

**COMPLIANCE WORLDWIDE INC.
TEST REPORT 461-14**

**In Accordance with the Requirements of
FCC PART 15.247, SUBPART C
INDUSTRY CANADA RSS 210, ISSUE 8
INDUSTRY CANADA RSS-GEN, ISSUE 4**

**Low Power License-Exempt Radio Communication Devices
Intentional Radiators**

Issued to

**Revolabs, Inc.
144 North Road, Suite 3250
Sudbury, MA 01776**

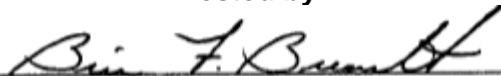
for the

**10-FLXHDDIALER
FLX New Bluetooth Handset**

**FCC ID: T5V10FLXHNDVE
IC: 6455A-10FLXHNDVE**

Report Issued on January 9, 2015

Tested by



Brian F. Breault

Reviewed by



Larry K. Stillings

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1. Scope

This test report certifies that the Revolabs 10-FLXHDDIALER, FLX New Bluetooth Handset, as tested, meets the FCC Part 15.247, and Industry Canada RSS 210, Issue 8 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:** Revolabs, Inc.
- 2.2. **Model Number:** 10-FLXHDDIALER
- 2.3. **Serial Number:** 301000055491
- 2.4. **Description:** FLX New Bluetooth Handset
- 2.5. **Power Source:** 3.7 Volts DC (Custom L1-ion Battery)
- 2.6. **EMC Modifications:** None

3. Product Configuration

3.1. Operational Characteristics & Software

CSR BlueTest3 was used as the control software for the Bluetooth transmitter.

Notes: The default transmitter power settings set by the client were maintained throughout the testing.

To facilitate setting the required transmitter test modes, the following device hardware setup was used: A USB cable from the laptop containing the test software was attached to modified device under test.

The following test modes were utilized to perform the testing:

TXSTART – The transmitter transmits a single carrier on a selected frequency from channel 1 to 79.

TXDATA 1 – Initiates a modulated output on the selected transmitter channel.

TXDATA 2 – Initiates the hopping sequence defined by the CFG HOPPING SEQ section.

CFG HOPPING SEQ – Selects the channel(s) to be included in a hopping sequence.

Orthogonal Positions:

For all radiated measurements, the FLX Handset was rotated through three orthogonal axes as required by ANSI C63.10-2013, section 5.10.1, for a hand held or body worn device.

3. Product Configuration (continued)

3.2. EUT Hardware

Device	Manufacturer	Model	Serial No.	Comment
FLX Handset	Revolabs, Inc.	10-FLXHDDIALER-01	301000055491	

3.3. Support Equipment

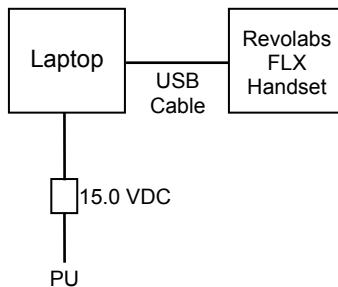
Device	Manufacturer	Model	Serial No.	Comment
Laptop Computer	Toshiba	Satellite A105-S4334	X6208961Q	Configured with BlueTest3

3.4. Cables

Cable	Shielded Y or N	Length	Function / Description
USB	Y	80 cm	Integrated into the FLX handset for test purposes
RF Cable UFL to SMA Bulkhead	Y	200 mm	To facilitate conducted RF measurements

3. Product Configuration (continued)

3.5. Block Diagram



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	4/4/2015	2 Years
Spectrum Analyzer 20 Hz – 40 GHz ²	Rohde & Schwarz	FSV40	100899	6/5/2015	2 Years
Spectrum Analyzer, 9 kHz to 40 GHz ³	Rohde & Schwarz	FSVR40	100909	5/15/2015	2 Years
EMI Receiver	Hewlett Packard	8546A	3650A00360	6/4/2016	2 Years
Preamplifier, 1 GHz to 26.5 GHz	Hewlett Packard	8449B	3008A00329	6/5/2015	2 Years
Loop Antenna	EMCO	6512	9309-1139	9/23/2016	2 Years
Biconilog Antenna, 30 MHz to 2 GHz	Sunol Sciences Corp	JB1	25509	5/15/2015	2 Years
Horn Antenna, 1 GHz – 18 GHz	ETS-Lindgren	3117	00143292	1/14/2015	2 Years
LISN 50 Ω 50 μH, 9 kHz to 30 MHz	EMCO	3825/2	9109-1860	6/2/2015	1 Year
Power Supply	Hewlett Packard	6296A	7M0599	8/26/2015	1 Year
Digital Barometer	Control Company	4195	ID236	2/25/2015	2 Years
2.4 GHz Band Reject Filter	Micro-Tronics	BRM50702	282	2/4/2015	1 Year
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.

Manufacturer	Software Description	Title or Model #	Rev.	Report Sections
Compliance Worldwide	Test Report Generation Software	Test Report Generator	1.0	7.7. Conducted Emissions

4.2. Measurement & Equipment Setup

Test Dates: Dec. 3rd 2014 – Jan. 6th, 2014
 Test Engineer: Brian Breault
 Normal Site Temperature (15 - 35°C): 21.6
 Relative Humidity (20 -75%RH): 35
 Frequency Range: 30 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

4. Measurements Parameters

4.3. Measurement Procedure

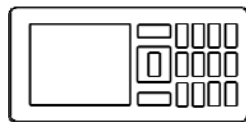
Testing was performed in accordance with the requirements detailed in ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. In addition, FCC DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems was also referenced.

Test measurements were made in accordance with FCC Part 15.247, ANSI C63.10-2013 and IC RSS-210 Annex II: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

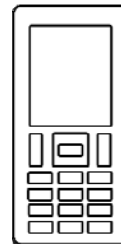
The test methods used to generate the data in this test report is in accordance with ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices.

In accordance with ANSI C63.10-2013, section 5.10.1 and 6.4.6, the device under test was rotated through three orthogonal axes to determine which attitude produced the highest emission relative to the limit. The positions tested were the following:

- X-axis - FLX Handset on left side, front facing antenna at 0° azimuth.
- Y-axis - FLX Handset top edge facing up, front facing antenna at 0° azimuth.
- Z-axis - FLX Handset front facing up, bottom edge facing antenna at 0° azimuth.



X-Axis



Y-Axis



Z-Axis

All measurements detailed in this test report represent the orthogonal position that produced the highest emission relative to a given limit.

In accordance with ANSI C63.10, section 5.6.2.2, the worst-case operating modes were investigated and used for the measurements detailed in this test report.

5. Measurements Summary

Test Requirement	FCC Rule Requirement	IC Rule Requirement	Report Section	Result
Antenna requirement	15.203	RSS-GEN 7.1.2	6.1	Compliant
Number of hopping channels	15.247 (a) (1) (iii)	RSS-210 A8.1 (d)	6.2	Compliant
Minimum 20 dB bandwidth	15.247 (a) (1) (iii)	RSS-210 A8.1 (b)	6.3	Compliant
Hopping channel carrier frequency separation	15.247 (a) (1)	RSS-210 A8.1 (b)	6.4	Compliant
Average time of occupancy	15.247 (a) (1) (iii)	RSS-210 A8.1 (d)	6.5	Compliant
Maximum peak conducted output power	15.247 (b) (1)	RSS-210 A8.1 (b)	6.6	Compliant
Band edge	15.247 (d)	RSS-210 A8.5	6.7	Compliant
99% (occupied) bandwidth	N/A	RSS-GEN 4.6.1	6.8	Compliant
Spurious harmonic radiated emissions	ANSI C63.10 9.13	RSS-210 A8.9	6.9	Compliant
Spurious radiated emissions	15.209	RSS-GEN	6.10	Compliant
Power line conducted emissions	15.207	RSS-GEN	6.11	Compliant
Public exposure to radio frequency energy levels	15.247 (1) 1.1307 (b)(1)	RSS-GEN 5.5 RSS-102	6.12	Compliant

6. Measurement Data

6.1. 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 utilized an internal antenna, inaccessible to the user.

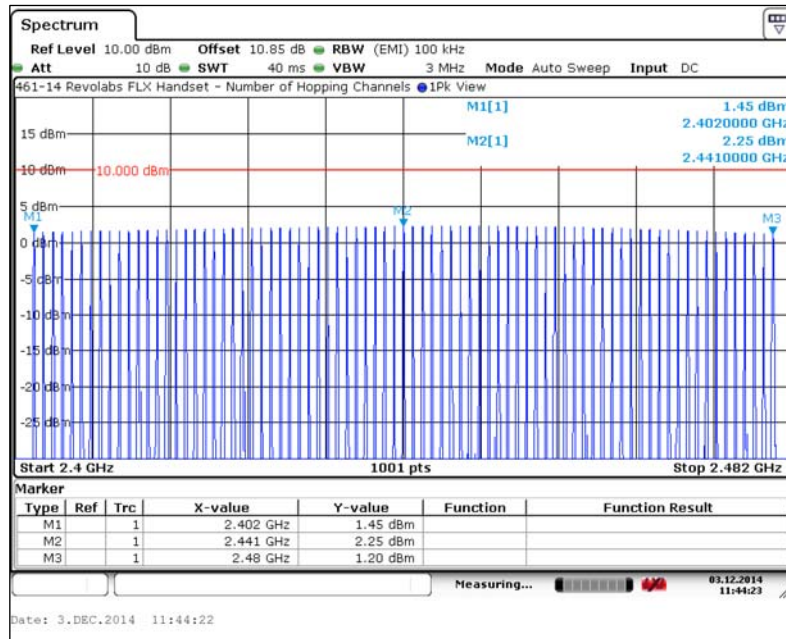
6. Measurement Data (continued)

6.2. Number of Hopping Channels (15.247 (a) (1) (iii), RSS-210 A8.1 (d))

Requirement: Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

Status: The device under test utilizes 79 hopping channels from 2402 MHz to 2480 MHz.

Result: Compliant



6. Measurement Data

6.3. Minimum 20 dB Bandwidth (15.247 (a) (1), RSS-210 A8.1 (b))

Requirement: Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

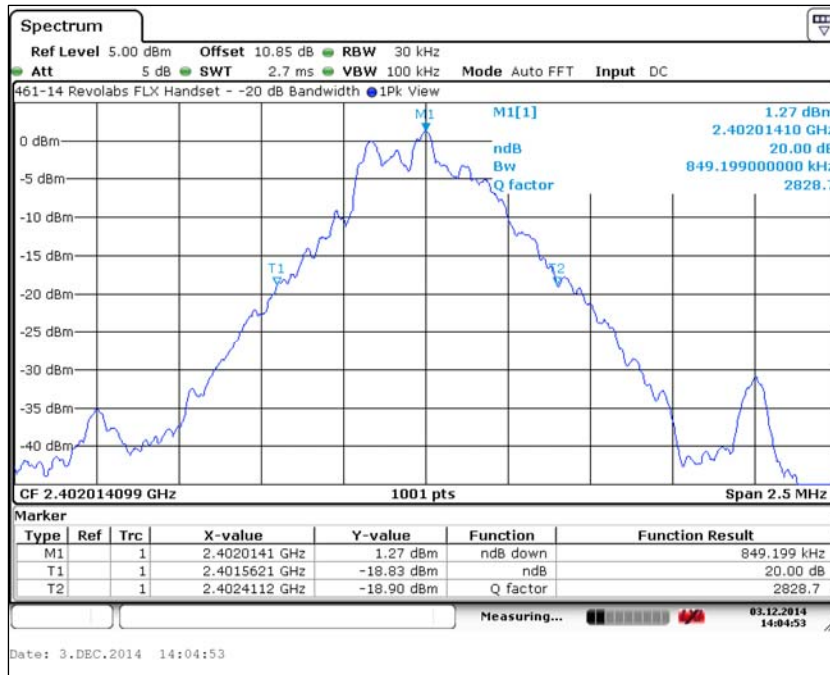
The nominal IF filter bandwidth (3 dB RBW) should be approximately 1% to 5% of the OBW, unless otherwise specified, depending on the applicable requirement.

Test Note: The 20 dB bandwidth of the hopping channel is the greater of the values.

Resolution Bandwidth : 30 kHz
Video Bandwidth : 100 kHz

Channel	Frequency (MHz)	-20 dB Bandwidth (kHz)
Low	2402	849.2
Middle	2441	786.7
High	2480	786.7

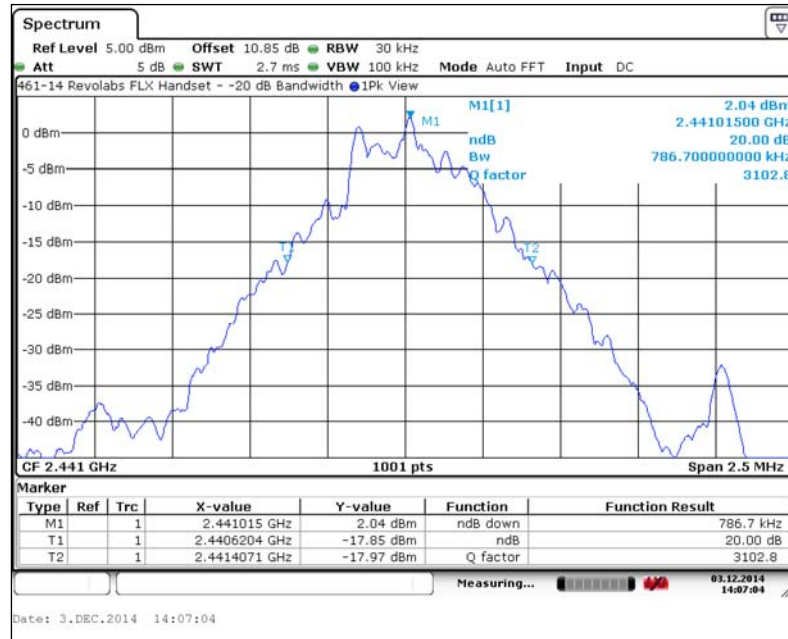
6.3.1. 20 dB Bandwidth – Low Frequency (2402 MHz)



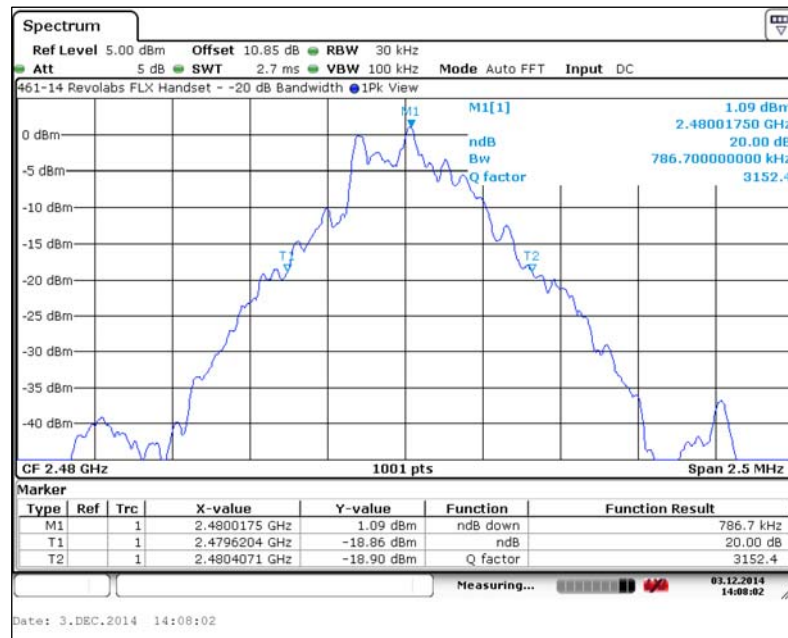
6. Measurement Data

6.3. Minimum 20 dB Bandwidth (15.247 (a) (1), RSS-210 A8.1 (b))

6.3.2. 20 dB Bandwidth – Middle Frequency (2441 MHz)



6.3.3. 20 dB Bandwidth – High Frequency (2480 MHz)

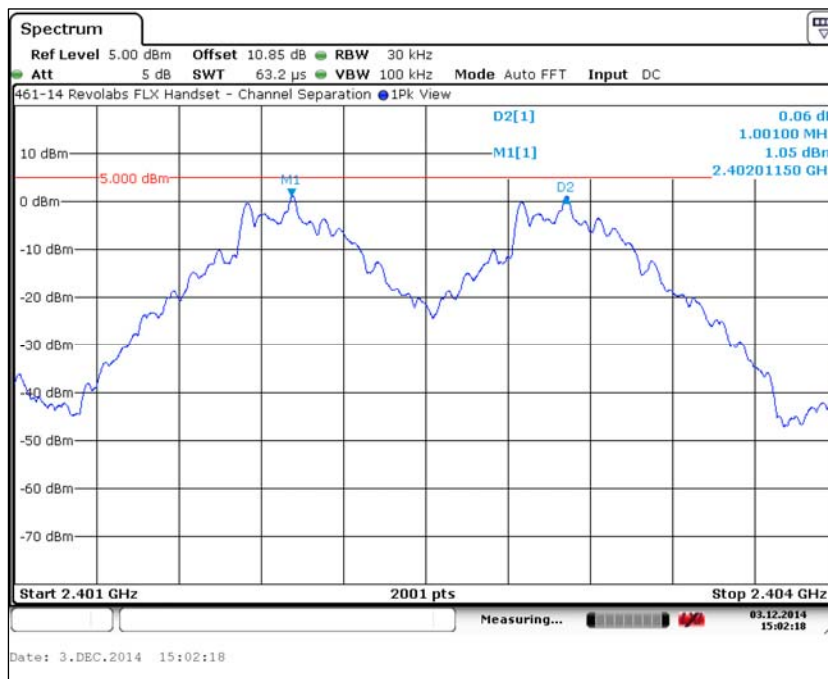


6. Measurement Data

6.4. Frequency Hopping Channel Separation (15.247 (a) (1), RSS-210 A8.1 (b))

Channel Pair	Channel Pair	Channel Separation (kHz)	Required Channel Separation (kHz)	Result
Low	2402	1000	>849.2 kHz	Compliant
	2403			
Middle	2440	1000	>786.7 kHz	Compliant
	2441			
High	2479	1000	>786.7 kHz	Compliant
	2480			

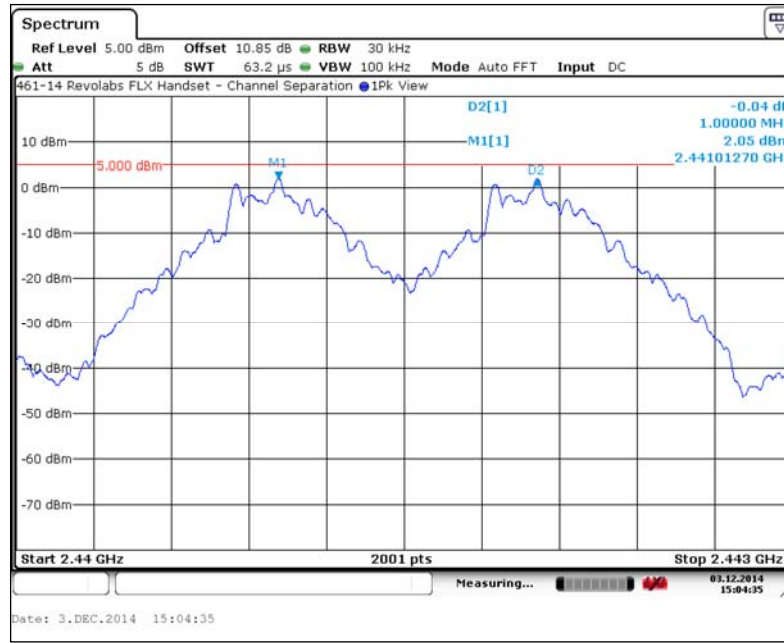
6.4.1. Channel Separation – Low Frequency (2402/2403 MHz)



