

# **FCC/IC Test Report**

For

## **Blink IQ 200**

**Brand** : blink  
**Model Number** : IQW2-80U-M1-R2-N-25/ IQW2-32U-M1-R2-N-25/  
IQW2-00U-M1-R2-N-00/ IQW2-80U-W1-N1-N-25  
**FCC ID** : PPQIQW2  
**IC** : 4491A-IQW2  
**Report Number** : RF-L015-1603-364  
**Date of Receipt** : April 14 , 2016  
**Date of Report** : August 18, 2016

Prepared for

### **LITE-ON TECHNOLOGY CORP.**

5F, No.90, Jian 1st Rd., Zhonghe Dist., New Taipei City 235, Taiwan

Prepared by



### **Central Research Technology Co. EMC Test Laboratory**

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# Verification of Compliance

**Equipment under Test** : Blink IQ 200  
**Model No.** : IQW2-80U-M1-R2-N-25/ IQW2-32U-M1-R2-N-25/  
IQW2-00U-M1-R2-N-00/ IQW2-80U-W1-N1-N-25  
**FCC ID** : PPQIQW2  
**IC** : 4491A-IQW2  
**Manufacturer** : LITE-ON TECHNOLOGY CORP.  
**Applicant** : LITE-ON TECHNOLOGY CORP.  
**Address** : 5F, No.90, Jian 1st Rd., Zhonghe Dist., New Taipei City 235,  
Taiwan  
**Applicable Standards** : 47 CFR part 15, Subpart C  
ANSI 63.10:2013  
RSS-247 ISSUE 1  
RSS-Gen ISSUE 4  
**Date of Testing** : April 15~May 11, 2016  
**Deviation** : N/A  
**Condition of Test Sample** : Mass Production

We, **Central Research Technology Co.**, hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

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# 1 General Description

## 1.1 General Description of EUT

Equipment under Test : Blink IQ 200

Model No. : IQW2-80U-M1-R2-N-25/ IQW2-32U-M1-R2-N-25/  
IQW2-00U-M1-R2-N-00/ IQW2-80U-W1-N1-N-25

Power in : 220Vac/60Hz

Test Voltage : 220Vac/60Hz

Manufacturer : LITE-ON TECHNOLOGY CORP.

Channel Numbers : 11 for 20MHz bandwidth; 9 for 40MHz bandwidth

Frequency Range : 2412~2462MHz

Modular Function : IEEE 802.11b: DSSS  
IEEE 802.11g/11n: OFDM

Antenna Spec : Antenna Gain : 2.43dBi

Function Description :

The EUT is used to transmit and receive data both. Please refer to the user’s manual for the details. Perform the communication functions of EUT continuously by executing the test program supplied by manufacturer.

Model	Product Type	Amp Rating
IQW2-80U-M1-R2-N-25	IQ 200 Advanced w/LCD	80A
IQW2-32U-M1-R2-N-25	IQ 200 Advanced w/LCD	32A
IQW2-00U-M1-R2-N-00	IQ 200 Kiosk w/LCD	N/A
IQW2-80U-W1-N1-N-25	IQ 200 Smart	80A

The IQW2-80U-M1-R2-N-25 was adopted to perform all tests. It was taken as the representative configuration for testing and its data are recorded in the present document.

Software and Hardware version:

1	Product SW/HW version	V0.99.25/ Blink IQ 200 series
2	Radio SW/HW version	V0.99.25/ Blink IQ 200 series
3	Test SW Version	N/A
4	RF power setting in TEST SW	N/A

**1.2 Test Methodology**

Mode	Low Channel (MHz)	Middle Channel (MHz)	Hingh Channel (MHz)
802.11b/g	2412	2437	2462
802.11n 20HT	2412	2437	2462
802.11n 40HT	2422	2437	2452

According to the preliminary test from peak output power, it was found the data rate as below list for the worst test result. It was taken as the representative condition for test and their data are recorded in the present document.

Mode	Frequency (MHz)	Data Rate (Mbps)
802.11b	2412	1
802.11g	2412	6
802.11n 20HT	2412	Long GI MSC0
802.11n 40HT	2422	Short GI MSC0

**1.3 Applied standards**

(1) Conduction Emission Requirement

For intentional device, according to FCC 15.207(a) and RSS-Gen section 8.8, line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

\* Decreases with the logarithm of the frequency.

(2) Radiated Emission Requirement

For intentional device, according to FCC 15.209 and RSS-Gen section 8.9, the general requirement of field strength of radiated emissions from intentional radiator at a distance of 3 meters shall not exceed the below table.

Frequency (MHz)	Measurement Distance (m)	Field Strength (uV/m)	Field Strength (dBuV/m)
30 – 88	3	100	40.0
88 – 216	3	150	43.5
216 – 960	3	200	46.0
960 – 1610	3	500	54.0
above 1610	3	500	54.0

Note 1- The lower limit shall apply at the transition frequency.

(3) 6dB Bandwidth

According to FCC 15.247(a)(2) and RSS-247 section 5.2(1), Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

(4) Maximun Peak Output Power

According to FCC 15.247(b)(3) and RSS-247 section 5.4(4), for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.



**(5) 100kHz Bandedge**

According to FCC 15.247(d) and RSS-247 section 5.5, 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 FCC 15.247(b)(3) and RSS-247 section 5.4(4), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in FCC 15.209(a) and RSS-Gen are not required. Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) RSS-Gen section 8.10, must also comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Geb section 8.9.

**(6) Power spectral density**

According to FCC 15.247(e) and RSS-247 section 5.2(2),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) Occupied Bandwidth**

According RSS-Gen section 6.6, when the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

(8) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (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
<sup>2</sup> 1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41			

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

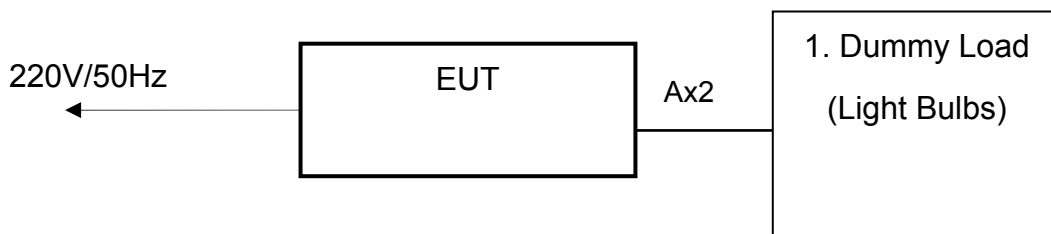
<sup>2</sup> Above 38.6

**1.4 The Support Units**

<b>No.</b>	<b>Unit</b>	<b>Model No./ Serial No.</b>	<b>Trade Name</b>	<b>Power Code</b>	<b>Supported by lab.</b>
1.	Dummy Load (Light Bulbs)	N/A	N/A	N/A	√

**1.5 Layout of Setup**

**Conducted Emission Test**



**Connecting Cables :**

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	Power Cable	3.0m					

**Other Tests**



**Connecting Cables :**

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	Power Cable	3.0m					

## 1.6 Test Capability

### Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3 and ANSI C63.10:2013.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber (23m × 14m × 9m)	Complying with the NSA requirements in documents CISPR 22 and ANSI C63.10:2013. For the radiated emission measurement.
TR1	3m fully-anechoic chamber (23m × 14m × 9m)	
TR11	3m semi-anechoic chamber (9m × 6m × 6m)	Complying with the NSA requirements in documents CISPR 22 for the radiated emission measurement.
TR13	Test Site	For the RF conducted emission measurement.
TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.
TR4	Shielding Room (5m×3m×3m)	

**Test Laboratory Competence Information**

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

<b>Certificate</b>	<b>Nation</b>	<b>Agency</b>	<b>Code</b>	<b>Mark</b>
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	USA	FCC	TW1053, TW0905, TW1104	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033, SL2-L1-E-0033	ISO/IEC 17025
Site Filing Document	Canada	IC	4699A-1,-3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-1441,G-10, C-4400, G-614, T-1334	Test facility list & NSA Data
Authorization Certificate	Germany	TUV	UA 50235497	ISO/IEC 17025
	Norway	Nemko	ELA 212	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: [www.crc-lab.com](http://www.crc-lab.com)

**1.7 Measurement Uncertainty**

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than  $U_{cispr}$  in table 1 of CISPR 16-4-2.

