

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT**

OF

PlugLink 9550 Wireless Adapter

FCC ID: T37PL9550-WAP

MODEL No.: PL9550-WAP

BRAND NAME: PlugLink 9550 Wireless Adapter

REPORT NO: TRE06020028

ISSUE DATE: Dec 07, 2006

Prepared for

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VERIFICATION OF COMPLIANCE

Applicant:	ASOKA USA Corporation 558 Pilgrim Drive, Unit H Foster City, CA 94404
Product Description:	2.4GHz (Wireless Access Point Data Transceiver for WLAN application)
Brand Name:	PlugLink 9550 Wireless Adapter
Model Number:	PL9550-WAP
Serial Number:	N/A
File Number:	SQE06020028
Date of Test:	Oct 25, 2006 ~ Nov 15, 2006

We hereby certify that:

The above equipment was tested by SHENZHEN HUA TONG WEI INTERNATIONAL INSPECTION CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

The test results of this report relate only to the tested sample identified in this report.

Approved By

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Reviewed By

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Table of Contents

1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION.....	5
1.2 RELATED SUBMITTAL(S) / GRANT (S).....	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
1.5 SPECIAL ACCESSORIES	6
1.6 EQUIPMENT MODIFICATIONS	6
1.7 LABORATORY ACCREDITATIONS AND LISTINGS	6
2. SYSTEM TEST CONFIGURATION.....	8
2.1 EUT CONFIGURATION	8
2.2 EUT EXERCISE.....	8
2.3 CONFIGURATION OF TESTED SYSTEM	8
3. SUMMARY OF TEST RESULTS	9
4. DESCRIPTION OF TEST MODES	9
5. CONDUCTED EMISSIONS TEST	10
5.1 MEASUREMENT PROCEDURE:	10
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	10
5.3 MEASUREMENT EQUIPMENT USED:	11
5.4 CONDUCTED POWER LINE EMISSION LIMIT.....	11
5.5 MEASUREMENT RESULT:.....	11
6. RADIATED EMISSION TEST	13
6.1 MEASUREMENT PROCEDURE	13
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	13
6.3 MEASUREMENT EQUIPMENT USED:.....	14
6.4 FIELD STRENGTH CALCULATION	14
6.5 RADIATION LIMIT	15
6.6 MEASUREMENT RESULT	15
7. 6DB BANDWIDTH MEASUREMENT	22
7.1 MEASUREMENT PROCEDURE	22
7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	22
7.3 MEASUREMENT EQUIPMENT USED:.....	22
7.4 MEASUREMENT RESULTS:	22
8 MAXIMUM PEAK OUTPUT POWER.....	27
8.1 MEASUREMENT PROCEDURE	27
8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	27
8.3 MEASUREMENT EQUIPMENT USED:.....	27
8.4 LIMITS OF MAXIMUM PEAK OUTPUT POWER.....	27

8.5	MEASUREMENT RESULTS:	28
9	POWER SPECTRAL DENSITY MEASUREMENT	33
9.1	MEASUREMENT PROCEDURE	33
9.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	33
9.3	MEASUREMENT EQUIPMENT USED:.....	33
9.4	LIMITS OF MAXIMUM PEAK OUTPUT POWER.....	33
9.5	MEASUREMENT RESULTS:.....	33
10	BAND EDGE MEASUREMENT.....	39
10.1	MEASUREMENT PROCEDURE	39
10.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	39
10.3	MEASUREMENT EQUIPMENT USED:.....	39
10.4	LIMITS OF MAXIMUM PEAK OUTPUT POWER.....	39
10.5	MEASUREMENT RESULTS:	39
11.	ANTENNA REQUIREMENT	49
11.1	STANDARD APPLICABLE.....	49
11.2	ANTENNA CONNECTED CONSTRUCTION	49
APPENDIX 1		50
PHOTOGRAPHS OF SET UP		50
APPENDIX 2		52
PHOTOGRAPHS OF EUT		52

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

2.4GHz (Wireless Access Point Data Transceiver for WLAN application)

A major technical descriptions of EUT is described as following:

A). Operation Frequency: $2412\text{MHz} + 5 \times n$ (MHz), $n=0, 1, 2, \dots, 10$

B). Modulation: 802.11b : DSSS(CCK, DQPSK, DBPSK)

802.11g : OFDM(64QAM, 16AQM, QPSK, BPSK)

C). Antenna Designation: Dipole Antenna, Antenna gain : 2dBi

D). Power Supply: 120VAC/60Hz

E). Power Cable: N/A

F). I/O Port: LAN Port $\times$ 1

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: T37PL9550-WAP filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. The composite system (receiver) is compliance with Subpart B is authorized under a Declaration of Conformity procedure.

1.3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 TEST FACILITY

The fully anechoic chamber test site and conducted measurement facility used to collect the radiated data is located on the address of SHENZHEN HUA TONG WEI INTERNATIONAL INSPECTION CO., LTD Huatongwei Building, Keji Rd. 12 S., High-tech Park, Nanshan District, Shenzhen, Guangdong, P.R.China

The fully anechoic chamber Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements.

1.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

1.7 LABORATORY ACCREDITATIONS AND LISTINGS

The test facility is recognized, certified, or accredited by the following organizations:

CNAL-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAL/AC01: 2003 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 1999 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 1999 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is from Aug 24, 2005 to Sept 30, 2007

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, November 17, 2003.

IC-Registration No.: 5377

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on November 28th, 2005.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated

against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1920 and C-2067 respectively. Date of Registration: July 28, 2004. Valid time is until November 16, 2006.

The Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-175 respectively. Date of Registration: July 28, 2004. Valid time is until July 27, 2007.

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. the TX frequency was fixed which was for the purpose of the measurements.

2.3 CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System

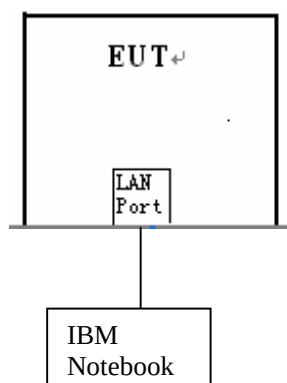


Table 2-1 Equipment Used in Tested System

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	IBM	R50e	L3-XGMC3	DoC

3. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications :

APPLIED STANDARD : FCC 47 C.F.R. Part 15, Subpart B and Subpart C			
Standard Section	Test Item and Limit	Result	REMARK
15.107 15.207	AC Power Conducted Emission Limit : 15.107	PASS	Meet the requirement of limit
15.247(a)(2)	Spectrum Bandwidth of a Orthogonal Frequency Division Multiplex System Limit : 6dB bandwidth > 500KHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.109 15.205 15.209	Transmitter Radiated Emissions Limit : Table 15.209	PASS	Meet the requirement of limit
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(d)	Out of Band Emission and Restricted Band Radiation Limit:20dB less than peak value of fundamental frequency	PASS	Meet the requirement of limit

4. DESCRIPTION OF TEST MODES

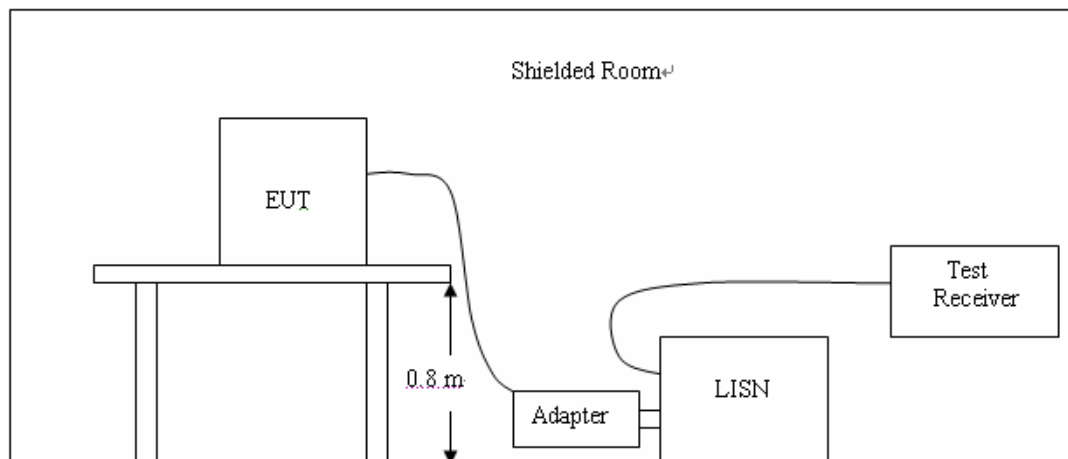
1. The EUT (PL9550-WAP) has been tested under normal operating condition.
2. The EUT stay in continuous transmitting mode. FCC Continuous Transmit is chosen for testing.

5. CONDUCTED EMISSIONS TEST

5.1 MEASUREMENT PROCEDURE:

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2 Support equipment, if needed, was placed as per ANSI C63.4.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 The EUT received DC8V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

5.2 TEST SET-UP (Block Diagram of Configuration)



5.3 MEASUREMENT EQUIPMENT USED:

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS30	100038	2006/10	2007/10
ARTIFICIAL MAINS	ROHDE & SCHWARZ	ESH2-Z5	100028	2006/10	2007/10
PULSE LIMITER	ROHDE & SCHWARZ	ESHSZ2	100044	2006/10	2007/10
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ES-K1 1.71	N/A	2006/10	2007/10

Note: Each piece of equipment is scheduled for calibration once a year.

5.4 CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dBµV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

5.5 MEASUREMENT RESULT:

Company	ASOKA USA Corporation	Test Date	2006/10/16
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

TEST RESULTS

FREQ MHz	PEAK RAW dBuV	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.568	34.00	---	---	56.00	46.00	---	-12.00	L1
0.991	35.80	---	---	56.00	46.00	---	-10.20	L1
1.936	36.70	---	---	56.00	46.00	---	-9.30	L1
3.751	35.40	---	---	56.00	46.00	---	-10.60	L1
14.306	36.30	---	---	60.00	50.00	---	-13.70	L1
0.206	40.10	---	---	63.00	53.00	---	-12.90	N
0.275	39.60	---	---	61.00	51.00	---	-11.40	N
0.682	39.70	---	---	56.00	46.00	---	-6.30	N
0.756	36.60	---	---	56.00	46.00	---	-9.40	N
18.461	33.50	---	---	60.00	50.00	---	-16.50	N

REMARKS :

1. Margin value = Emission level – Limit value
2. The EUT was set to be normal operation condition. Each Ethernet port was connected and data payload was transmitted at highest data rate. The RF chip can be operated in 802.11g and 802.11b mode. The rf chip will detect the environment and select the proper mode automatically. The WLAN function was set to normal operation condition.

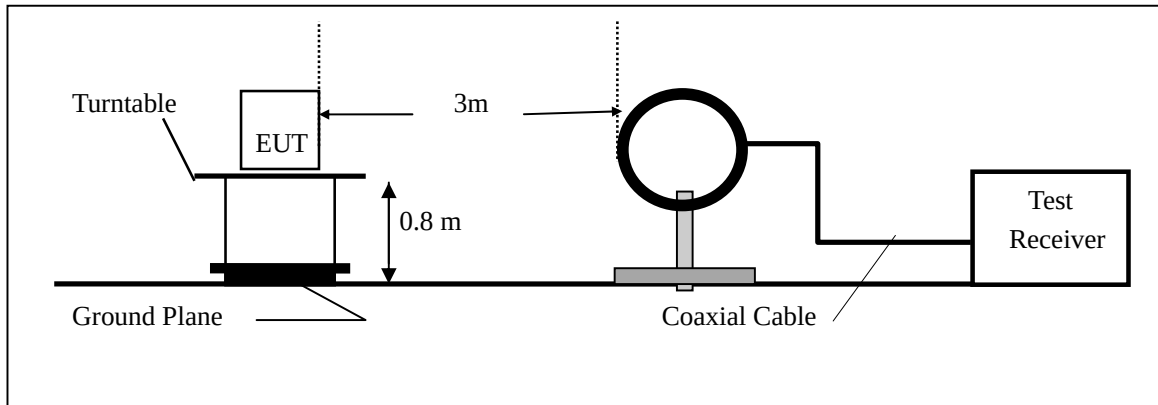
6. RADIATED EMISSION TEST

6.1 MEASUREMENT PROCEDURE

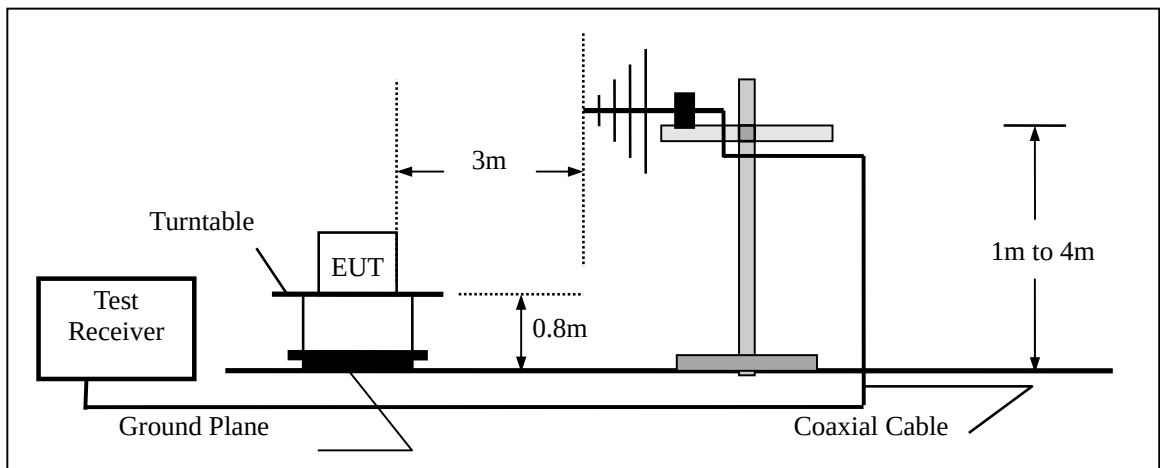
- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

