FCC TEST REPORT

For

SHENZHEN SIPO TECHNOLOGY CO.,LTD

TCP IP Video Door Phone

Trade Name	:	SIPOTEK
Model No.	:	SIPO-272-870, SIPO-270-872, SIPO-271-871, SIPO-273-873, SIPO-274-874, SIPO-2A0-8A0, SIPO-0A0-8A1, SIPO-0A1-8A2, SIPO-0A2-8A3, SIPO-0A3-8A4
FCC ID	:	2ACR4-SIPOTEK
Frequency range	:	2412-2462MHz
Number of Channel	:	11CH
Type of antenna	:	Internal monopole Antenna
Applicant	:	SHENZHEN SIPO TECHNOLOGY CO.,LTD 11th Bldg, Gangzai Street, Furong Industrial Area, Xinqiao, Shajing Town, Baoan District, Shenzhen, China
Regulation	:	FCC Rules and Regulations Part 15 Subpart C Section 15.247
Prepared by	:	WST Certification & Testing (HK) Limited
Address	:	12/F., San Toi Building,137-139 Connaught Road Central, Hong Kong, China
Report No.:	:	WST20140714006
Test Date	:	July 14-16, 2014
Date of Report	:	July 16, 2014

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Description Page

TEST REPORT DECLARATION

Applicant	:	SHENZHEN SIPO TECHNOLOGY CO.,LTD
Manufacturer	:	SHENZHEN SIPO TECHNOLOGY CO.,LTD
EUT Description	:	TCP IP Video Door Phone
Model NO.	:	SIPO-272-870, SIPO-270-872, SIPO-271-871, SIPO-273-873, SIPO-274-874, SIPO-2A0-8A0, SIPO-0A0-8A1, SIPO-0A1-8A2, SIPO-0A2-8A3, SIPO-0A3-8A4
Serial NO.	:	N/A
Power Supply	:	DC 3.7V From Battery

Measurement Procedure Used:
FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4:2003

The device described above is tested by WST Certification & Testing (HK) Limited to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and WST Certification & Testing (HK) Limited. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of WST Certification & Testing (HK) Limited.

Date of Test: July 14-16, 2014

Prepared by: Eric Xie

Project Engineer(Eric Xie)

Reviewed by:

Project Supervisor(Nico Lee)

Approved by:

Technical Director（Kait Chen）

1. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)2)	6dB Bandwidth Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Tes	Compliant
Section 15.247(d) Section 15.209)	Radiated Spurious Emission Test	Compliant
Section 15.247(d)	Conducted Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

2. GENERAL INFORMATION

1.1. General Information

EUT	:	TCP IP Video Door Phone
Model Number	:	SIPO-272-870, SIPO-270-872, SIPO-271-871, SIPO-273-873, SIPO-274-874, SIPO-2A0-8A0, SIPO-0A0-8A1, SIPO-0A1-8A2, SIPO-0A2-8A3, SIPO-0A3-8A4
Frequency Range	:	2412-2462MHz
Number of Channels	:	11CH
Antenna Gain	:	0dBi
Data Rate		802.11b: 11 Mbps 802.11g: 54 Mbps 802.11n: 150 Mbps
Applicant	:	SHENZHEN SIPO TECHNOLOGY CO.,LTD 11th Bldg, Gangzai Street, Furong Industrial Area, Xinqiao, Shajing Town, Baoan District, Shenzhen, China
Manufacturer	:	SHENZHEN SIPO TECHNOLOGY CO.,LTD 11th Bldg, Gangzai Street, Furong Industrial Area, Xinqiao, Shajing Town, Baoan District, Shenzhen, China
Test Date	:	July 14-16, 2014

1.2. Test Facility

Test Firm	:	Shenzhen Anbotek Compliance Laboratory Limited Certificated by FCC, Registration No.: 752021
Address	:	1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen 518054, China
Tel	:	86-755-26014755
Fax	:	86-755-26014772

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

3. TEST INSTRUMENT USED

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2013	1 Year
2.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2014	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2014	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
5.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2013	1 Year
6.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	May 17, 2014	1 Year
7.	Pre-amplifier	Compliance Direction	PAP-0203	22008	May 19, 2014	1 Year
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2013	1 Year
10.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2014	1 Year
11.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2014	1 Year
12.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
13.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2013	1 Year
14.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2013	1 Year
15.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2014	1 Year
16.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2014	1 Year
17.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
18.	Programmable AC Power source	SOPH POWER	PAG-1050	630250	May 26, 2014	1 Year
19.	Harmonic and Flicker Analyzer	LAPLACE	AC2000A	272629	May 26, 2014	1 Year
20.	Harmonic and Flicker Test Software AC 2000A	LAPLACE	N/A	N/A	N/A	N/A
21.	ESD Simulators	KIKUSUI	KES4021	LJ003477	May 25, 2014	1 Year
22.	EFT Generator	EMPEK	EFT-4040B	0430928N	May 19, 2014	1 Year
23.	Shielding Room	ChangZhou ZhongYu	JB88	SEL0166	2013-06-10	1 Year
24.	Signal Generator 9KHz~2.2GHz	R&S	SML02	SEL0143	2013-10-24	1 Year
25.	Signal Generator 9KHz~1.1GHz	R&S	SML01	SEL0135	2013-10-24	1 Year
26.	Power Meter	R&S	NRVS	SEL0144	2013-10-24	1 Year
27.	RF Level Meter		URV35	SEL0137	2013-10-24	1 Year
28.	Audio Analyzer	R&S	UPL	SEL0136	2013-10-24	1 Year
29.	RF-Amplifier 150KHz~150MHz	BONN Elektronik	BSA1515-25	SEL0157	2013-05-17	1 Year

30.	Stripline Test Cell	Erika Fiedler	VDE0872	SEL0167	N/A	N/A
31.	TV Test Transmitter	R&S	SFM	SEL0159	2014-05-17	1 Year
32.	TV Generator PAL	R&S	SGPF	SEL0138	2013-10-24	1 Year
33.	TV Generator Ntsc	R&S	SGMF	SEL0140	2013-10-24	1 Year
34.	TV Generator Secam	R&S	SGSF	SEL0139	2013-10-24	1 Year
35.	TV Test Transmitter 0.3MHz~3300MHz	R&S	SFQ	SEL0142	2013-10-24	1 Year
36.	MPEG2 Measurement Generator	R&S	DVG	SEL0141	2013-10-24	1 Year
37.	Spectrum Analyzer	R&S	FSP	SEL0177	2013-02-21	1 Year
38.	Matching	R&S	RAM	SEL0146	N/A	N/A
39.	Matching	R&S	RAM	SEL0148	N/A	N/A
40.	Absorbing Clamp	R&S	MDS21	SEL0158	2014-05-17	1 Year
41.	Coupling Set	Erika Fiedler	Rco, Rci, MC, AC, LC	SEL0149	N/A	N/A
42.	Filters	Erika Fiedler	Sr, LBS	SEL0150	N/A	N/A
43.	Matching Network	Erika Fiedler	MN, T1	SEL0151	N/A	N/A
44.	Fully Anechoic Room	ChangZhou ZhongYu	854	SEL0169	2014-06-10	1 Year
45.	Signal Generator	R&S	SML03	SEL0068	2014-05-17	1 Year
46.	RF-Amplifier 30M~1GHz	Amplifier Reasearch	250W1000A	SEL0066	2014-10-24	1 Year
47.	RF-Amplifier 0.8~3.0GHz	Amplifier Reasearch	60S1G3	SEL0065	2014-10-24	1 Year
48.	Power Meter	R&S	NRVD	SEL0069	2014-05-17	1 Year
49.	Power Sensor	R&S	URV5-Z2	SEL0071	2014-05-17	1 Year
50.	Power Sensor	R&S	URV5-Z2	SEL0072	2014-05-17	1 Year
51.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
52.	Log-periodic Antenna	Amplifier Reasearch	AT1080	SEL0073	N/A	N/A
53.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	N/A	N/A
54.	High Gain Horn Antenna(0.8-5G Hz)	Amplifier Reasearch	AT4002A	SEL0075	N/A	N/A

Support equipments or special accessories in test configuration：

Equipment	Manufacturer	Model No.	CABLE
PC Notebook	LENOVO	X240	1.5m Unshielded Power Cord 1.8m shielded data Cable with core 1.5m Unshielded Power Cord
Monitor	DELL	E178P	1.5m Unshielded shielded HDMI Cable 1.2m Unshielded Power Cord
Entrance guard	SIPOTEK	SIPO-272-870	1.2m Unshielded Ethernet cable

4. OPERATION OF EUT DURING TESTING

Operating Mode

The mode is used: **802.11b Transmitting mode**

Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

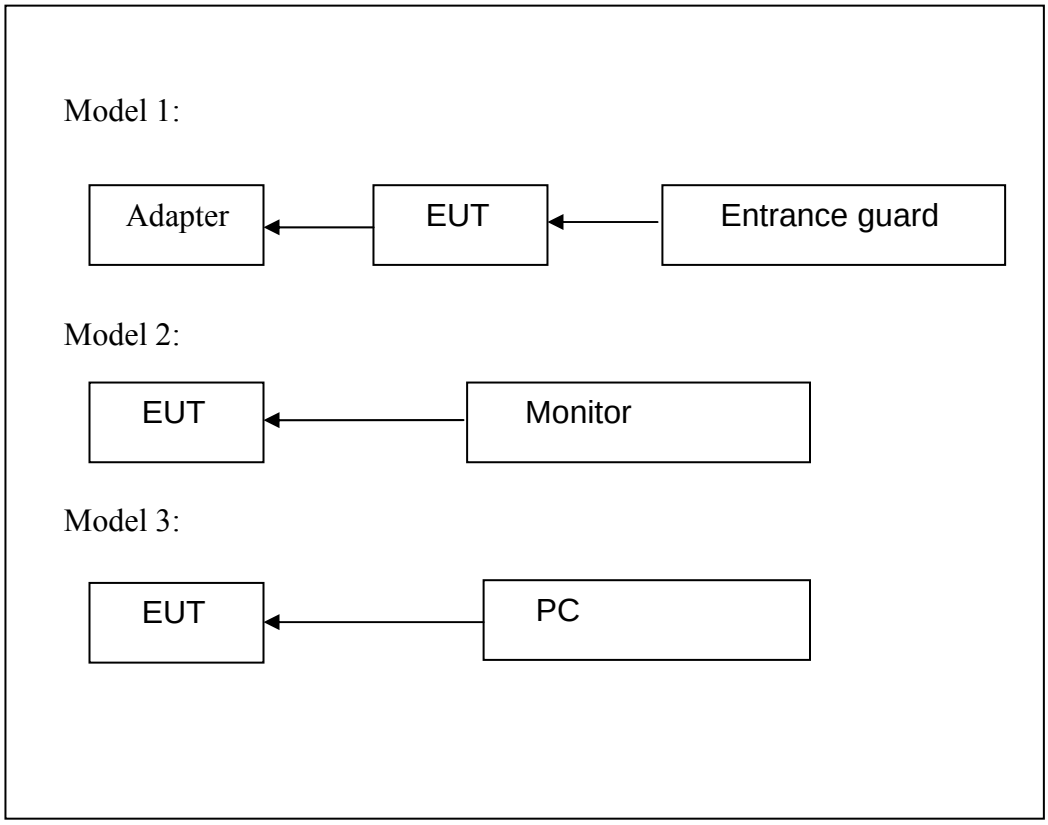
802.11g Transmitting mode

Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

802.11n Transmitting mode

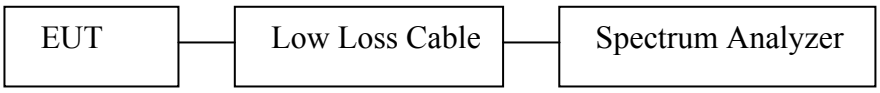
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

Test Setup



5. 6DB BANDWIDTH MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. Limits

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz

5.3. Test Procedure

5.3.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.3.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz

5.3.3. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.4. Test Result

PASS

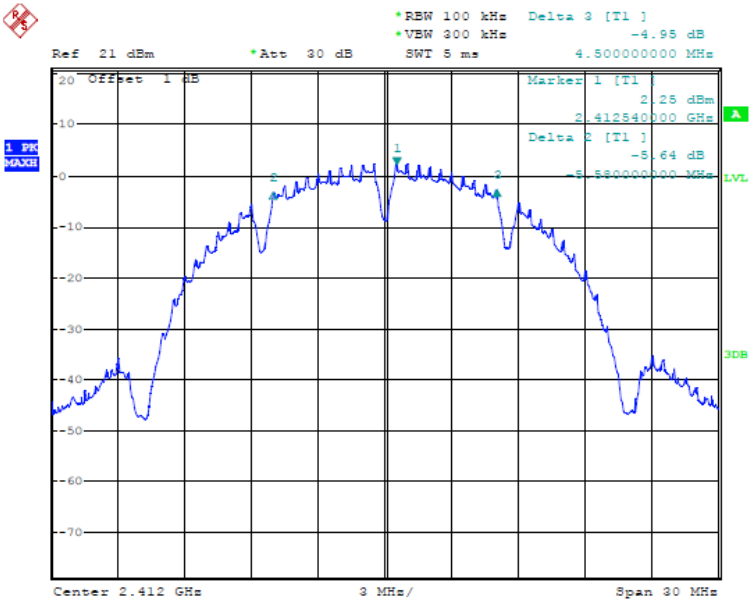
802.11b			
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**	**Limit (MHz)**
Low	2412	10.08	>0.5MHz
Middle	2437	10.08	>0.5MHz
High	2462	10.08	>0.5MHz

802.11g			
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**	**Limit (MHz)**
Low	2412	16.62	>0.5MHz
Middle	2437	16.62	>0.5MHz
High	2462	16.68	>0.5MHz

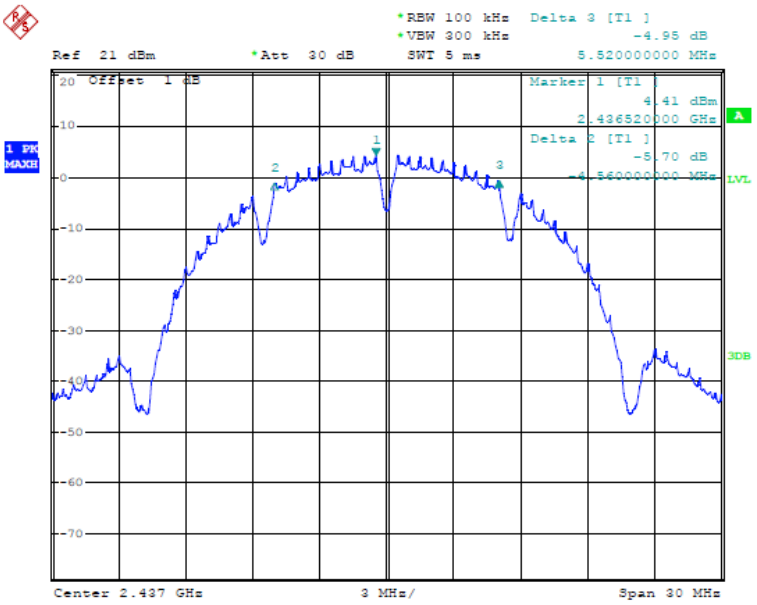
802.11n			
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**	**Limit (MHz)**
Low	2412	17.82	>0.5MHz
Middle	2437	17.82	>0.5MHz
High	2462	17.82	>0.5MHz

The spectrum analyzer plots are attached as below.

