Engineering and Testing for EMC and Safety Compliance

Accredited under A2LA certificate # 2653.01

Certification Application Report
FCC Part 24 & RSS-133

Test Lab:	Applicant:
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FCC ID/IC	XEZ-1000/8390A-1000	**Test Report Date**	October 15, 2009
Platform	Tri-band GSM Handset	**RTL Work Order Number**	2009194
Model	WP8	**RTL Quote Number**	QRTL09-269A
American National Standard Institute	ANSI C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz		
FCC Classifications	TBC – Licensed Broadcast Station Transmitter		
FCC Rule Part	Part 24: Personal Communication Services		
IC Rule Part	RSS-133: 2 GHz Personal Communication Services RSS-210: Low-power Licence-exempt Radiocommunication Devices (all Frequency Bands): Category 1 Equipment		
Digital Interface Information	Digital Interface was found to be compliant		

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance (ppm)	Emission Designator
1850.2 - 1909.8	1.05	4.4	254KGXW

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 24, FCC 97-114, ANSI C63.4, and Industry Canada RSS-133.

Signature: _____ Date: October 15, 2009

Typed/Printed Name: Desmond A. Fraser Position: President

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Rules Part 24 (E): The rules in this subpart govern Personal Communications Services – Broadband PCS.
- IC RSS-133: These Radio Standards set out the minimum requirements for the certification (type-approval) of transmitters and receivers for the dual-band (GSM) cellular telephone system in the 1850-1910 MHz and 1930-1990 MHz paired bands.

All measurements contained in this application were conducted in accordance with the FCC Rules and Regulations CFR47, Industry Canada RSS-133.

Note that the EUT is a composite device, and that data in this report pertains to the licensed PCS portion of the EUT. The data for the unlicensed 2.4 GHz low power transceiver portion is contained in a separate report.

1.2 Description of EUT

Equipment Under Test	Cellular phone
Model	WP8
Power Supply	3.7 VDC Li-Ion battery
Modulation Type	GSM
Frequency Range	1850.2-1909.8 MHz PCS-1900
Antenna Connector Type	Internal
Antenna Type	Internal

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 (ANSI C63.4 2003).

1.4 Related Submittal(s)/Grant(s)

This is an original application for certification for Via One Networks LLC Model: WP8, FCC ID: XEZ-1000, IC: 8390A-1000.

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: Channels Tested for GSM1900

Channel	Frequency
512	1850.2
661	1880.0
810	1909.8

2.2 Exercising the EUT

The EUT was provided with various test functions using internal engineer codes to enter channel selection and mode while testing: either a continuous transmit on a specific channel, or receive mode.

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 24

Standard	Test	Pass/Fail or N/A
24.238(a)	Radiated Emissions	Pass
24.232(c)	Maximum Peak Power Output	Pass
24.238(a)	Antenna Conducted Spurious Emissions	Pass
24.238	Band Edge Measurement	Pass
24.238(b)	26 dB Bandwidth	Pass
24.235	Frequency Stability	Pass

2.4 Test System Details

The test sample was received on June 17, 2009. 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	Cable Description	RTL Bar Code
Tri-Band Cellular Portable Phone	Via One Networks LLC	WP8	355781020019242	XEZ-1000	N/A	18990
Tri-Band Cellular Portable Phone	Via One Networks LLC	WP8	N/A	XEZ-1000	N/A	18999
Tri-Band Cellular Portable Phone	Via One Networks LLC	WP8	N/A	XEZ-1000	N/A	19001
3.7V Li-ion Battery	Bleu	466X	XD0805508358	N/A	N/A	18988
3.7V Li-ion Battery	BenQ	MNC30	C10737XD004053	N/A	N/A	19003
3.7V Li-ion Battery	BenQ	MNC30	C10819XD002693	N/A	N/A	19005
Mini-USB-USB 2.0 Cable	Liuchuan-St.	30AWG/2C	N/A	N/A	1m unshielded I/O – 5V power	19009

2.5 Configuration of Tested System

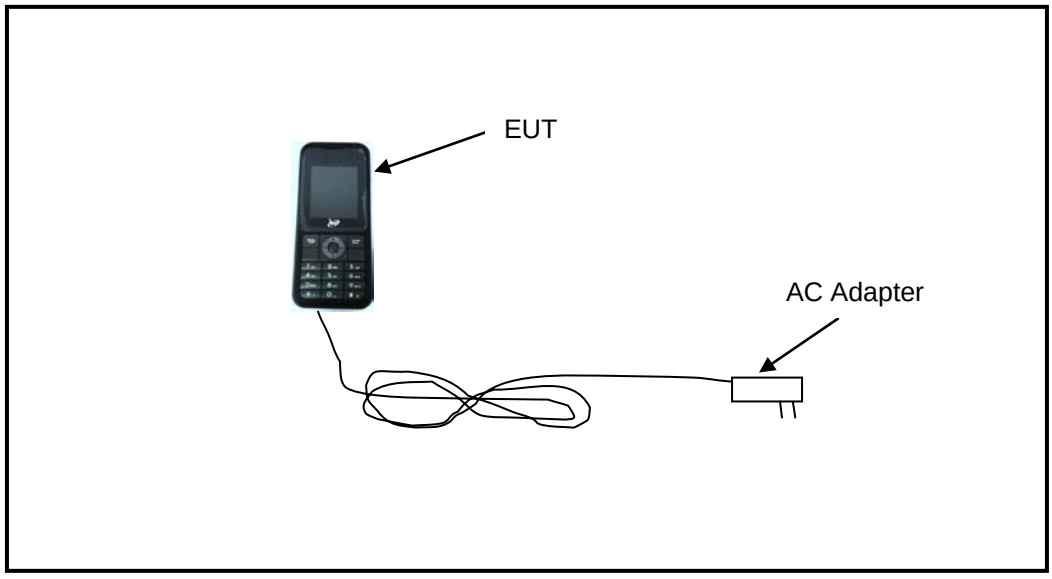


Figure 2-1: Configuration of System Under Test

3 FCC Rules and Regulations Part 2.1033(C)(8) Voltages and Currents Through The Final Amplifying Stage

The following are the DC voltages applied to, and DC currents into, the several elements of the final radio frequency amplifying device for normal operation over the power range (min – max):

3.6 - 4.2 V / 0.12 - 0.26 A

4 Peak Output Power - §24.232(c); RSS-133 §6.4

4.1 Power Output Test Procedure

A conducted power measurement of the EUT was taken using a power meter.

4.2 Power Output Test Data

Table 4-1: Power Output Test Data

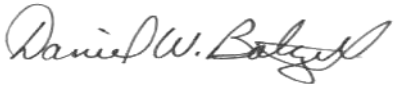
Channel	Frequency (MHz)	Power Output (dBm)
512	1850.2	30.19
661	1880.0	30.20
810	1909.8	30.13

4.3 Power Output Test Equipment

Table 4-2: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	11/5/09
901184	Agilent Technologies	E4416A	EPM-P Power Meter	GB41050573	11/5/09
901139	Weinschel Corp.	48-20-34 DC-18GHz	Attenuator, 100W 20dB	BK5859	12/3/09

Test Personnel:



Dan Baltzell		June 18, 2009
EMC Test Engineer	Signature	Date Of Test

5 FCC Rules and Regulation Part 2.1055: Frequency Stability; Part 24: Frequency Stability

5.1 Test Procedure

ANSI/TIA/EIA-603-2002, section 2.2.2

The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

The EUT was evaluated over the temperature range -30°C to +50°C.

The temperature was initially set to -30°C and a 2-hour period was observed for stabilization of the EUT. The frequency stability was measured within one minute after application of primary power to the transmitter. The temperature was raised at intervals of 10 degrees centigrade through the range. A ½-hour period was observed to stabilize the EUT at each measurement step and the frequency stability was measured within one minute after application of primary power to the transmitter. Additionally, the power supply voltage of the EUT was varied +/-15% nominal input voltage.

Limit:

§24.235 Frequency stability: The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

5.2 Test Data

5.2.1 Temperature Frequency Stability

Table 5-1: Temperature Frequency Stability – 1880 MHz

Temperature (°C)	Measured Frequency (Hz)	ppm
-30	1880.008339	4.4
-20	1880.008133	4.3
-10	1880.007939	4.2
0	1880.006291	3.3
10	1880.005410	2.9
20	1880.001574	0.8
30	1880.000072	0.0
40	1879.997025	-1.6
50	1879.994011	-3.2

The worst-case deviation was found to be 4.4 ppm.

Result: The EUT is compliant.

5.2.2 Frequency Stability/Voltage Variation

Table 5-2: Frequency Stability/Voltage Variation – 1880 MHz

Voltage (VDC)	Measured Frequency (Hz)	ppm
3.145	1879.995326	-2.5
3.7	1879.995137	-2.6
4.255	1879.995150	-2.6

Table 5-3: Test Equipment Used For Testing Frequency Stability

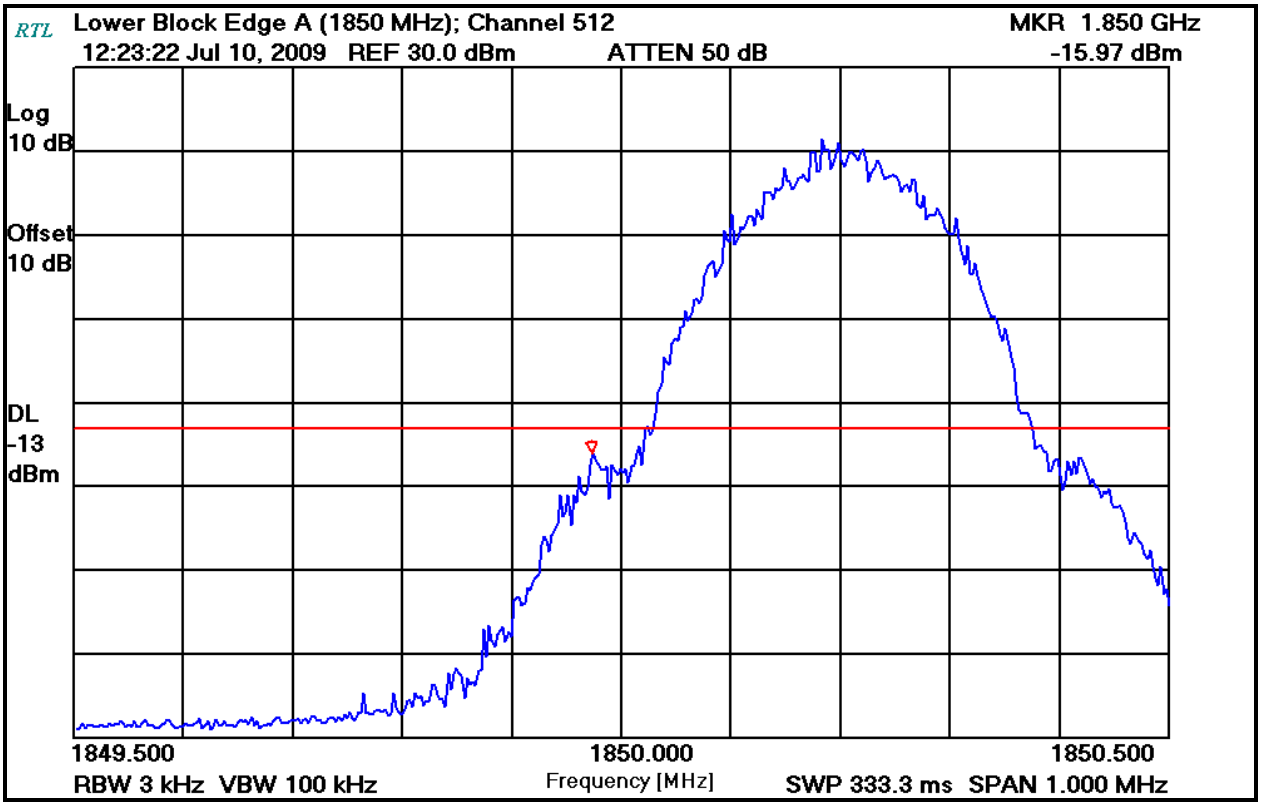
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900946	Tenney Engineering, Inc.	TH65	Temperature Chamber with Humidity	11380	5/08/10
901300	Agilent Technologies	53131A	Frequency Counter	MY40001345	6/18/10

