b mobile HK Limited

b mobile

Model: W2B

November 25, 2011
Report No.: 11050110-FCC 15.247-WIFI

(This report supersedes NONE)

Modifications made to the product : None

This Test Report is Issued Under the Authority of:	
Andy. wang	Alex. Liu
Andy Wang Compliance Engineer	Alex Liu Technical Manager

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Test result presented in this test report is applicable to the representative sample only.

RF Test Report

TO: FCC Part 15.247: 2011

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Laboratory Introduction

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Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
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Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive

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CONTENTS

1 Executive Summary & EUT information

The purpose of this test programme was to demonstrate compliance of the b mobile HK Limited and model: W2B against the current Stipulated Standards. The b mobile has demonstrated compliance with the FCC 15.247:2011.

EUT Information

EUT Description	:	**b mobile**
Model No	:	**W2B**
Serial No	:	**N/A**
Input Power	:	**Powered by Power Adapter: Trade Name: BiRD Model No.: DYS06-050050S-3 Input: AC100-240V, 50/60Hz, 0.2A Output: DC5.0V, 500mA Li-ion Battery: Trade Name :B mobile Model No.: BP-4L Rating: 3.7V 5.55Wh Capacity: 1500mAh**
Classification Per Stipulated Test Standard	:	**FCC 15.247:2011**

2 TECHNICAL DETAILS

Purpose	Compliance testing of b mobile model W2B with stipulated standard
Applicant / Client	b mobile HK Limited G/F., 144 UN CHAU STREET, SHAM SHUI PO, KOWLOON, HONG KONG,China
Manufacturer	NINGBO BIRD CO., LTD No.999 Dacheng East Road,Fenghua City,Zhejiang
Laboratory performing the tests	SIEMIC Nanjing (China) Laboratories NO.2-1,Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email:info@siemic.com
Test report reference number	11050110-FCC 15.247-WIFI
Date EUT received	November 8, 2011
Standard applied	FCC 15.247:2011
Dates of test (from – to)	November 15 to November 26, 2011
No of Units :	#1
Equipment Category :	Spread Spectrum System/Device
Trade Name :	B Mobile
Model :	W2B
RF OPERATING FREQUENCY (IES)	Bluetooth: 2402MHz~2480MHz GSM850 TX : 824.2 ~ 848.8 MHz RX :869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz RX :1930.2 ~ 1989.8 MHz WIFI:2.4GHz band:802.11b/g: 2412MHz-2462MHz
NUMBER OF CHANNELS :	Bluetooth:79 125 (GSM850) and 300 (PCS1900) WIFI:2.4GHz band: 802.11b/g-20MHz 11CH
MODULATION :	Bluetooth: GFSK GSM / GPRS : GMSK WIFI:DSSS
FCC ID :	ZSW-AX340

3 MODIFICATION

NONE

4 TEST SUMMARY

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

Spread Spectrum System/Device

Test Results Summary

FCC Rules	Description of Test	Result
§15.247 (i), §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a),	Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions & Restricted Bands	Compliance
§15.247 (a)(2)	6 dB Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 §15.247 (i) and §2.1093 – RF Exposure

Applicable Standard

According to §15.247 (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.

Table 2 – Summary of SAR Evaluation Requirements for a Cell Phone with Multiple Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	Routine evaluation required	SAR not required: Unlicensed only o when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas Licensed & Unlicensed o when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas o when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 SAR required: Licensed & Unlicensed antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply
Unlicensed Transmitters	When there is no simultaneous transmission – o output ≤ 60/f: SAR not required o output > 60/f: stand-alone SAR required When there is simultaneous transmission – Stand-alone SAR not required when o output ≤ 2·P_{Ref} and antenna is ≥ 5.0 cm from other antennas o output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas o output ≤ P_{Ref} and antenna is < 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR < 1.2 W/kg Otherwise stand-alone SAR is required When stand-alone SAR is required o test SAR on highest output channel for each wireless mode and exposure condition o if SAR for highest output channel is > 50% of SAR limit, evaluate all channels according to normal procedures	
Jaw, Mouth and Nose	Flat phantom SAR required o when measurement is required in tight regions of SAM and it is not feasible or the results can be questionable due to probe tilt, calibration, positioning and orientation issues o position rectangular and clam-shell phones according to flat phantom procedures and conduct SAR measurements for these specific locations	When simultaneous transmission SAR testing is required, contact the FCC Laboratory for interim guidance.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

The distance between WIFI antenna and GSM antenna is more than 5 cm. and the maximum output power (3.38mW) of WIFI is less then 2*Pref(12 mW),So no stand alone SAR is required for WIFI. No simultaneous SAR required.

Result:

The SAR measurement is exempt.

5.2 §15.203 - ANTENNA REQUIREMENT

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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the 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 6 dBi.

Antenna Connector Construction

The EUT has 4 antennas, one is a PIFA antenna for Bluetooth/WIFI, the gain is -5dBi; one is a PIFA antenna for GSM, the gain is -4dBi for GSM and -2dBi for PCS, other is a PIFA antenna for GPS, the gain is 1.5dBi which in accordance to section 15.203, please refer to the internal photos.

Result: Compliant.

5.3 §15.207 (a) - CONDUCTED EMISSIONS

Requirement:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

Procedures:

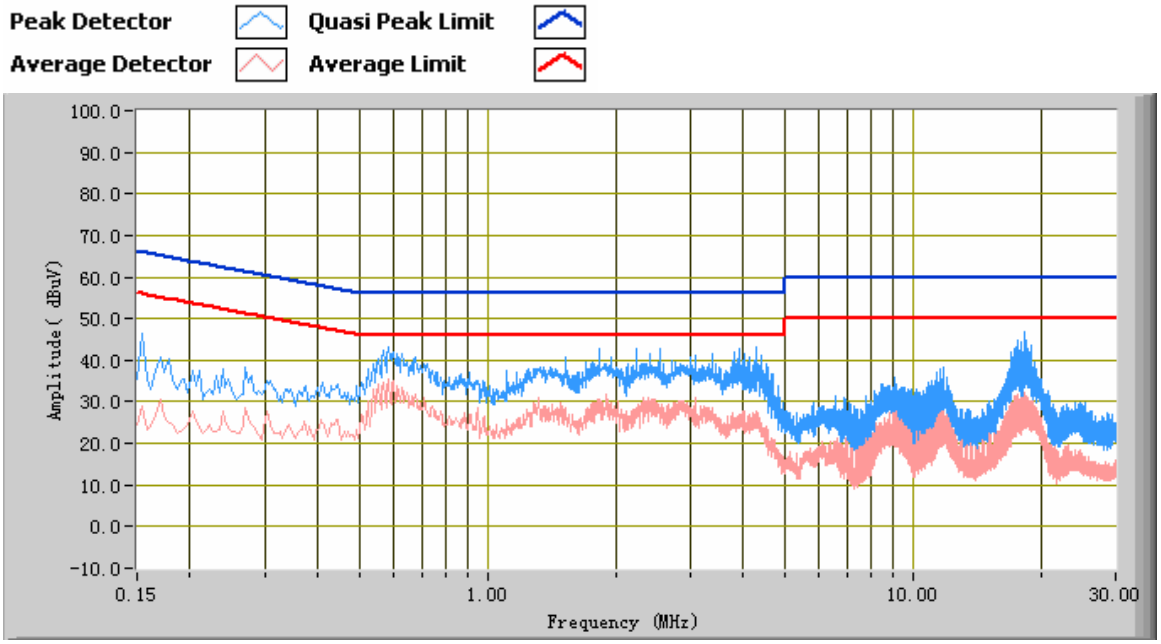
1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.5dB.
4. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

5. Test date :15 November, 2011
   Tested By : Andy Wang

Test Mode: Transmitting

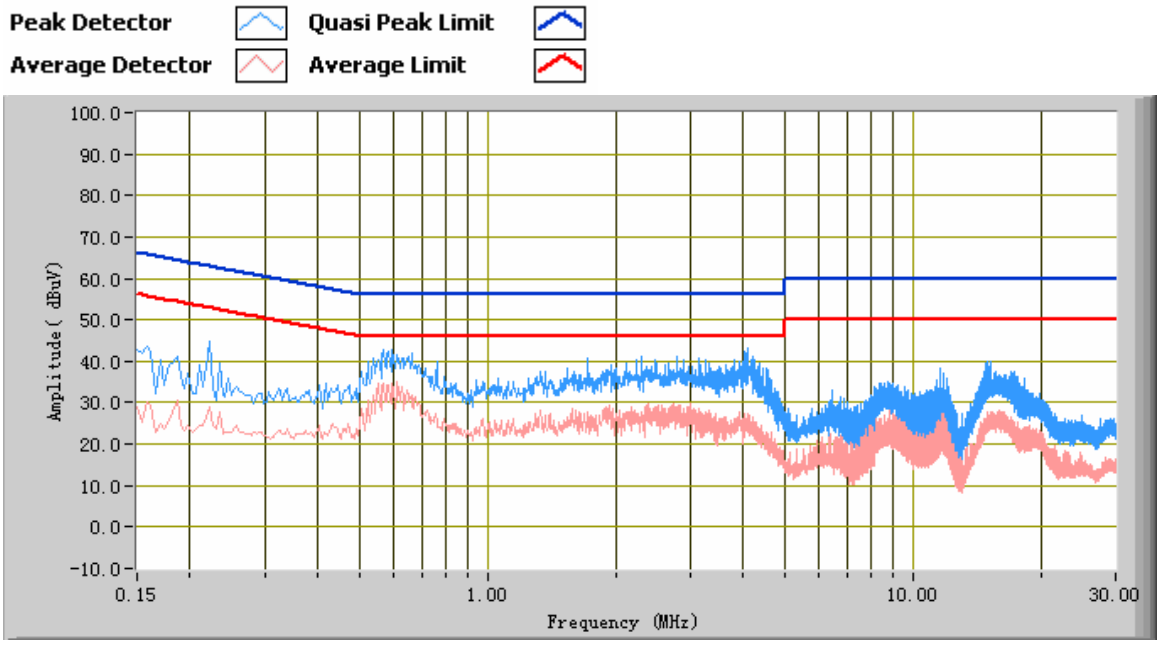
Mode: 802.11b



Test Data

Line

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.586	43.066	56.000	-12.934	35.388	46.000	-10.612	10.151
4.270	42.988	56.000	-13.012	27.718	46.000	-18.282	10.461
2.538	42.952	56.000	-13.048	28.747	46.000	-17.253	10.200
18.353	46.893	60.000	-13.107	32.288	50.000	-17.712	10.564
1.830	42.782	56.000	-13.218	30.453	46.000	-15.547	10.193
3.898	42.674	56.000	-13.326	26.037	46.000	-19.963	10.478

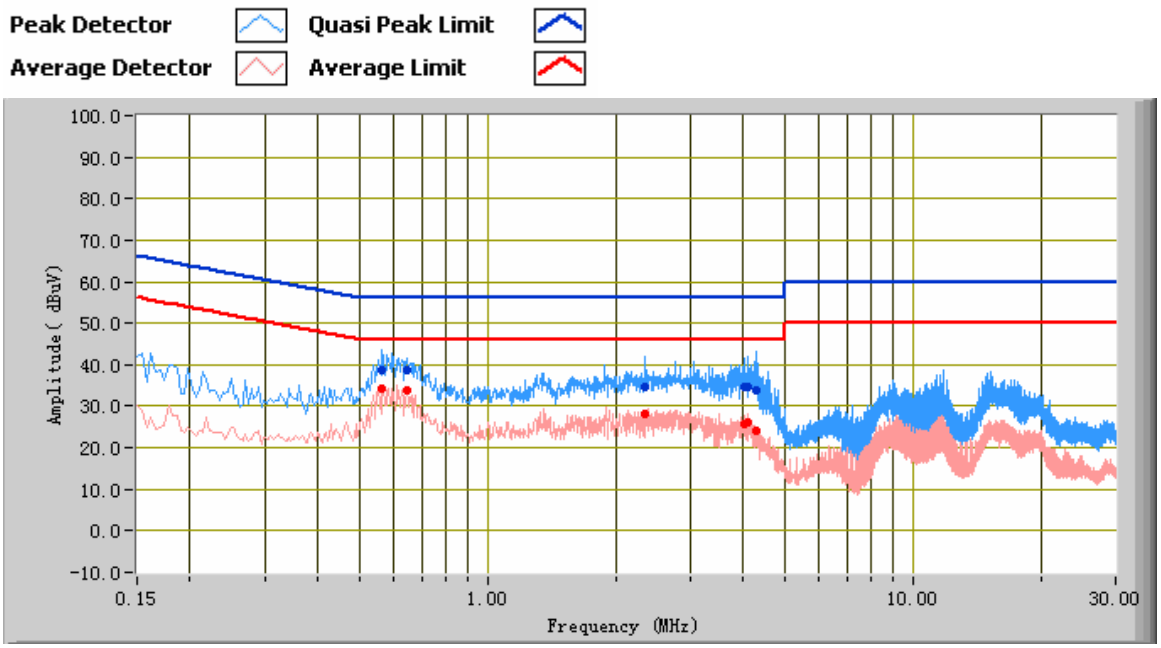


Test Data

Neutral

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
4.098	43.067	56.000	-12.933	27.279	46.000	-18.721	10.492
0.570	42.862	56.000	-13.138	34.633	46.000	-11.367	10.154
4.022	42.271	56.000	-13.729	27.294	46.000	-18.706	10.506
0.662	41.916	56.000	-14.084	31.824	46.000	-14.176	10.130
2.782	41.041	56.000	-14.959	28.954	46.000	-17.046	10.200
4.226	40.991	56.000	-15.009	26.457	46.000	-19.543	10.469