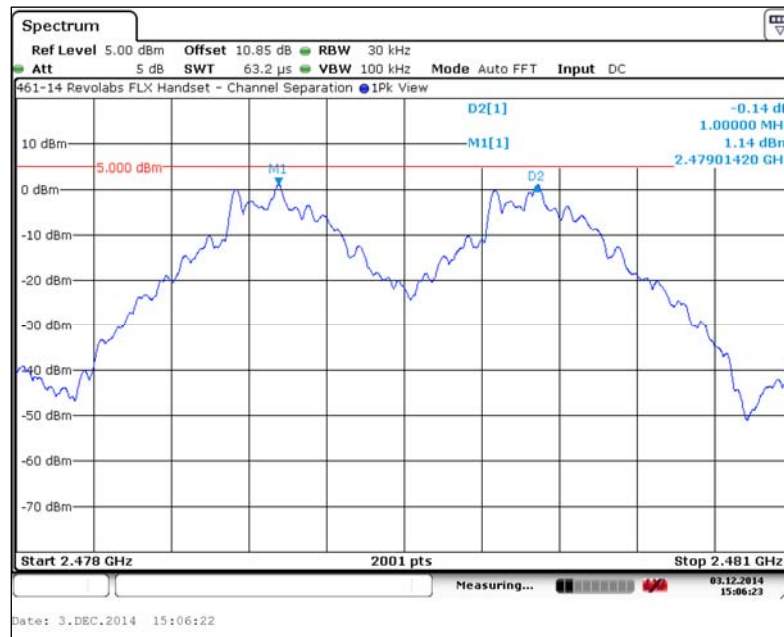
6. Measurement Data

6.4. Frequency Hopping Channel Separation (15.247 (a) (1), RSS-210 A8.1 (b))

6.4.2. Channel Separation – Middle Frequency (2441/2442 MHz)



6.4.3. Channel Separation – High Frequency (2479/2480 MHz)



6. Measurement Data

6.5. Average Time of Occupancy (15.247 (a) (1) (iii), RSS-210 A8.1 (d))

Requirement: The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

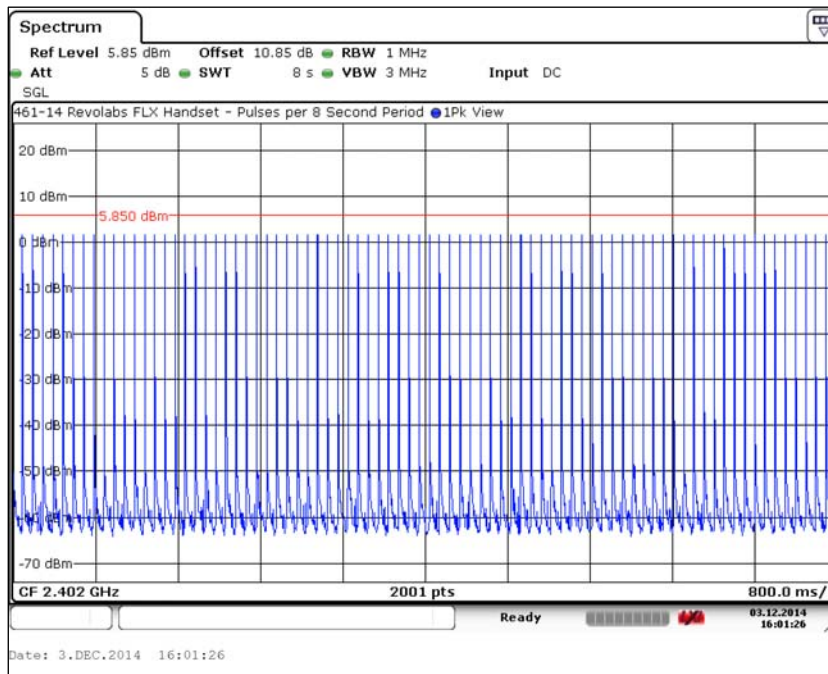
Test Note: A sweep time of 8 seconds was used to facilitate counting the pulses on a given frequency. This number was multiplied by 4 to determine the number of pulses in a 32 second interval.

$$79 \text{ Channels} \times 0.4 \text{ Seconds} = \sim 32 \text{ Seconds}$$

Channel	Frequency (MHz)	Number of Pulses per 8s Period	Number of Pulses per 32s Period	Pulse Width (µS)	Dwell Time per Period (32 Seconds)	Allowable Dwell Time per Period	Result
Low	2402	81	324	421.0	0.1364 Sec.	0.4 Sec.	Compliant
Middle	2441	81	324	421.0	0.1364 Sec.	0.4 Sec.	Compliant
High	2480	81	324	421.0	0.1364 Sec.	0.4 Sec.	Compliant

6.5.1. Pulses per 8 Second Period

6.5.1.1. Pulses per 8 Second Period – Low Frequency (2402 MHz)

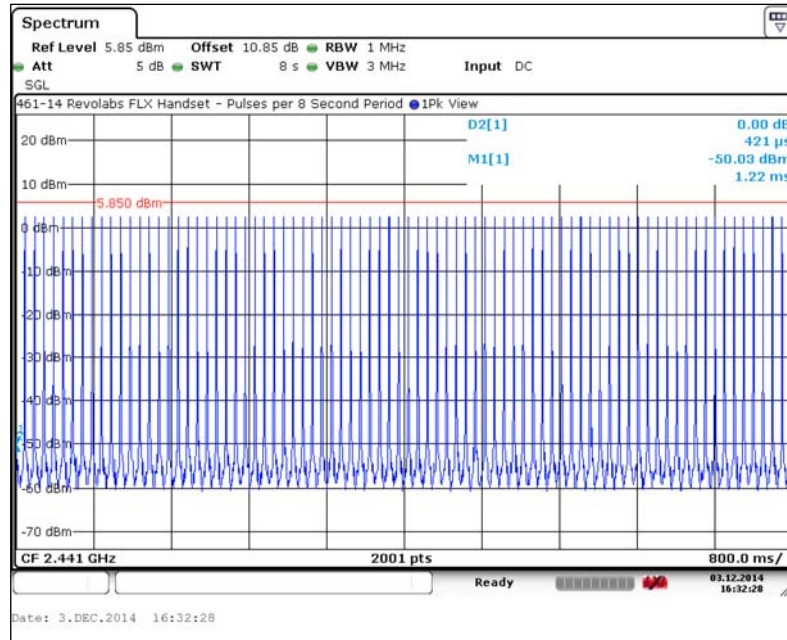


6. Measurement Data

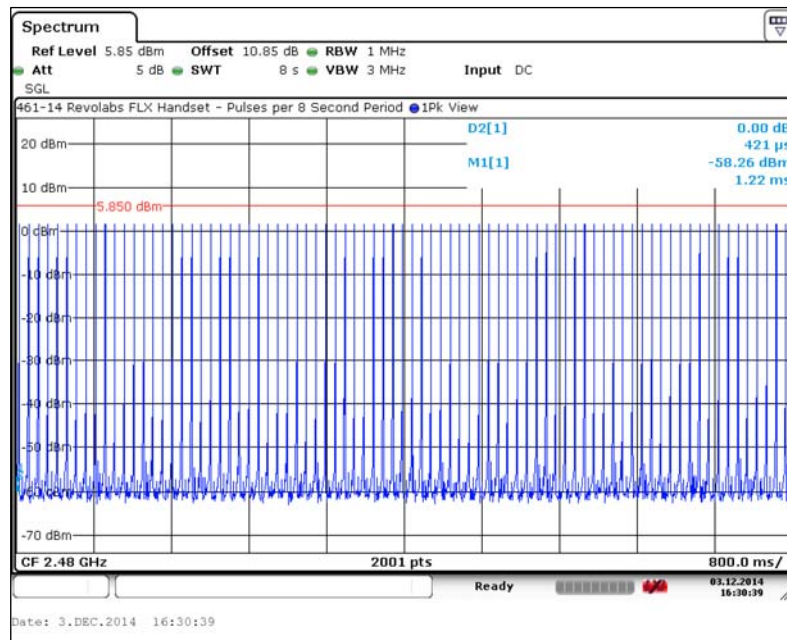
6.5. Average Time of Occupancy (15.247 (a) (1) (iii), RSS-210 A8.1 (d))

6.5.1. Pulses per 8 Second Period (continued)

6.5.1.2. Pulses per 8 Second Period – Middle Frequency (2441 MHz)



6.5.1.3. Pulses per 8 Second Period – High Frequency (2480 MHz)

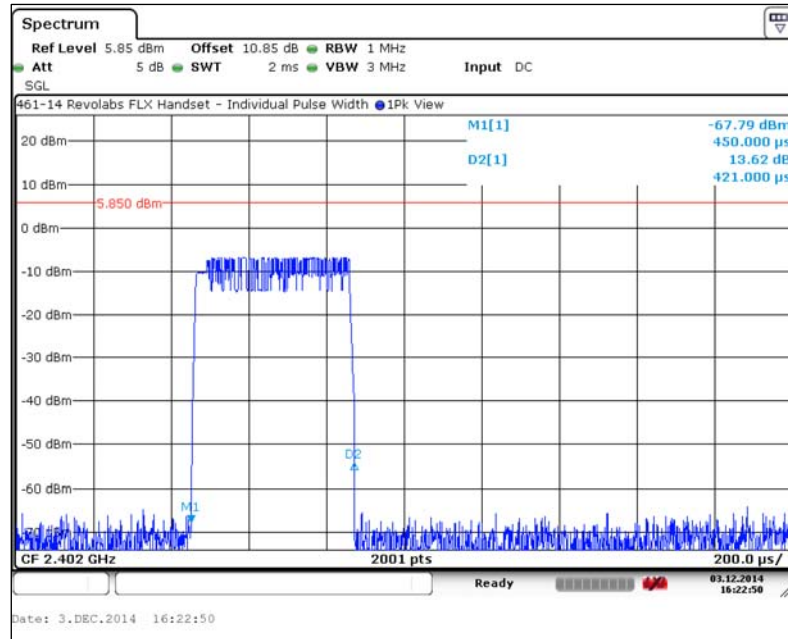


6. Measurement Data

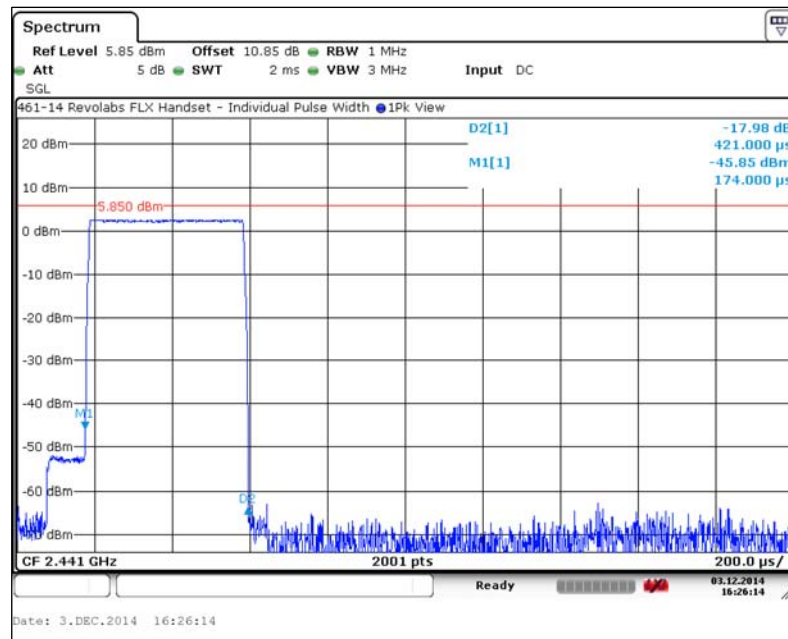
6.5. Average Time of Occupancy (15.247 (a) (1) (iii), RSS-210 A8.1 (d))

6.5.2. Transmitter Individual Pulse Width

6.5.2.1. Transmitter Individual Pulse Width – Low Frequency (2402 MHz)



6.5.2.2. Transmitter Individual Pulse Width – Middle Frequency (2441 MHz)

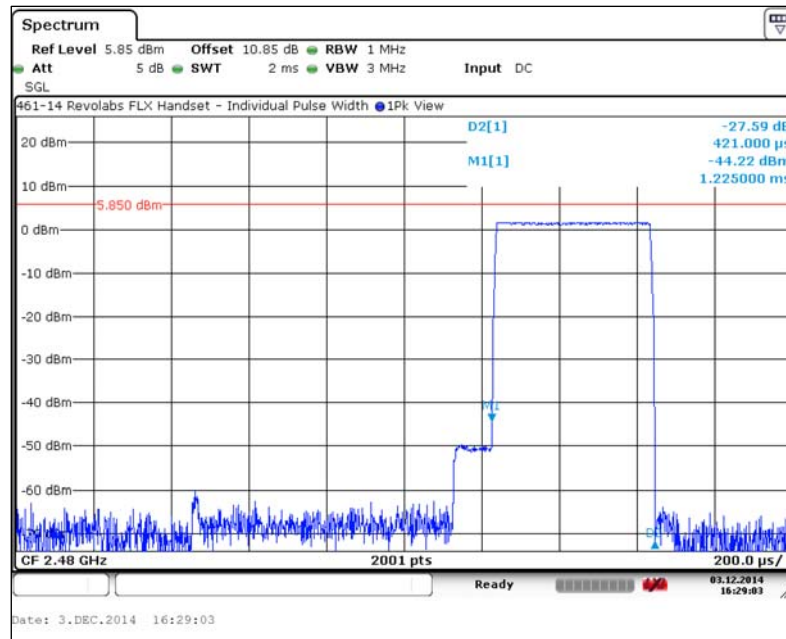


6. Measurement Data

6.5. Average Time of Occupancy (15.247 (a) (1) (iii), RSS-210 A8.1 (d))

6.5.2. Transmitter Individual Pulse Width (continued)

6.5.2.3. Transmitter Individual Pulse Width – High Frequency (2480 MHz)



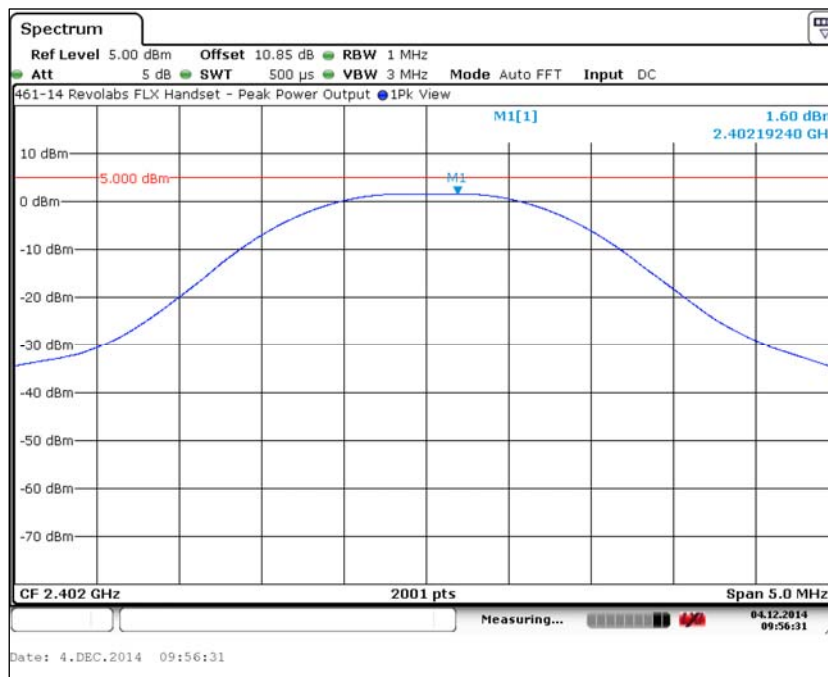
6. Measurement Data

6.6. Maximum Peak Conducted Output Power (15.247 (b) (1), RSS-210 A8.1 (b))

Requirement: The maximum peak conducted output power of the intentional radiator shall not exceed 1 watt for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels.

Channel	Frequency	Measured Peak Output Power		Peak Output Power Limit		Result
		(MHz)	(dBm)	(mW)	(dBm)	
Low	2402	1.60	1.45	30.0	1000.0	Compliant
Middle	2441	2.38	1.73	30.0	1000.0	Compliant
High	2480	1.47	1.40	30.0	1000.0	Compliant

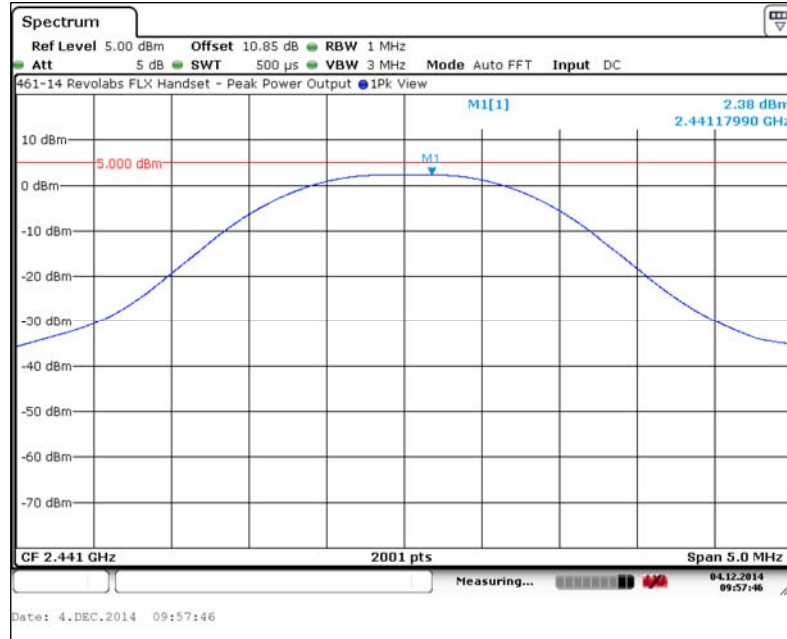
6.6.1. Low Frequency (2402 MHz)



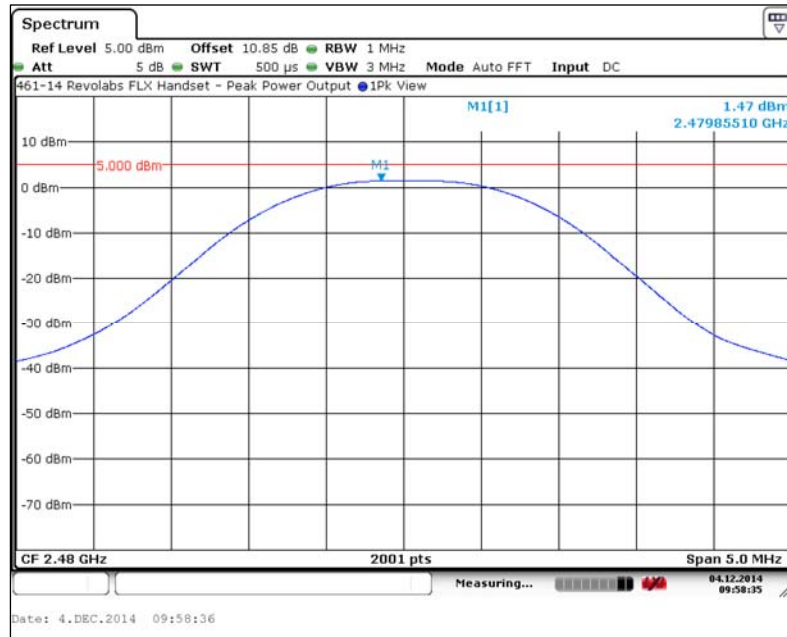
6. Measurement Data

6.6. Maximum Peak Conducted Output Power (15.247 (b) (1), RSS-210 A8.1

6.6.2. Middle Frequency (2441 MHz)



6.6.3. High Frequency (2480 MHz)



6. Measurement Data

6.7. Band Edge (15.247 (d), RSS-210 A8.5)

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.

Test Note: For the two upper band edge measurements, the worst case orthogonal position was first determined. This position was then used to make the measurements.