6.2 TEST SET-UP (Block Diagram of Configuration)

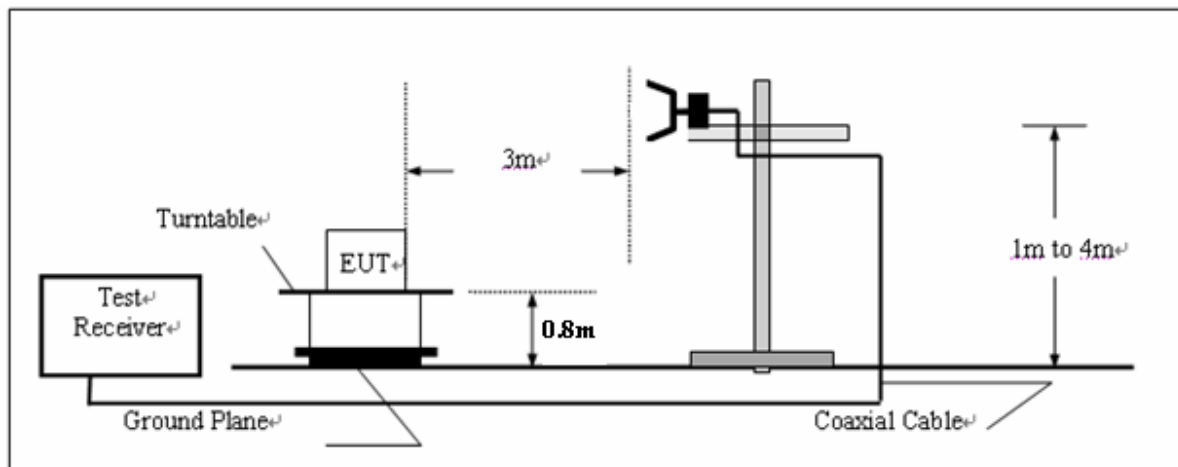
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



6.3 MEASUREMENT EQUIPMENT USED:

3/5 Anechoic Chamber Radiation Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2006/10	2007/10
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2006/10	2007/10
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A	N/A
TURNTABLE	ETS	2088	2149	N/A	N/A
ANTENNA MAST	ETS	2075	2346	N/A	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ES-K1 1.71	N/A	2006/10	2007/10

Note: Each piece of equipment is scheduled for calibration once a year.

6.4 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

6.5 RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
30-8	3	40.0	100
88-21	3	43.5	150
216-96	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

6.6 MEASUREMENT RESULT

Company	ASOKA USA Corporation	Test Date	2006/10/16
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

Frequency (MHz)	Ant/CL/ Amp.CF (dB)	Meter Reading at 3m(dBµV)		Limits (dBµV/m)	Emission Level at 3m(dBµV/m)	
		Horizontal	Vertical		Horizontal	Vertical
30.00	20.70	*	*	40.00	*	*
199.98	10.70	29.50	27.60	43.50	40.20	38.30
525.69	21.10	21.00	20.80	46.00	42.10	41.90
601.50	22.90	18.60	16.50	46.00	41.50	39.40
724.98	26.10	16.10	14.70	46.00	42.20	40.80
875.59	24.90	17.20	12.90	46.00	42.10	37.80
1000.00	24.30	*	*	54.00	*	*

REMARKS :

1. *Undetectable
2. The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	ASOKA USA Corporation	Test Date	2006/10/16
Test Mode	Channel 1	Detector Function	Peak(PK)/Average(AV)
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.60	44.30 PK	74.00	-29.70	1.87 H	124	11.50	32.80
1	2386.60	38.50 AV	54.00	-15.50	1.87 H	124	5.70	32.80
2	2390.00	39.70 PK	74.00	-34.30	1.87 H	124	5.90	33.80
2	2390.00	34.10 AV	54.00	-19.90	1.87 H	124	0.30	33.80
3	*2412.00	101.10 PK			1.87 H	124	71.20	29.90
3	*2412.00	96.00 AV			1.87 H	124	66.10	29.90
4	4824.00	51.50 PK	74.00	-22.50	1.49 H	331	15.30	36.20
4	4824.00	43.90 AV	54.00	-10.10	1.49 H	331	7.70	36.20
5	7236.00	49.70 PK	74.00	-24.30	1.03 H	146	8.00	41.70
5	7236.00	38.50 AV	54.00	-15.50	1.03 H	146	-3.20	41.70
6	9648.00	55.20 PK	74.00	-18.80	1.53 H	307	10.30	44.90
6	9648.00	49.20 AV	54.00	-4.80	1.53 H	307	4.30	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.60	55.30 PK	74.00	-18.70	1.19 V	90	22.60	32.80
1	2386.60	49.50 AV	54.00	-4.50	1.19 V	90	16.70	32.80
2	2390.00	51.20 PK	74.00	-22.80	1.19 V	90	17.40	33.80
2	2390.00	45.10 AV	54.00	-8.90	1.19 V	90	11.30	33.80
3	*2412.00	112.40 PK			1.19 V	90	82.50	29.90
3	*2412.00	107.00 AV			1.19 V	90	77.10	29.90
4	4824.00	54.20 PK	74.00	-19.80	1.10 V	224	18.00	36.20
4	4824.00	47.30 AV	54.00	-6.70	1.10 V	224	11.10	36.20
5	7236.00	50.20 PK	74.00	-23.80	1.65 V	124	8.50	41.70
5	7236.00	38.90 AV	54.00	-15.10	1.65 V	124	-2.80	41.70
6	9648.00	58.00 PK	92.40	-34.40	1.87 V	308	13.10	44.90
6	9648.00	54.70 AV	87.00	-32.30	1.87 V	308	9.80	44.90

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247
6. “ * ” : Fundamental frequency
7. For Wireless 802.11b mode at 11Mbps.

Company	ASOKA USA Corporation	Test Date	2006/10/16
Test Mode	Channel 6	Detector Function	Peak(PK)/Average(AV)
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25 °C, 53%

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	104.00 PK			1.90 H	249	74.00	30.00
1	*2437.00	99.00 AV			1.90 H	249	69.00	30.00
2	4874.00	49.50 PK	74.00	-24.50	1.58 H	317	13.00	36.50
2	4874.00	42.40 AV	54.00	-11.60	1.58 H	317	5.90	36.50
3	7311.00	49.50 PK	74.00	-24.50	1.36 H	26	7.70	41.80
3	7311.00	38.70 AV	54.00	-15.30	1.36 H	26	-3.10	41.80
4	9748.00	54.40 PK	74.00	-19.60	1.66 H	308	9.80	44.60
4	9748.00	47.70 AV	54.00	-6.30	1.66 H	308	3.10	44.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	113.70 PK			1.32 V	121	83.70	30.00
1	*2437.00	107.60 AV			1.32 V	121	77.60	30.00
2	4874.00	56.40 PK	74.00	-17.60	1.33 V	307	19.90	36.50
2	4874.00	48.10 AV	54.00	-5.90	1.33 V	307	11.60	36.50
3	7311.00	50.30 PK	74.00	-23.70	1.33 V	178	8.50	41.80
3	7311.00	39.70 AV	54.00	-14.30	1.33 V	178	-2.10	41.80
4	9748.00	55.20 PK	74.00	-18.80	1.18 V	301	10.60	44.60
4	9748.00	49.80 AV	54.00	-4.20	1.18 V	301	5.20	44.60

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “* “: Fundamental frequency
 7. For Wireless 802.11b mode at 11Mbps.

Company	ASOKA USA Corporation	Test Date	2006/10/16
Test Mode	Channel 11	Detector Function	Peak(PK)/Average(AV)
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	103.90 PK			1.79 H	249	73.80	30.10
1	*2462.00	97.60 AV			1.79 H	249	67.50	30.10
2	2483.50	47.80 PK	74.00	-26.20	1.79 H	249	17.70	30.10
2	2483.50	41.60 AV	54.00	-12.40	1.79 H	249	11.50	30.10
3	2487.60	49.70 PK	74.00	-24.30	1.79 H	249	19.60	30.10
3	2487.60	43.30 AV	54.00	-10.70	1.79 H	249	13.20	30.10
4	4924.00	50.20 PK	74.00	-23.80	1.46 H	334	13.50	36.70
4	4924.00	41.90 AV	54.00	-12.10	1.46 H	334	5.20	36.70
5	7386.00	49.10 PK	74.00	-24.90	1.22 H	182	7.30	41.80
5	7386.00	38.50 AV	54.00	-15.50	1.22 H	182	-3.30	41.80
6	9848.00	55.50 PK	74.00	-18.50	1.47 H	343	11.10	44.40
6	9848.00	47.50 AV	54.00	-6.50	1.47 H	343	3.10	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.90 PK			1.28 V	247	81.80	30.10
1	*2462.00	106.80 AV			1.28 V	247	76.70	30.10
2	2483.50	55.80 PK	74.00	-18.20	1.28 V	247	25.70	30.10
2	2483.50	50.80 AV	54.00	-3.20	1.28 V	247	20.70	30.10
3	2487.60	57.60 PK	74.00	-16.40	1.28 V	247	27.50	30.10
3	2487.60	52.50 AV	54.00	-1.50	1.28 V	247	22.40	30.10
4	4924.00	55.70 PK	74.00	-18.30	1.07 V	223	19.00	36.70
4	4924.00	48.10 AV	54.00	-5.90	1.07 V	223	11.40	36.70
5	7386.00	49.80 PK	74.00	-24.20	1.31 V	176	8.00	41.80
5	7386.00	39.40 AV	54.00	-14.60	1.31 V	176	-2.40	41.80
6	9848.00	56.60 PK	74.00	-17.40	1.68 V	337	12.20	44.40
6	9848.00	50.30 AV	54.00	-3.70	1.68 V	337	5.90	44.40

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “* “: Fundamental frequency
 7. For Wireless 802.11b mode at 11Mbps.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

Company	ASOKA USA Corporation	Test Date	2006/10/16
Test Mode	Channel 1	Detector Function	Peak(PK)/Average(AV)
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	49.70 PK	74.00	-24.30	1.87 H	123	15.90	33.80
1	2390.00	40.60 AV	54.00	-13.40	1.87 H	123	6.80	33.80
2	*2412.00	99.70 PK			1.87 H	123	69.80	29.90
2	*2412.00	90.50 AV			1.87 H	123	60.60	29.90
3	4824.00	50.20 PK	74.00	-23.80	1.32 H	10	14.00	36.20
3	4824.00	40.10 AV	54.00	-13.90	1.32 H	10	3.90	36.20
4	7236.00	50.30 PK	74.00	-23.70	1.43 H	27	8.60	41.70
4	7236.00	39.40 AV	54.00	-14.60	1.43 H	27	-2.30	41.70
5	9648.00	57.40 PK	74.00	-16.60	1.03 H	55	12.50	44.90
5	9648.00	47.40 AV	54.00	-6.60	1.03 H	55	2.50	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.80 PK	74.00	-15.20	1.61 V	127	25.00	33.80
1	2390.00	50.70 AV	54.00	-3.30	1.61 V	127	16.90	33.80
2	*2412.00	108.70 PK			1.61 V	127	78.80	29.90
2	*2412.00	100.60 AV			1.61 V	127	70.70	29.90
3	4824.00	52.90 PK	74.00	-21.10	1.38 V	59	16.60	36.20
3	4824.00	42.00 AV	54.00	-12.00	1.38 V	59	5.70	36.20
4	7236.00	53.10 PK	74.00	-20.90	1.37 V	27	11.50	41.70
4	7236.00	40.30 AV	54.00	-13.70	1.37 V	27	-1.40	41.70
5	9648.00	56.80 PK	74.00	-17.20	1.38 V	8	11.90	44.90
5	9648.00	47.60 AV	54.00	-6.40	1.38 V	8	2.70	44.90

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency
 7. For Wireless 802.11g mode at 6Mbps.

Company	ASOKA USA Corporation	Test Date	2006/10/16
Test Mode	Channel 6	Detector Function	Peak(PK)/Average(AV)
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	99.60 PK			1.47 H	122	69.60	30.00
1	*2437.00	89.60 AV			1.47 H	122	59.60	30.00
2	4874.00	49.90 PK	74.00	-24.10	1.39 H	21	13.40	36.50
2	4874.00	39.80 AV	54.00	-14.20	1.39 H	21	3.30	36.50
3	7311.00	50.80 PK	74.00	-23.20	1.47 H	53	9.10	41.80
3	7311.00	39.70 AV	54.00	-14.30	1.47 H	53	-2.00	41.80
4	9748.00	56.50 PK	74.00	-17.50	1.17 H	64	11.80	44.60
4	9748.00	46.80 AV	54.00	-7.20	1.17 H	64	2.10	44.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.50 PK			1.31 V	122	80.50	30.00
1	*2437.00	101.80 AV			1.31 V	122	71.80	30.00
2	4874.00	52.70 PK	74.00	-21.30	1.34 V	47	16.20	36.50
2	4874.00	41.80 AV	54.00	-12.20	1.34 V	47	5.30	36.50
3	7311.00	53.20 PK	74.00	-20.80	1.29 V	41	11.40	41.80
3	7311.00	40.20 AV	54.00	-13.80	1.29 V	41	-1.60	41.80
4	9748.00	56.40 PK	74.00	-17.60	1.27 V	26	11.80	44.60
4	9748.00	47.90 AV	54.00	-6.10	1.27 V	26	3.30	44.60

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency
 7. For Wireless 802.11g mode at 6Mbps.

