Engineering and Testing for EMC and Safety Compliance

Certification Application Report
FCC Part 15.247 & Industry Canada RSS-210

Test Lab:	Applicant:
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FCC ID/ IC ID:	UVV-ZSEN 7070A-ZSEN	**Test Report Date:**	May 14, 2007
Platform:	N/A	**RTL Work Order #:**	2007146
Model Name/ Model Number:	ZSEN	**RTL Quote #:**	QRTL07-083
American National Standard Institute:	ANSI C63.4-2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz		
FCC Classification:	DTS – Part 15 Digital Transmission System		
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 October 1, 2006		
Industry Canada:	RSS-210, Issue 6 September 2005: Low Power License-Exempt Communications Devices		
Digital Interface Information	Digital Interface was found to be compliant		

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
905-925	0.013	N/A	N/A

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 and ANSI C63.4.

Signature: _____ Date: May 14, 2007

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

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1 General Information

1.1 Scope

The EUT is a hybrid system operating under Part 15.247 of the FCC rules. The applicant is seeking full modular approval.

1.2 Description of EUT

Equipment Under Test	Modular Transceiver
Model Name/Number	ZSEN
Power Supply	3.6 VDC
Modulation Type	MSK
Frequency Range	905 – 925 MHz
Antenna Connector Type	Internal
Antenna Types	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 **FULL MODULAR APPROVAL** for Zylaya Corporation Model Name: ZSEN, FCC ID: UVV-ZSEN, IC ID: 7070A-ZSEN.

1.5 Modifications

No modifications were required to achieve 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

Channel	Frequency
Low	905
Middle	915
High	925

2.2 Exercising the EUT

Seven EUT's were provided to perform various functions while testing. Four were setup for conducted measurements: low, middle and high channel fixed frequency operation, and one with hopping enabled. Five were setup for radiated measurements: low, middle and high channel fixed frequency operation, one with hopping enabled and one receive only.

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)

Standard	Test	Pass/Fail or N/A
FCC 15.207	AC Power Conducted Emissions	Pass
FCC 15.209	Radiated Emissions	Pass
FCC 15.247(a)(2)	6 dB Bandwidth	N/A*
FCC 15.247(b)(3)	Maximum Peak Power Output	Pass
FCC 15.247(d)	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(d)	Band Edge Measurement	Pass
FCC 15.247(e), (f)	Power Spectral Density	Pass
FCC 15.247(f)	Average Time of Occupancy, Channel Separation	Pass

** Not required for hybrid systems per KDB 453039*

2.4 Test System Details

The test samples were received on March 21, 2007. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following table.

Table 2-3: Equipment Under Test

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Transmitter Module	Zylaya Corporation	905 MHz fixed frequency (conducted)	X0102	UVV-ZSEN	N/A	17823
Transmitter Module	Zylaya Corporation	915 MHz fixed frequency (conducted)	X0104	UVV-ZSEN	N/A	17822
Transmitter Module	Zylaya Corporation	925 MHz fixed frequency (conducted)	X0111	UVV-ZSEN	N/A	17821
Transmitter Module	Zylaya Corporation	hopping (conducted)	X0115	UVV-ZSEN	N/A	17885
Transmitter Module	Zylaya Corporation	905 MHz fixed frequency (radiated)	B0093	UVV-ZSEN	N/A	17886
Transmitter Module	Zylaya Corporation	915 MHz fixed frequency (radiated)	B0097	UVV-ZSEN	N/A	17887
Transmitter Module	Zylaya Corporation	925 MHz fixed frequency	B0096	UVV-ZSEN	N/A	17888
Transmitter Module	Zylaya Corporation	hopping (radiated)	B0131	UVV-ZSEN	N/A	17889
Battery Pack	EAC	4606	980002-449	N/A	N/A	17820

2.5 Configuration of Tested System

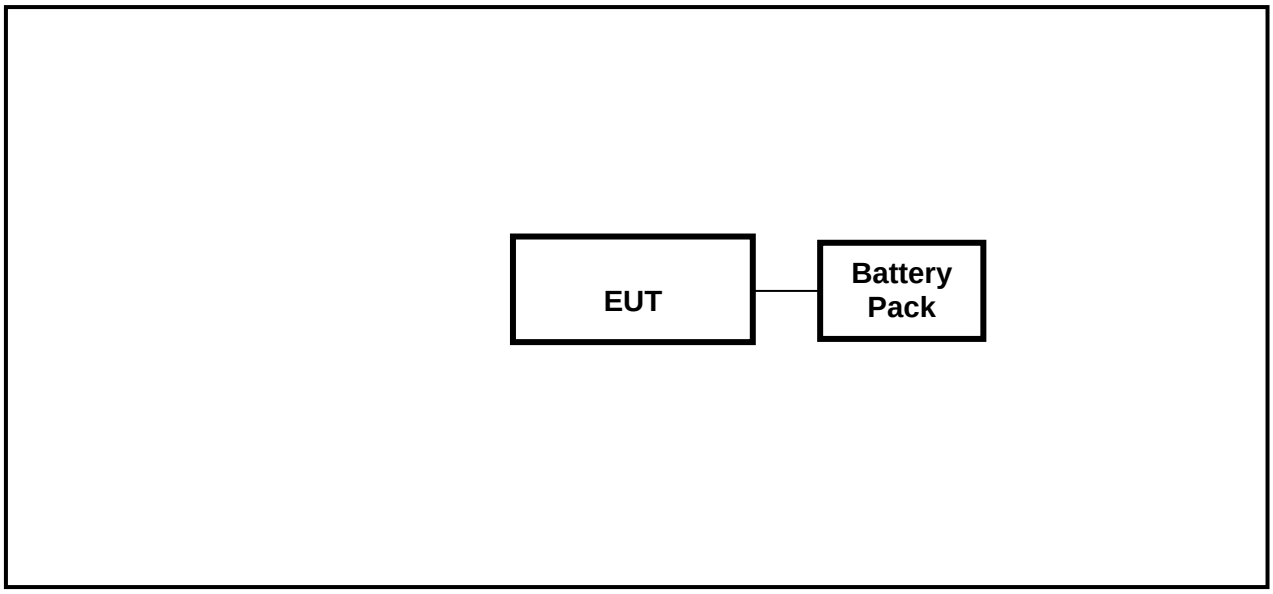


Figure 2-1: Configuration of System Under Test

3 Peak Output Power - §15.247(b)(3)

3.1 Power Output Test Procedure

A conducted power measurement of the EUT was taken using an Agilent Technologies spectrum analyzer.

