SGS-CSTC Standards Technical Services Ltd

No.198 Kezhu Road, Science Town Economic& Technology
Development District Guangzhou, China 510663
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TEST REPORT

Application No.:	SZEMO081105705RF
Applicant/ Manufacturer:	King Champion Industries Ltd.
Address of Applicant:	Unit 1520, Phase, 1 Metro Centre, 32 Lam Hing Street, Kowloon Bay, Kowloon, Hong Kong
FCC ID:	VSAKP100IB0001
Fundamental Carrier Frequency :	2.412GHz to 2.462GHz
Equipment Under Test (EUT):	
Name:	Internet Radio
Model No.:	MX-150i
Rated Voltage:	100V-240V
Standards:	FCC PART 15 Subpart C: 2008
Date of Receipt:	25 November 2008
Date of Test:	27 November to 11 December 2008
Date of Issue:	12 December 2008

Test Result :	**PASS ***

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

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Conducted Emissions	FCC PART 15:2008	Section 15.107 / 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

Remark:

1>.The test of the EUT was based on the report of SZEMO080904519RFF

2> The EUT in this report used the same FCC ID as the EUT in the report SZEMO080904519RFF.

3 Contents

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4 General Information

4.1 General Description of E.U.T.

Name:	Internet Radio
Item No.:	MX-150i
Frequency Range	802.11b/g:2412-2462MHz
Transfer Rate	802.11b mode: 1/2/5.5/11Mbps
	802.11g mode 6/9/12/18/24/36/48/54Mbps
Number of Channel	11 channels (802.11b & 802.11g)
Antenna Type;	Integral
Type of Modulation	802.11b DBPSK(1MHz), DQPSK(2MHz), CCK(5.5/11MHz), 802.11g OFDM(6MHz-54MHz)
Antenna Type	Integral

Verify the Frequency and Channel

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

Note:

1. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz. The locations of these frequencies one near the top, one near the middle and one near the bottom.

2. So all the items as followed in testing report are need to test these three frequencies with 802.11b and 802.11g modulation type respectively:

Top: Channel 1: 2412MHz.

Middle: Channel 6: 2437MHz.

Bottom: Channel 11: 2462 MHz.

4.2 Test Location

No.198 Kezhu Road, Science Town Economic& Technology Development District Guangzhou, China 510663
Telephone: +86 (0) 20 8215 5555 Fax: +86 (0) 20 8207 5059

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	16-06-2007	15-06-2009
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2007	11-12-2008
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2008	17-06-2009
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2008	11-08-2009
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	18-06-2008	17-06-2009
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0005	12-08-2008	11-08-2009
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	12-08-2008	11-08-2009
9	Pre-amplifier (1-18GHz)	Rohde & Schwarz	AFS42-00101 800-25-S-42	SEL0081	18-06-2008	17-06-2009
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002650-30-8P-44	SEL0080	18-06-2008	17-06-2009
11	Band filter	Amindeon	82346	SEL0094	18-06-2008	17-06-2009
12	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	15-06-2008	14-06-2009

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	18-06-2008	17-06-2009
3	ISN	Rohde & Schwarz	ENY 22 1109	EMC0114	18-06-2008	17-06-2009
4	ISN	Rohde & Schwarz	ENY 41 1110	EMC0115	18-06-2008	17-06-2009
5	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	18-06-2008	17-06-2009
6	Coaxial Cable	SGS	N/A	SEL0024	18-06-2008	17-06-2009

5.2 E.U.T. Operation

Power supply:	Input: AC 100-240V 50/60Hz 0.45A max
	Output: DC 9.0V 1.5A 13.5VA max
Test Voltage	120V AC
Operating Environment	
Temperature:	24 °C
Humidity:	52 % RH
Atmospheric Pressure:	1010 mbar

Operation:
Test the EUT as a product which Direct Sequence Spread Spectrum. The total channels are 11 channels (1 to 11 channels), the fundamental frequencies are from 2.412GHz to 2.462GHz.The test procedure provided by applicant enabled the EUT to transmit and receive data at lowest (Channel 1: 2.412GHz), middle (Channel 6: 2.437GHz), and highest channel (Channel 11: 2.462GHz), frequencies individually. Pre-test the entire frequencies mode and their power status, compliance test in the worse case: Channel 1, Channel 6, Channel 11 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).

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

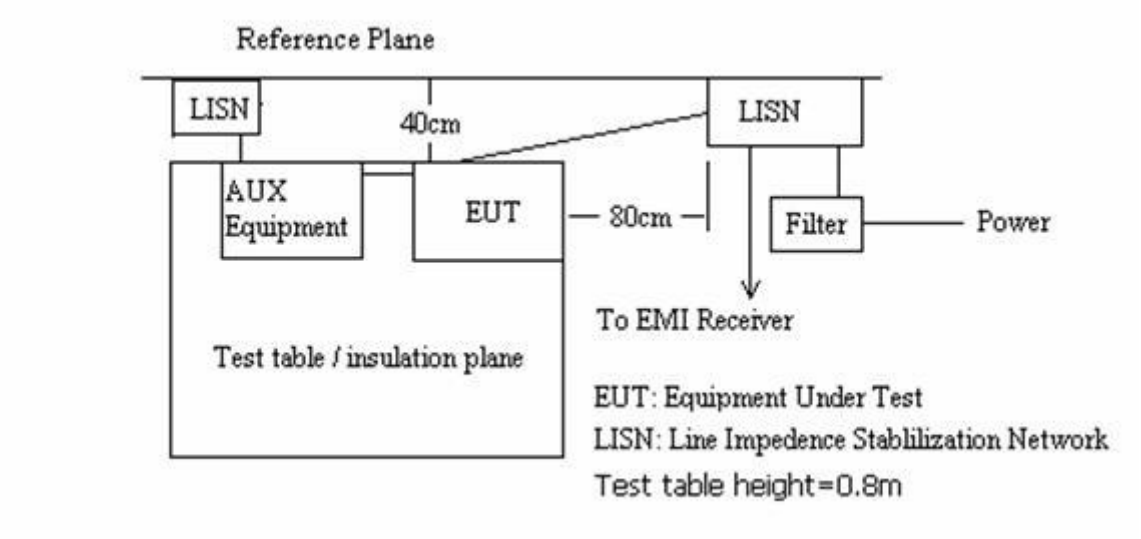
Operating Environment:

Temperature: 24 °C Humidity: 52 % RH Atmospheric Pressure: 1010 Mbar

EUT Operation: Test in normal 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



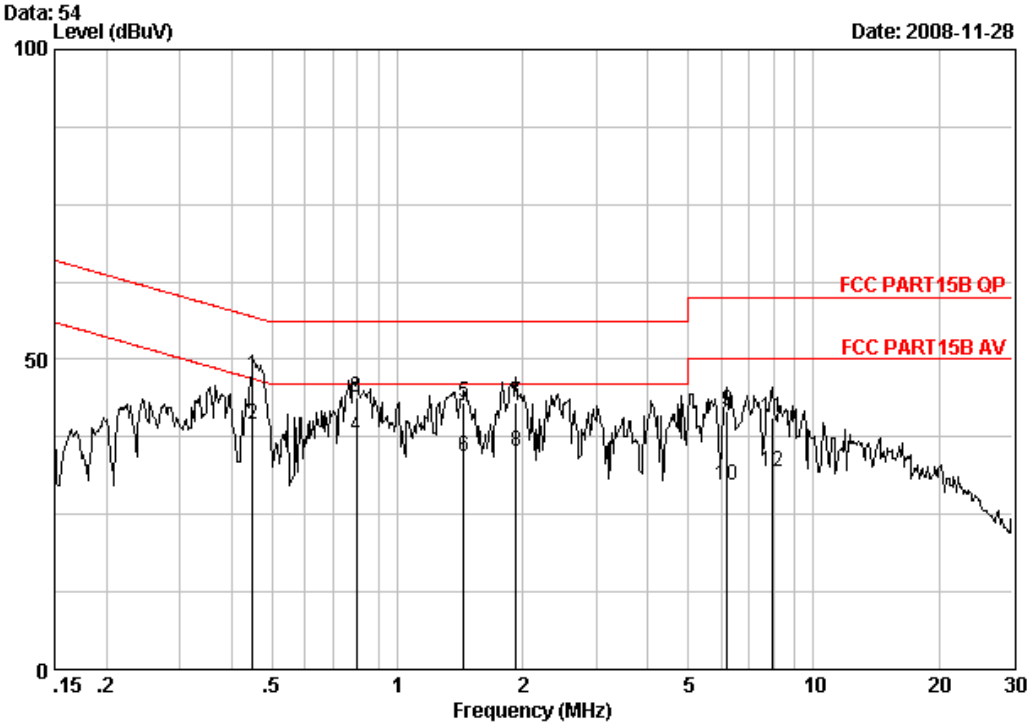
5.3.1.1 Measurement Data

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:

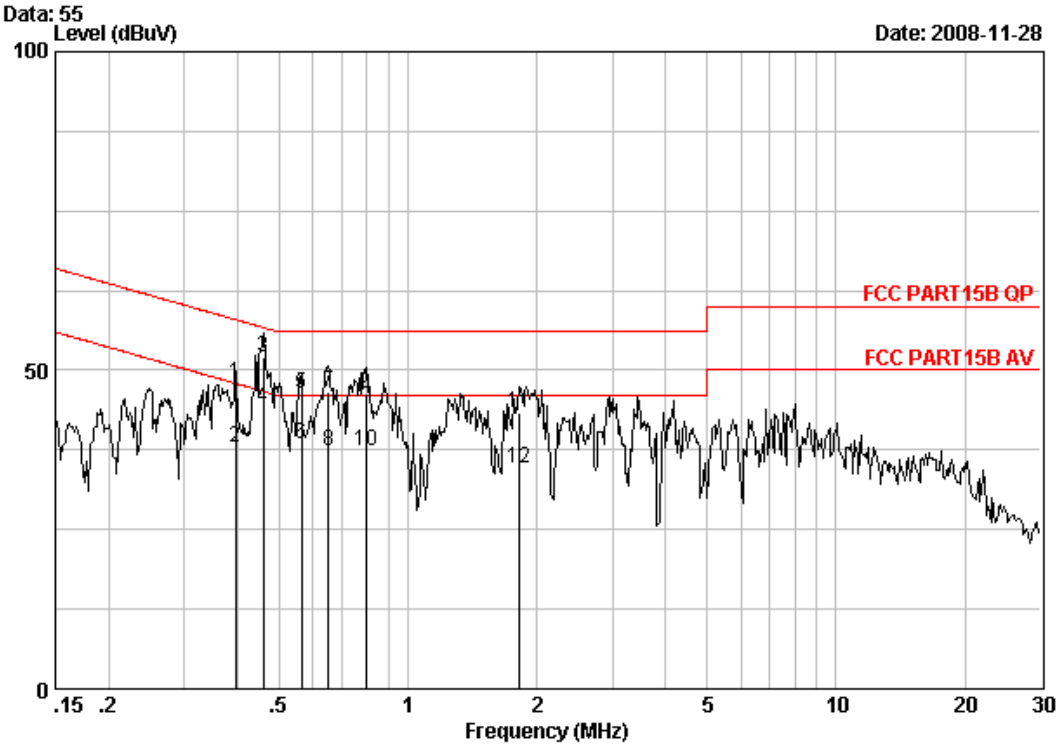
Live Line



Site : Shielding Room
Condition : FCC PART15B QP CE NEUTRAL
EUT : Internet Radio
Job No. : 5705RF
Test Mode : WIFI

