Lab Code: 200167-0

FCC PART 15 SUBPART 247

MEASUREMENTAND TEST REPORT

For

Ruckus Wireless, Inc.

883 North Shoreline Blvd, Suite A-100
Mountain View CA, USA 94043

FCC ID: S9GVX2X25
Model: ZX2X25

This Report Concerns:	Product type:
☒ Class II Permissive Change Report	Wireless 802.11b/g Router

Test Engineer:	Oscar Au 
Report Number:	R0612201-247
Report Date:	2007-01-15
Reviewed By:	Hans Mellberg, VP of Engineering 
Prepared By: (12)	**Bay Area Compliance Laboratories Corp.** 1274 Anvilwood Ave. Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732 9164

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1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

The *Ruckus Wireless, Inc.* product, FC ID: *S9GVX2X25* the "EUT" as referred to in this report is a Wireless 802.11b/g Router that transmits and receives digital information at a rate from 11Mbps – 54 Mbps in the 2.4 GHz frequency band (2412.00 - 2462.00 MHz). This device is designed for home use and receives power via AC/DC adapter with switching power supply functions for various countries of deployment. This EUT features a single LAN input port, and four LAN output ports.

1.2 EUT Photo

1.3 Mechanical Description

The EUT is a mobile device which measures approximately 233mmL x 153mmW x 75mmH.

** The test data gathered are from production sample, serial number: VF40000005 Revision: #1, provided by the manufacturer.*

1.4 Objective

This type approval report is prepared on behalf of *Ruckus Wireless* in accordance with Part 2, Subpart J, Part 15, Subparts A, B, C and E of the Federal Communication Commissions rules.

The objective is to determine continued compliance with FCC 15.247 Standard's limits rules for Antenna Requirements and Radiated Spurious Emissions after the class II permissive change made by *Ruckus Wireless.*

FCC ID: S9GVX2X25 is electrically identical to the device of the same FCC ID tested by BACL in project R0603171. The only change that has been made to the EUT is mechanical; a new antenna with a maximum gain of 4.5 dBi has replaced the original Please refer to *Ruckus Wireless* Change Description letter filed along with this submission.

1.5 Related Submittal(s)/Grant(s)

This Permissive Change II report has been compiled on behalf of *Ruckus Wireless* and contains only those tests preformed to verify continued compliance after the aforementioned change was made. The original FCC ID: *S9GVX2X25* was granted in May, 2006. Please refer to Bay Area Compliance Laboratories Corp. project number: R0602242 for complete tests and their results.

1.6 Test Methodology

All measurements contained in this report were conducted 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.

1.7 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values ranging from $\pm$2.0 dB for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

Detailed instrumentation measurement uncertainties can be found in BACL Corp. report QAP-018.

1.8 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11, 1997 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the test methods and procedures set forth in ANSI C63.4-2003 & TIA/EIA-603.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: R-2463 and C-2698. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is a National Institute of Standards and Technology (NIST) accredited laboratory under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm.

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The host system was configured for testing according to ANSI C63.4-2003.

The EUT was tested in the normal (native) operating mode to represent *worst*-case results during the final qualification test.

2.2 Equipment Modifications

No modifications were made to the EUT.

2.3 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
IBM	Laptop PC	T42	N/A

2.4 Power Supply Information

Manufacturer	Description	Model	Serial Number
DVE	ADC Adaptor	DSA-0131F-12 US 12	N/A
DVE	ADC Adaptor	DSA-12W-10 Fxx	N/A
Leader Electronic	ADC Adaptor	MU-12-2120100-A1	N/A

2.5 Interface Ports and Cabling

Cable Description	Length (M)	From	To
Shielded Ethernet Cable	2.0	Ethernet port / EUT	Ethernet Port / PC

2.6 Printed Circuit Boards in EUT

Manufacturer	Description	Model/Rev.	Serial Number
Ruckus Wireless	Main Board	Rev. D	N/A

3 SUMMARY OF TEST RESULTS

Results reported relate only to the product tested.

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1091, §15.247(f)	RF Exposure Requirement	Compliant
§15.203 §15.247(b)(4)	Antenna Requirement	Compliant
§ 15.205	Restricted Bands	Compliant*
§ 15.207(a)	AC Line Conducted Emissions	Compliant*
§15.209(a), §15.247(d)	Spurious Radiated Emissions	Compliant
§2.1051, §15.247(d)	Spurious Emissions At Antenna Terminals	Compliant*
§15.247 (a)(2)	6 dB Bandwidth	Compliant*
§15.247 (b)(3)	Maximum Peak Output Power	Compliant*
§ 15.247 (d)	100 kHz Bandwidth of Frequency Band Edge	Compliant*
§15.247 (e)	Peak Power Spectral Density	Compliant*

* Please refer to BACL's project# R0602242 for original test data and photographs.

4 §1.1307(b) (1), §2.1091 - RF EXPOSURE

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

MPE Prediction

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S = PG/4\pi R^2$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 23.0(dBm)
Maximum peak output power at antenna input terminal: 200.00 (mW)
Prediction distance: 20 (cm)
Predication frequency: 2400 (MHz)
Antenna Gain (typical): 4.5 (dBi)
antenna gain: 2.82(numeric)
Power density at predication frequency at 20 cm: 0.1122(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 1.0 (mW/cm^2)

Test Result

The EUT is a mobile device. The power density level at 20 cm is 0.1122mW/cm², which is below the uncontrolled exposure limit of 1.0mW/cm² at 2400 MHz.

5 §15.203 - ANTENNA REQUIREMENT

5.1 Applicable Standard

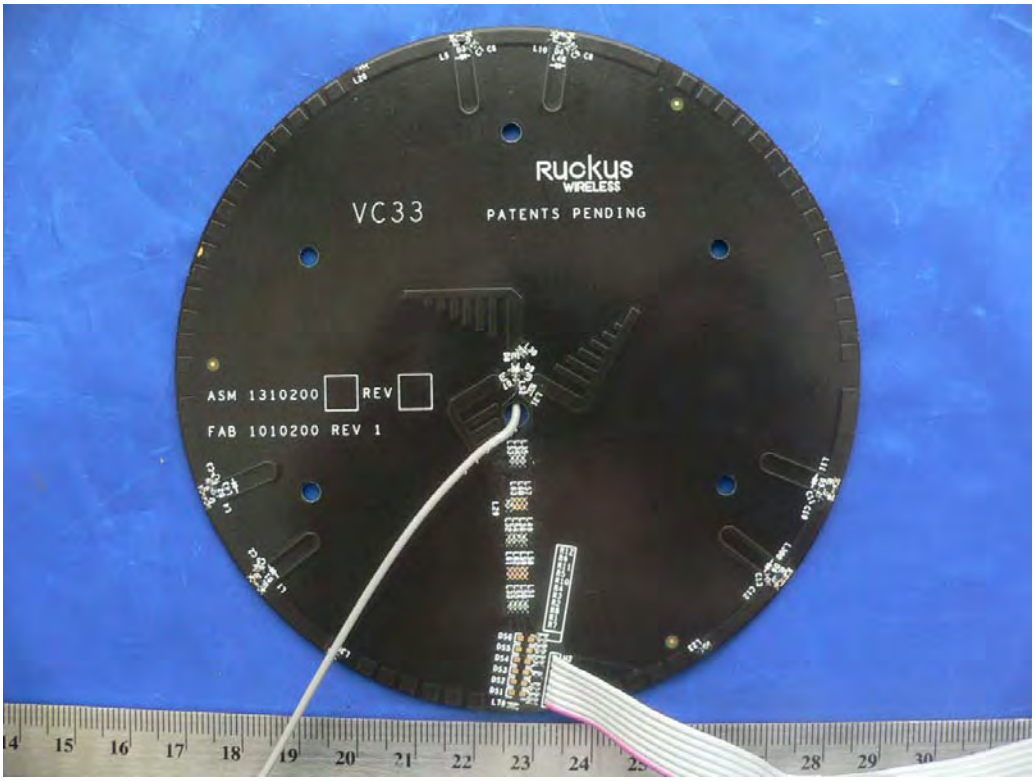
According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to § 15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Result

The antenna for this device is an internal panel antenna connected to the main board in a fashion not readily accessible to the end user with a maximum gain of 4.5 dBi which is under the 6 dBi limit.