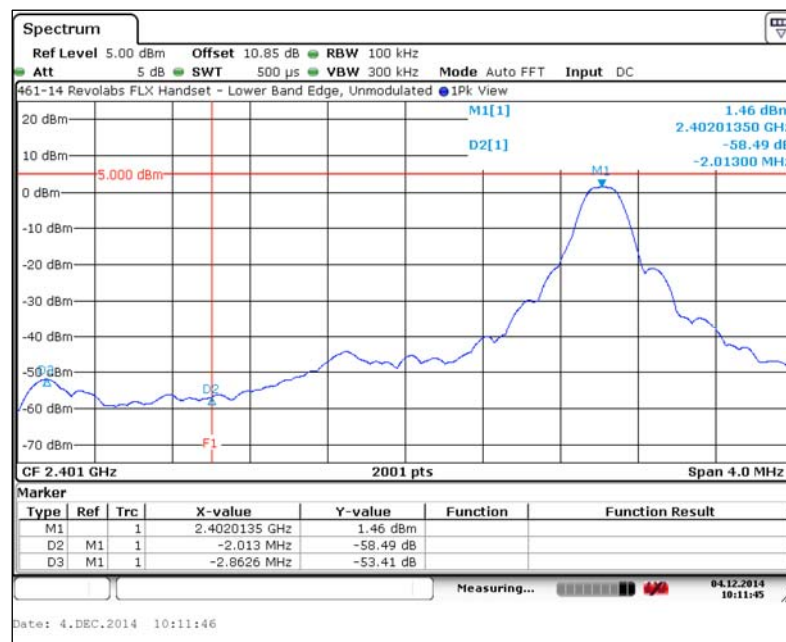
Resolution Bandwidth : 100 kHz

Video Bandwidth : 300 kHz

6.7.1. Lower Band Edge

6.7.1.1. Unmodulated Carrier

Lowest Channel (MHz)	Field Strength (dBm)		Band Edge Frequency (MHz)	Field Strength (dBm)		Required Offset (dB)	Actual Offset (dB)	Result
	Peak	Average		Peak	Average			
2402	1.46	---	2400	-57.03	---	>20 dB	58.49	Compliant



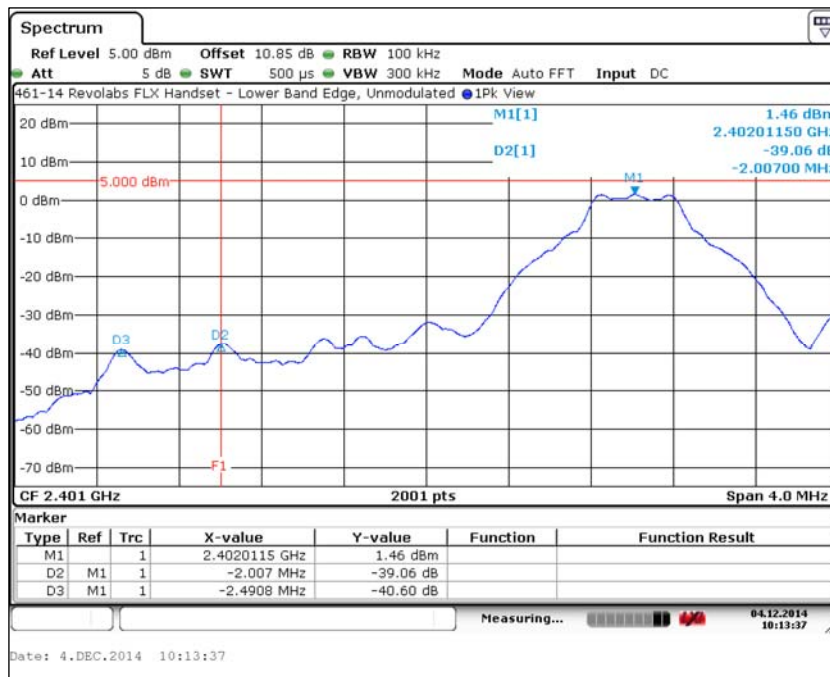
6. Measurement Data (continued)

6.7. Band Edge (15.247 (d), RSS-210 A8.5)

6.7.1. Lower Band Edge

6.7.1.2. Frequency Hopping

Lowest Channel (MHz)	Field Strength (dBm)		Band Edge Frequency (MHz)	Field Strength (dBm)		Required Offset (dB)	Actual Offset (dB)	Result
	Peak	Average		Peak	Average			
2402.	1.46	---	2400	-39.06	---	>20 dB	40.52	Compliant



6. Measurement Data

6.7. Band Edge (15.247 (d), RSS-210 A8.5)

6.7.2. Upper Band Edge

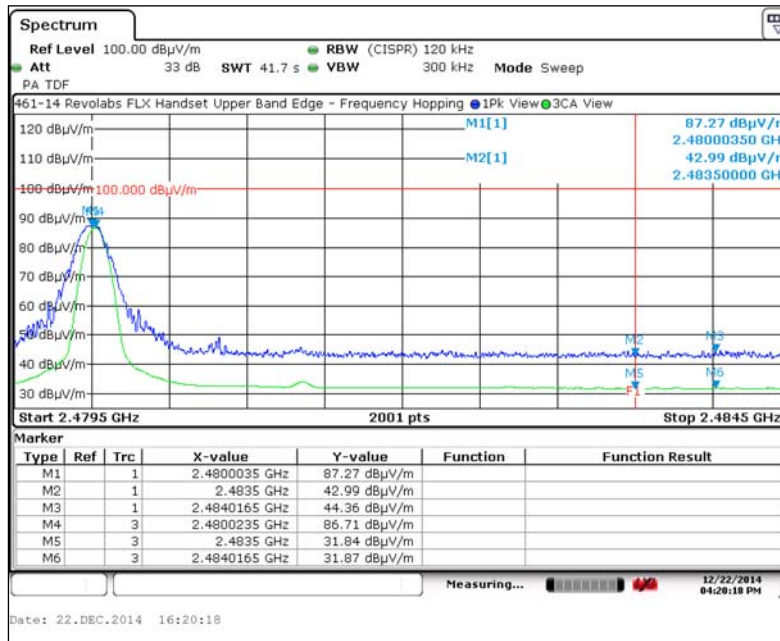
6.7.2.1. Unmodulated Carrier

Band Edge

Highest Channel (MHz)	Field Strength (dBµV/m)		Upper Band Edge (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dB)		Result
	Peak	Average		Peak	Average	Peak	Average	Peak	Average	
2480	87.27	86.71	2483.5	42.99	31.84	74	54	-31.01	-22.16	Compliant

Worst-case Out of Band

Freq. (MHz)	Field Strength (dBµV/m)		15.209 Limit (dBµV/m)		Margin (dB)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.655	44.36	31.87	74	54	-29.64	-22.13	Compliant



6. Measurement Data

6.7. Band Edge and Out of Band (15.247 (d), RSS-210 A8.5)

6.7.2. Upper Band Edge

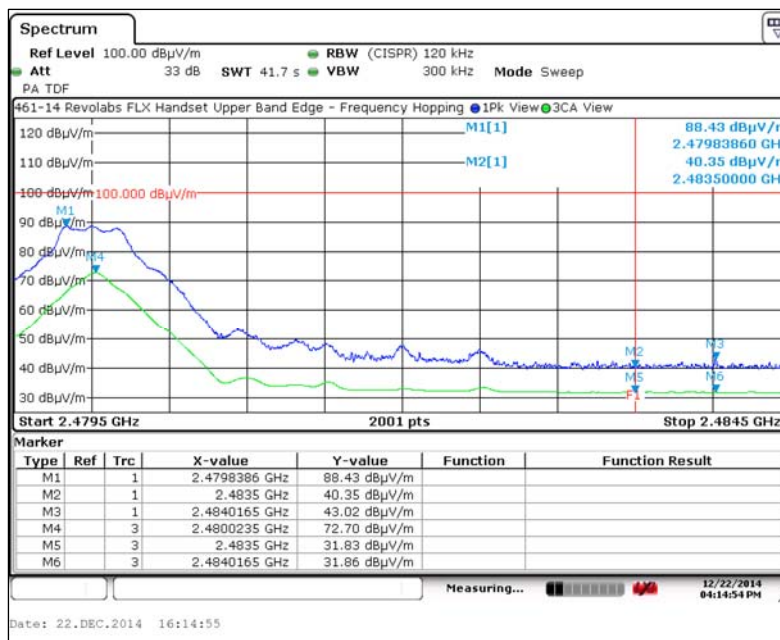
6.7.2.2. Modulated Carrier

Band Edge

Highest Channel (MHz)	Field Strength (dBµV/m)		Upper Band Edge (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dB)		Result
	Peak	Average		Peak	Average	Peak	Average	Peak	Average	
2480	89.31	70.64	2483.5	47.67	34.01	74	54	-26.33	-19.99	Compliant

Worst-case Out of Band

Freq. (MHz)	Field Strength (dBµV/m)		15.209 Limit (dBµV/m)		Margin (dB)		Result
	Peak	Average	Peak	Average	Peak	Average	
2483.655	43.02	31.86	74	54	-30.98	-22.14	Compliant

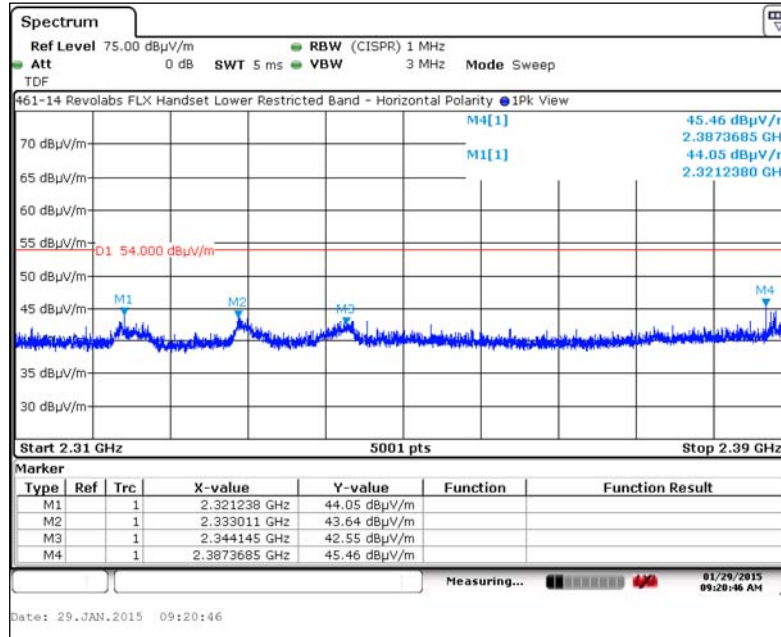


6. Measurement Data

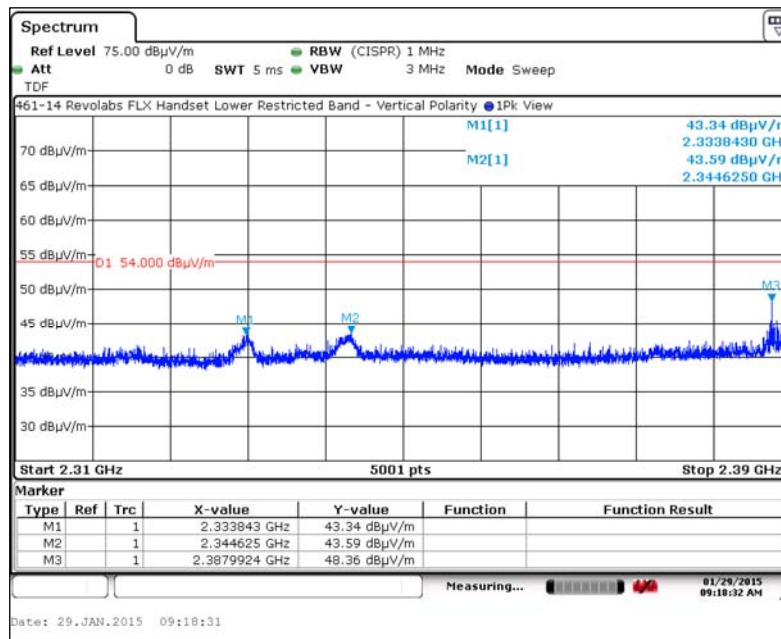
6.7. Band Edge and Out of Band (15.247 (d), RSS-210 A8.5)

6.7.3. Lower Restricted Band

6.7.3.1. Horizontal Polarity



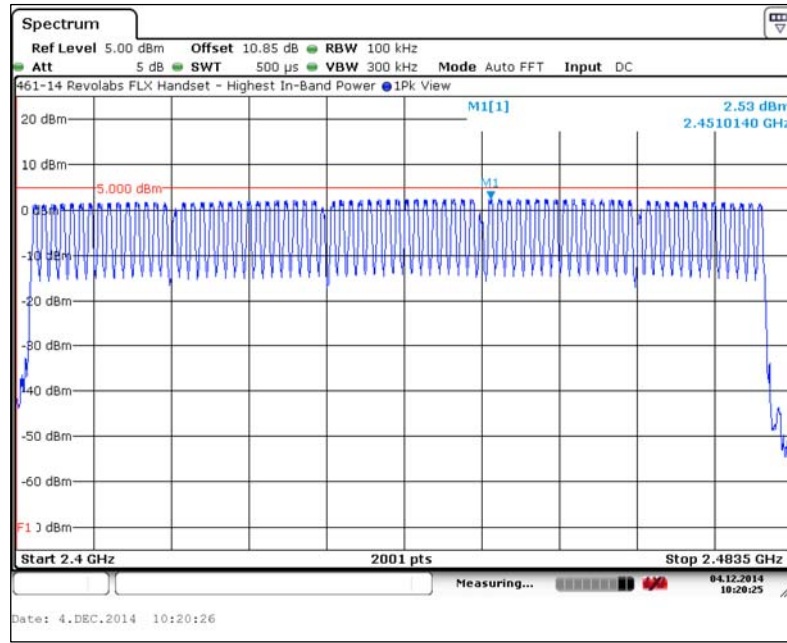
6.7.3.2. Vertical Polarity



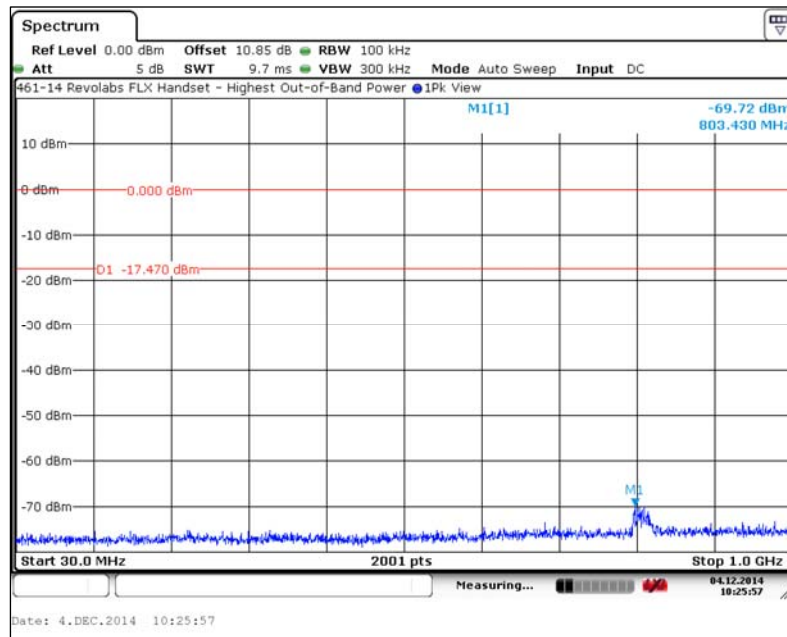
6. Measurement Data

6.7. Band Edge and Out of Band (15.247 (d), RSS-210 A8.5)

6.7.4. Highest Measured In-Band Power Level (2402 MHz to 2480 MHz)



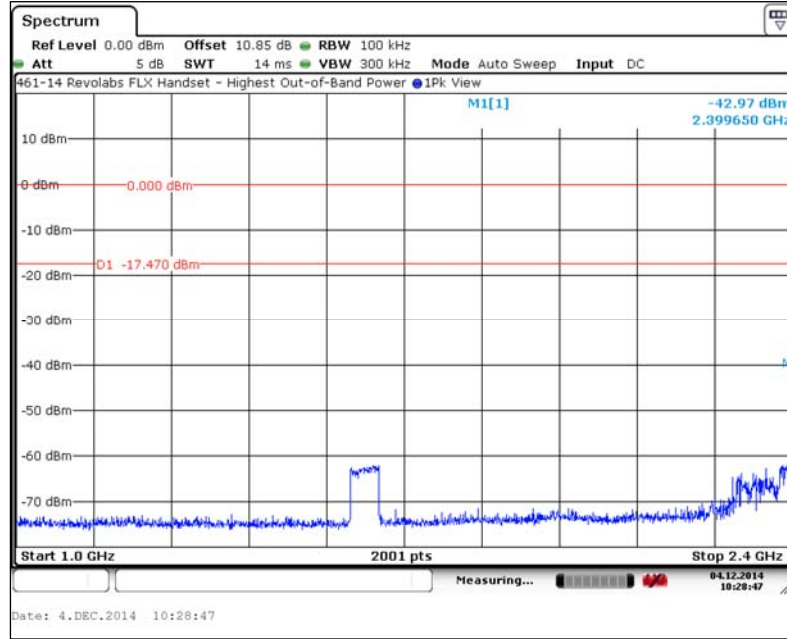
6.7.5. Highest Measured Out-of-Band Power Level (30 MHz to 1000 MHz)



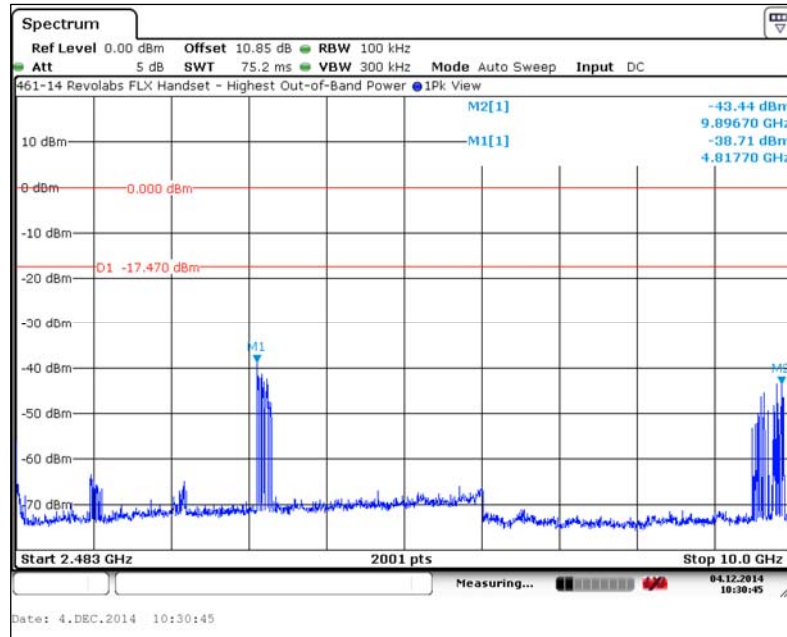
6. Measurement Data

6.7. Band Edge and Out of Band (15.247 (d), RSS-210 A8.5)

6.7.6. Highest Measured Out-of-Band Power Level (1000 MHz to 2400 MHz)



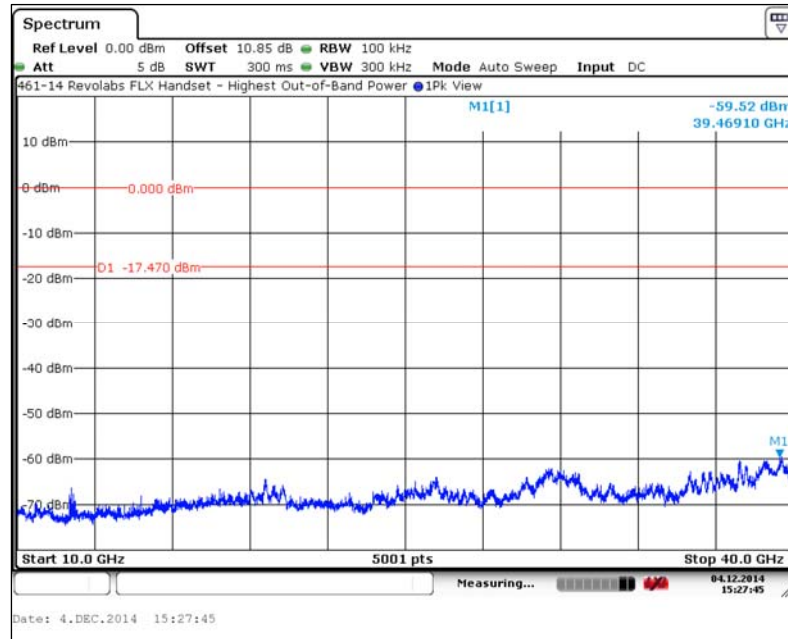
6.7.7. Highest Measured Out-of-Band Power Level (2483 MHz to 10000 MHz)



6. Measurement Data

6.7. Band Edge and Out of Band (15.247 (d), RSS-210 A8.5)

6.7.8. Highest Measured Out-of-Band Power Level (10000 MHz to 40000 MHz)



6. Measurement Data (continued)

6.8. 99% (Occupied) Bandwidth (RSS-GEN 4.6.1)

Requirement: For devices operating above 900 MHz, the 99% bandwidth shall be no wider than 0.5% of the center frequency.

