
**COMPLIANCE WORLDWIDE INC.
TEST REPORT 412-11R2**

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

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

Issued to

**Segway Inc.
14 Technology Drive
Bedford, NH 03110**

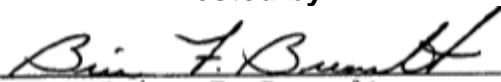
for the

**Seg-Link
2.4 GHz ZigBee 802.15.4 RF Transmitter
Utilizing the TI Chipcon CC2420 RF Transceiver**

**FCC ID: T2Z-GC261515
IC: 6395A-GC261515**

**Report Issued on October 21, 2011
Revision R1 Issued on April 2, 2012
Revision R2 Issued on April 17, 2012**

Tested by


Brian F. Breault

Reviewed by


Larry K. Stillings

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1. Scope

This test report certifies that the Segway Inc. Seg-Link 2.4 GHz 802.15.4 (ZigBee) RF Transmitter, as tested, meets the FCC Part 15, Subpart C and Industry Canada RSS 210, Issue 8, Annex 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. Revision R1 updates the referenced procedures in Section 4.3. Revision R2 provides spurious emissions test data down to 18 kHz in section 7.6.

2. Product Details

- 2.1. Manufacturer:** Segway Inc.
- 2.2. Model Number:** Seg-Link 2.4 GHz ZigBee 802.15.4 RF Transmitter
- 2.3. Serial Number:** Engineering sample 007
- 2.4. Description:**
1. The Seg-Link device contains a wireless transceiver operating in the 2.4 GHz IEEE 802.15.4 frequency band. Additional Interfaces are provided via a shielded DB-9 connector for serial communications.
 2. Power and control is supplied through a standard USB interface connection to a PC.
 3. This device is for use by our distributors/dealers/depot operators for programming the PT (Personal Transporter). It is not sold to, nor used by, the rider / typical end-user type customer. It is for the dealer or rental site operator to program in parameters such as maximum speed, etc. It is also intended for indoor use only.
 4. The device enclosure is aluminum.
- 2.5. Power Source:** DC 5 volts – Obtained from a USB based power source.
- 2.6. EMC Modifications:** None

3. Product Configuration

3.1. Operational Characteristics & Software

The Segway Inc. Seg-Link 2.4 GHz 802.15.4 (ZigBee) RF Transmitter communicates with a Segway Personal Transporter (PT) in normal transmitting mode. The test software provided by Segway allows the transmitter to be operated in normal, modulated and unmodulated modes in any of the sixteen ZigBee channels. Communication and device operating voltage are provided to the DUT via a USB 2.0 connection.

The serial port configured on the front of the device under test is connected to the Personal Transporter for diagnostic purposes only and is not part of the normal operating conditions.

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3. Product Configuration (continued)

3.2. EUT Hardware

Blk Diag #	Manufactr	Model/Part # / Options	Serial Number	Input Voltage	Frq (Hz)	Description/Function
1	Segway	802.15.4	007	5V	DC	PT Transceiver

3.3. EUT Hardware/Software/Firmware Revision Level

Radio Board #	Description	FW	SW	HW
19455-00002	Systec SYS-3304005 RF Transceiver Module	2011-03-30.1159		

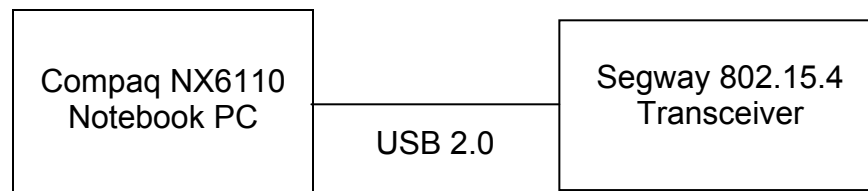
3.4. EUT Cables/Transducers

Blk Diag Ltr	Manufacturer	Model/Part #	Length (m)	Shield Y/N	Description/Function
A	Generic	N/A	1	Y	USB Cable

3.5. Support Equipment

Diag Blk #	HP	Model/Part # Options	Serial Number	Input Voltage	Input Frq.	Description/Function
1	Philips	Compaq NX6110	CNU619267L	120/230	60/50	Notebook PC

3.6. Block Diagram



4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Tests

Device	Manufacturer	Model No.	Serial No.	Cal Due
Spectrum Analyzer	Agilent	E4407B	MY45104493	12/22/2012
EMI Receiver	Hewlett Packard	8546A	3330A00115	10/28/2011
Microwave Preamp	Hewlett Packard	8449B	3008A01323	12/1/2012
Spectrum Analyzer	Agilent	E7405A	MY45115430	10/22/2011
Spectrum Analyzer	Rohde & Schwarz	FSV40	100899	05/26/2013
Bilog Antenna	Com-Power	AC-220	25509	8/31/2012
Horn Antenna	Electro-Metrics	EM-6961	6337	10/19/2012
Horn Antenna	Com-Power	AH-826	081051	6/30/2012
Horn Antenna	Com-Power	AH-840	03075	7/20/2012
Loop Antenna	EMCO	6502	2197	7/21/2012
DMM / Temperature	Fluke	187	79690058	11/29/2011
2.4 GHz BP Filter	Micro-Tronics	BRM50702	14	8/11/2012
Digital Barometer	Control Company	4195	ID236	11/9/2011

4.2. Measurement & Equipment Setup

Test Dates:	Oct 11 to Oct 21, 2011
Test Engineer:	Brian Breault
Normal Site Temperature (15 - 35°C):	21.7
Relative Humidity (20 - 75%RH):	33%
Frequency Range:	30 MHz to 25 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz - 30 MHz to 1 GHz 1 MHz - Above 1 GHz
EMI Receiver Avg Bandwidth:	300 kHz - 30 MHz to 1 GHz 3 MHz - Above 1 GHz
Detector Function:	Peak, QP - 30 MHz to 1 GHz Peak, Avg - Above 1 GHz Unless otherwise specified.

4.3. Measurement Procedure

Test measurements were made in accordance FCC Part 15.247, IC RSS-210 Annex 8: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz.

The test methods used to generate the data in this test report is in accordance with ANSI C63.4: 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz and FCC Publication KDB 558074: Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005.

4. Measurements Parameters

4.4. Measurement Uncertainty

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

RF Frequency	$\pm 1 \times 10^{-8}$
Radiated Emission of Transmitter	± 4.55 dB
Radiated Emission of Receiver	± 4.55 dB
Temperature	$\pm 0.91^{\circ}$ C
Humidity	$\pm 5\%$

5. Choice of Equipment for Test Suits

5.1 Choice of Model

This test report is based on the test samples supplied by the manufacturer and are 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 Seg-Link 2.4 GHz 802.15.4 (ZigBee) RF Transmitter operates on a total of 16 channels, from channel 11 to channel 26.

In accordance with ANSI C63.4-2009, section 13.2.1, the choice of operating frequencies selected for the testing detailed in this report was based on the lowest, middle and highest operating frequencies. The frequencies selected were 2405 MHz (Channel 11), 2440 MHz (Channel 18) and 2480 MHz (Channel 26).

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 6 dB Bandwidth	(a) (2)	RSS-210 A8.2	7.2	Compliant
99% Bandwidth	N/A	RSS-GEN 4.6.1	7.3	Compliant
Maximum Peak Conducted Output Power	(b) (1)	RSS-210 A8.4 (4)	7.4	Compliant
Operation with directional antenna gains greater than 6 dBi	(b) (4)	RSS-GEN 7.1.2	7.5	Compliant
Spurious Radiated Emissions	15.247 (d)	RSS-GEN 4.9	7.6	Compliant
Spurious Radiated Emissions (> GHz) - Harmonic Measurements	15.247 (d)	RSS-210 A8.9	7.6	Compliant
Receiver Spurious Radiated Emissions	15.247 (d)	RSS-GEN 4.10	7.7	Compliant
Lower and Upper Band Edge	15.247 (d)	RSS-210 A8.5	7.8	Compliant
Power Spectral Density	15.247(e)		7.9	Compliant
Conducted Emissions	FCC Part 15	RSS-GEN	N/A	Compliant
Public Exposure to Radio Frequency Energy Levels	1.1307 (b) (1)	RSS-GEN 5.5 RSS-102	7.10	Compliant

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 Segway Seg-Link radio antenna is connected internally to the transmitter of the unit and not user accessible.

7.2. Minimum 6 dB Bandwidth (15.247 (a) (2), RSS 210 A8.2(a))

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.