Compliant. Please refer to the following antenna photo for details.



6 §15.205 & §15.209 & §15.247(c) - SPURIOUS RADIATED EMISSION

6.1 Applicable Standard

As per 15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per 15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As Per 15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 –167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3 3458 – 3 358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

6.2 Test Setup

The radiated emissions tests were performed in the 3-meter open area test site, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15 Subpart C and E limits.

The spacing between the peripherals was 10 centimetres.

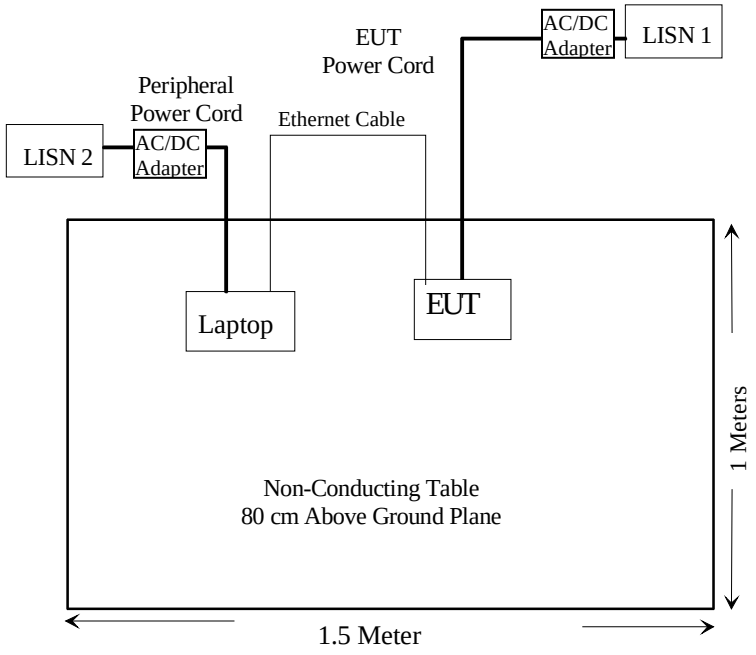
External I/O cables were draped along the edge of the test table and bundle when necessary.

6.3 Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Calibration Date
Sonoma	Amplifier, Pre	317	260407	2006-03-20
Sunol Science	30Mhz ~ 2 GHz Antenna	JB1	A03105-3	2006-03-15
A.R.A	Antenna, Horn, DRG	DRG-118/A	1132	2005-08-17*
Agilent	Analyzer, Spectrum	E4446A	US44300386	2006-03-06
HP	Pre, Amplifier (1 ~ 26.5 GHz)	8449B	3147A00400	2006-08-21

Statement of Traceability: BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.
* 2 year calibration cycle

6.4 Test Setup Block Diagram



6.5 Test Procedure

For the radiated emissions test, the EUT, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 mete, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto

(2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit.
The equation for margin calculation is as follows:

Margin = Corrected Amplitude - FCC Limit

6.5.1 Environmental Conditions

Temperature:	20 ° C
Relative Humidity:	55 %
ATM Pressure:	1013 mbar

The testing was performed by Oscar Au on 2007-01-09.

6.6 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Title 47, Part 15 section 15.205, 15.209 and Subpart C 15.247 standard's limits, and had the worst margin of:

802.11b:

-1.7 dB at **9648.00 MHz** in the **Horizontal** polarization, Low Channel
-11.9 dB at **9748.00 MHz** in the **Horizontal** polarization, Middle Channel
-10.3 dB at **4924.00 MHz** in the **Vertical** polarization, High Channel

802.11g:

-11.1 dB at **9648.00 MHz** in the **Horizontal** polarization, Low Channel
-15.2 dB at **4874.00 MHz** in the **Vertical** polarization, Middle Channel
-12.2 dB at **4924.00 MHz** in the **Vertical** polarization, High Channel

.*Please refer to the following table and plots for specific test result details*

Run # 1 Radiated Harmonic and Spurious Emission 802.11b (Antenna 4.5 dBi)

Run # 1- 1 : Final scan 1GHz -25GHz , (Lowest channel. : 2412 MHz)

Frequency (MHz)	Reading (dBµV)	Azimuth (Degree)	Height (Meter)	Polar. (H / V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier (dB)	Distance factor (dB)	Corrected Reading (dBµV/m)	15.247 Limit (dBµV/m)	15.247 Margin	Comments
2412.0000	112.3	310	1.8	V	28.7	2.7	35.8	0.0	107.8			Fund/Peak
2412.0000	116.8	180	1.4	H	28.7	2.7	35.8	0.0	112.3			Fund/Peak
2412.0000	76.2	310	1.8	V	28.7	2.7	35.8	0.0	71.7			Ave
2412.0000	83.3	170	1.4	H	28.7	2.7	35.8	0.0	78.8			Ave
9648.0000	45.6	60	1.3	H	38.1	5.5	36.9	0.0	52.3	54	-1.7	Ave
7236.0000	41.7	210	1.5	H	36.7	4.8	34.9	0.0	48.3	54	-5.7	Ave
4824.0000	46.7	40	1.6	V	32.5	3.8	34.8	0.0	48.2	54	-5.8	Ave
7236.0000	41.3	210	1.8	V	36.7	4.8	34.9	0.0	47.9	54	-6.1	Ave
9648.0000	40.7	260	1.9	V	38.1	5.5	36.9	0.0	47.4	54	-6.6	Ave
4824.0000	44.1	160	1.5	H	32.5	3.8	34.8	0.0	45.6	54	-8.4	Ave
4824.0000	63.9	40	1.6	V	32.5	3.8	34.8	0.0	65.4	74	-8.6	Peak
9648.0000	58.6	60	1.3	H	38.1	5.5	36.9	0.0	65.3	74	-8.7	Peak
7236.0000	54.9	210	1.8	V	36.7	4.8	34.9	0.0	61.5	74	-12.5	Peak
4824.0000	59.6	160	1.5	H	32.5	3.8	34.8	0.0	61.1	74	-12.9	Peak
7236.0000	54.4	210	1.5	H	36.7	4.8	34.9	0.0	61.0	74	-13.0	Peak
9648.0000	53.6	260	1.9	V	38.1	5.5	36.9	0.0	60.3	74	-13.7	Peak

Run # 1- 2 :Final scan 1GHz -25GHz , (Middle channel. : 2437 MHz)

Frequency (MHz)	Reading (dBµV)	Azimuth (Degree)	Height (Meter)	Polar. (H / V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier (dB)	Distance factor (dB)	Corrected Reading (dBµV/m)	15.247 Limit (dBµV/m)	15.247 Margin	Comments
2437.0000	102.2	325	2.0	V	28.7	2.7	35.8	0.0	97.7			Fund/Peak
2437.0000	115.9	70	1.6	H	28.7	2.7	35.8	0.0	111.4			Fund/Peak
2437.0000	66.4	325	2.0	V	28.7	2.7	35.8	0.0	61.9			Ave
2437.0000	83.2	70	1.6	H	28.7	2.7	35.8	0.0	78.7			Ave
9748.0000	35.0	65	1.3	H	38.1	5.6	36.7	0.0	42.1	54	-11.9	Ave
4874.0000	37.9	40	1.8	V	32.5	3.8	34.8	0.0	39.4	54	-14.6	Ave
9748.0000	32.0	30	1.6	V	38.1	5.6	36.7	0.0	39.1	54	-14.9	Ave
4874.0000	57.1	40	1.8	V	32.5	3.8	34.8	0.0	58.6	74	-15.4	Peak
7311.0000	32.1	240	1.8	V	36.7	4.8	35.1	0.0	38.5	54	-15.5	Ave
7311.0000	32.1	275	1.5	H	36.7	4.8	35.1	0.0	38.5	54	-15.5	Ave
4874.0000	36.3	160	1.4	H	32.5	3.8	34.8	0.0	37.8	54	-16.2	Ave
4874.0000	53.8	160	1.4	H	32.5	3.8	34.8	0.0	55.3	74	-18.7	Peak
7311.0000	45.5	240	1.8	V	36.7	4.8	35.1	0.0	51.9	74	-22.1	Peak
7311.0000	45.4	275	1.5	H	36.7	4.8	35.1	0.0	51.8	74	-22.2	Peak
9748.0000	44.6	30	1.6	V	38.1	5.6	36.7	0.0	51.7	74	-22.3	Peak
9748.0000	44.5	65	1.3	H	38.1	5.6	36.7	0.0	51.6	74	-22.4	Peak