Test Personnel:

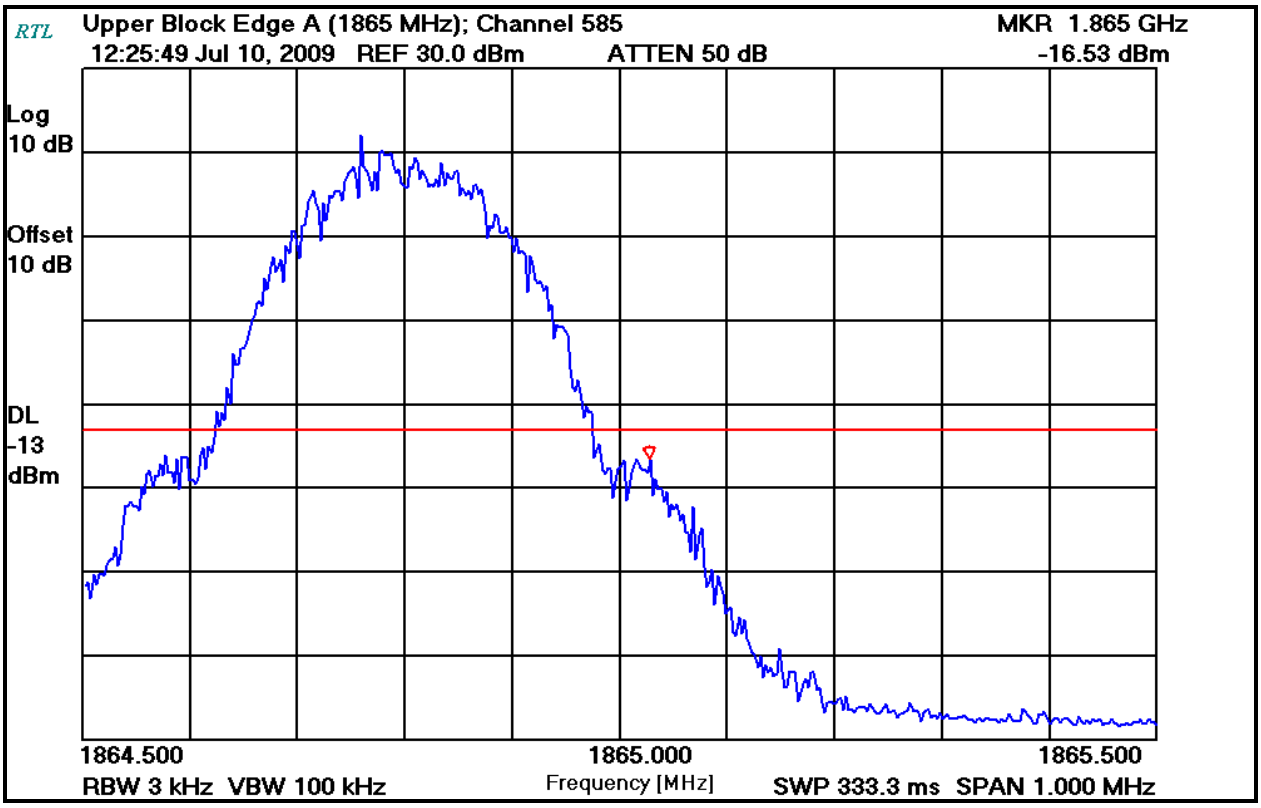
Dan Baltzell		June 25, 2009
EMC Test Engineer	Signature	Date Of Test

6 Compliance with the Block Edge – FCC §24.238; IC RSS-133 §6.5.1

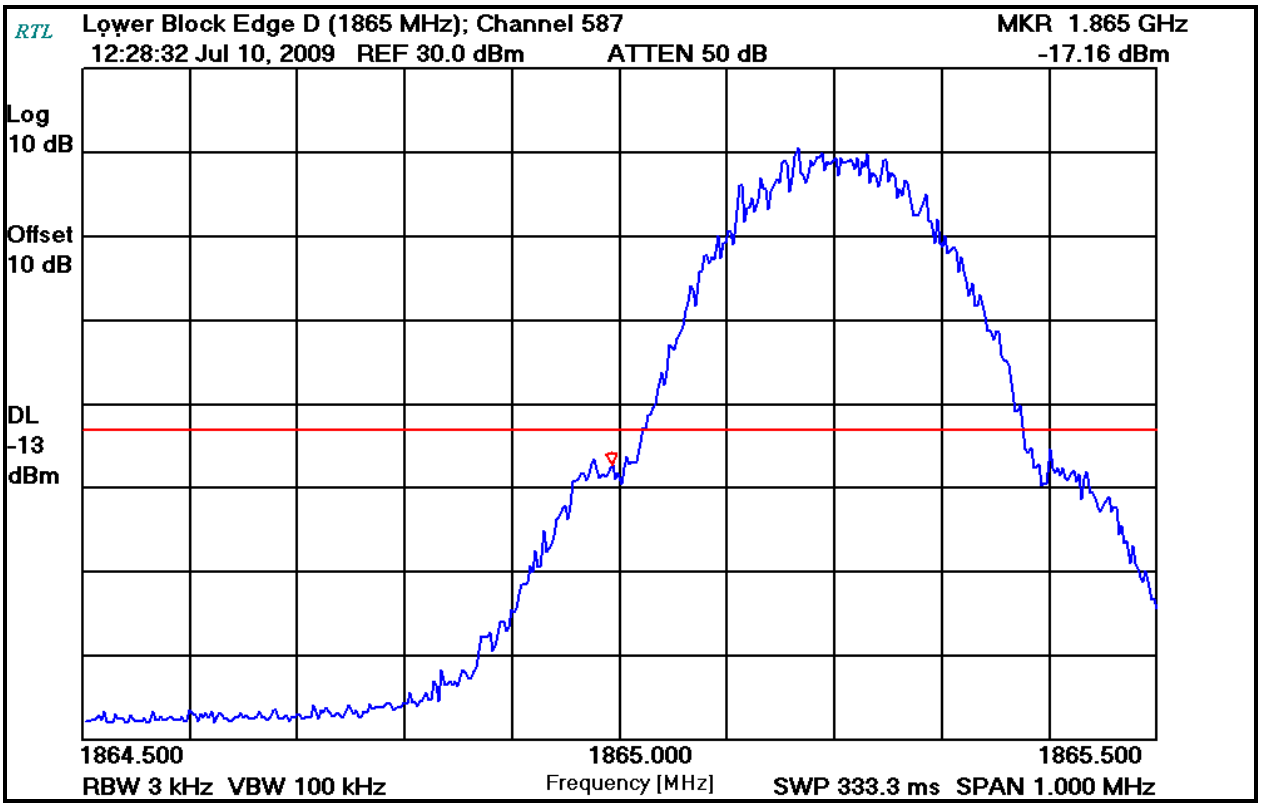
Plot 6-1: Lower Block Edge A (1850 MHz); Channel 512



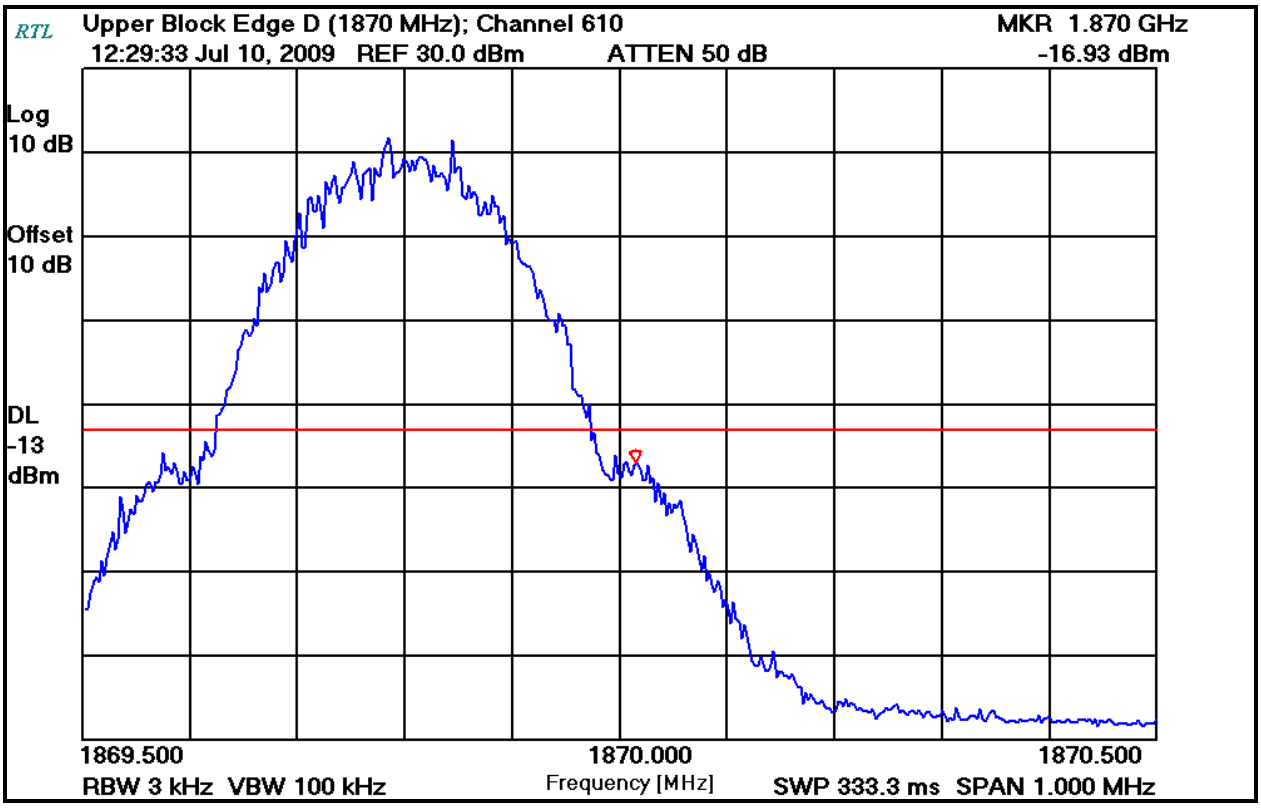
Plot 6-2: Upper Block Edge A (1865 MHz); Channel 585



