FCC Part 15.247 & IC RSS-210 Certification Report

Test Lab:	Applicant:
Rhein Tech Laboratories, Inc. Tel: 703-689-0368 360 Herndon Parkway Fax: 703-689-2056 Suite 1400 www.rheintech.com Herndon, VA 20170 E-Mail: ATCBINFO@rheintech.com	Innovative Wireless Technologies, Inc. (IWT) 1047 Vista Park Dr., Suite A Tel: 434-316-5230 x14 Forest, VA 24551 Fax: 434-316-5232 Contact: Gary Raulerson, Jr.

FCC ID **IC**	SP8-FAP4100-010 9568A-FAP4100010	**Test Report Date**	April 22, 2012
Platform	N/A	**RTL Work Order Number**	2012044
Model	FAP4100-010	**RTL Quote Number**	QRTL11-260

American National Standard Institute	ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices
FCC Classification	DSS – Part 15 Spread Spectrum Transmitter
FCC Rule Part(s)	FCC Rules Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System (10-01-11)
IC Rule Part(s)	RSS-210 Issue 8: Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment RSS-Gen Issue 3: General Requirements and Information for the Certification of Radio Apparatus

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
902.47 – 926.97	0.646	N/A	548KFXD

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, IC RSS-210, IC RSS-Gen and ANSI C63.10.

Signature: 

Date: April 22, 2012

Typed/Printed Name: Desmond A. Fraser

Position: President

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.
- RSS-210 Issue 8: Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
- RSS-Gen Issue 3: General Requirements and Information for the Certification of Radio Apparatus

1.2 Description of EUT

Equipment Under Test	Unattended Ground Sensor
Model	FAP4100-010
Power Supply	2 12V non-rechargeable lithium manganese dioxide batteries
Modulation Type	FHSS
Frequency Range	902.47 – 926.97 MHz
Antenna Connector Type	Reverse Polarity TNC
Antenna Type & Gain	Omni 2.9 dBi
Weight	4.93 kg with two internal batteries

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing.

1.4 Related Submittal(s)/Grant(s)

This is an original application for certification for Innovative Wireless Technologies, Inc. Unattended Ground Sensor, Model FAP4100-010, FCC ID: SP8-FAP4100-010, IC: 9568A-FAP4100010.

1.5 Modifications

No modifications were required for compliance.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested:

Table 2-1: Frequencies Tested

Channel	Frequency (MHz)
Low (00)	902.47
Mid (25)	914.97
High (49)	926.97

2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.247), IC RSS-210/RSS-Gen

FCC Reference	IC Reference	C63.10 Procedure	Test	Pass/Fail or N/A
FCC 15.207	RSS-Gen 7.2.4	6.2	AC Power Conducted Emissions	N/A
FCC 15.209	RSS-Gen 7.2.5	6.5, 6.6	Radiated Emissions	Pass
FCC 15.247(b)	RSS-210 A8.4	6.10	Maximum Peak Power Output	Pass
FCC 15.247(d)	RSS-210 A8.5	6.7	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(d)	RSS-210 A8.5	6.9.2	Band Edge	Pass
FCC 15.247(a)(1)	RSS-210 A8.1(a)	6.9.1	20 dB Bandwidth	Pass
FCC 15.247(a)(a)	RSS-210 A8.1(c)	7.7	hopping characteristics	Pass

2.4 Test System Details

The test samples were received on February 6, 2012. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

Table 2-3: Equipment Under Test

Part	Manufacturer	Model #	Serial Number	FCC ID	RTL Bar Code
Unattended Ground Sensor	Innovative Wireless Technologies, Inc.	FAP4100-010	N11320015	SP8-FAP4100-010	20542
Unattended Ground Sensor	Innovative Wireless Technologies, Inc.	FAP4100-010	N11320011	SP8-FAP4100-010	20543
2-Ground sensors and cable	Innovative Wireless Technologies, Inc.	N/A	N/A	N/A	20646
Antenna	Innovative Wireless Technologies, Inc.	RAT1000-006R4A	N/A	N/A	20647
Antenna	Innovative Wireless Technologies, Inc.	RAT1000-006R4A	N/A	N/A	20648

2.5 Configuration of Tested System

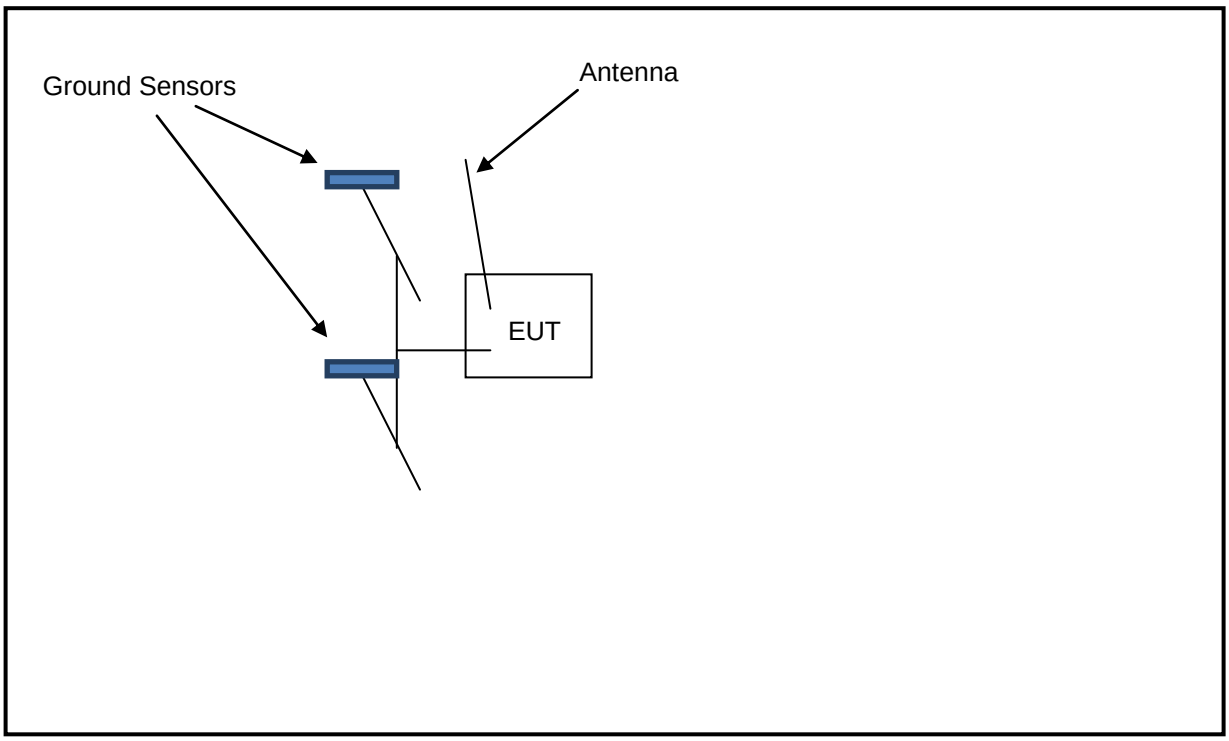


Figure 2-1: Configuration of System Under Test

3 Peak Output Power – FCC 15.247(b)(2); IC RSS-Gen

3.1 Power Output Test Procedure

A conducted power measurement of the EUT was taken using an Agilent power meter and sensor.