Table 3-1: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	PSA Series Spectrum Analyzer	US44020346	12/14/2007

3.2 Power Output Test Data

Table 3-2: Power Output Test Data

Channel	Frequency (MHz)	Peak Power Conducted Output (dBm)
Low	905	11.1
Middle	915	10.7
High	925	10.3

Test Personnel:

Richard B. McMurray	Richard B. McMurray	April 6, 2007
EMC Test Engineer	Signature	Date Of Test

4 Compliance With the Band Edge – FCC §15.247(d)

4.1 Band Edge Test Procedure

The transmitter output was connected to its appropriate antenna. A conducted antenna port delta measurement was performed from the highest peak in the restricted band to the peak of the fundamental, and subtracted from the radiated field strength; the result was compared to the limit.

Table 4-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	12/14/07
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901425	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	12/05/07
901424	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	12/05/07
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	05/20/07

4.2 Band Edge Test Results

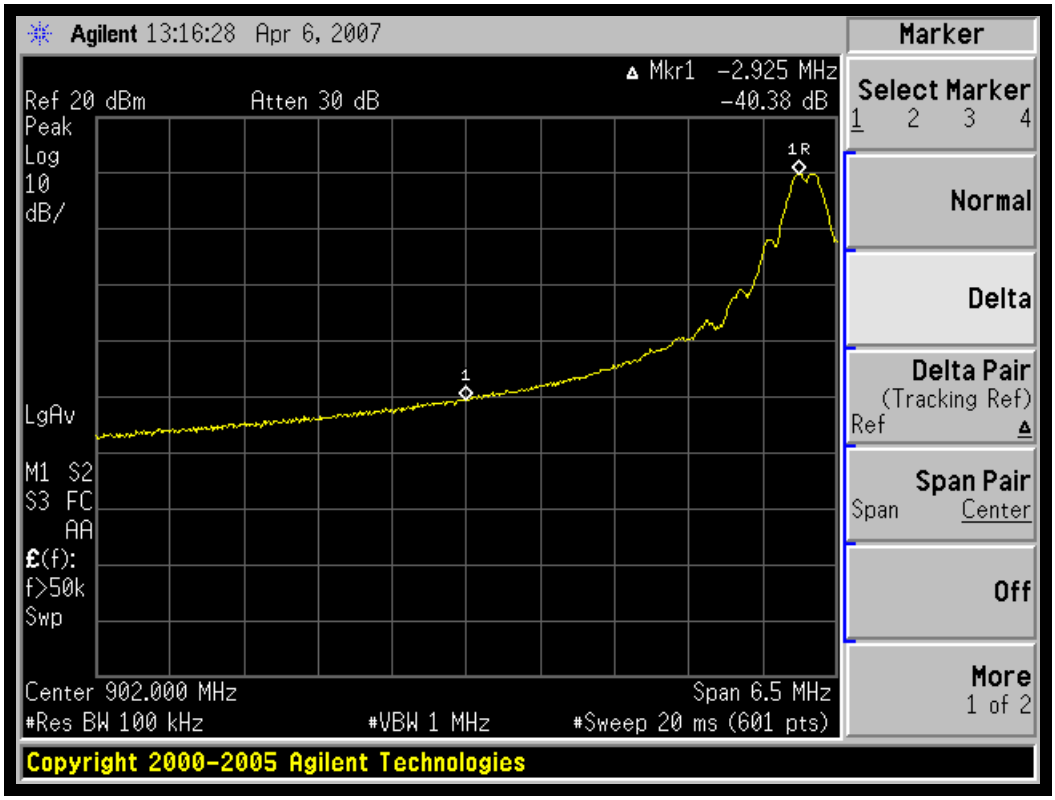
4.2.1 Calculation of Lower Band Edge

102.7 dBuV/m is the field strength measurement, from which the delta measurement of 40.4 dB is subtracted (reference hopping plot), resulting in a level of 62.3 dB. This level has a margin of 20.4 dB below the limit of 82.7 dBuV/m.