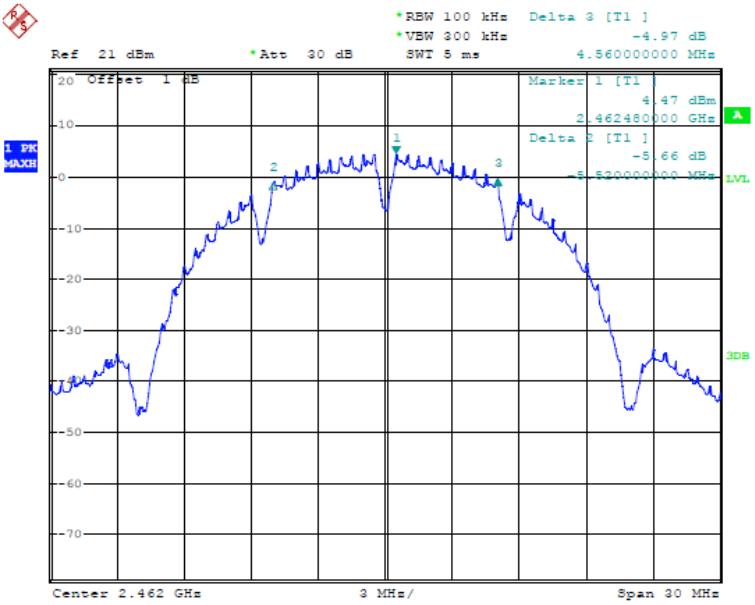
802.11b Channel Low 2412MHz



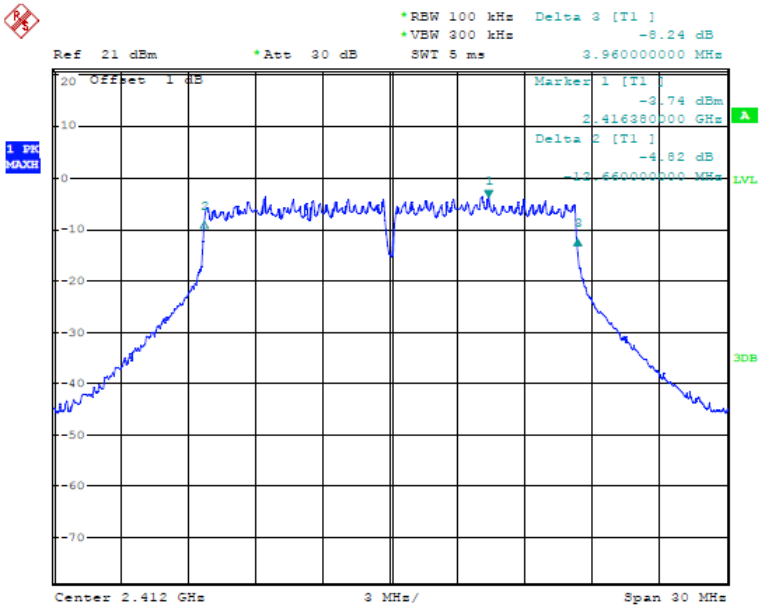
802.11b Channel Middle 2437MHz



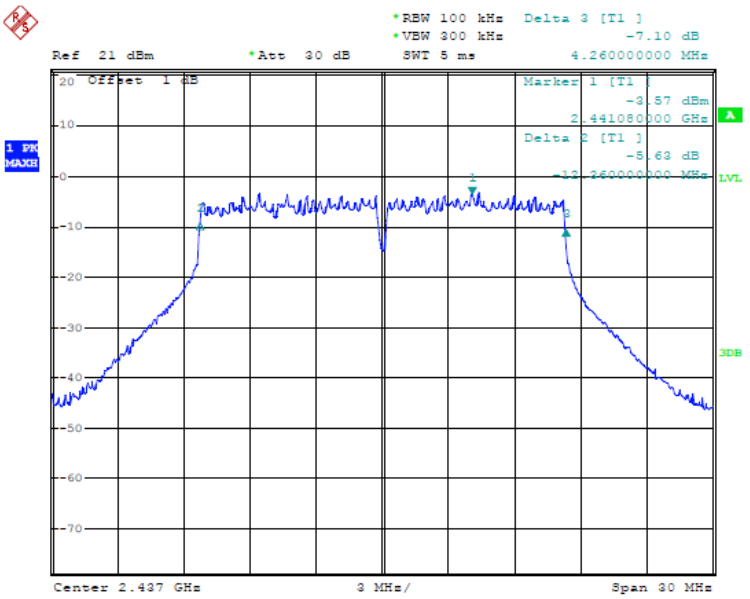
802.11b Channel High 2462MHz



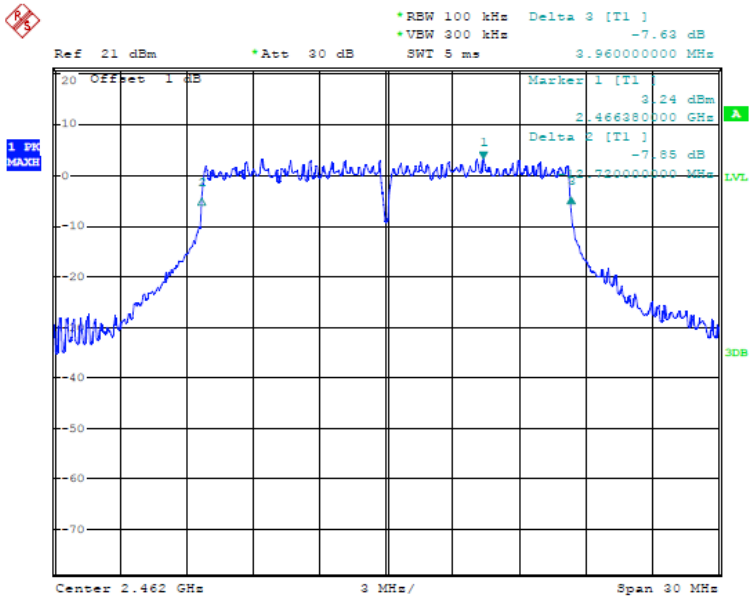
802.11g Channel Low 2412MHz



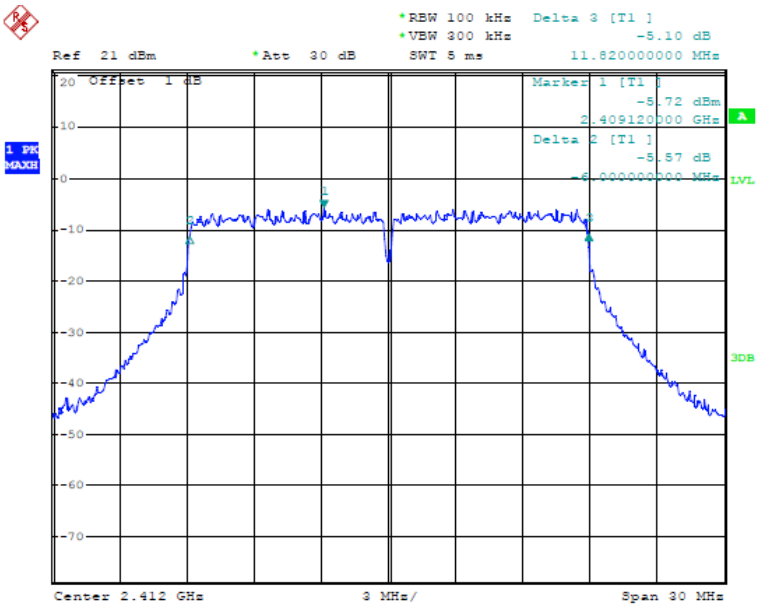
802.11g Channel Middle 2437MHz



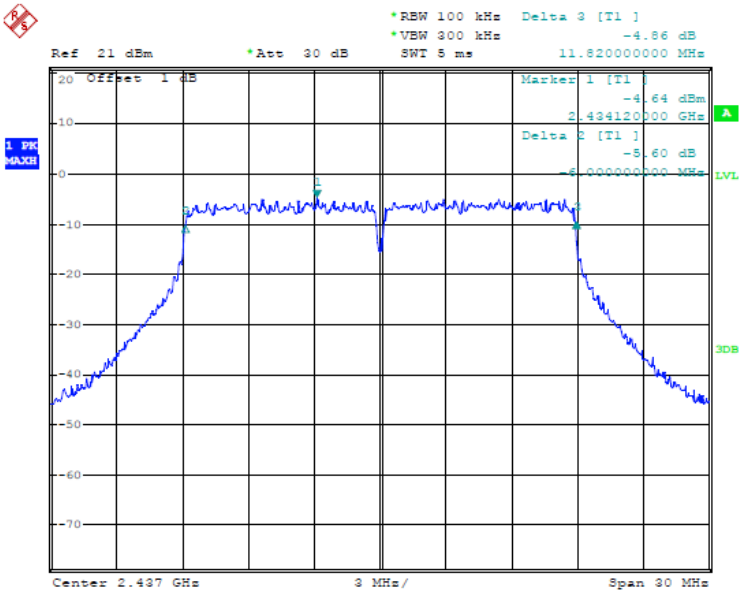
802.11g Channel High 2462MHz



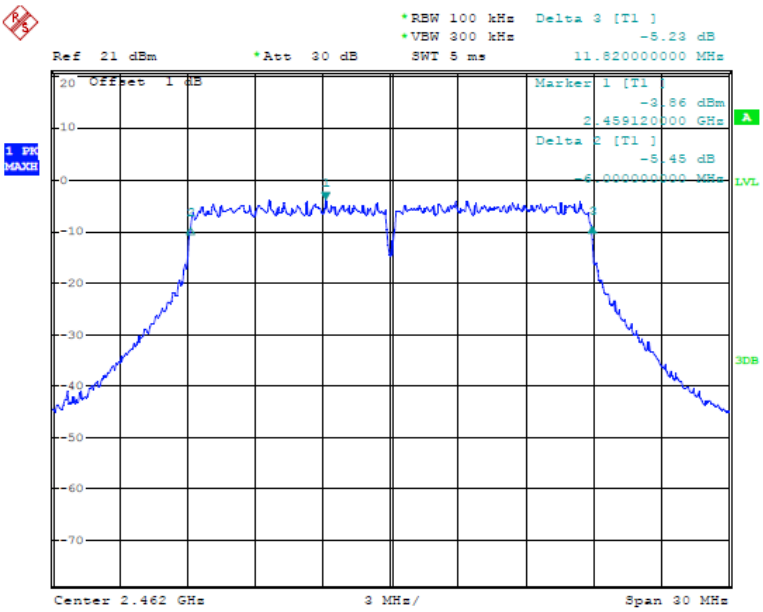
802.11n Channel Low 2412MHz



802.11n Channel Middle 2437MHz

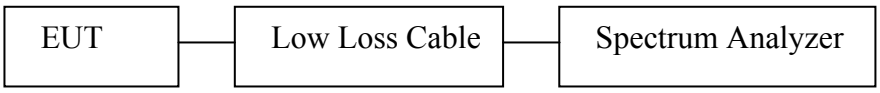


802.11n Channel High 2462MHz



6. MAXIMUM PEAK OUTPUT POWER

6.1. Block Diagram of Test Setup



6.2. Limits

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

6.3. Test Procedure

Measurement Procedure PK:

This procedure should only be used when the maximum available RBW of the spectrum/signal analyzer is less than the DTS bandwidth.

1. Set the RBW = maximum available (at least 1 MHz).
2. Set the VBW = 3 x RBW or maximum available setting (must be ≥ RBW).
3. Set the span to fully encompass the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some analyzers, this may require a manual override to ensure use of peak detector). If the spectrum analyzer does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

6.4.Test Result

PASS

802.11b				
Channel	**Frequency (MHz)**	**Data Rate (Mbps)**	**Peak output power (dBm)**	**Limit (dBm)**
Low	2412	1	10.44	30
Middle	2437	1	10.83	30
High	2462	1	10.29	30

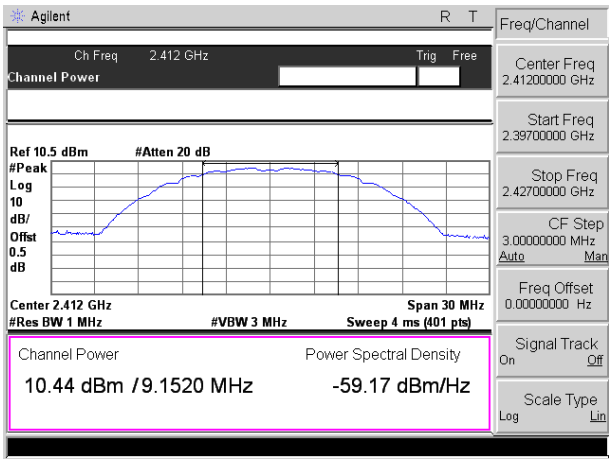
802.11g				
Channel	**Frequency (MHz)**	**Data Rate (Mbps)**	**Peak output power (dBm)**	**Limit (dBm)**
Low	2412	6	12.76	30
Middle	2437	6	13.12	30
High	2462	6	13.32	30

802.11n				
Channel	**Frequency (MHz)**	**Data Rate (Mbps)**	**Peak output power (dBm)**	**Limit (dBm)**
Low	2412	MCS0 (20M)	12.69	30
Middle	2437	MCS0 (20M)	12.89	30
High	2462	MCS0 (20M)	13.42	30

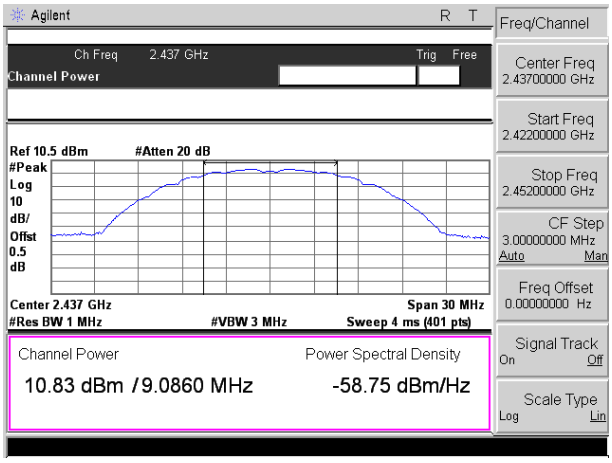
Note: In the worst case test

The spectrum analyzer plots are attached as below.

