FCC TEST REPORT

Test report
On Behalf of
Shenzhen EC Technology Co,Ltd
For
MINI PC / TV BOX
Model No.: V6W, V6,V6A,V6B,V6C,V8,V9,V24,V26,V28

FCC ID: 2AI6Z-V6W

Prepared for :	**Shenzhen EC Technology Co., Ltd.** **F3,Building 10,Xiaweiyuan Industrial Area, Gushu, Xixiang Town,Bao'an District 518102, Shenzhen City, China**
Prepared By :	**WST Certification & Testing (HK) Limited** **12/F., San Toi Building,137-139 Connaught Road Central,HongKong**
Date of Test:	**July 06, 2016 ~ July 14, 2016**
Date of Report:	**July 15, 2016**
Report Number:	**WST160620009-E**

TEST RESULT CERTIFICATION

Applicant's name	Shenzhen EC Technology Co., Ltd.
Address	F3,Building 10,Xiaweiyuan Industrial Area, Gushu, Xixiang Town,Bao'an District 518102, Shenzhen City, China
Manufacture's Name.....	Shenzhen EC Technology Co., Ltd.
Address	F3,Building 10,Xiaweiyuan Industrial Area, Gushu, Xixiang Town,Bao'an District 518102, Shenzhen City, China
Product description	
Trade Mark:	/
Product name	MINI PC / TV BOX
Model and/or type reference	V6W, V6,V6A,V6B,V6C,V8,V9,V24,V26,V28
Standards	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013

Date of Test.....

Date (s) of performance of tests ..... **July 06, 2016 ~ July 14, 2016**

Date of Issue..... **July 15, 2016**

Test Result..... **Pass**

Testing Engineer : Eric Xie

(Eric Xie)

Technical Manager : Dora Qin

(Dora Qin)

Authorized Signatory :

(Kait Chen)

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1. TEST SUMMARY

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

1.1 TEST FACILITY

Test Firm	:	Shenzhen WST Testing Technology Co., Ltd. Certificated by FCC, Registration No.: 939433
Address	:	1F,No.9 Building,TGK Science & Technology Park,Yangtian Rd., NO.72 Bao'an Dist., Shenzhen,Guangdong,China. 518101
Tel	:	(86)755-33916437
Fax	:	(86)755-27822175

1.2 MEASUREMENT UNCERTAINTY

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

2. GENERAL INFORMATION

2.1 General description of EUT

Equipment	MINI PC / TV BOX
Model Name	V6W
Serial No	V6,V6A,V6B,V6C,V8,V9,V24,V26,V28
FCC ID	2AI6Z-V6W
Model Difference	All model’s the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: V6W
Modulation Type	WIFI:DBPSK,DQPSK,CCK,BPSK,
Antenna Type	Internal antenna
WLA Operation frequency	802.11b: 2412-2462MHz 802.11g: 2412-2462MHz 802.11n HT20: 2412-2462MHz 802.11n HT40: 2422-2452MHz
Number of Channels	802.11b/g/n (HT20):11 802.11n (HT40): 7
Data Rate	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 150Mbps
Modulation Type	CCK, OFDM
Power Source	DC 5V from Adapter
Power Rating	/
Adapter Model	/

2.2 Carrier frequency of channels

Channel List for 802.11b/g/n(20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452		
04	2427	07	2442				
05	2432	08	2447				

2.3 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

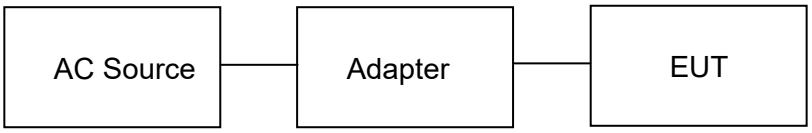
802.11n (HT20) Transmitting mode

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

802.11n (HT40) Transmitting mode

Low Channel: 2422MHz
Middle Channel: 2437MHz
High Channel: 2452MHz

2.4 Description of test setup



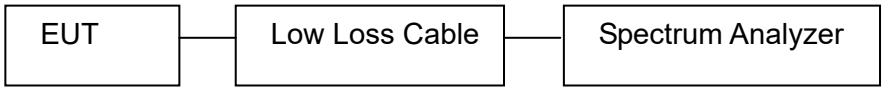
2.5 Measurement instruments list

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 19, 2016	1 Year
2.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 19, 2016	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 19, 2016	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	Feb. 19, 2016	1 Year
6.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Feb. 19, 2016	1 Year
7.	Pre-amplifier	Compliance Direction	PAP-0203	22008	Feb. 19, 2016	1 Year
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 19, 2016	1 Year
10.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 19, 2016	1 Year
11.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 19, 2016	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	Feb. 19, 2016	1 Year
14.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 19, 2016	1 Year
15.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 19, 2016	1 Year
16.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 19, 2016	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	Feb. 19, 2016	1 Year
19.	Harmonic and Flicker Analyzer	LAPLACE	AC2000A	272629	Feb. 19, 2016	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	Feb. 19, 2016	1 Year
22.	EFT Generator	EMPEK	EFT-4040B	0430928N	Feb. 19, 2016	1 Year
23.	Shielding Room	ChangZhou ZhongYu	JB88	SEL0166	Feb. 19, 2016	1 Year
24.	Signal Generator 9KHz~2.2GHz	R&S	SML02	SEL0143	Feb. 19, 2016	1 Year
25.	Signal Generator 9KHz~1.1GHz	R&S	SML01	SEL0135	Feb. 19, 2016	1 Year
26.	Power Meter	R&S	NRVS	SEL0144	Feb. 19, 2016	1 Year
27.	RF Level Meter		URV35	SEL0137	Feb. 19, 2016	1 Year
28.	Audio Analyzer	R&S	UPL	SEL0136	Feb. 19, 2016	1 Year

29.	RF-Amplifier 150KHz~150MHz	BONN Elektronik	BSA1515-25	SEL0157	Feb. 19, 2016	1 Year
30.	Stripline Test Cell	Erika Fiedler	VDE0872	SEL0167	N/A	N/A
31.	TV Test Transmitter	R&S	SFM	SEL0159	Feb. 19, 2016	1 Year
32.	TV Generator PAL	R&S	SGPF	SEL0138	Feb. 19, 2016	1 Year
33.	TV Generator Ntsc	R&S	SGMF	SEL0140	Feb. 19, 2016	1 Year
34.	TV Generator Secam	R&S	SGSF	SEL0139	Feb. 19, 2016	1 Year
35.	TV Test Transmitter 0.3MHz~3300MHz	R&S	SFQ	SEL0142	Feb. 19, 2016	1 Year
36.	MPEG2 Measurement Generator	R&S	DVG	SEL0141	Feb. 19, 2016	1 Year
37.	Spectrum Analyzer	R&S	FSP	SEL0177	Feb. 19, 2016	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	Feb. 19, 2016	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, X1Ⅱ	SEL0151	N/A	N/A
44.	Fully Anechoic Room	ChangZhou ZhongYu	854	SEL0169	Feb. 19, 2016	1 Year
45.	Signal Generator	R&S	SML03	SEL0068	Feb. 19, 2016	1 Year
46.	RF-Amplifier 30M~1GHz	Amplifier Reasearch	250W1000A	SEL0066	Feb. 19, 2016	1 Year
47.	RF-Amplifier 0.8~3.0GHz	Amplifier Reasearch	60S1G3	SEL0065	Feb. 19, 2016	1 Year
48.	Power Meter	R&S	NRVD	SEL0069	Feb. 19, 2016	1 Year
49.	Power Sensor	R&S	URV5-Z2	SEL0071	Feb. 19, 2016	1 Year
50.	Power Sensor	R&S	URV5-Z2	SEL0072	Feb. 19, 2016	1 Year
51.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
52.	Log-periodic Antenna	Amplifier Reasearch	AX1Ⅱ080	SEL0073	N/A	N/A
53.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	N/A	N/A
54.	High Gain Horn Antenna(0.8-5GHz)	Amplifier Reasearch	AT4002A	SEL0075	N/A	N/A

3. 6DB BANDWIDTH MEASUREMENT

3.1 Block diagram of test setup



3.2 Limit

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

3.3 Block diagram of test setup

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

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

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

3.4 Test result

802.11b			
Channel	**Frequency (MHz)**	**6DB Bandwidth(MHz)**	**Limit(MHz)**
Low	2412	9.570	>0.5MHz
Middle	2437	8.867	>0.5MHz
High	2462	9.252	>0.5MHz

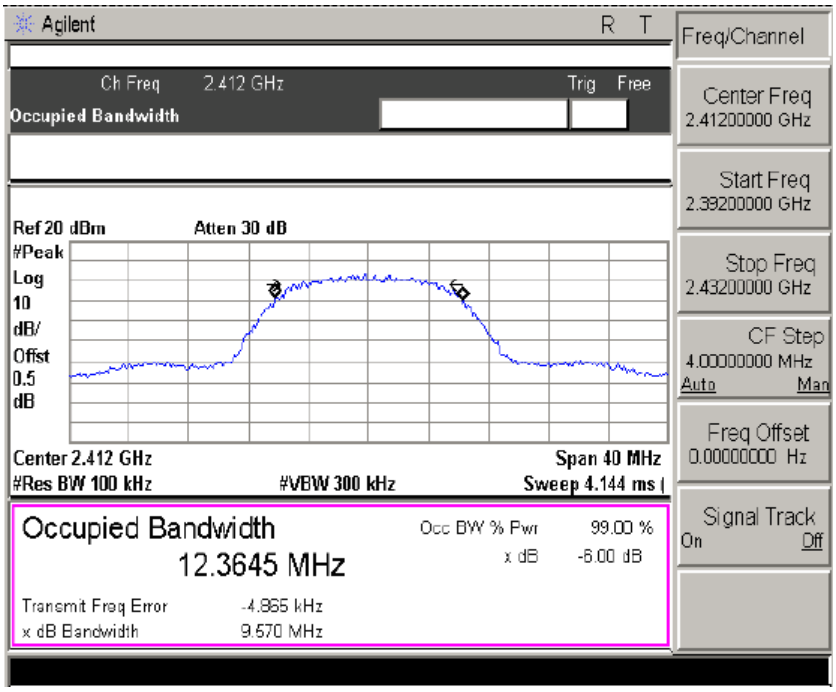
802.11g			
Channel	**Frequency (MHz)**	**6DB Bandwidth(MHz)**	**Limit(MHz)**
Low	2412	16.444	>0.5MHz
Middle	2437	16.447	>0.5MHz
High	2462	16.510	>0.5MHz

802.11n (HT20)			
Channel	**Frequency (MHz)**	**6DB Bandwidth(MHz)**	**Limit(MHz)**
Low	2412	17.643	>0.5MHz
Middle	2437	17.520	>0.5MHz
High	2462	17.758	>0.5MHz

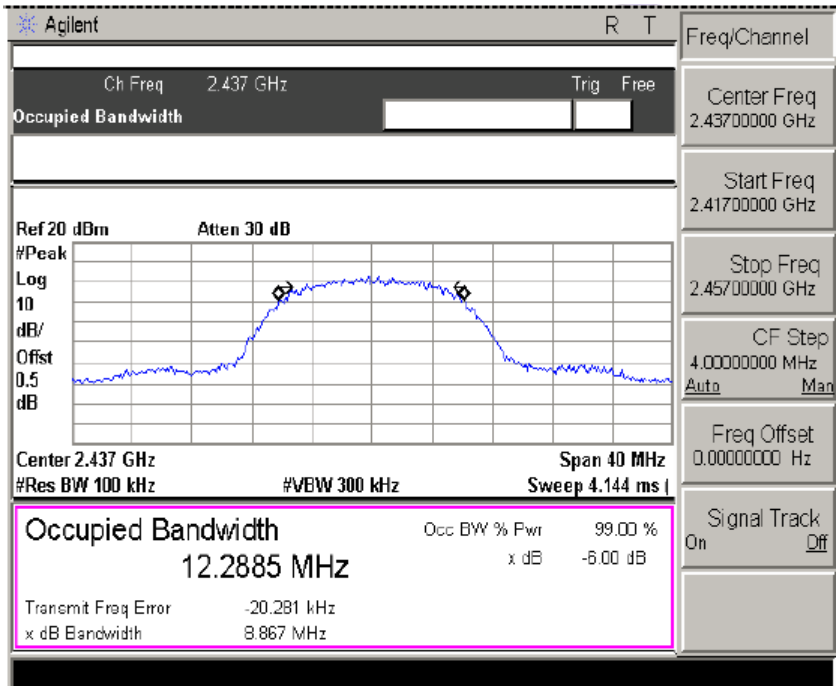
802.11n (HT40)			
Channel	**Frequency (MHz)**	**6DB Bandwidth(MHz)**	**Limit(MHz)**
Low	2422	36.449	>0.5MHz
Middle	2437	36.058	>0.5MHz
High	2452	36.452	>0.5MHz

The spectrum analyzer plots are attached as below.