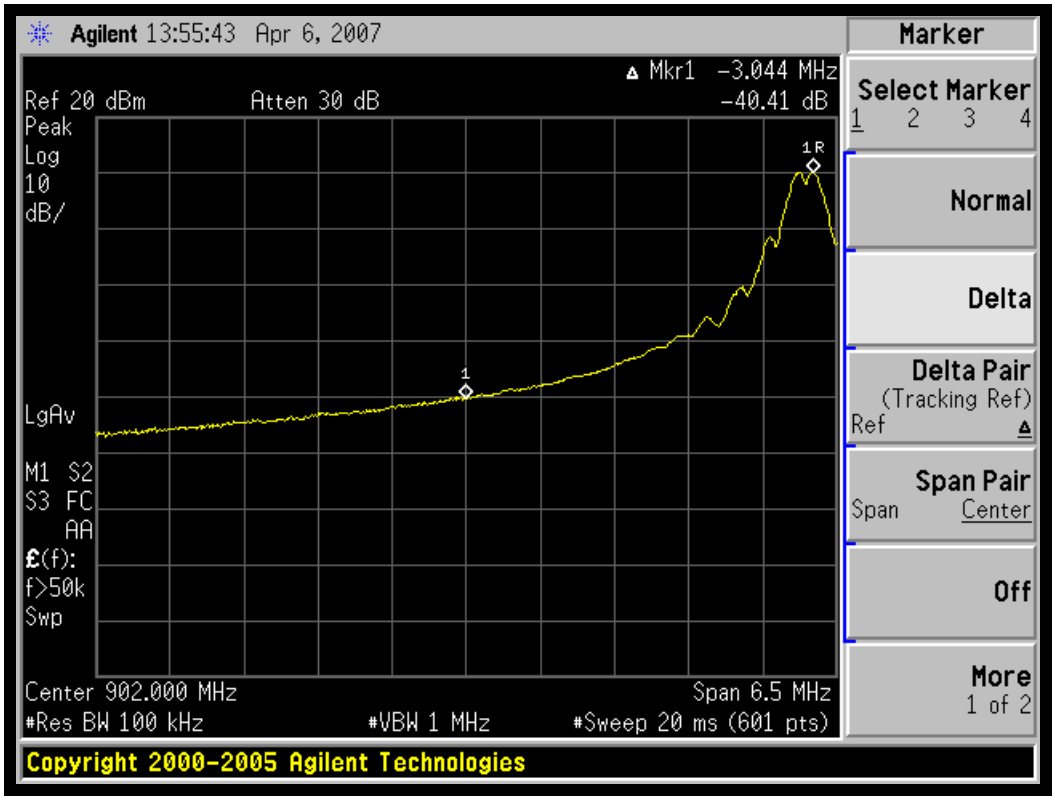
Calculation: 102.7 dBuV/m – 40.4 dB – 86.3 dBuV/m = -20.4 dB

Peak Field Strength of Lower Band Edge (100 kHz RBW/300 kHz VBW) = 103.0 dBuV/m
Quasi-Peak Field Strength of Lower Band Edge (120 kHz RBW/300 kHz VBW) = 102.7 dBuV/m
Delta measurement = 40.4 dB

4.2.2 Conducted Lower Band Edge Plots



Plot 4-1: Conducted Lower Band Edge – Fixed Low Channel Operation



Plot 4-2: Conducted Lower Band Edge – Hopping

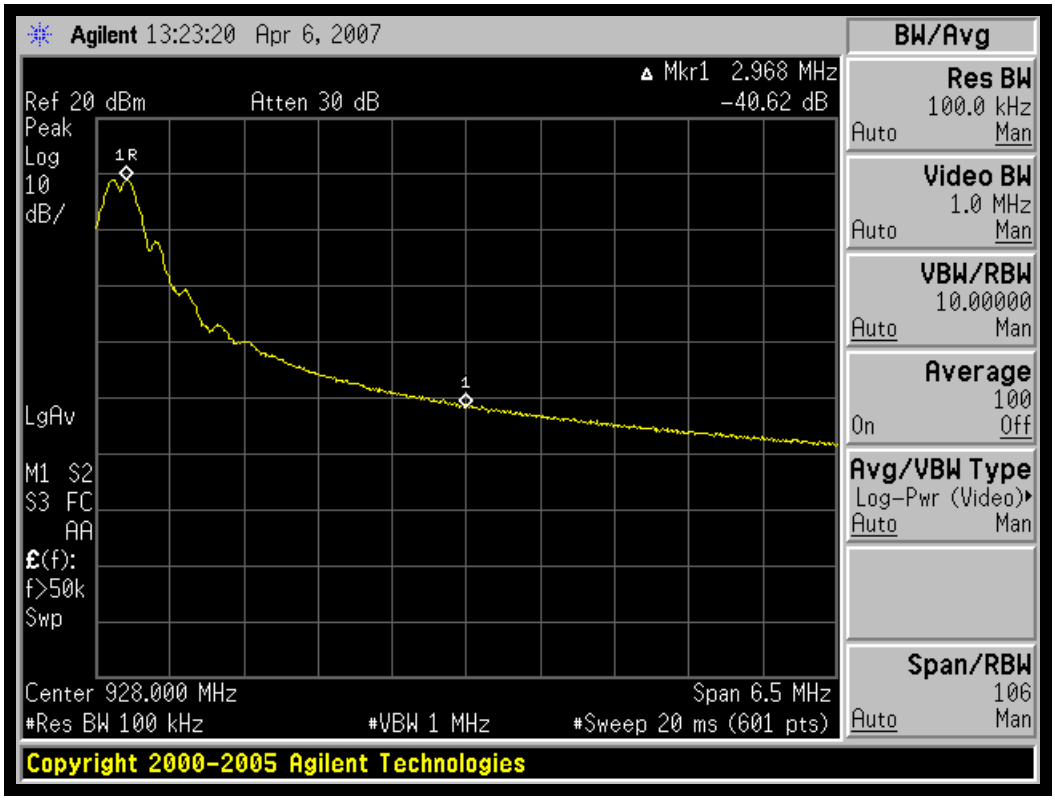
4.2.3 Calculation of Upper Band Edge

102.2 dBuV/m is the field strength measurement, from which the delta measurement of 40.6 dB is subtracted (reference hopping plot), resulting in a level of 61.6 dB. This level has a margin of 20.2 dB below the limit of 82.2 dBuV/m.

