

No. 1 Workshop, M-10, Middle Section, Science & Technology Park,
District Shenzhen, China 518057

Telephone: +86 (0) 755 2601 2053

Fax: +86 (0) 755 2671 0594

Email: sgs_internet_operations@sgs.com

FEDERAL COMMUNICATIONS COMMISSION

Registration number: 556682

Report No.: SZEMO09080507101

Page: 1 of 38

TEST REPORT

Application No.: SZEMO090805071RF

Applicant/ Manufacturer: King Champion Industries Ltd.

Address of Applicant: Flat B, 12/F., Yeung Yiu Chung (No.8) Ind. Bldg., 20 Wang Hoi Road Kowloon Bay Hong Kong

Address of Manufacturer: Same as applicant

FCC ID: VSAPX6000I00002

Fundamental Carrier Frequency : 2.412GHz to 2.462GHz

Equipment Under Test (EUT):

Name: Internet Radio

Model No.: PX-60i

Standards: FCC PART 15 Subpart C: 2008

Date of Receipt: 28 August 2009

Date of Test: 01 to 16 September 2009

Date of Issue: 17 September 2009

Test Result :	PASS *
----------------------	---------------

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo
Laboratory Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf. This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the SGS PRODUCT CERTIFICATION MARK.. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

"This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Conducted Emissions	FCC PART 15:2008	Section 15.207	PASS
Radiated Emission	FCC PART 15:2008	Section 15.205/15.209	PASS*
Maximum Peak Output Power	FCC PART 15 :2008	Section 15.247 (b)	PASS
Occupied Bandwidth	FCC PART 15 :2008	Section 15.247 (a2)	PASS
Edges Measurement	FCC PART 15 2008	Section 15.247(d)	PASS
Power Spectral Density Measurement	FCC PART 15 :2008	Section 15.247 (e)	PASS
Antenna requirement.	FCC PART 15:2008	Section 15.247 (b)	PASS

3 Contents

Page	1
2	TEST SUMMARY	2
3	CONTENTS	3
4	GENERAL INFORMATION.....	4
4.1	GENERAL DESCRIPTION OF E.U.T.....	4
4.2	TEST LOCATION	4
4.3	OTHER INFORMATION REQUESTED BY THE CUSTOMER.....	4
5	TEST RESULTS	5
5.1	TEST INSTRUMENTS.....	5
5.2	E.U.T. OPERATION.....	6
5.3	TEST PROCEDURE & MEASUREMENT DATA	7
5.3.1	<i>Conducted Emissions</i>	7
5.3.2	<i>Radiated Emissions</i>	10
5.3.2.1	<i>Radiated emission below 1GHz</i>	12
5.3.2.2	<i>Transmitter emission above 1GHz</i>	13
5.3.3	<i>Occupied Bandwidth</i>	21
5.3.4	<i>Maximum Peak Output Power</i>	25
5.3.5	<i>Band Edges Measurement</i>	28
5.3.6	<i>Power Spectral Density Measurement</i>	33
5.3.7	<i>Antenna Requirement</i>	38

4 General Information

4.1 General Description of E.U.T.

Name:	Internet Radio
Item No.:	PX-60i
Frequency Range	2412-2462MHz
Channel number:	11
Type of modulation(802.11b):	DBPSK(1MHz), DQPSK(2MHz), CCK(5.5/11MHz)
Type of modulation(802.11g):	OFDM
Data speed(802.11b):	1/2/5.5/11Mbps
Data speed(802.11g):	6/9/12/18/24/36/48/54Mbps
Antenna Type:	Integral
Antenna Gain:	0dBi

Working Frequency of Each channel:

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
001	2412	002	2417	003	2422
004	2427	005	2432	006	2437
007	2442	008	2447	009	2452
010	2457	011	2462		

Note:

Regards to the frequency band over 10MHz, the lowest, middle and highest frequency of channel were selected to perform the test, and then shown on this report.

So the there channel as follow:

Lowest channel: 2412MHz

Middle channel: 2437MHz

Highest channel: 2462 MHz

4.2 Test Location

All tests were performed at:

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, District Shenzhen, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.3 Other Information Requested by the Customer

None

5 Test Results

5.1 Test Instruments

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2009	15-06-2010
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2008	11-12-2009
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2009	17-06-2010
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2009	11-08-2010
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	18-06-2009	17-06-2010
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0005	12-08-2009	11-08-2010
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	12-08-2009	11-08-2010
9	Pre-amplifier (1-18GHz)	Rohde & Schwarz	AFS42-00101 800-25-S-42	SEL0081	18-06-2009	17-06-2010
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	18-06-2009	17-06-2010
11	Band filter	Amindeon	82346	SEL0094	18-06-2009	17-06-2010
12	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	15-06-2009	14-06-2010

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	N/A	N/A
2	LISN	ETS-LINDGREN	3816/2	SEL0021	18-06-2009	17-06-2010
3	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	EMC0120	21-02-2009	21-02-2010
4	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	EMC0121	21-02-2009	21-02-2010
5	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	21-02-2009	21-02-2010
6	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	18-06-2009	17-06-2010
7	Coaxial Cable	SGS	N/A	SEL0024	18-06-2009	17-06-2010

5.2 E.U.T. Operation

Power supply:	Input: AC 100-240V 50/60Hz 0.45A MAX Output: DC 9.0V2A
Test Voltage	120V AC
Operating Environment	
Temperature:	24 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar

Test mode:

SGS has verified the construction and function in typical operation. All the test modes were carried out with out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-Test mode	
Transmit	1/2/5.5/11Mbps for 802.11b 6/9/12/18/24/36/48/54Mbps for 802.11g
Final Test mode	
Transmit	11Mbps for 802.11b 54Mbps for 802.11g

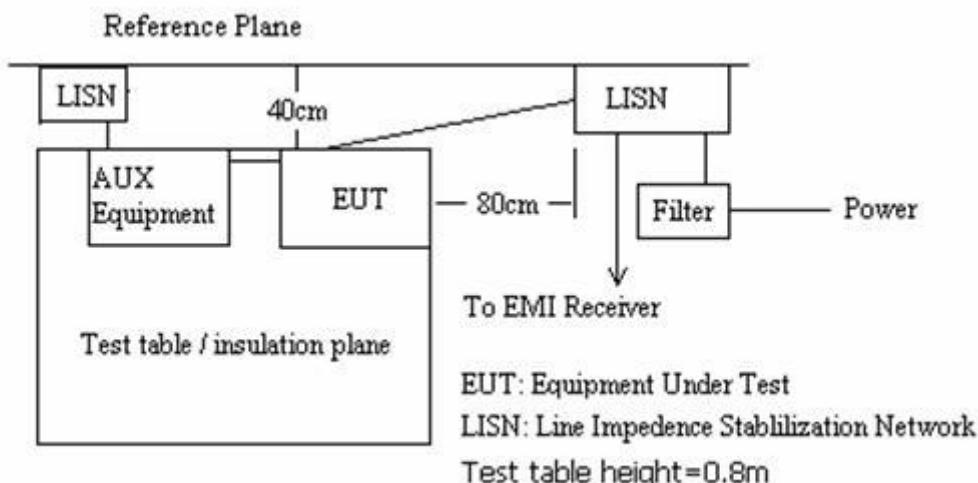
Note: according to ANSI C63.4: 2003 standards, the test results are both the "worst case" and "worst setup".

5.3 Test Procedure & Measurement Data

5.3.1 Conducted Emissions

Test Requirement: FCC Part15 C Section 15.207
Test Method: ANSI C63.4: 2003
Frequency Range: 150KHz to 30MHz
Class / Severity: Class B
Detector: RBW=9KHz VBW=30KHz
Operating Environment:
Temperature: 24 °C Humidity: 52 % RH Atmospheric Pressure: 1010 Mbar
EUT Operation: Test in WIFI mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.
Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Plan View of Test Setup



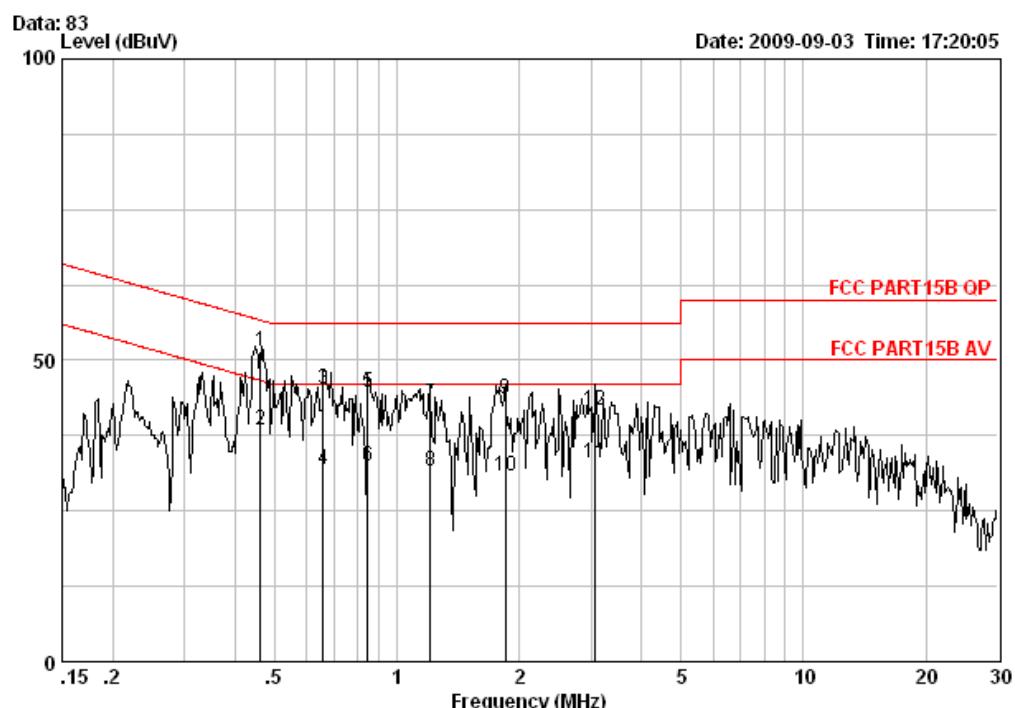
5.3.1.1 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. For EUT communicating with worst case mode.