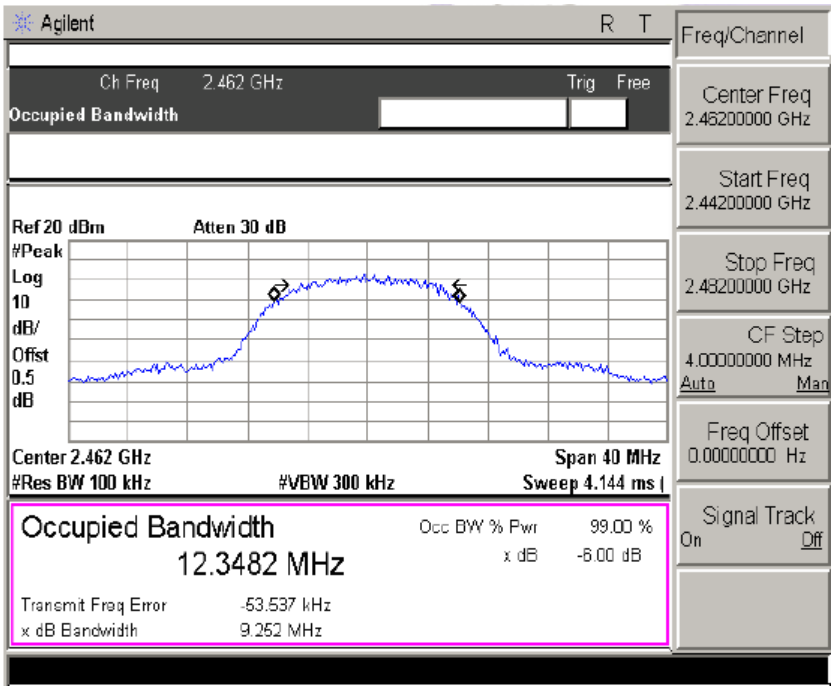
802.11b Channel Low 2412MHz



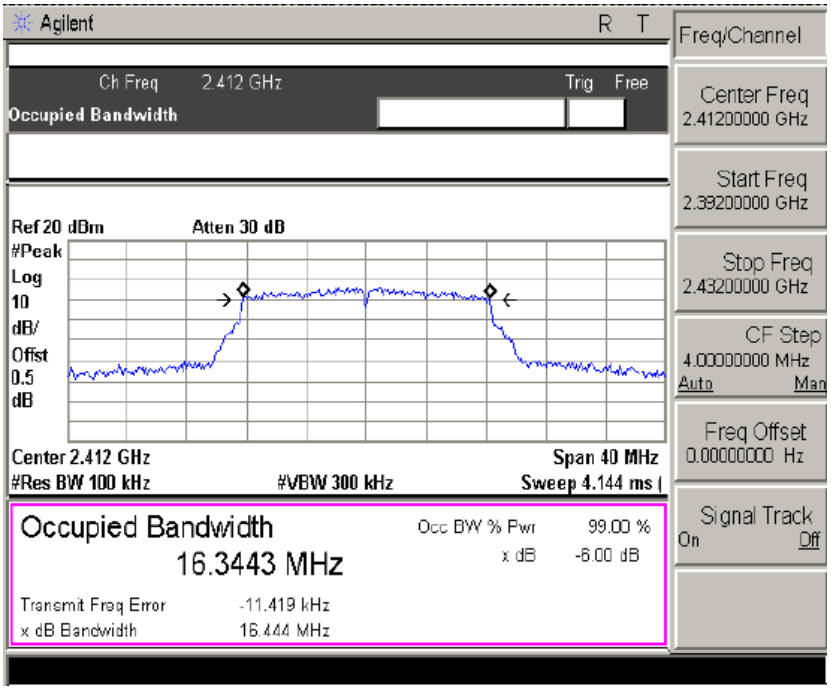
802.11b Channel Middle 2437MHz



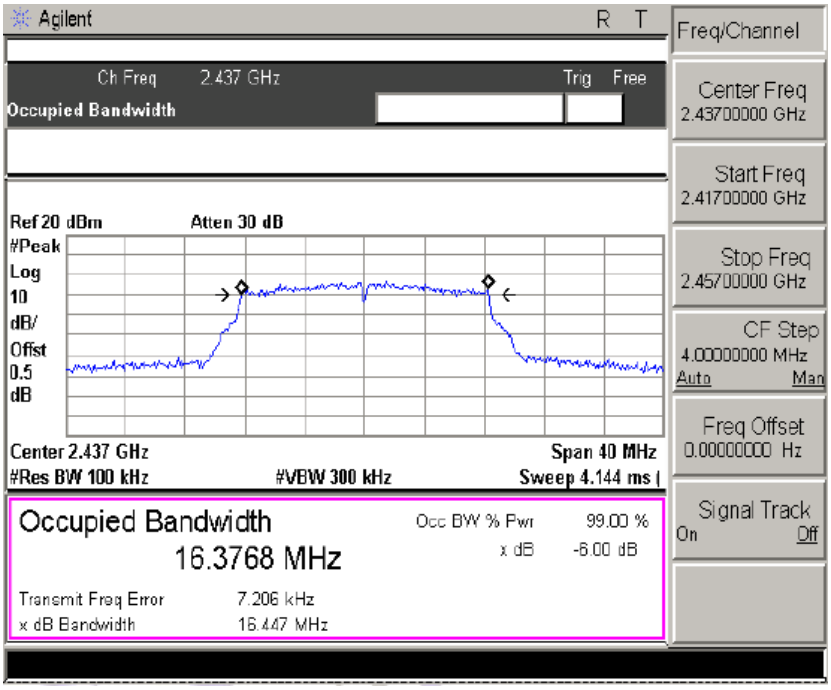
802.11b Channel High 2462MHz



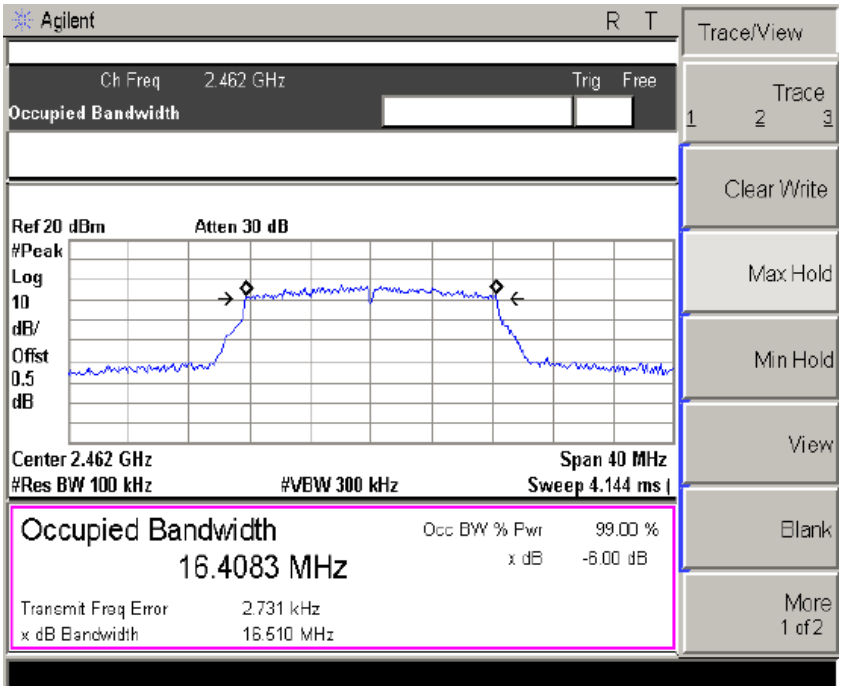
802.11g Channel Low 2412MHz



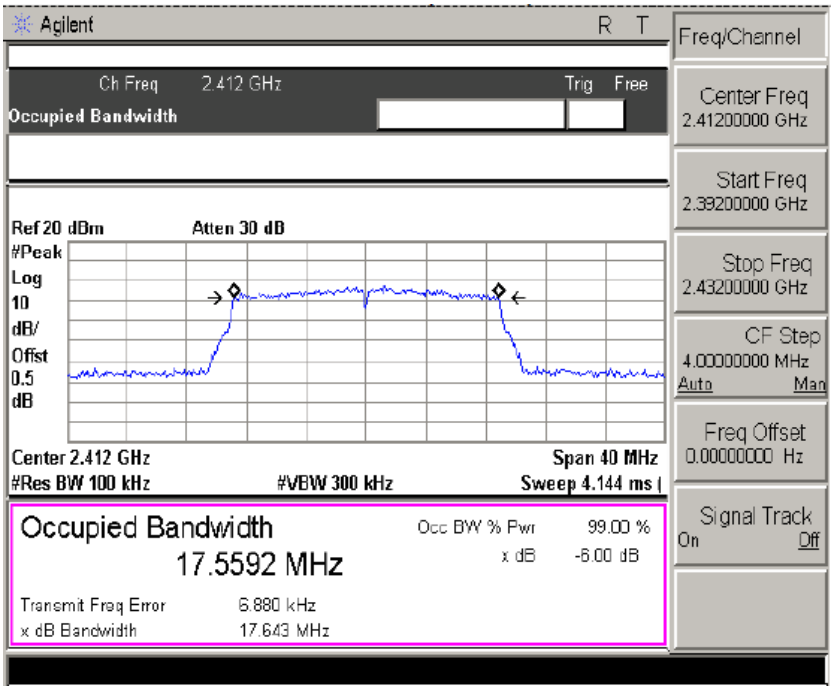
802.11g Channel Middle 2437MHz



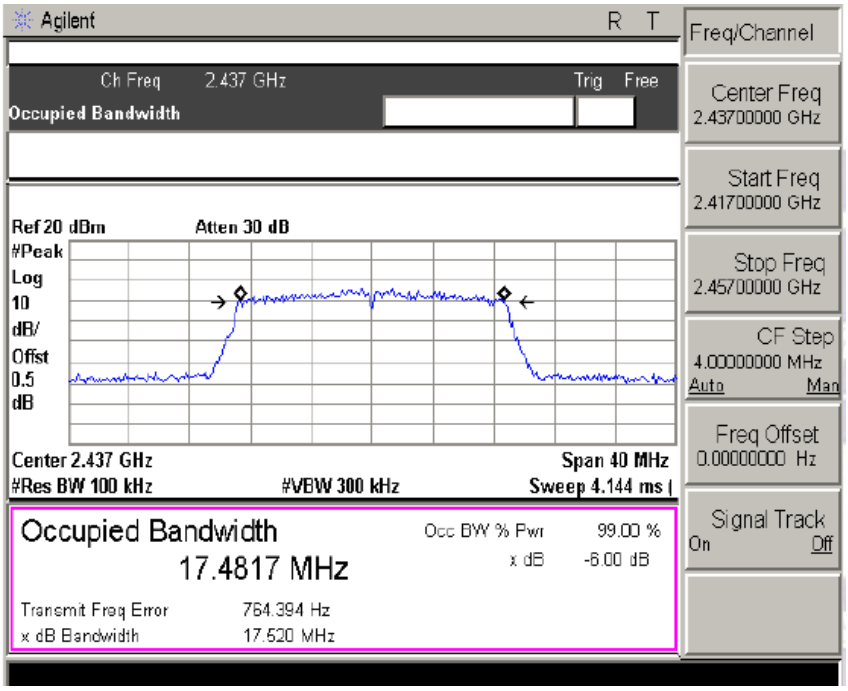
802.11g Channel High 2462MHz



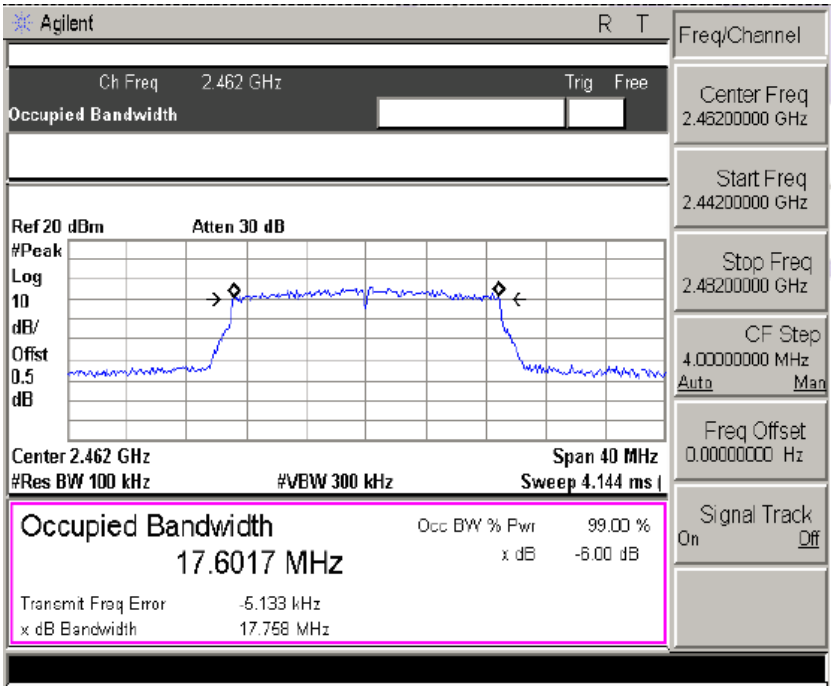
802.11n(HT20) Channel Low 2412MHz



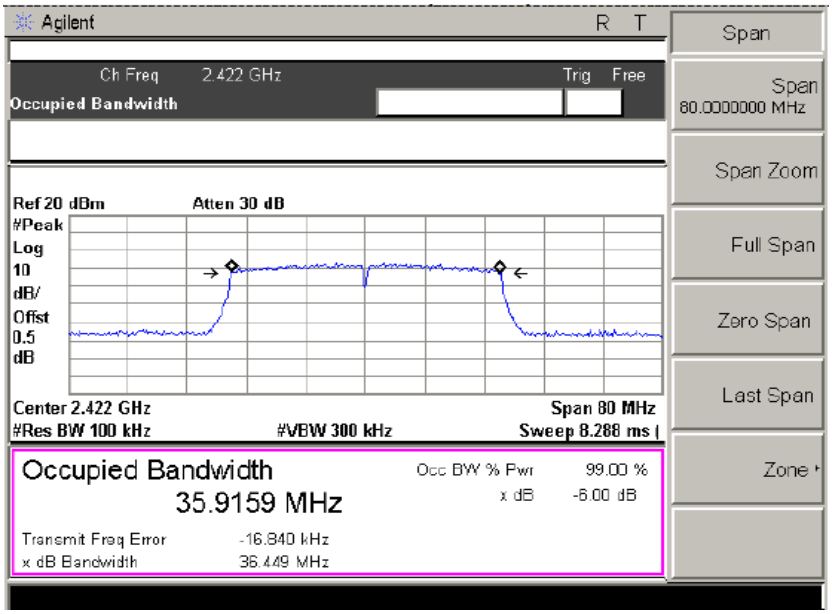
802.11n(HT20) Channel Middle 2437MHz



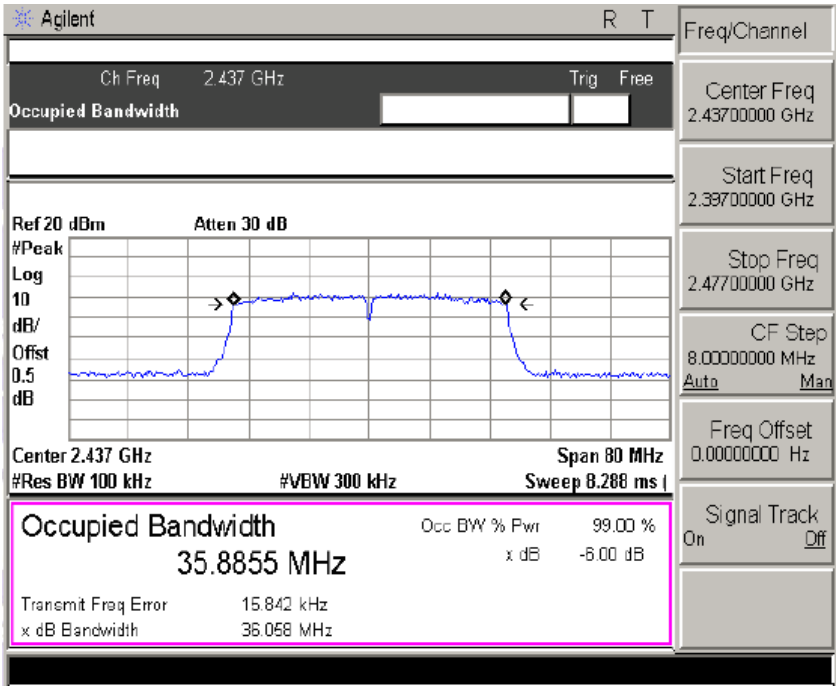
802.11n(HT20) Channel High 2462MHz



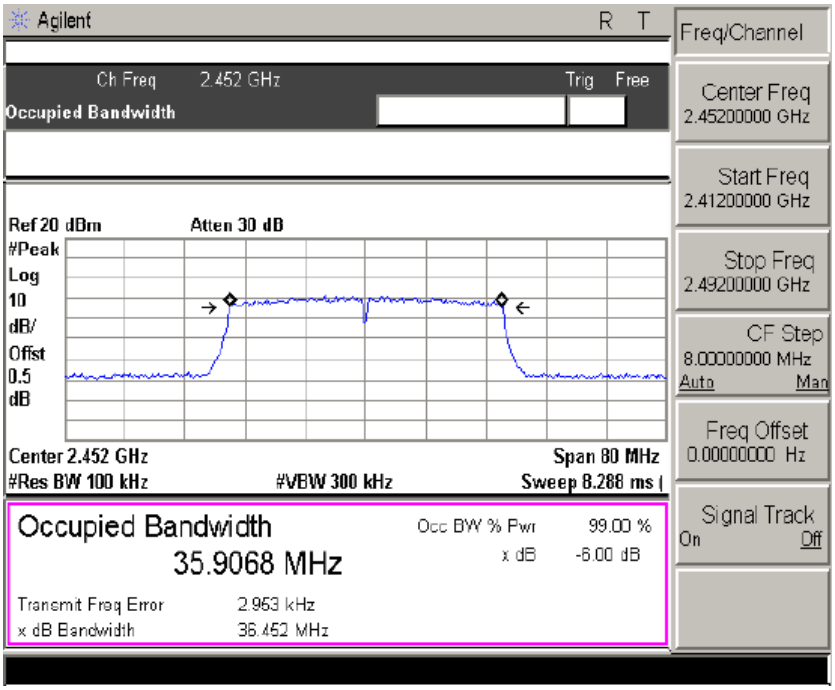
802.11n(HT40) Channel Low 2422MHz



802.11n(HT40) Channel Middle 2437MHz

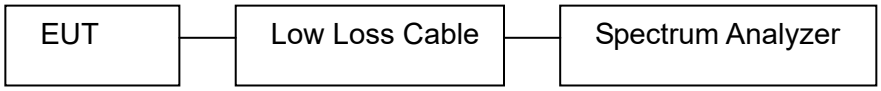


802.11n(HT40) Channel High 2452MHz



4. MAXIMUM PEAK OUTPUT POWER

4.1 Block diagram of test setup



4.2 Limits

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

4.3 Test procedure

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

4.4 Test result

Pass

802.11b_1Mbps

Channel	Frequency (MHz)	Peak output power (dBm)	Limit (dBm)
Low	2412	9.09	30
Middle	2437	9.21	30