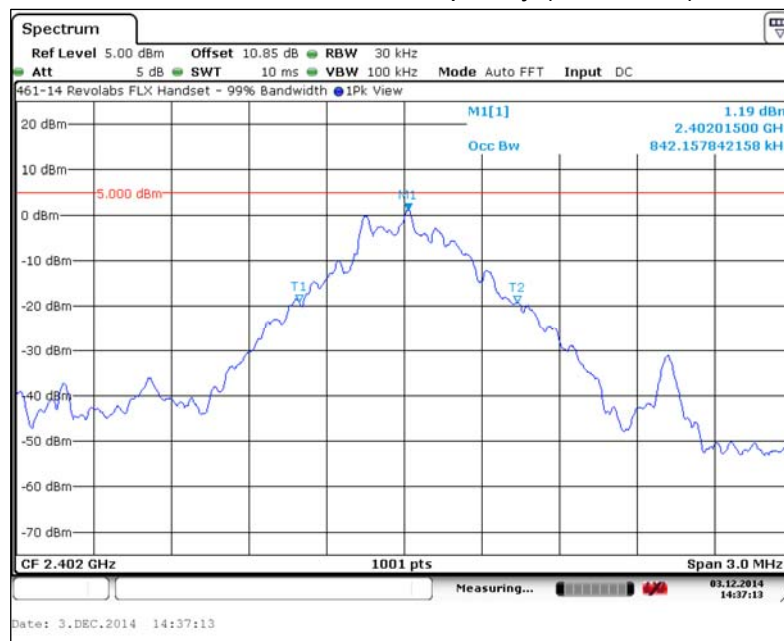
The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth.

Resolution Bandwidth : 30 kHz
 Video Bandwidth : 100 kHz

6.8.1. Measurement Results

Channel	Channel Frequency (MHz)	99% Power Bandwidth (MHz)
Low	2402	.842
Middle	2441	.839
High	2480	.842

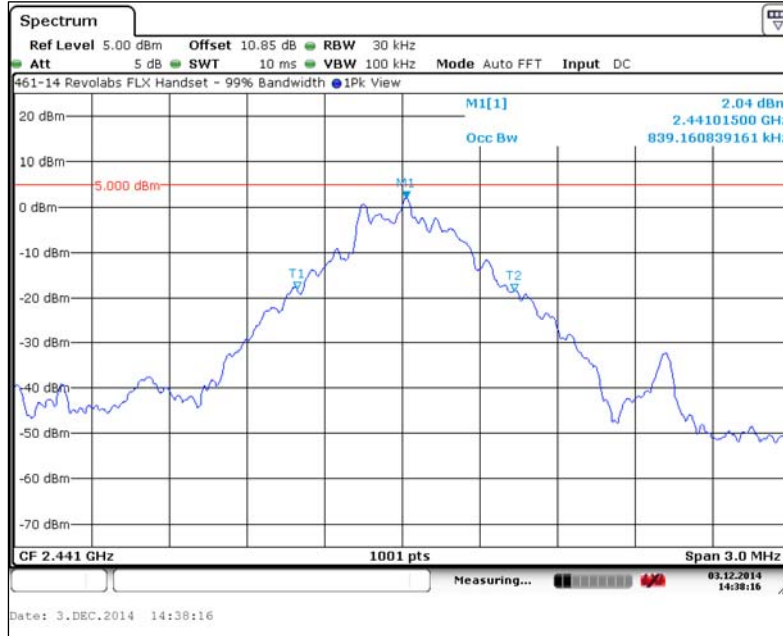
6.8.1.1. 99% Power Bandwidth – Low Frequency (2402 MHz)



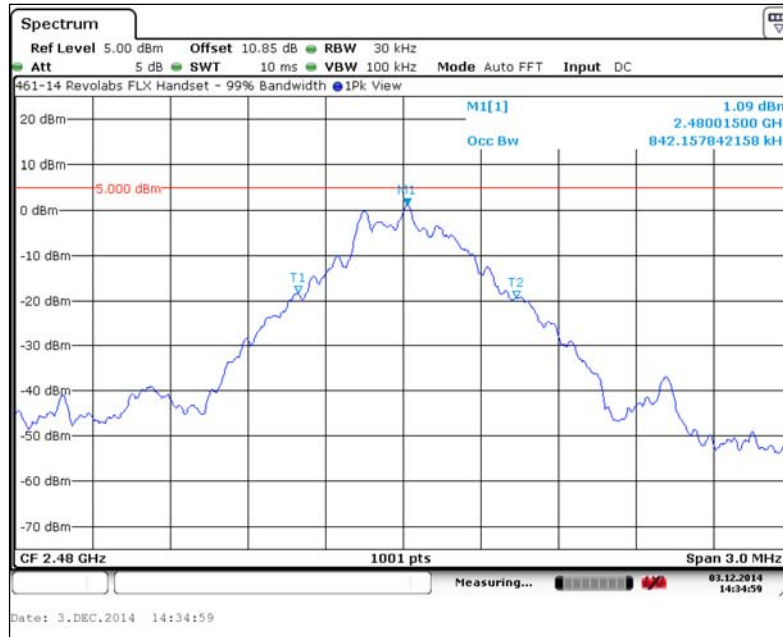
6. Measurement Data (continued)

6.8. 99% Bandwidth (RSS 210)

6.8.1.2. 99% Power Bandwidth – Middle Frequency (2441 MHz)



6.8.1.3. 99% Power Bandwidth – High Frequency (2480 MHz)



6. Measurement Data (continued)

6.9. Combined Spurious Harmonic Radiated Emissions (ANSI C63.10 Section 9.13, RSS-210 A8.9)

Test Note: The following table represents the worst case measurement of each harmonic emission, taking into account the ANSI C63.10 requirement of rotating the DUT through three orthogonal axes.

Resolution Bandwidth : 1 MHz

Video Bandwidth : 3 MHz

Frequency (MHz)	Field Strength (dBµV/m) ¹		Limit (dBµV/m)		Margin (dB)		Pol (H/V)	Results
	Peak	Avg	Peak	Avg	Peak	Avg		
4804	64.12	51.62	74.00	54.00	-9.88	-2.38	H	Compliant
4882	63.52	51.26	74.00	54.00	-10.48	-2.74	H	Compliant
4960	58.64	40.44	74.00	54.00	-15.36	-13.56	H	Compliant
7323	51.07	39.54	74.00	54.00	-22.93	-14.46	H	Compliant
7440	56.23	41.84	74.00	54.00	-17.77	-12.16	V	Compliant
12010	58.54	45.32	74.00	54.00	-15.46	-8.68	V	Compliant
12205	59.48	45.41	74.00	54.00	-14.52	-8.59	H	Compliant
12400	59.15	45.58	74.00	54.00	-14.85	-8.42	V	Compliant
19216	60.01	46.59	74.00	54.00	-13.99	-7.41	V	Compliant
19528	58.88	45.56	74.00	54.00	-15.12	-8.44	V	Compliant
19840	59.23	45.59	74.00	54.00	-14.77	-8.41	V	Compliant
22320	61.76	48.33	74.00	54.00	-12.24	-5.67	V	Compliant

6. Measurement Data (continued)

6.10. Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

Regulatory Limit: FCC Part 15.209

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m) ¹
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

¹ Measurements in the 9 to 90 kHz, 110 to 490 kHz and above 1000 MHz ranges employ an average detector. Otherwise a quasi-peak detector is used.

Test Procedure

Test measurements were made in accordance with ANSI C63.10-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

Test Notes:

1. The host PC that was required to control the DUT had to be co-located with the DUT during spurious radiated emissions testing. To determine if the device under test was the source of any observed emissions, at the end of each test the host PC was observed with the DUT disconnected.
2. The frequency span that includes the Bluetooth transmitters was omitted from the spurious emissions scan.
3. Refer to Appendix A for detailed screen captures of the spurious emissions..

Conclusion:

The device under test met the spurious emissions requirements.

6. Measurement Data (continued)

6.10. Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

Worst Case Spurious Emissions

Frequency (MHz)	DUT Position	Field Strength (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)		Antenna Polarity (H/V)
		Peak	Average ¹	Peak	Average	Peak	Average ¹	
136.027	Y-Axis	38.53	---	63.50	43.50	-24.97	-4.97	V
142.051	X-Axis	31.98	---	63.50	43.50	-31.52	-11.52	V
160.089	X-Axis	31.94	---	63.50	43.50	-31.56	-11.56	V
166.473	Y-Axis	35.26	---	66.00	46.00	-30.74	-10.74	V
183.956	X-Axis	31.97	---	63.50	43.50	-31.53	-11.53	H
192.007	X-Axis	33.15	---	63.50	43.50	-30.35	-10.35	V
200.111	Z-Axis	32.08	---	63.50	43.50	-31.42	-11.42	V
203.732	X-Axis	34.48	---	63.50	43.50	-29.02	-9.02	V
207.831	X-Axis	32.09	---	63.50	43.50	-31.41	-11.41	H
208.142	Y-Axis	31.73	---	63.50	43.50	-31.77	-11.77	V
224.289	X-Axis	36.45	---	66.00	46.00	-29.55	-9.55	V
255.554	X-Axis	41.88	---	66.00	46.00	-24.12	-4.12	V
256.064	Z-Axis	38.27	---	66.00	46.00	-27.73	-7.73	H
282.745	X-Axis	40.90	---	66.00	46.00	-25.10	-5.10	V
287.861	Z-Axis	38.19	---	66.00	46.00	-27.81	-7.81	V
288.148	Z-Axis	38.86	---	66.00	46.00	-27.14	-7.14	H
288.538	X-Axis	37.95	---	66.00	46.00	-28.05	-8.05	V
351.801	X-Axis	36.18	---	66.00	46.00	-29.82	-9.82	V
384.225	Y-Axis	35.51	---	66.00	46.00	-30.49	-10.49	V
699.984	X-Axis	36.09	---	66.00	46.00	-29.91	-9.91	V
1330.580	Y-Axis	47.07	---	74.00	54.00	-26.93	-6.93	V
1331.980	Z-Axis	46.10	---	74.00	54.00	-27.90	-7.90	V
1858.120	Z-Axis	52.42	---	74.00	54.00	-21.58	-1.58	V
1860.950	X-Axis	54.13	34.99	74.00	54.00	-19.87	-19.01	V
1862.320	X-Axis	47.47	---	74.00	54.00	-26.53	-6.53	H
1867.220	Y-Axis	50.51	---	74.00	54.00	-23.49	-3.49	V
2297.500	X-Axis	48.36	---	74.00	54.00	-25.64	-5.64	V
4806.200	Y-Axis	50.18	---	74.00	54.00	-23.82	-3.82	H
4828.200	X-Axis	52.53	---	74.00	54.00	-21.47	-1.47	H
4839.200	Z-Axis	49.54	---	74.00	54.00	-24.46	-4.46	V
4847.500	Z-Axis	51.19	---	74.00	54.00	-22.81	-2.81	H
4866.800	X-Axis	51.25	---	74.00	54.00	-22.75	-2.75	V
4872.300	Y-Axis	51.32	---	74.00	54.00	-22.68	-2.68	H
4897.100	Z-Axis	48.93	---	74.00	54.00	-25.07	-5.07	H
4905.400	X-Axis	49.90	---	74.00	54.00	-24.10	-4.10	H
7703.600	Z-Axis	49.93	---	74.00	54.00	-24.07	-4.07	V

¹ With the exception of 1860.950 MHz, all peak emissions were compared to the average limit.

6. Measurement Data (continued)

6.11 Conducted Emissions

Requirement: For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

Test Note: The FLX Handset cannot be charged directly. The FLX handset was placed in an FLX Base Station for charging. The power line of the FLX Base Station was tested for this report

Test Results: The DUT is meets the FCC Part 15.207 requirements for conducted emissions in the tested configuration.

Regulatory Limit: FCC Part 15.207

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56 ¹	56 to 46 ¹
0.50 to 5.0	56	46
0.50 to 30	60	50

¹ The limit decreases linearly with the logarithm of the frequency.

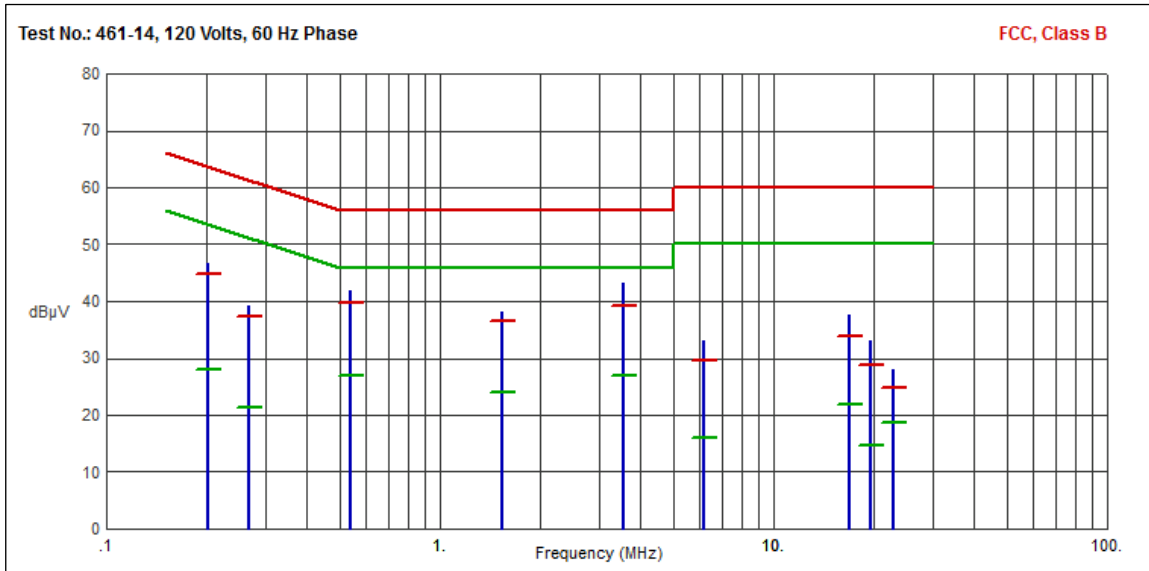
Test Procedure

Test measurements were made in accordance with CISPR 22, Section 9: Method of measurement of conducted disturbance at mains terminals and telecommunication ports and ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

6 Measurement Data (continued)

6.11 Conducted Emissions (continued)

6.11.1 120 Volts, 60 Hz Phase

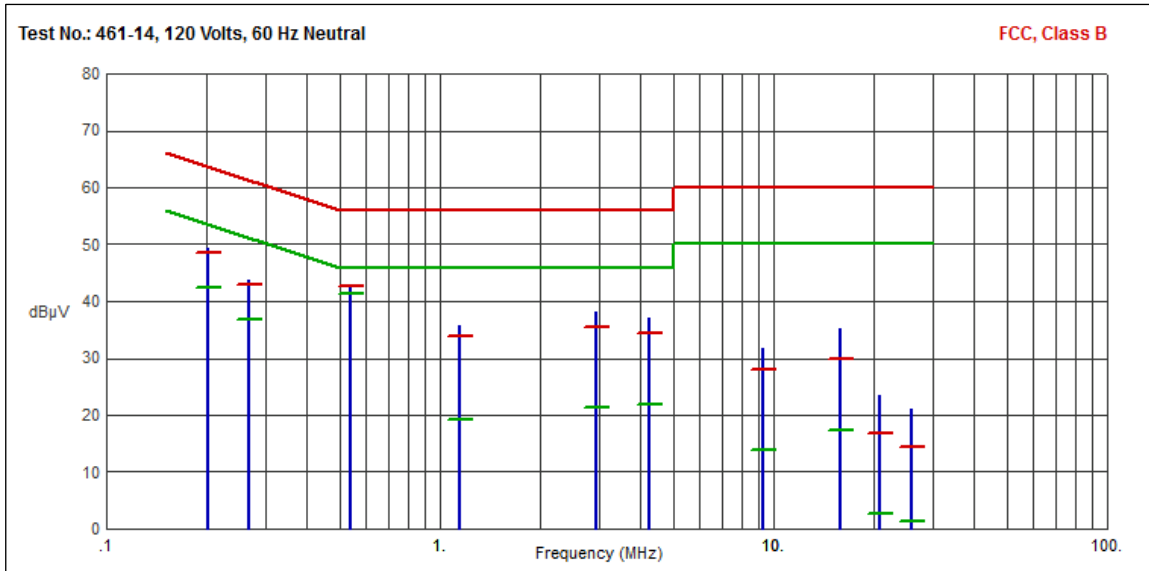


Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.2007	46.79	44.88	63.58	-18.70	27.93	53.58	-25.65	
.2674	39.17	37.20	61.20	-24.00	21.35	51.20	-29.85	
.5376	41.87	39.83	56.00	-16.17	26.88	46.00	-19.12	
1.5386	38.11	36.47	56.00	-19.53	24.10	46.00	-21.90	
3.5459	43.12	39.25	56.00	-16.75	26.87	46.00	-19.13	
6.1536	33.19	29.64	60.00	-30.36	16.09	50.00	-33.91	
16.8068	37.72	33.85	60.00	-26.15	21.98	50.00	-28.02	
19.4731	33.03	28.82	60.00	-31.18	14.77	50.00	-35.23	
22.8021	27.88	24.84	60.00	-35.16	18.69	50.00	-31.31	

6. Measurement Data (continued)

6.11. Conducted Emissions (continued)

6.11.2. 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
.2018	49.25	48.48	63.54	-15.06	42.28	53.54	-11.26	
.2688	43.82	42.90	61.15	-18.25	36.93	51.15	-14.22	
.5366	43.03	42.64	56.00	-13.36	41.21	46.00	-4.79	
1.1410	35.86	33.85	56.00	-22.15	19.16	46.00	-26.84	
2.9486	38.03	35.58	56.00	-20.42	21.27	46.00	-24.73	
4.2219	37.10	34.53	56.00	-21.47	21.80	46.00	-24.20	
9.3086	31.83	27.92	60.00	-32.08	13.77	50.00	-36.23	
15.7872	35.10	29.97	60.00	-30.03	17.45	50.00	-32.55	
20.7385	23.40	16.82	60.00	-43.18	2.70	50.00	-47.30	
4.6982	36.78	34.65	56.00	-21.35	31.76	46.00	-14.24	
7.4315	34.94	32.27	60.00	-27.73	26.56	50.00	-23.44	
9.7397	42.63	40.31	60.00	-19.69	37.08	50.00	-12.92	
11.3636	40.81	38.65	60.00	-21.35	32.81	50.00	-17.19	
17.0843	41.73	37.54	60.00	-22.46	32.13	50.00	-17.87	
17.6941	44.90	43.27	60.00	-16.73	40.51	50.00	-9.49	
21.8795	47.17	42.70	60.00	-17.30	34.14	50.00	-15.86	
24.6972	47.67	43.56	60.00	-16.44	34.55	50.00	-15.45	
29.2378	38.09	35.94	60.00	-24.06	33.06	50.00	-16.94	

6. Measurement Data (continued)

6.12. Public Exposure to Radio Frequency Energy Levels (1.1307 (b)(1))

6.12.1. SAR Test Exclusion Calculation

Requirement: Portable devices as defined in § 2.1093 of this chapter operating under Part 15 are subject to radio frequency radiation exposure requirements as specified in §§ 1.1307(b) and 2.1093 of this chapter. 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:

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

P_{MAX} mW Maximum power of channel, including tune-up tolerance

d_{MIN} mm Minimum test separation distance, mm (≤ 50 mm)

$f_{(\text{GHz})}$ GHz $f_{(\text{GHz})}$ 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.