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.44916	0.06	-0.04	47.36	47.38	56.89	-9.51	QP
2	0.44916	0.06	-0.04	39.40	39.42	46.89	-7.47	Average
3	0.79600	0.07	-0.04	43.75	43.77	56.00	-12.23	QP
4	0.79600	0.07	-0.04	37.45	37.47	46.00	-8.53	Average
5	1.441	0.10	-0.05	42.96	43.00	56.00	-13.00	QP
6	1.441	0.10	-0.05	34.28	34.33	46.00	-11.67	Average
7	1.928	0.12	-0.06	43.09	43.15	56.00	-12.85	QP
8	1.928	0.12	-0.06	35.07	35.13	46.00	-10.87	Average
9	6.186	0.19	-0.15	41.60	41.64	60.00	-18.36	QP
10	6.186	0.19	-0.15	29.75	29.79	50.00	-20.21	Average
11	7.977	0.20	-0.21	40.49	40.48	60.00	-19.52	QP
12	7.977	0.20	-0.21	31.85	31.84	50.00	-18.16	Average

Neutral Line

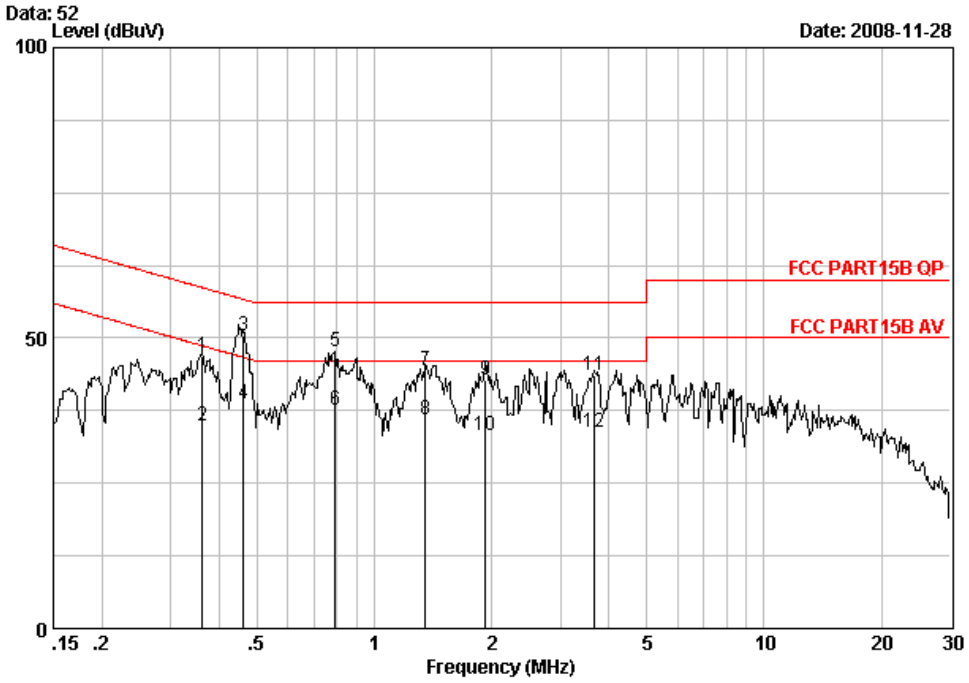


Site : Shielding Room
Condition : FCC PART15B QP CE LINE
EUT : Internet Radio
Job No. : 5705RF
Test Mode : WIFI

		Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1		0.39553	0.06	-0.04	47.85	47.86	57.95	-10.08	QP
2		0.39553	0.06	-0.04	37.87	37.88	47.95	-10.07	Average
3		0.45878	0.06	-0.04	51.93	51.95	56.71	-4.77	QP
4	@	0.45878	0.06	-0.04	44.25	44.27	46.71	-2.45	Average
5		0.56409	0.06	-0.04	46.19	46.21	56.00	-9.79	QP
6		0.56409	0.06	-0.04	38.31	38.33	46.00	-7.67	Average
7		0.65084	0.06	-0.05	46.64	46.66	56.00	-9.34	QP
8		0.65084	0.06	-0.05	37.28	37.29	46.00	-8.71	Average
9		0.79600	0.07	-0.05	46.25	46.27	56.00	-9.73	QP
10		0.79600	0.07	-0.05	37.28	37.30	46.00	-8.70	Average
11		1.819	0.11	-0.06	43.40	43.45	56.00	-12.55	QP
12		1.819	0.11	-0.06	34.65	34.70	46.00	-11.30	Average

LAN mode:

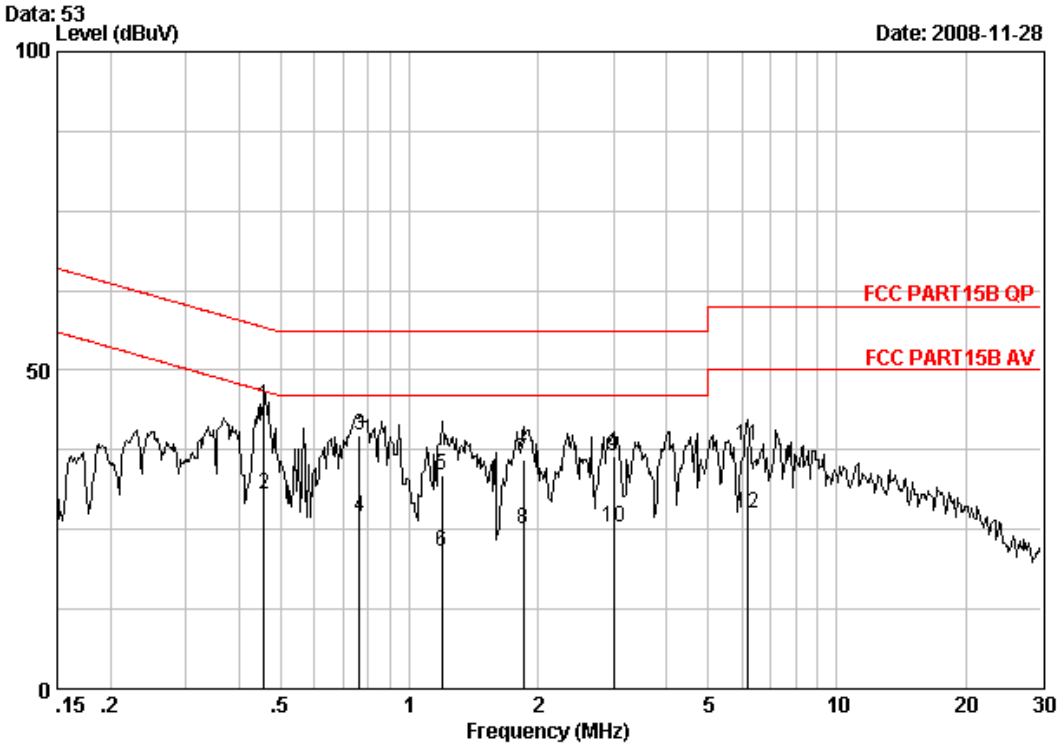
Live Line:



Site : Shielding Room
Condition : FCC PART15B QP CE LINE
EUT : Internet Radio
Job No. : 5705RF
Test Mode : LAN

		Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	@	0.36146	0.05	-0.04	46.80	46.81	58.69	-11.88	QP
2		0.36146	0.05	-0.04	34.87	34.89	48.69	-13.81	Average
3	@	0.46040	0.06	-0.04	50.50	50.52	56.69	-6.17	QP
4	@	0.46040	0.06	-0.04	38.60	38.62	46.69	-8.07	Average
5	@	0.79180	0.07	-0.04	47.65	47.68	56.00	-8.32	QP
6	@	0.79180	0.07	-0.05	37.50	37.52	46.00	-8.48	Average
7	@	1.352	0.10	-0.05	44.47	44.52	56.00	-11.48	QP
8	@	1.352	0.10	-0.05	35.80	35.84	46.00	-10.16	Average
9		1.928	0.12	-0.06	42.73	42.79	56.00	-13.21	QP
10		1.928	0.12	-0.06	33.20	33.26	46.00	-12.74	Average
11		3.661	0.15	-0.09	43.44	43.50	56.00	-12.50	QP
12	@	3.661	0.15	-0.09	33.60	33.67	46.00	-12.33	Average

Neutral Line



Site : Shielding Room
Condition : FCC PART15B QP CE NEUTRAL
EUT : Internet Radio
Job No. : 5705RF
Test Mode : LAN

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 @	0.45636	0.06	-0.04	44.30	44.32	56.76	-12.44	QP
2	0.45636	0.06	-0.04	30.50	30.52	46.76	-16.24	Average
3	0.76297	0.06	-0.04	39.80	39.82	56.00	-16.18	QP
4	0.76297	0.06	-0.04	26.90	26.92	46.00	-19.08	Average
5	1.191	0.09	-0.05	33.50	33.54	56.00	-22.46	QP
6	1.191	0.09	-0.05	21.40	21.44	46.00	-24.56	Average
7	1.848	0.11	-0.06	36.01	36.07	56.00	-19.93	QP
8	1.848	0.11	-0.06	25.14	25.20	46.00	-20.80	Average
9	3.009	0.14	-0.08	36.39	36.45	56.00	-19.55	QP
10	3.009	0.14	-0.08	25.34	25.40	46.00	-20.60	Average
11	6.186	0.19	-0.15	38.24	38.28	60.00	-21.72	QP
12	6.186	0.19	-0.15	27.41	27.45	50.00	-22.55	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 & DA 00-705
Select test mode:	802.11 b 1Mbps & 802.11g 6Mbps
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 dBμV/m between 30MHz & 88MHz
	43.5 dBμV/m between 88MHz & 216MHz
	46.0 dBμV/m between 216MHz & 960MHz
	above 960MHz: Average value Limit 54.0 dBμV/m
	Peak value Limit 74.0 dBμV/m.