Resolution Bandwidth : 100 kHz

Video Bandwidth : 300 kHz

Measurement Results

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum 6 dB Bandwidth (kHz)	Result
Low	2405	1595	>500	Compliant
Middle	2440	1600	>500	Compliant
High	2480	1595	>500	Compliant

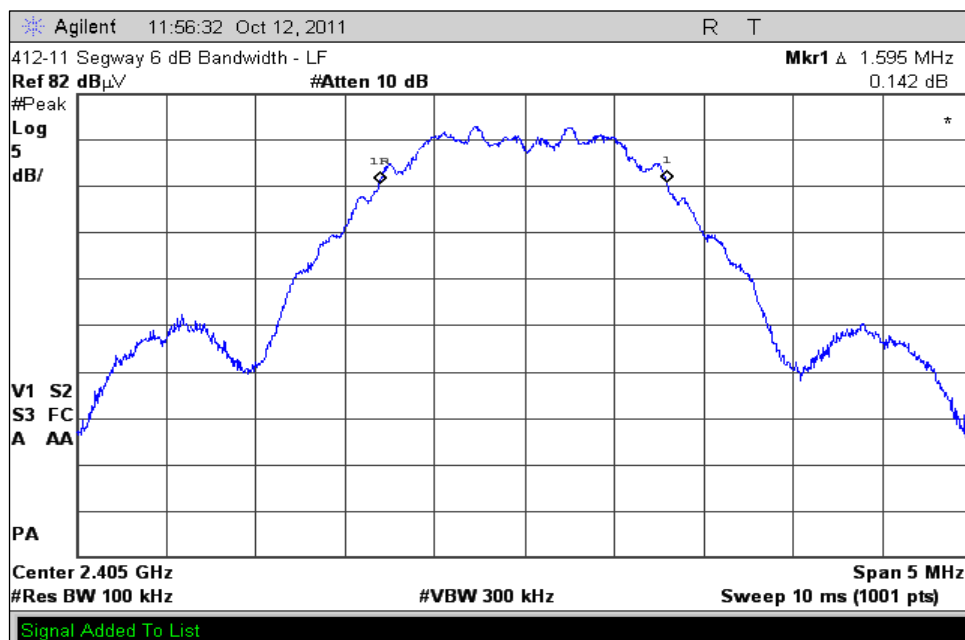
Test Number: 412-11R2

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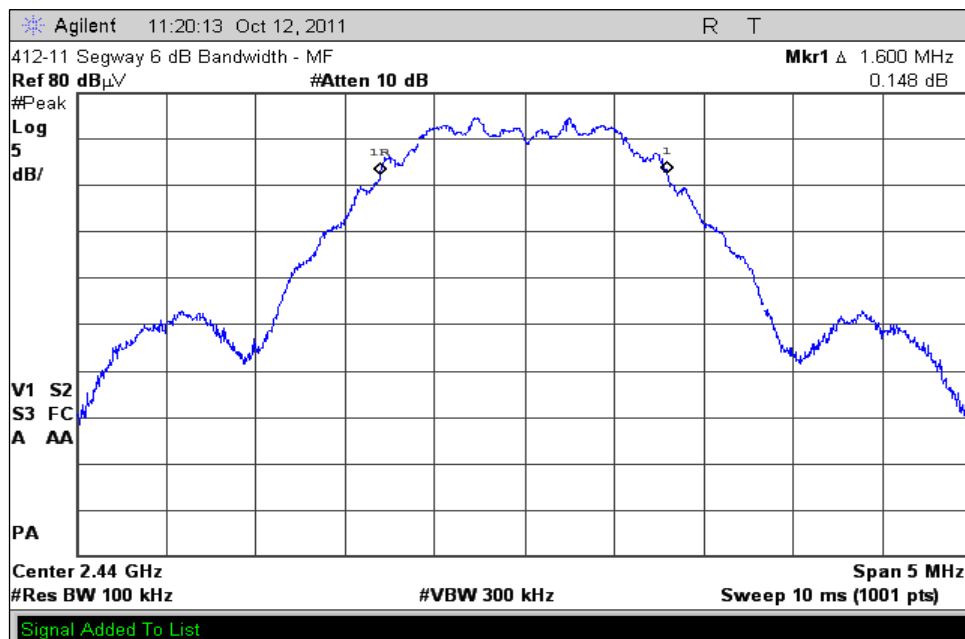
7. Measurement Data

7.2. Minimum 6 dB Bandwidth (15.247 (a) (2)) (continued)

6.2.1. Low Channel – 11



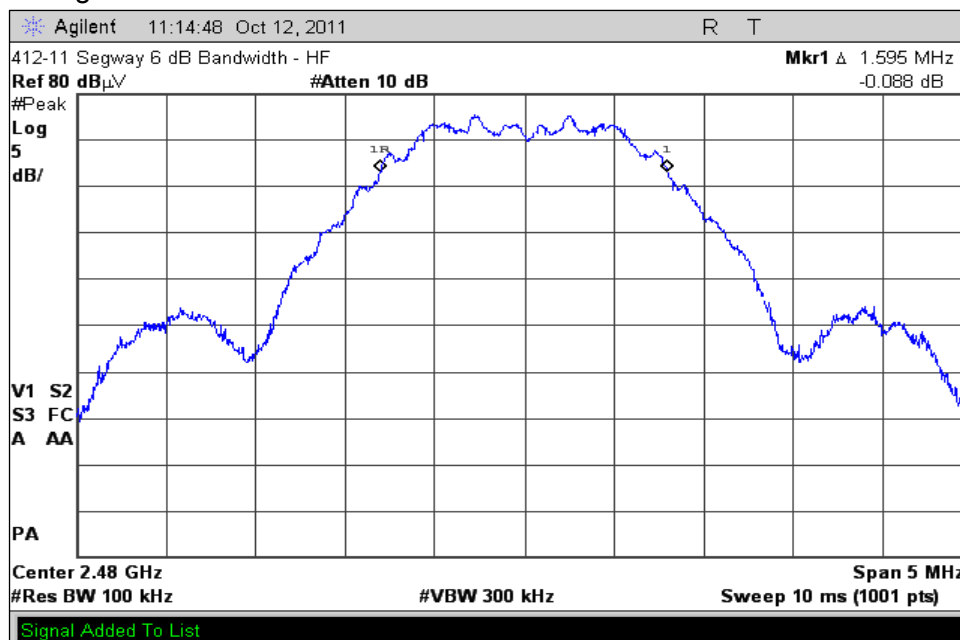
6.2.2. Mid Channel – 18



7. Measurement Data (continued)

7.2. Minimum 6 dB Bandwidth (15.247 (a) (2)) (continued)

6.2.3. High Channel - 26



7.3. 99% Bandwidth (RSS 210)

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: 100 kHz
Video Bandwidth : 300 kHz

Measurement Results

Channel	Channel Frequency (MHz)	99% Power Bandwidth (MHz)	Acceptable Bandwidth (MHz)	Result
Low	2405	2.510	12.025	Compliant
Middle	2440	2.525	12.200	Compliant
High	2480	2.510	12.400	Compliant

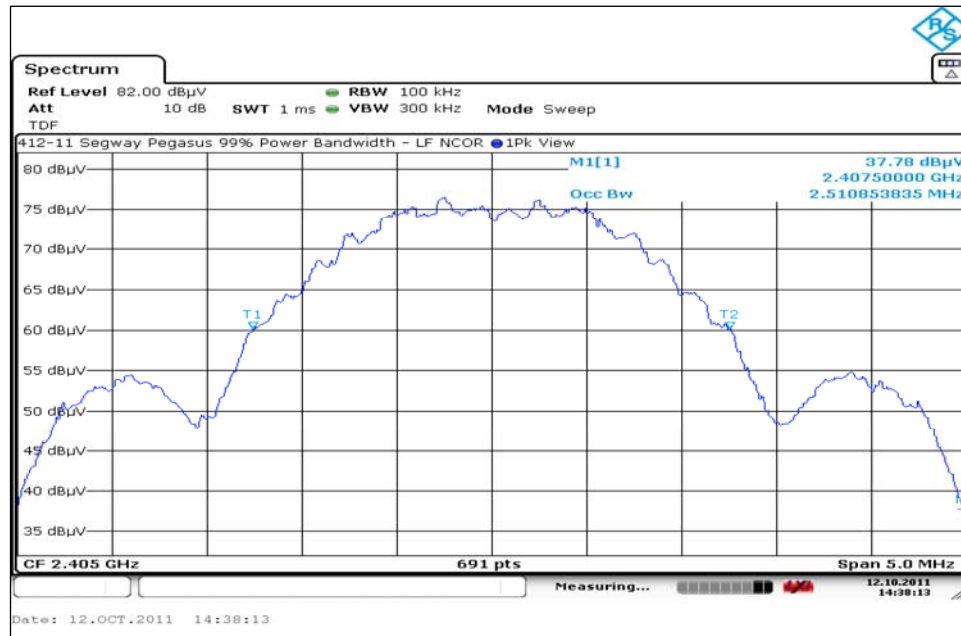
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Issue Date: 04/17/2012