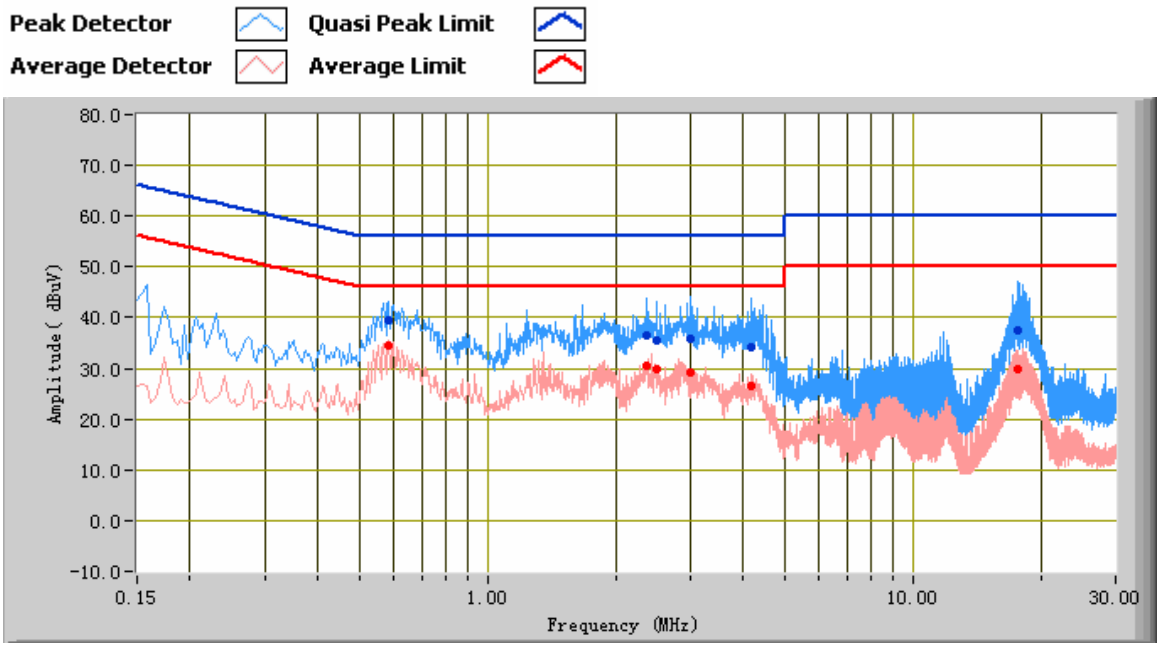
Mode: 802.11g



Test Data

Line

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.57	38.77	56.00	-17.23	34.23	46.00	-11.77	10.15
4.27	33.89	56.00	-22.11	24.26	46.00	-21.74	10.46
2.35	34.64	56.00	-21.36	28.08	46.00	-17.92	10.20
4.09	34.82	56.00	-21.18	26.04	46.00	-19.96	10.49
0.65	38.89	56.00	-17.11	33.64	46.00	-12.36	10.13
4.04	34.70	56.00	-21.30	25.67	46.00	-20.33	10.50



Test Data

Neutral

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
2.99	35.83	56.00	-20.17	29.22	46.00	-16.78	10.20
4.17	34.04	56.00	-21.96	26.44	46.00	-19.56	10.48
2.37	36.66	56.00	-19.34	30.65	46.00	-15.35	10.20
0.59	39.56	56.00	-16.44	34.66	46.00	-11.34	10.15
17.59	37.41	60.00	-22.59	29.72	50.00	-20.28	10.54
2.49	35.40	56.00	-20.60	29.71	46.00	-16.29	10.20

5.4 §15.209, §15.205 & §15.247(d) - Spurious Emissions

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above (3m & 10m) is +/-6dB.
4. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

5. Test date : 15 November, 2011
   Tested By : Andy Wang

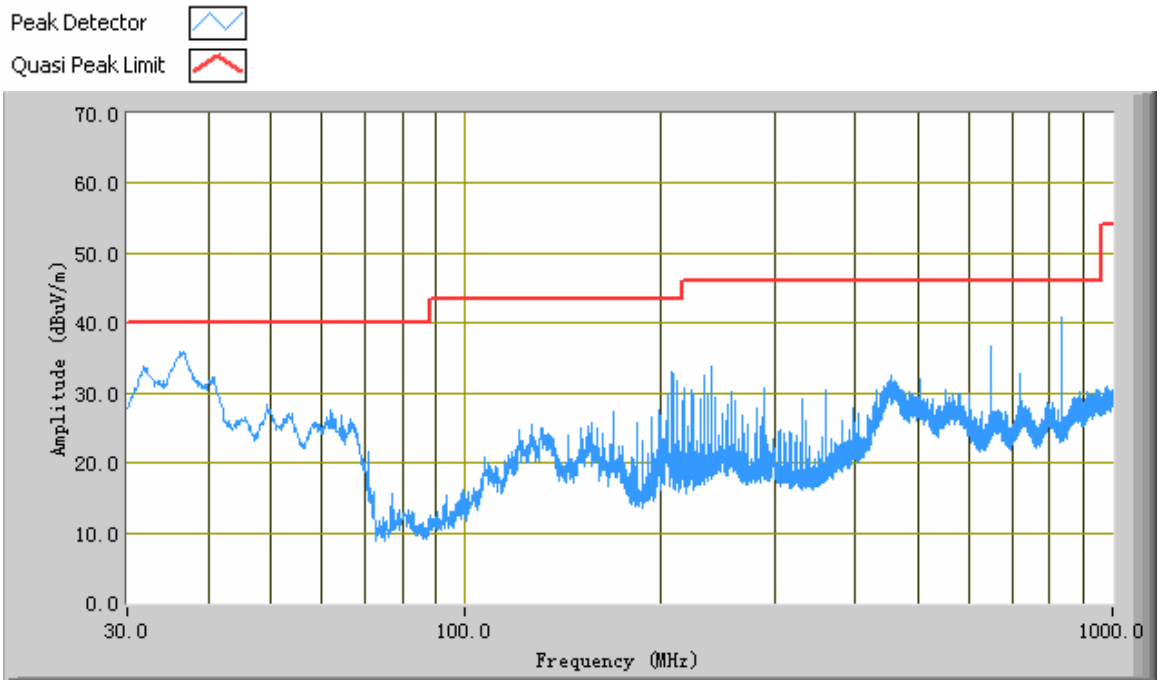
Standard Requirement: The emissions from the Low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges.

Test Result: Pass

30-1000 MHz:

Test Mode: Transmitting

Mode: 802.11b

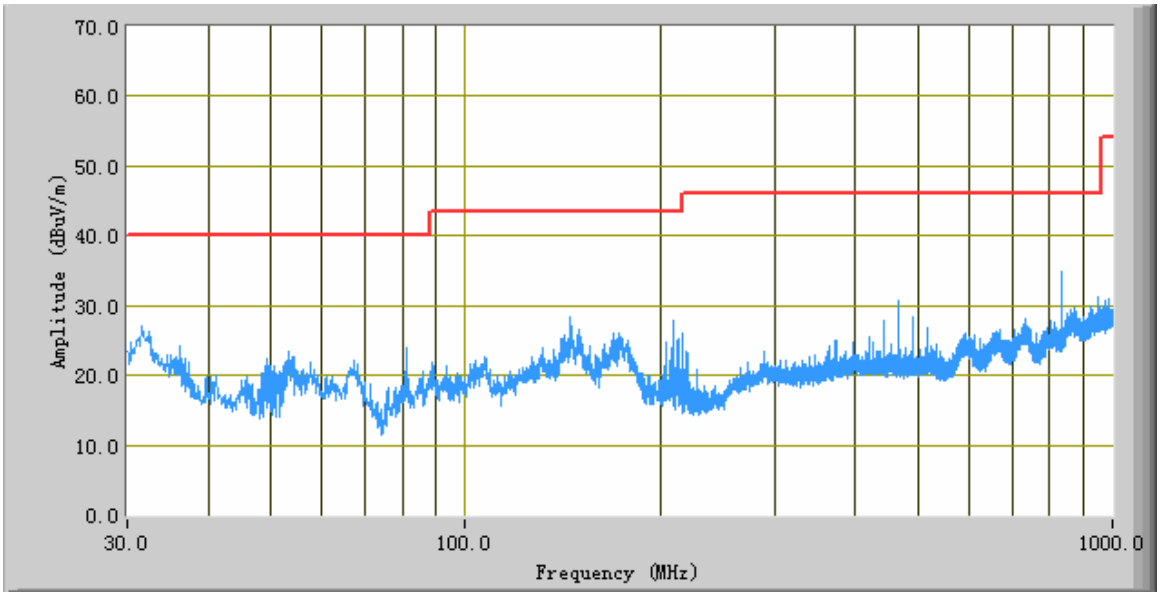


Test Data

Frequency (MHz)	Quasi Peak (dBµV/m)	Azimuth	Polarity(H /V)	Height (cm)	Factors (dB)	Limit (dBµV/m)	Margin (dB)
36.67	*35.83*	*315.50*	*V*	*100.00*	*-27.21*	*40.00*	*-4.17*
833.16	*40.90*	*359.70*	*V*	*100.00*	*-19.82*	*46.00*	*-5.10*
40.79	*32.34*	*9.90*	*V*	*100.00*	*-30.11*	*40.00*	*-7.66*
649.35	*36.66*	*309.30*	*H*	*100.00*	*-22.87*	*46.00*	*-9.34*
208.84	*32.96*	*80.90*	*H*	*100.00*	*-32.58*	*43.50*	*-10.54*
49.40	*28.28*	*222.70*	*H*	*100.00*	*-34.82*	*40.00*	*-11.72*

Note: The data which below 20 dB to the limit was not recorded.

Mode: 802.11g



Peak Detector

Quasi Peak Limit

Test Data

Frequency (MHz)	Quasi Peak (dBµV/m)	Azimuth	Polarity(H /V)	Height (cm)	Factors (dB)	Limit (dBµV/m)	Margin (dB)
834.01	*34.94*	*0.30*	*V*	*200.00*	*-19.39*	*46.00*	*-11.06*
31.58	*27.15*	*0.00*	*V*	*100.00*	*-23.85*	*40.00*	*-12.85*
950.29	*31.12*	*126.30*	*V*	*100.00*	*-18.28*	*46.00*	*-14.88*
145.43	*28.44*	*101.90*	*H*	*200.00*	*-31.76*	*43.50*	*-15.06*
467.95	*30.71*	*206.20*	*H*	*200.00*	*-27.14*	*46.00*	*-15.29*
209.21	*27.94*	*253.40*	*H*	*100.00*	*-31.28*	*43.50*	*-15.56*

Note: The data which below 20 dB to the limit was not recorded.

Above 1 GHz:

Note: Other modes were verified, only the result of worst case basic rate mode was presented.

Mode: 802.11b

Low Channel (2412 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
4824	38.23	AV	160	1.0	V	34	2.6	26.79	48.87	54	-5.13
4824	37.73	AV	240	1.1	H	33.8	2.6	26.79	46.02	54	-7.98
4824	50.52	PK	123	1.1	V	34	2.6	26.79	60.94	74	-13.06
4824	49.77	PK	160	1.2	H	33.8	2.6	26.79	59.62	74	-14.38
1087.41	33.64	AV	185	1.1	V	25.3	1.1	26.51	33.65	54	-20.35
1087.41	32.17	AV	123	1.1	H	23.8	1.1	26.51	31.90	54	-22.10
1087.41	41.18	PK	185	1.2	V	23.8	1.1	26.51	40.80	74	-33.20
1087.41	42.69	PK	130	1.1	H	25.3	1.1	26.51	42.15	74	-31.85

Middle Channel (2437 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
4874	36.60	AV	125	1.0	V	33.6	2.6	26.78	45.52	54	-8.48
4874	37.94	AV	256	1.1	H	33.8	2.6	26.78	47.89	54	-6.11
4874	47.22	PK	125	1.0	V	33.6	2.6	26.78	56.33	74	-17.67
4874	48.13	PK	256	1.0	H	33.8	2.6	26.78	57.07	74	-16.93
1323.18	31.39	AV	40	1.0	V	25.1	1.3	26.65	31.86	54	-22.14
1323.18	31.09	AV	78	1.0	H	25.1	1.3	26.65	30.16	54	-23.84
1323.18	38.47	PK	40	1.1	V	25.3	1.3	26.65	38.58	74	-35.42
1323.18	38.35	PK	78	1.0	H	25.3	1.3	26.65	38.70	74	-35.30

High Channel (2462 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
4924	36.22	AV	158	1.3	V	34.6	2.7	26.75	46.23	54	-7.77
4924	36.31	AV	250	1.4	H	34.7	2.7	26.75	46.04	54	-7.96
4924	49.42	PK	158	1.1	V	34.6	2.7	26.75	59.03	74	-14.96
4924	47.14	PK	250	1.1	H	34.7	2.7	26.75	57.21	74	-16.79
1458.13	30.06	AV	57	1.3	V	25.3	1.3	26.65	30.99	54	-23.01
1458.13	29.2	AV	243	1.4	H	25.5	1.3	26.65	29.65	54	-24.35
1458.13	38.55	PK	57	1.1	V	25.3	1.3	26.65	38.50	74	-35.50
1458.13	38.32	PK	243	1.2	H	25.5	1.3	26.65	38.53	74	-35.47

Spurious emission in restricted band:

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
2367.69	38.45	AV	60	1.2	V	30.1	1.8	26.83	43.48	54	-10.52
2468.54	38.82	AV	120	1.1	V	30.6	1.8	26.83	44.61	54	-939
2468.54	33.23	AV	60	1.3	H	30.6	1.8	26.83	38.70	54	-15.30
2367.69	33.19	AV	120	1.2	H	30.1	1.8	26.83	38.74	54	-15.26
2468.54	45.38	PK	165	1.1	V	30.6	1.8	26.83	50.80	74	-23.20
2367.69	44.18	PK	240	1.2	V	30.1	1.8	26.83	49.65	74	-24.35
2468.54	44.72	PK	165	1.3	H	30.6	1.8	26.83	50.71	74	-23.29
2367.69	45.67	PK	240	1.2	H	30.1	1.8	26.83	50.26	74	-23.74

Mode: 802.11g

Low Channel (2412 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
4824	38.32	AV	133	1.1	V	34	2.6	26.79	48.87	54	-5.13
4824	37.37	AV	320	1.1	H	33.8	2.6	26.79	46.02	54	-7.98
4824	50.25	PK	133	1.1	V	34	2.6	26.79	60.94	74	-13.06
4824	49.77	PK	320	1.1	H	33.8	2.6	26.79	59.62	74	-14.38
1184.12	33.46	AV	120	1.2	V	25.3	1.1	26.51	33.65	54	-20.35
1184.12	32.71	AV	133	1.1	H	23.8	1.1	26.51	31.50	54	-22.50
1184.12	41.81	PK	120	1.2	V	23.8	1.1	26.51	40.60	74	-33.40
1184.12	42.96	PK	133	1.1	H	25.3	1.1	26.51	42.15	74	-31.85

Middle Channel (2437 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
4874	36.06	AV	189	1.1	V	33.6	2.6	26.78	45.52	54	-8.48
4874	37.49	AV	156	1.0	H	33.8	2.6	26.78	47.89	54	-6.11
4874	47.25	PK	189	1.0	V	33.6	2.6	26.78	56.33	74	-17.67
4874	48.31	PK	156	1.0	H	33.8	2.6	26.78	57.07	74	-16.93
1387.88	31.39	AV	242	1.1	V	25.1	1.3	26.65	31.86	54	-22.14
1387.88	31.09	AV	134	1.0	H	25.1	1.3	26.65	30.16	54	-23.84
1387.88	38.47	PK	242	1.0	V	25.3	1.3	26.65	38.58	74	-35.42
1387.88	38.35	PK	134	1.0	H	25.3	1.3	26.65	38.40	74	-35.60

High Channel (2462 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
4924	37.22	AV	253	1.1	V	34.6	2.7	26.75	47.23	54	-6.77
4924	36.31	AV	35	1.3	H	34.7	2.7	26.75	46.04	54	-7.96
4924	49.45	PK	253	1.1	V	34.6	2.7	26.75	60.00	74	-14.00
4924	47.14	PK	35	1.3	H	34.7	2.7	26.75	57.21	74	-16.79
1397.52	30.06	AV	268	1.1	V	25.3	1.3	26.65	30.03	54	-23.97
1397.52	29.20	AV	287	1.1	H	25.5	1.3	26.65	29.65	54	-24.35
1397.52	38.55	PK	268	1.1	V	25.3	1.3	26.65	38.50	74	-35.50
1397.52	38.32	PK	187	1.1	H	25.5	1.3	26.65	38.53	74	-35.47

Spurious emission in restricted band:

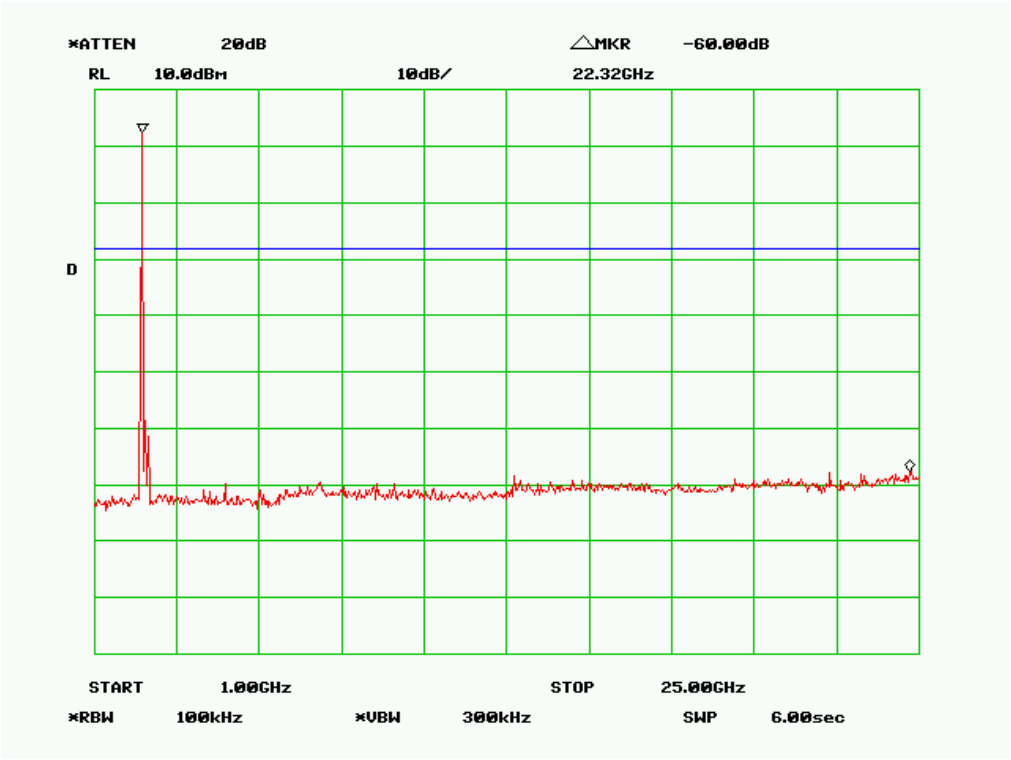
Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Direction (degree)	Height (m)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBm)	Margin (dB)
2363.86	37.85	AV	145	1.1	V	30.1	1.8	26.83	42.08	54	-11.92
2485.42	36.58	AV	130	1.1	V	30.6	1.8	26.83	42.85	54	-11.15
2485.42	33.48	AV	334	1.1	H	30.6	1.8	26.83	39.95	54	-14.05
2363.86	33.18	AV	145	1.1	H	30.1	1.8	26.83	38.75	54	-15.25
2485.42	45.79	PK	130	1.1	V	30.6	1.8	26.83	51.64	74	-22.36
2363.86	45.69	PK	145	1.1	V	30.1	1.8	26.83	50.24	74	-23.76
2485.42	45.08	PK	145	1.1	H	30.6	1.8	26.83	50.35	74	-23.65
2363.86	45.22	PK	334	1.1	H	30.1	1.8	26.83	50.71	74	-23.29

Antenna Port Conducted Spurious Emissions

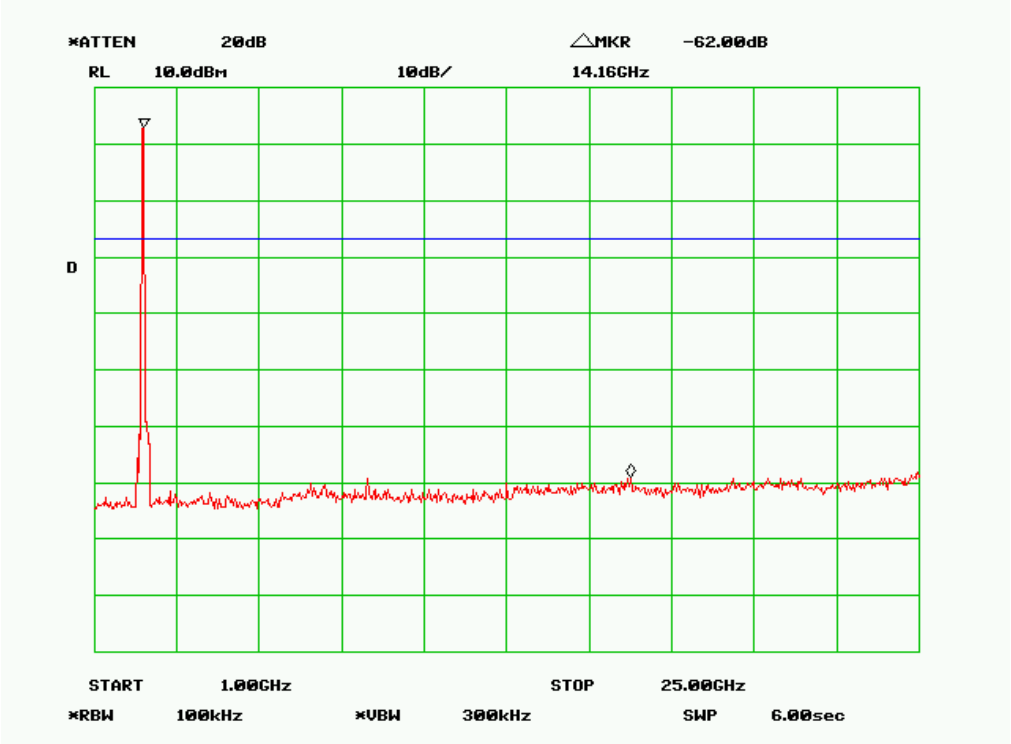
Channel Frequency (MHz)	Delta Value (dBc)	Limit (dBc)	Ref. Plot	Result
802.11g mode				
2412	60.00	20	PLOT1	PASS
2437	62.00	20	PLOT2	PASS
2462	60.67	20	PLOT3	PASS
802.11g mode				
2412	57.66	20	PLOT4	PASS
2437	58.67	20	PLOT5	PASS
2462	55.83	20	PLOT6	PASS

Please refer to the following plots.