Procedure: C63.10-2009 6.10

Table 3-1: Power Output Test Equipment

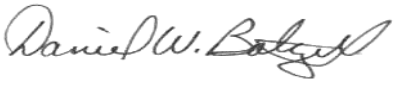
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	1/30/13
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	2/5/13

3.2 Power Output Test Data

Table 3-2: Power Output Test Data

Frequency (MHz)	Peak Conducted Power (dBm)
902.47	28.1
914.97	28.1
926.97	28.0

Test Personnel:



Daniel W. Baltzell		February 7, 2012
EMC Test Engineer	Signature	Date of Test

4 Band Edge Compliance of RF Conducted Emissions – FCC 15.247(d); IC RSS-Gen

4.1 Band Edge Test Procedure

Procedure: C63.10-2009 6.9.2, 6.9.3

The EUT was connected to the spectrum analyzer through suitable attenuation. The span was set wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation. The spectrum analyzer was set to the following:

RBW > = 1% of the span
VBW > = RBW
Sweep = auto
Detector function = peak
Trace = max hold

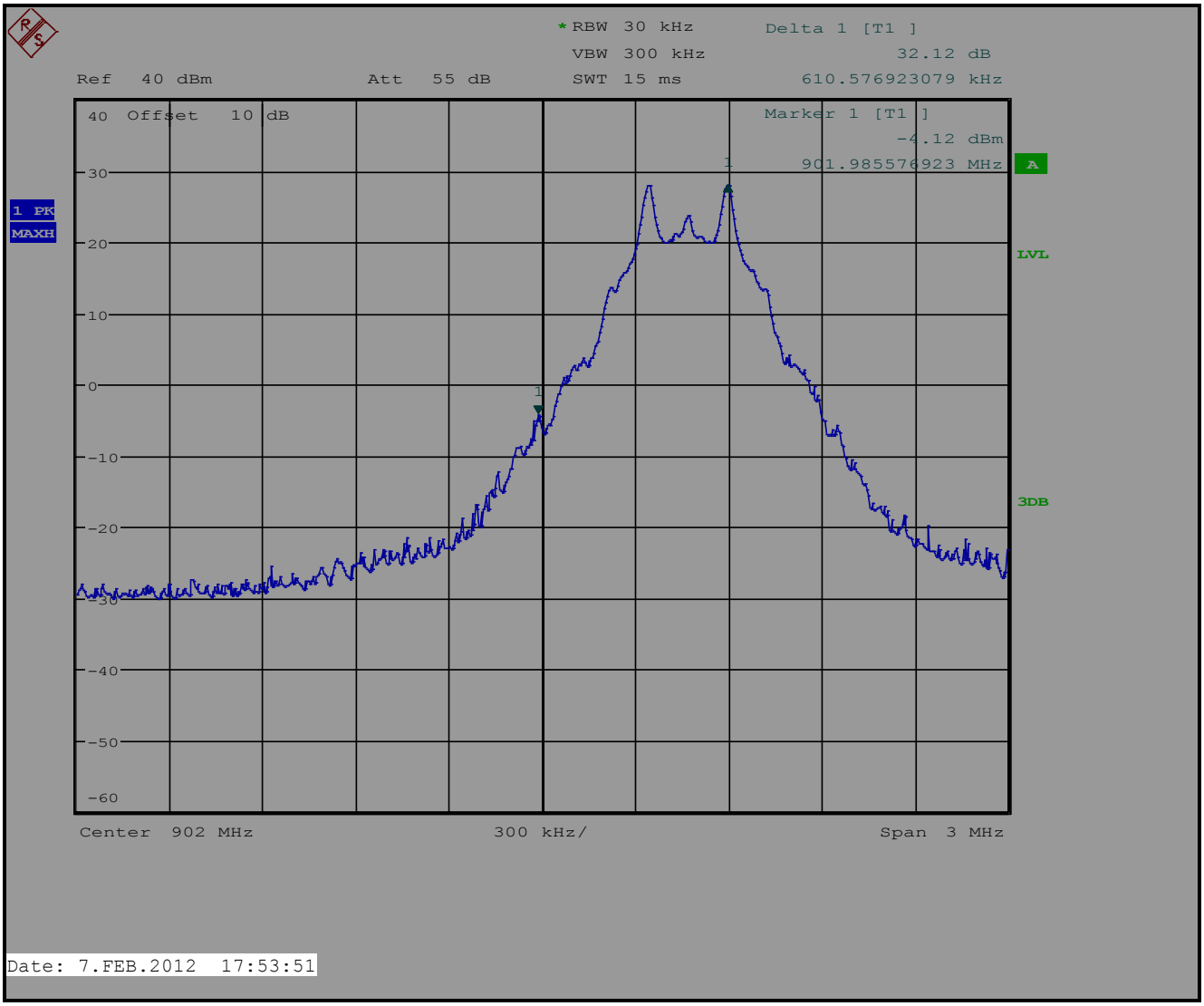
The trace was allowed to stabilize. The marker was set on the emission at the band edge. The marker-delta was used to show the delta between the maximum in-band emission and the emission at the band edge, and was compared to the 20 dBc requirement of 15.247(d) (when using peak emissions).

Table 4-1: Band Edge Test Equipment

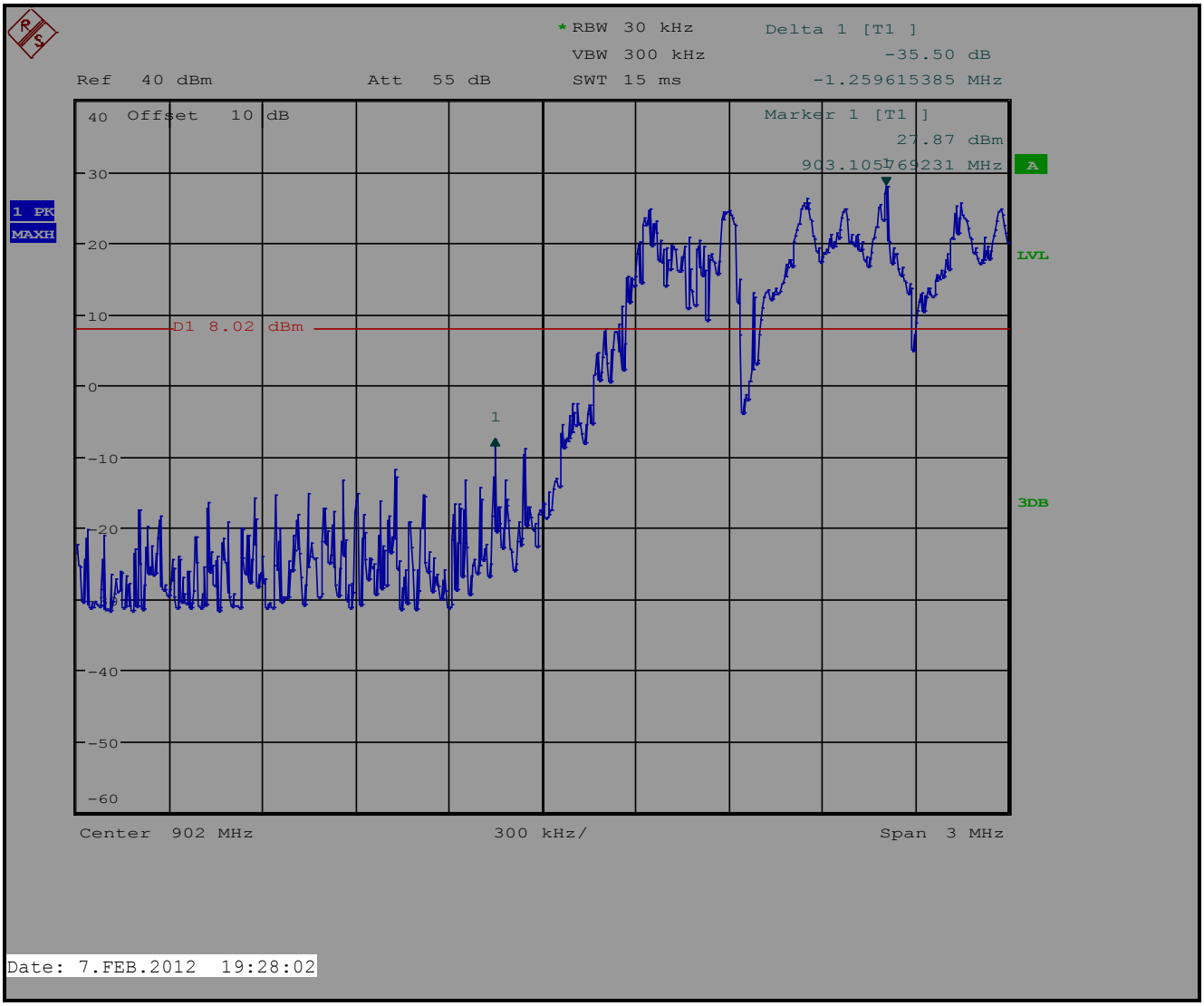
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer	200106	1/19/13
900948	Weinschel Corporation	47-10-43	Attenuator DC-18 GHz 10 dB 50W	BH1487	2/14/12