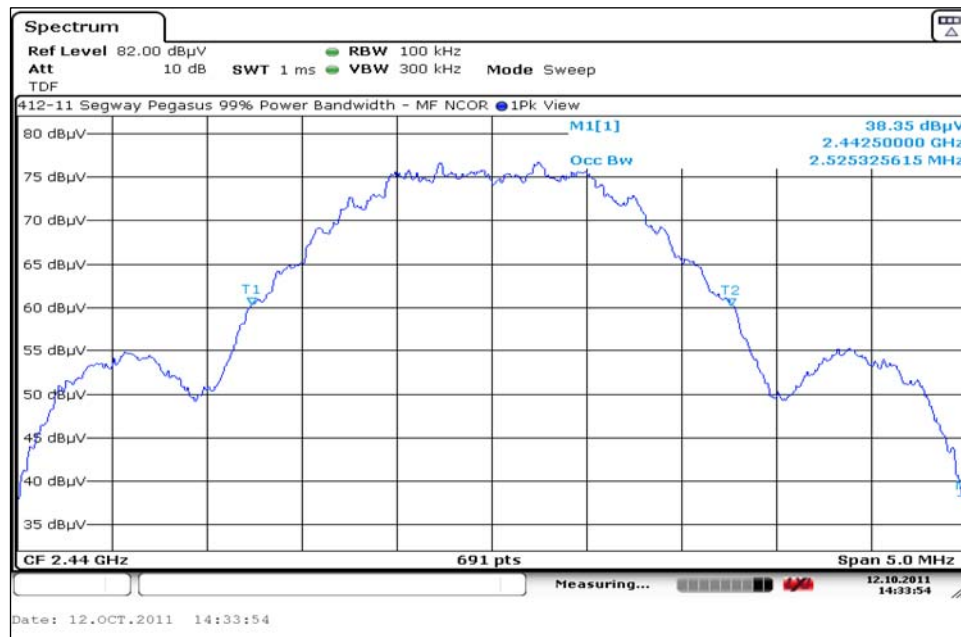
7. Measurement Data (continued)

7.3. 99% Bandwidth (RSS 210) (continued)

7.3.1. Low Channel – 11



7.3.2. Mid Channel - 18



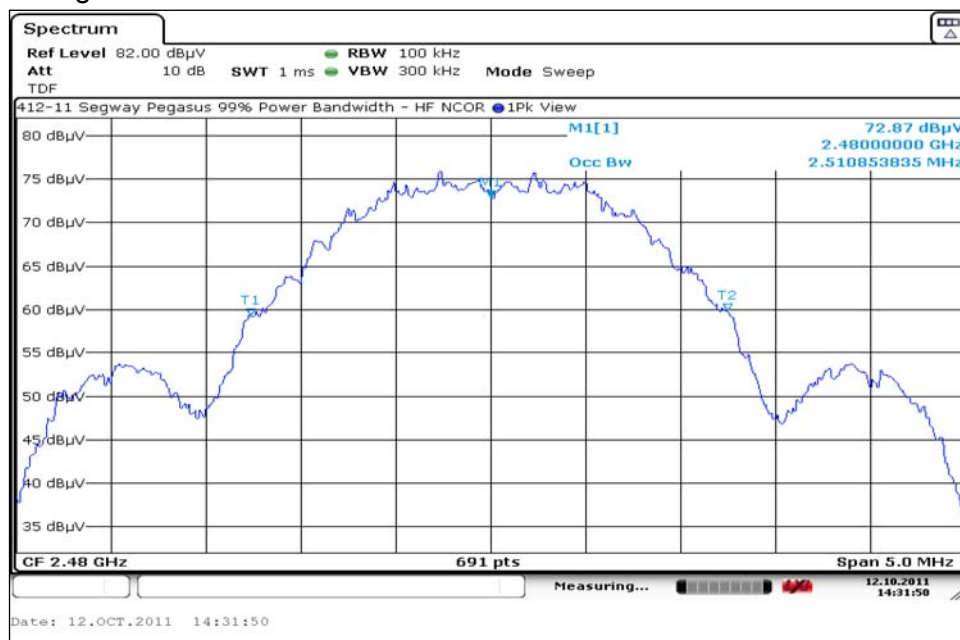
Test Number: 412-11R2

Issue Date: 04/17/2012

7. Measurement Data (continued)

7.3. 99% Bandwidth (IC RSS 210) (cont.)

7.3.3. High Channel - 26



7. Measurement Data (continued)
7.4. Maximum Peak Conducted Output Power (15.247 (b) (1))

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.

Test Notes: The Segway Inc. Seg-Link 2.4 GHz 802.15.4 (ZigBee) RF Transmitter antenna is not removable; therefore the output power was determined from the measured field strength using the following equation:

$$P = \frac{(E \times d)^2}{(30 \times G)}$$

- P = the power in Watts (power has been converted to milliwatts in the table).
- E = the measured maximum field in V/m.
- G = the numeric gain of the transmitting antenna over an isotropic radiator.
- d = the distance in meters of the field strength measurement.

Resolution Bandwidth : 1 MHz

Video Bandwidth : 3 MHz

Band Power Converted to Field Strength

Channel	Frequency	Integrated Band Power	
	(MHz)	(dBm)	(dBμV)
Low	2405	-21.94	85.060
Middle	2440	-22.72	84.280
High	2480	-22.94	84.060

Maximum Peak Output Power

Channel	Frequency	Integrated Field Strength	Distance	Antenna Gain ¹		Measured Output Power	Output Power Limit	Result
	(MHz)	(dBμV/m)	(d)	(dBi)	(numeric)	(mW)	(mW)	
Low	2405	85.06	3.0	2.14	1.637	0.059	1000	Compliant
Middle	2440	84.28	3.0	2.14	1.637	0.049	1000	Compliant
High	2480	84.06	3.0	2.14	1.637	0.047	1000	Compliant

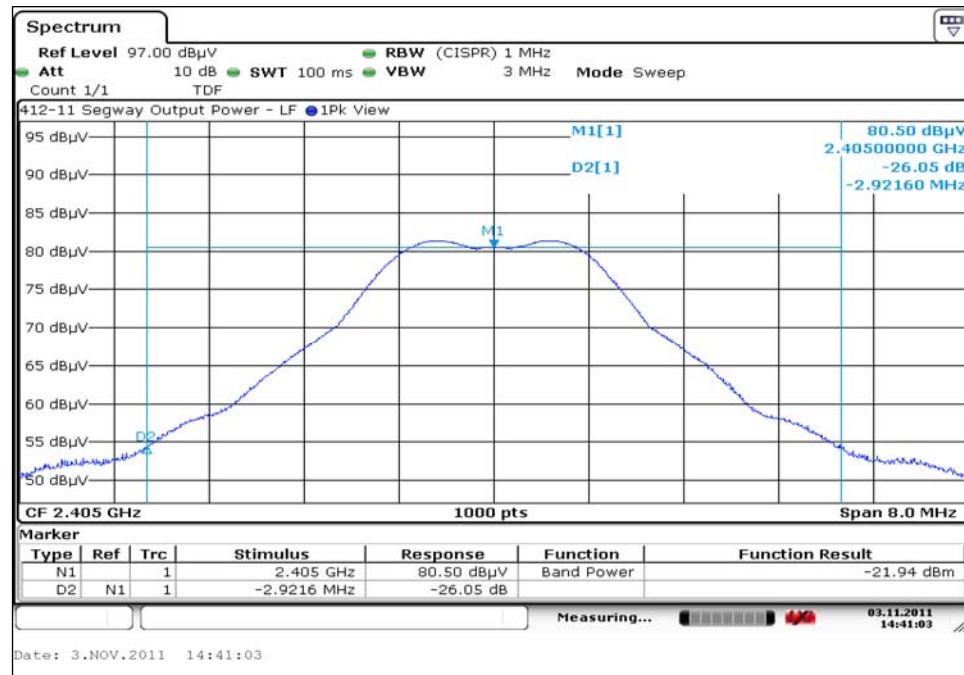
Test Number: 412-11R2

Issue Date: 04/17/2012

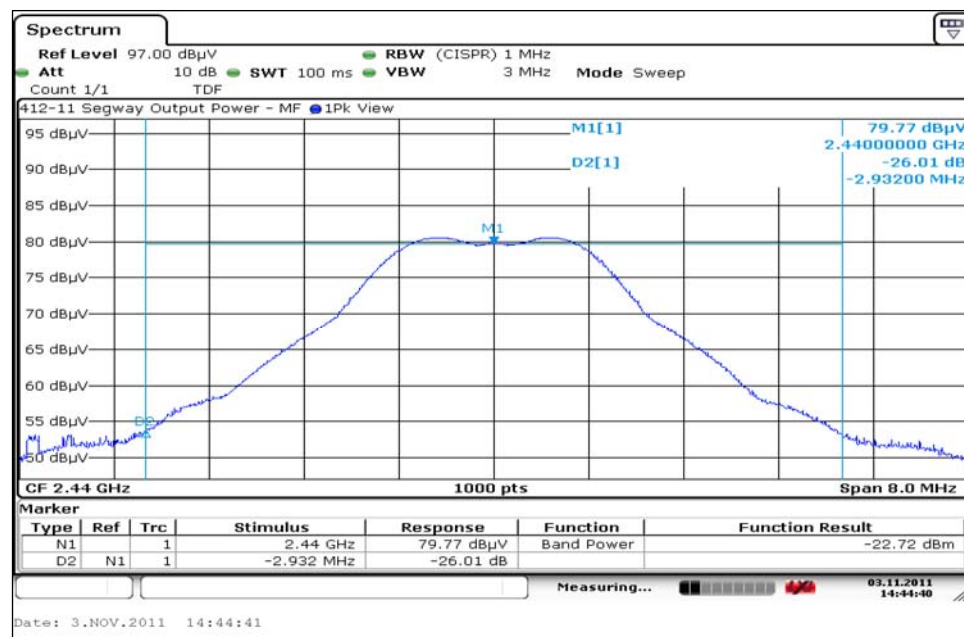
7. Measurement Data (continued)

