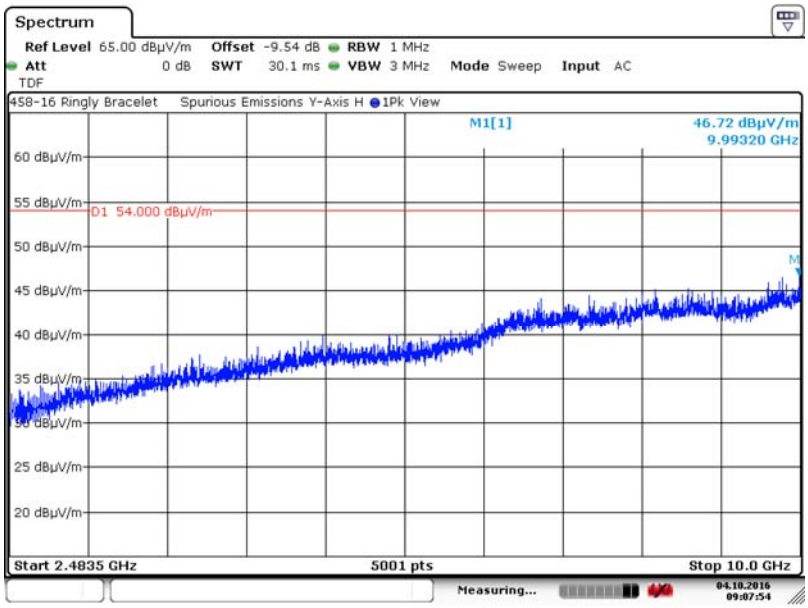
Appendix A (continued)

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

A1. Channel 0

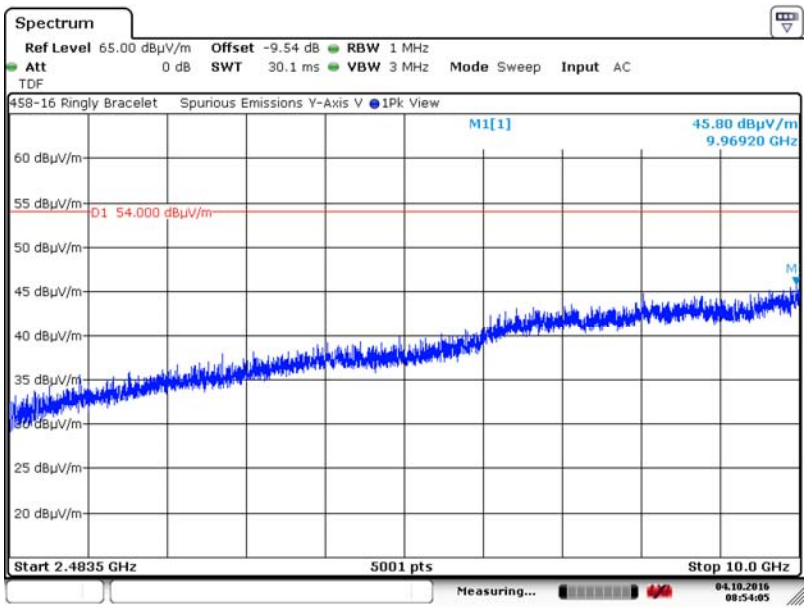
A1.5. Measurement Results – Channel 0, 2.4835 GHz to 10 GHz (continued)

A1.5.3. Y-Axis, Horizontal Antenna



Date: 4.OCT.2016 09:07:54

A1.5.4. Y-Axis, Vertical Antenna



Date: 4.OCT.2016 08:54:04

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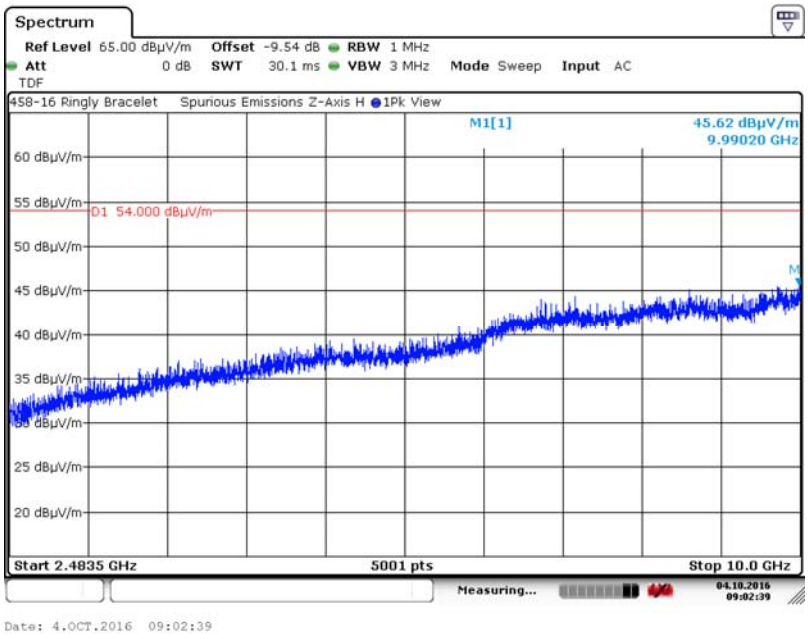
Appendix A (continued)

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

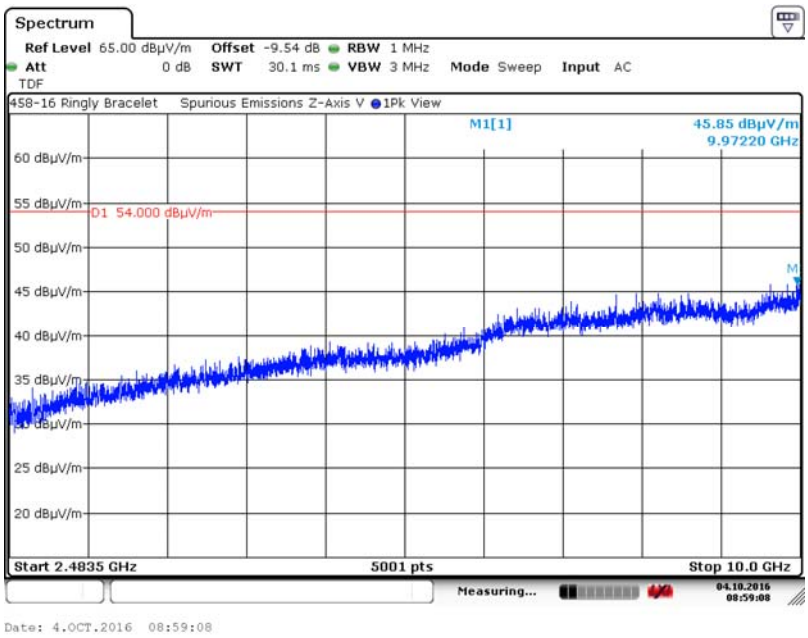
A1. Channel 0

A1.5. Measurement Results – Channel 0, 2.483.5 GHz to 10 GHz (continued)

A1.5.5. Z-Axis, Horizontal Antenna



A1.5.6. Z-Axis, Vertical Antenna



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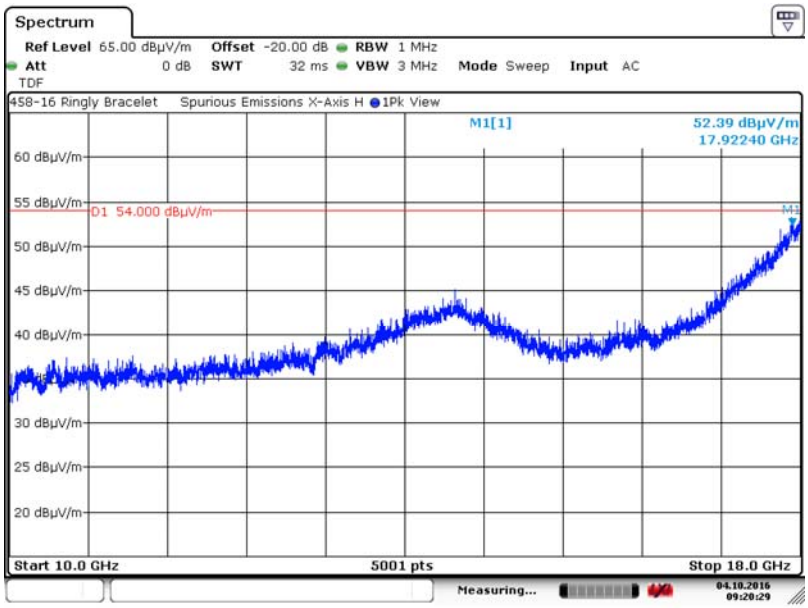
Appendix A (continued)

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

A1. Channel 0

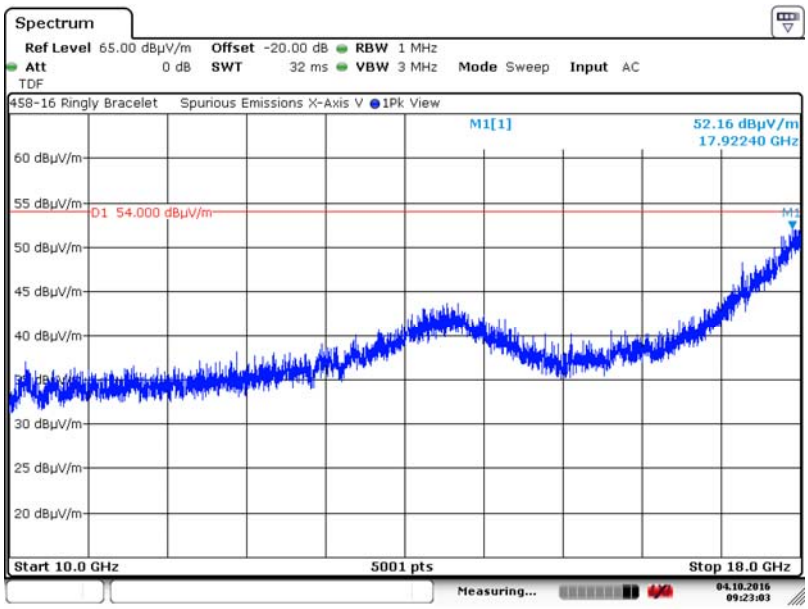
A1.6. Measurement Results – Channel 0, 10 GHz to 18 GHz (continued)

A1.6.1. X-Axis, Horizontal Antenna



Date: 4.OCT.2016 09:20:28

A1.6.2. X-Axis, Vertical Antenna



Date: 4.OCT.2016 09:23:02

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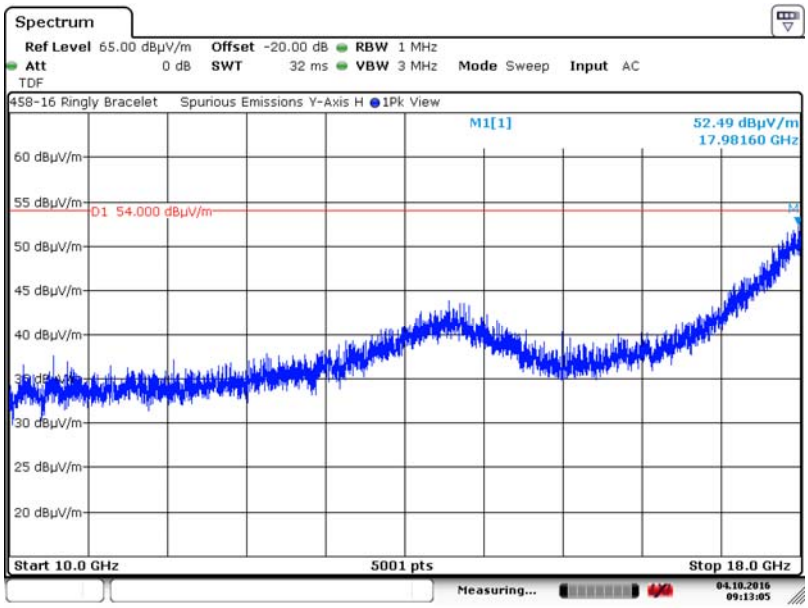
Appendix A (continued)