Test Item	Measurement Uncertainty	
Radiated Emission: (30MHz~200MHz)	Horizontal 4.00dB ; Vertical 4.67dB	
Radiated Emission: (200MHz~1GHz)	Horizontal 4.22dB ; Vertical 5.52dB	
Radiated Emission: (1GHz~6GHz)	Horizontal 4.62dB ; Vertical 4.64dB	
Radiated Emission: (6GHz~18GHz)	Horizontal 4.70dB ; Vertical 4.68dB	
Line Conducted Emission	ESH2-Z5	3.08dB
	ENV 4200	3.11dB



## 2 Conducted Emission Measurement

Test Result : PASS

### 2.1 Applied Standard

For intentional device, according to FCC 15.207(a) and RSS-Gen section 8.8, line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

\* Decreases with the logarithm of the frequency.

Note:

For a device with a permanent antenna operating at or below 30 MHz, the FCC will accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

**2.2 Test Instruments**

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCS30/ 836858/021	Jan. 16, 2016	Jan. 16, 2017
LISN	R&S	ENV4200/ 833209/010	April 20, 2016	April 20, 2017
2 <sup>nd</sup> LISN	R&S	ESH2-Z5/ 880669/039	March 25, 2016	March 25, 2017
ISN	FCC	<input type="checkbox"/> FCC-TLISN-T2-02/ 20269	August 11, 2015	August 11, 2016
	TESEQ	<input type="checkbox"/> ISN T400A/ 28575	July 30, 2015	July 30, 2016
		<input type="checkbox"/> ISN T800/ 36191	July 30, 2015	July 30, 2016
50Ω terminator	SHHNER	65 BNC-50-0-1/133 NE/004	May 11, 2015	May 11, 2016
RF Switch	R&S	RSU28/ 338965/002	Jan. 29, 2016	July 29, 2016
RF Cable	N/A	N/A/ C0052 ~ 56	Jan. 29, 2016	July 29, 2016
Test Software	Audix	e3/ Ver. 5.2004-2-19k	NCR	NCR
TR5 shielded room	ETS LINDGREN	TR5/ 15353-F	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

**Instrument Setting**

<b>IF BW</b>	<b>Measurement Time</b>	<b>Detector</b>	<b>Trace</b>	<b>Comment</b>
9kHz	1 second	Quasi-Peak / Average	Maxhold	

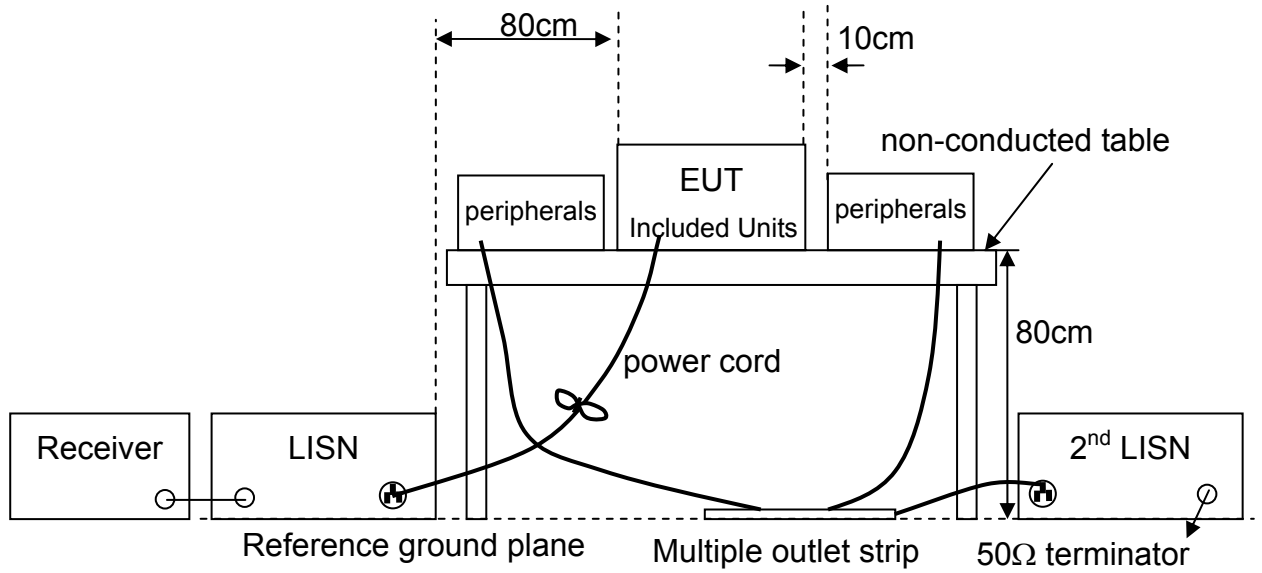
**Climatic Condition**

Ambient Temperature : 26°C;      Relative Humidity : 64%

## 2.3 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a non-conducted table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane.
- c. Connect the EUT's power source to the appropriate power mains through the LISN.
- d. All the other peripherals are connected to the 2<sup>nd</sup> LISN, if any.
- e. The LISN was placed 0.8 meters from the EUT and at least 0.8 meters from other units and other metal planes.
- f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.
- g. Rapidly scan the signal from 150kHz to 30MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each measured line.
- h. Then measure the maximum level of conducted disturbance for each frequency found from step g. by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.
- i. Record the level for each frequency and compare with the required limit.

