

## **FCC TEST REPORT**

**For**

**SYNECTIX, LLC**

### **Wireless Access Point**

Trade Name : SYNECTIX

Model No. : AP1200, AP1200-24P, AP1200-48P, AP1200-12D

FCC ID : 2ADO9-AP1200

Frequency range : 2412-2462MHz

Number of Channel : 11CH

Type of antenna : Internal monopole Antenna

Applicant : SYNECTIX, LLC  
291-A PEPES FARM ROAD MILFORD CT 06460 USA

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.: : WST20141126006

Test Date : Nov. 26-30, 2014

Date of Report : Nov. 30, 2014

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## TEST REPORT DECLARATION

Applicant : SYNECTIX, LLC  
Manufacturer : Shenzhen Yunlink Technology Co.,Ltd  
EUT Description : Wireless Access Point  
  
Model NO. : AP1200, AP1200-24P, AP1200-48P, AP1200-12D  
Serial NO. : N/A  
Power Supply : DC 12V From Adapter

**Measurement Procedure Used:**

FCC Rules and Regulations Part 15 Subpart C Section 15.247

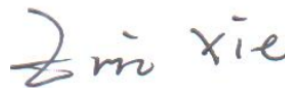
**ANSI C63.4:2009**

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: Nov. 26-30, 2014

Prepared by:



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 Test	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	:	Wireless Access Point
Model	:	
Number	:	AP1200, AP1200-24P, AP1200-48P, AP1200-12D
Frequency	:	
Range	:	2412-2462MHz
Number of	:	
Channels	:	11CH
Antenna Gain	:	5dBi
Data Rate	:	802.11b: 11 Mbps 802.11g: 54 Mbps 802.11n: 150 Mbps
Applicant	:	SYNECTIX, LLC 291-A PEPES FARM ROAD MILFORD CT 06460 USA
Manufacturer	:	Shenzhen Yunlink Technology Co.,Ltd B2 Building, An'le Industrial Zone, Hangcheng Road, Gushu, Xixiang town, Baoan, Shenzhen, Guangdong Province, China
Test Date	:	Nov. 26-30, 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, China  
Tel : 86-755-89486194  
Fax : 86-755-89486194

### Measurement Uncertainty

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

### 3. TEST INSTRUMENT USED

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

30.	Stripline Test Cell	Erika Fiedler	VDE0872	SEL0167	N/A	N/A
31.	TV Test Transmitter	R&S	SFM	SEL0159	2014-05-17	1 Year
32.	TV Generator PAL	R&S	SGPF	SEL0138	May 19, 2014	1 Year
33.	TV Generator Ntsc	R&S	SGMF	SEL0140	May 19, 2014	1 Year
34.	TV Generator Secam	R&S	SGSF	SEL0139	May 19, 2014	1 Year
35.	TV Test Transmitter 0.3MHz~3300MHz	R&S	SFQ	SEL0142	May 19, 2014	1 Year
36.	MPEG2 Measurement Generator	R&S	DVG	SEL0141	May 19, 2014	1 Year
37.	Spectrum Analyzer	R&S	FSP	SEL0177	May 19, 2014	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	May 17, 2014	1 Year
41.	Coupling Set	Erika Fiedler	Rco, Rci, MC, AC, LC	SEL0149	N/A	N/A
42.	Filters	Erika Fiedler	Sr, LBS	SEL0150	N/A	N/A
43.	Matching Network	Erika Fiedler	MN, T1	SEL0151	N/A	N/A
44.	Fully Anechoic Room	ChangZhou ZhongYu	854	SEL0169	Jun. 10, 2014	1 Year
45.	Signal Generator	R&S	SML03	SEL0068	May 17, 2014	1 Year
46.	RF-Amplifier 30M~1GHz	Amplifier Reasearch	250W1000A	SEL0066	Oct. 24, 2014	1 Year
47.	RF-Amplifier 0.8~3.0GHz	Amplifier Reasearch	60S1G3	SEL0065	Oct. 24, 2014	1 Year
48.	Power Meter	R&S	NRVD	SEL0069	May 17, 2014	1 Year
49.	Power Sensor	R&S	URV5-Z2	SEL0071	May 17, 2014	1 Year
50.	Power Sensor	R&S	URV5-Z2	SEL0072	May 17, 2014	1 Year
51.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
52.	Log-periodic Antenna	Amplifier Reasearch	AT1080	SEL0073	N/A	N/A
53.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	N/A	N/A
54.	High Gain Horn Antenna(0.8-5G Hz)	Amplifier Reasearch	AT4002A	SEL0075	N/A	N/A

Support equipments or special accessories in test configuration:

Equipment	Manufacturer	Model No.	CABLE
PC Notebook	LENOVO	X240	1.5m Unshielded Power Cord 1.8m shielded data Cable with core 1.5m Unshielded Power Cord 1.5m Unshielded shielded HDMI Cable
Monitor	DELL	E178P	1.2m Unshielded Power Cord
Entrance guard	SIPOTEK	AP1200-24P	1.2m Unshielded Ethernet cable



#### 4. OPERATION OF EUT DURING TESTING

##### Operating Mode

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

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

##### **802.11g Transmitting mode**

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

##### **802.11n Transmitting mode**

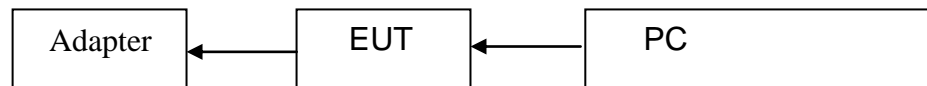
Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

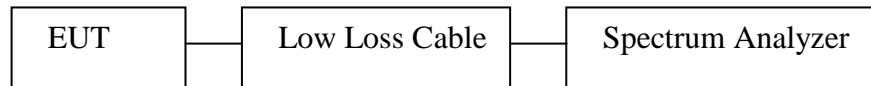
##### Test Setup

Model 1:



## 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

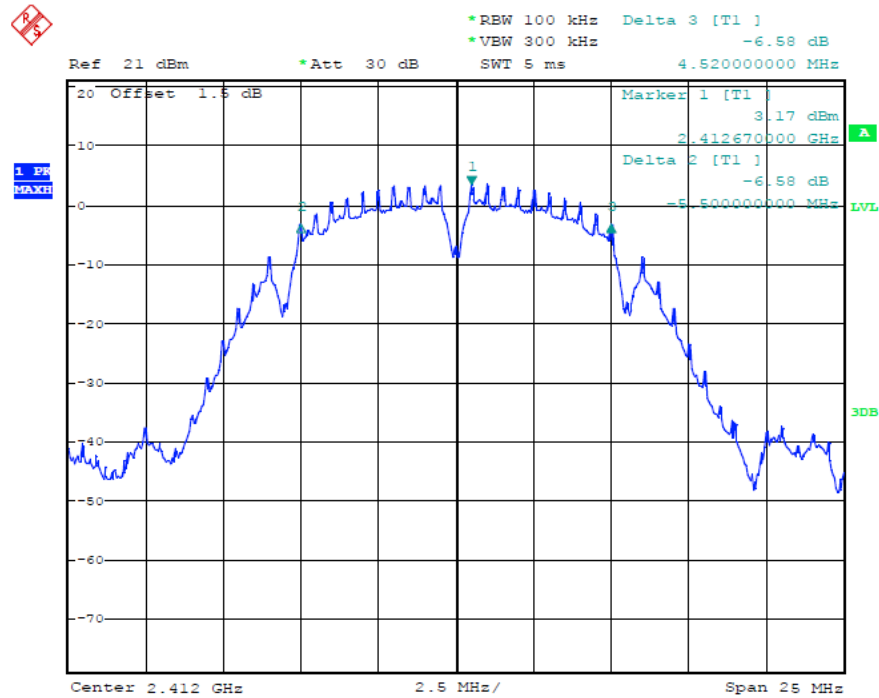
802.11b			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	10.02	>0.5MHz
Middle	2437	10.00	>0.5MHz
High	2462	10.15	>0.5MHz

802.11g			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	15.67	>0.5MHz
Middle	2437	15.79	>0.5MHz
High	2462	16.56	>0.5MHz

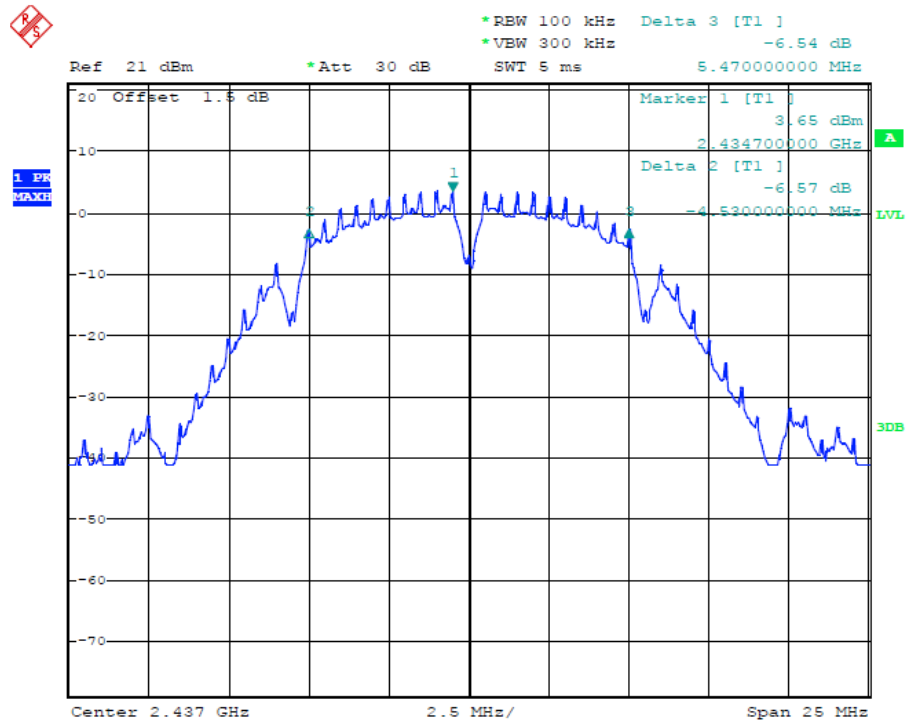
802.11n			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	17.62	>0.5MHz
Middle	2437	17.68	>0.5MHz
High	2462	17.66	>0.5MHz

The spectrum analyzer plots are attached as below.

