FCC TEST REPORT

For

Pronto Networks, Inc

Pronto Intelligent Access Point

Trade Name	:	Pronto
Model No.	:	PPAP-11n-S-48C, PPAP-11n-S-24C
FCC ID	:	TVV-PPAP
Frequency range	:	2412-2462MHz
Number of Channel	:	11CH
Type of antenna	:	Internal monopole Antenna
Applicant	:	Pronto Networks, Inc 1966 Tice Valley Blvd #411 Walnut Creek, CA 94595
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.:	:	WST20140622006
Test Date	:	June 22-26, 2014
Date of Report	:	June 26, 2014

TABLE OF CONTENT

TEST REPORT DECLARATION

Applicant	:	Pronto Networks, Inc
Manufacturer	:	Shenzhen Yunlink Technology Co., Ltd
EUT Description	:	Pronto Intelligent Access Point
Model NO.	:	PPAP-11n-S-48C, PPAP-11n-S-24C
Serial NO.	:	N/A
Power Supply	:	AC 120V/60HZ (Adapter)

Measurement Procedure Used:
FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4:2009

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: June 22-26, 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	:	Pronto Intelligent Access Point
Model Number	:	PPAP-11n-S-48C, PPAP-11n-S-24C
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	:	Pronto Networks, Inc 1966 Tice Valley Blvd #411 Walnut Creek, CA 94595
Manufacturer	:	Shenzhen Yunlink Technology Co., Ltd B2 Building, An'le Industrial Zone, Hangcheng Road, gushu, xixiang town, Baoan, Shenzhen Guangdong Province China
Test Date	:	June 22-26, 2014

1.2. Test Facility

Test Firm	:	Shenzhen CTL Testing Technology Co., Ltd. Certificated by FCC, Registration No.: 970318
Address	:	Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan Shenzhen Guangdong China
Tel	:	(86)755-89486194
Fax	:	(86)755-26636041

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

No.	Equipment	Manufacturer	Model No.	S/N	Cal. Date	Next Cal. Date
1	ESD TESTER	HAEFELY	PESD1610	H401552	2013.12.16	2014.12.16
2	MAGNETIC FIELD TESTER	HAEFELY	MAG100	150577	2013.12.16	2014.12.16
3	5kVA AC POWER SOURCE	CALIFORNIA INSTRUMENTS	5001ix-400	55692	2013.12.16	2014.12.16
4	HARMONICS/FLICKER TEST ANALYZER	CALIFORNIA INSTRUMENTS	PACS-1	72254	2013.12.16	2014.12.16
5	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200283933	2013.12.16	2014.12.16
6	CONICAL HOUSING	ATC	N/A	N/A	N/A	N/A
7	VOLTAGE PROBE	SCHWARZBECK	TK9416	N/A	2013.12.16	2014.12.16
8	RF CURRENT PROBE	ROHDE& SCHWARZ	EZ-17	100048	2013.12.16	2014.12.16
9	BILOG ANTENNA	SCHWARZBECK	VULB9163	194	2013.12.16	2014.12.16
10	SPECTRUM ANALYZER	ANRITSU	MS2651B	N/A	2013.12.16	2014.12.16
11	PRE-AMPLIFIER	AGILENT	8447D	294A10619	2013.12.16	2014.12.16
12	RF COAXIAL CABLE(844 CHAMBER)	SCHWARZBECK	N-5m	NO.1	2013.12.16	2014.12.16
13	THERMO-HYGROMETER	OREGON SCIENTIFIC	JB913R	GZ-WS004	2013.12.16	2014.12.16
14	1# SHIELDING ROOM	CHANGZHOU ZHONGYU	843	N/A	N/A	N/A
15	2# SHIELDING ROOM	CHANGZHOU ZHONGYU	843	N/A	N/A	N/A
16	3m Semi-ANECHOIC CHAMBER	CHANGZHOU ZHONGYU	844	N/A	N/A	N/A
17	ANTENNA/TURNTABLE CONTROLLER	INNCO	CO2000	CO2000/077/ 7301203/L	N/A	N/A
18	101 LCR METER	YANGZHI	YD2810B	20101170	2013.12.16	2014.12.16
19	RF COAXIAL CABLE(844 CHAMBER)	NTGS8017	N-1m	NO.6	2013.12.16	2014.12.16
20	RF COAXIAL CABLE(844 CHAMBER)	NTGS8017	N-1m	NO.7	2013.12.16	2014.12.16
21	AUDIO GENERATOR	GW	GAG-809	EG835424	N/A	N/A
22	THERMO-HYGROMETER	OREGON SCIENTIFIC	JB913R	GZ-WS002	2013.12.16	2014.12.16

No.	Equipment 29	Manufacturer	Model No.	S/N	Cal. Date	Next Cal. Date
23	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	PRO-BASE	0403271	2013.12.16	2014.12.16
24	CAPACITIVE CLAMP (EFT)	THERMO	PRO-CCL	0403272	2013.12.16	2014.12.16
25	COUPLER DECOUPLER FOR TELECOM LINES	THERMO	CM-TEL-CD	0403273	2013.12.16	2014.12.16
26	L.I.S.N.	ROHDE& SCHWARZ	ESH3-Z5	100305	2013.12.16	2014.12.16
27	EMI TEST RECEIVER	ROHDE& SCHWARZ	ESPI-3	100396/003	2013.12.16	2014.12.16
28	SIGNAL GENERATOR	ROHDE& SCHWARZ	SML01	101161	2013.12.16	2014.12.16
29	EMI TEST RECEIVER	ROHDE& SCHWARZ	ESPI-3	101526/003	2013.12.16	2014.12.16
30	SPECTRUM ANALYZER	AGILENT	E7405A	MY45115511	2013.12.16	2014.12.16
31	L.I.S.N.	SCHWARZBECK	NSLK8126	8126431	2013.12.16	2014.12.16
32	PULSE LIMITER (FOR ESPI3)	ROHDE& SCHWARZ	ESH3-Z2	100815	2013.12.16	2014.12.16
33	PRE-AMPLIFIER	ROHDE& SCHWARZ	CBLU1183540-01	3791	2013.12.16	2014.12.16
34	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200506474	2013.12.16	2014.12.16
35	BILOG ANTENNA	SCHWARZBECK	VULB9163	9163-323	2013.12.16	2014.12.16
36	HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-655	2013.12.16	2014.12.16
37	HORN ANTENNA	SCHWARZBECK	BBHA9170	9170-359	N/A	N/A
38	LOOP ANTENNA	SCHWARZBECK	FMZB1516	1516131	2013.12.16	2014.12.16
39	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	2013.12.16	2014.12.16
40	CAPACITIVE CLAMP	EM TEST	HFK	0509-34	2013.12.16	2014.12.16
41	Transformer	EM TEST	V4780S2	0109-44	N/A	N/A
42	Conducted Immunity Test System	FRANKONIA	CIT-10	126B1121	2013.12.16	2014.12.16
43	CDN	FRANKONIA	CDN-M2/3	A3027020	2013.12.16	2014.12.16
44	EM Injection Clamp	FCC	F-203I-23mm	091824	2013.12.16	2014.12.16
45	LISN	AFJ	LS16C	16010946249	2013.12.16	2014.12.16
46	CLICK METER	AFJ	CL55C	55040947164	2013.12.16	2014.12.16

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

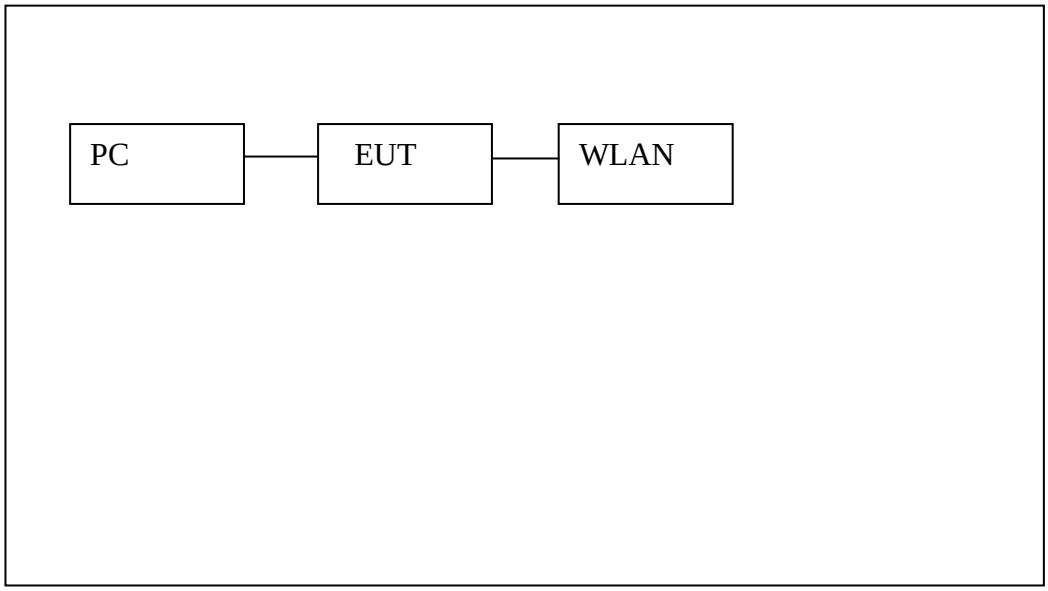
802.11g Transmitting mode

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

802.11n Transmitting mode

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

Configuration and peripherals



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

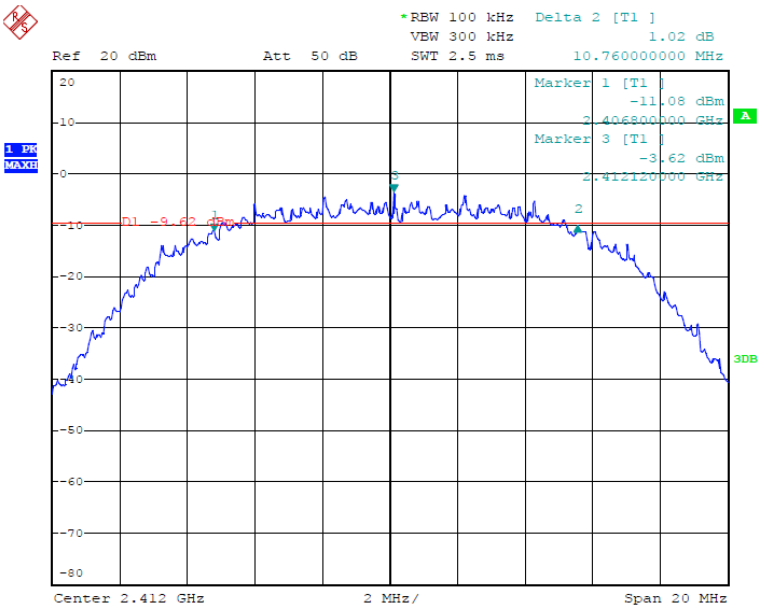
802.11b			
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**	**Limit (MHz)**
Low	2412	10.76	>0.5MHz
Middle	2437	10.60	>0.5MHz
High	2462	10.48	>0.5MHz

802.11g			
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**	**Limit (MHz)**
Low	2412	16.60	>0.5MHz
Middle	2437	16.56	>0.5MHz
High	2462	16.56	>0.5MHz

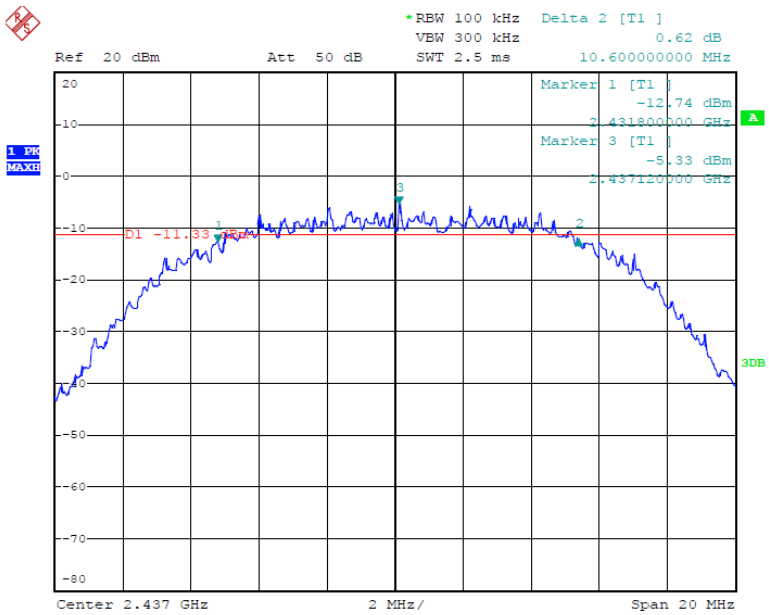
802.11n			
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**	**Limit (MHz)**
Low	2412	17.76	>0.5MHz
Middle	2437	17.72	>0.5MHz
High	2462	17.76	>0.5MHz

The spectrum analyzer plots are attached as below.