## 2.4 Test Configurations



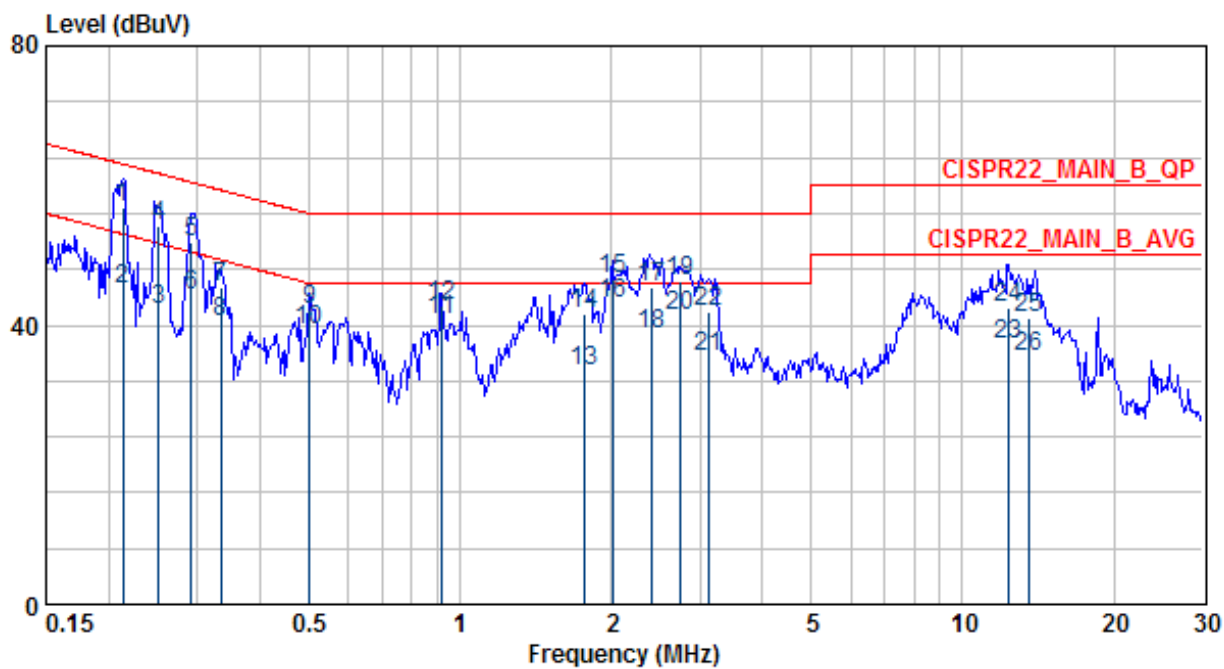
## 2.5 Test Results

Test Mode : 2437MHz, Continuous Transmitting

Tester : DER-JAN KEN

Frequency Range : 150kHz~30MHz

Phase : Line

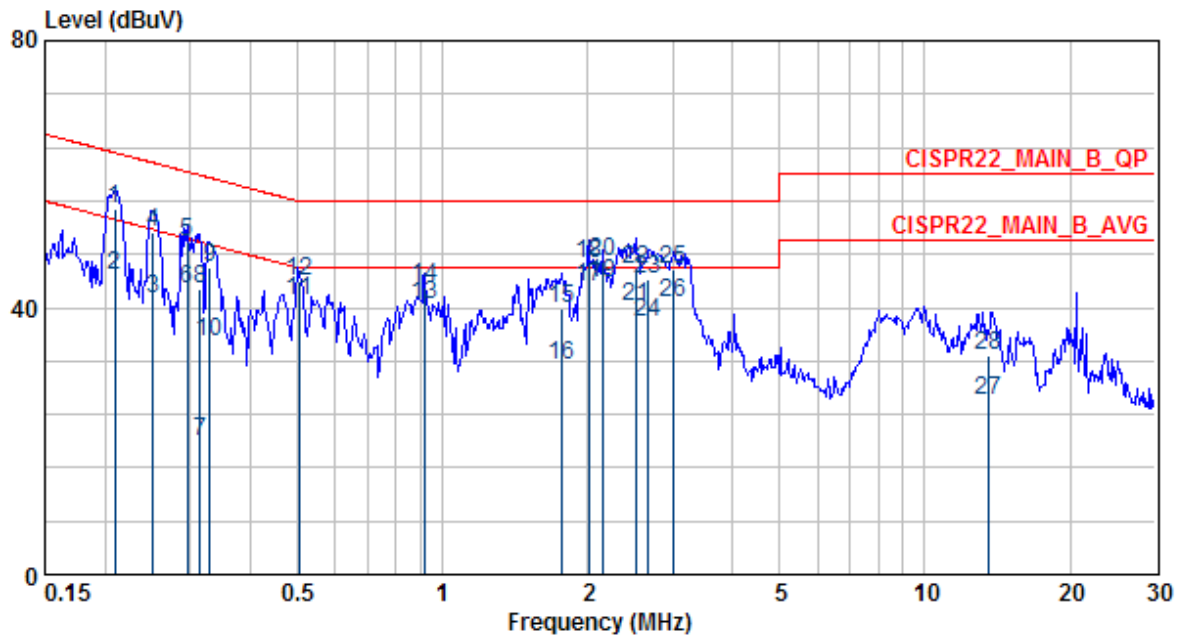


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.214	56.93	10.02	46.91	63.05	-6.12	LINE	QP
2	0.214	45.03	10.02	35.01	53.05	-8.02	LINE	AVERAGE
3	0.252	42.21	10.02	32.19	51.70	-9.49	LINE	AVERAGE
4	0.252	54.10	10.02	44.08	61.70	-7.60	LINE	QP
5	0.292	51.90	10.02	41.88	60.46	-8.55	LINE	QP
6	0.292	44.35	10.02	34.33	50.46	-6.10	LINE	AVERAGE
7	0.334	45.56	10.03	35.53	59.35	-13.79	LINE	QP
8	0.334	40.53	10.03	30.50	49.35	-8.82	LINE	AVERAGE
9	0.502	42.29	10.04	32.25	56.00	-13.71	LINE	QP
10	0.502	39.28	10.04	29.24	46.00	-6.72	LINE	AVERAGE
11	0.918	40.84	10.07	30.77	46.00	-5.16	LINE	AVERAGE
12	0.918	42.74	10.07	32.67	56.00	-13.26	LINE	QP
13	1.772	33.51	10.15	23.36	46.00	-12.49	LINE	AVERAGE
14	1.772	41.64	10.15	31.49	56.00	-14.36	LINE	QP
15	2.012	46.55	10.17	36.38	56.00	-9.45	LINE	QP
16	2.012	42.97	10.17	32.80	46.00	-3.03	LINE	AVERAGE
17	2.397	45.44	10.22	35.22	56.00	-10.56	LINE	QP
18	2.397	38.76	10.22	28.54	46.00	-7.24	LINE	AVERAGE
19	2.754	46.22	10.25	35.97	56.00	-9.78	LINE	QP
20	2.754	41.23	10.25	30.98	46.00	-4.77	LINE	AVERAGE
21	3.140	35.50	10.28	25.22	46.00	-10.50	LINE	AVERAGE
22	3.140	41.78	10.28	31.50	56.00	-14.22	LINE	QP
23	12.384	37.14	10.27	26.87	50.00	-12.86	LINE	AVERAGE
24	12.384	42.56	10.27	32.29	60.00	-17.44	LINE	QP
25	13.560	41.06	10.25	30.81	60.00	-18.94	LINE	QP
26	13.560	35.45	10.25	25.20	50.00	-14.55	LINE	AVERAGE

**Note:**

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

Test Mode : 2437MHz, Continuous Transmitting  
Tester : DER-JAN KEN  
Frequency Range : 150kHz~30MHz  
Phase : Neutral





	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.209	54.92	9.88	45.04	63.23	-8.30	NEUTRAL	QP
2	0.209	44.95	9.88	35.07	53.23	-8.27	NEUTRAL	AVERAGE
3	0.251	41.36	9.86	31.50	51.71	-10.34	NEUTRAL	AVERAGE
4	0.251	51.22	9.86	41.36	61.71	-10.48	NEUTRAL	QP
5	0.296	49.77	9.85	39.92	60.37	-10.60	NEUTRAL	QP
6	0.296	42.82	9.85	32.97	50.37	-7.55	NEUTRAL	AVERAGE
7	0.315	20.07	9.84	10.23	49.84	-29.77	NEUTRAL	AVERAGE
8	0.315	42.69	9.84	32.85	59.84	-17.15	NEUTRAL	QP
9	0.329	46.01	9.84	36.17	59.48	-13.47	NEUTRAL	QP
10	0.329	34.86	9.84	25.02	49.48	-14.62	NEUTRAL	AVERAGE
11	0.504	40.89	9.83	31.06	46.00	-5.11	NEUTRAL	AVERAGE
12	0.504	44.05	9.83	34.22	56.00	-11.95	NEUTRAL	QP
13	0.918	40.49	9.86	30.63	46.00	-5.51	NEUTRAL	AVERAGE
14	0.918	43.16	9.86	33.30	56.00	-12.84	NEUTRAL	QP
15	1.772	39.79	9.94	29.85	56.00	-16.21	NEUTRAL	QP
16	1.772	31.21	9.94	21.27	46.00	-14.79	NEUTRAL	AVERAGE
17	2.015	43.00	9.96	33.04	46.00	-3.00	NEUTRAL	AVERAGE
18	2.015	46.45	9.96	36.49	56.00	-9.55	NEUTRAL	QP
19	2.144	43.69	9.98	33.71	46.00	-2.31	NEUTRAL	AVERAGE
20	2.144	46.85	9.98	36.87	56.00	-9.15	NEUTRAL	QP
21	2.518	40.10	10.01	30.09	46.00	-5.90	NEUTRAL	AVERAGE
22	2.518	45.71	10.01	35.70	56.00	-10.29	NEUTRAL	QP
23	2.678	44.24	10.03	34.21	56.00	-11.76	NEUTRAL	QP
24	2.678	37.85	10.03	27.82	46.00	-8.15	NEUTRAL	AVERAGE
25	3.025	45.76	10.05	35.71	56.00	-10.24	NEUTRAL	QP
26	3.025	40.76	10.05	30.71	46.00	-5.24	NEUTRAL	AVERAGE
27	13.560	26.06	9.94	16.12	50.00	-23.94	NEUTRAL	AVERAGE
28	13.560	32.83	9.94	22.89	60.00	-27.17	NEUTRAL	QP

**Note:**

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

### 3 6dB Bandwidth

**Result: Pass**

#### 3.1 Applied standard

According to FCC 15.247(a)(2) and RSS-247 section 5.2(1), Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

#### 3.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	April 27, 2016	April 27, 2017
Test Site	N.A.	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

#### Instrument Setting

RBW	VBW	Detector	Trace	Comment
100kHz	300kHz	Peak	Maxhold	

#### Climatic Condition

Ambient Temperature : 25°C

Relative Humidity :60%

### 3.3 Measurement Procedure

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. A software provided by client enabled the EUT to transmit data at middle channel frequencies individually.
- c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r05 Section 8.0 option 1.
- d. Measure the 6dB bandwidth and compare with the required limit.