4.2 Test Results

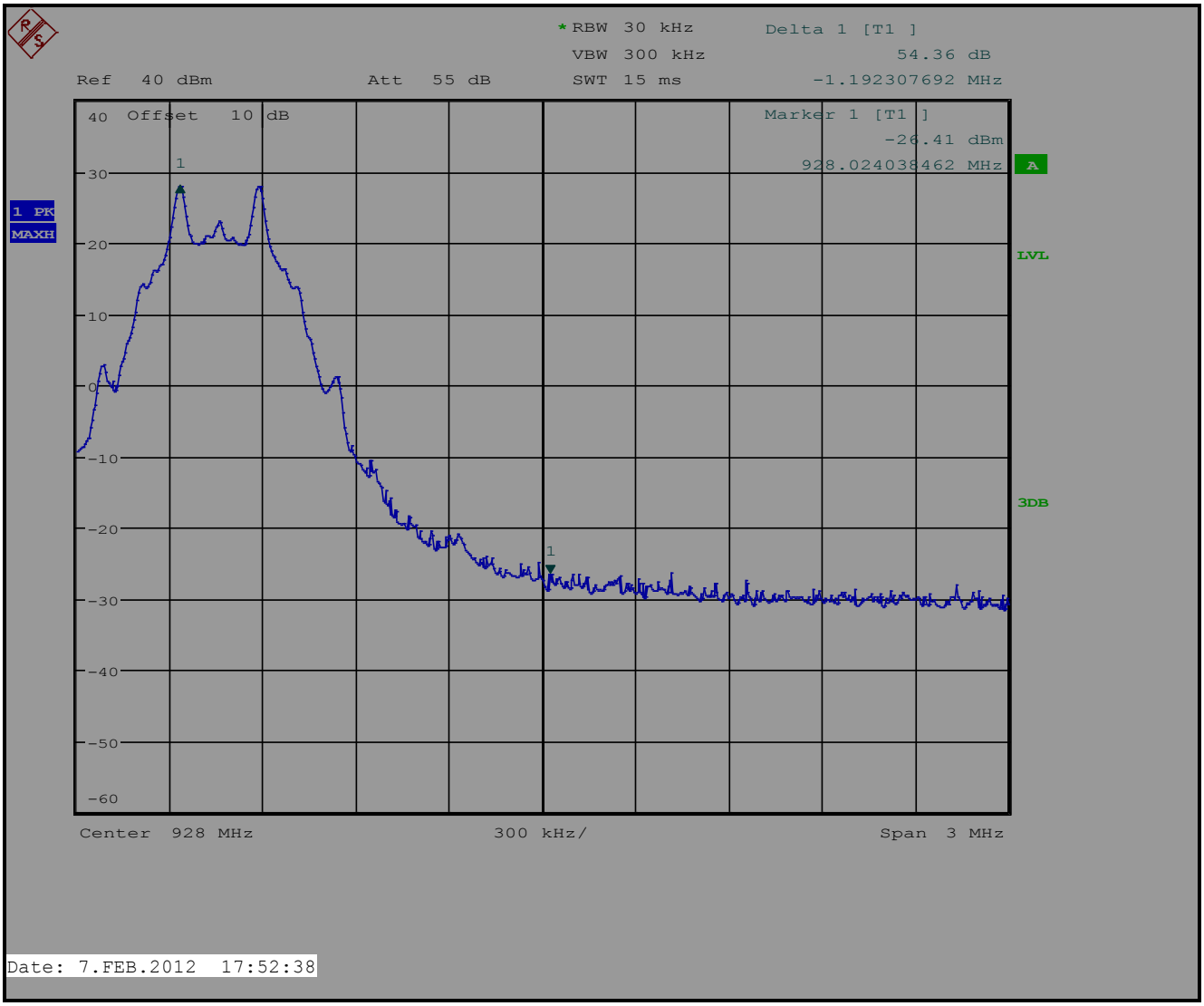
Plot 4-1: Lower Band Edge (902 MHz Band Edge, 902.47 MHz Carrier)



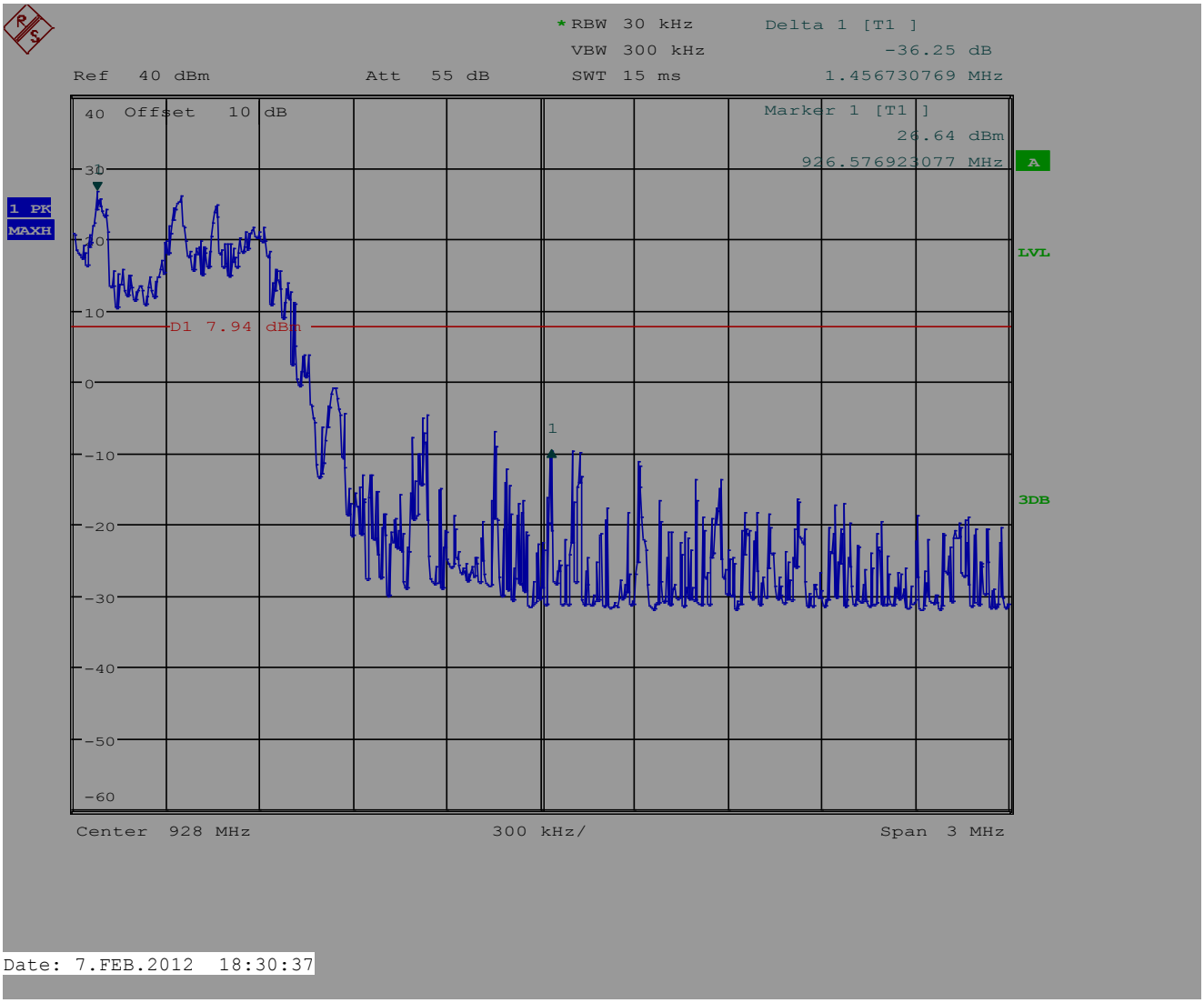
Plot 4-2: Lower Band Edge (Hopping)



Plot 4-3: Upper Band Edge (928 MHz Band Edge, 926.97 MHz Carrier)



Plot 4-4: Upper Band Edge (Hopping)



Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	February 7, 2012
EMC Test Engineer	Signature	Date of Test

5 Antenna Conducted Spurious Emissions – FCC 15.247(d); IC RSS-210 A8.5

5.1 Antenna Conducted Spurious Emissions Test Procedures

Procedure: C63.10-2009 6.7

Antenna spurious emissions per FCC 15.247(d) were measured from the EUT antenna port using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. The modulated carrier was identified at the following frequencies: 903.0 MHz, 915 MHz and 927.0 MHz. The carrier to the 10th harmonic of the carrier frequency was investigated.