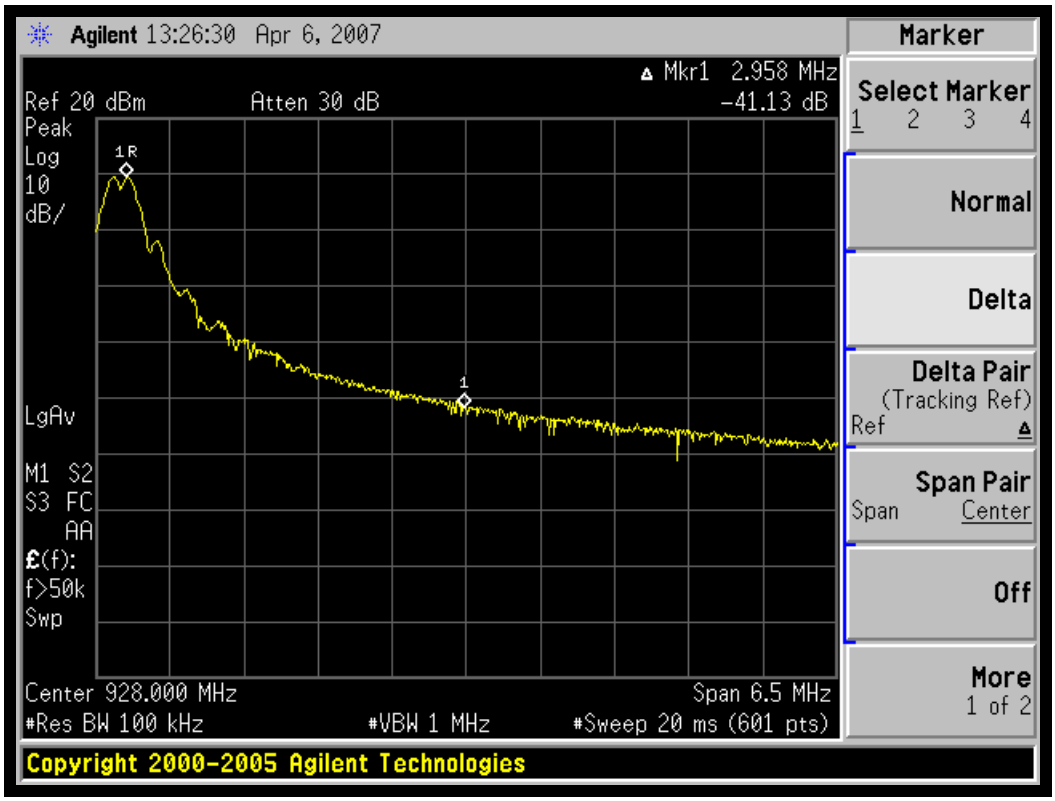
Calculation: 102.2 dBuV/m – 40.6 dB – 82.2 dBuV/m = -20.2 dB

Peak Field Strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 102.5 dBuV/m
Average Field Strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 102.2 dBuV/m
Delta measurement = 40.6 dB

4.2.4 Conducted Upper Band Edge Plots



Plot 4-3: Conducted Upper Band Edge – Fixed High Channel Operation



Plot 4-4: Conducted Upper Band Edge – Hopping

Test Personnel:

Richard B. McMurray	Richard B. McMurray	April 6, 2007
EMC Test Engineer	Signature	Date Of Test

5 Antenna Conducted Spurious Emissions - §15.247(d)

5.1 Antenna Conducted Spurious Emissions Test Procedure

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 300 kHz. The modulated carrier was identified at the following frequencies: 905 MHz, 915 MHz, 925 MHz, and hopping mode.

Note that the limit is 20 dBc as we are reporting peak power.

Table 5-1: Antenna Conducted Spurious Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	PSA Series Spectrum Analyzer	US44020346	12/14/2007

No conducted spurious emissions were identified within 20 dB of the limit. Per 15.31(o), no data is being reported.

Test Personnel:

Richard B. McMurray	Richard B. McMurray	April 6, 2007
EMC Test Engineer	Signature	Date Of Test

6 Power Spectral Density - §15.247(e), (f); RSS-210 §A8.2

6.1 Power Spectral Density Test Procedure

The power spectral density per FCC 15.247(d) was measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 3 kHz, the video bandwidth set at 30 kHz, and the sweep time set at 500 seconds. The spectral lines were resolved for the modulated carriers at the low, middle and high channels. These levels are below the +8 dBm limit. See the power spectral density table and plots.

Table 6-1: Power Spectral Density Test Equipment

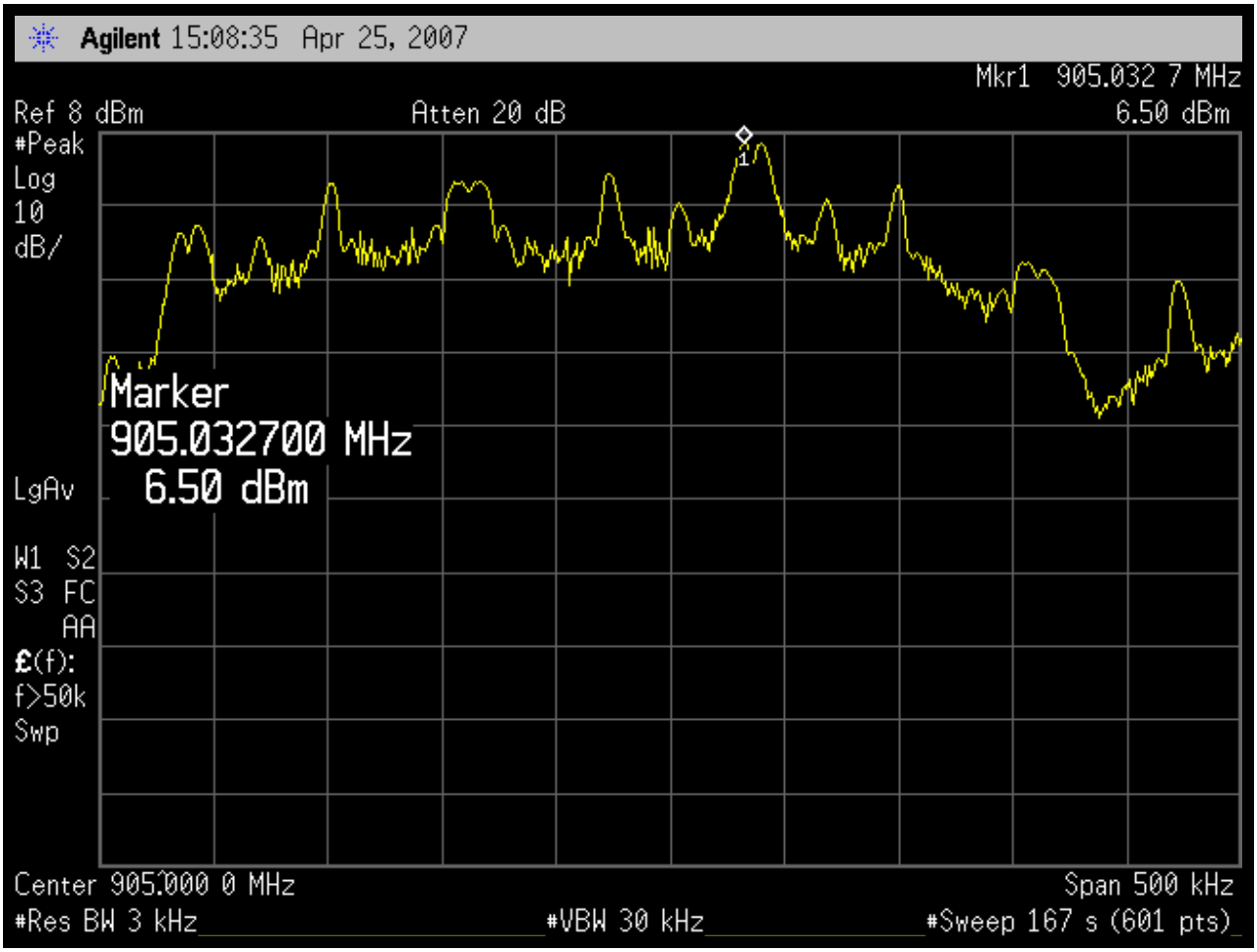
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	12/14/07