### 3.4 Test configuration

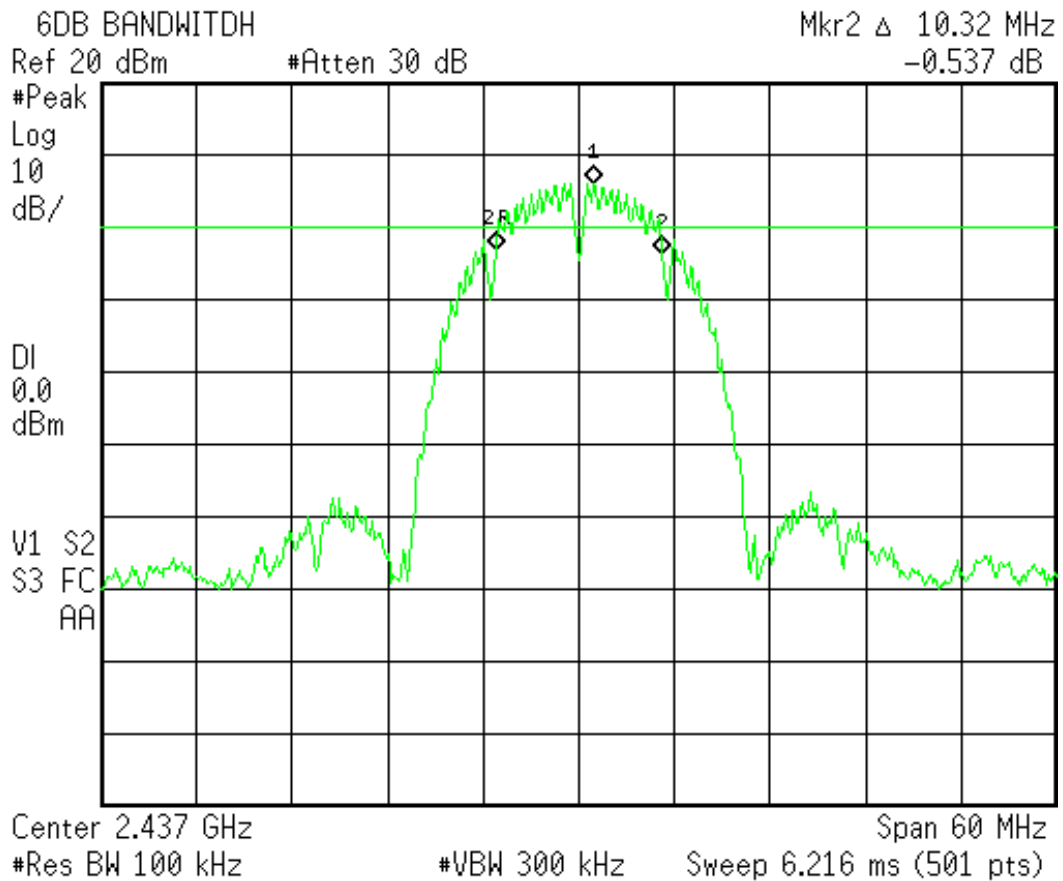


3.5 Test Data

Test Mode : Continuous Transmitting  
 Tester : Martin

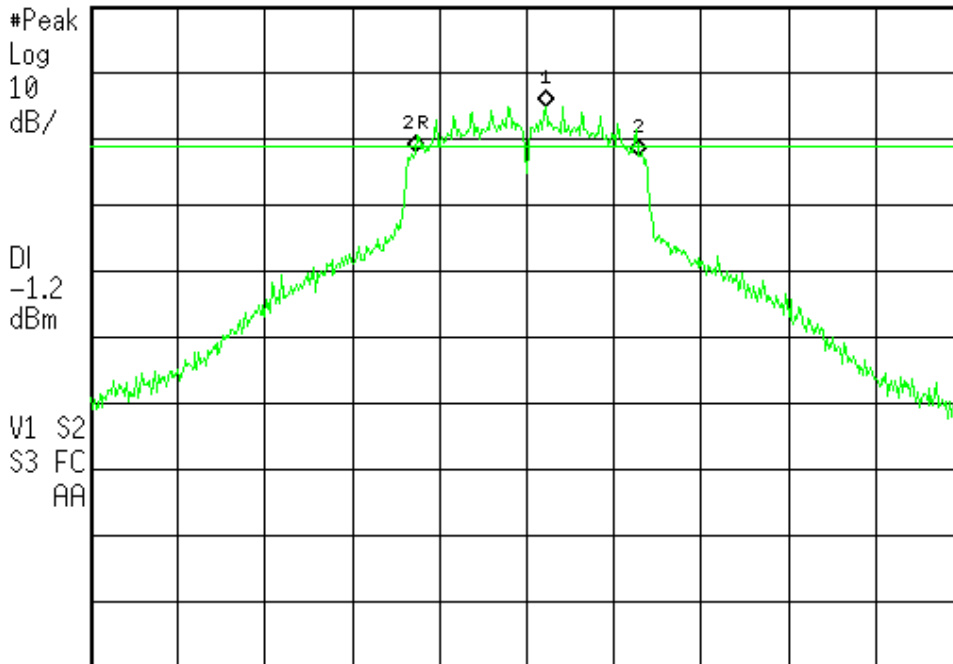
Mode	Operating Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
802.11b	2437	10.32	500
802.11g	2437	15.36	500
802.11n 20HT	2437	15.36	500
802.11n 40HT	2437	35.28	500

802.11b



802.11g

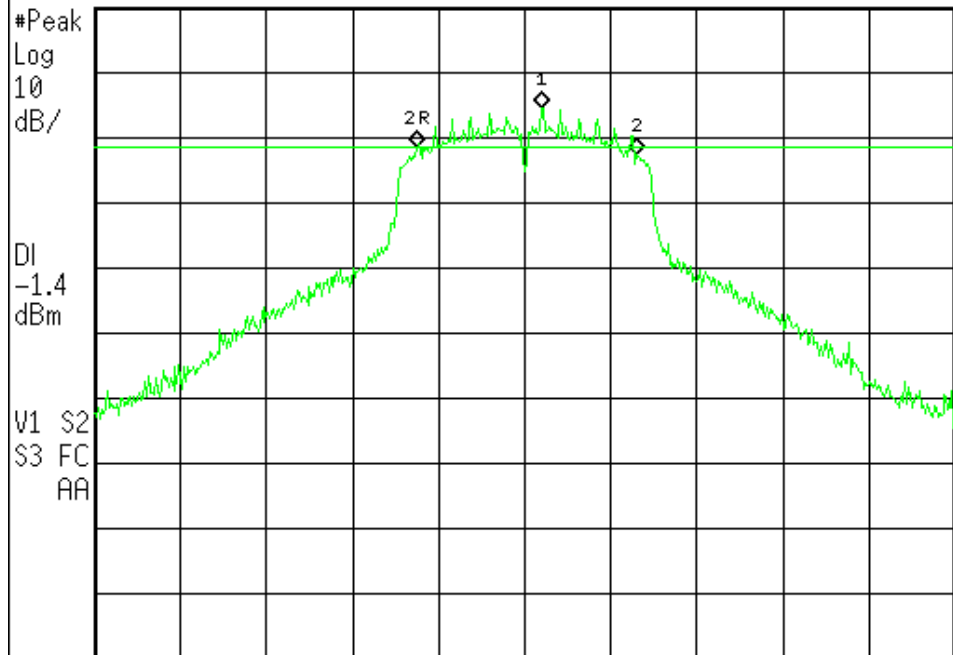
6DB BANDWIDTH Mkr2 Δ 15.36 MHz  
 Ref 20 dBm #Atten 30 dB -0.382 dB



Center 2.437 GHz Span 60 MHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 6.216 ms (501 pts)

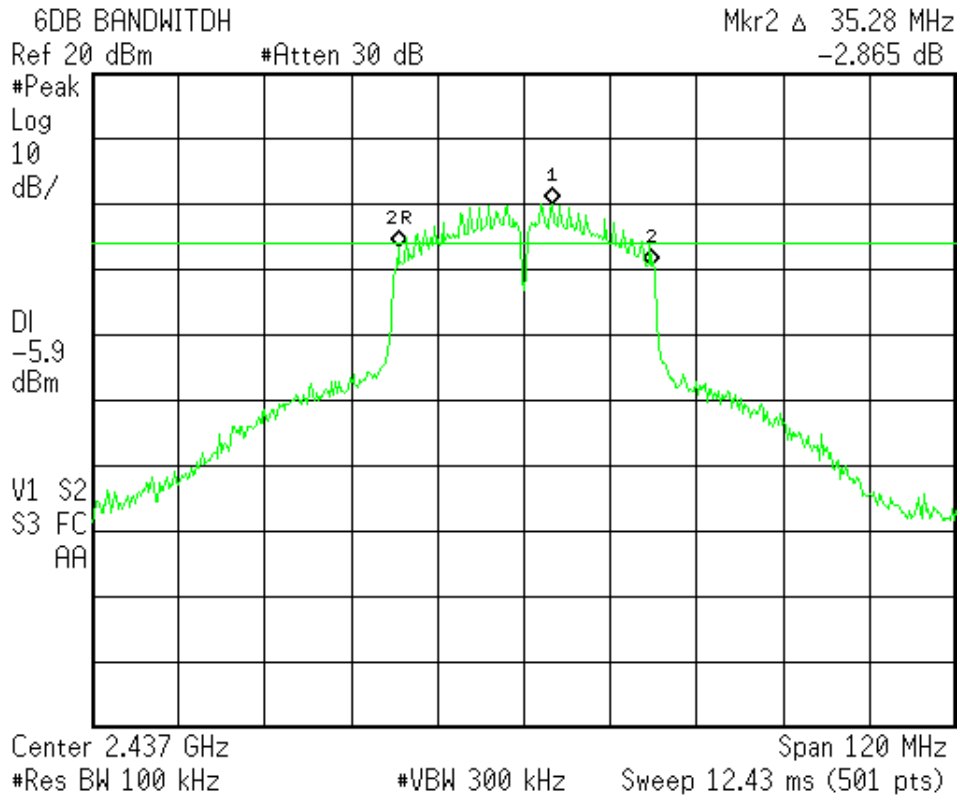
802.11n 20HT

6DB BANDWIDTH Mkr2 Δ 15.36 MHz  
 Ref 20 dBm #Atten 30 dB -1.136 dB



Center 2.437 GHz Span 60 MHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 6.216 ms (501 pts)