### 802.11b Channel Low 2412MHz

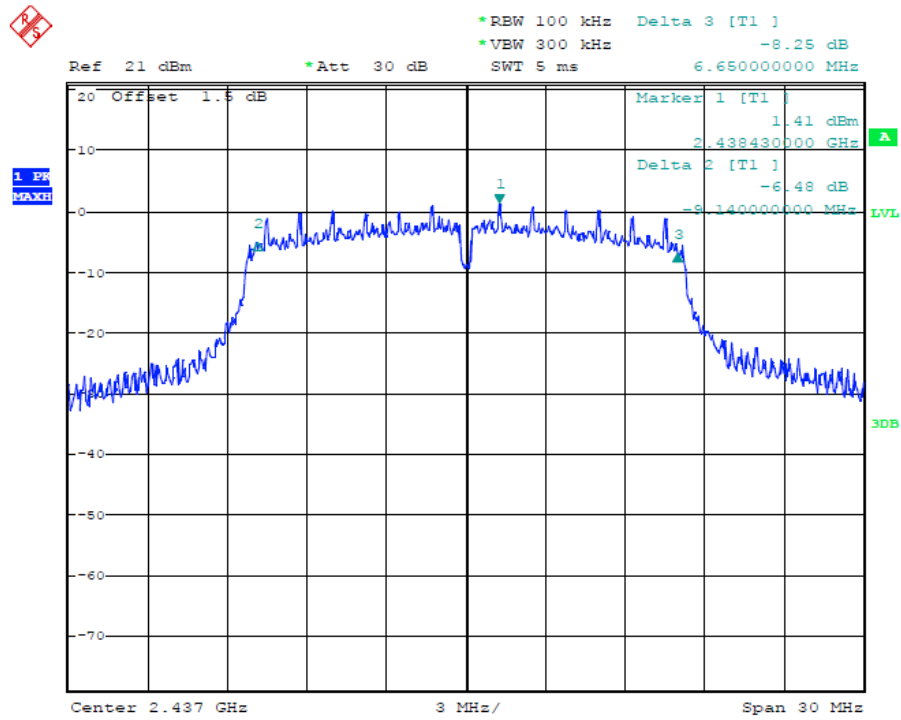


### 802.11b Channel Middle 2437MHz

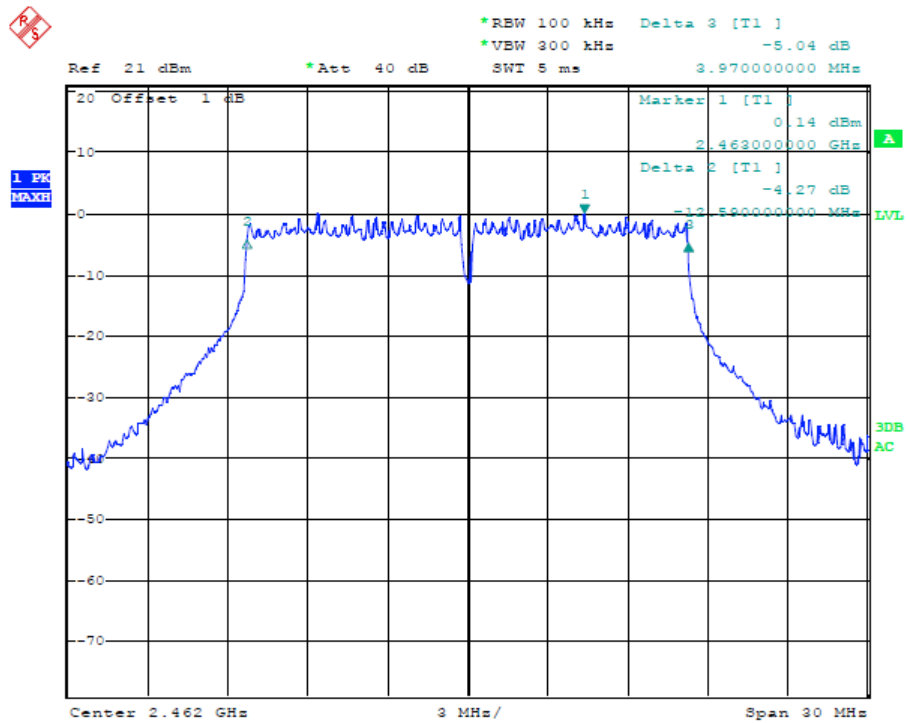




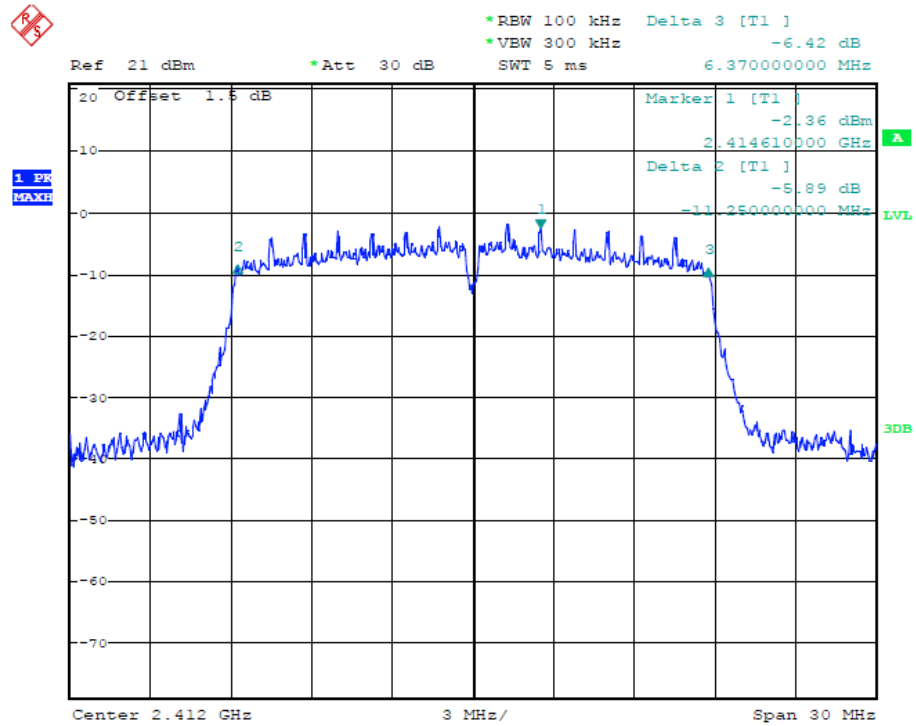
## 802.11g Channel Middle 2437MHz



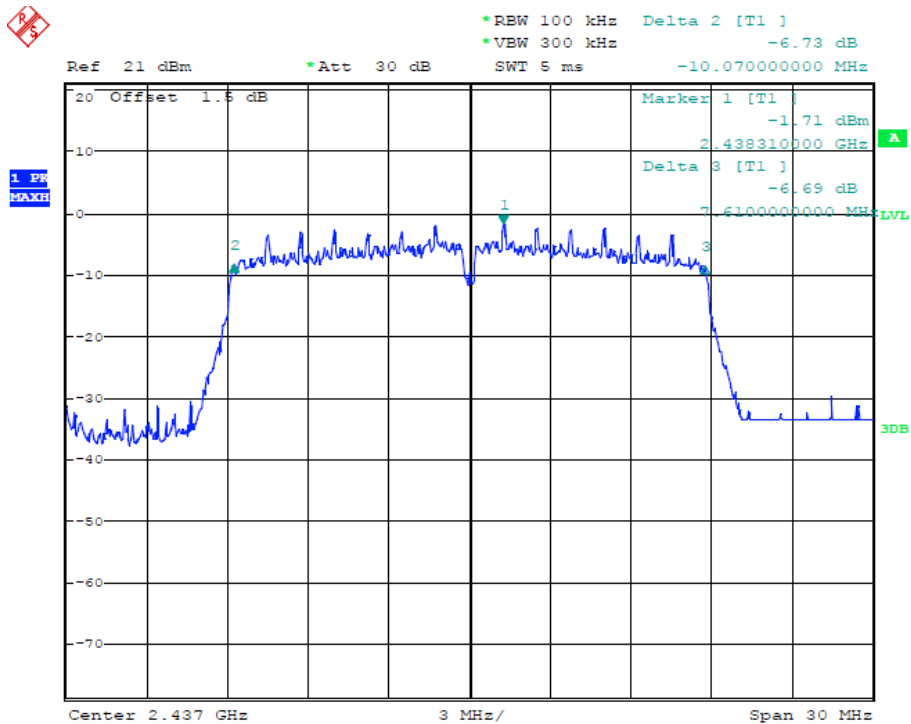
## 802.11g Channel High 2462MHz



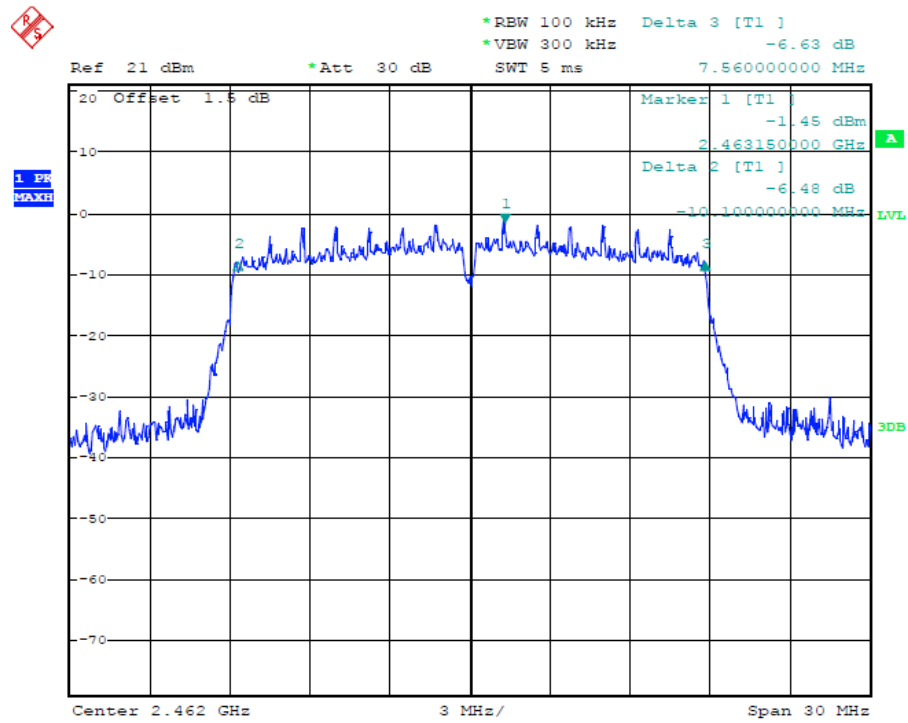
## 802.11n Channel Low 2412MHz



## 802.11n Channel Middle 2437MHz

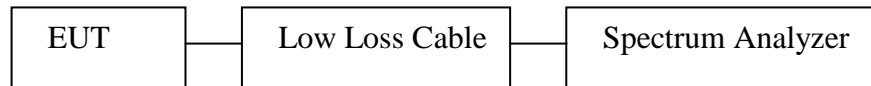


## 802.11n Channel High 2462MHz



## 6. MAXIMUM PEAK OUTPUT POWER

### 6.1. Block Diagram of Test Setup



### 6.2. Limits

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

### 6.3. Test Procedure

#### **Measurement Procedure PK:**

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

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



## 6.4. Test Result

**PASS**

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

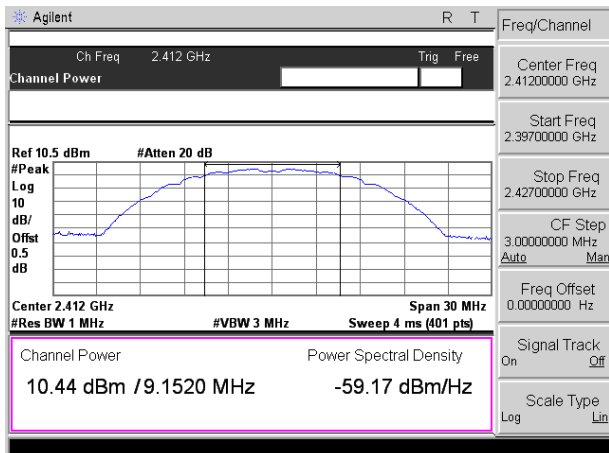
802.11g				
Channel	Frequency (MHz)	Data Rate (Mbps)	Peak output power (dBm)	Limit (dBm)
Low	2412	6	12.76	30
Middle	2437	6	13.12	30
High	2462	6	13.32	30

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

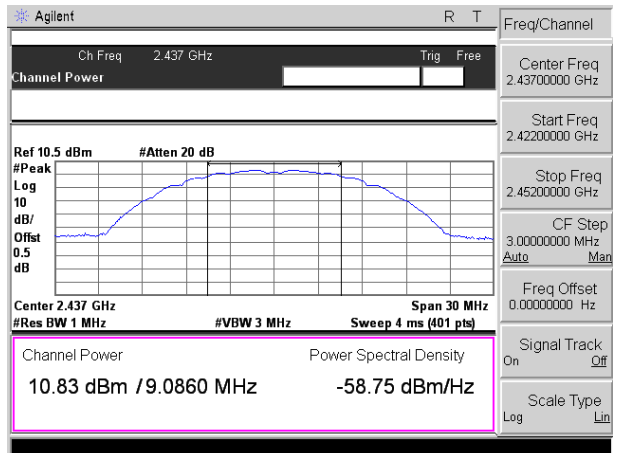
Note: In the worst case test

The spectrum analyzer plots are attached as below.

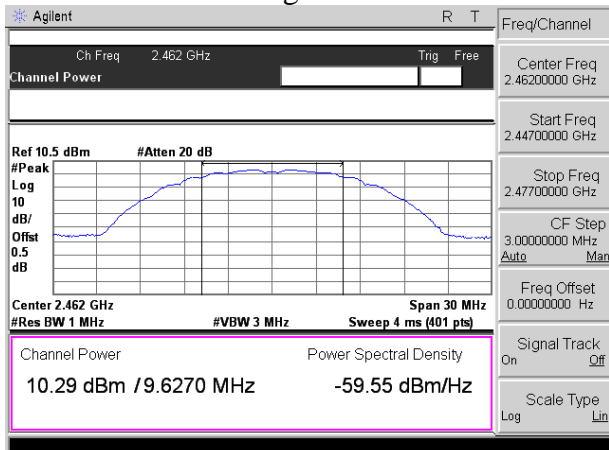
802.11b Channel Low 2412MHz



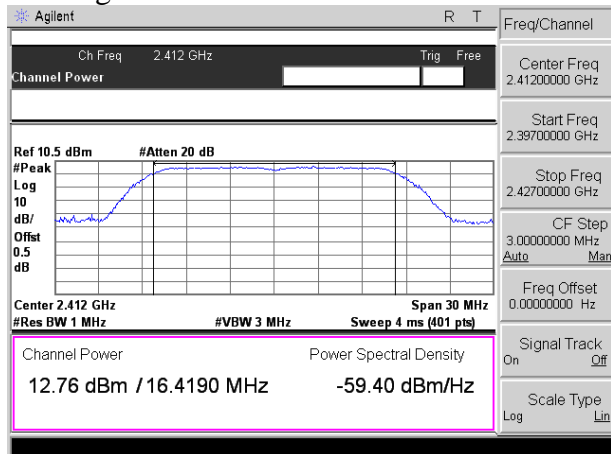
802.11b Channel Middle 2437MHz



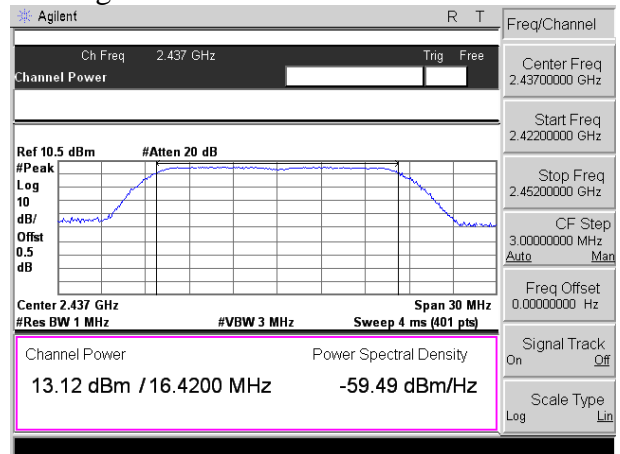
802.11b Channel High 2462MHz



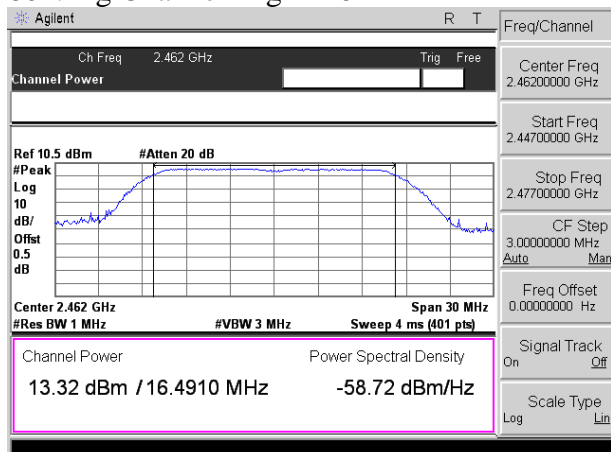
## 802.11g Channel Low 2412MHz



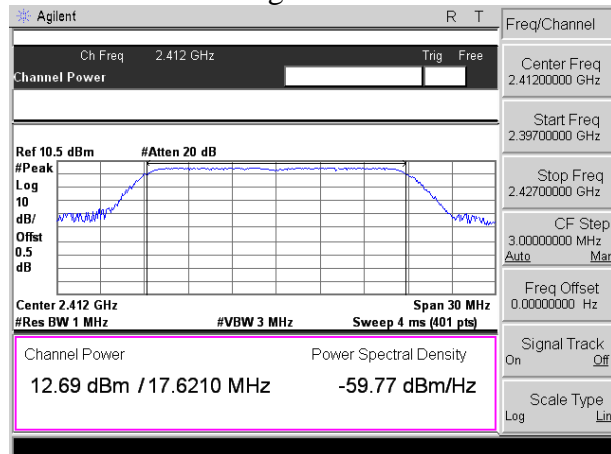
## 802.11g Channel Middle 2437MHz



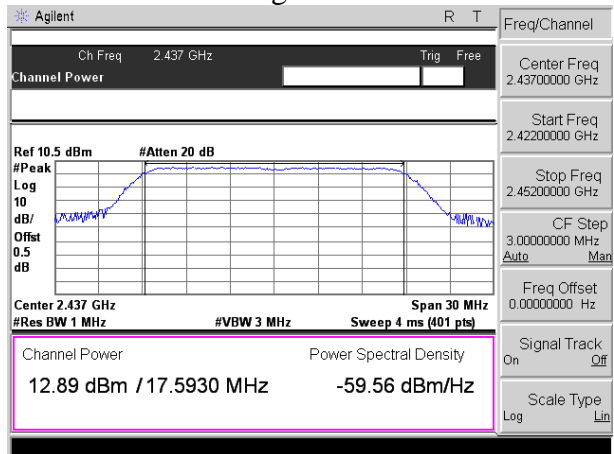
## 802.11g Channel High 2462MHz



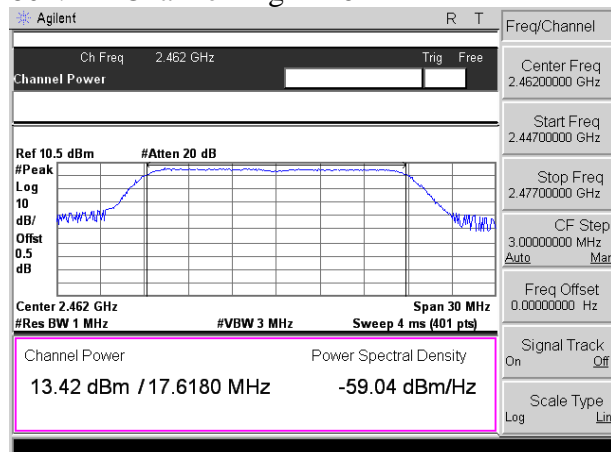
## 802.11n Channel High 2412MHz



## 802.11n Channel High 2437MHz

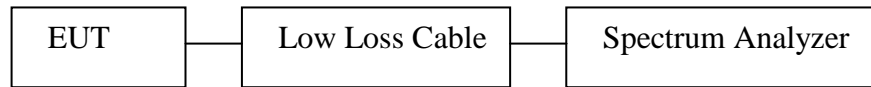


## 802.11n Channel High 2462MHz



## 7. POWER SPECTRAL DENSITY MEASUREMENT

### 7.1. Block Diagram of Test Setup



### 7.2. Limits

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 7.3. Test Procedure

- 7.3.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 7.3.2. Set RBW of spectrum analyzer to 3kHz and VBW to 10kHz, sweep time = Span/30kHz
- 7.3.2. Measurement the maximum power spectral density.

### 7.4. Test Result

#### PASS

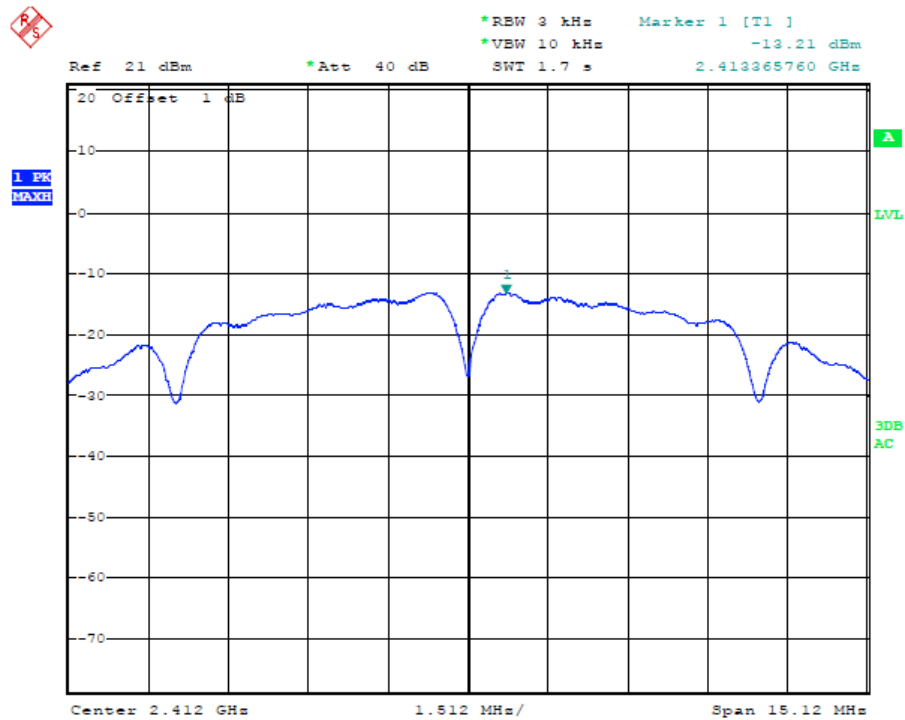
802.11b			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)
Low	2412	-13.21	8
Middle	2437	-13.08	8
High	2462	-13.21	8

802.11g			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)
Low	2412	-15.35	8
Middle	2437	-16.39	8
High	2462	-15.41	8

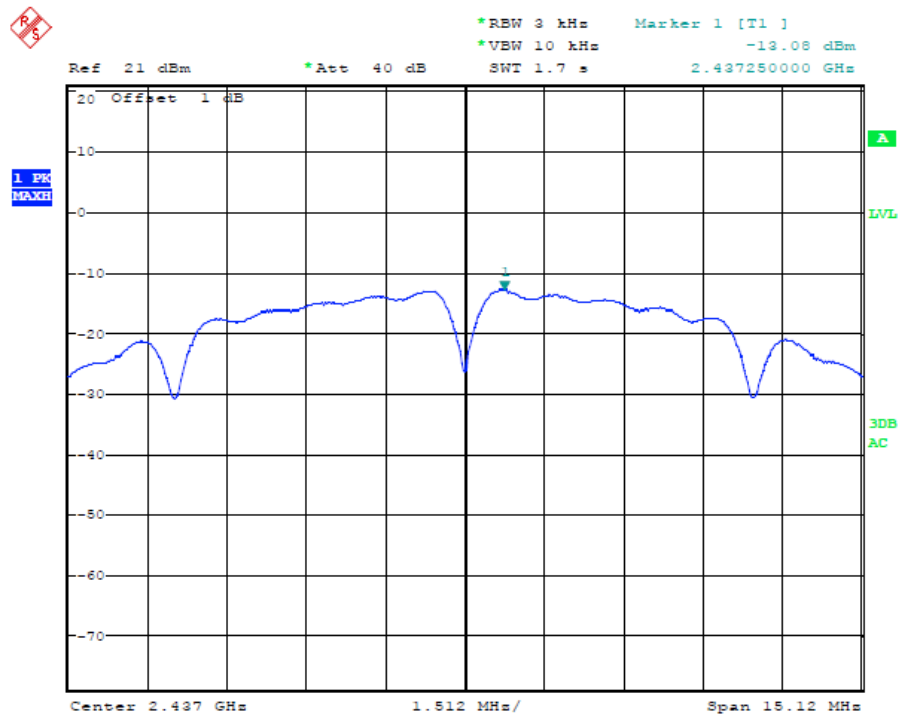
802.11n			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)
Low	2412	-16.47	8
Middle	2437	-16.83	8
High	2462	-16.16	8

The spectrum analyzer plots are attached as below.