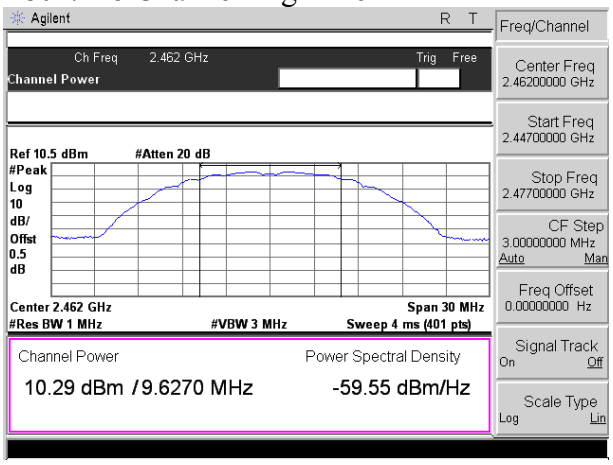
802.11b Channel Low 2412MHz



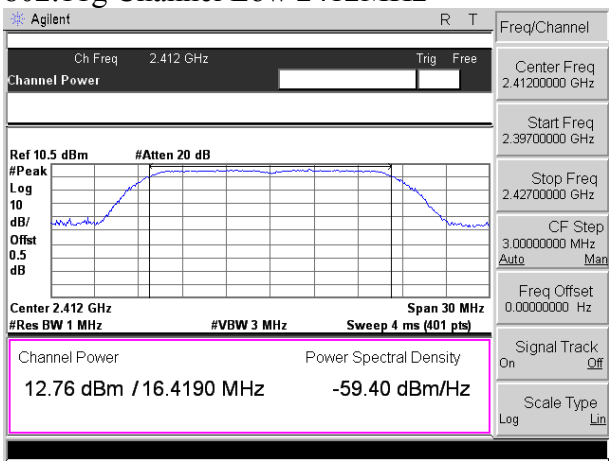
802.11b Channel Middle 2437MHz



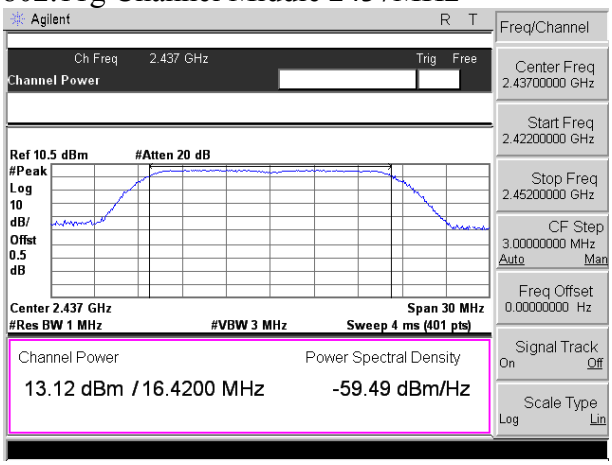
802.11b Channel High 2462MHz



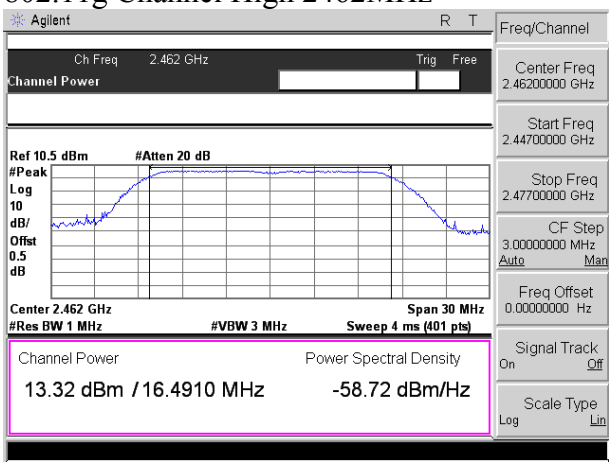
802.11g Channel Low 2412MHz



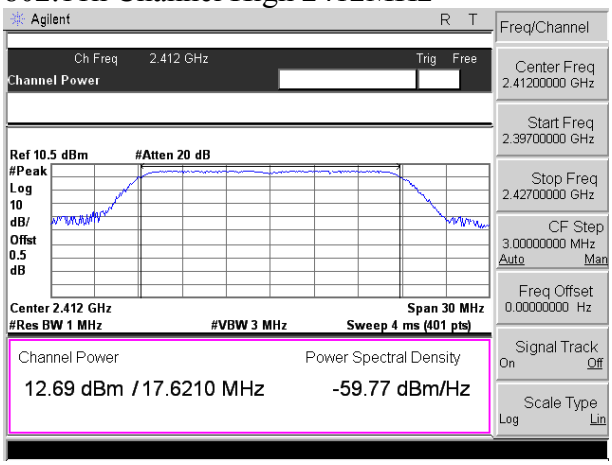
802.11g Channel Middle 2437MHz



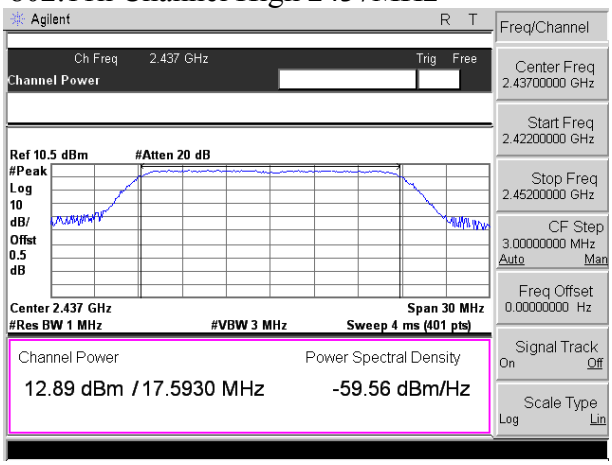
802.11g Channel High 2462MHz



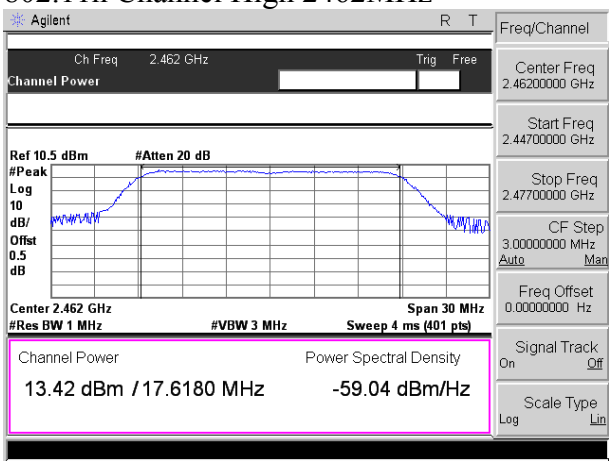
802.11n Channel High 2412MHz



802.11n Channel High 2437MHz

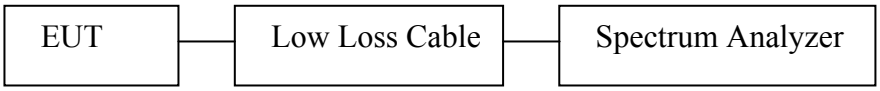


802.11n Channel High 2462MHz



7. POWER SPECTRAL DENSITY MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Limits

Section 15.247(e): For digitally modulated systems, the 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.

7.3. Test Procedure

7.3.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.3.2. Set RBW of spectrum analyzer to 3kHz and VBW to 10kHz, sweep time = Span/30kHz

7.3.2. Measurement the maximum power spectral density.

7.4. Test Result

PASS

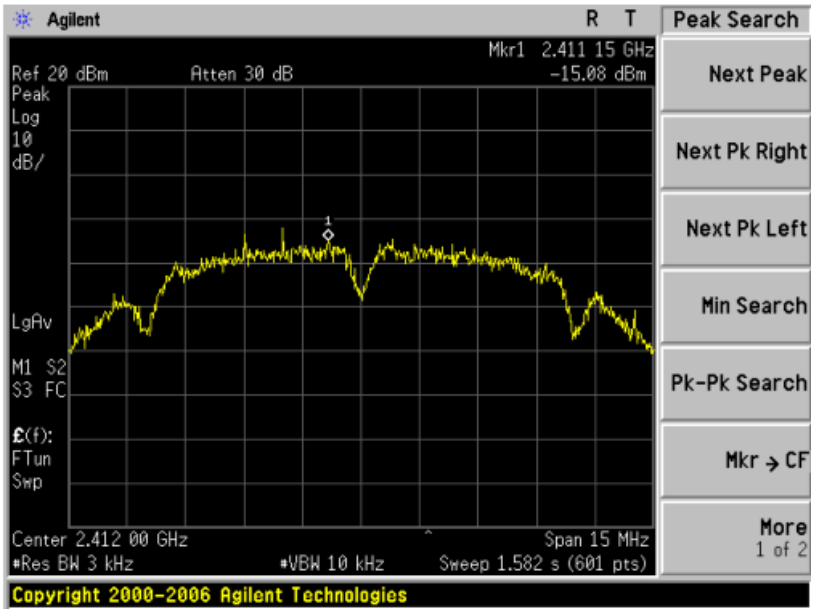
802. 11b			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-15.08	8
Middle	2437	-14.6	8
High	2462	-14.85	8

802. 11g			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-19.42	8
Middle	2437	-19.42	8
High	2462	-17.65	8

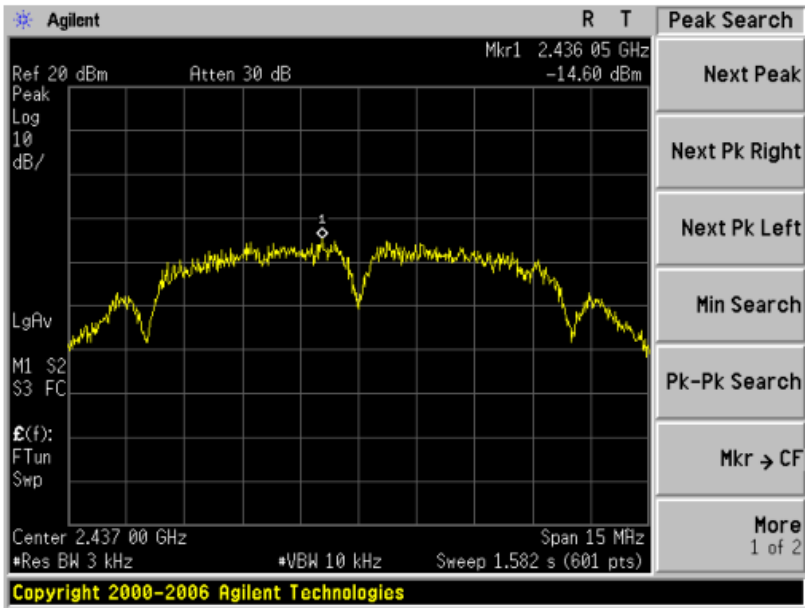
802. 11n			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-18.07	8
Middle	2437	-19.33	8
High	2462	-18.07	8

The spectrum analyzer plots are attached as below.