7.4. Maximum Peak Conducted Output Power (15.247 (b) (1))

7.4.1. Low Channel - 11



7.4.2. Middle Channel - 18



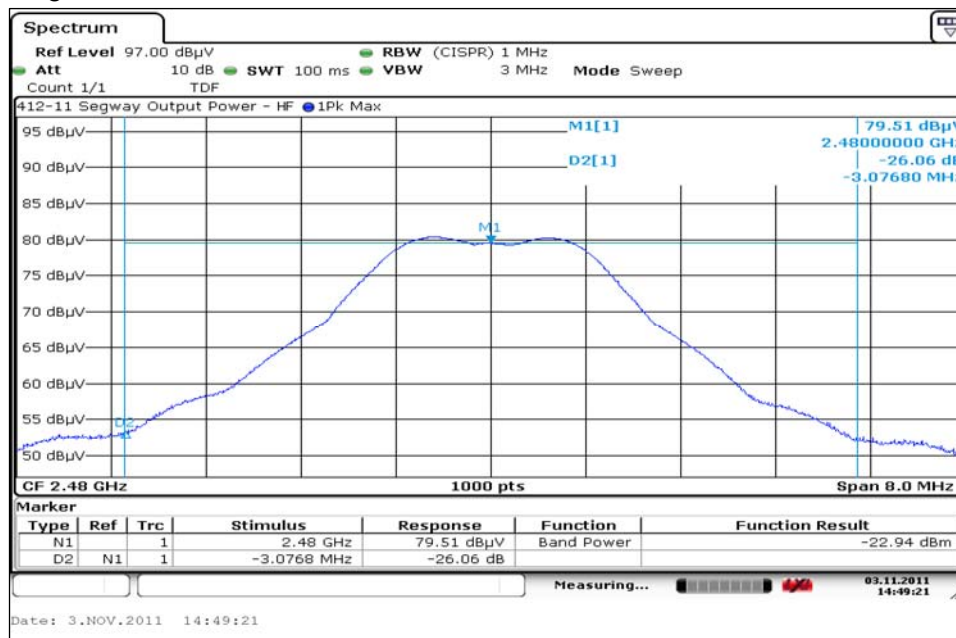
Test Number: 412-11R2

Issue Date: 04/17/2012

7. Measurement Data (continued)

7.4. Maximum Peak Conducted Output Power (15.247 (b) (1)) (continued)

7.4.3. High Channel - 26



7. Measurement Data (continued)

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

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

DUT Status: **The Segway Inc. Seg-Link 2.4 GHz 802.15.4 (ZigBee) RF Transmitter utilizes an antenna with 2.1 dBi antenna gain value and therefore is not affected by this clause.**

7.6. Transmitter Spurious Radiated Emissions (18 kHz to 25 GHz)

7.6.1. Regulatory Limit: FCC, Part 209, Quasi-Peak

Frequency Range (MHz)	Distance (Meters) ¹	Limit (dBμV/m)
.009 to .490	3	128.5 – 73.8
.490 to 1.705	3	73.8 – 62.9
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 The measurement distance for the .009 to 30 MHz bands were extrapolated from 30 meters to 3 meters by using the square of an inverse linear distance extrapolation factor (40 dB/decade). See FCC Part 15, Section 15.31 (2) for additional information.

7.6.2. Measurement & Equipment Setup

Test Engineer:	Brian Breault
Site Temperature (°C):	21.3
Relative Humidity (%RH):	31
Frequency Range:	18 kHz to 25 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	200 Hz (18 kHz to 150 kHz)
	9 kHz (150 kHz – 30 MHz)
	120 kHz (30 MHz – 1 GHz)
	1 MHz (>1GHz)
EMI Receiver Avg Bandwidth:	300 Hz (18 kHz to 150 kHz)
	30 kHz (150 kHz to 30 MHz)
	300 kHz (30 MHz – 1 GHz)
	3 MHz (>1GHz)
Detector Functions:	Peak, Quasi-Peak, Average
Antenna Height:	1 to 4 meters

7.6.3. Test Procedure

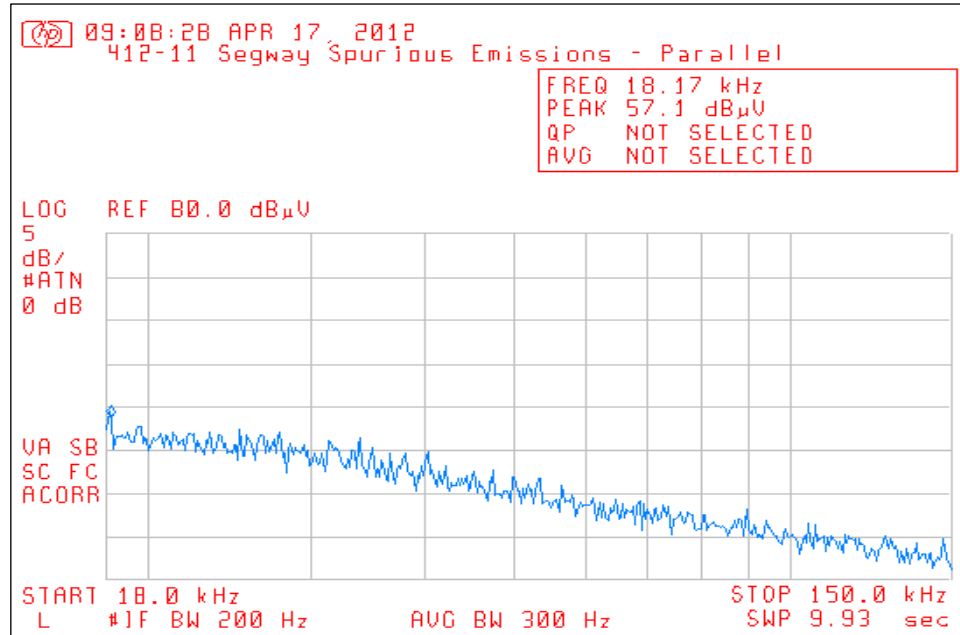
Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

7. Measurement Data (continued)

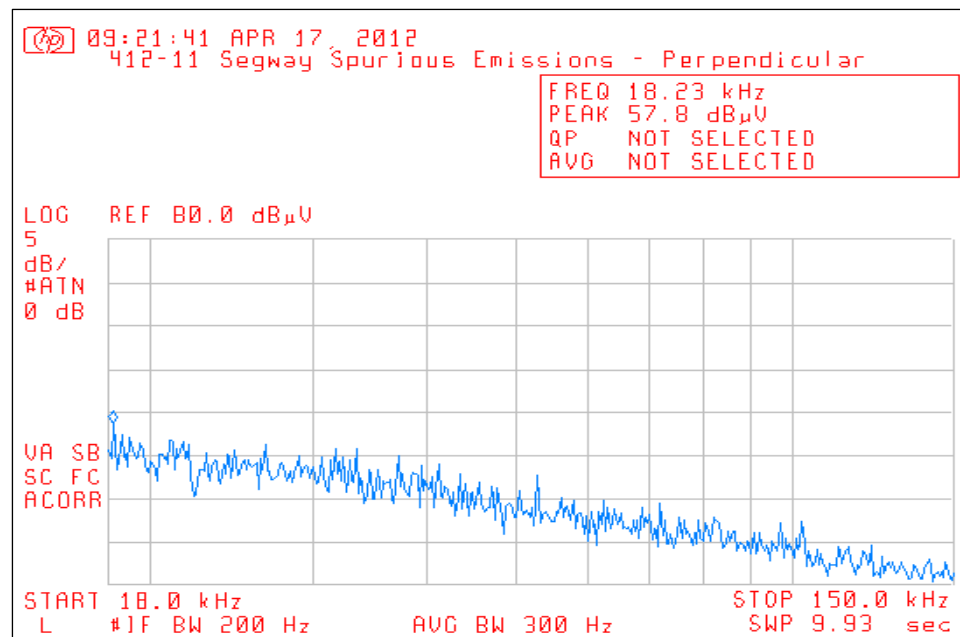
7.6. Transmitter Spurious Radiated Emissions (18 kHz to 25 GHz)

