



# **FCC TEST REPORT**

**Test report  
On Behalf of  
Bayou Bar & restaurant Supply  
For  
CashCow\_Killer\_Wifi  
Model No.: LQK, LQK1, LQK2, LQK3, LQK4, LQK5, LQK6, LQK7,  
LQK8, LQK9**

**FCC ID: 2AKLM-LQK**

**Prepared for :** Bayou Bar & restaurant Supply  
Bayou Bar & Restaurant Supply, 199 Latino Street, Donaldsonville, Louisiana  
70346 USA

**Prepared By :** Shenzhen HUAKE Testing Technology Co., Ltd.  
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District, Shenzhen City, China

**Date of Test:** December. 1, 2016 ~ December. 8, 2016  
**Date of Report:** December. 9, 2016  
**Report Number:** HK1601201058-E



## TEST RESULT CERTIFICATION

**Applicant's name** ..... : Bayou Bar & restaurant Supply  
**Address** ..... : Bayou Bar & Restaurant Supply, 199 Latino Street,  
Donaldsonville, Louisiana 70346 USA  
**Manufacture's Name** ..... : Hangzhou Sabao Technology Co., Ltd.  
**Address** ..... : 715room 3rd building , No 452 of 6th street,  
Xiasha jianggan district Hangzhou Zhejiang province China

### Product description

**Trade Mark:** 来钱快  
**Product name** ..... : CashCow\_Killer\_Wifi  
**Model and/or type reference** : LQK, LQK1, LQK2, LQK3, LQK4, LQK5, LQK6, LQK7, LQK8,  
LQK9  
**Standards** ..... : FCC Rules and Regulations Part 15 Subpart C Section 15.247  
ANSI C63.10: 2013

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**Date of Test** ..... :  
**Date (s) of performance of tests** ..... : **December. 1, 2016 ~ December. 8, 2016**  
**Date of Issue** ..... : **December. 9, 2016**  
**Test Result** ..... : **Pass**

Testing Engineer :

(Eric Xie)

Technical Manager :

(Dora Qin)

Authorized Signatory :

(Kait Chen)



<b>Table of Contents</b>	<b>Page</b>
1 . TEST SUMMARY	5
2 . GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
Operation of EUT during testing	7
2.2 DESCRIPTION OF TEST SETUP	7
2.3 MEASUREMENT INSTRUMENTS LIST	8
3 . CONDUCTED EMISSIONS TEST	9
3.1 Conducted Power Line Emission Limit	9
3.2 Test Setup	9
3.3 Test Procedure	9
3.4 Test Result	9
4 RADIATED EMISSION TEST	12
4.1 Radiation Limit	12
4.2 Test Setup	12
4.3 Test Procedure	13
4.4 Test Result	13
5 BAND EDGE	25
5.1 Limits	25
5.2 Test Procedure	25
5.3 Test Result	25
6 OCCUPIED BANDWIDTH MEASUREMENT	38
6.1 Test Limit	38
6.2 Test Procedure	38
6.3 Measurement Equipment Used	38
6.4 Test Result	38
7 POWER SPECTRAL DENSITY TEST	45
7.1 Test Limit	45
7.2 Test Procedure	45
7.3 Measurement Equipment Used	45
7.4 Test Result	45
8 PEAK OUTPUT POWER TEST	52
8.1 Test Limit	52
8.2 Test Procedure	52
8.3 Measurement Equipment Used	52



<b>Table of Contents</b>	<b>Page</b>
8.4 Test Result	52
9 CONDUCTED EMISSION TEST	53
9.1 Test Limit	53
9.2 Test Procedure	53
9.3 Test Setup	53
7.4 Test Result	53
10 ANTENNA REQUIREMENT	59
11 PHOTOGRAPH OF TEST	60
11.1 Radiated Emission	60
11.2 Conducted Emission	61



## 1. TEST SUMMARY

### 1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	RESULT
CONDUCTED EMISSIONS TEST	COMPLIANT
RADIATED EMISSION TEST	COMPLIANT
BAND EDGE	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	COMPLIANT
POWER SPECTRAL DENSITY	COMPLIANT
PEAK OUTPUT POWER <sub>Peak</sub>	COMPLIANT
ANTENNA REQUIREMENT	COMPLIANT

### 1.2 TEST FACILITY

Test Firm : Dongguan Dongdian Testing Service Co., Ltd  
Certificated by FCC, Registration No.: 270092  
Address No.17 Zongbu road 2, Songshan Lake Sci&Tech Park, DongGuan  
City, Guangdong province, 523808 China

### 1.3 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	CashCow_Killer_Wifi
Model Name	LQK
Serial No	LQK1, LQK2, LQK3, LQK4, LQK5, LQK6, LQK7, LQK8, LQK9
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: LQK.
FCC ID	2AKLM-LQK
Antenna Type	Integral Antenna
Antenna Gain	0dBi
Operation frequency	WIFI: 802.11b/g/n 20:2412~2462 MHz
Number of Channels	802.11b/g/n20: 11CH
Modulation Type	CCK/OFDM/DBPSK/DAPSK
Power Source	AC 120V/60Hz
Power Rating	AC 120V/60Hz

Equipment	CashCow_Killer_Wifi
Model Name	LQK
Serial No	LQK1, LQK2, LQK3, LQK4, LQK5, LQK6, LQK7, LQK8, LQK9
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: LQK.
FCC ID	2AKLM-LQK
Antenna Type	Integral Antenna
Antenna Gain	0dBi
Operation frequency	Bluetooth 4.0: 2402-2480MHz
Number of Channels	40CH
Modulation Type	GFSK
Power Source	AC 120V/60Hz
Power Rating	AC 120V/60Hz

Note: This report only WIFI test report, BT transmitters see the other test report.



### 2.1.1 Carrier Frequency of Channels

Channel List for 802.11b/g/n(20MHz)							
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		

### Operation of EUT during testing

#### Operating Mode

The mode is used: **Transmitting mode for 802.11b/g/n(20MHz)**

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

## 2.2 DESCRIPTION OF TEST SETUP

Operation of EUT during conducted and Radiation testing:

EUT



## 2.3 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.	Power Meter	R&S	NRVD	SEL0069	Feb. 19, 2016	1 Year
19.	Power Sensor	R&S	URV5-Z2	SEL0071	Feb. 19, 2016	1 Year
20.	Power Sensor	R&S	URV5-Z2	SEL0072	Feb. 19, 2016	1 Year
21.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
22.	Log-periodic Antenna	Amplifier Reasearch	APT1.580	SEL0073	N/A	N/A
23.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	N/A	N/A
24.	High Gain Horn Antenna(0.8-5GHz)	Amplifier Reasearch	AT4002A	SEL0075	N/A	N/A
25.	Spectrum analyzer	Agilent	N9020A	MY499110 048	Feb. 19, 2016	1 Year
26.	Spectrum analyzer	Agilent	E4407B	MY461843 26	Feb. 19, 2016	1 Year





### 3. CONDUCTED EMISSIONS TEST

#### 3.1 Conducted Power Line Emission Limit

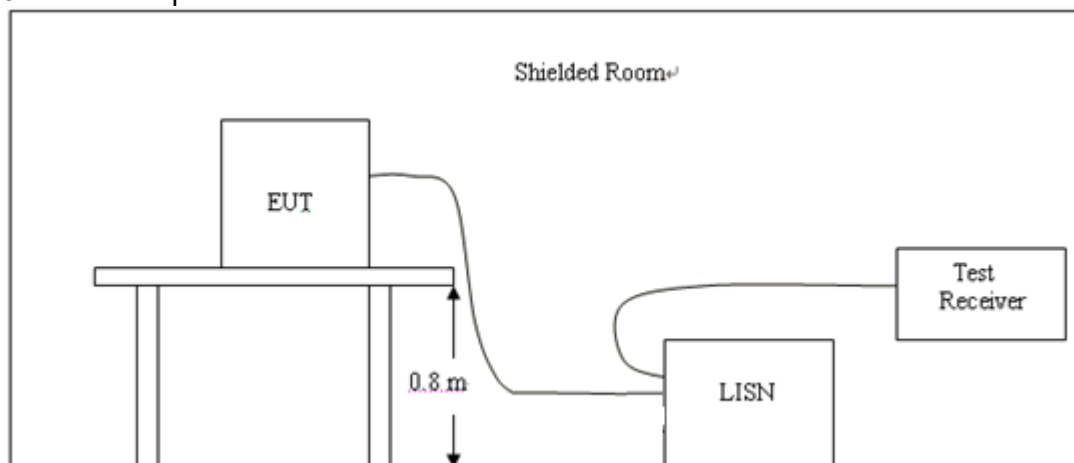
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

\* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

#### 3.2 Test Setup



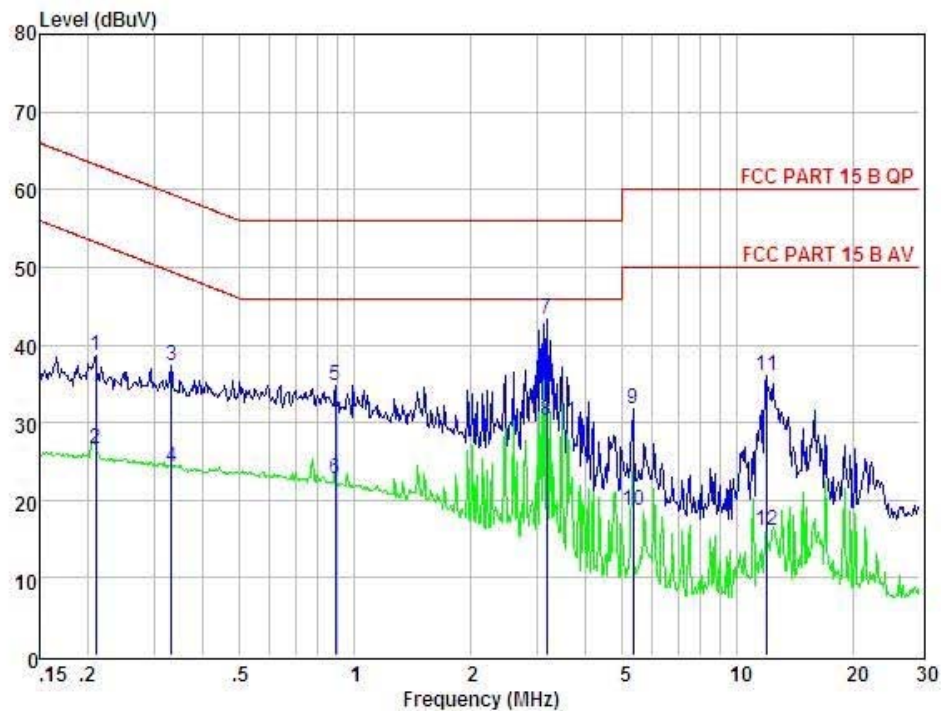
#### 3.3 Test Procedure

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

#### 3.4 Test Result

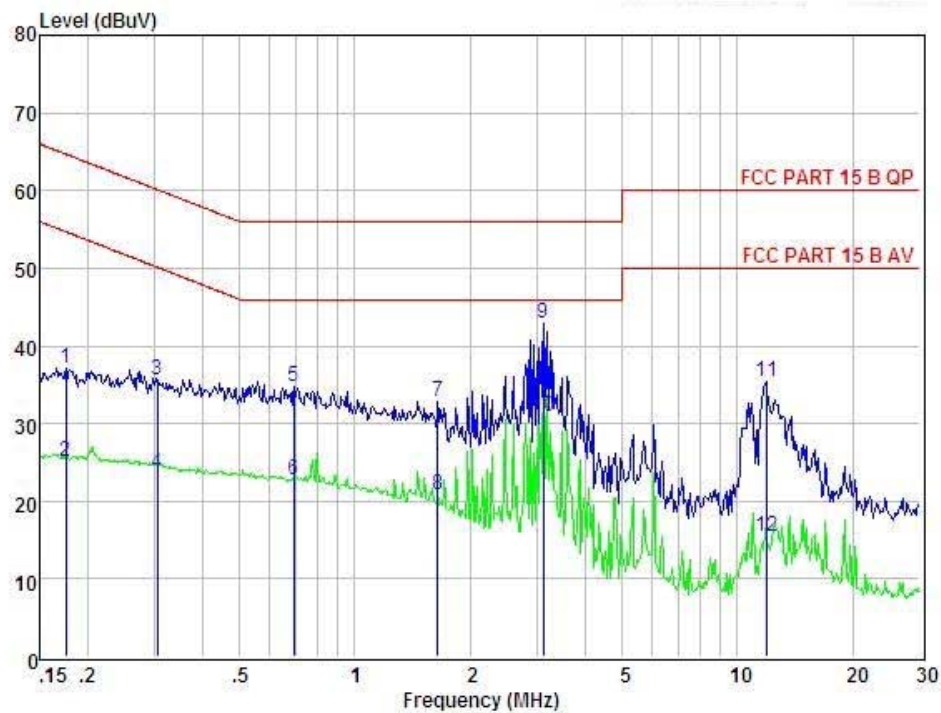
PASS

All the test modes completed for test.



Condition : FCC PART 15 B QP					POL: LINE		Temp:24 °C		Hum:56 %	
Item	Freq	Read	LISN	Preamp	Cable	Level	Limit	Margin	Remark	
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV		
1	0.211	28.67	0.03	-9.72	0.10	38.52	63.18	-24.66	QP	
2	0.211	16.67	0.03	-9.72	0.10	26.52	53.18	-26.66	Average	
3	0.332	27.40	0.03	-9.72	0.10	37.25	59.40	-22.15	QP	
4	0.332	14.40	0.03	-9.72	0.10	24.25	49.40	-25.15	Average	
5	0.890	24.84	0.04	-9.71	0.10	34.69	56.00	-21.31	QP	
6	0.890	12.84	0.04	-9.71	0.10	22.69	46.00	-23.31	Average	
7	3.173	33.37	0.07	-9.69	0.12	43.25	56.00	-12.75	QP	
8	3.173	20.37	0.07	-9.69	0.12	30.25	46.00	-15.75	Average	
9	5.333	21.79	0.10	-9.66	0.13	31.68	60.00	-28.32	QP	
10	5.333	8.79	0.10	-9.66	0.13	18.68	50.00	-31.32	Average	
11	11.933	26.07	0.26	-9.47	0.22	36.02	60.00	-23.98	QP	
12	11.933	6.07	0.26	-9.47	0.22	16.02	50.00	-33.98	Average	

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss



Condition : FCC PART 15 B QP						POL: NEUTRAL Temp:24 °C Hum:56 %			Remark
Item	Freq	Read	LISN	Preamp	Cable	Level	Limit	Margin	
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV	
			dB	dB	dB				
1	0.176	27.32	0.03	-9.72	0.10	37.17	64.68	-27.51	QP
2	0.176	15.32	0.03	-9.72	0.10	25.17	54.68	-29.51	Average
3	0.305	25.76	0.03	-9.72	0.10	35.61	60.10	-24.49	QP
4	0.305	13.76	0.03	-9.72	0.10	23.61	50.10	-26.49	Average
5	0.694	24.87	0.04	-9.72	0.10	34.73	56.00	-21.27	QP
6	0.694	12.87	0.04	-9.72	0.10	22.73	46.00	-23.27	Average
7	1.645	23.03	0.05	-9.71	0.10	32.89	56.00	-23.11	QP
8	1.645	11.03	0.05	-9.71	0.10	20.89	46.00	-25.11	Average
9	3.107	33.10	0.07	-9.69	0.12	42.98	56.00	-13.02	QP
10	3.107	21.10	0.07	-9.69	0.12	30.98	46.00	-15.02	Average
11	11.933	25.46	0.26	-9.47	0.22	35.41	60.00	-24.59	QP
12	11.933	5.46	0.26	-9.47	0.22	15.41	50.00	-34.59	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