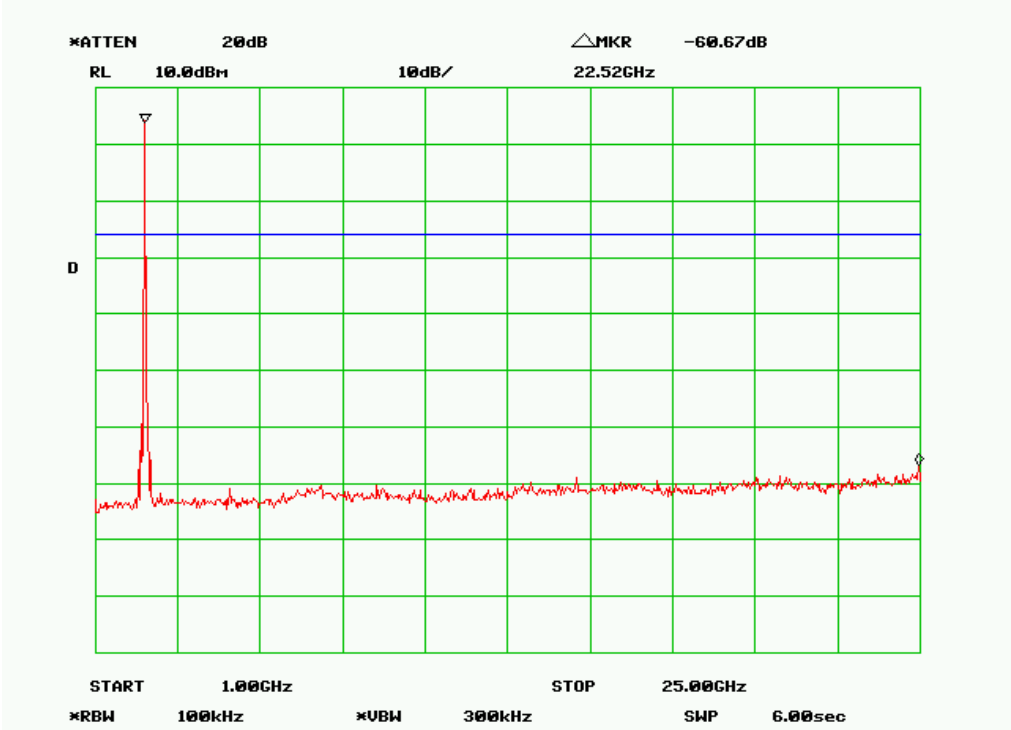
PLOT1- 802.11b Low Channel



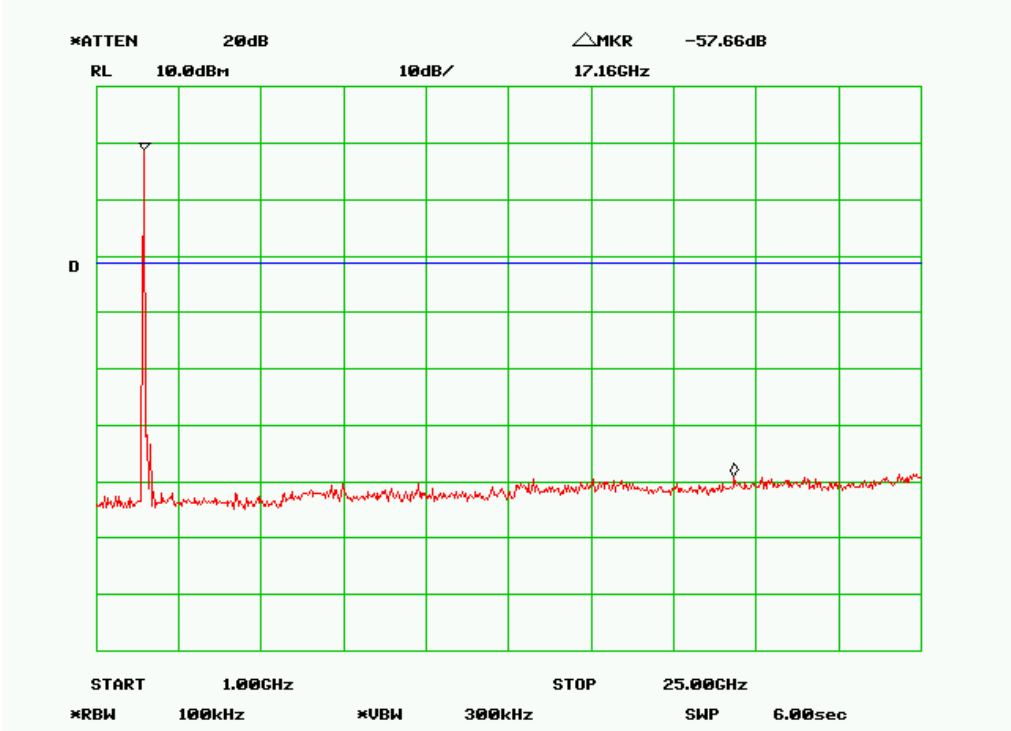
PLOT2- 802.11b Middle Channel



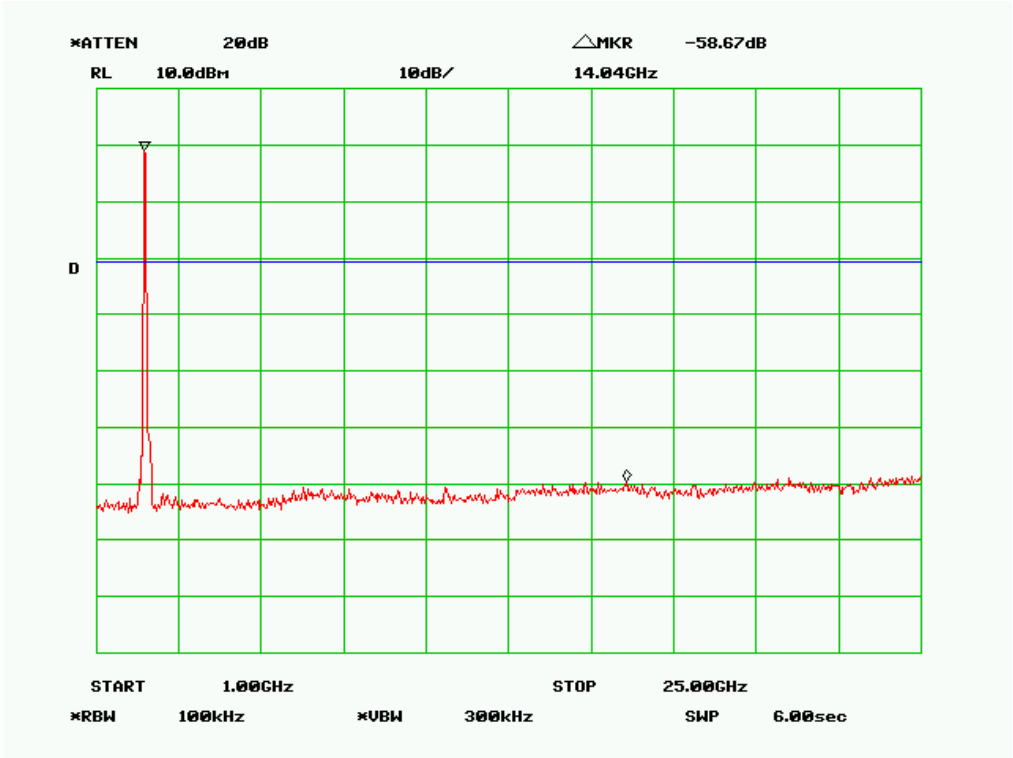
PLOT3- 802.11b High Channel



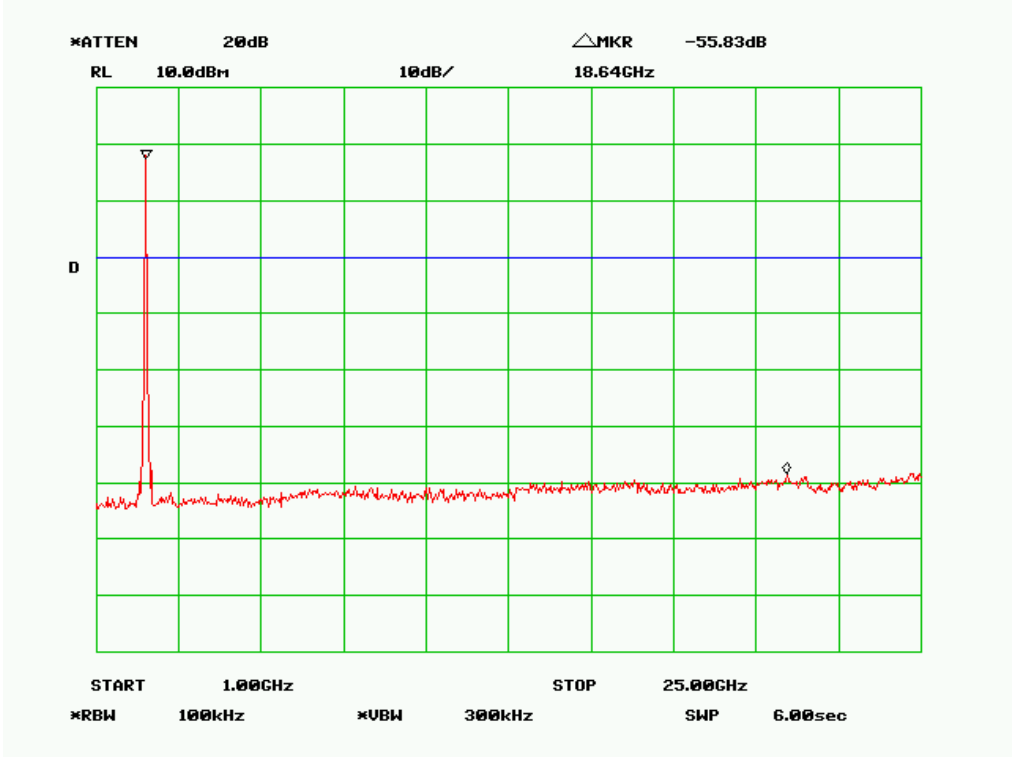
PLOT4- 802.11g Low Channel



PLOT5- 802.11g Middle Channel



PLOT6- 802.11g High Channel



5.5 §15.247(a) (2) – 6 dB BANDWIDTH TESTING

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
4. Test date : 26 November, 2011
   Tested By : Andy Wang

Requirement(s): 47 CFR § 15.247(a)(1)

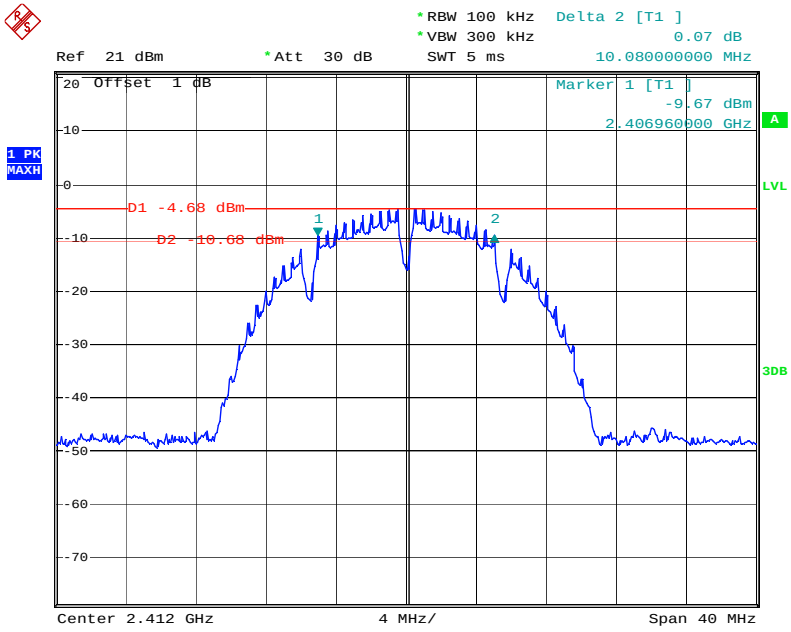
Procedures: The 6dB Bandwidths were measured conducted using a spectrum analyzer at low, middle, and high channels. 6dB Bandwidth Limit: ＞500kHz.

Test Result: Pass.

Please refer to the following tables and plots.

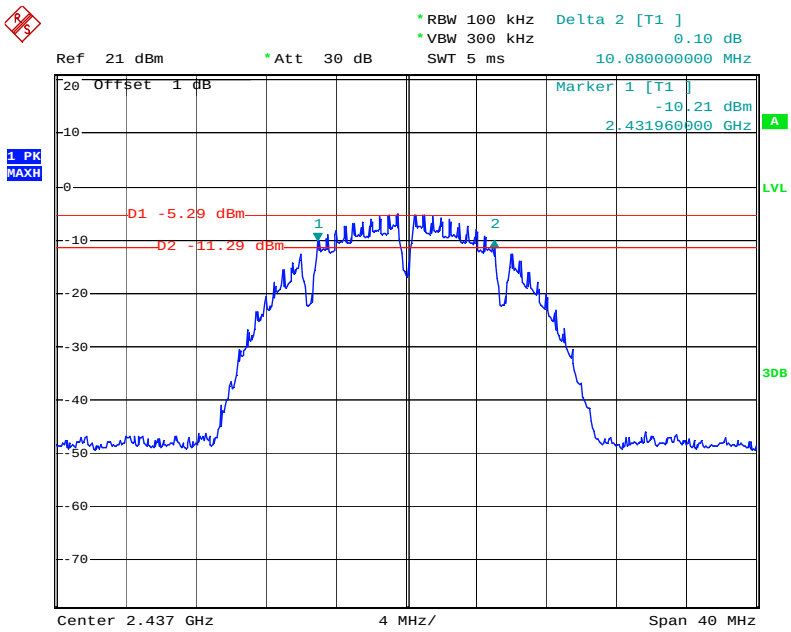
Channel	Channel Frequency (MHz)	Measured 6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)
802.11b mode			
Low	2412	10.08	＞500
Middle	2437	10.08	＞500
High	2462	10.08	＞500
802.11g mode			
Low	2412	15.36	＞500
Middle	2437	15.36	＞500
High	2462	15.36	＞500