6.2 Power Spectral Density Test Data

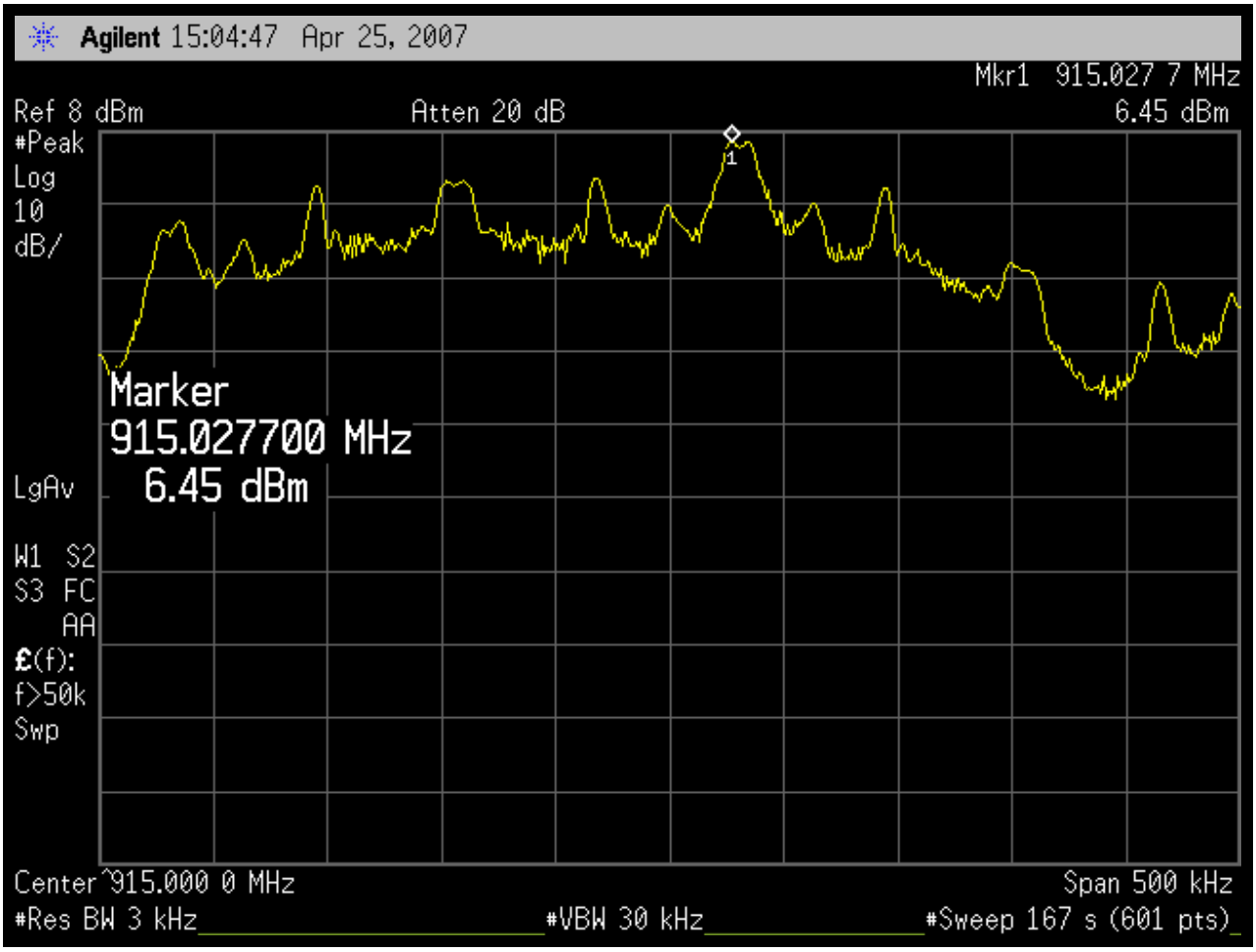
Table 6-2: Power Spectral Density Test Data

Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
Low	905	6.5	8	Pass
Mid	915	6.5	8	Pass
High	925	6.0	8	Pass