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

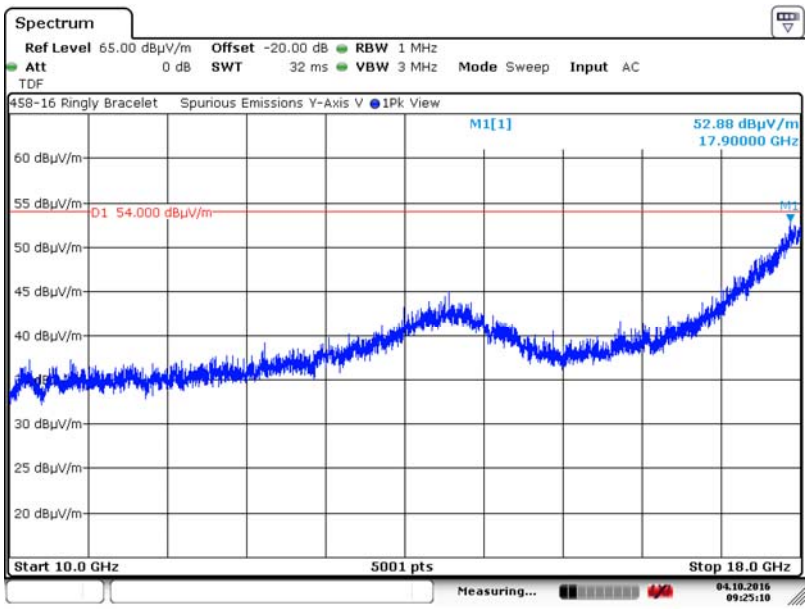
A1. Channel 0

A1.6. Measurement Results – Channel 0, 10 GHz to 18 GHz (continued)

A1.6.3. Y-Axis, Horizontal Antenna



A1.6.4. Y-Axis, Vertical Antenna



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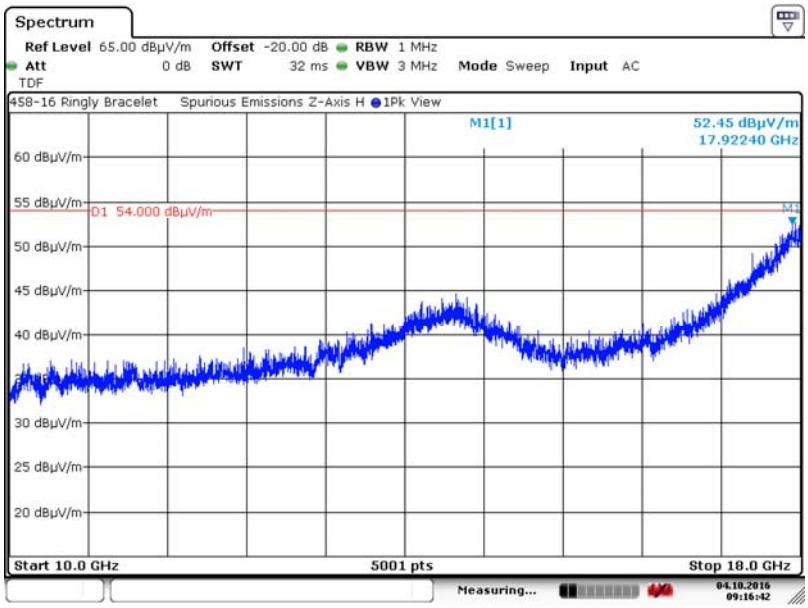
Appendix A (continued)

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

A1. Channel 0

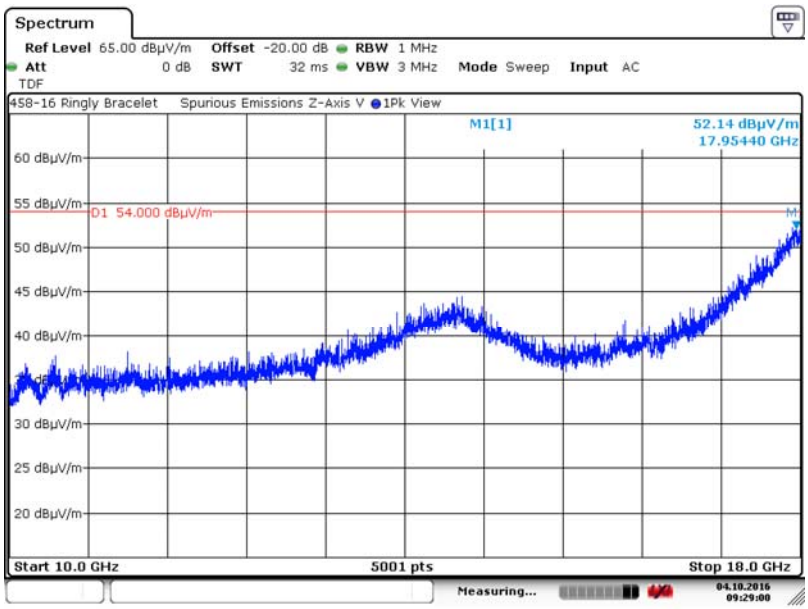
A1.6. Measurement Results – Channel 0, 10 GHz to 18 GHz (continued)

A1.6.5. Z-Axis, Horizontal Antenna



Date: 4.OCT.2016 09:16:41

A1.6.6. Z-Axis, Vertical Antenna



Date: 4.OCT.2016 09:29:00

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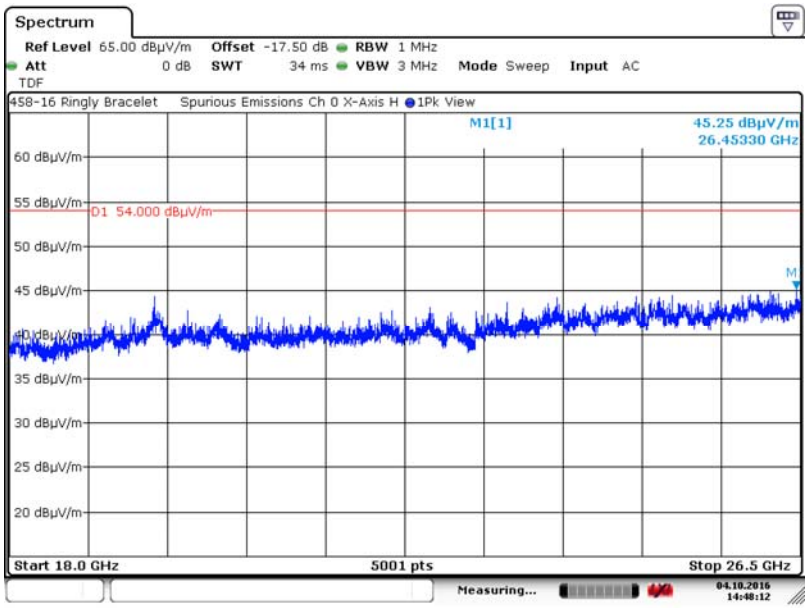
Appendix A (continued)

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

A1. Channel 0

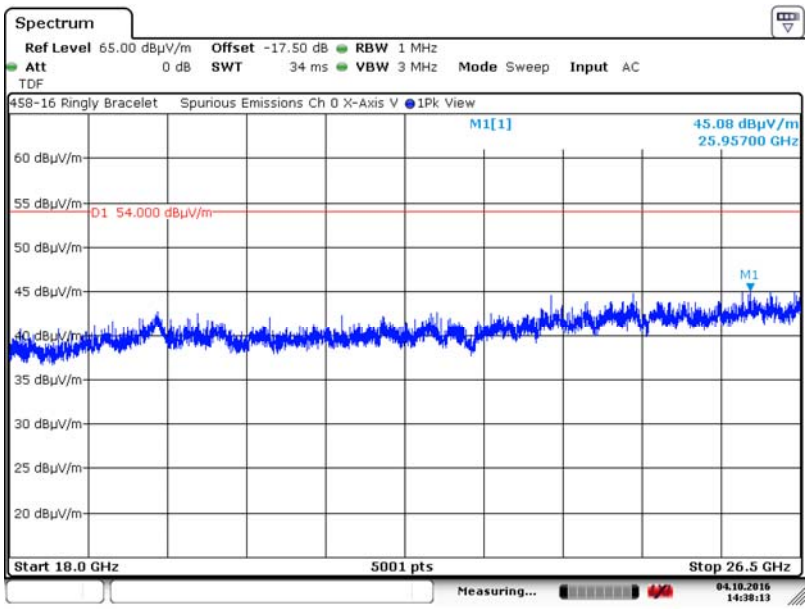
A1.7. Measurement Results – Channel 0, 18 GHz to 26.5 GHz

A1.7.1. X-Axis, Horizontal Antenna



Date: 4.OCT.2016 14:48:12

A1.7.2. X-Axis, Vertical Antenna



Date: 4.OCT.2016 14:38:13

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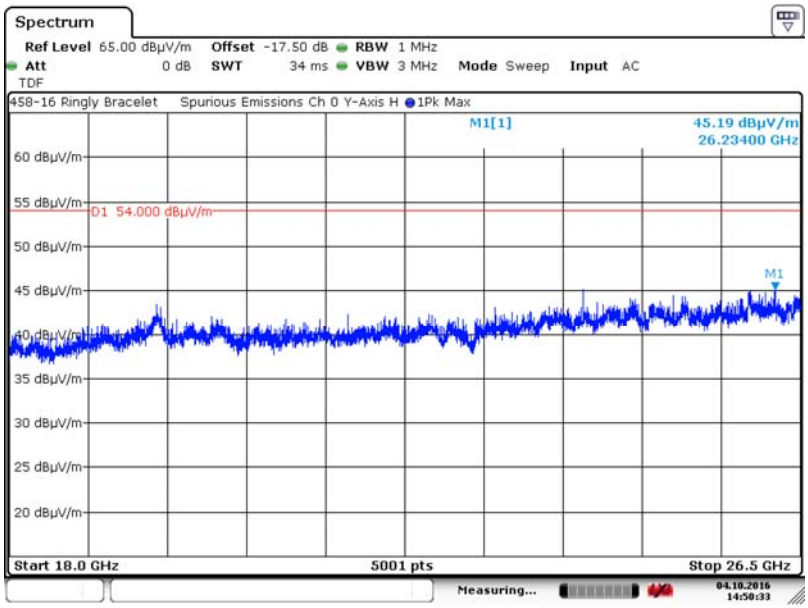
Appendix A (continued)

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

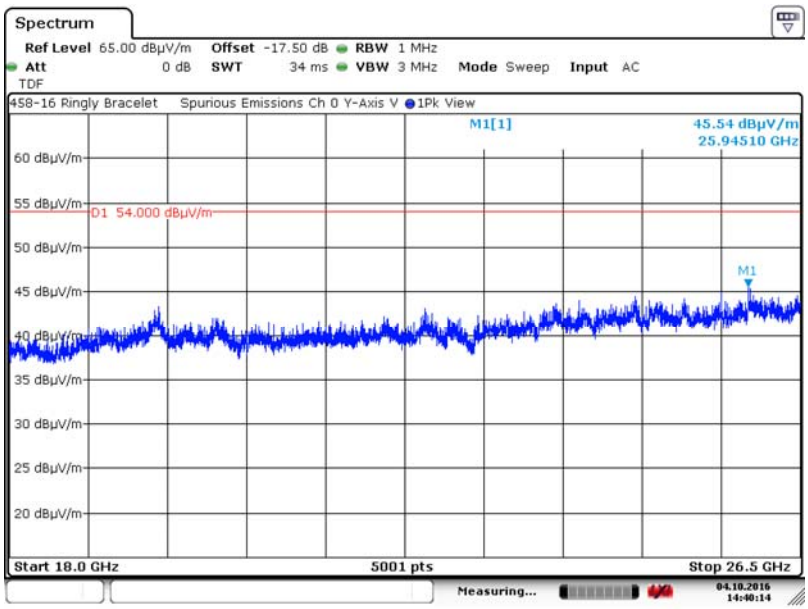
A1. Channel 0

A1.7. Measurement Results – Channel 0, 18 GHz to 26.5 GHz (continued)

A1.7.3. Y-Axis, Horizontal Antenna



A1.7.4. Y-Axis, Vertical Antenna



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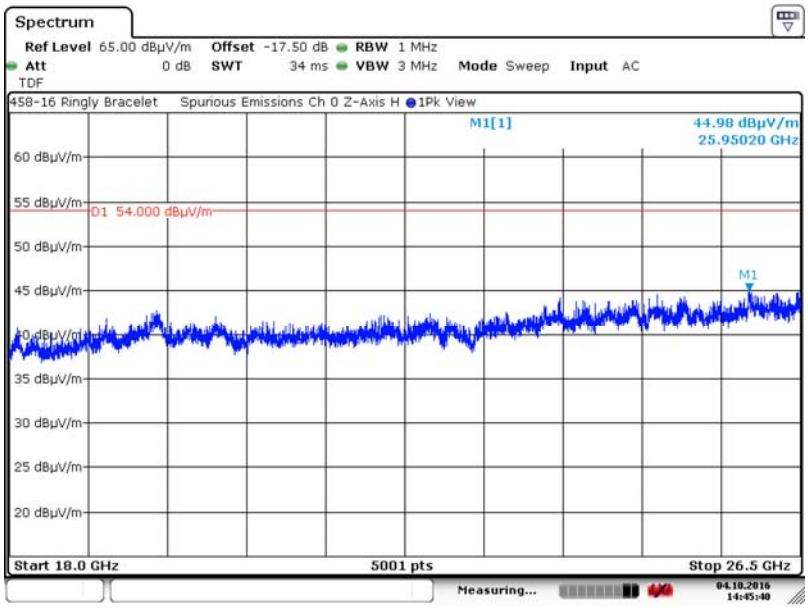
Appendix A (continued)