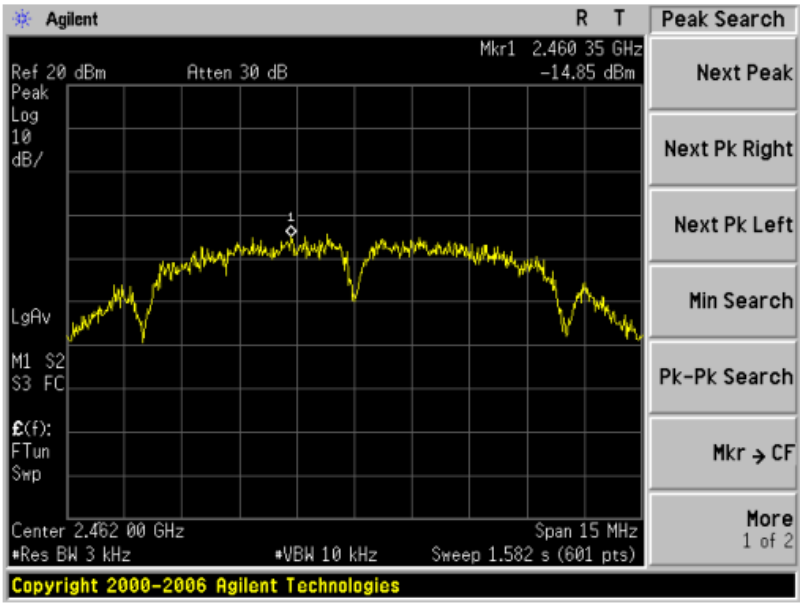
802.11b Channel Low 2412MHz



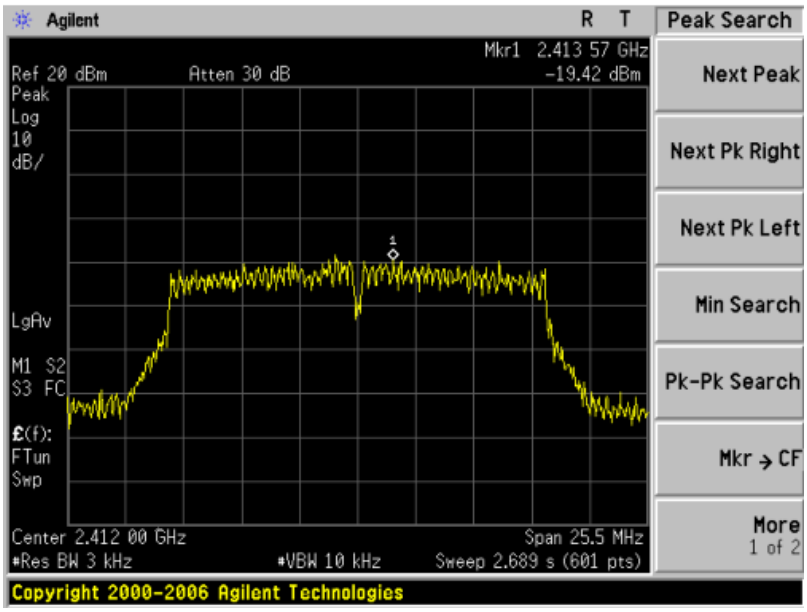
802.11b Channel Middle 2437MHz



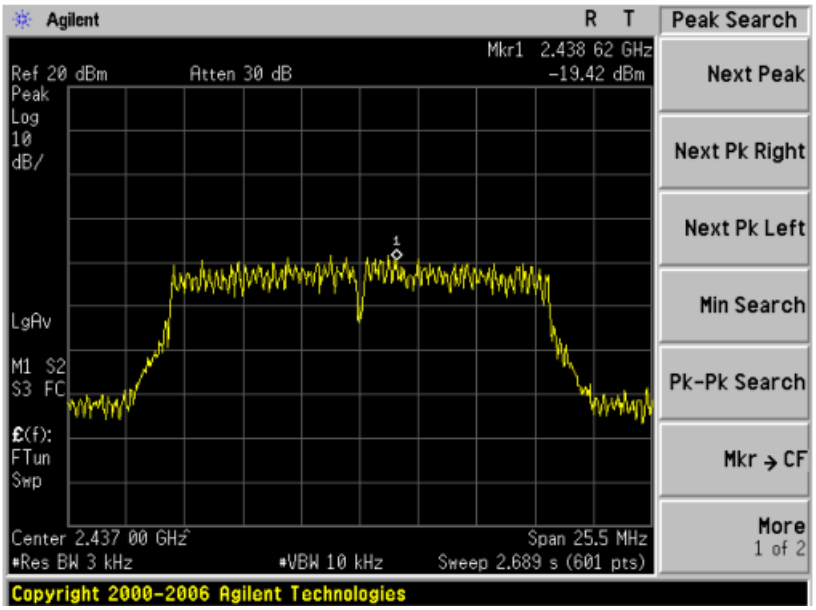
802.11b Channel High 2462MHz



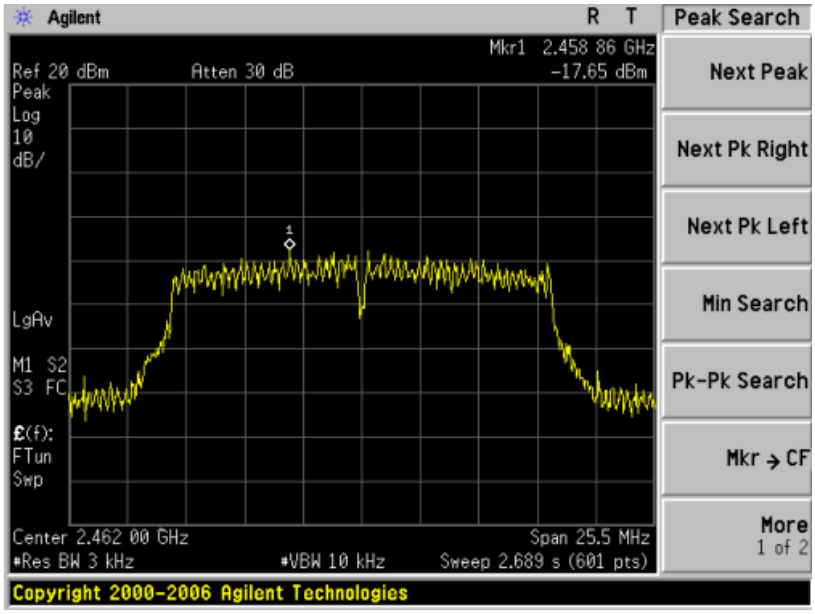
802.11g Channel Low 2412MHz



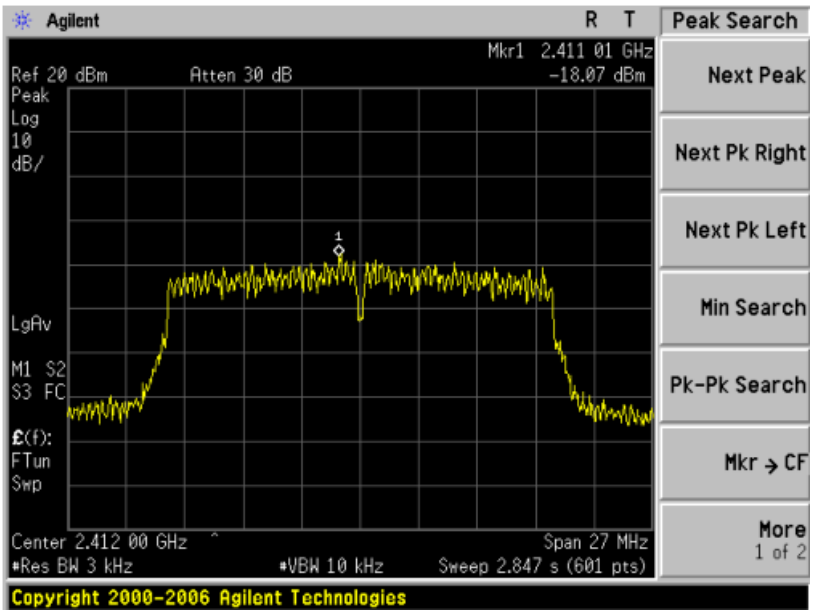
802.11g Channel Middle 2437MHz



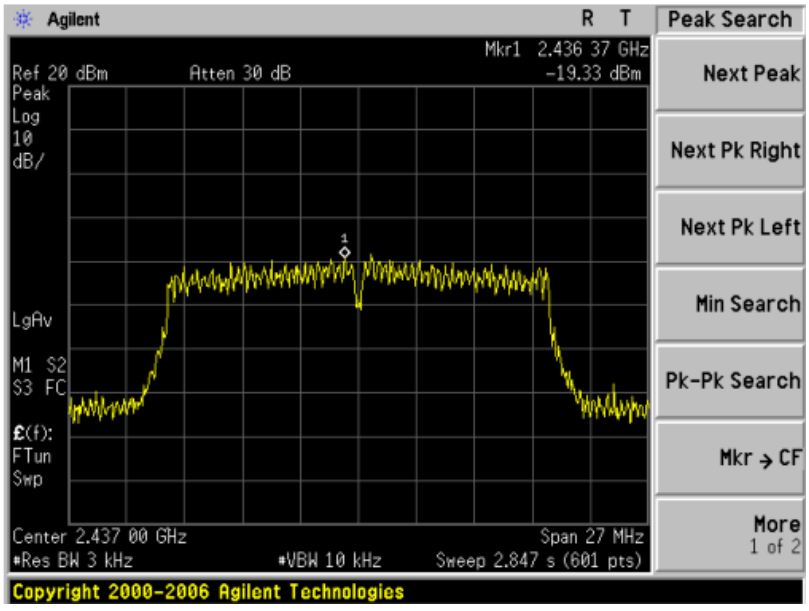
802.11g Channel High 2462MHz



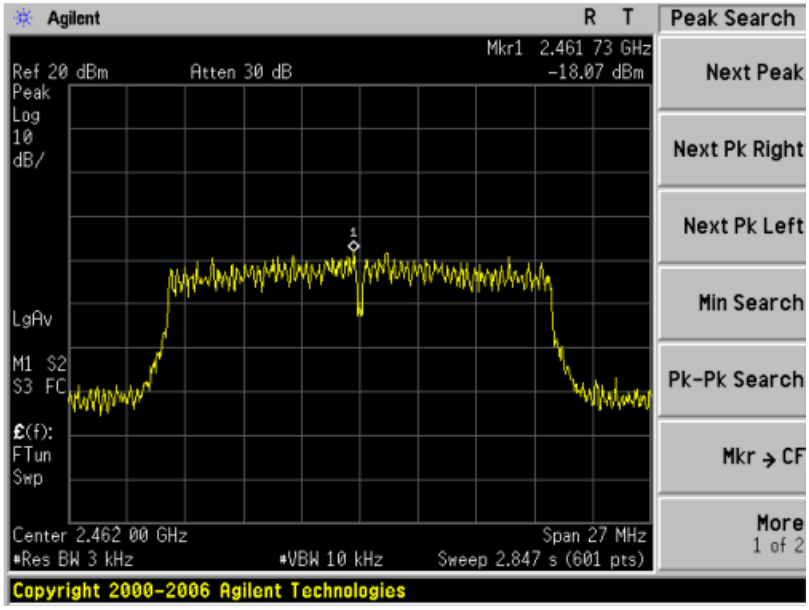
802.11n Channel Low 2412MHz



802.11n Channel High 2437MHz

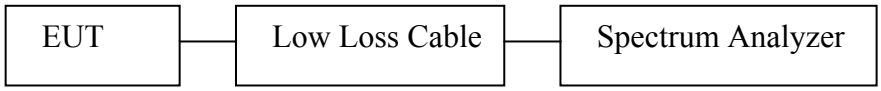


802.11n Channel High 2462MHz



8. BAND EDGE COMPLIANCE TEST

8.1. Block Diagram of Test Setup



8.2. Limits

Section 15.247(d): 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

8.3. Test Procedure

Conducted Band Edge:

8.3.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

8.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

Radiate Band Edge:

8.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

8.3.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

8.3.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

8.3.6. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: RBW=1MHz, VBW=1MHz

8.3.7. The band edges was measured and recorded.

8.4.Test Result

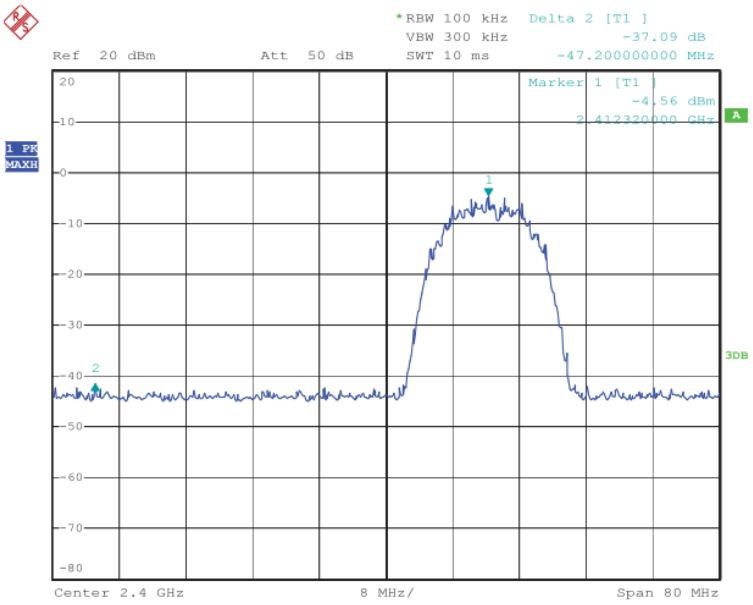
PASS

IEEE 802.b		
Frequency(MHz)	Result of Band Edge(dBc)	Limit of Band Edge(dBc)
2412	37.9	>20 dBc
2462	36.84	>20 dBc

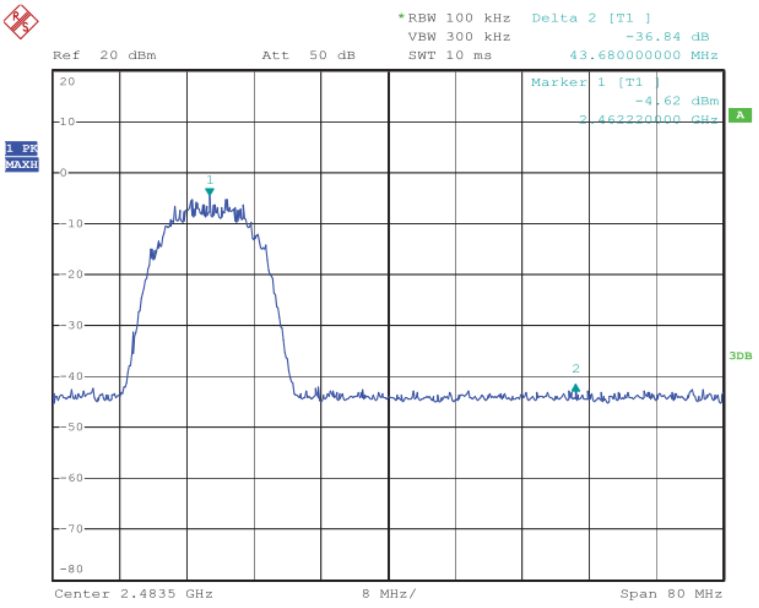
IEEE 802.g		
Frequency(MHz)	Result of Band Edge(dBc)	Limit of Band Edge(dBc)
2412	33.04	>20 dBc
2462	32.23	>20 dBc

IEEE 802.n		
Frequency(MHz)	Result of Band Edge(dBc)	Limit of Band Edge(dBc)
2412	32.45	>20 dBc
2462	32.76	>20 dBc

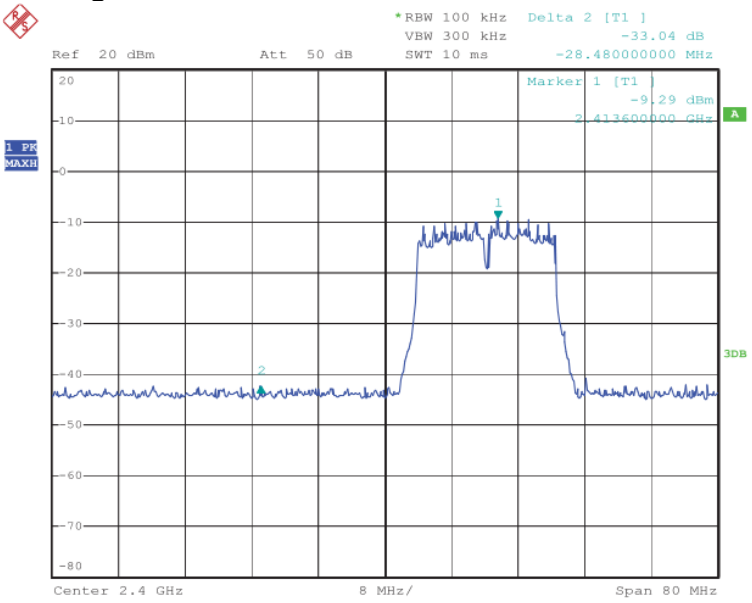
802.11b Channel Low 2412MHz



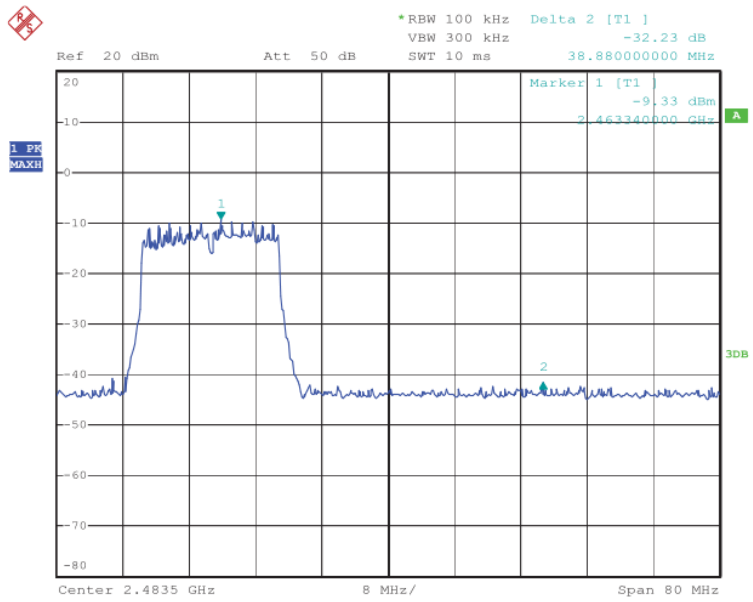
802.11b Channel High 2462MHz



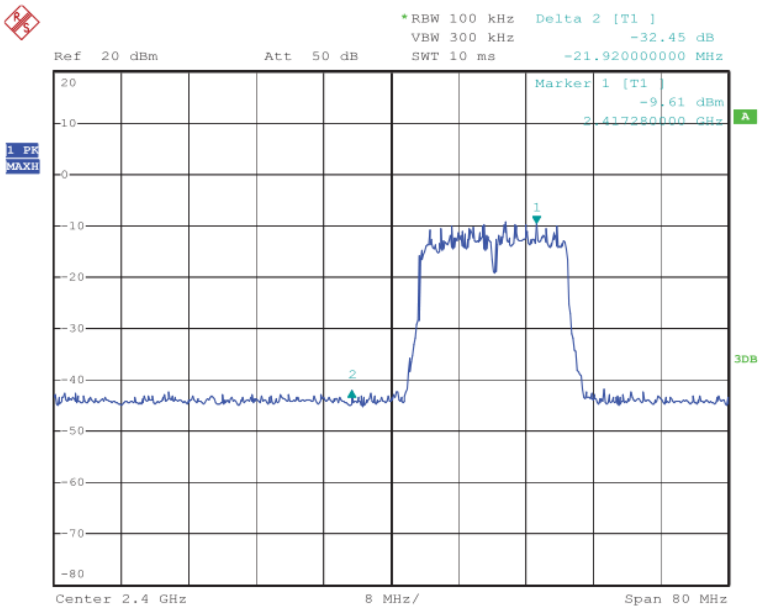
802.11g Channel Low 2412MHz



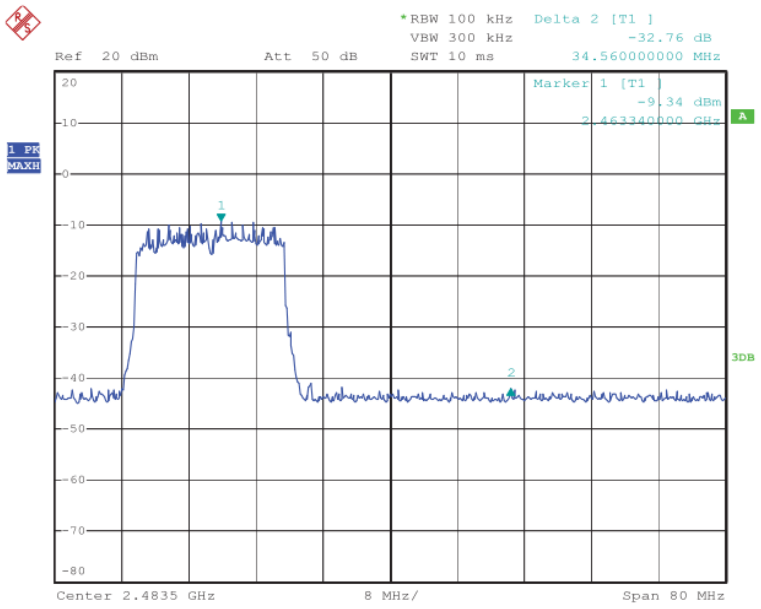
802.11g Channel High 2462MHz



802.11n Channel High 2412MHz



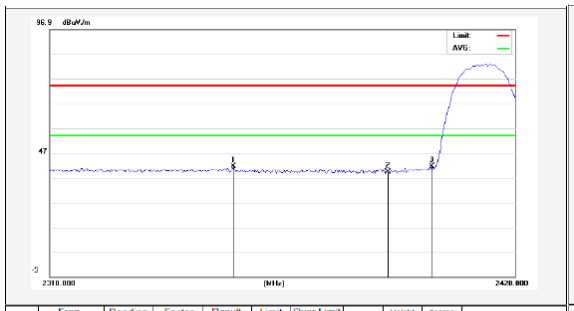
802.11n Channel High 2462MHz



Radiated Band Edge Result

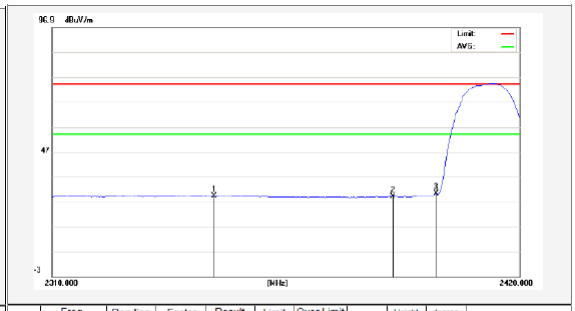
802.11b Channel Low 2412MHz
Horizontal

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2352.900	44.13	-2.60	41.53	74.00	-32.47	peak			
2	2390.000	41.79	-2.51	39.28	74.00	-34.72	peak			
3	2400.000	43.99	-2.49	41.50	74.00	-32.50	peak			

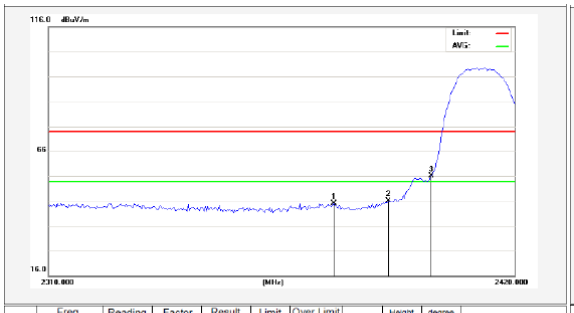
AV



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2347.675	31.93	-2.61	29.32	54.00	-24.68	AVG			
2	2390.000	31.54	-2.51	29.03	54.00	-24.97	AVG			
3	2400.000	32.65	-2.49	30.16	54.00	-23.84	AVG			

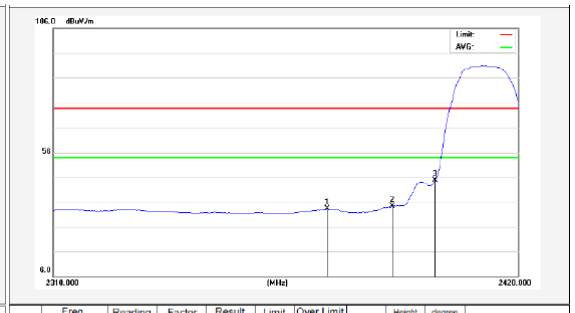
Vertical

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2376.825	47.74	-2.54	45.20	74.00	-28.80	peak			
2	2390.000	48.52	-2.51	46.01	74.00	-27.99	peak			
3	2400.000	58.72	-2.49	56.23	74.00	-17.77	peak			

AV

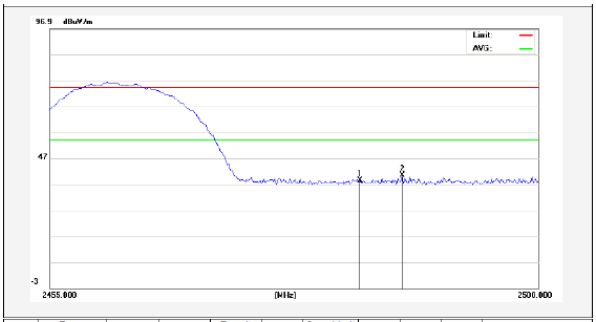


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2374.350	35.85	-2.55	33.30	54.00	-20.70	AVG			
2	2390.000	36.96	-2.51	34.45	54.00	-19.55	AVG			
3	2400.000	47.38	-2.49	44.89	54.00	-9.11	AVG			

Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

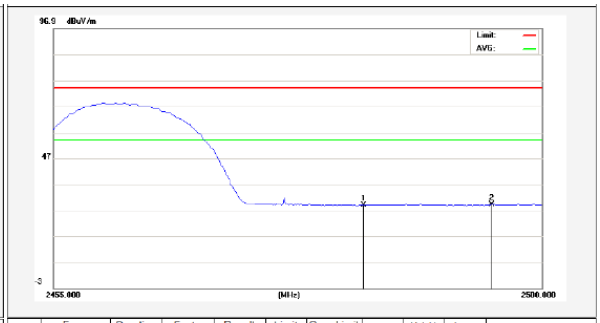
802.11b Channel High 2462MHz
Horizontal

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	40.75	-2.31	38.44	74.00	-35.56	peak			
2	2487.512	42.91	-2.30	40.61	74.00	-33.39	peak			

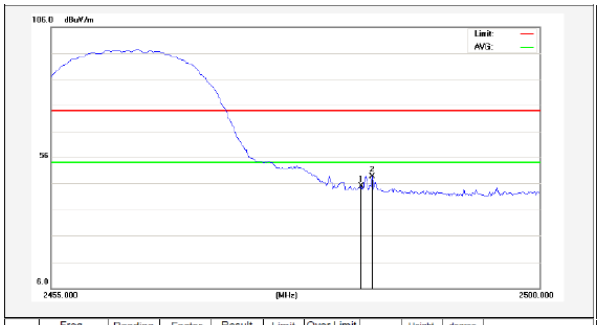
AV



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	31.00	-2.31	28.69	54.00	-25.31	AVG			
2	2495.387	31.30	-2.28	29.02	54.00	-24.98	AVG			

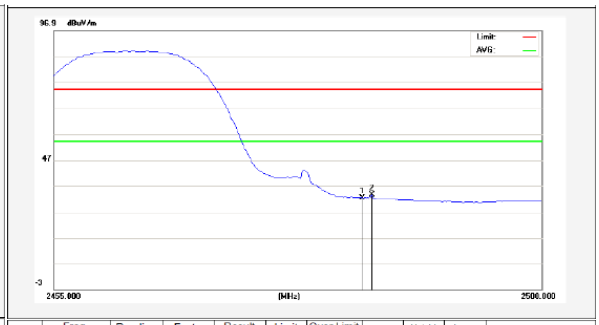
Vertical

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	47.12	-2.31	44.81	74.00	-29.19	peak			
2	2484.588	50.91	-2.30	48.61	74.00	-25.39	peak			

AV

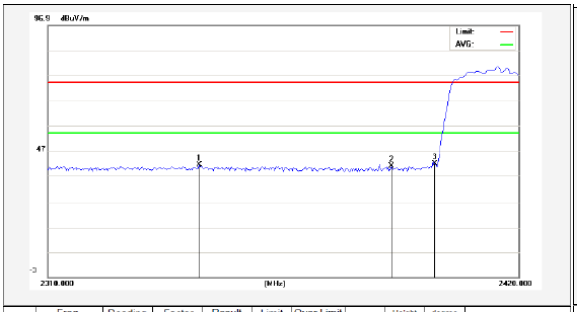


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	34.70	-2.31	32.39	54.00	-21.61	AVG			
2	2484.383	35.89	-2.30	33.59	54.00	-20.41	AVG			

Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

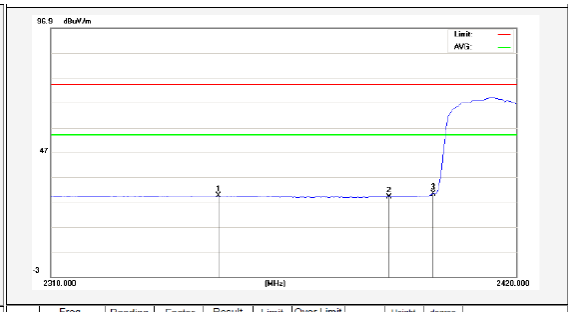
802.11g Channel Low 2412MHz
Horizontal

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2344.925	43.98	-2.61	41.37	74.00	-32.63	peak			
2	2390.000	43.34	-2.51	40.83	74.00	-33.17	peak			
3	2400.000	44.29	-2.49	41.80	74.00	-32.20	peak			

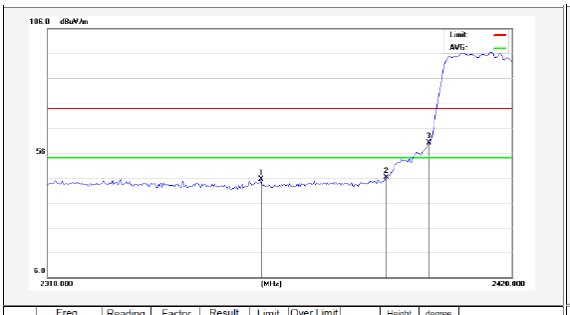
AV



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2349.050	32.09	-2.61	29.48	54.00	-24.52	AVG			
2	2390.000	31.54	-2.51	29.03	54.00	-24.97	AVG			
3	2400.000	32.80	-2.49	30.31	54.00	-23.69	AVG			

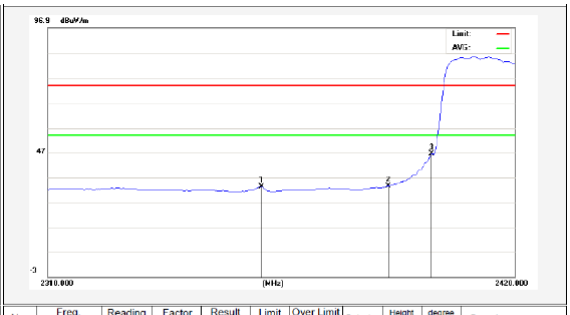
Vertical

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2360.050	47.97	-2.58	45.39	74.00	-28.61	peak			
2	2390.000	48.72	-2.51	46.21	74.00	-27.79	peak			
3	2400.000	62.62	-2.49	60.13	74.00	-13.87	peak			

AV

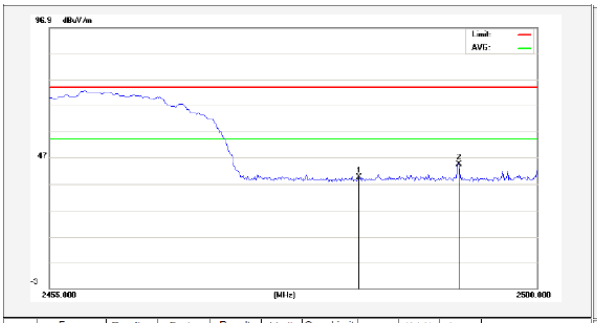


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2359.775	35.88	-2.58	33.30	54.00	-20.70	AVG			
2	2390.000	36.15	-2.51	33.64	54.00	-20.36	AVG			
3	2400.000	48.98	-2.49	46.49	54.00	-7.51	AVG			

Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

802.11g Channel High 2462MHz
Horizontal

PK



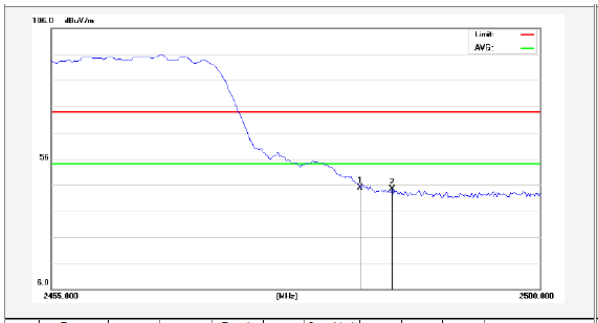
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	41.56	-2.31	39.25	74.00	-34.75	peak			
2	2492.800	46.65	-2.29	44.36	74.00	-29.64	peak			

AV

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	31.10	-2.31	28.79	54.00	-25.21	AVG			
2	2498.088	31.49	-2.27	29.22	54.00	-24.78	AVG			

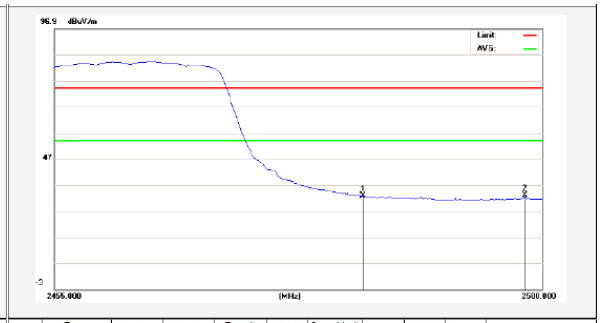
Vertical

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	47.22	-2.31	44.91	74.00	-29.09	peak			
2	2486.387	46.59	-2.30	44.29	74.00	-29.71	peak			

AV

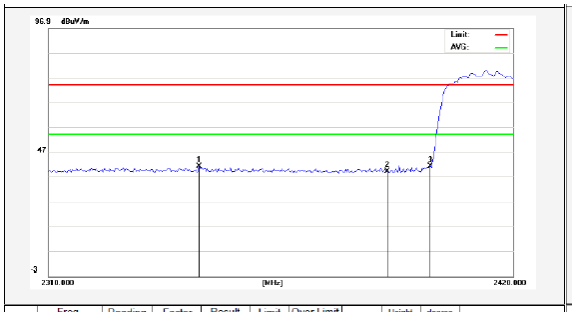


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	35.03	-2.31	32.72	54.00	-21.28	AVG			
2	2498.425	35.32	-2.27	33.05	54.00	-20.95	AVG			

Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

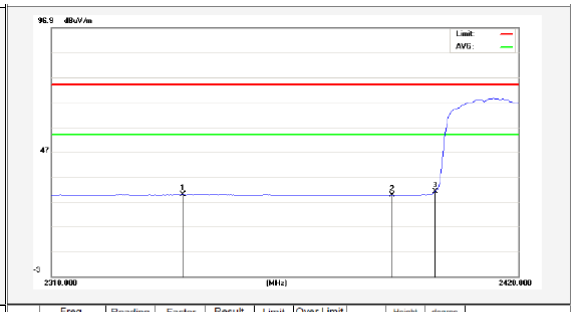
802.11n Channel Low 2412MHz
Horizontal

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2345.200	43.52	-2.61	40.91	74.00	-33.09	peak			
2	2390.000	41.66	-2.51	39.15	74.00	-34.85	peak			
3	2400.000	43.57	-2.49	41.08	74.00	-32.92	peak			

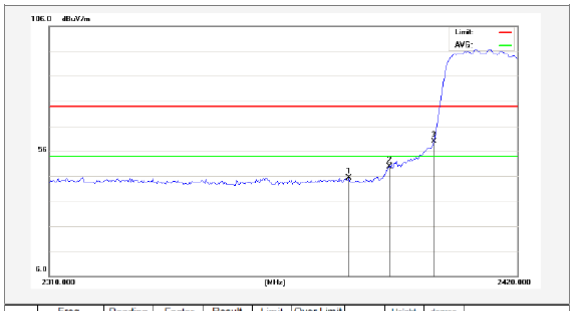
AV



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2340.800	32.45	-2.62	29.83	54.00	-24.17	AVG			
2	2390.000	32.00	-2.51	29.49	54.00	-24.51	AVG			
3	2400.000	33.59	-2.49	31.10	54.00	-22.90	AVG			

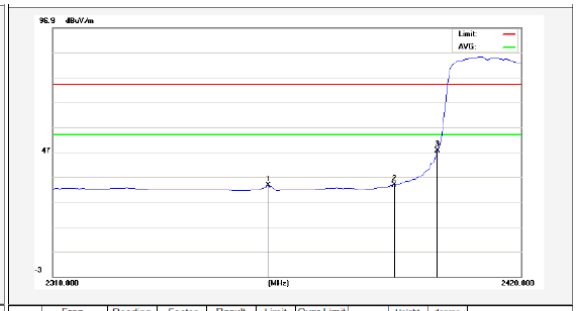
Vertical

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2379.850	48.00	-2.54	45.46	74.00	-28.54	peak			
2	2390.000	52.42	-2.51	49.91	74.00	-24.09	peak			
3	2400.000	62.26	-2.49	59.77	74.00	-14.23	peak			

AV



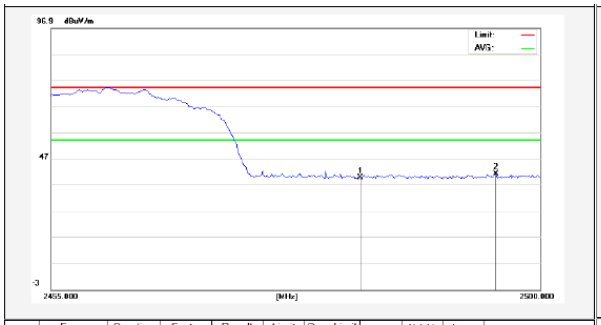
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2380.050	36.01	-2.58	33.43	54.00	-20.57	AVG			
2	2390.000	36.30	-2.51	33.79	54.00	-20.21	AVG			
3	2400.000	50.07	-2.49	47.58	54.00	-6.42	AVG			

Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

802.11n Channel High 2462MHz

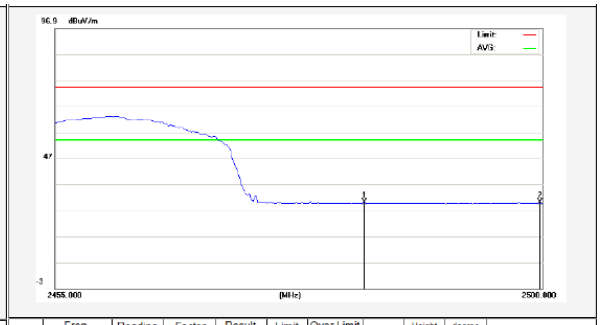
Horizontal

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	41.92	-2.31	39.61	74.00	-34.39	peak			
2	2495.950	43.31	-2.28	41.03	74.00	-32.97	peak			

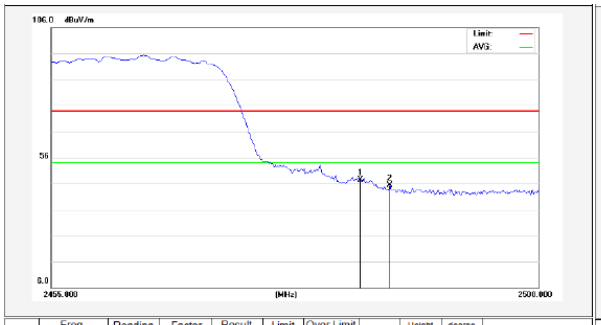
AV



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	32.23	-2.31	29.92	54.00	-24.08	AVG			
2	2499.775	32.18	-2.27	29.91	54.00	-24.09	AVG			

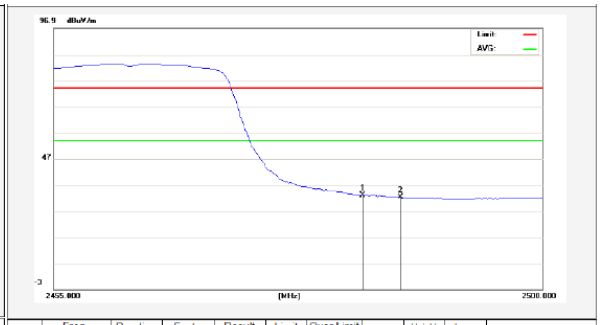
Vertical

PK



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	49.80	-2.31	47.49	74.00	-26.51	peak			
2	2486.275	47.72	-2.30	45.42	74.00	-28.58	peak			

AV



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	35.41	-2.31	33.10	54.00	-20.90	AVG			
2	2486.950	34.64	-2.30	32.34	54.00	-21.66	AVG			

Note:

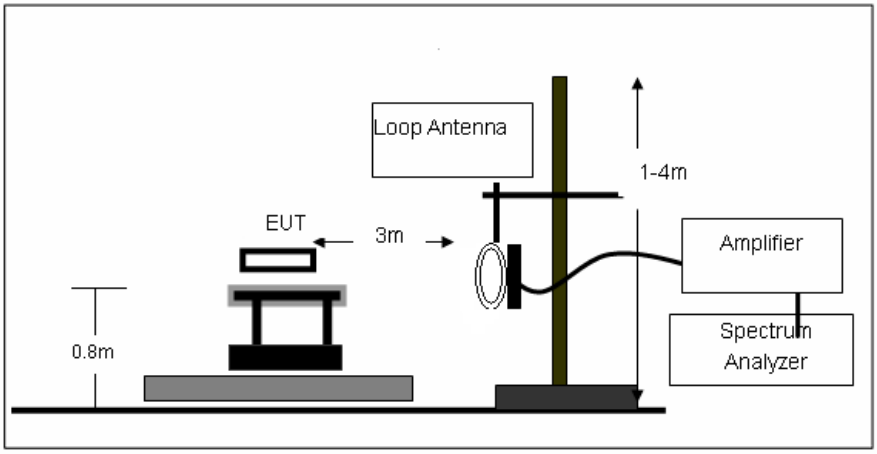
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

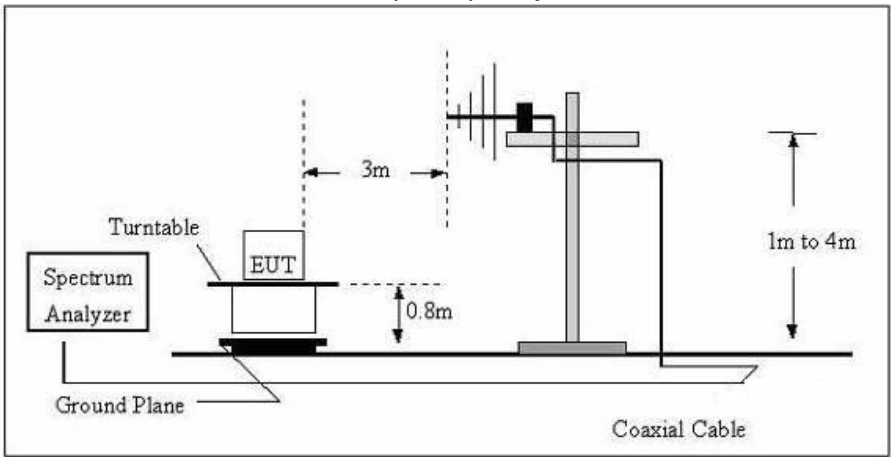
9. RADIATED SPURIOUS EMISSION TEST

9.1. Block Diagram of Test Setup

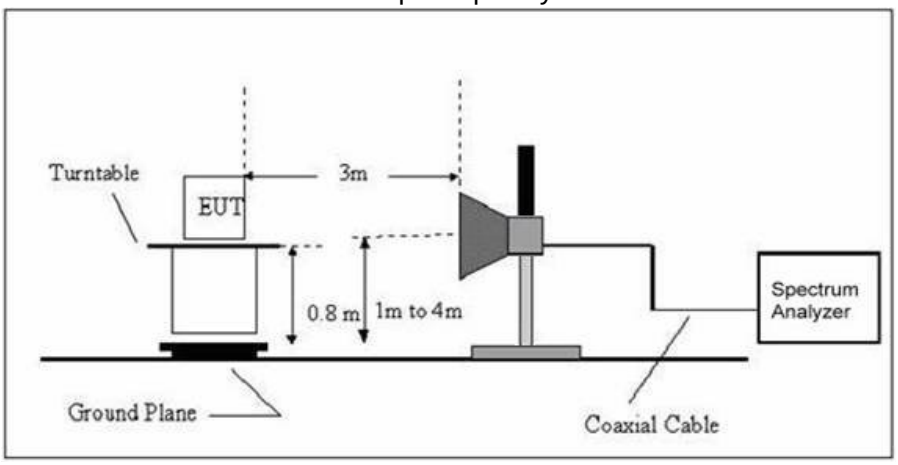
（1）Radiated Emission Test-Up Frequency Below 30MHz



（2）Radiated Emission Test-Up Frequency 30MHz~1GHz



（3）Radiated Emission Test-Up Frequency Above 1GHz



9.2.Limits

Section 15.247(d): 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

9.3.Restricted bands of operation

9.3.1.FCC Part 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	2690-2900	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			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

9.4. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The worst-case data rate for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and 300Mbps for 802.11n mode, based on previous with 802.11 WLAN product design architectures.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

9.5. Test Result

PASS

802.11b Channel Low 2412MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
153.9254	25.27	14.56	39.83	43.50	-3.67	Vertical
218.1194	24.12	16.63	40.75	46.00	-5.25	
500.1302	17.20	23.99	41.19	46.00	-4.81	
153.9254	24.19	14.56	38.75	43.50	-4.75	Horizontal
192.9837	22.62	16.04	38.66	43.50	-4.84	
278.3546	21.98	18.28	40.26	46.00	-5.74	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2412.042	69.40	71.60	-7.41	61.99	64.19	/	/	/	/	Vertical
4824.052	40.13	41.61	0.16	40.29	41.77	54	74	-13.71	-32.23	
2412.013	70.43	72.65	-7.41	63.02	65.24	/	/	/	/	Horizontal
4824.016	40.00	43.60	0.16	40.16	43.16	54	74	-13.84	-30.84	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11b Channel Middle 2437MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
168.0540	24.53	14.70	39.23	43.50	-4.27	Vertical
182.9379	24.25	15.87	40.12	43.50	-3.38	
694.4673	15.08	26.44	41.52	46.00	-4.48	
98.6198	23.70	16.29	39.99	43.60	-3.51	Horizontal
130.0180	24.21	16.63	40.84	46.00	-5.16	
162.4463	23.18	16.80	39.98	46.00	-6.02	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2437.013	72.30	75.58	-7.33	64.97	68.25	/	/	/	/	Vertical
4874.044	40.04	41.13	0.09	40.13	41.22	54	74	-13.87	-32.78	
2437.021	69.36	70.68	-7.33	62.03	63.35	/	/	/	/	Horizontal
4874.014	40.02	40.85	0.09	40.11	40.94	54	74	13.89	-33.06	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11b Channel Middle 2462MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
172.1885	23.26	15.17	38.43	43.50	-5.07	Vertical
236.3092	21.73	16.50	38.23	46.00	-7.77	
556.2269	14.27	25.33	39.60	46.00	-6.40	
183.9379	24.02	15.98	40.00	43.50	-3.50	Horizontal
218.1194	23.35	16.63	39.98	46.00	-6.02	
694.4763	14.18	26.44	40.62	46.00	-5.38	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2462.0014	72.56	76.61	-7.30	65.26	69.31	/	/	/	/	Vertical
4924.022	45.05	46.19	0.34	45.39	46.43	54	74	-8.61	-27.57	
2462.015	72.04	74.98	-7.30	64.74	67.68	/	/	/	/	Horizontal
4924.017	41.65	44.18	0.34	41.99	44.52	54	74	-12.01	-29.48	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11g Channel Low 2412MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
172.7878	25.16	15.30	40.46	43.50	-3.04	Vertical
193.7838	24.15	16.10	40.25	43.50	-3.25	
669.6024	16.23	26.13	42.36	46.00	-3.64	
192.7856	22.55	16.04	38.59	43.50	-4.91	Horizontal
209.9259	23.15	16.35	39.50	43.50	-4.00	
646.4529	14.11	26.06	40.17	46.00	-5.83	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2412.030	71.05	73.90	-7.33	63.72	66.57	/	/	/	/	Vertical
4824.050	41.06	42.62	-0.15	40.91	42.47	54	74	-13.09	-31.53	
2412.032	72.15	75.58	-7.33	64.82	68.25	/	/	/	/	Horizontal
4824.021	40.20	43.15	-0.15	43.05	43.00	54	74	-11.05	-31.00	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11g Channel Middle 2437MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
169.2247	25.08	14.71	39.79	43.50	-3.71	Vertical
183.2397	24.16	15.87	40.03	43.50	-3.47	
662.2163	14.24	26.06	40.30	46.00	-5.70	
193.2380	23.22	16.04	39.26	43.50	-4.24	Horizontal
211.0926	23.25	16.39	39.64	43.50	-3.86	
693.5763	15.23	26.43	41.66	46.00	-4.34	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2437.014	70.68	72.81	-7.36	63.32	65.45	/	/	/	/	Vertical
4874.041	41.16	42.01	0.09	41.25	42.10	54	74	-12.75	-31.90	
2437.036	78.06	81.19	-7.36	70.7	73.83	/	/	/	/	Horizontal
4874.035	43.03	45.60	0.09	43.12	45.69	54	74	-10.88	-28.31	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11g Channel High 2462MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
178.2746	24.02	15.77	39.79	43.50	-3.71	Vertical
279.3456	21.17	18.28	39.45	46.00	-6.55	
576.3269	15.09	25.38	40.47	46.00	-5.53	
163.3025	25.30	14.64	39.67	43.50	-3.83	Horizontal
218.2689	23.10	16.63	39.73	46.00	-6.27	
683.2359	14.17	26.36	40.53	46.00	-5.74	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2462.025	75.13	78.20	-7.15	67.19	71.05	/	/	/	/	Vertical
4924.041	43.00	45.47	0.34	43.34	45.81	54	74	-10.66	-28.19	
2462.038	74.25	77.33	-7.15	67.10	70.18	/	/	/	/	Horizontal
4924.052	42.35	45.05	0.34	42.69	45.39	54	74	-11.31	-28.61	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11n Channel Low 2412MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
191.7730	23.27	16.06	39.33	43.50	-4.17	Vertical
214.3689	24.28	16.51	40.79	43.50	-2.17	
513.6875	18.00	24.09	42.09	46.00	-3.91	
154.6257	24.38	14.56	38.94	43.50	-4.56	Horizontal
193.2158	23.12	16.03	39.24	43.50	-4.26	
710.3697	14.23	26.83	41.50	43.50	-4.85	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2412.033	72.52	74.71	-7.44	68.08	74.71	/	/	/	/	Vertical
4824.050	43.01	45.01	-0.18	42.83	44.83	54	74	-11.17	-29.17	
2412.015	72.54	76.60	-7.44	65.10	69.16	/	/	/	/	Horizontal
4824.135	43.45	45.60	-0.18	43.27	45.42	54	74	-10.73	-28.58	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11n Channel Middle 2437MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
170.5689	25.11	14.84	39.95	43.50	-3.55	Vertical
183.5982	24.24	15.90	40.14	43.50	-3.36	
236.5894	25.16	16.50	41.66	46.00	-4.34	
193.7838	23.17	16.03	39.20	43.50	-4.30	Horizontal
218.1194	24.35	16.63	40.98	46.00	-5.02	
385.1598	19.22	21.72	40.94	46.00	-5.06	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2437.001	71.43	73.70	-7.43	64.00	66.27	/	/	/	/	Vertical
4874.062	41.15	44.30	0.08	41.23	44.38	54	74	-9.76	-9.63	
2437.028	75.45.	78.60	-7.43	68.02	71.17	/	/	/	/	Horizontal
4874.028	43.31	45.57	0.08	43.39	45.65	54	74	-10.61	-28.35	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

802.11n Channel High 2462MHz

For Below 30MHz

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

For 30MHz-1000MHz
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
153.9867	25.26	14.56	40.18	43.50	-3.32	Vertical
170.3258	25.46	14.93	40.39	43.50	-3.11	
456.3258	17.57	23.43	41.00	46.00	-5.00	
210.2598	24.10	16.37	40.47	43.50	-3.03	Horizontal
324.5891	21.14	19.53	40.67	46.00	-5.33	
554.2298	16.20	25.32	41.52	46.00	-4.48	

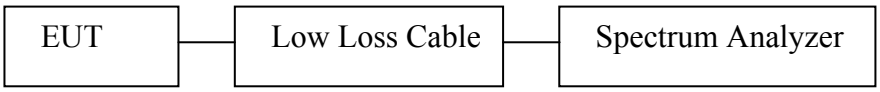
For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2462.035	70.18	73.29	-7.31	62.87	65.98	/	/	/	/	Vertical
4924.019	42.31	45.86	0.36	42.67	46.22	54	74	-11.33	-27.88	
2462.015	72.56	75.74	-7.31	65.25	68.43	/	/	/	/	Horizontal
4924.038	41.25	45.43	0.36	41.61	45.79	54	74	-12.39	-28.21	

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

10. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

10.1.Block Diagram of Test Setup



10.2.Limits

Section 15.247(d): 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

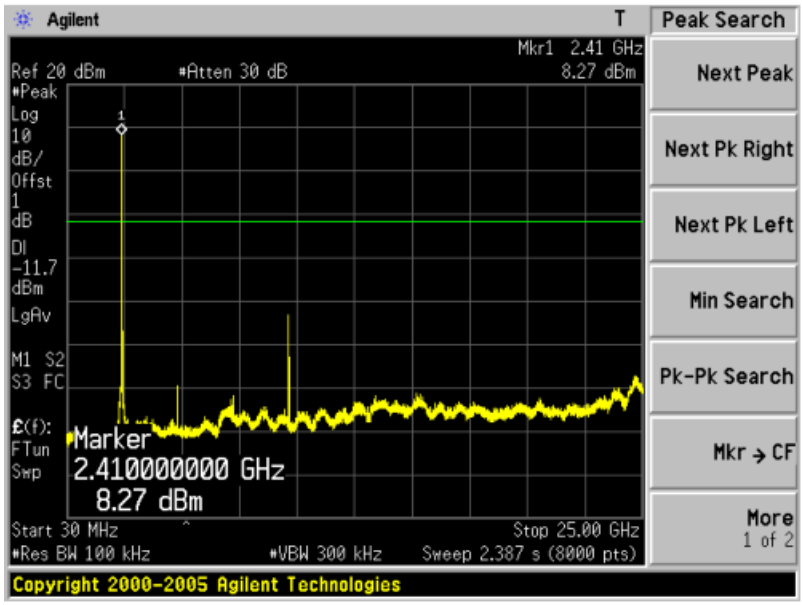
10.3.Test Procedure

10.3.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.
10.3.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.
10.3.3. The Conducted Spurious Emission was measured and recorded.

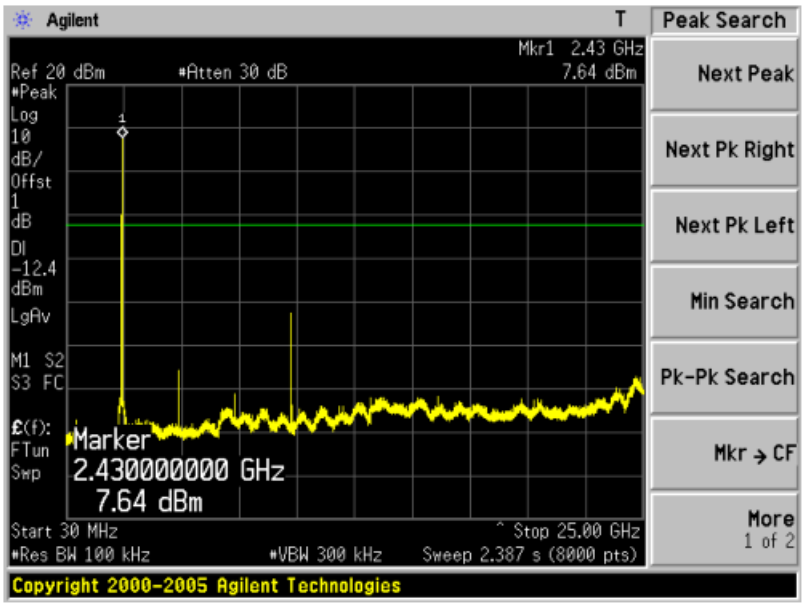
10.4.Test Result

PASS
The spectrum analyzer plots are attached as below.