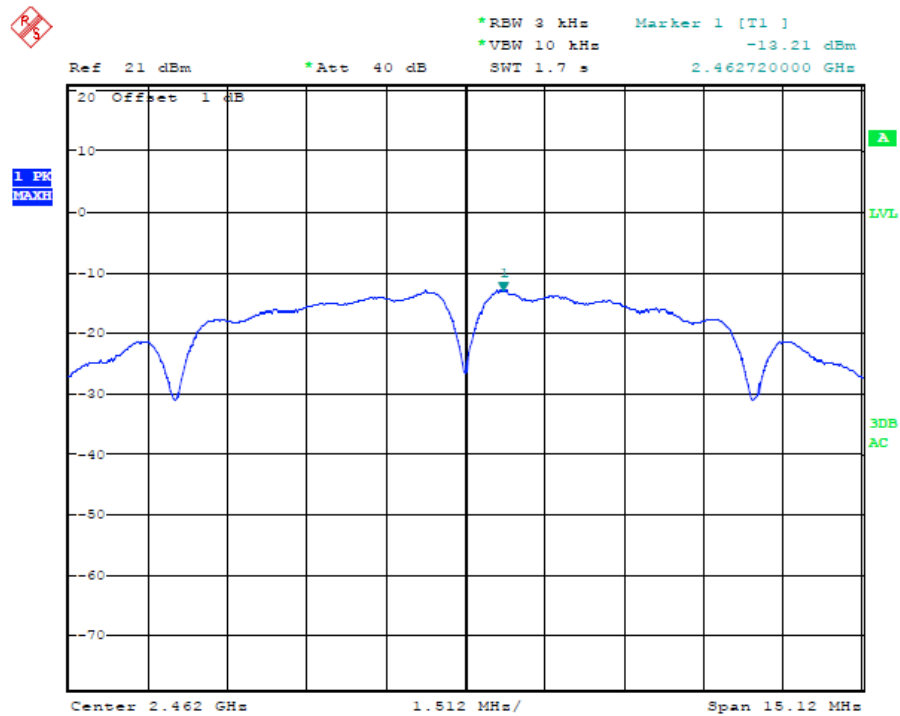
802.11b Channel Low 2412MHz



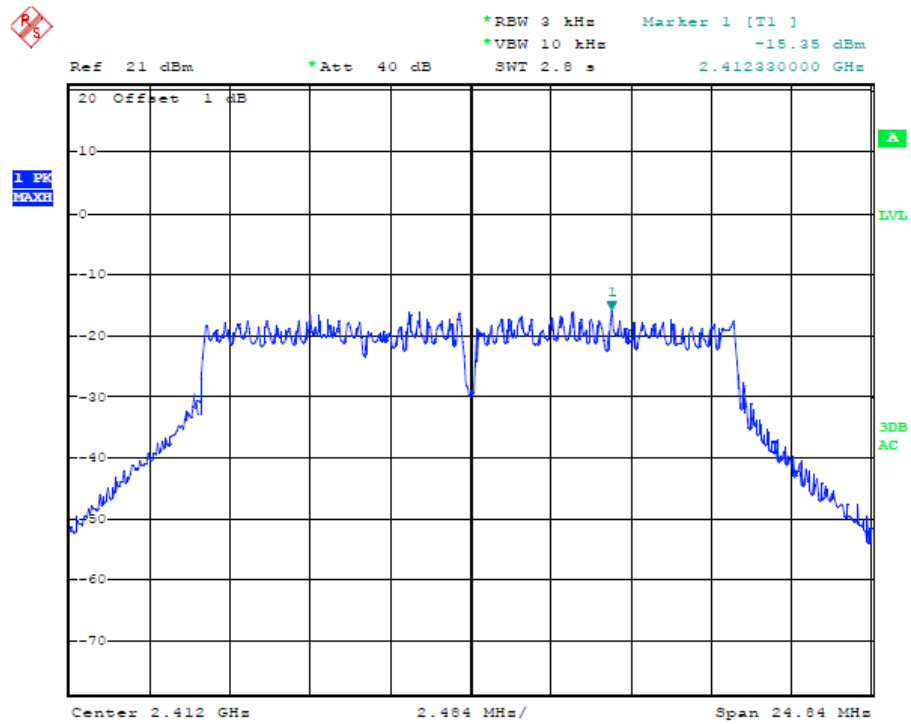
## 802.11b Channel Middle 2437MHz



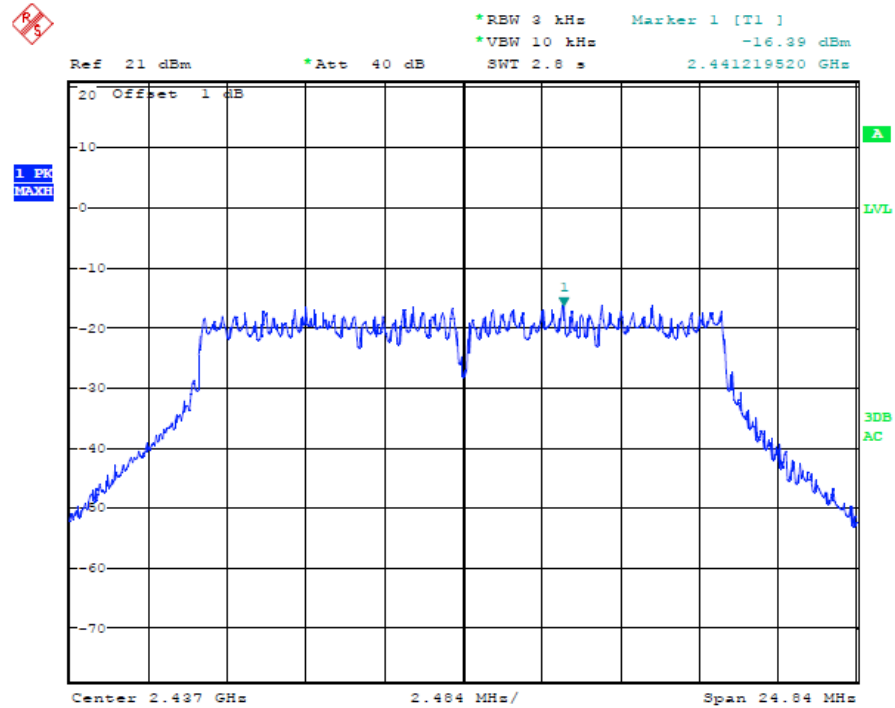
## 802.11b Channel High 2462MHz



## 802.11g Channel Low 2412MHz

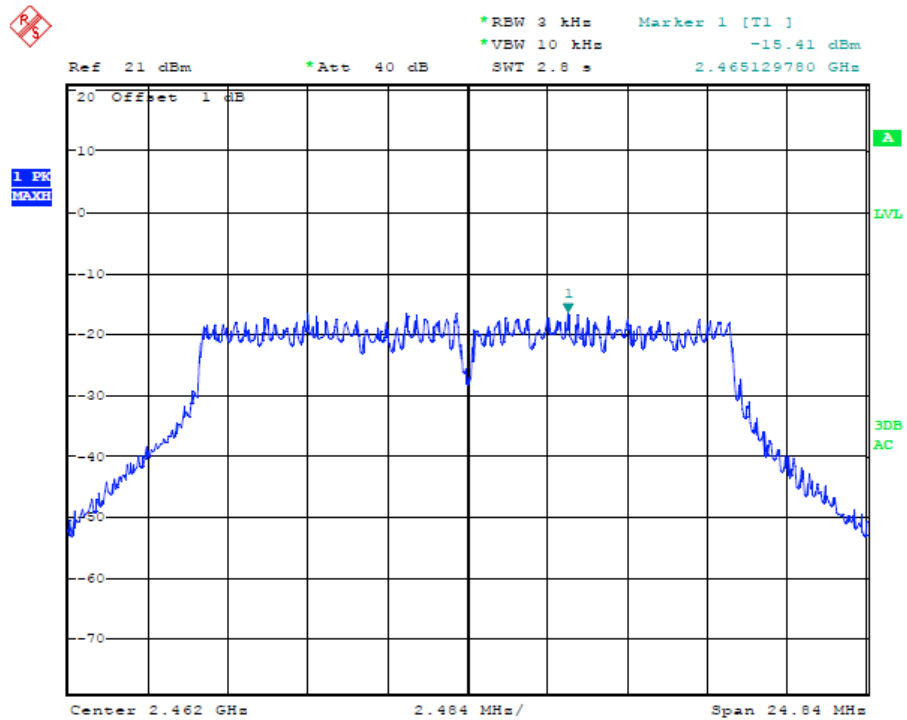


## 802.11g Channel Middle 2437MHz

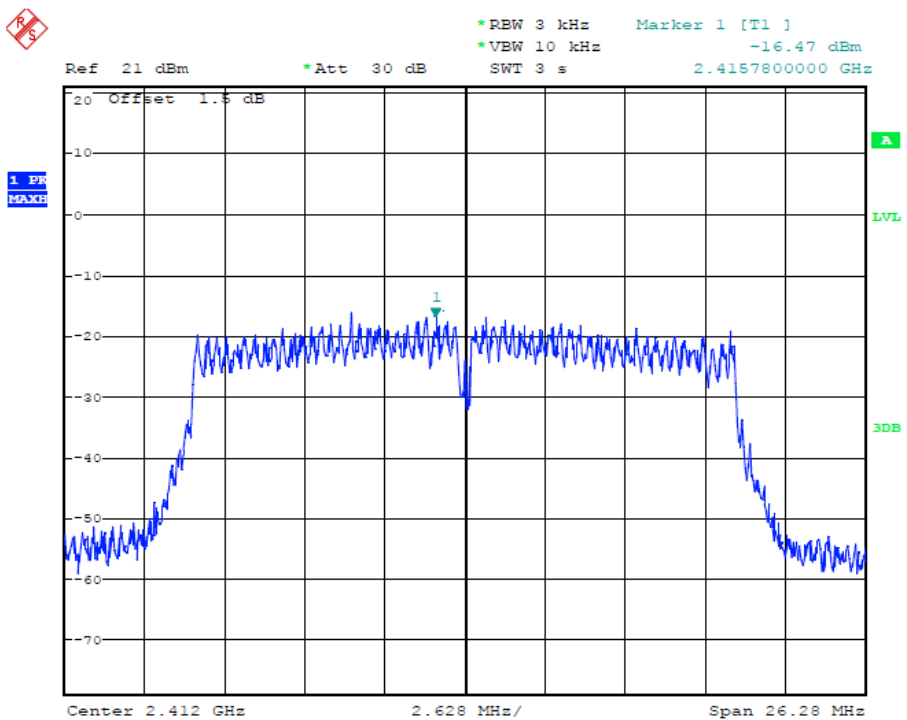




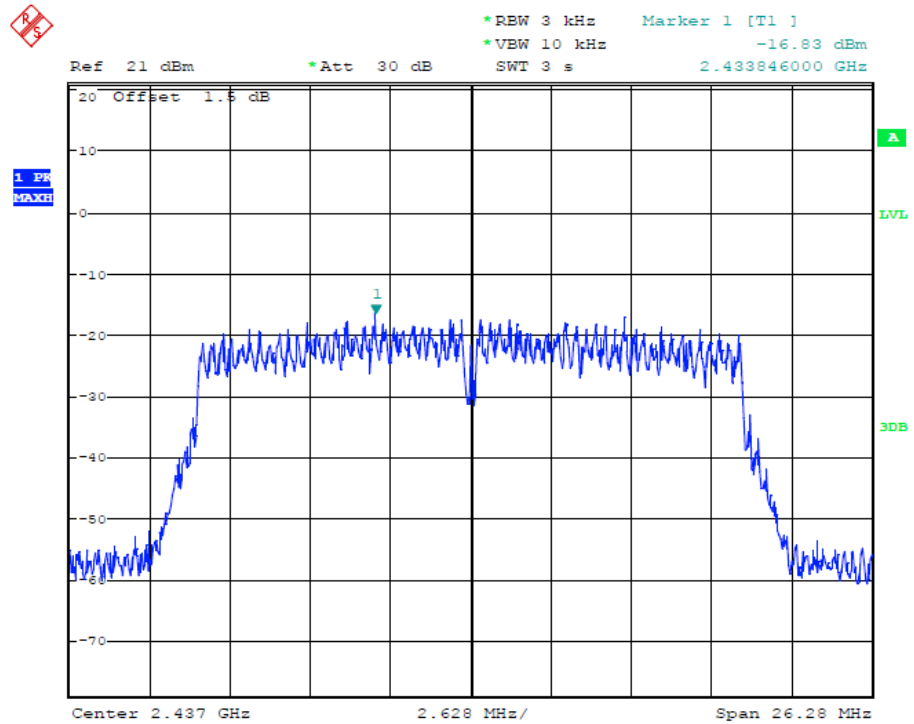
## 802.11g Channel High 2462MHz



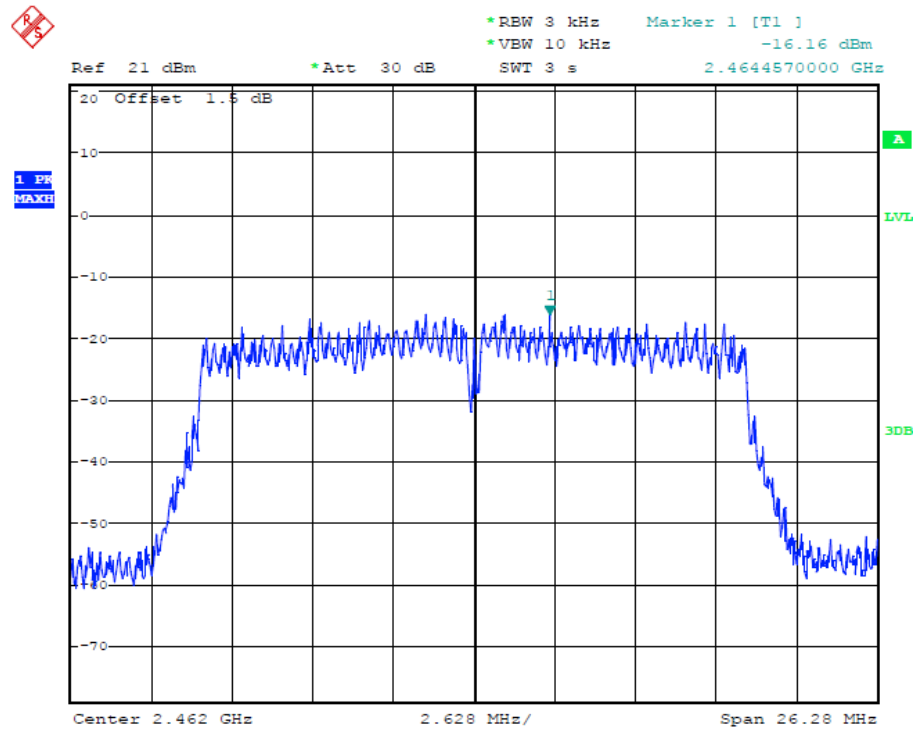
## 802.11n Channel Low 2412MHz



## 802.11n Channel High 2437MHz

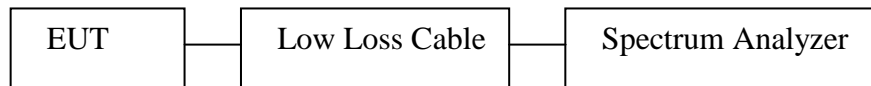


## 802.11n Channel High 2462MHz



## 8. BAND EDGE COMPLIANCE TEST

### 8.1. Block Diagram of Test Setup



### 8.2. Limits

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

### 8.3. Test Procedure

#### Conducted Band Edge:

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

#### Radiate Band Edge:

- 8.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
- 8.3.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 8.3.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 8.3.6. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: RBW=1MHz, VBW=1MHz
- 8.3.7. The band edges was measured and recorded.