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

Input: P_{MAX}^1 (mW)	1.44544	1.72982	1.40281
d_{MIN} (mm)	5.00	5.00	5.00
$f_{(\text{GHz})}$	2.402	2.441	2.480
Test Exclusion:	0.44804	0.54052	0.44183
Limit Exemption:	3.00	3.00	3.00

¹ Taken from the peak data in Section 6.6 of this test report (converted to mW).

The device does not exceed the test limit exemption and therefore a routine SAR Evaluation is not required

7. 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 96392), 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.

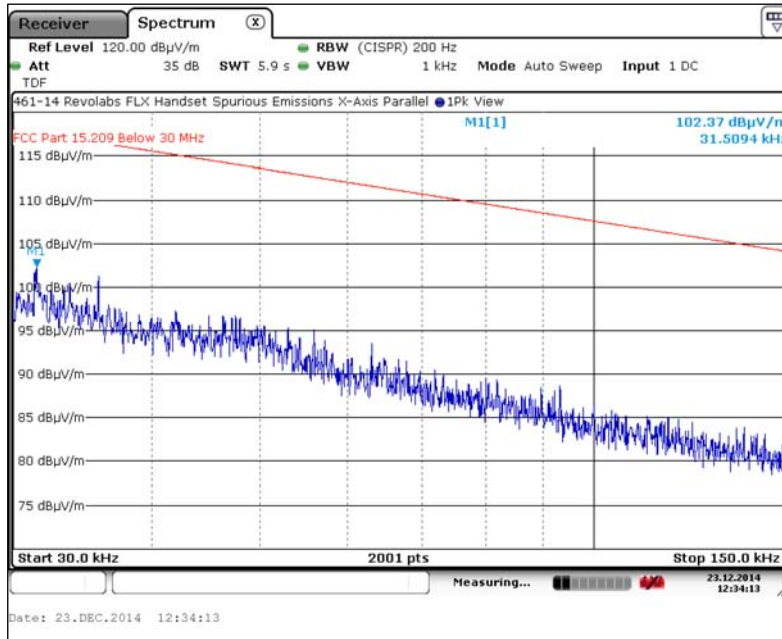
Both sites are designed to test products or systems 1.5 meters W x 1.5 meters L x 2.0 meters H, floor standing or table top.

Appendix A

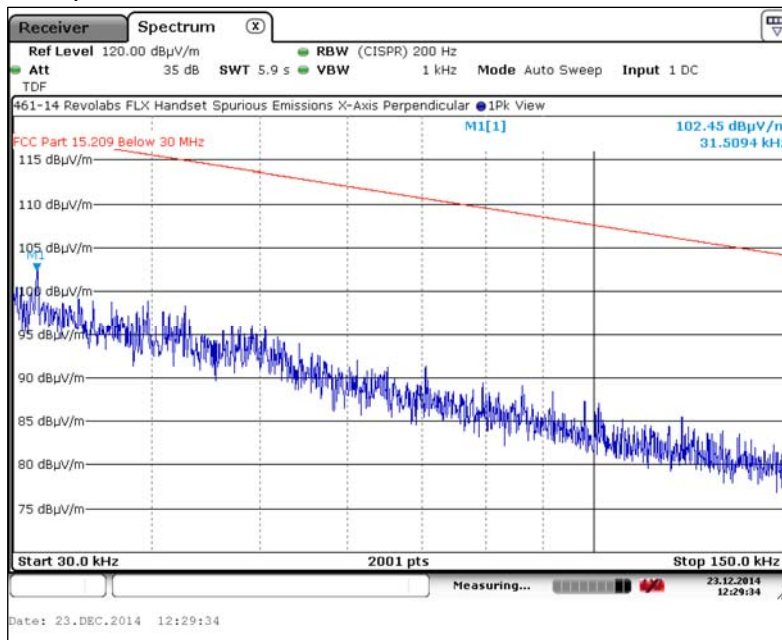
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

1. Measurement Results – 30 kHz to 150 kHz

1.1. Parallel Antenna, X-Axis



1.2. Perpendicular Antenna, X-Axis

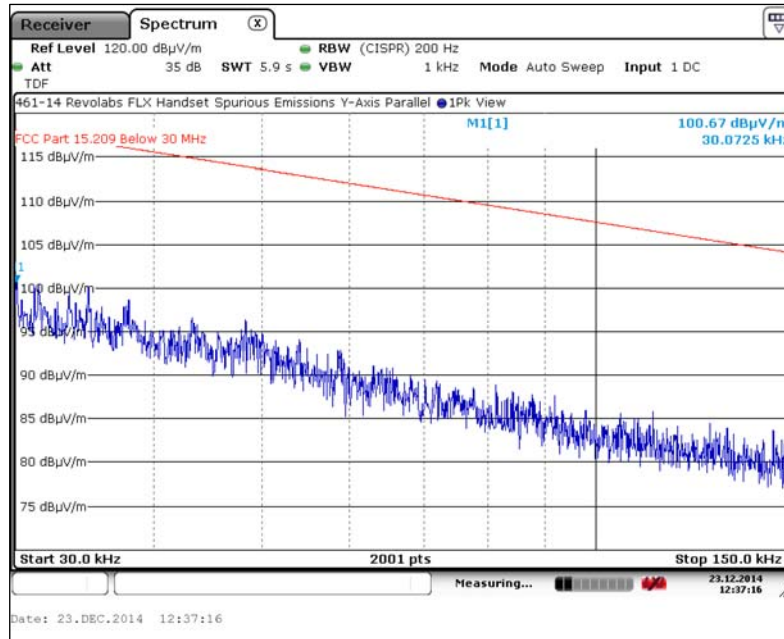


Appendix A

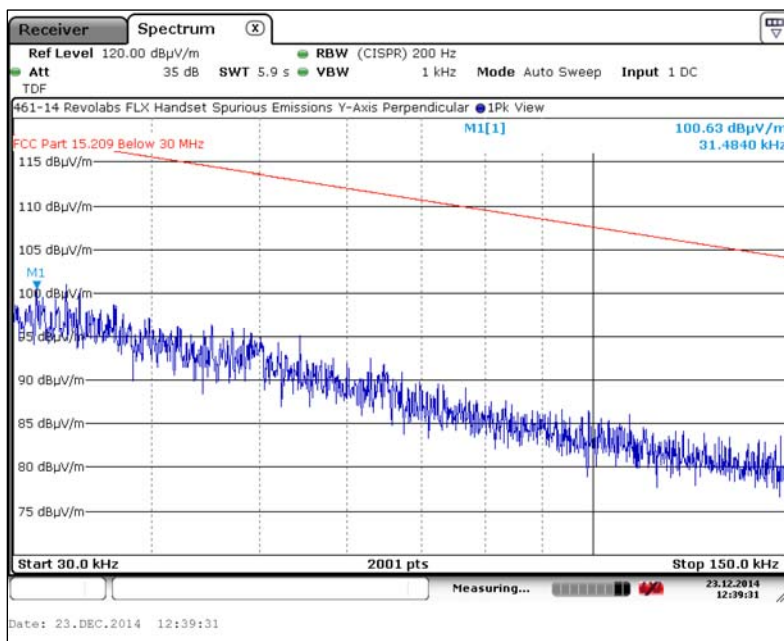
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

1. Measurement Results – 30 kHz to 150 kHz

1.3. Parallel Antenna, Y-Axis



1.4. Perpendicular Antenna, Y-Axis

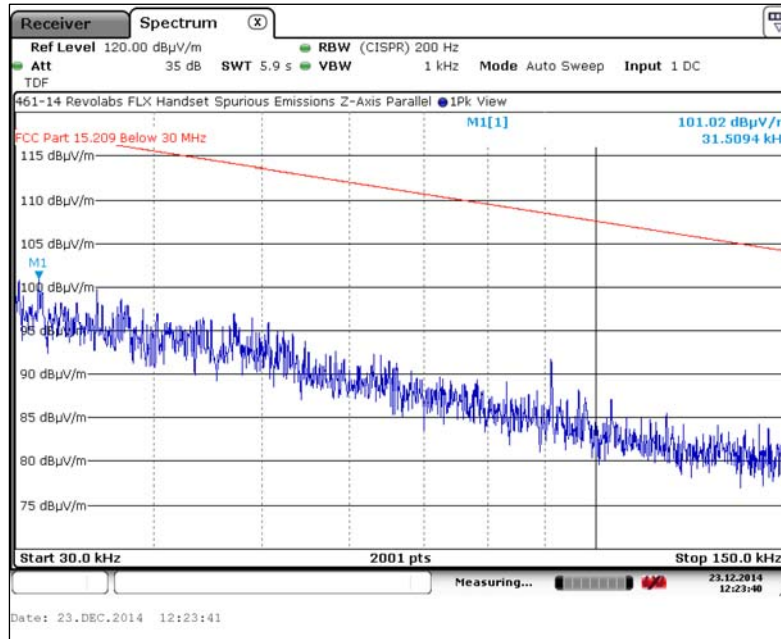


Appendix A

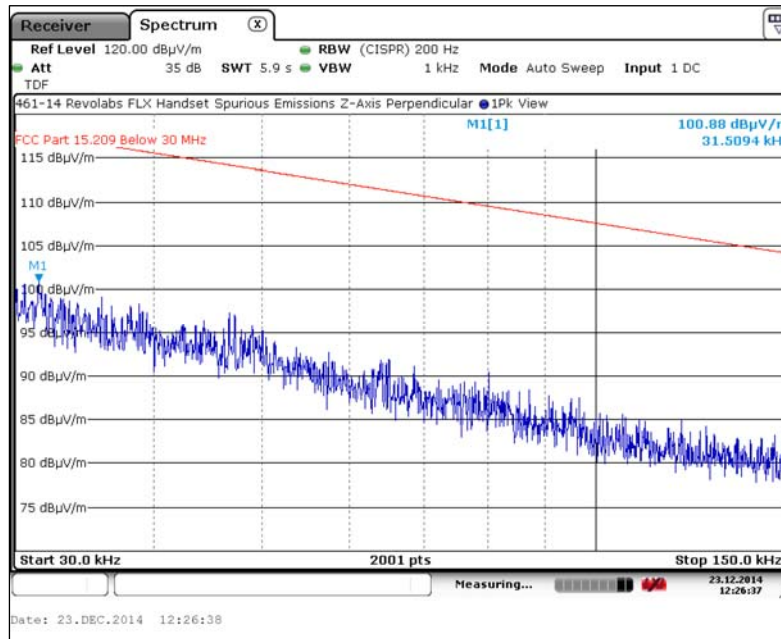
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

1. Measurement Results – 30 kHz to 150 kHz

1.5. Parallel Antenna, Z-Axis



1.6. Perpendicular Antenna, Z-Axis

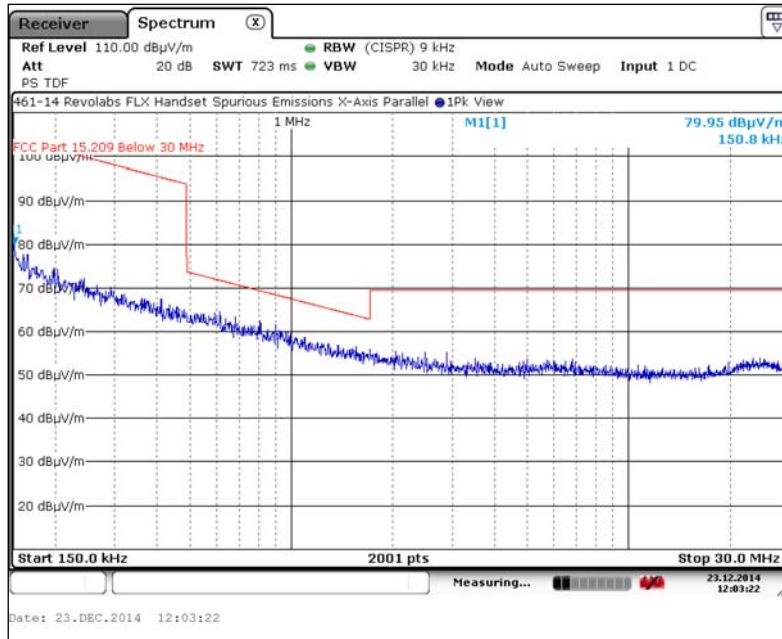


Appendix A

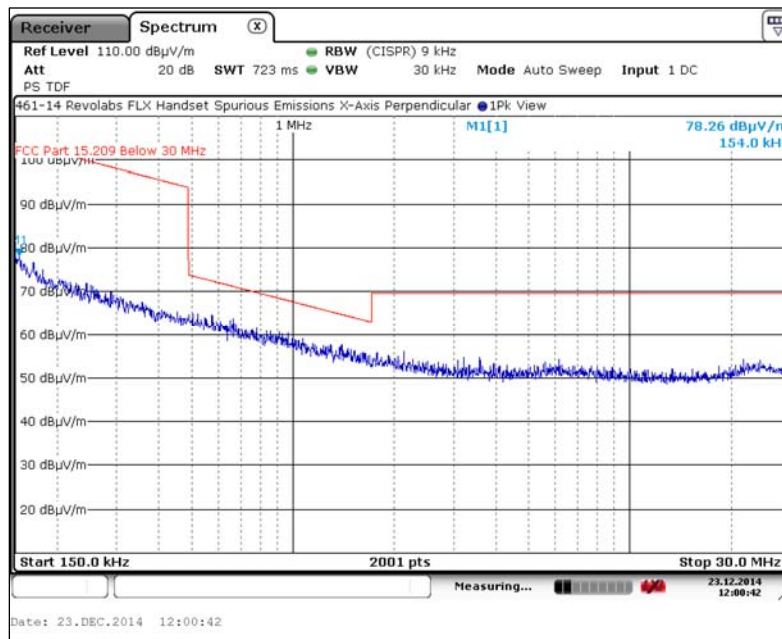
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

2. Measurement Results – 150 kHz to 30 MHz

2.1. Parallel Antenna, X-Axis



2.2. Perpendicular Antenna, X-Axis

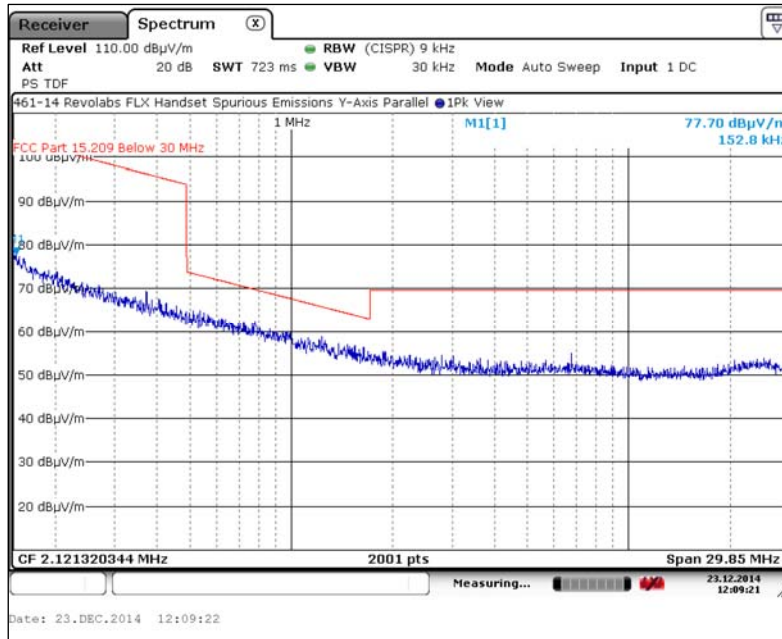


Appendix A

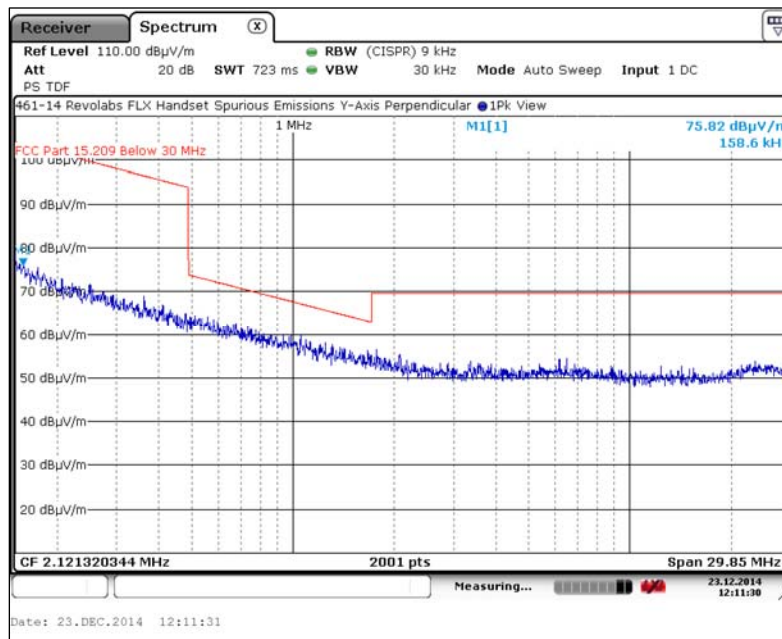
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

2. Measurement Results – 150 kHz to 30 MHz

2.3. Parallel Antenna, Y-Axis



2.4 Perpendicular Antenna, Y-Axis

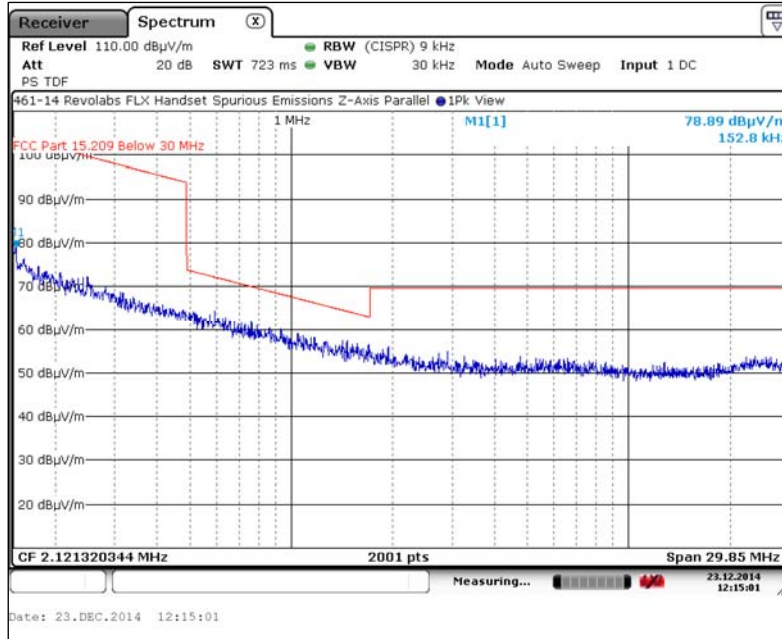


Appendix A

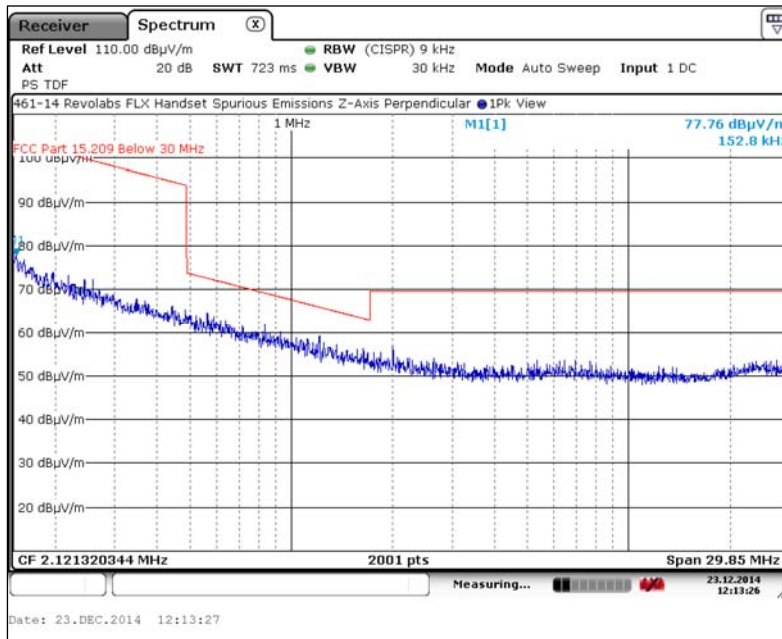
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