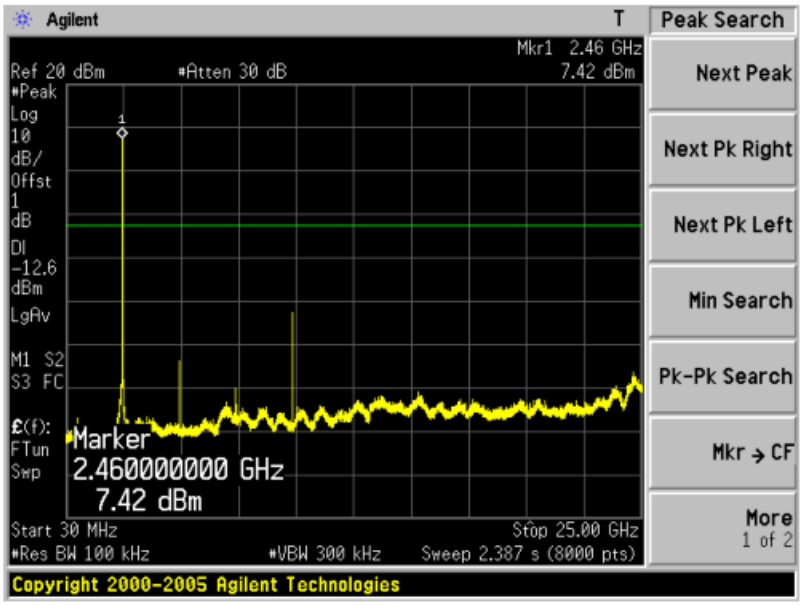
TX 802.11b Channel Low 2412MHz



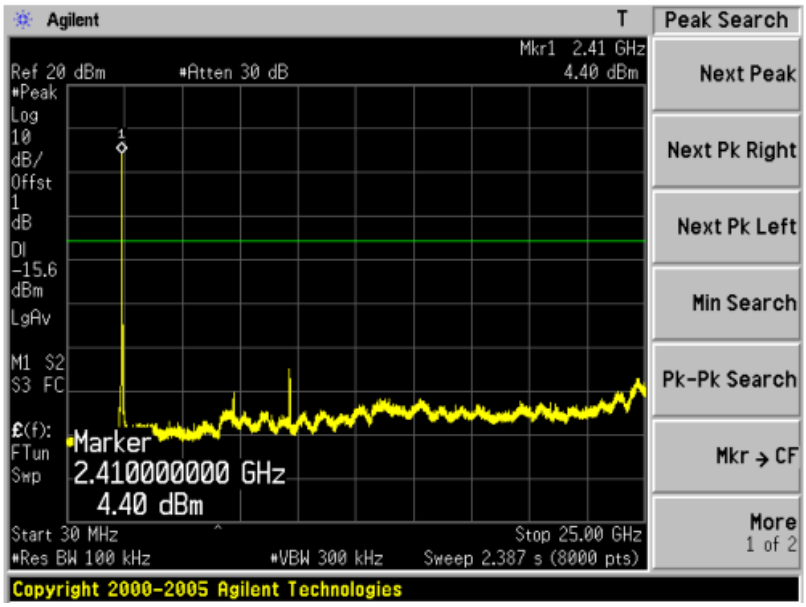
TX 802.11b Channel Middle 2437MHz



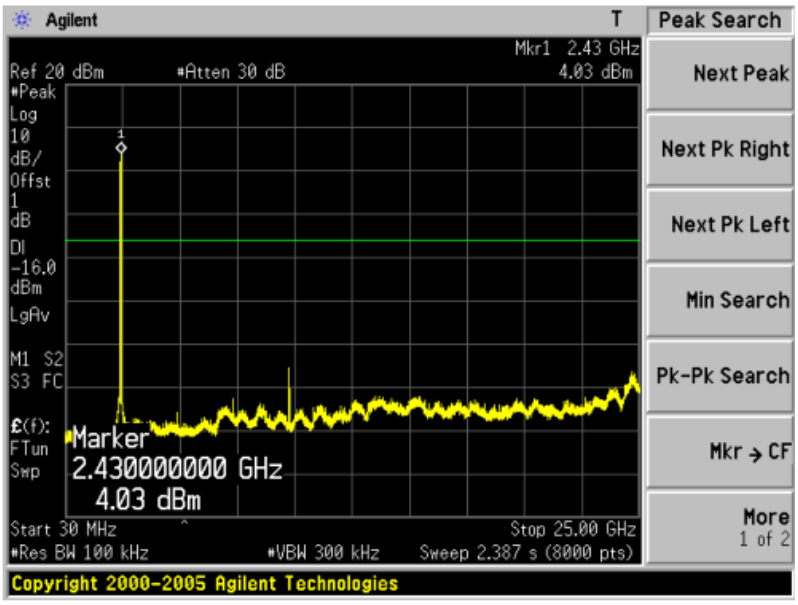
TX 802.11b Channel High 2462MHz



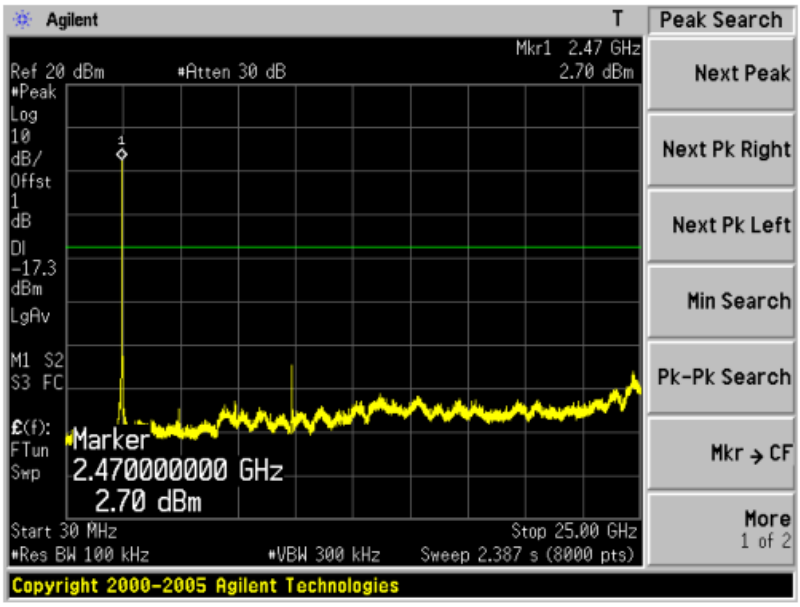
TX 802.11g Channel Low 2412MHz



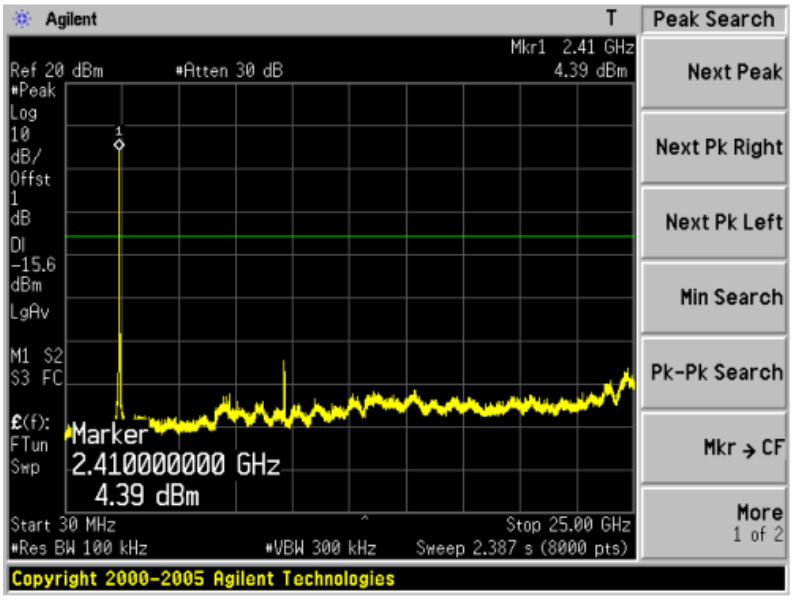
TX 802.11b Channel Middle 2437MHz



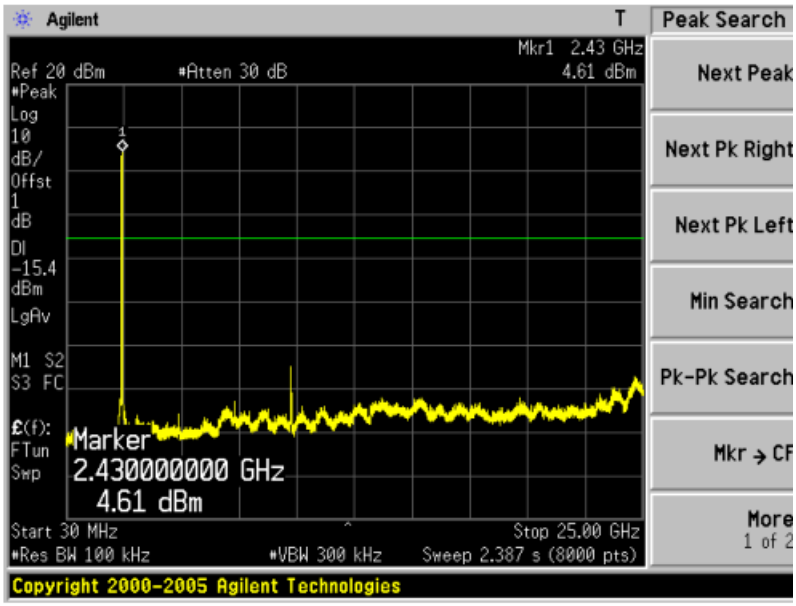
TX 802.11b Channel High 2462MHz



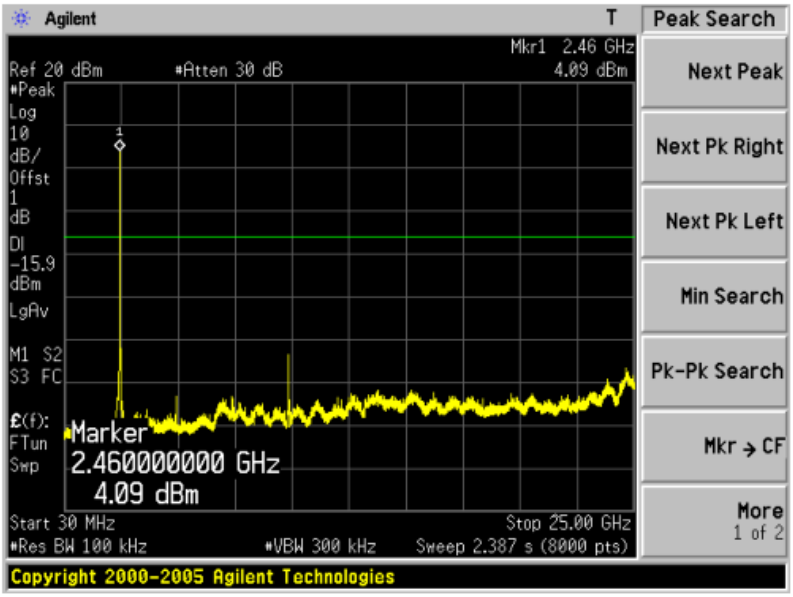
TX 802.11nChannel Low 2412MHz



TX 802.11n Channel Middle 2437MHz

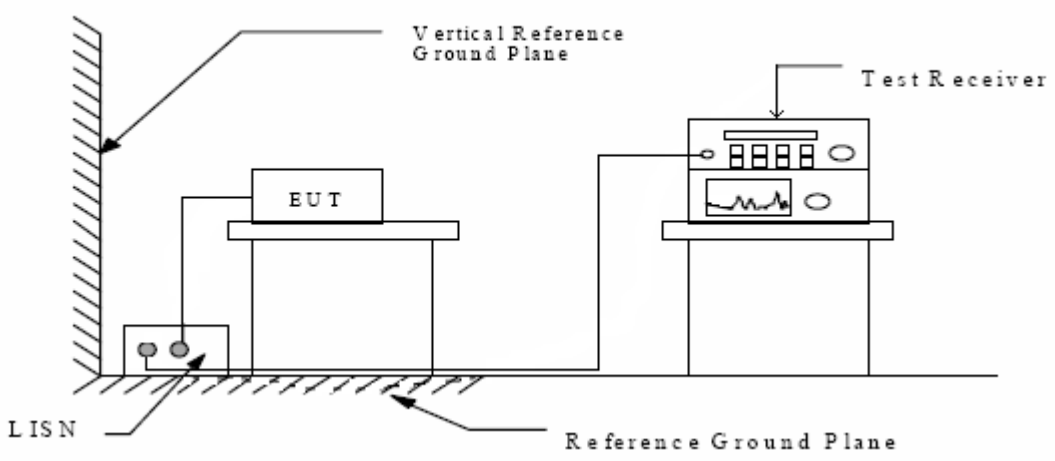


TX 802.11n Channel High 2462MHz



11. AC POWER LINE CONDUCTED EMISSION FOR PART 15 SECTION 15.207(A)

11.1.Block Diagram of Test Setup



11.2.Limits

Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency MHz	Limits (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

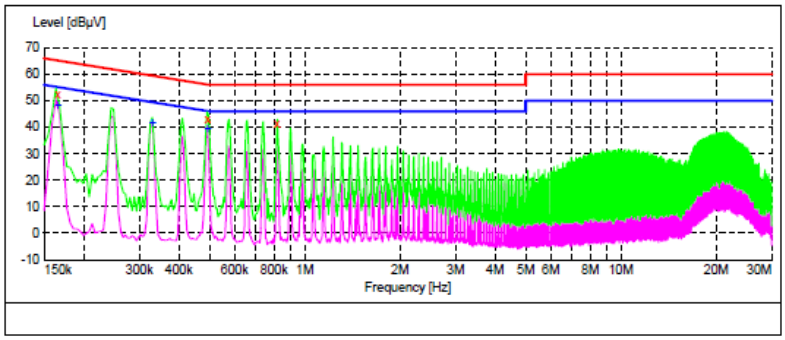
* Decreases with the logarithm of the frequency.

11.3.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2003 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESPI) is set at 9kHz.
The frequency range from 150kHz to 30MHz is checked.

11.4.Test Result

L



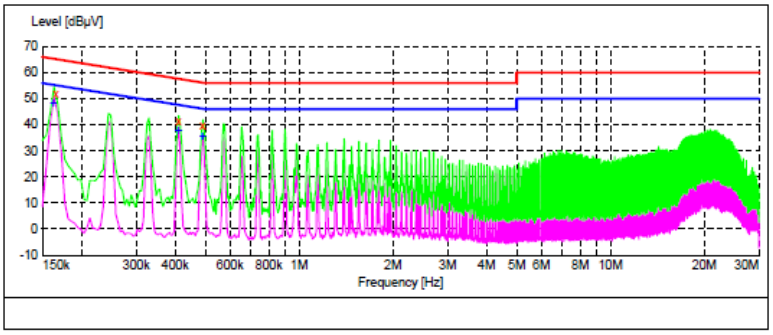
MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.166000	52.30	10.2	65	12.9	QP	L1	GND
0.494000	43.20	10.2	56	12.9	QP	L1	GND
0.818000	41.20	10.2	56	14.8	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.166000	48.70	10.2	55	6.5	AV	L1	GND
0.330000	41.80	10.2	50	7.7	AV	L1	GND
0.494000	39.60	10.2	46	6.5	AV	L1	GND

N



MEASUREMENT RESULT:

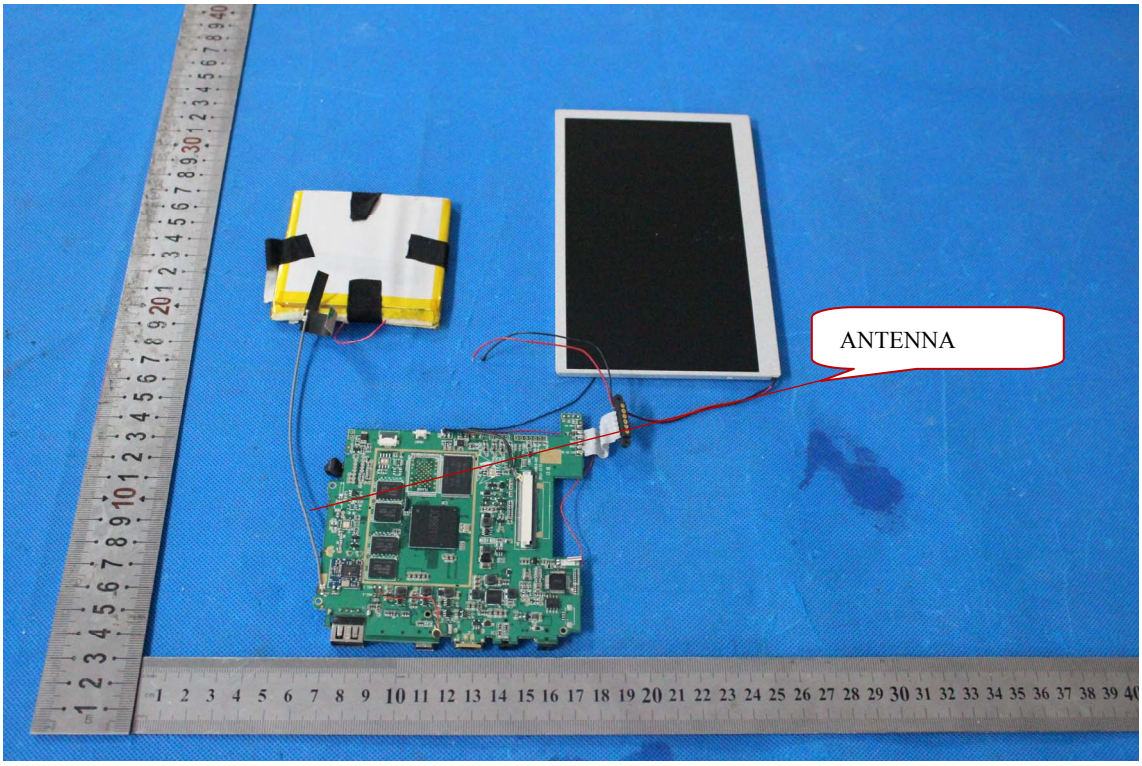
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.166000	52.10	10.2	65	13.1	QP	N	GND
0.410000	41.50	10.2	58	16.1	QP	N	GND
0.490000	39.50	10.2	56	16.7	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.162000	48.60	10.2	55	6.8	AV	N	GND
0.410000	38.10	10.2	48	9.5	AV	N	GND
0.490000	35.60	10.2	46	10.6	AV	N	GND