7.6.4. Spurious Radiated Emissions (18 kHz to 150 kHz) Test Results

7.6.4.1. Measurement Results – Parallel



7.6.4.2. Measurement Results – Perpendicular

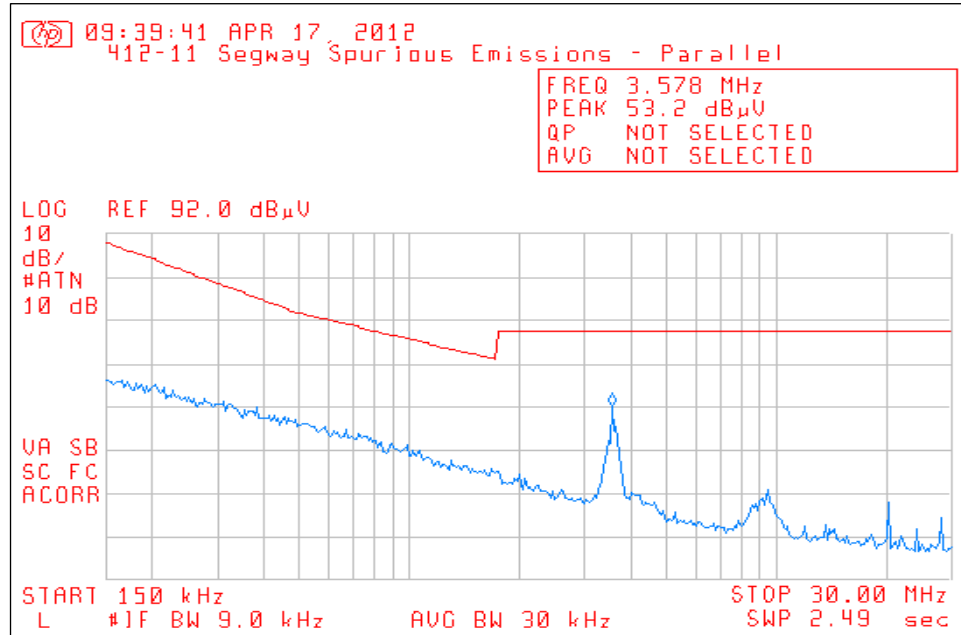


7. Measurement Data (continued)

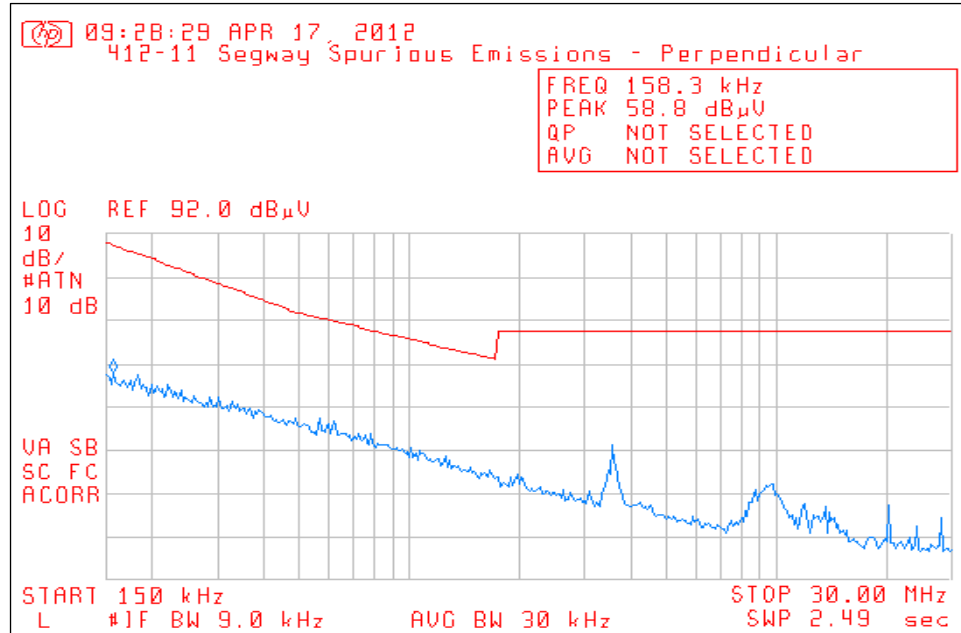
7.6. Transmitter Spurious Radiated Emissions (18 kHz to 25 GHz)

7.6.5. Spurious Radiated Emissions (150 kHz – 30 MHz) Test Results

7.6.5.1. Measurement Results – Parallel



7.6.5.2. Measurement Results – Perpendicular

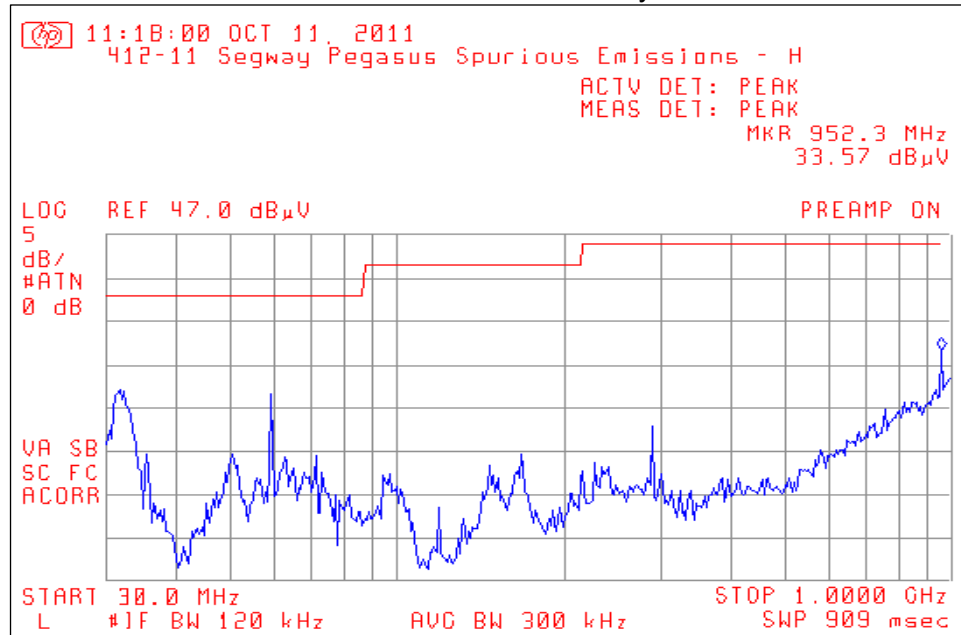


7. Measurement Data (continued)

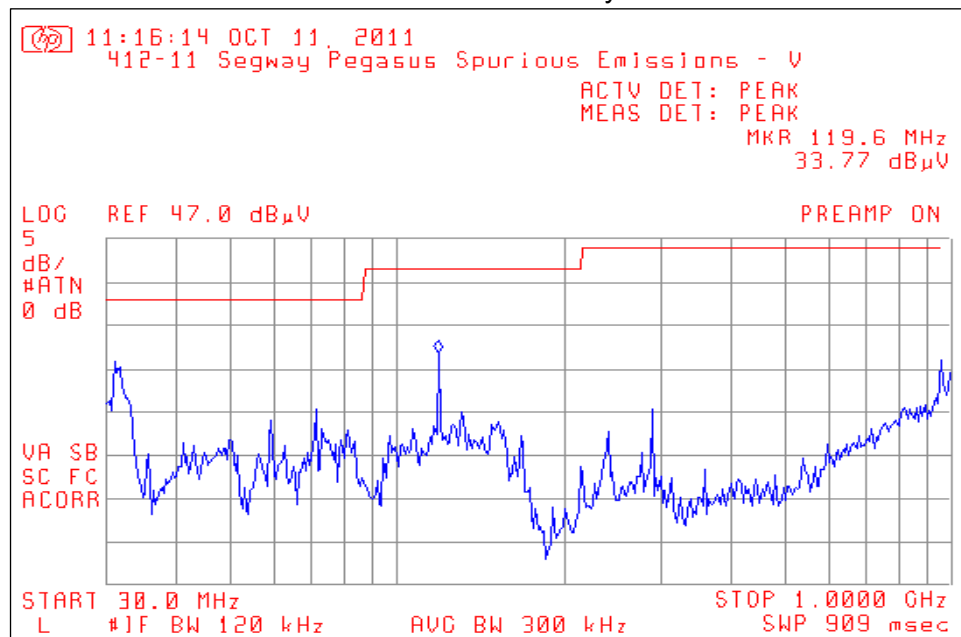
7.6. Transmitter Spurious Radiated Emissions (18 kHz to 25 GHz)

7.6.6. Spurious Radiated Emissions (30 MHz – 1 GHz) Test Results

7.6.6.1. Measurement Results – Horizontal Polarity



7.6.6.2. Measurement Results – Vertical Polarity



7. Measurement Data (continued)
7.6. Transmitter Spurious Radiated Emissions (18 kHz to 25 GHz)
7.6.7. Spurious Radiated Emissions (Above 1 GHz) Test Results
7.6.7.1. Transmitter Spurious Radiated Emissions

There were measurable no transmitter spurious emissions other than the emissions tabled in section 7.6.6.2.