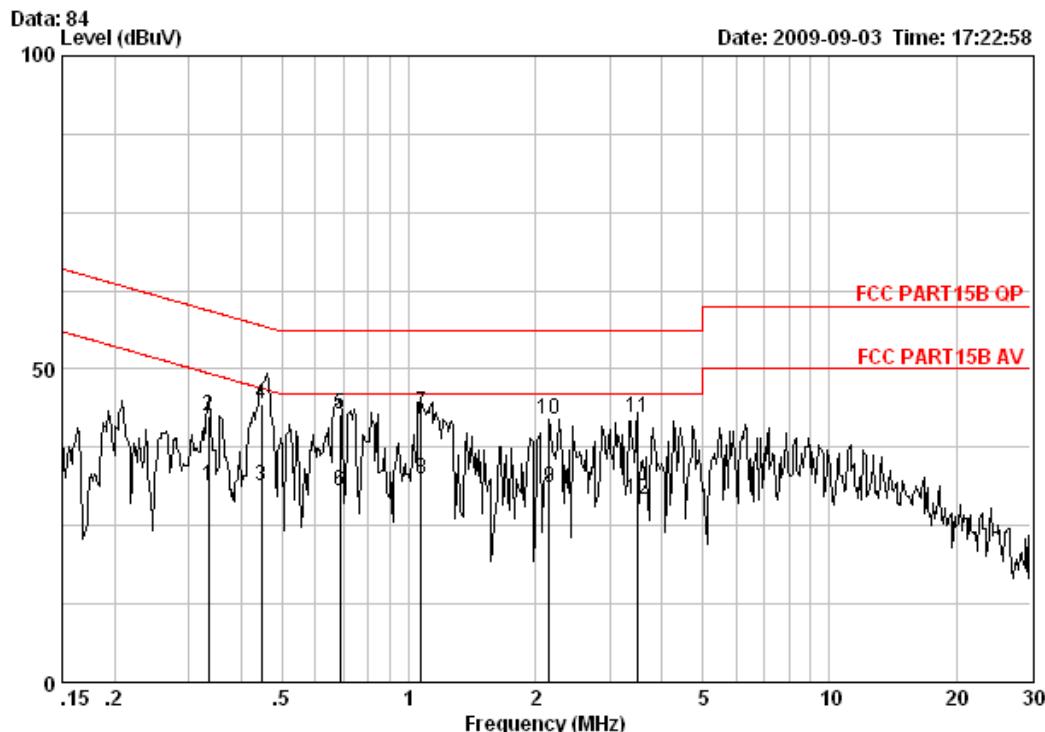
The following Quasi-Peak and Average measurements were performed on the EUT:

Live Line



Site : Shielding Room
Condition : FCC PART15B QP CE LINE
EUT : internet radio
Job No. : S071RF
Test Mode : WI-FI

Freq	Cable	LISN	Read	Limit	Over	Remark	
	Loss	Factor	Level				
	MHz	dB	dB	dBuV	dBuV	dB	
1 0	0.46122	0.06	-0.04	51.50	51.52	56.67	-5.16 QP
2 0	0.46122	0.06	-0.04	38.30	38.32	46.67	-8.36 Average
3 0	0.65777	0.06	-0.05	45.20	45.21	56.00	-10.79 QP
4 0	0.65777	0.06	-0.05	31.80	31.81	46.00	-14.19 Average
5 0	0.84826	0.07	-0.05	44.60	44.62	56.00	-11.38 QP
6 0	0.84826	0.07	-0.05	32.50	32.52	46.00	-13.48 Average
7 0	1.210	0.09	-0.05	42.80	42.84	56.00	-13.16 QP
8 0	1.210	0.09	-0.05	31.70	31.74	46.00	-14.26 Average
9 0	1.848	0.11	-0.06	43.50	43.55	56.00	-12.45 QP
10 0	1.848	0.11	-0.06	30.80	30.85	46.00	-15.15 Average
11 0	3.074	0.14	-0.08	32.80	32.87	46.00	-13.13 Average
12 0	3.074	0.14	-0.08	41.70	41.77	56.00	-14.23 QP

Neutral Line


Site : Shielding Room
Condition : FCC PART15B QP CE NEUTRAL
EUT : internet radio
Job No. : S071RF
Test Mode : WI-FI

	Freq	Cable	LISN	Read	Limit	Over	Remark
		Loss	Factor	Level			
	MHz	dB	dB	dBuV	dBuV	dBuV	dB
1	0.33385	0.05	-0.04	31.20	31.21	49.35	-18.14 Average
2	0.33385	0.05	-0.04	42.50	42.51	59.35	-16.84 QP
3 @	0.44678	0.06	-0.04	31.20	31.22	46.93	-15.72 Average
4 @	0.44678	0.06	-0.04	44.50	44.52	56.93	-12.42 QP
5 @	0.68626	0.06	-0.04	42.80	42.82	56.00	-13.18 QP
6 @	0.68626	0.06	-0.04	30.50	30.52	46.00	-15.48 Average
7 @	1.071	0.08	-0.05	43.10	43.14	56.00	-12.86 QP
8 @	1.071	0.08	-0.05	32.40	32.44	46.00	-13.56 Average
9 @	2.155	0.12	-0.06	31.00	31.06	46.00	-14.94 Average
10 @	2.155	0.12	-0.06	41.87	41.92	56.00	-14.08 QP
11 @	3.491	0.15	-0.09	42.10	42.16	56.00	-13.84 QP
12	3.491	0.15	-0.09	29.10	29.16	46.00	-16.84 Average

TEST RESULTS: The unit does meet the FCC requirement

5.3.2 Radiated Emissions

Test Requirement: FCC Part15 C Section 15.247, 15.209 and 15.205
Test Method: ANSI C63.4: 2003
Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)
Test Range 30MHz to 25GHz
30MHz-1000MHz: RBW=100KHz, VBW=300KHz
Above 1GHz: PK RBW=1MHz, VBW=3MHz
Average RBW=1MHz, VBW=10Hz
15.209 Limit: 40.0 dB μ V/m between 30MHz & 88MHz
43.5 dB μ V/m between 88MHz & 216MHz
46.0 dB μ V/m between 216MHz & 960MHz
above 960MHz: Average value Limit 54.0 dB μ V/m
Peak value Limit 74.0 dB μ V/m.

Test Configuration

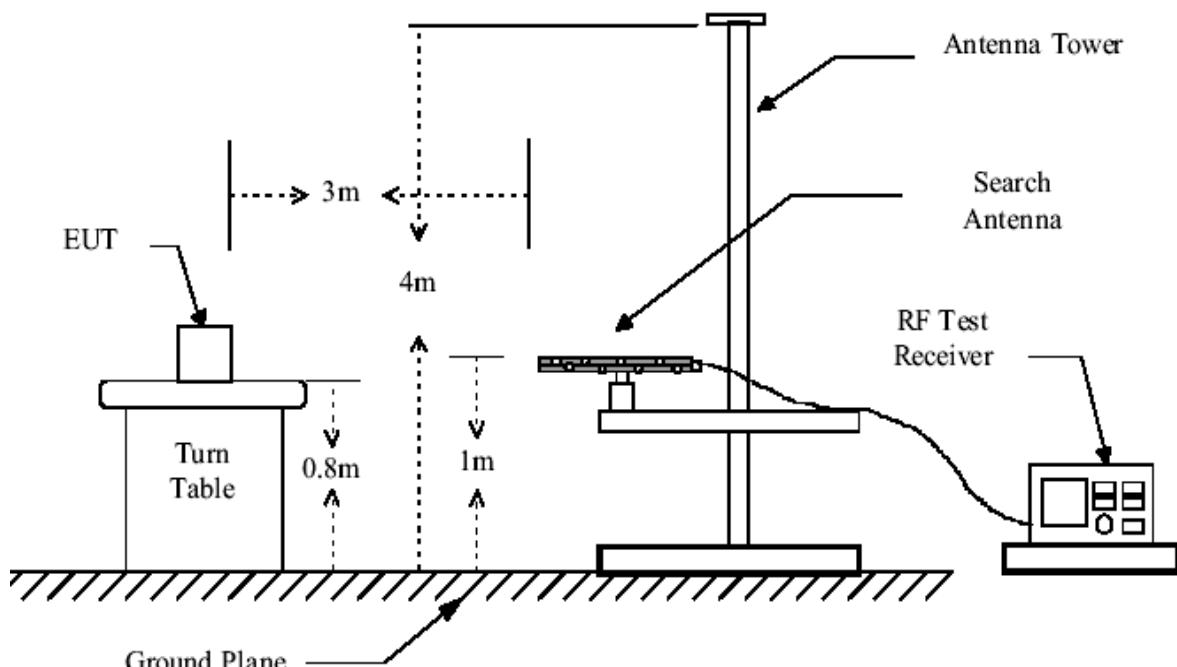
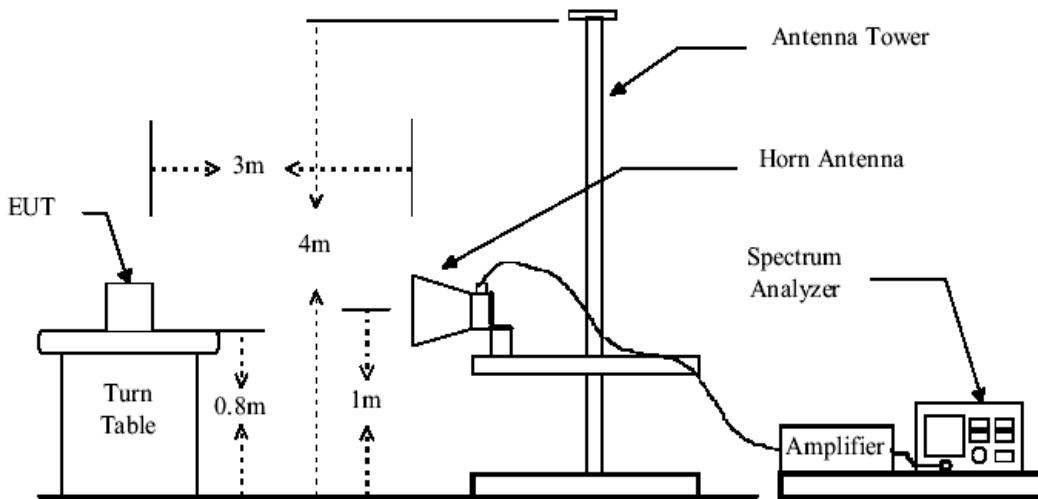