## 8.4.Test Result

### PASS

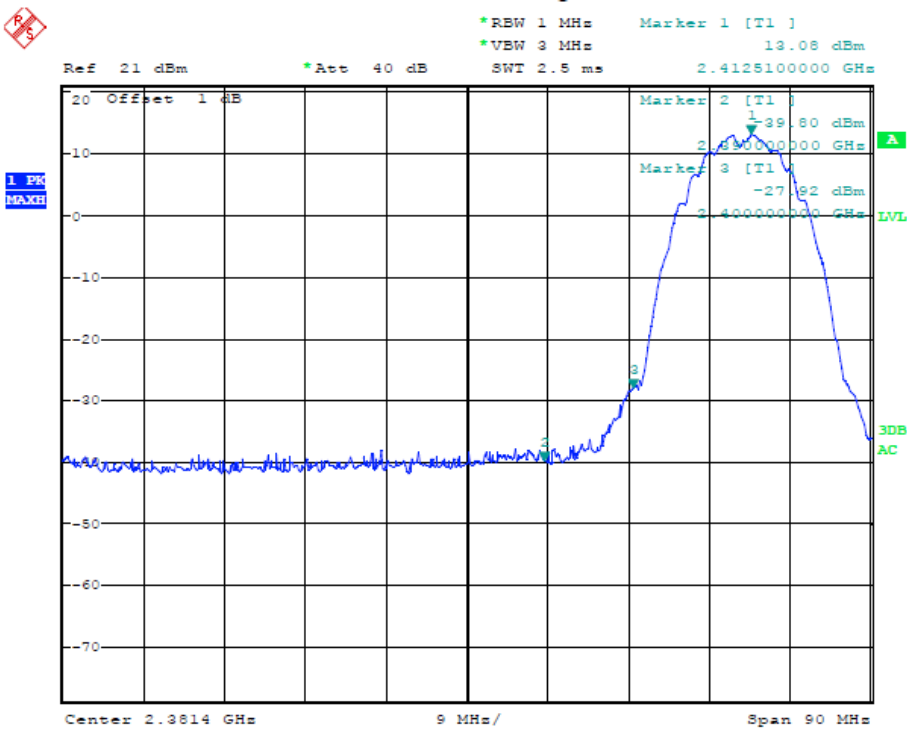
IEEE 802.b		
Frequency(MHz)	Result of Band Edge(dBc)	Limit of Band Edge(dBc)
2412	43.35	>20 dBc
2462	42.16	>20 dBc

IEEE 802.g		
Frequency(MHz)	Result of Band Edge(dBc)	Limit of Band Edge(dBc)
2412	38.75	>20 dBc
2462	42.27	>20 dBc

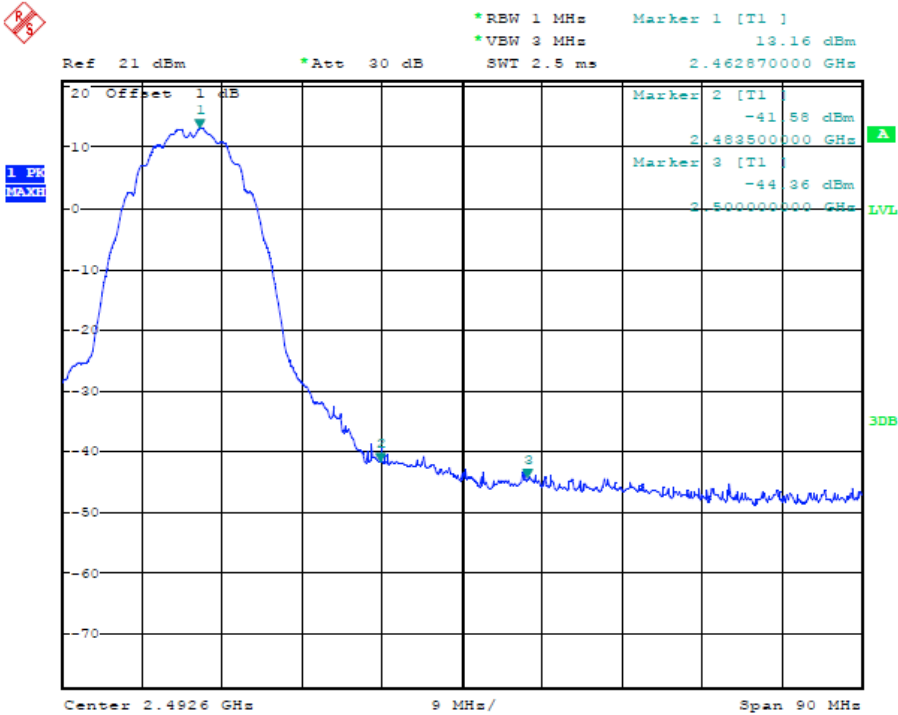
IEEE 802.n		
Frequency(MHz)	Result of Band Edge(dBc)	Limit of Band Edge(dBc)
2412	40.27	>20 dBc
2462	41.17	>20 dBc

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
802.11b							
2390	47.84	9.86	57.7	74	-16.3	Pk	Vertical
2390	38.93	9.86	48.79	54	-5.21	Av	Vertical
2483.5	49.18	10.14	59.32	74	-14.68	Pk	Vertical
2483.5	38.03	10.14	48.17	54	-5.83	Av	Vertical
802.11g							
2390	49.17	9.86	59.03	74	-14.97	Pk	Vertical
2390	39.06	9.86	48.92	54	-5.08	Av	Vertical
2483.5	47.82	10.14	57.96	74	-16.04	Pk	Vertical
2483.5	36.93	10.14	47.07	54	-6.93	Av	Vertical
802.11n							
2390	48.94	9.86	58.8	74	-15.2	Pk	Vertical
2390	38.38	9.86	48.24	54	-5.76	Av	Vertical
2483.5	48.94	10.14	59.08	74	-14.92	Pk	Vertical
2483.5	36.04	10.14	46.18	54	-7.82	Av	Vertical

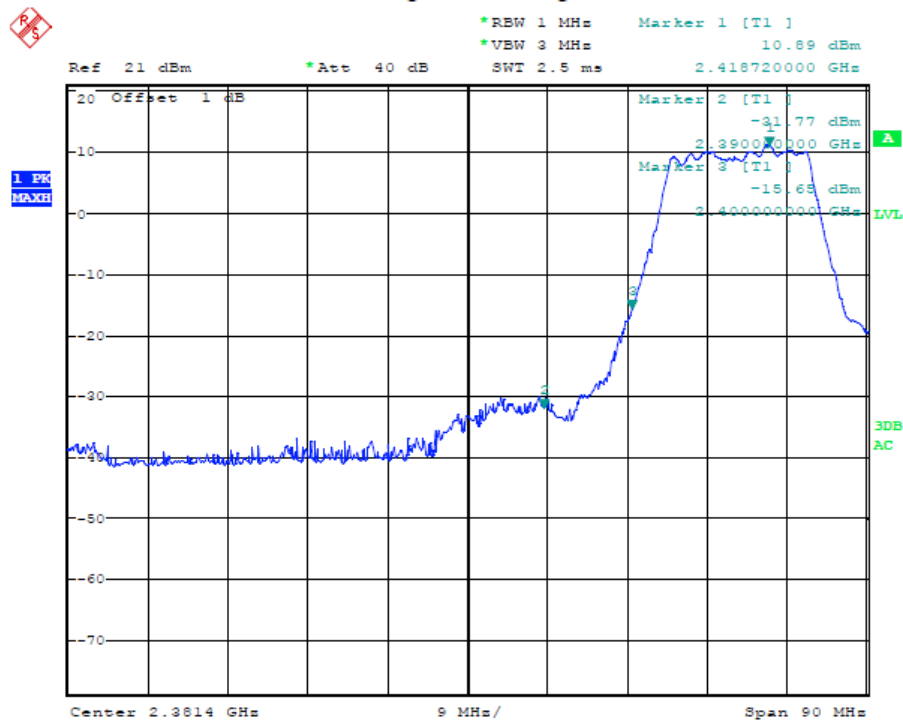
802.11b Channel Low 2412MHz



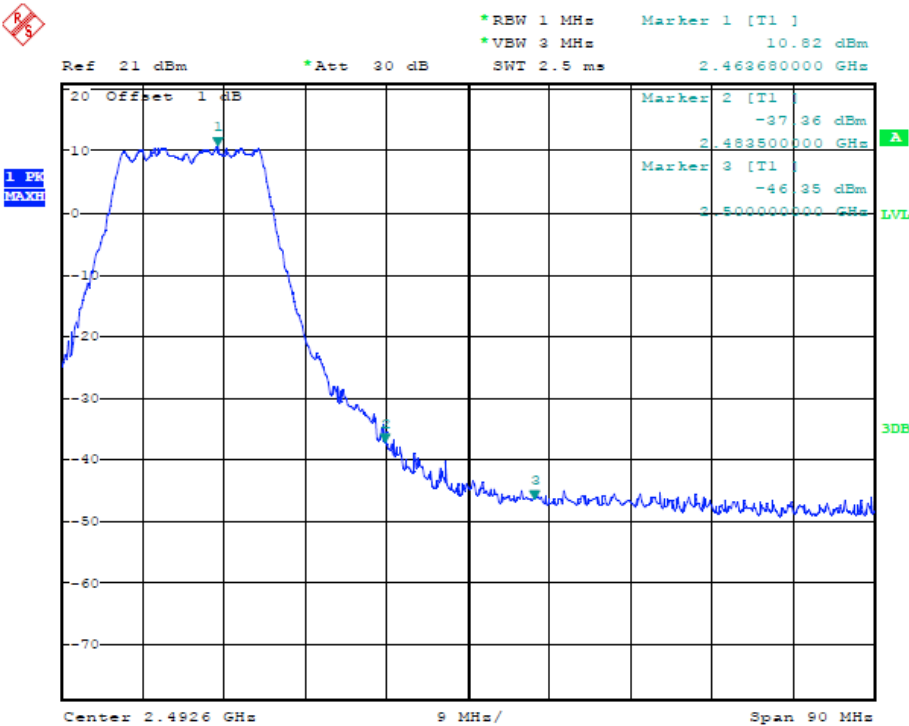
802.11b Channel High 2462MHz



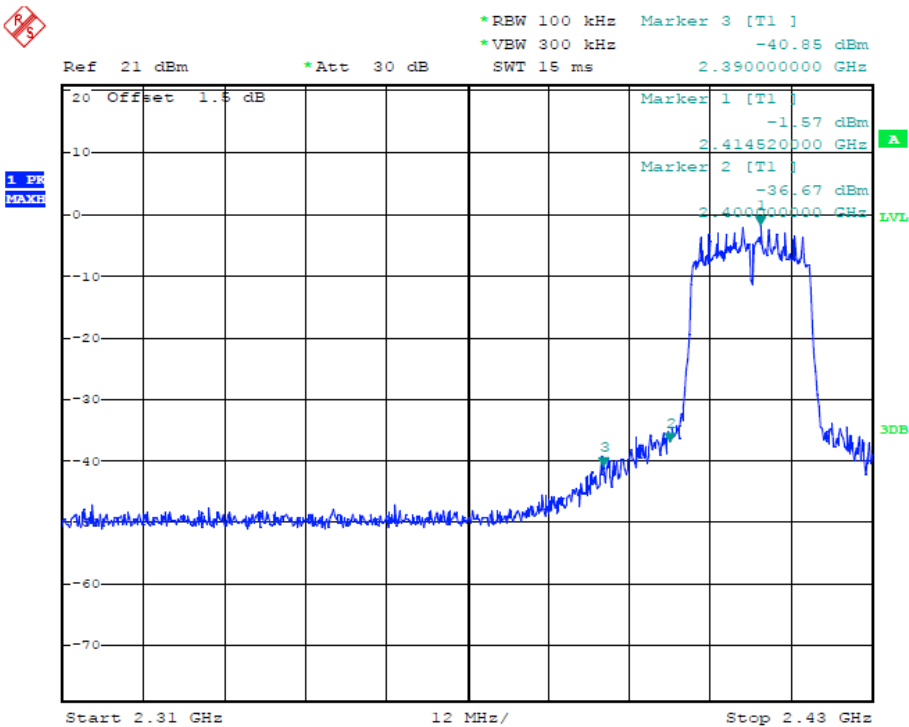
802.11g Channel Low 2412MHz



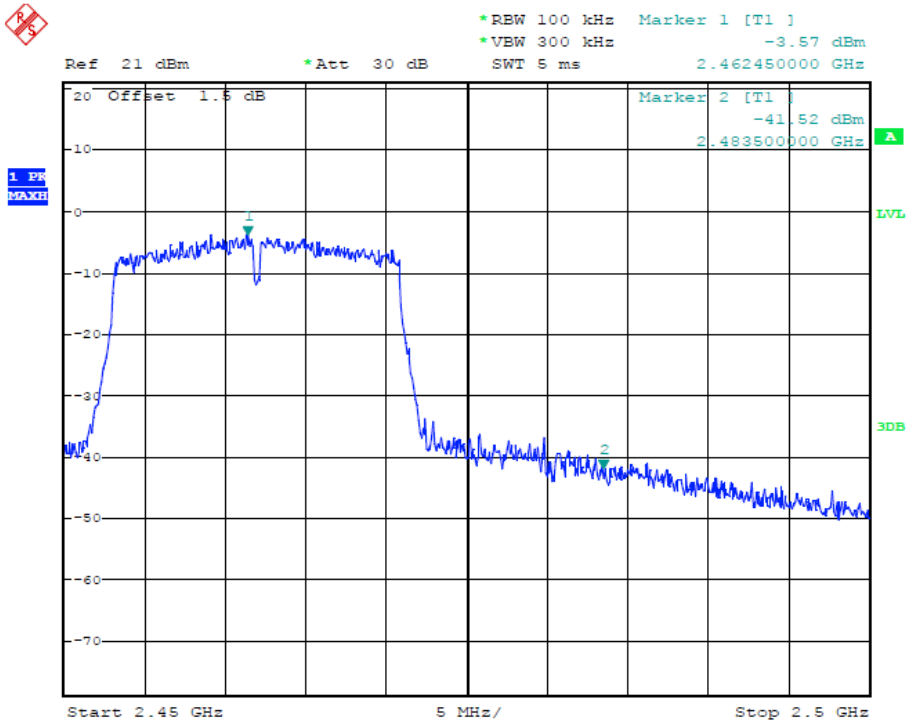
802.11g Channel High 2462MHz



802.11n Channel High 2412MHz



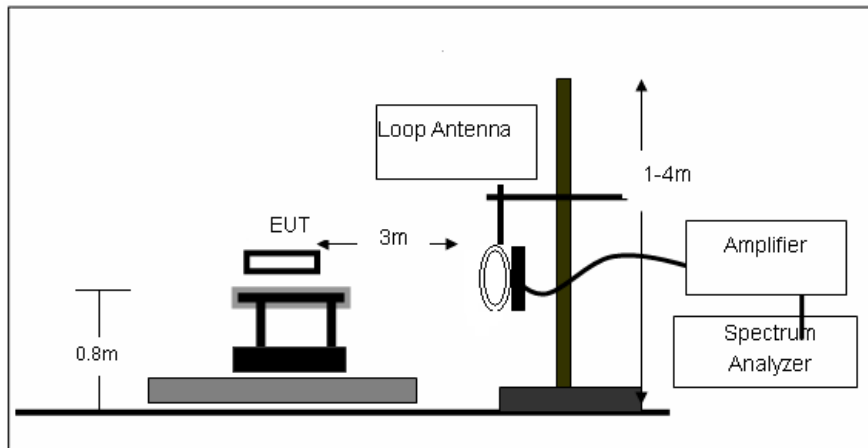
802.11n Channel High 2462MHz



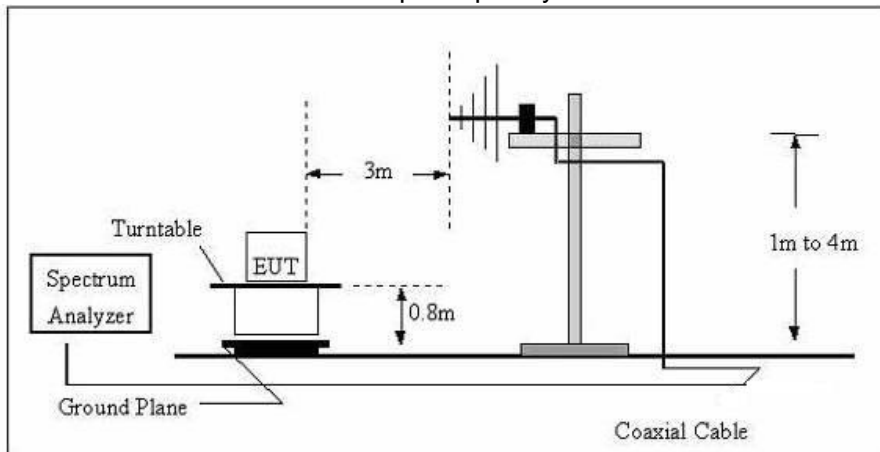
## 9. RADIATED SPURIOUS EMISSION TEST

### 9.1. Block Diagram of Test Setup

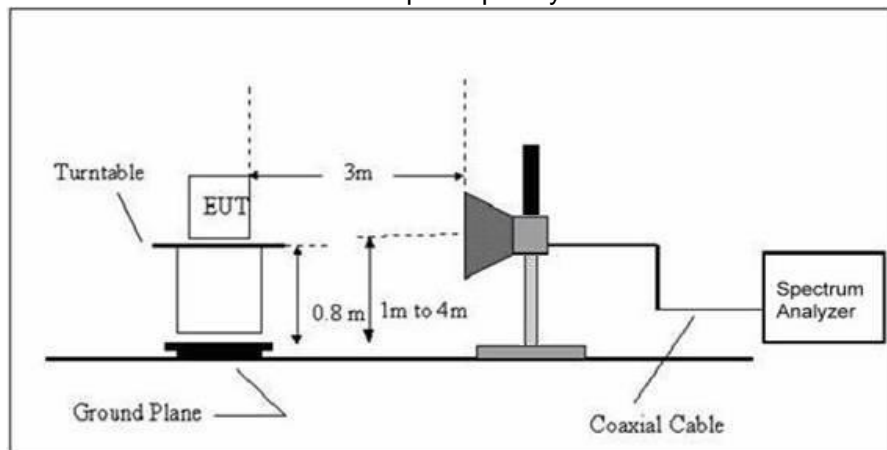
#### (1) Radiated Emission Test-Up Frequency Below 30MHz



#### (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
<sup>1</sup> 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	( <sup>2</sup> )
13.36-13.41			