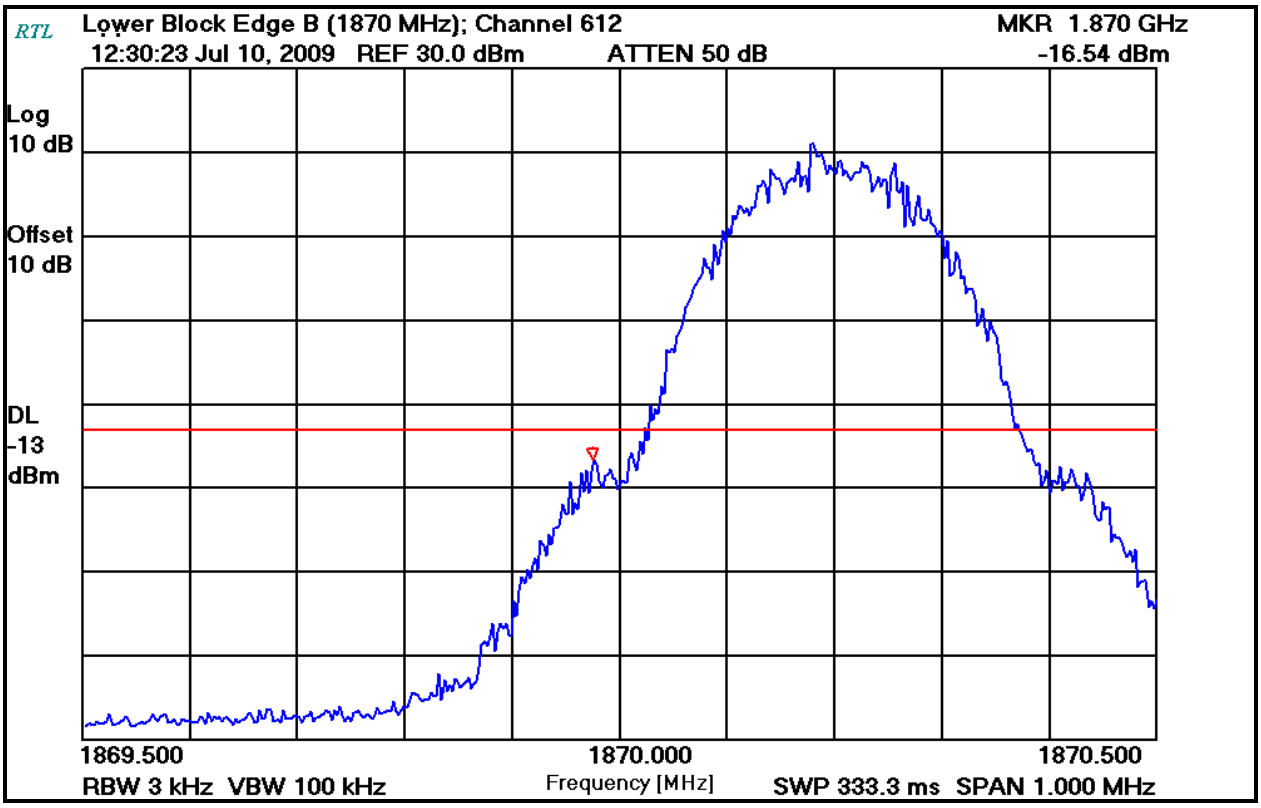
Plot 6-3: Lower Block Edge D (1865 MHz); Channel 587



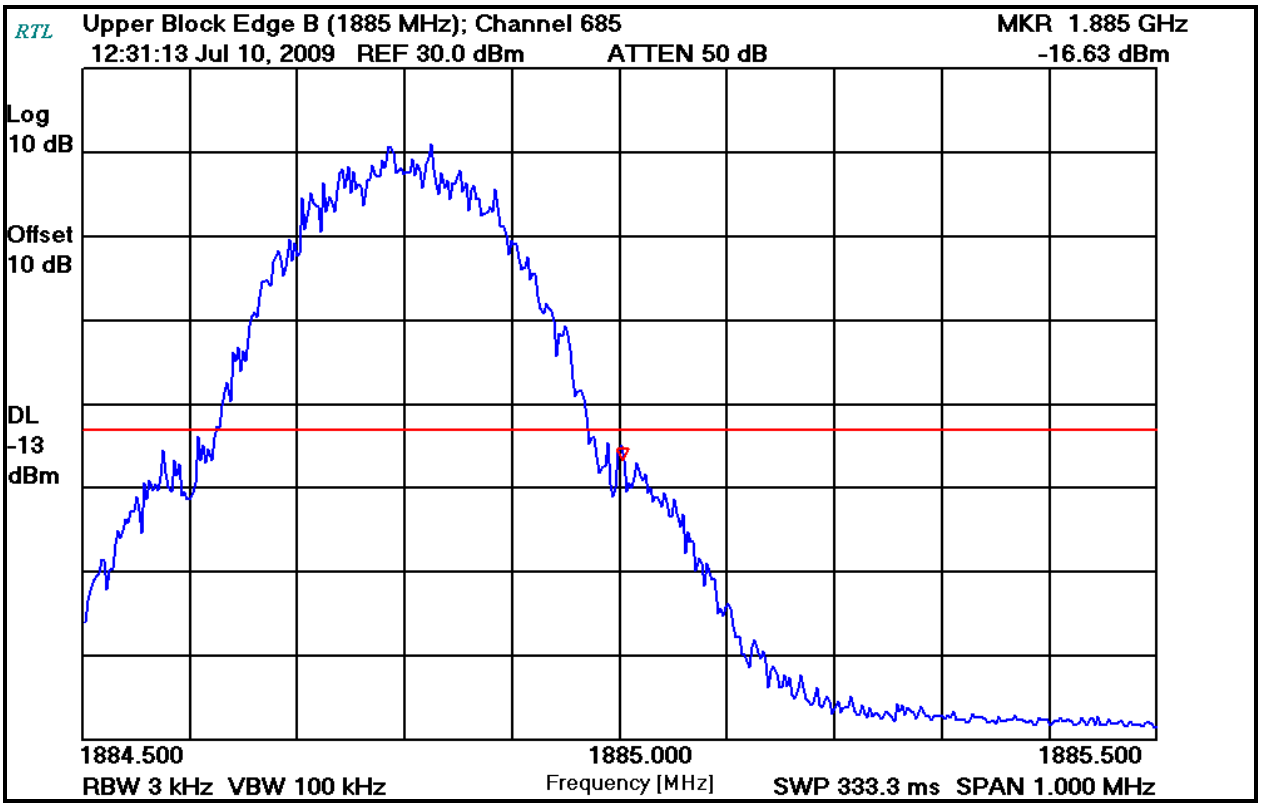
Plot 6-4: Upper Block Edge D (1870 MHz); Channel 610



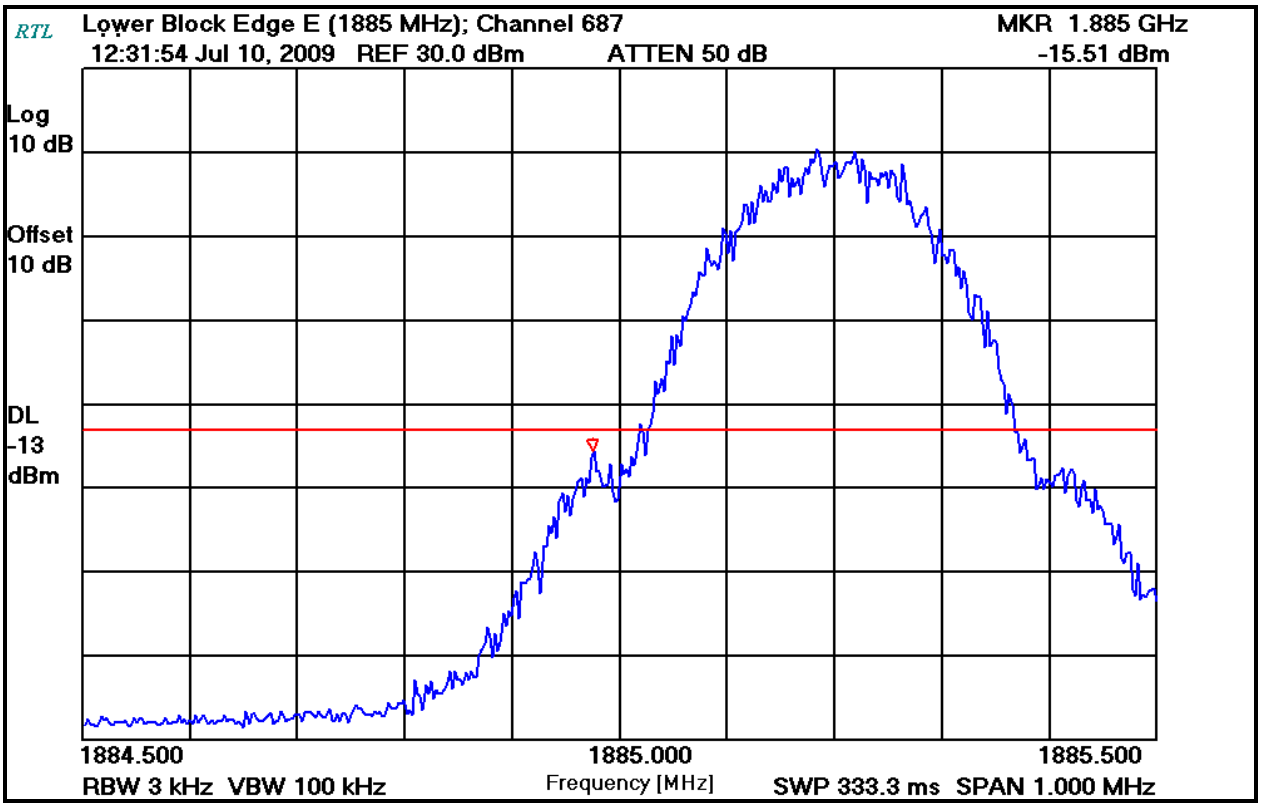
Plot 6-5: Lower Block Edge B (1870 MHz); Channel 612



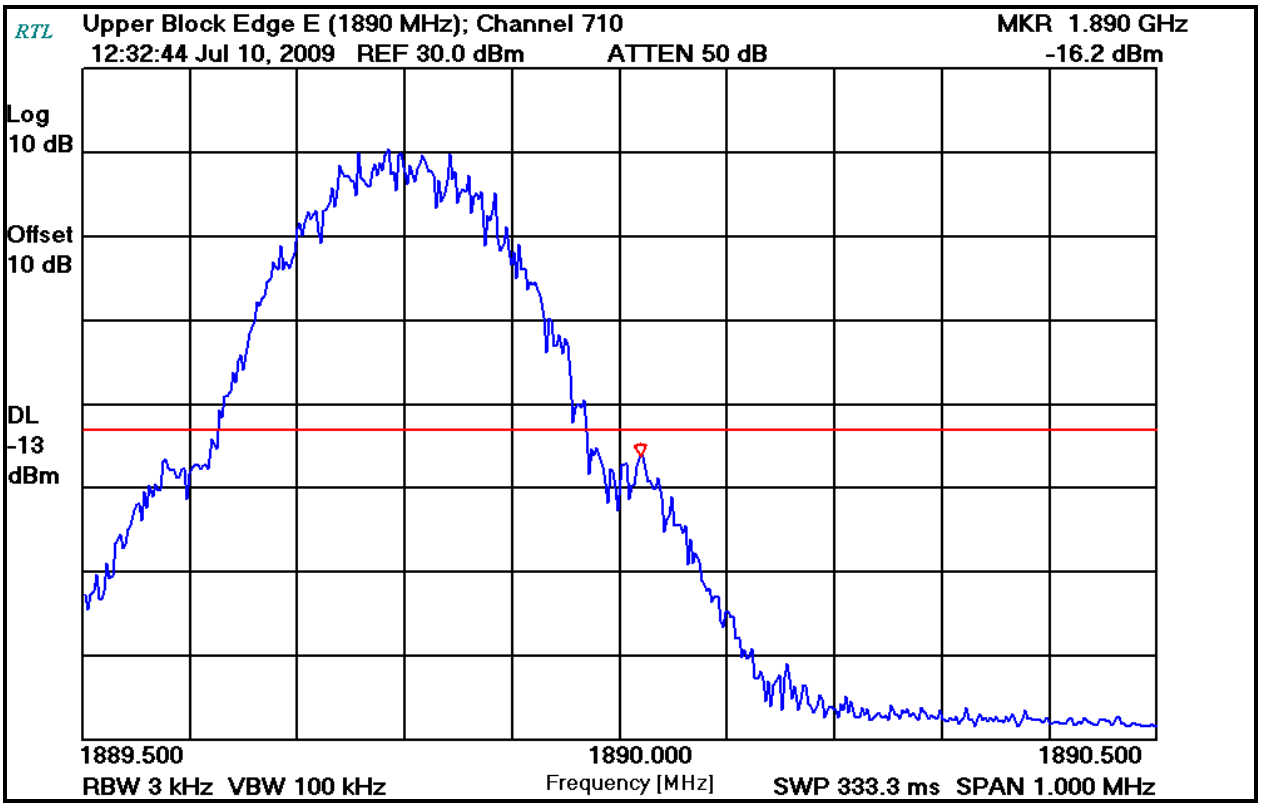
Plot 6-6: Upper Block Edge B (1885 MHz); Channel 685