Company	ASOKA USA Corporation	Test Date	2006/10/16
Test Mode	Channel 11	Detector Function	Peak(PK)/Average(AV)
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

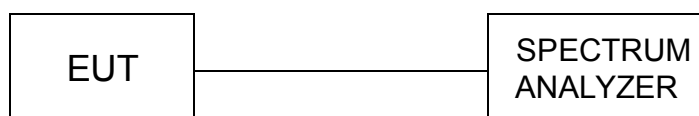
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	98.40 PK			1.89 H	122	68.30	30.10
1	*2462.00	88.90 AV			1.89 H	122	58.80	30.10
2	2483.50	51.70 PK	74.00	-22.30	1.89 H	122	21.60	30.10
2	2483.50	41.60 AV	54.00	-12.40	1.89 H	122	11.50	30.10
3	4924.00	48.90 PK	74.00	-25.10	1.29 H	9	12.20	36.70
3	4924.00	38.80 AV	54.00	-15.20	1.29 H	9	2.20	36.70
4	7386.00	50.80 PK	74.00	-23.20	1.45 H	21	9.00	41.80
4	7386.00	39.80 AV	54.00	-14.20	1.45 H	21	-2.00	41.80
5	9848.00	55.80 PK	74.00	-18.20	1.41 H	118	11.50	44.40
5	9848.00	46.10 AV	54.00	-7.90	1.41 H	118	1.80	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.30 PK			1.30 V	125	80.20	30.10
1	*2462.00	100.30 AV			1.30 V	125	70.20	30.10
2	2483.50	63.10 PK	74.00	-10.90	1.30 V	125	33.00	30.10
2	2483.50	53.00 AV	54.00	-1.00	1.30 V	125	22.90	30.10
3	4924.00	52.70 PK	74.00	-21.30	1.27 V	38	16.10	36.70
3	4924.00	41.10 AV	54.00	-12.90	1.27 V	38	4.40	36.70
4	7386.00	53.20 PK	74.00	-20.80	1.28 V	35	11.30	41.80
4	7386.00	40.10 AV	54.00	-13.90	1.28 V	35	-1.80	41.80
5	9848.00	56.30 PK	74.00	-17.70	1.00 V	37	11.90	44.40
5	9848.00	48.70 AV	54.00	-5.30	1.00 V	37	4.40	44.40

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency
 7. For Wireless 802.11g mode at 6Mbps.

7. 6DB BANDWIDTH MEASUREMENT**7.1 MEASUREMENT PROCEDURE**

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300 KHz RBW and 1MHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**7.3 MEASUREMENT EQUIPMENT USED:**

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2006/10	2007/10

Note: Each piece of equipment is scheduled for calibration once a year.

7.4 MEASUREMENT RESULTS:

Company	ASOKA USA Corporation	Test Date	2006/10/16
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.40	0.5	PASS
6	2437	10.05	0.5	PASS
11	2462	10.90	0.5	PASS

Note: 1. For 802.11b Mode

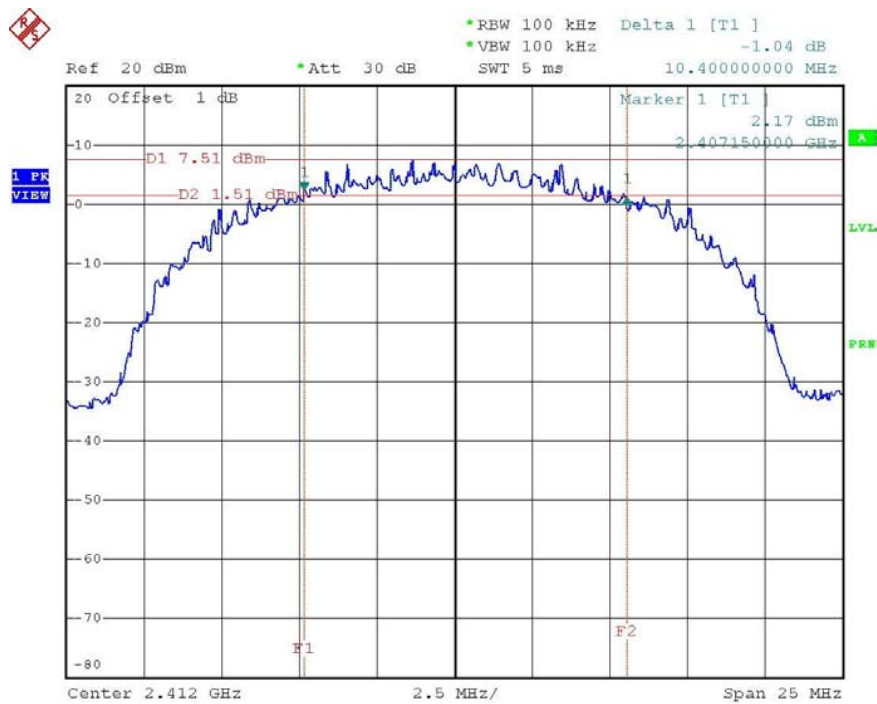
CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.40	0.5	PASS
6	2437	16.40	0.5	PASS
11	2462	16.40	0.5	PASS

Note: 1. For 802.11g Mode

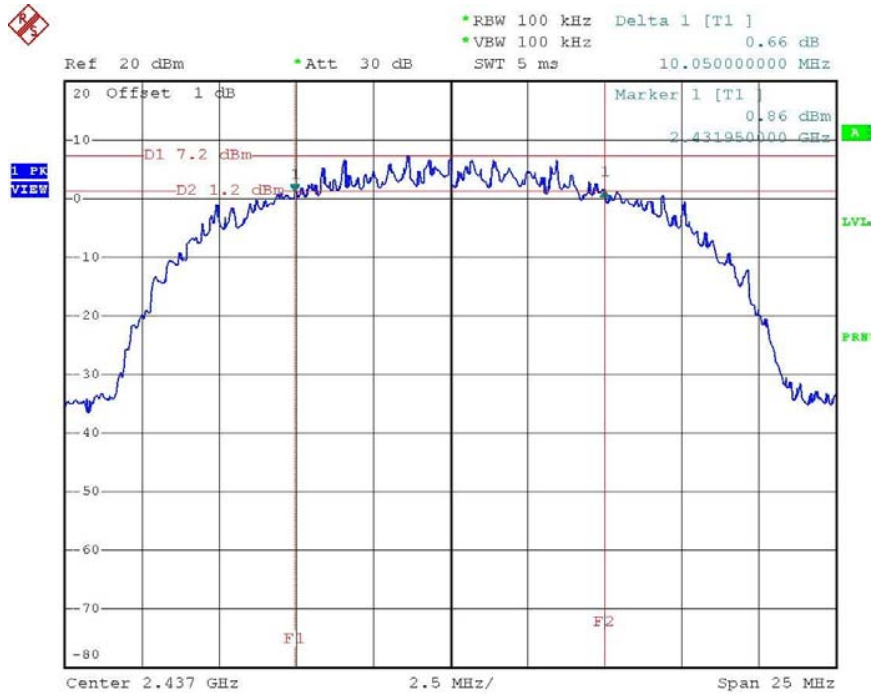
6 dB Bandwidth Test Plots:

Note: For 802.11b Mode

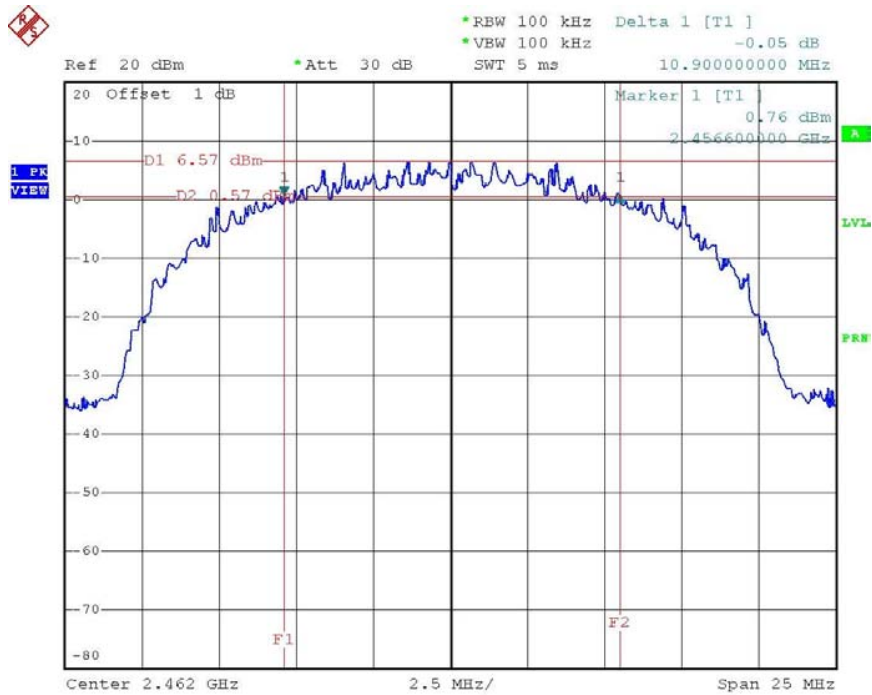
Channel 1



Channel 6

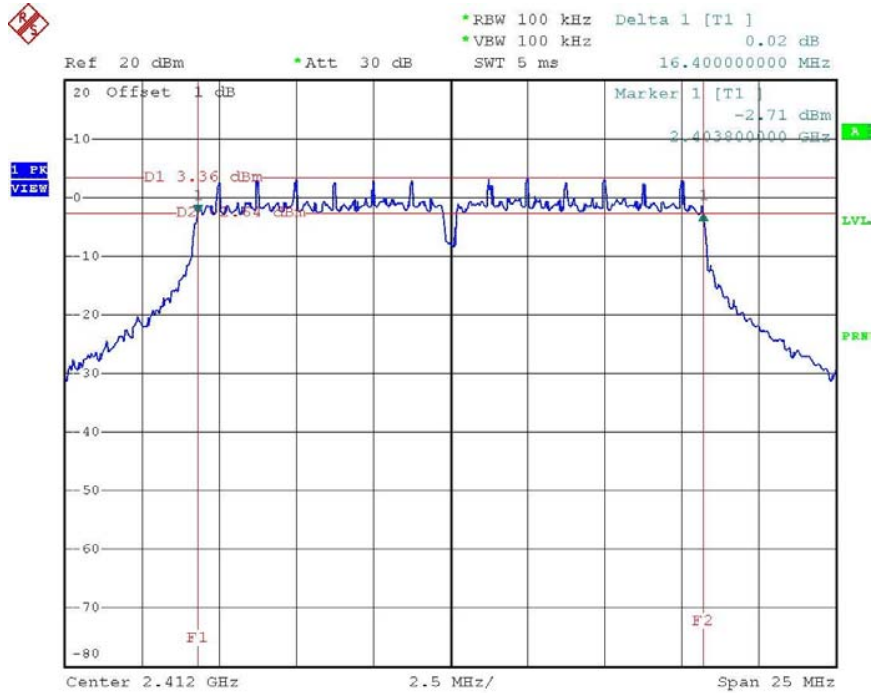


Channel 11

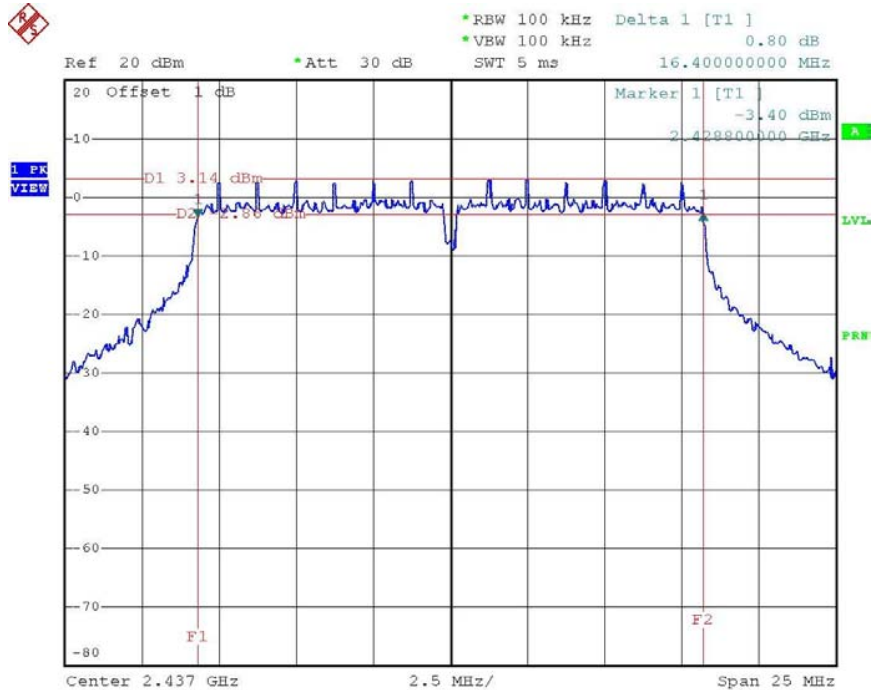


Note : For 802.11g Mode

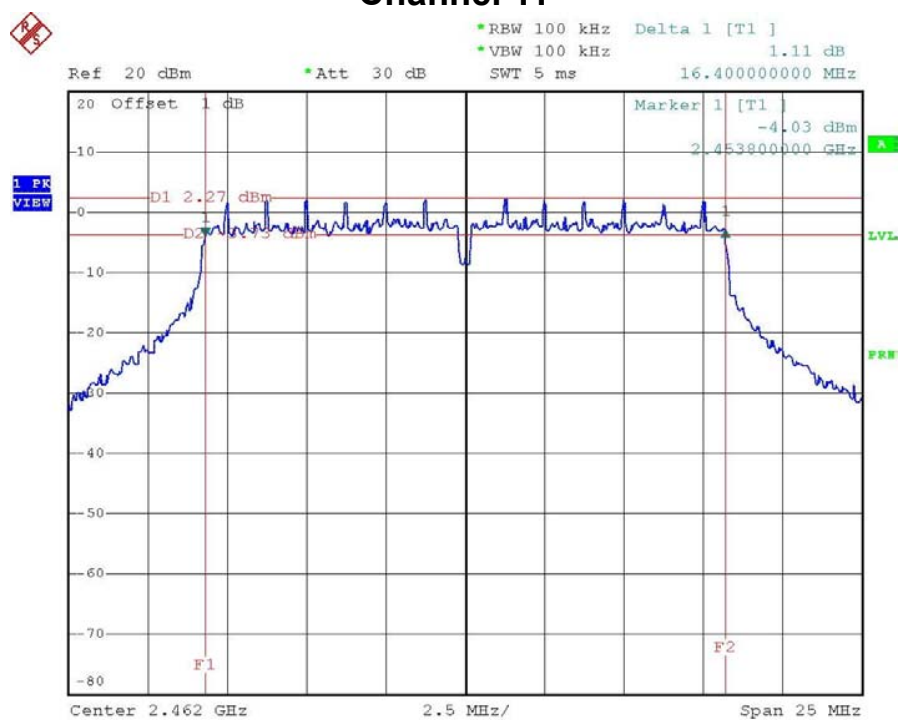
Channel 1



Channel 6



Channel 11



8 MAXIMUM PEAK OUTPUT POWER

8.1 MEASUREMENT PROCEDURE

1. The spectrum shall be set as follows :

Span : 1.5 times channel integration bandwidth.