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

<sup>2</sup>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 Section 15.209 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
152.9144	25.27	14.56	39.83	43.50	-3.67	Vertical
218.1090	24.12	16.63	40.75	46.00	-5.25	
502.1316	17.20	23.99	41.19	46.00	-4.81	
152.9144	24.19	14.56	38.75	43.50	-4.75	Horizontal
218.1090	22.62	16.04	38.66	43.50	-4.84	
278.3546	21.98	18.28	40.26	46.00	-5.74	

For 1GHz-25GHz

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

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

## 802.11b Channel Middle 2437MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
169.0440	24.53	14.70	39.23	43.50	-4.27	Vertical
182.4537	24.25	15.87	40.12	43.50	-3.38	
694.4475	15.08	26.44	41.52	46.00	-4.48	
98.6134	23.70	16.29	39.99	43.60	-3.51	Horizontal
130.0280	24.21	16.63	40.84	46.00	-5.16	
162.4573	23.18	16.80	39.98	46.00	-6.02	

For 1GHz-25GHz

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

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

## 802.11b Channel Middle 2462MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
175.1484	23.26	15.17	38.43	43.50	-5.07	Vertical
233.4093	21.73	16.50	38.23	46.00	-7.77	
556.2469	14.27	25.33	39.60	46.00	-6.40	
183.9359	24.02	15.98	40.00	43.50	-3.50	Horizontal
218.1196	23.35	16.63	39.98	46.00	-6.02	
694.4664	14.18	26.44	40.62	46.00	-5.38	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2462.001	72.56	76.61	-7.30	65.26	69.31	/	/	/	/	Vertical
4924.022	45.05	46.19	0.34	45.39	46.43	54	74	-8.61	-27.57	
2462.015	72.04	74.98	-7.30	64.74	67.68	/	/	/	/	Horizontal
4924.017	41.65	44.18	0.34	41.99	44.52	54	74	-12.01	-29.48	

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

## 802.11g Channel Low 2412MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
172.7458	25.16	15.30	40.46	43.50	-3.04	Vertical
193.7536	24.15	16.10	40.25	43.50	-3.25	
669.6028	16.23	26.13	42.36	46.00	-3.64	
192.7858	22.55	16.04	38.59	43.50	-4.91	Horizontal
209.9268	23.15	16.35	39.50	43.50	-4.00	
646.4327	14.11	26.06	40.17	46.00	-5.83	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2412.024	71.05	73.90	-7.33	63.72	66.57	/	/	/	/	Vertical
4824.058	41.06	42.62	-0.15	40.91	42.47	54	74	-13.09	-31.53	
2412.034	72.15	75.58	-7.33	64.82	68.25	/	/	/	/	Horizontal
4824.023	40.20	43.15	-0.15	43.05	43.00	54	74	-11.05	-31.00	

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

## 802.11g Channel Middle 2437MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Freq.(MHz)	Reading (dBuV/m) (QP)	Factor(dB) Corr.	Result (dBuV/m) (QP)	Limit (dBuV/m) (QP)	Margin(dB) (QP)	Polarization
169.2238	25.08	14.71	39.79	43.50	-3.71	Vertical
183.2390	24.16	15.87	40.03	43.50	-3.47	
662.2467	14.24	26.06	40.30	46.00	-5.70	
193.2387	23.22	16.04	39.26	43.50	-4.24	Horizontal
211.0928	23.25	16.39	39.64	43.50	-3.86	
693.5747	15.23	26.43	41.66	46.00	-4.34	

For 1GHz-25GHz

Freq.(MHz)	Reading (dBuV/m) (QP)		Factor (dB) Corr.	Result (dBuV/m) (QP)		Limit (dBuV/m) (QP)		Margin(dB) (QP)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2437.024	70.68	72.81	-7.36	63.32	65.45	/	/	/	/	Vertical
4874.046	41.16	42.01	0.09	41.25	42.10	54	74	-12.75	-31.90	
2437.039	78.06	81.19	-7.36	70.7	73.83	/	/	/	/	Horizontal
4874.037	43.03	45.60	0.09	43.12	45.69	54	74	-10.88	-28.31	

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

## 802.11g Channel High 2462MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

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

For 1GHz-25GHz

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

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



## 802.11n Channel Low 2412MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

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

For 1GHz-25GHz

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

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

## 802.11n Channel Middle 2437MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

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

For 1GHz-25GHz

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

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

## 802.11n Channel High 2462MHz

For Below 30MHz

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

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

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

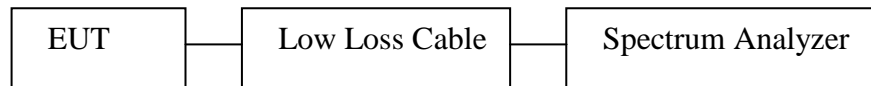
For 1GHz-25GHz

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

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

## 10. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

### 10.1. Block Diagram of Test Setup



### 10.2. Limits

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

### 10.3. Test Procedure

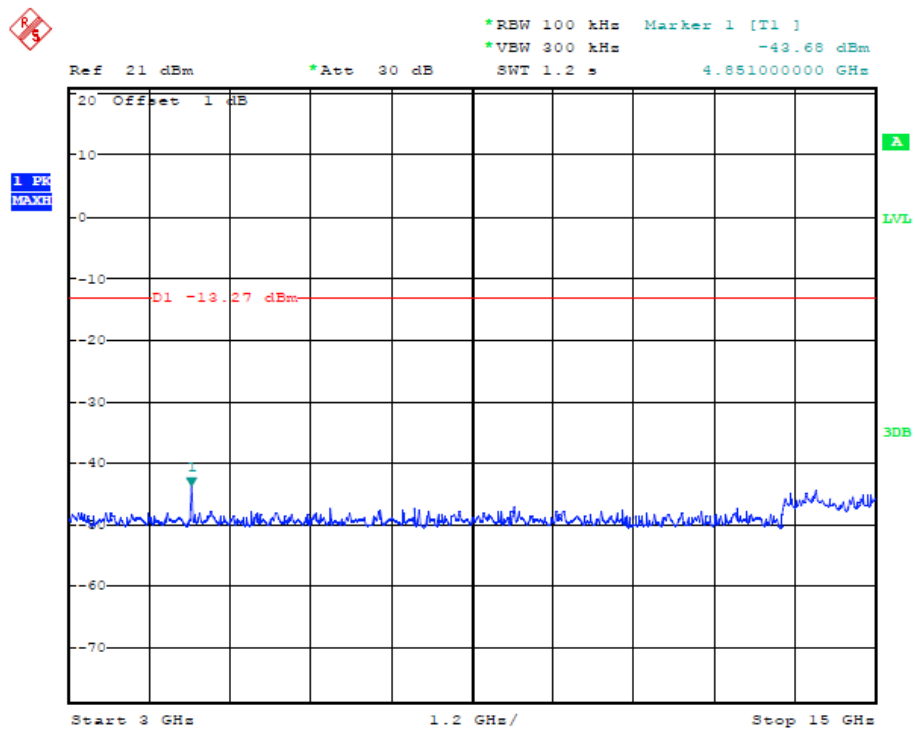
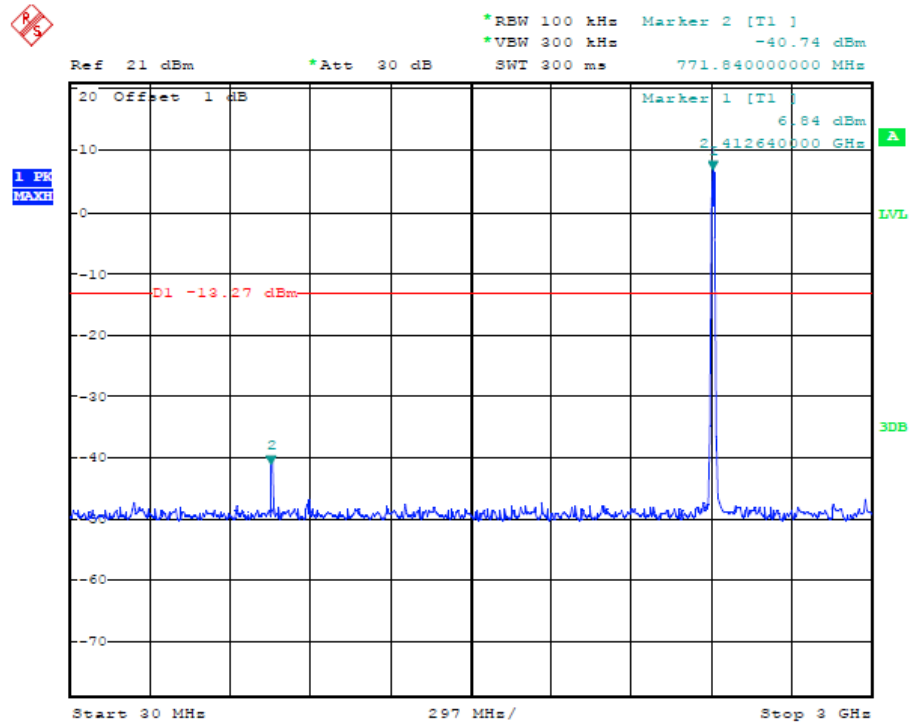
- 10.3.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 10.3.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.
- 10.3.3. The Conducted Spurious Emission was measured and recorded.

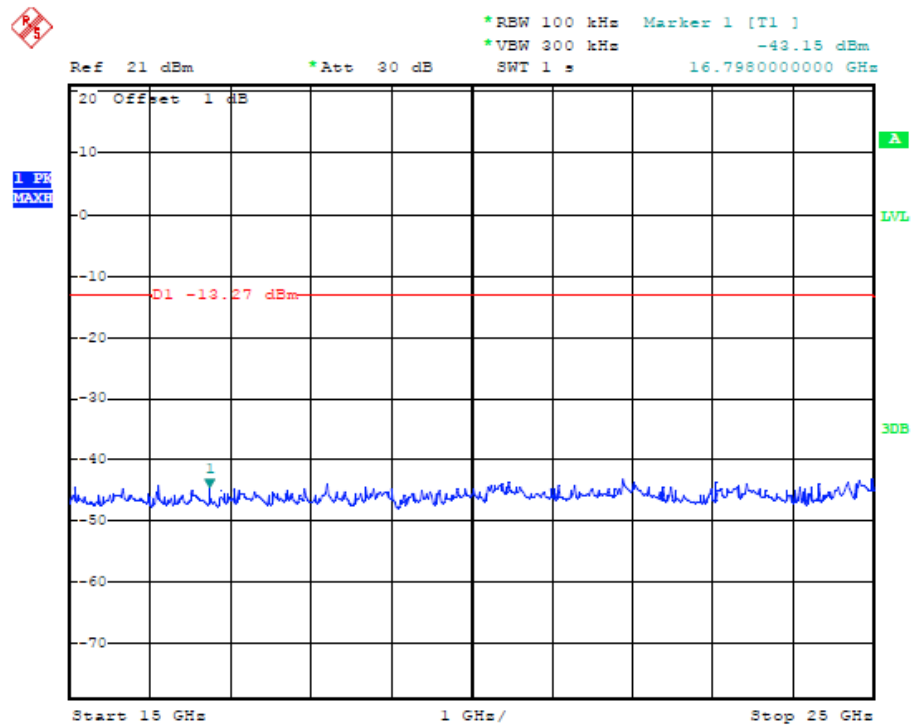
### 10.4. Test Result

#### **PASS**

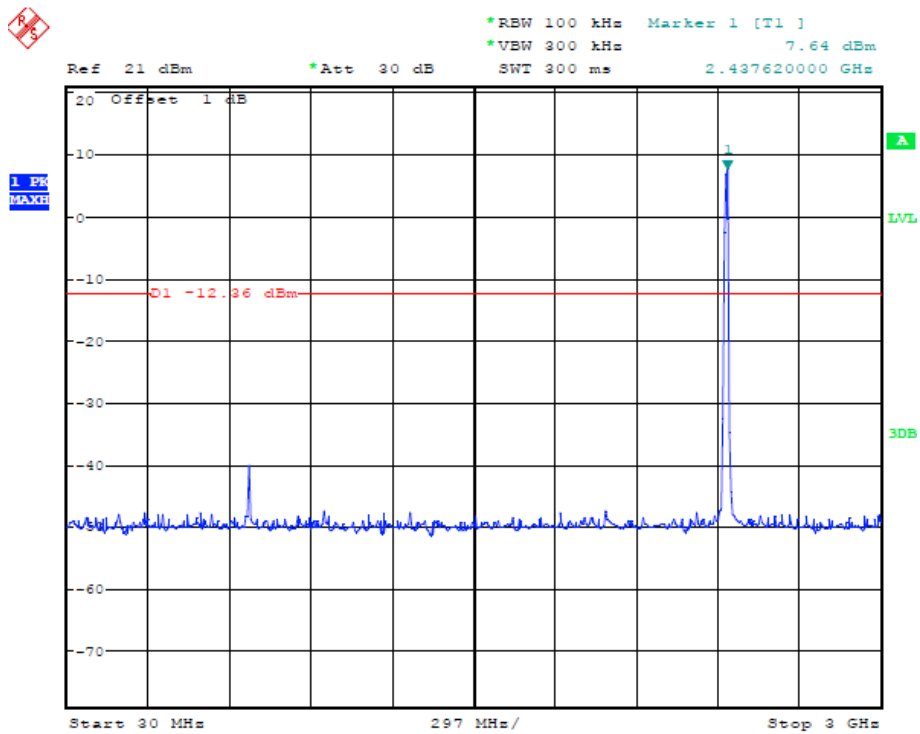
The spectrum analyzer plots are attached as below.

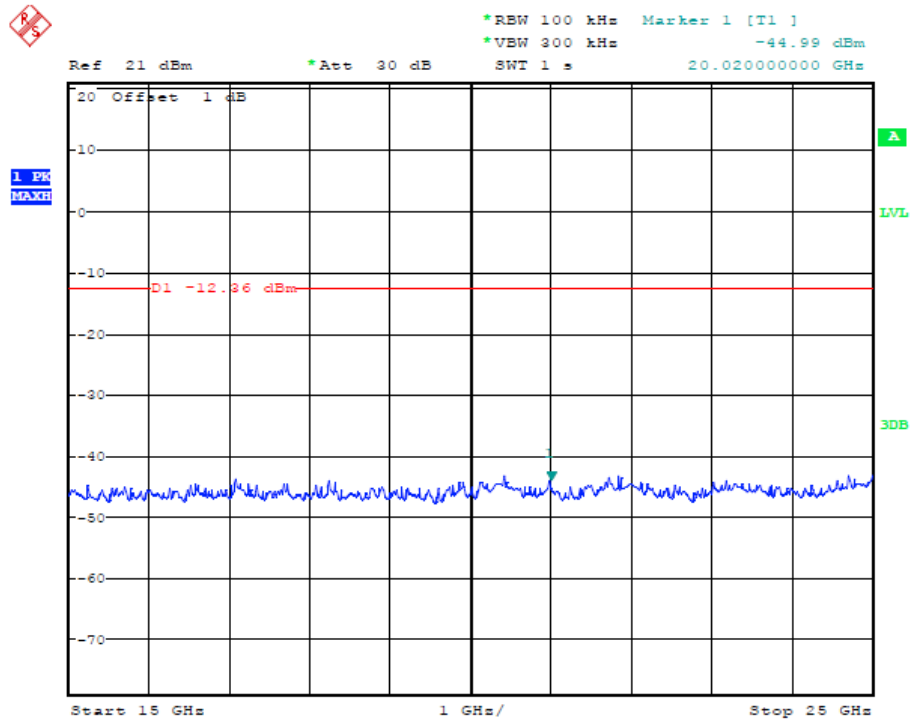
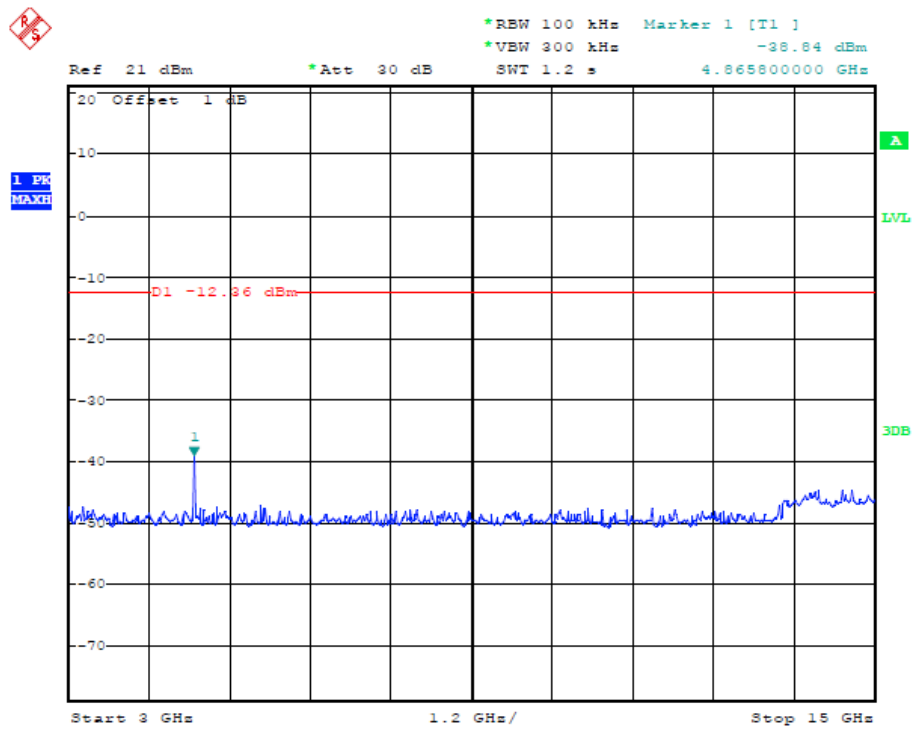
## TX 802.11b Channel Low 2412MHz