Run # 1- 3 :Final scan 1GHz -25GHz , (Highest channel. : 2462 MHz)

Frequency (MHz)	Reading (dBµV)	Azimuth (Degree)	Height (Meter)	Polar. (H / V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier (dB)	Distance factor (dB)	Corrected Reading (dBµV/m)	15.247 Limit (dBµV/m)	15.247 Margin	Comments
2462.0000	113.0	320	2.0	V	28.7	2.7	35.8	0.0	108.5			Fund/Peak
2462.0000	116.0	175	1.9	H	28.7	2.7	35.8	0.0	111.5			Fund/Peak
2462.0000	76.8	320	2.0	V	28.7	2.7	35.8	0.0	72.3			Ave
2462.0000	83.3	175	1.9	H	28.7	2.7	35.8	0.0	78.8			Ave
4924.0000	62.3	10	1.8	V	32.5	3.9	35.0	0.0	63.7	74	-10.3	Peak
4924.0000	42.2	10	1.8	V	32.5	3.9	35.0	0.0	43.6	54	-10.4	Ave
4924.0000	41.0	160	1.4	H	32.5	3.9	35.0	0.0	42.4	54	-11.6	Ave
4924.0000	58.8	160	1.4	H	32.5	3.9	35.0	0.0	60.2	74	-13.8	Peak
9848.0000	32.4	240	1.6	H	38.1	5.6	37.0	0.0	39.1	54	-14.9	Ave
7386.0000	32.5	290	1.4	H	36.7	4.8	35.1	0.0	38.9	54	-15.1	Ave
9848.0000	32.2	250	1.8	V	38.1	5.6	37.0	0.0	38.9	54	-15.1	Ave
7386.0000	31.8	200	1.9	V	36.7	4.8	35.1	0.0	38.2	54	-15.8	Ave
7386.0000	45.7	290	1.4	H	36.7	4.8	35.1	0.0	52.1	74	-21.9	Peak
7386.0000	45.1	200	1.9	V	36.7	4.8	35.1	0.0	51.5	74	-22.5	Peak
9848.0000	44.8	240	1.6	H	38.1	5.6	37.0	0.0	51.5	74	-22.5	Peak
9848.0000	44.3	250	1.8	V	38.1	5.6	37.0	0.0	51.0	74	-23.0	Peak

Run # 1 Radiated Harmonic and Spurious Emission 802.11g (Antenna 4.5 dBi)

Run # 1- 1 : Final scan 1GHz -25GHz , (Lowest channel. : 2412 MHz)

Frequency (MHz)	Reading (dBµV)	Azimuth (Degree)	Height (Meter)	Polar. (H / V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier (dB)	Distance factor (dB)	Corrected Reading (dBµV/m)	15.247 Limit (dBµV/m)	15.247 Margin	Comments
2412.0000	104.1	43	1.8	V	28.7	2.7	35.8	0.0	99.6			Fund/Peak
2412.0000	120.4	285	1.9	H	28.7	2.7	35.8	0.0	115.9			Fund/Peak
2412.0000	61.3	43	1.8	V	28.7	2.7	35.8	0.0	56.8			Ave
2412.0000	62.6	285	1.9	H	28.7	2.7	35.8	0.0	58.1			Ave
9648.0000	56.2	55	1.4	H	38.1	5.5	36.9	0.0	62.9	74	-11.1	Peak
7236.0000	50.5	300	1.4	H	36.7	4.8	34.9	0.0	57.1	74	-16.9	Peak
7236.0000	30.3	300	1.4	H	36.7	4.8	34.9	0.0	36.9	54	-17.1	Ave
7236.0000	29.4	200	1.5	V	36.7	4.8	34.9	0.0	36.0	54	-18.0	Ave
9648.0000	29.3	55	1.4	H	38.1	5.5	36.9	0.0	36.0	54	-18.0	Ave
9648.0000	28.7	240	1.7	V	38.1	5.5	36.9	0.0	35.4	54	-18.6	Ave
4824.0000	52.8	50	1.0	V	32.5	3.8	34.8	0.0	54.3	74	-19.7	Peak
9648.0000	46.8	240	1.7	V	38.1	5.5	36.9	0.0	53.5	74	-20.5	Peak
7236.0000	46.3	200	1.5	V	36.7	4.8	34.9	0.0	52.9	74	-21.1	Peak
4824.0000	48.9	160	1.3	H	32.5	3.8	34.8	0.0	50.4	74	-23.6	Peak
4824.0000	24.8	160	1.3	H	32.5	3.8	34.8	0.0	26.3	54	-27.7	Ave
4824.0000	24.5	50	1.0	V	32.5	3.8	34.8	0.0	26.0	54	-28.0	Ave

Run # 1- 2 :Final scan 1GHz -25GHz , (Middle channel. : 2437 MHz)

Frequency (MHz)	Reading (dBµV)	Azimuth (Degree)	Height (Meter)	Polar. (H / V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier (dB)	Distance factor (dB)	Corrected Reading (dBµV/m)	15.247 Limit (dBµV/m)	15.247 Margin	Comments
2437.0000	102.4	140	2.0	V	28.7	2.7	35.8	0.0	97.9			Fund/Peak
2437.0000	118.4	75	2.1	H	28.7	2.7	35.8	0.0	113.9			Fund/Peak
2437.0000	61.2	140	2.0	V	28.7	2.7	35.8	0.0	56.7			Ave
2437.0000	62.5	75	2.1	H	28.7	2.7	35.8	0.0	58.0			Ave
4874.0000	57.3	22	1.7	V	32.5	3.8	34.8	0.0	58.8	74	-15.2	Peak
9748.0000	28.7	180	1.7	H	38.1	5.6	36.7	0.0	35.8	54	-18.2	Ave
7311.0000	28.9	200	1.5	V	36.7	4.8	35.1	0.0	35.3	54	-18.7	Ave
9748.0000	28.2	20	1.6	V	38.1	5.6	36.7	0.0	35.3	54	-18.7	Ave
7311.0000	28.7	340	1.4	H	36.7	4.8	35.1	0.0	35.1	54	-18.9	Ave
9748.0000	46.2	180	1.7	H	38.1	5.6	36.7	0.0	53.3	74	-20.7	Peak
7311.0000	46.8	200	1.5	V	36.7	4.8	35.1	0.0	53.2	74	-20.8	Peak
4874.0000	50.8	160	1.8	H	32.5	3.8	34.8	0.0	52.3	74	-21.7	Peak
9748.0000	45.1	20	1.6	V	38.1	5.6	36.7	0.0	52.2	74	-21.8	Peak
7311.0000	45.7	340	1.4	H	36.7	4.8	35.1	0.0	52.1	74	-21.9	Peak
4874.0000	26.0	22	1.7	V	32.5	3.8	34.8	0.0	27.5	54	-26.5	Ave
4874.0000	25.4	160	1.8	H	32.5	3.8	34.8	0.0	26.9	54	-27.1	Ave

Run # 1- 3 :Final scan 1GHz -25GHz , (Highest channel. : 2462 MHz)