## 4 RADIATED EMISSION TEST

### 4.1 Radiation Limit

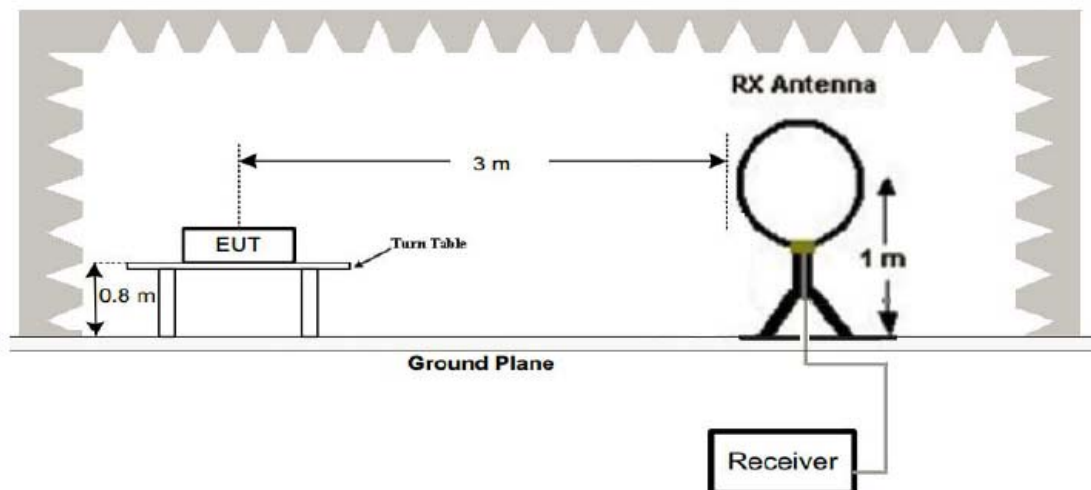
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB $\mu$ V/m)	Radiated ( $\mu$ V/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

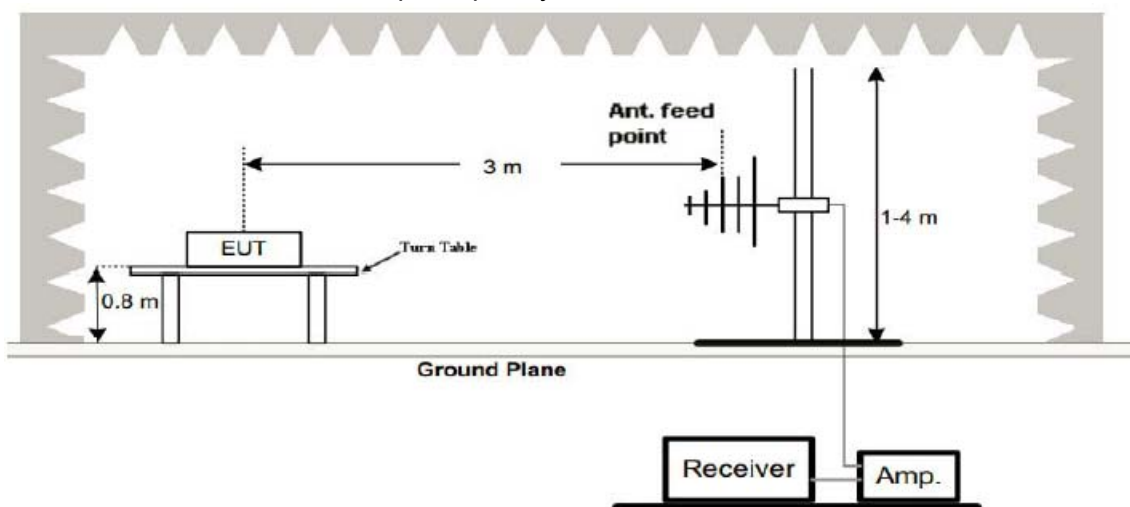
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

### 4.2 Test Setup

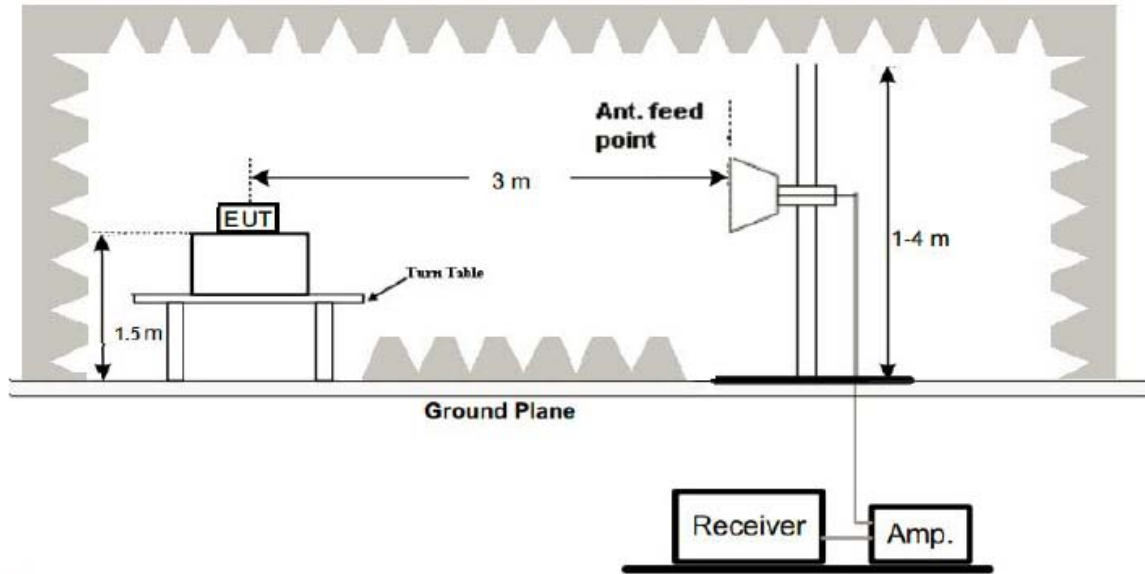
#### (1) Radiated Emission Test-Up Frequency Below 30MHz



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



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



#### 4.3 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.
7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

#### Note:

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

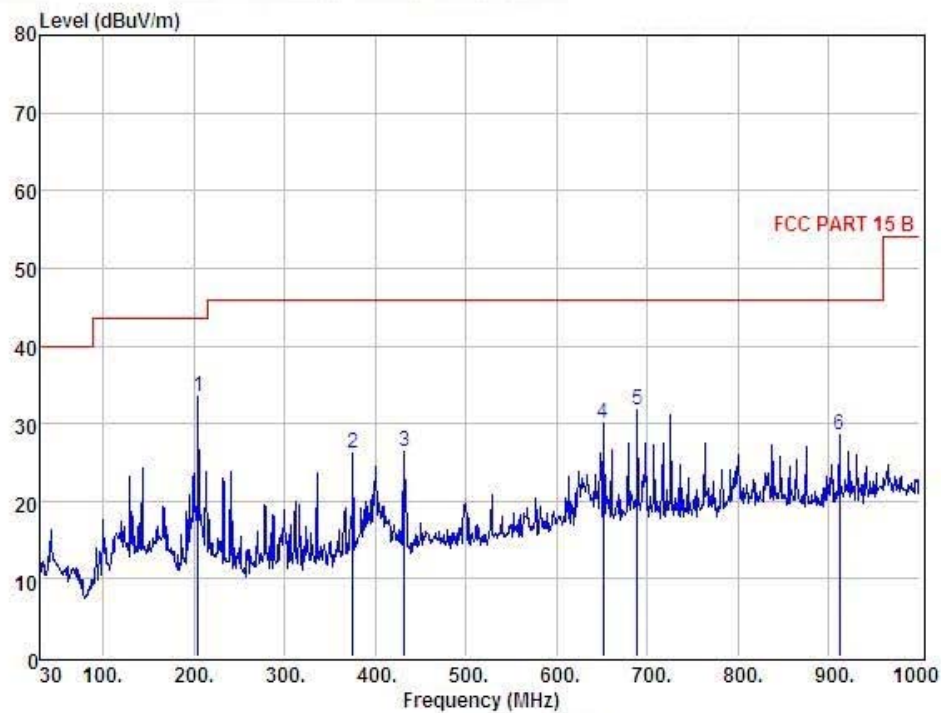
#### 4.4 Test Result

##### PASS

All the test modes completed for test. The worst case of Radiated Emission; the test data of this mode was reported.



Below 1GHz Test Results:  
Antenna polarity: H



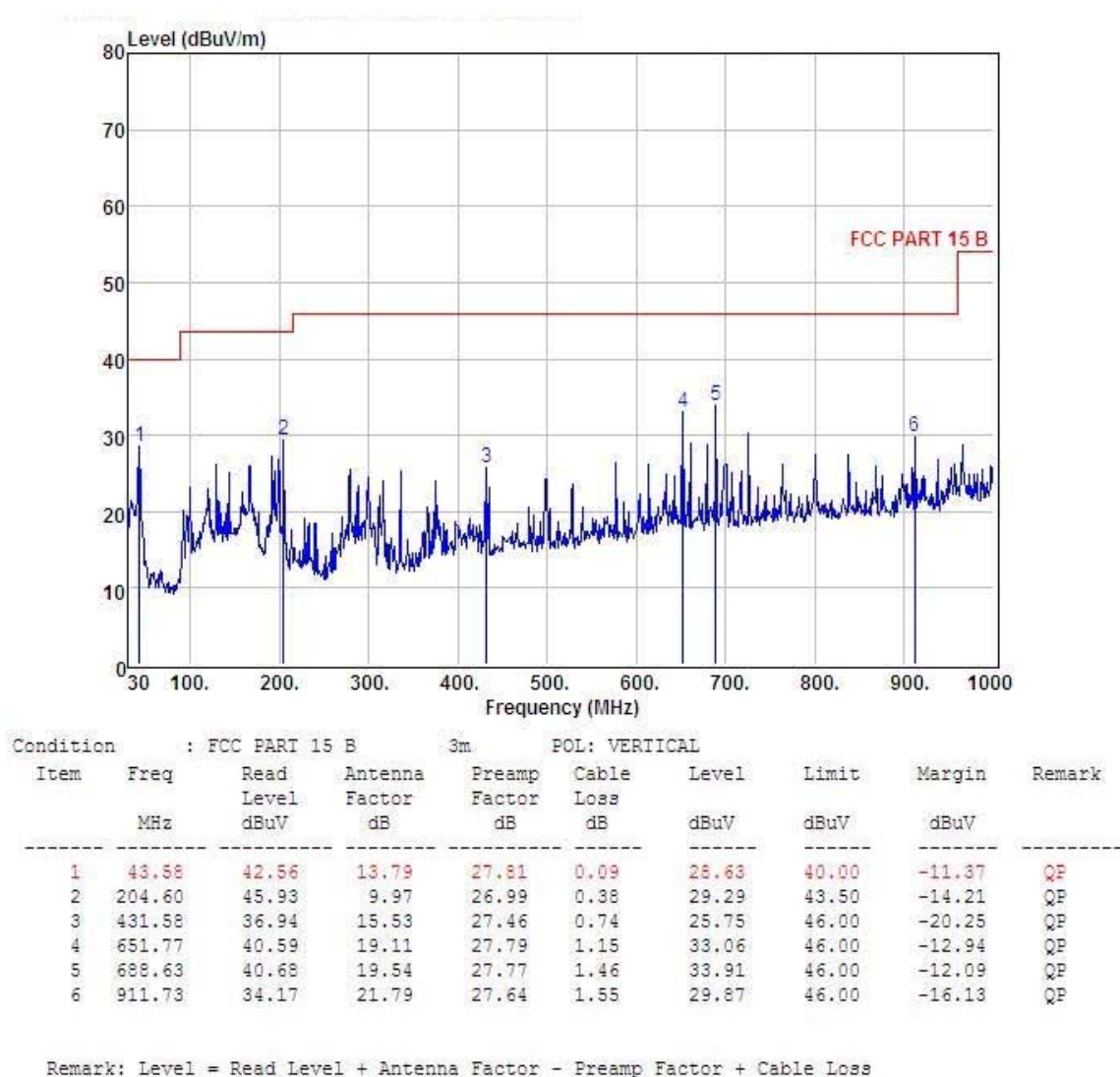
Condition		: FCC PART 15 B			3m	POL: HORIZONTAL					
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark		
	MHz	Level	Factor	Factor	Loss						
		dBuV	dB	dB	dB	dBuV	dBuV	dBuV			
1	204.60	50.11	9.97	26.99	0.38	33.47	43.50	-10.03	QP		
2	375.32	38.15	14.32	27.35	1.01	26.13	46.00	-19.87	QP		
3	431.58	37.60	15.53	27.46	0.74	26.41	46.00	-19.59	QP		
4	650.80	37.60	19.11	27.79	1.16	30.08	46.00	-15.92	QP		
5	688.63	38.42	19.54	27.77	1.46	31.65	46.00	-14.35	QP		
6	911.73	32.89	21.79	27.64	1.55	28.59	46.00	-17.41	QP		

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss





Antenna polarity: V



Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.



## Above 1 GHz Test Results:

LOW CH1 (802.11b Mode)/2412  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	61.11	-3.64	57.47	74	-16.53	peak
4824	45.93	-3.64	42.29	54	-11.71	AVG
7236	56.41	-0.95	55.46	74	-18.54	peak
7236	41.66	-0.95	40.71	54	-13.29	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

## Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	58.92	-3.64	55.28	74	-18.72	peak
4824	44.08	-3.64	40.44	54	-13.56	AVG
7236	54.69	-0.95	53.74	74	-20.26	peak
7236	39.78	-0.95	38.83	54	-15.17	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH6 (802.11b Mode)/2437  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	60.19	-3.51	56.68	74	-17.32	peak
4874	45.08	-3.51	41.57	54	-12.43	AVG
7311	55.88	-0.82	55.06	74	-18.94	peak
7311	40.80	-0.82	39.98	54	-14.02	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	58.25	-3.51	54.74	74	-19.26	peak
4874	43.16	-3.51	39.65	54	-14.35	AVG
7311	53.38	-0.82	52.56	74	-21.44	peak
7311	38.25	-0.82	37.43	54	-16.57	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH11 (802.11b Mode)/2462  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	60.50	-3.43	57.07	74	-16.93	peak
4924	44.95	-3.43	41.52	54	-12.48	AVG
7386	55.99	-0.75	55.24	74	-18.76	peak
7386	41.24	-0.75	40.49	54	-13.51	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	59.20	-3.43	55.77	74	-18.23	peak
4924	44.46	-3.43	41.03	54	-12.97	AVG
7386	54.09	-0.75	53.34	74	-20.66	peak
7386	39.03	-0.75	38.28	54	-15.72	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "—" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.



LOW CH1 (802.11g Mode)/2412  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	59.21	-3.64	55.57	74	-18.43	peak
4824	43.96	-3.64	40.32	54	-13.68	AVG
7236	55.68	-0.95	54.73	74	-19.27	peak
7236	40.59	-0.95	39.64	54	-14.36	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	59.17	-3.64	55.53	74	-18.47	peak
4824	44.49	-3.64	40.85	54	-13.15	AVG
7236	54.49	-0.95	53.54	74	-20.46	peak
7236	39.22	-0.95	38.27	54	-15.73	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

MID CH6 (802.11g Mode)/2437  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	58.59	-3.51	55.08	74	-18.92	peak
4874	44.17	-3.51	40.66	54	-13.34	AVG
7311	54.75	-0.82	53.93	74	-20.07	peak
7311	39.64	-0.82	38.82	54	-15.18	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	57.76	-3.51	54.25	74	-19.75	peak
4874	42.83	-3.51	39.32	54	-14.68	AVG
7311	52.31	-0.82	51.49	74	-22.51	peak
7311	37.33	-0.82	36.51	54	-17.49	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH11 (802.11g Mode)/2462  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	59.48	-3.43	56.05	74	-17.95	peak
4924	45.11	-3.43	41.68	54	-12.32	AVG
7386	55.27	-0.75	54.52	74	-19.48	peak
7386	40.08	-0.75	39.33	54	-14.67	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	58.94	-3.43	55.51	74	-18.49	peak
4924	43.79	-3.43	40.36	54	-13.64	AVG
7386	53.50	-0.75	52.75	74	-21.25	peak
7386	37.92	-0.75	37.17	54	-16.83	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) Data of measurement within this frequency range shown "—" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.