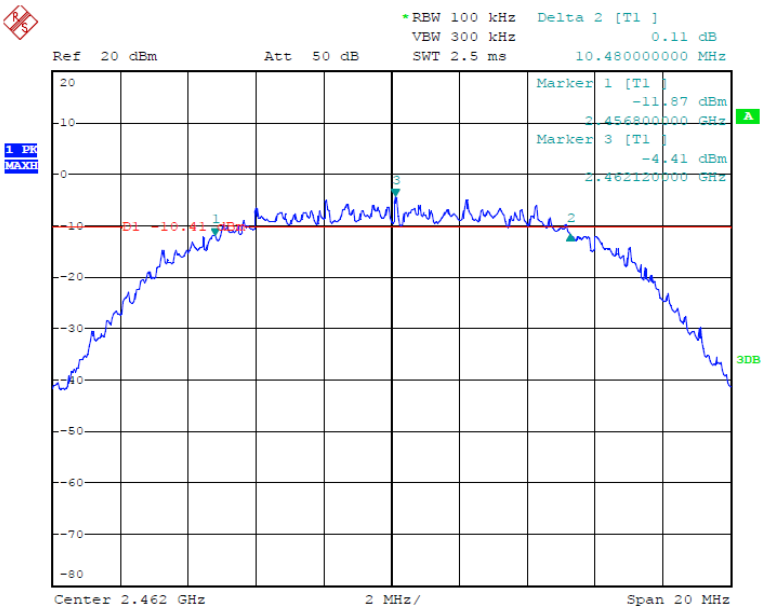
802.11b Channel Low 2412MHz



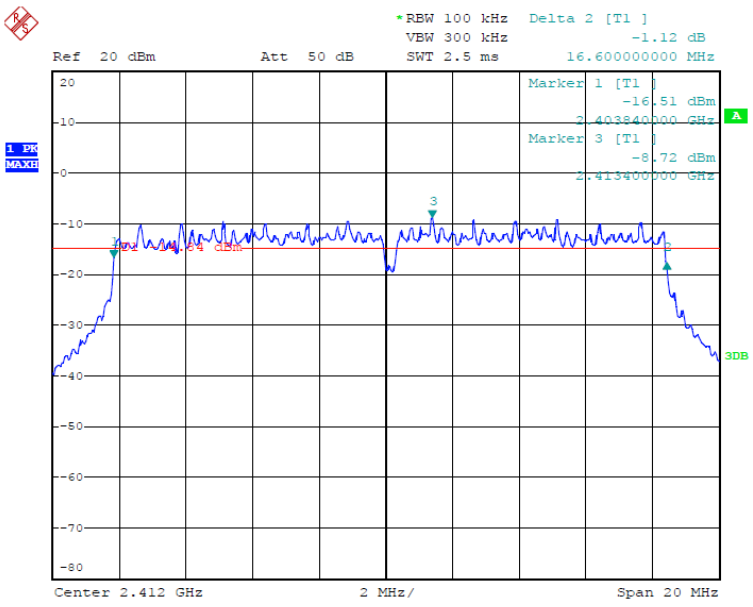
802.11b Channel Middle 2437MHz



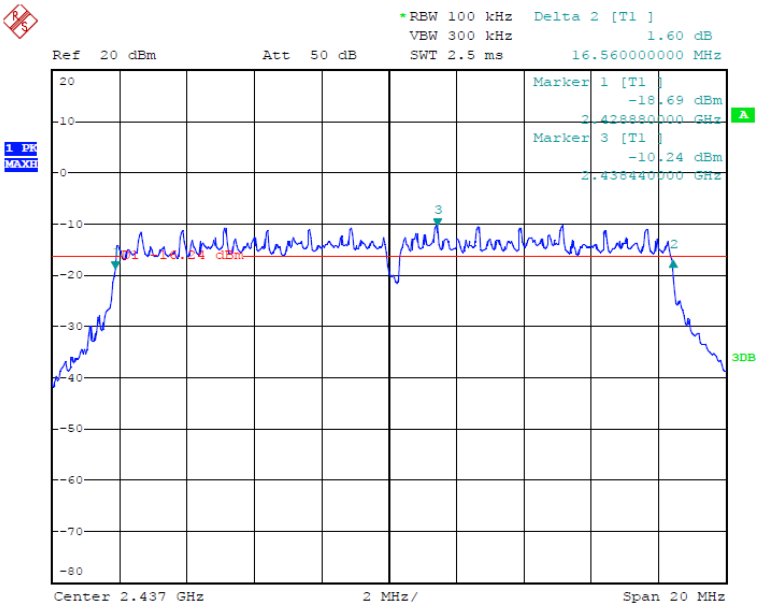
802.11b Channel High 2462MHz



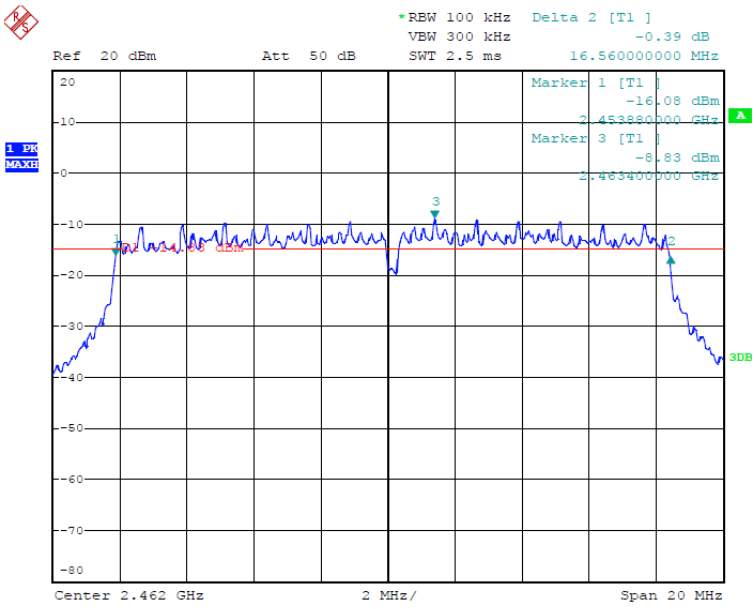
802.11g Channel Low 2412MHz



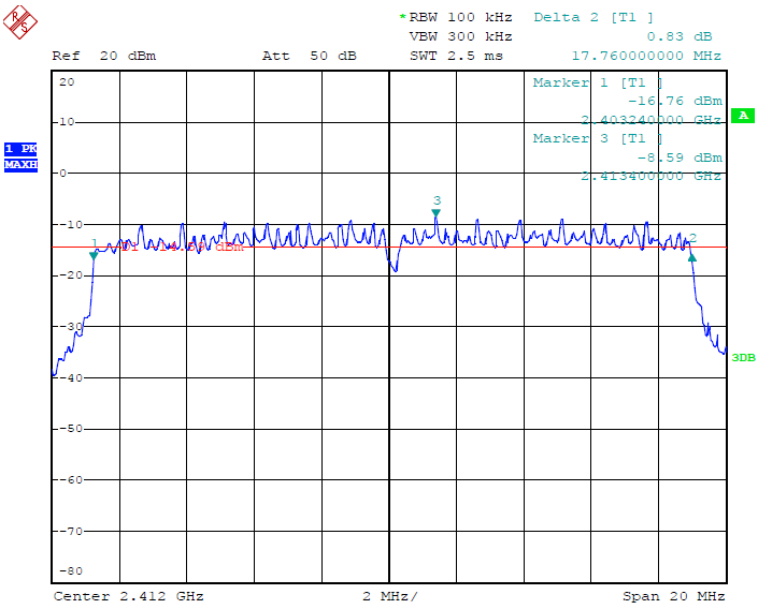
802.11g Channel Middle 2437MHz



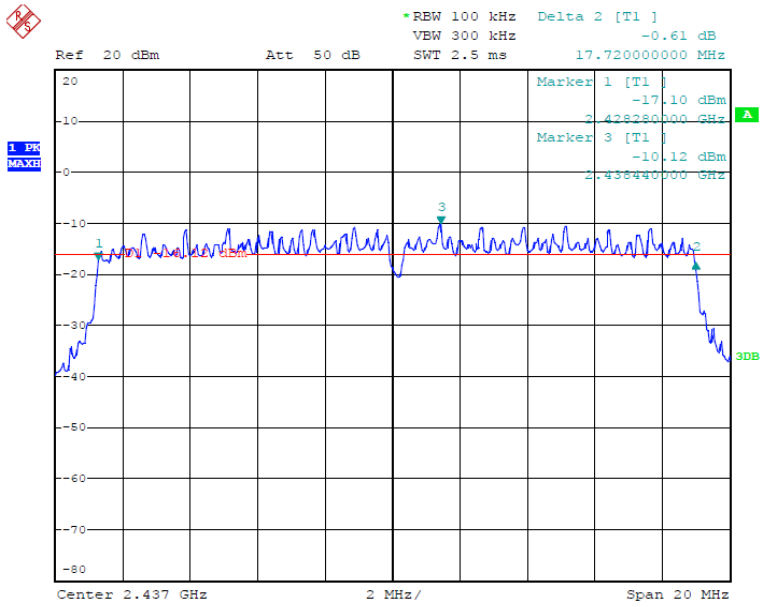
802.11g Channel High 2462MHz



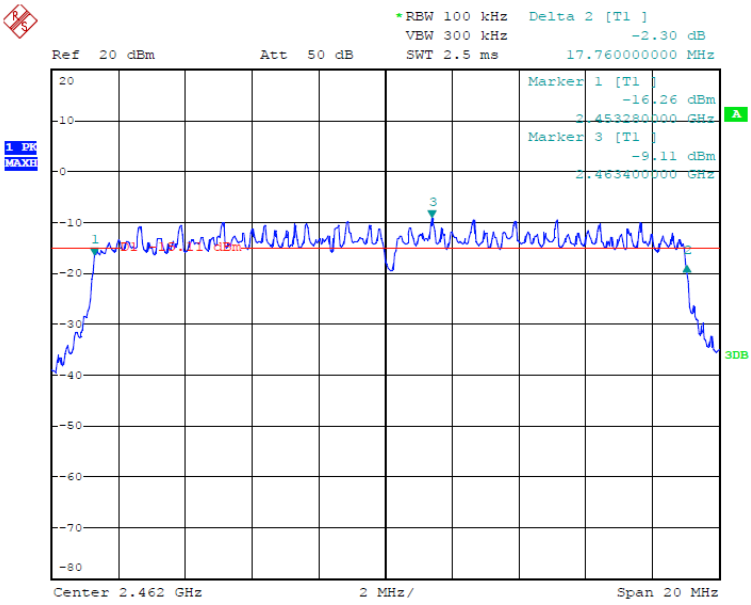
802.11n Channel Low 2412MHz



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

6.3.1. The transmitter output was connected to the spectrum analyzer through a low
6.3.2. Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.
6.3.3. Measurement the maximum peak output power.

6.4.Test Result

PASS

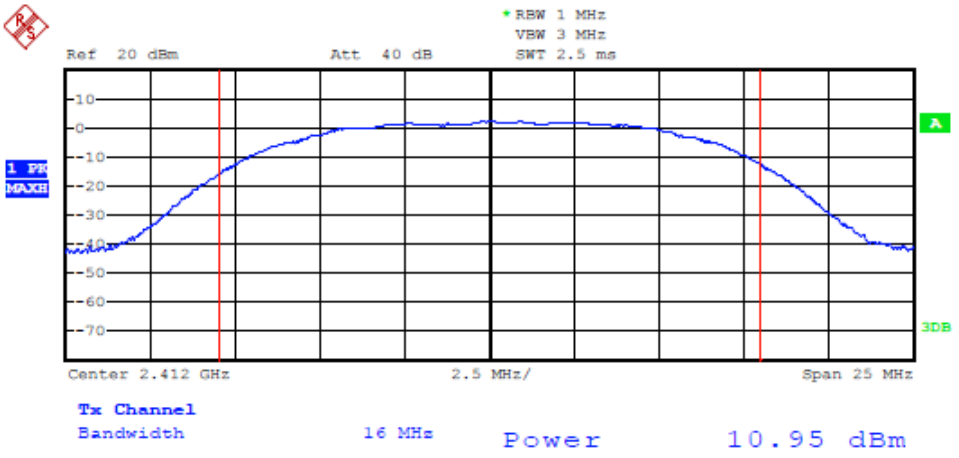
802.11b			
Channel	**Frequency (MHz)**	**Peak output power (dBm)**	**Limit (dBm)**
Low	2412	10.95	30
Middle	2437	9.68	30
High	2462	10.58	30

802.11g			
Channel	**Frequency (MHz)**	**Peak output power (dBm)**	**Limit (dBm)**
Low	2412	10.10	30
Middle	2437	9.00	30
High	2462	10.01	30

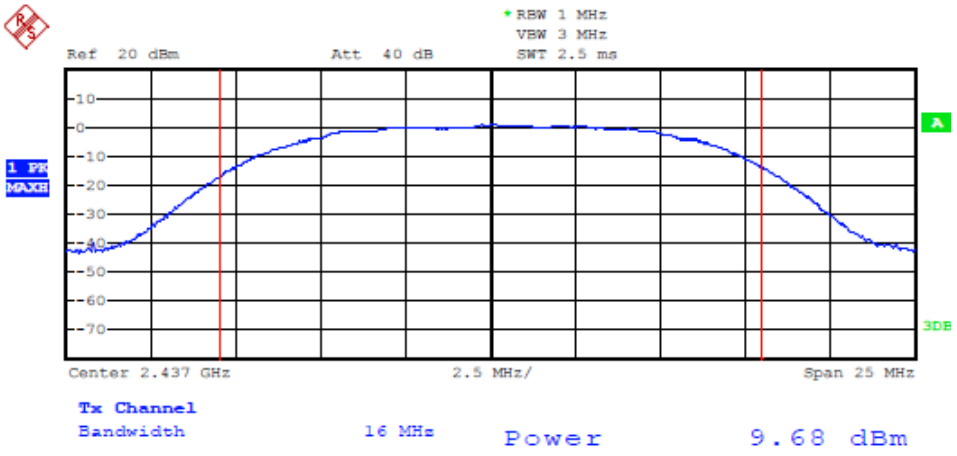
802.11n			
Channel	**Frequency (MHz)**	**Peak output power (dBm)**	**Limit (dBm)**
Low	2412	9.67	30
Middle	2437	8.65	30
High	2462	9.63	30

The spectrum analyzer plots are attached as below.