2. Measurement Results – 150 kHz to 30 MHz

2.5. Parallel Antenna, Z-Axis



2.6. Perpendicular Antenna, Z-Axis

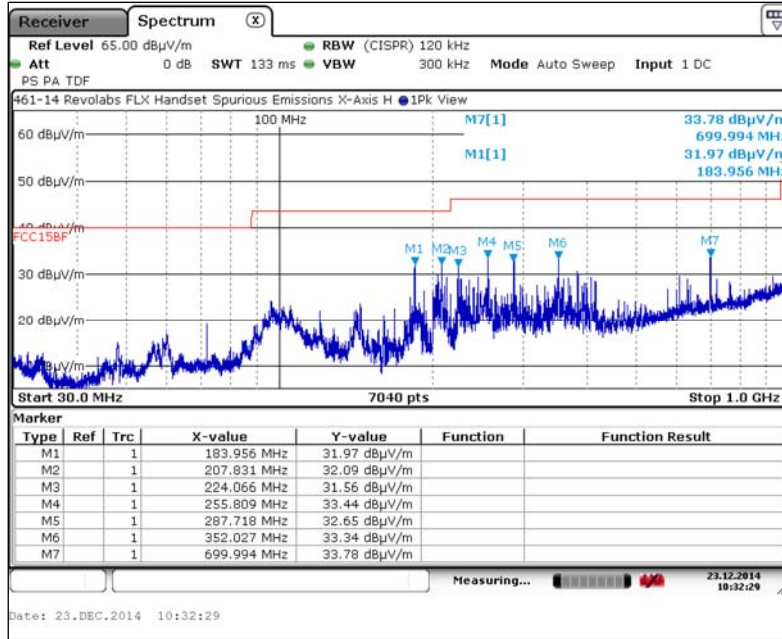


Appendix A

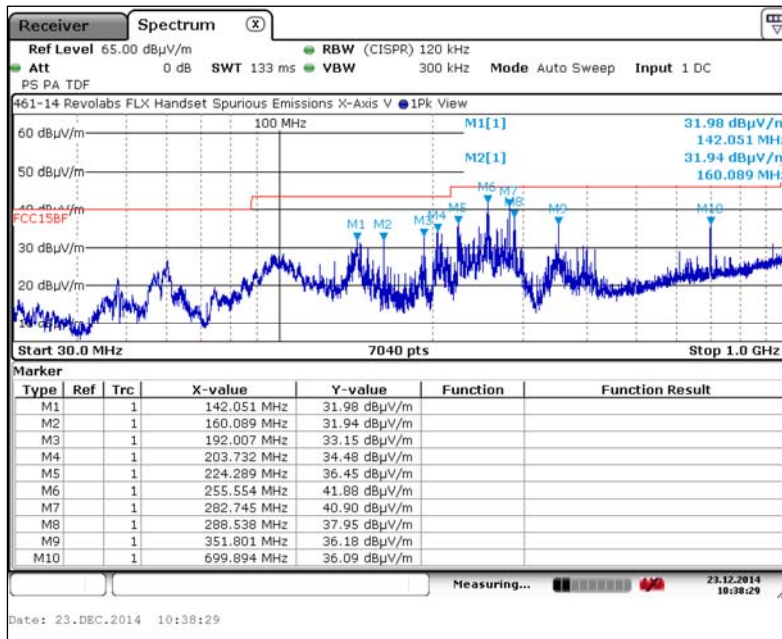
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

3. Measurement Results – 30 MHz to 1 GHz

3.1. Horizontal Antenna, X-Axis



3.2. Vertical Antenna, X-Axis

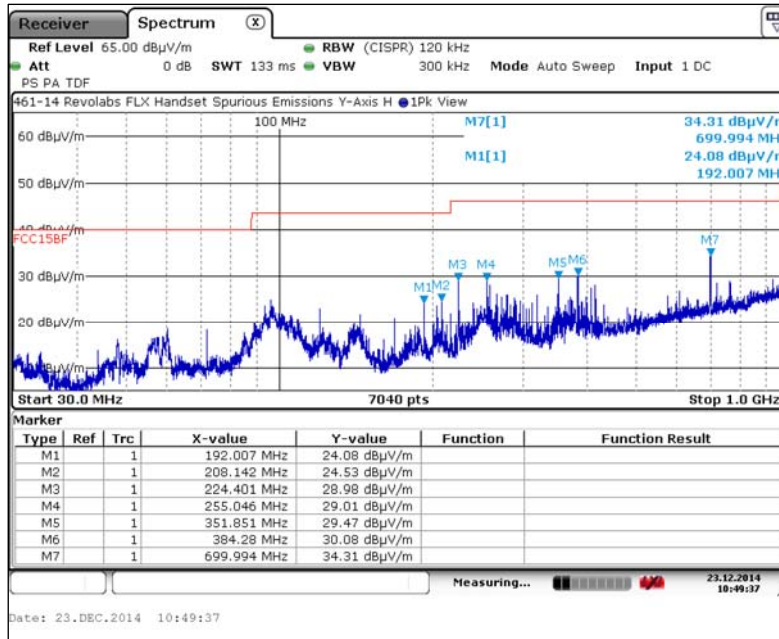


Appendix A

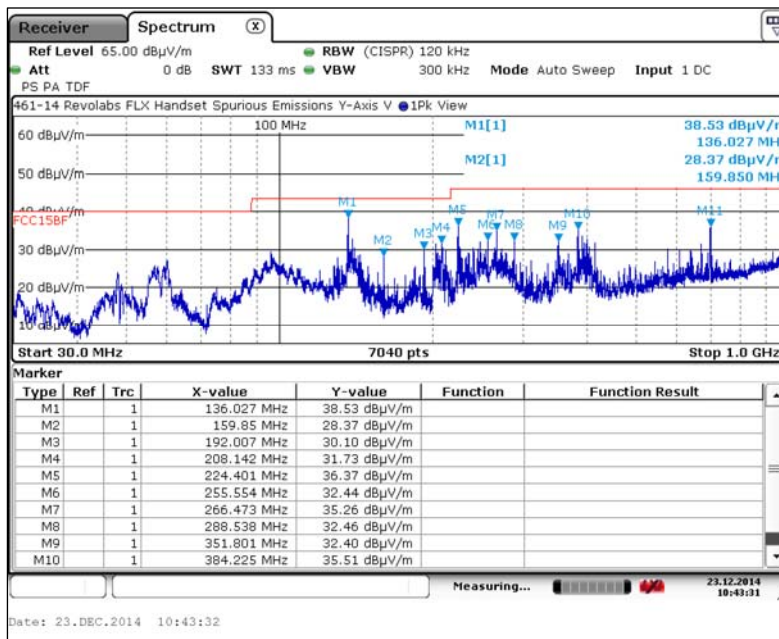
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

3. Measurement Results – 30 MHz to 1 GHz

3.3. Horizontal Antenna, Y-Axis



3.4. Vertical Antenna, Y-Axis

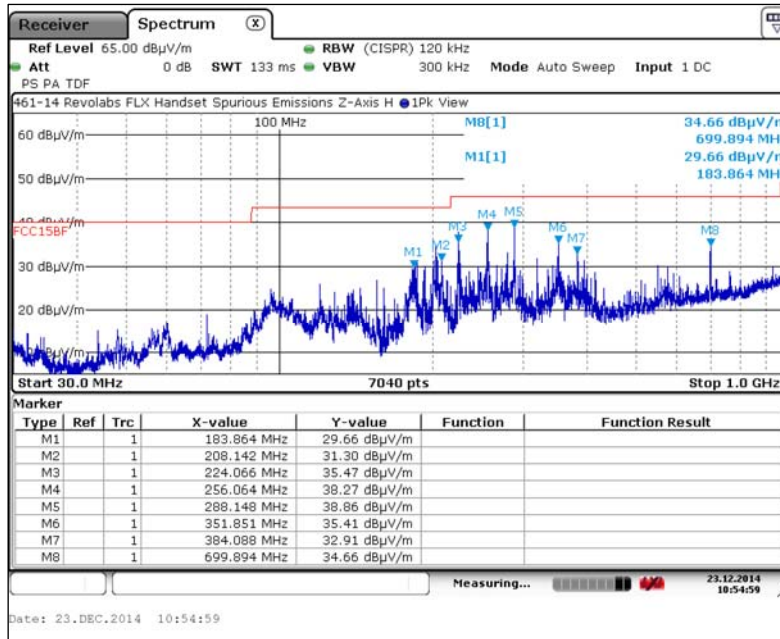


Appendix A

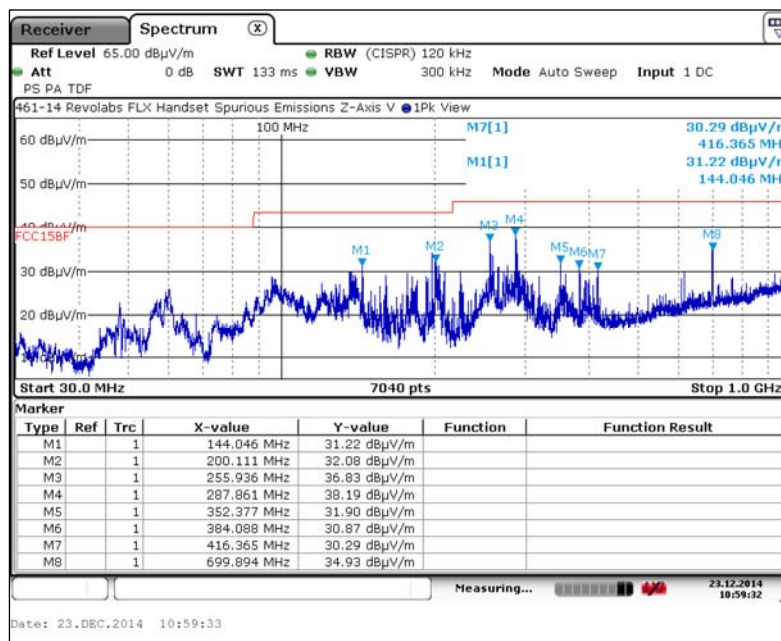
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

3. Measurement Results – 30 MHz to 1 GHz

3.5. Horizontal Antenna, Z-Axis



3.3. Vertical Antenna, Z-Axis

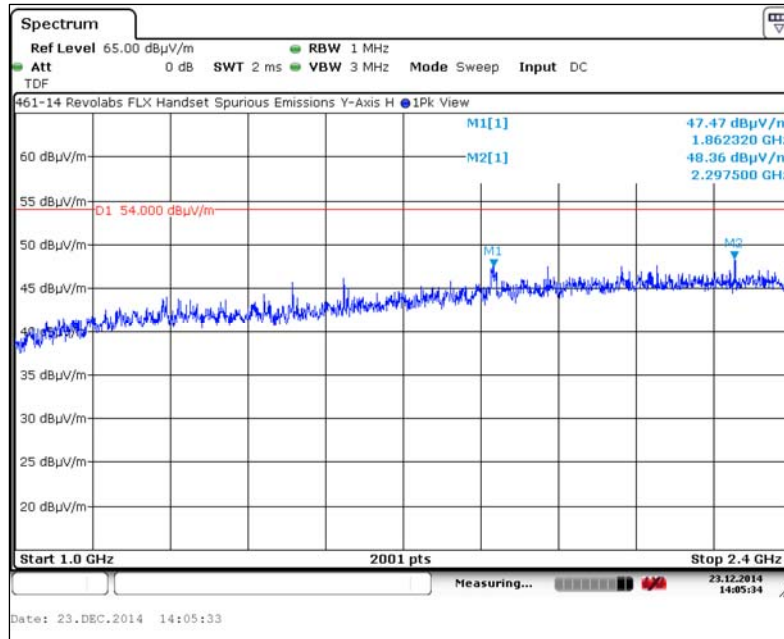


Appendix A

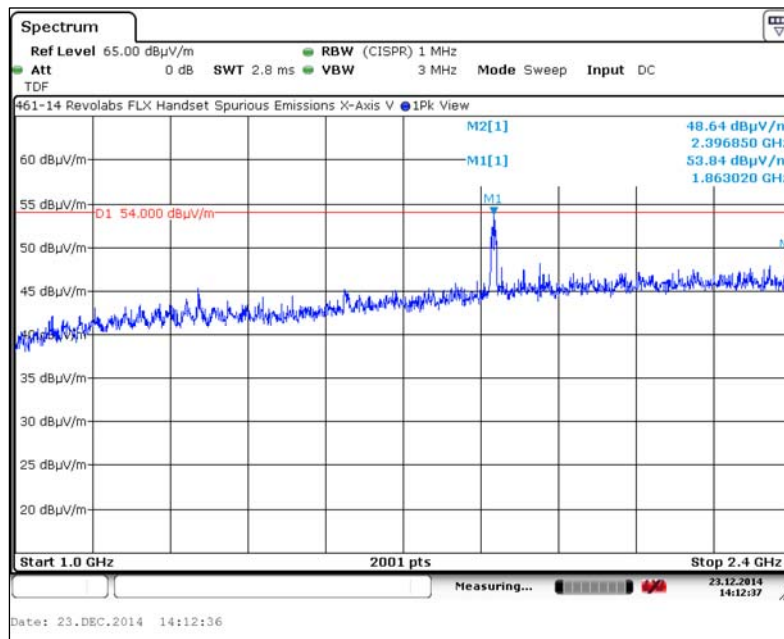
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

4. Measurement Results – 1 GHz to 2.4 GHz

4.1. Horizontal Antenna, X-Axis



4.2. Vertical Antenna, X-Axis

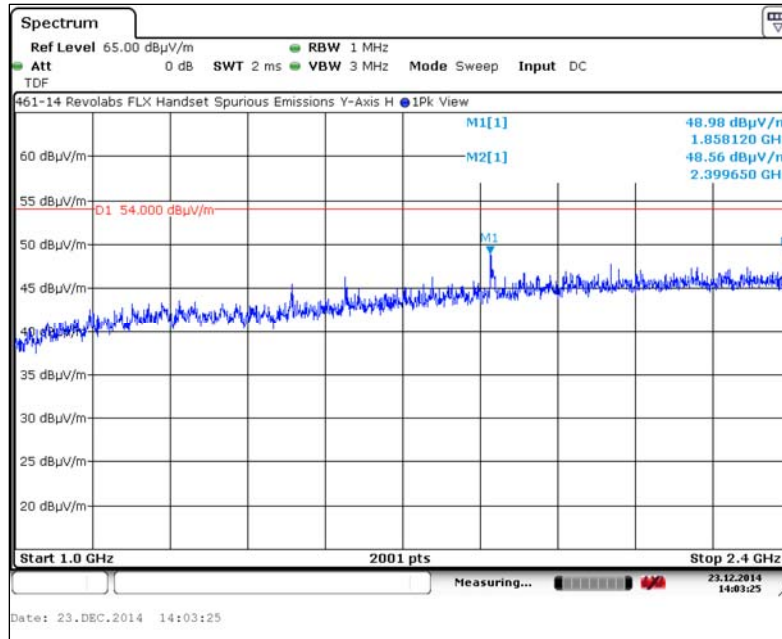


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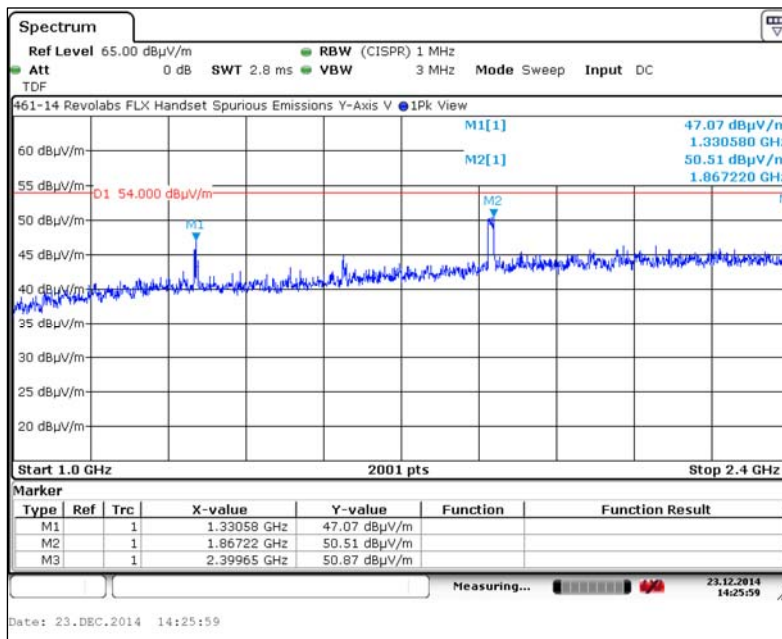
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

4. Measurement Results – 1 GHz to 2.4 GHz

4.3. Horizontal Antenna, Y-Axis



4.4. Vertical Antenna, Y-Axis

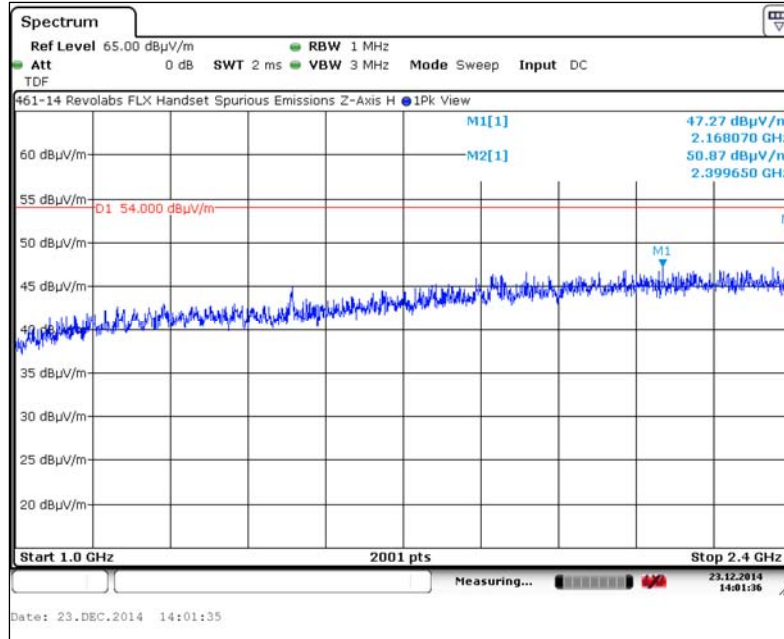


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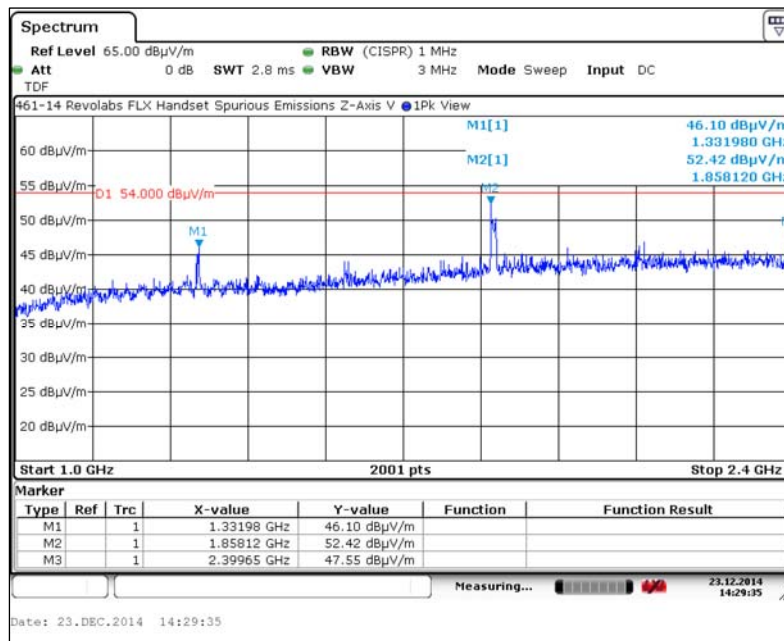
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