LOW CH1 (802.11n/H20 Mode)/2412  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	58.29	-3.64	54.65	74	-19.35	peak
4824	43.36	-3.64	39.72	54	-14.28	AVG
7236	53.48	-0.95	52.53	74	-21.47	peak
7236	37.33	-0.95	36.38	54	-17.62	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	58.10	-3.64	54.46	74	-19.54	peak
4824	43.39	-3.64	39.75	54	-14.25	AVG
7236	53.62	-0.95	52.67	74	-21.33	peak
7236	38.13	-0.95	37.18	54	-16.82	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

MID CH6 (802.11n/H20 Mode)/2437  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	58.94	-3.51	55.43	74	-18.57	peak
4874	43.77	-3.51	40.26	54	-13.74	AVG
7311	54.91	-0.82	54.09	74	-19.91	peak
7311	40.29	-0.82	39.47	54	-14.53	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	57.76	-3.51	54.25	74	-19.75	peak
4874	43.23	-3.51	39.72	54	-14.28	AVG
7311	52.66	-0.82	51.84	74	-22.16	peak
7311	37.84	-0.82	37.02	54	-16.98	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH11 (802.11n/H20 Mode)/2462  
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	58.01	-3.43	54.58	74	-19.42	peak
4924	42.86	-3.43	39.43	54	-14.57	AVG
7386	52.12	-0.75	51.37	74	-22.63	peak
7386	37.67	-0.75	36.92	54	-17.08	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	57.25	-3.43	53.82	74	-20.18	peak
4924	42.09	-3.43	38.66	54	-15.34	AVG
7386	50.50	-0.75	49.75	74	-24.25	peak
7386	36.08	-0.75	35.33	54	-18.67	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) Data of measurement within this frequency range shown "—" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.





## 5 BAND EDGE

### 5.1 Limits

Please refer section 15.247

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

### 5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBW to 300 KHz, to measure the conducted peak band edge.

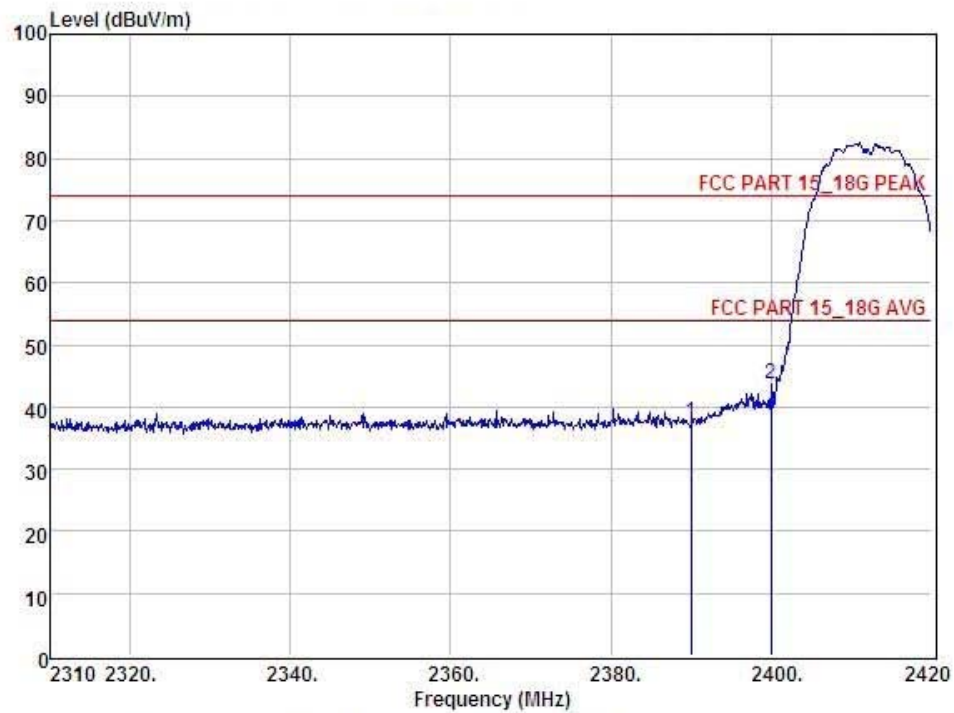
### 5.3 Test Result

**PASS**

Detailed information please see the following page.

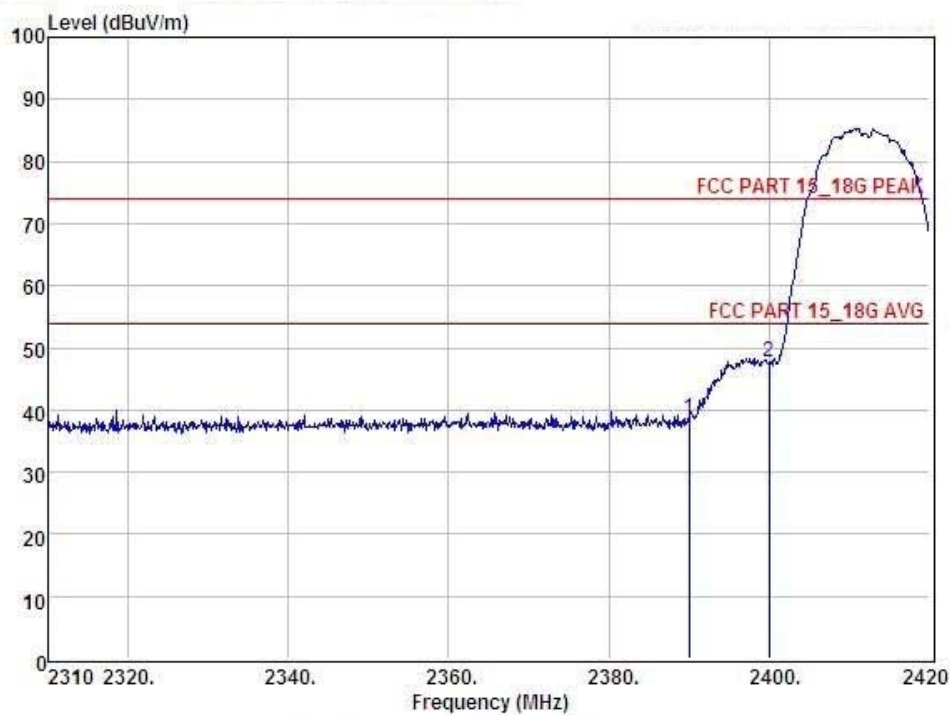


Radiated Band Edge Test:  
Operation Mode: 802.11b Mode TX CH Low (2412MHz)



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV	
			dB	dB	dB				
1	2390.00	41.04	27.62	34.97	3.92	37.61	74.00	-36.39	Peak
2	2400.00	47.20	27.62	34.97	3.94	43.79	74.00	-30.21	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

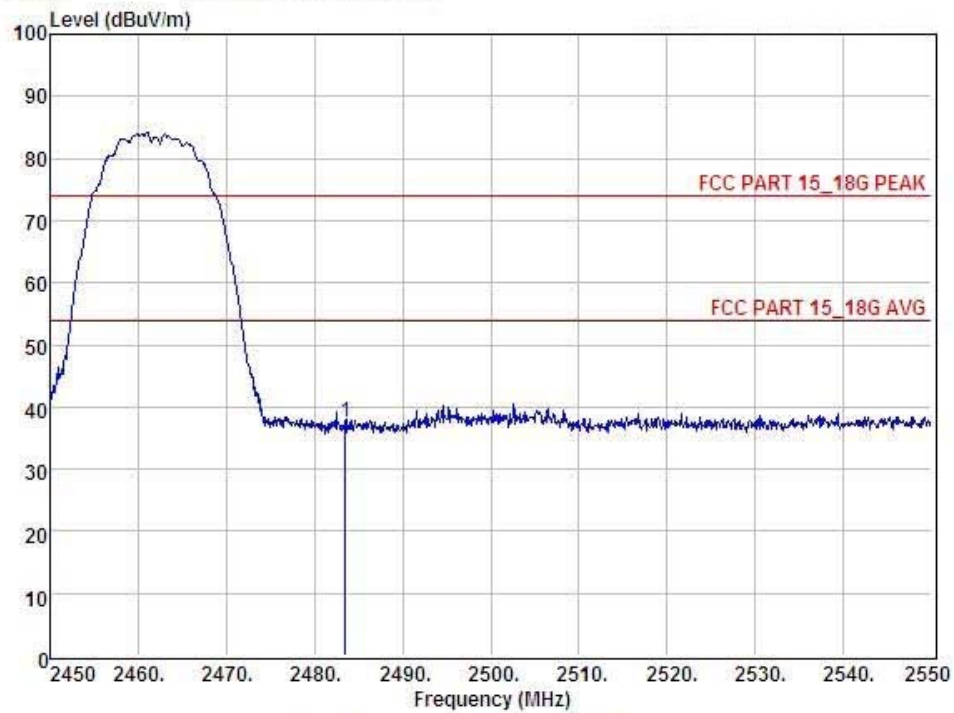


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	Level	Factor	Factor	Loss	dBuV	dBuV	dBuV	
		dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	42.11	27.62	34.97	3.92	38.68	74.00	-35.32	Peak
2	2400.00	51.14	27.62	34.97	3.94	47.73	74.00	-26.27	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

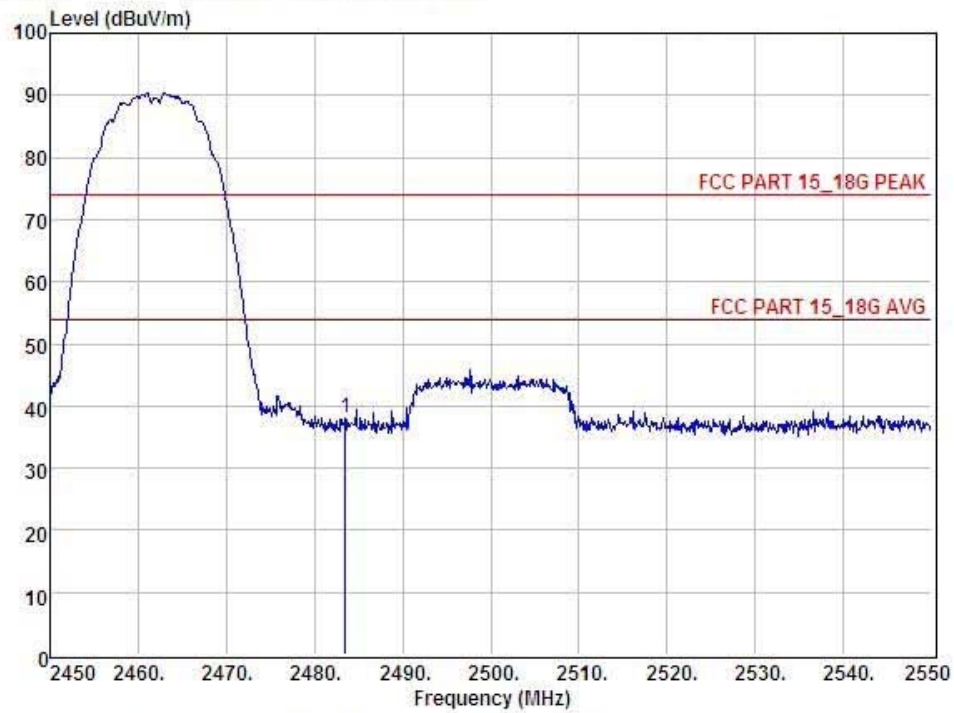


Operation Mode: TX CH High (2462MHz)



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV	
			dB	dB	dB				
1	2462.50	40.79	27.59	34.97	4.00	37.41	74.00	-36.59	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

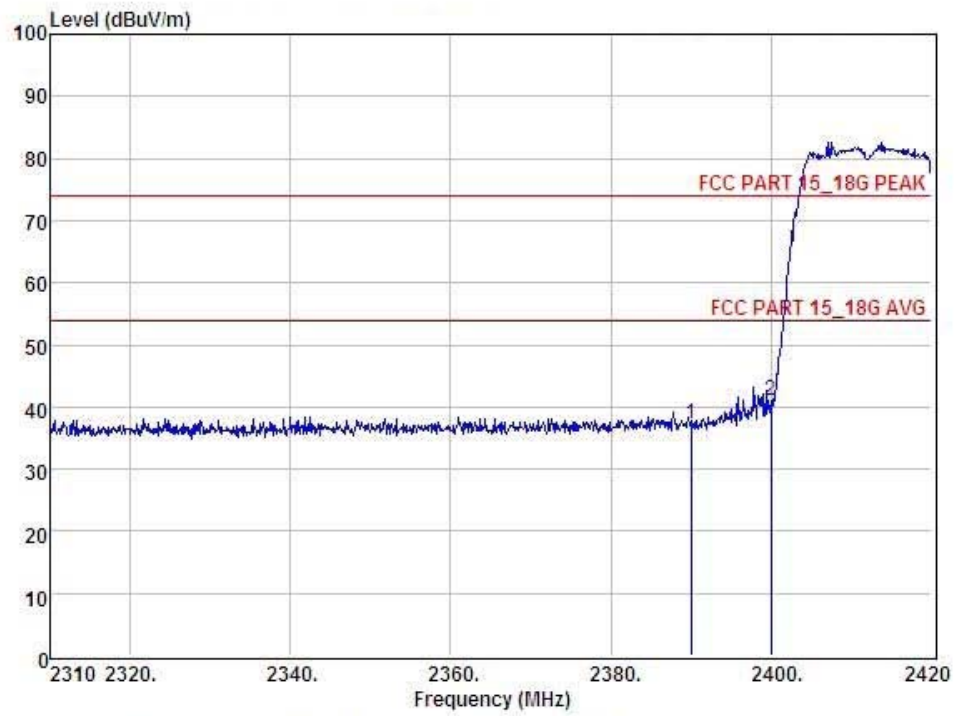


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV	
			dB	dB	dB				
1	2483.50	41.35	27.59	34.97	4.00	37.97	74.00	-36.03	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

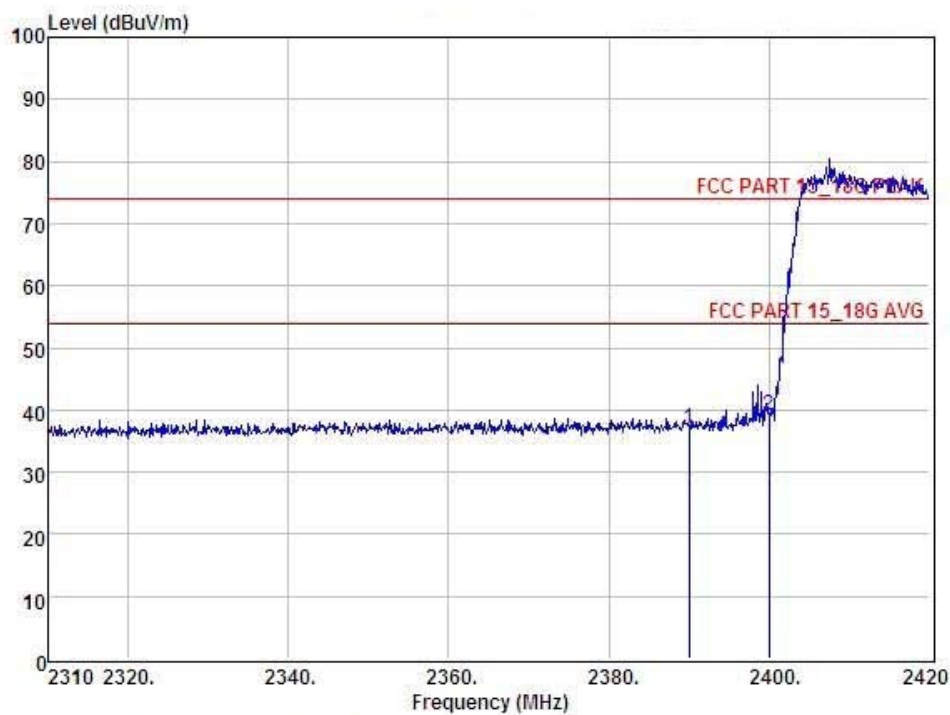


Operation Mode: 802.11g Mode TX CH Low (2412MHz)



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV	
			dB	dB	dB				
1	2390.00	40.70	27.62	34.97	3.92	37.27	74.00	-36.73	Peak
2	2400.00	44.31	27.62	34.97	3.94	40.90	74.00	-33.10	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