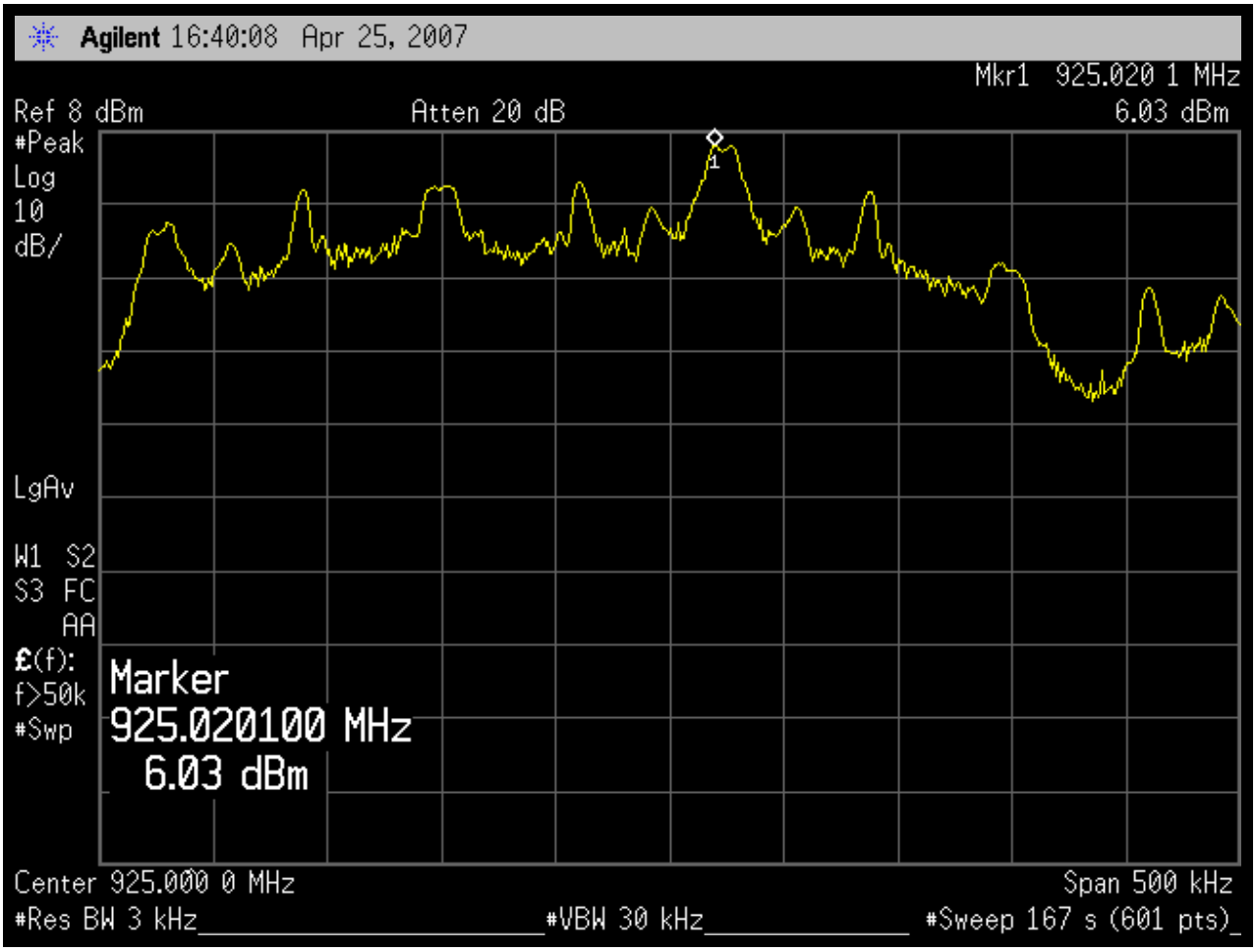
Plot 6-1: Power Spectral Density: 905 MHz



Plot 6-2: Power Spectral Density: 915 MHz



Plot 6-3: Power Spectral Density: 925 MHz



Test Personnel:

Dan Baltzell		April 25, 2007
EMC Test Engineer	Signature	Date Of Test

7 Carrier Frequency Separation - §15.247(a)(1)

7.1 Carrier Frequency Separation Test Procedure

Hybrid systems must meet the same requirements as frequency hopping systems. 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. The 20 dB bandwidth was measured to be 930 kHz.

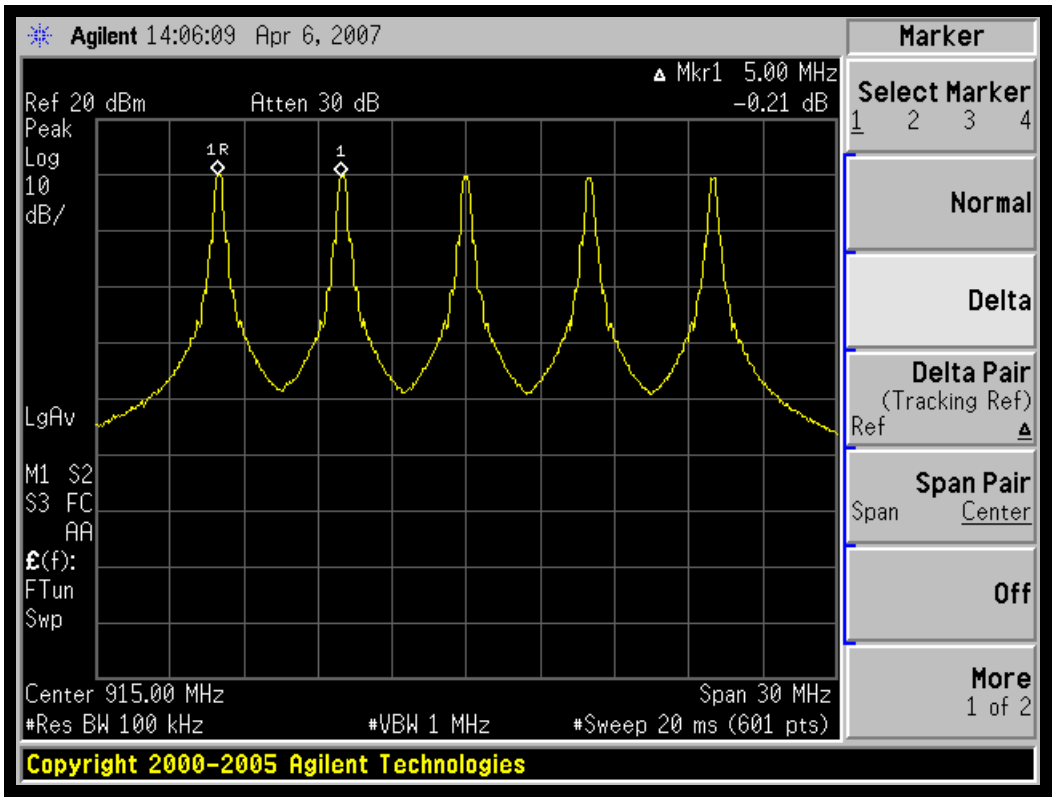
Measured frequency separation = 5 MHz

Table 7-1: Carrier Frequency Separation Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	PSA Series Spectrum Analyzer	US44020346	12/14/07