4. Measurement Results – 1 GHz to 2.4 GHz

4.5. Horizontal Antenna, Z-Axis



4.6. Vertical Antenna, Z-Axis

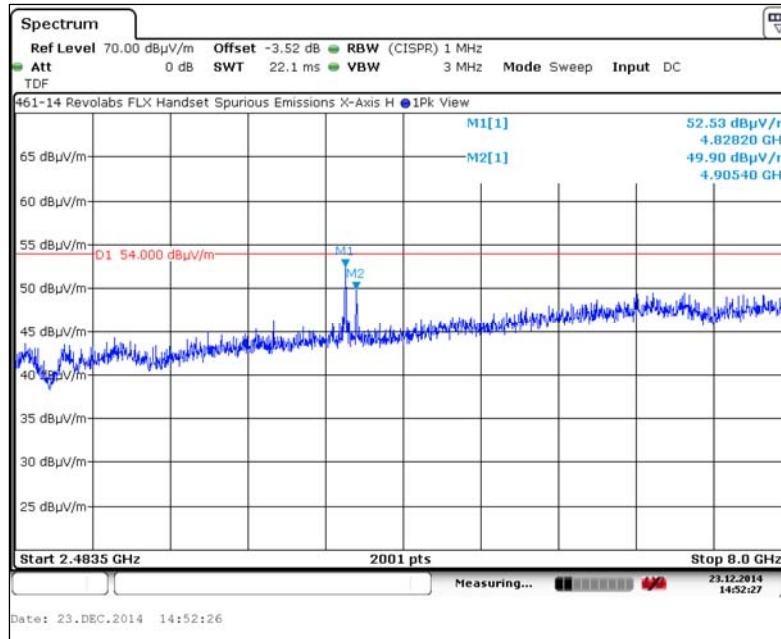


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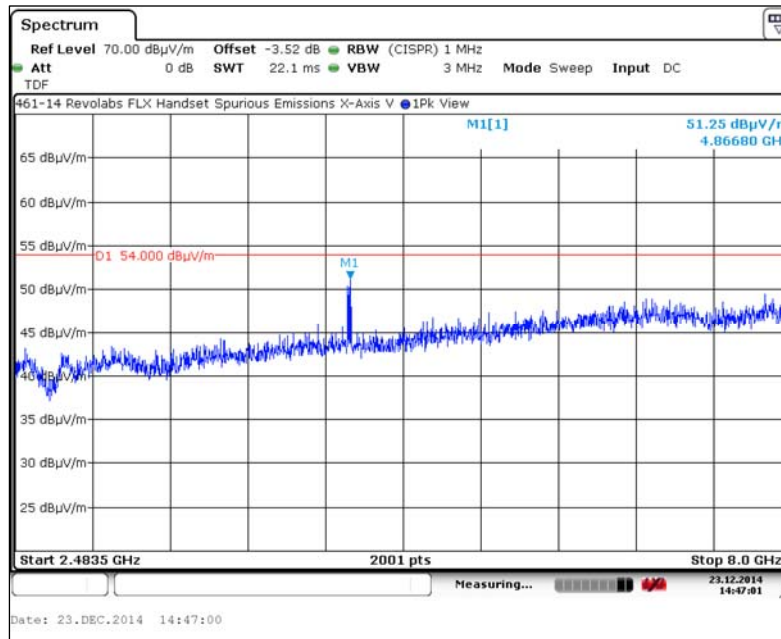
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

5. Measurement Results – 2.5 GHz to 8 GHz

5.1. Horizontal Antenna, X-Axis



5.2. Vertical Antenna, X-Axis

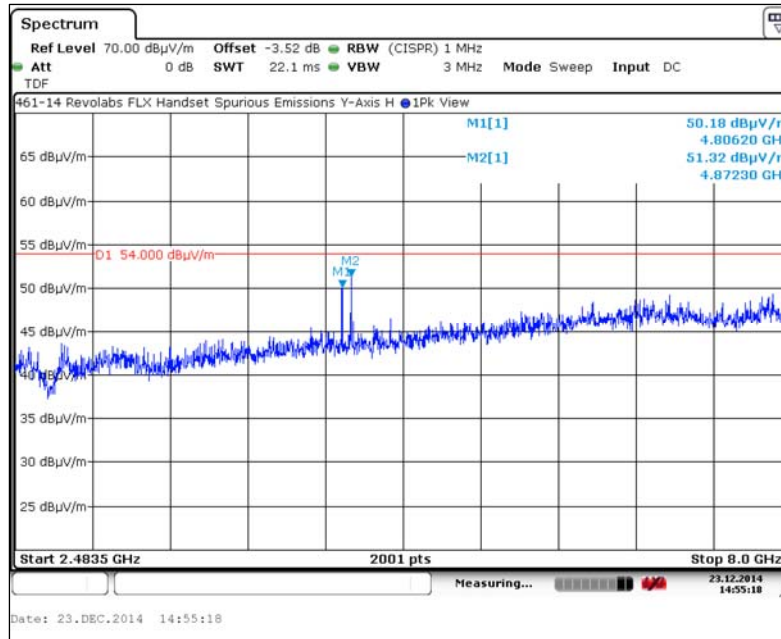


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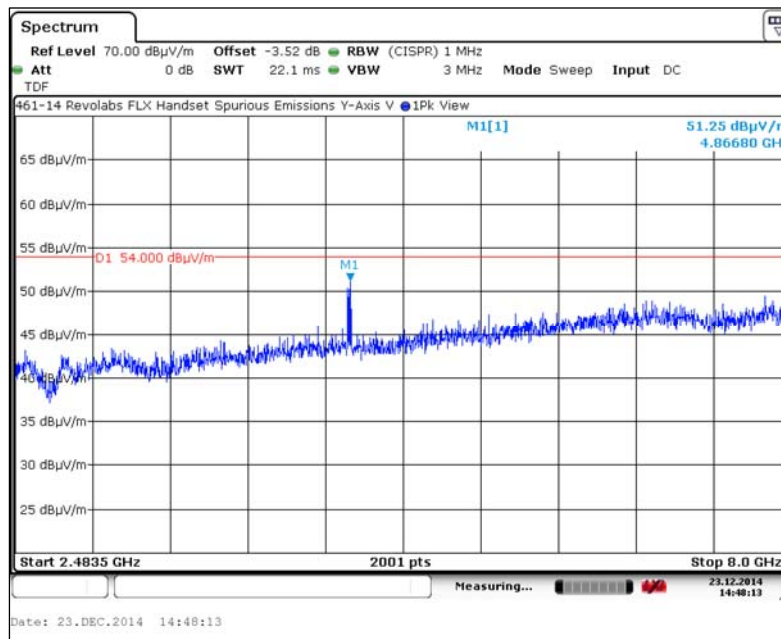
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

5. Measurement Results – 2.5 GHz to 8 GHz

5.3. Horizontal Antenna, Y-Axis



5.4. Vertical Antenna, Y-Axis

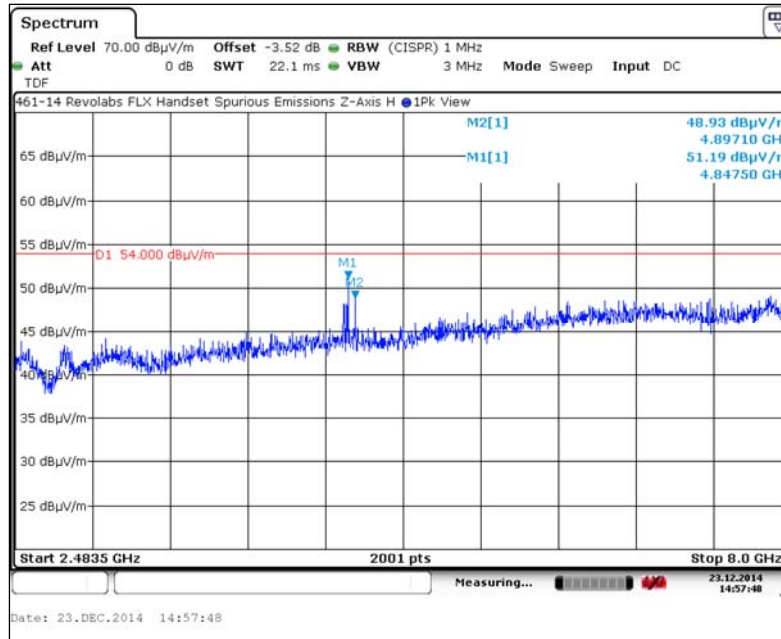


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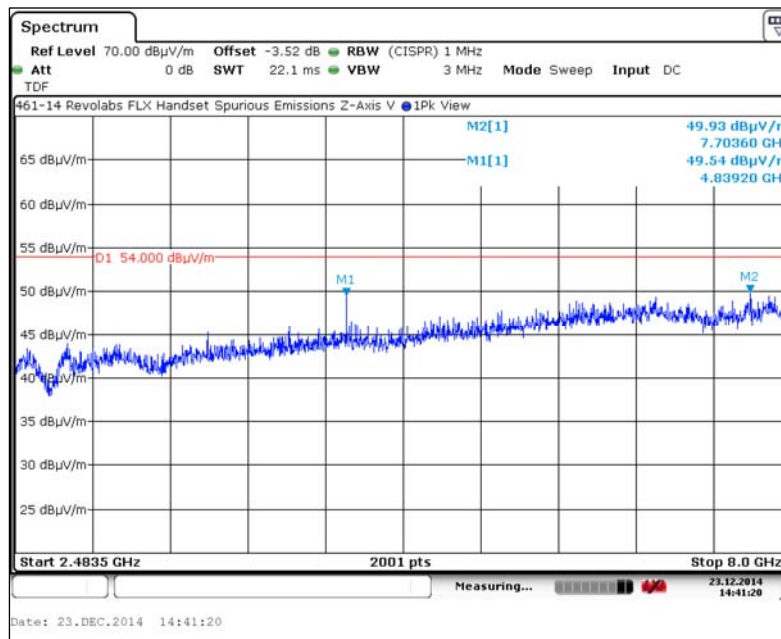
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

5. Measurement Results – 2.5 GHz to 8 GHz

5.5. Horizontal Antenna, Z-Axis



5.6. Vertical Antenna, Z-Axis

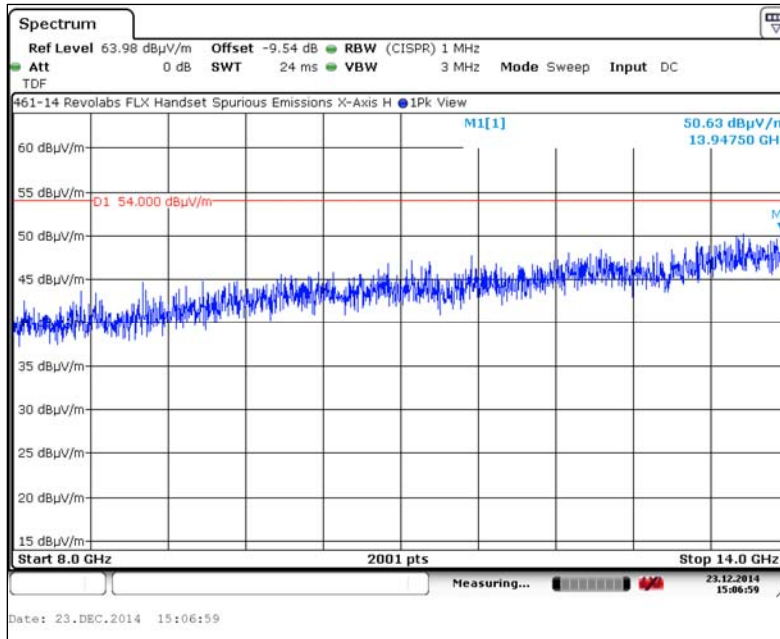


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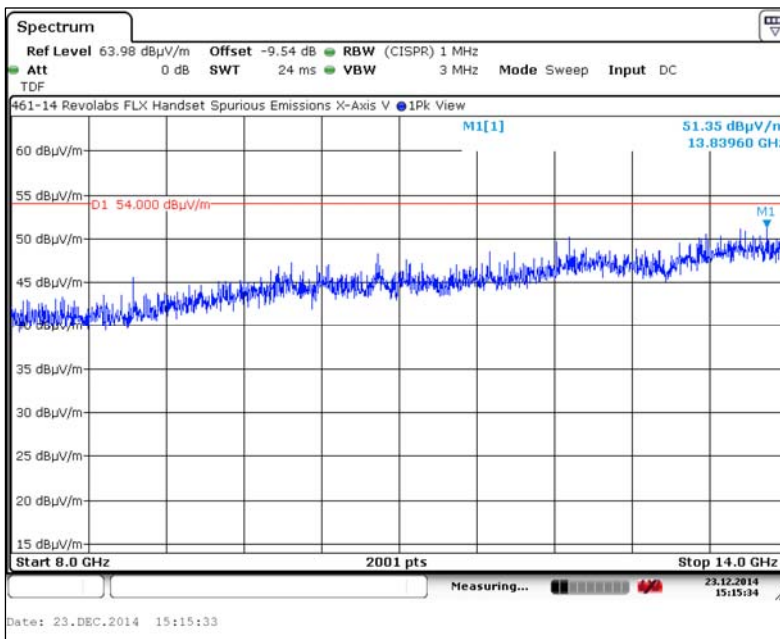
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

6. Measurement Results – 8 GHz to 14 GHz

6.1. Horizontal Antenna, X-Axis



6.2. Vertical Antenna, X-Axis

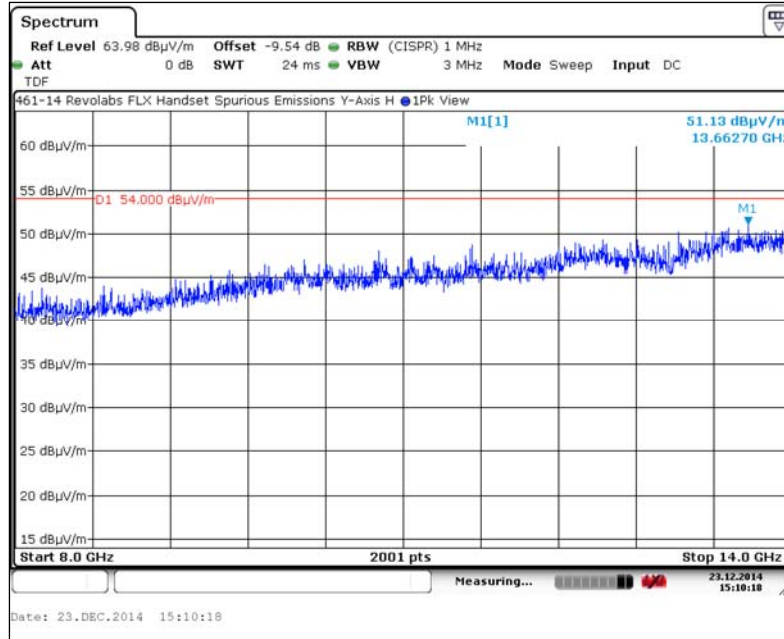


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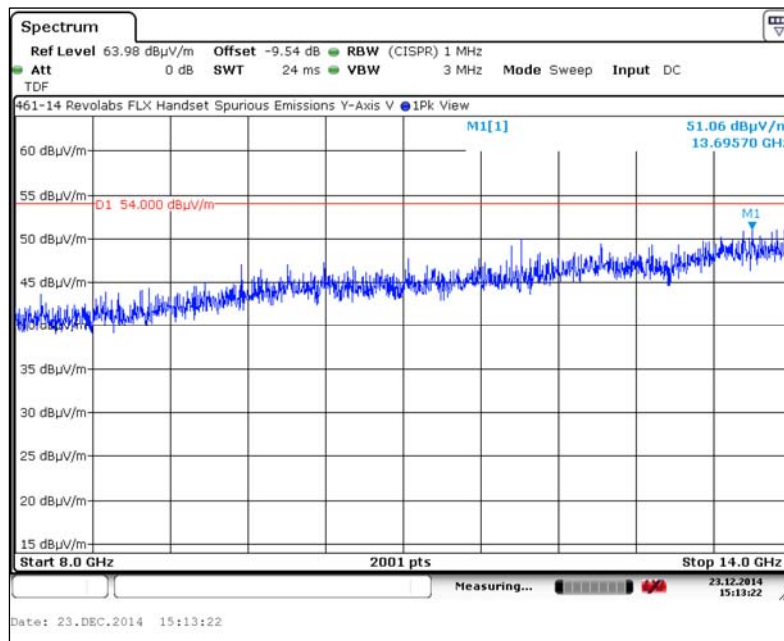
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

6. Measurement Results – 8 GHz to 14 GHz

6.3. Horizontal Antenna, Y-Axis



6.4. Vertical Antenna, Y-Axis

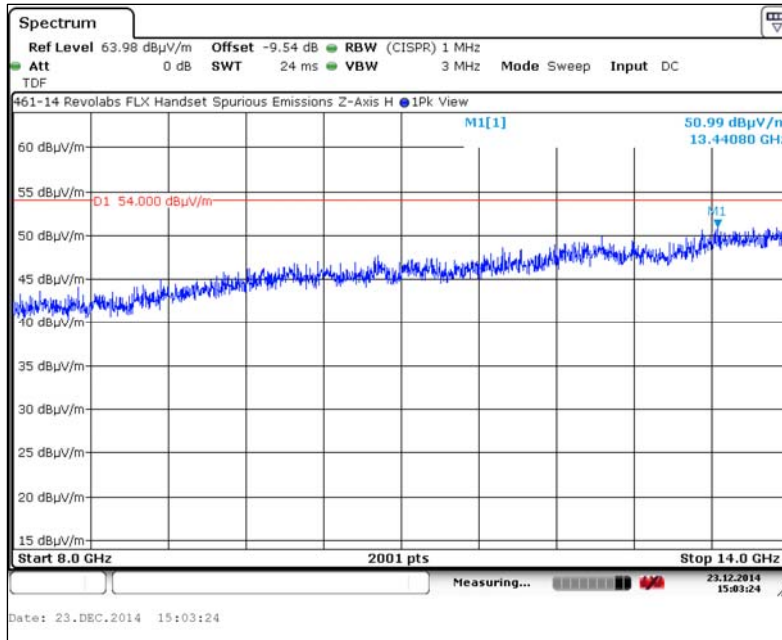


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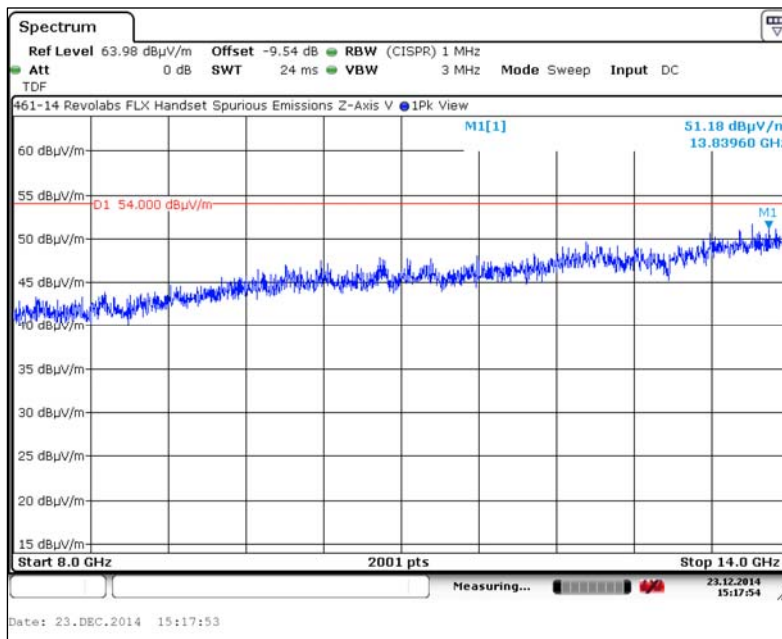
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