7.6.7.2. Transmitter Spurious Radiated Emissions (Harmonic Meas.)

Freq. (MHz)	Field Strength ¹ (dBμV/m)		Limit (dBμV/m)		Margin (dBμV/m)		Antenna Polarity (H/V)	Result
	Peak	Average	Peak	Average	Peak	Average		
4810	50.05	39.40	74.00	54.00	-23.95	-14.60	V	Compliant
4880	49.96	40.68	74.00	54.00	-24.04	-13.32	V	Compliant
4960	52.63	41.70	74.00	54.00	-21.37	-12.30	H	Compliant
7215	53.85	41.07	74.00	54.00	-20.15	-12.93	H	Compliant
7320	54.00	40.73	74.00	54.00	-20.00	-13.27	V	Compliant
7440	54.00	41.17	74.00	54.00	-20.00	-12.83	V	Compliant
9620	53.18	42.57	74.00	54.00	-20.82	-11.43	H	Compliant
9760	57.49	43.93	74.00	54.00	-16.51	-10.07	H	Compliant
9920	57.85	45.07	74.00	54.00	-16.15	-8.93	H	Compliant
12025	58.72	46.33	74.00	54.00	-15.28	-7.67	H	Compliant
12200	58.18	45.35	74.00	54.00	-15.82	-8.65	V	Compliant
12400	59.23	46.04	74.00	54.00	-14.77	-7.96	H	Compliant
14430	61.61	49.24	74.00	54.00	-12.39	-4.76	H	Compliant
14640	61.83	49.11	74.00	54.00	-12.17	-4.89	H	Compliant
14880	60.98	48.27	74.00	54.00	-13.02	-5.73	H	Compliant
16835	55.34	43.04	74.00	54.00	-18.66	-10.96	H	Compliant
17080	56.77	44.22	74.00	54.00	-17.23	-9.78	H	Compliant
17360	58.69	46.36	74.00	54.00	-15.31	-7.64	V	Compliant
19240	55.60	43.69	74.00	54.00	-18.40	-10.31	H	Compliant
19520	58.02	44.99	74.00	54.00	-15.98	-9.01	H	Compliant
19840	56.01	43.06	74.00	54.00	-17.99	-10.94	V	Compliant
21645	56.16	43.76	74.00	54.00	-17.84	-10.24	V	Compliant
21960	57.64	47.71	74.00	54.00	-16.36	-6.29	H	Compliant
22320	55.31	42.82	74.00	54.00	-18.69	-11.18	V	Compliant
24050	57.84	44.91	74.00	54.00	-16.16	-9.09	V	Compliant
24400	61.90	49.45	74.00	54.00	-12.10	-4.55	H	Compliant
24800	51.40	38.81	74.00	54.00	-22.60	-15.19	H	Compliant

¹ All correction factors are stored in the spectrum analyzer and applied to this column entry.

7. Measurement Data (continued)

7.7. Receiver Spurious Emissions (RSS 213 6.8, RSS-Gen 4.10 & 7.2.3.1)

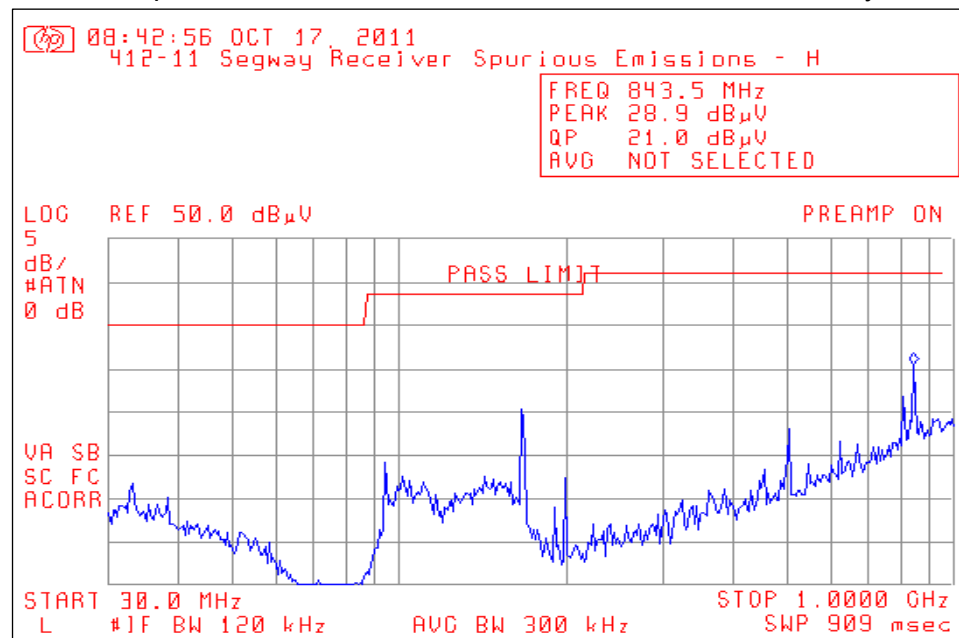
Requirement: RSS 213 6.8 - Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

RSS-Gen 4.10 – Radiated emission measurements are to be performed using a calibrated open-area test site. As an alternative, the conducted measurement method may be used when the antenna is detachable. In such a case, the receiver spurious signal may be measured at the antenna port. The limits for this measurement were taken from section 7.2.3.1:

2 η W	30 MHz to 1 GHz
5 η W	above 1 GHz

Status: The device under test requires that at least one channel is configured to transmit. Channel 24 (midpoint channel) was enabled.

7.7.1. Receiver Spurious Emissions, 30 MHz to 1 GHz Horizontal Polarity



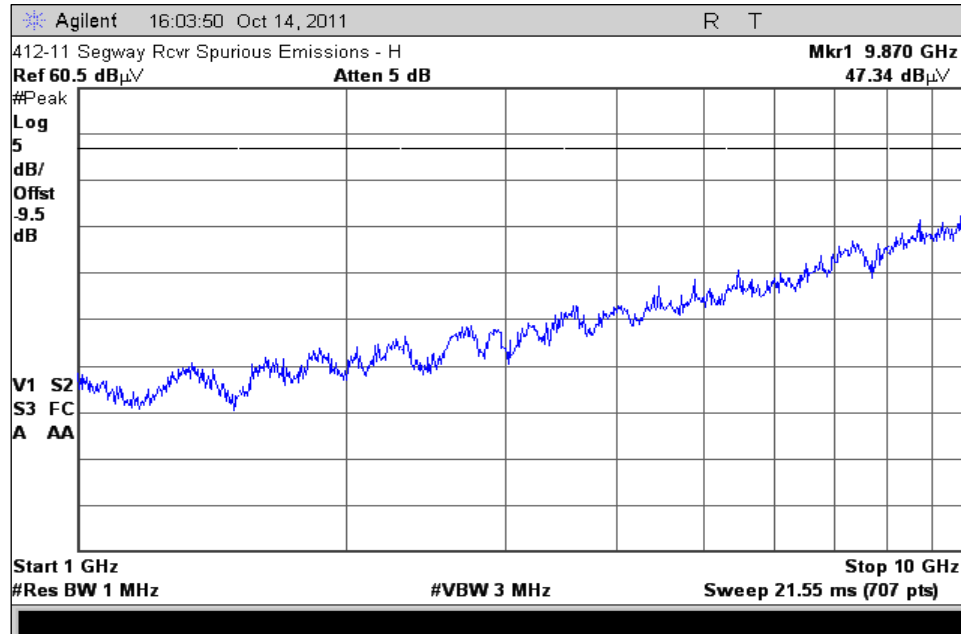
Test Number: 412-11R2

Issue Date: 04/17/2012

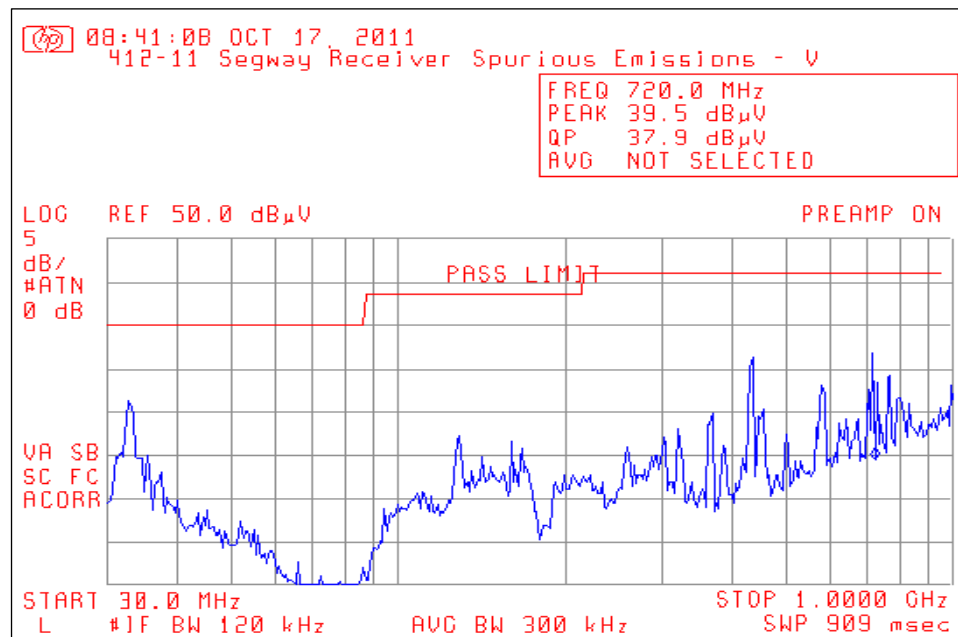
7. Measurement Data (continued)