Test Configuration

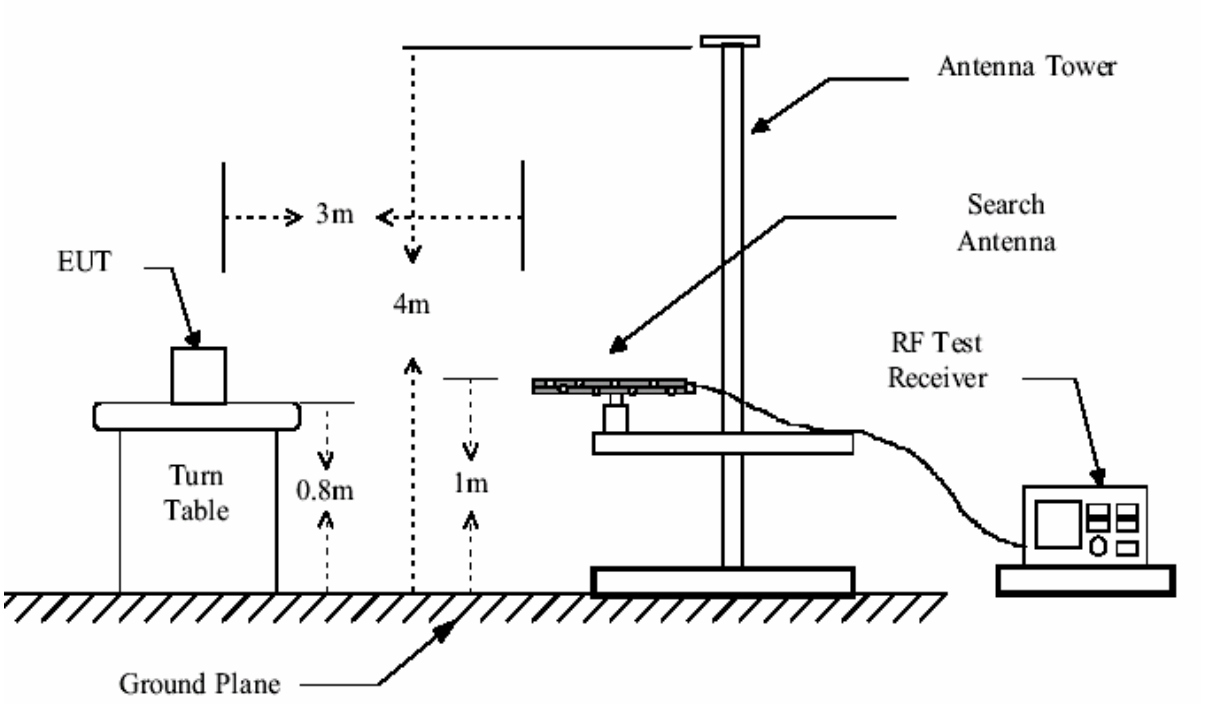


Figure1: 30MHz to 1GHz radiated emissions test configuration

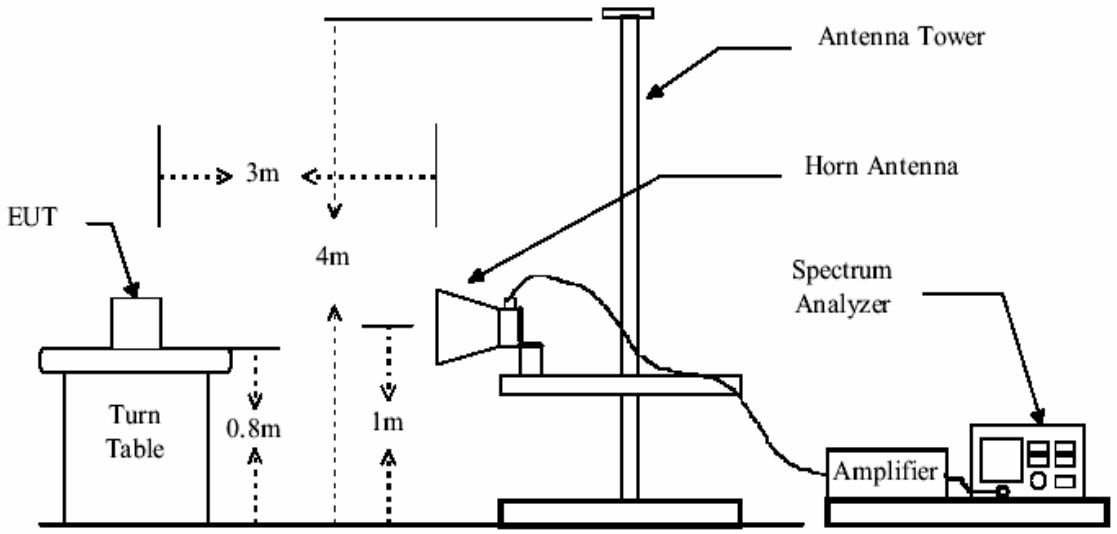


Figure 2: Above 1GHz radiated emissions test configuration

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. 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 WIFI mode.

Vertical

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)
87.230	1.10	8.45	27.96	46.55	28.14	40.00	-11.86
202.660	1.42	10.32	27.14	48.72	33.32	43.50	-10.18
263.770	1.74	12.59	26.86	48.98	36.45	46.00	-9.55
288.020	1.85	13.40	26.76	47.16	35.65	46.00	-10.35
519.850	2.62	18.39	27.69	36.80	30.12	46.00	-15.88
669.230	2.84	21.24	27.38	40.74	37.44	46.00	-8.56

Horizontal

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)
163.860	1.34	9.56	27.36	46.47	30.01	43.50	-13.49
191.020	1.39	10.11	27.20	45.79	30.09	43.50	-13.41
269.590	1.77	12.70	26.83	55.56	43.20	46.00	-2.80
365.620	2.10	15.78	27.20	49.41	40.09	46.00	-5.91
416.060	2.27	16.36	27.46	47.75	38.92	46.00	-7.08
669.230	2.84	21.24	27.38	37.58	34.28	46.00	-11.72

Test in LAN mode.

Vertical

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)
122.150	1.26	7.85	27.67	54.38	35.82	43.50	-7.68
191.020	1.39	10.11	27.20	53.89	38.19	43.50	-5.31
219.150	1.51	11.18	27.05	54.24	39.88	46.00	-6.12
264.740	1.74	12.61	26.85	51.22	38.72	46.00	-7.28
575.140	2.68	19.10	27.64	48.03	42.17	46.00	-3.83
669.230	2.84	21.24	27.38	45.95	42.65	46.00	-3.35

Horizontal

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)
123.120	1.26	7.84	27.66	51.15	32.59	43.50	-10.91
265.343	1.75	12.61	26.85	56.00	43.51	46.00	-2.49
302.570	1.91	13.99	26.74	52.08	41.24	46.00	-4.76
370.470	2.12	15.91	27.22	50.89	41.70	46.00	-4.30
479.110	2.52	17.80	27.65	44.30	36.97	46.00	-9.03
575.140	2.68	19.10	27.64	43.82	37.96	46.00	-8.04

Test in IPOD mode.

Vertical

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)
82.380	1.10	7.95	27.99	49.20	30.26	40.00	-9.74
133.790	1.28	7.86	27.57	51.91	33.48	43.50	-10.02
160.950	1.34	9.59	27.38	48.15	31.70	43.50	-11.80
268.479	1.76	12.68	26.84	49.21	36.81	46.00	-9.19
374.098	2.13	15.97	27.25	46.50	37.35	46.00	-8.65
657.590	2.82	20.84	27.42	38.96	35.20	46.00	-10.80

Horizontal

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)
133.790	1.28	7.86	27.57	46.44	28.01	43.50	-15.49
163.860	1.34	9.56	27.36	49.16	32.70	43.50	-10.80
264.084	1.74	12.59	26.85	49.40	36.88	46.00	-9.12
374.080	2.13	15.97	27.25	52.00	42.85	46.00	-3.15
657.590	2.82	20.84	27.42	36.11	32.35	46.00	-13.65
808.910	3.25	22.21	26.89	34.83	33.40	46.00	-12.60

5.3.2.2 Transmitter emission above 1GHz

For EUT communicating with 802.11b Mode(2.412GHz)

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
2400.00	2.58	32.15	48.17	72.25	58.81	74.00	-15.19	Vertical
7239.00	3.15	36.25	44.48	60.27	55.19	74.00	-18.81	Vertical
9653.00	3.46	37.01	42.17	59.74	58.04	74.00	-15.96	Vertical
12050.00	3.82	38.82	43.37	59.68	58.95	74.00	-15.05	Vertical
2399.00	2.56	32.12	46.18	70.81	59.31	74.00	-14.69	Horizontal
7239.00	3.15	36.25	44.48	67.51	62.43	74.00	-11.57	Horizontal
9653.00	3.46	37.01	42.17	61.38	59.68	74.00	-14.32	Horizontal
12050.00	3.82	38.82	43.37	58.27	57.54	74.00	-16.46	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit	polarization
2400.00	2.58	32.15	48.17	55.28	41.84	54.00	-12.16	Vertical
7239.00	3.15	36.25	44.48	47.12	42.04	54.00	-11.96	Vertical
9653.00	3.46	37.01	42.17	42.46	40.76	54.00	-13.24	Vertical
12050.00	3.82	38.82	43.37	43.67	42.94	54.00	-11.06	Vertical
2399.00	2.56	32.12	46.18	53.14	41.64	54.00	-12.36	Horizontal
7239.00	3.15	36.25	44.48	46.97	41.89	54.00	-12.11	Horizontal
9653.00	3.46	37.01	42.17	42.78	41.08	54.00	-12.92	Horizontal
12050.00	3.82	38.82	43.37	44.07	43.34	54.00	-10.66	Horizontal