7.2 Carrier Frequency Separation Test Data

Plot 7-1: Carrier Frequency Separation



Test Personnel:

Richard B. McMurray	Richard B. McMurray	April 6, 2007
EMC Test Engineer	Signature	Date Of Test

8 Additional Requirements for Hybrid Systems – FCC §15.247(a)(1)

Hybrid systems must also comply with the following requirements. These requirements were not tested, but compliance is attested to in the operational description.

- The transmission also must comply with a 0.4 second/channel maximum dwell time when the hopping function is turned on.
- Pseudo-random hop sequence
- Equal use of each frequency
- Receiver matching bandwidth and synchronization

9 Conducted Emissions Measurement Limits – FCC §15.207

9.1 Test Methodology for Conducted Line Emissions Measurements

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 microhenry 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 through a Solar high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 100 kHz. 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.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech Quality Manual, section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as well as daily calibration methods, technician training, and emphasis to employees on avoiding error.

9.2 Conducted Line Emission Test

The conducted test was performed with the EUT in hopping mode and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE.

9.3 Conducted Line Emissions Test Equipment

Table 9-1: Conducted Line Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz-12.8 GHz)	3826A00144	10/16/07
901084	AFJ International	LS16	16A LISN	16010020082	04/04/08

9.4 Conducted Line Emissions Test Data

Table 9-2: Conducted Emissions (Neutral Side); Mode: Hopping

Temperature: 74°F Humidity: 38%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.150	Av	36.6	0.2	36.8			56.0	-19.2	Pass
0.150	Qp	58.8	0.2	59.0	66.0	-7.0			Pass
0.221	Av	34.2	0.2	34.4			52.8	-18.4	Pass
0.221	Qp	54.5	0.2	54.7	62.8	-8.1			Pass
0.294	Av	33.2	0.3	33.5			50.4	-16.9	Pass
0.294	Qp	50.8	0.3	51.1	60.4	-9.3			Pass
0.369	Av	39.2	0.2	39.4			48.5	-9.1	Pass
0.369	Qp	46.1	0.2	46.3	58.5	-12.2			Pass
0.440	Pk	35.7	0.2	35.9			47.1	-11.2	Pass
0.734	Pk	40.1	0.4	40.5			46.0	-5.5	Pass
0.809	Pk	40.5	0.3	40.8			46.0	-5.2	Pass
1.250	Pk	42.0	0.5	42.5			46.0	-3.5	Pass
1.326	Pk	41.9	0.5	42.4			46.0	-3.6	Pass
1.397	Pk	41.8	0.5	42.3			46.0	-3.7	Pass
1.473	Pk	40.4	0.5	40.9			46.0	-5.1	Pass
7.250	Pk	42.1	1.5	43.6			50.0	-6.4	Pass
27.900	Pk	36.6	2.3	38.9			50.0	-11.1	Pass

Table 9-3: Conducted Emissions (Phase Side); Mode: Hopping

Temperature: 74°F Humidity: 38%									
Emission Frequency (MHz)	**Test Detector**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB)**	**Emission Level (dBuV)**	**QP Limit (dBuV)**	**QP Margin (dBuV)**	**AV Limit (dBuV)**	**AV Margin (dBuV)**	**Pass/ Fail**
0.150	Av	30.3	0.2	30.5			56.0	-25.5	Pass
0.150	Qp	56.0	0.2	56.2	66.0	-9.8			Pass
0.221	Av	31.7	0.2	31.9			52.8	-20.9	Pass
0.221	Qp	53.0	0.2	53.2	62.8	-9.6			Pass
0.294	Av	26.9	0.3	27.2			50.4	-23.2	Pass
0.294	Qp	48.2	0.3	48.5	60.4	-11.9			Pass
0.367	Av	37.2	0.2	37.4			48.6	-11.2	Pass
0.367	Qp	44.1	0.2	44.3	58.6	-14.3			Pass
0.441	Av	32.8	0.2	33.0			47.0	-14.0	Pass
0.441	Qp	39.3	0.2	39.5	57.0	-17.5			Pass
0.736	Pk	42.1	0.4	42.5			46.0	-3.5	Pass
0.808	Pk	42.3	0.3	42.6			46.0	-3.4	Pass
0.883	Pk	41.9	0.4	42.3			46.0	-3.7	Pass
1.250	Pk	41.4	0.5	41.9			46.0	-4.1	Pass
1.321	Pk	40.4	0.5	40.9			46.0	-5.1	Pass
1.400	Pk	40.6	0.5	41.1			46.0	-4.9	Pass
5.010	Pk	28.9	1.2	30.1			50.0	-19.9	Pass
27.900	Pk	32.5	2.3	34.8			50.0	-15.2	Pass

Test Personnel:

Daniel W. Baltzell		May 14, 2007
EMC Test Engineer	Signature	Date Of Test

10 Radiated Emissions - §15.209

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

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 (24.8 GHz).