Frequency (MHz)	Reading (dBµV)	Azimuth (Degree)	Height (Meter)	Polar. (H / V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier (dB)	Distance factor (dB)	Corrected Reading (dBµV/m)	15.247 Limit (dBµV/m)	15.247 Margin	Comments
2462.0000	105.5	40	2.0	V	28.7	2.7	35.8	0.0	101.0			Fund/Peak
2462.0000	119.0	180	2.0	H	28.7	2.7	35.8	0.0	114.5			Fund/Peak
2462.0000	61.4	40	2.0	V	28.7	2.7	35.8	0.0	56.9			Ave
2462.0000	62.5	180	2.0	H	28.7	2.7	35.8	0.0	58.0			Ave
4924.0000	60.4	20	2.0	V	32.5	3.9	35.0	0.0	61.8	74	-12.2	Peak
9848.0000	28.5	200	1.8	H	38.1	5.6	37.0	0.0	35.2	54	-18.8	Ave
9848.0000	28.4	240	1.8	V	38.1	5.6	37.0	0.0	35.1	54	-18.9	Ave
4924.0000	53.6	170	2.0	H	32.5	3.9	35.0	0.0	55.0	74	-19.0	Peak
7386.0000	28.5	200	1.8	V	36.7	4.8	35.1	0.0	34.9	54	-19.1	Ave
7386.0000	28.2	220	2.2	H	36.7	4.8	35.1	0.0	34.6	54	-19.4	Ave
7386.0000	47.6	200	1.8	V	36.7	4.8	35.1	0.0	54.0	74	-20.0	Peak
9848.0000	45.0	200	1.8	H	38.1	5.6	37.0	0.0	51.7	74	-22.3	Peak
4924.0000	30.2	20	2.0	V	32.5	3.9	35.0	0.0	31.6	54	-22.4	Ave
4924.0000	29.8	170	2.0	H	32.5	3.9	35.0	0.0	31.2	54	-22.8	Ave
7386.0000	44.1	220	2.2	H	36.7	4.8	35.1	0.0	50.5	74	-23.5	Peak
9848.0000	42.6	240	1.8	V	38.1	5.6	37.0	0.0	49.3	74	-24.7	Peak

7 EXHIBIT A - FCC ID LABEL INFORMATION

7.1 FCC § 2.925 Identification of equipment

(a) Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:

(1) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term *FCC ID* in capital letters on a single line, and shall be of a type size large enough to be legible without the aid of magnification.

Example: FCC ID XXX123. XXX—Grantee Code 123—Equipment Product Code

7.2 ID Label Requirements as per FCC § 15.19

(a) In addition to the requirements in part 2 of this chapter, a device subject to certification, or verification shall be labeled as follows:

(3) All other devices shall bear the following statement in a conspicuous location on the device:

> This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

7.3 Proposed FCC ID Label

Model: ZX2X25

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC ID: S9GVX2X25 Ruckus Wireless Corporation

IC:

7.4 Proposed Label on EUT (Bottom View)

As per FCC §15.17 (b)(4), the label shall not be a stick-on, paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase, as described in Section 2.925(d) of this chapter. "Permanently affixed" means that the label is etched, engraved, stamped, silk-screened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.