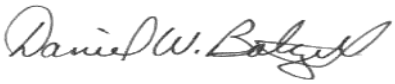
5.2 Antenna Conducted Spurious Emissions Test Results

All spurious emissions were greater than 20 dB below the limit (note that we are reporting power as peak). Per FCC 15.31(o), no data is being reported.

Table 5-1: Antenna Conducted Spurious Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer	200106	1/19/13
900948	Weinschel Corporation	47-10-43	Attenuator DC-18 GHz 10 dB 50W	BH1487	2/14/12

Test Personnel:

Daniel W. Baltzell		February 8, 2012
EMC Test Engineer	Signature	Date of Test

6 20 dB Bandwidth – FCC §15.247(a)(1)(i); IC RSS-210 A8.1(a)

6.1 20 dB Bandwidth Test Procedure

The minimum 20 dB bandwidths were measured using a 50-ohm spectrum analyzer. The carrier was adjusted on the analyzer so that it was displayed entirely on the spectrum analyzer. The sweep time was set to 10 seconds and allowed through several sweeps with the max hold function used in peak detector mode. The resolution bandwidth was set to 100 kHz, and the video bandwidth set at 300 kHz. The minimum 20 dB bandwidths were measured using the spectrum analyzer delta marker set 20 dB down from the peak of the modulated carrier.

Table 6-1: 20 dB Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer	200106	1/19/13
900948	Weinschel Corporation	47-10-43	Attenuator DC-18 GHz 10 dB 50W	BH1487	2/14/12

6.2 20 dB Modulated Bandwidth Test Data

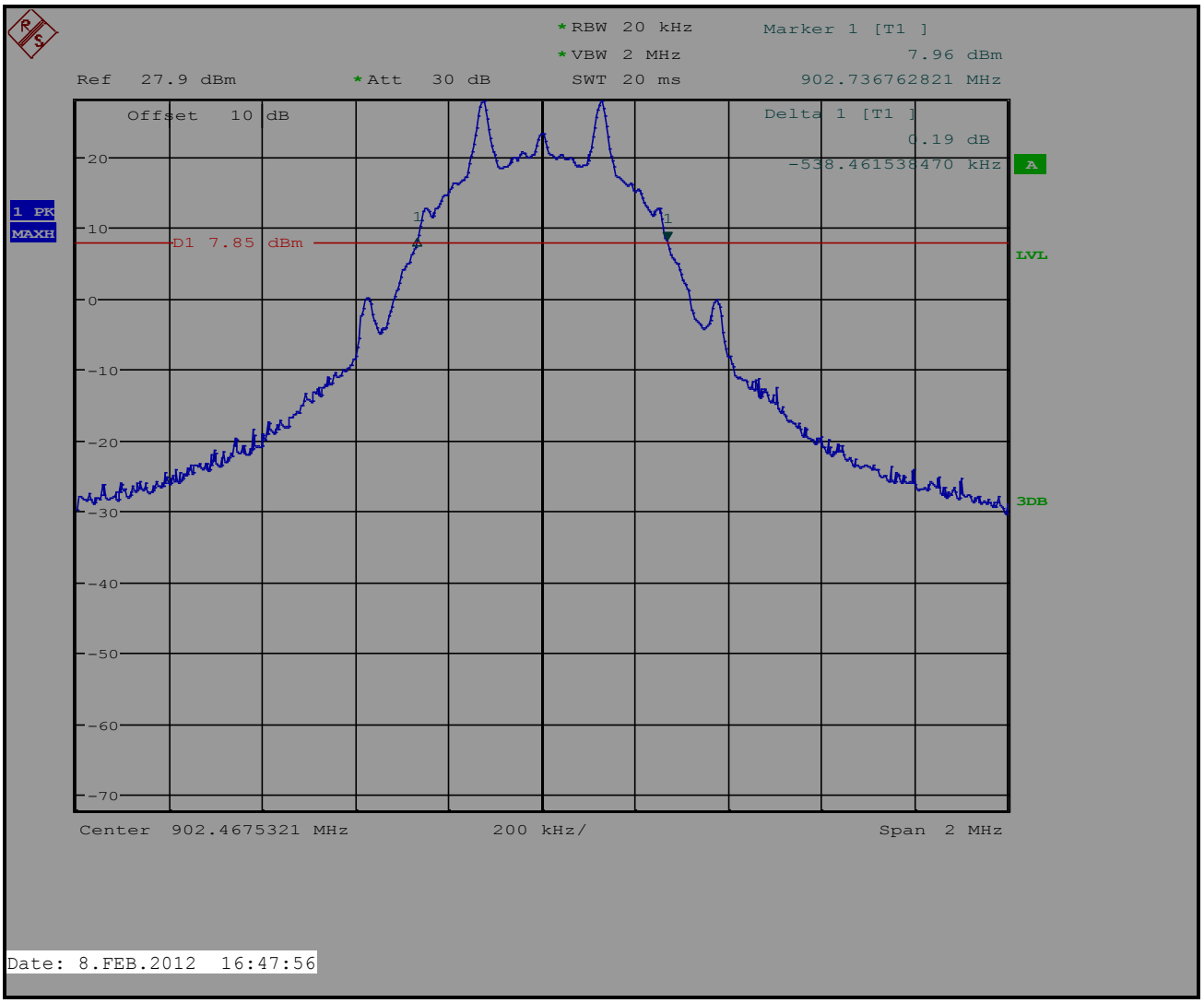
Table 6-2: 20 dB Modulated Bandwidth Test Data