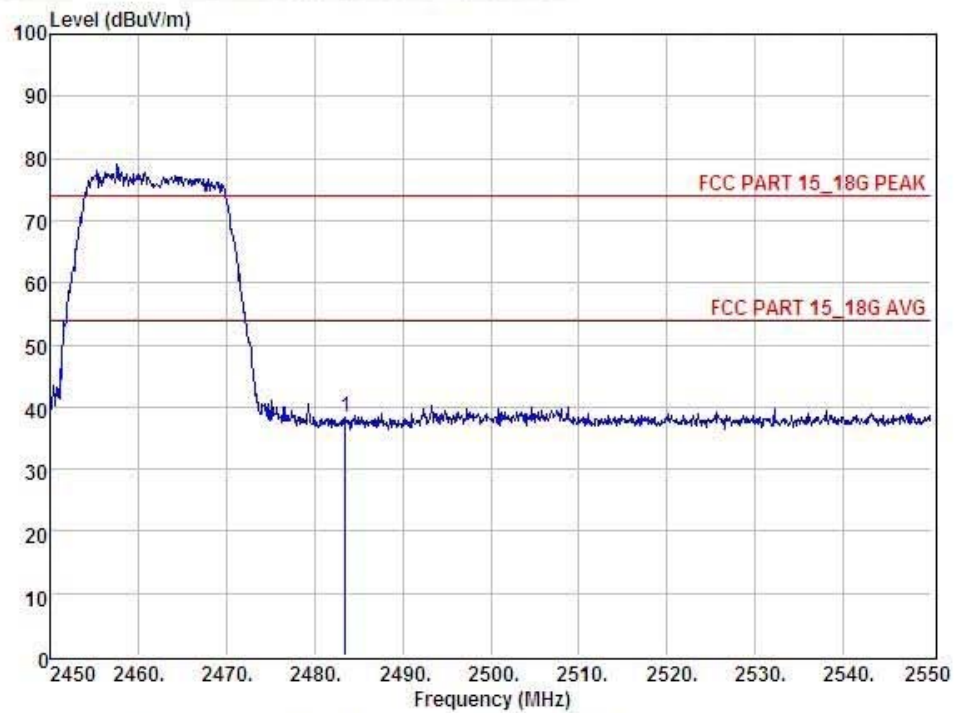


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	Level	Factor	Factor	Loss	dBuV	dBuV	dBuV	
		dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	40.49	27.62	34.97	3.92	37.06	74.00	-36.94	Peak
2	2400.00	42.42	27.62	34.97	3.94	39.01	74.00	-34.99	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



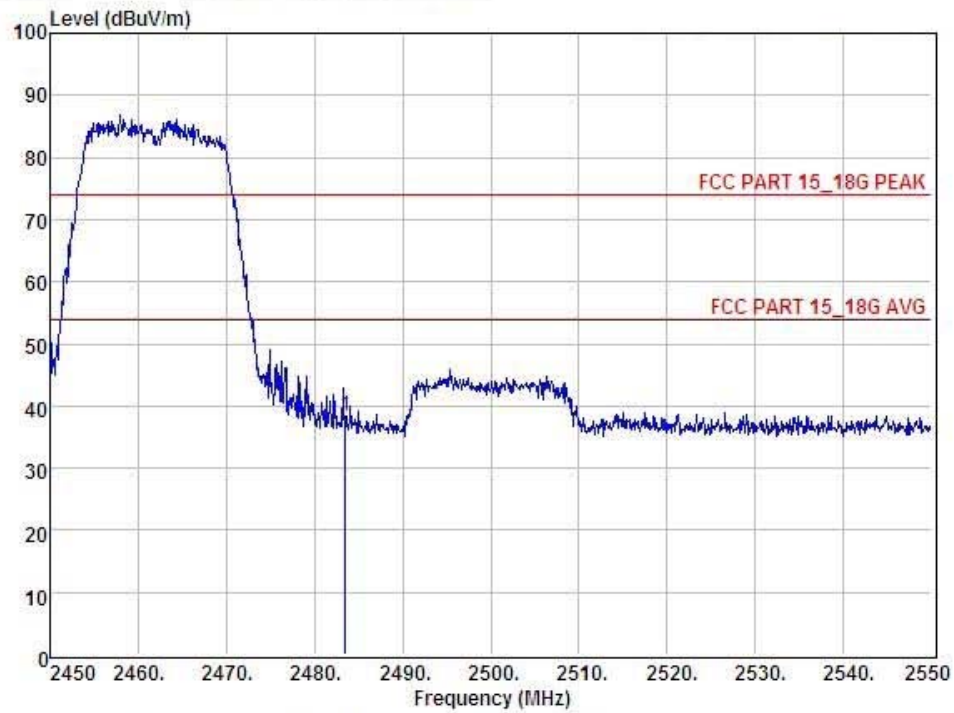
Operation Mode: TX CH High (2462MHz)



Condition		: FCC PART 15_18G PEAK 3m				POL: HORIZONTAL			
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	Loss	dBuV	dBuV	dBuV	
			dB	dB	dB				
1	2483.50	41.65	27.59	34.97	4.00	38.27	74.00	-35.73	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



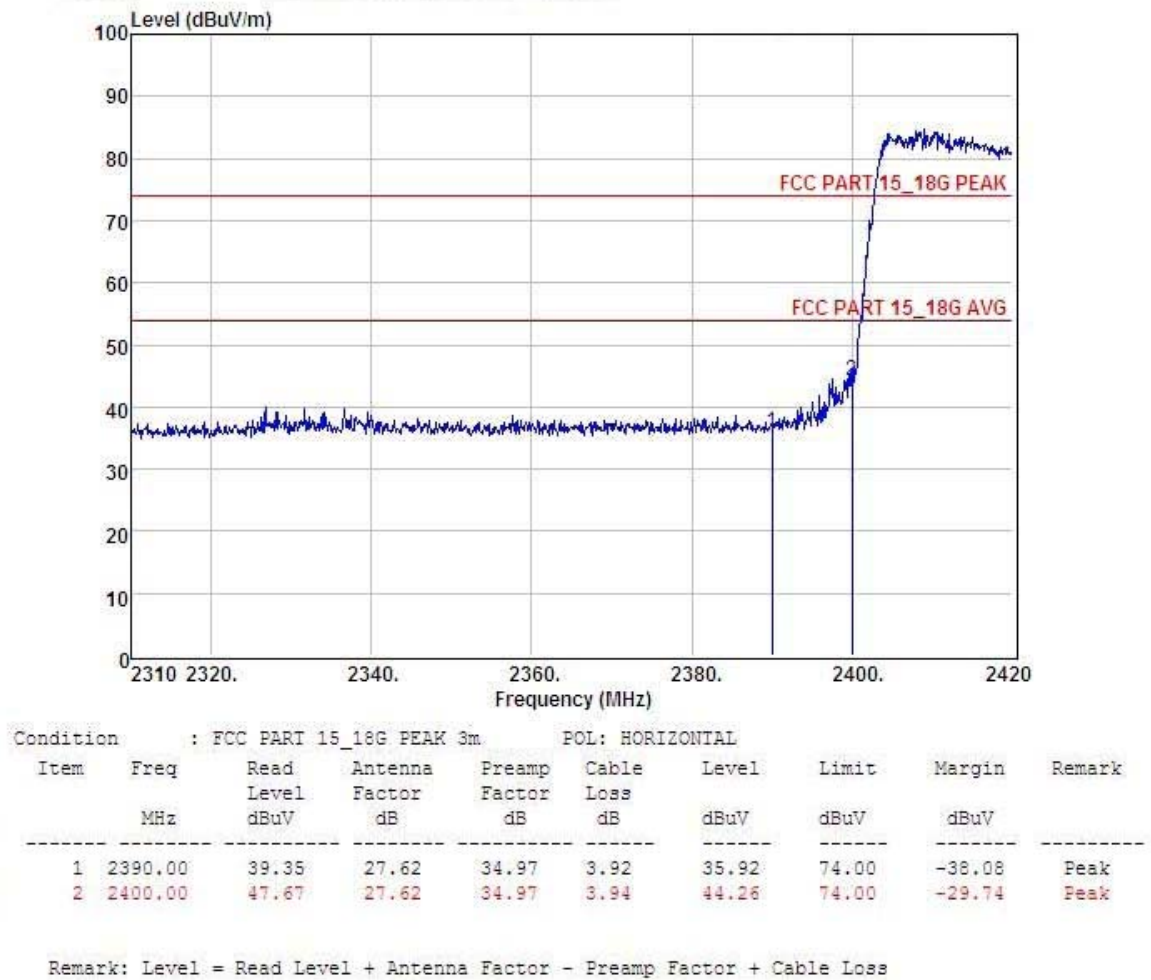


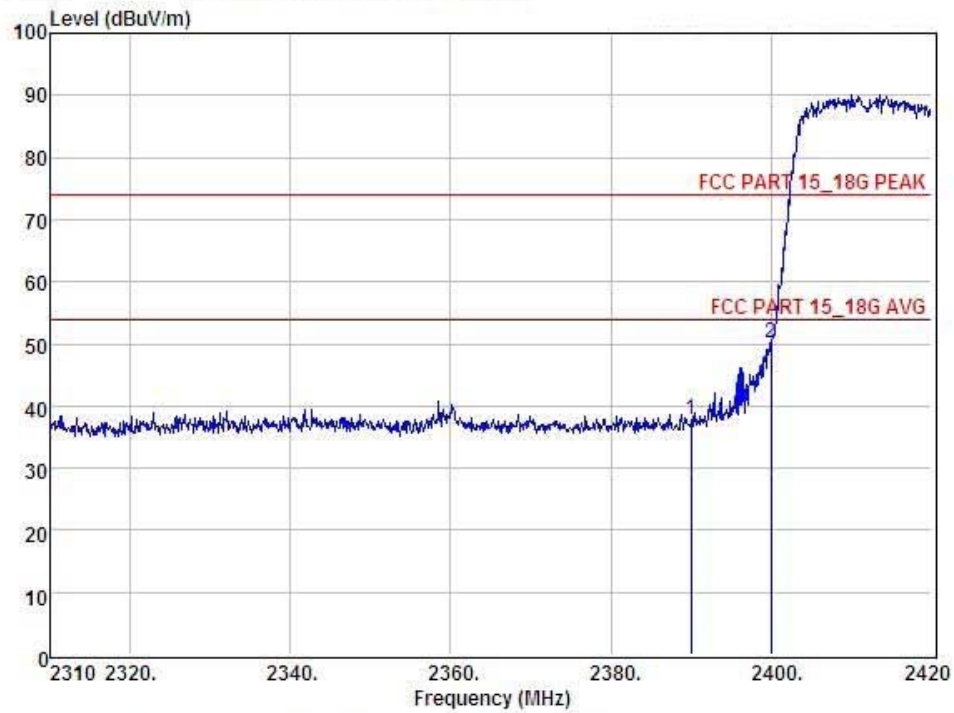
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL									
Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	41.69	27.59	34.97	4.00	38.31	74.00	-35.69	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



Operation Mode: 802.11n/H20 Mode TX CH Low (2412MHz)



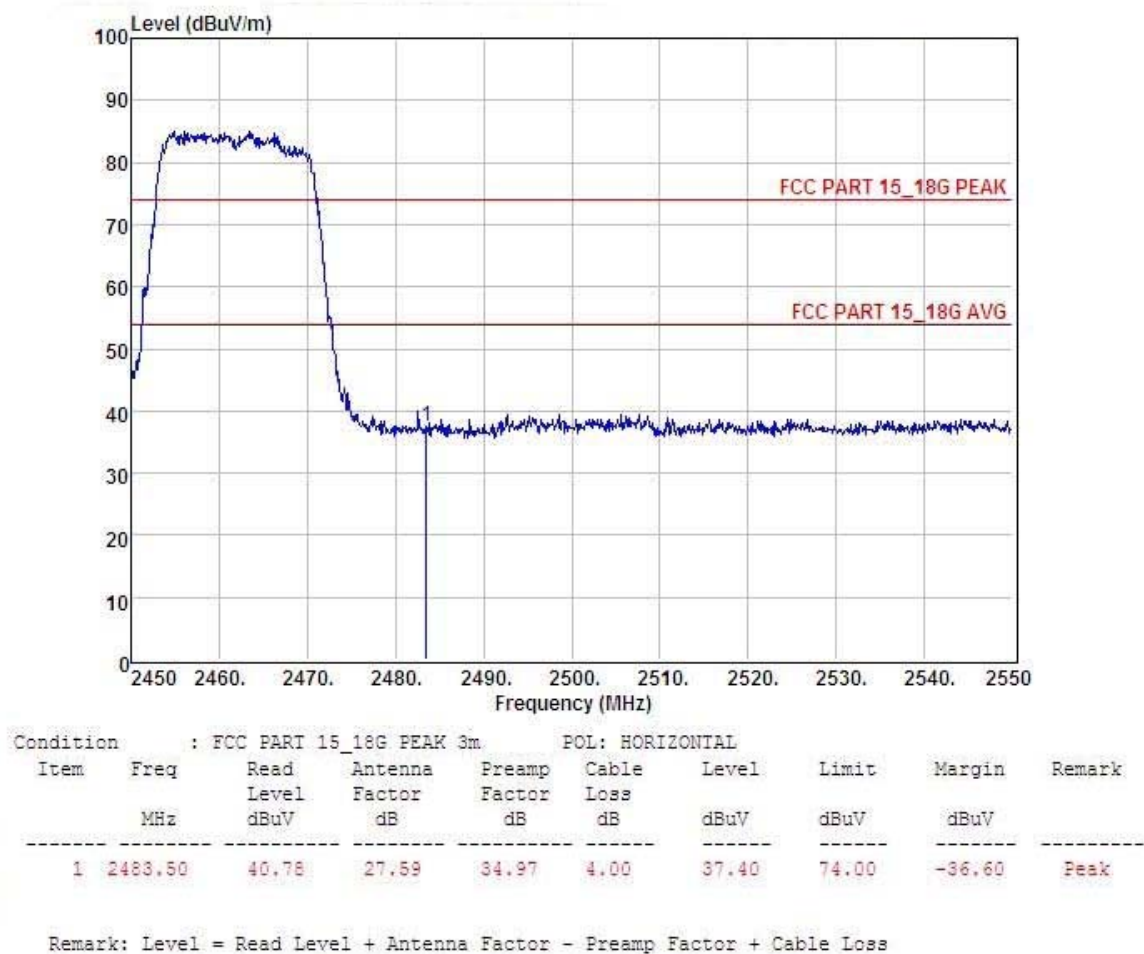


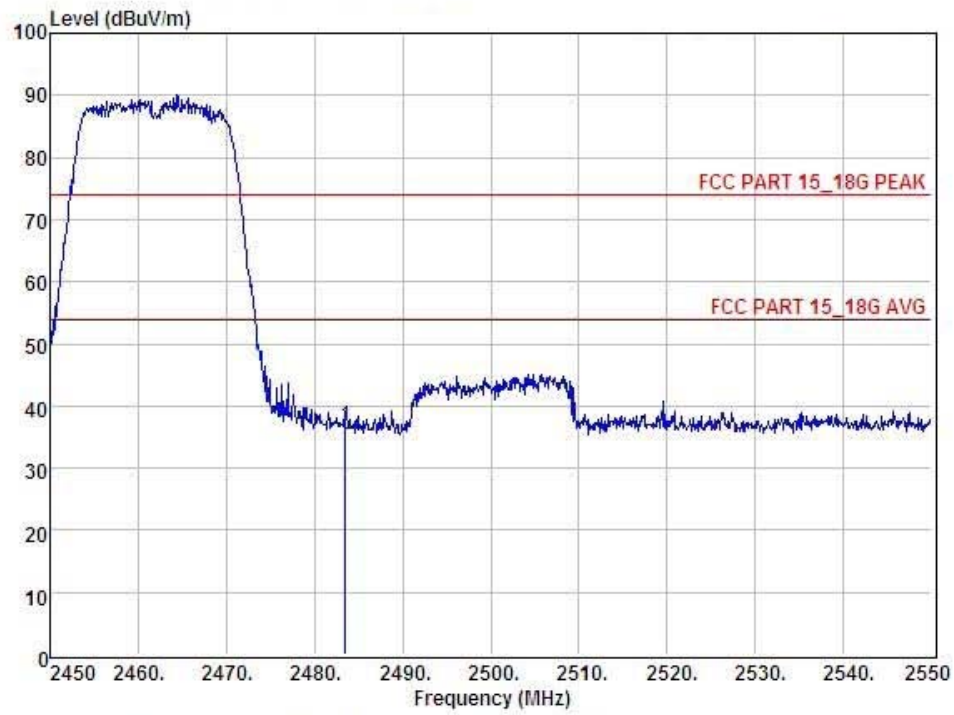
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	Level	Factor	Factor	Loss	dBuV	dBuV	dBuV	
		dBuV	dB	dB	dB				
1	2390.00	41.33	27.62	34.97	3.92	37.90	74.00	-36.10	Peak
2	2400.00	53.46	27.62	34.97	3.94	50.05	74.00	-23.95	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