High	2462	9.07	30

802.11g_6Mbps

Channel	Frequency (MHz)	Peak output power (dBm)	Limit (dBm)
Low	2412	9.19	30
Middle	2437	9.16	30
High	2462	9.19	30

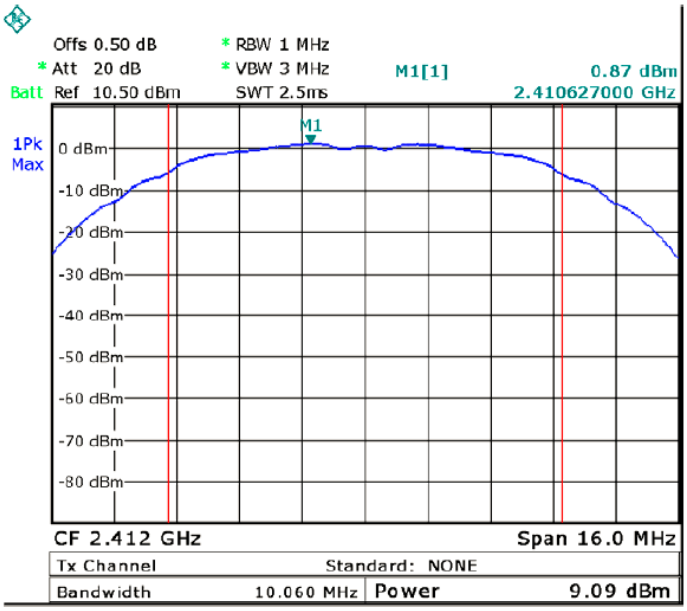
802.11n (HT20) _6.5Mbps

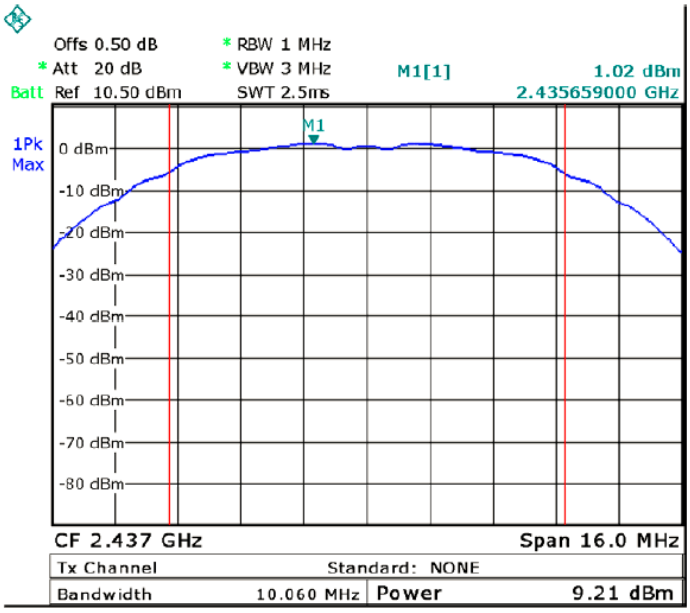
Channel	Frequency (MHz)	Peak output power (dBm)	Limit (dBm)
Low	2412	9.34	30
Middle	2437	9.21	30
High	2462	9.30	30

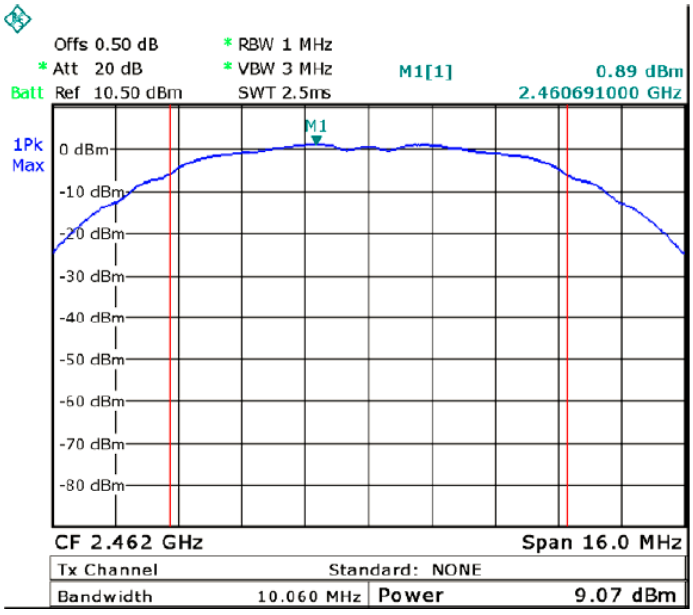
802.11n (HT40) _136.5Mbps

Channel	Frequency (MHz)	Peak output power (dBm)	Limit (dBm)
Low	2422	9.35	30
Middle	2437	9.27	30
High	2452	9.31	30

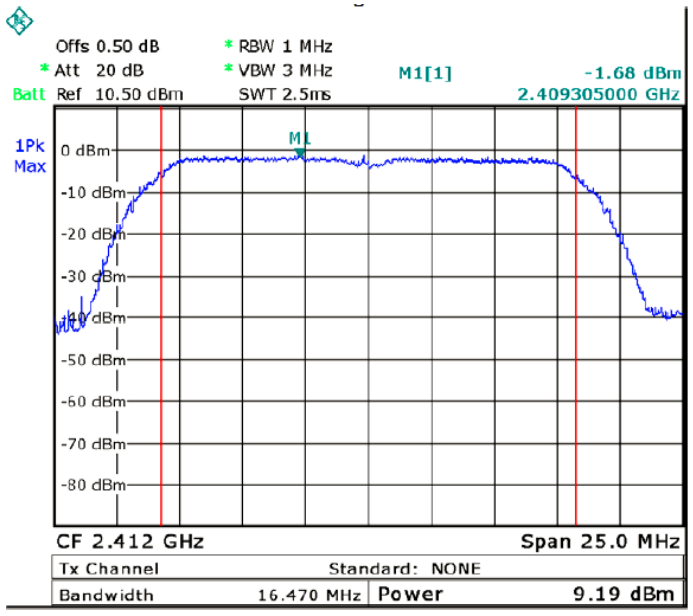
802.11b

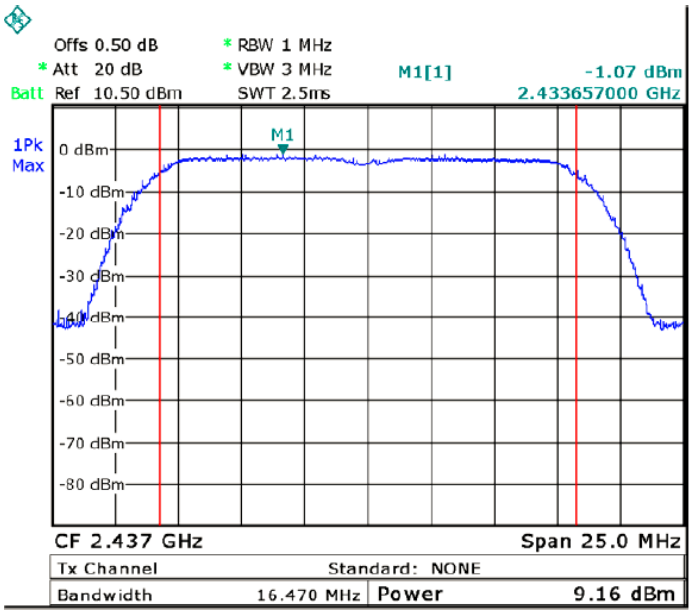

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
0.87 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.410627000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.412 GHz
Span 16.0 MHz
Tx Channel
Standard: NONE
Bandwidth
10.060 MHz
Power
9.09 dBm

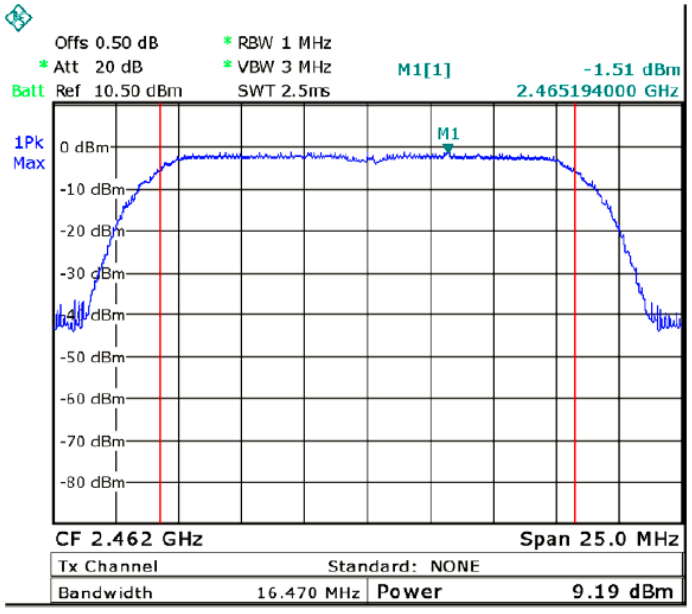

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
1.02 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.435659000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.437 GHz
Span 16.0 MHz
Tx Channel
Standard: NONE
Bandwidth
10.060 MHz
Power
9.21 dBm


Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
0.89 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.460691000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
Span 16.0 MHz
Tx Channel
Standard: NONE
Bandwidth
10.060 MHz
Power
9.07 dBm

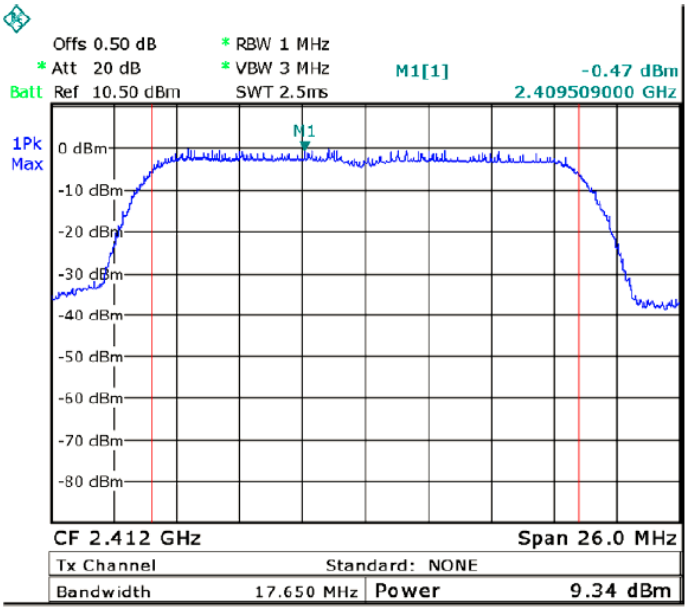
802.11g

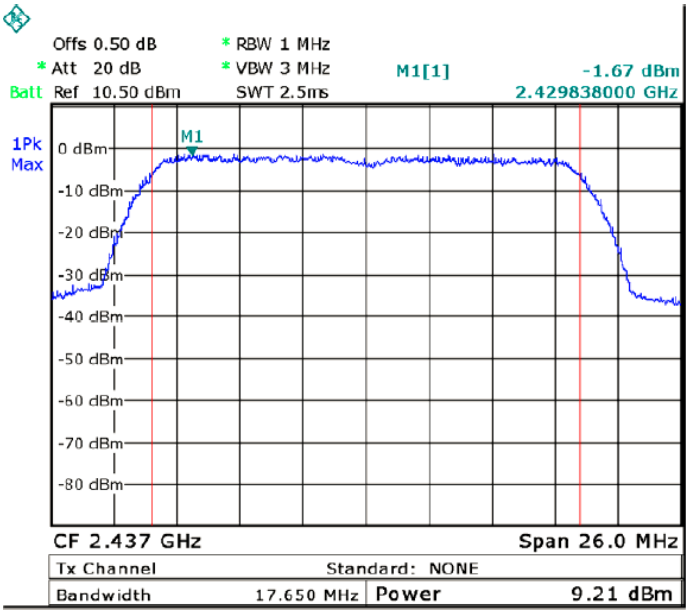

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-1.68 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.409305000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.412 GHz
Span 25.0 MHz
Tx Channel
Standard: NONE
Bandwidth
16.470 MHz
Power
9.19 dBm

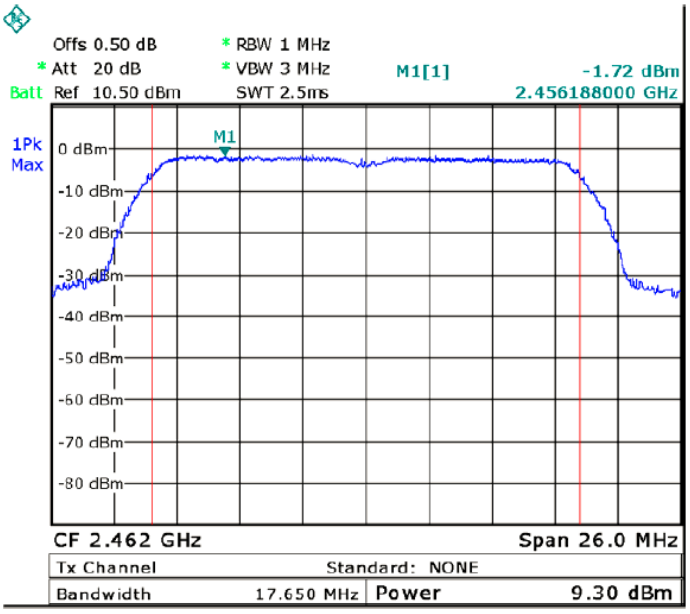

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-1.07 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.433657000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.437 GHz
Span 25.0 MHz
Tx Channel
Standard: NONE
Bandwidth
16.470 MHz
Power
9.16 dBm


Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-1.51 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.465194000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
Span 25.0 MHz
Tx Channel
Standard: NONE
Bandwidth
16.470 MHz
Power
9.19 dBm

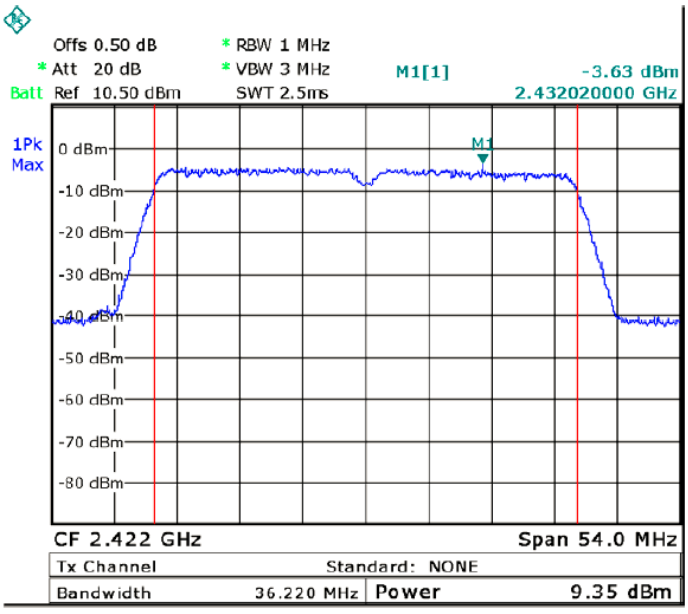
802.11n HT20

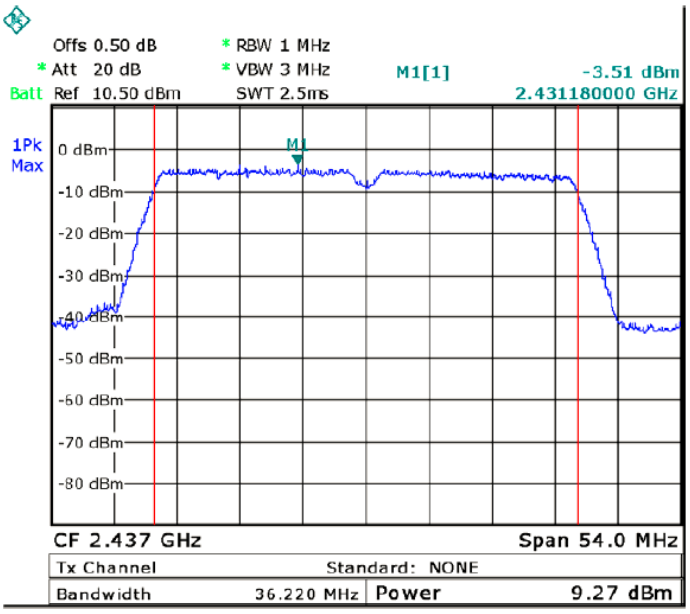

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-0.47 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.409509000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.412 GHz
Span 26.0 MHz
Tx Channel
Standard: NONE
Bandwidth
17.650 MHz
Power
9.34 dBm

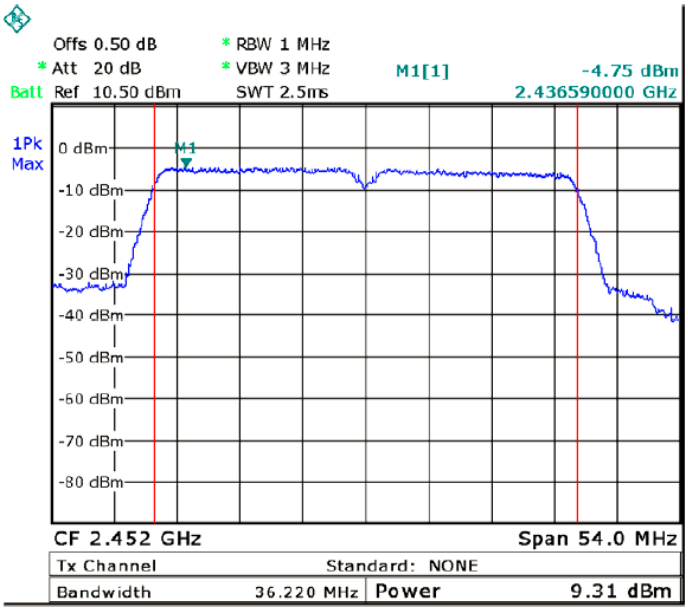

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-1.67 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.429838000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.437 GHz
Span 26.0 MHz
Tx Channel
Standard: NONE
Bandwidth
17.650 MHz
Power
9.21 dBm


Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-1.72 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.456188000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
Span 26.0 MHz
Tx Channel
Standard: NONE
Bandwidth
17.650 MHz
Power
9.30 dBm

802.11n HT40

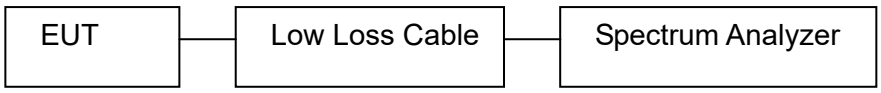

Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-3.63 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.432020000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.422 GHz
Span 54.0 MHz
Tx Channel
Standard: NONE
Bandwidth
36.220 MHz
Power
9.35 dBm


Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-3.51 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.431180000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.437 GHz
Span 54.0 MHz
Tx Channel
Standard: NONE
Bandwidth
36.220 MHz
Power
9.27 dBm


Offs 0.50 dB
* RBW 1 MHz
* Att 20 dB
* VBW 3 MHz
M1[1]
-4.75 dBm
Batt Ref 10.50 dBm
SWT 2.5ms
2.436590000 GHz
1Pk
Max
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.452 GHz
Span 54.0 MHz
Tx Channel
Standard: NONE
Bandwidth
36.220 MHz
Power
9.31 dBm

5. POWER SPECTRAL DENSITY TEST

5.1 Block diagram of test setup



5.2 Limits

According to 15.247(a)(1)(iii), 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.

5.3 Test procedure

According to the KDB 558074 D01 V03r02, such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. The test method of power spectral density as below:

a. Set instrument center frequency to DTS channel center frequency.
b. Set span to at least 1.5 times the OBW.
c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available)
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Use the peak marker function to determine the maximum amplitude level.
i. Use the peak marker function to determine the maximum amplitude level.
j. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

5.4 Test result

Pass

802.11b			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-19.32	8
Middle	2437	-20.30	8
High	2462	-21.71	8

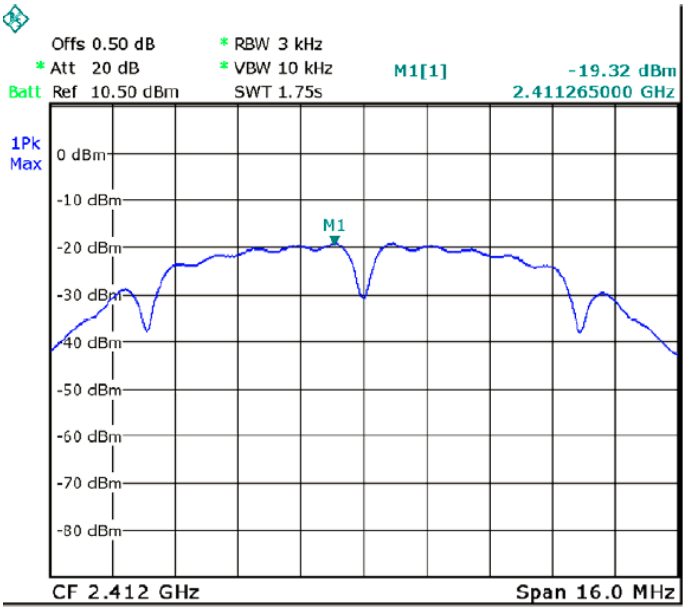
802.11g			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-20.16	8
Middle	2437	-23.30	8
High	2462	-23.71	8

802.11n(HT20)			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2412	-21.12	8
Middle	2437	-22.04	8
High	2462	-24.15	8

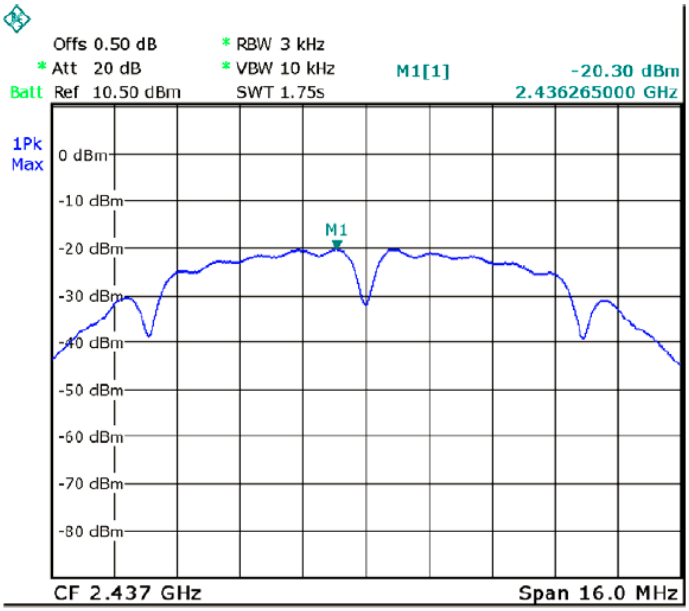
802.11n(HT40M)			
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm)**	**Limit (dBm)**
Low	2422	-26.47	8
Middle	2437	-24.38	8
High	2452	-23.62	8

The spectrum analyzer plots are attached as below.