Frequency (MHz)	20 dB Bandwidth (kHz)
902.47	538.5
914.97	535.3
926.97	548.1

6.3 20 dB Bandwidth Plots

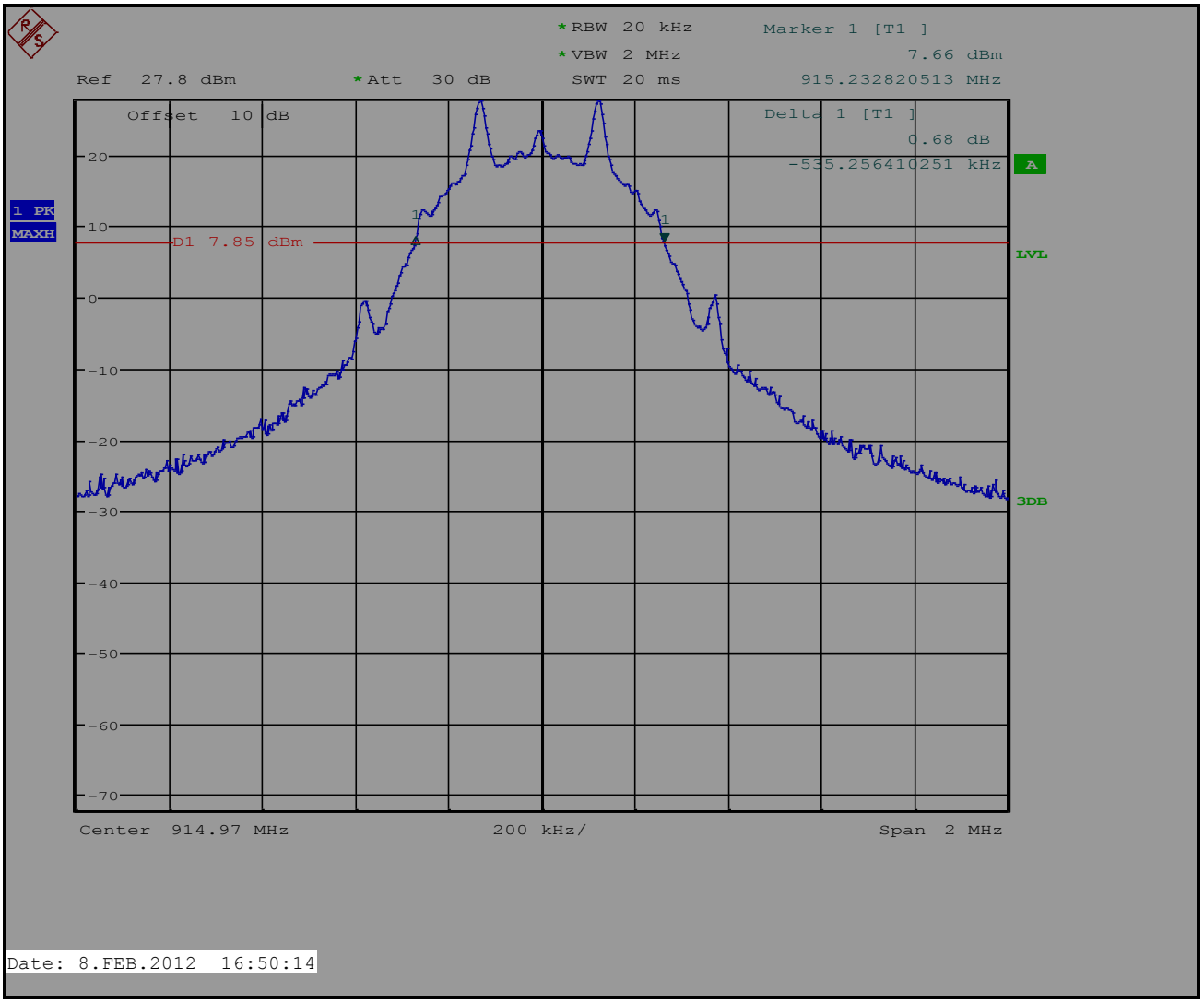
Channel:	00
Channel Frequency (MHz):	902.47
Resolution Bandwidth (kHz):	20
Video Bandwidth (kHz):	2000
Span (MHz):	2

Plot 6-1: 20 dB Bandwidth Channel 00



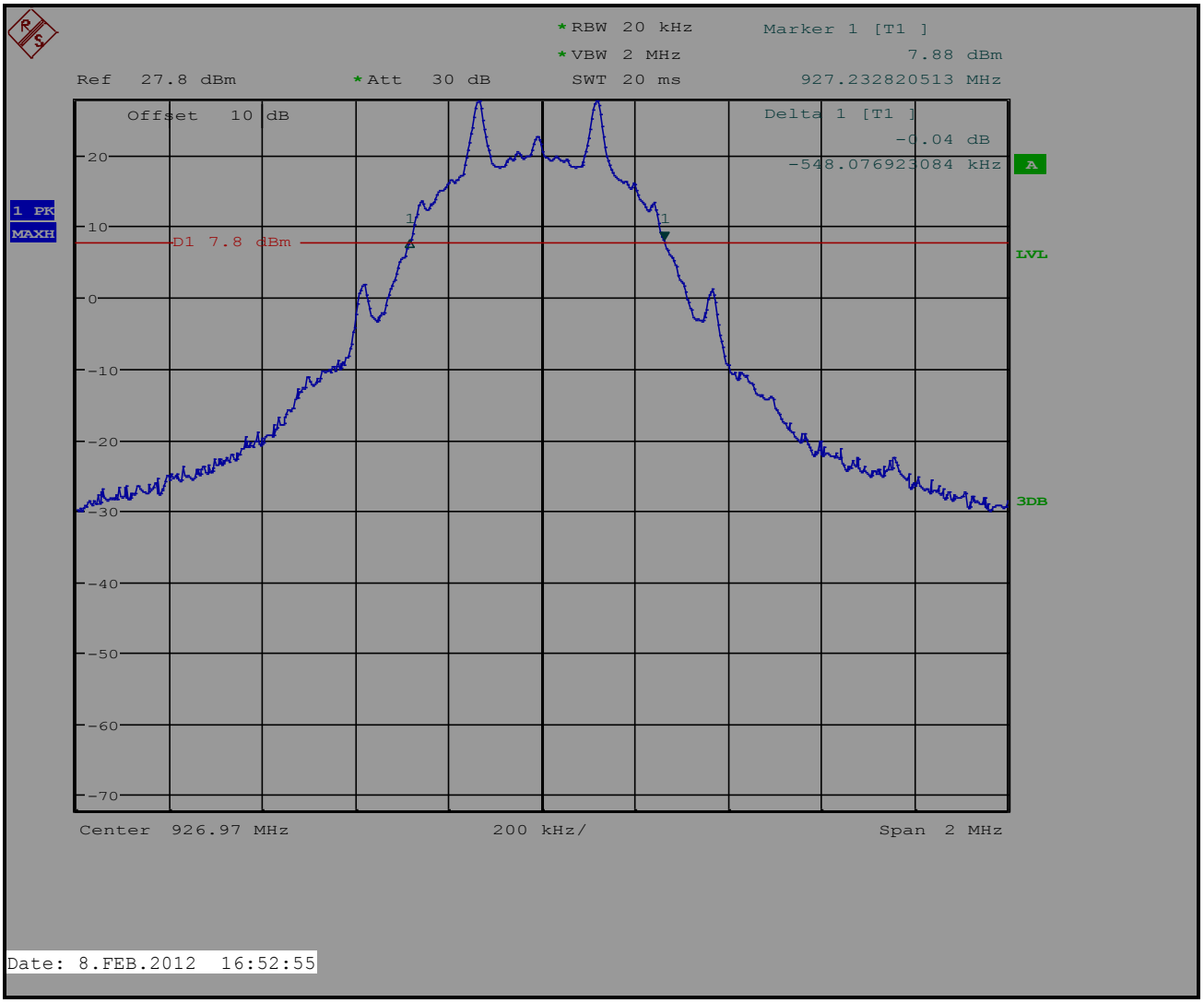
Channel:	25
Channel Frequency (MHz):	914.97
Resolution Bandwidth (kHz):	20
Video Bandwidth (kHz):	2000
Span (MHz):	2

Plot 6-2: 20 dB Bandwidth Channel 25



Channel:	49
Channel Frequency (MHz):	926.97
Resolution Bandwidth (kHz):	20
Video Bandwidth (kHz):	2000
Span (MHz):	2

Plot 6-3: 20 dB Bandwidth Channel 49



Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	February 8, 2012
EMC Test Engineer	Signature	Date of Test

7 Carrier Frequency Separation - §15.247(a)(1); RSS-210 A8.1(b)

7.1 Carrier Frequency Separation Test Procedure

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.