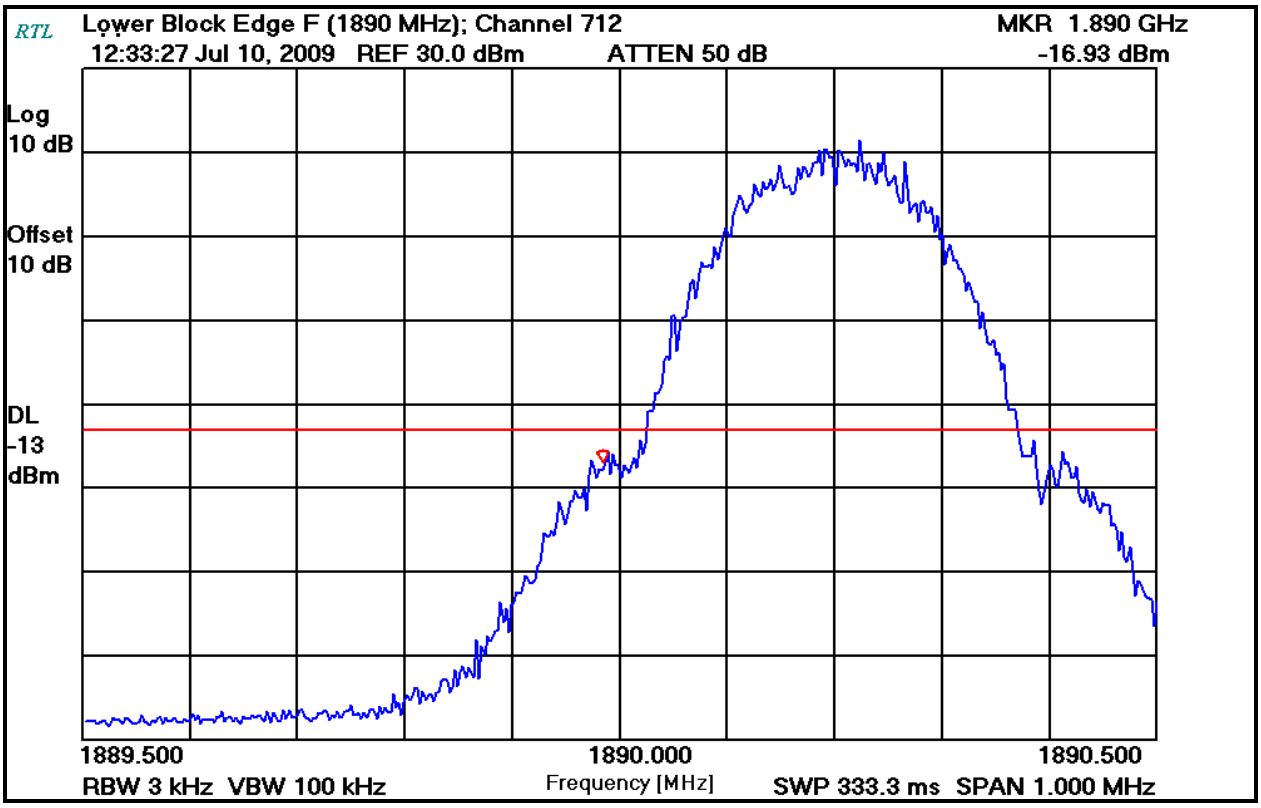
Plot 6-7: Lower Block Edge E (1885 MHz); Channel 687



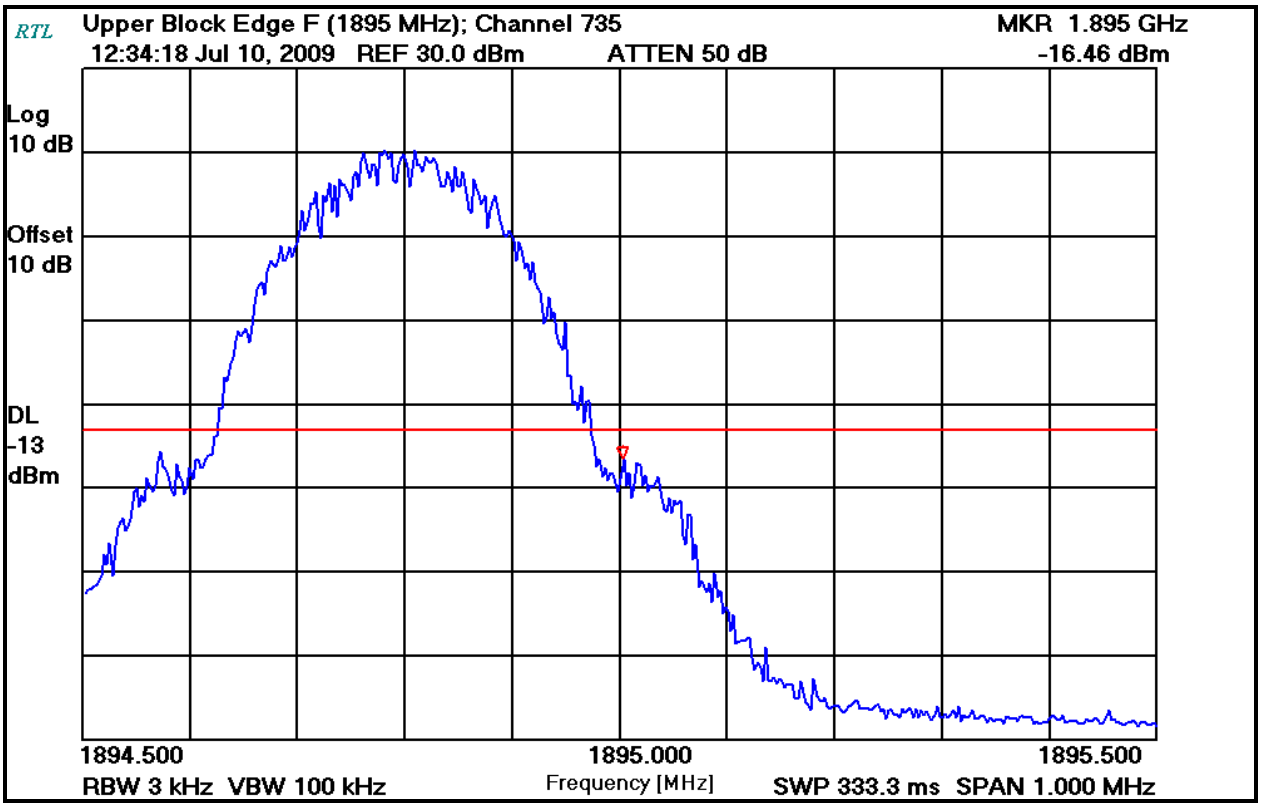
Plot 6-8: Upper Block Edge E (1890 MHz); Channel 710



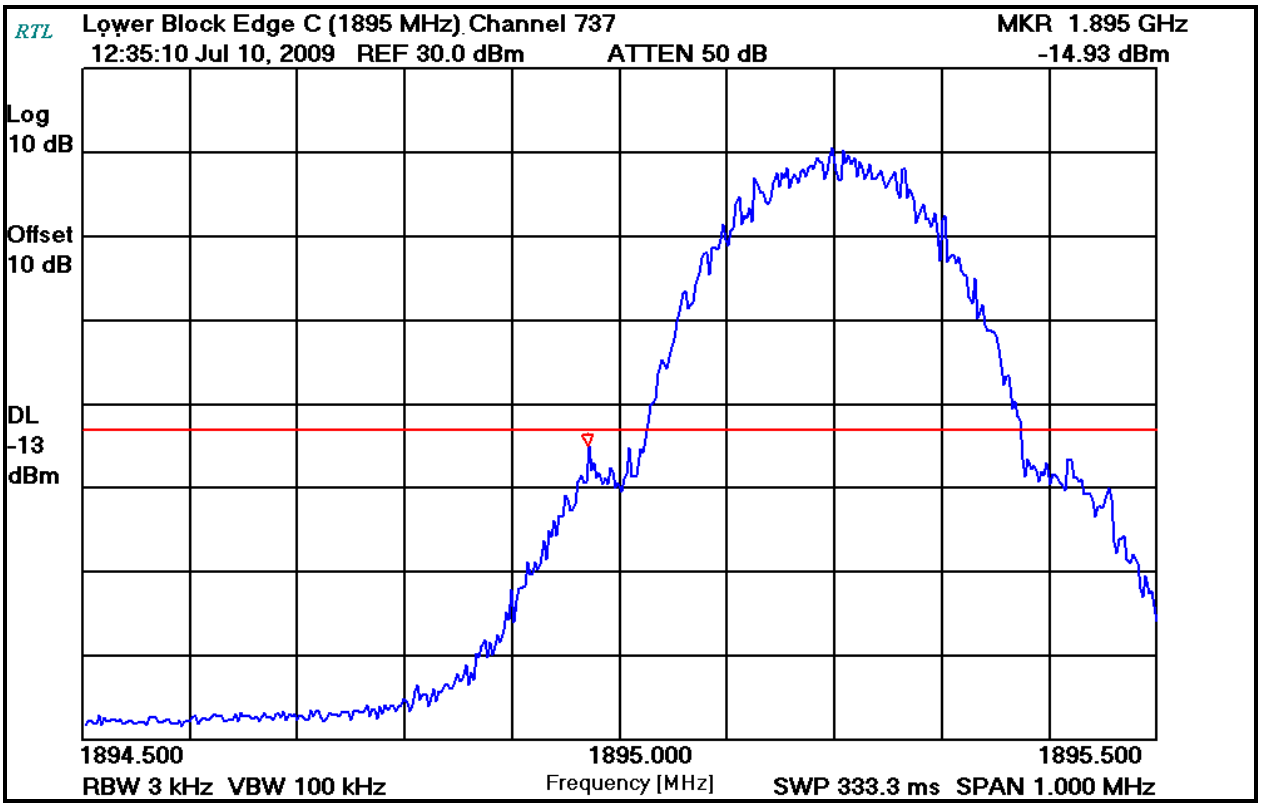
Plot 6-9: Lower Block Edge F (1890 MHz); Channel 712