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

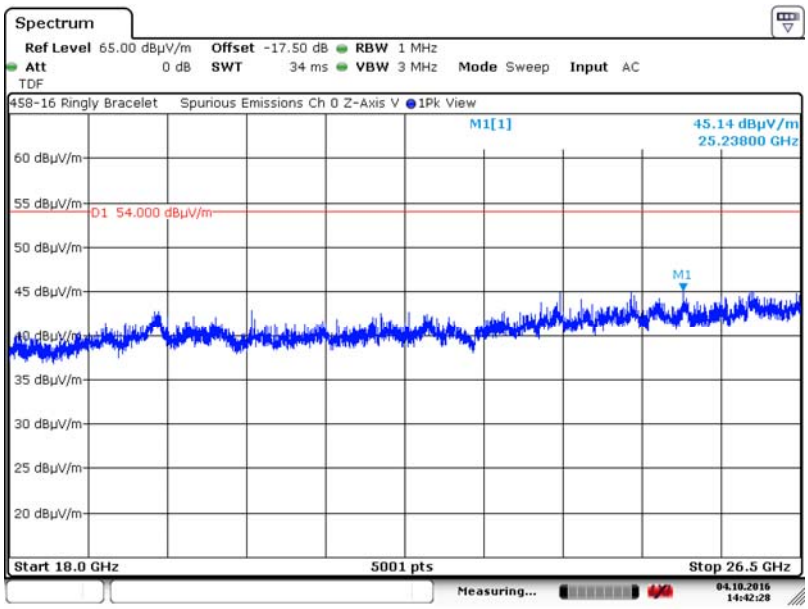
A1. Channel 0

A1.7. Measurement Results – Channel 0, 18 GHz to 26.5 GHz (continued)

A1.7.5. Z-Axis, Horizontal Antenna



A1.7.6. Z-Axis, Vertical Antenna



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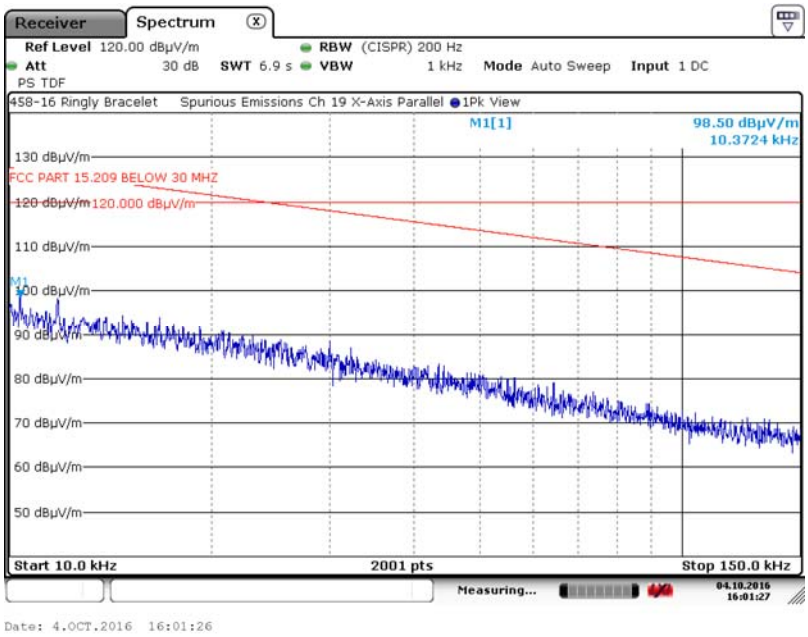
Appendix A (continued)

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

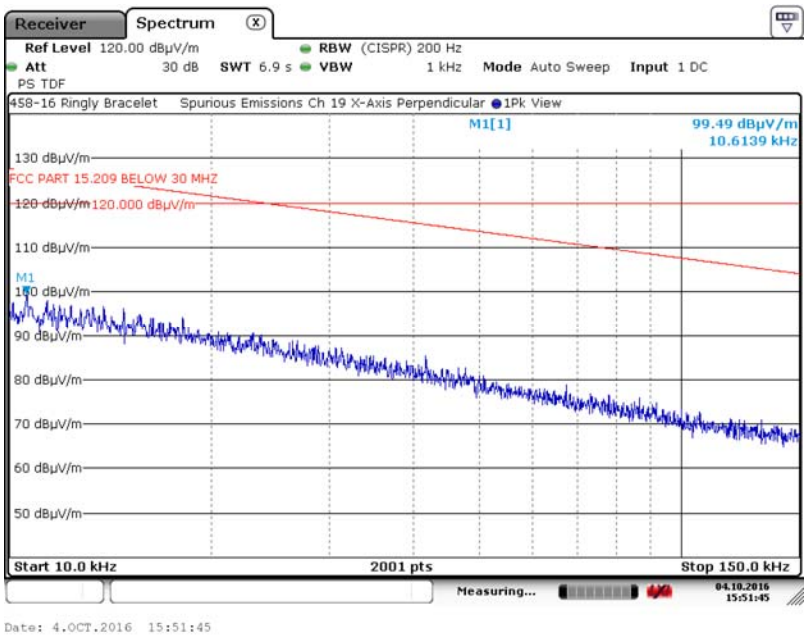
A2. Channel 19

A2.1. Measurement Results – 10 kHz to 150 kHz

A2.1.1. X-Axis, Parallel Antenna



A2.1.2. X-Axis, Perpendicular Antenna



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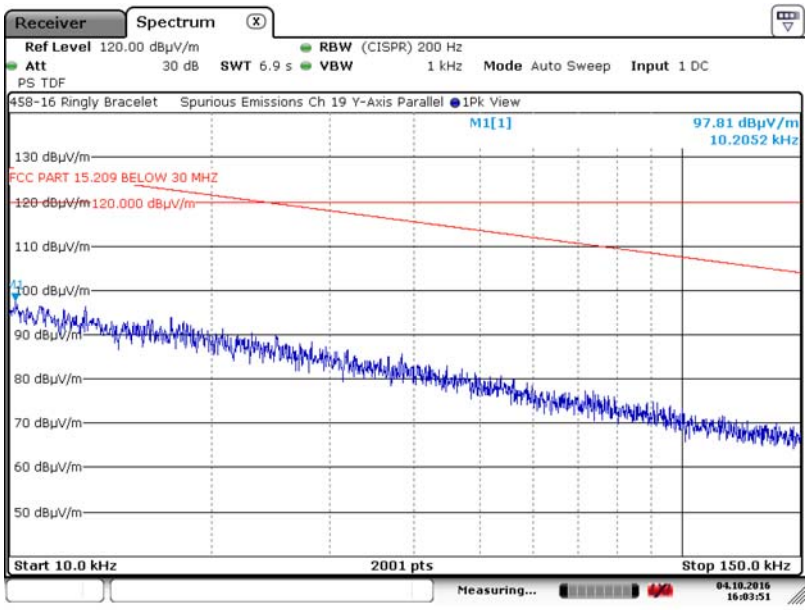
Appendix A (continued)

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

A2. Channel 19

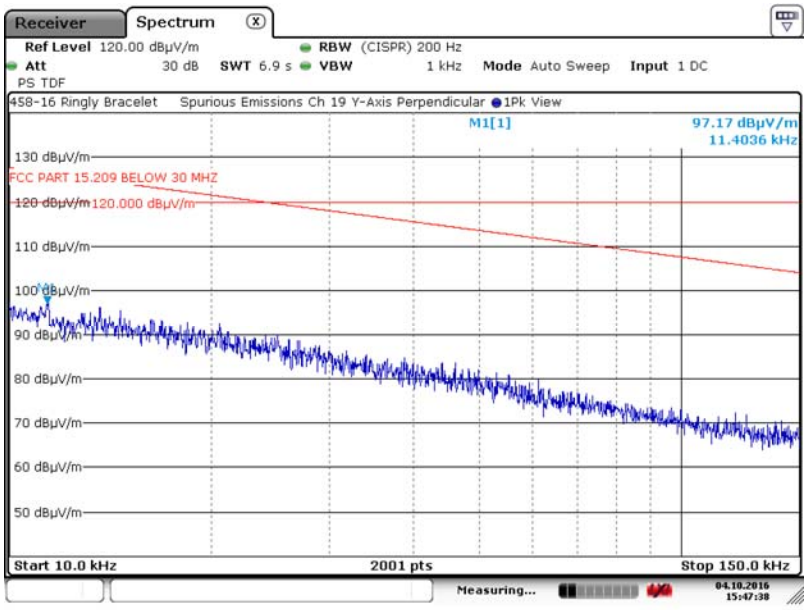
A2.1. Measurement Results – 10 kHz to 150 kHz (continued)

A2.1.3. Y-Axis, Parallel Antenna



Date: 4.OCT.2016 16:03:51

A2.1.4. Y-Axis, Perpendicular Antenna



Date: 4.OCT.2016 15:47:37

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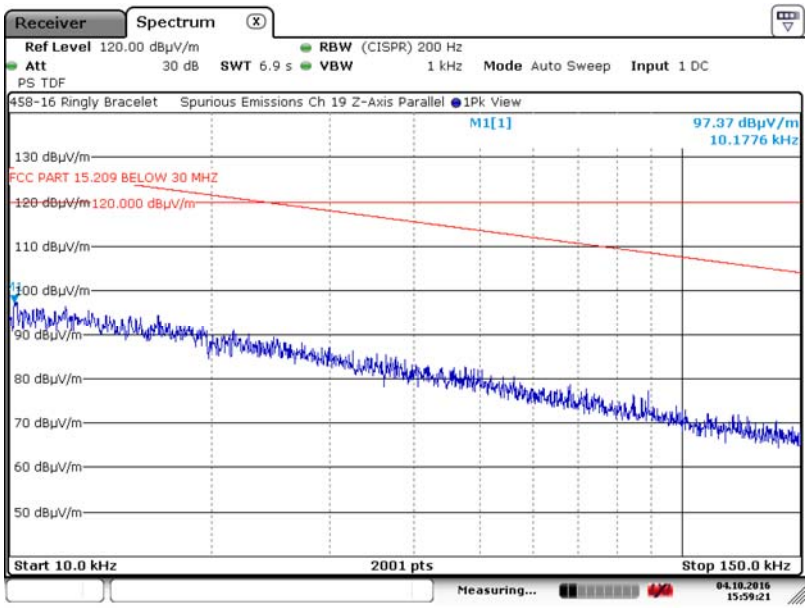
Appendix A (continued)

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

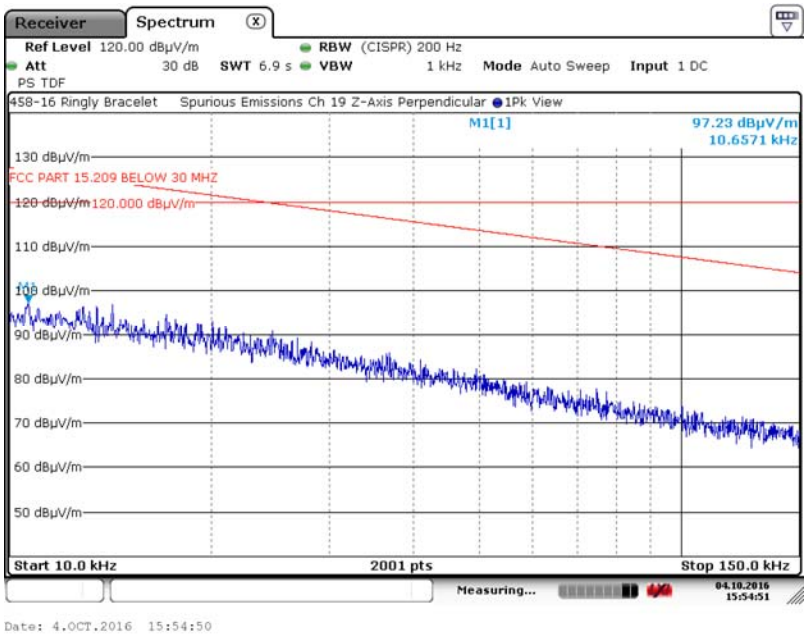
A2. Channel 19

A2.1. Measurement Results – 10 kHz to 150 kHz (continued)