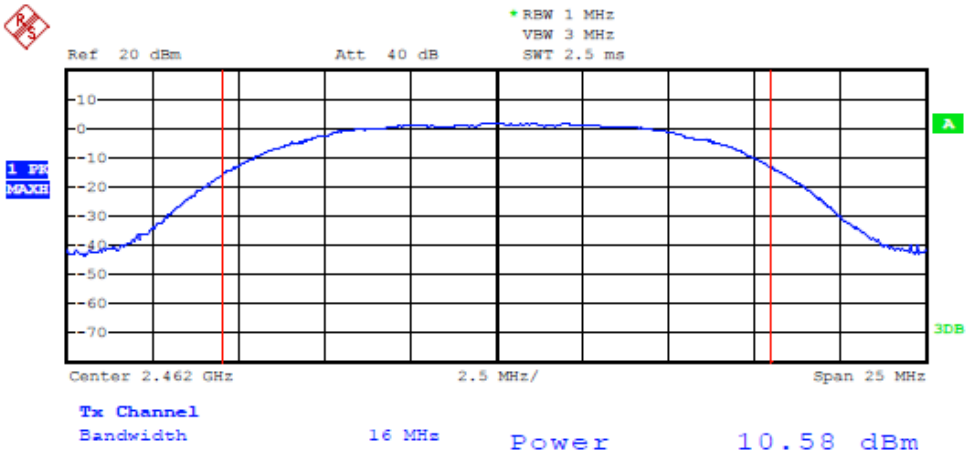
802.11b Channel Low 2412MHz



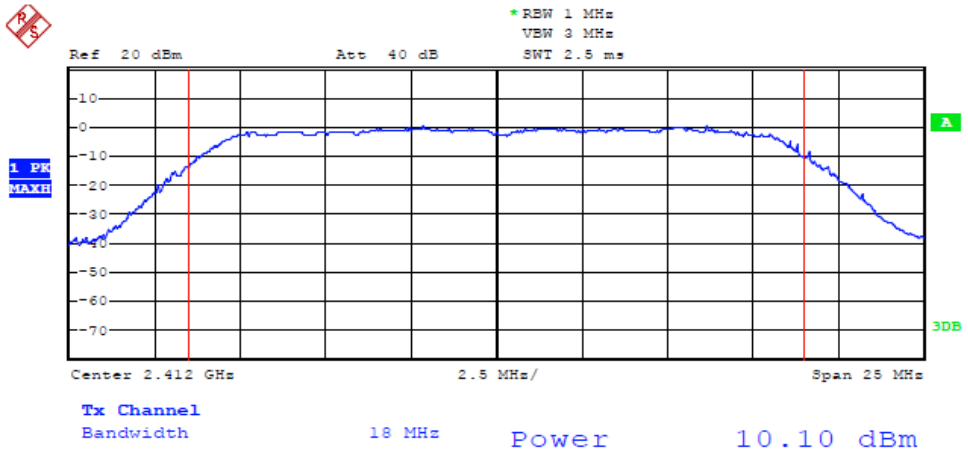
802.11b Channel Middle 2437MHz



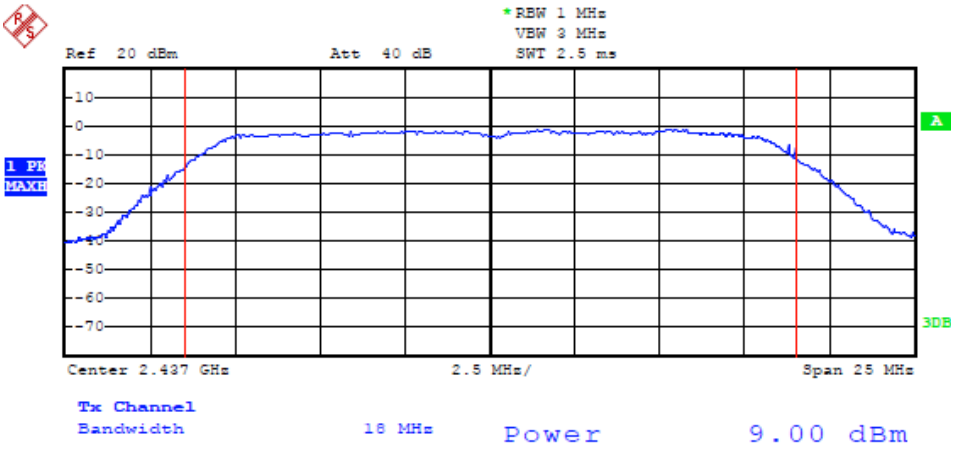
802.11b Channel High 2462MHz



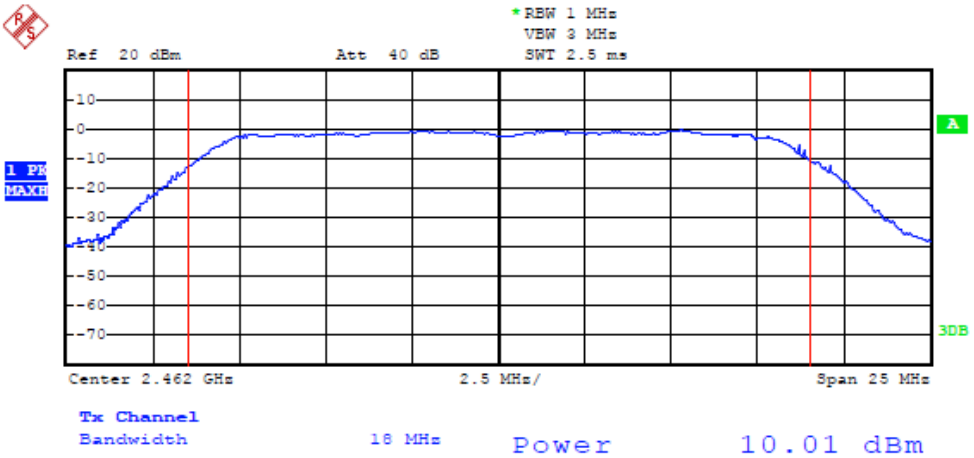
802.11g Channel Low 2412MHz



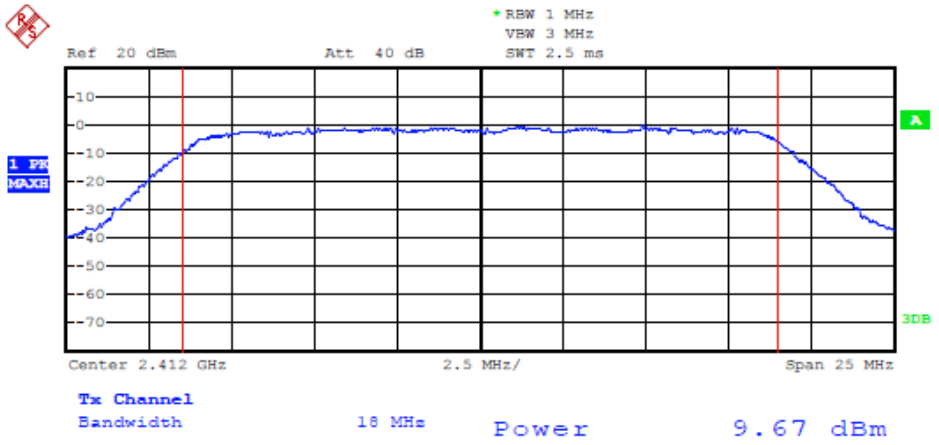
802.11g Channel Middle 2437MHz



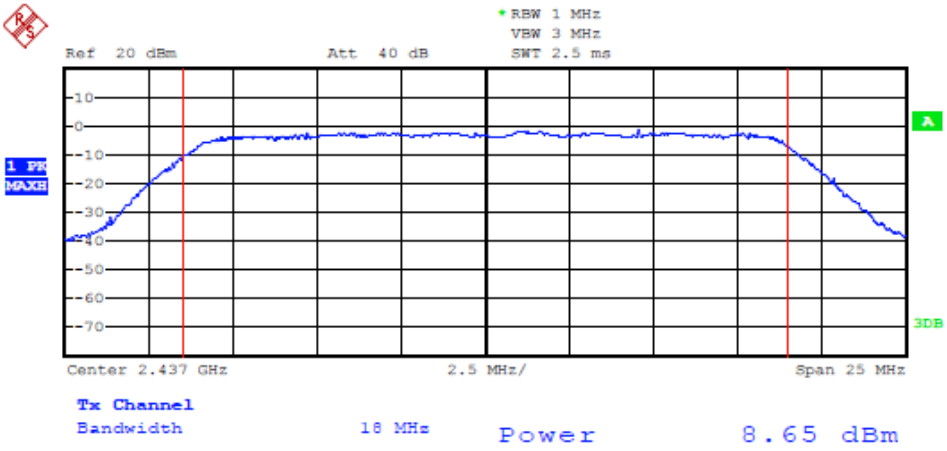
802.11g Channel High 2462MHz



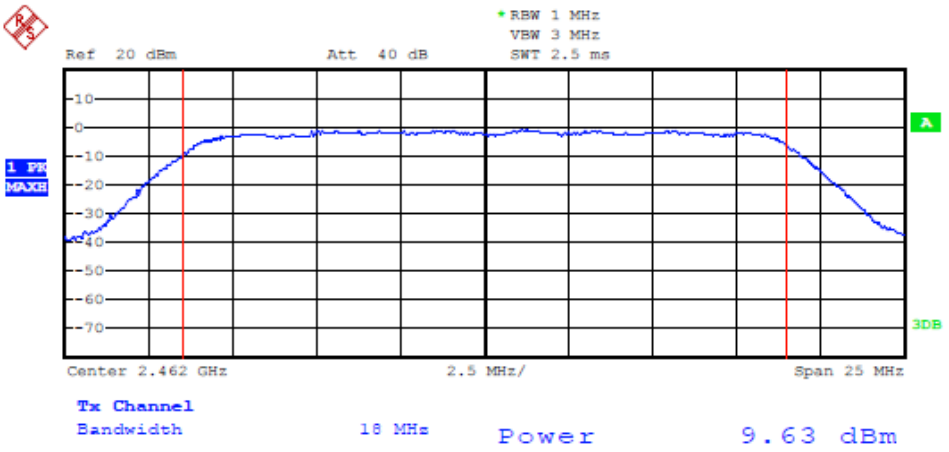
802.11n Channel High 2412MHz



802.11n Channel High 2437MHz

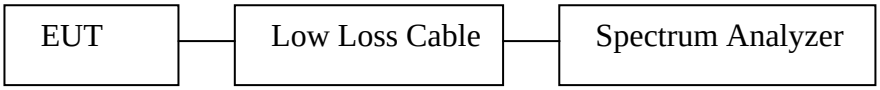


802.11n Channel High 2462MHz



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

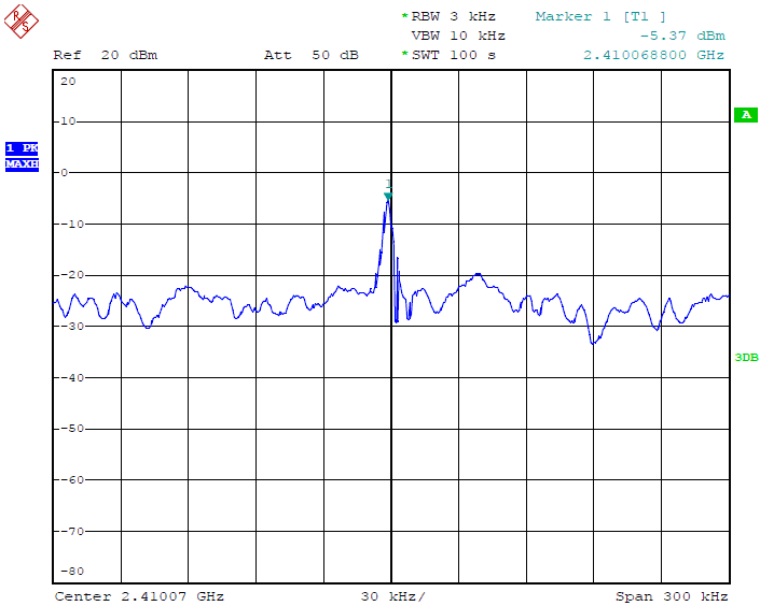
802. 11b			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-5.37	8
Middle	2437	-6.61	8
High	2462	-5.08	8

802. 11g			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-24.95	8
Middle	2437	-26.77	8
High	2462	-24.99	8

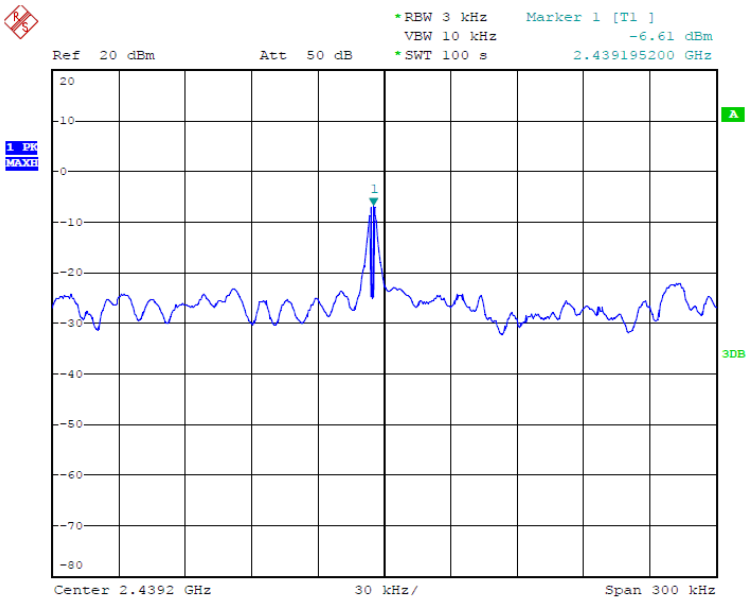
802. 11n			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-24.06	8
Middle	2437	-26.16	8
High	2462	-25.30	8

The spectrum analyzer plots are attached as below.