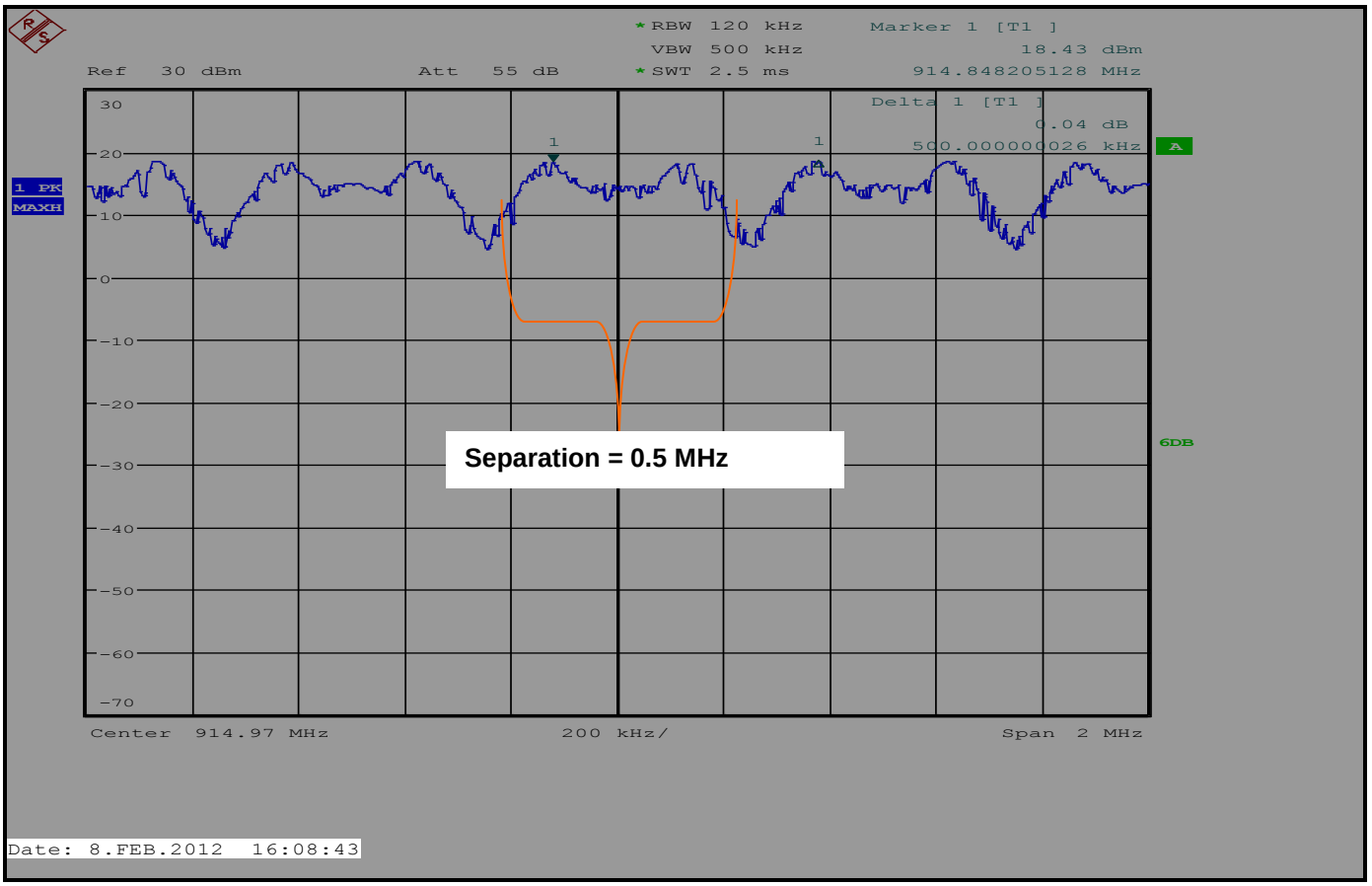
Measured frequency separation = 0.5 MHz

Table 7-1: Carrier Frequency Separation Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer	200106	1/19/13
900948	Weinschel Corporation	47-10-43	Attenuator DC-18 GHz 10 dB 50W	BH1487	2/14/12

7.2 Carrier Frequency Separation Test Data

Plot 7-1: Carrier Frequency Separation



Test Personnel:

Daniel W. Baltzell		February 8, 2012
EMC Test Engineer	Signature	Date of Test

8 Hopping Characteristics – FCC §15.247(a)(1)(i); RSS-210 A8.1(c)

8.1 Hopping Characteristics Test Procedure

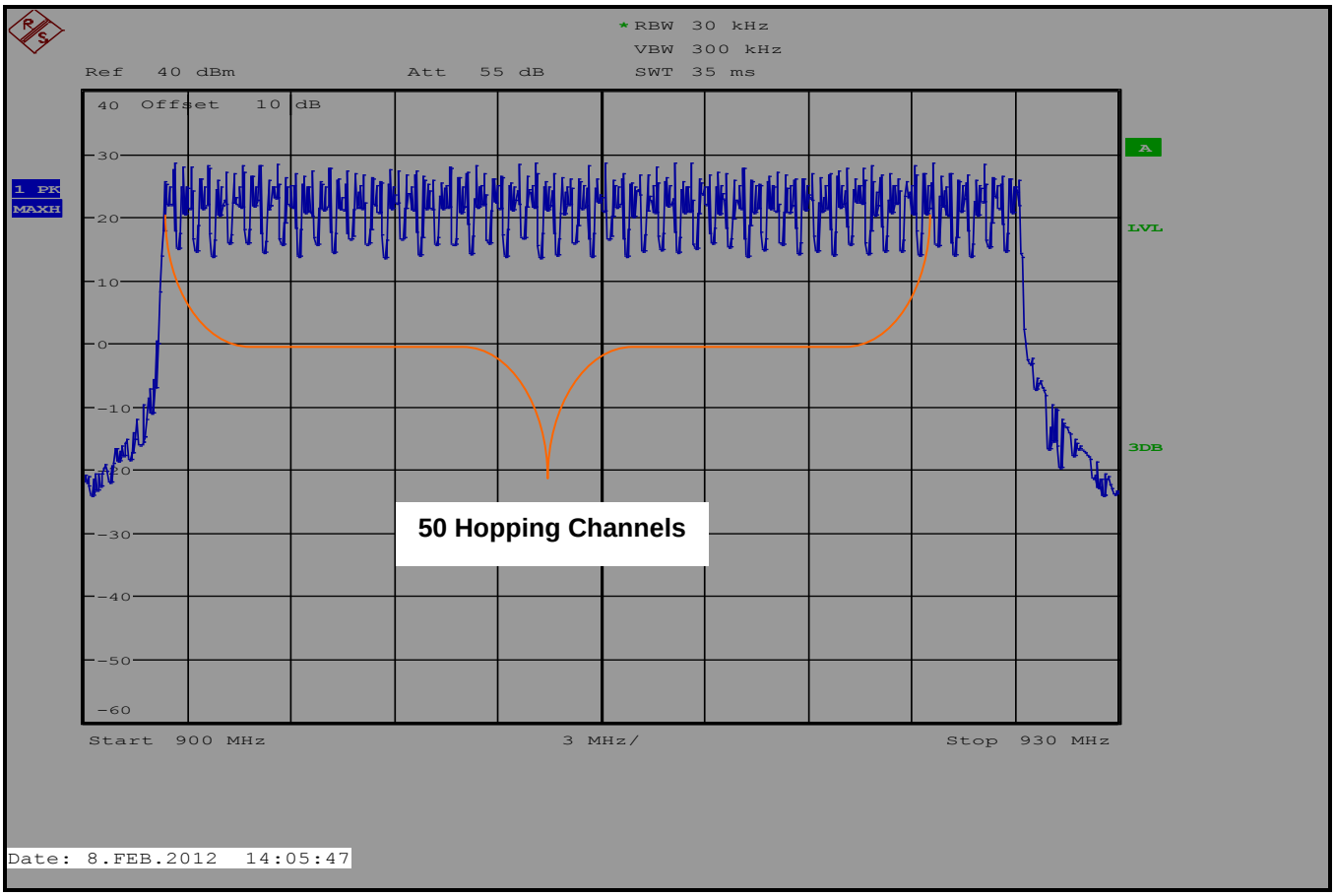
For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

Table 8-1: Hopping Characteristics Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer	200106	1/19/13
900948	Weinschel Corporation	47-10-43	Attenuator DC-18 GHz 10 dB 50W	BH1487	2/14/12

Measured number of hopping frequencies = 50

Plot 8-1: Number of Hopping Frequencies



Test Personnel:

Daniel W. Baltzell		February 8, 2012
EMC Test Engineer	Signature	Date of Test

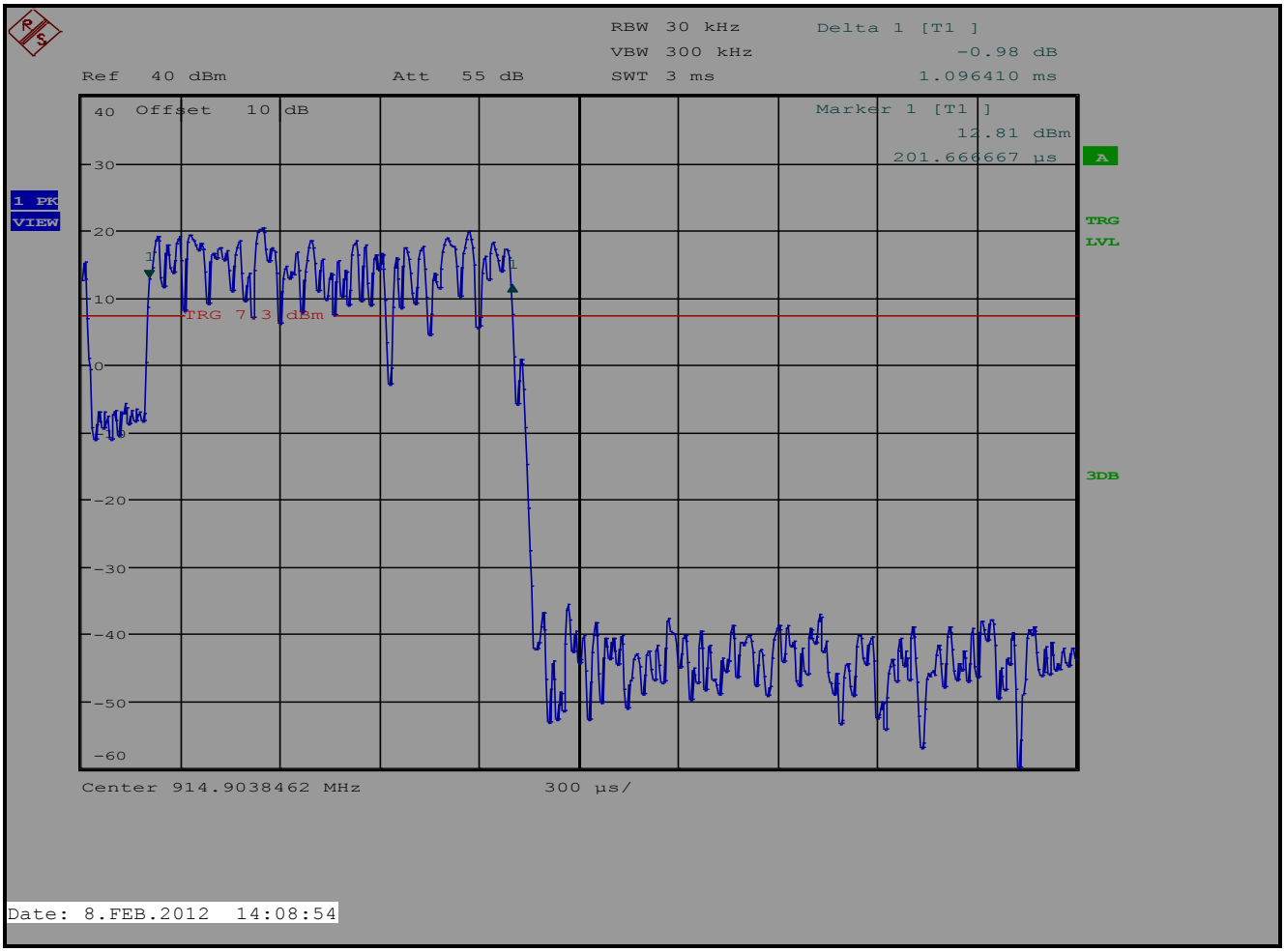
8.2 Average Time of Occupancy

The spectrum analyzer sweep was set to 3 ms, with a zero span and max hold until a pulse from the device under test was captured. A marker delta was used to measure the dwell time for this pulse. The sweep was then set to single sweep for 20 seconds. The number of pulses in 20 s was one. Therefore, the average time of occupancy in twenty seconds is equal to 1.1 ms, which meets the limit as defined by 15.247(a)(1)(iii) of 0.4 seconds.

Table 8-2: Average Time of Occupancy Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer	200106	1/19/13
900948	Weinschel Corporation	47-10-43	Attenuator DC-18 GHz 10 dB 50W	BH1487	2/14/12

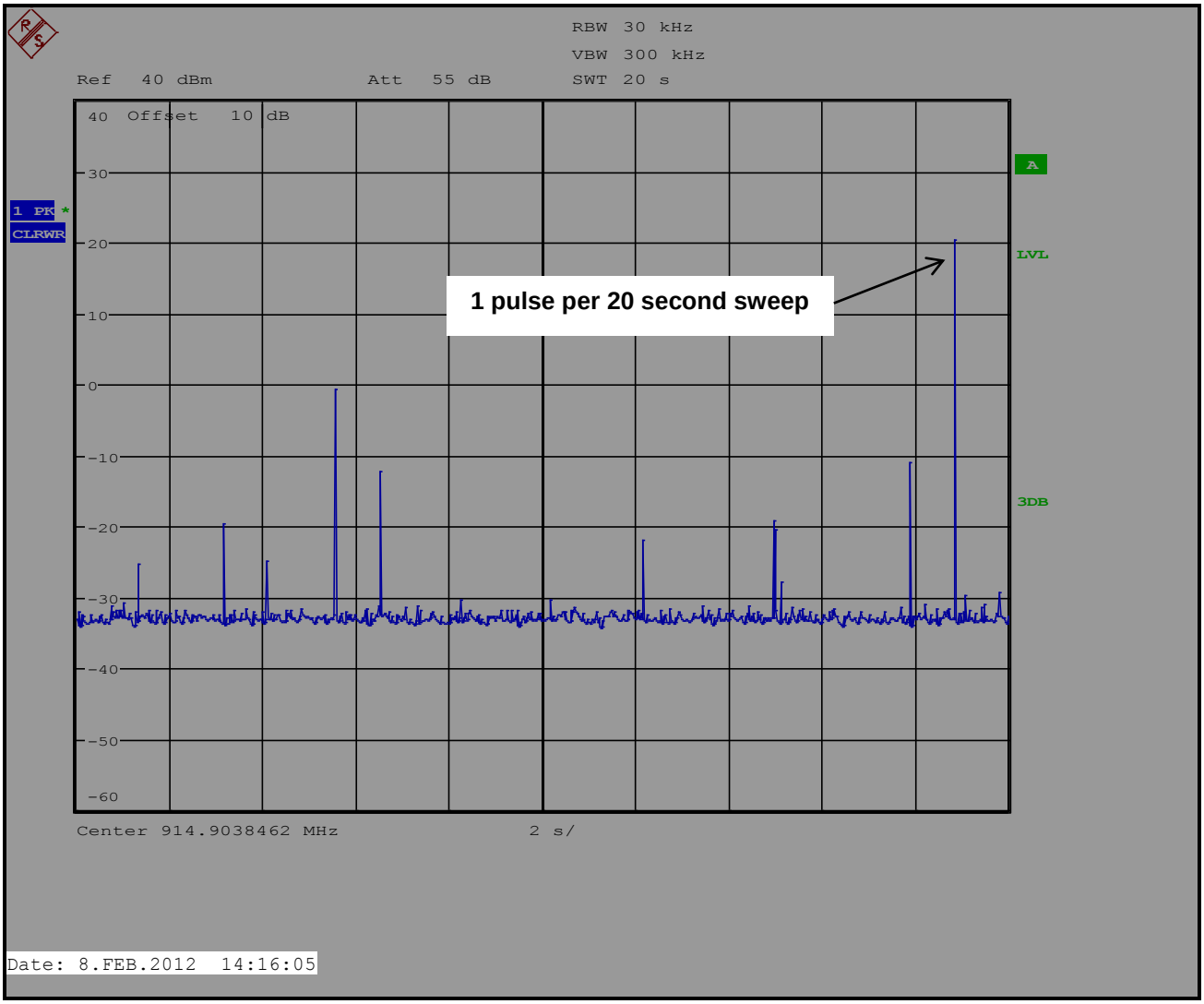
Plot 8-2: Time of Occupancy (Dwell Time)



Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	February 8, 2012
EMC Test Engineer	Signature	Date of Test

Plot 8-3: Time of Occupancy (Dwell Time 20 Second Sweep)



Number of pulses in 20 seconds: 1
Width of pulse = 1.1ms
Total time per 20 seconds = 1.1 ms which is less than 400 ms = PASS

Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	February 8, 2012
EMC Test Engineer	Signature	Date of Test

9 Conducted Emissions Measurement Limits – FCC 15.207; IC RSS-Gen

9.1 Limits of Conducted Emissions Measurement

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

9.2 Conducted Emissions Measurement Test Procedure

Procedure: C63.10-2009 6.2

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50-ohm / 50 micro Henry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. No video filter less than 10 times the resolution bandwidth was used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in this report.