RBW : 1MHz

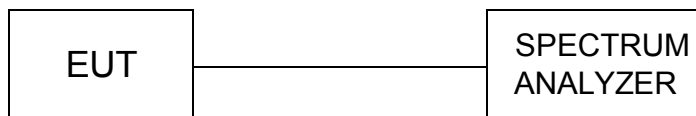
VBW : 3MHz

Detector : Peak

Sweep : Single trace

2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
4. The peak output power is the channel power integrated over 99% bandwidth.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3 MEASUREMENT EQUIPMENT USED:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2006/10	2007/10

Note: Each piece of equipment is scheduled for calibration once a year.

8.4 LIMITS OF MAXIMUM PEAK OUTPUT POWER

The Maximum Peak Output Power Measurement is 30dBm.

8.5 MEASUREMENT RESULTS:

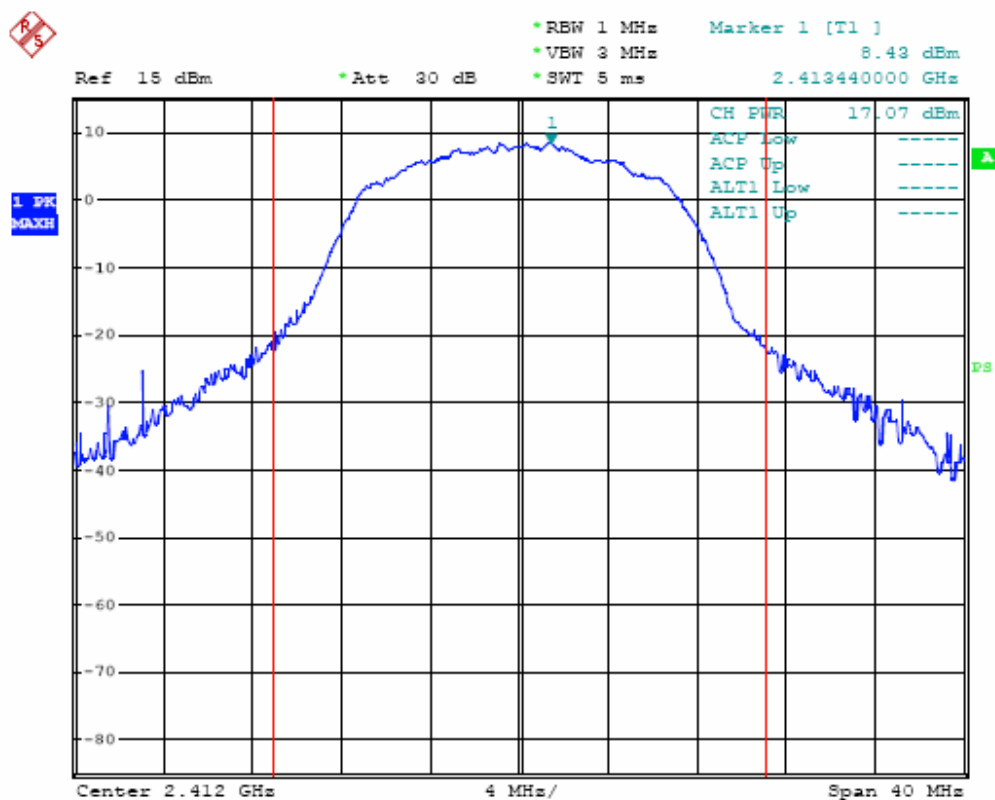
Company	ASOKA USA Corporation	Test Date	2006/10/16
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25 °C, 53%

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
1	2412	17.07	30	PASS
6	2437	17.15	30	PASS
11	2462	18.16	30	PASS

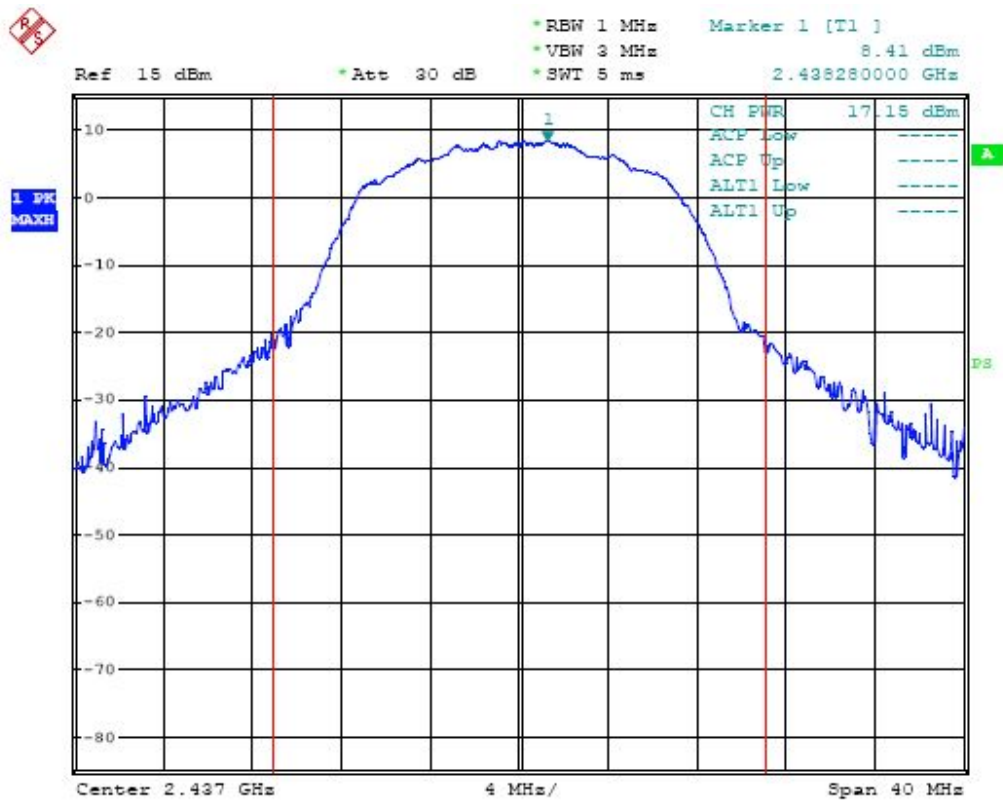
Note :1. For 802.11b Mode

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
1	2412	16.95	30	PASS
6	2437	17.12	30	PASS
11	2462	17.97	30	PASS

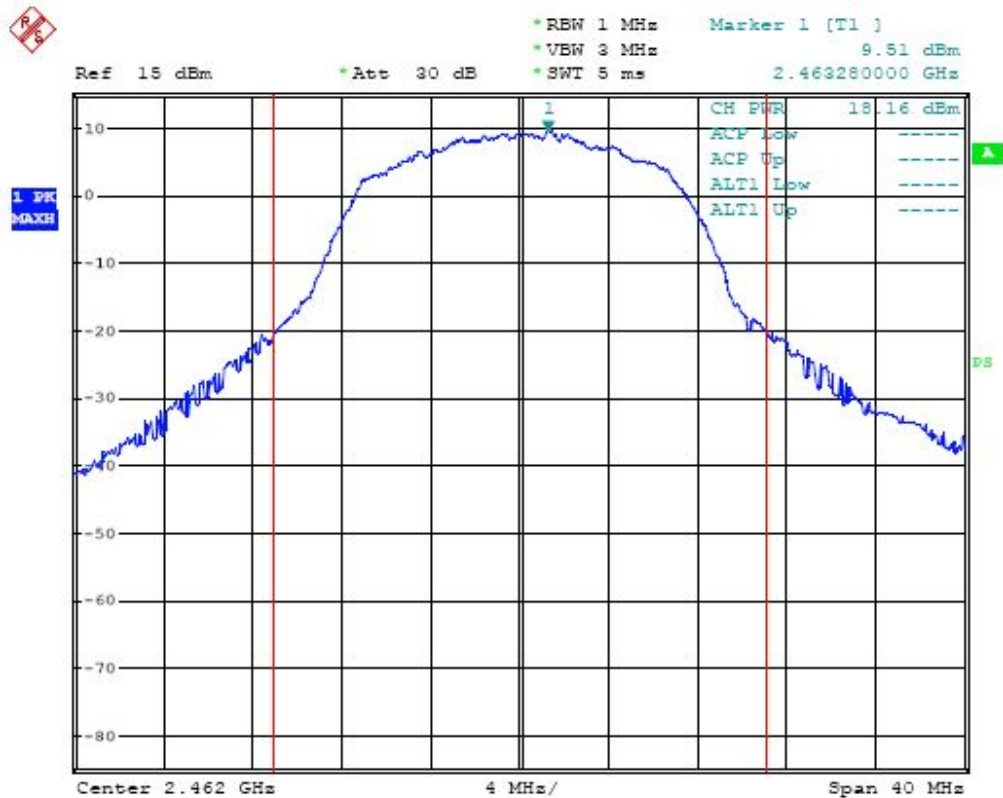
Note : 1. For 802.11g Mode

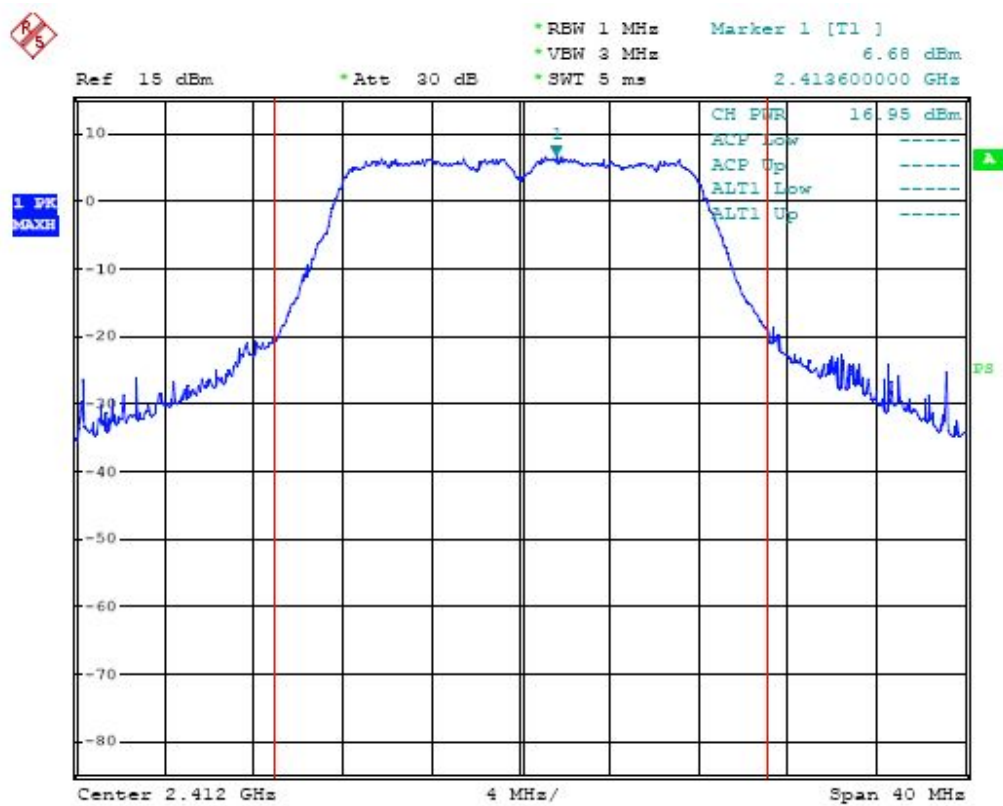
Photo of Maximum Peak Output Power Measurement:**Note:** For 802.11b Mode**Channel 1**