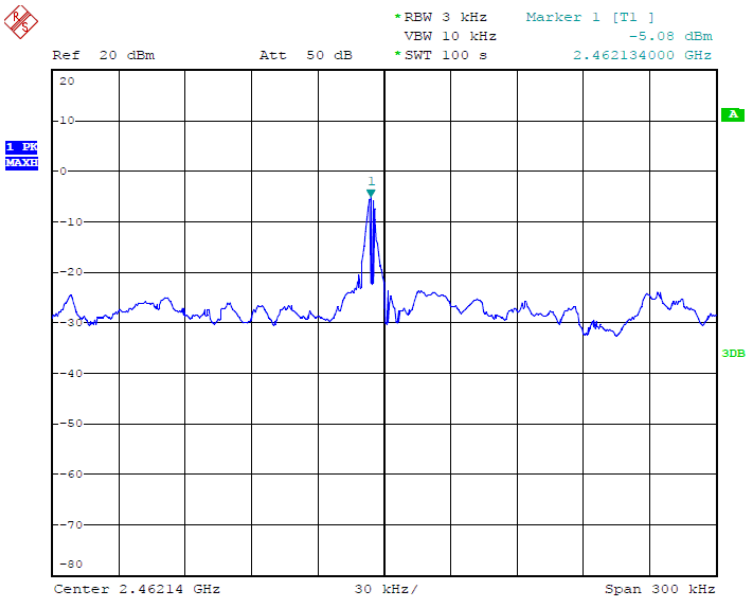
802.11b Channel Low 2412MHz



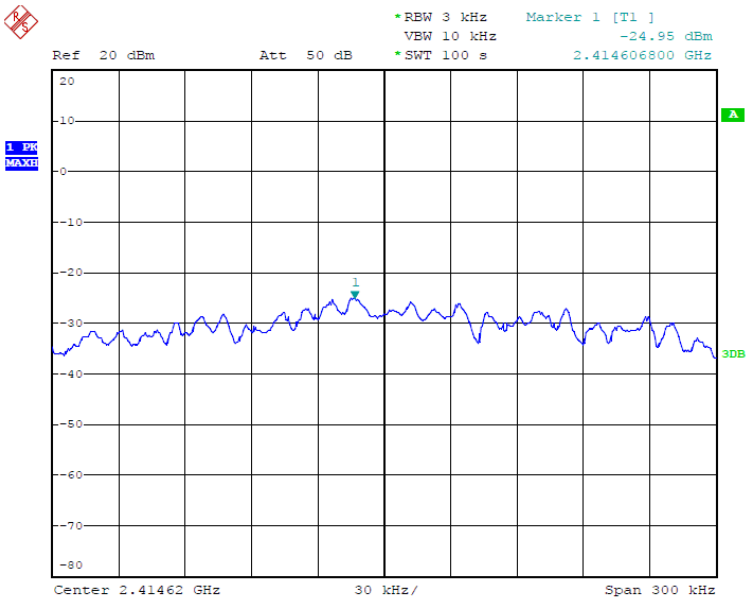
802.11b Channel Middle 2437MHz



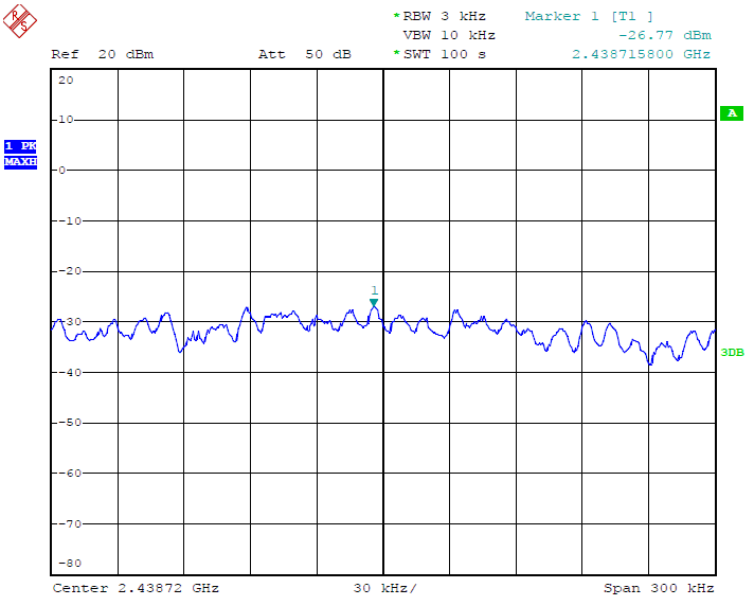
802.11b Channel High 2462MHz



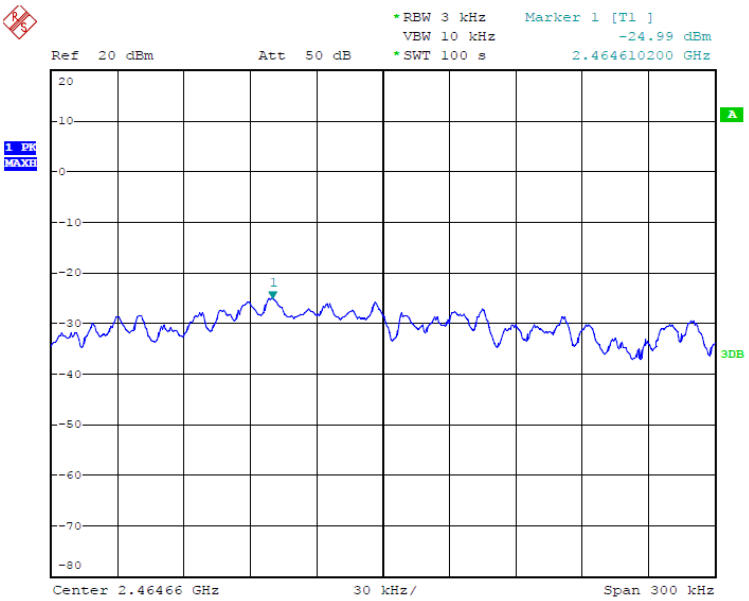
802.11g Channel Low 2412MHz



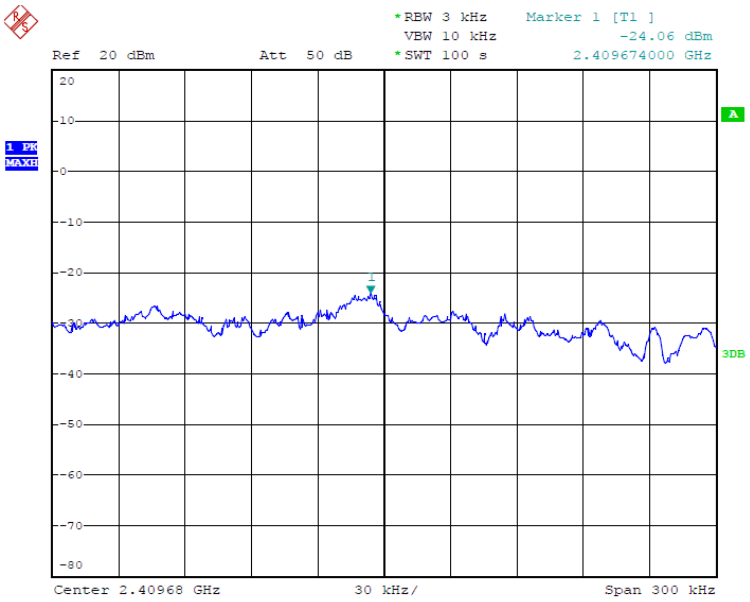
802.11g Channel Middle 2437MHz



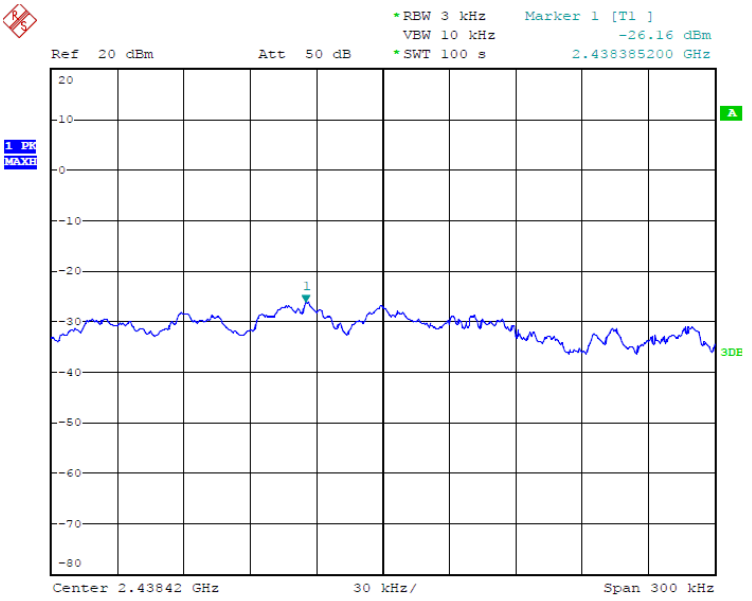
802.11g Channel High 2462MHz



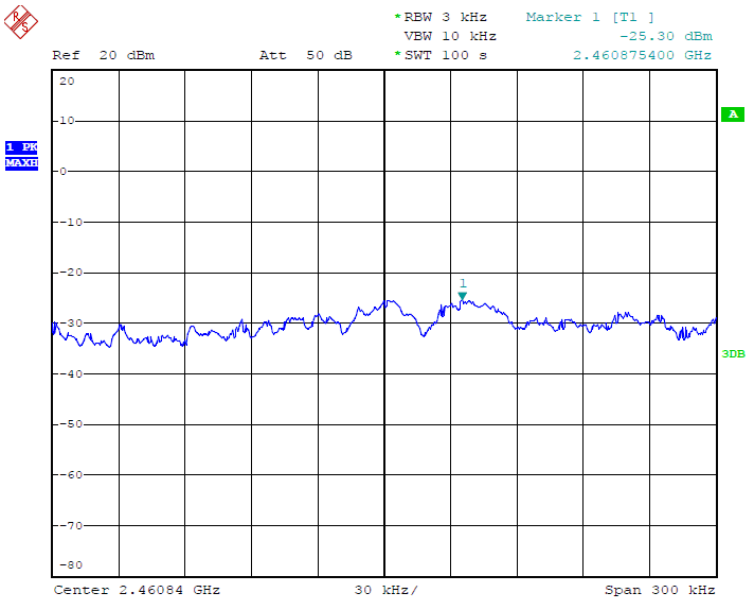
802.11n Channel High 2412MHz



802.11n Channel High 2437MHz

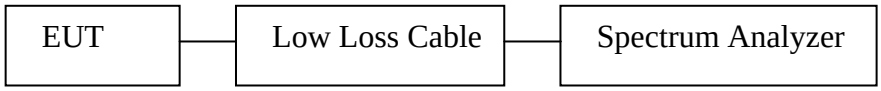


802.11n Channel High 2462MHz



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

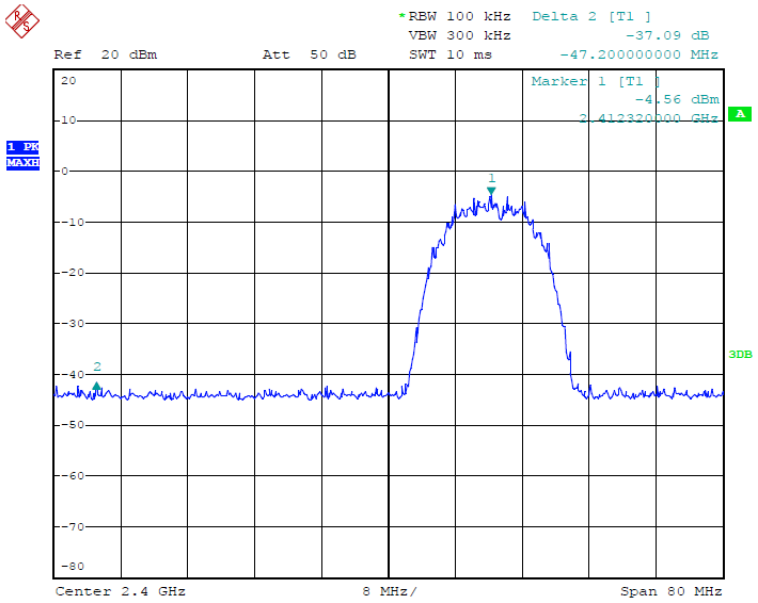
PASS

802.11b			
Channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit (dBc)
Low	2412	37.09	>20dBc
High	2462	36.84	> 20dBc

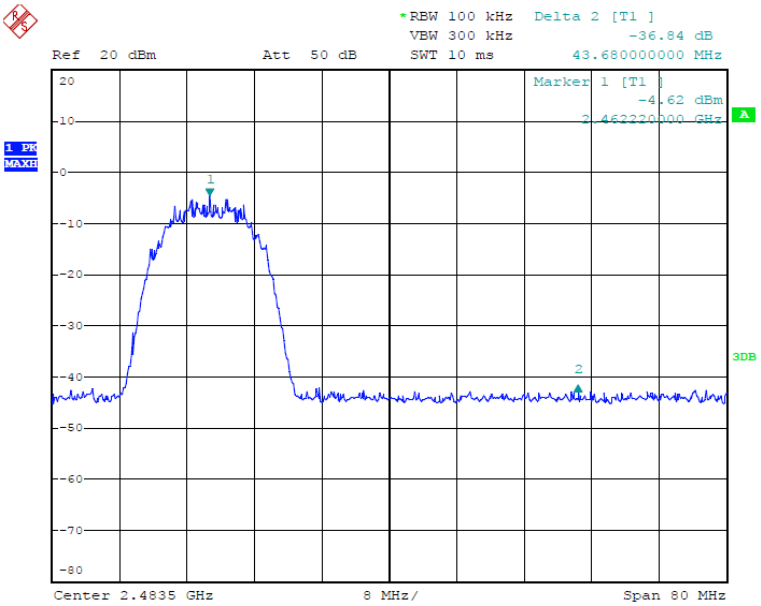
802.11g			
Channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit (dBc)
Low	2412	33.04	>20dBc
High	2462	32.23	> 20dBc

802.11n			
Channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit (dBc)
Low	2412	32.45	>20dBc
High	2462	32.76	> 20dBc