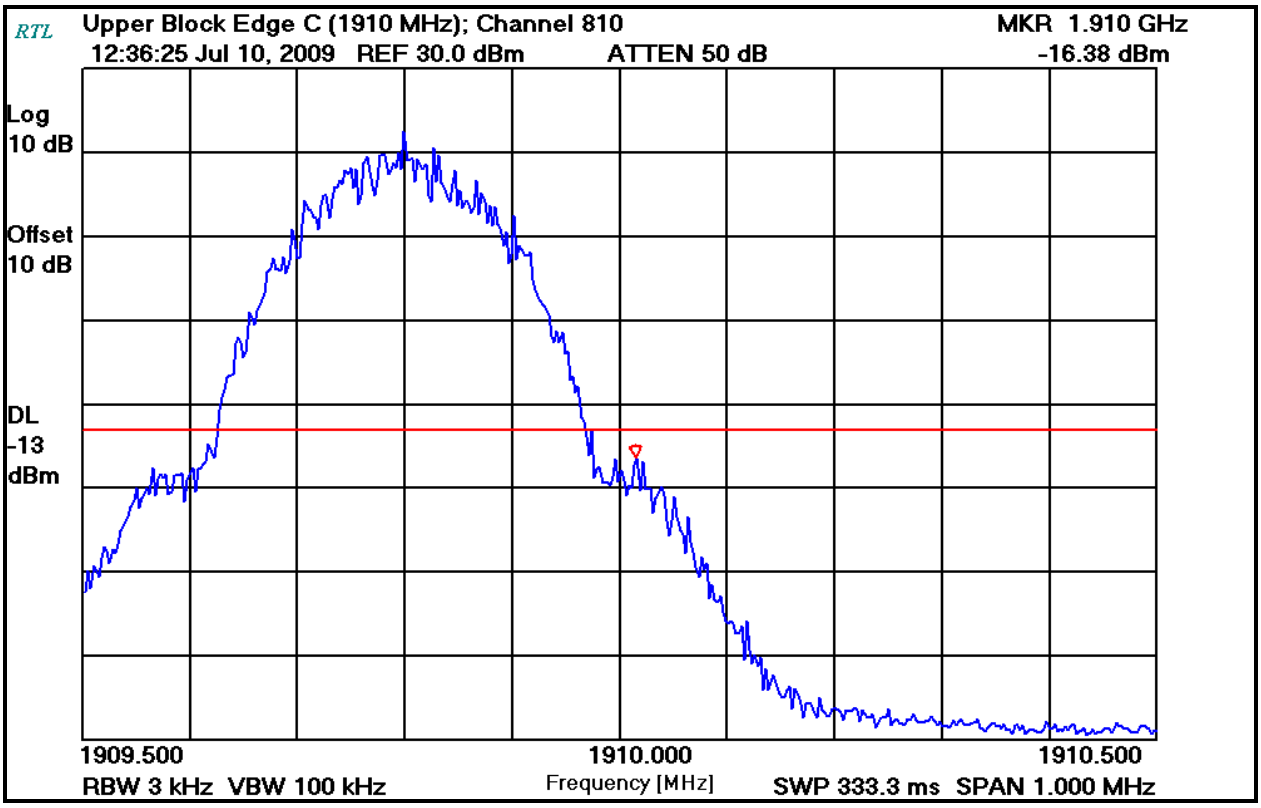
Plot 6-10: Upper Block Edge F (1895 MHz); Channel 735



Plot 6-11: Lower Block Edge C (1895 MHz) Channel 737



Plot 6-12: Upper Block Edge C (1910 MHz); Channel 810



6.1 Block Edge Test Equipment

Table 6-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900791	Chase	CBL6111B	Bilog Antenna (30 MHz – 2000 MHz)	N/A	9/21/09
900819	Weinschel Corp	2	10 dB Attenuator; 5 W	BF0830	12/3/09

Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	July 10, 2009
Test Engineer	Signature	Date Of Tests

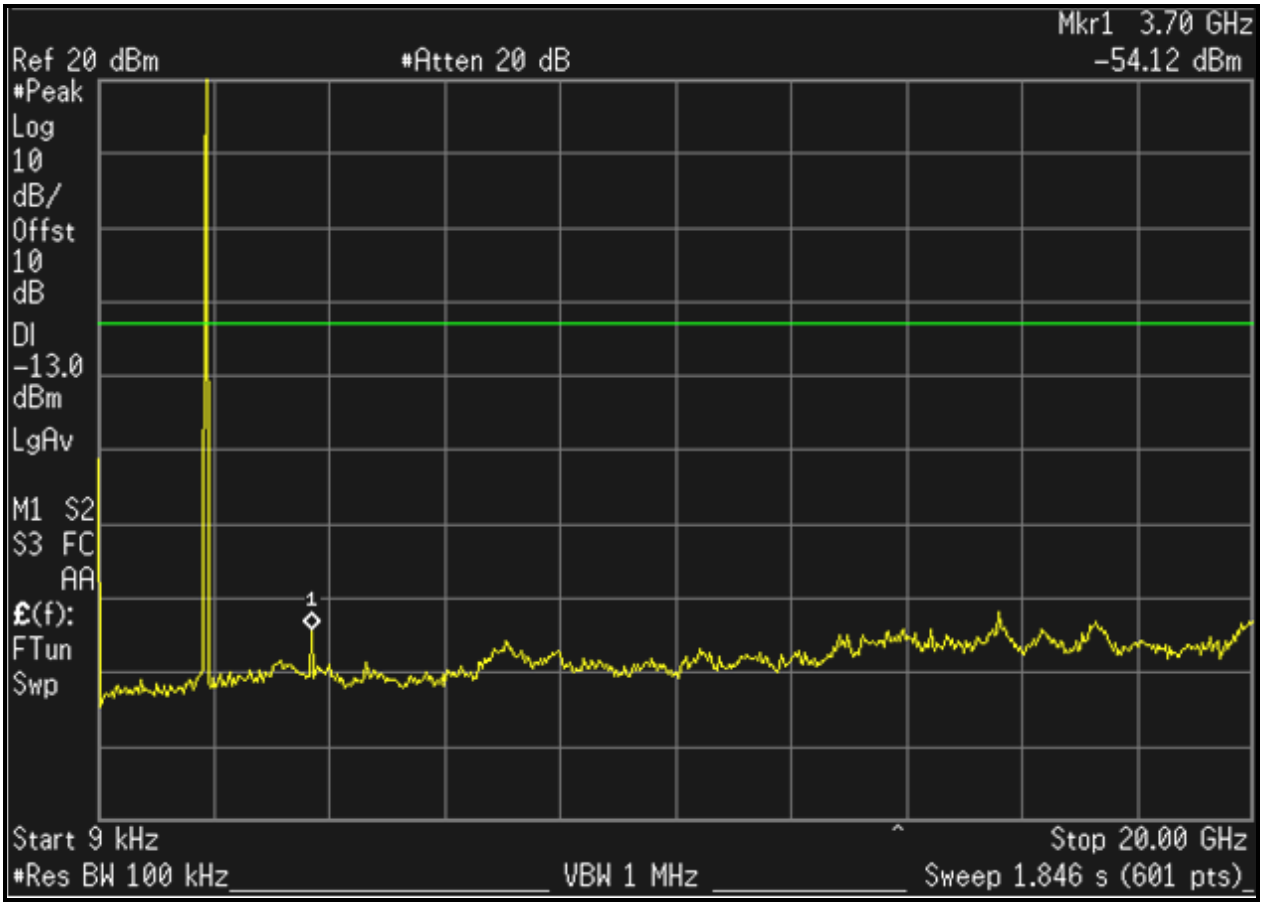
7 Antenna Conducted Spurious Emissions – FCC §24.238(a); RSS-133 §6.5.1(a)(i)

7.1 Antenna Conducted Spurious Emissions Test Procedures

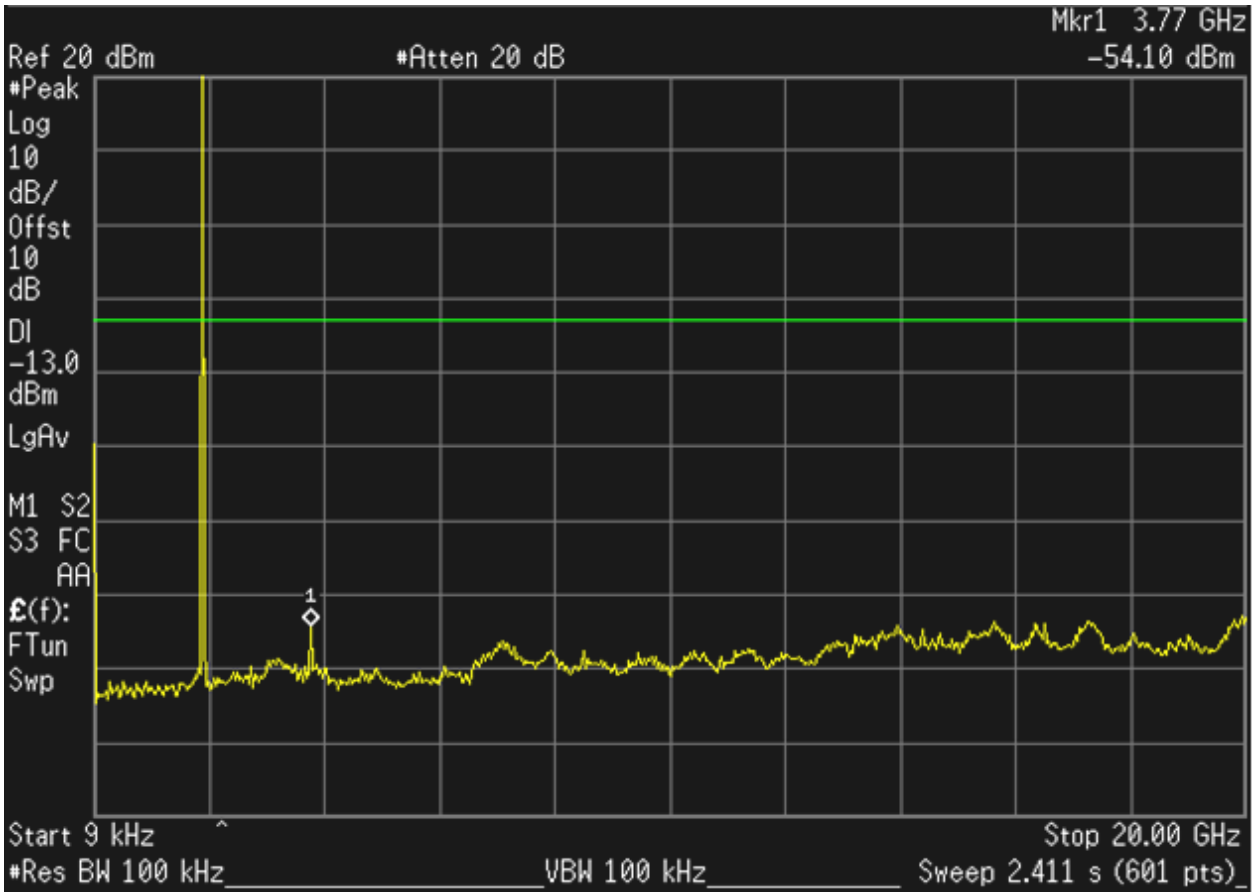
Antenna spurious emissions were measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 1 MHz.

Note: All spurious emissions are more than 20 dB below the limit.