A2.1.5. Z-Axis, Parallel Antenna



A2.1.6. Z-Axis, Perpendicular Antenna



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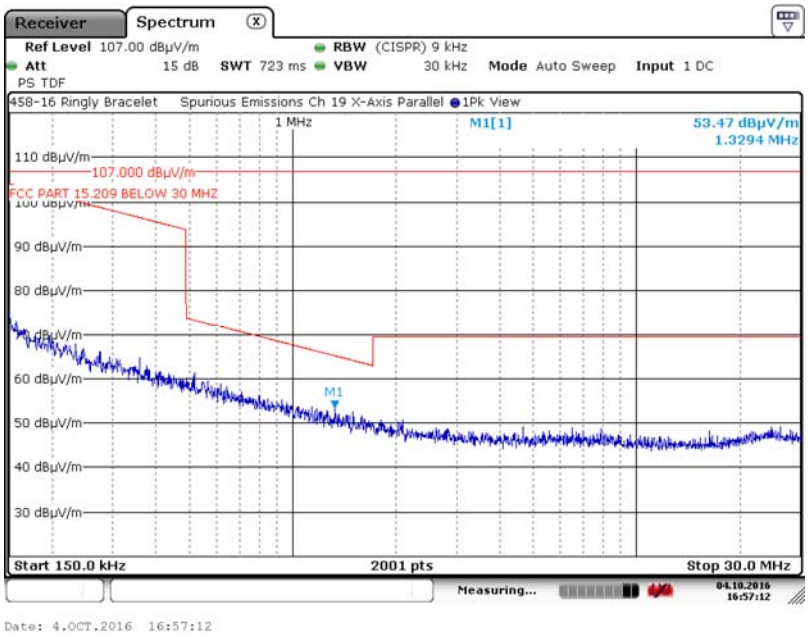
Appendix A (continued)

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

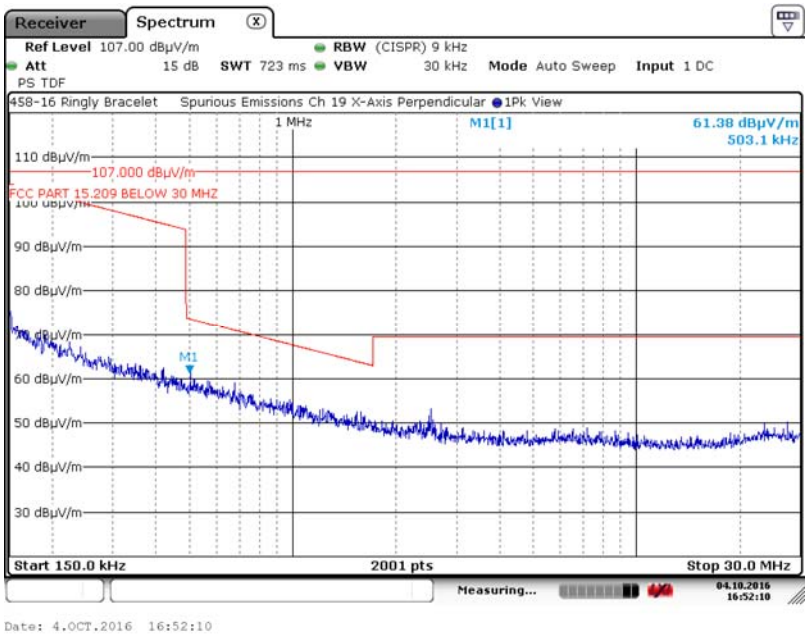
A2. Channel 19

A2.2. Measurement Results – 150 kHz to 30 MHz

A2.2.1. X-Axis, Parallel Antenna



A2.2.2. X-Axis, Perpendicular Antenna



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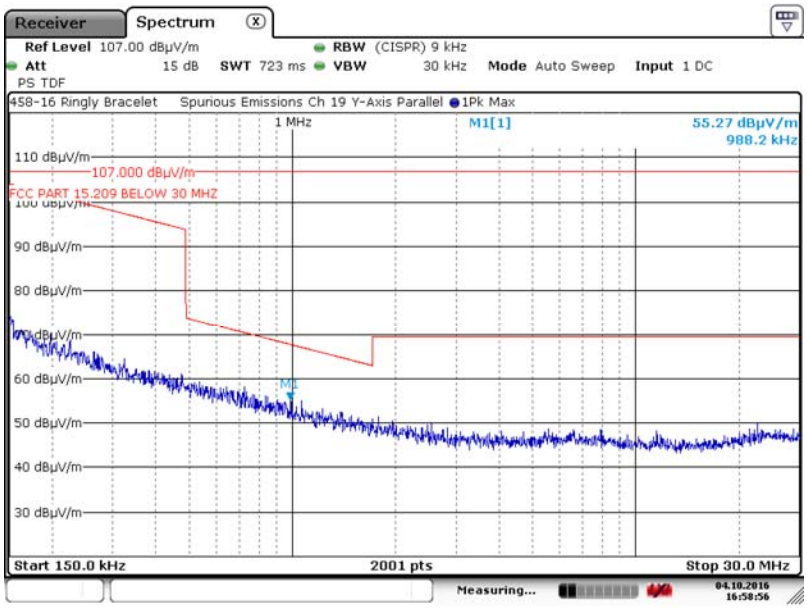
Appendix A (continued)

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

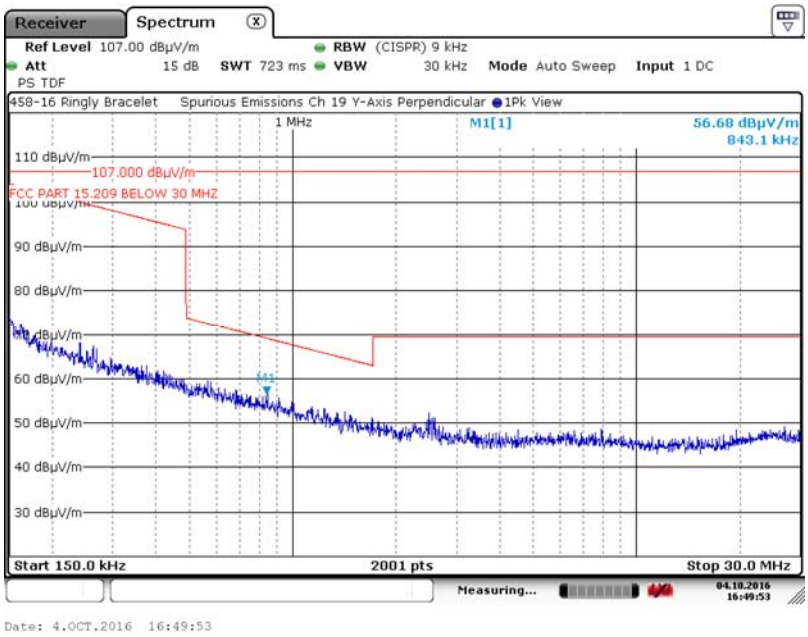
A2. Channel 19

A2.2. Measurement Results – 150 kHz to 30 MHz (continued)

A2.2.3. Y-Axis, Parallel Antenna



A2.2.4 Y-Axis, Perpendicular Antenna



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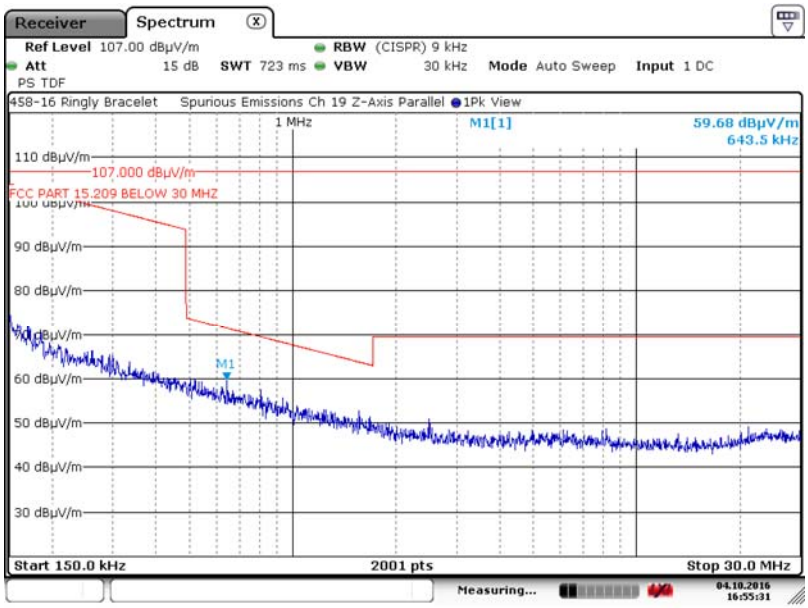
Appendix A (continued)

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

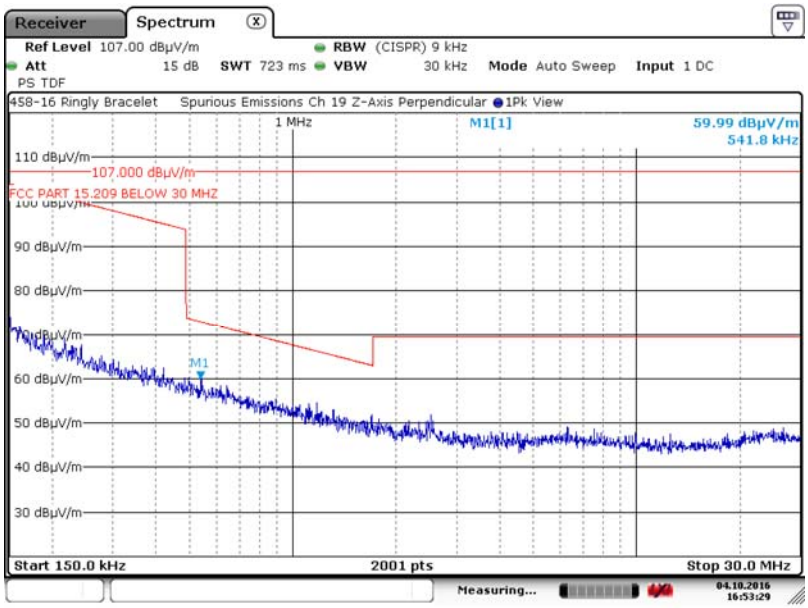
A2. Channel 19

A2.2. Measurement Results – 150 kHz to 30 MHz (continued)

A2.2.5. Z-Axis, Parallel Antenna



A2.2.6. Z-Axis, Perpendicular Antenna



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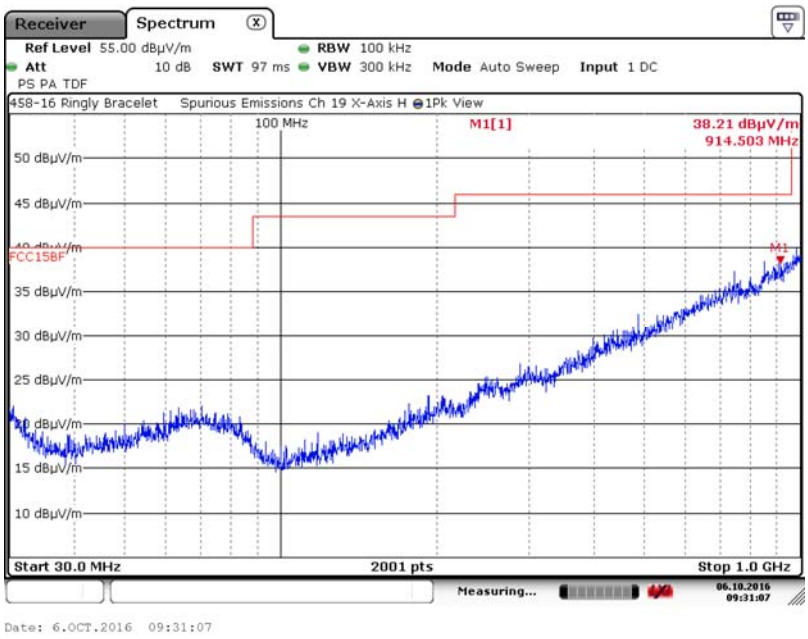
Appendix A (continued)