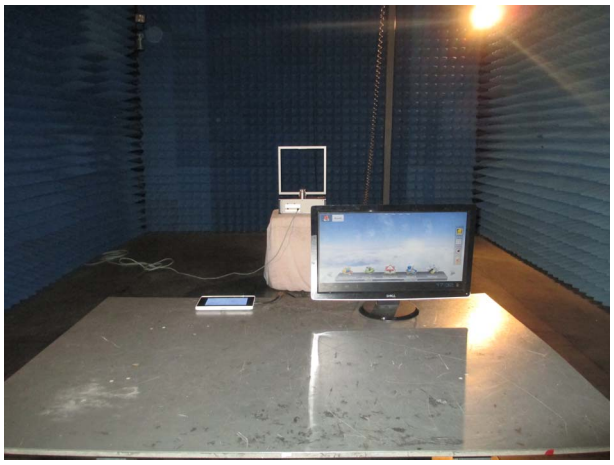
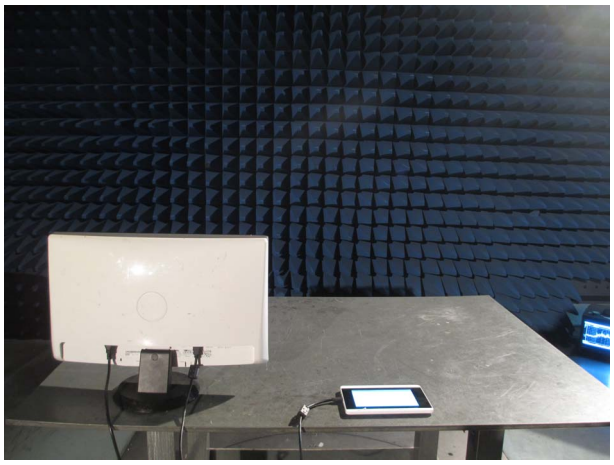
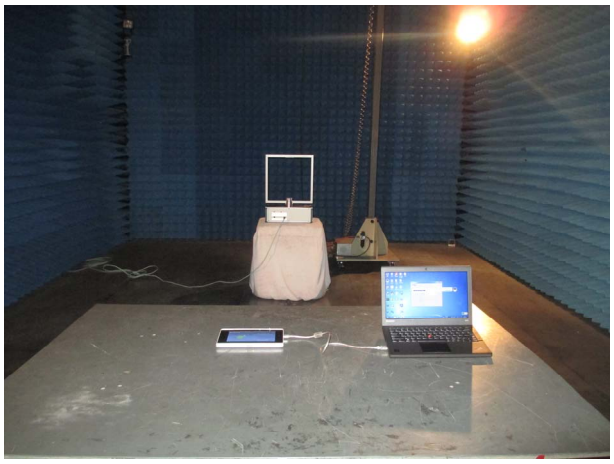
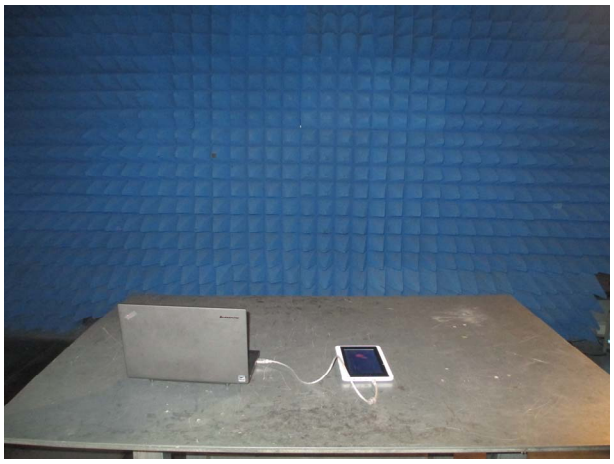
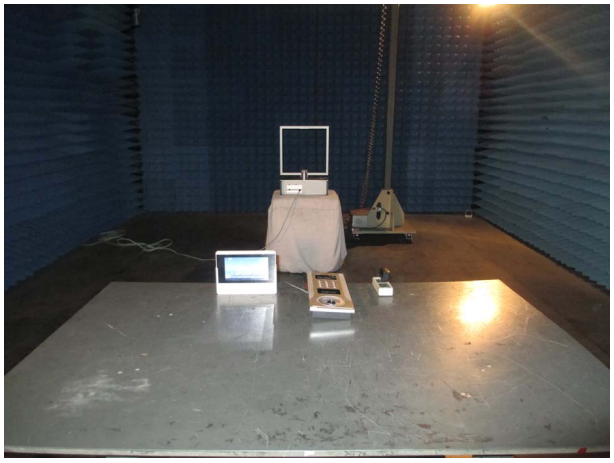
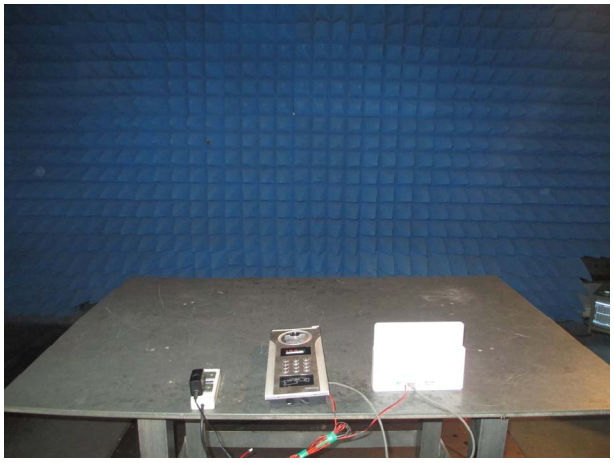
12. ANTENNA REQUIREMENT

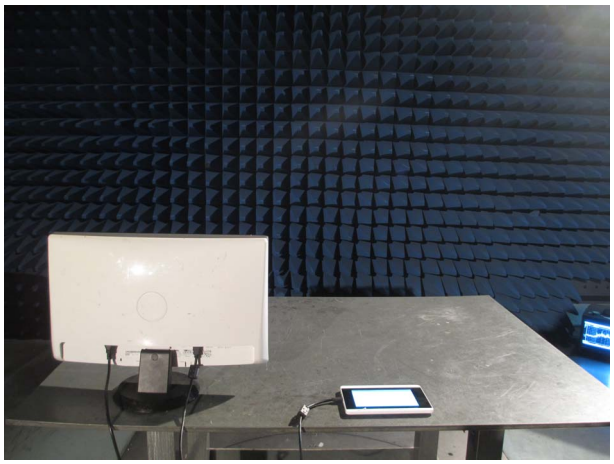
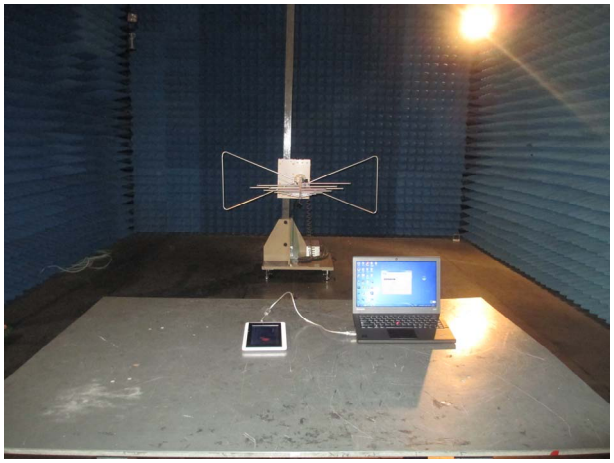
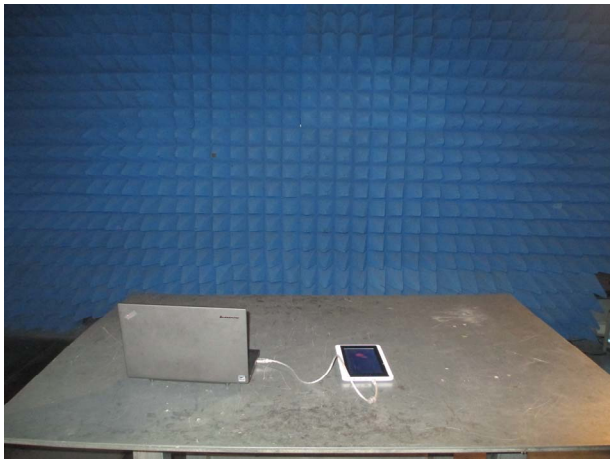
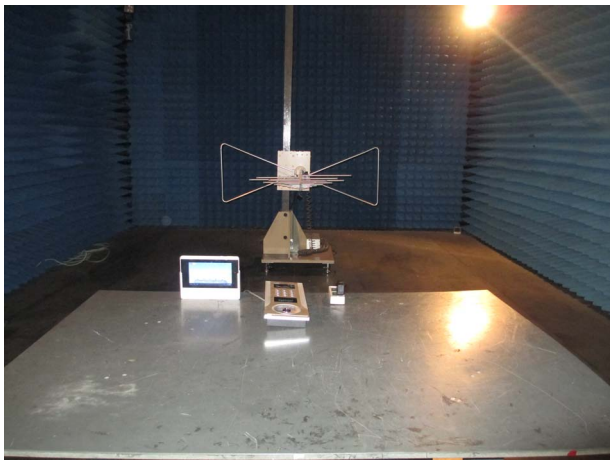
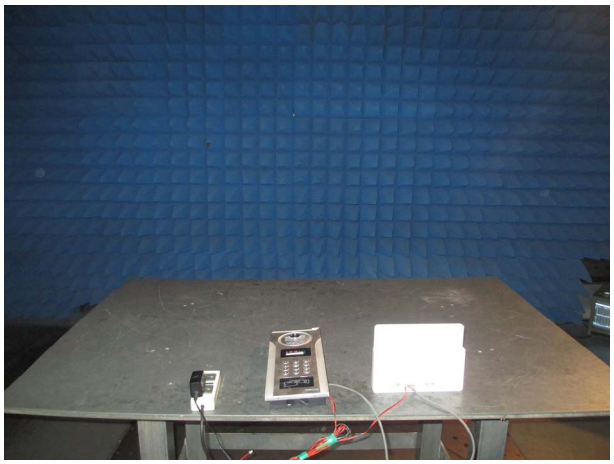
According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. Antenna is fixed by enclosure, can not be changed except take apart the product.

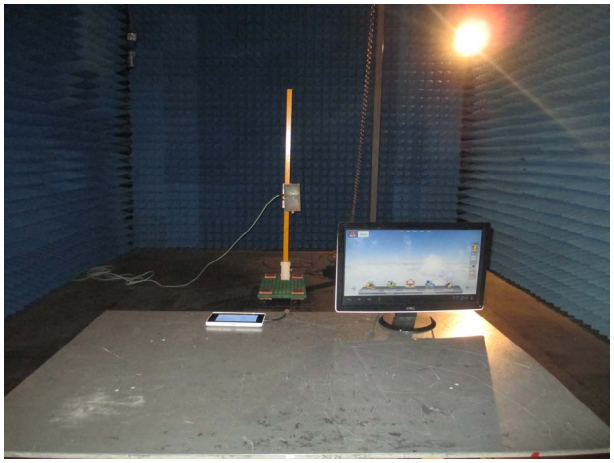
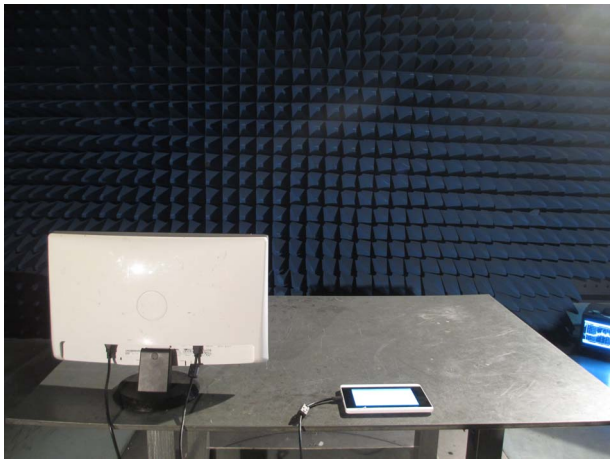
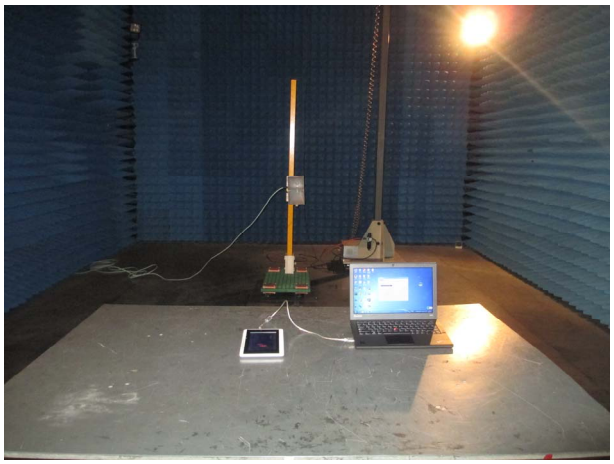
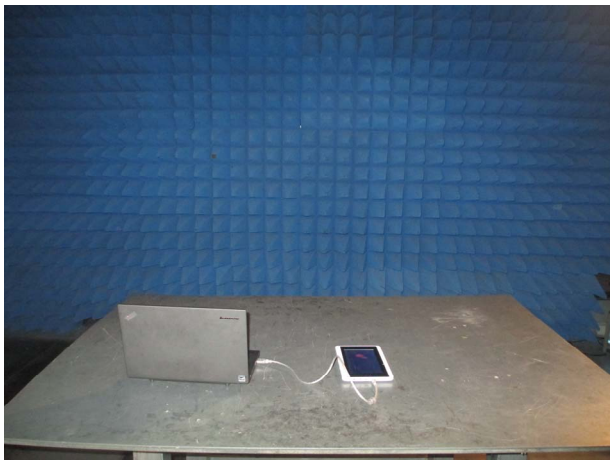
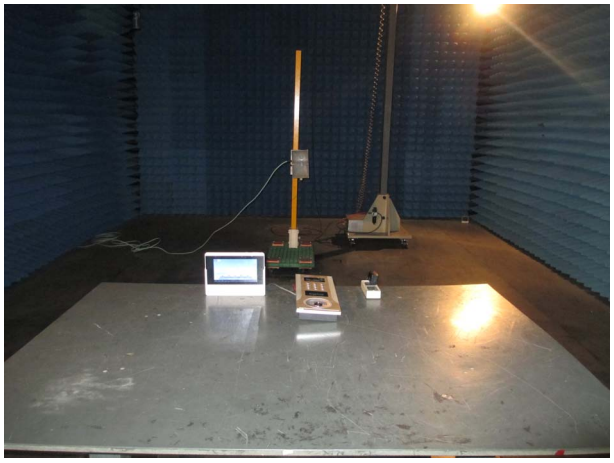
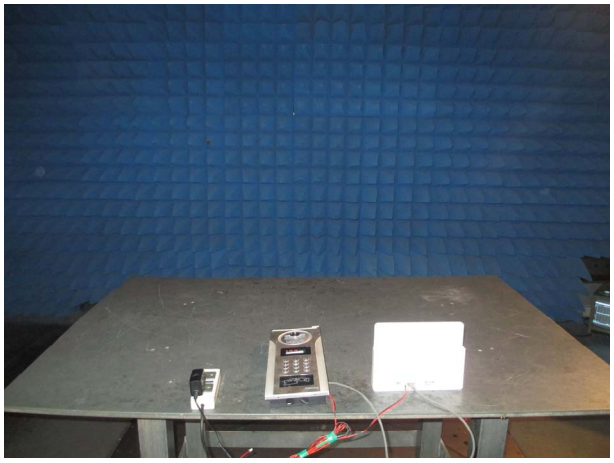


13. PHOTOGRAPH OF TEST

Radiated Emission

Ac power line conducted emission