802.11n 40HT



**4 Maximum Peak Output Power**

**Result: Pass**

**4.1 Applied standard**

According to FCC 15.247(b)(3) and RSS-247 section 5.4(4), for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

**4.2 Test Instruments**

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	April 27, 2016	April 27, 2017
Test Site	N.A.	TR13	NCR	NCR

Note:

- 1.The calibrations are traceable to NML/ROC.
- 2.NCR : No Calibration Required.

**Instrument Setting**

RBW	VBW	Detector	Trace	Comment
300kHz	1MHz	Average	Maxhold	11b/g/n 20HT
1MHz	3MHz	Average	Maxhold	11n 40HT

**Climatic Condition**

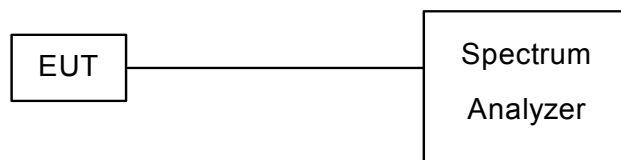
Ambient Temperature : 25°C

Relative Humidity :60%

### 4.3 Measurement Procedure

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. The software provided by client enabled the EUT to transmit data at lowest, middle and highest channel frequencies individually.
- c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r05 section 9.2.2.2.
- d. Measurement the maximum peak output and compare with the required limit.

### 4.4 Test configuration





**4.5 Test Data**

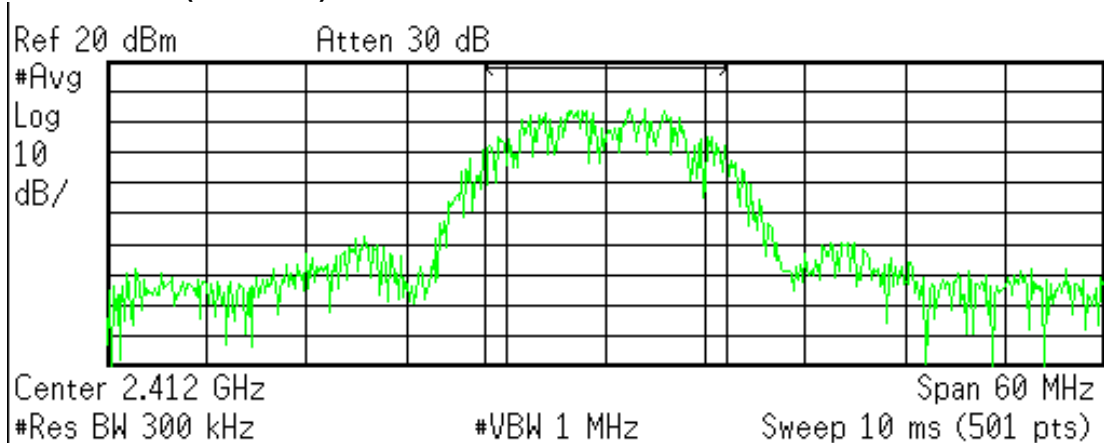
**Test Mode : 802.11b, Continuous Transmitting**  
**Tester : Martin**

Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission (dBm)	Limit (dBm)	Margin (dB)
2412	15.03	1.5	16.53	30	13.47
2437	14.97	1.5	16.47	30	13.53
2462	14.99	1.5	16.49	30	13.51

Note:

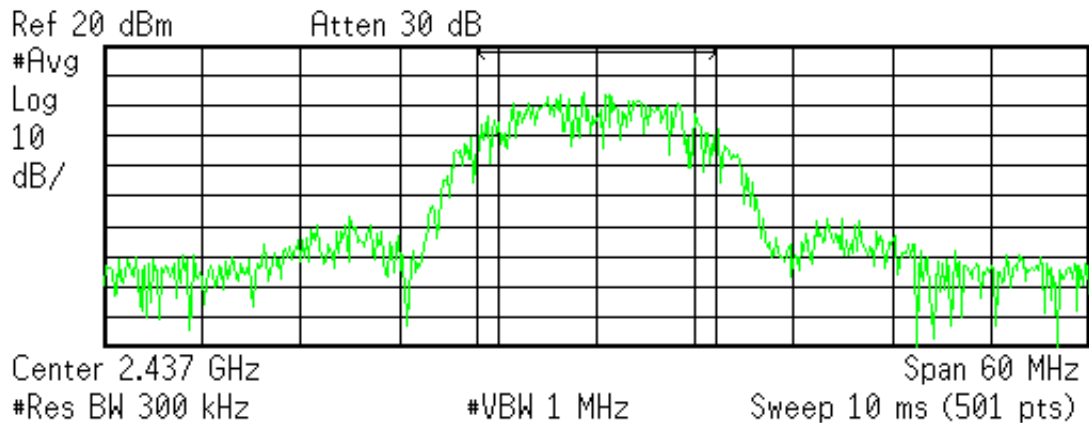
1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

**Low Channel (2412MHz)**



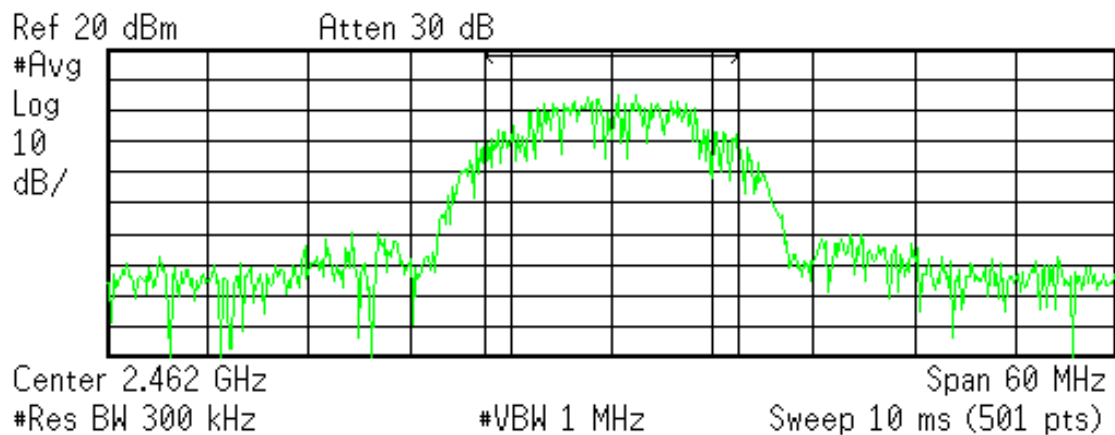
<b>Channel Power</b>	<b>Power Spectral Density</b>
15.03 dBm /14.5095 MHz	-56.59 dBm/Hz

**MiddleChannel (2437MHz)**



Channel Power	Power Spectral Density
14.97 dBm /14.5970 MHz	-56.67 dBm/Hz

**High Channel (2462MHz)**



Channel Power	Power Spectral Density
14.99 dBm /15.1413 MHz	-56.81 dBm/Hz

**Test Mode : 802.11g, Continuous Transmitting**  
**Tester : Martin**

Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission (dBm)	Limit (dBm)	Margin (dB)
2412	11.60	1.5	13.10	30	16.90
2437	13.92	1.5	15.42	30	14.58
2462	11.55	1.5	13.05	30	16.95