8 EXHIBIT B - TEST SETUP PHOTOGRAPHS

8.1 Radiated Emission – Front View

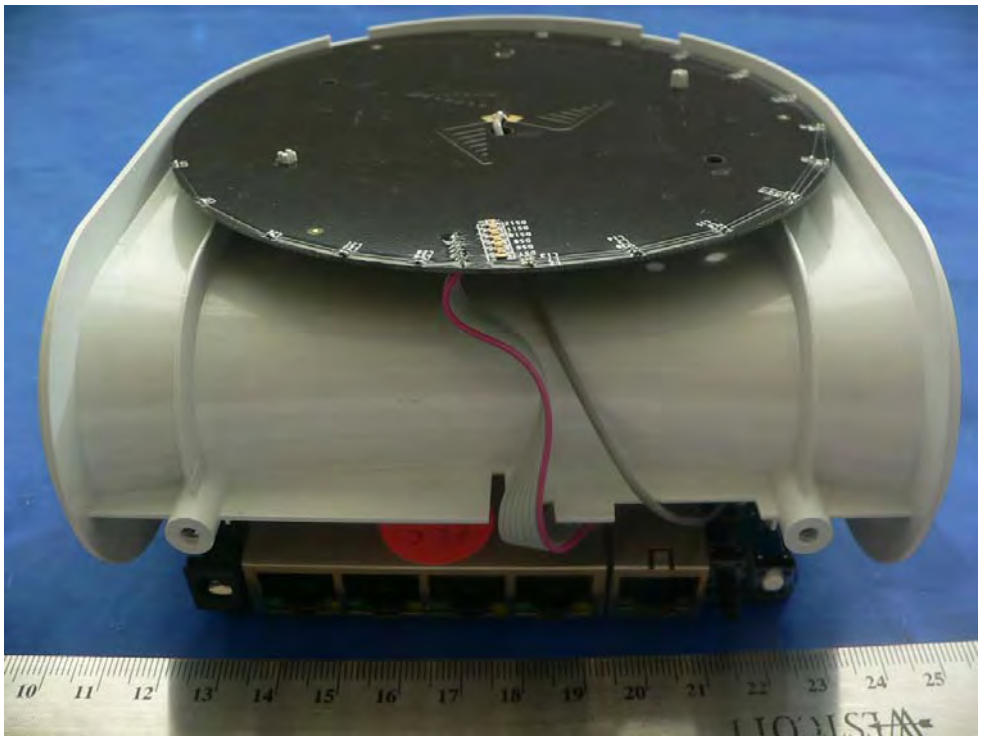
8.2 Radiated Emission – Rear View

9 EXHIBIT C - EUT PHOTOGRAPHS

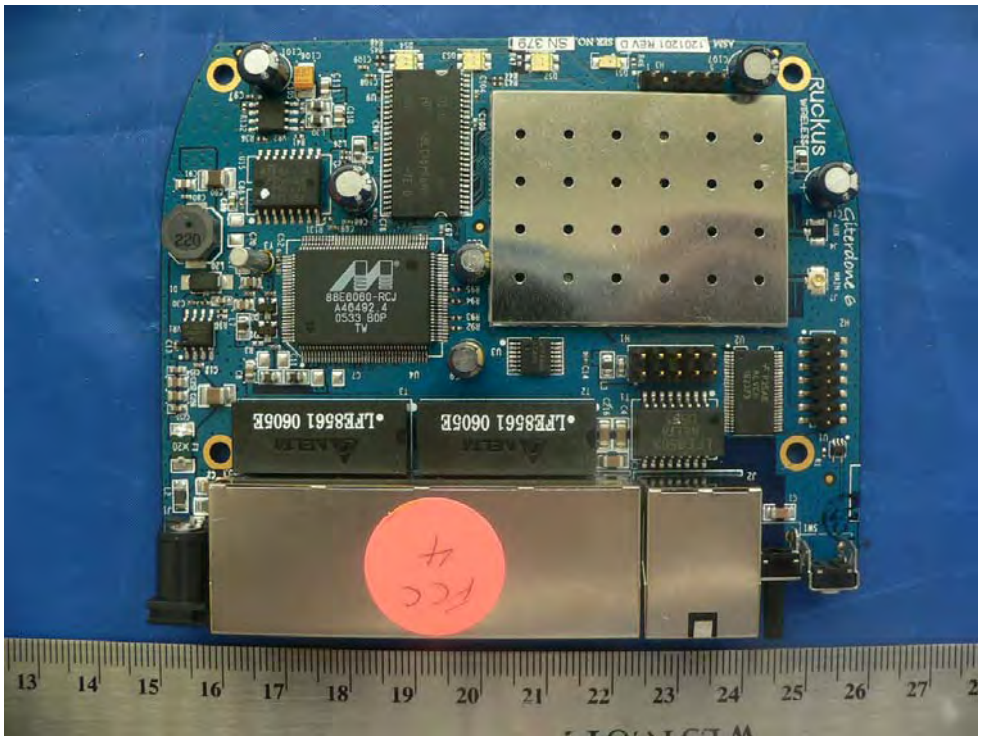
9.1 EUT – Top View

9.2 EUT – Bottom View

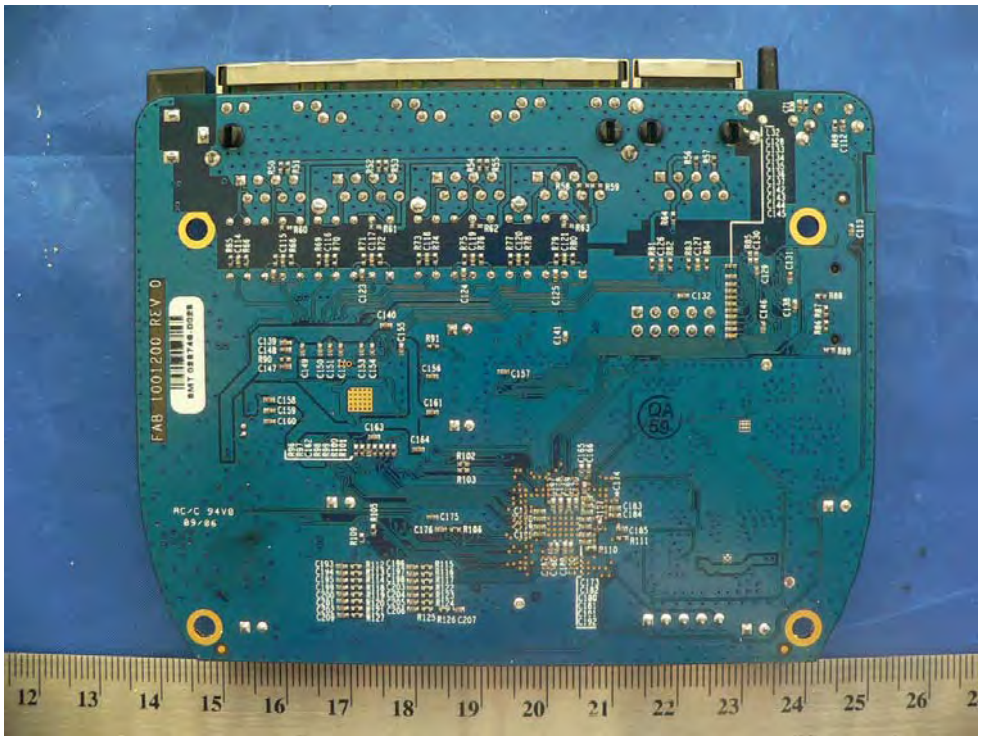
9.3 EUT – Cover off View



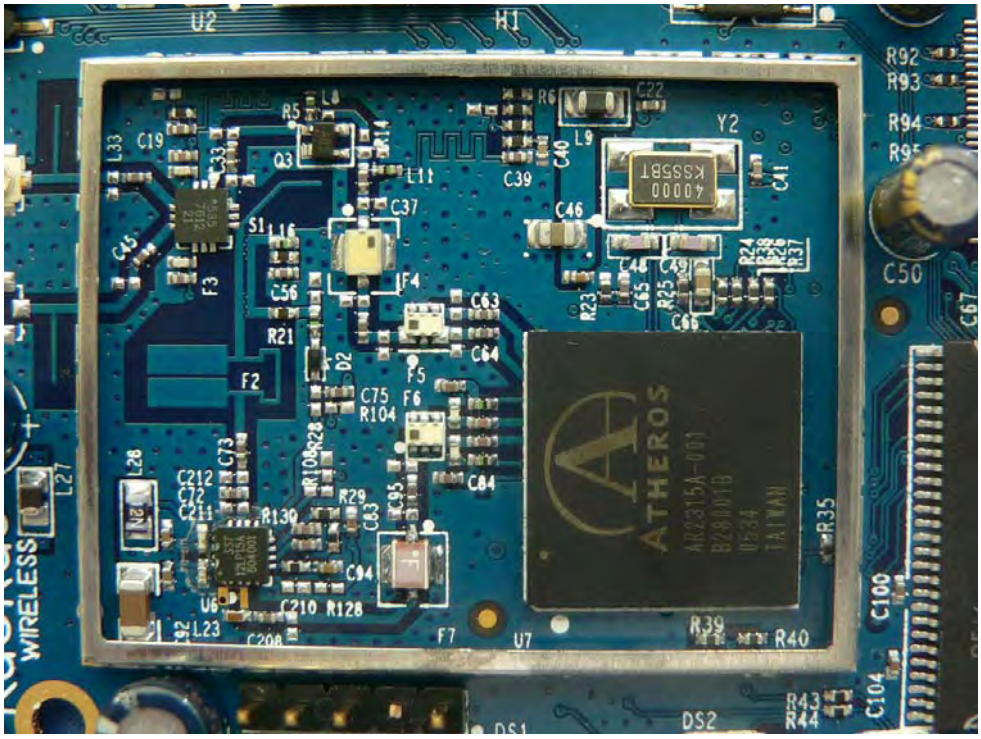
9.4 EUT – Main Board Component View