Channel 6

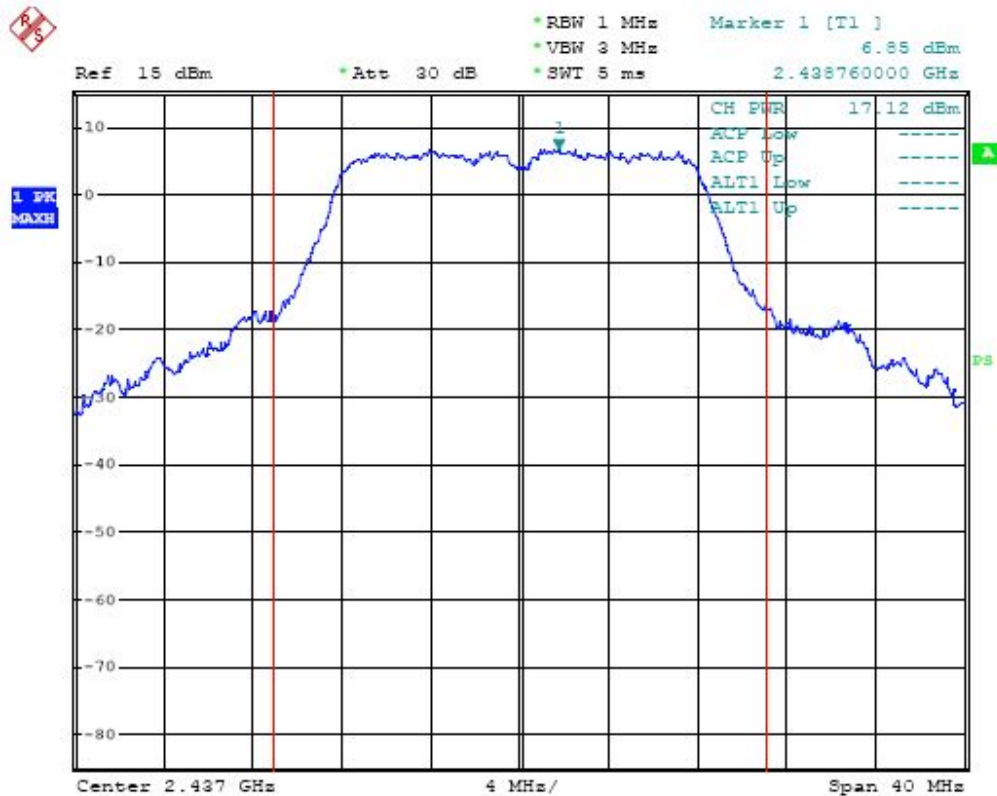


Channel 11

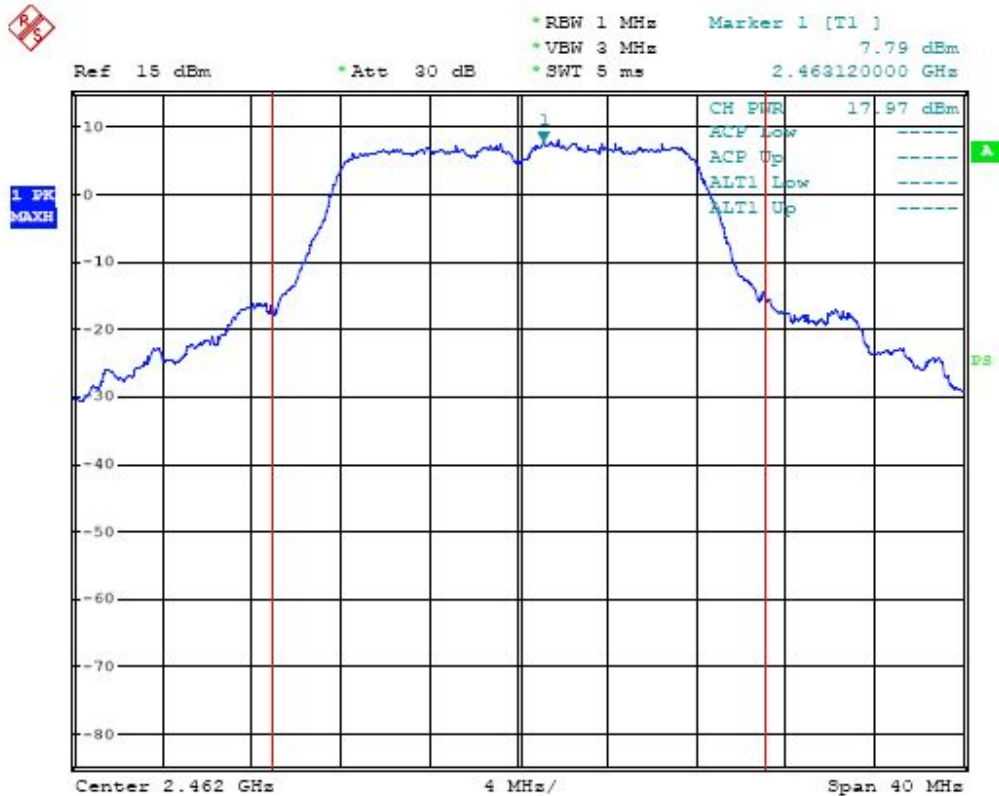


Note : For 802.11g Mode**Channel 1**

Channel 6



Channel 11

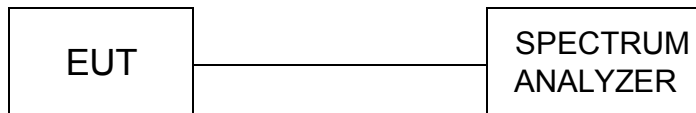


9 POWER SPECTRAL DENSITY MEASUREMENT**9.1 MEASUREMENT PROCEDURE**

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3KHz RBW and 30KHz VBW, set sweep time=span / 3KHz.

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.

9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**9.3 MEASUREMENT EQUIPMENT USED:**

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2006/10	2007/10

Note: Each piece of equipment is scheduled for calibration once a year.

9.4 LIMITS OF MAXIMUM PEAK OUTPUT POWER

The Maximum Power Spectral Density Measurement is 8dBm/3KHz.

9.5 MEASUREMENT RESULTS:

Company	ASOKA USA Corporation	Test Date	2006/10/16
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

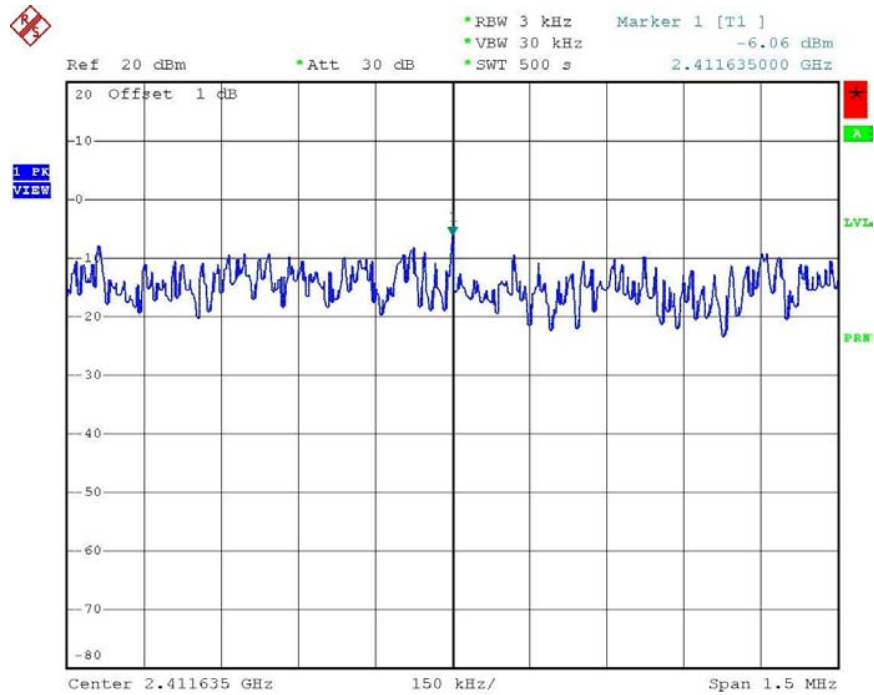
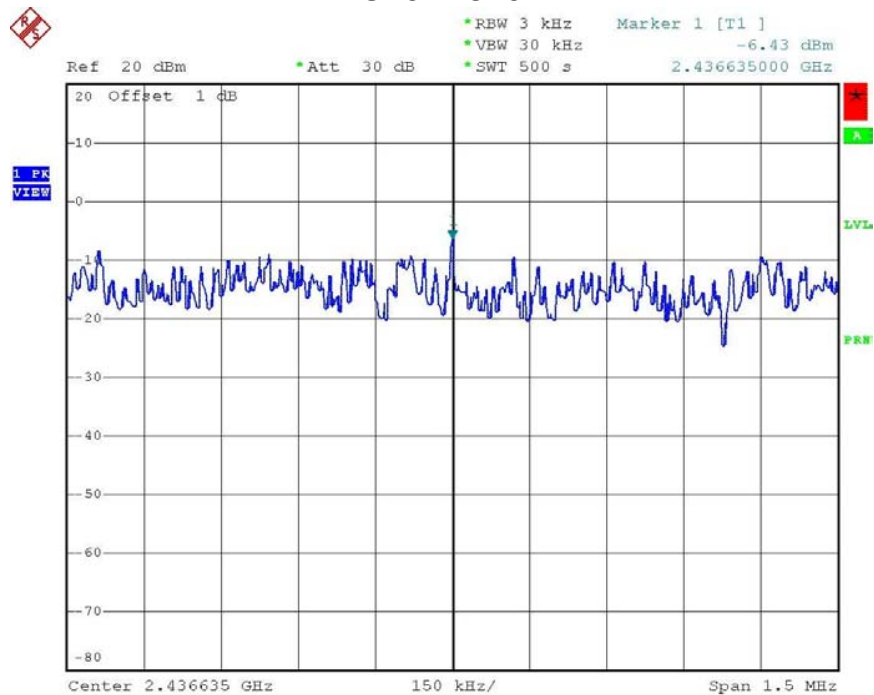
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-6.06	8	PASS
6	2437	-6.43	8	PASS
11	2462	-6.50	8	PASS

Note: 1. For 802.11b mode at final test to get the worst-case emission at 11Mbps.

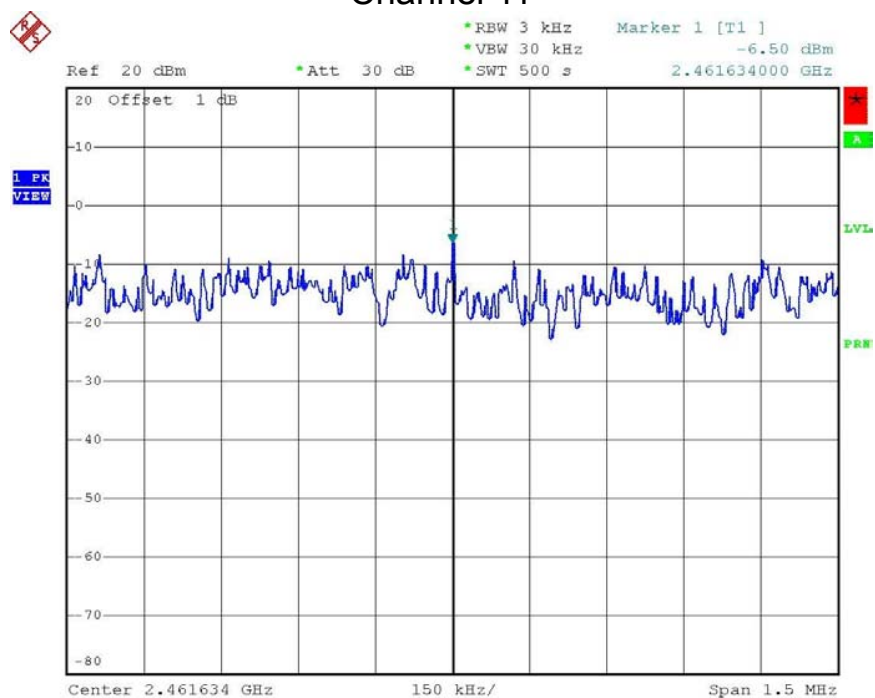
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.01	8	PASS
6	2437	-11.39	8	PASS
11	2462	-11.57	8	PASS