Figure1: 30MHz to 1GHz radiated emissions test configuration

**Figure 2: Above 1GHz radiated emissions test configuration****Test Procedure:**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. The EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

7 The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

5.3.2.1 Radiated emission below 1GHz

Test in Wi-Fi mode

Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Quasi-peak Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
40.670	0.61	10.93	28.09	47.77	31.22	40.00	-8.78
82.380	1.10	7.95	27.99	44.56	25.62	40.00	-14.38
149.310	1.32	8.91	27.46	52.59	35.36	43.50	-8.14
253.100	1.69	12.38	26.90	41.63	28.80	46.00	-17.20
618.790	2.74	20.31	27.55	47.34	42.84	46.00	-3.16
644.980	2.79	20.58	27.46	46.61	42.52	46.00	-3.48

Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Quasi-peak Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
125.060	1.27	7.80	27.64	44.86	26.29	43.50	-17.21
137.670	1.30	8.00	27.54	48.13	29.89	43.50	-13.61
176.470	1.36	9.77	27.28	44.55	28.40	43.50	-15.10
202.660	1.42	10.32	27.14	45.28	29.88	43.50	-13.62
288.020	1.85	13.40	26.76	44.41	32.90	46.00	-13.10
339.430	2.03	15.16	27.02	45.11	35.28	46.00	-10.72

5.3.2.2 Transmitter emission above 1GHz

Transmitting mode (802.11b lowest channel=2412MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2400	6.34	32.25	38.87	48.79	48.51	74.00	-25.49	Vertical
2439	6.29	32.26	38.64	38.46	38.37	74.00	-35.63	Vertical
4824	9.21	34.04	41.27	47.23	49.21	74.00	-24.79	Vertical
7236	13.22	36.25	40.78	47.74	56.43	74.00	-17.57	Vertical
9648	13.49	37.01	37.64	43.38	56.24	74.00	-17.76	Vertical
12060	16.77	38.82	39.13	43.90	60.36	74.00	-13.64	Vertical
2400	6.34	32.25	38.87	53.40	53.12	74.00	-20.88	Horizontal
2439	6.29	32.26	38.64	38.49	38.40	74.00	-35.60	Horizontal
4824	9.21	34.04	41.27	49.76	51.74	74.00	-22.26	Horizontal
7236	13.22	36.25	40.78	46.94	55.63	74.00	-18.37	Horizontal
9648	13.49	37.01	37.64	42.78	55.64	74.00	-18.36	Horizontal
12060	16.77	38.82	39.13	44.33	60.79	74.00	-13.21	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over limit	polarization
2400	6.34	32.25	38.87	32.00	31.72	54.00	-22.28	Vertical
2439	6.29	32.26	38.64	33.00	32.91	54.00	-21.09	Vertical
4824	9.21	34.04	41.27	33.23	35.21	54.00	-18.79	Vertical
7236	13.22	36.25	40.78	33.21	41.90	54.00	-12.10	Vertical
9648	13.49	37.01	37.64	30.85	43.71	54.00	-10.29	Vertical
12030	16.77	38.82	39.13	30.10	46.56	54.00	-7.44	Vertical
2400	6.34	32.25	38.87	32.60	32.32	54.00	-21.68	Horizontal
2439	6.29	32.26	38.64	32.60	32.51	54.00	-21.49	Horizontal
4824	9.21	34.04	41.27	32.28	34.26	54.00	-19.74	Horizontal
7236	13.22	36.25	40.78	32.23	40.92	54.00	-13.08	Horizontal
9648	13.49	37.01	37.64	29.90	42.76	54.00	-11.24	Horizontal
12060	16.77	38.82	39.13	29.18	45.64	54.00	-8.36	Horizontal

Transmitting mode (802.11b middle channel=2437MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2400	6.34	32.25	38.87	44.00	43.72	74.00	-30.28	Vertical
2483.5	6.22	32.29	39.53	46.00	44.98	74.00	-29.02	Vertical
4874	10.36	34.02	39.89	48.00	52.49	74.00	-21.51	Vertical
7311	12.99	36.14	40.50	44.00	52.63	74.00	-21.37	Vertical
9748	13.89	37.10	37.94	41.00	54.05	74.00	-19.95	Vertical
12185	18.03	38.91	39.27	42.00	59.67	74.00	-14.33	Vertical
2400	6.34	32.25	38.87	47.00	46.72	74.00	-27.28	Horizontal
2483.5	6.22	32.29	39.53	49.00	47.98	74.00	-26.02	Horizontal
4874	10.36	34.02	39.89	46.00	50.49	74.00	-23.51	Horizontal
7311	12.99	36.14	40.50	48.00	56.63	74.00	-17.37	Horizontal
9748	13.89	37.10	37.94	43.00	56.05	74.00	-17.95	Horizontal
12185	18.03	38.91	39.27	42.00	59.67	74.00	-14.33	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over limit	polarization
2400	6.34	32.25	38.87	32.00	31.72	54.00	-22.28	Vertical
2483.5	6.22	32.29	39.53	33.00	31.98	54.00	-22.02	Vertical
4874	10.36	34.02	39.89	34.00	38.49	54.00	-15.51	Vertical
9748	13.89	37.10	37.94	30.00	43.05	54.00	-10.95	Vertical
12185	18.03	38.91	39.27	29.00	46.67	54.00	-7.33	Vertical
2400	6.34	32.25	38.87	32.00	31.72	54.00	-22.28	Horizontal
2483.5	6.22	32.29	39.53	34.00	32.98	54.00	-21.02	Horizontal
4874	10.36	34.02	39.89	33.21	37.70	54.00	-16.30	Horizontal
7311	12.99	36.14	40.50	32.20	40.83	54.00	-13.17	Horizontal
9748	13.89	37.10	37.94	30.20	43.25	54.00	-10.75	Horizontal
12185	18.03	38.91	39.27	28.20	45.87	54.00	-8.13	Horizontal

Transmitting mode (802.11b highest channel=2462MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.5	6.22	32.29	39.53	43.56	42.54	74.00	-31.46	Vertical
2500	5.76	32.30	39.15	45.56	44.47	74.00	-29.53	Vertical
4924	10.53	34.01	40.90	49.57	53.21	74.00	-20.79	Vertical
7386	12.68	35.99	40.11	46.56	55.12	74.00	-18.88	Vertical
9848	14.13	37.17	38.01	42.55	55.84	74.00	-18.16	Vertical
12310	17.71	38.99	39.41	43.56	60.85	74.00	-13.15	Vertical
2483.5	6.22	32.29	39.53	44.20	43.18	74.00	-30.82	Horizontal
2500	5.76	32.30	39.15	36.80	35.71	74.00	-38.29	Horizontal
4924	10.53	34.01	40.90	47.81	51.45	74.00	-22.55	Horizontal
7386	12.68	35.99	40.11	44.80	53.36	74.00	-20.64	Horizontal
9848	14.13	37.17	38.01	42.79	56.08	74.00	-17.92	Horizontal
12310	17.71	38.99	39.41	42.80	60.09	74.00	-13.91	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over limit	polarization
2483.5	6.22	32.29	39.53	34.00	32.98	54.00	-21.02	Vertical
2500	5.76	32.30	39.15	33.00	31.91	54.00	-22.09	Vertical
4924	10.53	34.01	40.90	34.01	37.65	54.00	-16.35	Vertical
7386	12.68	35.99	40.11	32.00	40.56	54.00	-13.44	Vertical
9848	14.13	37.17	38.01	28.99	42.28	54.00	-11.72	Vertical
12310	17.71	38.99	39.41	27.00	44.29	54.00	-9.71	Vertical
2483.5	6.22	32.29	39.53	33.00	31.98	54.00	-22.02	Horizontal
2500	5.76	32.30	39.15	33.00	31.91	54.00	-22.09	Horizontal
4924	10.53	34.01	40.90	32.01	35.65	54.00	-18.35	Horizontal
7386	12.68	35.99	40.11	33.00	41.56	54.00	-12.44	Horizontal
9848	14.13	37.17	38.01	28.99	42.28	54.00	-11.72	Horizontal
12310	17.71	38.99	39.41	28.00	45.29	54.00	-8.71	Horizontal

Transmitting mode (802.11g lowest channel=2412MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2400	6.34	32.25	38.87	48.17	47.89	74.00	-26.11	Vertical
2439	6.29	32.26	38.64	38.77	38.68	74.00	-35.32	Vertical
4824	9.21	34.04	41.27	47.60	49.58	74.00	-24.42	Vertical
7236	13.22	36.25	40.78	47.22	55.91	74.00	-18.09	Vertical
9648	13.49	37.01	37.64	43.67	56.53	74.00	-17.47	Vertical
12060	16.77	38.82	39.13	43.96	60.42	74.00	-13.58	Vertical
2400	6.34	32.25	38.87	50.99	50.71	74.00	-23.29	Horizontal
2439	6.29	32.26	38.64	36.42	36.33	74.00	-37.67	Horizontal
4824	9.21	34.04	41.27	46.95	48.93	74.00	-25.07	Horizontal
7236	13.22	36.25	40.78	44.77	53.46	74.00	-20.54	Horizontal
9648	13.49	37.01	37.64	40.96	53.82	74.00	-20.18	Horizontal
12060	16.77	38.82	39.13	43.99	60.45	74.00	-13.55	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over limit (dB)	polarization
2400	6.34	32.25	38.87	35.49	35.21	54.00	-18.79	Vertical
2439	6.29	32.26	38.64	34.01	33.92	54.00	-20.08	Vertical
4824	9.21	34.04	41.27	33.64	35.62	54.00	-18.38	Vertical
7236	13.22	36.25	40.78	33.56	42.25	54.00	-11.75	Vertical
9648	13.49	37.01	37.64	31.00	43.86	54.00	-10.14	Vertical
12030	16.77	38.82	39.13	32.16	48.62	54.00	-5.38	Vertical
2400	6.34	32.25	38.87	32.55	32.27	54.00	-21.73	Horizontal
2439	6.29	32.26	38.64	32.88	32.79	54.00	-21.21	Horizontal
4824	9.21	34.04	41.27	30.97	32.95	54.00	-21.05	Horizontal
7236	13.22	36.25	40.78	36.55	45.24	54.00	-8.76	Horizontal
9648	13.49	37.01	37.64	30.19	43.05	54.00	-10.95	Horizontal
12060	16.77	38.82	39.13	31.26	47.72	54.00	-6.28	Horizontal