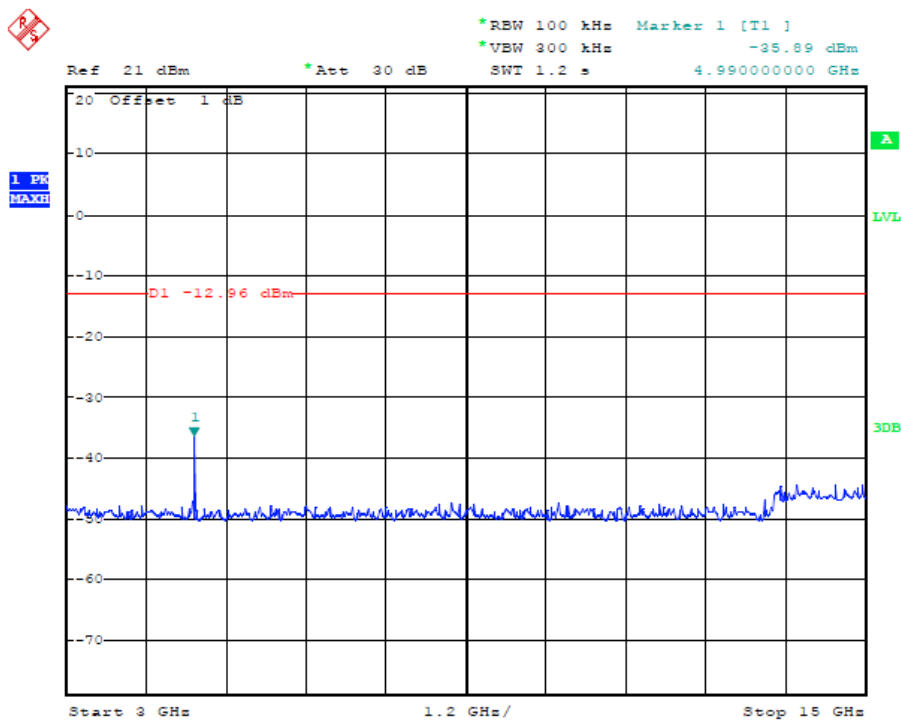
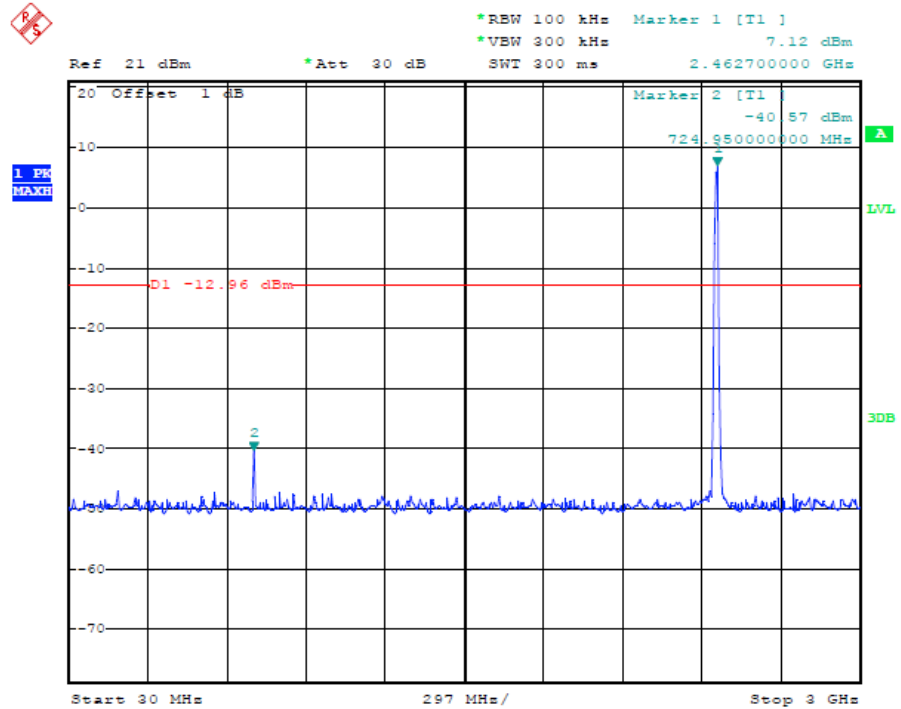


### TX 802.11b Channel Middle 2437MHz

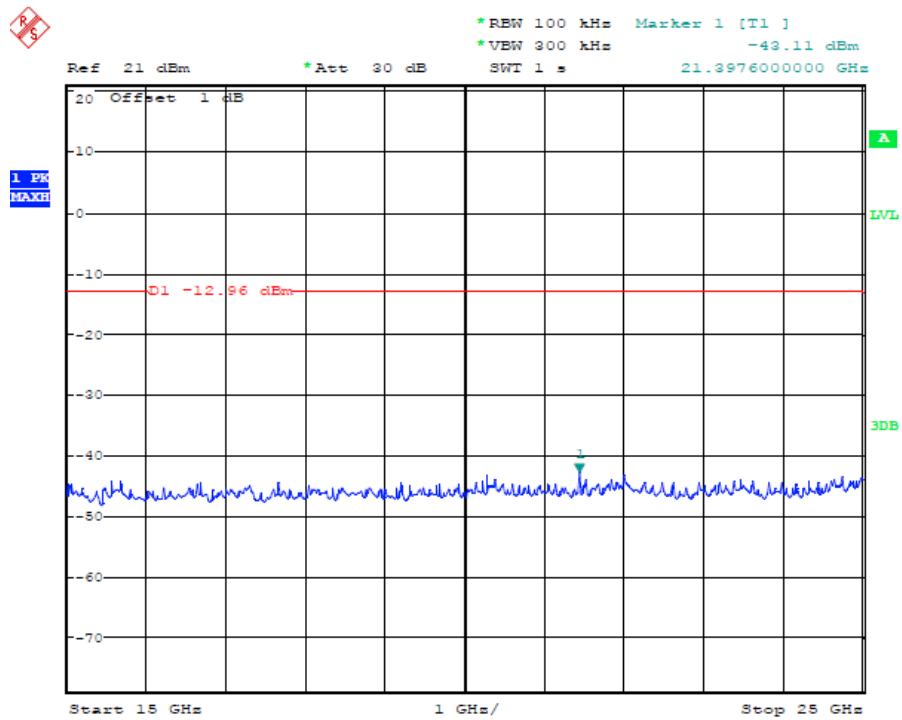




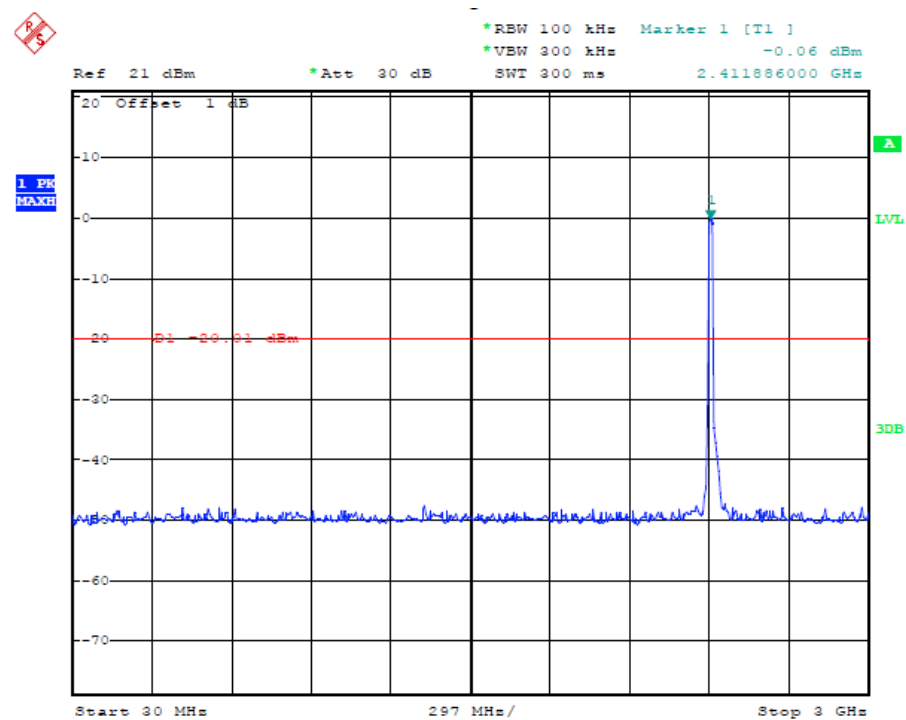
## TX 802.11b Channel High 2462MHz

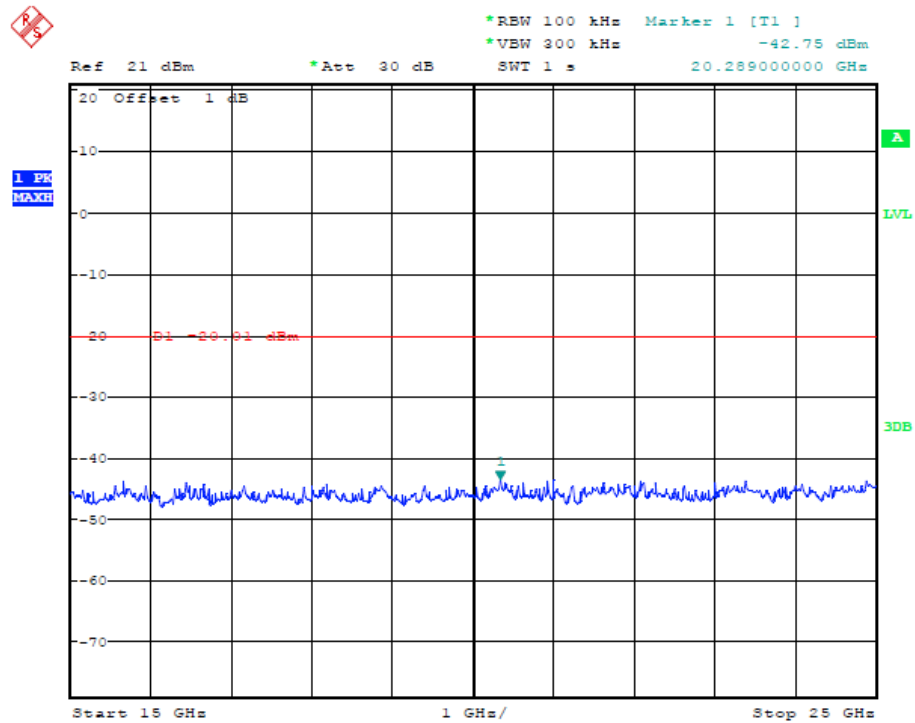
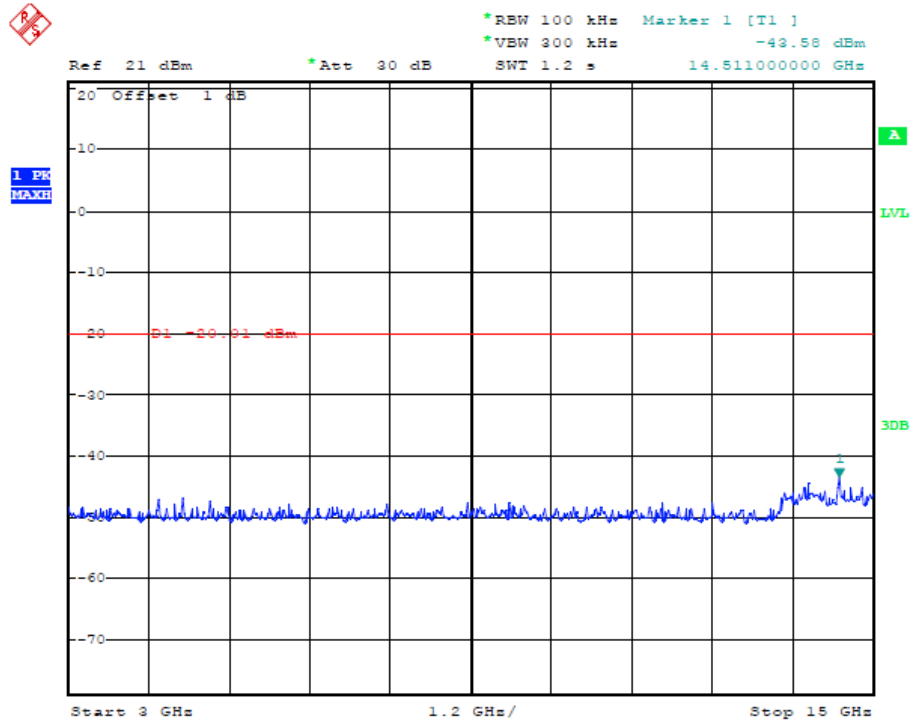


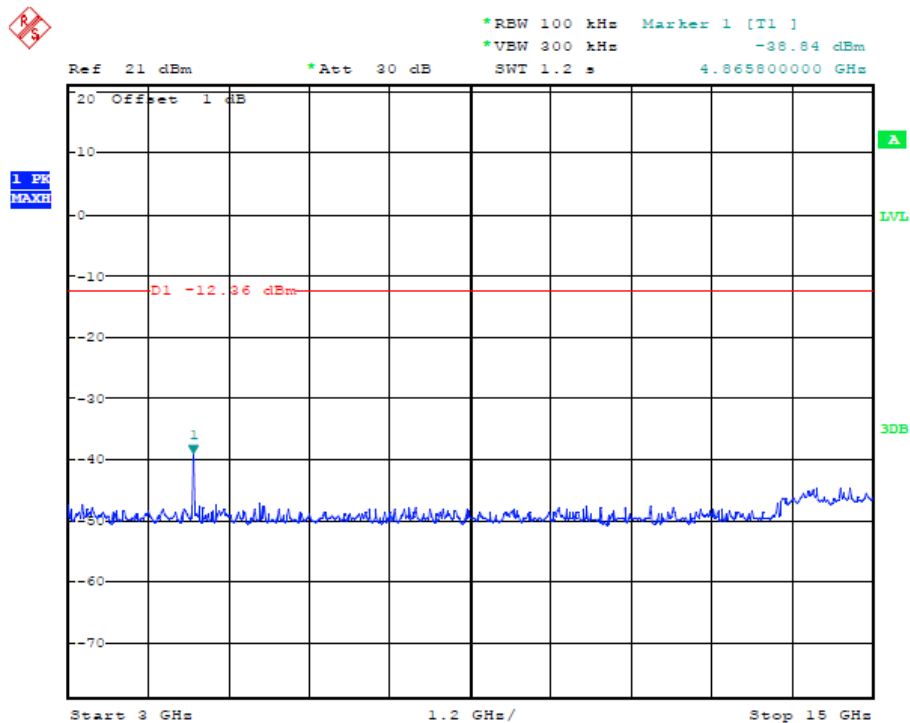
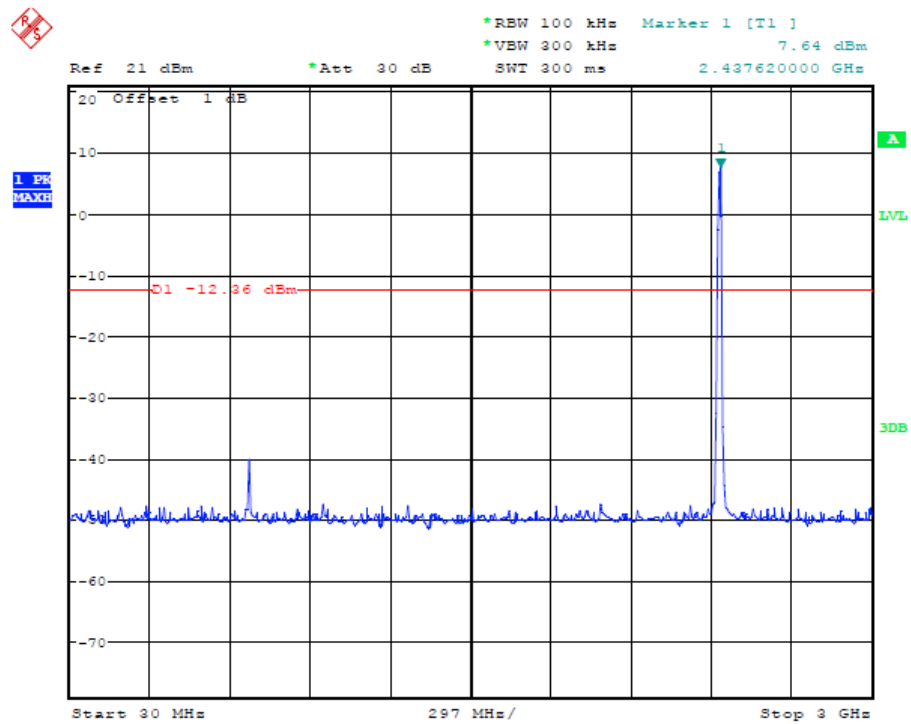