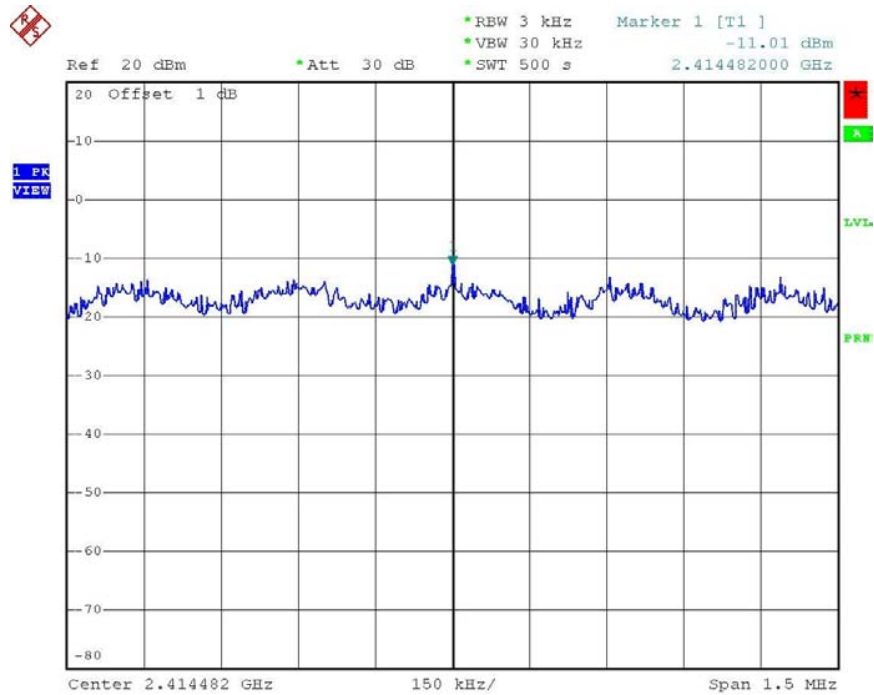
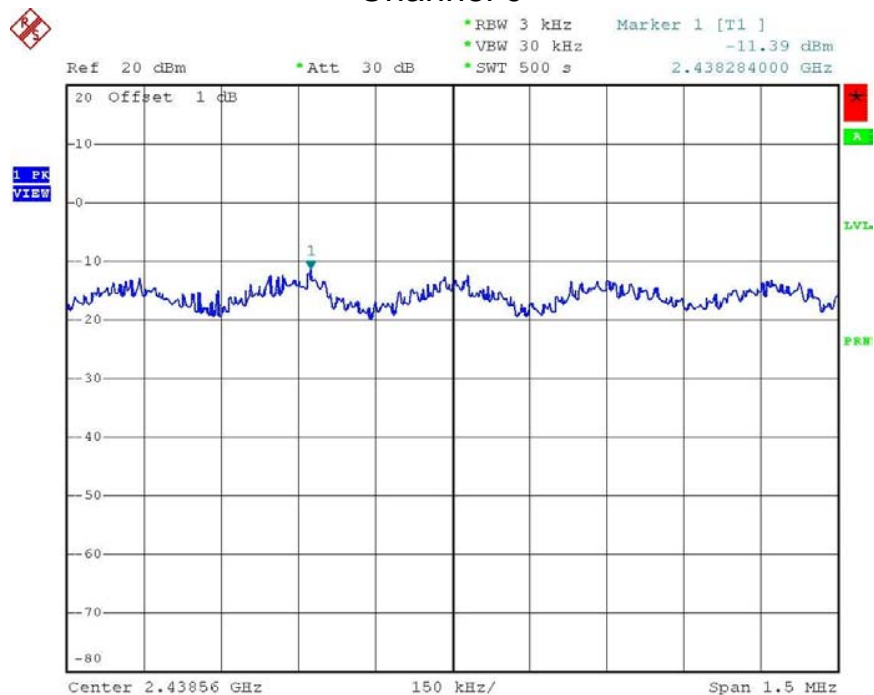
Note: 1. For 802.11g mode at final test to get the worst-case emission at 6Mbps

Photo of Power Spectral Density Measurement

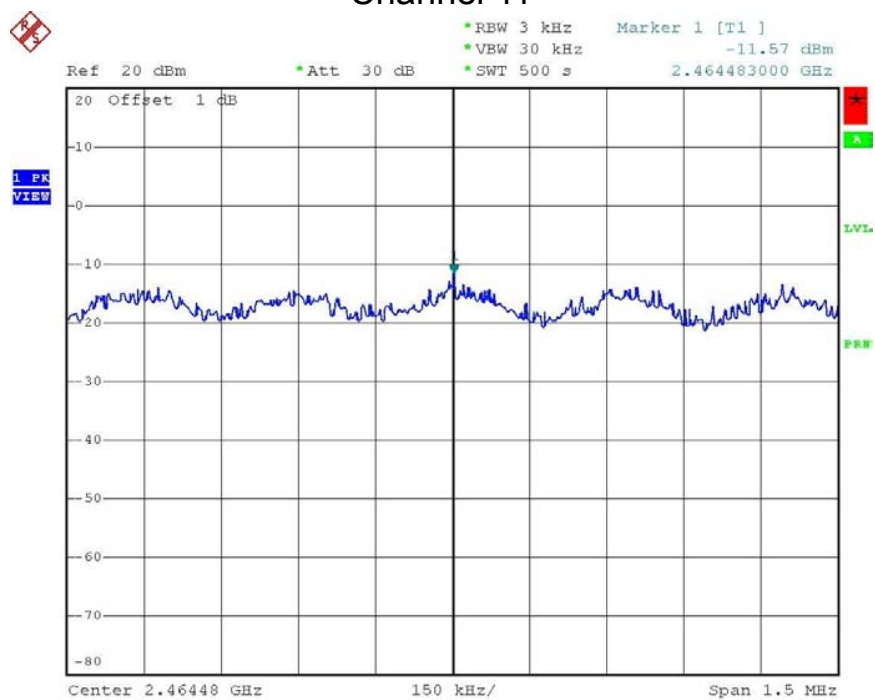
Note : For 802.11b Mode**Channel 1****Channel 6**

Channel 11



Note : For 802.11g Mode**Channel 1****Channel 6**

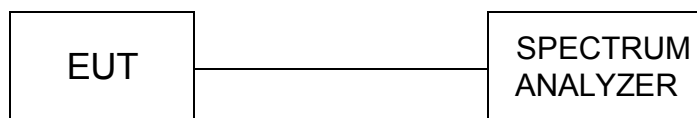
Channel 11



10 BAND EDGE MEASUREMENT**10.1 MEASUREMENT PROCEDURE**

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW and VBM to 1MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW and VBW to 100 kHz, to measure the conducted peak band edge.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**10.3 MEASUREMENT EQUIPMENT USED:**

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2006/10	2007/10

Note: Each piece of equipment is scheduled for calibration once a year.

10.4 LIMITS OF MAXIMUM PEAK OUTPUT POWER

1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

10.5 MEASUREMENT RESULTS:

- A. Conducted
Refer to photo of out band Emission measurement
- B. Radiated

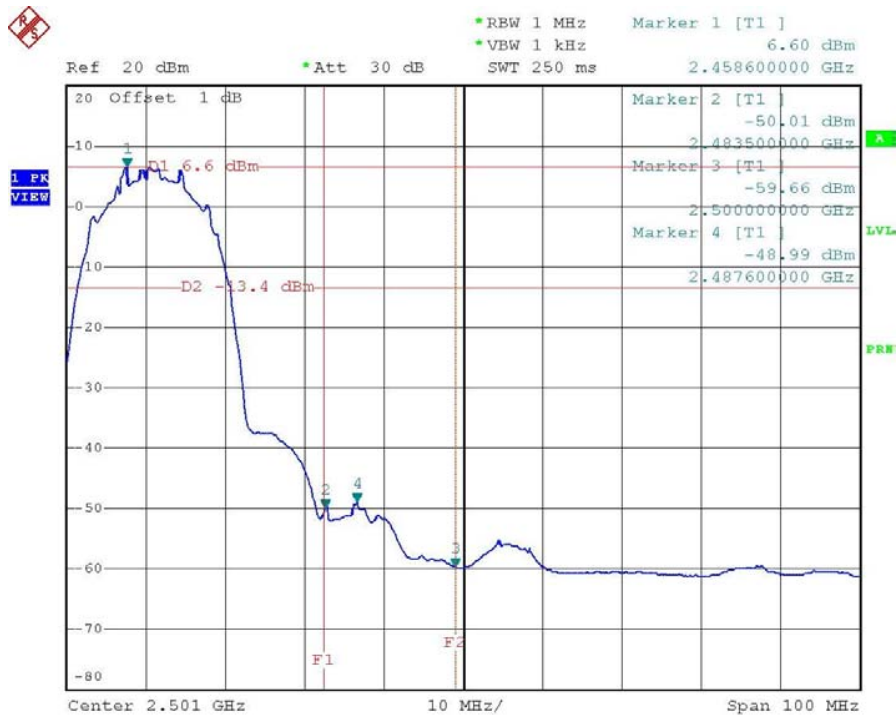
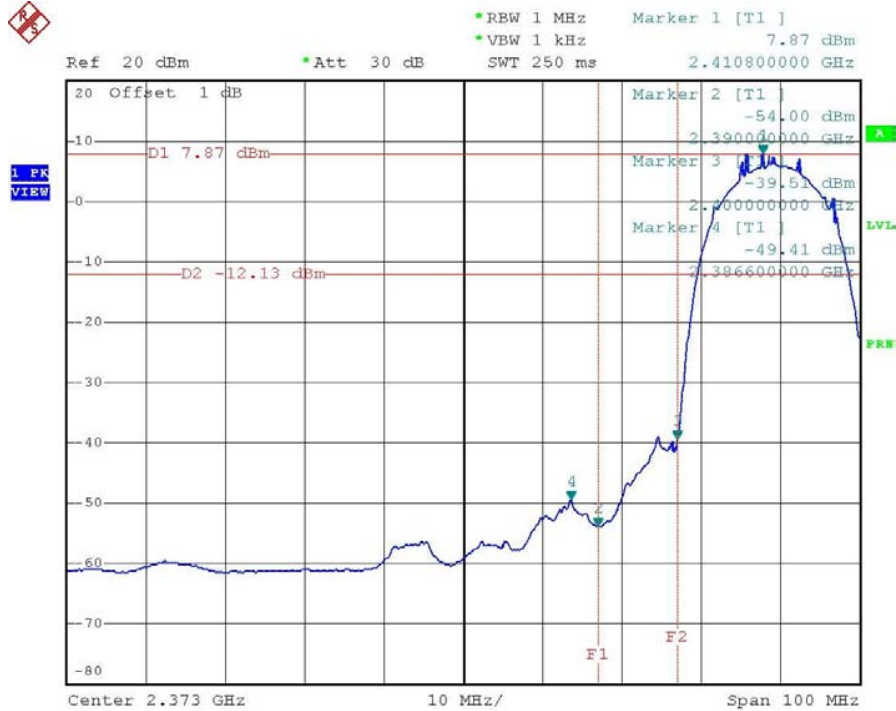
Company	ASOKA USA Corporation	Test Date	2006/10/16
Product Name	PlugLink 9550 Wireless Adapter	Test By	Tracy Qi
Model Name	PL9550-WAP	TEMP&Humidity	25°C, 53%

NOTE (1): The band edge emission plot on the following first page shows 61.87dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 107.00dBuV/m, so the maximum field strength in restrict band is $107.00 - 61.87 = 45.13$ dBuV/m which is under 54 dBuV/m limit.

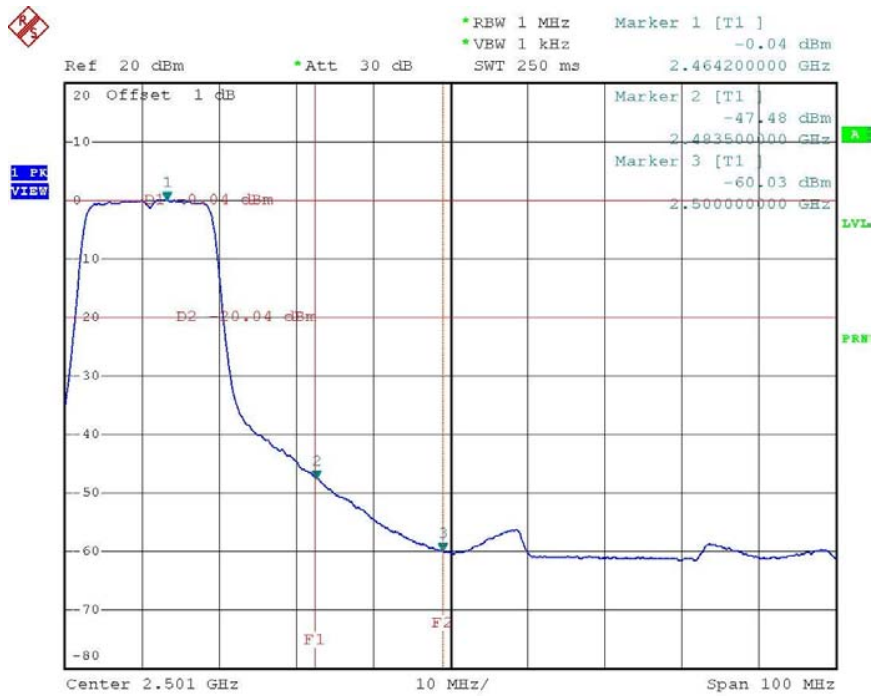
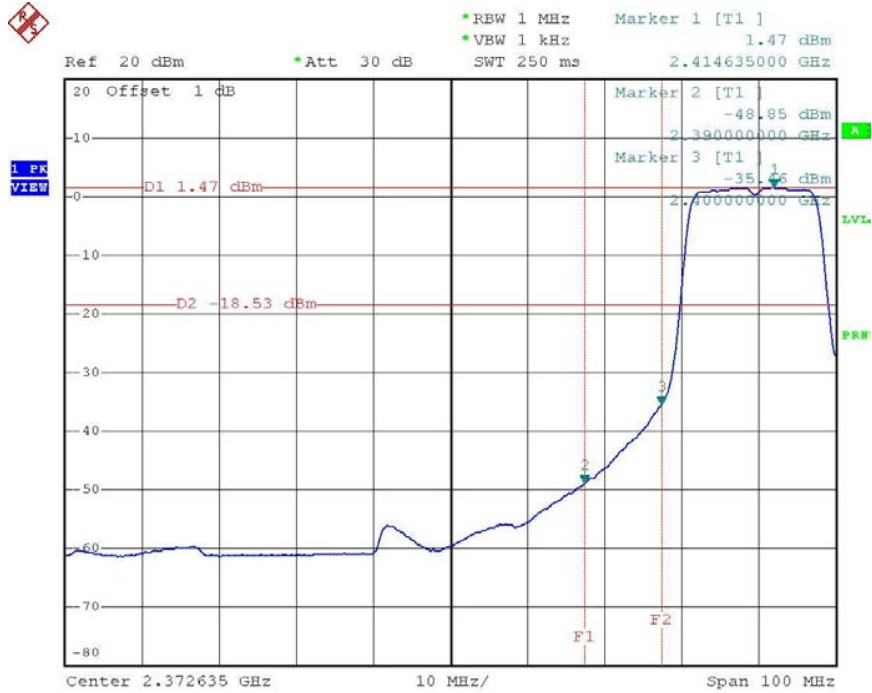
NOTE (2): The band edge emission plot on the following second page shows 56.61dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 106.80dBuV/m, so the maximum field strength in restrict band is $106.80 - 56.61 = 50.19$ dBuV/m which is under 54 dBuV/m limit.