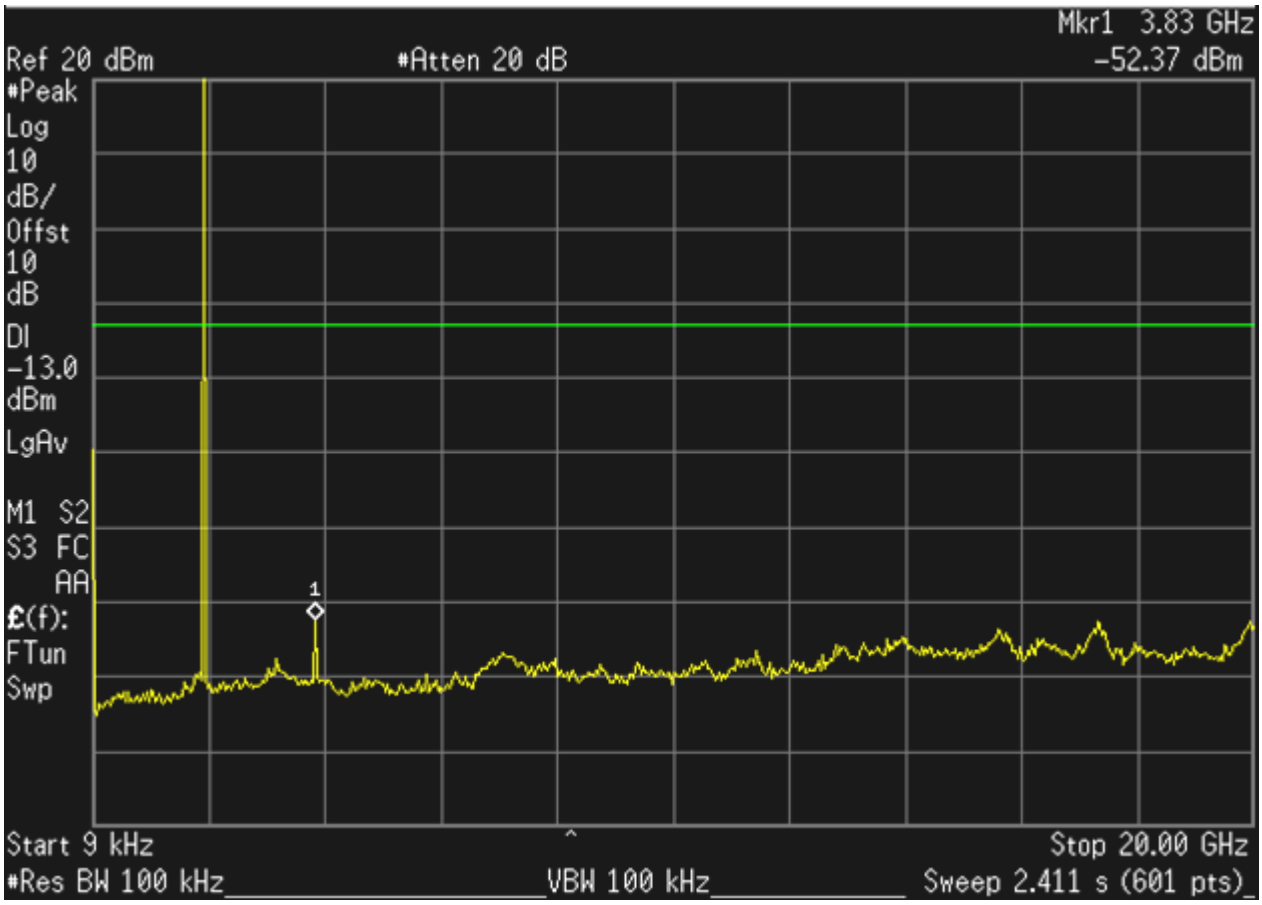
Plot 7-1: Carrier Frequency 1850.2 MHz – GSM1900



Plot 7-2: Carrier Frequency 1880 MHz - GSM1900



Plot 7-3: Carrier Frequency 1909.8 MHz - GSM1900



7.2 Antenna Conducted Spurious Test Equipment

Table 7-1: Antenna Conducted Spurious Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	7/31/09

Test Personnel:

Daniel W. Baltzell		July 13, 2009
Test Engineer	Signature	Date Of Tests

8 99% Bandwidth; IC RSS-Gen

8.1 99% Bandwidth Test Procedure

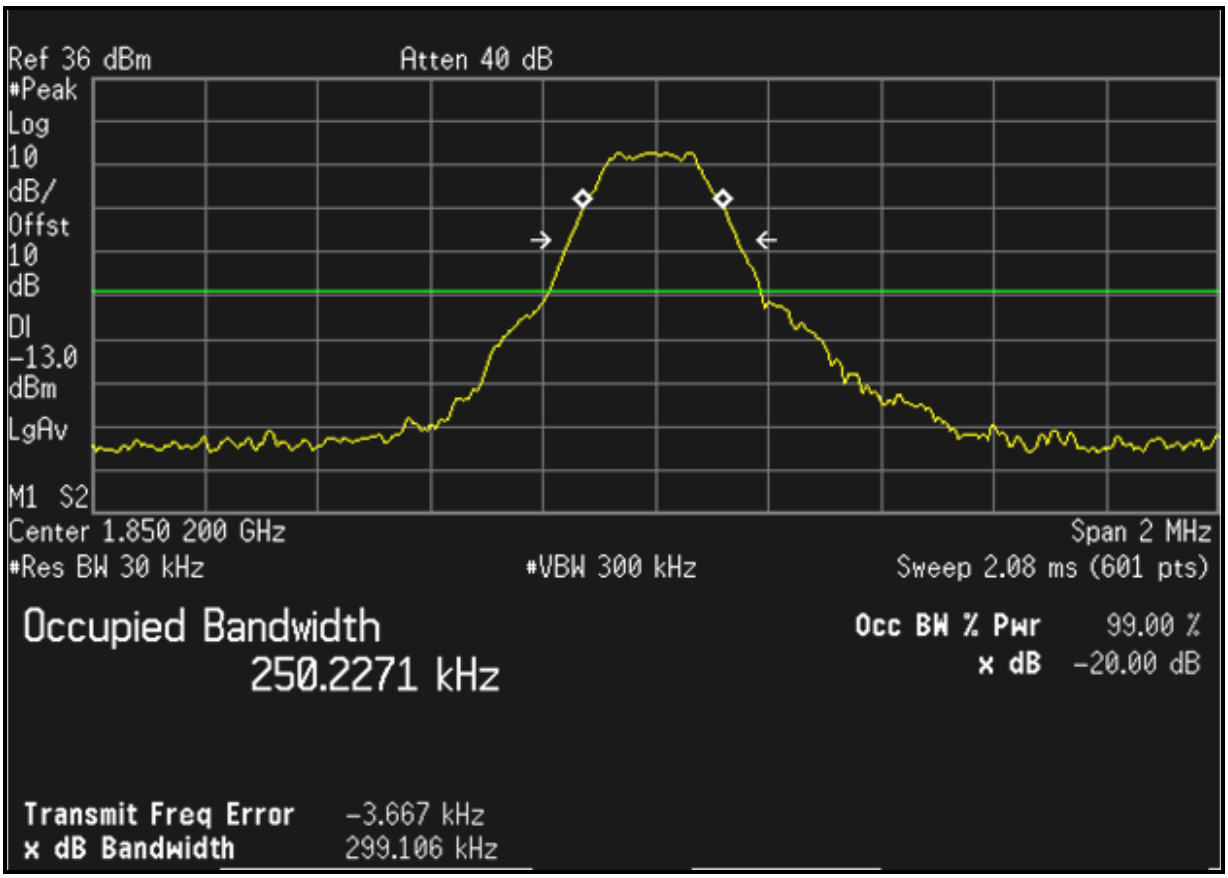
The minimum 99% bandwidths were measured using a 50 ohm spectrum analyzer. The carrier was adjusted on the analyzer so that it was displayed entirely on the spectrum analyzer. The sweep time was set to auto and allowed through several sweeps with the max hold function used in peak detector mode. The resolution bandwidth was set to auto. The minimum 99% bandwidths were measured using the spectrum analyzer Occ BW measurement function. The table below contains the bandwidth measurement results.

8.2 99% Modulated Bandwidth Test Data

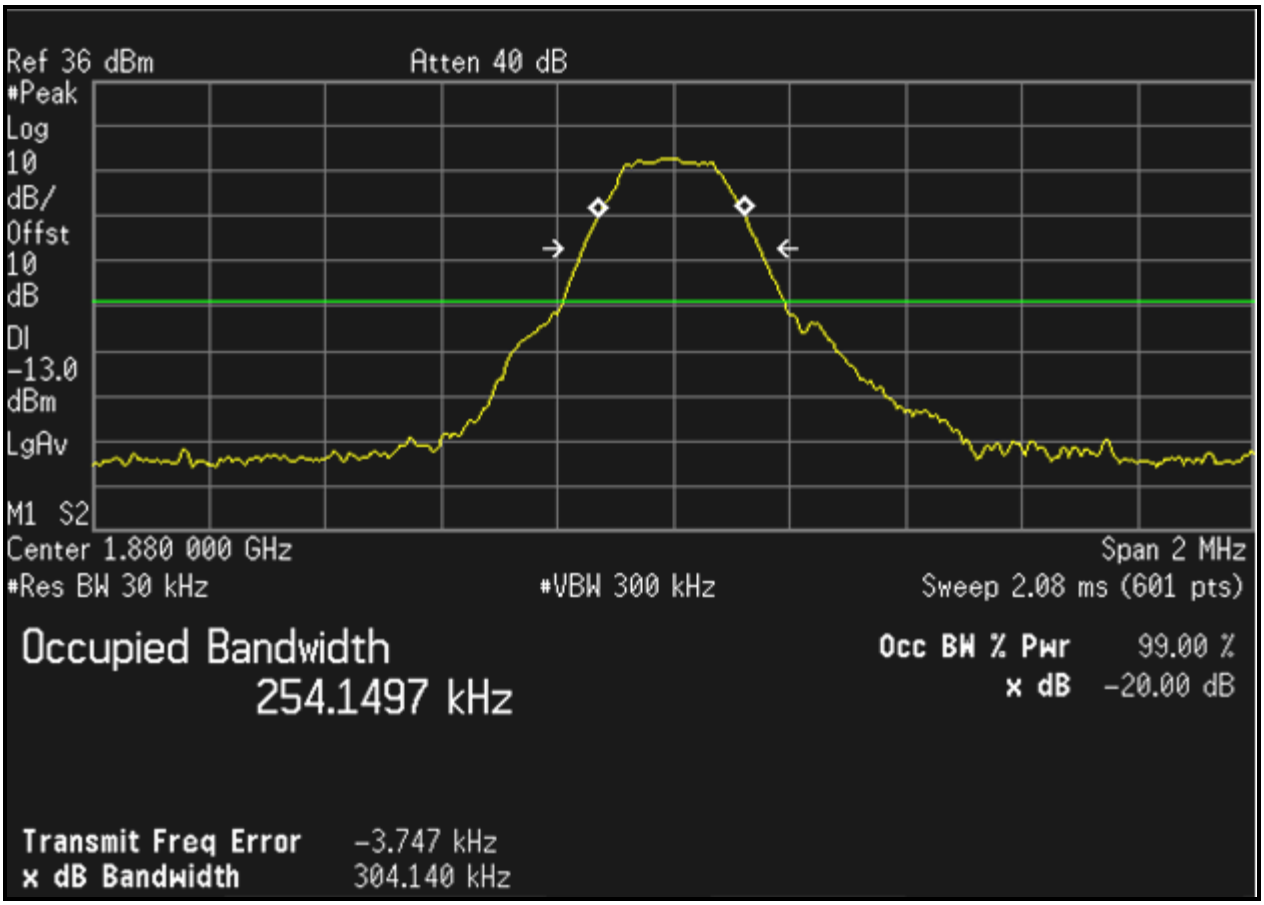
Table 8-1 99% Modulated Bandwidth Test Data - PCS 1900