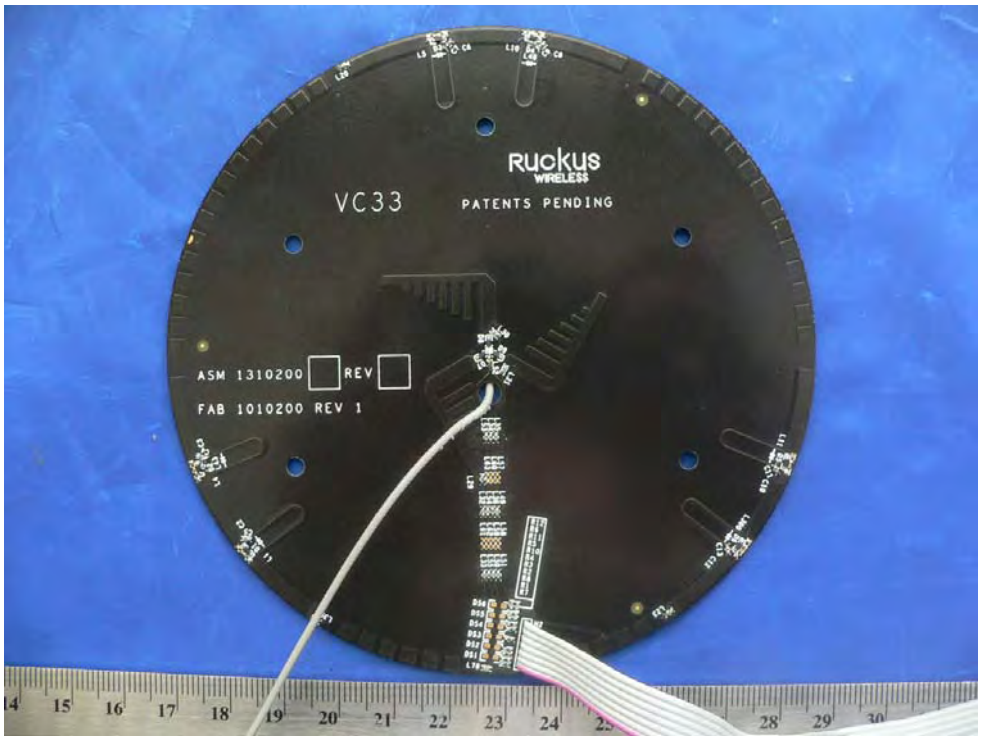
9.5 EUT – Main Board Solder View



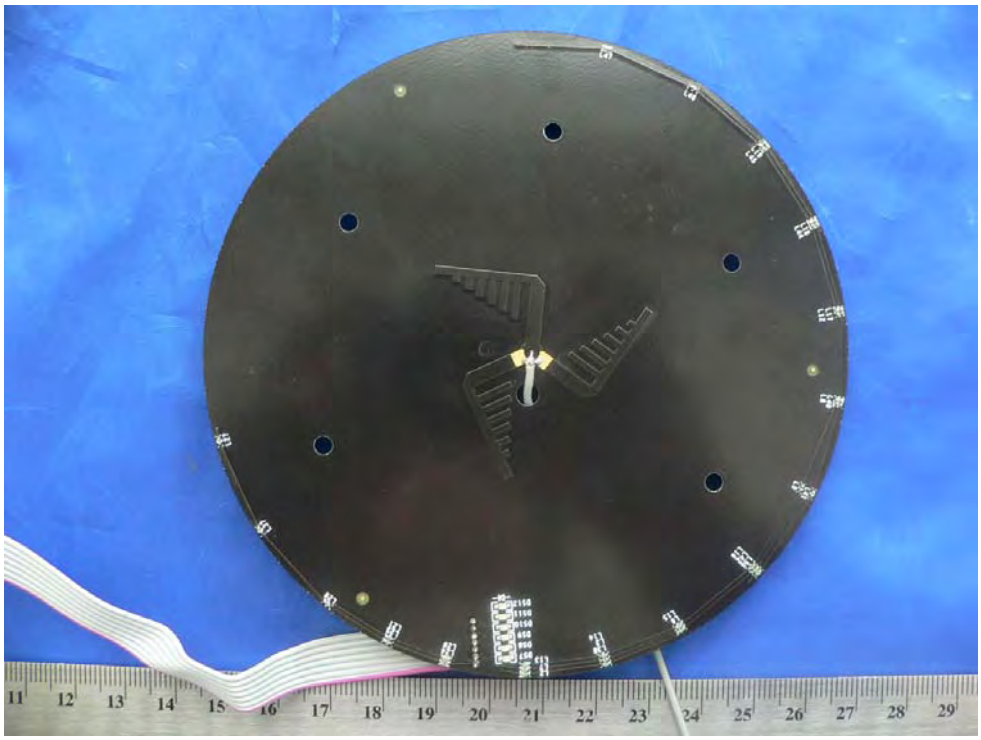
9.6 EUT – TX Close Up



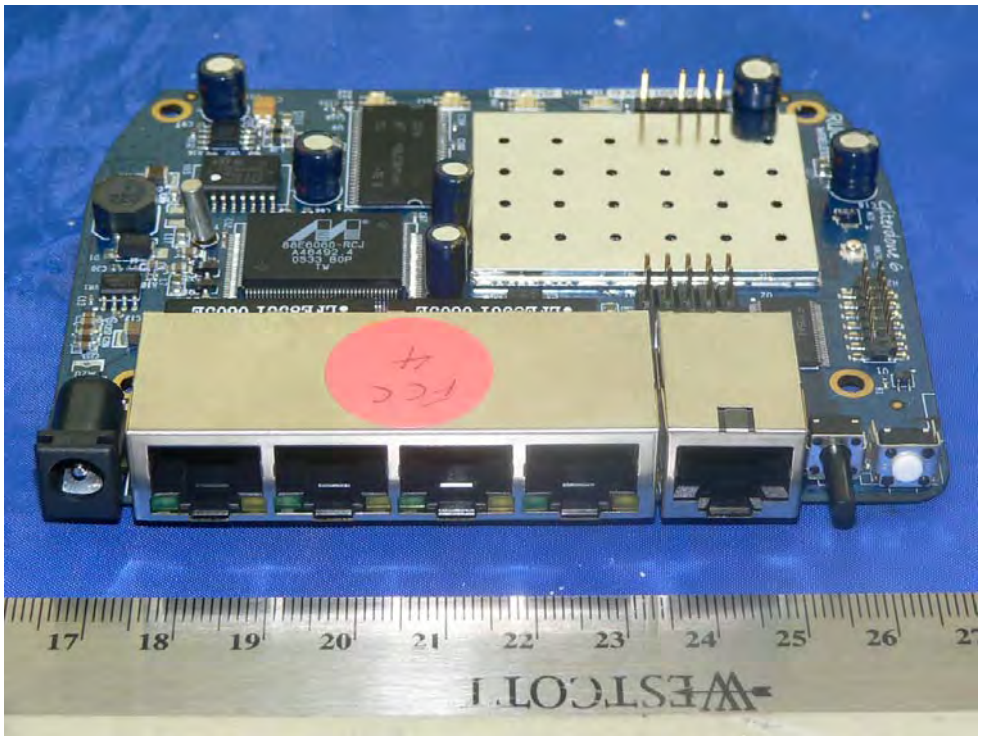
9.7 EUT – Antenna View 1



9.8 EUT – Antenna View 2

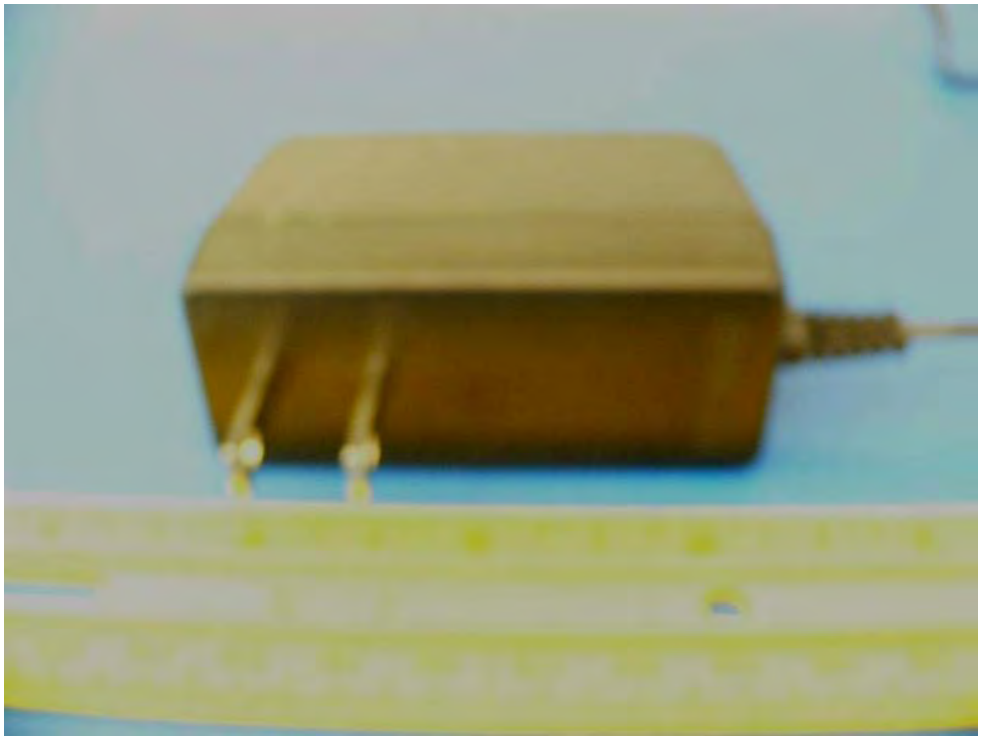


9.9 EUT – Port View



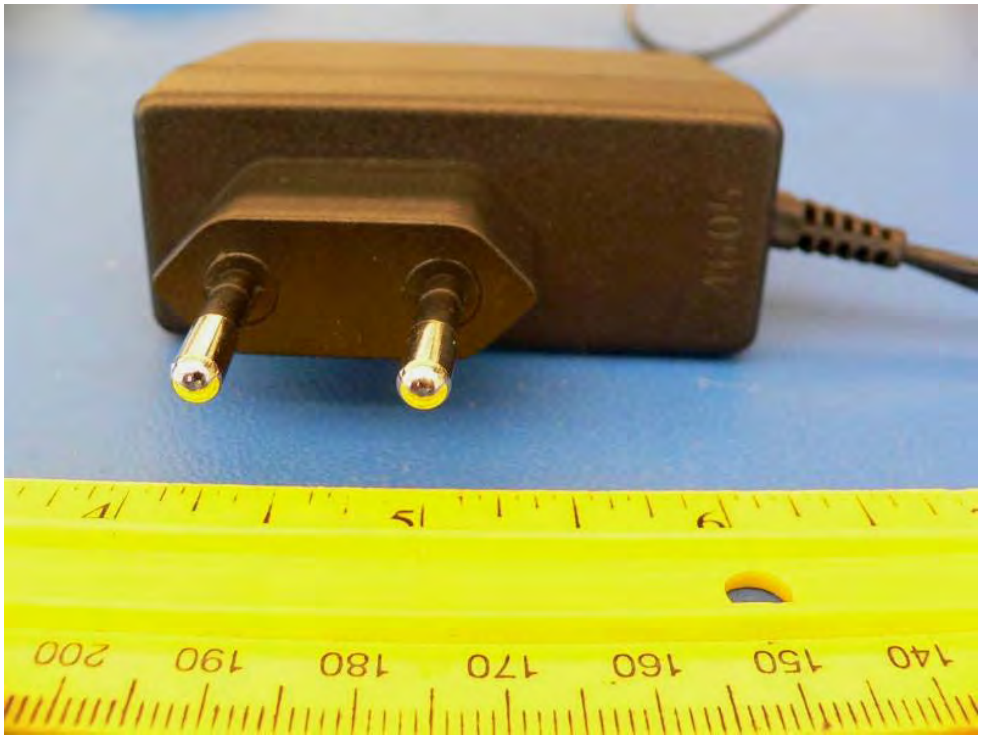
9.10 Power Supply Type 1-1 (Front)