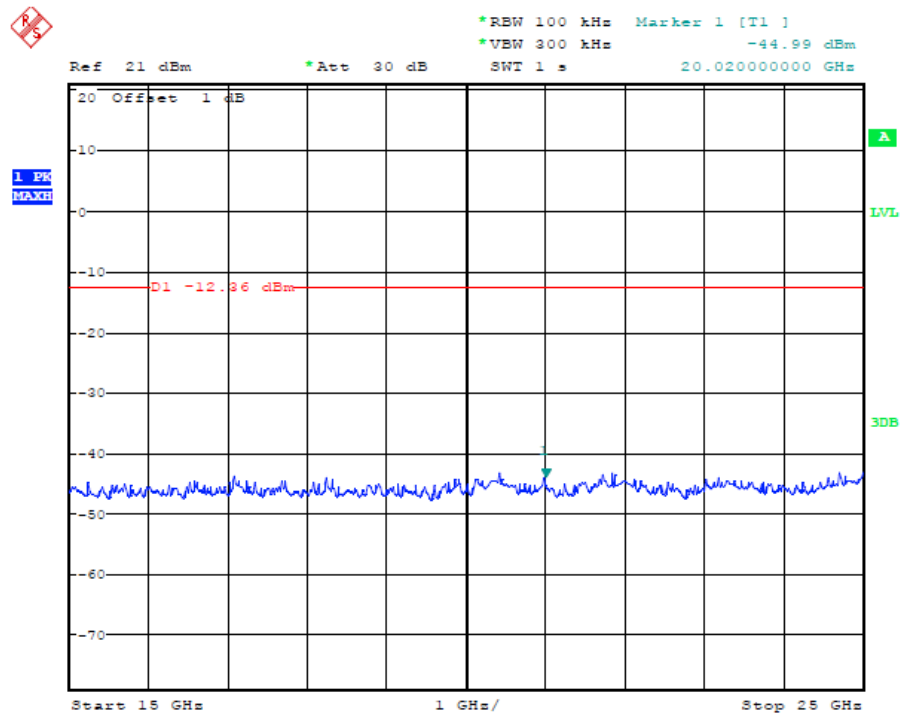


### TX 802.11g Channel Low 2412MHz

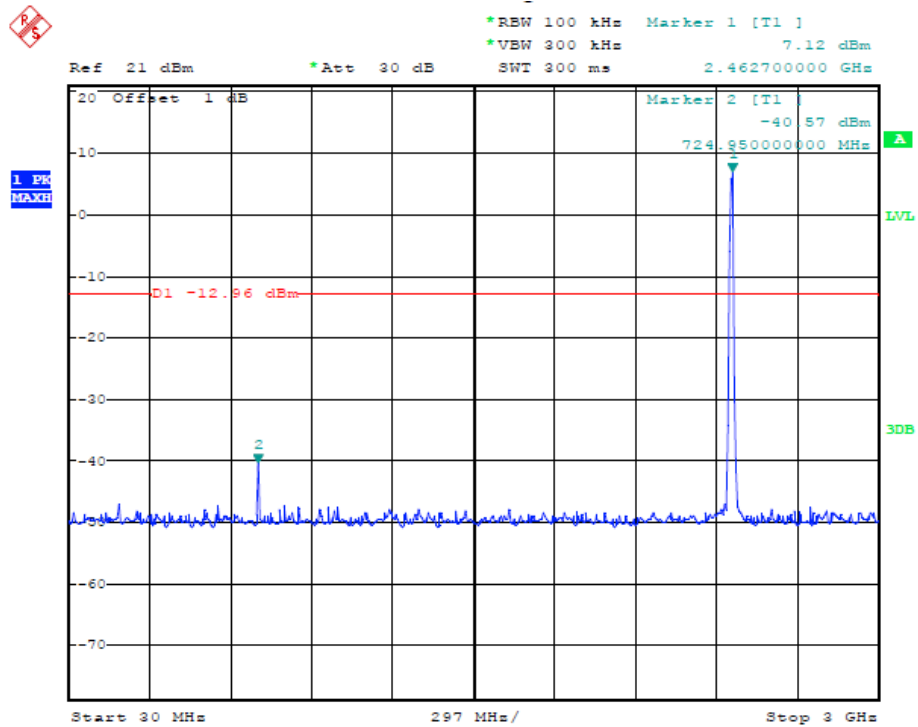


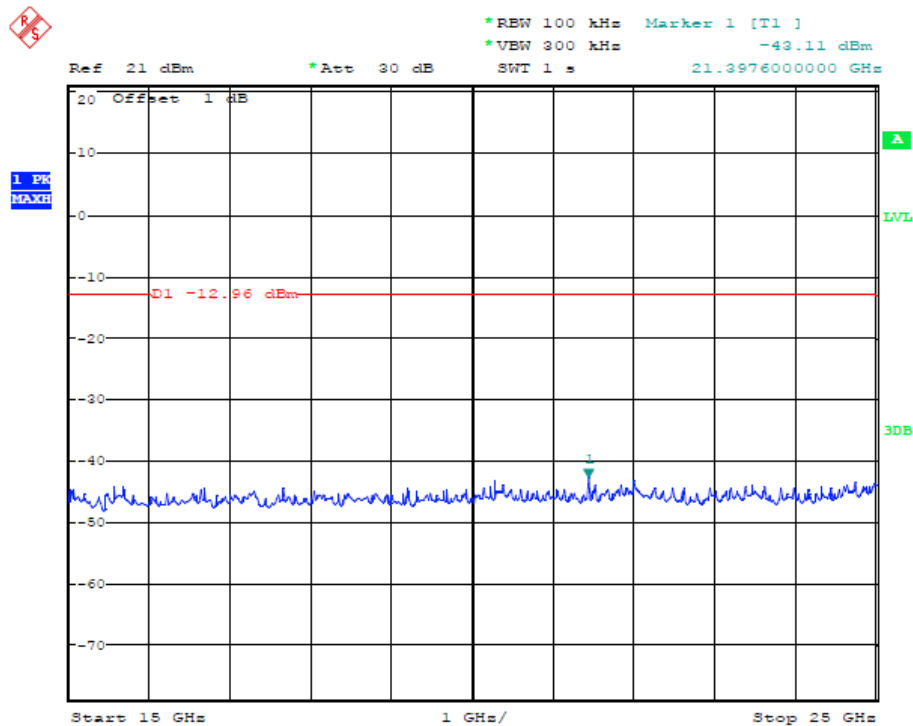
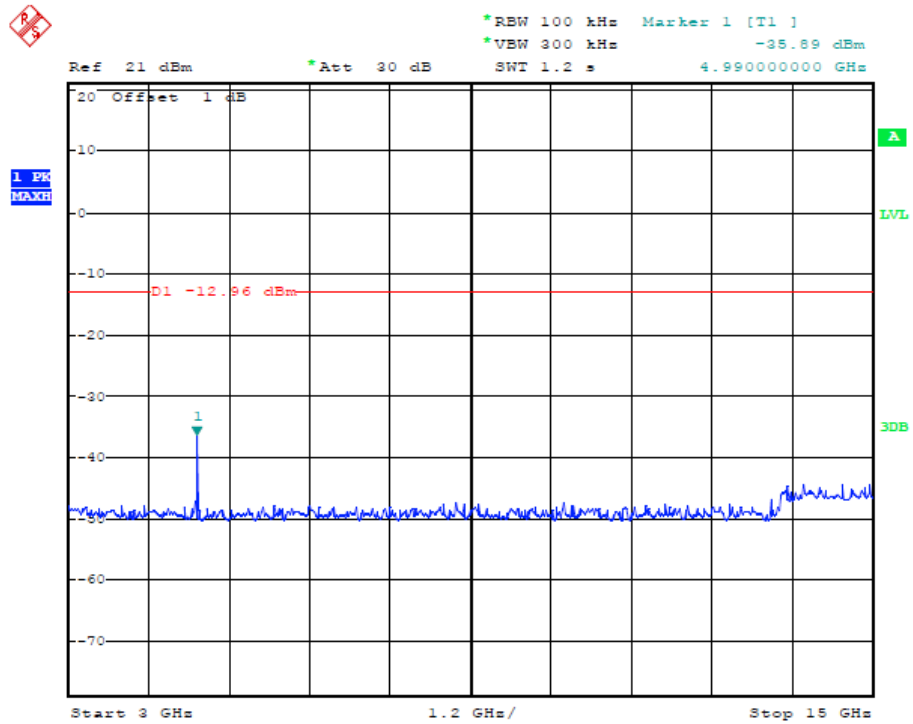


**TX 802.11b Channel Middle 2437MHz**

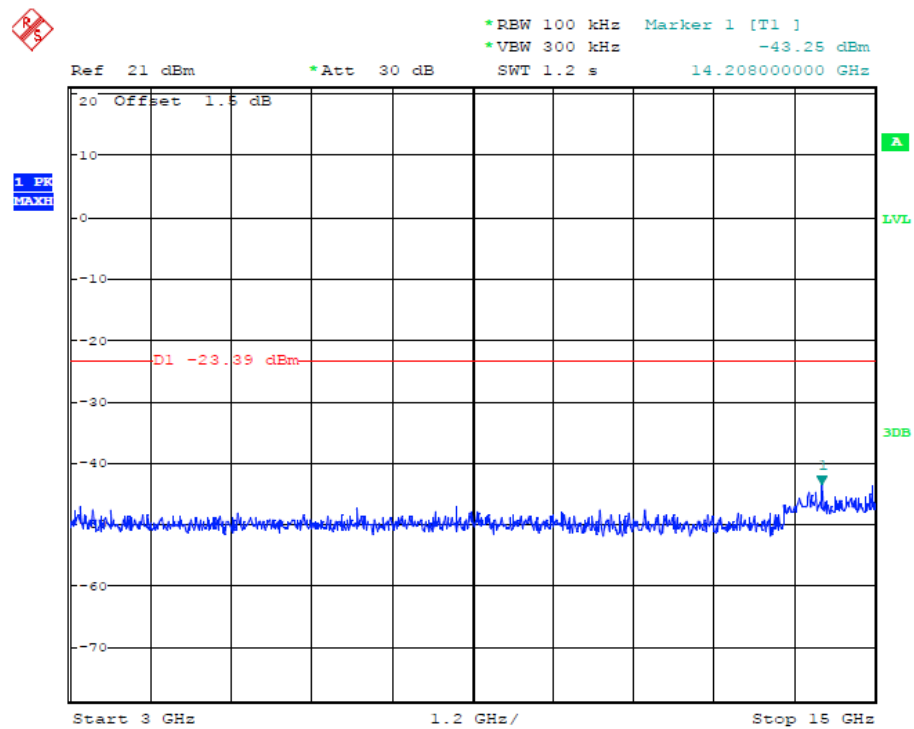
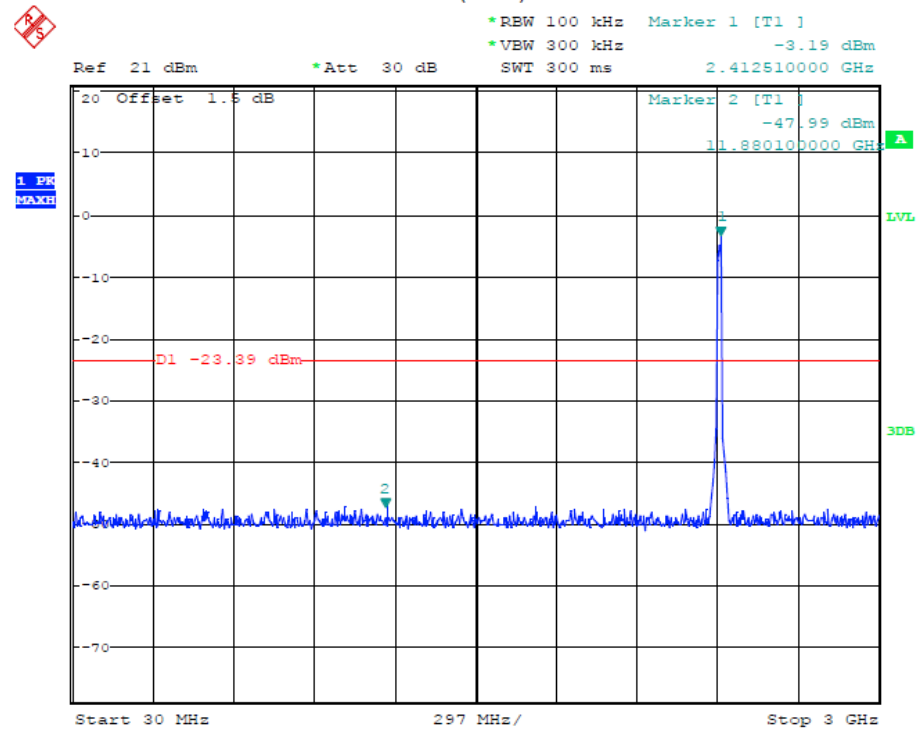