Frequency (MHz)	99% Bandwidth (kHz)
1850.2	250
1880.0	254
1909.8	248

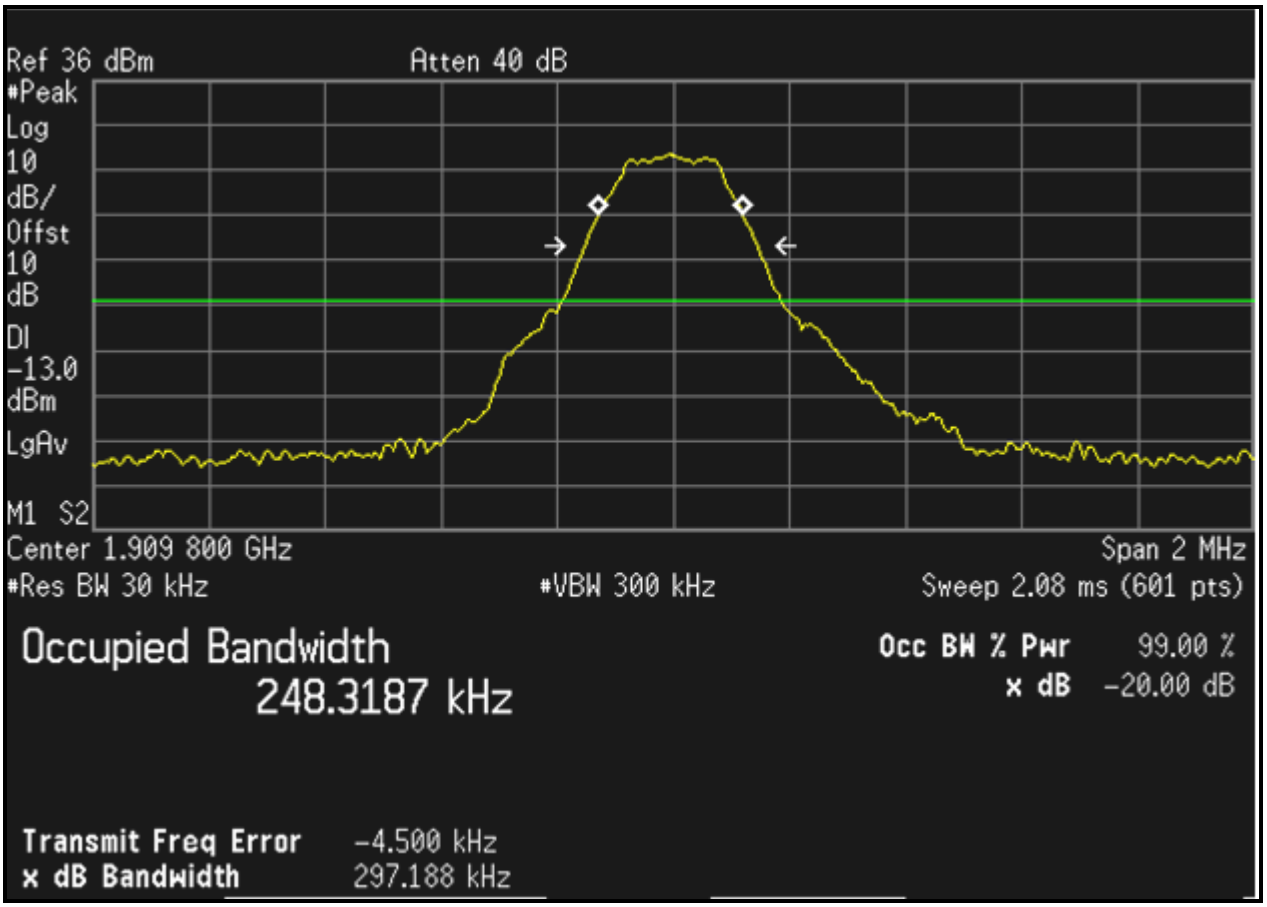
Plot 8-1: 99% Bandwidth 1850.2 MHz – GSM1900



Plot 8-2: 99% Bandwidth 1880 MHz – GSM1900



Plot 8-3: 99% Bandwidth 1909.8 MHz – GSM1900



8.3 99% Bandwidth Test Equipment

Table 8-2: 99% Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	7/31/09
900913	Hewlett Packard	85462A	EMI Receiver	3325A00159	6/8/10
900819	Weinschel Corp	2	10 dB Attenuator; 5 W	BF0830	12/3/09

Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	July 13, 2009
Test Engineer	Signature	Date Of Tests

9 26 dB Emission Bandwidth – FCC §24.238(b)

9.1 26 dB Emission Bandwidth Test Procedure

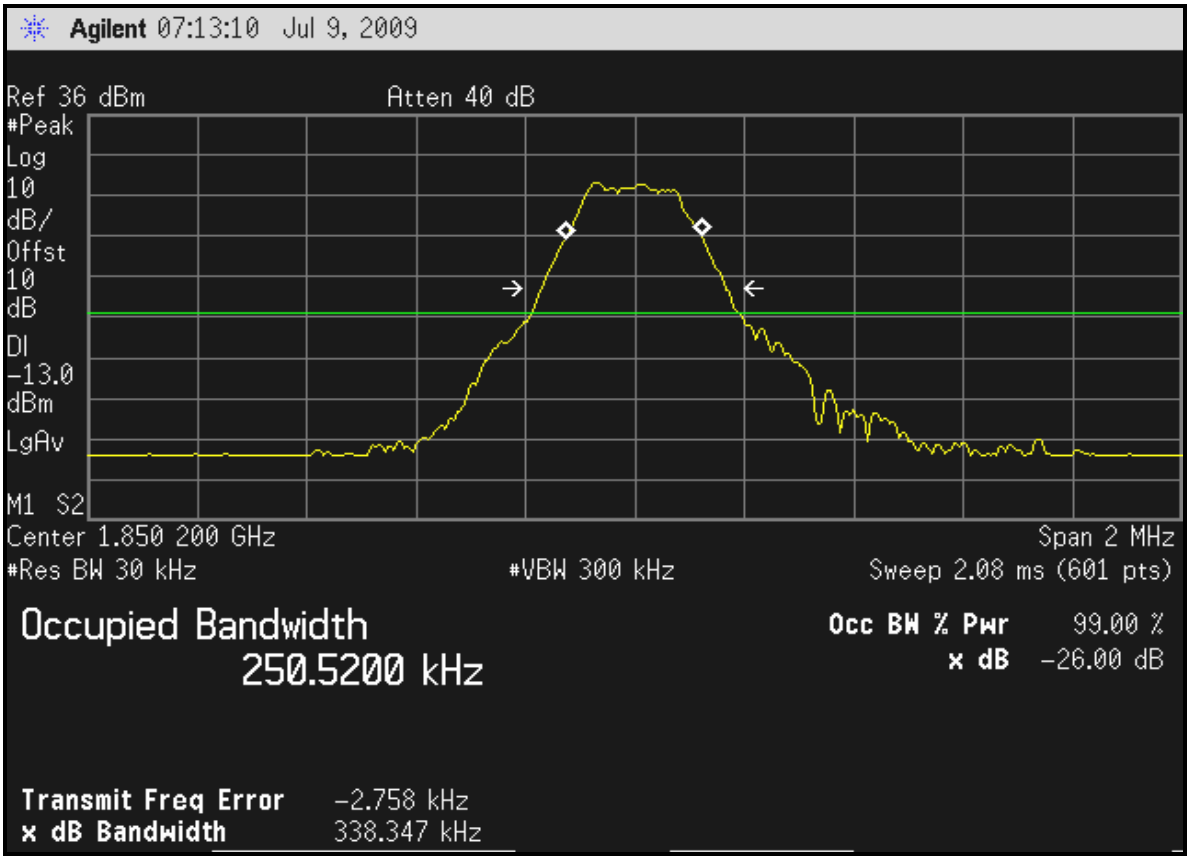
The minimum 26 dB bandwidths were measured using a 50 ohm spectrum analyzer. The carrier was adjusted on the analyzer so that it was displayed entirely on the spectrum analyzer. The sweep time was set to auto and allowed through several sweeps with the max hold function used in peak detector mode. The resolution bandwidth was set to 100 kHz, and the video bandwidth set at 300 kHz. The minimum 26 dB bandwidths were measured using the spectrum analyzer set to -26 dBc. The table below contains the bandwidth measurement results.

9.2 26 dB Emission Bandwidth Test Data

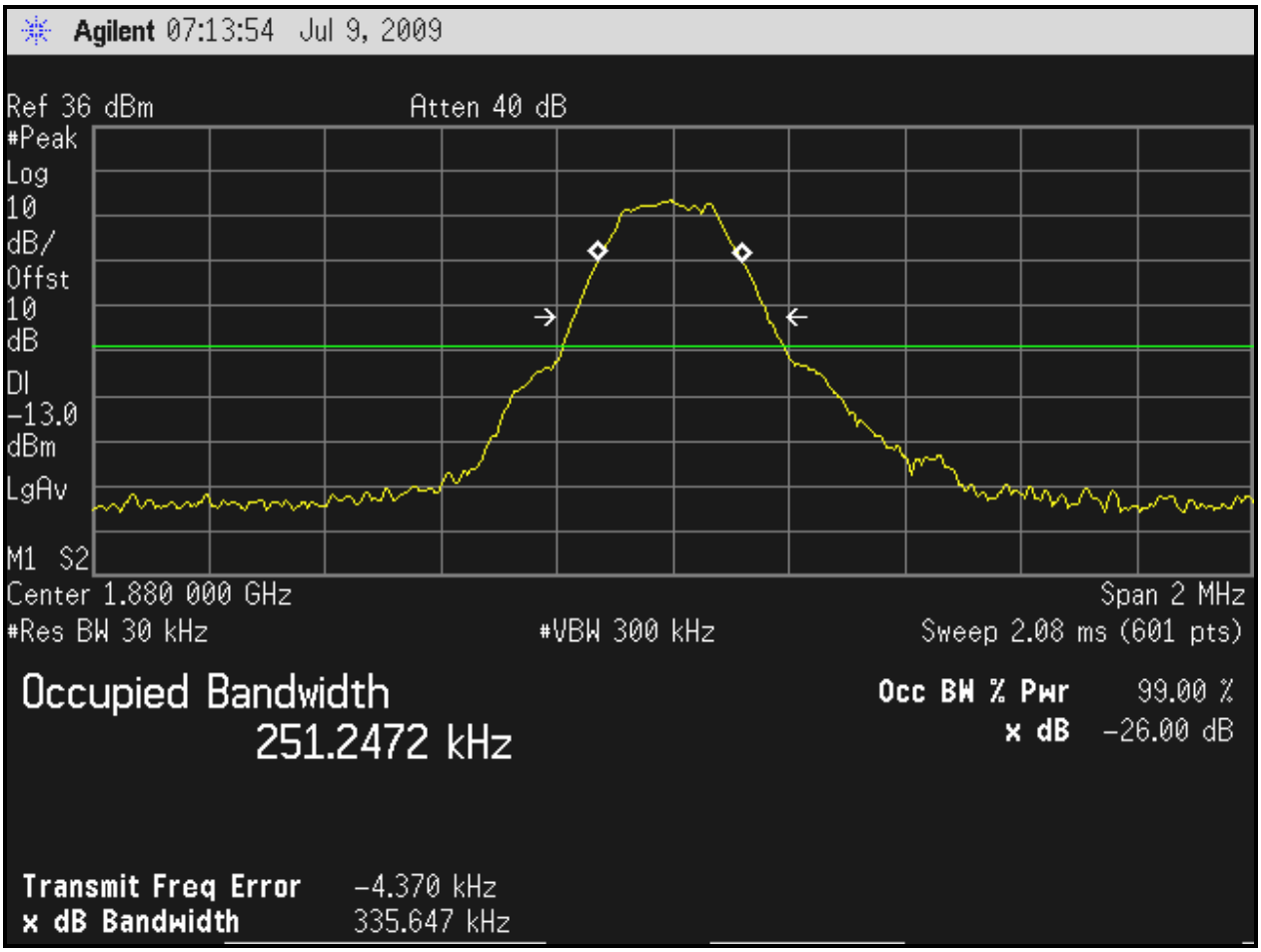
Table 9-1: 26 dB Emission Bandwidth Test Data - GSM1900