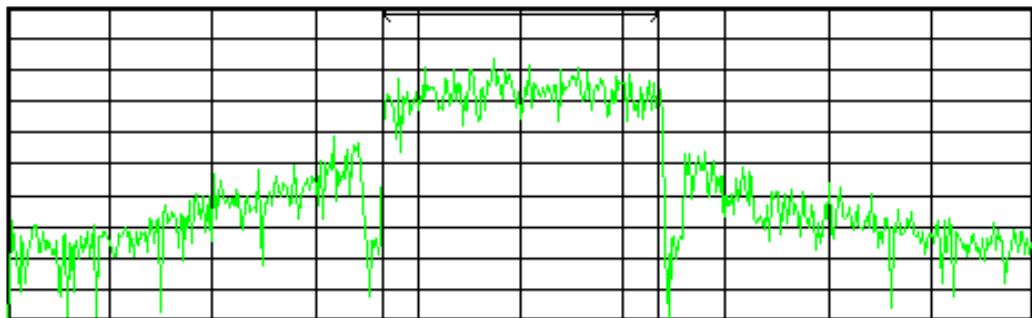
Note:

1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

**Low Channel (2412MHz)**

Ref 20 dBm      Atten 30 dB

#Avg  
Log  
10  
dB/



Center 2.412 GHz

Span 60 MHz

#Res BW 300 kHz

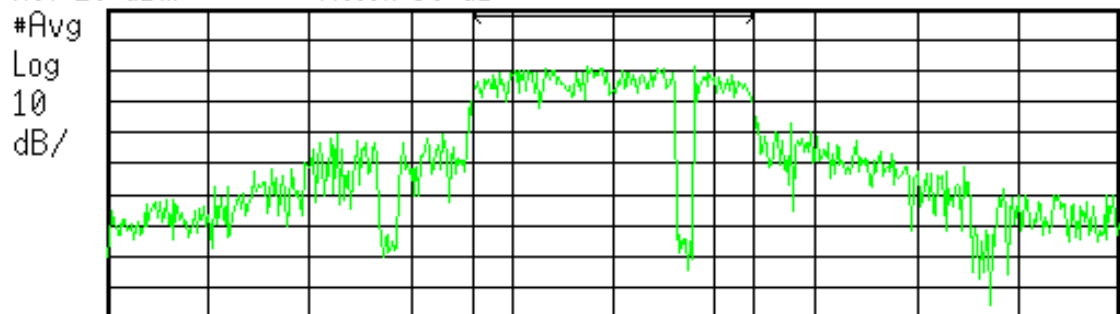
#VBW 1 MHz

Sweep 10 ms (501 pts)

<b>Channel Power</b>	<b>Power Spectral Density</b>
11.60 dBm /16.1923 MHz	-60.49 dBm/Hz

**MiddleChannel (2437MHz)**

Ref 20 dBm      Atten 30 dB

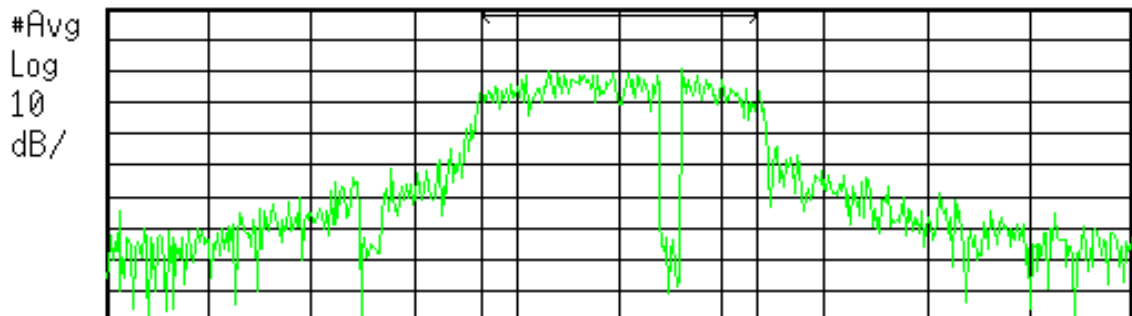


Center 2.437 GHz      Span 60 MHz  
 #Res BW 300 kHz      #VBW 1 MHz      Sweep 10 ms (501 pts)

Channel Power	Power Spectral Density
13.92 dBm /16.4949 MHz	-58.25 dBm/Hz

**High Channel (2462MHz)**

Ref 20 dBm      Atten 30 dB



Center 2.462 GHz      Span 60 MHz  
 #Res BW 300 kHz      #VBW 1 MHz      Sweep 10 ms (501 pts)

Channel Power	Power Spectral Density
11.55 dBm /16.0757 MHz	-60.51 dBm/Hz

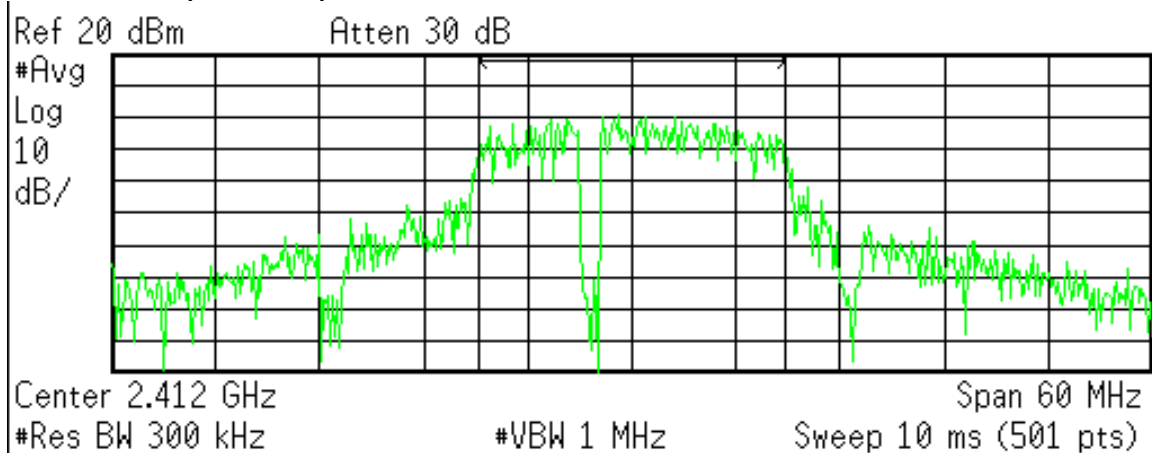
**Test Mode : 802.11n 20HT, Continuous Transmitting**  
**Tester : Martin**

Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission (dBm)	Limit (dBm)	Margin (dB)
2412	11.54	1.5	13.04	30	16.96
2437	13.47	1.5	14.97	30	15.03
2462	11.35	1.5	12.85	30	17.15

Note:

1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

**Low Channel (2412MHz)**

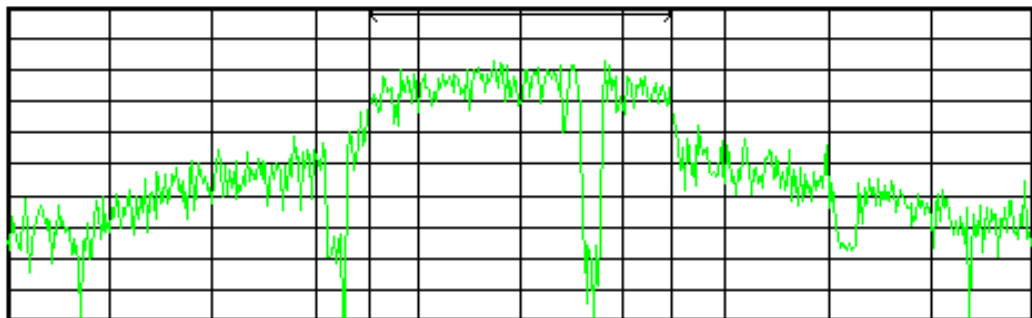


<b>Channel Power</b>	<b>Power Spectral Density</b>
11.54 dBm /17.5336 MHz	-60.90 dBm/Hz

**MiddleChannel (2437MHz)**

Ref 20 dBm      Atten 30 dB

#Avg  
Log  
10  
dB/



Center 2.437 GHz

Span 60 MHz

#Res BW 300 kHz

#VBW 1 MHz

Sweep 10 ms (501 pts)

**Channel Power**

**Power Spectral Density**

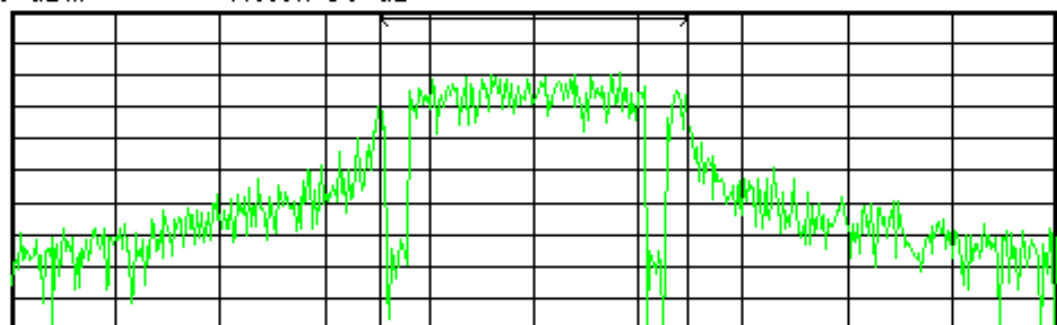
13.47 dBm /17.5507 MHz

-58.97 dBm/Hz

**High Channel (2462MHz)**

Ref 20 dBm      Atten 30 dB

#Avg  
Log  
10  
dB/



Center 2.462 GHz

Span 60 MHz

#Res BW 300 kHz

#VBW 1 MHz

Sweep 10 ms (501 pts)