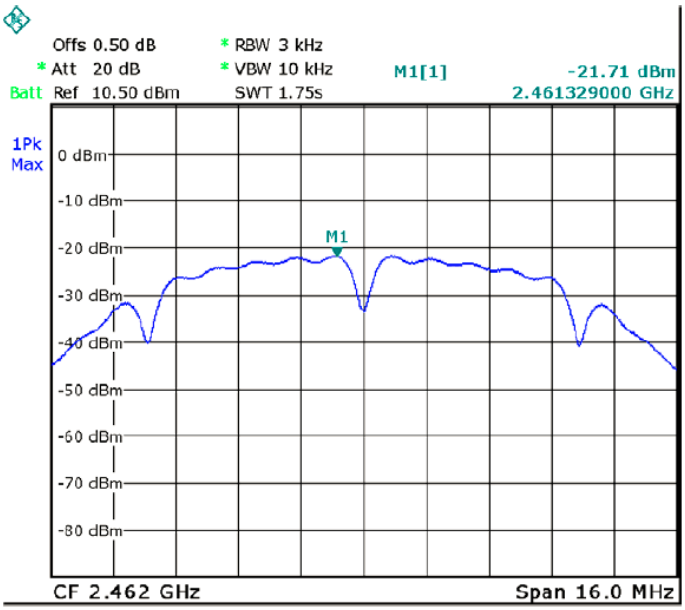
802.11b Channel Low 2412MHz



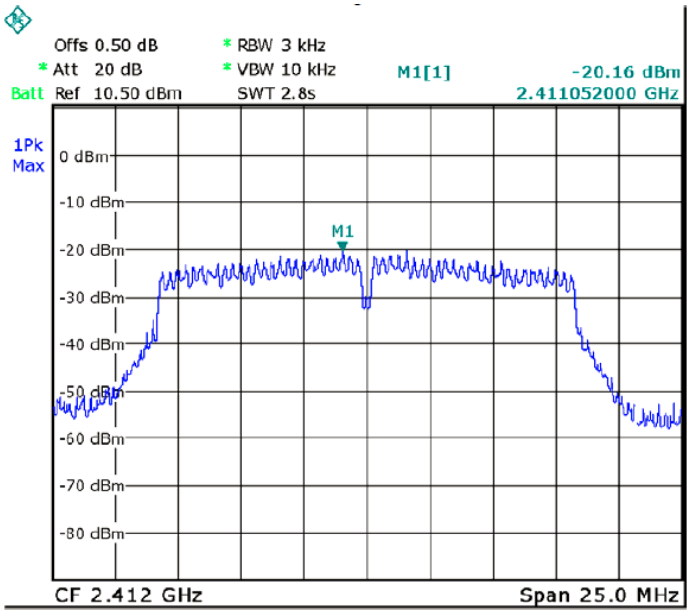
802.11b Channel Middle 2437MHz



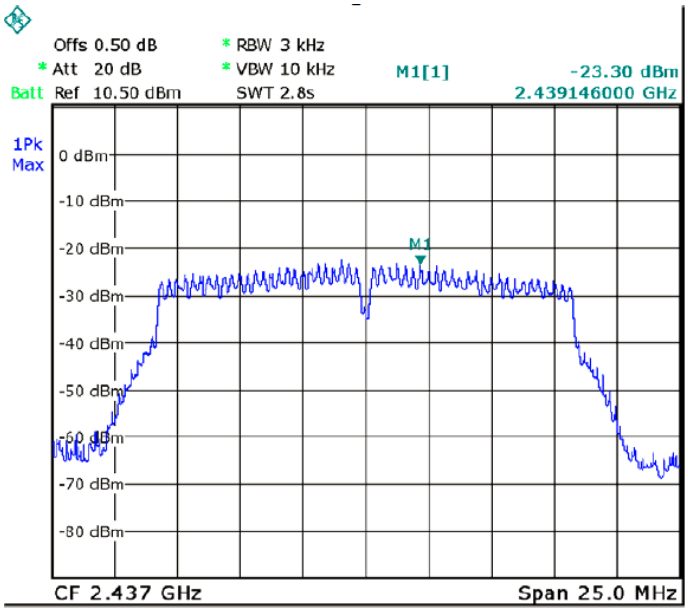
802.11b Channel High 2462MHz



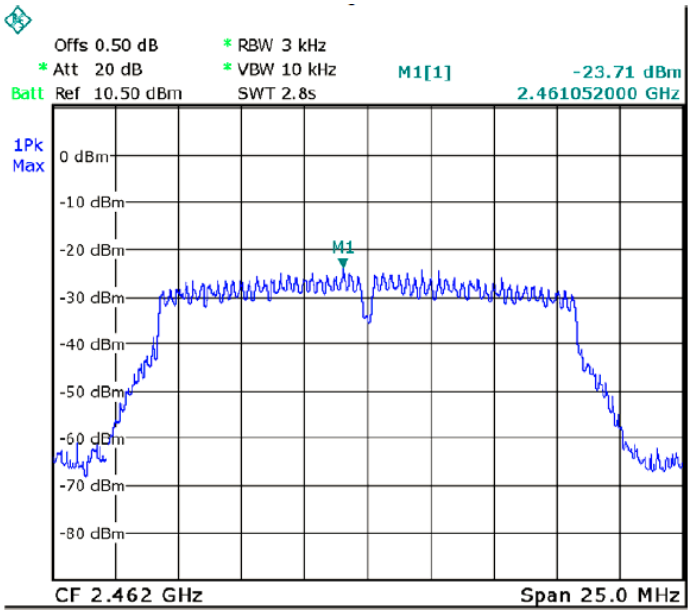
802.11g Channel Low 2412MHz



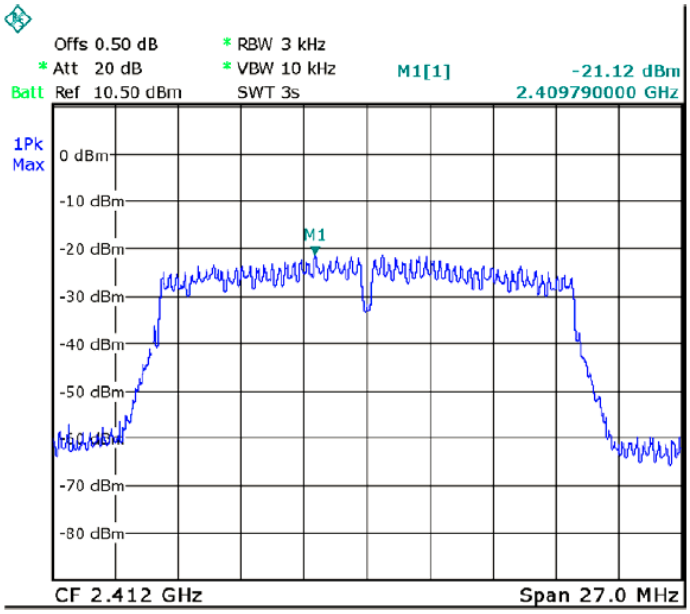
802.11g Channel Middle 2437MHz



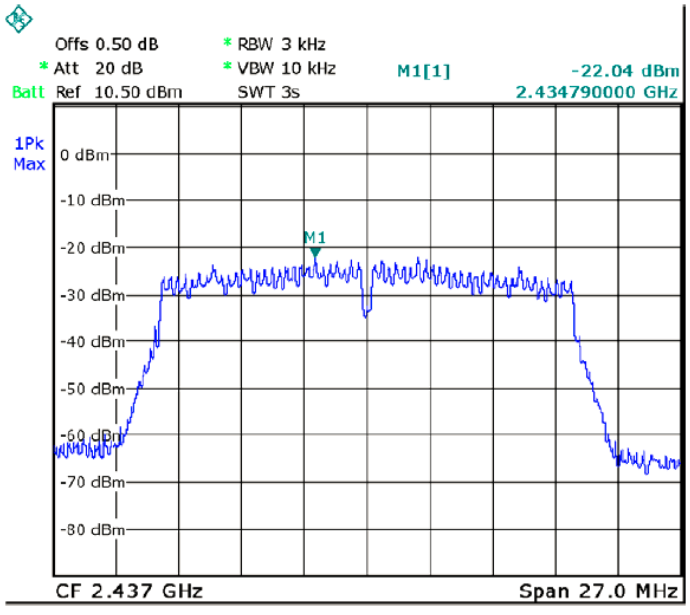
802.11g Channel High 2462MHz



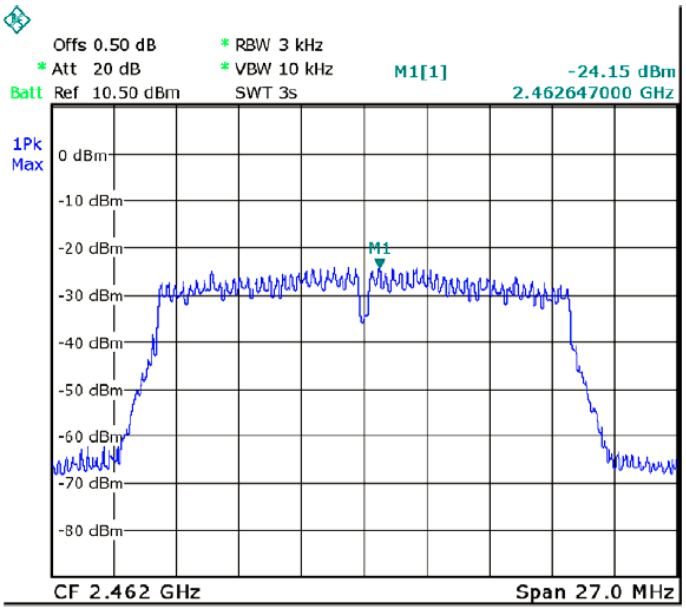
802.11n(HT20M) Channel Low 2412MHz



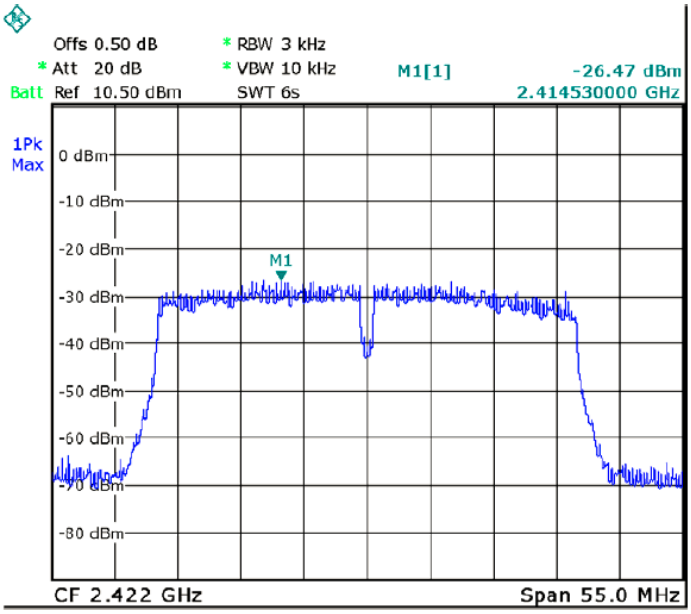
802.11n (HT20) Channel Middle 2437MHz



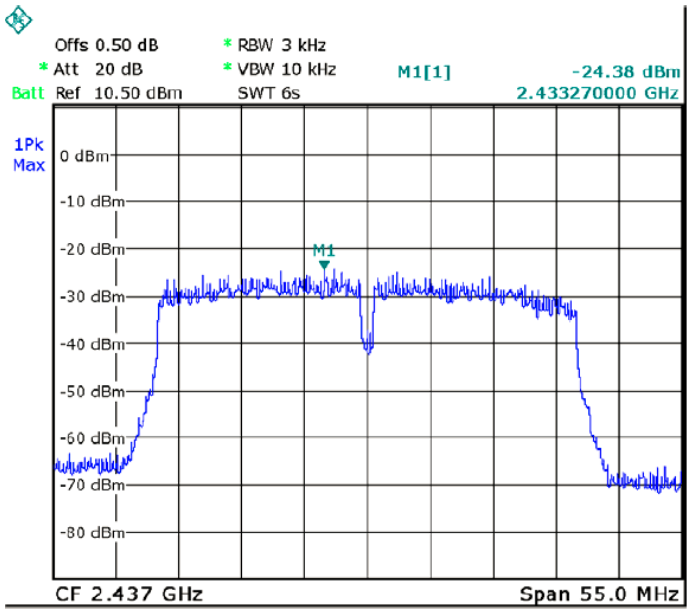
802.11n(HT20) Channel High 2462MHz



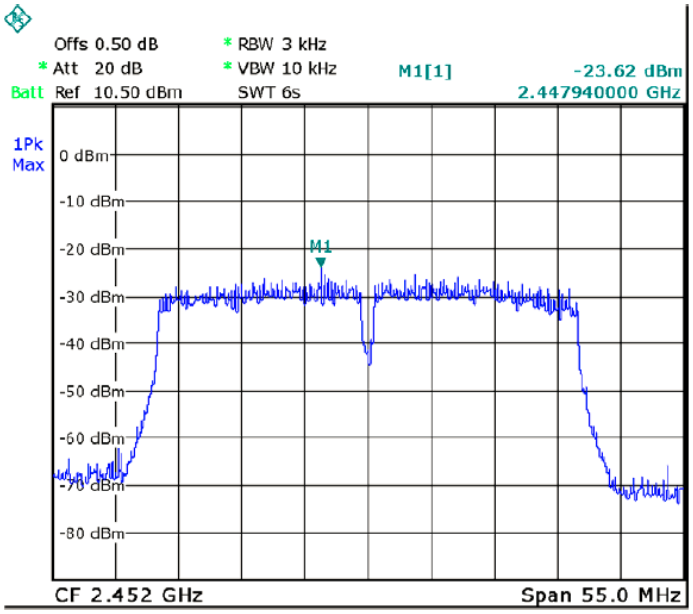
802.11n(HT40) Channel Low 2422MHz



802.11n (HT40) Middle High 2437MHz

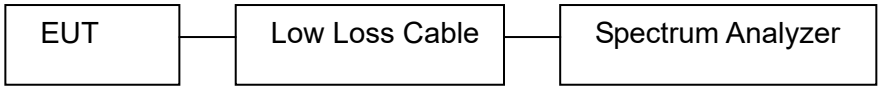


802.11n (HT40) Channel High 2452MHz



6. BAND EDGE COMPLIANCE TEST

6.1 Block diagram of test setup



6.2 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).