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

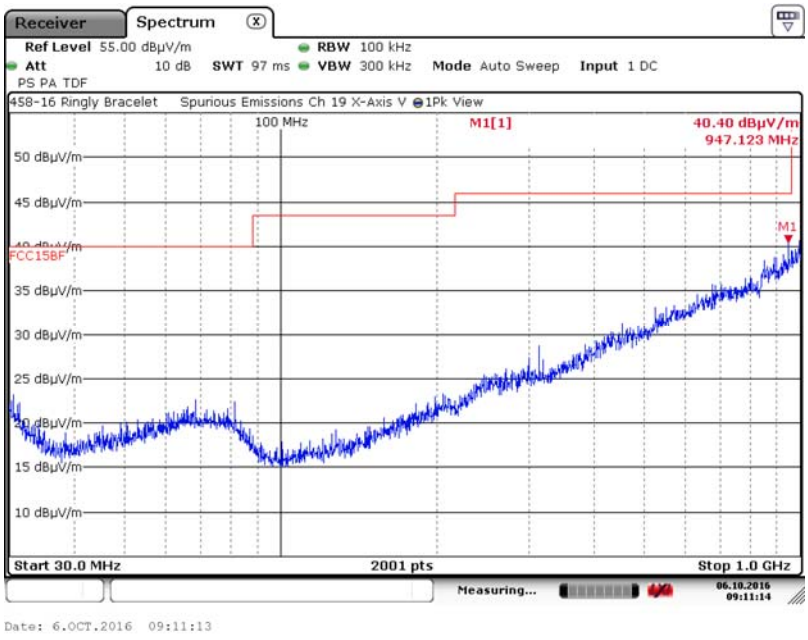
A2. Channel 19

A2.3. Measurement Results – 30 MHz to 1 GHz

A2.3.1. X-Axis, Horizontal Antenna



A2.3.2. X-Axis, Vertical Antenna



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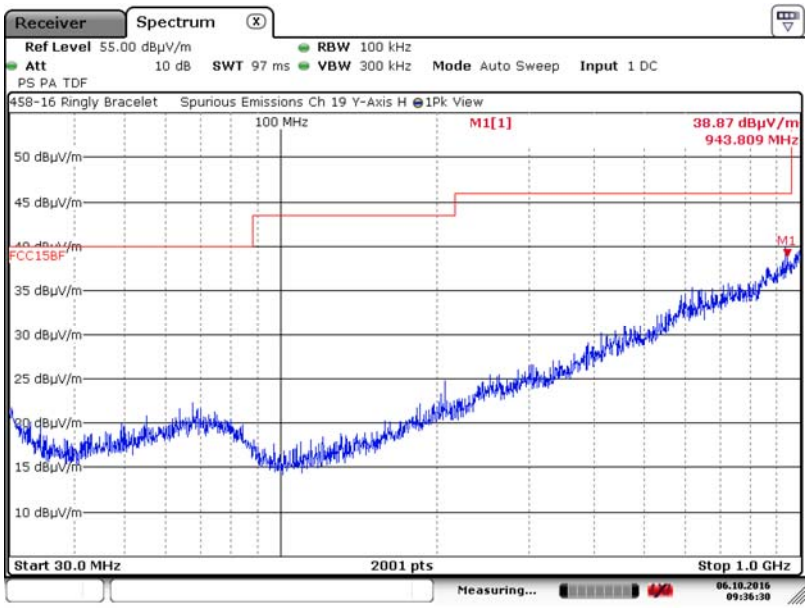
Appendix A (continued)

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

A2. Channel 19

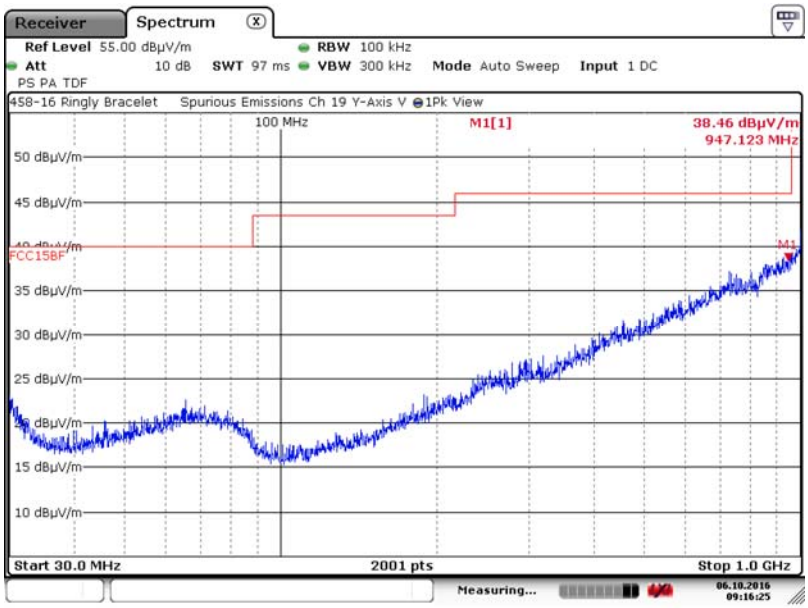
A2.3. Measurement Results – 30 MHz to 1 GHz (continued)

A2.3.3. Y-Axis, Horizontal Antenna



Date: 6.OCT.2016 09:36:30

A2.3.4. Y-Axis, Vertical Antenna



Date: 6.OCT.2016 09:16:25

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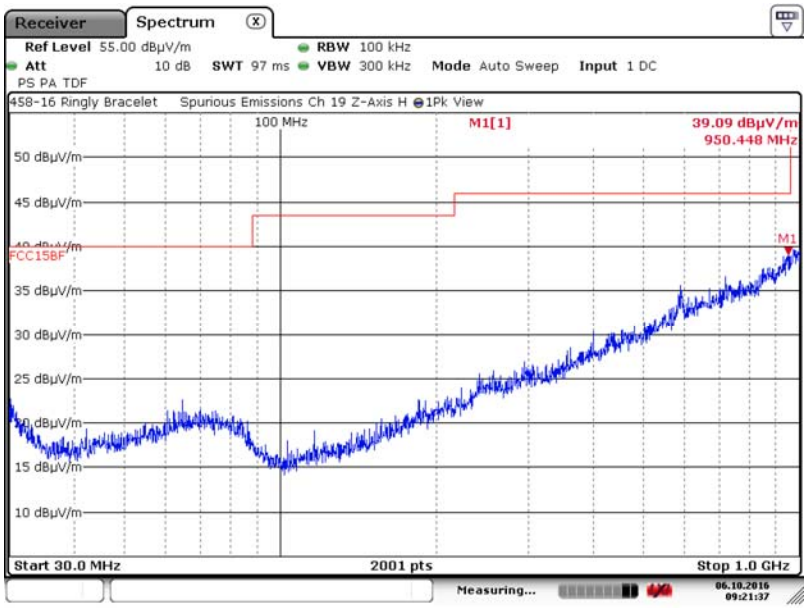
Appendix A (continued)

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

A2. Channel 19

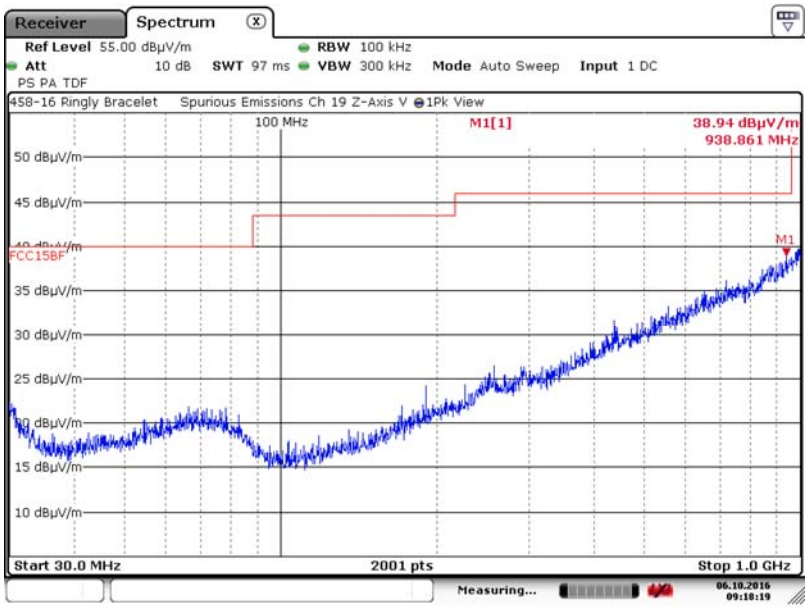
A2.3. Measurement Results – 30 MHz to 1 GHz (continued)

A2.3.5. Z-Axis, Horizontal Antenna



Date: 6.OCT.2016 09:21:36

A2.3.6. Z-Axis, Vertical Antenna



Date: 6.OCT.2016 09:18:19

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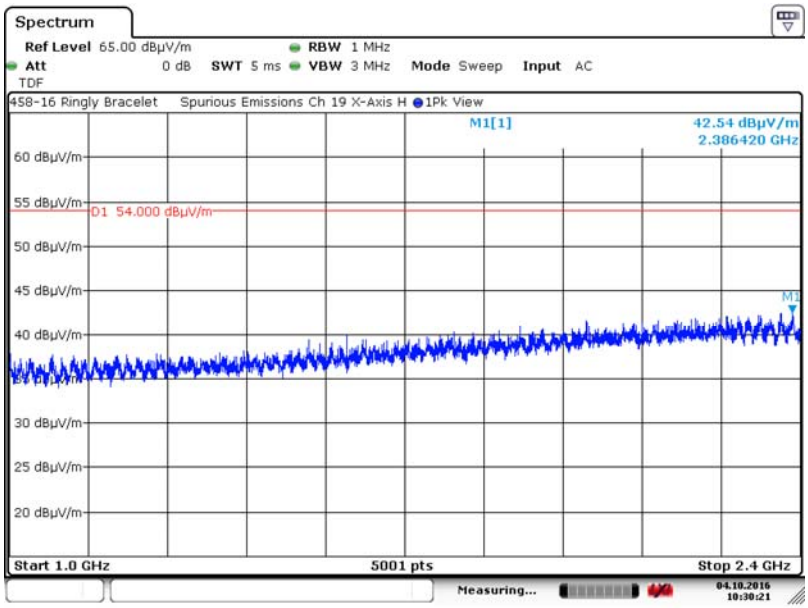
Appendix A (continued)

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

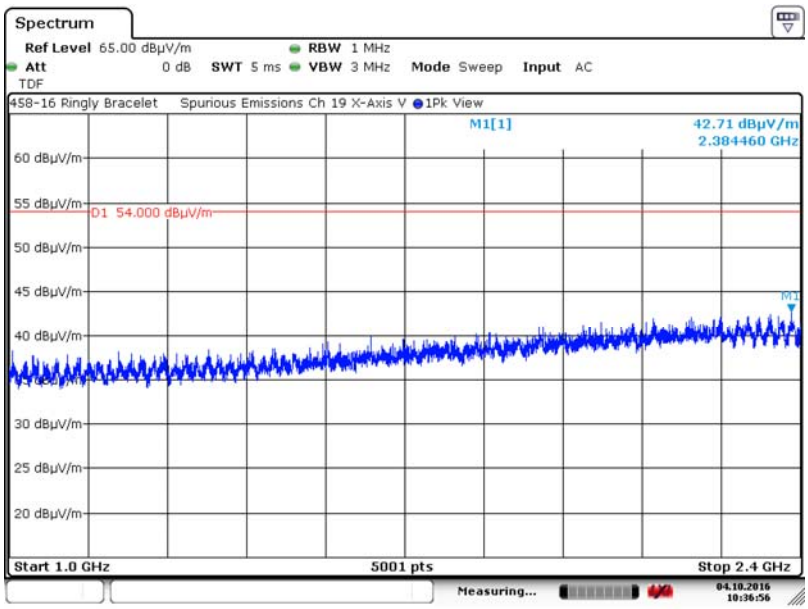
A2. Channel 19

A2.4. Measurement Results – 1 GHz to 2.4 GHz

A2.4.1. X-Axis, Horizontal Antenna



A2.4.2. X-Axis, Vertical Antenna



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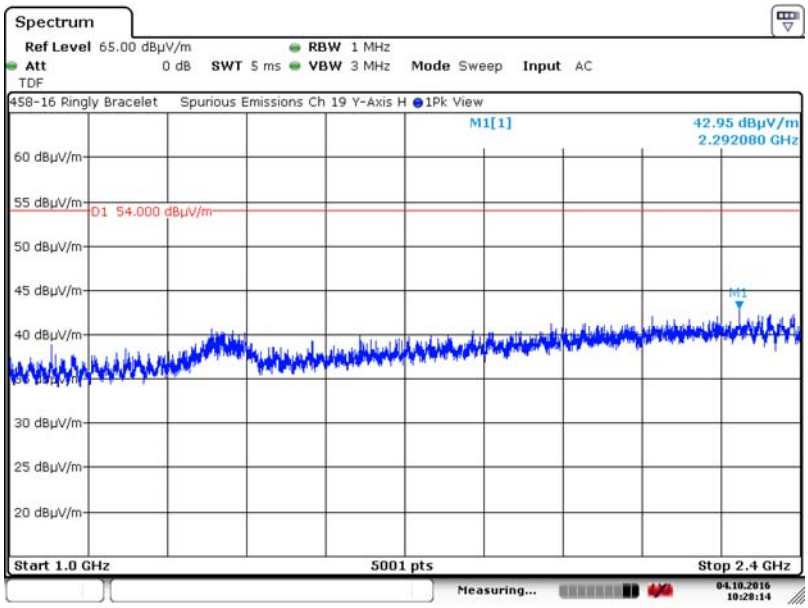
Appendix A (continued)