Transmitting mode (802.11g middle channel=2437MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2400	6.34	32.25	38.87	44.63	44.35	74.00	-29.65	Vertical
2547	5.90	32.40	39.08	44.46	43.68	74.00	-30.32	Vertical
4874	10.36	34.02	39.89	46.54	51.03	74.00	-22.97	Vertical
7311	12.99	36.14	40.50	45.11	53.74	74.00	-20.26	Vertical
9748	13.89	37.10	37.94	41.72	54.77	74.00	-19.23	Vertical
12185	18.03	38.91	39.27	42.84	60.51	74.00	-13.49	Vertical
2400	6.34	32.25	38.87	45.11	44.83	74.00	-29.17	Horizontal
2483.5	6.22	32.29	39.53	45.12	44.10	74.00	-29.90	Horizontal
4874	10.36	34.02	39.89	44.56	49.05	74.00	-24.95	Horizontal
7311	12.99	36.14	40.50	46.97	55.60	74.00	-18.40	Horizontal
9748	13.89	37.10	37.94	42.52	55.57	74.00	-18.43	Horizontal
12185	18.03	38.91	39.27	42.16	59.83	74.00	-14.17	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over limit (dB)	polarization
2400	6.34	32.25	38.87	32.00	31.72	54.00	-22.28	Vertical
2483.5	6.22	32.29	39.53	32.46	31.44	54.00	-22.56	Vertical
4874	10.36	34.02	39.89	31.58	36.07	54.00	-17.93	Vertical
7311	12.99	36.14	40.50	32.55	41.18	54.00	-12.82	Vertical
9748	13.89	37.10	37.94	30.11	43.16	54.00	-10.84	Vertical
12185	18.03	38.91	39.27	28.24	45.91	54.00	-8.09	Vertical
2400	6.34	32.25	38.87	32.16	31.88	54.00	-22.12	Horizontal
2483.5	6.22	32.29	39.53	32.45	31.43	54.00	-22.57	Horizontal
4874	10.36	34.02	39.89	33.19	37.68	54.00	-16.32	Horizontal
7311	12.99	36.14	40.50	33.42	42.05	54.00	-11.95	Horizontal
9748	13.89	37.10	37.94	29.20	42.25	54.00	-11.75	Horizontal
12185	18.03	38.91	39.27	27.88	45.55	54.00	-8.45	Horizontal

Transmitting mode (802.11g highest channel=2462MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.5	6.22	32.29	39.53	44.33	43.31	74.00	-30.69	Vertical
2500	5.76	32.30	39.15	44.79	43.70	74.00	-30.30	Vertical
4924	10.53	34.01	40.90	46.11	49.75	74.00	-24.25	Vertical
7386	12.68	35.99	40.11	46.27	54.83	74.00	-19.17	Vertical
9848	14.13	37.17	38.01	44.31	57.60	74.00	-16.40	Vertical
12310	17.71	38.99	39.41	42.19	59.48	74.00	-14.52	Vertical
2483.5	6.22	32.29	39.53	45.49	44.47	74.00	-29.53	Horizontal
2500	5.76	32.30	39.15	47.49	46.40	74.00	-27.60	Horizontal
4924	10.53	34.01	40.90	49.50	53.14	74.00	-20.86	Horizontal
7386	12.68	35.99	40.11	45.49	54.05	74.00	-19.95	Horizontal
9848	14.13	37.17	38.01	42.15	55.44	74.00	-18.56	Horizontal
12310	17.71	38.99	39.41	44.59	61.88	74.00	-12.12	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over limit (dB)	polarization
2483.5	6.22	32.29	39.53	33.28	32.26	54.00	-21.74	Vertical
2500	5.76	32.30	39.15	33.49	32.40	54.00	-21.60	Vertical
4924	10.53	34.01	40.90	33.20	36.84	54.00	-17.16	Vertical
7386	12.68	35.99	40.11	32.56	41.12	54.00	-12.88	Vertical
9848	14.13	37.17	38.01	29.57	42.86	54.00	-11.14	Vertical
12310	17.71	38.99	39.41	29.17	46.46	54.00	-7.54	Vertical
2483.5	6.22	32.29	39.53	32.56	31.54	54.00	-22.46	Horizontal
2500	5.76	32.30	39.15	34.19	33.10	54.00	-20.90	Horizontal
4924	10.53	34.01	40.90	33.80	37.44	54.00	-16.56	Horizontal
7386	12.68	35.99	40.11	33.25	41.81	54.00	-12.19	Horizontal
9848	14.13	37.17	38.01	29.23	42.52	54.00	-11.48	Horizontal
12310	17.71	38.99	39.41	27.50	44.79	54.00	-9.21	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor.

Remark: No any other emissions level which are attenuated less than 20dB below the limit

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.

The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

For this intentional radiator operates below 25 GHz. The spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the 6th harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 6th harmonic.

Remark:

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

TEST RESULTS: The unit does meet the FCC requirements.

5.3.3 Occupied Bandwidth

Test Requirement:	FCC 15.247(a2)
Test Method:	ANSI C63.4:2003 and KDB558074
Select test data rate:	11Mbps(802.11 b) & 54Mbps(802.11g)
Requirements:	15.247 (a2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel was (were) selected for the final test as listed below. 802.11b 11Mbps and 802.11g 54Mbps

Method of measurement:

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB. Analyzer and the attached plot were taken. The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance with FCC 47CFR 15.247 requirements.

Test results:**1. The EUT communicating with 802.11b Mode**

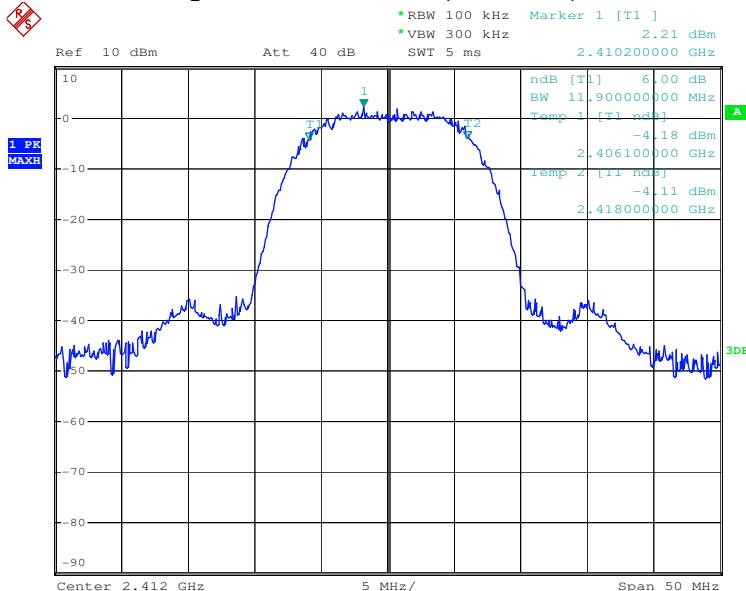
CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
2412	11.90	0.5	Pass
2437	11.50	0.5	Pass
2462	12.32	0.5	Pass

2. The EUT communicating with 802.11g Mode

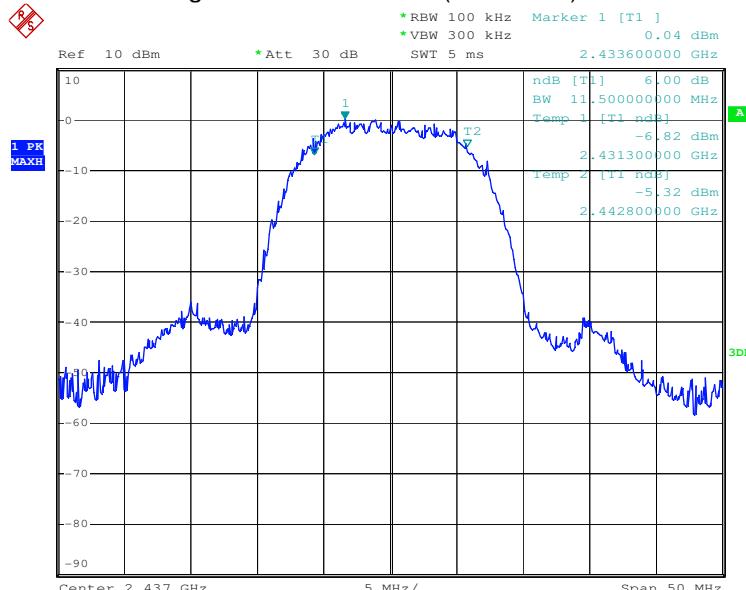
CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
2412	16.60	0.5	Pass
2437	16.60	0.5	Pass
2462	16.60	0.5	Pass

Conclusion: The unit does meet the FCC requirements.