6.3 Test procedure

Conducted Band Edge:

a. The transmitter output was connected to the spectrum analyzer via a low loss cable.
b. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

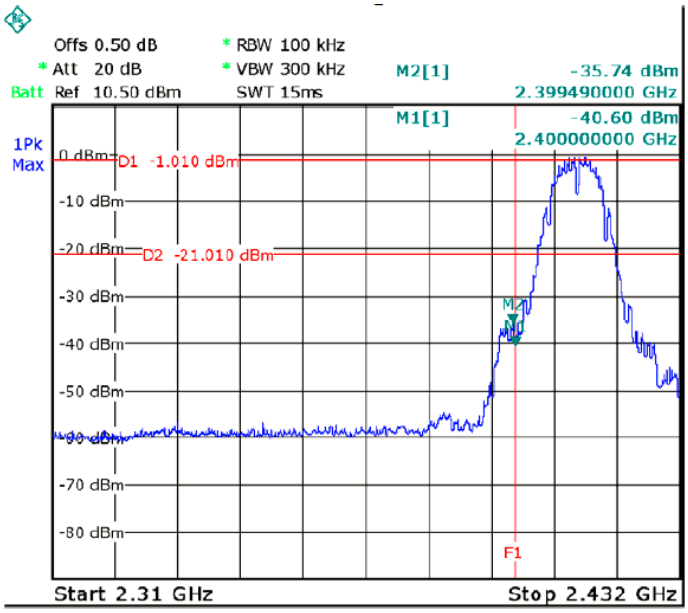
Radiate Band Edge:

a. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
b. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
c. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
d. 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
e. The band edges was measured and recorded.

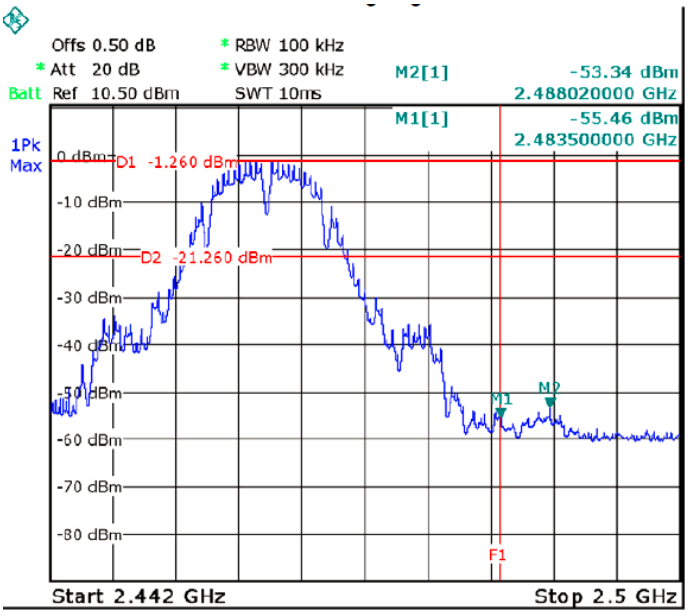
6.4 Test result

Pass

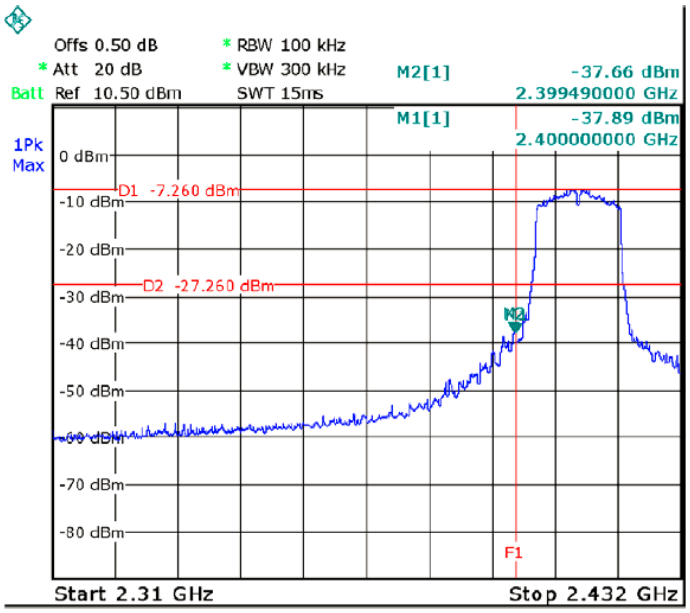
802.11b Channel Low 2412MHz
Vertical（Worst case）



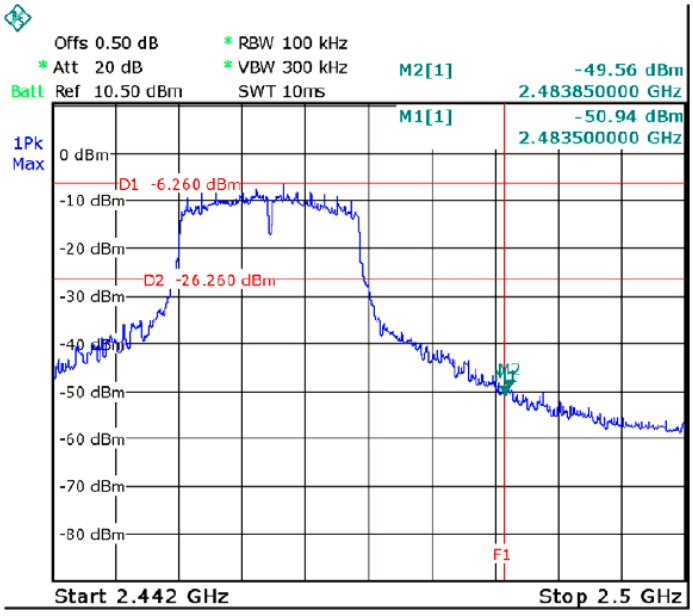
802.11b Channel High 2462MHz
Vertical（Worst case）



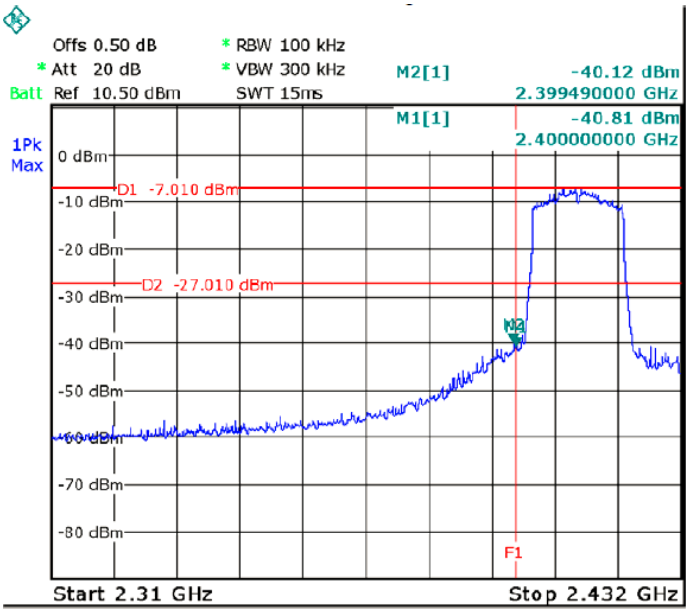
802.11g Channel Low 2412MHz
Vertical（Worst case）



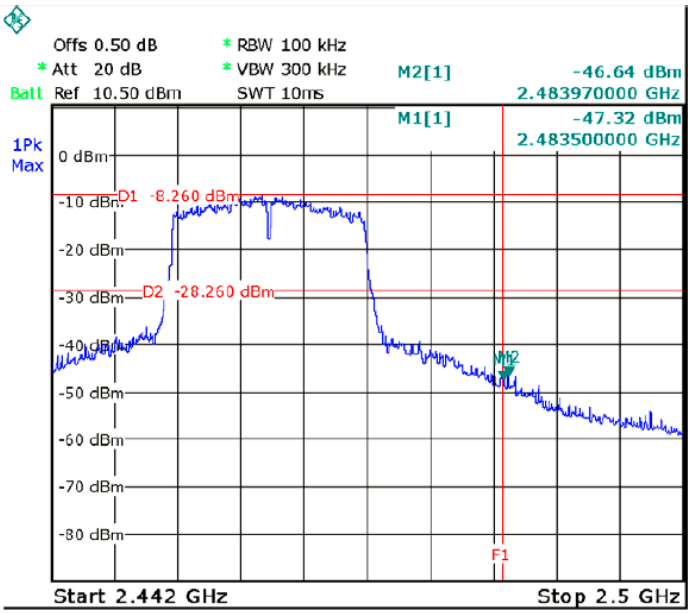
802.11g Channel High 2462MHz
Vertical（Worst case）



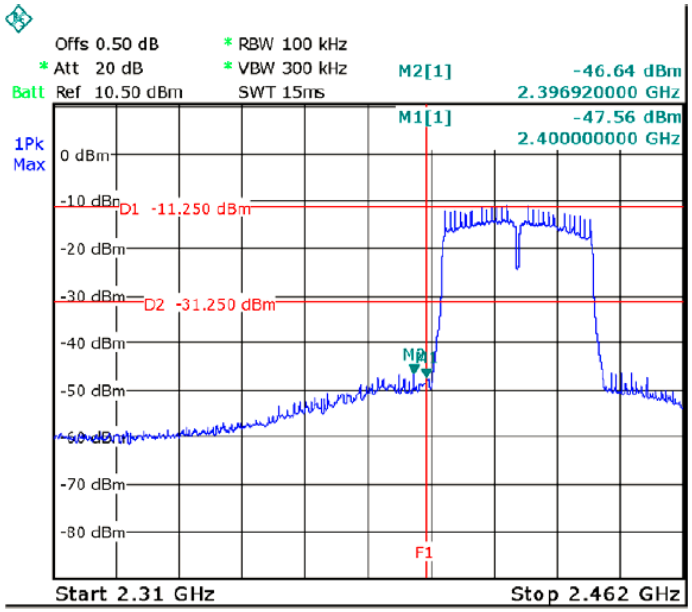
802.11n(HT20) Channel Low 2412MHz
Vertical（Worst case）



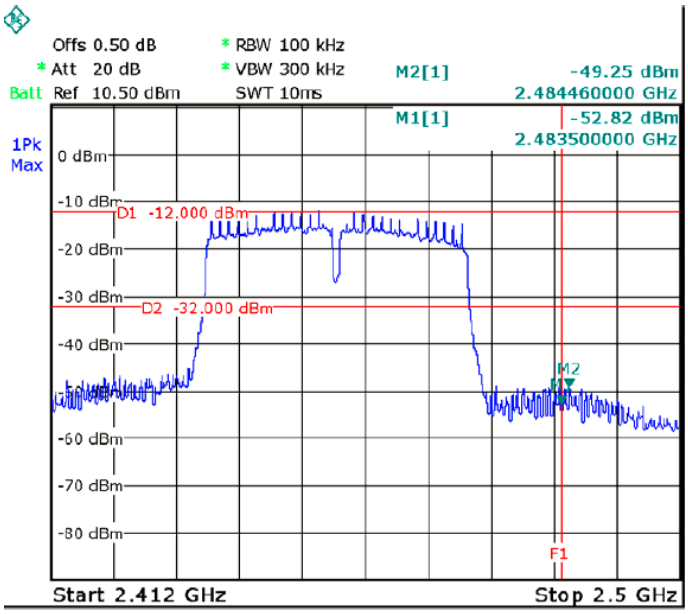
802.11n(HT20) Channel High 2462MHz
Vertical（Worst case）



802.11n(HT40) Channel Low 2422MHz
Vertical（Worst case）



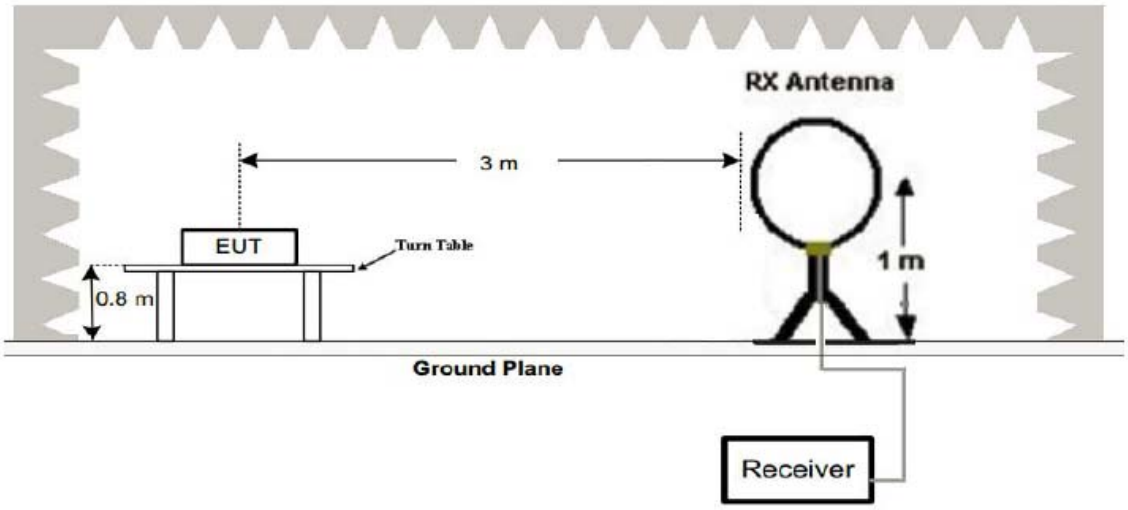
802.11n(HT40) Channel High 2452MHz
Vertical（Worst case）