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

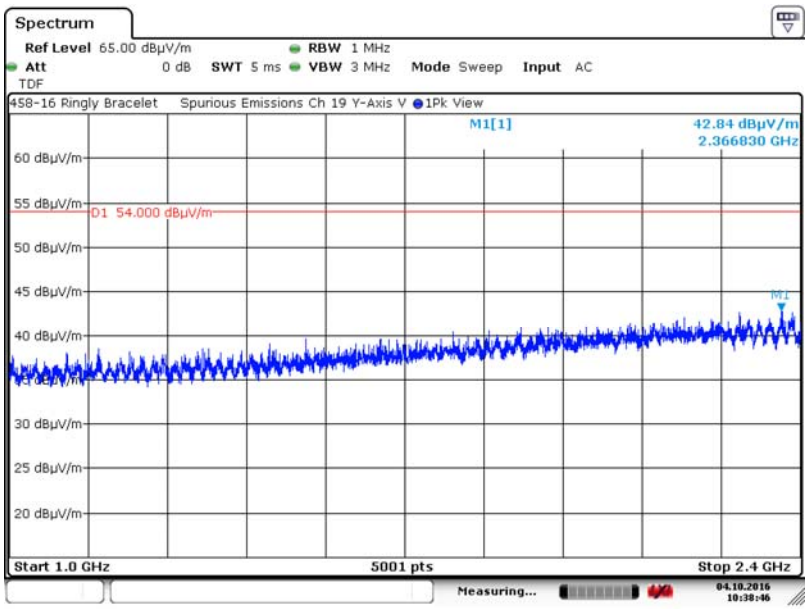
A2. Channel 19

A2.4. Measurement Results – 1 GHz to 2.4 GHz (continued)

A2.4.3. Y-Axis, Horizontal Antenna



A2.4.4. Y-Axis, Vertical Antenna



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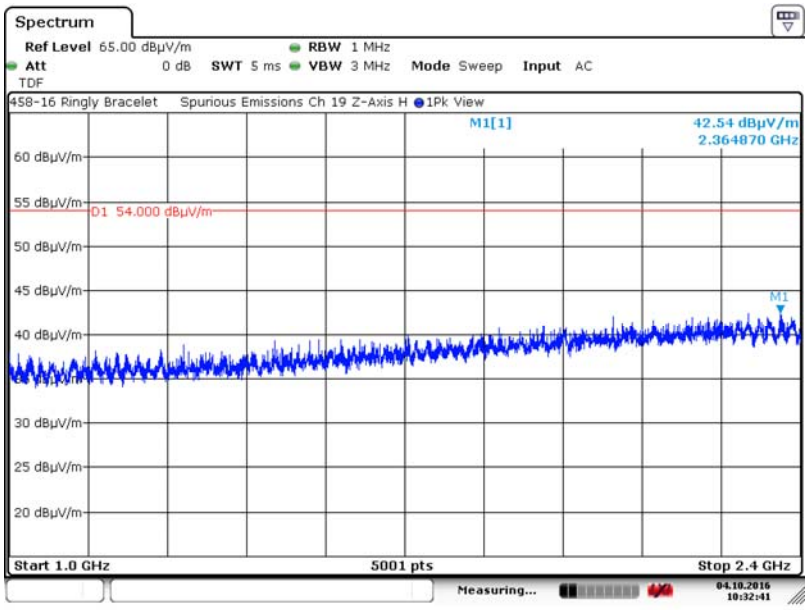
Appendix A (continued)

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

A2. Channel 19

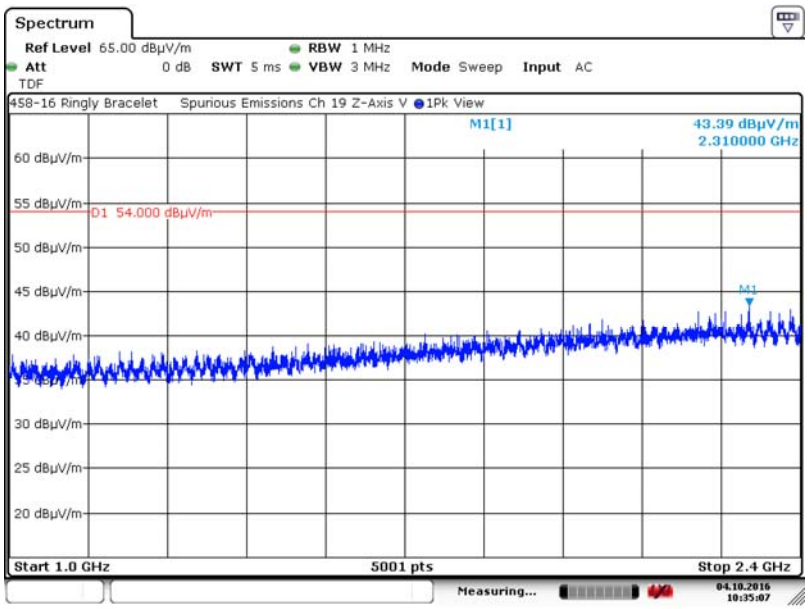
A2.4. Measurement Results – 1 GHz to 2.4 GHz (continued)

A2.4.5. Z-Axis, Horizontal Antenna



Date: 4.OCT.2016 10:32:40

A2.4.6. Z-Axis, Vertical Antenna



Date: 4.OCT.2016 10:35:07

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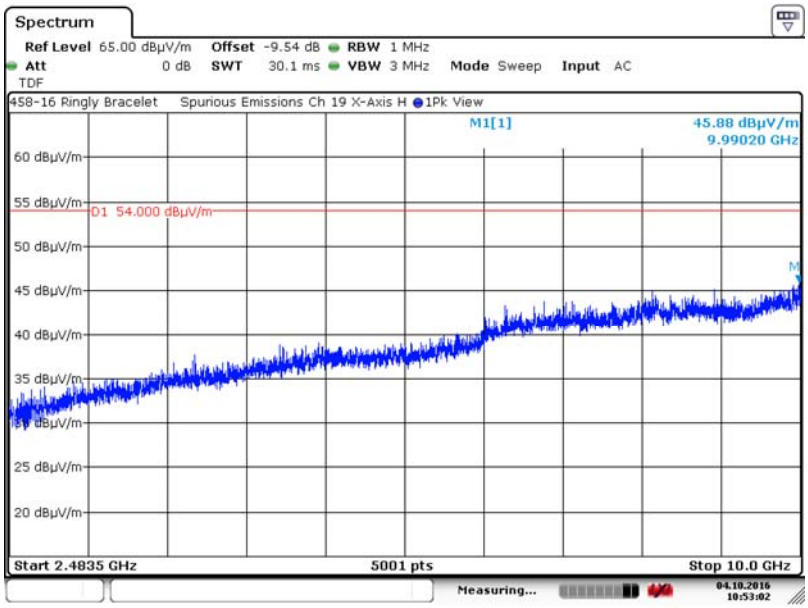
Appendix A (continued)

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

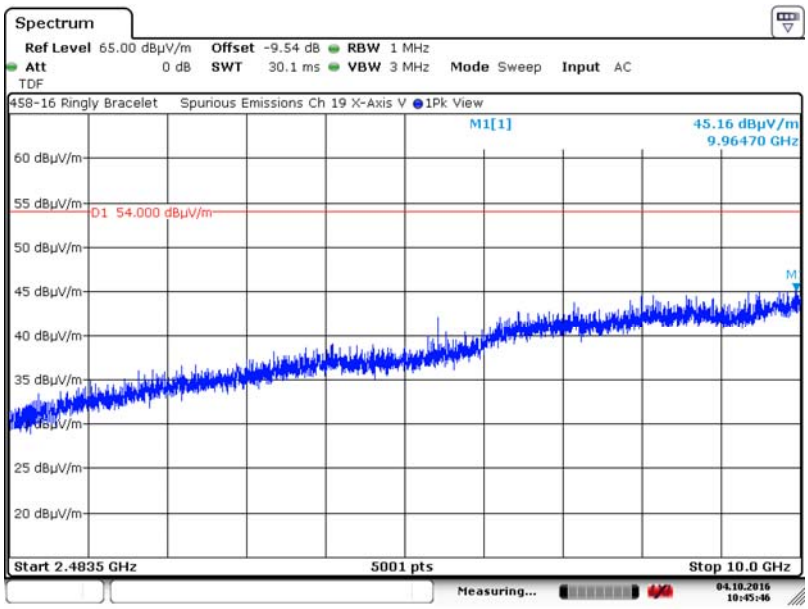
A2. Channel 19

A2.5. Measurement Results – 2.4835 GHz to 10 GHz

A2.5.1. X-Axis, Horizontal Antenna



A2.5.2. X-Axis, Vertical Antenna



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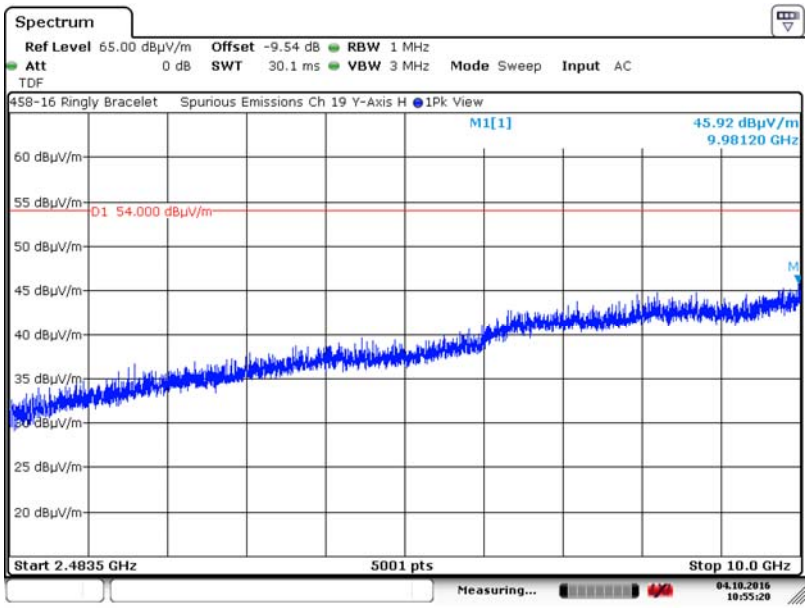
Appendix A (continued)

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

A2. Channel 19

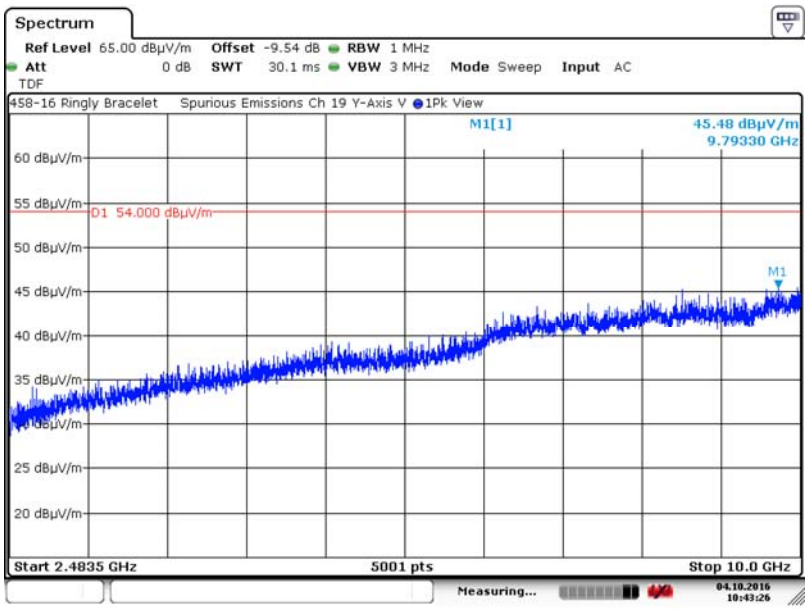
A2.5. Measurement Results – 2.4835 GHz to 10 GHz (continued)