802.11b Low Channel



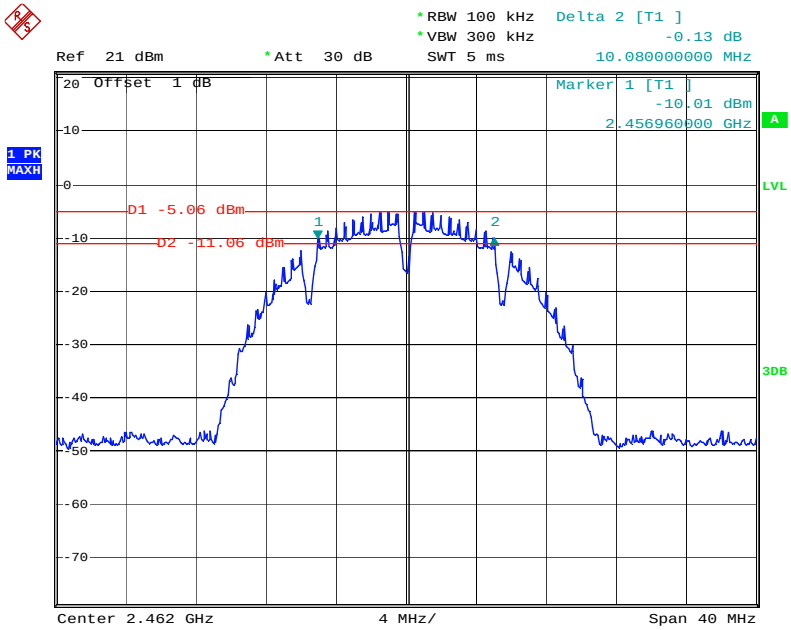
Date: 26.NOV.2011 15:56:07

802.11b Middle Channel



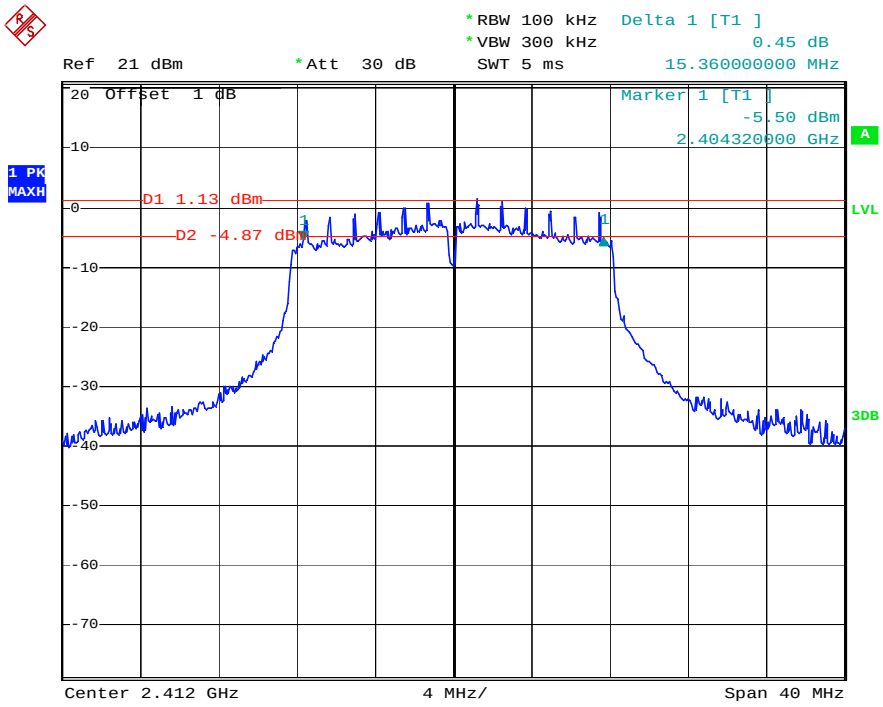
Date: 26.NOV.2011 15:59:48

802.11b High Channel



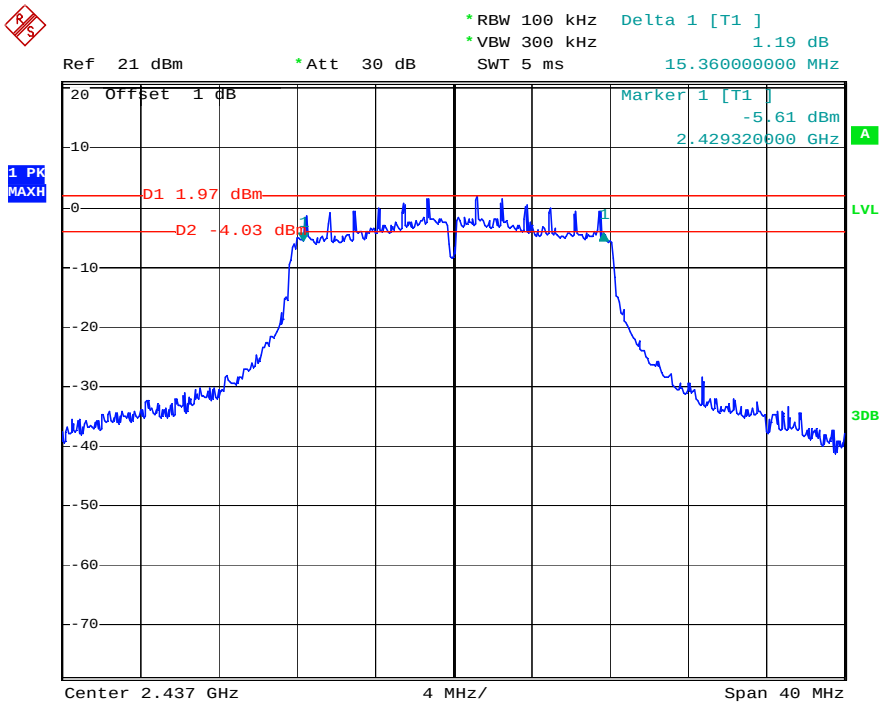
Date: 26.NOV.2011 16:06:15

802.11g Low Channel



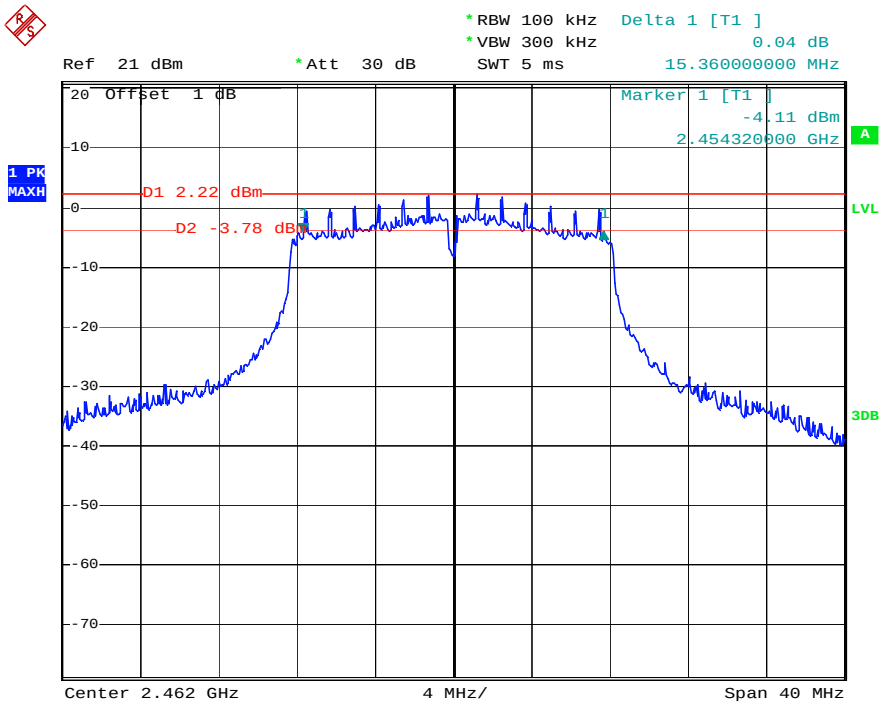
Date: 16.NOV.2011 22:57:06

802.11g Middle Channel



Date: 16.NOV.2011 23:01:02

802.11g High Channel



Date: 16.NOV.2011 22:53:33

5.6 §15.247(b) (3) - Maximum Peak Output Power

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power. The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	16°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

4. Test date : 15 November, 2011
   Tested By : Andy Wang

Standard Requirement: 47 CFR § 15.247(b)

Procedures: The peak output power was measured conducted using a spectrum analyzer at low, middle, and high channels. Peak detector was set to measure the power output. The power is converted from watt to dBm, therefore, 1 watt = 30 dBm. The highest antenna gain that will be used is 2dBi.

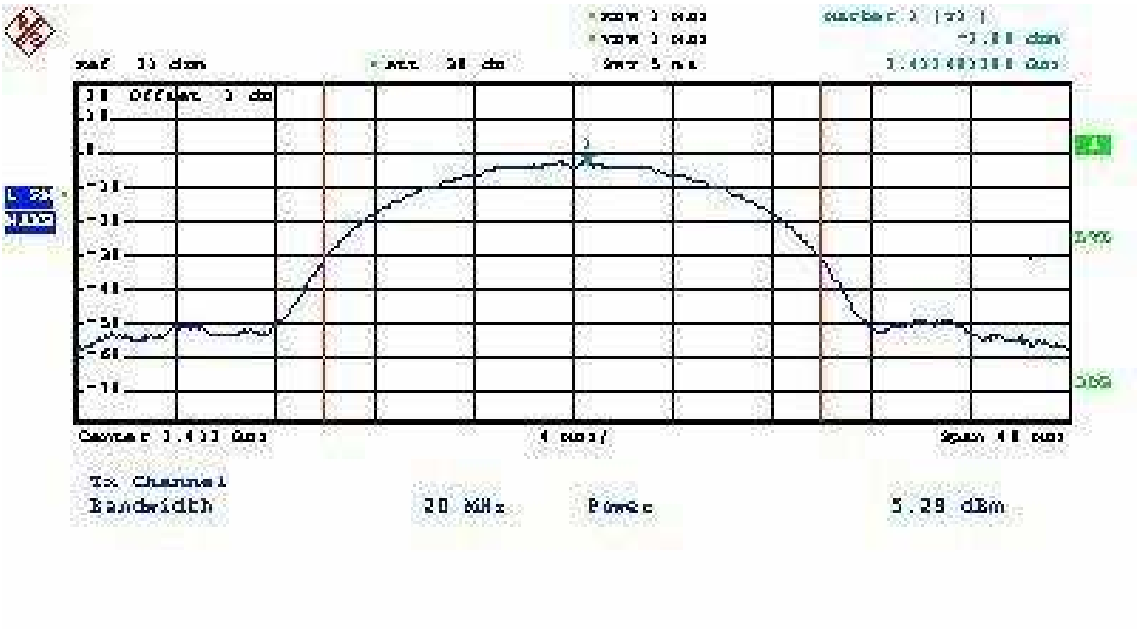
Test Result: Pass.

Please refer to the following tables and plots.

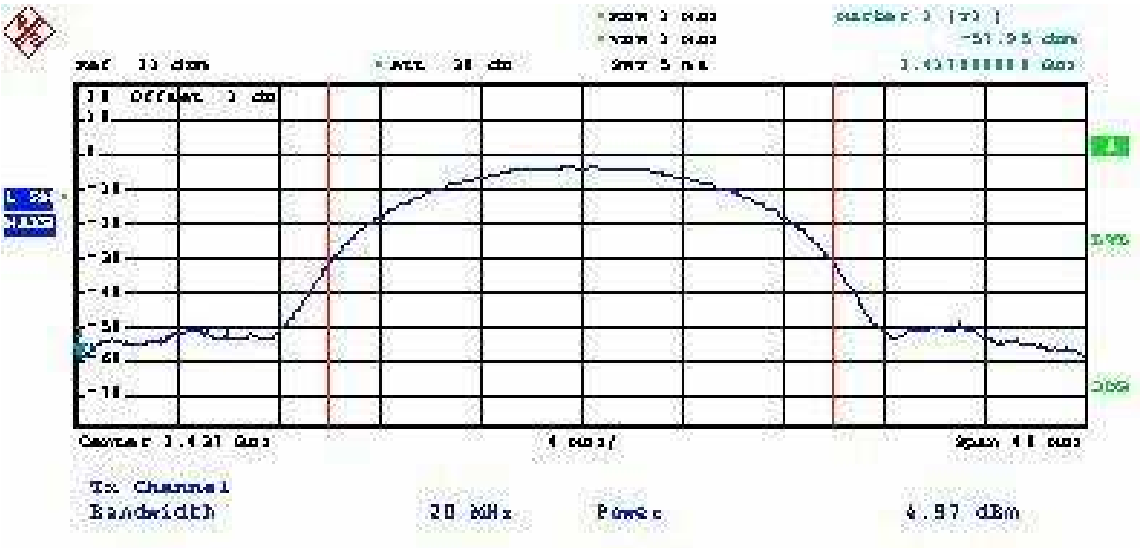
Channel	Channel Frequency (MHz)	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)
802.11b mode				
Low	2412	1	5.29	30
Middle	2437	1	4.97	30
High	2462	1	4.77	30
802.11g mode				
Low	2412	6	5.15	30
Middle	2437	6	5.20	30
High	2462	6	4.80	30

802.11b Mode:

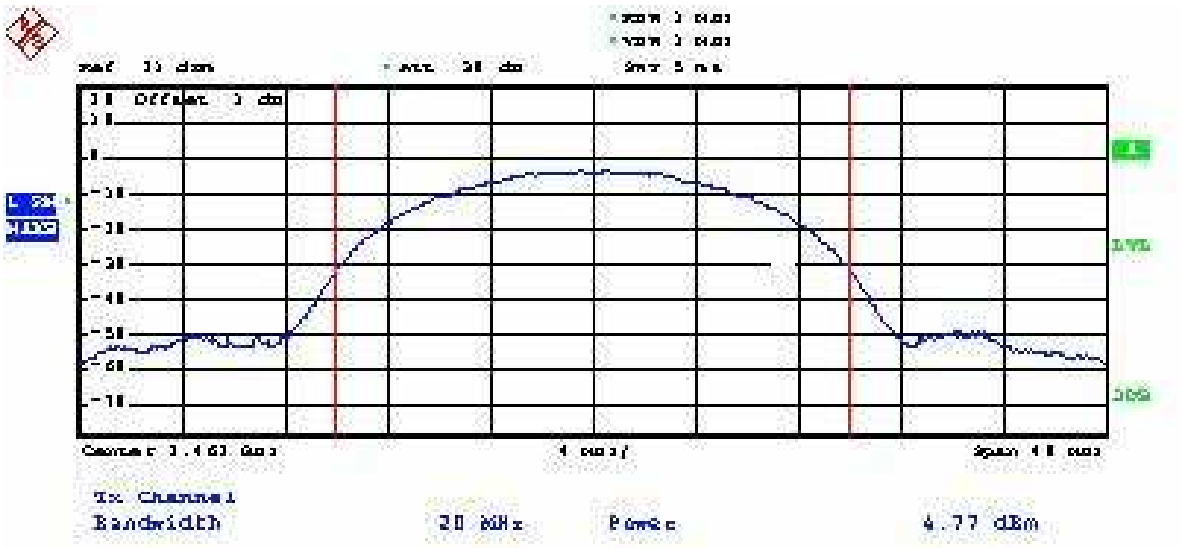
802.11b RF Output Power, Low Channel



802.11b RF Output Power, Middle Channel

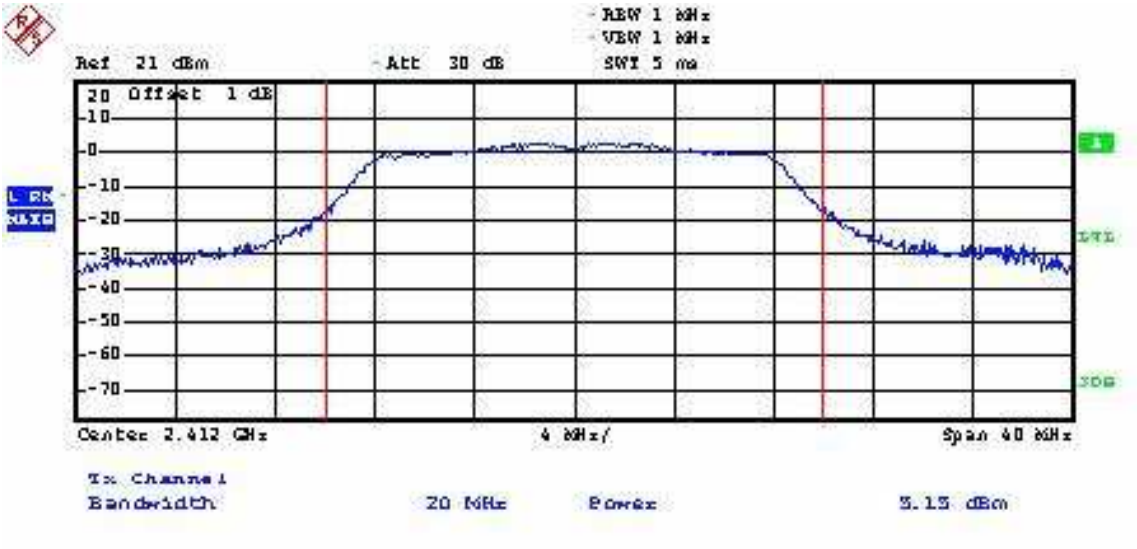


802.11b RF Output Power, High Channel

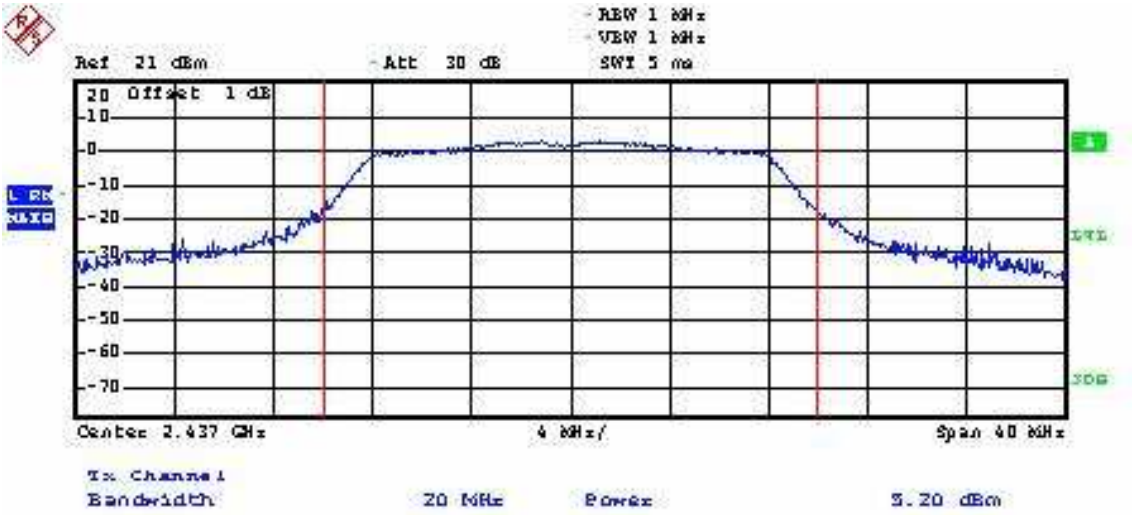


802.11g Mode:

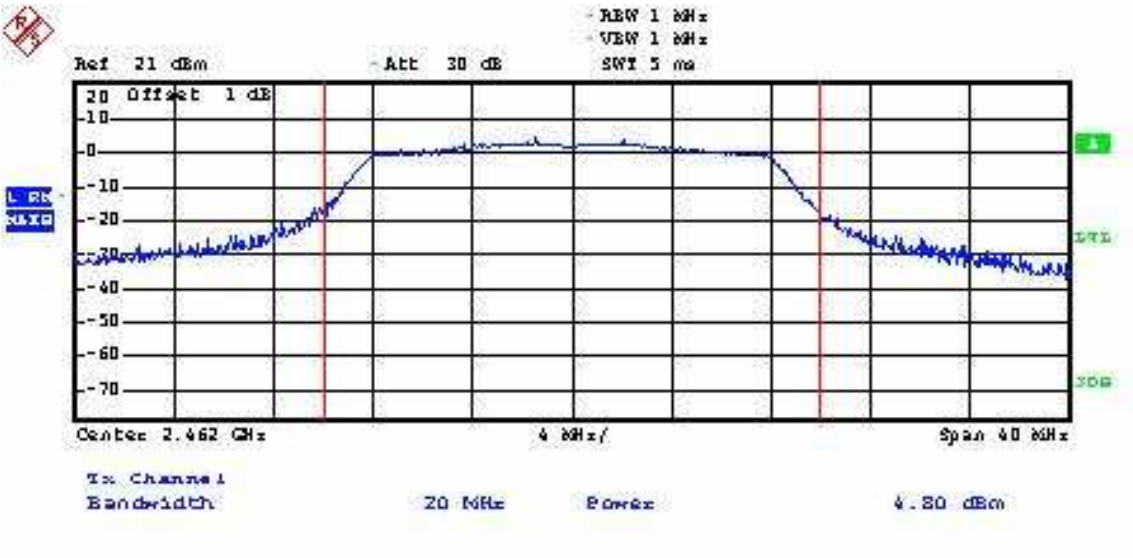
802.11g RF Output Power, Low Channel



802.11g RF Output Power, Middle Channel



802.11g RF Output Power, High Channel



5.7 §15.247(d) – 100 kHz Bandwidth of Frequency Band Edge

1. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

2. Environmental Conditions

Temperature	16oC
Relative Humidity	50%
Atmospheric Pressure	1019mbar

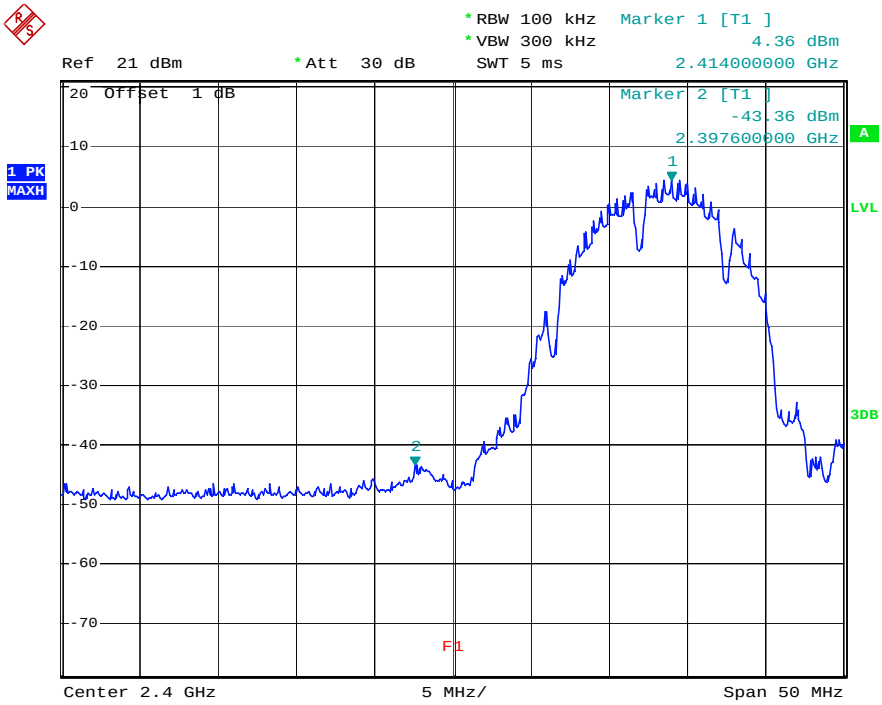
3. Test date : 16 November, 2011
Tested By : Andy Wang

Test Result: Pass.

Please refer to the following tables and plots.

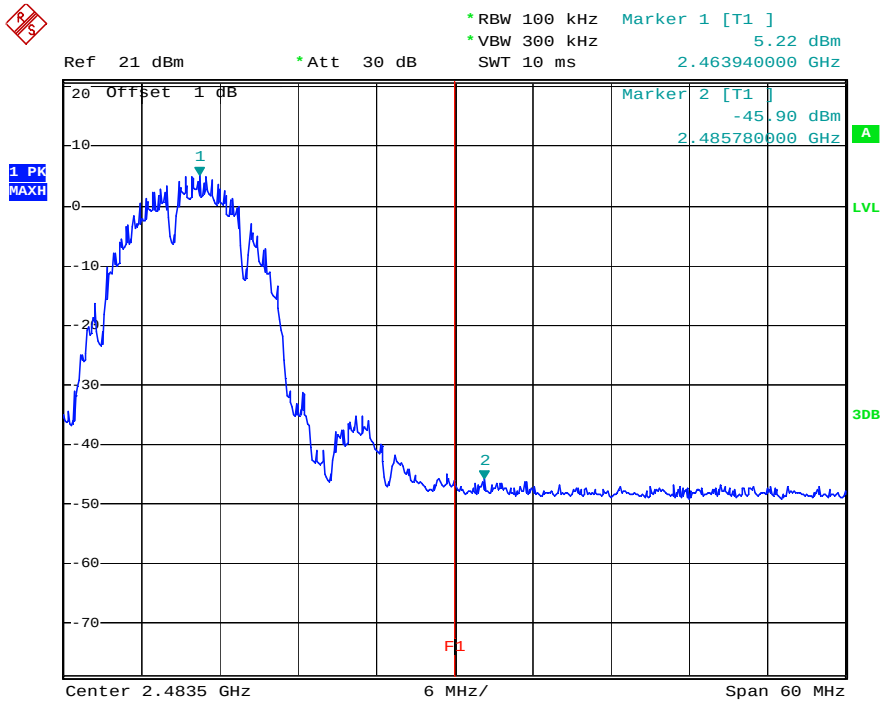
Frequency (MHz)	Delta Peak to band emission (dBc)	Limit (dBc)
802.11b mode		
2397.60	47.72	20
2485.78	51.12	20
802.11g mode		
2399.80	33.48	20
2483.86	41.94	20

802.11b: Band Edge, Left Side



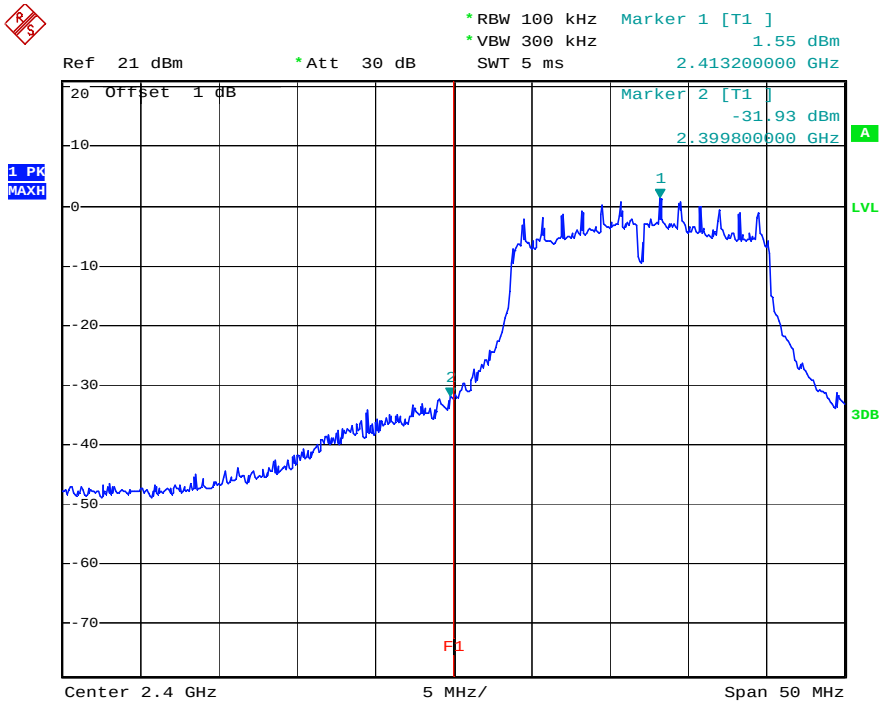
Date: 16.NOV.2011 22:40:35

802.11b: Band Edge, Right Side



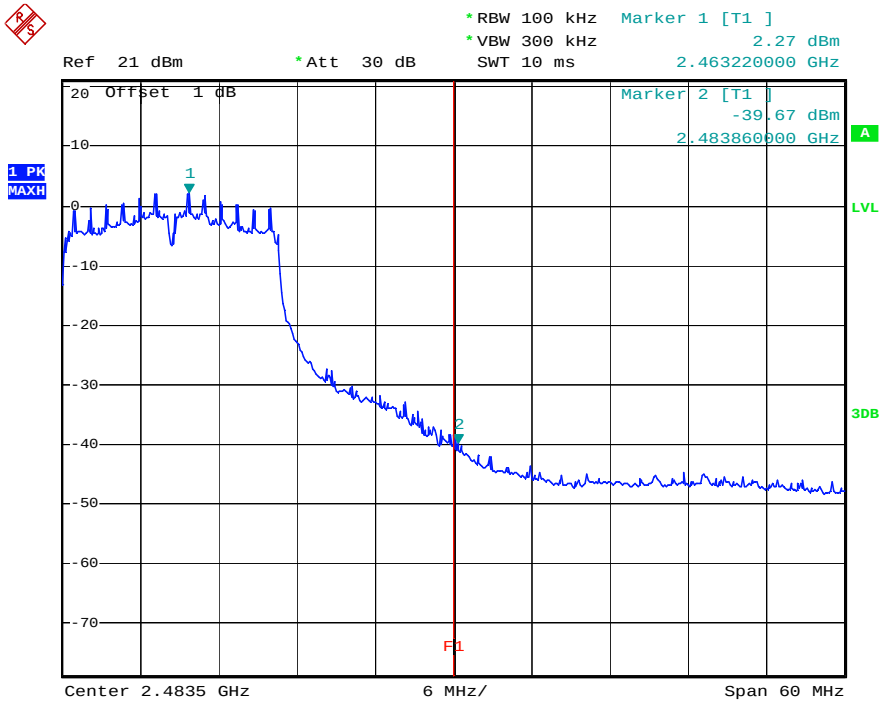
Date: 16.NOV.2011 22:43:53

802.11g: Band Edge, Left Side



Date: 16.NOV.2011 23:04:21

802.11g: Band Edge, Right Side



Date: 16.NOV.2011 23:13:07

5.8 §15.247(e) - Power Spectral Density

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
4. Test date : 16 & 17 November, 2011
   Tested By : Andy Wang

Requirement(s): 47 CFR § 15.247(e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3KHz band during any time interval of continuous transmission.