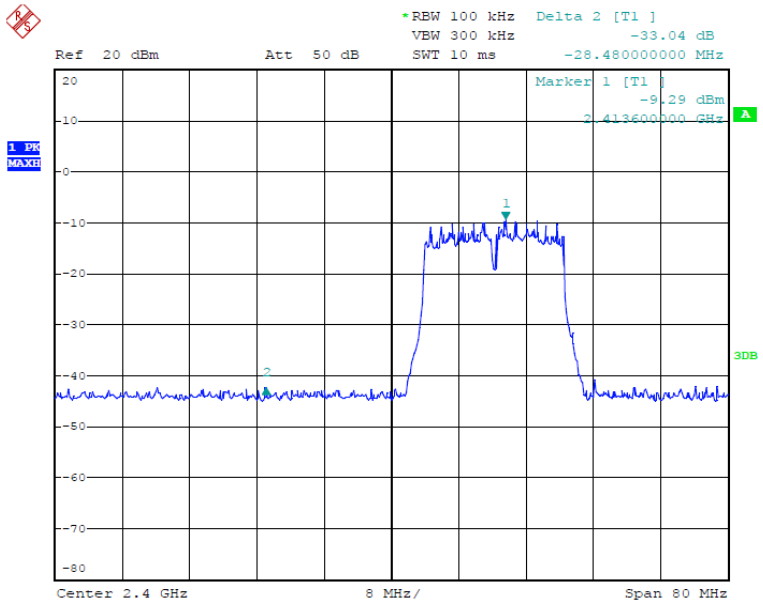
802.11b Channel Low 2412MHz



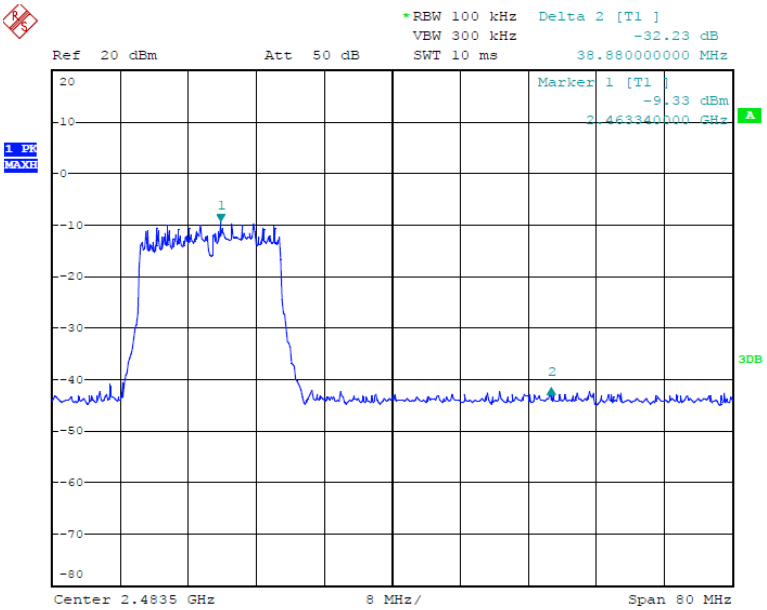
802.11b Channel High 2462MHz



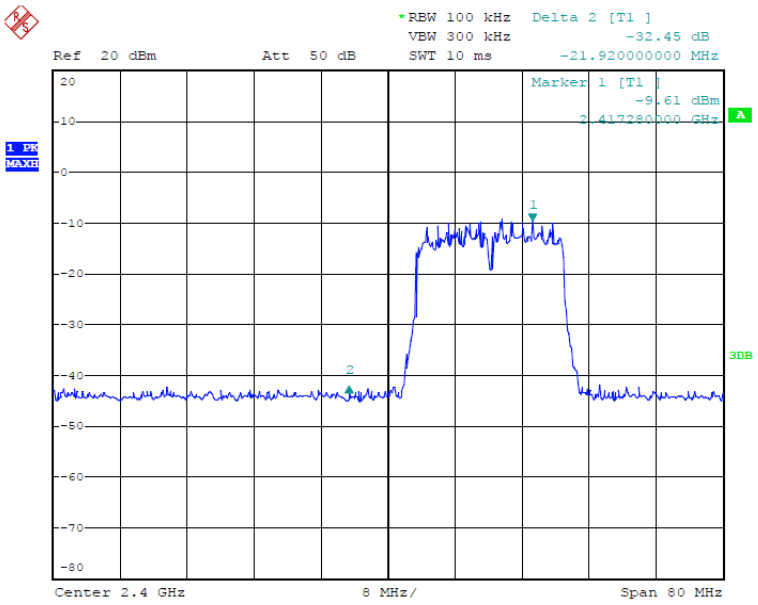
802.11g Channel Low 2412MHz



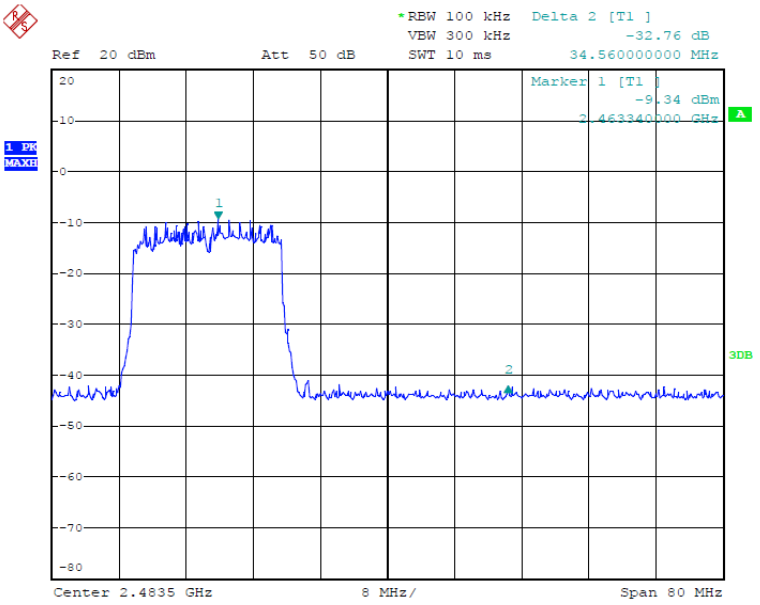
802.11g Channel High 2462MHz



802.11n Channel High 2412MHz

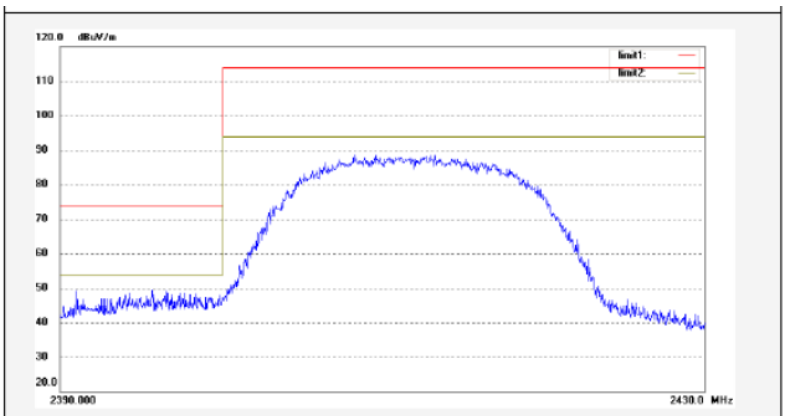


802.11n Channel High 2462MHz



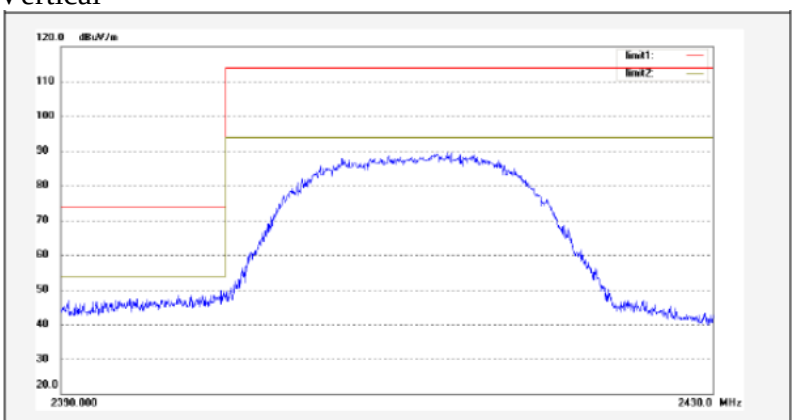
Radiated Band Edge Result

802.11b Channel Low 2412MHz
Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

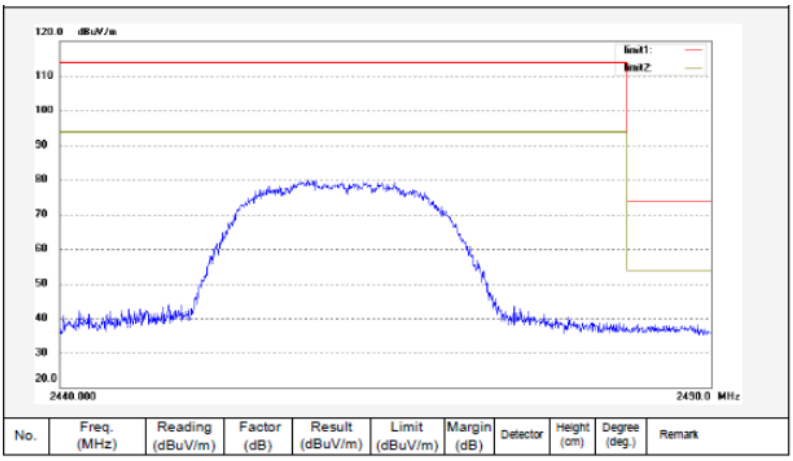
Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

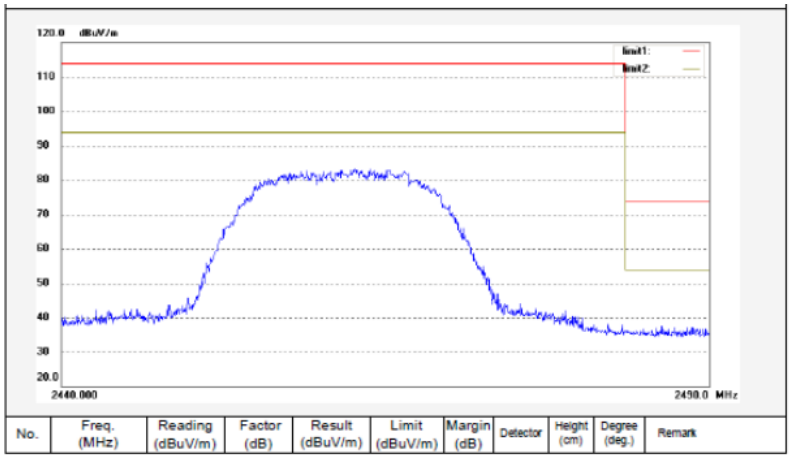
Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and
subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation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

802.11b Channel High 2462MHz
Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

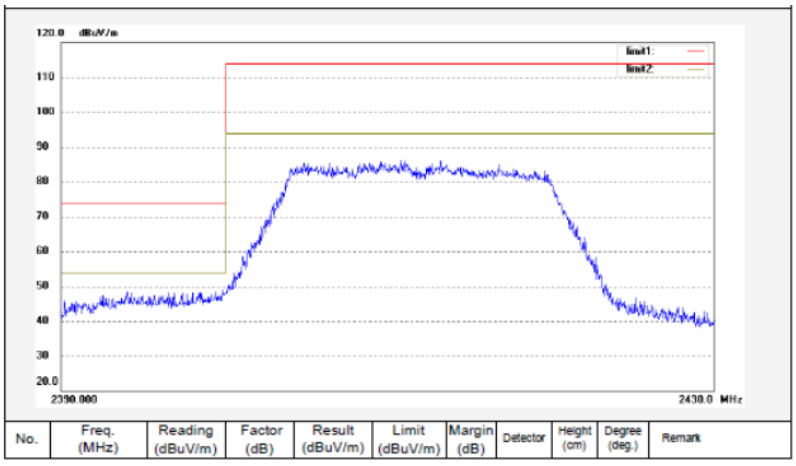
Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

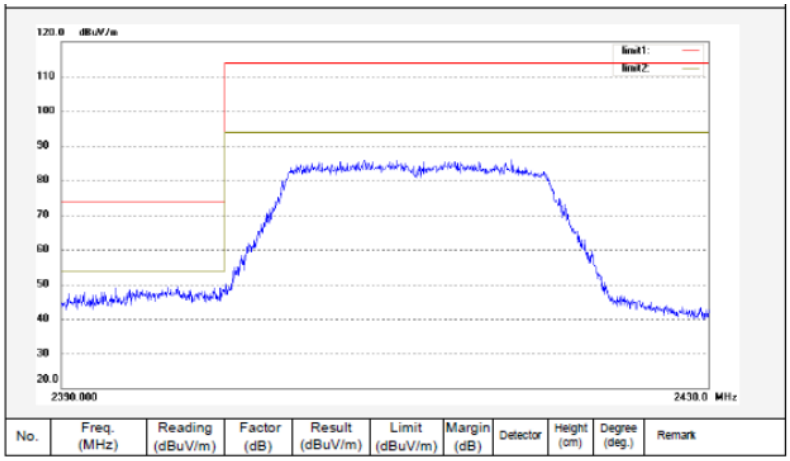
Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and
subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation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

802.11g Channel Low 2412MHz
Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

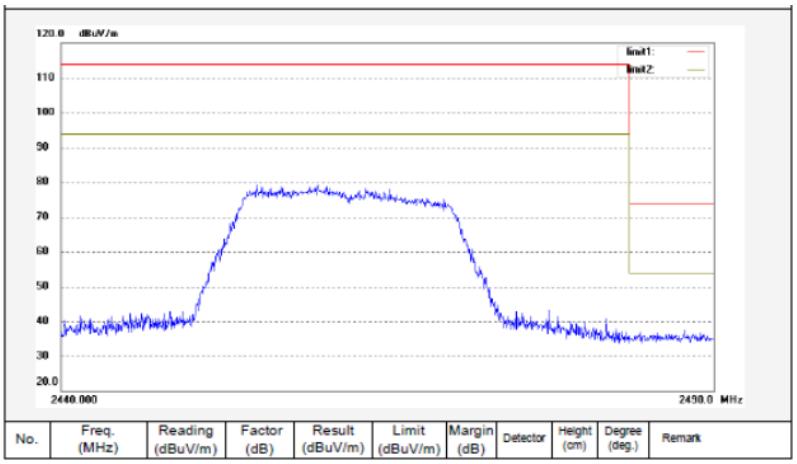
Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

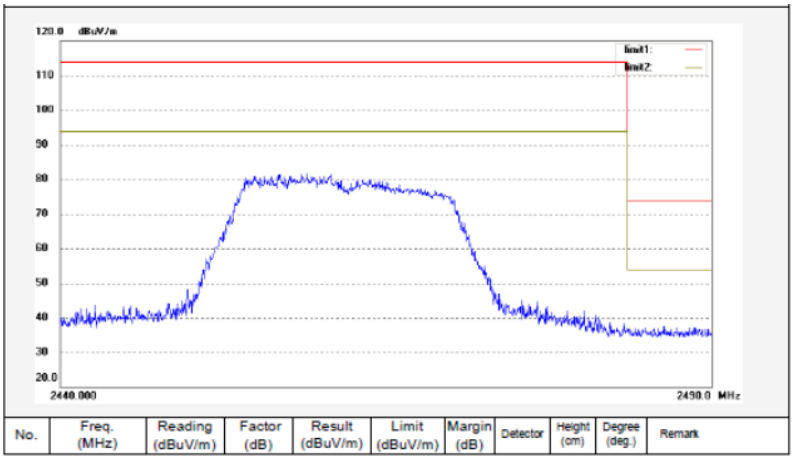
Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and
subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation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

802.11g Channel High 2462MHz
Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