7.7. Receiver Spurious Emissions (RSS 213 6.8, RSS-Gen 4.10 & 7.2.3.1)

7.7.2. Receiver Spurious Emissions, Above 1 GHz Horizontal Polarity



7.7.3. Receiver Spurious Emissions, 30 MHz to 1 GHz Vertical Polarity



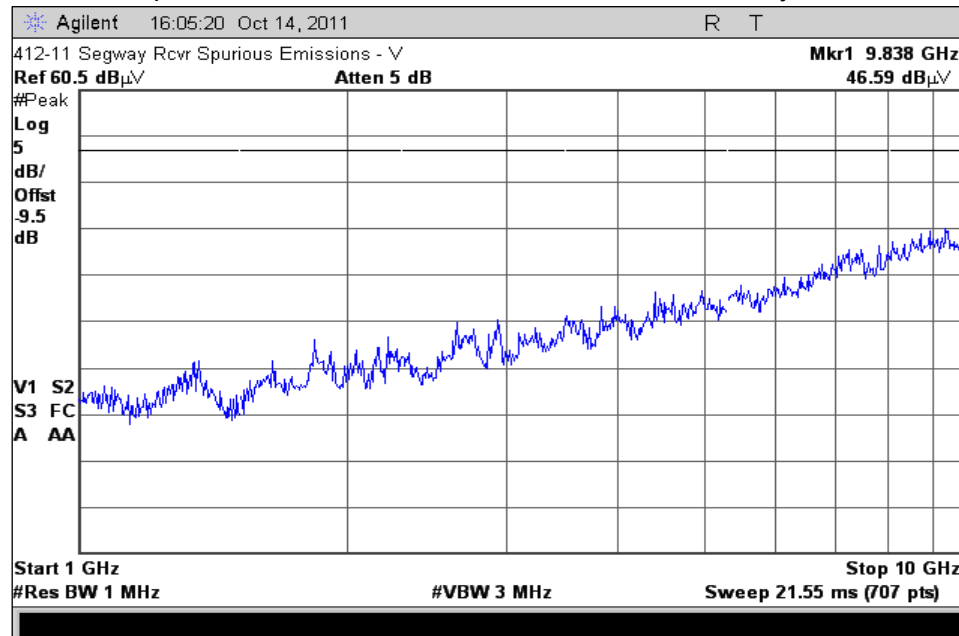
Test Number: 412-11R2

Issue Date: 04/17/2012

7. Measurement Data (continued)

7.7. Receiver Spurious Emissions (RSS 213 6.8, RSS-Gen 4.10 & 7.2.3.1) (continued)

7.7.4. Receiver Spurious Emissions, Above 1 GHz Vertical Polarity



7. Measurement Data (continued)

7.8. Band Edge Measurements

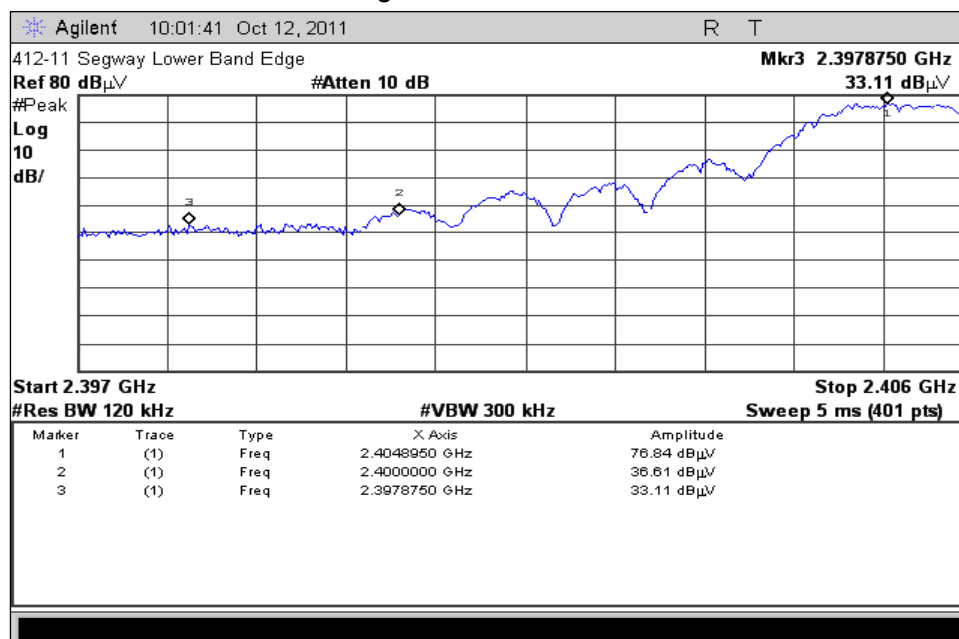
Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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)).

Test Note: For the upper band edge measurement, the procedure detailed in the FCC Office of Engineering and Technology (FCC OET) Publication Number 913591 was used in determining the measurement results.

Measurement Results – Lower Band Edge

Lowest Channel	Field Strength (dB μ V/m)		Band Edge Frequency	Field Strength (dB μ V/m)		Limit	Margin (dB)	Result
(MHz)	Peak	Average	(MHz)	Peak	Average			
2405	76.84	---	2400	36.61	---	>20 dB	-40.23	Compliant

Measurement Plot – Lower Band Edge



7. Measurement Data (continued)

7.8. Band Edge Measurements (continued)

Measurement Results – Upper Band Edge

FCC OET Publication Number KDB 913591 Calculator

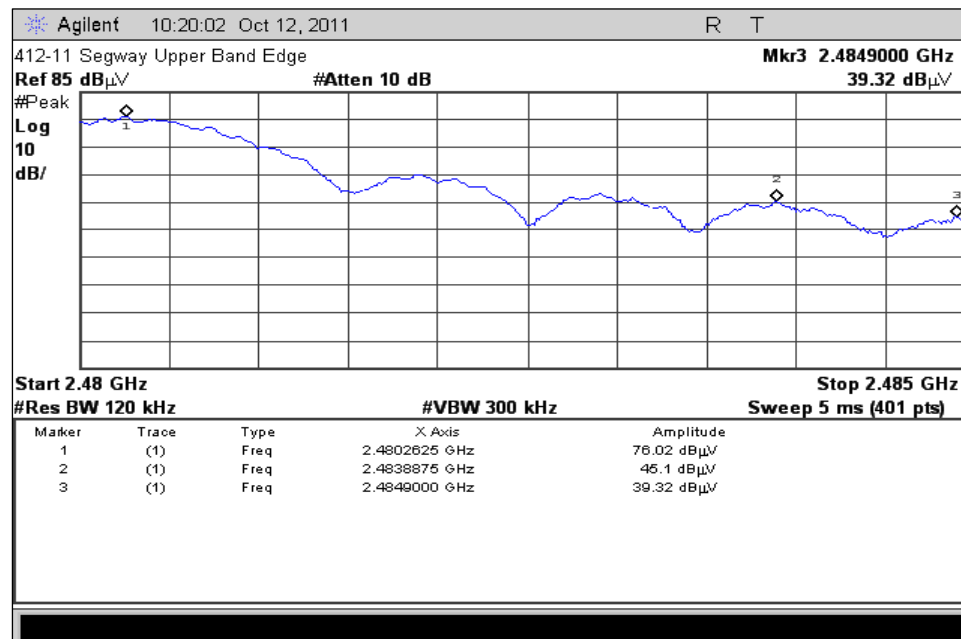
Highest Channel Frequency (MHz)	Highest Channel Field Strength (dBμV/m)		Band Edge & W/C Out of Band Calculator		Corrected Band Edge & Worst Case Out of Band (dBμV/m)	
	Peak ¹	Average ²	Freq. (MHz)	100 kHz BW Offset (dB) ³	Peak	Average
2480	80.93	79.51	2483.500	30.92	50.01	48.59
			2484.900	36.70	44.23	42.81

Notes: 1 – Peak value from plot in 7.4.3
2 – Average value measured in real time
3 – Delta values from plot in 7.8.1
Delta values are subtracted from peak & average values

Corrected Measurement Results (Delta values vs limits)

	Freq. (MHz)	Field Strength (dBμV/m)		Limit (dBμV/m)		Margin (dBμV/m)		Result
		Peak	Average	Peak	Average	Peak	Average	
Upper Band Edge	2483.5	50.01	48.59	74	54	-23.99	-5.41	Compliant
Worst Case Out of Band	2483.532	48.64	42.81	74	54	-25.36	-11.19	Compliant

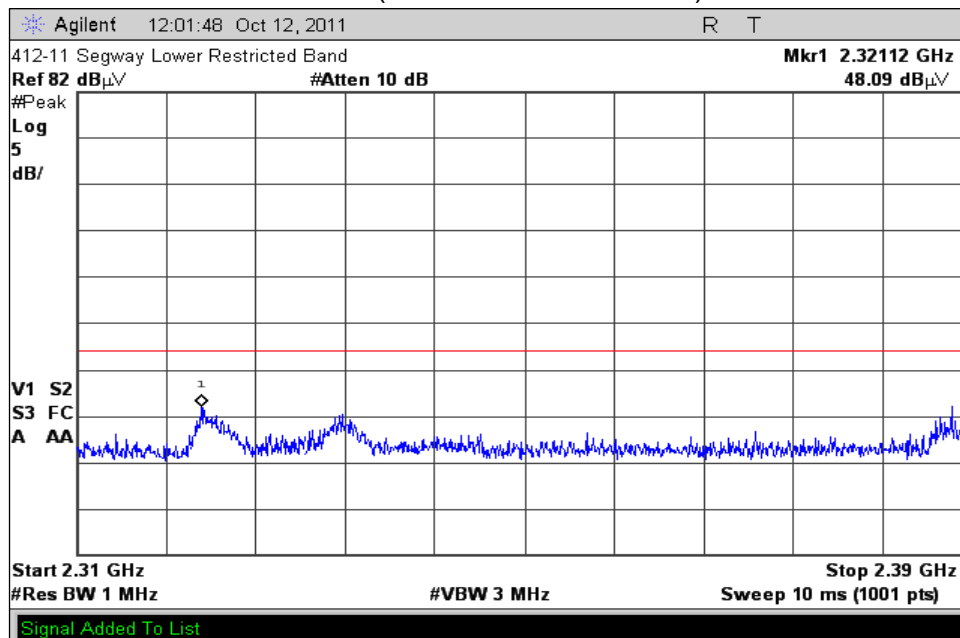
7.8.1. Measurement Plot – Upper Band Edge