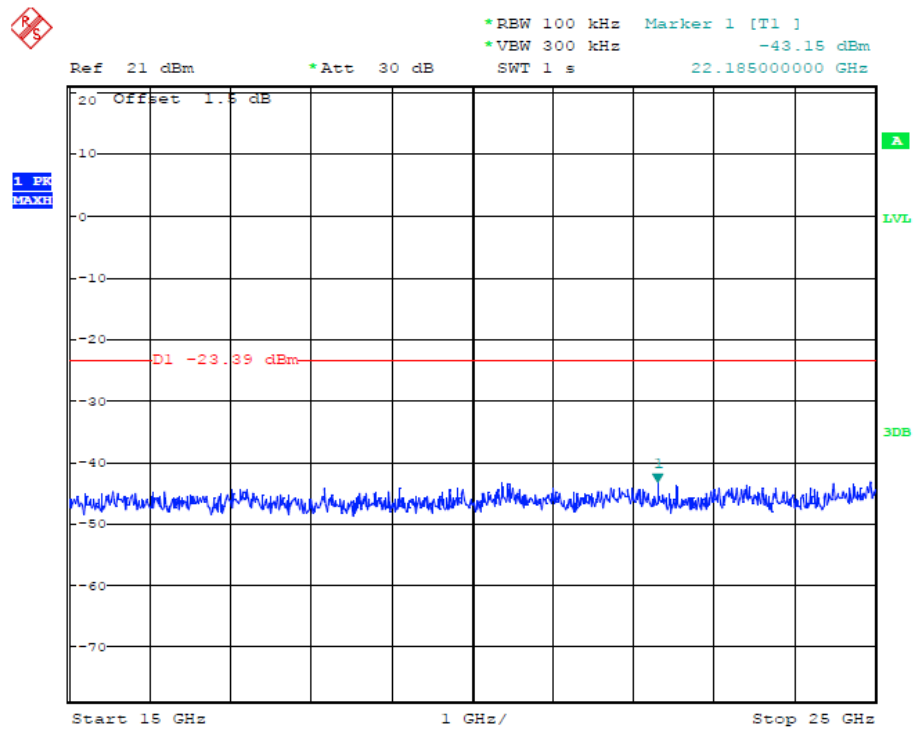
### TX 802.11b Channel High 2462MHz



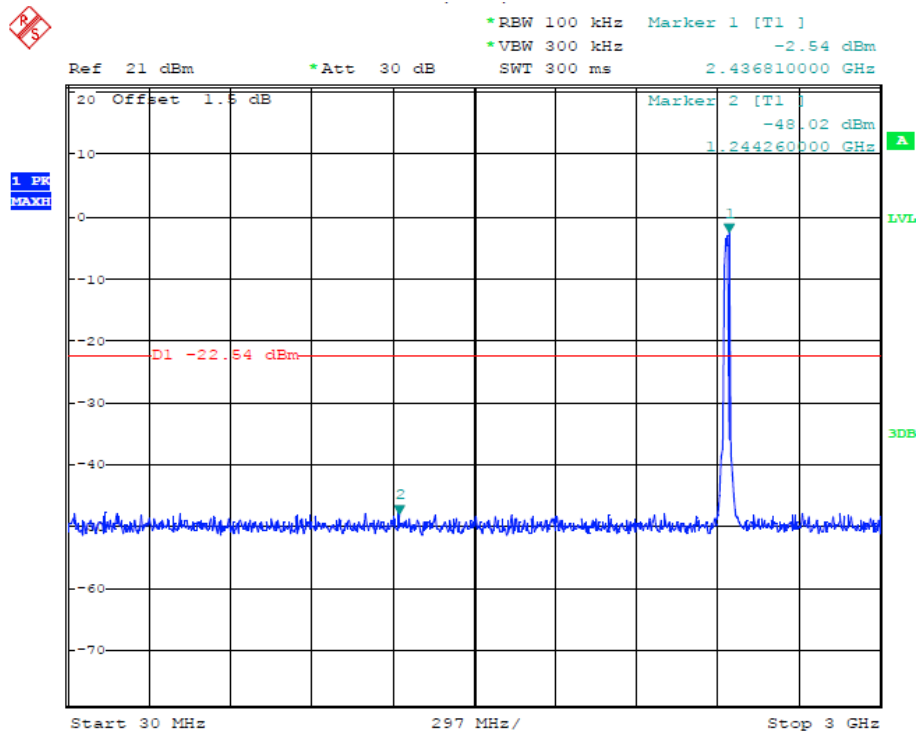


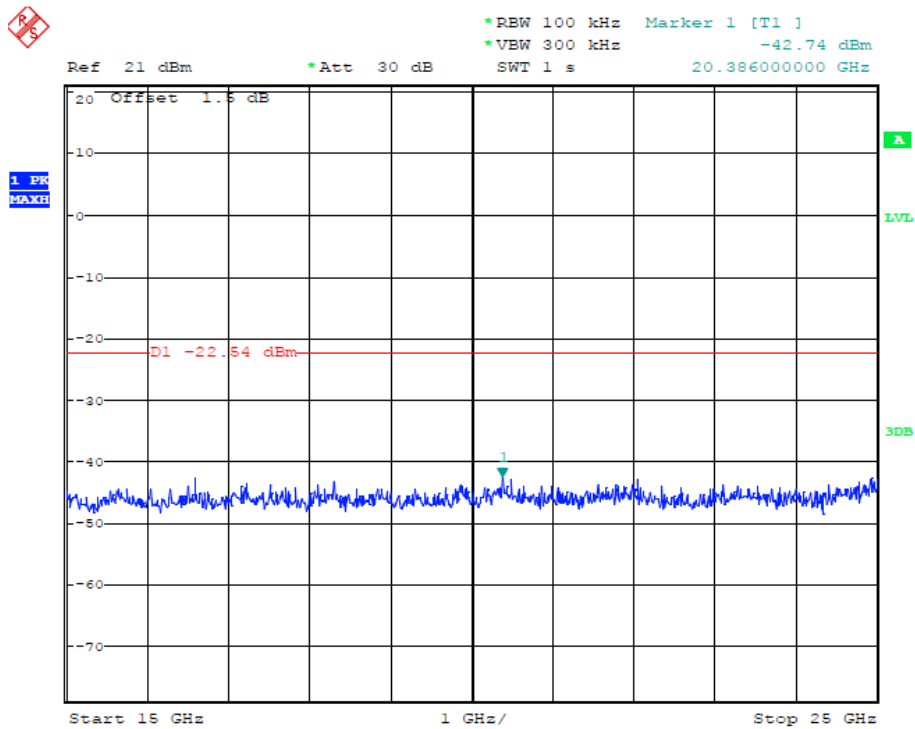
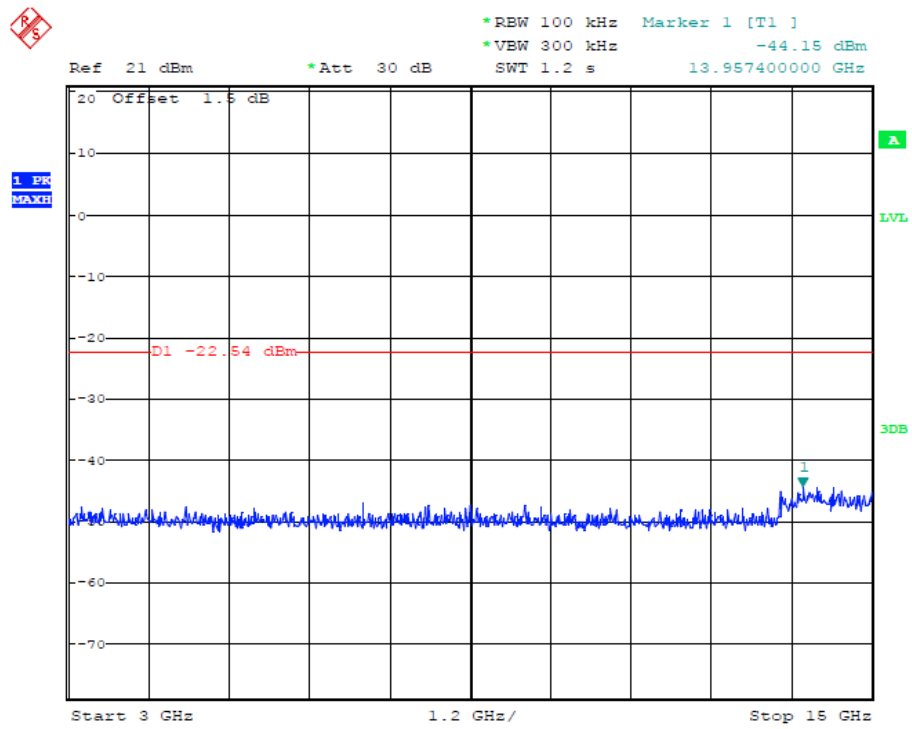
## TX 802.11nChannel Low 2412MHz



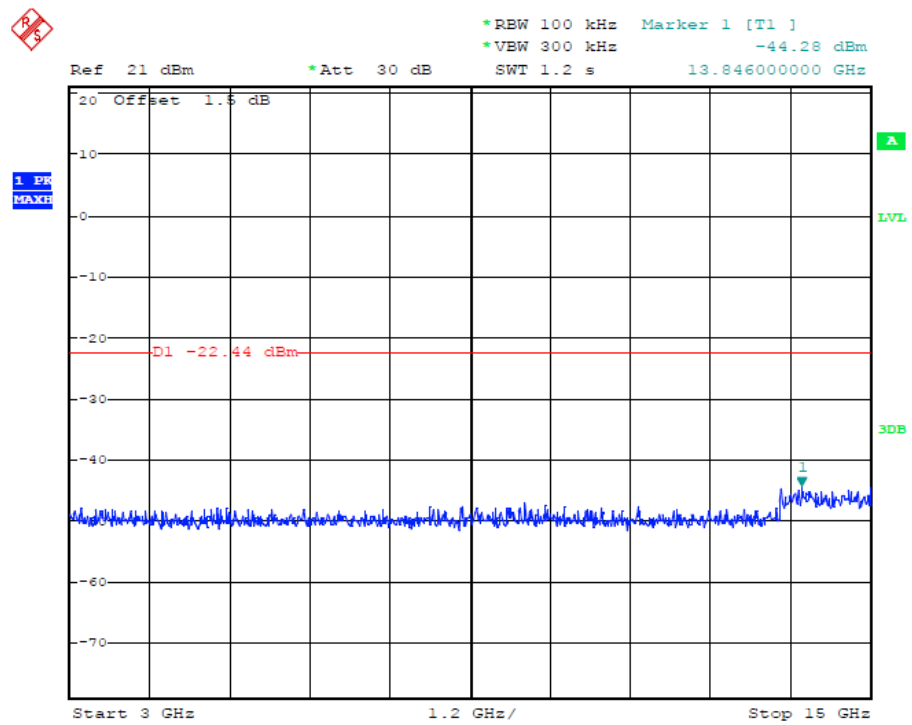
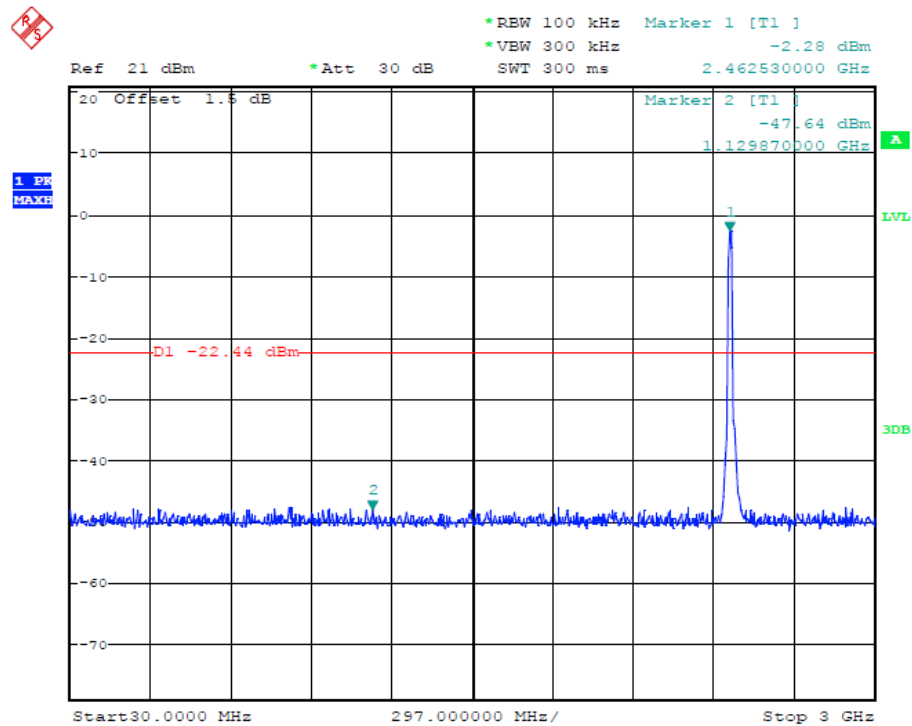


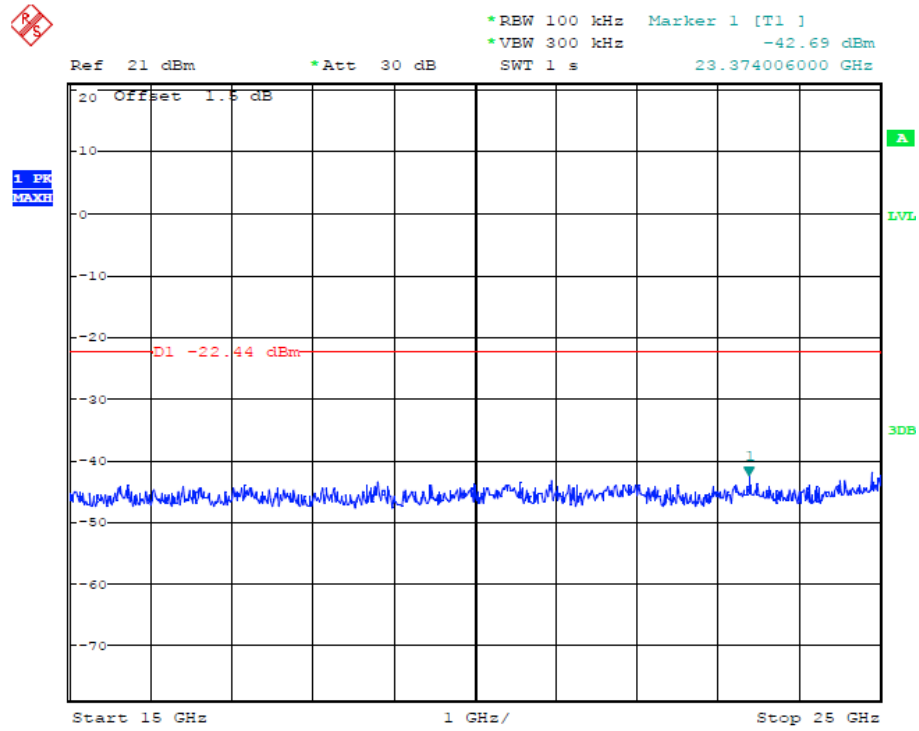
### TX 802.11n Channel Middle 2437MHz







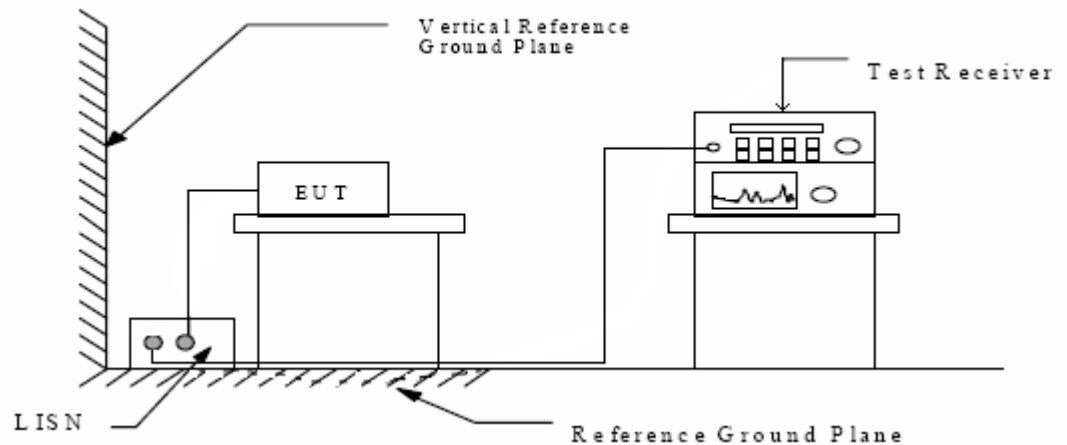
**TX 802.11n Channel High 2462MHz**



## 11. AC POWER LINE CONDUCTED EMISSION FOR PART 15 SECTION

### 15.207(A)

#### 11.1. Block Diagram of Test Setup



#### 11.2. Limits

Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency MHz	Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

\* Decreases with the logarithm of the frequency.

#### 11.3. Test Procedure

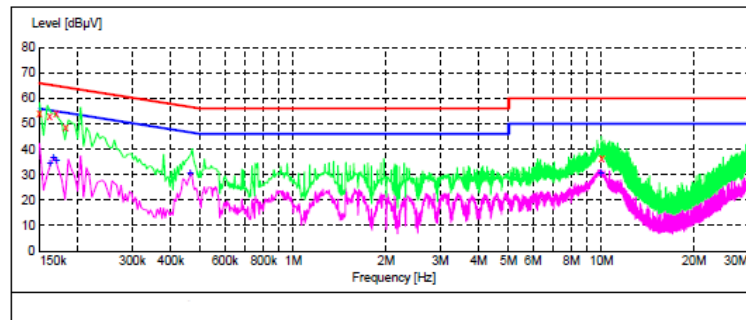
The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both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

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

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

## 11.4. Test Result

L



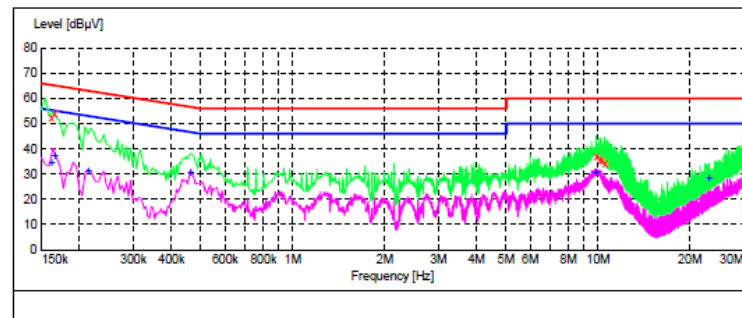
## MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	54.10	10.2	66	11.9	QP	L1	GND
0.162000	53.20	10.2	65	12.2	QP	L1	GND
0.170000	54.20	10.2	65	10.8	QP	L1	GND
0.182000	48.70	10.2	64	15.7	QP	L1	GND
10.034000	36.50	10.6	60	23.5	QP	L1	GND

## MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162000	35.00	10.2	55	20.4	AV	L1	GND
0.166000	37.20	10.2	55	18.0	AV	L1	GND
0.170000	35.70	10.2	55	19.3	AV	L1	GND
0.462000	31.10	10.2	47	15.6	AV	L1	GND
9.950000	31.10	10.6	50	18.9	AV	L1	GND

N



## MEASUREMENT RESULT:

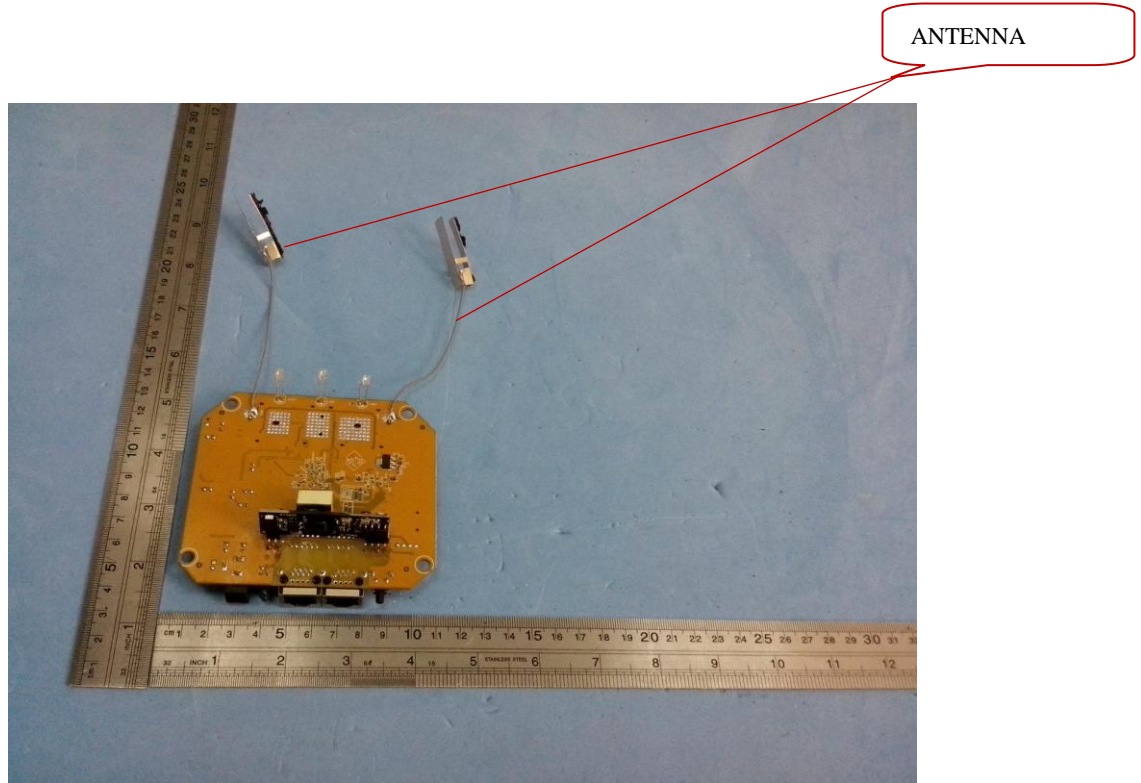
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162000	52.60	10.2	65	12.8	QP	N	GND
0.166000	54.40	10.2	65	10.8	QP	N	GND
9.878000	36.90	10.6	60	23.1	QP	N	GND
10.160000	35.80	10.6	60	24.2	QP	N	GND
10.262000	35.40	10.6	60	24.6	QP	N	GND
10.556000	34.30	10.6	60	25.7	QP	N	GND

## MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162000	34.80	10.2	55	20.6	AV	N	GND
0.166000	37.40	10.2	55	17.8	AV	N	GND
0.214000	31.60	10.2	53	21.4	AV	N	GND
0.462000	31.10	10.2	47	15.6	AV	N	GND
9.836000	30.90	10.6	50	19.1	AV	N	GND
23.126000	28.60	11.1	50	21.4	AV	N	GND

## 12. ANTENNA REQUIREMENT

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



### 13. PHOTOGRAPH OF TEST

#### Radiated Emission







### Ac power line conducted emission