Procedures: The power spectral density measurement was taken conducted using a spectrum analyzer.

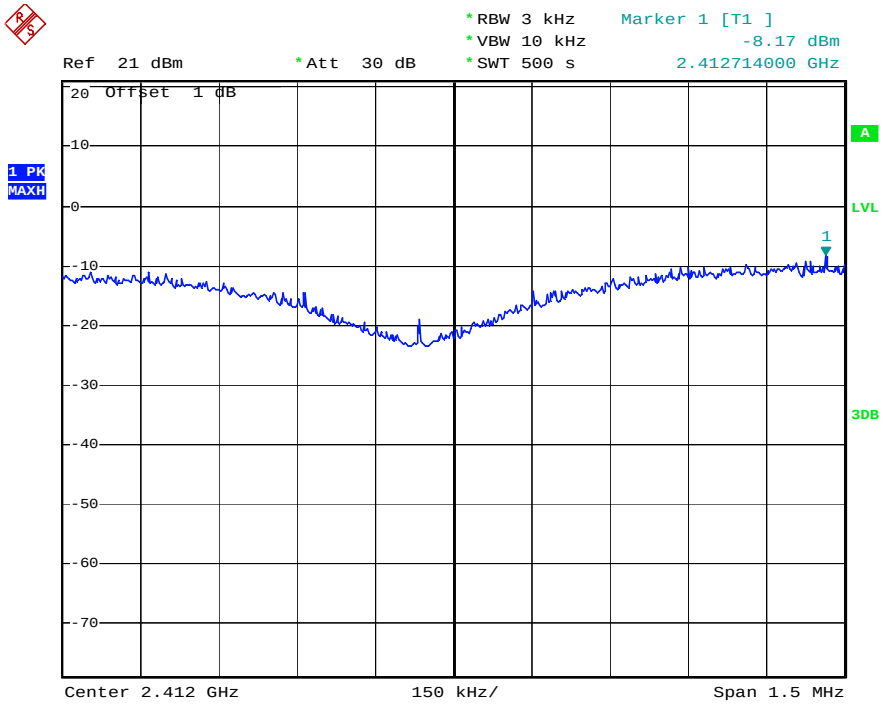
RBW=3KHz, VBW>RBW, Sweep time to SPAN/RBW(s).

Test Result: Pass.

Please refer to the following tables and plots.

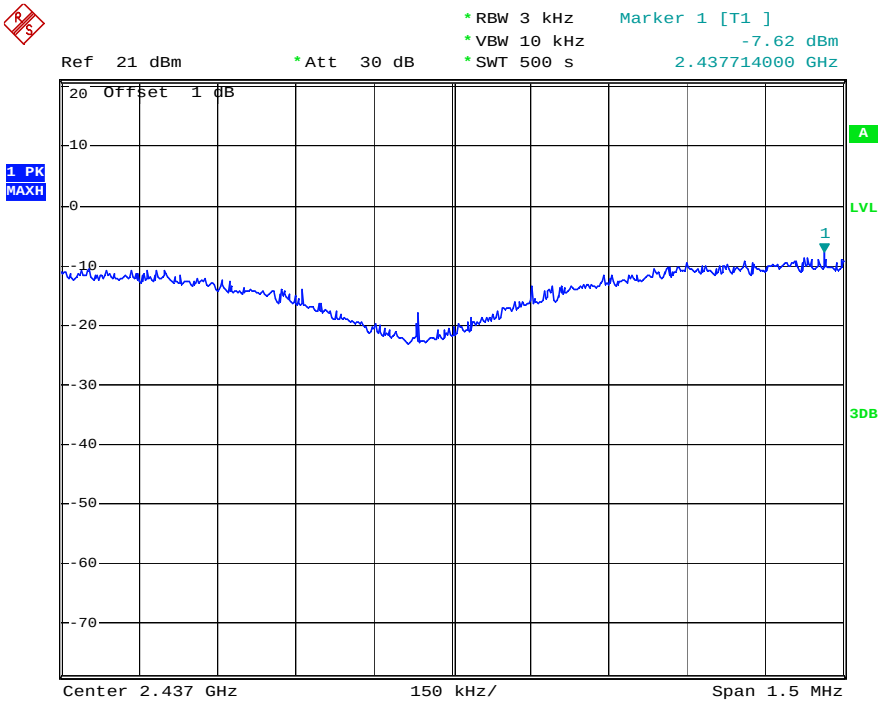
Channel	Frequency (MHz)	Data Rate	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b mode					
Low	2412	1	-8.17	8	Pass
Middle	2437	1	-7.62	8	Pass
High	2462	1	-7.36	8	Pass
802.11g mode					
Low	2412	6	-13.26	8	Pass
Middle	2437	6	-12.49	8	Pass
High	2462	6	-12.42	8	Pass

Power Spectral Density, 802.11b Low Channel



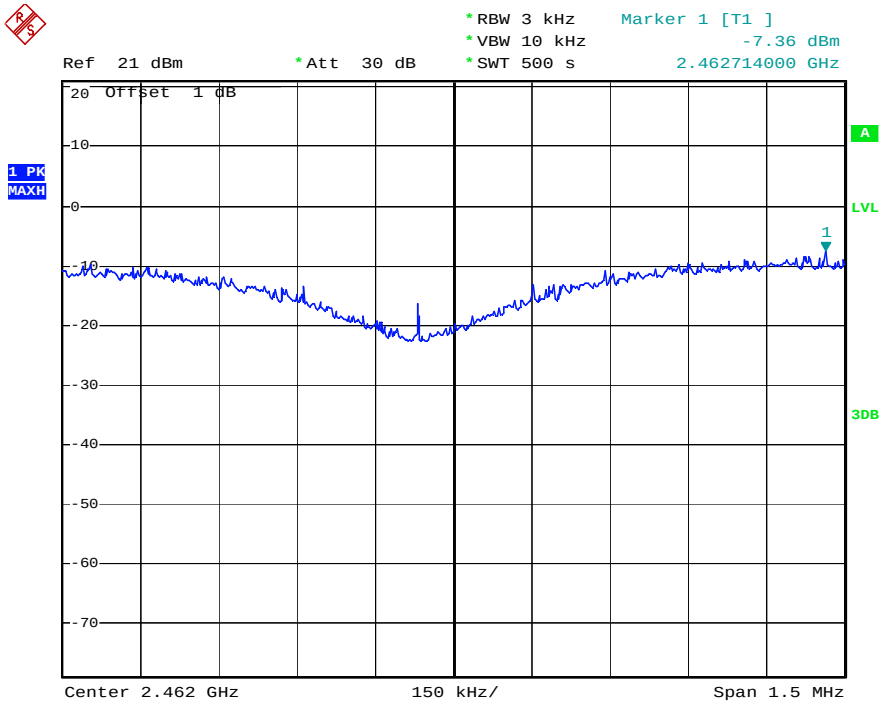
Date: 16.NOV.2011 23:26:50

Power Spectral Density, 802.11b Middle Channel



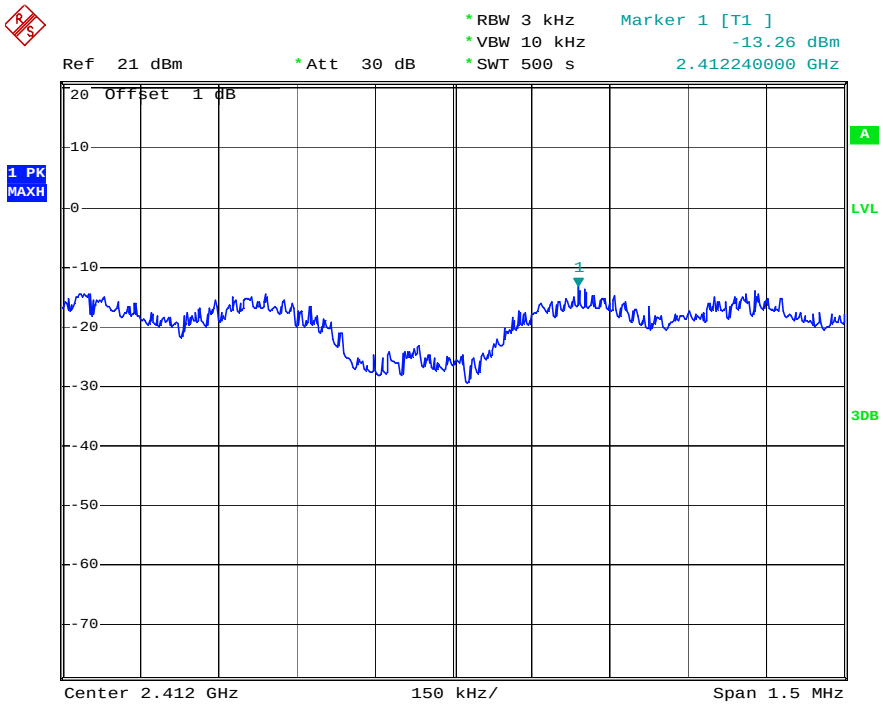
Date: 16.NOV.2011 23:36:10

Power Spectral Density, 802.11b High Channel



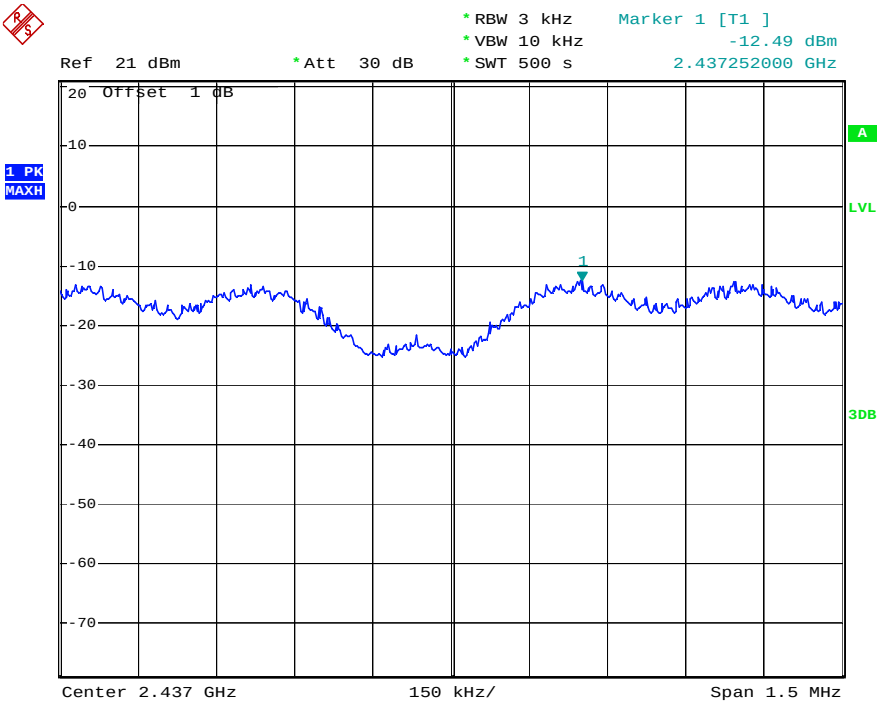
Date: 16.NOV.2011 23:47:23

Power Spectral Density, 802.11g Low Channel



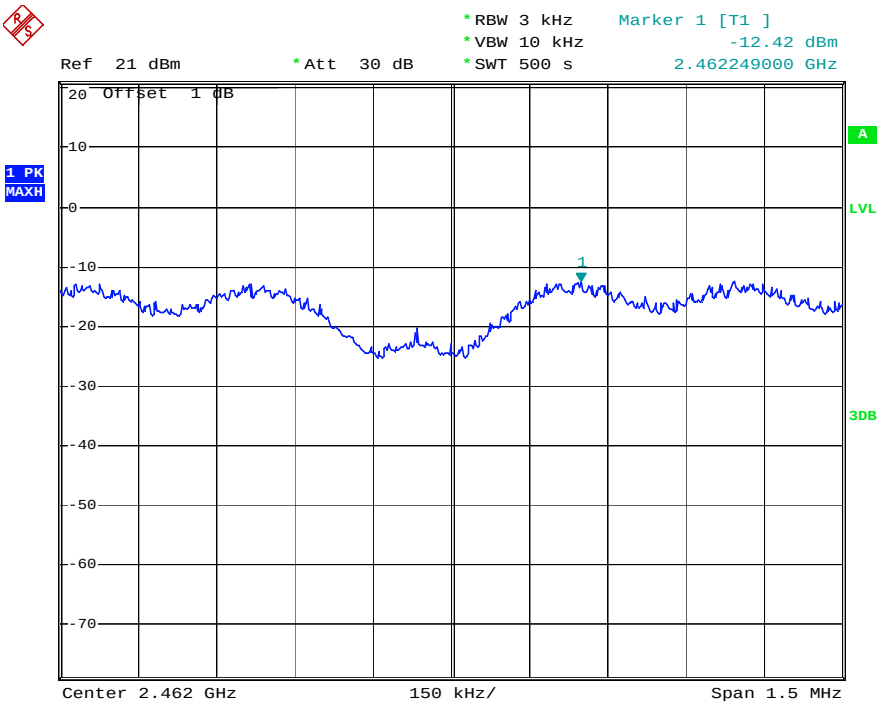
Date: 16.NOV.2011 23:57:28

Power Spectral Density, 802.11g Middle Channel



Date: 17.NOV.2011 00:08:35

Power Spectral Density, 802.11g High Channel



Date: 17.NOV.2011 00:18:39

Annex A. TEST INSTRUMENT & METHOD

Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

Instrument	Manufacturer	Model	CAL Date	CAL Due Date
Spectrum Analyzer	HP	8563 E	2011.01.10	2012.01.10
EMI Receiver	Rohde & Schwarz	ESPI 3	2011.05.25	2012.05.25
Antenna (30MHz~2GHz)	Sunol Sciences	JB1	2011.10.04	2012.10.04
Horn Antenna (1~18GHz)	A-INFOMW	JXTXLB-10180	2011.10.04	2012.10.04
Horn Antenna (1~18GHz)	N/A	N/A	2011.10.04	2012.10.04
Pre-Amplifier(0.01 ~ 1.3GHz)	HP	8447F	2011.05.25	2012.05.25
Pre-Amplifier(0.1 ~ 18GHz)	MITEQ	AMF-7D-00101800-30-10P	2011.05.25	2012.05.25
Horn Antenna (18~40GHz)	Com Power	AH-840	2011.05.25	2012.05.25
Microwave Pre-Amp (18~40GHz)	Com Power	PA-840	2011.05.25	2012.05.25

Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION

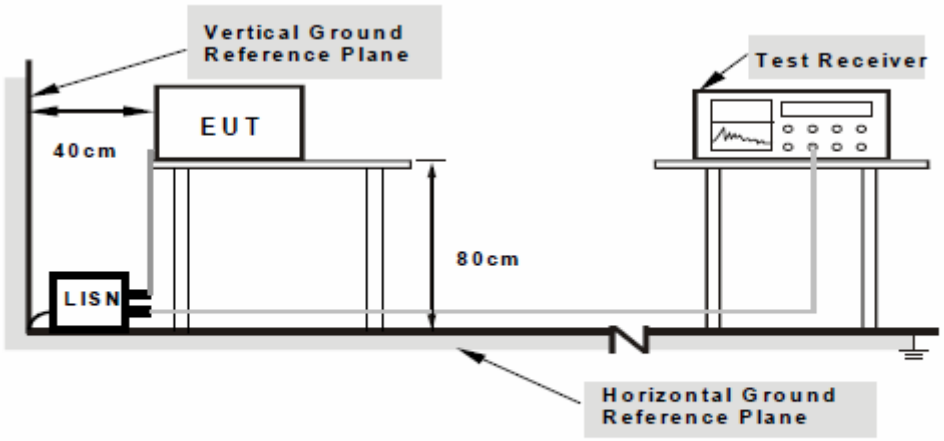
Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.

2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.

3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.

4. All other supporting equipments were powered separately from another main supply.



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration1.

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.

2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.

3. High peaks, relative to the limit line, were then selected.

4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.

5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 150 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.

Sample Calculation Example

At 20 MHz limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dBμV
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96 i.e. **7.96 dB below limit**

Annex A. iii RADIATED EMISSIONS TEST DESCRIPTION

EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10th Harmonic , was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

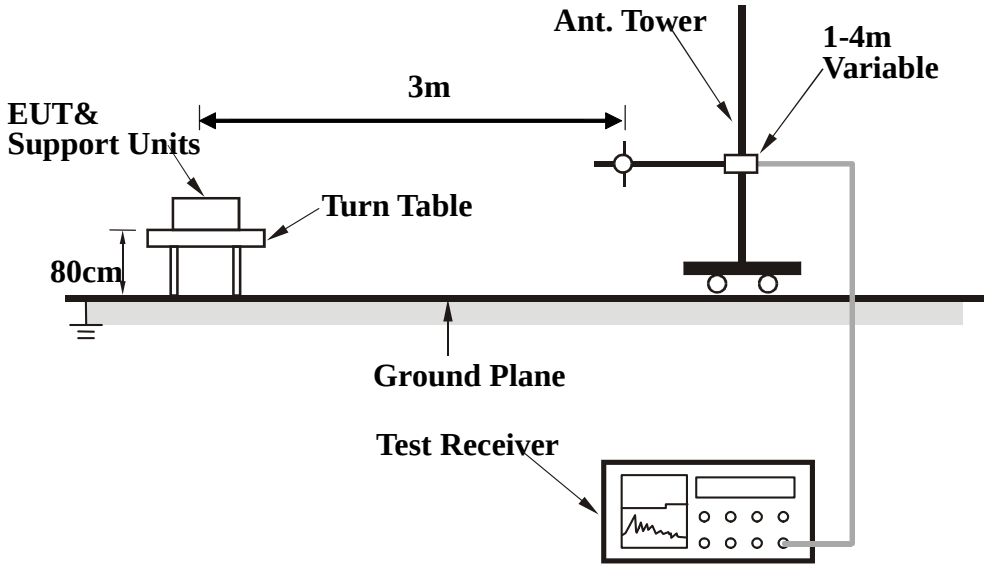
The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS).

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.

2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.

3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



Test Method

The following procedure was performed to determine the maximum emission axis of EUT:
1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

Final Radiated Emission Measurement
1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.

3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.

4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ◦ to 360 ◦ with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.

5. Repeat step 4 until all frequencies need to be measured were complete.

6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Sample Calculation Example

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Peak = Reading + Corrected Factor

where
Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)
And the average value is

Average = Peak Value + Duty Factor or
Set RBW = 1MHz, VBW = 10Hz.

Note :
If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

Annex B. EUT AND TEST SETUP PHOTOGRAPHS

Please see attachment

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

EUT TEST CONDITIONS

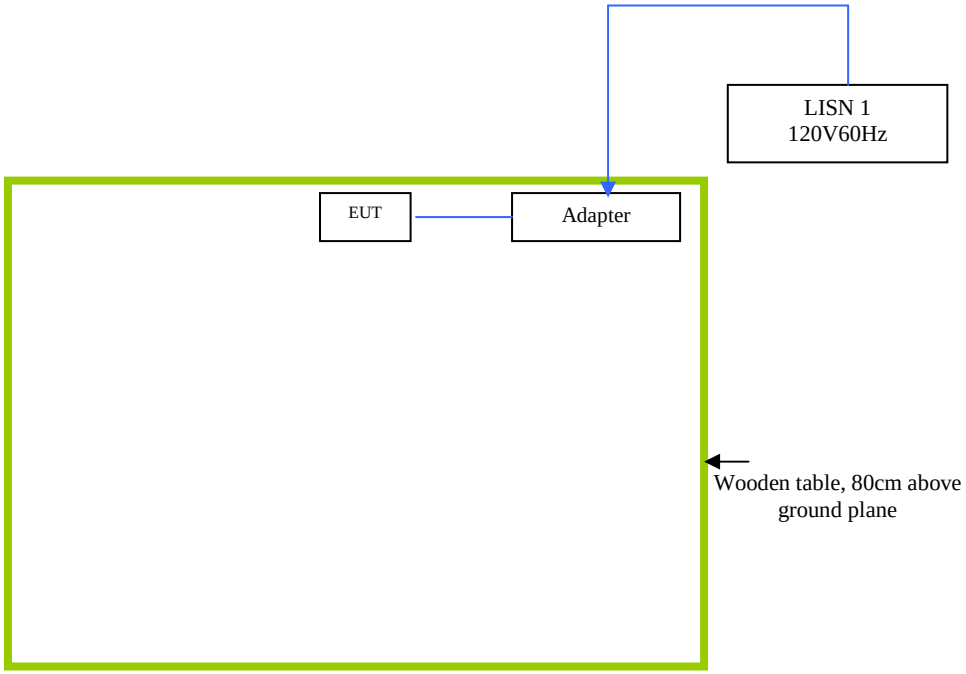
Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Equipment Description (Including Brand Name)	Model & Serial Number	Cable Description (List Length, Type & Purpose)
N/A	N/A	N/A

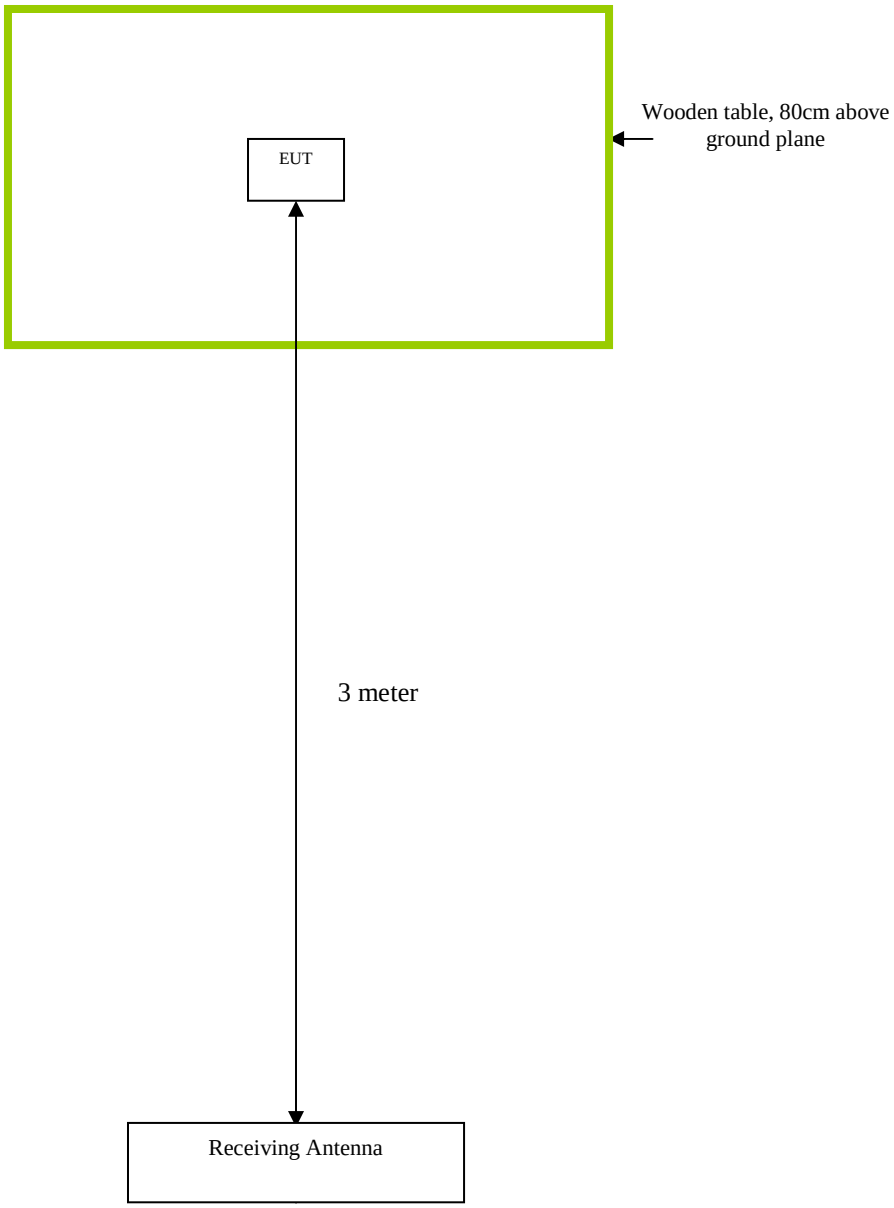
Block Configuration Diagram for Conducted Emissions

Note:Before Testing, the EUT must be set up for transmitting by laptop.



Block Configuration Diagram for Radiated Emissions

Note:Before Testing, the EUT must be set up for transmitting by laptop.



Annex C.ii. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions Testing	The EUT was continuously transmitting to stimulate the worst case.

Annex D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST

Please see attachment

Annex E. SIEMIC ACCREDITATION CERTIFICATES

SIEMIC ACREDITATION DETAILS: FCC Test Site Registration No. 986914

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

April 19, 2011

Registration Number: 986914

SIEMIC Nanjing (China) Laboratories
2-1 Longcang Avenue,
Yuhua Economic and Technology Development Park,
Nanjing, 210039
China

Attention: Leslie Bai,

Re: Measurement facility located at 2-1 Longcang Avenue, Nanjing, China
Anechoic chamber (3 meters) and 3&10 meter OATS
Date of Renewal: April 19, 2011

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Phyllis Parrish
Industry Analyst

SIEMIC ACREDITATION DETAILS: Industry of Canada Test Site Registration No. 4842B

Industry Canada Industrie Canada

January 25, 2011

OUR FILE: 46405-4842
Submission No: 145222

Siemic Nanjing (China) Laboratories
2-1 Longcang Avenue
Yuhua Economic & Technology Dev. Park, Nanjing
China

Attention: Leslie Bai

Dear Sir/Madame:

The Bureau has received your application for the registration of a 3/10m OATS. Be advised that the information received was satisfactory to Industry Canada. The following number(s) is now associated to the site(s) for which registration / renewal was sought (Site# 4842B-2). Please reference the appropriate site number in the body of test reports containing measurements performed on the site. In addition, please keep for your records the following information:

- The company address code associated to the site(s) located at the above address is: 4842B

Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 or later shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 metre OATS or 3 metre chamber). If the test facility is not accredited to ANSI C63.4-2003 or later, the test facility shall submit test data demonstrating full compliance with the ANSI standard. The Bureau will evaluate the filing to determine if recognition shall be granted.

The frequency for re-validation of the test site and the information that is required to be filed or retained by the testing party shall comply with the requirements established by the accrediting organization. However, in all cases, test site re-validation shall occur on an interval not to exceed three years. There is no fee or form associated with an OATS filing. OATS submissions are encouraged to be submitted electronically to the Bureau using the following URL;
http://strategis.ic.gc.ca/epic/internet/inceb-bbat.nsf/en/h_gr00012e.html.

If you have any questions, you may contact the Bureau by e-mail at certification.bureau@ic.gc.ca Please reference our file and submission number above for all correspondence.

Yours sincerely,

Dalwinder Gill
For: Wireless Laboratory Manager
Certification and Engineering Bureau
3701 Carling Ave., Building 94
P.O. Box 11490, Station "H"
Ottawa, Ontario K2H 8S2
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