**Channel Power**

**Power Spectral Density**

11.35 dBm /17.5487 MHz

-61.09 dBm/Hz

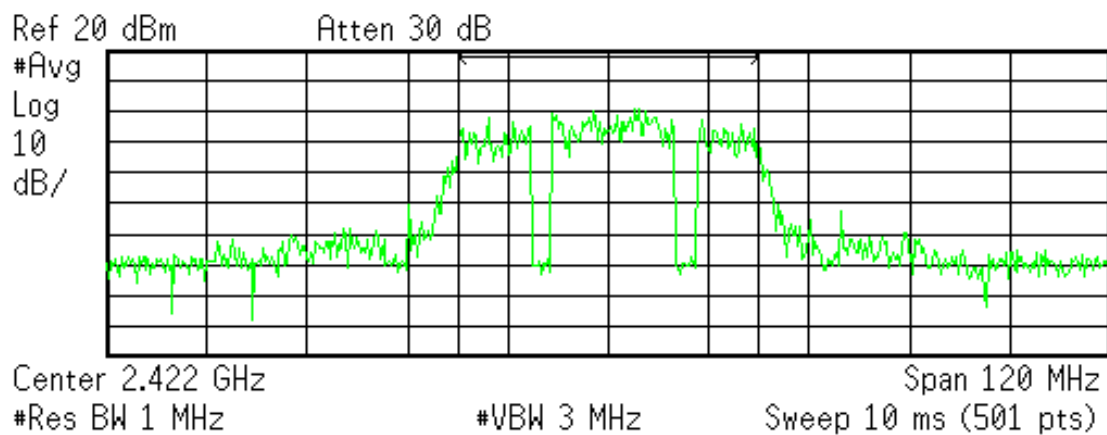
**Test Mode : 802.11n 40HT, Continuous Transmitting**  
**Tester : Martin**

Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission (dBm)	Limit (dBm)	Margin (dB)
2422	8.46	1.5	9.96	30	20.04
2437	11.96	1.5	13.46	30	16.54
2452	11.13	1.5	12.63	30	17.37

Note:

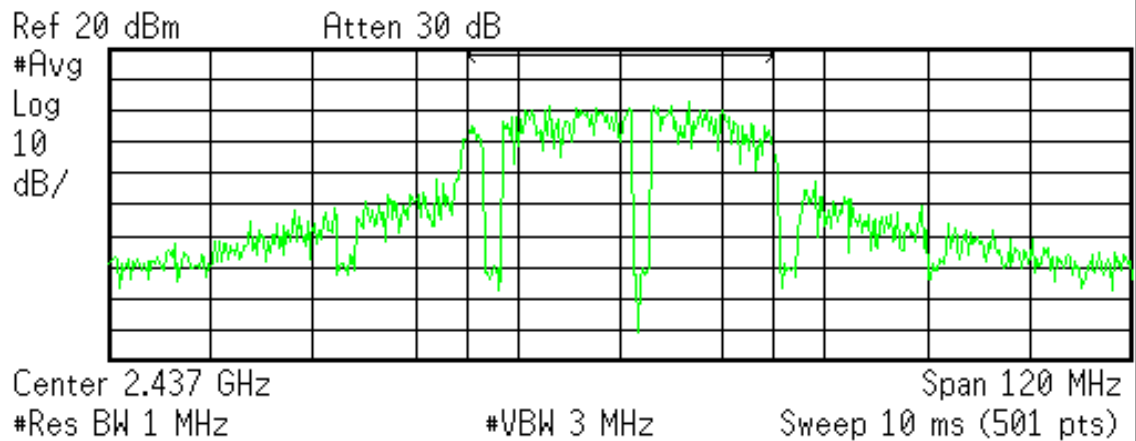
1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

**Low Channel (2422MHz)**



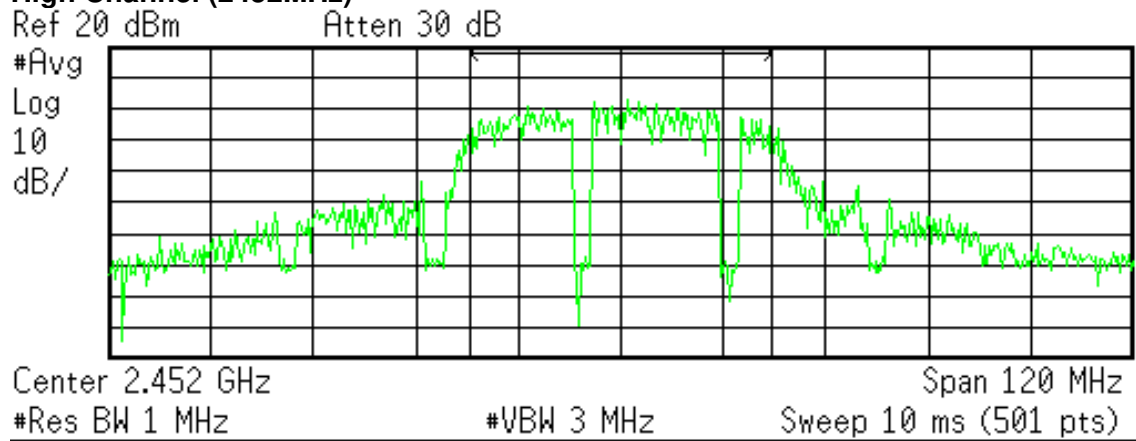
<b>Channel Power</b>	<b>Power Spectral Density</b>
8.46 dBm /35.7669 MHz	-67.08 dBm/Hz

**MiddleChannel (2437MHz)**



Channel Power	Power Spectral Density
11.96 dBm /35.8678 MHz	-63.59 dBm/Hz

**High Channel (2452MHz)**



Channel Power	Power Spectral Density
11.13 dBm /35.4992 MHz	-64.38 dBm/Hz



**5 Peak Power Spectral Density**

**Result: Pass**

**5.1 Applied standard**

According to FCC 15.247(e) and RSS-247 section 5.2(2), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**5.2 Test Instruments**

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	April 27, 2016	April 27, 2017
Test Site	N.A.	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

**Instrument Setting**

RBW	VBW	Detector	Trace	Comment
30kHz	100kHz	Peak	Maxhold	

**Climatic Condition**

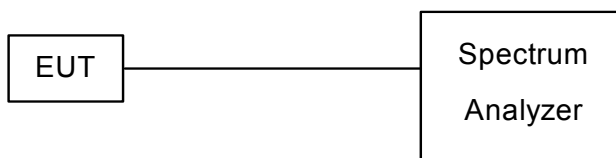
Ambient Temperature : 25°C

Relative Humidity :60%

### 5.3 Measurement Procedure

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. A software provided by client enabled the EUT to transmit data at middle channel frequencies individually.
- c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r05 section 10.3.
- d. Measure the peak power spectrum density and compare with the required limit.