For EUT communicating with 802.11b Mode(2.437GHz)

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
4893.00	2.72	34.02	45.42	66.58	57.90	74.00	-16.10	Vertical
7324.00	3.16	36.10	44.39	63.49	58.36	74.00	-15.64	Vertical
9772.00	3.47	37.12	42.06	60.15	58.68	74.00	-15.32	Vertical
12203.00	3.84	38.93	43.57	59.46	58.66	74.00	-15.34	Vertical
4893.00	2.72	34.02	45.42	70.81	62.13	74.00	-11.87	Horizontal
7324.00	3.16	36.10	44.39	67.51	62.38	74.00	-11.62	Horizontal
9772.00	3.47	37.12	42.06	61.38	59.91	74.00	-14.09	Horizontal
12203.00	3.84	38.93	43.57	58.27	57.47	74.00	-16.53	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit	polarization
4893.00	2.72	34.02	45.42	48.66	39.98	54.00	-14.02	Vertical
7324.00	3.16	36.10	44.39	47.13	42.00	54.00	-12.00	Vertical
9772.00	3.47	37.12	42.06	41.09	39.62	54.00	-14.38	Vertical
12203.00	3.84	38.93	43.57	43.46	42.66	54.00	-11.34	Vertical
4893.00	2.72	34.02	45.42	49.01	40.33	54.00	-13.67	Horizontal
7324.00	3.16	36.10	44.39	47.32	42.19	54.00	-11.81	Horizontal
9772.00	3.47	37.12	42.06	42.14	40.67	54.00	-13.33	Horizontal
12203.00	3.84	38.93	43.57	44.67	43.87	54.00	-10.13	Horizontal

For EUT communicating with 802.11b Mode(2.462GHz)

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
2483.50	2.63	33.89	45.85	70.51	61.18	74.00	-12.82	Vertical
7239.00	3.15	36.25	44.48	65.84	60.76	74.00	-13.24	Vertical
9653.00	3.46	37.01	42.17	60.15	58.45	74.00	-15.55	Vertical
12050.00	3.82	38.82	43.37	59.68	58.95	74.00	-15.05	Vertical
2483.60	2.64	33.89	45.85	70.81	61.49	74.00	-12.51	Horizontal
4808.00	2.70	34.04	45.40	67.51	58.85	74.00	-15.15	Horizontal
7222.00	3.15	36.29	44.49	61.38	56.33	74.00	-17.67	Horizontal
12016.00	3.81	38.80	43.33	58.27	57.55	74.00	-16.45	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit	polarization
2483.50	2.63	33.89	45.85	54.76	45.43	54.00	-8.57	Vertical
7239.00	3.15	36.25	44.48	50.48	45.40	54.00	-8.60	Vertical
9653.00	3.46	37.01	42.17	47.18	45.48	54.00	-8.52	Vertical
12050.00	3.82	38.82	43.37	45.01	44.28	54.00	-9.72	Vertical
2483.60	2.64	33.89	45.85	53.48	44.16	54.00	-9.84	Horizontal
4808.00	2.70	34.04	45.40	50.17	41.51	54.00	-12.49	Horizontal
7222.00	3.15	36.29	44.49	48.96	43.91	54.00	-10.09	Horizontal
12016.00	3.81	38.80	43.33	46.08	45.36	54.00	-8.64	Horizontal

For EUT communicating with 802.11g Mode(2.412GHz)

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
2400.00	2.58	32.15	48.17	73.56	60.12	74.00	-13.88	Vertical
7239.00	3.15	36.25	44.48	64.52	59.44	74.00	-14.56	Vertical
9653.00	3.46	37.01	42.17	61.57	59.87	74.00	-14.13	Vertical
12050.00	3.82	38.82	43.37	59.68	58.95	74.00	-15.05	Vertical
2399.00	2.56	32.12	46.18	70.81	59.31	74.00	-14.69	Horizontal
7239.00	3.15	36.25	44.48	68.95	63.87	74.00	-10.13	Horizontal
9653.00	3.46	37.01	42.17	66.74	65.04	74.00	-8.96	Horizontal
12050.00	3.82	38.82	43.37	59.68	58.95	74.00	-15.05	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit (dB)	polarization
2400.00	2.58	32.15	48.17	56.68	43.24	54.00	-10.76	Vertical
7239.00	3.15	36.25	44.48	48.74	43.66	54.00	-10.34	Vertical
9653.00	3.46	37.01	42.17	48.15	46.45	54.00	-7.55	Vertical
12050.00	3.82	38.82	43.37	47.59	46.86	54.00	-7.14	Vertical
2399.00	2.56	32.12	46.18	57.15	45.65	54.00	-8.35	Horizontal
7239.00	3.15	36.25	44.48	47.29	42.21	54.00	-11.79	Horizontal
9653.00	3.46	37.01	42.17	46.58	44.88	54.00	-9.12	Horizontal
12050.00	3.82	38.82	43.37	45.89	45.16	54.00	-8.84	Horizontal

For EUT communicating with 802.11g Mode(2.437GHz)

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
4893.00	2.72	34.02	45.42	67.52	58.84	74.00	-15.16	Vertical
7324.00	3.16	36.10	44.39	65.38	60.25	74.00	-13.75	Vertical
9772.00	3.47	37.12	42.06	64.18	62.71	74.00	-11.29	Vertical
12203.00	3.84	38.93	43.57	63.58	62.78	74.00	-11.22	Vertical
4893.00	2.72	34.02	45.42	70.81	62.13	74.00	-11.87	Horizontal
7324.00	3.16	36.10	44.39	67.51	62.38	74.00	-11.62	Horizontal
9772.00	3.47	37.12	42.06	65.17	63.70	74.00	-10.30	Horizontal
12203.00	3.84	38.93	43.57	62.58	61.78	74.00	-12.22	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit (dB)	polarization
4893.00	2.72	34.02	45.42	51.66	42.98	54.00	-11.02	Vertical
7324.00	3.16	36.10	44.39	47.13	42.00	54.00	-12.00	Vertical
9772.00	3.47	37.12	42.06	43.09	41.62	54.00	-12.38	Vertical
12203.00	3.84	38.93	43.57	41.46	40.66	54.00	-13.34	Vertical
4893.00	2.72	34.02	45.42	51.01	42.33	54.00	-11.67	Horizontal
7324.00	3.16	36.10	44.39	46.32	41.19	54.00	-12.81	Horizontal
9772.00	3.47	37.12	42.06	42.14	40.67	54.00	-13.33	Horizontal
12203.00	3.84	38.93	43.57	40.67	39.87	54.00	-14.13	Horizontal

For EUT communicating with 802.11g Mode(2.437GHz)

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
2483.50	2.63	33.89	45.85	71.95	62.62	74.00	-11.38	Vertical
7426.00	3.18	35.91	44.28	67.48	62.29	74.00	-11.71	Vertical
9908.00	3.49	37.21	41.94	66.28	65.04	74.00	-8.96	Vertical
12390.00	3.86	39.04	43.80	65.49	64.59	74.00	-9.41	Vertical
2483.60	2.64	33.89	45.85	70.81	61.49	74.00	-12.51	Horizontal
7426.00	3.18	35.91	44.28	67.51	62.32	74.00	-11.68	Horizontal
9908.00	3.49	37.21	41.94	61.38	60.14	74.00	-13.86	Horizontal
12390.00	3.86	39.04	43.80	64.27	63.37	74.00	-10.63	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit (dB)	polarization
2483.50	2.63	33.89	45.85	51.78	42.45	54.00	-11.55	Vertical
7426.00	3.18	35.91	44.28	48.07	42.88	54.00	-11.12	Vertical
9908.00	3.49	37.21	41.94	43.71	42.47	54.00	-11.53	Vertical
12390.00	3.86	39.04	43.80	42.01	41.11	54.00	-12.89	Vertical
2483.60	2.64	33.89	45.85	51.46	42.14	54.00	-11.86	Horizontal
7426.00	3.18	35.91	44.28	47.20	42.01	54.00	-11.99	Horizontal
9908.00	3.49	37.21	41.94	42.77	41.53	54.00	-12.47	Horizontal
12390.00	3.86	39.04	43.80	42.08	41.18	54.00	-12.82	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.

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.

Remark:

1). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on

average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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

3) Protest the Bluetooth normal mode

4）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 4th harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 4th 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 mode:	802.11 b 1Mbps & 802.11g 6Mbps
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(s) was (were) selected for the final test as listed below.
802.11b 1Mbps and 802.11g 6Mbps

Equipment Mode	Spectrum Analyzer
Detector Function	Peak Mode
RBW	100KHz for 802.11b and 802.11g
VBW	300KHz for 802.11b and 802.11g

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
2.412	12.24	0.5	Pass
2.437	11.92	0.5	Pass
2.462	11.92	0.5	Pass

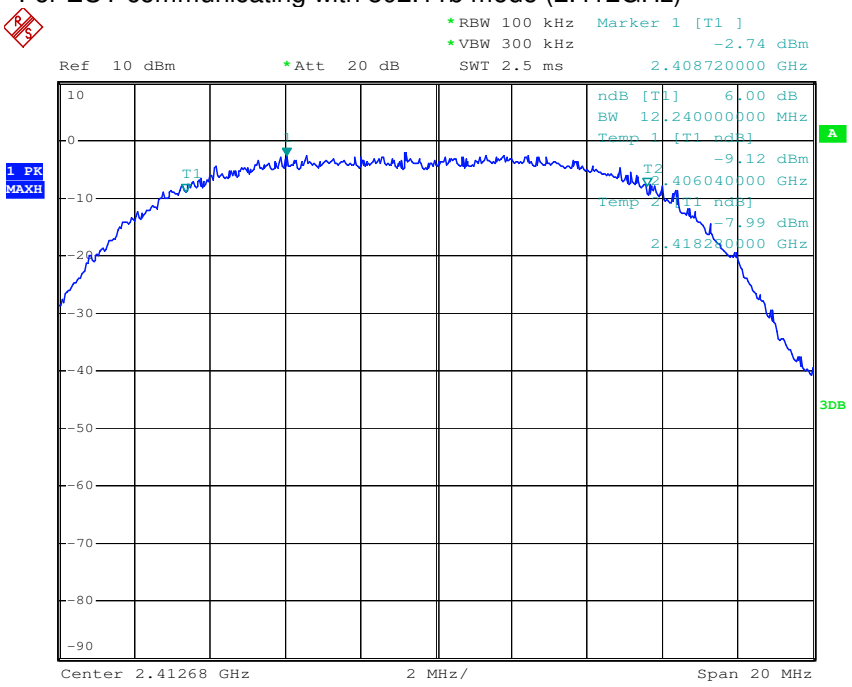
2. The EUT communicating with 802.11g Mode

CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
2.412	16.12	0.5	Pass
2.437	16.48	0.5	Pass
2.462	16.48	0.5	Pass

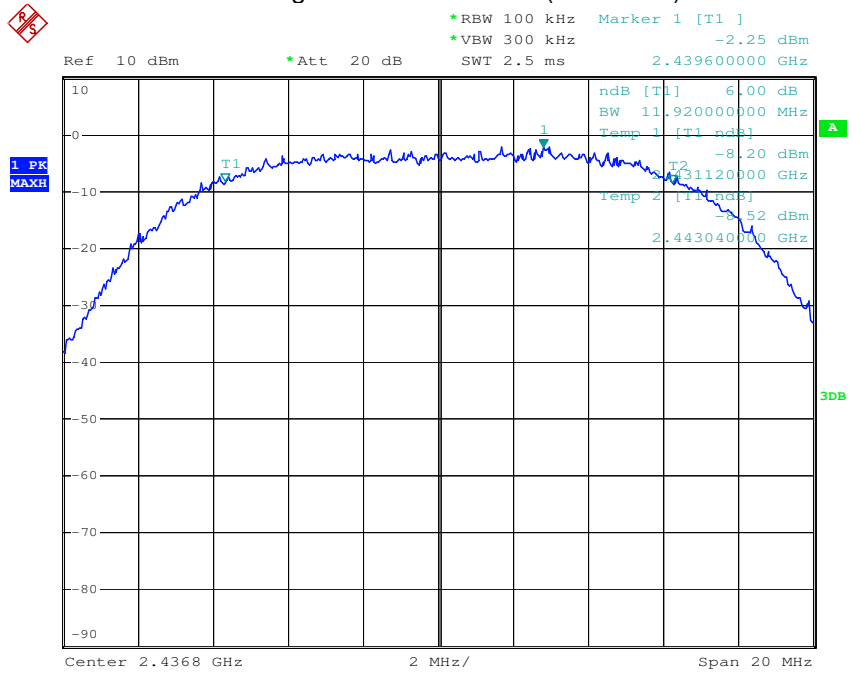
Conclusion: The unit does meet the FCC requirements.

Please refer to the graph as below:

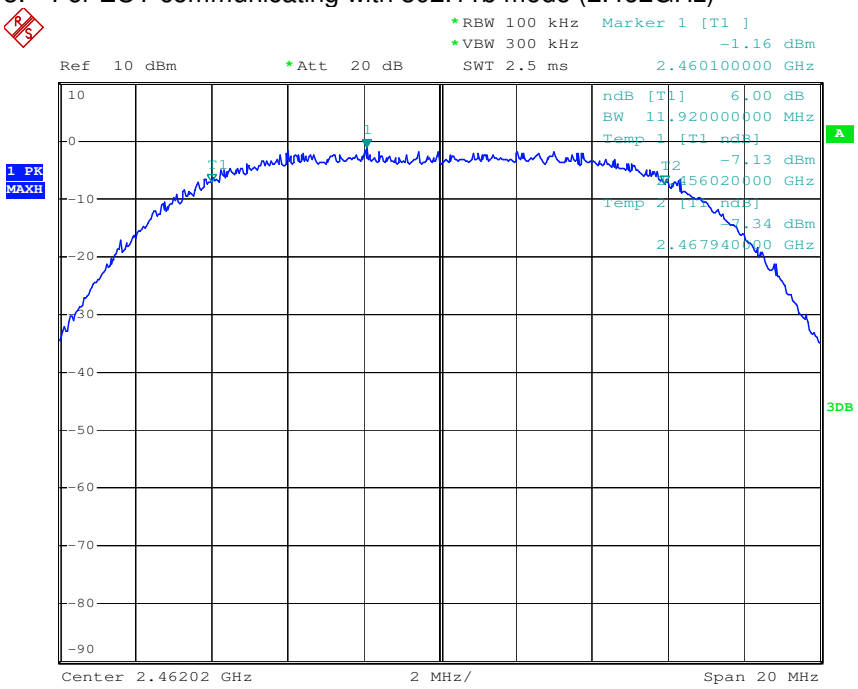
1. For EUT communicating with 802.11b mode (2.412GHz)



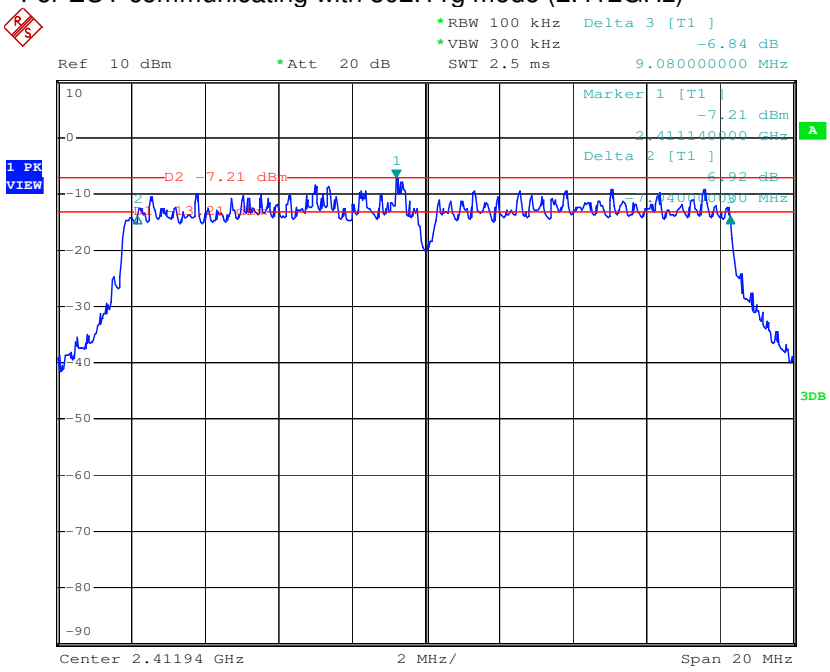
2. For EUT communicating with 802.11b mode (2.437GHz)



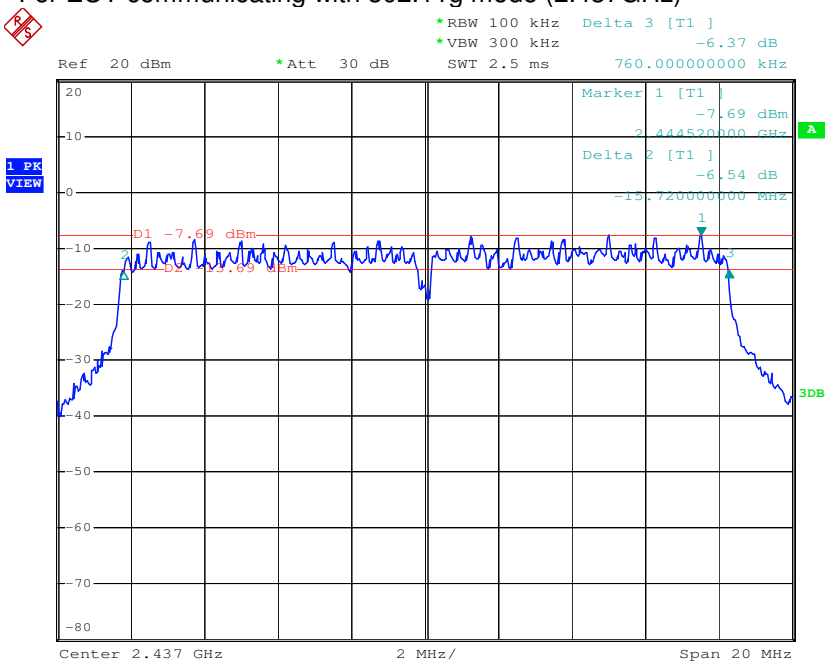
3. For EUT communicating with 802.11b mode (2.462GHz)



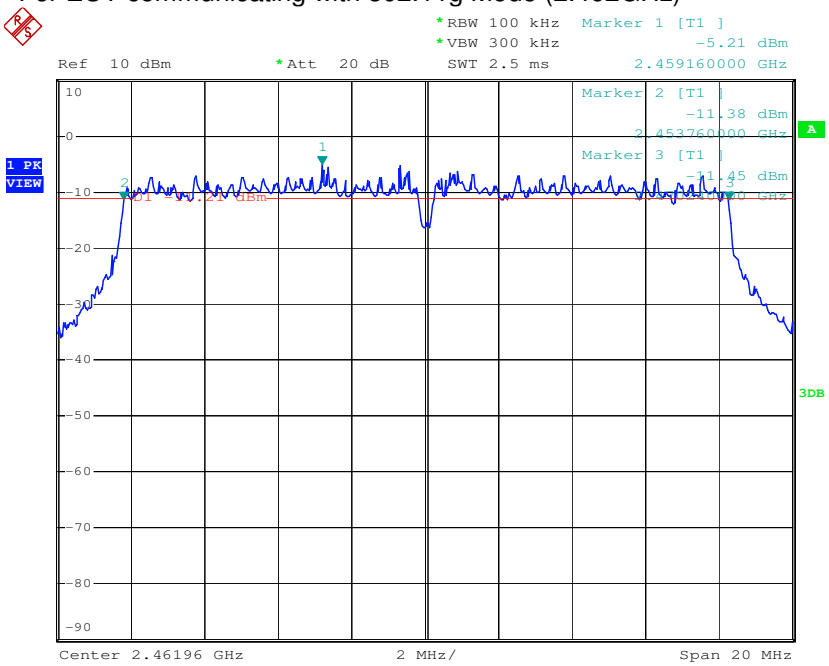
4. For EUT communicating with 802.11g mode (2.412GHz)



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



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



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.