A2.5.3. Y-Axis, Horizontal Antenna



Date: 4.OCT.2016 10:55:20

A2.5.4. Y-Axis, Vertical Antenna



Date: 4.OCT.2016 10:43:25

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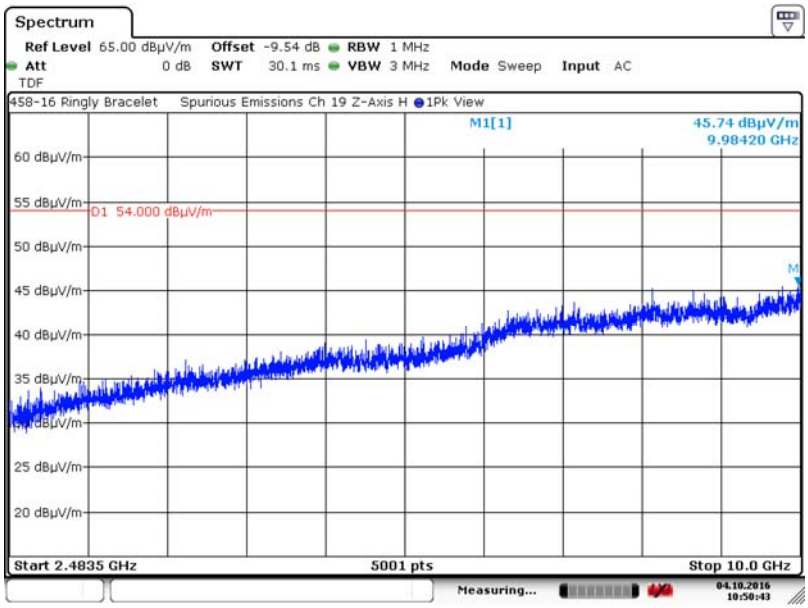
Appendix A (continued)

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

A2. Channel 19

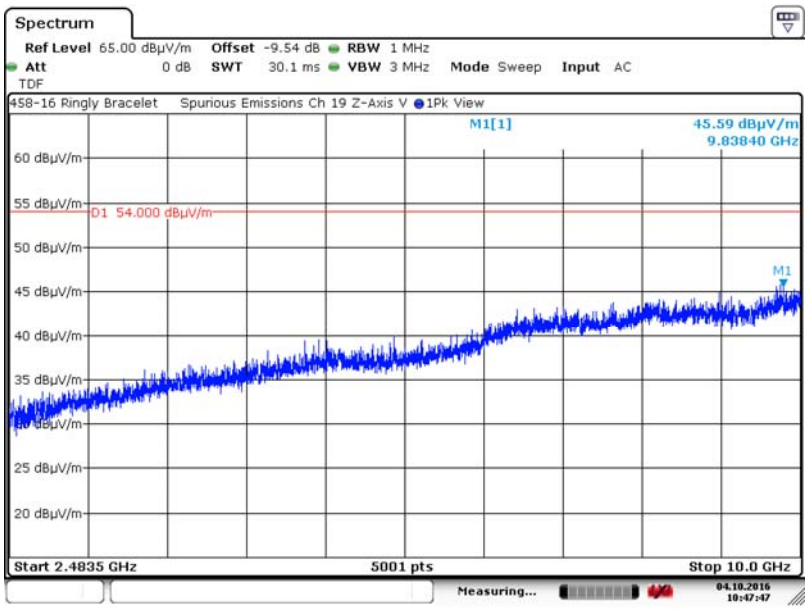
A2.5. Measurement Results – 2.483.5 GHz to 10 GHz (continued)

A2.5.5. Z-Axis, Horizontal Antenna



Date: 4.OCT.2016 10:50:42

A2.5.6. Z-Axis, Vertical Antenna



Date: 4.OCT.2016 10:47:47

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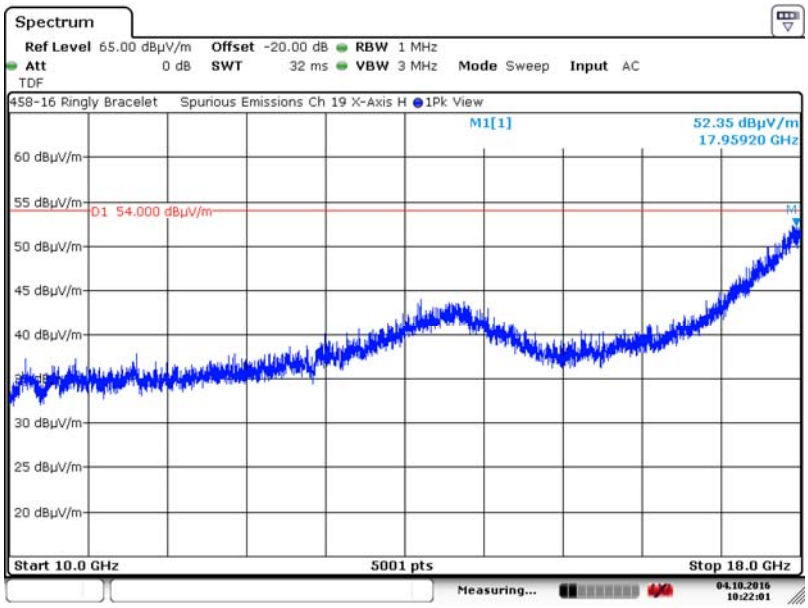
Appendix A (continued)

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

A2. Channel 19

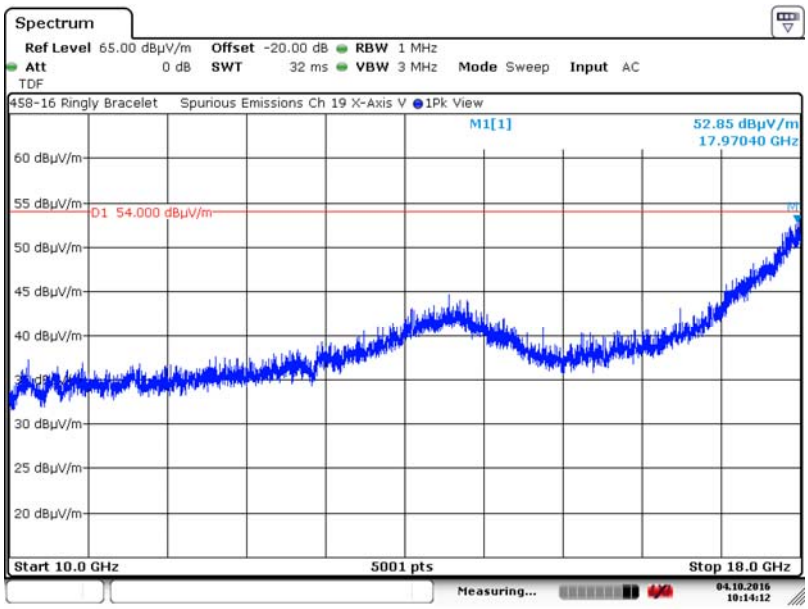
A2.6. Measurement Results – 10 GHz to 18 GHz (continued)

A2.6.1. X-Axis, Horizontal Antenna



Date: 4.OCT.2016 10:22:01

A2.6.2. X-Axis, Vertical Antenna



Date: 4.OCT.2016 10:14:12

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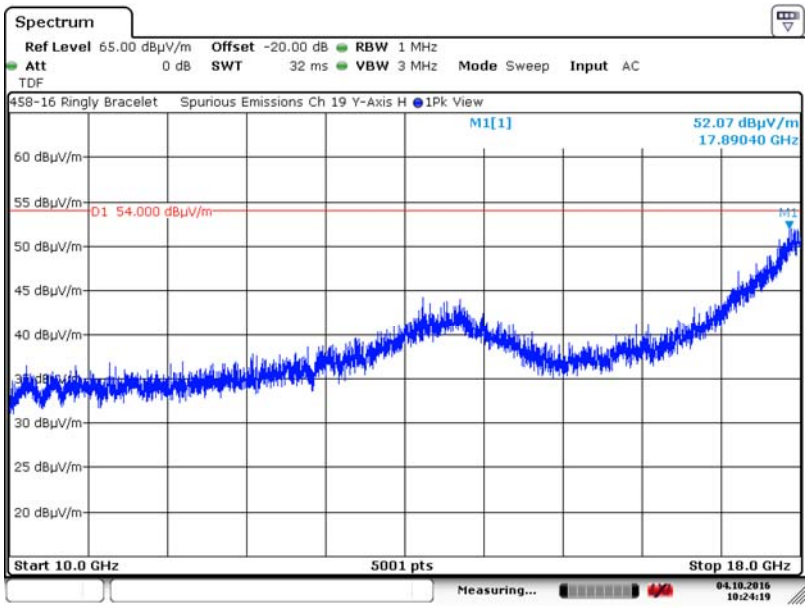
Appendix A (continued)

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

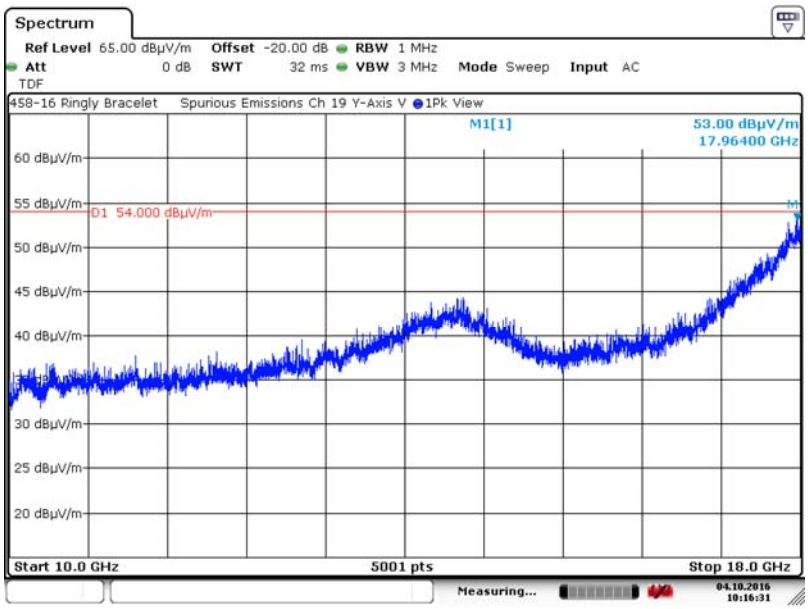
A2. Channel 19

A2.6. Measurement Results – 10 GHz to 18 GHz (continued)

A2.6.3. Y-Axis, Horizontal Antenna



A2.6.4. Y-Axis, Vertical Antenna



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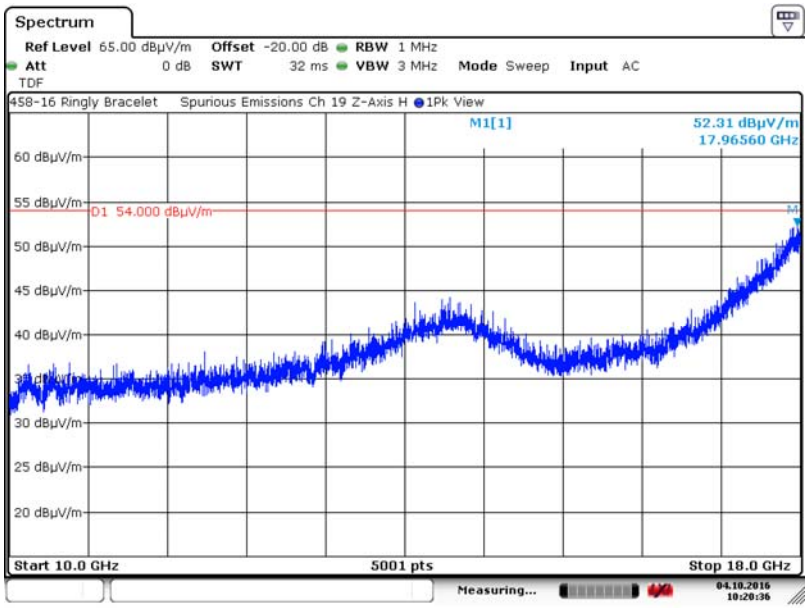
Appendix A (continued)