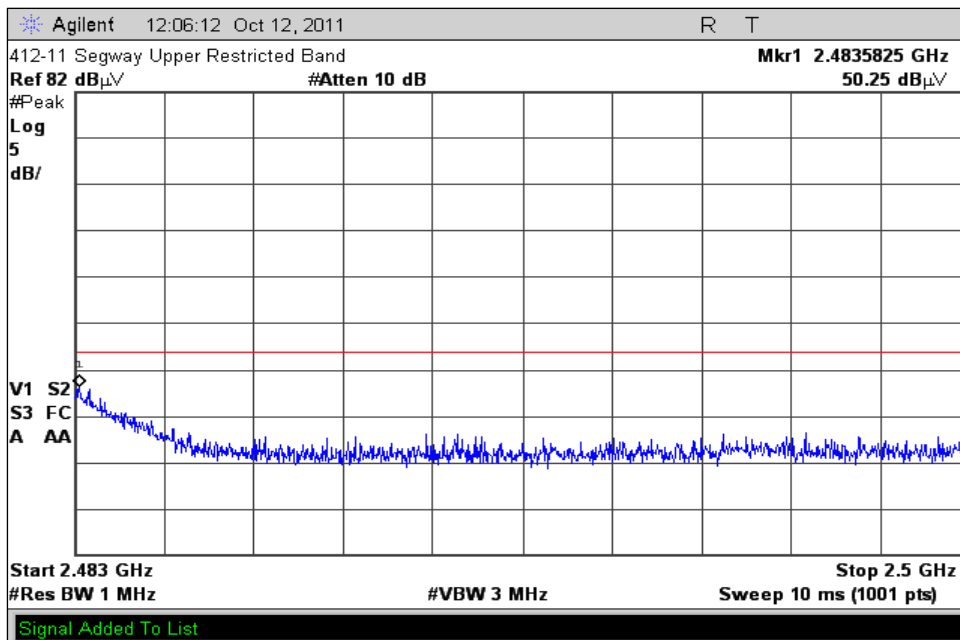
7. Measurement Data

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

7.8.4. Lower Restricted Band (2310 MHz to 2390 MHz)



7.8.5. Upper Restricted Band (2483.5 MHz to 2500 MHz)



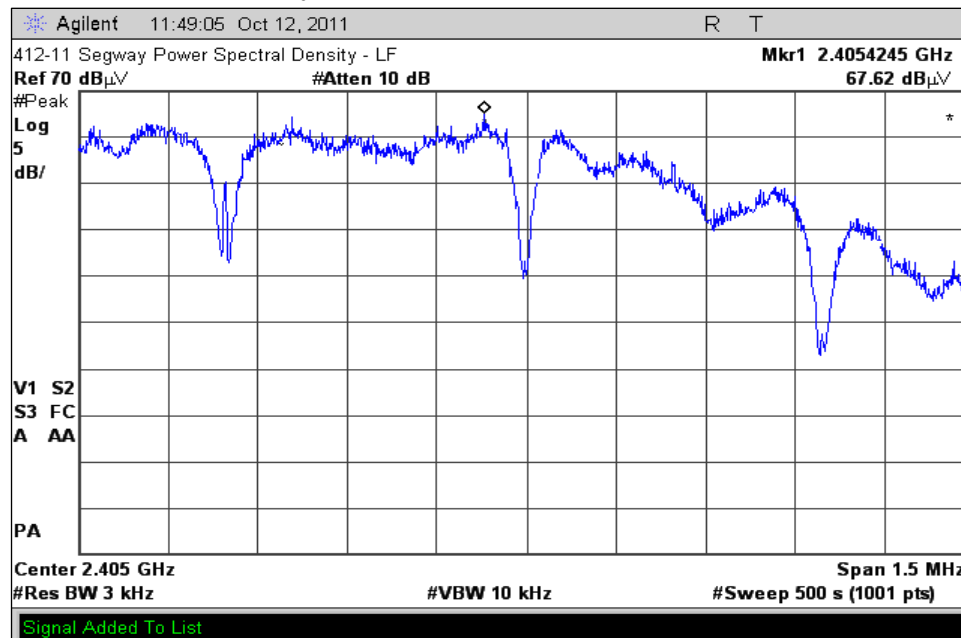
7. Measurement Data (continued)

7.9. Power Spectral Density (15.247(e))

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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Channel	Channel Frequency (MHz)	Measured Frequency (MHz)	PSD Value Radiated (dBμV/m)	Power Spectral Density (dBm)	Limit (dBm)	Result
Low	2405	2405.4245	67.62	-29.749	8	Compliant
Middle	2440	2439.8770	66.17	-31.199	8	Compliant
High	2480	2480.4250	66.58	-30.789	8	Compliant

7.9.1. Power Spectral Density Measurement Plot, Low Channel – 11



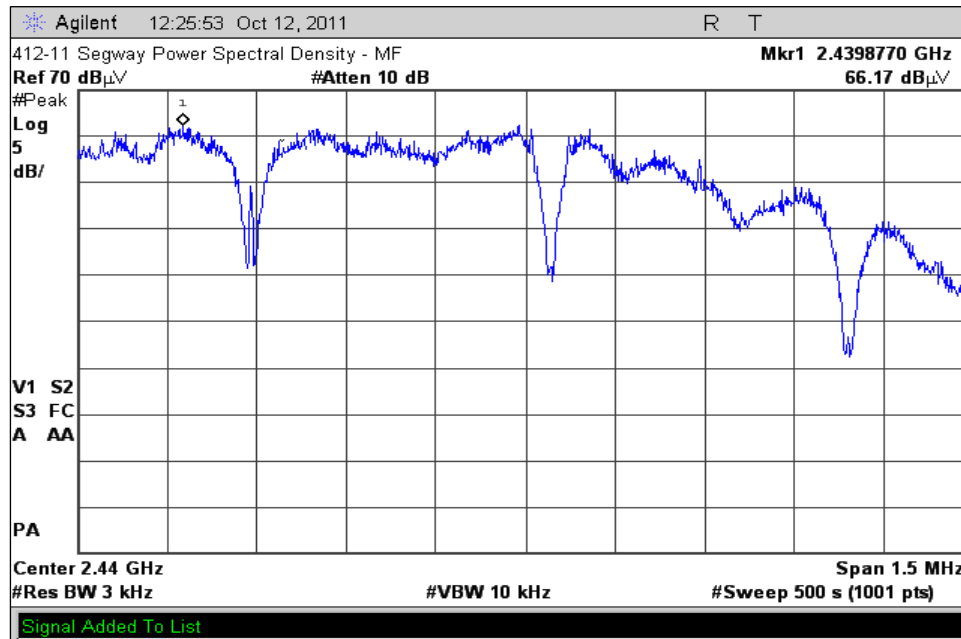
Test Number: 412-11R2

Issue Date: 04/17/2012

7. Measurement Data (continued)

7.9. Power Spectral Density (15.247(e))

7.9.2. Power Spectral Density Measurement Plot, Mid Channel – 18



7.9.3. Power Spectral Density Measurement Plot, High Channel – 26



7. Measurement Data (continued)
**7.10. Public Exposure to Radio Frequency Energy Levels (15.247(i) (1.1307 (b)(1))
RSS-GEN 5.5, RSS 102**

Channel Frequency	MPE Distance (cm)	DUT Output Power (dBm)	DUT Antenna Gain (dBi)	Power Density		Limit (mW/cm ²)	Result
				(mW/cm ²)	(W/m ²)		
				(4)		(5)	
2405	20	-21.94	2.1	0.00000208	0.00002083	1	Compliant
2440	20	-22.72	2.1	0.00000174	0.00001741	1	Compliant
2480	20	-22.94	2.1	0.00000165	0.00001655	1	Compliant

$$PD = \frac{OP + AG}{(4 \times \pi \times d^2)}$$

- PD = Power Density (mW/cm²)
- OP = DUT Output Power (dBm)
- AG = DUT Antenna Gain (dBi)
- d = MPE Distance (cm)

1. Reference CFR 2.1093(b): For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 2.5 centimeters of the body of the user.
2. Section 7.4 of this test report.
3. Data supplied by the client. Antenna specification data of worst case antenna used by the DUT.
4. Power density is calculated from field strength measurement and antenna gain.
5. Reference CFR 1.1310, Table 1: Limits for Maximum Permissible Exposure (MPE), Section (B): Limits for General Population/Uncontrolled Exposure.

8. Test Setup Photographs

8.1. Radiated Emissions Front:



8. Test Setup Photographs

8.2. Radiated Emissions Rear:



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. A description of the test sites is on file with the FCC (registration number **96392**) and Industry Canada (file number **IC 3023A-1**).

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 meter W x 1.5 meter L x 2.0 meter H, floor standing or table top.