Operation Mode: TX CH High (2462MHz)





Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL									
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	Level	Factor	Factor	Loss	dBuV	dBuV	dBuV	
		dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	40.09	27.59	34.97	4.00	36.71	74.00	-37.29	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



## 6 OCCUPIED BANDWIDTH MEASUREMENT

### 6.1 Test Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

### 6.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on FCC Part15 C Section 15.247: RBW= 100KHz. VBW= 300 KHz.
4. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

### 6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 6.4 Test Result

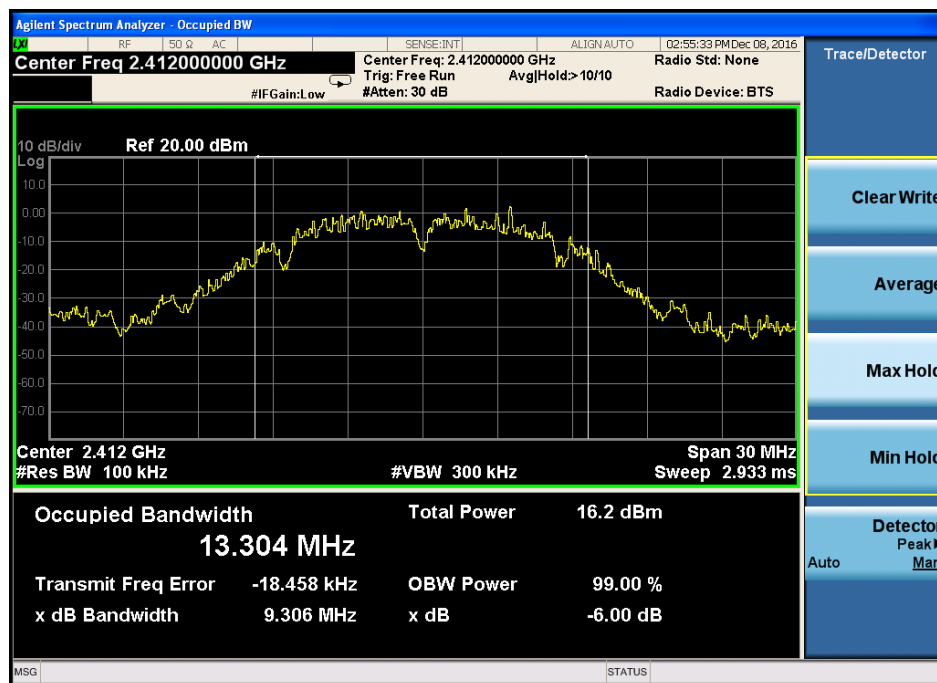
**PASS**

All the test modes completed for test.



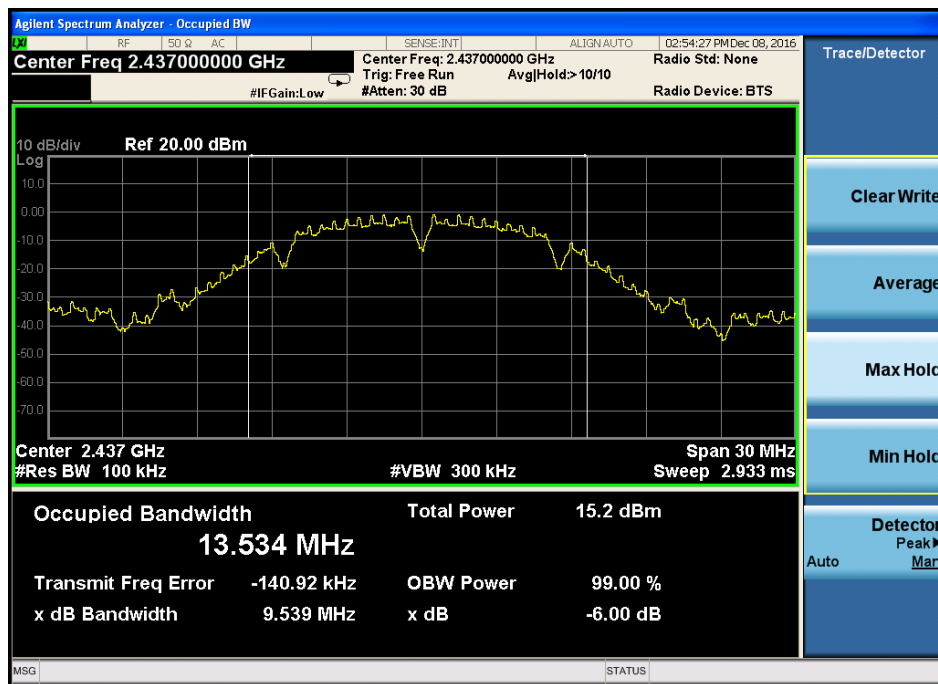
TX 802.11b Mode			
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	9.306	$\geq 500\text{KHz}$	PASS
2437 MHz	9.539	$\geq 500\text{KHz}$	PASS
2462 MHz	9.594	$\geq 500\text{KHz}$	PASS

CH: 2412MHz

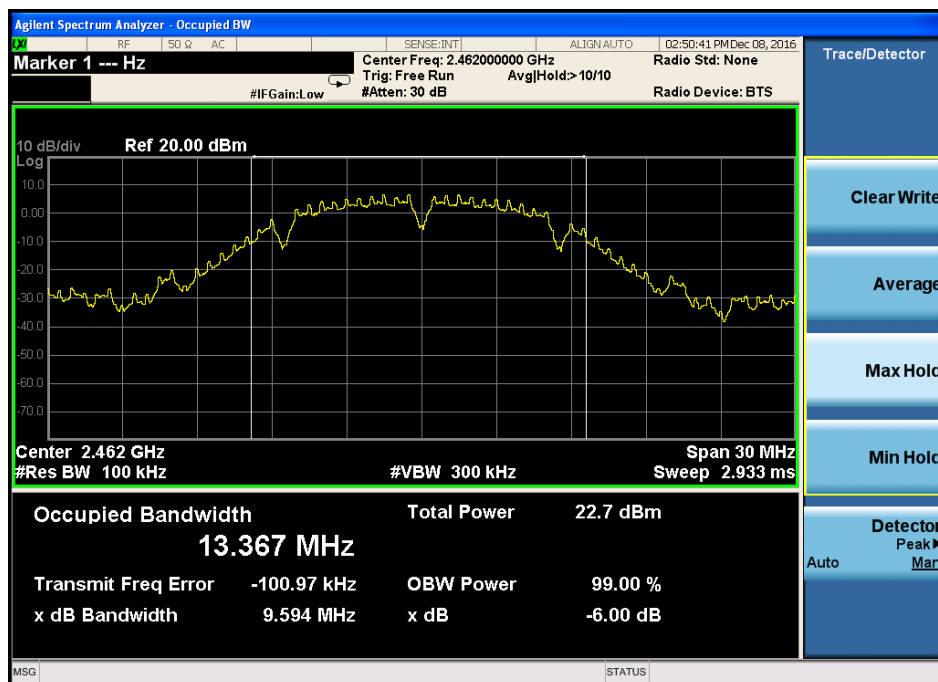




CH: 2437MHz



CH: 2462MHz

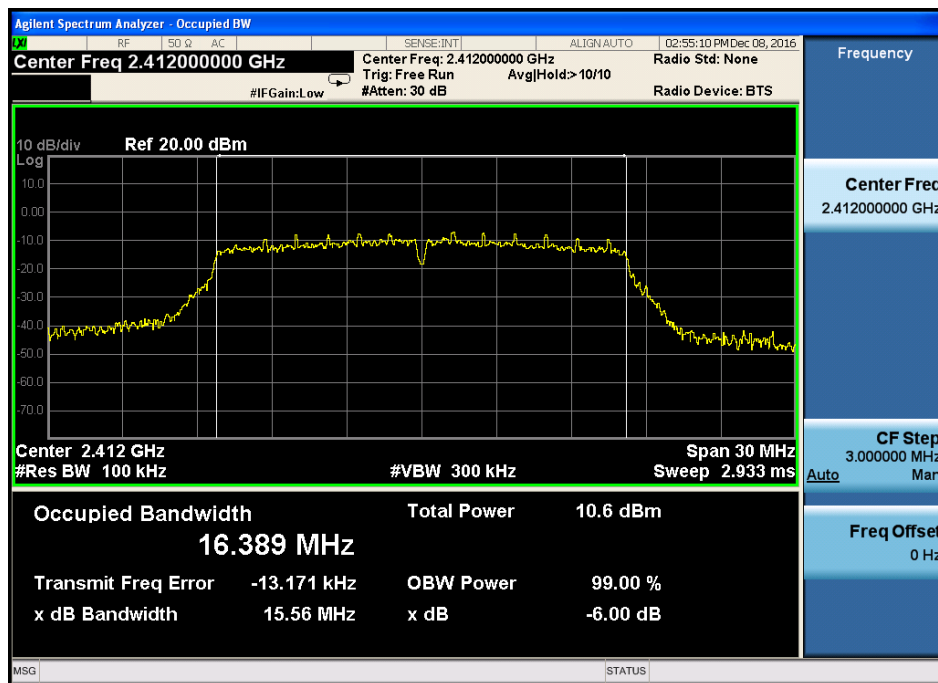






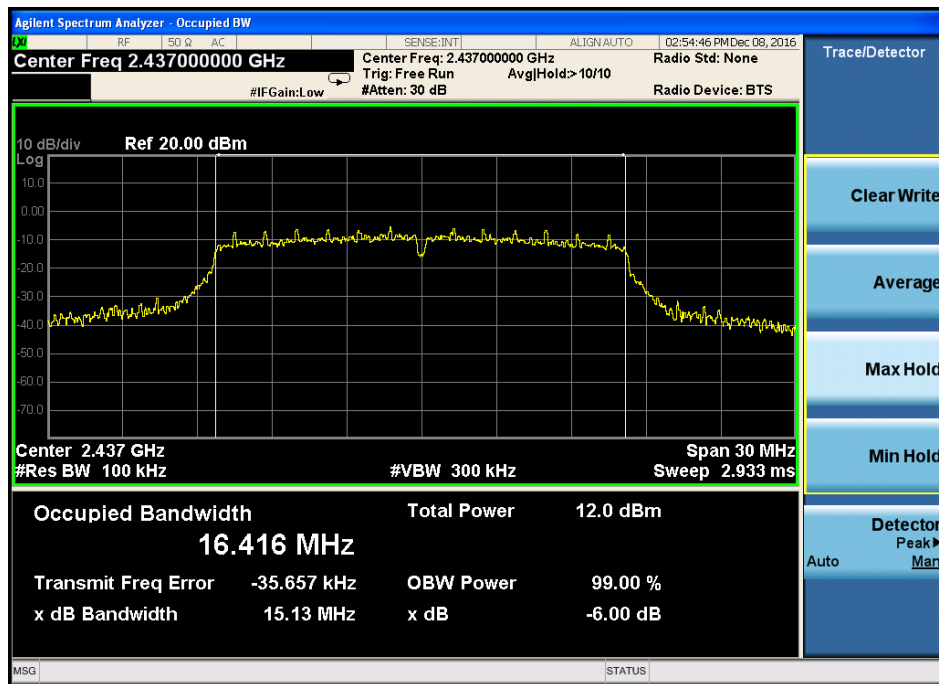
TX 802.11g Mode			
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	15.56	>=500KHz	PASS
2437 MHz	15.13	>=500KHz	PASS
2462 MHz	15.45	>=500KHz	PASS

CH: 2412MHz

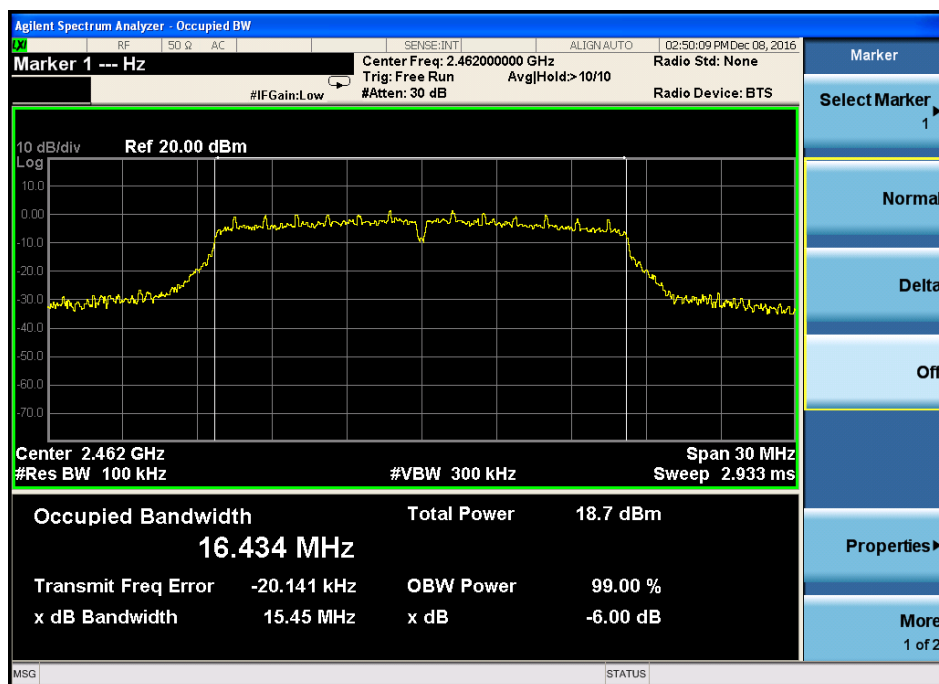




CH: 2437MHz



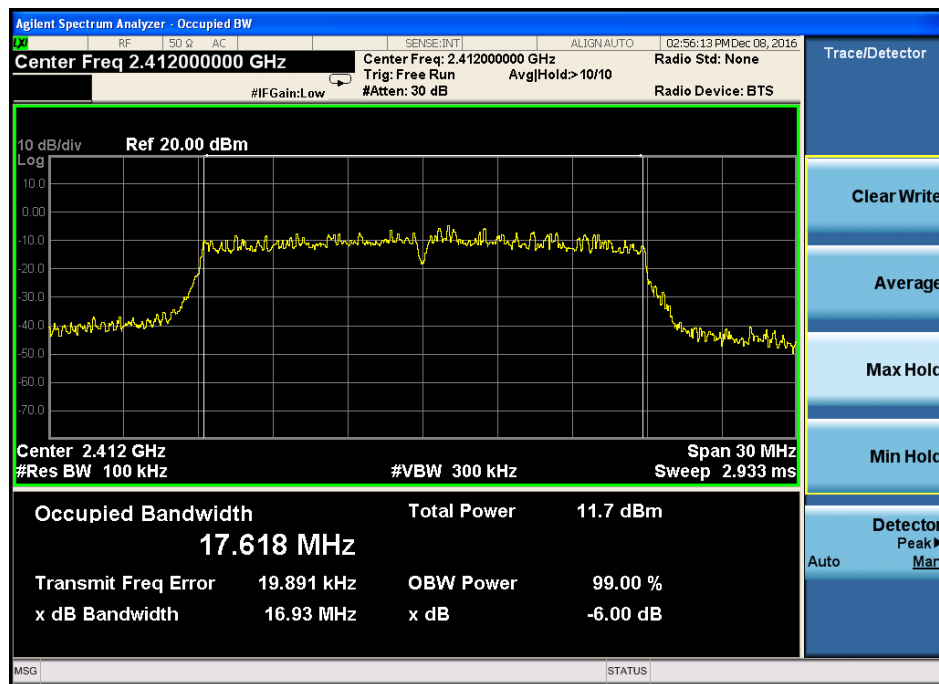
CH: 2462MHz





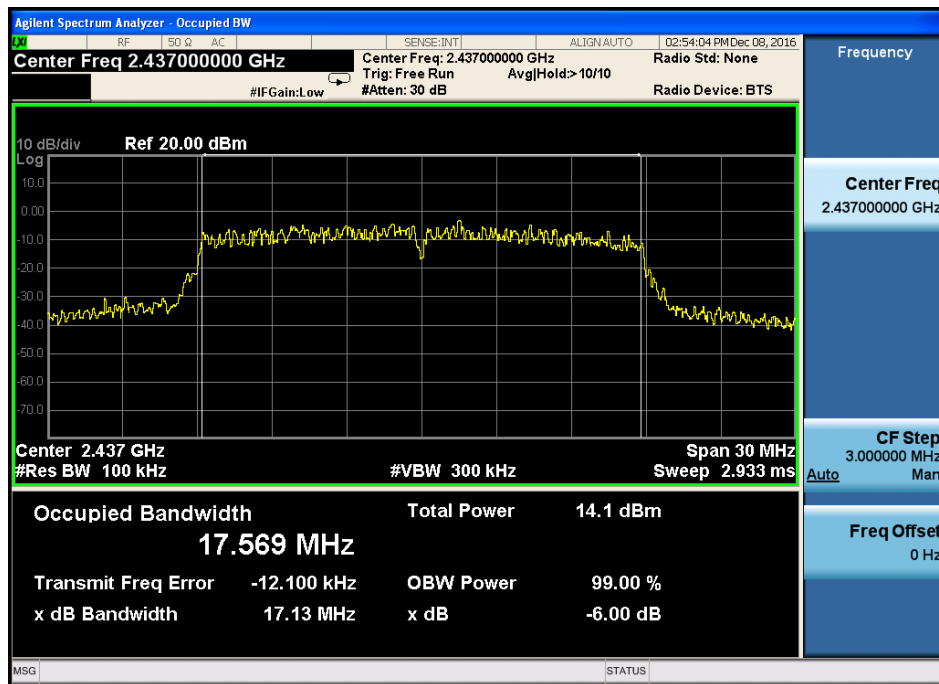
TX 802.11n/HT20 Mode			
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	16.93	>=500KHz	PASS
2437 MHz	17.13	>=500KHz	PASS
2462 MHz	16.91	>=500KHz	PASS