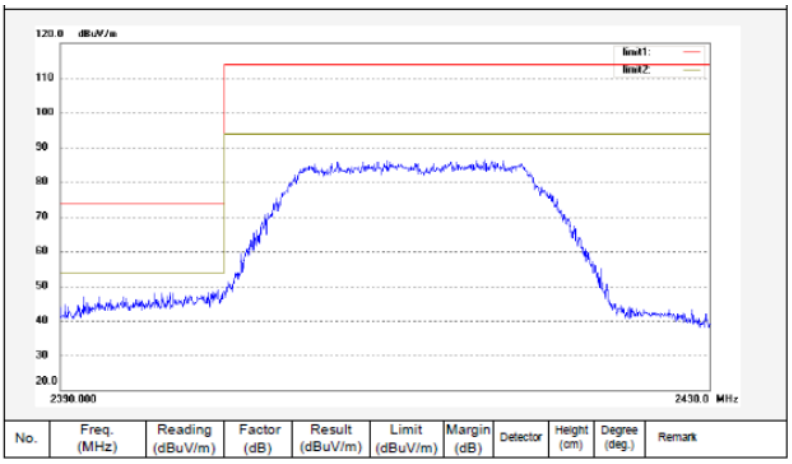
Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

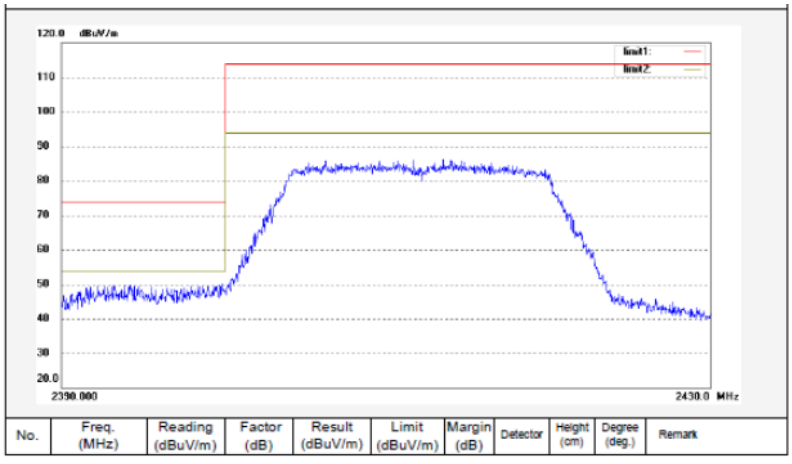
Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and
subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation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

802.11n Channel Low 2412MHz
Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

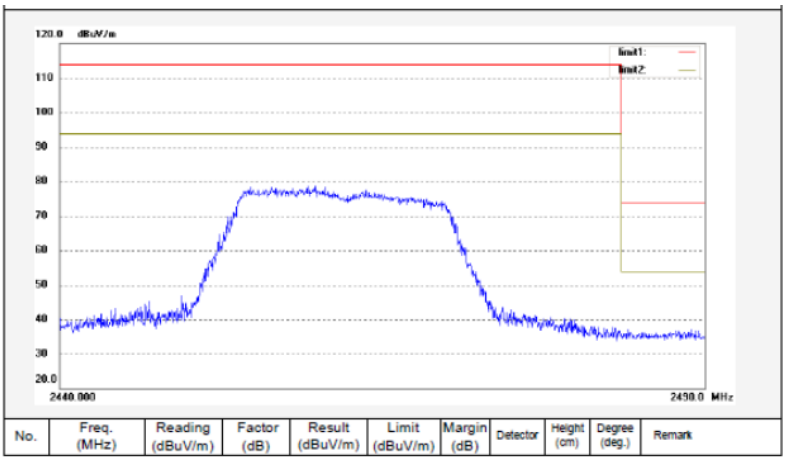
Vertical



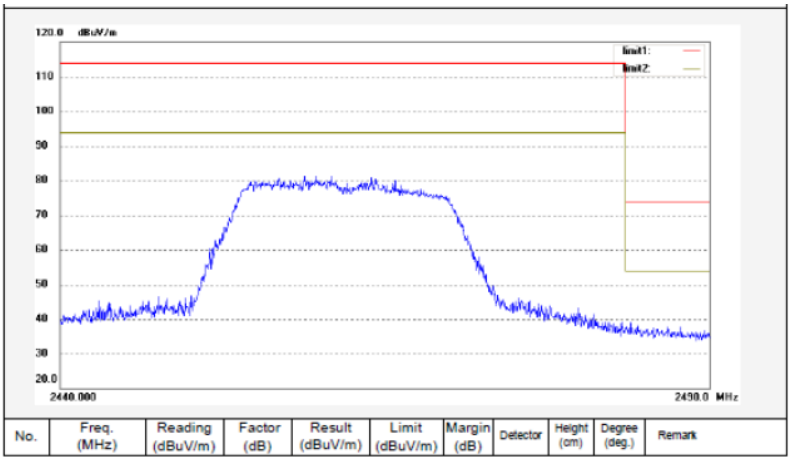
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

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
3. Display the measurement of peak values.

802.11n Channel High 2462MHz
Horizontal



Vertical

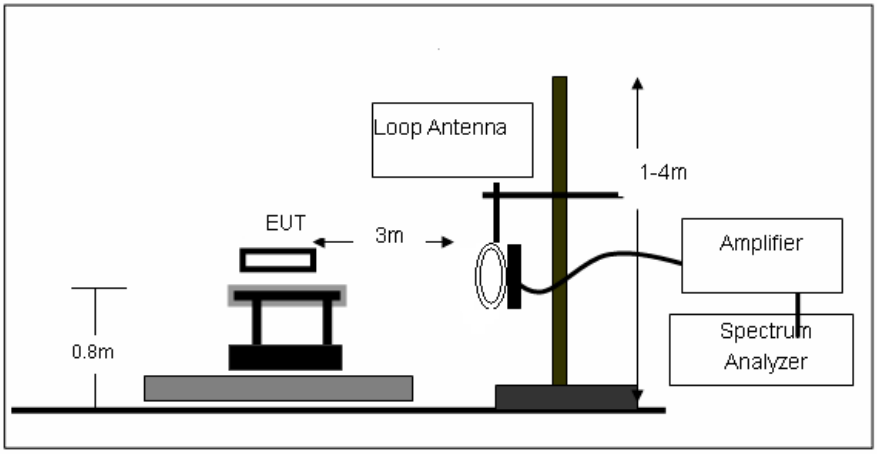


Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and
subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation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

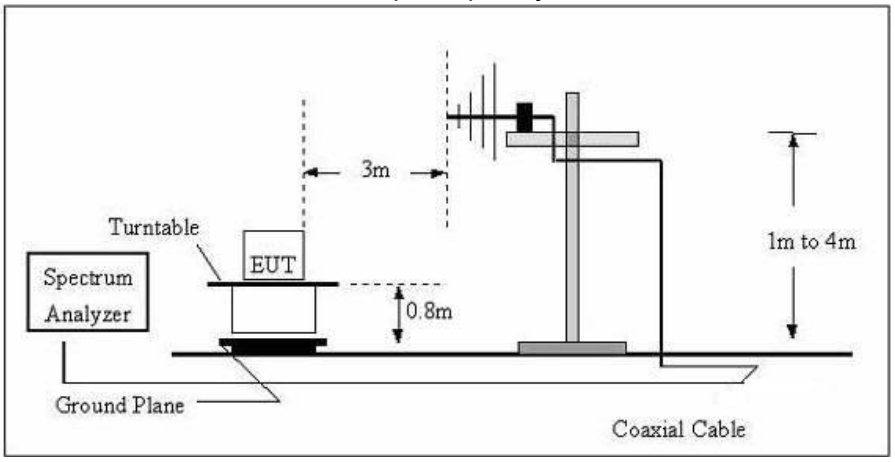
9. RADIATED SPURIOUS EMISSION TEST

9.1. Block Diagram of Test Setup

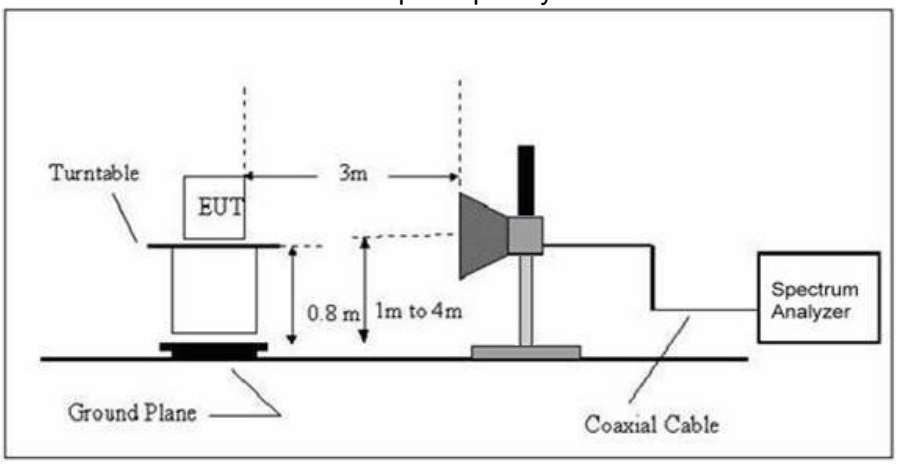
（1）Radiated Emission Test-Up Frequency Below 30MHz



（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
90.7016	27.03	13.94	40.97	43.50	-2.35	Vertical
126.3056	26.31	14.89	41.20	43.50	-2.30	
166.0918	26.47	14.62	41.90	43.50	-2.41	
190.8703	25.19	16.14	41.33	43.50	-2.17	
120.6198	24.66	14.72	39.38	43.50	-4.12	Horizontal
163.0180	26.40	14.62	41.02	43.50	-2. 31	
256.4463	25.22	18.52	43.74	46.00	-2.26	
328.0667	24.25	19.69	43.94	46.00	-2.06	

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	
2412.00	71.43	71.69	-7.43	64	64.53	/	/	/	/	Vertical
4824.021	40.00	41.63	0.19	39.81	41.44	54	74	-14.19	-32.56	
2412.00	71.43	71.69	-7.43	64.11	64.29	/	/	/	/	Horizontal
4824.021	40.00	41.63	0.19	39.81	40.80	54	74	-14.19	-33.20	

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
91.7016	27.38	13.94	41.32	43.50	-2.18	Vertical
130.3056	26.34	14.89	41.23	43.50	-2.37	
161.0918	26.48	14.62	41.10	43.50	-2.40	
195.8703	25.40	16.14	41.18	43.50	-2.32	
98.6198	27.24	14.01	41.25	43.50	-4.40	Horizontal
130.0180	26.07	14.89	41.96	43.50	-2. 54	
162.4463	26.55	14.62	41.17	43.50	-2.33	
195.0668	25.25	16.02	41.27	43.50	-2.23	

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	
2437.00	74.09	74.20	-7.36	66.73	66.84	/	/	/	/	Vertical
4874.021	44.07	44.13	0.09	44.16.	44.22	54	74	-9.84	-29.78	
2437.00	71.43	71.69	-7.43	64.11	64.29	/	/	/	/	Horizontal
4874.021	41.59	41.96	0.09	41.68	42.05	54	74	-12.32	-31.95	

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
99.7016	27.22	13.94	41.16	43.50	-2.34	Vertical
130.3045	25.80	14.89	40.69	43.50	-2.81	
161.0604	26.52	14.62	41.14	43.50	-2.36	
190.8703	25.30	16.14	41.44	43.50	-2.06	
99.6198	25.24	14.01	39.25	43.50	-4.25	Horizontal
130.2180	22.64	14.89	37.53	43.50	-5.97	
162.3463	26.97	14.62	41.41	43.50	-2.09	
195.0664	23.61	16.02	39.63	43.50	-3.87	

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	
2462.00	76.37	76.59	-7.35	69.02	69.24	/	/	/	/	Vertical
4924.021	46.15	46.21	0.34	46.49.	46.55	54	74	-7.51	-27.45	
2462.00	74.54	74.72	-7.35	67.19	67.37	/	/	/	/	Horizontal
4924.021	41.16	42.27	0.34	42.50	42.61	54	74	-11.50	-31.39	

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
98.7216	27.27	13.94	41.21	43.50	-2.29	Vertical
130.3048	26.09	14.89	40.98	43.50	-2.52	
162.0197	26.73	14.62	41.35	43.50	-2.15	
190.8701	25.18	16.14	41.32	43.50	-2.18	
99.7215	27.27	14.01	41.28	43.50	-2.22	Horizontal
130.3480	26.04	14.89	40.93	43.50	-2.57	
162.3063	26.58	14.62	41.20	43.50	-2.30	
195.8864	24.71	16.02	40.73	43.50	-2.77	

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	
2412.00	72.66	72.93	-7.43	65.23	65.50	/	/	/	/	Vertical
4824.021	40.00	41.62	-0.19	39.81.	41.43	54	74	-14.19	-32.57	
2412.00	74.54	79.58	-7.43	67.12	72.15	/	/	/	/	Horizontal
4824.031	40.00	41.20	-0.19	39.81	41.01	54	74	-14.19	-32.99	

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
98.7215	27.28	13.94	41.22	43.50	-2.28	Vertical
130.3048	26.32	14.89	41.21	43.50	-2.29	
162.0197	26.45	14.62	41.07	43.50	-2.43	
194.8701	25.59	16.14	41.73	43.50	-1.77	
99.7215	27.27	14.01	41.28	43.50	-2.22	Horizontal
130.3481	26.04	14.89	40.93	43.50	-2.57	
162.3064	26.58	14.62	41.20	43.50	-2.30	
195.8866	24.71	16.02	40.73	43.50	-2.77	

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	
2437.00	72.62	72.82	-7.36	65.26	65.46	/	/	/	/	Vertical
4874.021	44.17	44.31	0.09	44.26.	44.40	54	74	-9.74	-29.60	
2437.00	74.06	81.23	-7.36	67.70	73.87	/	/	/	/	Horizontal
4874.031	41.83	49.42	0.09	41.92	49.51	54	74	-12.08	-24.49	

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
98.7215	27.51	13.94	41.45	43.50	-2.05	Vertical
130.3048	26.32	14.89	41.12	43.50	-2.38	
162.0197	26.45	14.62	41.07	43.50	-2.43	
194.8701	25.59	16.14	41.73	43.50	-1.77	
99.7215	27.20	14.01	41.21	43.50	-2.29	Horizontal
130.3481	26.04	14.89	40.93	43.50	-2.57	
162.3064	26.58	14.62	41.20	43.50	-2.30	
195.8866	25.23	16.02	41.25	43.50	-2.25	