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 1000 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
900151	Rohde and Schwarz	HFH2-Z2	Loop Antenna (9 kHz - 30 MHz)	827525/019	09/15/09
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	05/20/07
901281	Rhein Tech Laboratories, Inc.	PR-1040	Amplifier (10 MHz - 2 GHz)	1004	01/19/08
901413	Agilent	E4448A	Spectrum Analyzer	US44020346	12/14/07
900878	Rhein Tech Laboratories, Inc.	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901425	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	12/05/07
901424	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	12/05/07
901242	Rhein Tech Laboratories, Inc.	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	05/20/07
900321	EMCO	3161-03	Horn Antennas (4 – 8.2 GHz)	9508-1020	5/20/07
900323	EMCO	3160-7	Horn Antennas (8,2 - 12,4 GHz)	9605-1054	5/20/07
900356	EMCO	3160-08	Horn Antenna (12.4 - 18 GHz)	9607-1044	5/20/07
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051	5/20/07
901218	EMCO	3301B	Horn Antenna (18 - 26.5 GHz)	960281-003	5/20/07
900392	Hewlett Packard	1197OK	Harmonic Mixer (18 – 26.5 GHz)	3525A00159	11/27/07
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	9/13/07
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	9/13/07

10.3 Radiated Emissions Test Results

10.3.1 Radiated Emissions Digital/Receiver Test Data

Table 10-2: Digital/Receiver Radiated Emissions Test Data

Temperature: 75°F Humidity: 72%										
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
131.900	Qp	H	180	1.0	33.0	-18.2	14.8	43.5	-28.7	Pass
163.400	Qp	H	180	1.0	33.4	-20.3	13.1	43.5	-30.4	Pass
226.400	Qp	H	180	1.0	31.3	-19.9	11.4	46.0	-34.6	Pass
238.600	Qp	H	180	1.0	42.0	-18.6	23.4	46.0	-22.6	Pass
444.700	Qp	H	180	1.0	20.2	-12.2	8.0	46.0	-38.0	Pass
546.500	Qp	H	180	1.0	34.6	-10.6	24.0	46.0	-22.0	Pass
558.700	Qp	H	180	1.0	45.0	-10.2	34.8	46.0	-11.2	Pass

10.3.2 Radiated Emissions Harmonics/Spurious Test Data

Table 10-3: Radiated Emissions Harmonics/Spurious 905 MHz

Fundamental amplitude = 102.7 dBuV/m

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	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)
1810.000	67.0	46.1	0.9	47.0	82.7	-35.7
2715.000	59.3	42.0	-3.7	38.3	54.0	-15.7
3620.000	45.0	31.6	-3.0	28.6	54.0	-25.4
4525.000	44.1	31.5	-12.5	19.0	54.0	-35.0
5430.000	42.1	29.7	4.1	33.8	82.7	-48.9
6335.000	40.9	27.9	4.8	32.7	82.7	-50.0
7240.000	44.4	30.9	6.0	36.9	82.7	-45.8
8145.000	46.6	32.9	6.9	39.8	54.0	-14.2
9050.000	42.8	29.6	12.6	42.2	54.0	-11.8

Table 10-4: Radiated Emissions Harmonics/Spurious 915 MHz

Fundamental amplitude = 102.9 dBuV/m

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	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)
1830.000	64.7	48.3	1.0	49.3	82.9	-33.6
2745.000	66.5	45.1	-3.2	41.9	54.0	-12.1
3660.000	45.7	33.0	-2.8	30.2	54.0	-23.8
4575.000	42.8	30.7	4.5	35.2	54.0	-18.8
5490.000	42.3	29.9	4.5	34.4	82.9	-48.5
6405.000	42.5	28.5	5.1	33.6	82.9	-49.3
7320.000	40.8	27.2	6.2	33.4	54.0	-20.6
8235.000	42.0	29.2	12.0	41.2	54.0	-12.8
9150.000	37.5	27.3	13.1	40.4	54.0	-13.6

Table 10-5: Radiated Emissions Harmonics/Spurious 925 MHz

Fundamental amplitude = 102.5 dBuV/m

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	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)
1850.000	64.6	46.1	1.2	47.3	82.5	-35.2
2775.000	60.7	43.7	-3.3	40.4	54.0	-13.6
3700.000	48.2	35.3	-2.4	32.9	54.0	-21.1
4625.000	44.2	31.1	4.2	35.3	54.0	-18.7
5550.000	43.6	30.8	4.5	35.3	82.5	-47.2
6475.000	44.7	31.3	5.4	36.7	82.5	-45.8
7400.000	42.2	29.1	6.5	35.6	54.0	-18.4
8325.000	44.0	30.6	12.0	42.6	54.0	-11.4
9250.000	40.9	28.1	13.0	41.1	82.5	-41.4

Table 10-6: Radiated Emissions Harmonics/Spurious Hopping Mode

Fundamental amplitude = 102.7 dBuV/m

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	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)
926.090	70.0	26.1	-5.9	20.2	82.7	-62.5
1809.998	65.6	26.1	0.9	27.0	82.7	-55.7
1819.990	65.6	26.0	1.2	27.2	82.7	-55.5
1830.110	65.7	26.1	1.0	27.1	82.7	-55.6
1840.120	65.4	26.4	1.3	27.7	82.7	-55.0
1850.020	68.5	26.5	1.2	27.7	82.7	-55.0
2715.000	57.3	29.6	-3.7	25.9	54.0	-28.1
3679.950	45.5	27.9	-2.6	25.3	54.0	-28.7
4550.300	42.5	29.3	4.4	33.7	54.0	-20.3
5459.900	42.3	29.4	4.1	33.5	54.0	-20.5
6475.600	41.2	31.6	5.5	37.1	82.7	-45.6
7359.400	43.0	27.6	6.1	33.7	54.0	-20.3
8145.000	48.4	29.0	6.9	35.9	54.0	-18.1

Test Personnel:

Daniel W. Baltzell		April 19, 2007
EMC Test Engineer	Signature	Date Of Test

11 Conclusion

The data in this measurement report shows that the EUT as tested, Zylaya Corporation, Model Name: ZSEN, FCC ID: UVV-ZSEN, IC ID: 7070A-ZSEN , complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations and IC RSS-210.