9.3 Conducted Line Emissions Test Data

N/A – the EUT is battery operated.

10 Radiated Emissions – FCC 15.209; IC RSS-210

10.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

10.2 Radiated Emissions Measurement Test Procedure

Procedure: C63.10-2009 6.5, 6.6

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10^{th} harmonic of the highest fundamental transmitter frequency.

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1,000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 10-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901364	MITEQ	JS4-01002600-36-5P	Amplifier 0.1-26 GHz, 28 dB gain, power 5 dB	849863	7/14/12
900878	Rhein Tech Laboratories	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901516	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	10/14/12
901517	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	10/14/12
901242	Rhein Tech Laboratories	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	6/14/12
900321	EMCO	3161-03	Horn Antennas (4 – 8.2 GHz)	9508-1020	6/14/12
900323	EMCO	3160-7	Horn Antennas (8.2 – 12.4 GHz)	9605-1054	6/14/12
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz - 12.8 GHz)	3826A00144	3/15/13
900791	Chase	CBL6111B	Bilog Antenna (30 MHz – 2000 MHz)	N/A	1/31/13
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 kHz – 6.5 GHz)	3325A00159	8/17/12
900914	Hewlett Packard	85460A	RF Filter Section, (100 kHz - 6.5 GHz)	3330A00107	8/17/12
900905	Rhein Tech Laboratories	PR-1040	OATS 1 Preamplifier 40dB (30 MHz – 2 GHz)	1006	7/14/12

10.3 Radiated Emissions Test Results

10.3.1 Radiated Emissions Digital

Table 10-2: Radiated Emissions Digital Test Data

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/ Fail
257.000	Qp	H	180	1.0	33.7	-14.1	19.6	46.0	-26.4	Pass
272.000	Qp	V	270	1.0	33.6	-14.2	19.4	46.0	-26.6	Pass
275.000	Qp	H	90	1.5	33.8	-14.2	19.6	46.0	-26.4	Pass
283.000	Qp	V	0	1.0	33.6	-14.1	19.5	46.0	-26.5	Pass
329.000	Qp	V	0	1.0	33.6	-13.5	20.1	46.0	-25.9	Pass
376.500	Qp	V	180	1.0	33.8	-11.6	22.2	46.0	-23.8	Pass

10.3.2 Radiated Emissions Harmonics/Spurious

Table 10-3: Radiated Emissions Harmonics/Spurious TX Frequency – 902.47 MHz (Average)

Emission Frequency (MHz)	Average Analyzer Reading (dBuV) (1 MHz RBW/ 10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
2707.410	23.3	26.5	49.8	54.0	-4.2
3609.880	42.7	-17.2	25.5	54.0	-28.5
4512.350	32.0	-10.9	21.1	54.0	-32.9
5414.820	35.6	-9.2	26.4	54.0	-27.6
7219.760	34.6	-7.8	26.8	54.0	-27.2
9024.700	30.7	-0.5	30.2	54.0	-23.8

Table 10-4: Radiated Emissions Harmonics/Spurious TX Frequency – 902.47 MHz (Peak)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Site Correction Factor (dB/m)	Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)
2707.410	32.1	26.5	58.6	74.0	-15.4
3609.880	52.3	-17.2	35.1	74.0	-38.9
4512.350	48.1	-10.9	37.2	74.0	-36.8
5414.820	47.1	-9.2	37.9	74.0	-36.1
7219.760	46.2	-7.8	38.4	74.0	-35.6
9024.700	44.2	-0.5	43.7	74.0	-30.3

Table 10-5: Radiated Emissions Harmonics/Spurious TX Frequency – 914.97 MHz (Average)

Emission Frequency (MHz)	Average Analyzer Reading (dBuV) (1 MHz RBW/ 10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
2744.910	21.9	26.5	48.4	54.0	-5.6
3659.880	55.9	-16.9	39.0	54.0	-15.0
4574.850	46.3	-10.9	35.4	54.0	-18.6
7319.760	41.1	-7.7	33.4	54.0	-20.6
8234.730	42.9	-0.1	42.8	54.0	-11.2
9149.700	33.9	-0.5	33.4	54.0	-20.6

Table 10-6: Radiated Emissions Harmonics/Spurious TX Frequency – 914.97 MHz (Peak)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Site Correction Factor (dB/m)	Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)
2744.910	32.1	26.5	58.6	74.0	-15.4
3659.880	61.7	-16.9	44.8	74.0	-29.2
4574.850	55.4	-10.9	44.5	74.0	-29.5
7319.760	54.3	-7.7	46.6	74.0	-27.4
8234.730	57.3	-0.1	57.2	74.0	-16.8
9149.700	45.9	-0.5	45.4	74.0	-28.6

Table 10-7: Radiated Emissions Harmonics/Spurious TX Frequency – 926.97 MHz (Average)

Emission Frequency (MHz)	Average Analyzer Reading (dBuV) (1 MHz RBW/ 10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
2780.910	62.6	-19.0	43.6	54.0	-10.4
3707.880	41.6	-16.7	24.9	54.0	-29.1
4634.850	32.7	-10.9	21.8	54.0	-32.2
7415.760	35.5	-7.7	27.8	54.0	-26.2
8342.730	30.2	-0.1	30.1	54.0	-23.9

Table 10-8: Radiated Emissions Harmonics/Spurious TX Frequency – 926.97 MHz (Peak)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Site Correction Factor (dB/m)	Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)
2780.910	67.5	-19.0	48.5	74.0	-25.5
3707.880	51.2	-16.7	34.5	74.0	-39.5
4634.850	45.7	-10.9	34.8	74.0	-39.2
7415.760	44.8	-7.7	37.1	74.0	-36.9
8342.730	43.0	-0.1	42.9	74.0	-31.1

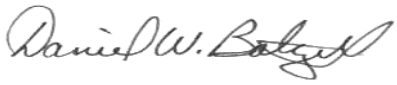
Table 10-9: Radiated Emissions Harmonics/Spurious TX Hopping (Average)

Emission Frequency (MHz)	Average Analyzer Reading (dBuV) (1 MHz RBW/ 10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
2719.186	28.9	10.7	39.6	54.0	-14.4
3609.176	28.9	10.2	39.1	54.0	-14.9
4530.790	28.3	13.9	42.2	54.0	-11.8
5452.594	28.0	13.1	41.1	54.0	-12.9
7415.000	28.8	12.6	41.4	54.0	-12.6
8162.116	28.6	18.1	46.7	54.0	-7.3
9123.490	30.0	18.0	48.0	54.0	-6.0

Table 10-10: Radiated Emissions Harmonics/Spurious TX Hopping (Peak)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Site Correction Factor (dB/m)	Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)
2719.186	43.1	10.7	53.8	74	-20.2
3609.176	42.0	10.2	52.2	74	-21.8
4530.790	43.6	13.9	57.5	74	-16.5
5452.594	41.8	13.1	54.9	74	-19.1
7415.000	44.1	12.6	56.7	74	-17.3
8162.116	44.4	18.1	62.5	74	-11.5
9123.490	42.8	18.0	60.8	74	-13.2

Test Personnel:



Daniel W. Baltzell		March 23, 2012
EMC Test Engineer	Signature	Date of Test

11 Conclusion

The data in this measurement report shows that the Innovative Wireless Technologies, Inc. (IWT) Unattended Ground Sensor, Model FAP4100-010, FCC ID: SP8-FAP4100-010, IC: 9568A-FAP4100010, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations and Industry Canada RSS-Gen and RSS-210.

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