CH: 2412MHz

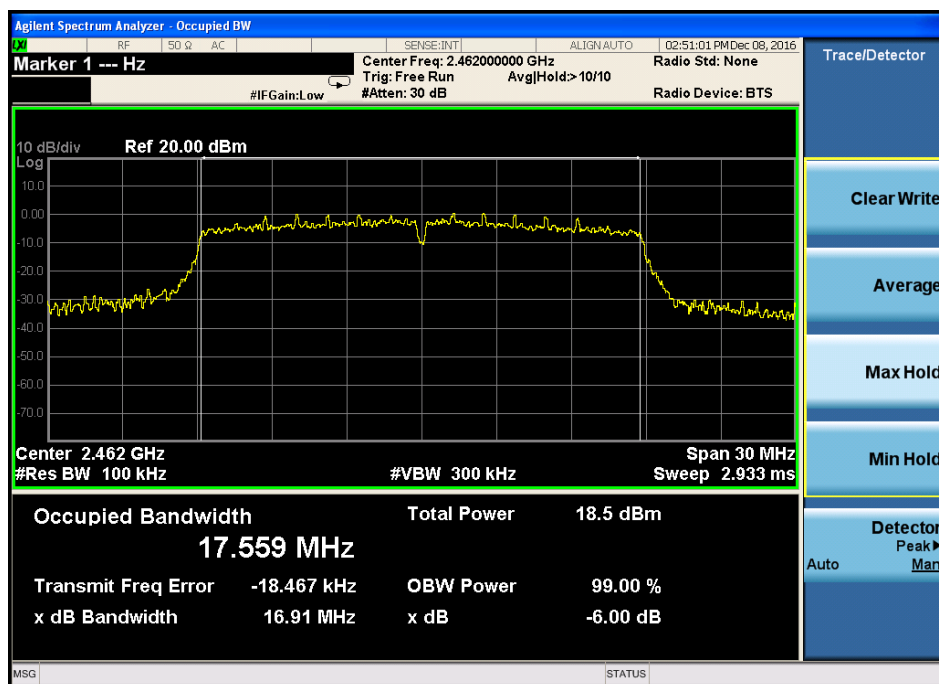




CH: 2437MHz



CH: 2462MHz





## 7 POWER SPECTRAL DENSITY TEST

### 7.1 Test Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

### 7.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on FCC Part15 C Section 15.247: RBW= 3KHz. VBW= 10 KHz, Span=3MHz.
4. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

### 7.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 7.4 Test Result

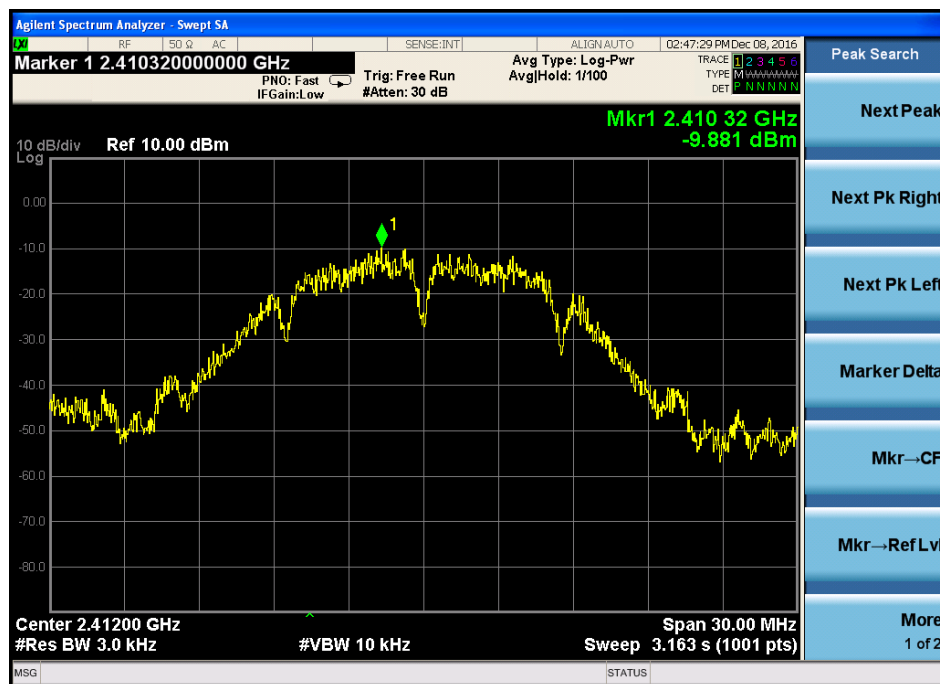
**PASS**

All the test modes completed for test.



TX 802.11b Mode			
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-9.881	8	PASS
2437 MHz	-8.692	8	PASS
2462 MHz	-8.563	8	PASS

CH: 2412MHz

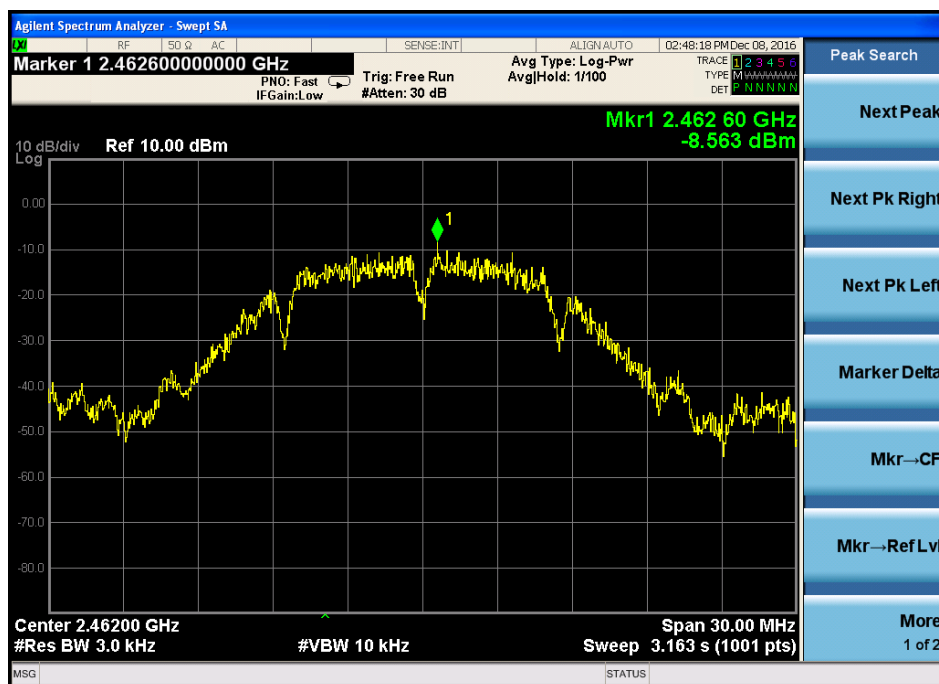




CH: 2437MHz



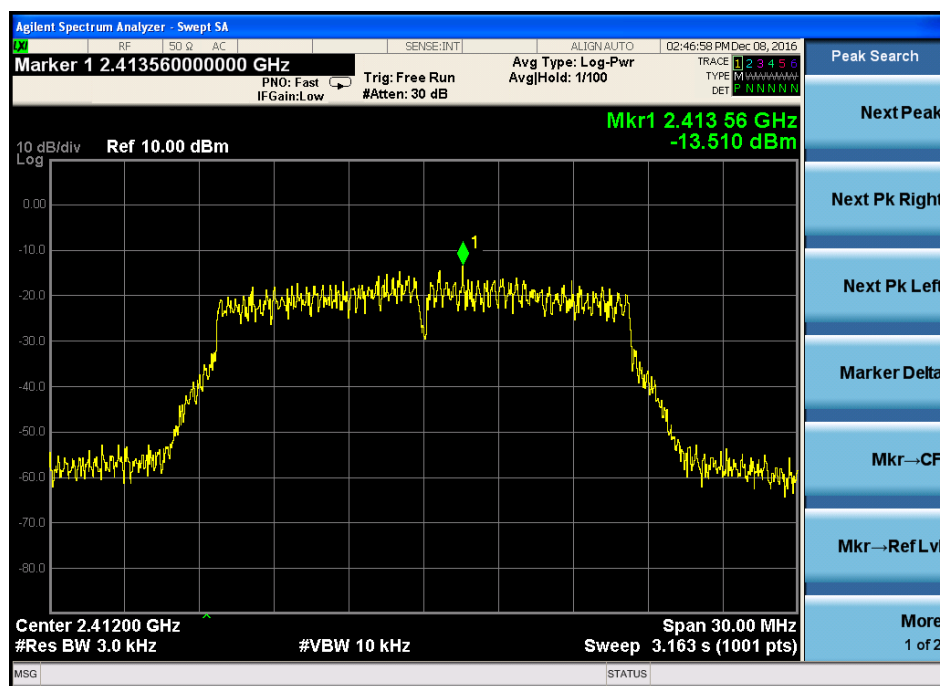
CH: 2462MHz





TX 802.11g Mode			
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-13.510	8	PASS
2437 MHz	-12.361	8	PASS
2462 MHz	-12.765	8	PASS