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	
2462.00	77.21	77.33	-7.35	69.86	69.98	/	/	/	/	Vertical
4924.021	43.29	43.47	0.34	43.63	43.81	54	74	-10.37	-30.19	
2462.00	78.42.	78.60	-7.35	71.07	71.25	/	/	/	/	Horizontal
4924.021	44.83	45.05	0.34	45.17	45.39	54	74	-8.83	-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
98.7215	27.51	13.94	41.45	43.50	-2.05	Vertical
130.3048	26.32	14.89	41.10	43.50	-2.40	
162.0197	26.72	14.62	41.34	43.50	-2.16	
193.8701	25.27	16.14	41.41	43.50	-2.09	
99.7215	26.88	14.01	40.89	43.50	-2.61	Horizontal
130.3481	26.04	14.89	40.93	43.50	-2.57	
162.3064	26.26	14.62	40.88	43.50	-2.62	
195.8866	25.23	16.02	41.25	43.50	-2.25	

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	
2412.00	71.52	71.73	-7.43	64.09	64.30	/	/	/	/	Vertical
4824.021	41.01	41.01	-0.19	39.81	40.82	54	74	-14.19	-33.18	
2412.00	73.34.	78.63	-7.43	65.91	66.20	/	/	/	/	Horizontal
4824.101	41.40	41.64	-0.19	41.21	41.45	54	74	-12.79	-32.55	

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
98.7215	27.28	13.94	41.42	43.50	-2.28	Vertical
130.3048	25.76	14.89	40.65	43.50	-2.85	
162.0197	26.72	14.62	41.34	43.50	-2.16	
193.8701	25.27	16.14	41.41	43.50	-2.09	
99.7215	26.58	14.01	40.59	43.50	-2.91	Horizontal
130.3481	25.22	14.89	40.11	43.50	-3.39	
162.3064	26.86	14.62	41.48	43.50	-2.02	
195.8866	24.77	16.02	40.79	43.50	-2.71	

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	
2437.00	72.48	72.70	-7.43	65.05	65.27	/	/	/	/	Vertical
4874.021	44.15	44.28	0.09	44.24	44.37	54	74	-9.76	-9.63	
2437.00	75.45.	78.92	-7.36	68.09	71.29	/	/	/	/	Horizontal
4874.021	42.31	44.57	0.09	42.40	44.66	54	74	-11.60	-29.34	

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
98.7215	27.40	13.94	41.34	43.50	-2.16	Vertical
130.3048	25.87	14.89	40.76	43.50	-2.74	
162.0197	26.72	14.62	41.34	43.50	-2.16	
193.8701	25.27	16.14	41.41	43.50	-2.09	
97.7215	27.27	14.01	40.59	43.50	-2.91	Horizontal
130.3481	25.22	14.89	40.11	43.50	-3.39	
162.3064	26.86	14.62	41.48	43.50	-2.02	
195.8866	25.17	16.02	41.19	43.50	-2.31	

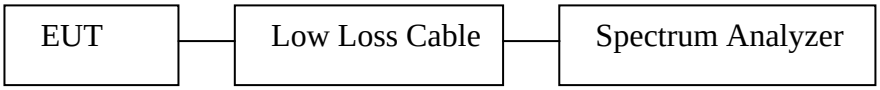
For 1GHz-25GHz

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	
2462.00	76.11	72.29	-7.35	68.76	68.94	/	/	/	/	Vertical
4924.021	46.42	46.75	0.34	46.76	47.09	54	74	-7.24	-26.91	
2462.00	75.08.	75.25	-7.35	67.73	67.90	/	/	/	/	Horizontal
4924.021	40.00	40.16	0.34	40.34	40.50	54	74	-13.66	-33.50	

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).

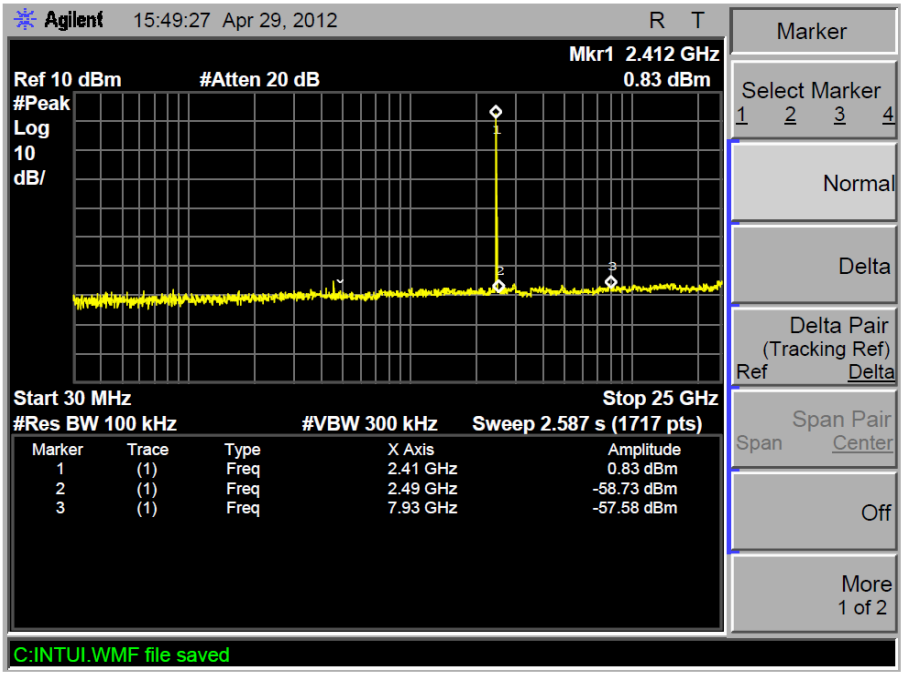
10.3.Test Procedure

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.

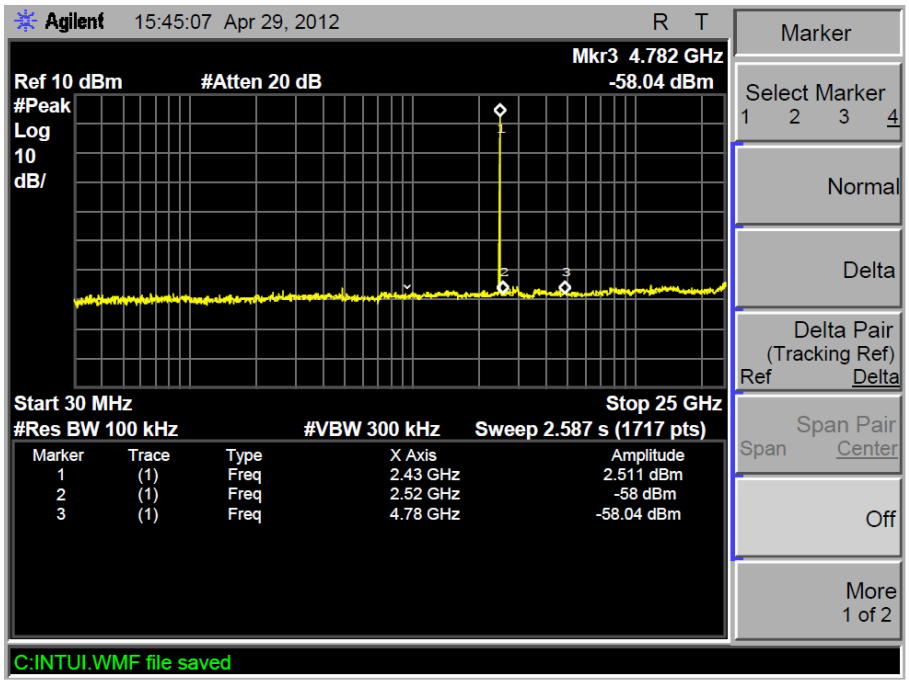
10.4.Test Result

PASS
The spectrum analyzer plots are attached as below.