Please refer to the graph as below:

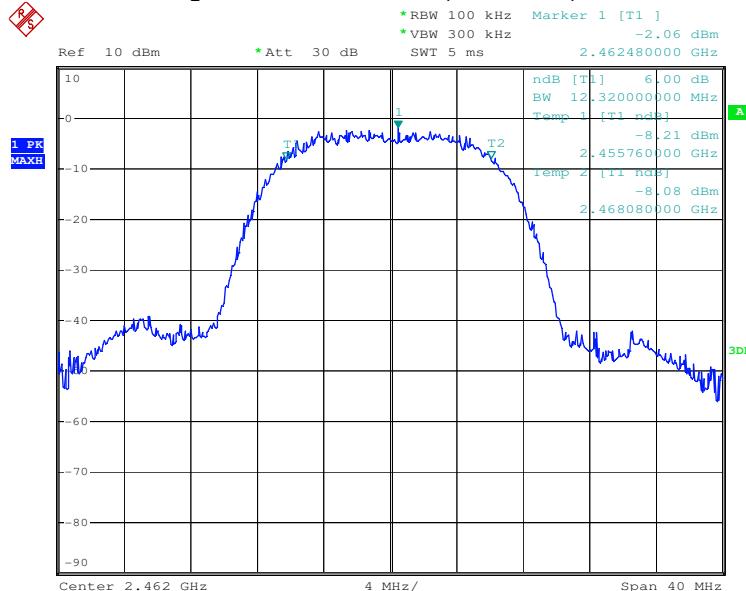
1. For EUT communicating with 802.11b mode (2.412GHz)


Date: 3.SEP.2009 08:27:26

2. For EUT communicating with 802.11b mode (2.437GHz)


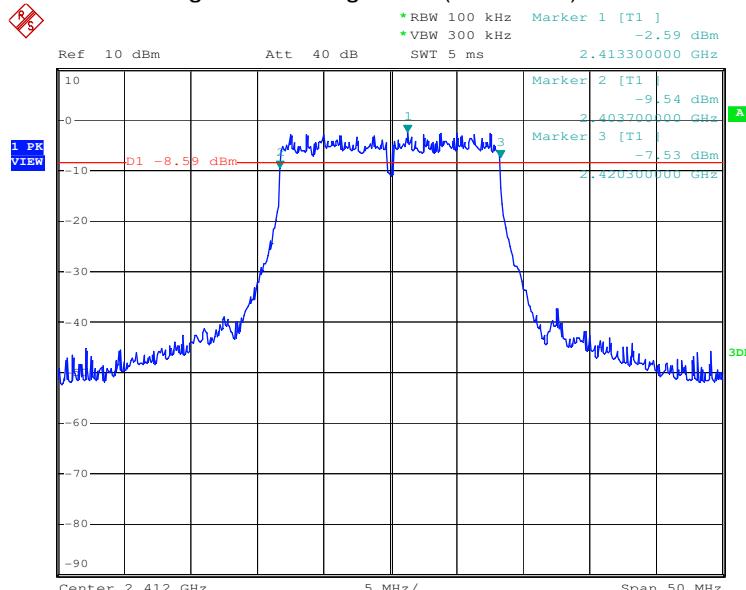
Date: 3.SEP.2009 08:56:50

3. For EUT communicating with 802.11b mode (2.462GHz)



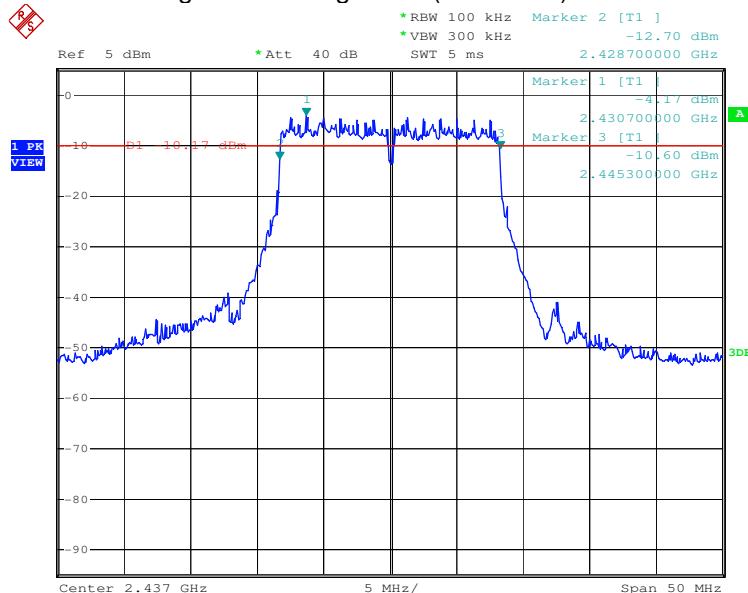
Date: 3.SEP.2009 09:15:50

4. For EUT communicating with 802.11g mode (2.412GHz)



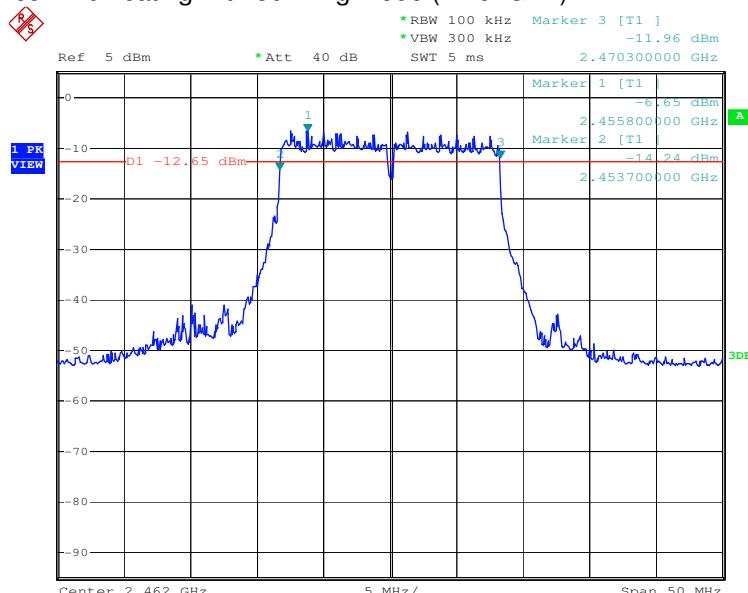
Date: 3.SEP.2009 09:36:29

5. For EUT communicating with 802.11g mode (2.437GHz)



Date: 3.SEP.2009 10:33:59

6. For EUT communicating with 802.11g Mode (2.462GHz)



Date: 3.SEP.2009 10:38:30

5.3.4 Maximum Peak Output Power

Test Requirement: FCC 15.247(b)

Test Method: ANSI C63.4:2003 and KDB558074.

Method of measurement: The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Select test data rate: 11Mbps(802.11b) & 54Mbps(802.11g)

Test Procedure:

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
802.11b 11Mbps and 802.11g 54Mbps.

Requirements:

Regulation 15.247 (b) The Limit of Maximum Peak Output Power Measurement is 30dBm.

Test Result:

For EUT communicating with 802.11b Mode

Channel (GHz)	Peak Output Power (dBm)	Cable loss (dB)	Power level(dBm)	Limit (dBm)	Margin (dB)
2.412	18.66	1.50	20.16	30.00	9.84
2.437	17.26	1.50	18.76	30.00	11.24
2.462	14.85	1.50	16.35	30.00	13.65

For EUT communicating with 802.11g Mode

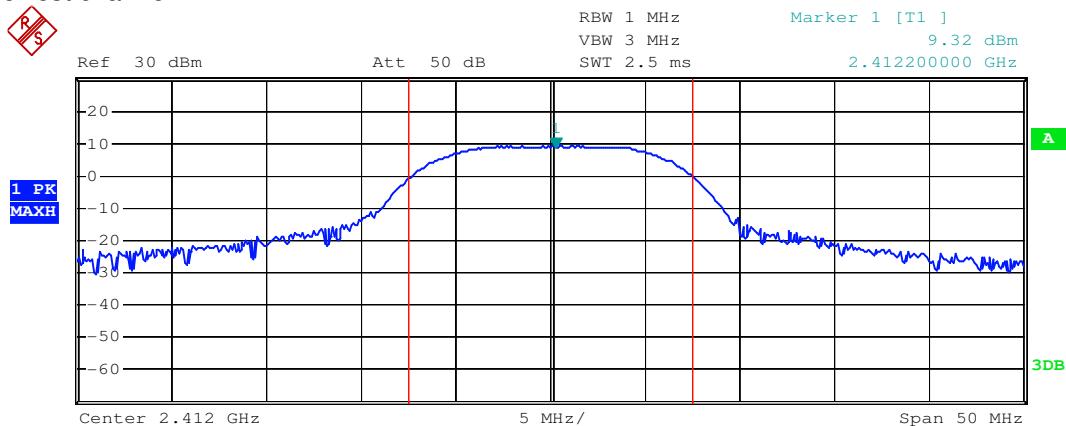
Channel (GHz)	Peak Output Power (dBm)	Cable loss (dB)	Power level(dBm)	Limit (dBm)	Margin (dB)
2.412	17.49	1.50	18.99	30.00	11.01
2.437	15.93	1.50	17.43	30.00	12.57
2.462	13.95	1.50	15.45	30.00	14.55

Test result: The unit does meet the FCC requirements.