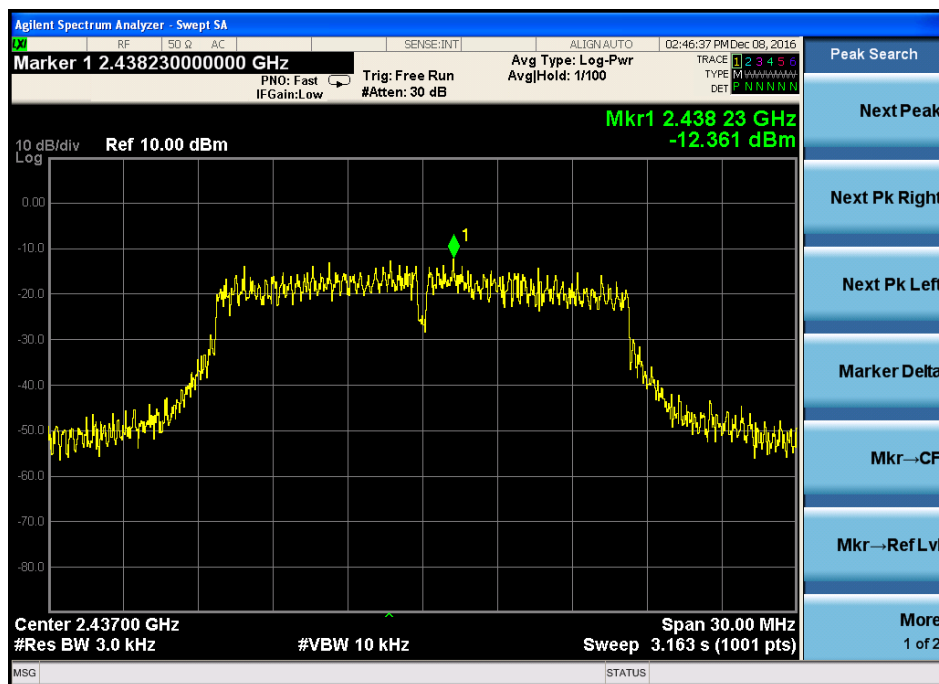
CH: 2412MHz



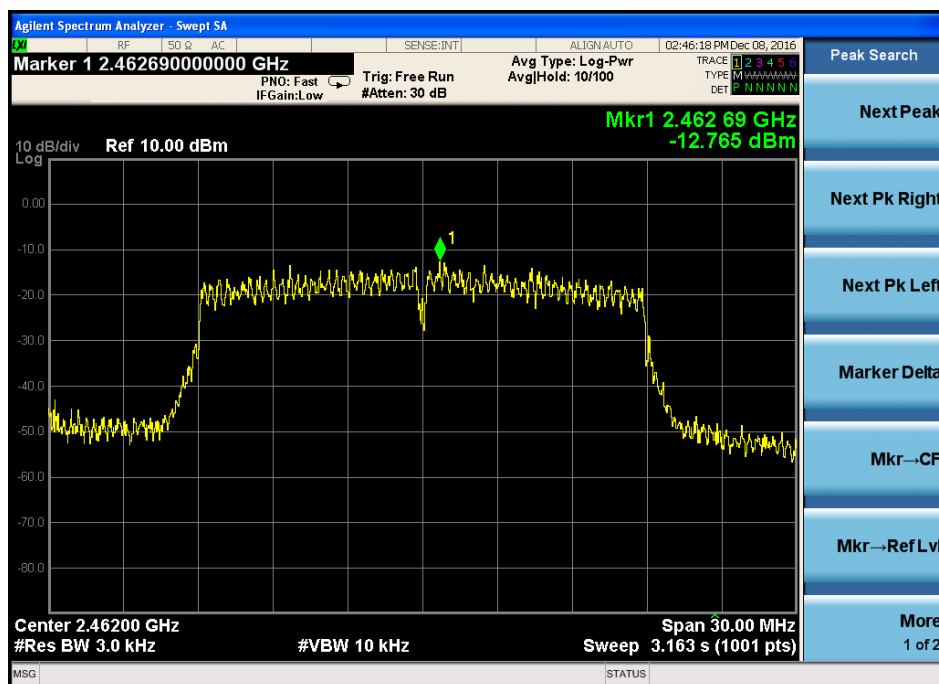




CH: 2437MHz



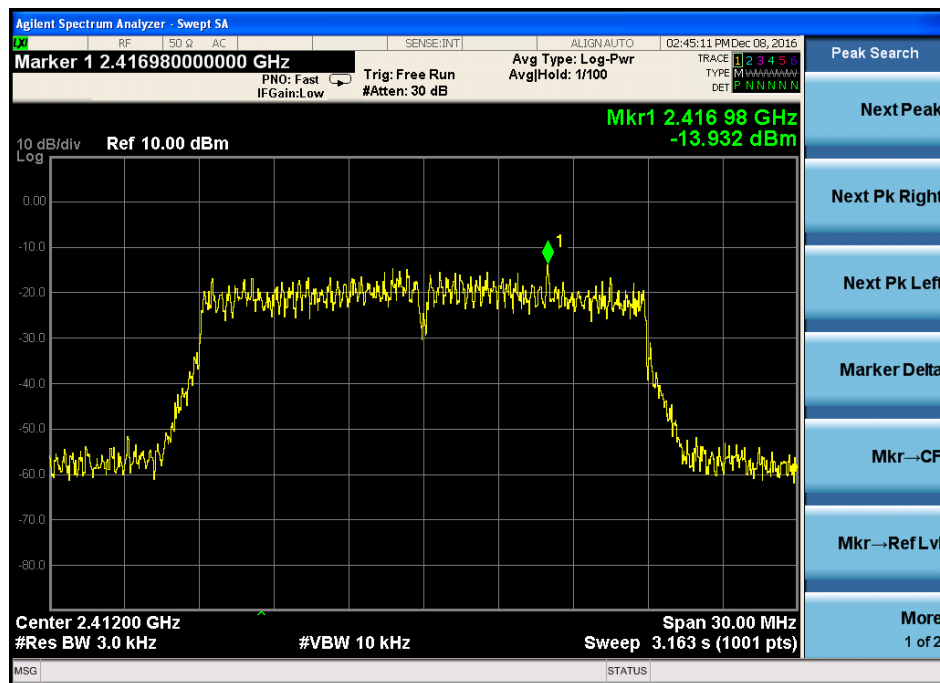
CH: 2462MHz





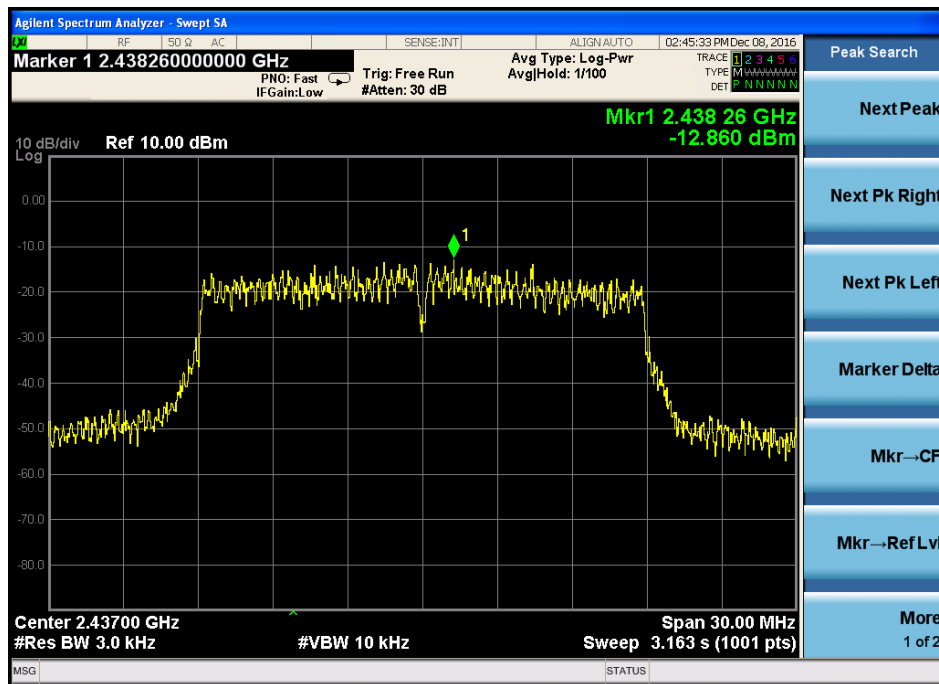
TX 802.11n/HT20 Mode			
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-13.932	8	PASS
2437 MHz	-12.860	8	PASS
2462 MHz	-13.522	8	PASS

CH: 2412MHz

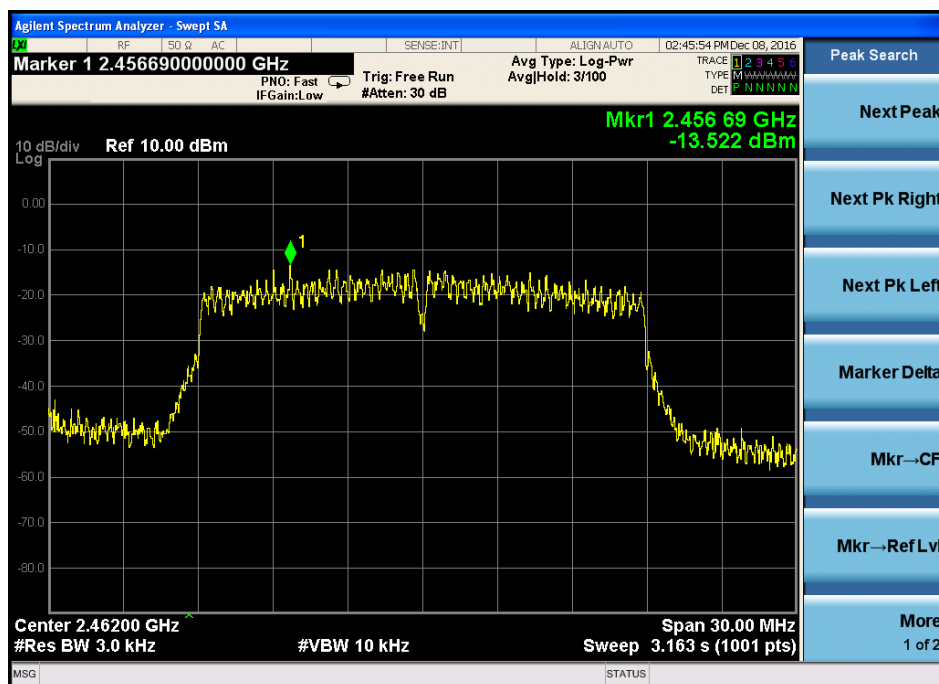




CH: 2437MHz



CH: 2462MHz





## 8 PEAK OUTPUT POWER TEST

### 8.1 Test Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

### 8.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The EUT was directly connected to the Power meter.

### 8.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 8.4 Test Result

**PASS**

All the test modes completed for test.

TX 802.11b Mode			
Test	Frequency	Maximum Peak Conducted Output Power	LIMIT
Channe	(MHz)	(dBm)	dBm
CH01	2412	8.26	30
CH06	2437	8.14	30
CH11	2462	8.07	30
TX 802.11g Mode			
CH01	2412	7.95	30
CH06	2437	7.86	30
CH11	2462	7.75	30
TX 802.11n20 Mode			
CH01	2412	7.82	30
CH06	2437	7.74	30
CH11	2462	7.79	30



## 9 CONDUCTED EMISSION TEST

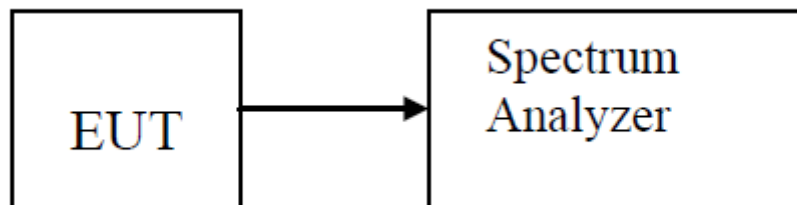
### 9.1 Test Limit

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.

### 9.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as TX operation and connect directly to the spectrum analyzer.
3. Set spectrum analyzer RBW= 100KHz. VBW= 100 KHz
4. Set detected by the spectrum analyser with peak detector.

### 9.3 Test Setup



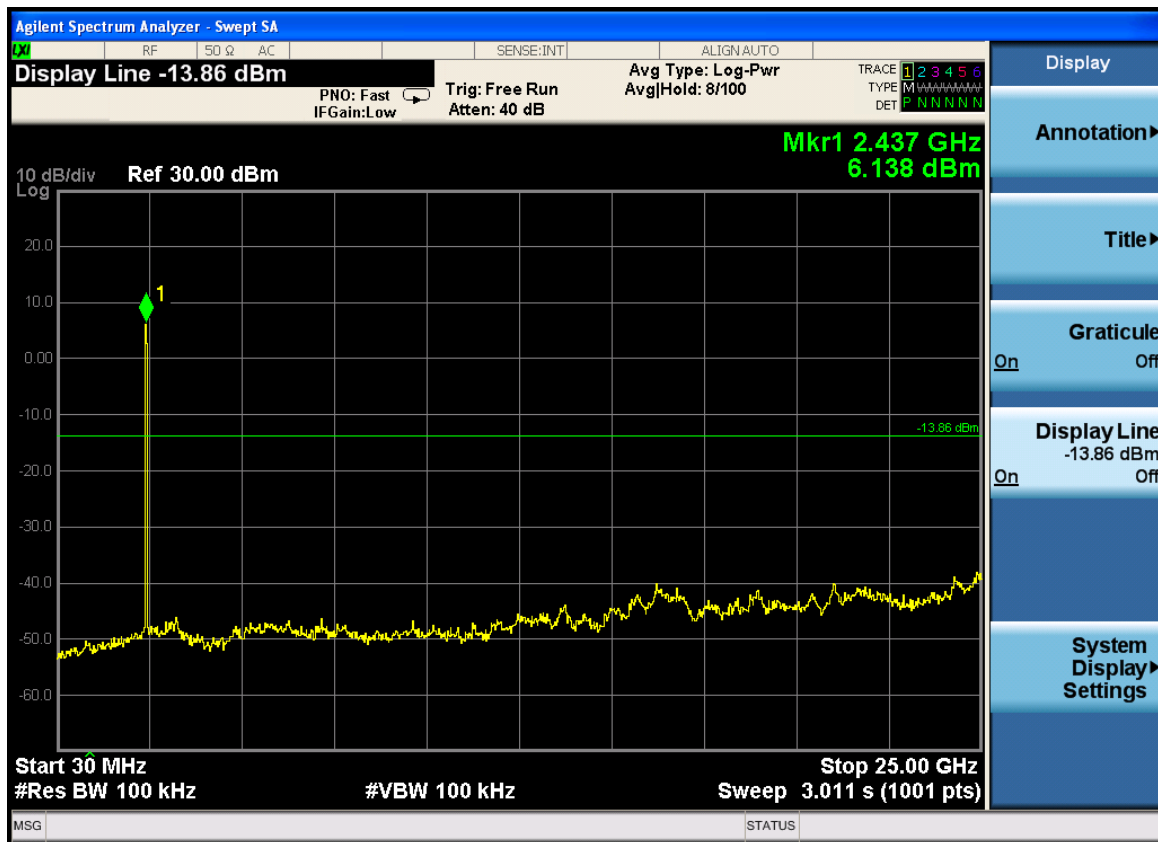
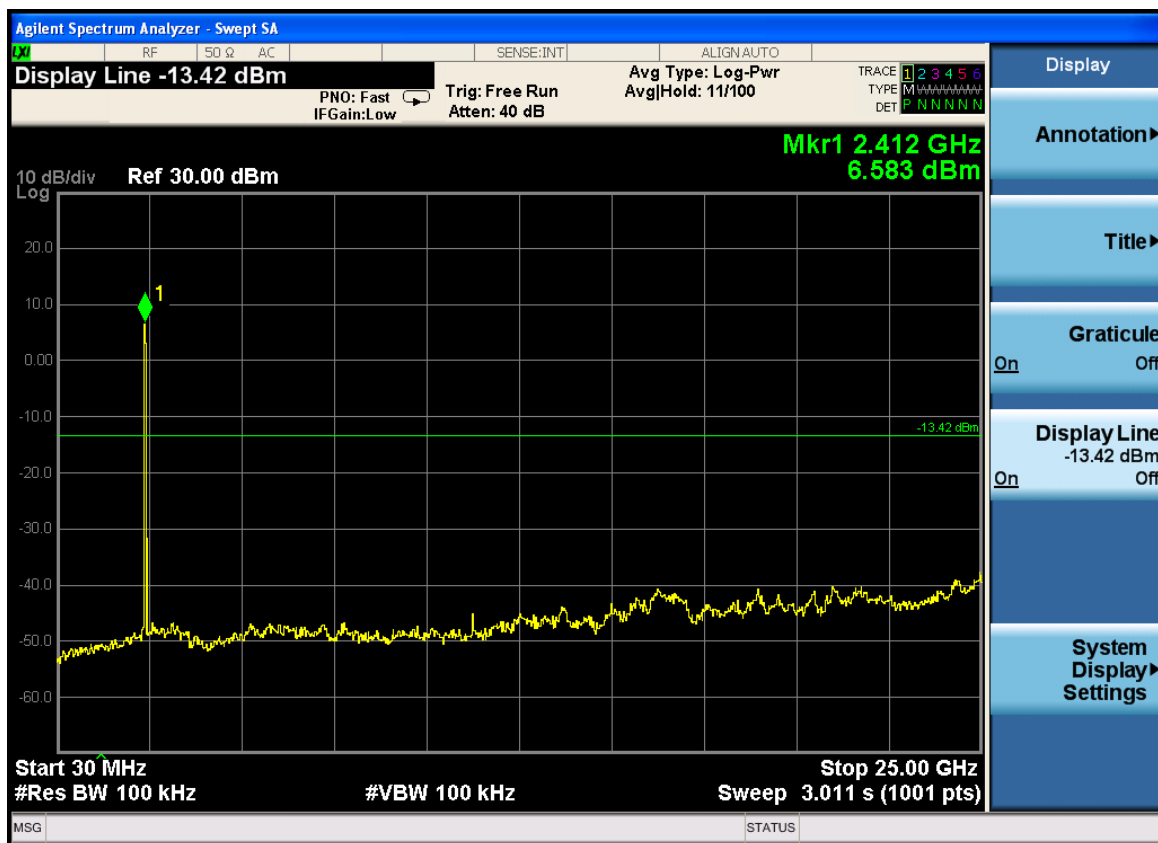
### 7.4 Test Result

**PASS**

All the test modes completed for test.