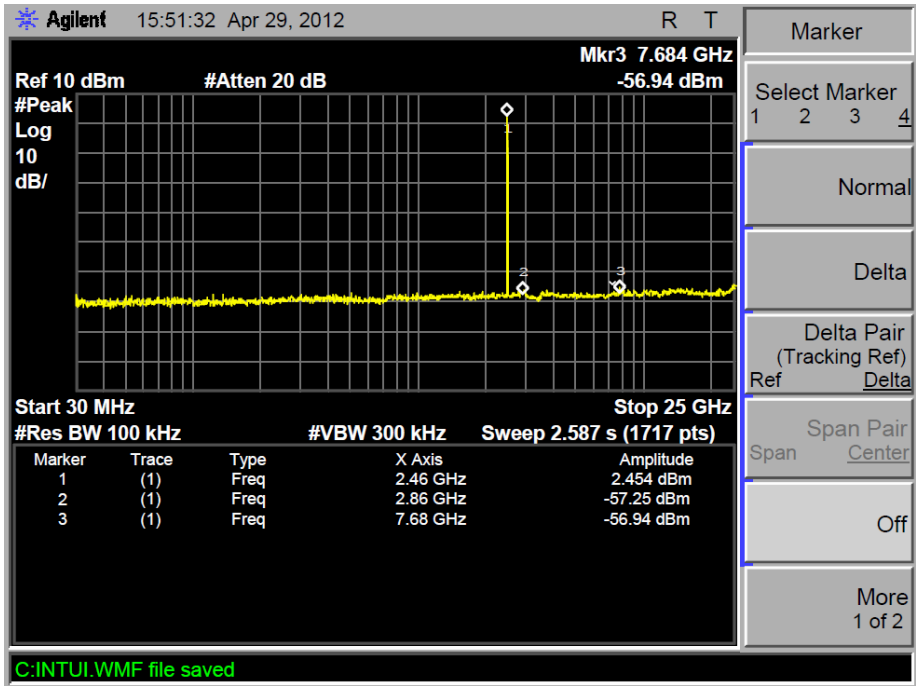
TX 802.11b Channel Low 2412MHz



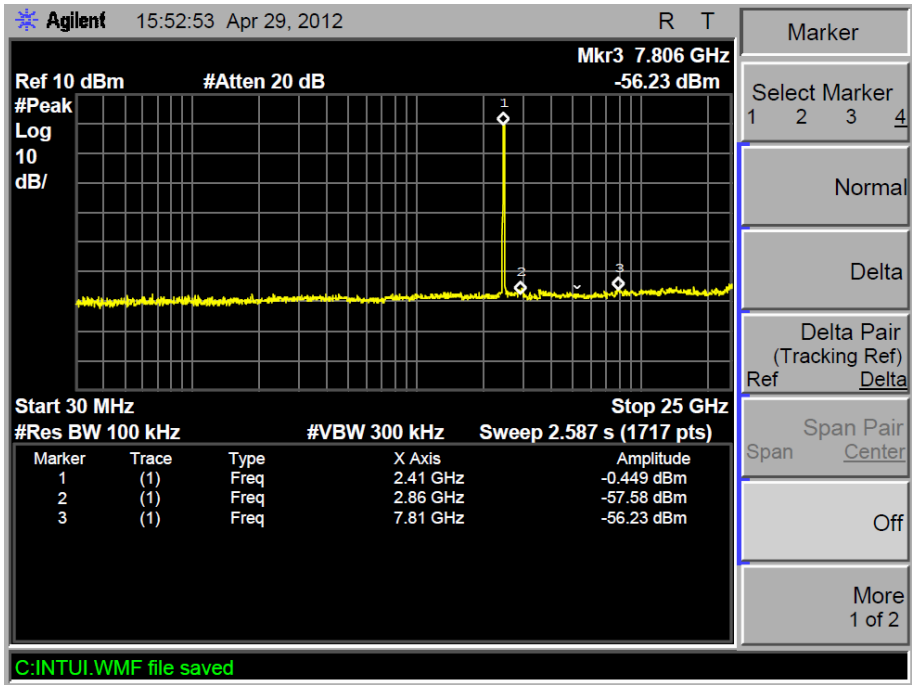
TX 802.11b Channel Middle 2437MHz



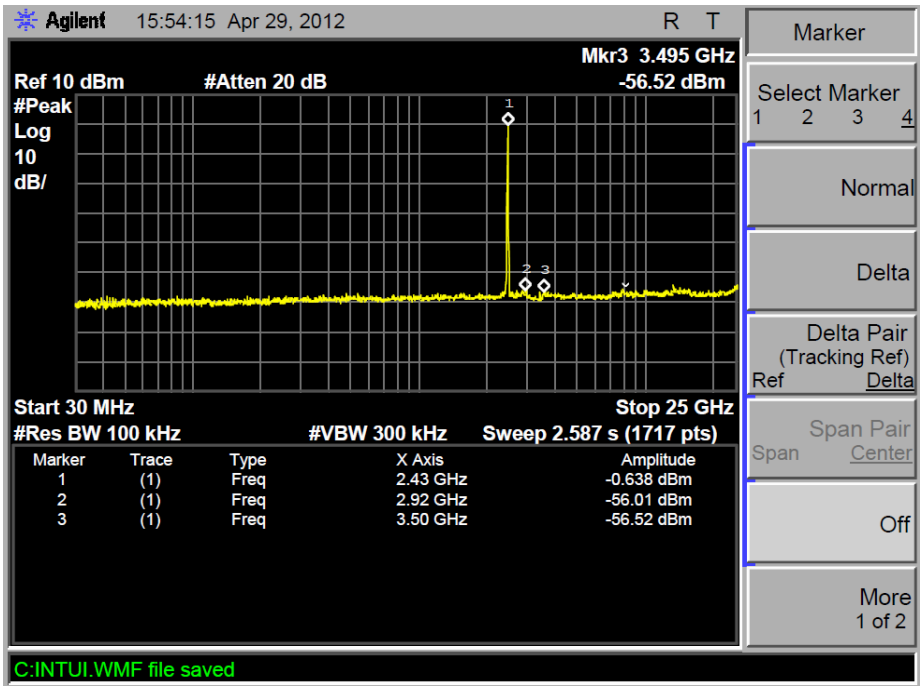
TX 802.11b Channel High 2462MHz



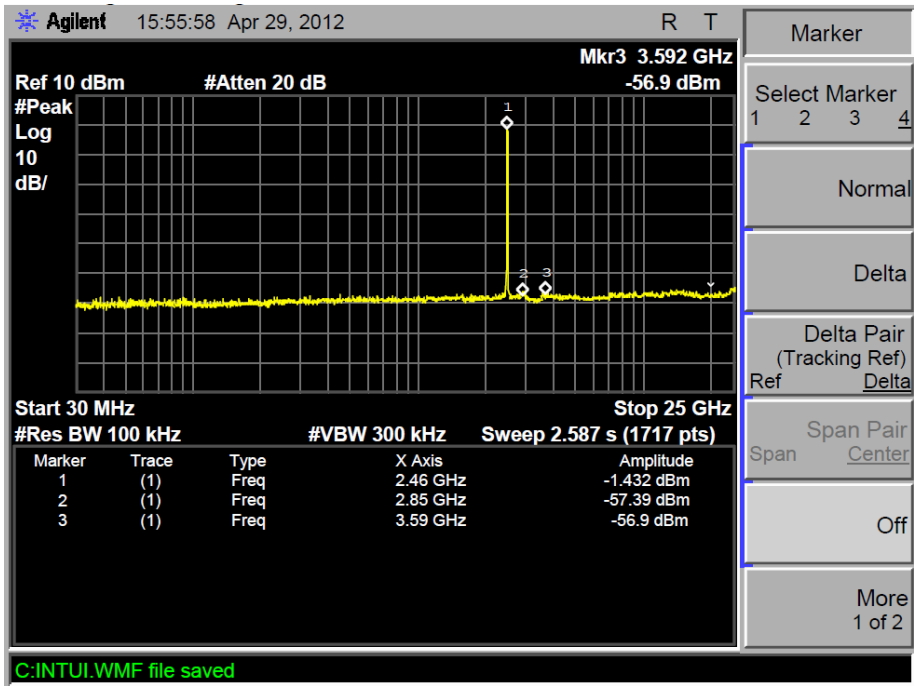
TX 802.11g Channel Low 2412MHz



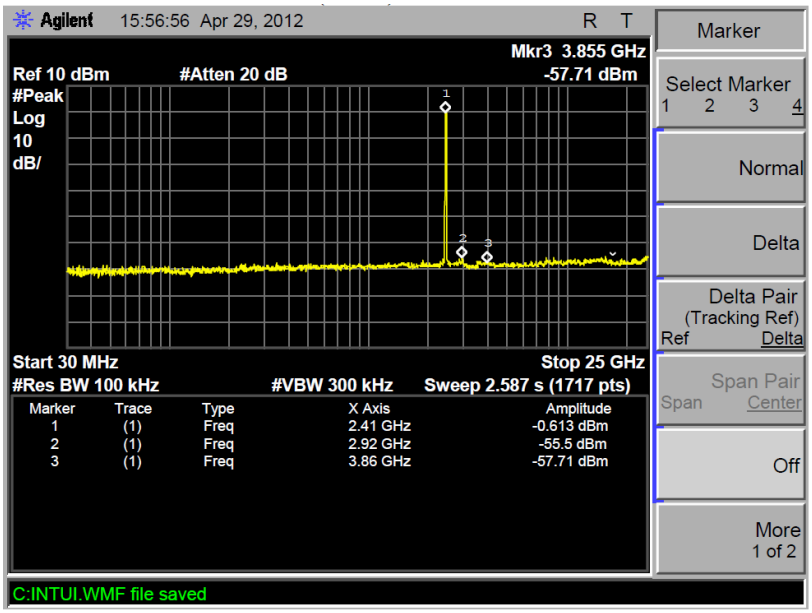
TX 802.11b Channel Middle 2437MHz



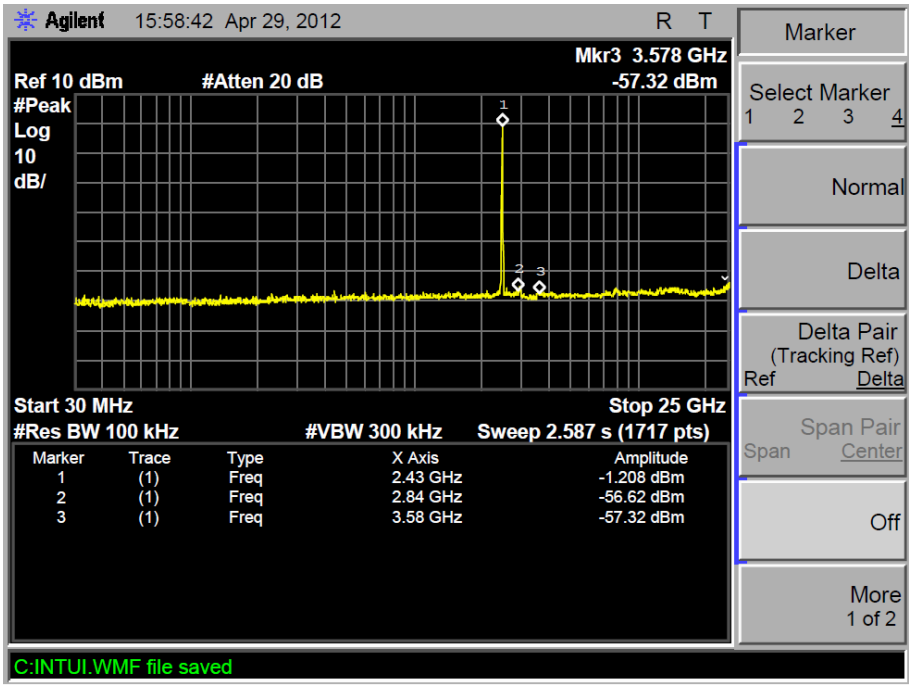
TX 802.11b Channel High 2462MHz



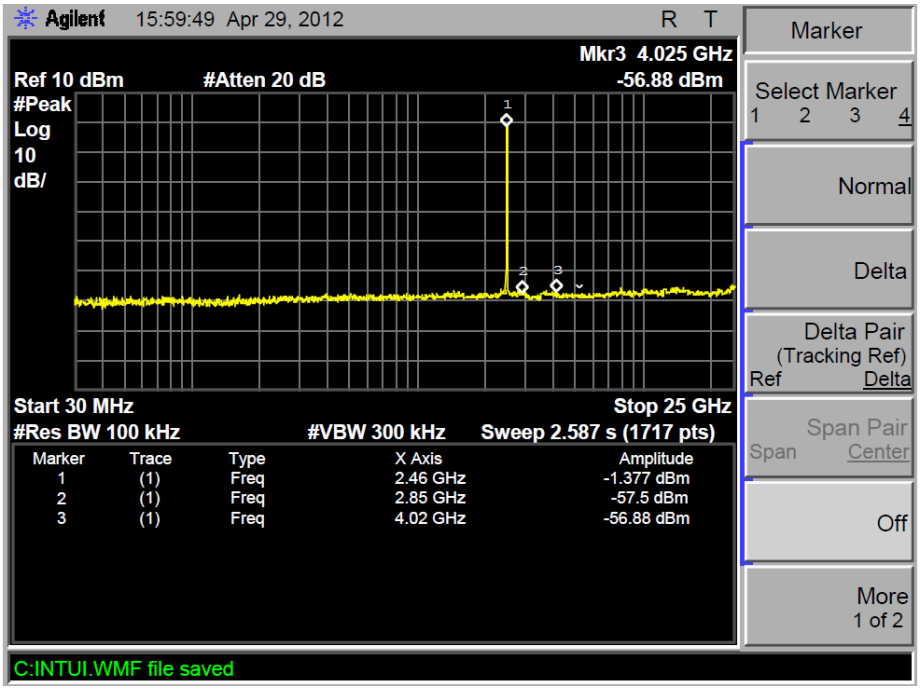
TX 802.11nChannel Low 2412MHz



TX 802.11n Channel Middle 2437MHz

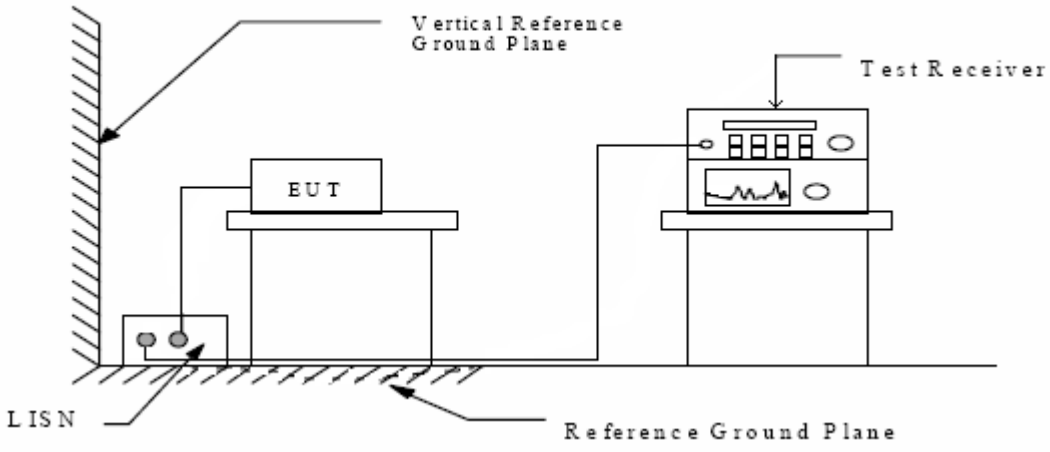


TX 802.11n Channel High 2462MHz



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.

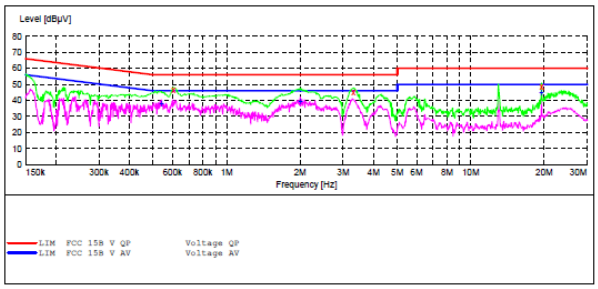
11.3.Test Procedure

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

PASS

N



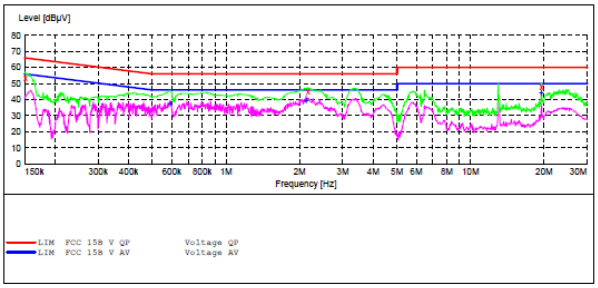
MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.606584	46.50	12.0	56	9.5	QP	N	GND
3.309167	45.30	11.5	56	10.7	QP	N	GND
19.475435	48.70	11.1	60	11.3	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.540273	37.80	12.0	46	8.2	AV	N	GND
2.001110	39.60	11.7	46	6.4	AV	N	GND
19.475435	48.20	11.1	50	4.8	AV	N	GND

L



MEASUREMENT RESULT:

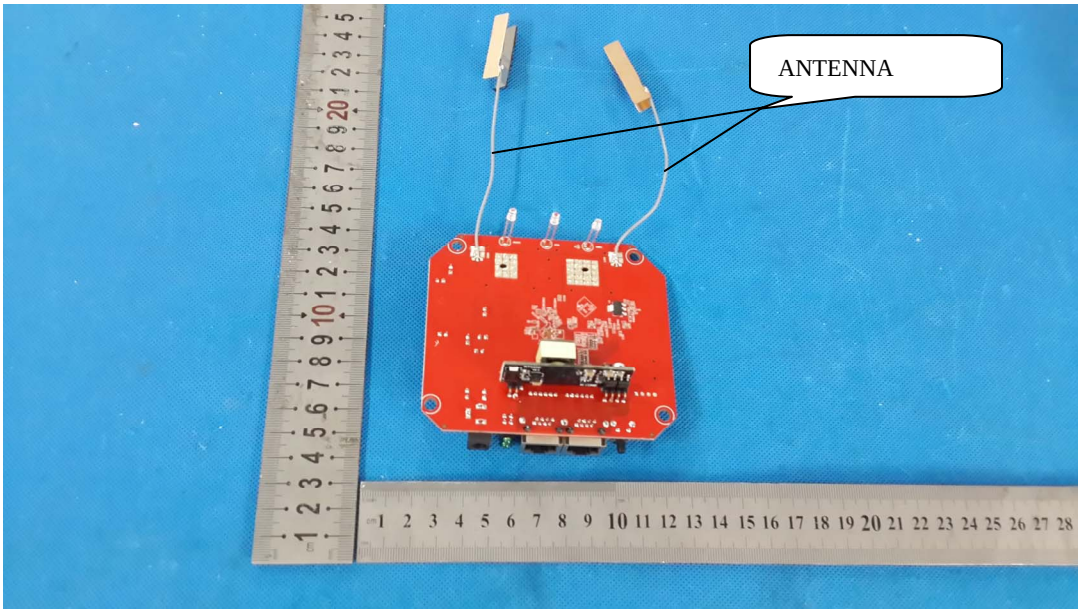
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.151202	53.40	11.0	66	12.5	QP	L1	GND
2.167430	44.90	11.6	56	11.1	QP	L1	GND
19.475435	48.00	11.1	60	12.0	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.592227	37.40	12.0	46	8.6	AV	L1	GND
2.124597	39.70	11.6	46	6.3	AV	L1	GND
19.475435	44.40	11.1	50	5.6	AV	L1	GND

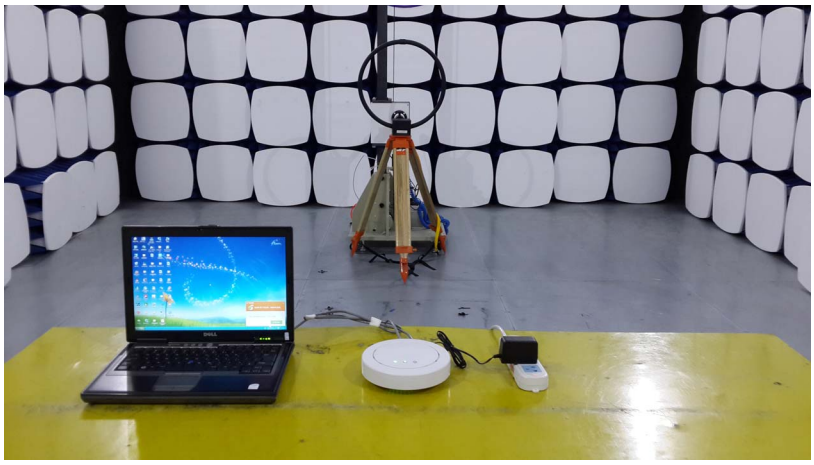
12. ANTENNA REQUIREMENT

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