Channel	Frequency (MHz)	26 dB Bandwidth (kHz)
512	1850.2	338.347
661	1880.0	335.647
810	1909.8	338.019

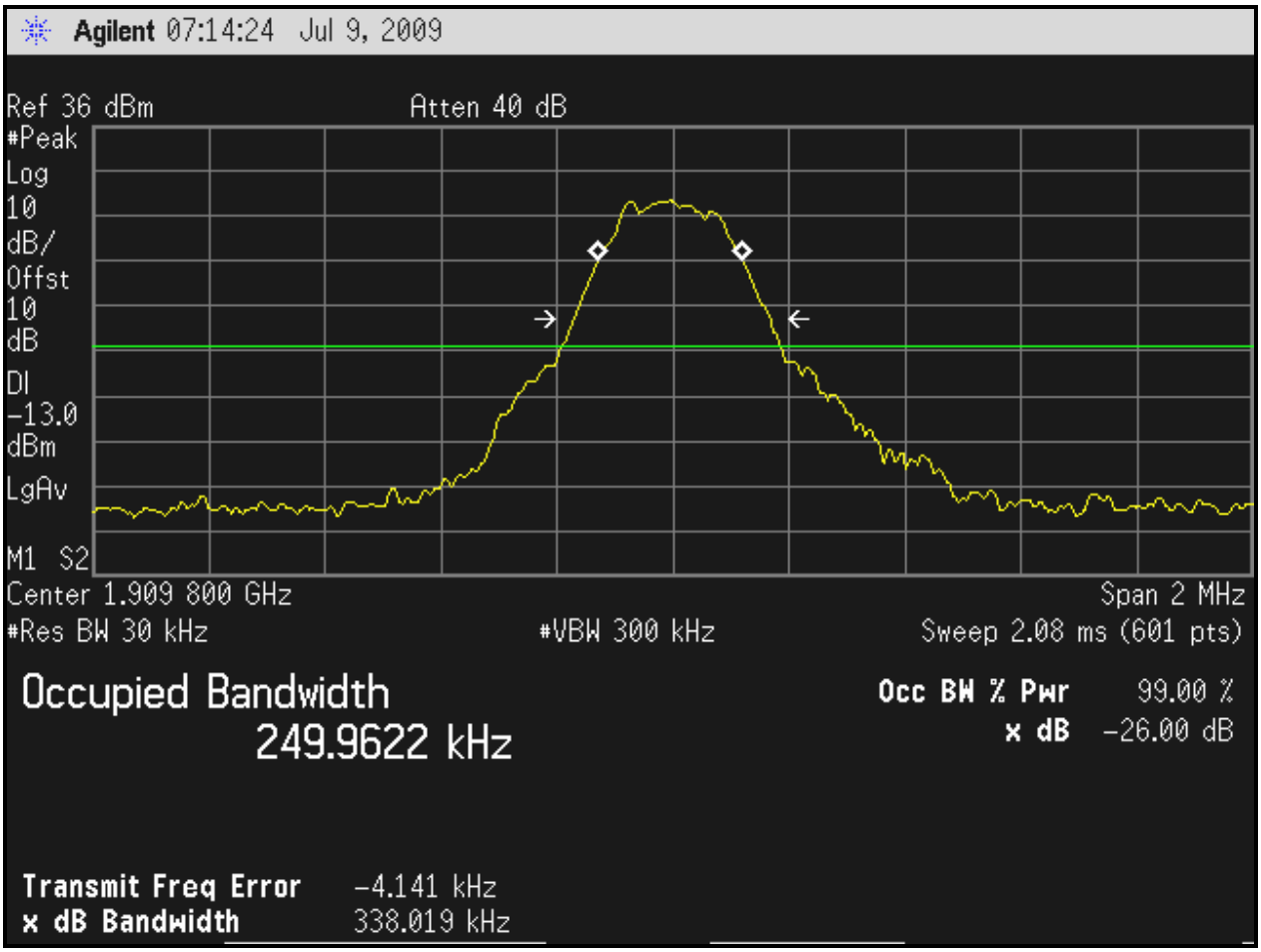
Plot 9-1: 26 dB Emission Bandwidth 1850.2 MHz – GSM1900



Plot 9-2: 26 dB Emission Bandwidth 1880 MHz – GSM1900



Plot 9-3: 26 dB Emission Bandwidth 1909.8 MHz – GSM1900



9.3 26 dB Emissions Bandwidth Test Equipment

Table 9-2: 26 dB Emissions Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	6/13/10

Test Personnel:

Daniel W. Baltzell		July 9, 2009
Test Engineer	Signature	Date Of Test

10 Radiated Emissions - FCC §24.238(a); RSS-133 §6.5.1(a)(i) and §6.6

10.1 Radiated Emissions Measurement Test Procedure

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 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 10th harmonic of the highest fundamental transmitter frequency.

At each frequency, the EUT was rotated 360° and positioned in three dimensions, 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 1000 MHz, emissions were measured using 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. For the substitution measurements for the cellular and PCS bands a substitution antenna replaced the EUT and an amplitude achieved to match the initial analyzer level and further corrected for comparison to the limit.

10.2 Spurious Radiated Emissions Test Results

Table 10-1: Radiated Emissions Harmonics/Spurious Channel 512; 1850.2 MHz; GSM1900

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Signal Generator Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Corrected Emission Level (dBc)	Limit (dBc)	Margin (dB)
1850.2	96.6	21.8	1.0	8.4	29.2 dBm	33.0 dBm	-3.8
3700.4	48.0	-46.4	15.4	7.4	84.6	43.2	-41.4
5550.6	41.6	-43.3	13.4	8.3	78.5	43.2	-35.4
7400.8	39.6	-43.2	14.9	8.8	79.5	43.2	-36.3
9251.0	38.5	-38.5	17.1	9.5	76.4	43.2	-33.2
11101.2	38.5	-36.7	17.2	10.4	73.7	43.2	-30.5
12951.4	38.3	-31.6	17.3	11.0	68.1	43.2	-24.9
14801.6	38.5	-29.9	18.3	9.9	68.5	43.2	-25.3
16651.8	37.1	-30.5	19.7	13.3	67.1	43.2	-23.9
18502.0	34.3	-23.1	20.6	13.1	60.8	43.2	-17.6

Table 10-2: Radiated Emissions Harmonics/Spurious Channel 661; 1880 MHz; GSM1900

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Signal Generator Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Corrected Emission Level (dBc)	Limit (dBc)	Margin (dB)
1880.0	95.6	21.7	1.6	8.4	28.5 dBm	33.0 dBm	-4.5
3760.0	48.7	-45.4	15.8	7.4	84.0	43.2	-40.8
5640.0	40.9	-45.2	13.4	8.4	80.3	43.2	-37.1
7520.0	42.1	-40.9	15.8	8.7	78.3	43.2	-35.1
9400.0	36.8	-39.5	17.6	9.5	77.7	43.2	-34.5
11280.0	35.7	-40.0	16.7	10.4	76.6	43.2	-33.4
13160.0	41.4	-28.8	17.6	10.7	65.9	43.2	-22.7
15040.0	37.5	-30.6	18.4	10.6	68.7	43.2	-25.5
16920.0	37.9	-29.7	20.0	12.2	67.7	43.2	-24.5
18800.0	34.4	-20.3	21.1	12.4	59.2	43.2	-16.0

Table 10-3: Radiated Emissions Harmonics/Spurious Channel 810; 1909.8 MHz; GSM1900

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Signal Generator Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Corrected Emission Level (dBc)	Limit (dBc)	Margin (dB)
1909.8	93.8	21.1	1.7	8.0	27.4 dBm	33.0 dBm	-5.6
3819.6	50.8	-41.5	16.0	7.4	80.2	43.1	-37.1
5729.4	43.0	-42.6	13.8	8.5	78.0	43.1	-34.8
7639.2	40.5	-42.3	15.3	8.7	79.0	43.1	-35.9
9549.0	37.7	-39.5	17.3	9.6	77.3	43.1	-34.2
11458.8	37.0	-38.4	16.9	10.4	75.1	43.1	-31.9
13368.6	37.7	-32.1	17.6	10.4	69.5	43.1	-26.4
15278.4	39.2	-29.0	18.8	11.9	66.0	43.1	-22.9
17188.2	38.6	-26.7	19.9	11.1	65.6	43.1	-22.5
19098.0	35.2	-18.2	21.7	12.4	57.7	43.1	-14.5

Table 10-4: Radiated Emissions Unintentional/Receiver

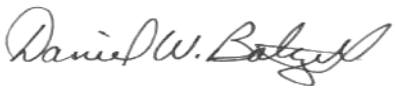
Temperature: 87°F Humidity: 55%										
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Pass/ Fail**
208.0	Qp	V	0	1.0	41.5	-19.3	22.2	43.5	-21.3	Pass
416.0	Qp	V	0	1.0	24.4	-17.5	6.9	46.0	-39.1	Pass
624.0	Qp	V	0	1.0	22.8	-13.2	9.6	46.0	-36.4	Pass
832.0	Qp	H	0	1.0	17.2	-10.4	6.8	46.0	-39.2	Pass
1040.0	Av	V	0	1.0	26.4	-2.0	24.4	54.0	-29.6	Pass
1248.0	Av	V	0	1.0	25.7	-0.1	25.6	54.0	-28.4	Pass

10.3 Radiated Emissions Test Equipment

Table 10-5: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901365	MITEQ	JS4-00102600-41-5P	Amplifier, 0.1-26 GHz, 30 dB gain	N/A	3/4/10
901215	Hewlett Packard	8596EM	Spectrum Analyzer	3826A00144	10/23/09
901426	Insulated Wire Inc.	KPS-1503-3600-KPS	RF cable, 30'	NA	10/17/09
901516	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	10/17/09
901517	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	10/17/09
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	6/14/10
900321	EMCO	3161-03	Horn Antennas (4 - 8,2GHz)	9508-1020	6/14/10
900323	EMCO	3160-7	Horn Antenna (8.2-12.4 GHz)	9605-1054	6/14/10
900356	EMCO	3160-08	Horn Antenna (12.4-18 GHz)	9607-1044	6/14/10
900325	EMCO	3160-9	Horn Antenna (18-26.5 GHz)	9605-1051	6/14/10
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	7/31/09

Test Personnel:



Daniel W. Baltzell		July 10 and 20, 2009
EMC Test Engineer	Signature	Dates Of Tests

11 Conclusion

The data in this measurement report shows that the Via One Networks LLC Model: WP8, FCC ID: XEZ-1000, IC: 8390A-1000, complies with all the requirements of Parts 2, and 24 of the FCC Rules and Industry Canada RSS-133.