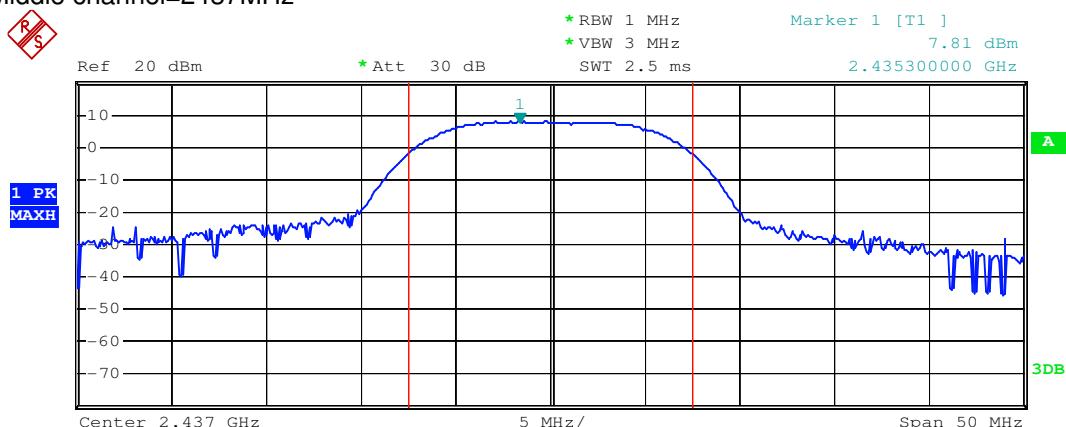
Test result plot as follows:

The EUT communicating with 802.11b Mode

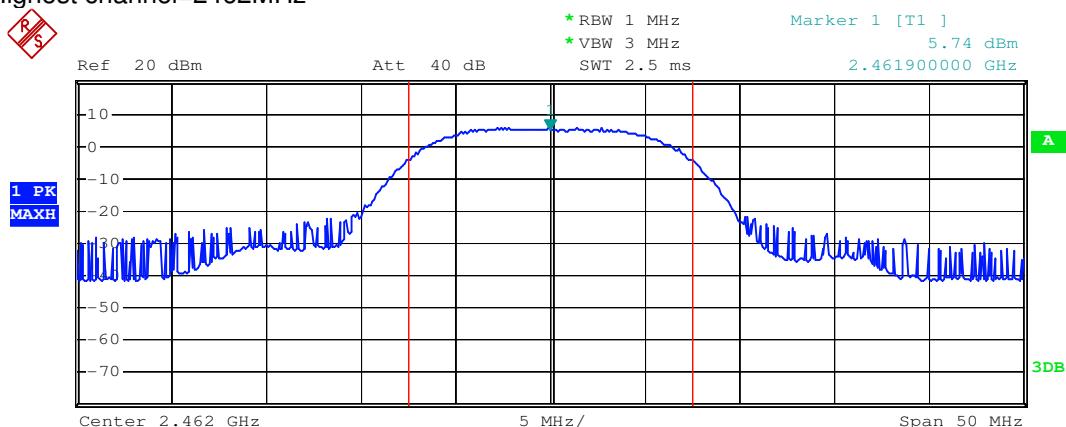
Lowest channel=2412MHz


Tx Channel
Bandwidth 15 MHz Power 18.66 dBm

Middle channel=2437MHz

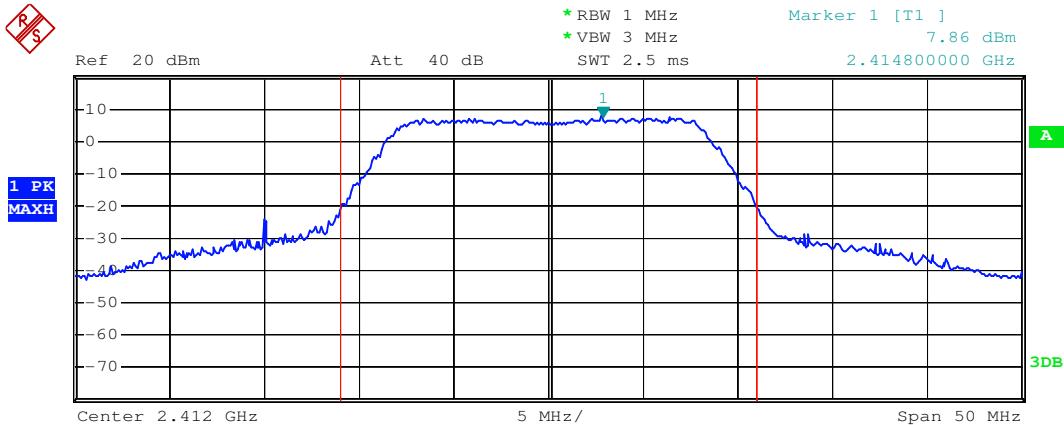

Tx Channel
Bandwidth 15 MHz Power 17.26 dBm

Highest channel=2462MHz

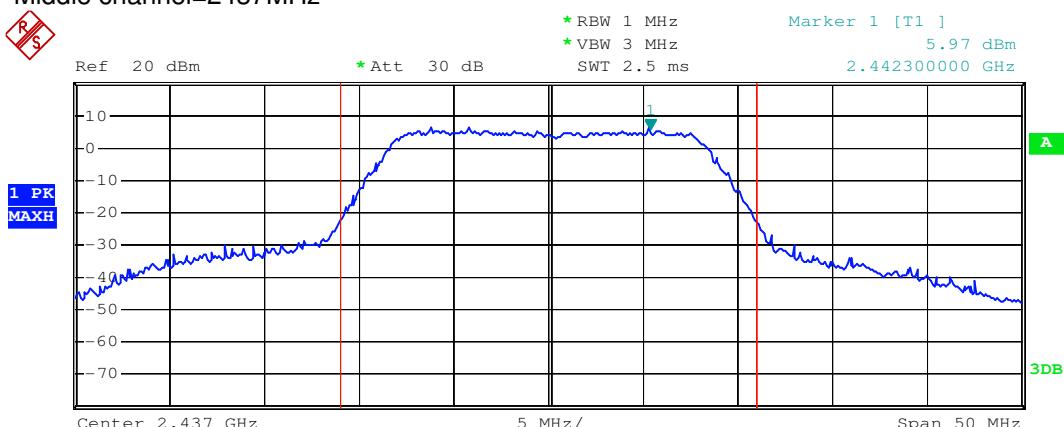

Tx Channel
Bandwidth 15 MHz Power 14.85 dBm

The EUT communicating with 802.11g Mode

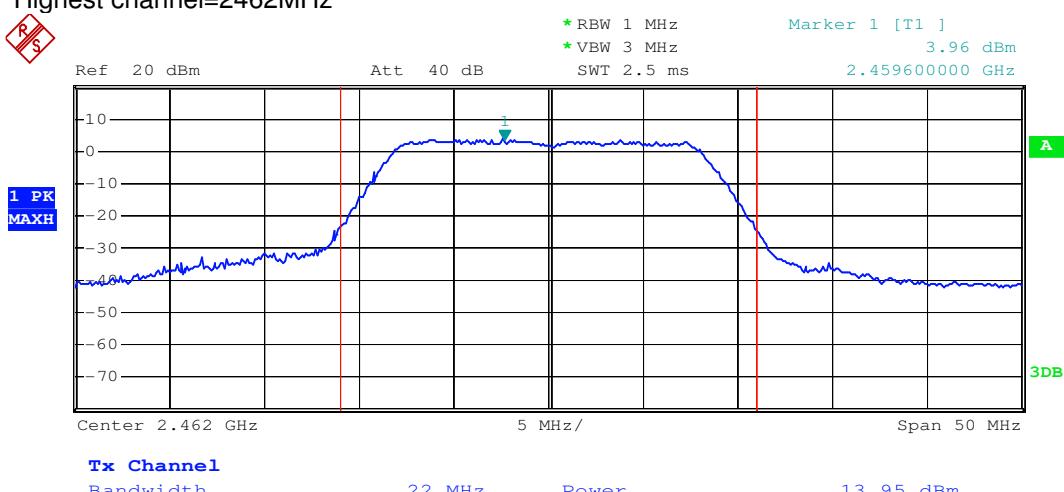
Lowest channel=2412MHz



Middle channel=2437MHz



Highest channel=2462MHz


Conclusion: The EUT meets the requirements of this section.

5.3.5 Band Edges Measurement

Test Requirement: FCC Part15 C Section 15.247(d)

Test Method: ANSI C63.4; FCC Part15 C Section 15.247:
KDB Publication No. 558074 for DSS

Select test mode: 802.11 b 11Mbps & 802.11g 54Mbps

Requirements:

Regulation 15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

Test Procedures:

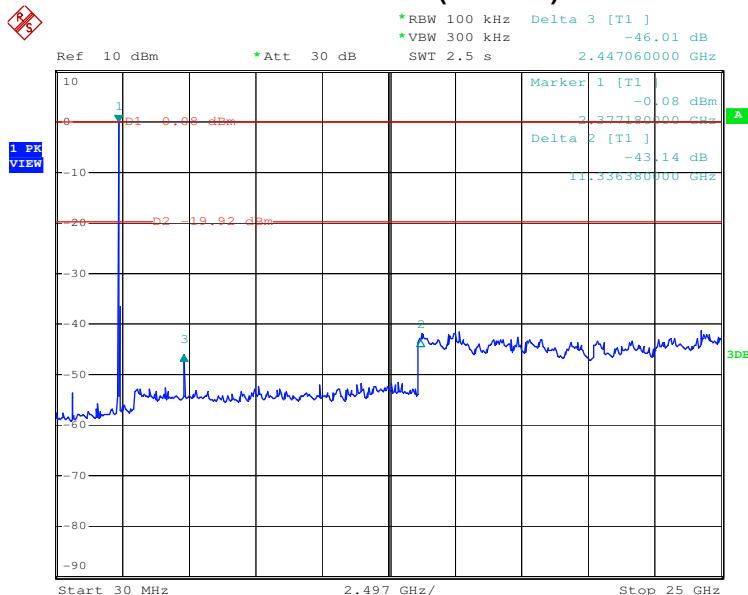
Procedure: The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

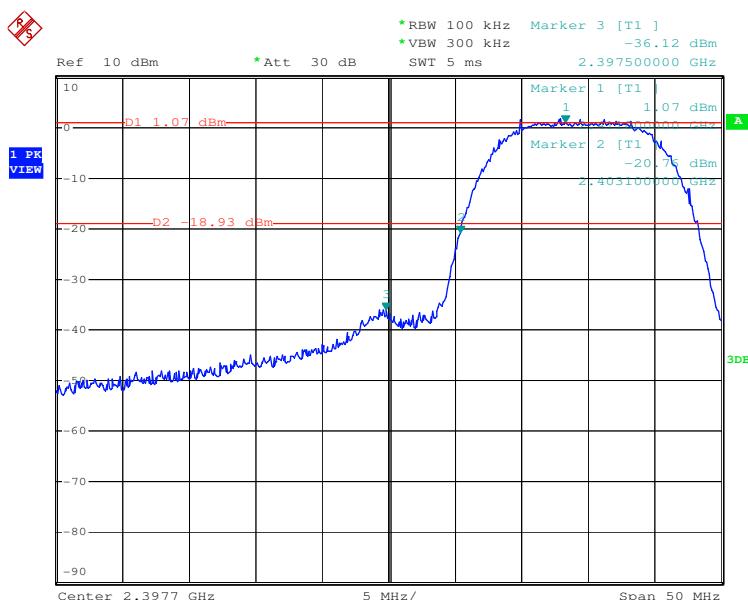
802.11b 11Mbps and 802.11g 54Mbps

Test Result:

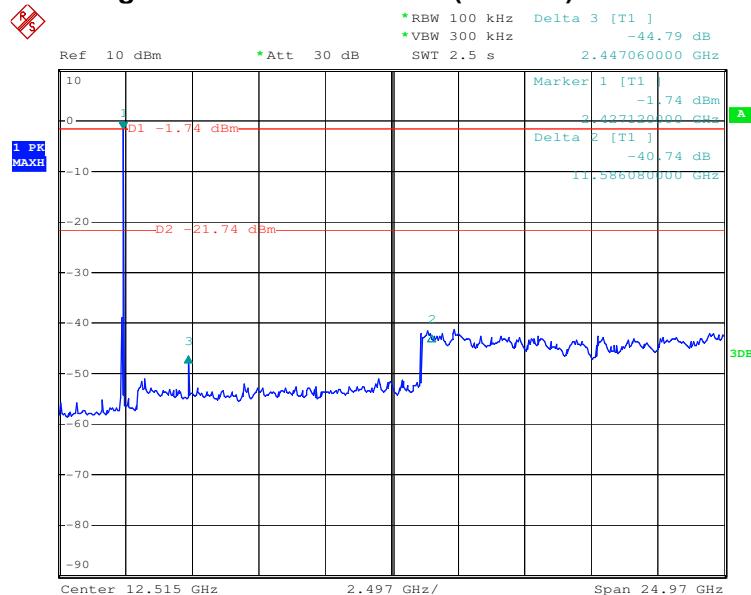
Please refer to the measurement graph and data.

Transmitting mode in lowest channel=2412MHz (802.11b)


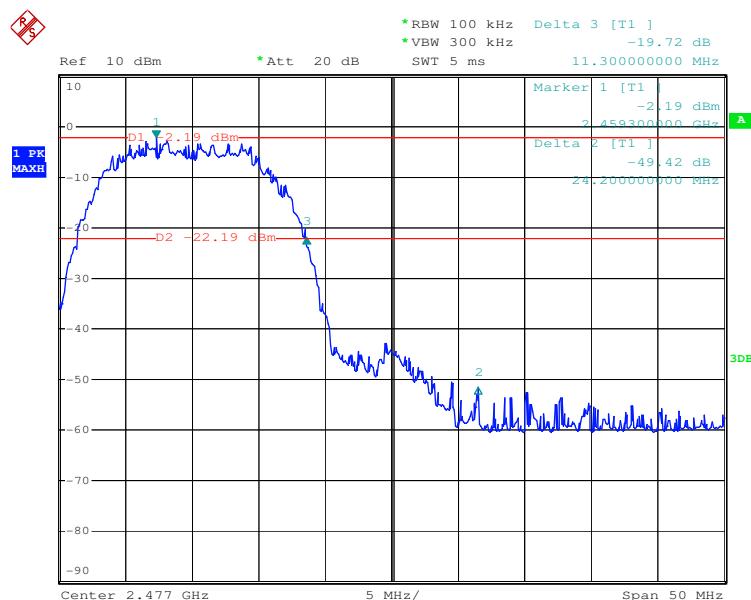
Date: 3.SEP.2009 08:43:53



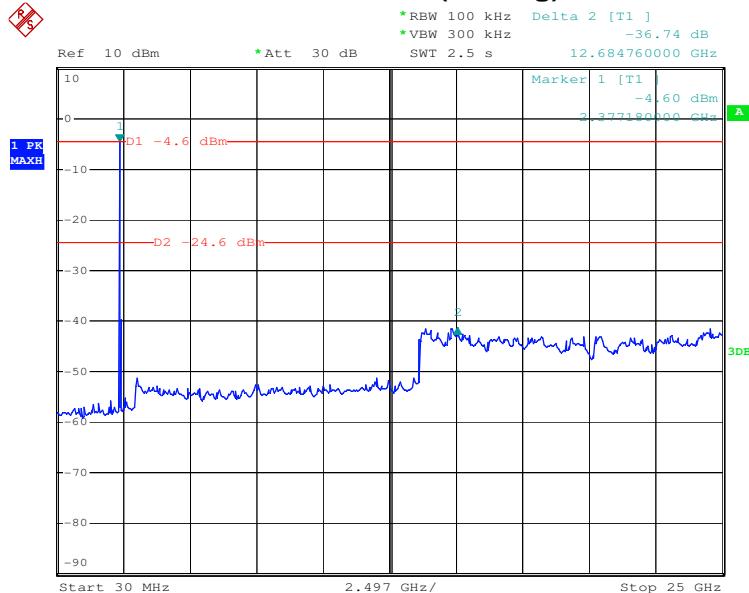
Date: 3.SEP.2009 08:36:27

Transmitting mode in highest channel=2462MHz (802.11b)


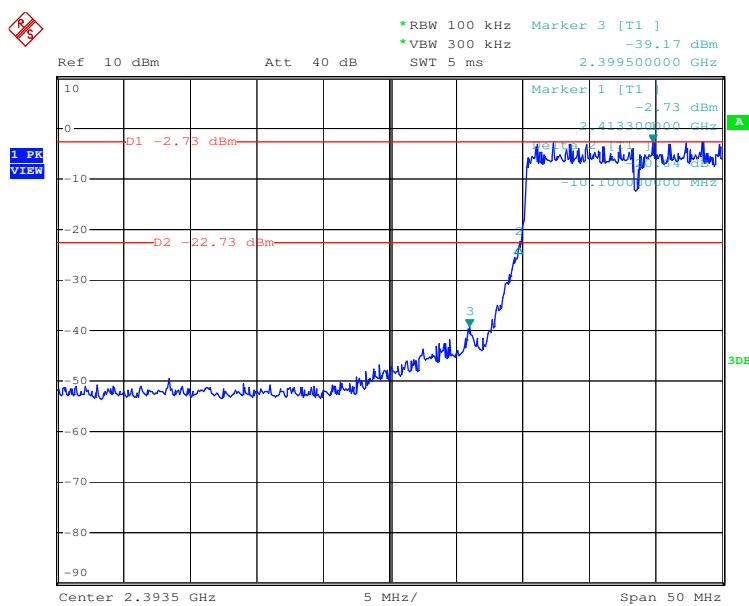
Date: 3.SEP.2009 09:10:24



Date: 3.SEP.2009 09:28:56

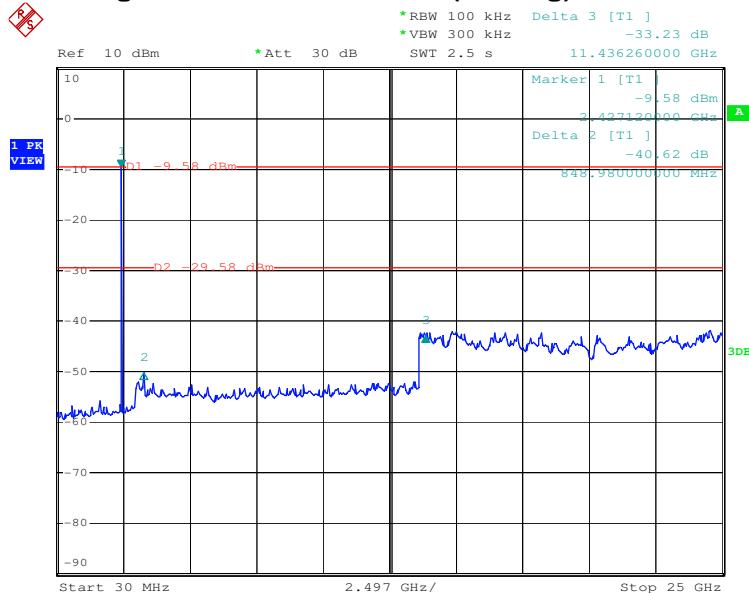
Transmitting mode in lowest channel=2412MHz (802.11g)


Date: 3.SEP.2009 10:18:06

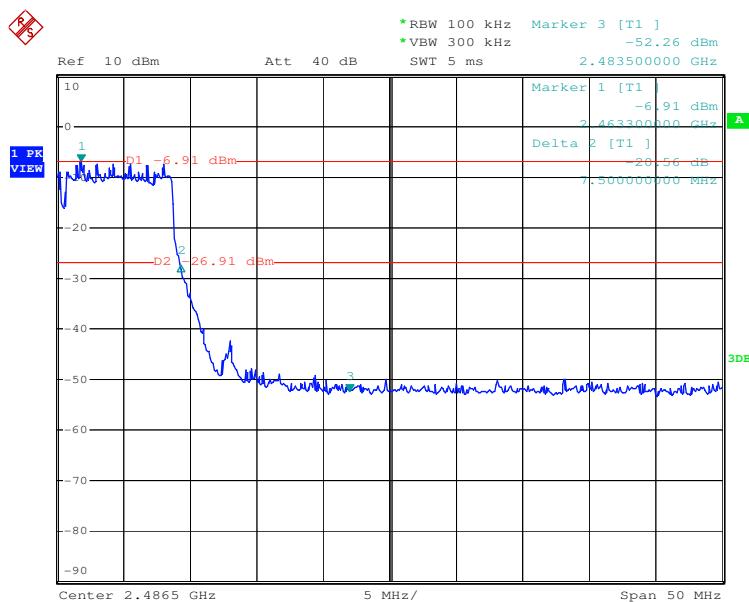


Date: 3.SEP.2009 10:16:14

Transmitting mode in highest channel=2462MHz (802.11g)



Date: 3.SEP.2009 10:46:45



Date: 3.SEP.2009 10:45:21

5.3.6 Power Spectral Density Measurement

Test Requirement: FCC 15.247(d)

Test Method: ANSI C63.4: 2003 and KDB Publication No. 558074 for DSS.

Regulation 15.247 (d) for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

Test Procedures:

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
802.11b 11Mbps and 802.11g 54Mbps

The EUT was set transmitting continuously and force selection of output power level and channel number. We'd observed that the peak levels aren't greater than +8dBm limit.