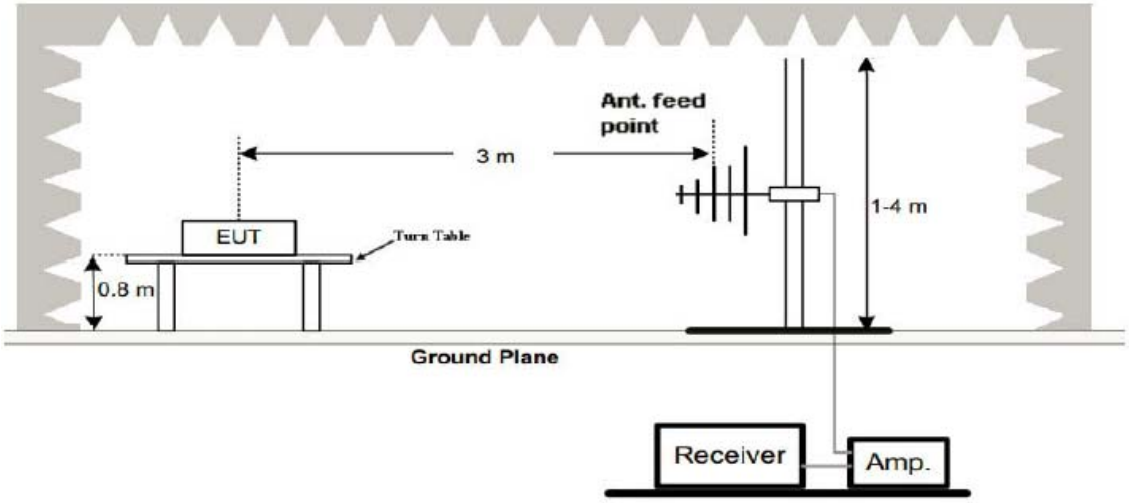
7. RADIATED SPURIOUS EMISSION TEST

7.1 Block diagram of test setup

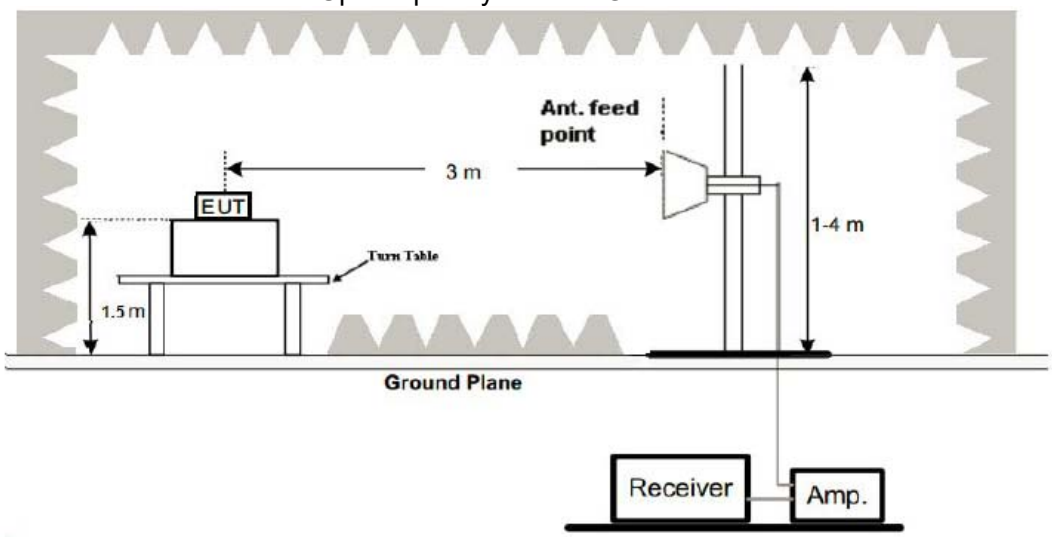
（1） Radiated Emission Test-Up Frequency Below 30MHz



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



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



7.2 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).

7.3 Restricted bands of operation

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.

7.4 Test procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Note:
For battery operated equipment, the equipment tests shall be performed using a new battery.

7.5 Test result

Pass

The worst test mode:: 802.11b
For Below 30MHz

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

Test mode: 802.11b
For 30MHz-18GHz

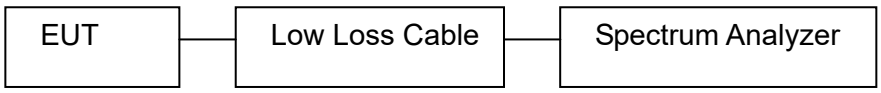
Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
11b: Low Channel 2412MHz									
313.60	14.21	PK	45	1.7	H	17.02	31.23	46.00	-14.77
313.60	13.55	PK	168	1.8	V	17.02	30.57	46.00	-15.43
4824.00	51.29	PK	268	1.2	V	-1.06	50.23	74.00	-23.77
4824.00	49.33	Ave	268	1.2	V	-1.06	48.27	54.00	-5.73
7236.00	47.52	PK	109	1.5	H	1.33	48.85	74.00	-25.15
7236.00	46.67	Ave	109	1.5	H	1.33	48.00	54.00	-6.00
2335.70	45.11	PK	352	1.8	V	-13.19	31.92	74.00	-42.08
2335.70	39.06	Ave	352	1.8	V	-13.19	25.87	54.00	-28.13
2389.22	42.47	PK	142	1.1	H	-13.14	29.33	74.00	-44.67
2389.22	36.71	Ave	142	1.1	H	-13.14	23.57	54.00	-30.43
2487.38	44.64	PK	113	1.4	V	-13.08	31.56	74.00	-42.44
2487.38	37.94	Ave	113	1.4	V	-13.08	24.86	54.00	-29.14

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
11b: Middle Channel 2437MHz									
313.60	15.31	PK	188	1.4	H	17.02	32.33	46.00	-13.67
313.60	15.01	PK	192	1.2	V	17.02	32.03	46.00	-13.97
4874.00	51.66	PK	3	1.4	V	-0.62	51.04	74.00	-22.96
4874.00	47.62	Ave	3	1.4	V	-0.62	47.00	54.00	-7.00
7311.00	47.36	PK	96	1.4	H	2.21	49.57	74.00	-24.43
7311.00	45.20	Ave	96	1.4	H	2.21	47.41	54.00	-6.59
2346.34	46.72	PK	131	1.0	V	-13.19	33.53	74.00	-40.47
2346.34	39.72	Ave	131	1.0	V	-13.19	26.53	54.00	-27.47
2385.47	43.15	PK	203	2.0	H	-13.14	30.01	74.00	-43.99
2385.47	36.24	Ave	203	2.0	H	-13.14	23.10	54.00	-30.90
2486.16	42.58	PK	231	1.4	V	-13.08	29.50	74.00	-44.50
2486.16	36.51	Ave	231	1.4	V	-13.08	23.43	54.00	-30.57

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
11b: High Channel 2462MHz									
313.60	15.10	PK	54	1.5	H	17.02	32.12	46.00	-13.88
313.60	15.36	PK	180	1.1	V	17.02	32.38	46.00	-13.62
4924.00	51.28	PK	275	1.4	V	-0.24	51.04	74.00	-22.96
4924.00	49.67	Ave	275	1.4	V	-0.24	49.43	54.00	-4.57
7386.00	49.77	PK	113	1.3	H	2.84	52.61	74.00	-21.39
7386.00	47.68	Ave	113	1.3	H	2.84	50.52	54.00	-3.48
2327.02	45.12	PK	219	1.1	V	-13.19	31.93	74.00	-42.07
2327.02	37.28	Ave	219	1.1	V	-13.19	24.09	54.00	-29.91
2387.49	44.40	PK	137	1.5	H	-13.14	31.26	74.00	-42.74
2387.49	37.74	Ave	137	1.5	H	-13.14	24.60	54.00	-29.40
2494.27	42.61	PK	122	1.6	V	-13.08	29.53	74.00	-44.47
2494.27	37.81	Ave	122	1.6	V	-13.08	24.73	54.00	-29.27

8. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

8.1 Block diagram of test setup



8.2 Limits

Se 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

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

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

c. The Conducted Spurious Emission was measured and recorded.

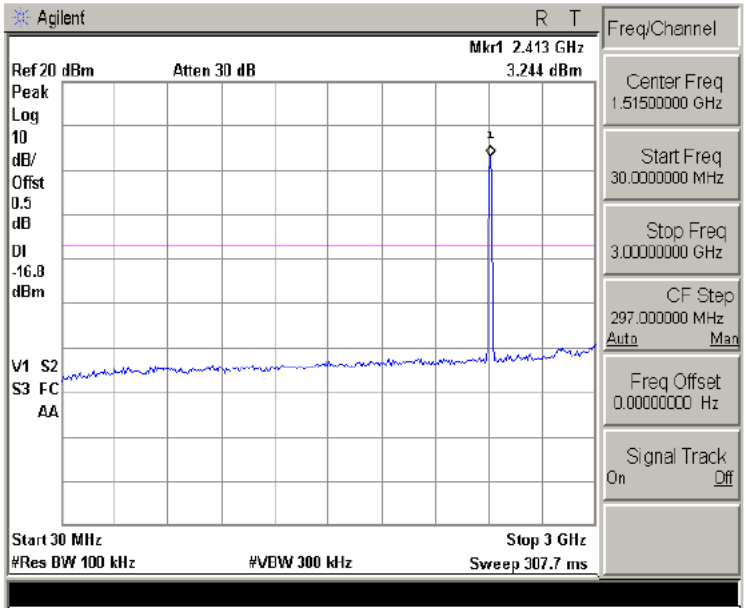
8.4 Test Result

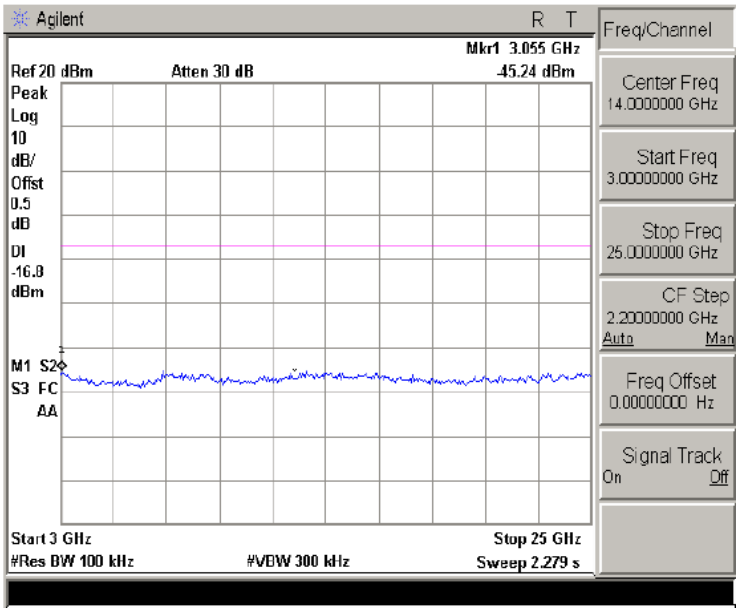
Pass

The spectrum analyzer plots are attached as below.