Photo of Band Edge Measurement

Note : For 802.11b Mode



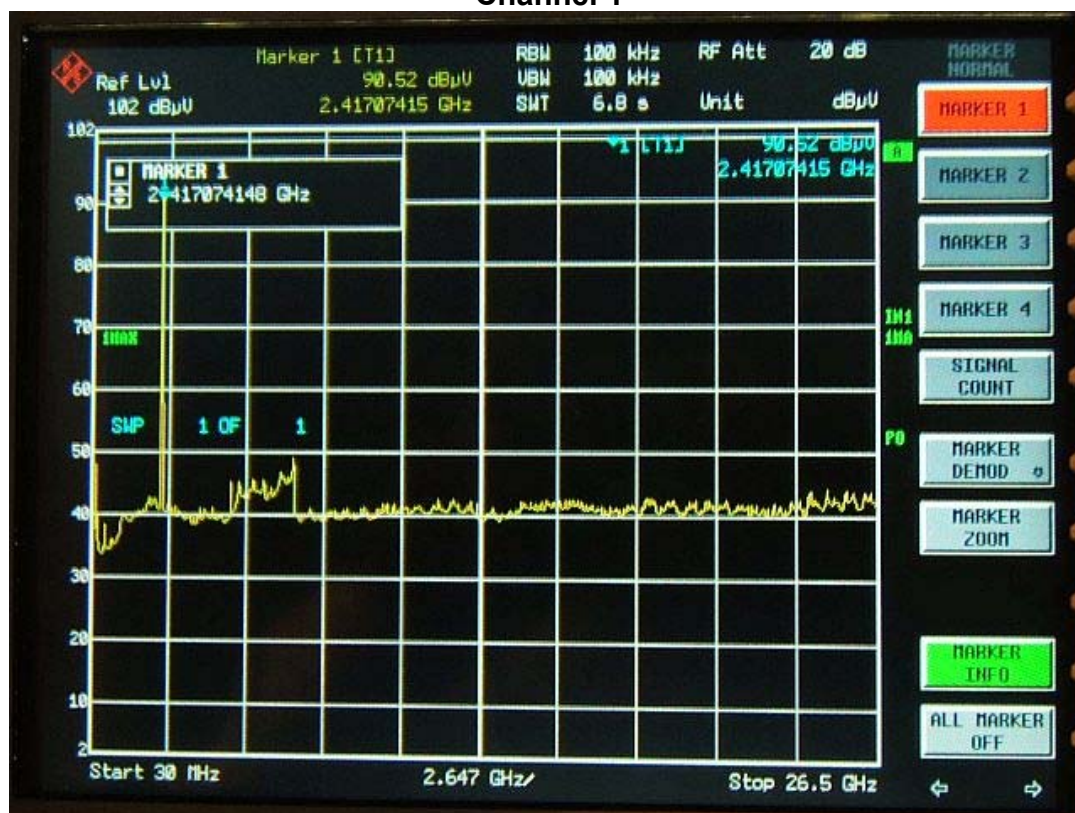
Note : For 802.11b Mode



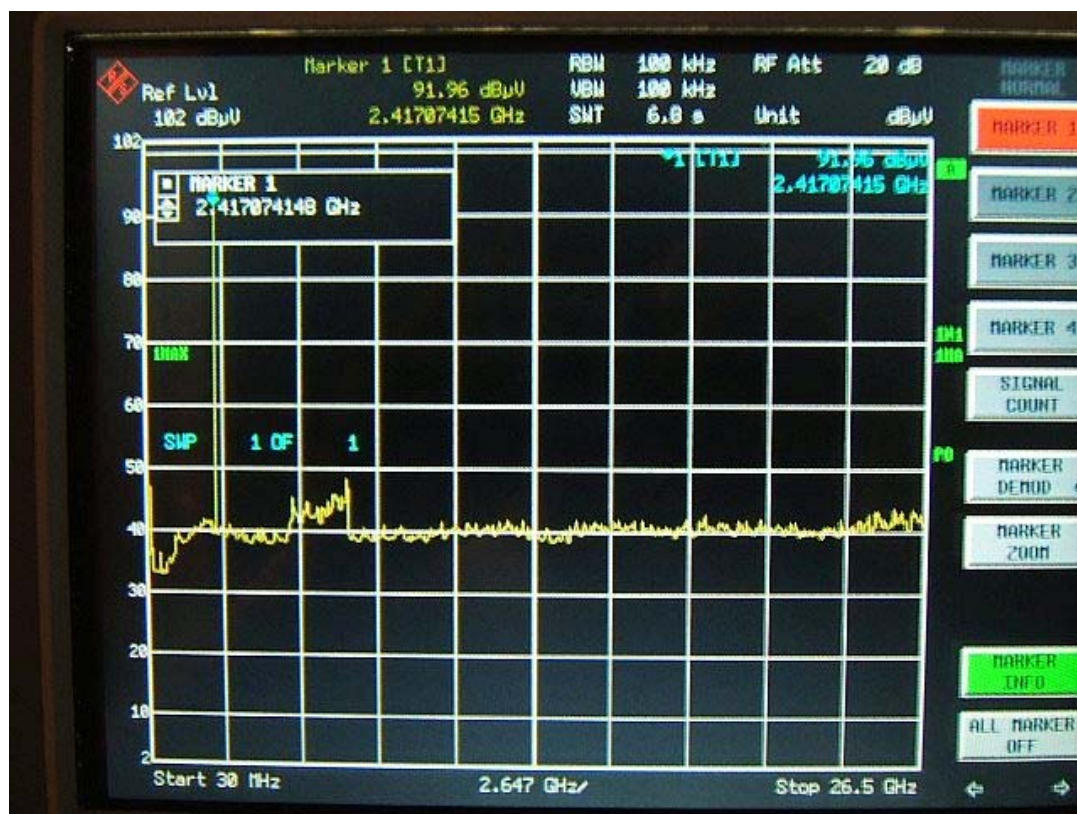
Out-of-band Spurious Emissions-conducted measurement