Test mode: 802.11 b 6/1Mbps & 802.11g 6/54Mbps

Equipment Mode	Spectrum Analyzer
Detector Function	Peak Mode
RBW	1MHz
VBW	3MHz

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 1Mbps and 802.11g 6Mbps.
Requirements:

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

Test Result:

For EUT communicating with 802.11b Mode

Test channel (GHz)	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)
2.410	12.53	30.00	17.47
2.437	13.52	30.00	16.48
2.462	14.11	30.00	15.89

For EUT communicating with 802.11g Mode

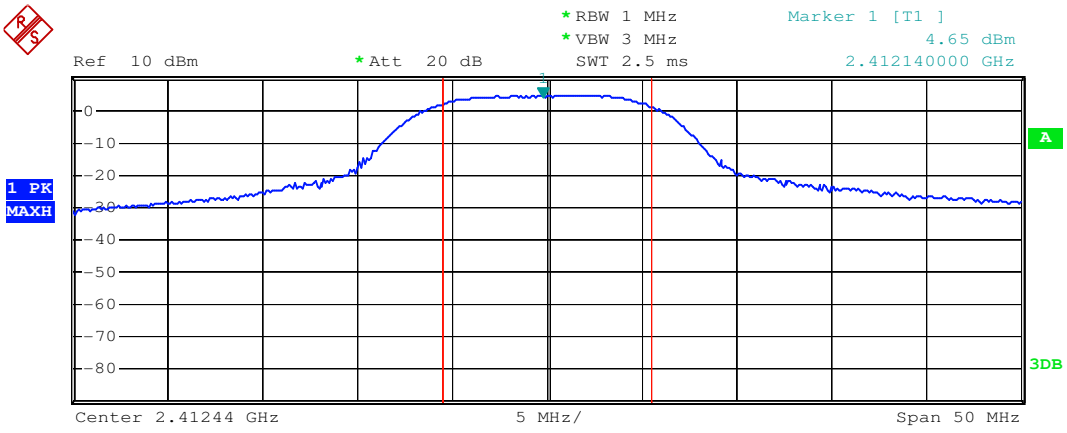
Test channel (GHz)	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)
2.410	10.08	30.00	19.92
2.437	11.56	30.00	18.44
2.462	12.65	30.00	17.35

Test result: The unit does meet the FCC requirements.

Test result plot as follows:

The EUT communicating with 802.11b Mode

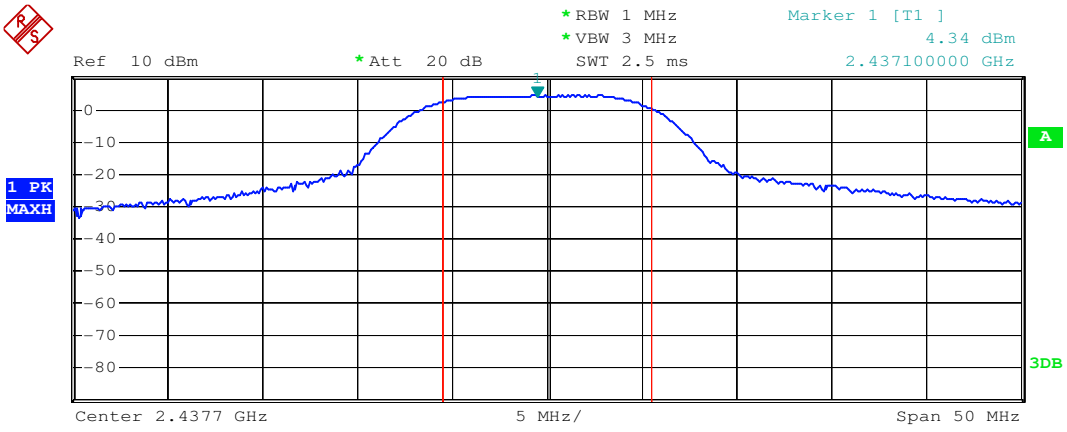
2.412GHz



Tx Channel

Bandwidth	11 MHz	Power	13.53 dBm

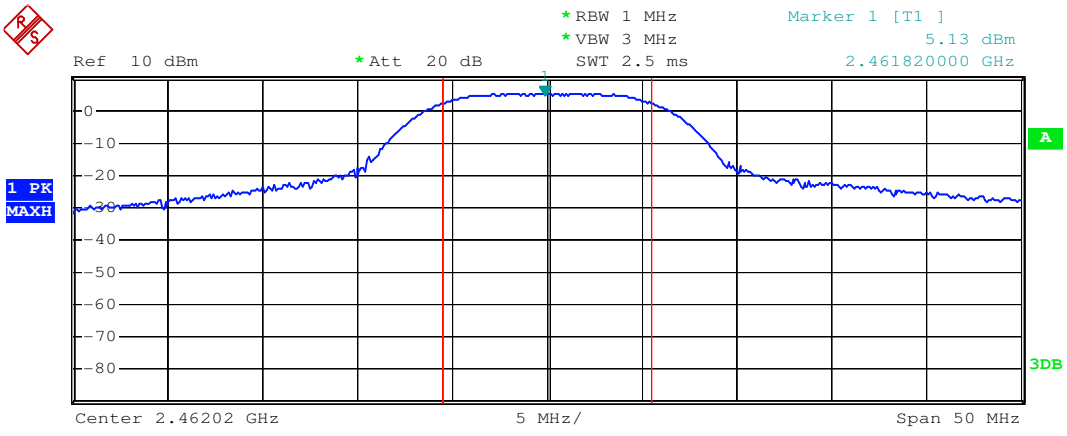
2.437GHz



Tx Channel

Bandwidth	11 MHz	Power	13.32 dBm

2.462GHz

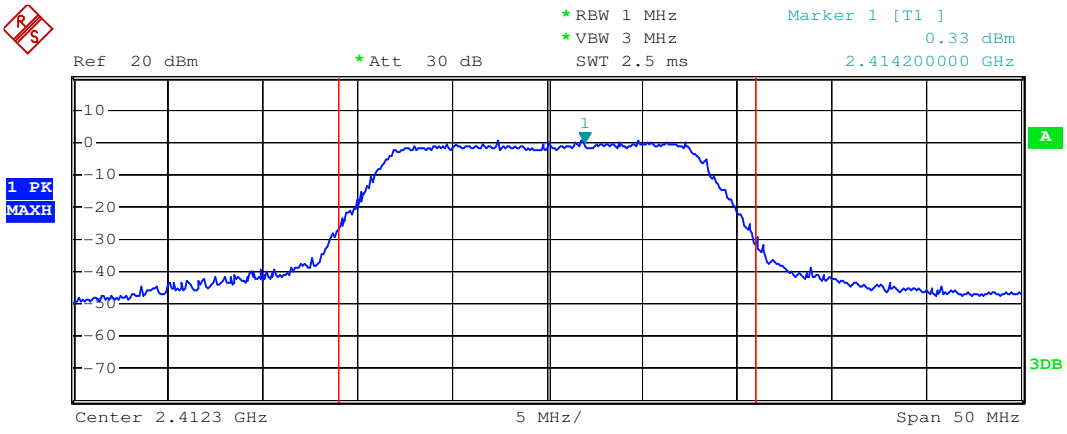


Tx Channel

Bandwidth	11 MHz	Power	14.11 dBm

The EUT communicating with 802.11g Mode

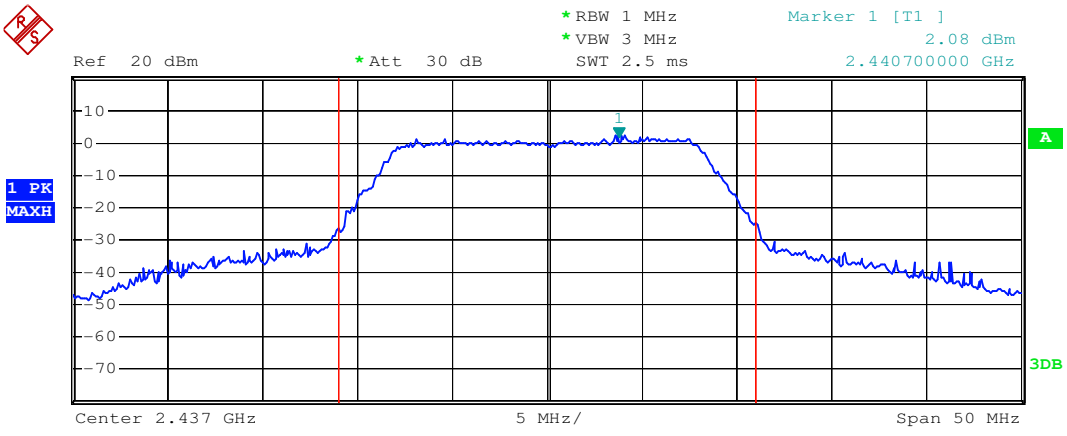
2.412GHz



Tx Channel

Bandwidth	22 MHz	Power	10.08 dBm

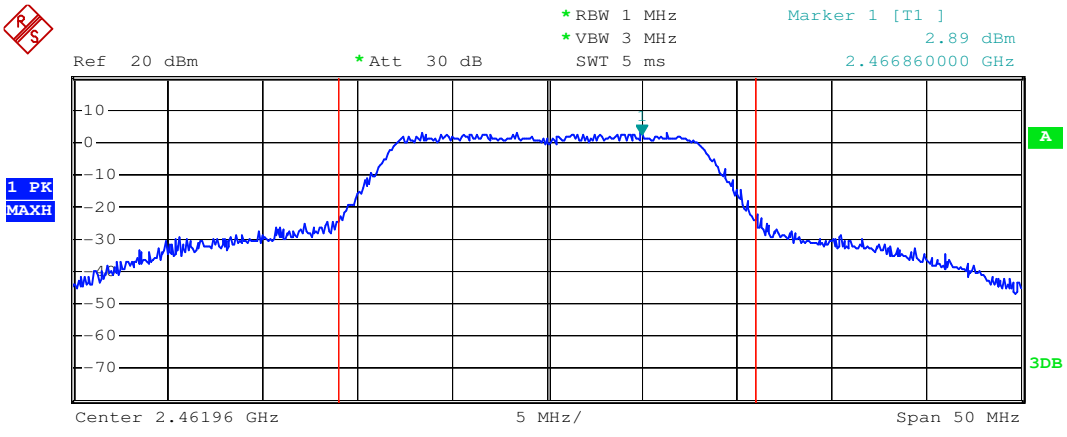
2.437GHz



Tx Channel

Bandwidth	22 MHz	Power	11.56 dBm

2.462GHz



Tx Channel

Bandwidth	22 MHz	Power	12.65 dBm

Conclusion: The EUT meets the requirements of this section.