9.11 Power Supply Type 1-1 (Rear)



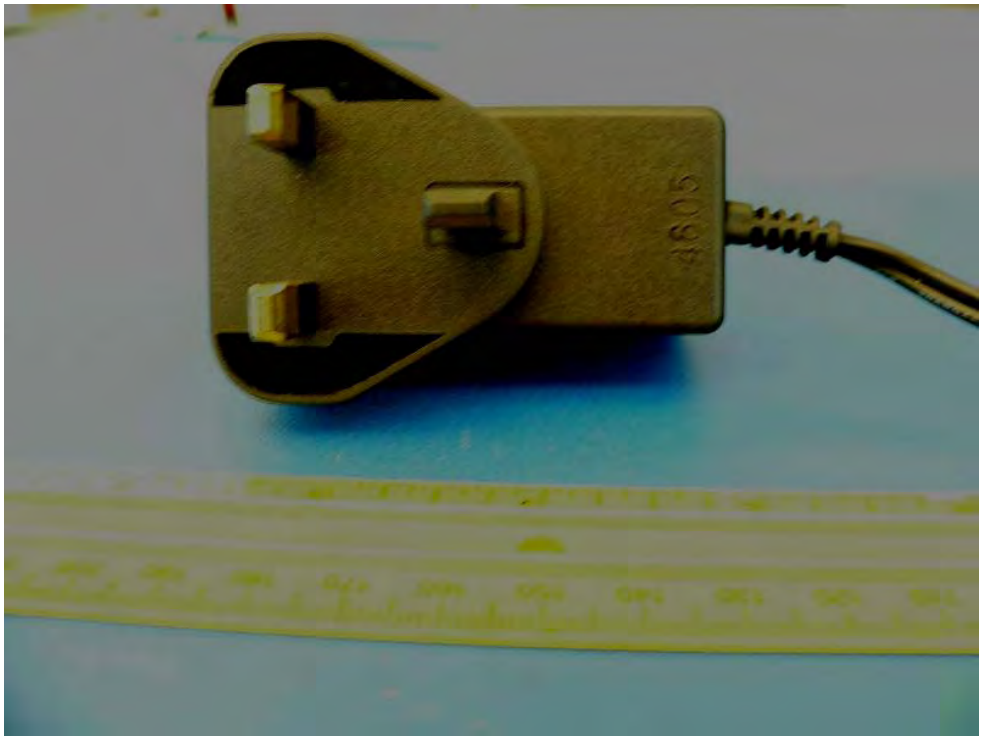
9.12 Power Supply Type 1-2 (Front)

9.13 Power Supply Type 1-2 (Rear)



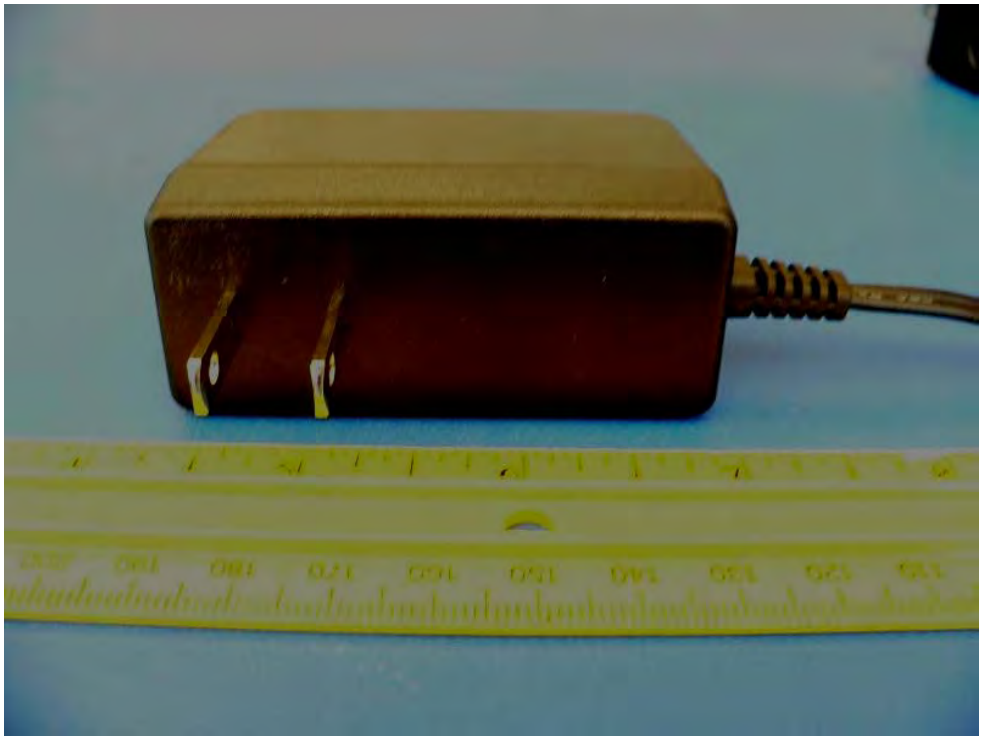
9.14 Power Supply Type 1-3 (Front)

9.15 Power Supply Type 1-3 (Rear)



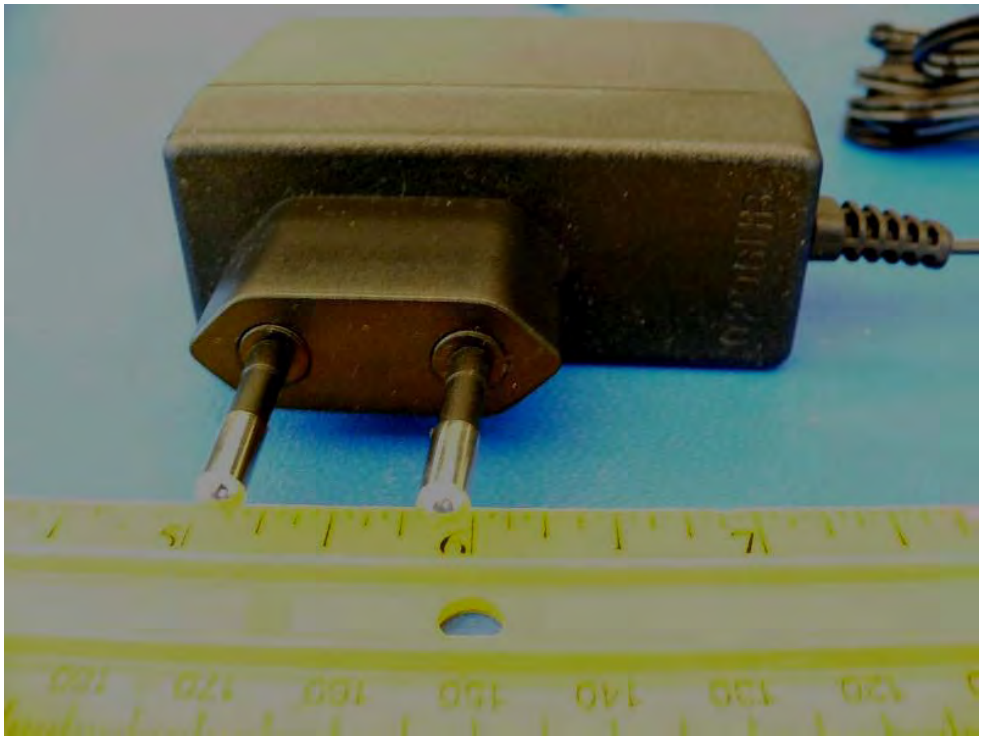
9.16 Power Supply Type 2-1 (Front)