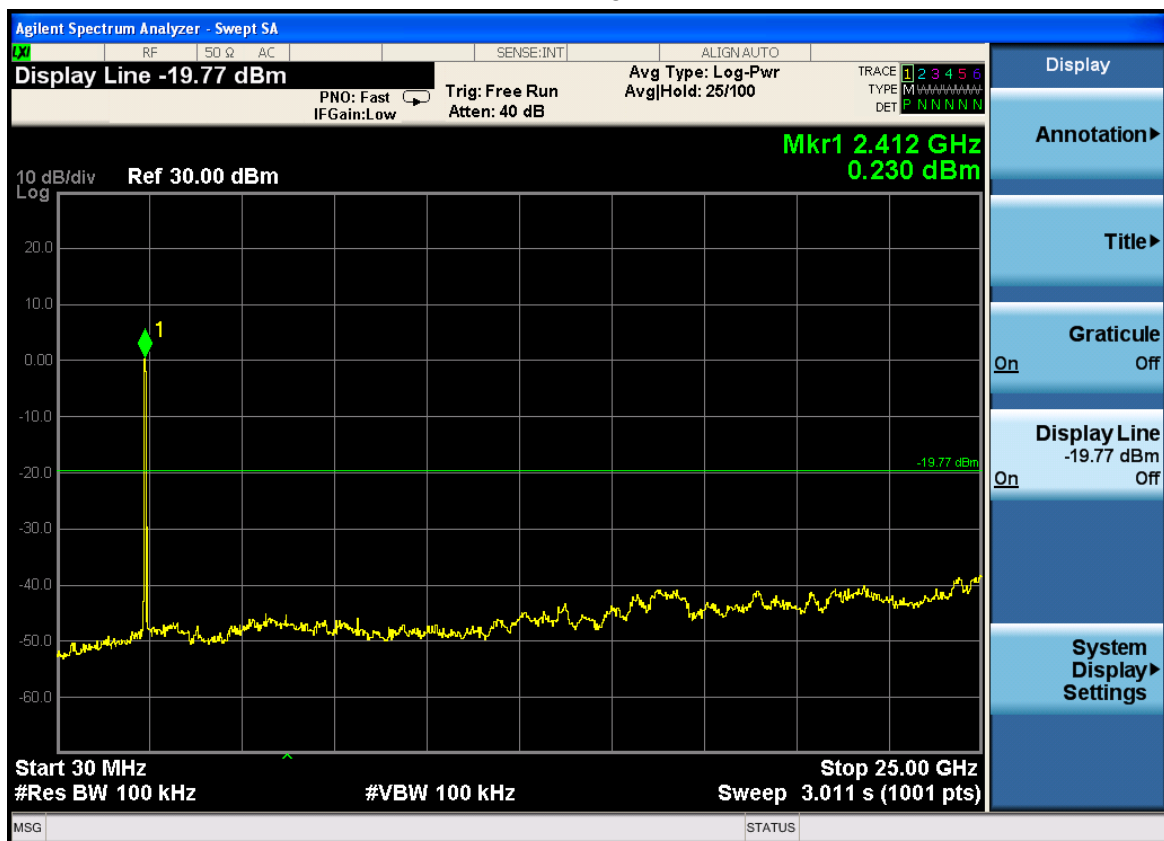


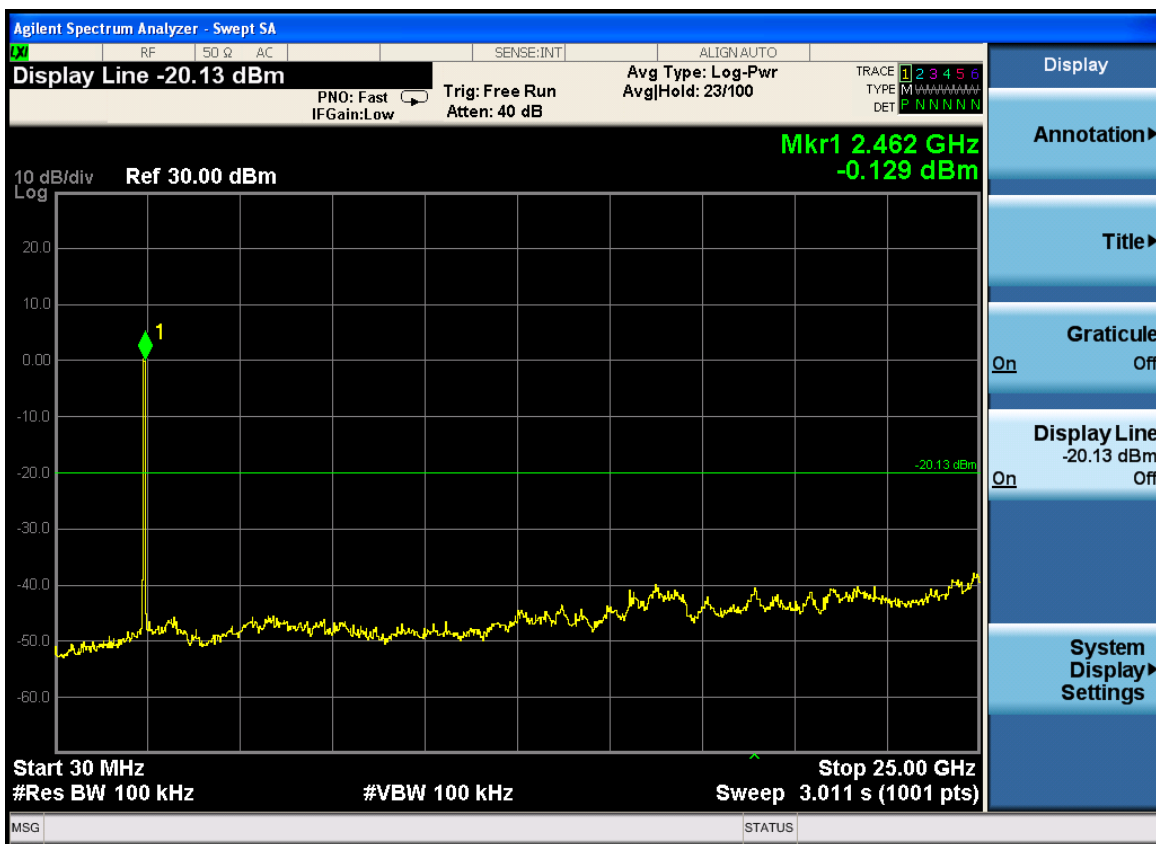
## TX 802.11b Mode





## TX 802.11g Mode

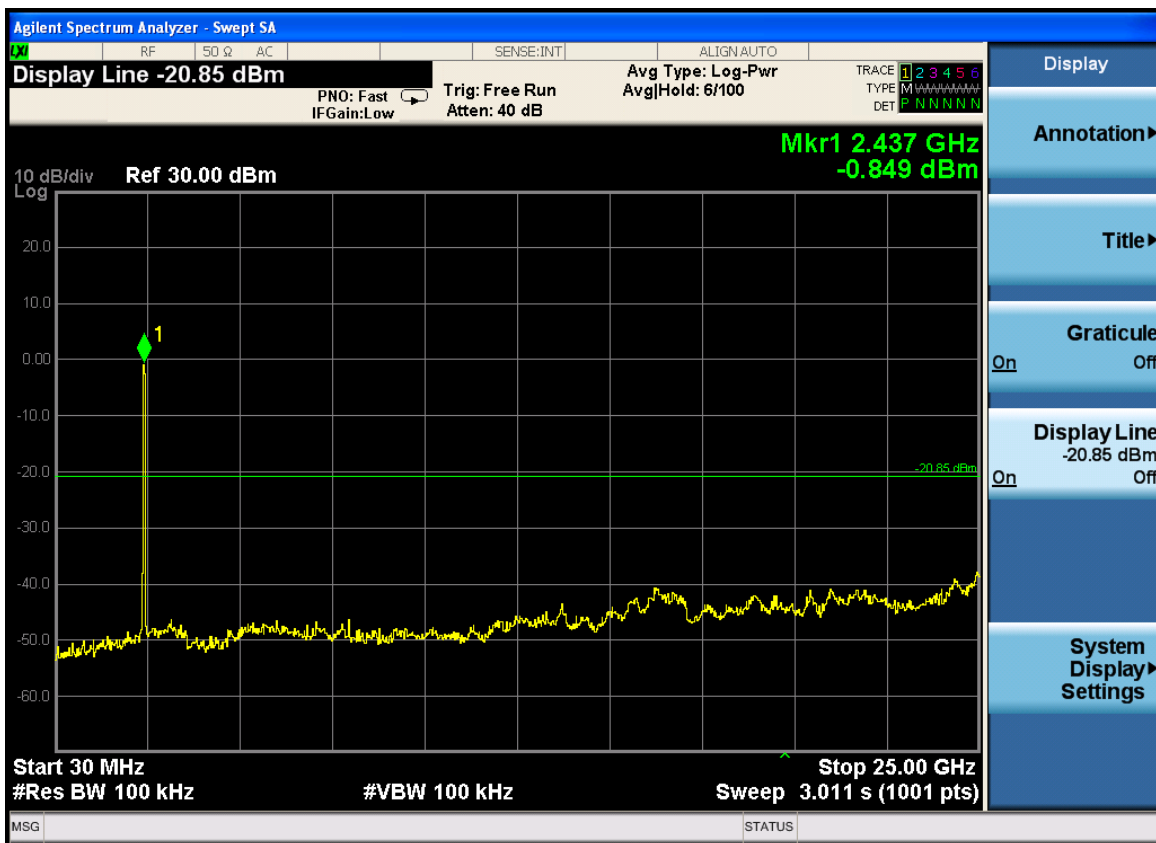
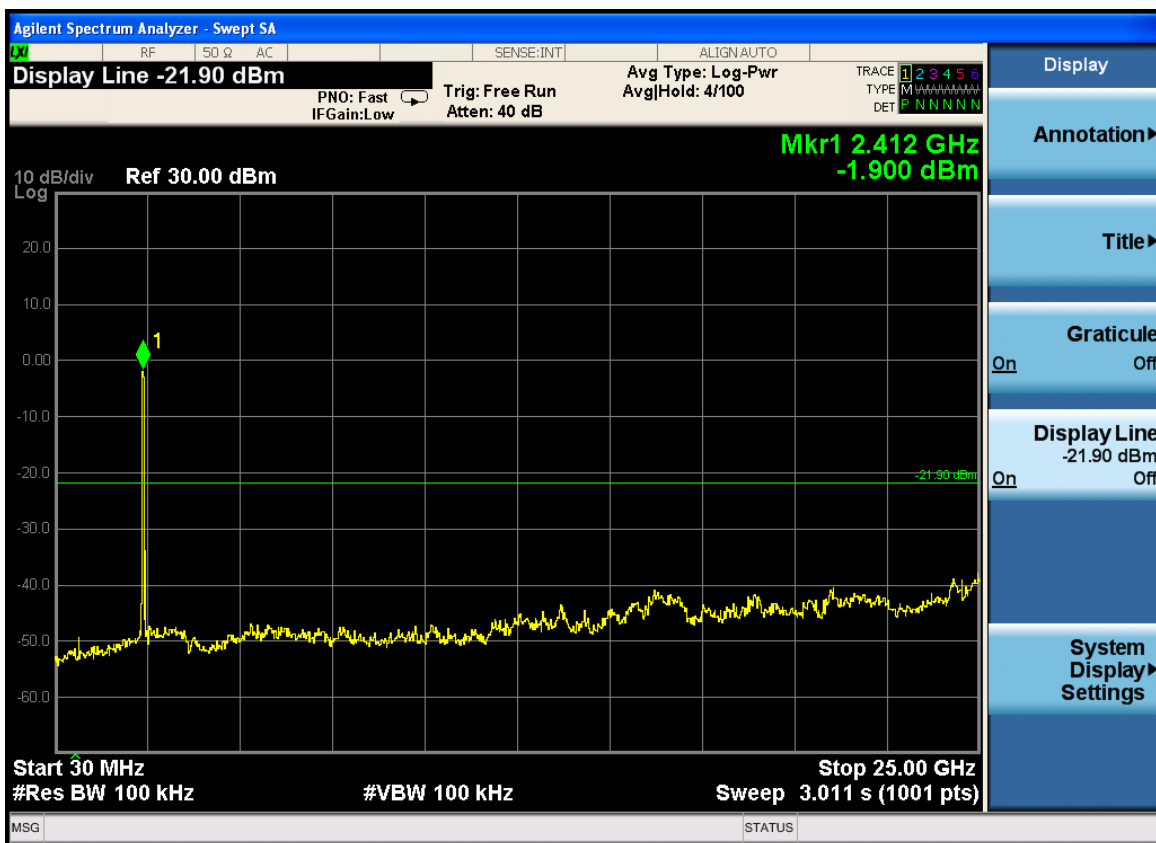


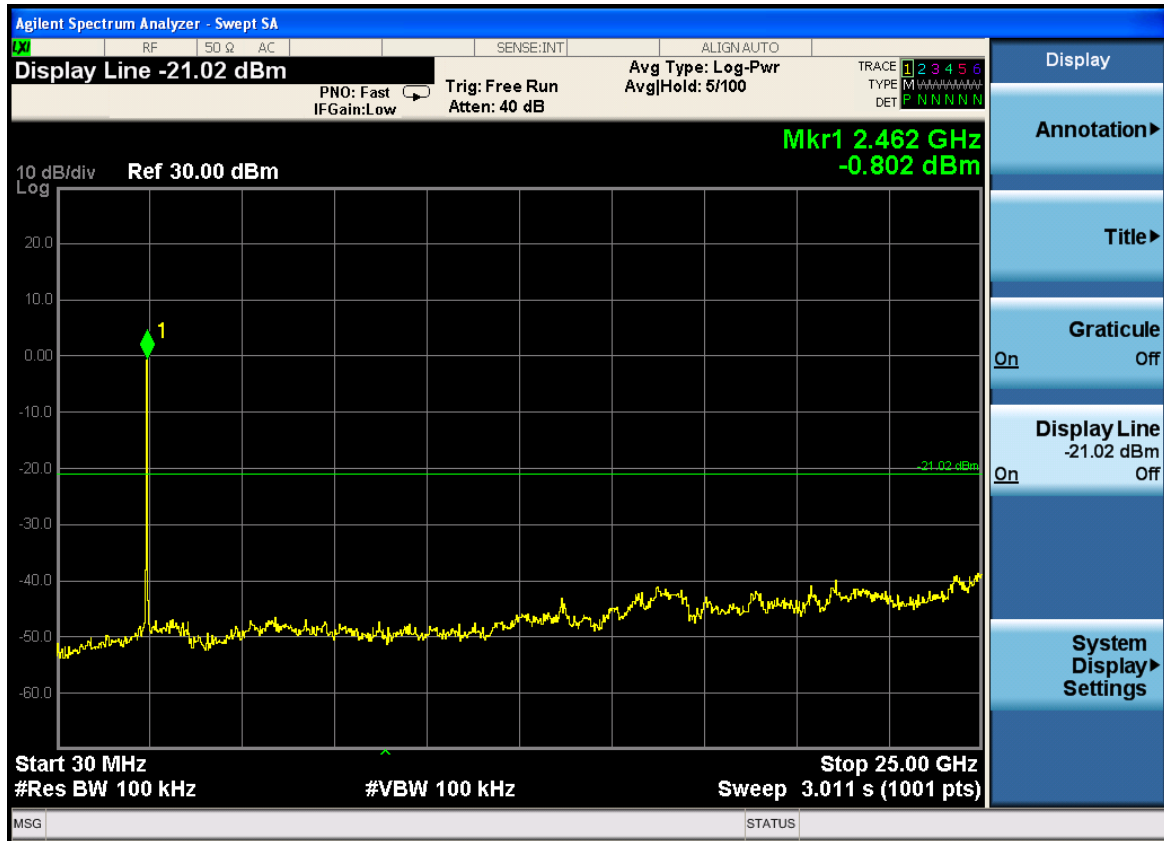






## TX 802.11n/HT20 Mode





## 10 ANTENNA REQUIREMENT

### Standard Applicable

For intentional device, according to FCC 47 CFR 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. And according to FCC 47 CFR Section 15.249, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

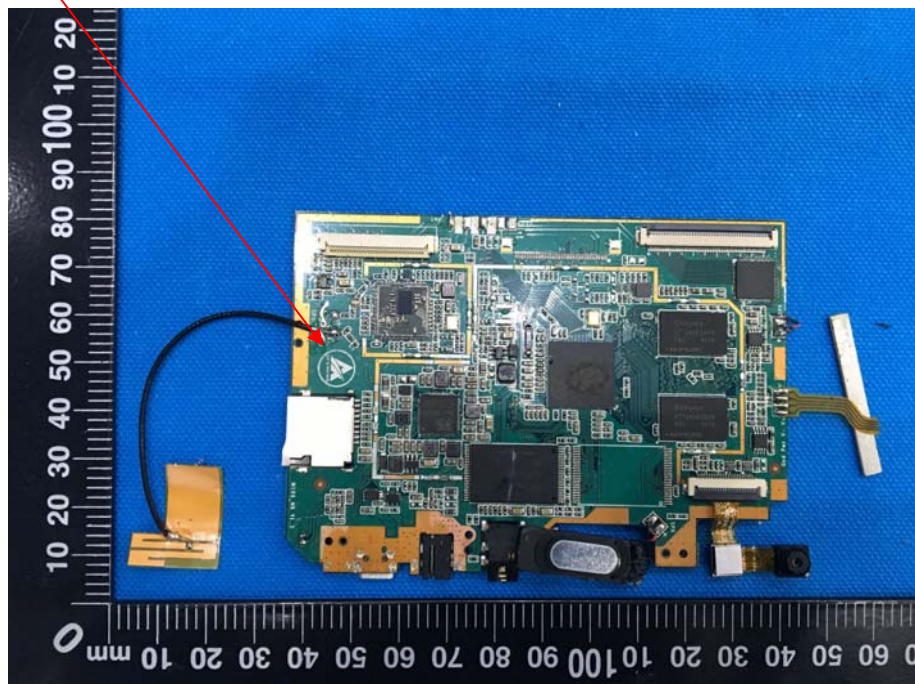
### Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

### Antenna Connected Construction

The antenna used in this product is a Integral Antenna, The directional gains of antenna used for transmitting is 0dBi.

### ANTENNA



## 11 PHOTOGRAPH OF TEST

### 11.1 Radiated Emission





## 11.2 Conducted Emission