FCC ID: VSAKP100IB0001

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 Public Notice DA 00-705 for DSS.

Select test mode: 802.11 b 1Mbps & 802.11g 6Mbps

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.

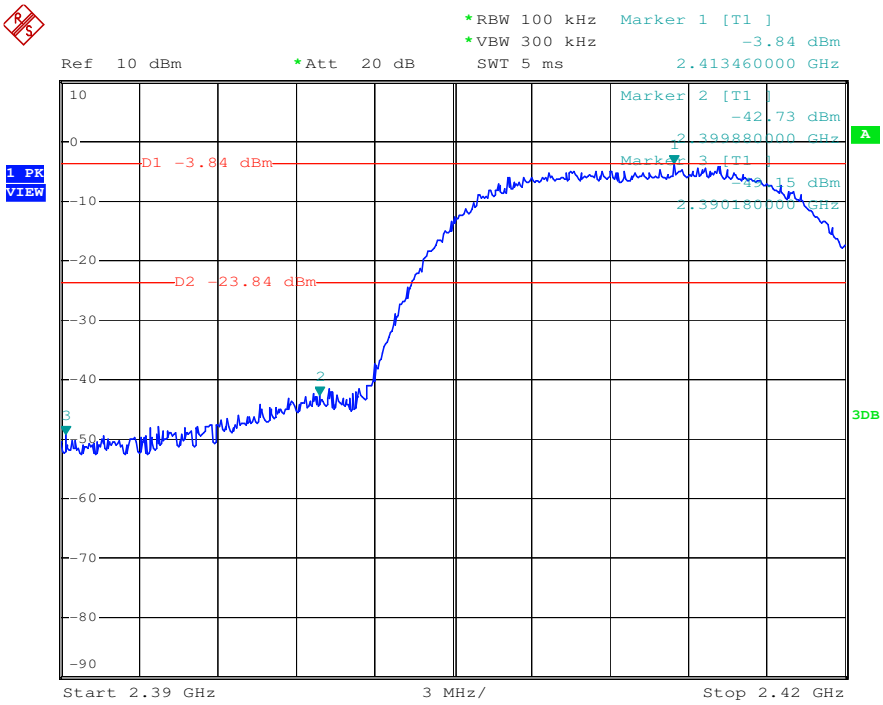
Equipment Mode	Spectrum Analyzer
Detector Function	Peak Mode
RBW	100KHz
VBW	300KHz

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 1Mbps and 802.11g 6Mbps

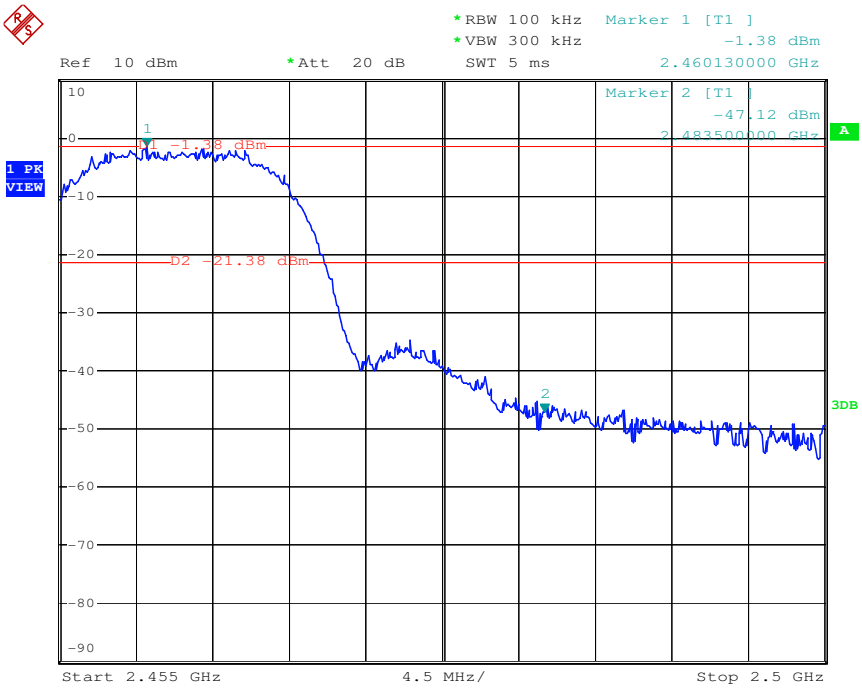
Test Result:

Please refer to the measurement graph and data.

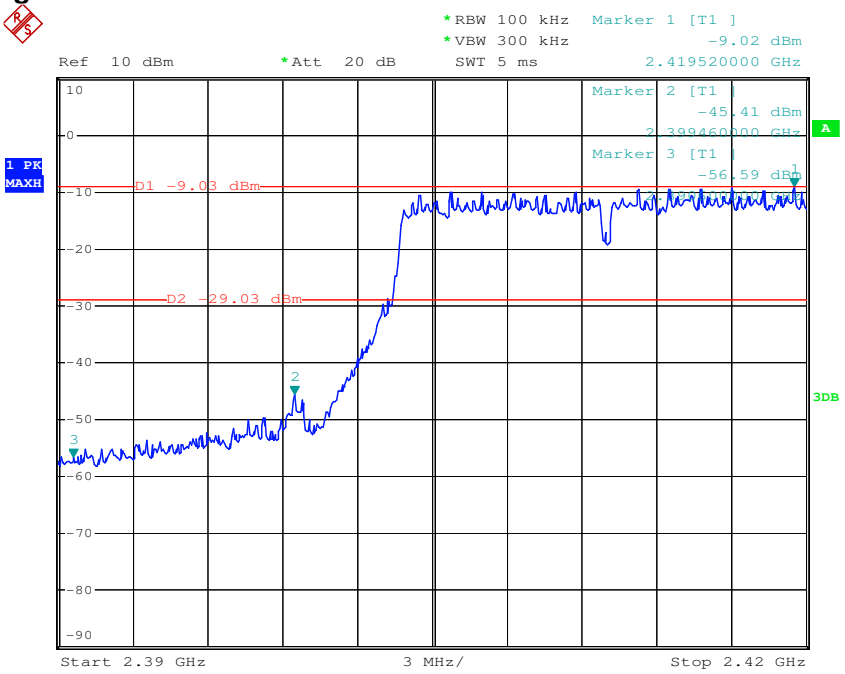
802.11b mode at 2.412GHz



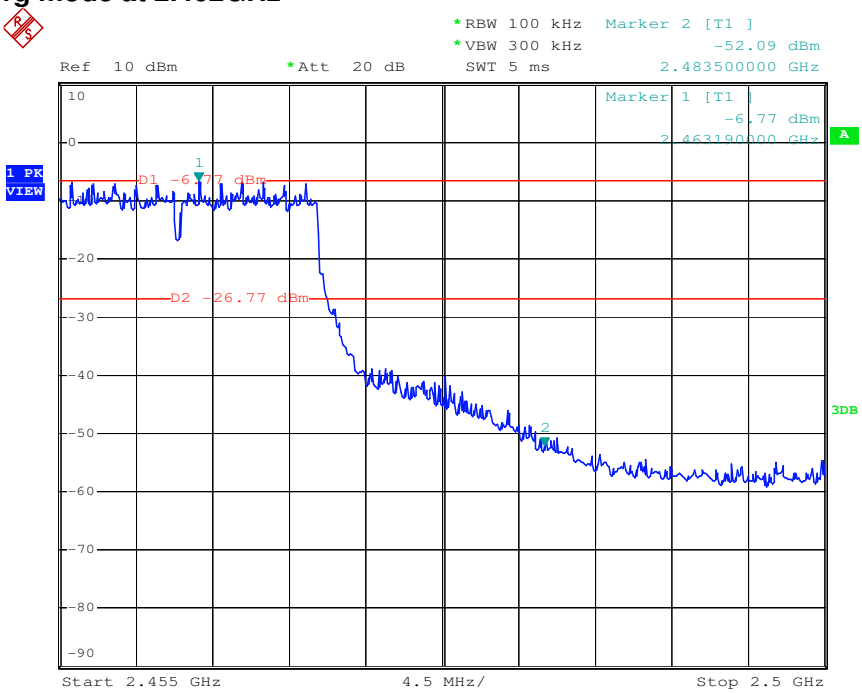
802.11b mode at 2.462 GHz



802.11g mode at 2.412GHz



802.11g mode at 2.462GHz



5.3.6 Power Spectral Density Measurement

Test Requirement: FCC 15.247(d)

Test Method: ANSI C63.4 and KDB Publication No. 558074 Public Notice DA 00-705 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:

Equipment Mode	Spectrum Analyzer
Detector Function	Peak Mode
RBW	3KHz
VBW	10KHz
Span	300KHz
Sweep Time	100S

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 1Mbps and 802.11g 6Mbps

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

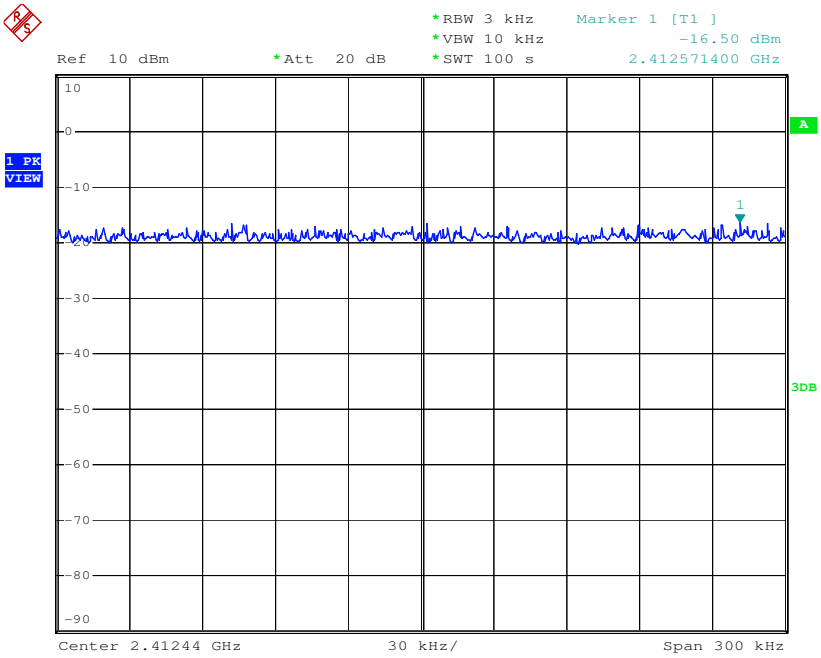
CHANNEL FREQUENCY (GHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM Limit (dBm)	PASS/FAIL
2.412	-16.50	8.00	Pass
2.437	-15.91	8.00	Pass
2.462	-16.39	8.00	Pass