6. Measurement Results – 8 GHz to 14 GHz

6.5. Horizontal Antenna, Z-Axis



6.6. Vertical Antenna, Z-Axis

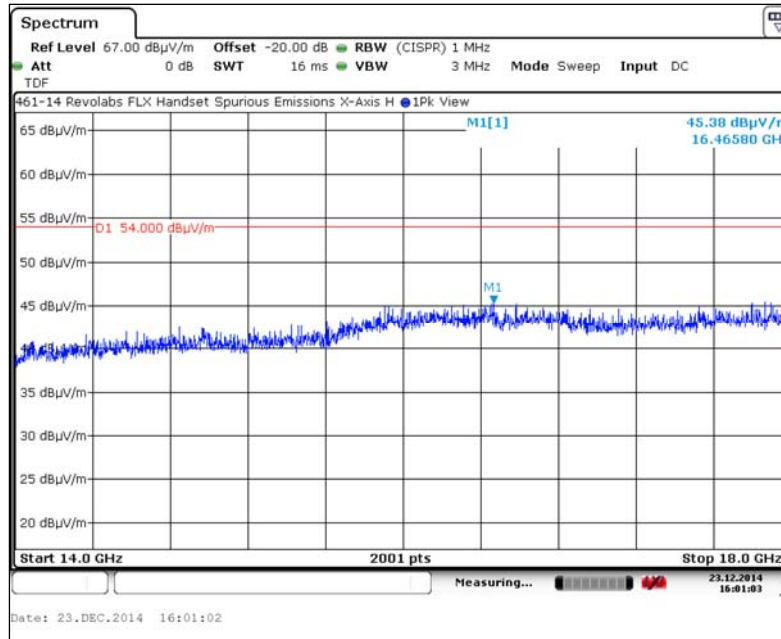


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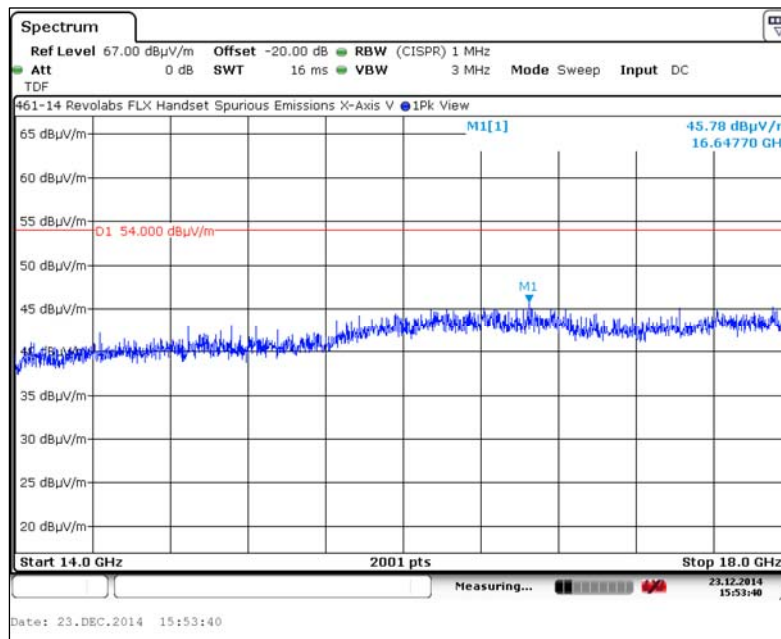
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

7. Measurement Results – 14 GHz to 18 GHz

7.1. Horizontal Antenna, X-Axis



7.2. Vertical Antenna, X-Axis

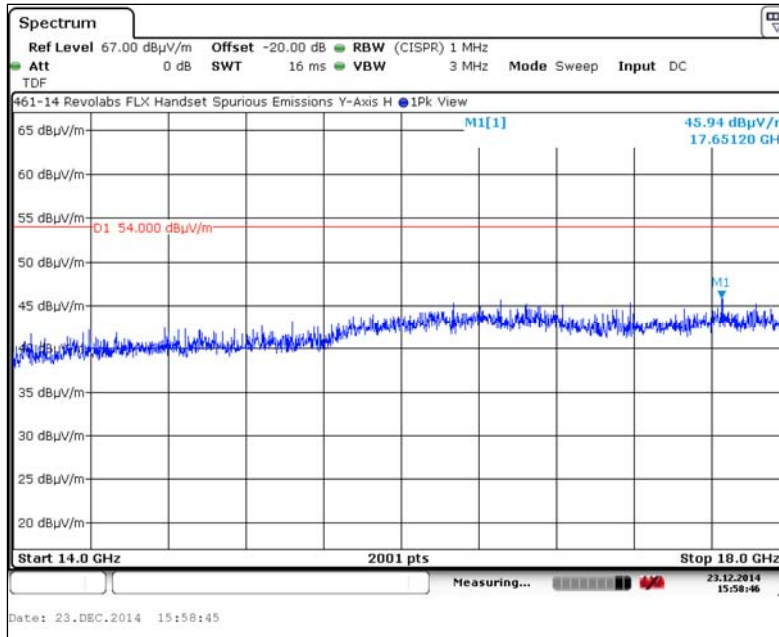


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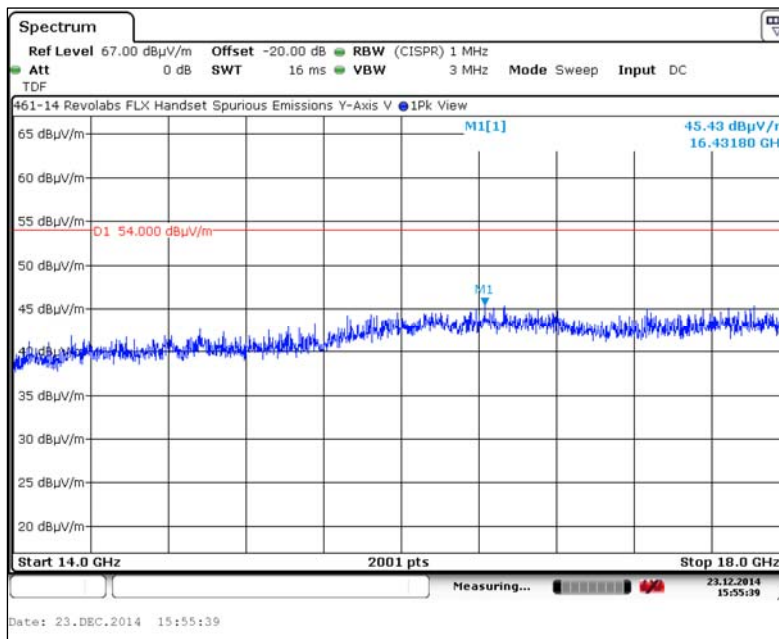
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

7. Measurement Results – 14 GHz to 18 GHz

7.3. Horizontal Antenna, Y-Axis



7.4. Vertical Antenna, Y-Axis

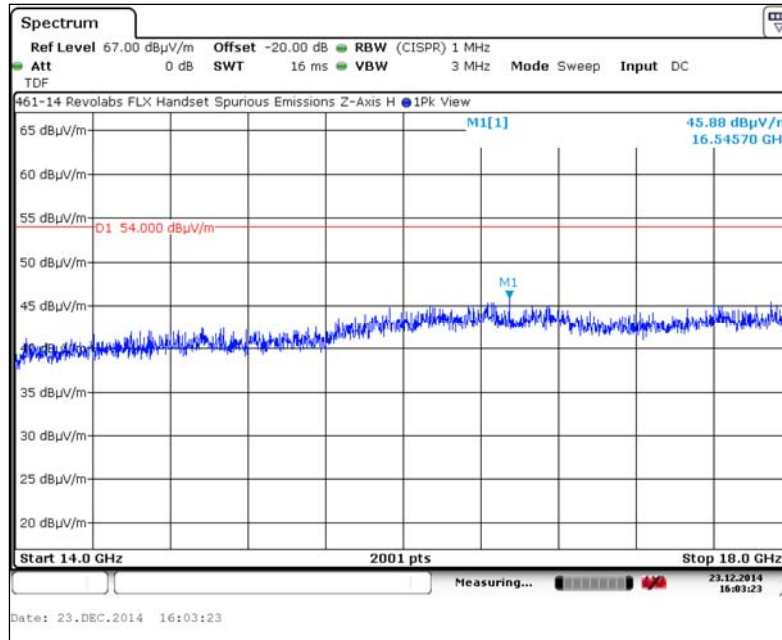


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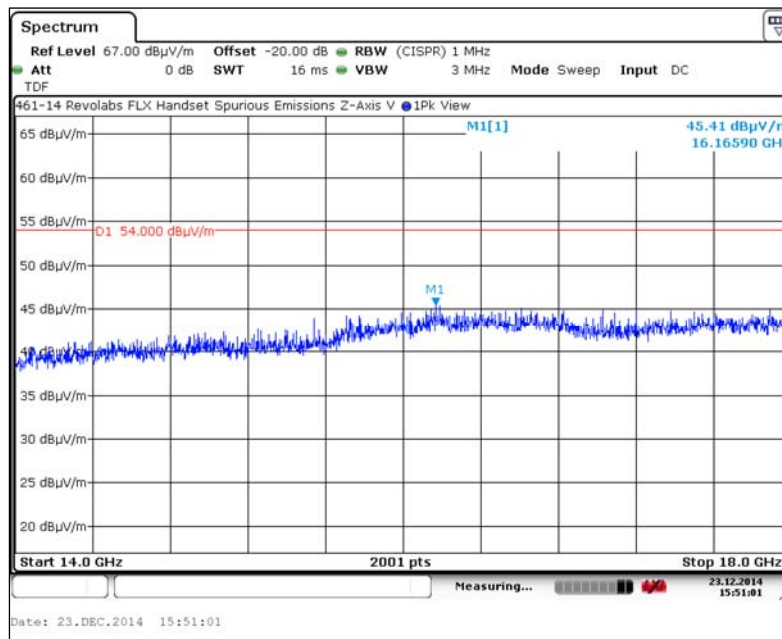
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

7. Measurement Results – 14 GHz to 18 GHz

7.5. Horizontal Antenna, Z-Axis



7.6. Vertical Antenna, Z-Axis

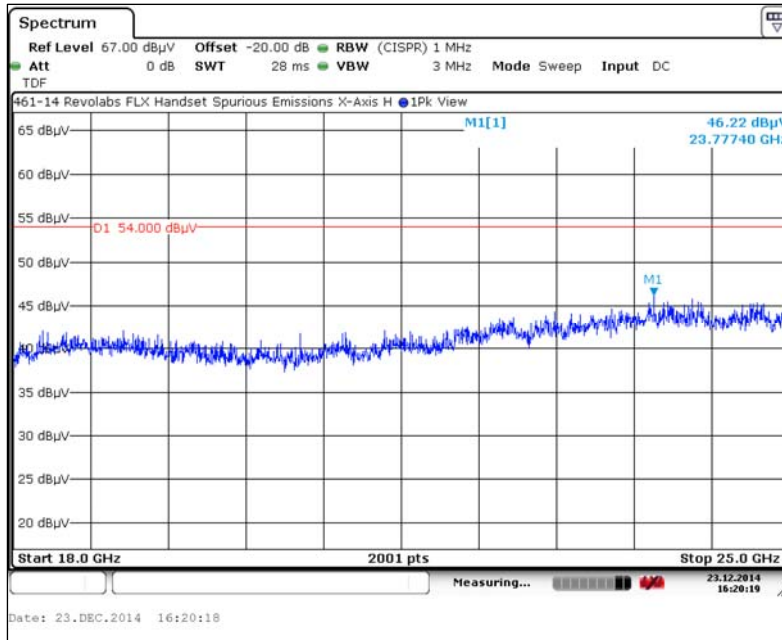


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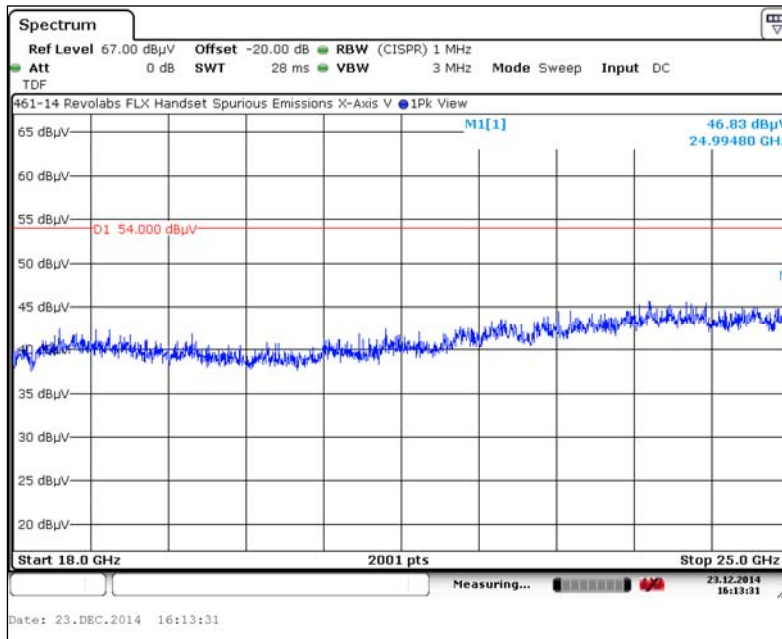
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

8. Measurement Results – 18 GHz to 25 GHz

8.1. Horizontal Antenna, X-Axis



8.2. Vertical Antenna, X-Axis

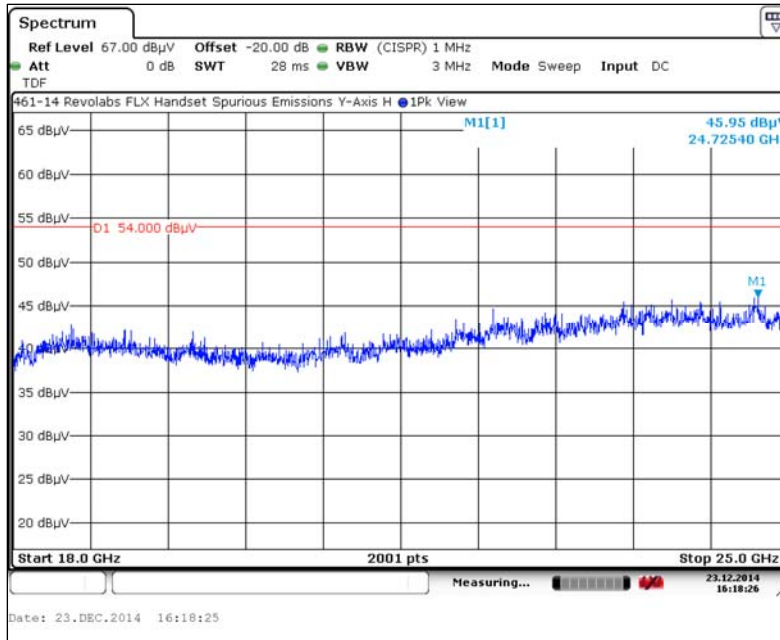


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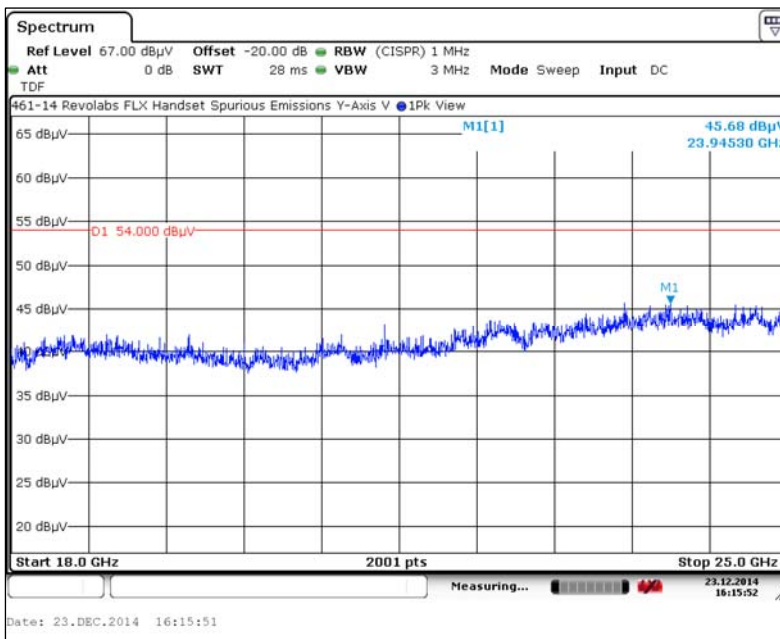
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

8. Measurement Results – 18 GHz to 25 GHz

8.3. Horizontal Antenna, Y-Axis



8.4. Vertical Antenna, Y-Axis

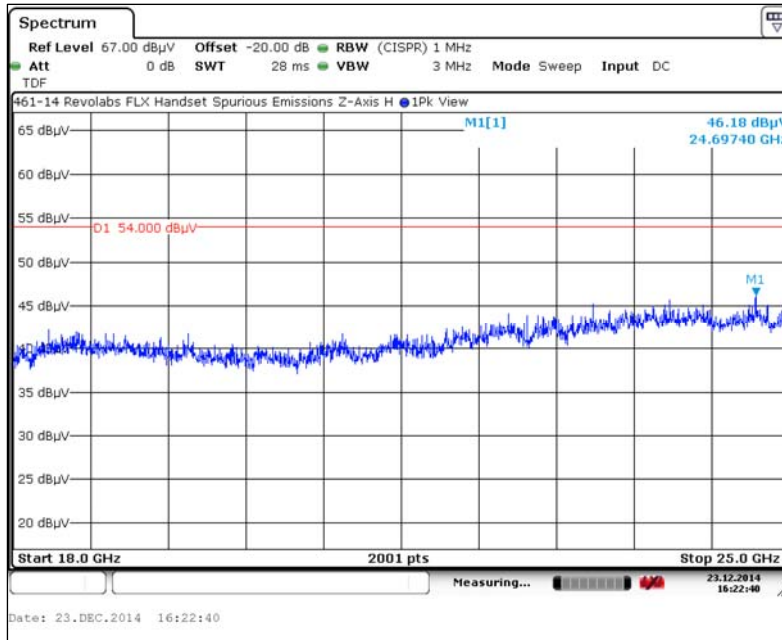


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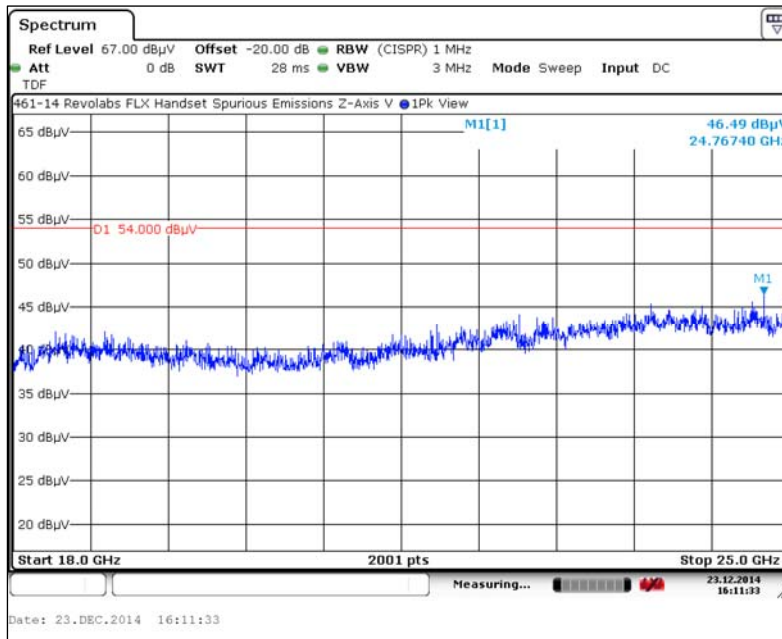
Spurious Radiated Emissions Test Results (15.209), IC RSS-GEN

8. Measurement Results – 18 GHz to 25 GHz

8.5. Horizontal Antenna, Z-Axis



8.6. Vertical Antenna, Z-Axis



Appendix A

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

Measurement Recheck – 1863.020 MHz

Reference screen capture 4.2 of this section.