The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Test Result:1. For EUT communicating with 802.11b Mode

Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable loss (dB)	Power Spectral Density level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-11.94	1.50	-10.44	8.00	18.44
2437	-12.07	1.50	-10.57	8.00	18.57
2462	-15.71	1.50	-14.21	8.00	22.21

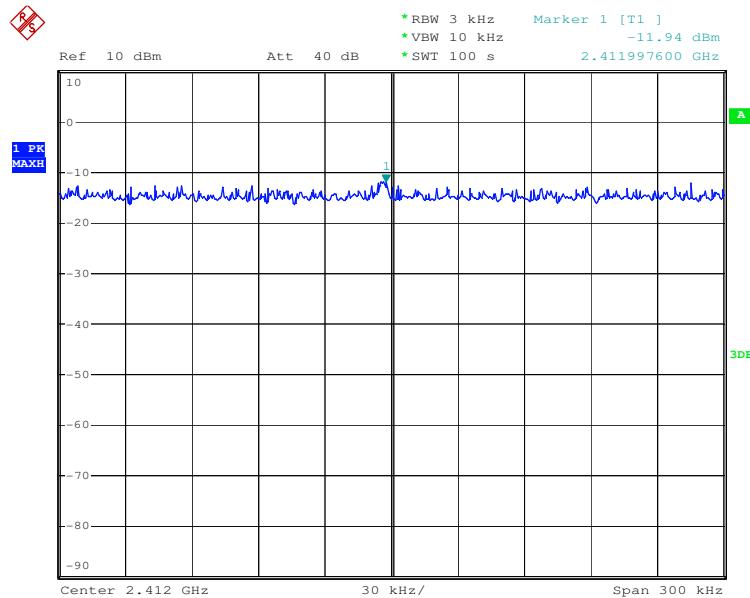
2. For EUT communicating with 802.11g Mode

Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable loss (dB)	Power Spectral Density level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-20.35	1.50	-18.85	8.00	26.85
2437	-22.14	1.50	-20.64	8.00	28.64
2462	-24.32	1.50	-22.82	8.00	30.82

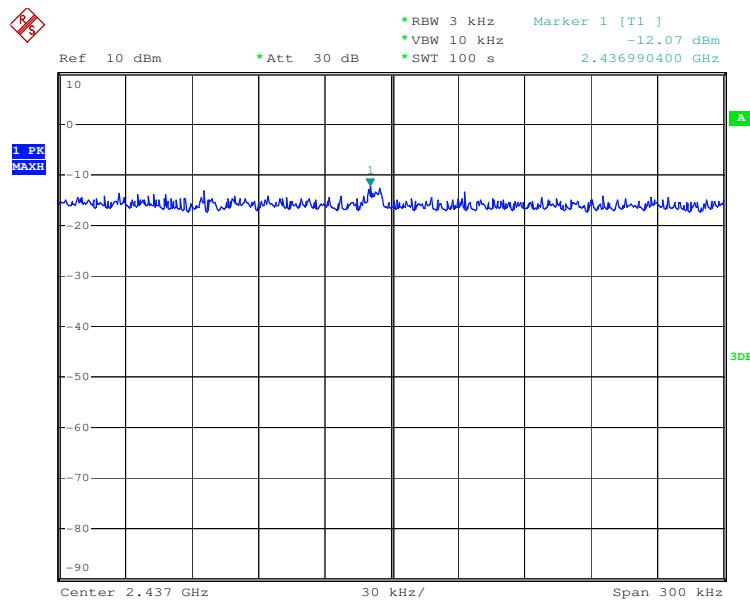
Conclusion:

The EUT meets the requirements of this section.

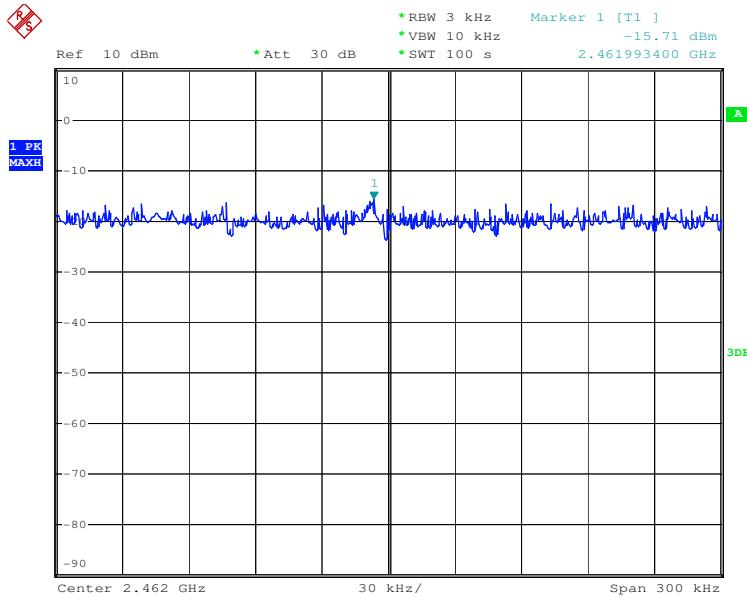
Please refer to the graph and data as below:

802.11b mode:
2412MHz


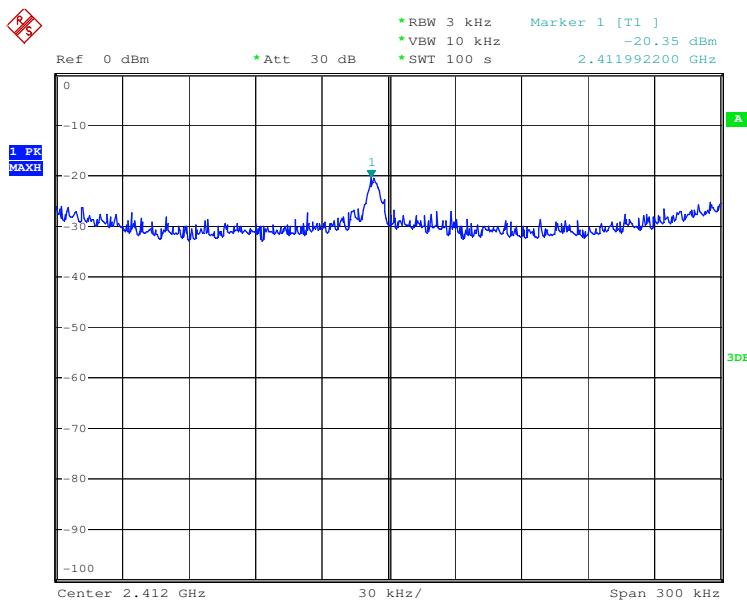
Date: 3.SEP.2009 08:31:59

2437MHz


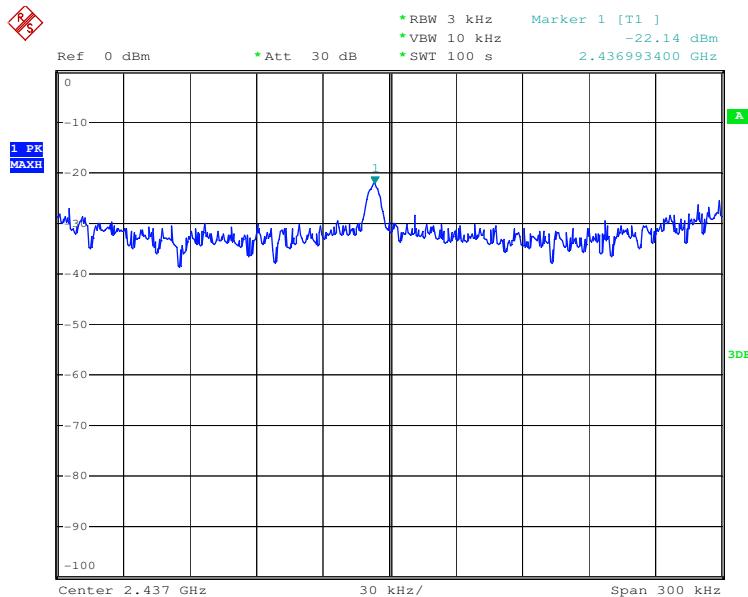
Date: 3.SEP.2009 09:02:37

2462MHz


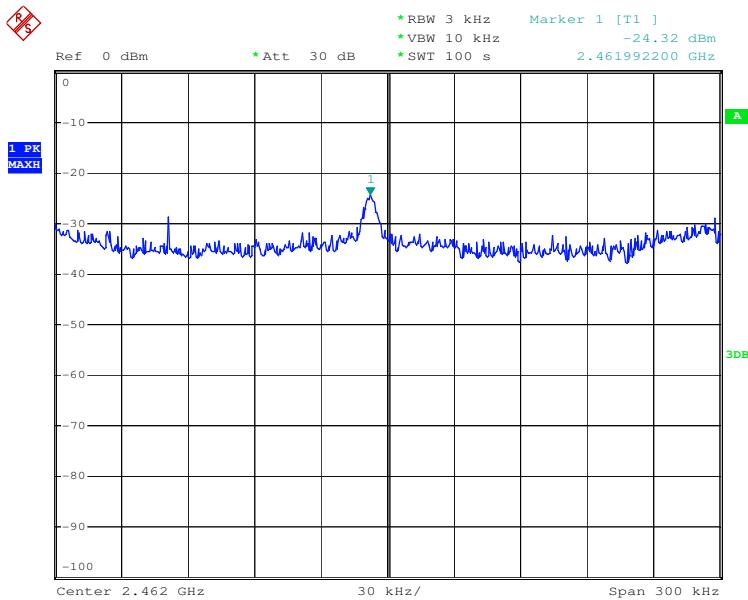
Date: 3.SEP.2009 09:21:50

**802.11g mode:
2412MHz**


Date: 3.SEP.2009 10:22:29

2437MHz


Date: 3.SEP.2009 10:29:46

2462MHz


Date: 3.SEP.2009 10:50:48

5.3.7 Antenna Requirement

Standard requirement

15.203 requirement:

For intentional device. 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.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz bands that are used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna

The best case gain of the antenna is 0 dBi.