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

A2. Channel 19

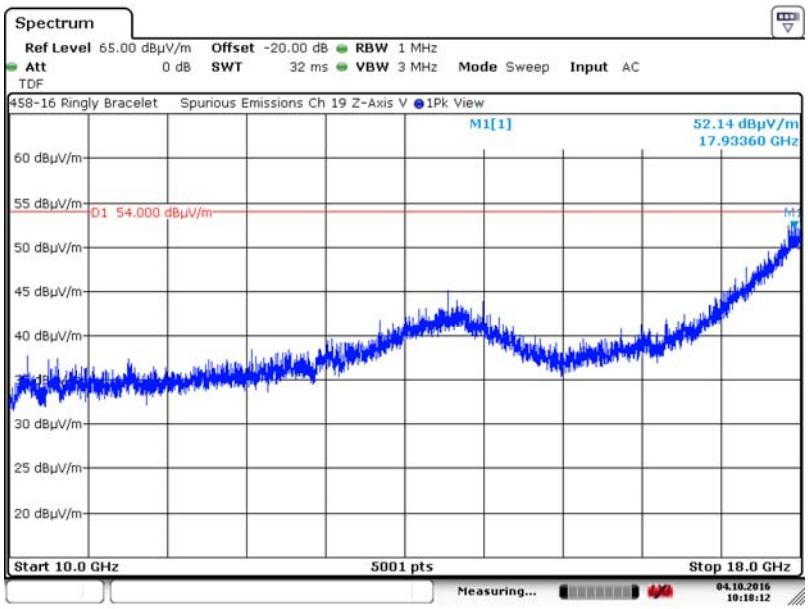
A2.6. Measurement Results – 10 GHz to 18 GHz (continued)

A2.6.5. Z-Axis, Horizontal Antenna



Date: 4.OCT.2016 10:20:35

A2.6.6. Z-Axis, Vertical Antenna



Date: 4.OCT.2016 10:18:11

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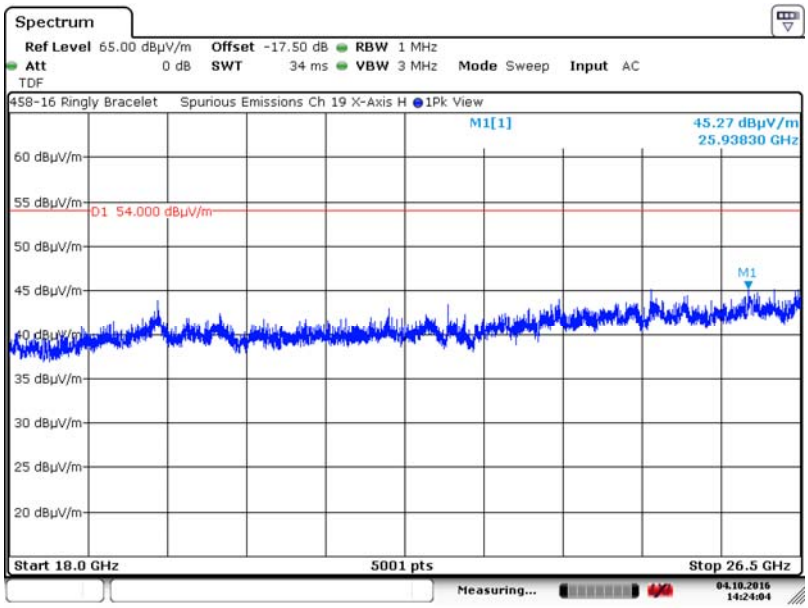
Appendix A (continued)

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

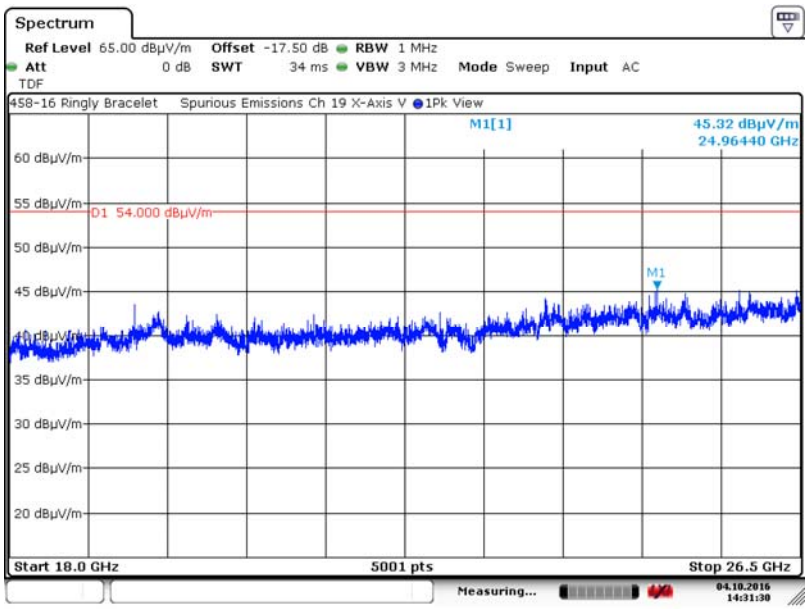
A2. Channel 19

A2.7. Measurement Results – 18 GHz to 26.5 GHz

A2.7.1. X-Axis, Horizontal Antenna



A2.7.2. X-Axis, Vertical Antenna



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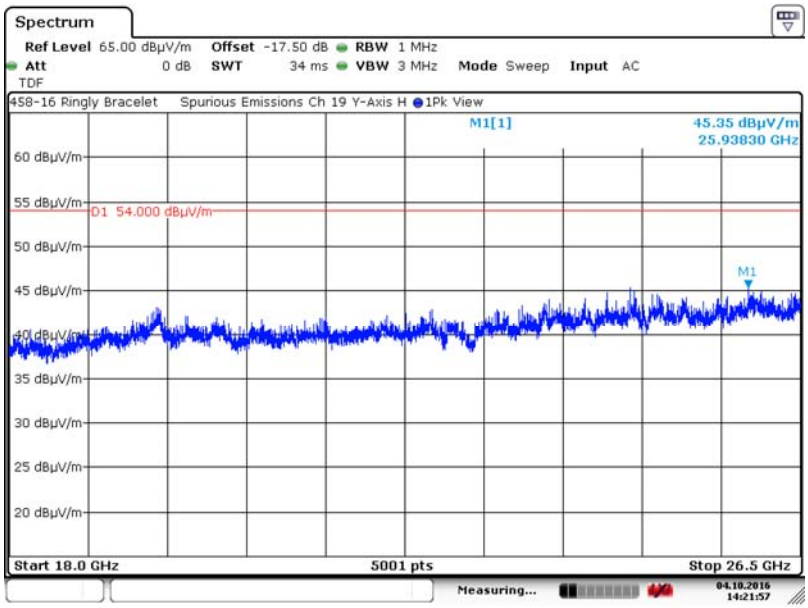
Appendix A (continued)

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

A2. Channel 19

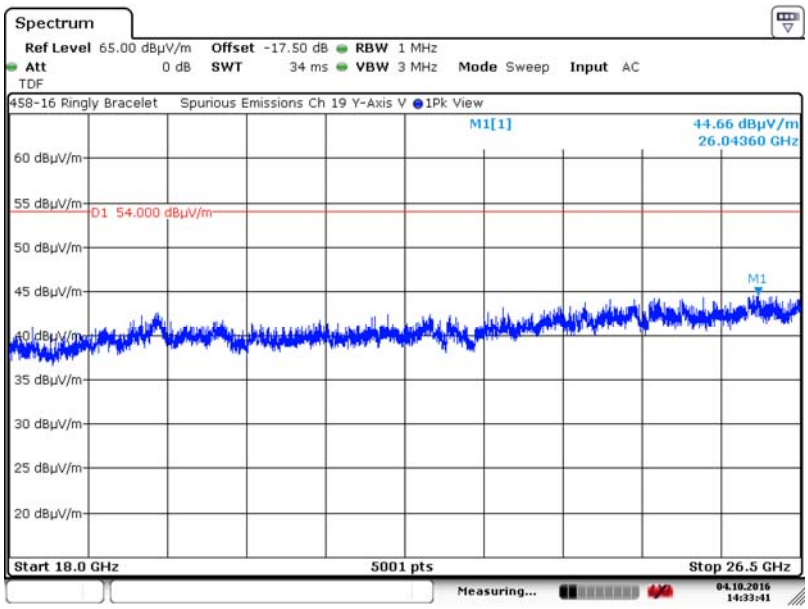
A2.7. Measurement Results – 18 GHz to 26.5 GHz (continued)

A2.7.3. Y-Axis, Horizontal Antenna



Date: 4.OCT.2016 14:21:57

A2.7.4. Y-Axis, Vertical Antenna



Date: 4.OCT.2016 14:33:40

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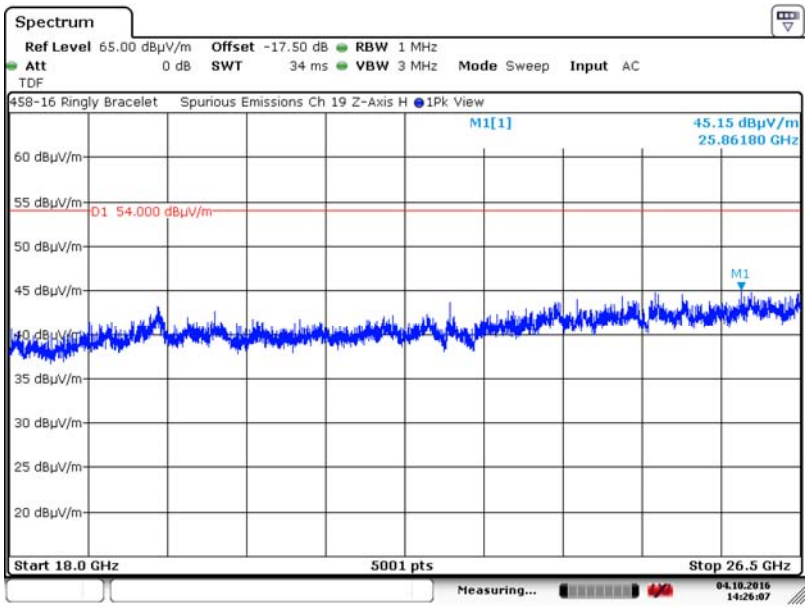
Appendix A (continued)

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

A2. Channel 19

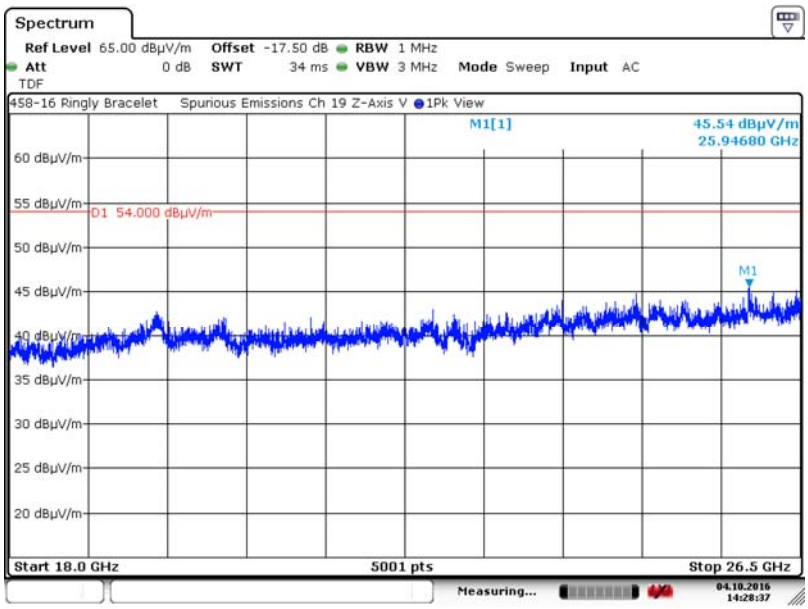
A2.7. Measurement Results – 18 GHz to 26.5 GHz (continued)

A2.7.5. Z-Axis, Horizontal Antenna



Date: 4.OCT.2016 14:26:06

A2.7.6. Z-Axis, Vertical Antenna



Date: 4.OCT.2016 14:28:36

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