9.17 Power Supply Type 2-1 (Rear)



9.18 Power Supply Type 2-2 (Front)

9.19 Power Supply Type 2-2 (Rear)

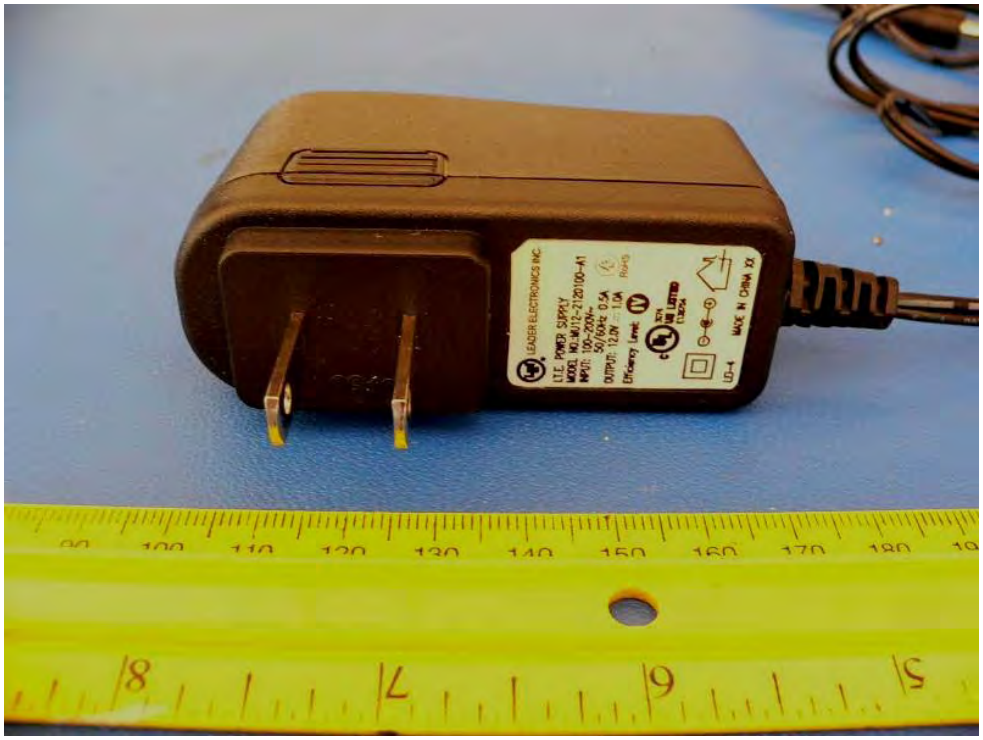


9.20 Power Supply Type 2-3 (Front)

9.21 Power Supply Type 2-3 (Rear)

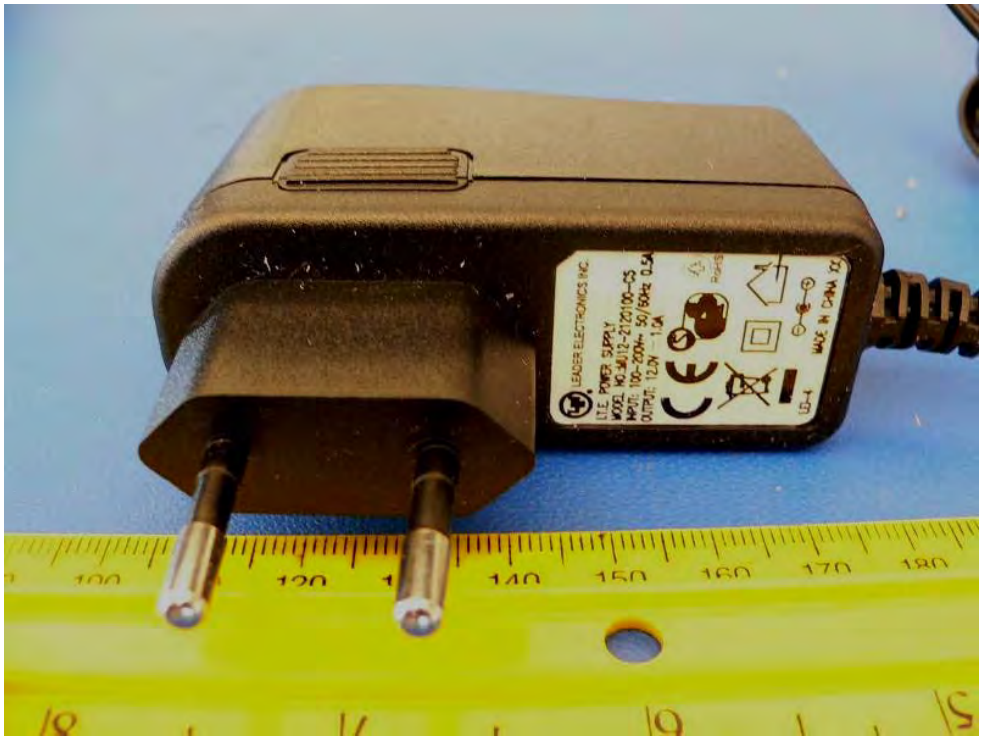
9.22 Power Supply Type 3-1 (Front)

9.23 Power Supply 3-1 (Rear)



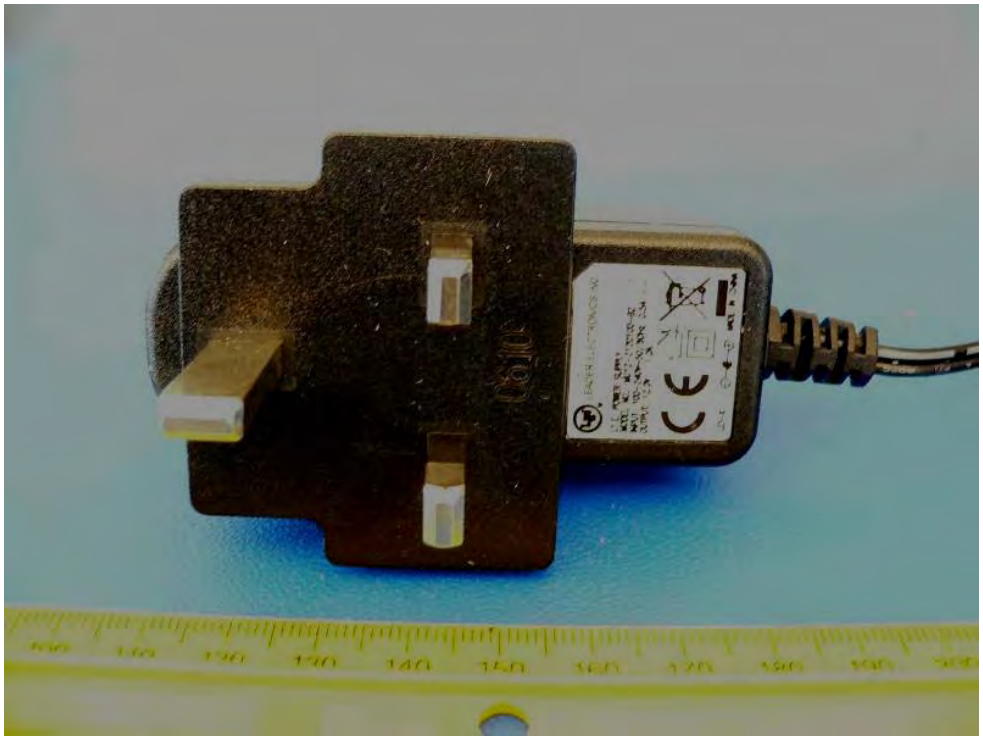
9.24 Power Supply Type 3-2 (Front)

9.25 Power Supply Type 3-2 (Rear)



9.26 Power Supply Type 3-3 (Front)

9.27 Power Supply Type 3-3 (Rear)



END OF REPORT