2. For EUT communicating with 802.11g Mode

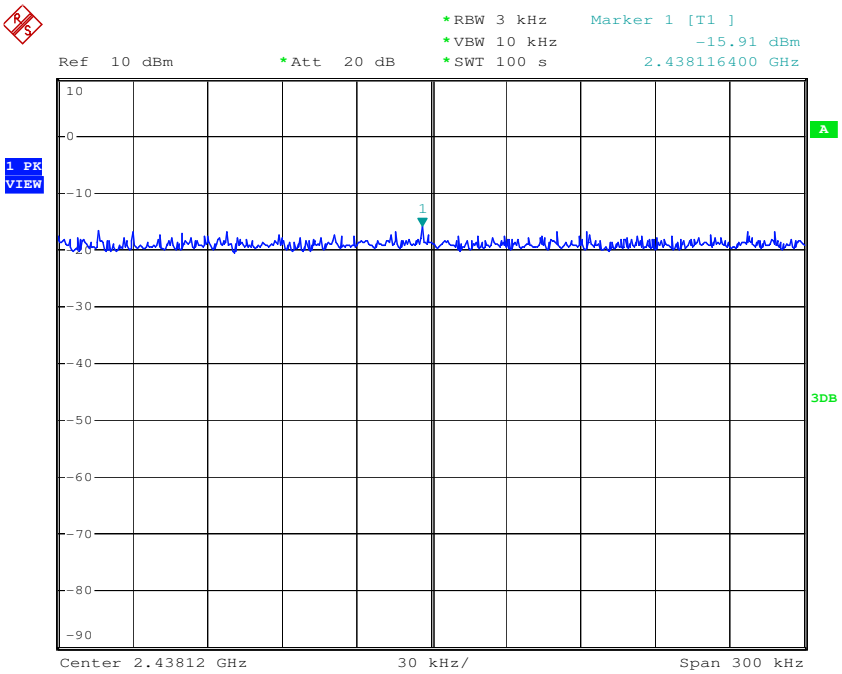
CHANNEL FREQUENCY (GHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM Limit (dBm)	PASS/FAIL
2.412	-23.91	8.00	Pass
2.437	-21.61	8.00	Pass
2.462	-20.75	8.00	Pass

Conclusion:
The EUT meets the requirements of this section.
Please refer to the graph and data as below:

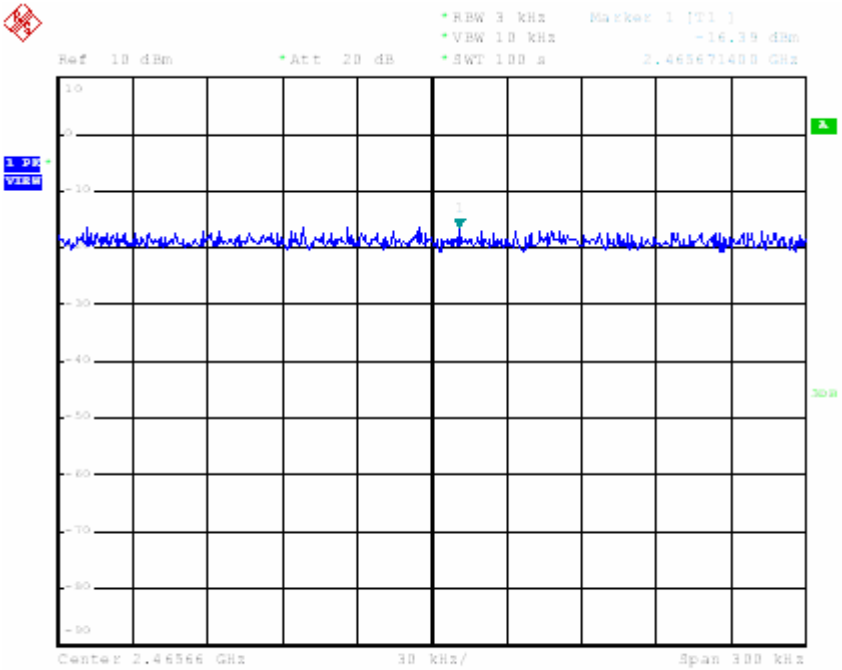
Test Result:
802.11b mode:
2.412GHz



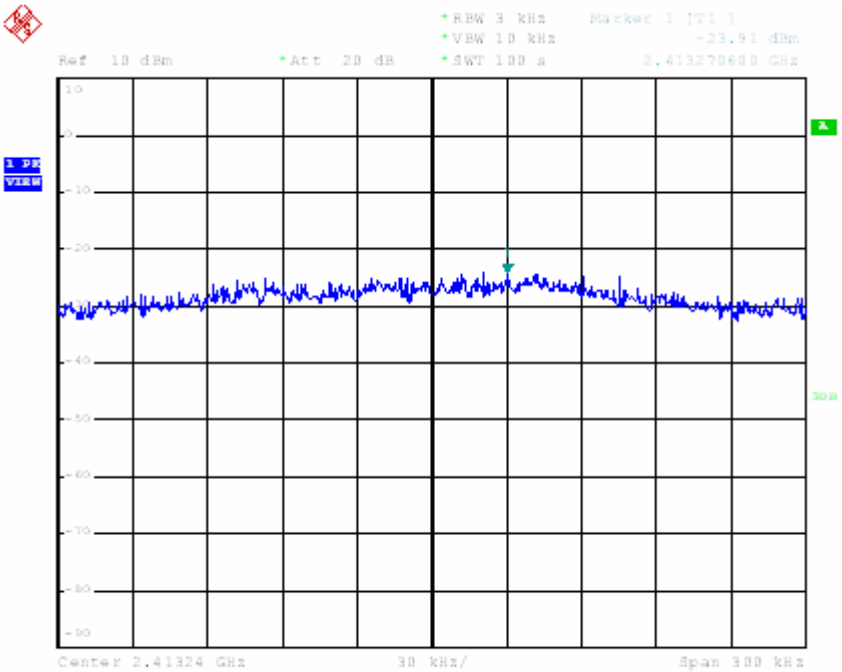
2.437 GHz



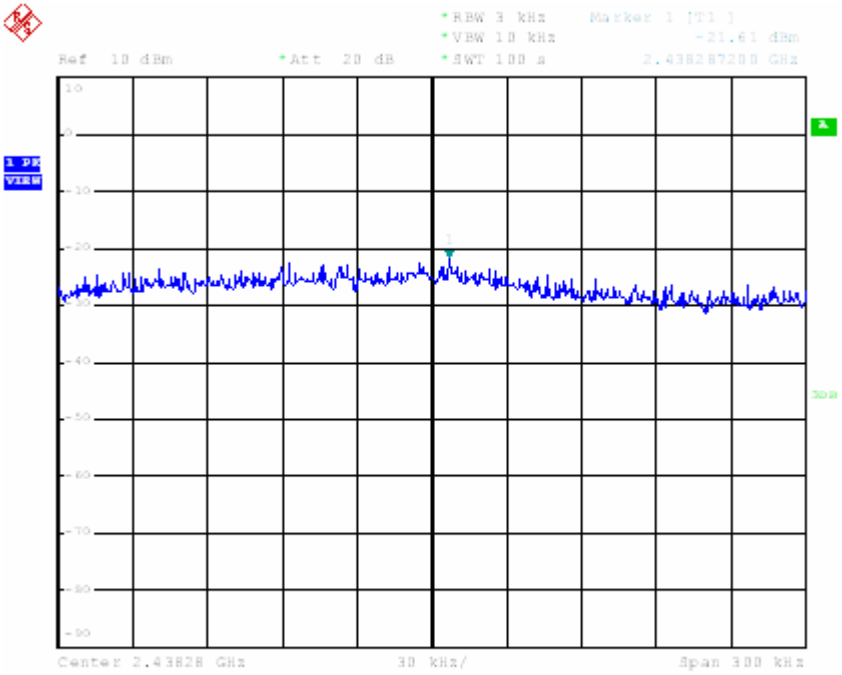
2.462 GHz



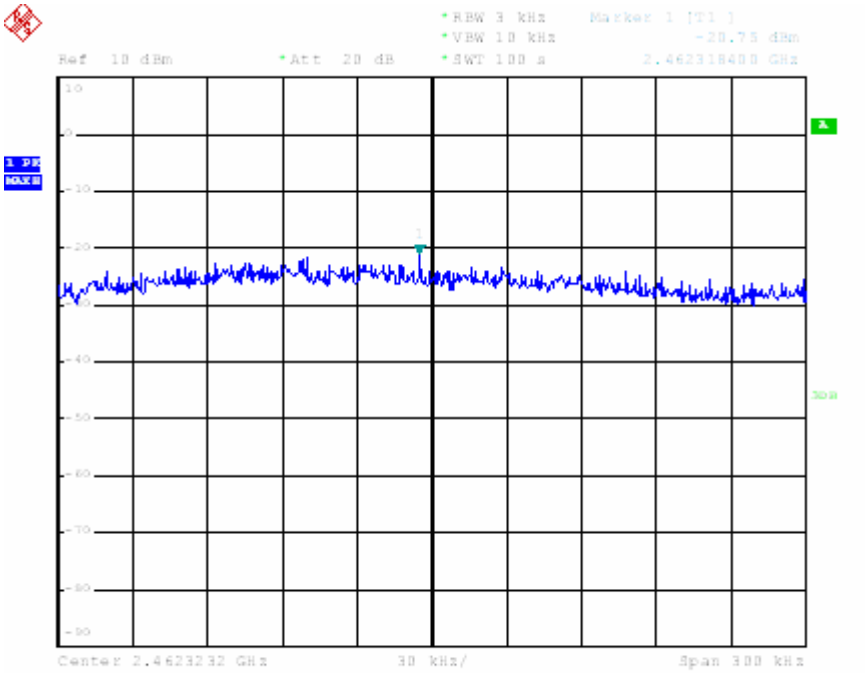
802.11g mode:
2.412 GHz



2.437 GHz



2.462 GHz



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 0dBi.