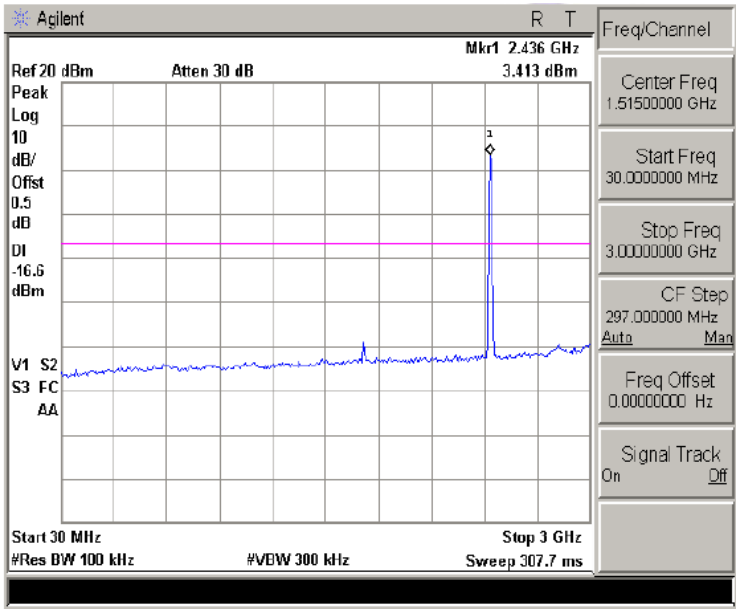
The worst test mode: 802.11b

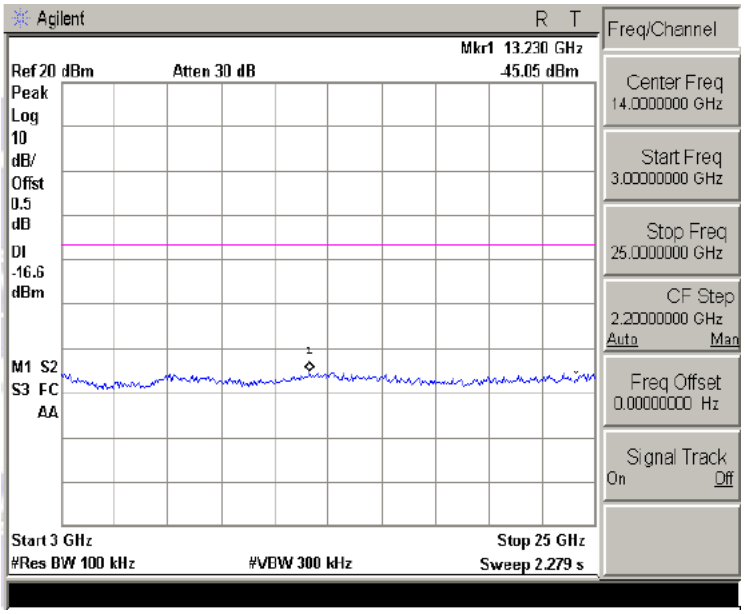
TX 802.11b Channel Low 2412MHz



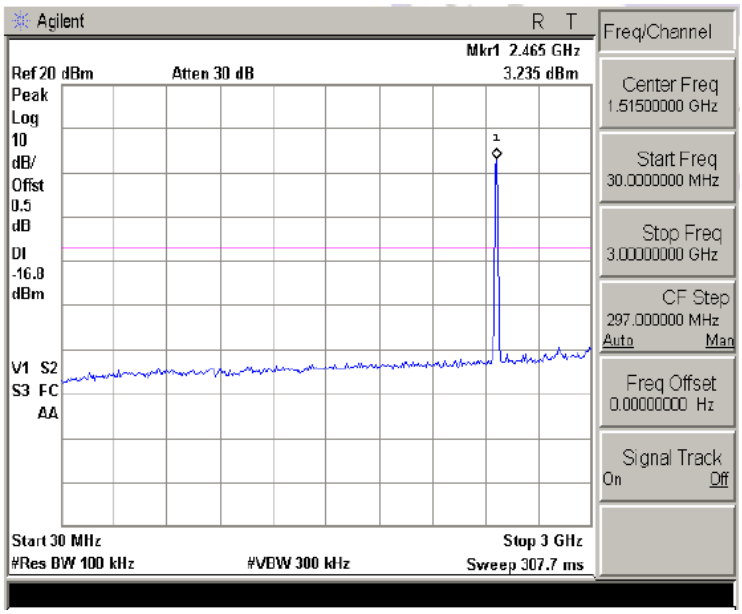


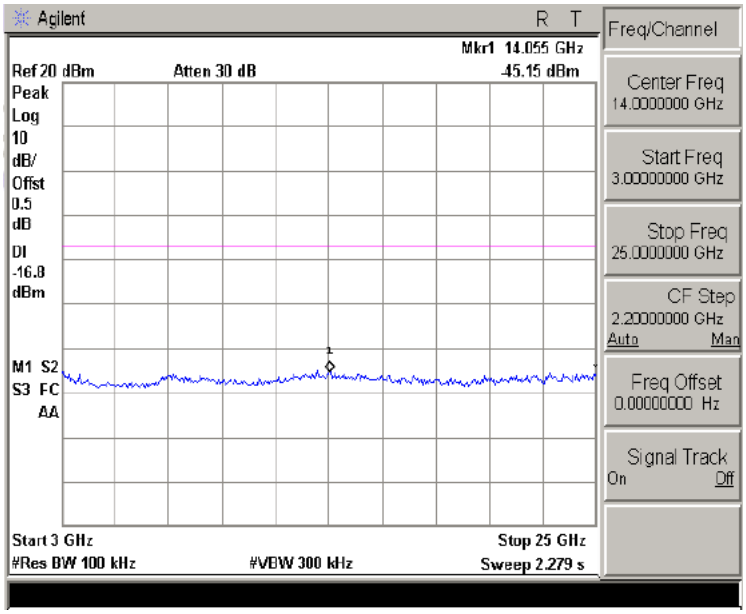
TX 802.11b Channel Middle 2437MHz





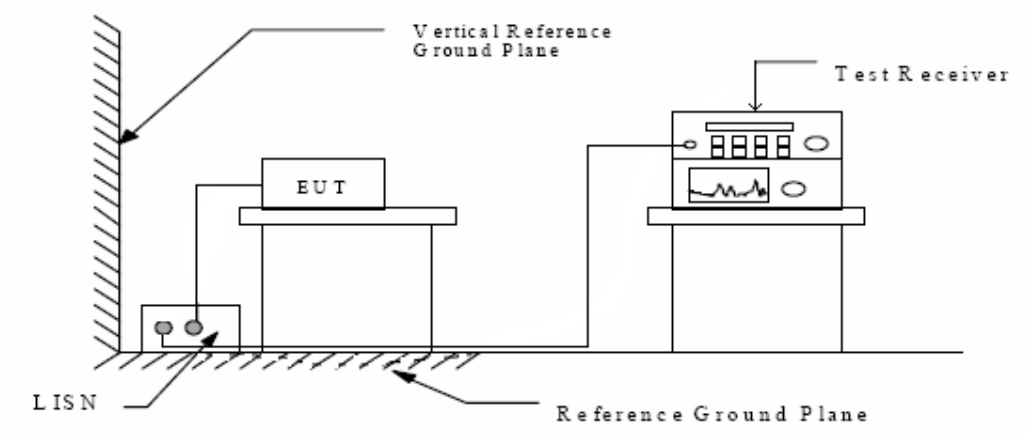
TX 802.11b Channel High 2462MHz





9. AC POWER LINE CONDUCTED EMISSION

9.1 Block diagram of test setup



9.2 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.

9.3 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.

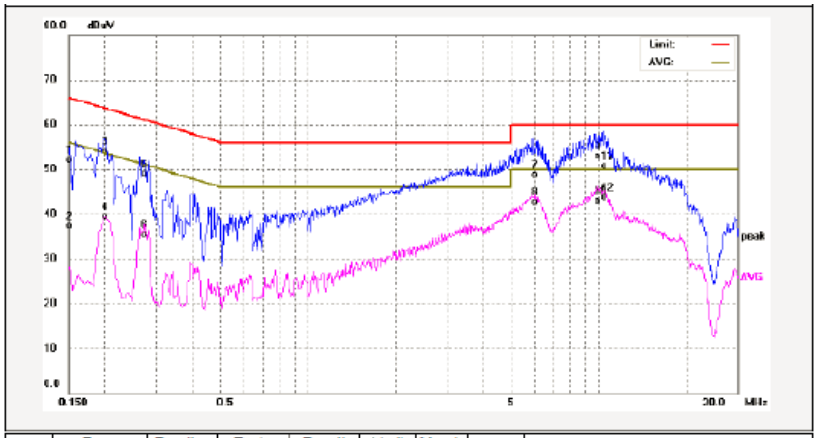
The bandwidth of test receiver (R & S ESPI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

9.4 Test Result

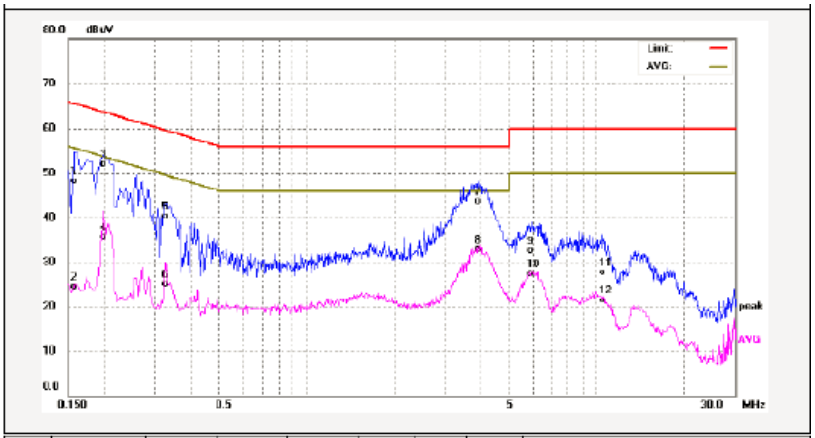
PASS

L



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	41.03	11.17	52.20	65.99	-13.79	QP	
2	0.1500	26.13	11.17	37.30	55.99	-18.69	AVG	
3	0.1980	42.79	11.29	54.08	63.69	-9.61	QP	
4	0.1980	28.29	11.29	39.58	53.69	-14.11	AVG	
5	0.2740	37.63	11.30	48.93	60.99	-12.06	QP	
6	0.2740	24.19	11.30	35.49	50.99	-15.50	AVG	
7	5.9459	37.51	11.25	48.76	60.00	-11.24	QP	
8	5.9459	31.50	11.25	42.75	50.00	-7.25	AVG	
9	9.8899	41.61	11.31	52.92	60.00	-7.08	QP	
10	9.8899	31.66	11.31	42.97	50.00	-7.03	AVG	
11	10.2899	39.47	11.32	50.79	60.00	-9.21	QP	
12	10.2899	32.47	11.32	43.79	50.00	-6.21	AVG	

N



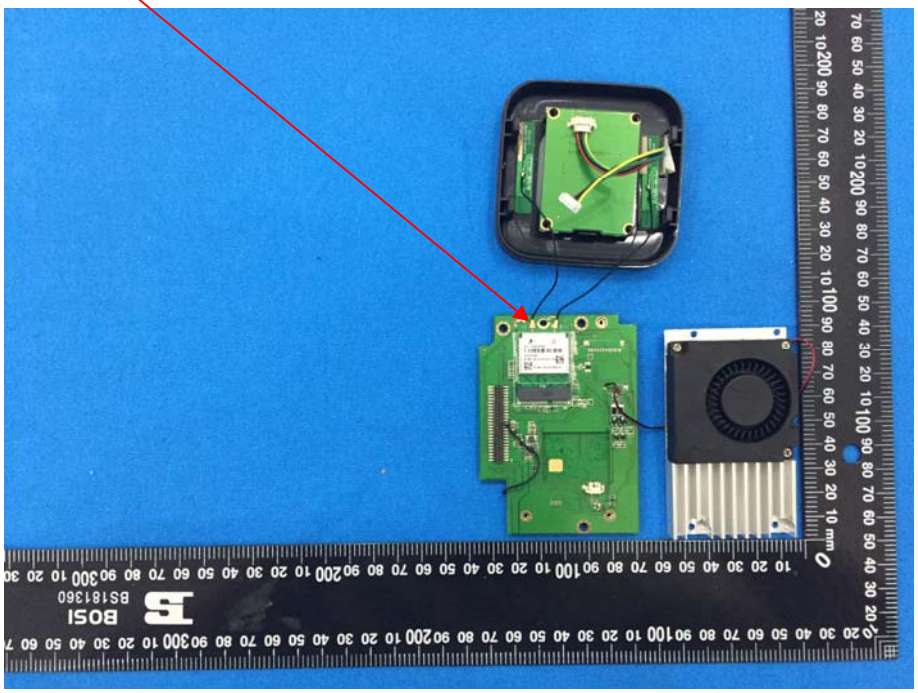
No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1580	37.04	11.19	48.23	65.56	-17.33	QP	
2	0.1580	13.41	11.19	24.60	55.56	-30.96	AVG	
3	0.1980	40.75	11.29	52.04	63.69	-11.65	QP	
4	0.1980	24.49	11.29	35.78	53.69	-17.91	AVG	
5	0.3300	29.03	11.30	40.33	59.45	-19.12	QP	
6	0.3300	13.85	11.30	25.15	49.45	-24.30	AVG	
7	3.8860	32.40	11.22	43.62	56.00	-12.38	QP	
8	3.8860	21.76	11.22	32.98	46.00	-13.02	AVG	
9	5.9660	21.30	11.25	32.64	60.00	-27.36	QP	
10	5.9660	16.18	11.25	27.43	50.00	-22.57	AVG	
11	10.4140	16.35	11.32	27.67	60.00	-32.33	QP	
12	10.4140	10.11	11.32	21.43	50.00	-28.57	AVG	

10. 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.

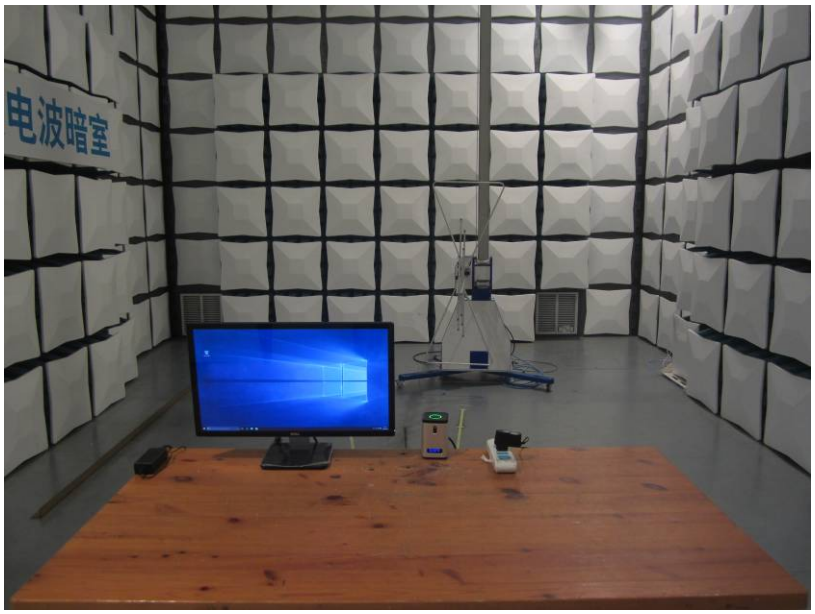
Antenna is fixed by enclosure, can not be changed except take apart the product.

Antenna



11. POTOGRAPH OF TEST

11.1 Radiated Emission



11.2 Conducted Emission