For 802.11b Mode

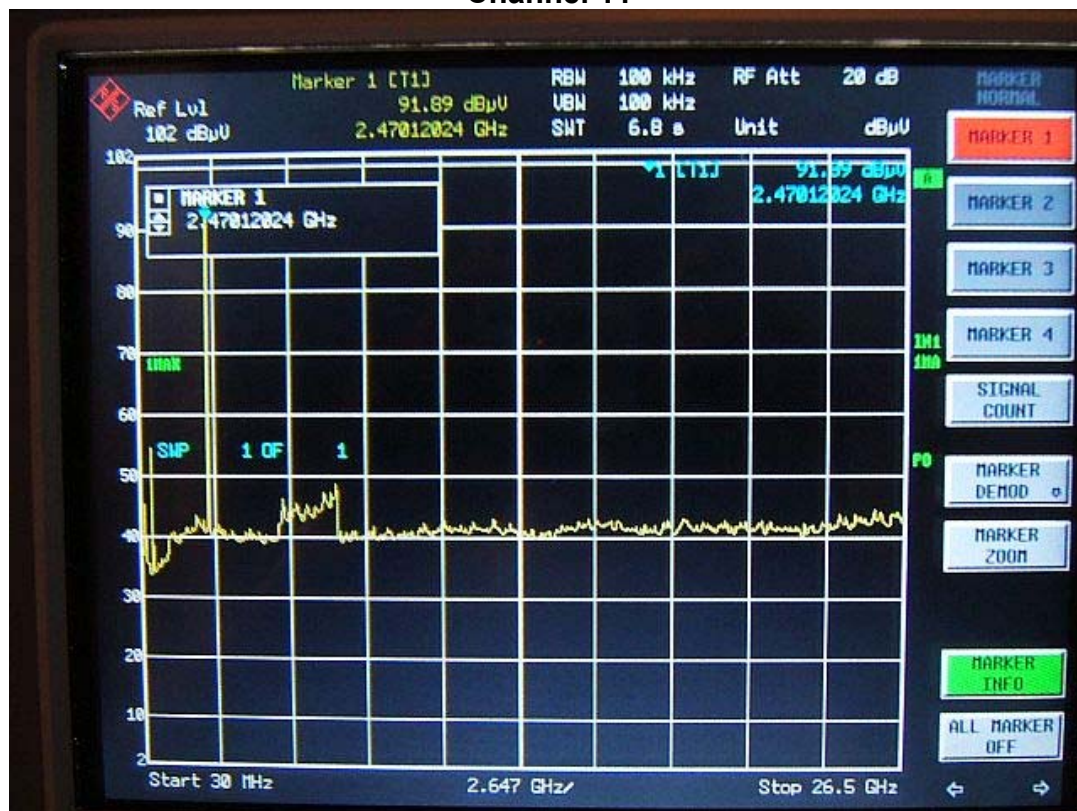
Channel 1



Channel 6

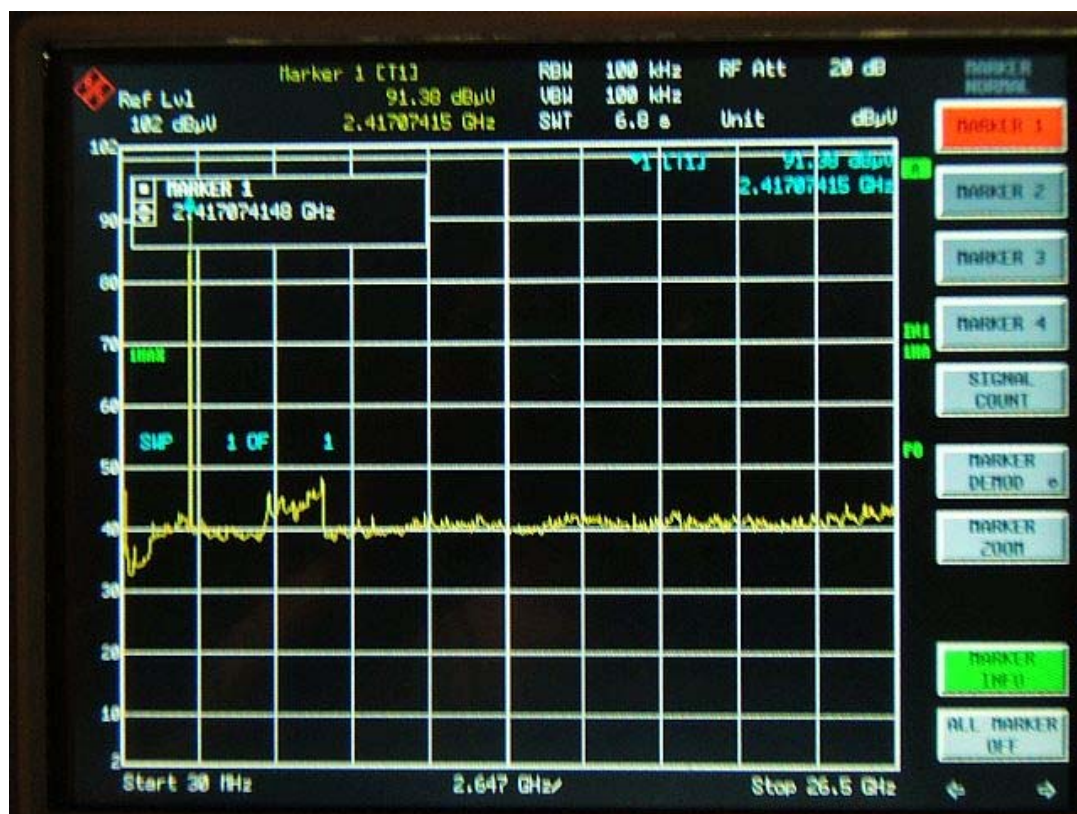


Channel 11

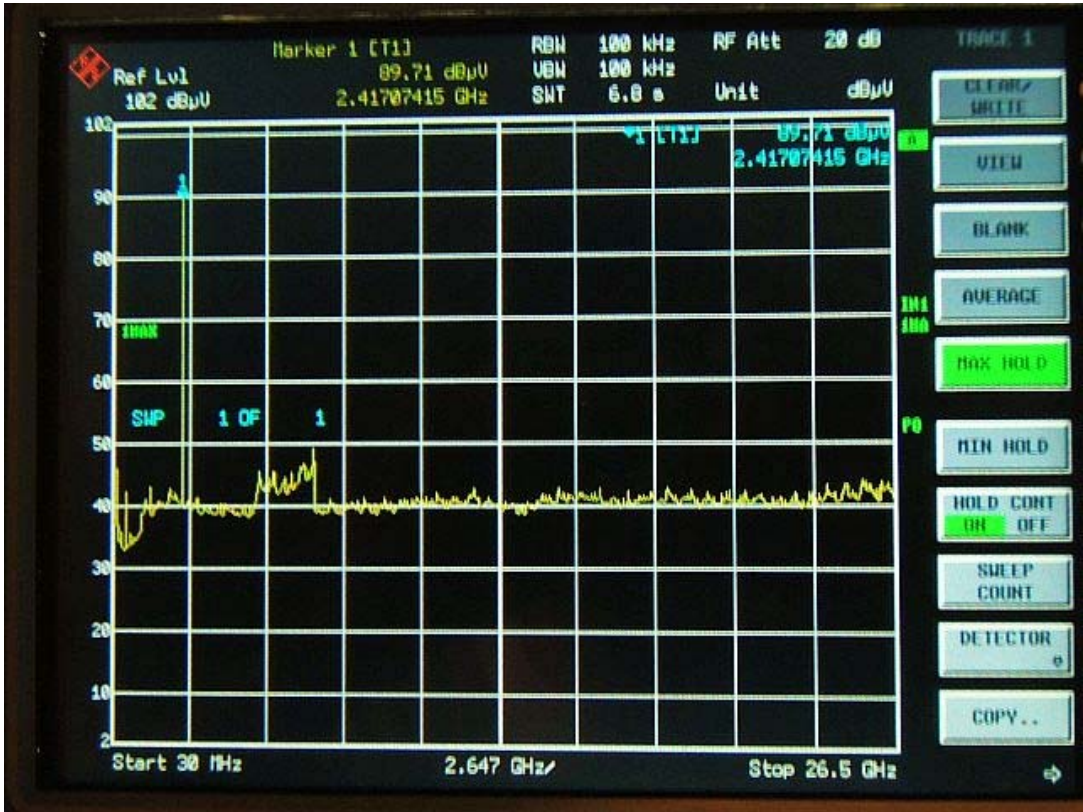


For 802.11g Mode

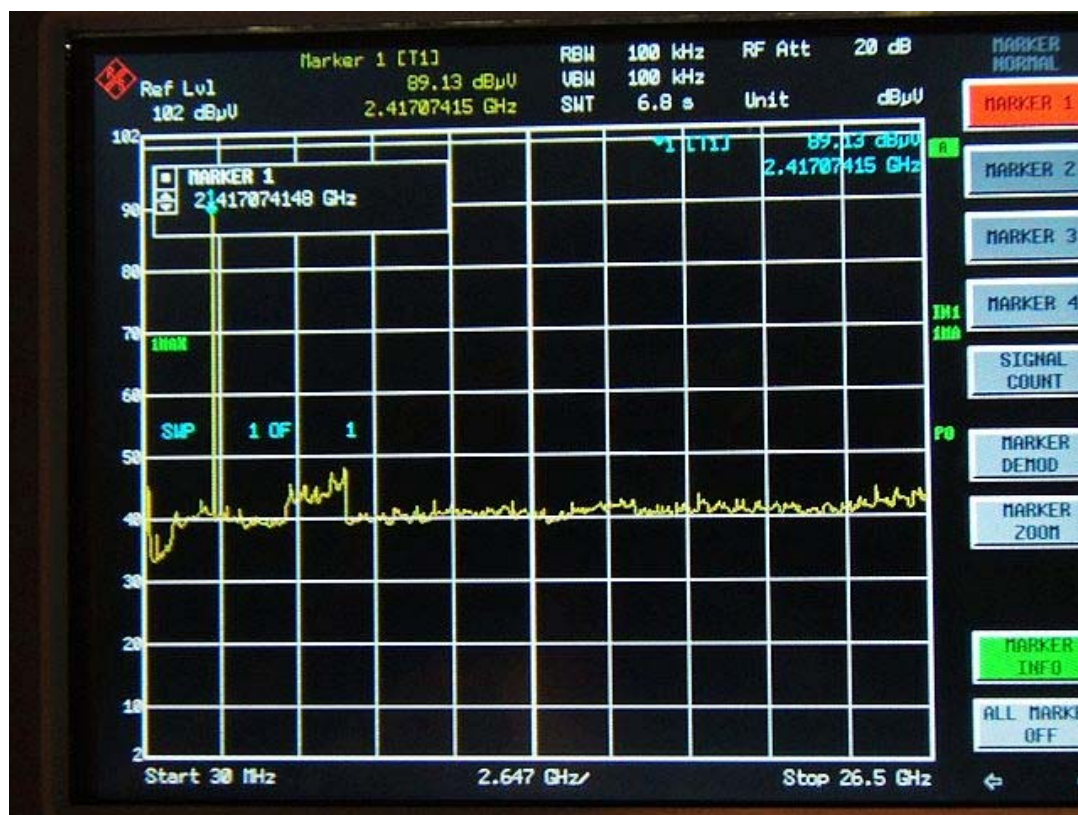
Channel 1



Channel 6



Channel 11



11. ANTENNA REQUIREMENT

11.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The antenna for this device is an integral antenna that the end user cannot remove.

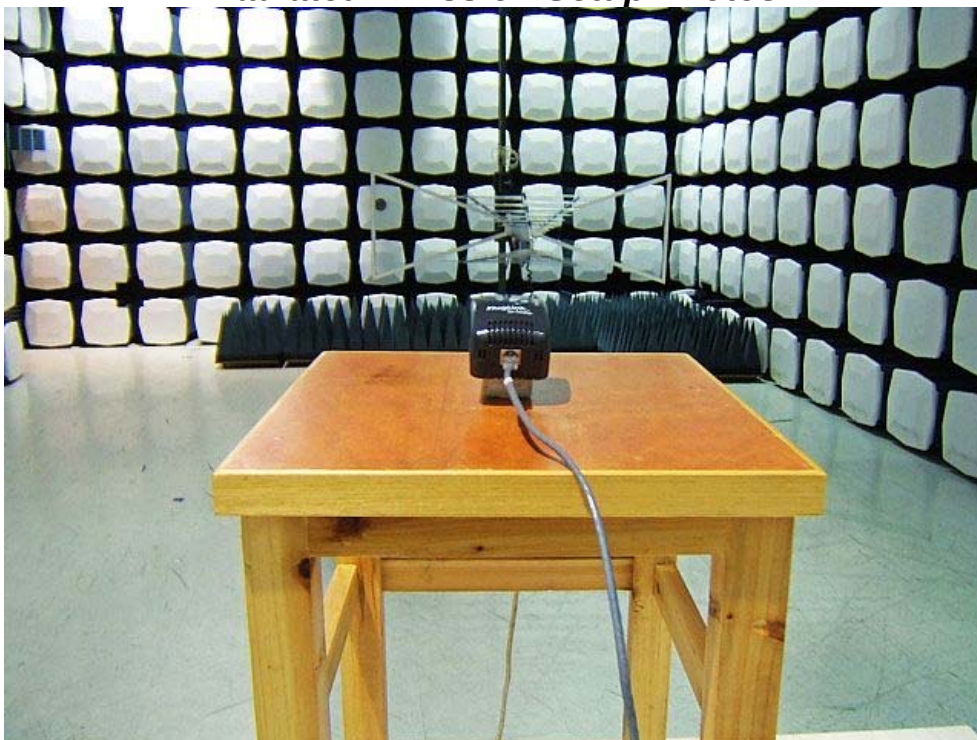
11.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna. The maximum Gain of the antenna only 2dBi.

APPENDIX 1

PHOTOGRAPHS OF SET UP

Radiated Emission Setup Photos



Conducted Emission Setup Photo



APPENDIX 2

PHOTOGRAPHS OF EUT

Top View of EUT



Bottom View of EUT



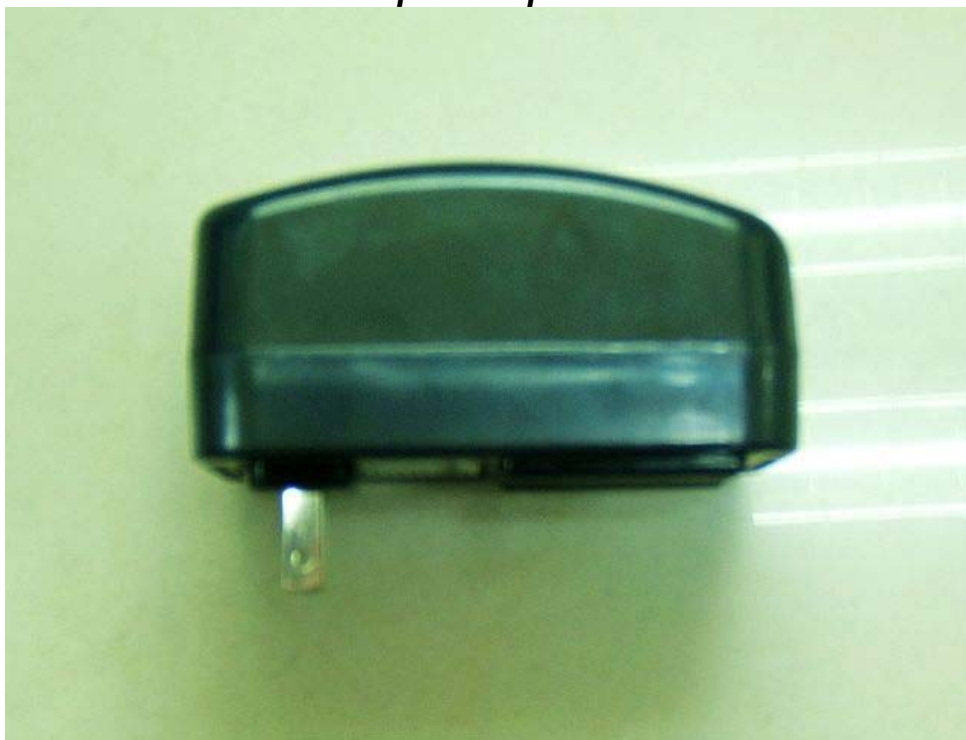
Front View of EUT



Back View of EUT



Left View of EUT



Right View of EUT



Internal of EUT- Open



Internal of EUT- 1



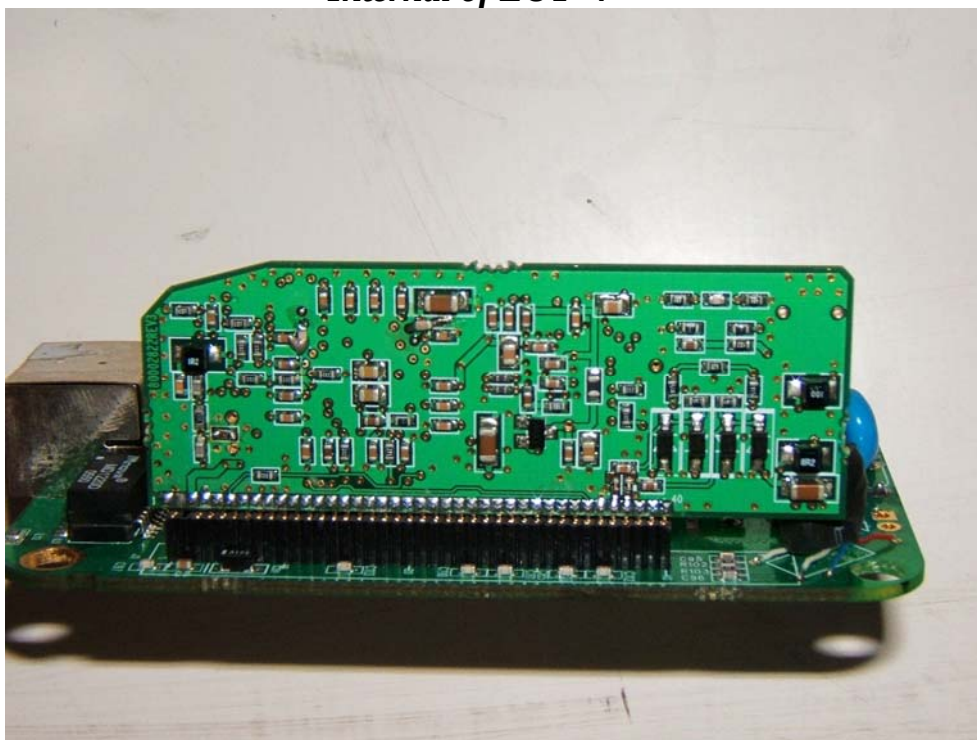
Internal of EUT-2



Internal of EUT-3



Internal of EUT-4



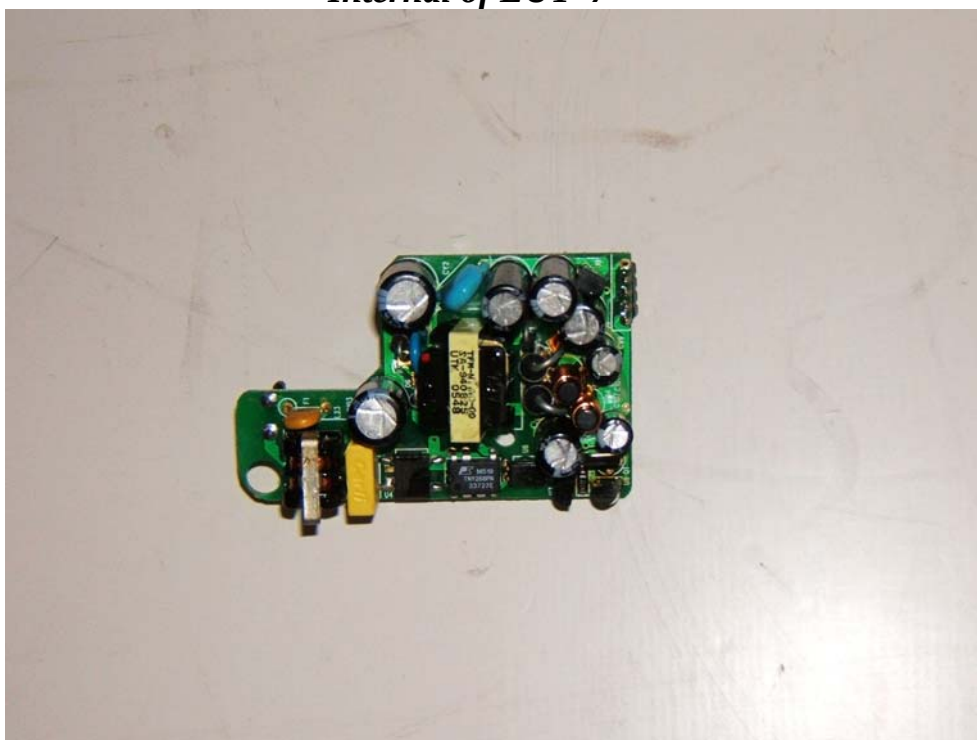
Internal of EUT-5



Internal of EUT-6



Internal of EUT-7



Internal of EUT-8



Internal of EUT-9



Internal of EUT-10