### 5.4 Test configuration



5.5 Test Data

Test Mode : Continuous Transmitting

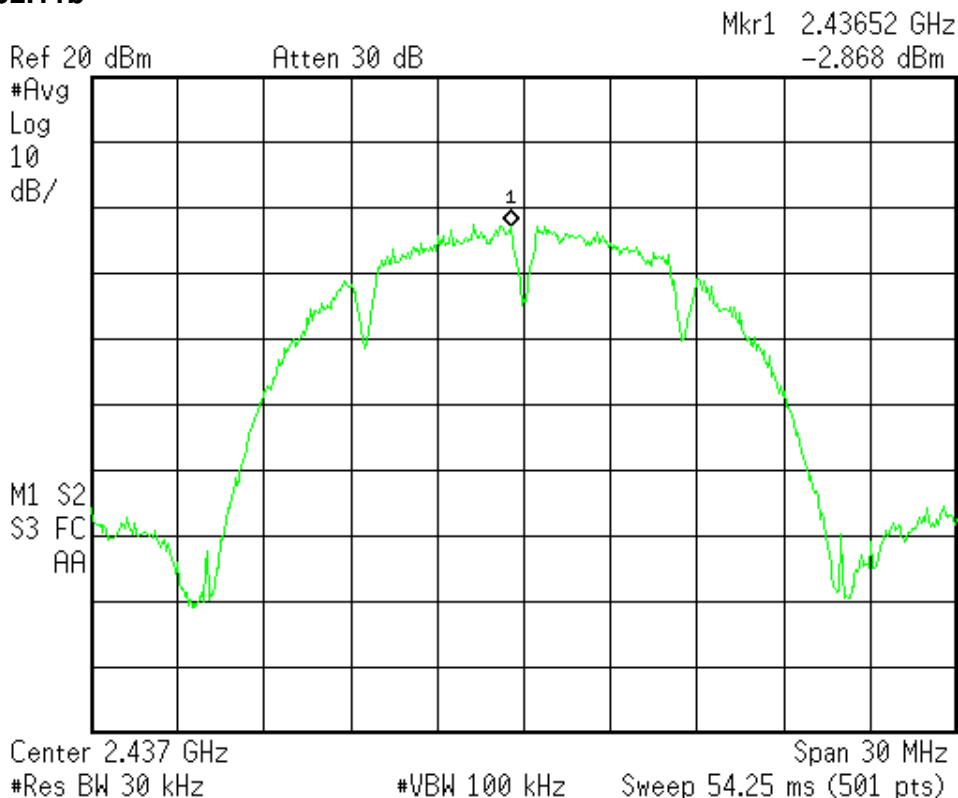
Tester : Martin

Mode	Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission(dBm)		Limit (dBm)	Margin (dB)
				/30kHz	/3kHz		
802.11b	2437	-2.86	1.5	-1.36	-11.36	8	19.36
802.11g	2437	-4.86	1.5	-3.36	-13.36	8	21.36
802.11n 20HT	2437	-6.04	1.5	-4.54	-14.54	8	22.54
802.11n 40HT	2437	-0.56	1.5	0.94	-9.06	8	17.06

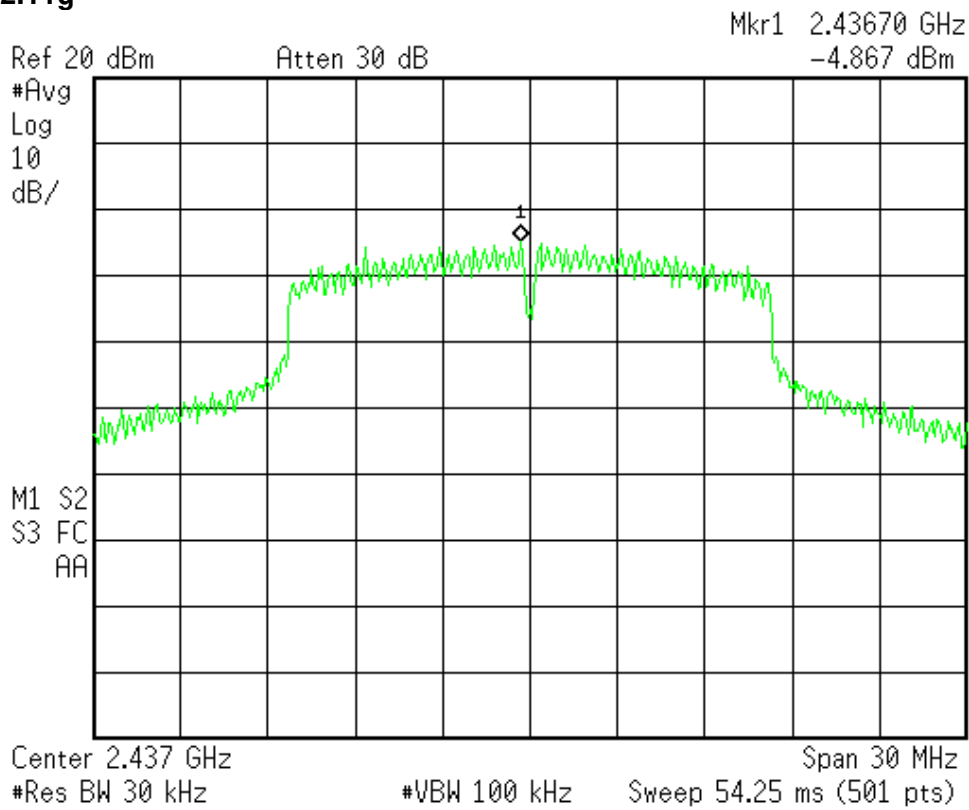
Note:

1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

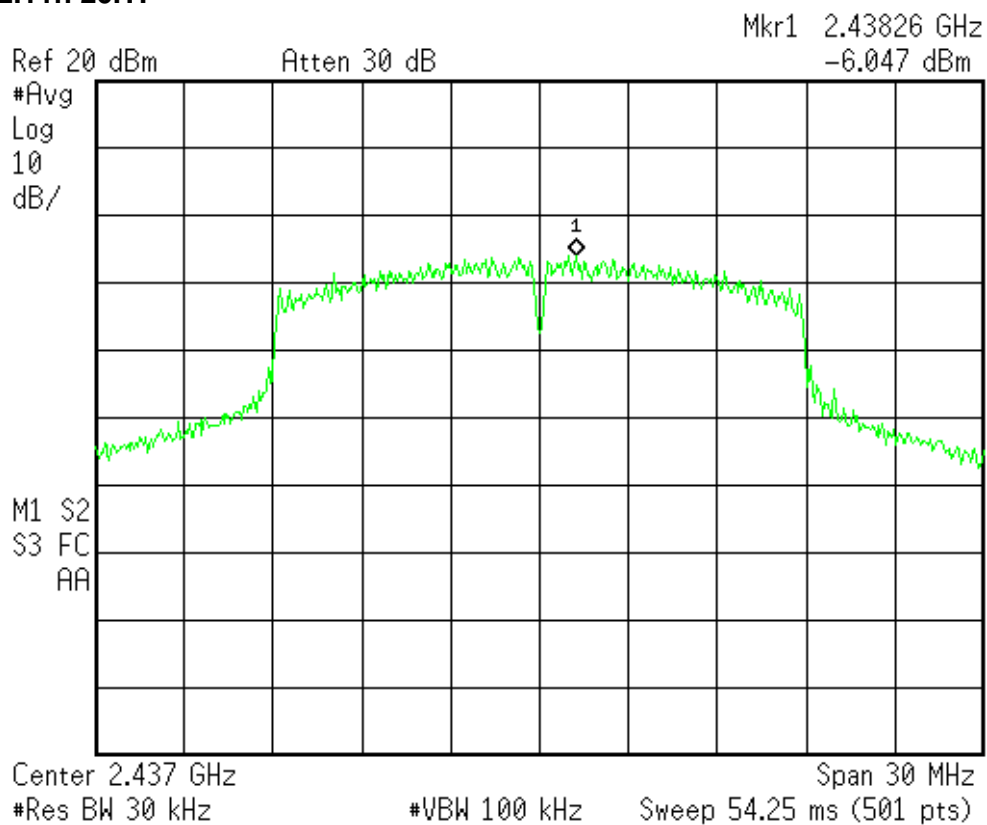
802.11b



802.11g



802.11n 20HT





## **6 RF Antenna Conducted spurious**

**Result: Pass**

### **6.1 Applied standard**

According to FCC 15.247(d) and RSS-247 section 5.5, 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 FCC 15.247(b)(3) and RSS-247 section 5.4(4), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in FCC 15.209(a) and RSS-Gen are not required.

**6.2 Test Instruments**

<b>Test Site and Equipment</b>	<b>Manufacturer</b>	<b>Model No./ Serial No.</b>	<b>Last Calibration Date</b>	<b>Calibration Due Date</b>
Spectrum Analyzer	Agilent	E4405B/ MY45106706	April 27, 2016	April 27, 2017
Test Site	N.A.	TR13	NCR	NCR

Note:

- 1.The calibrations are traceable to NML/ROC.
- 2.NCR : No Calibration Required.

**Instrument Setting**

<b>RBW</b>	<b>VBW</b>	<b>Detector</b>	<b>Trace</b>	<b>Comment</b>
100kHz	300kHz	Peak	Maxhold	

**Climatic Condition**

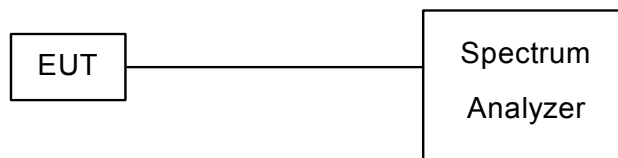
Ambient Temperature : 25°C

Relative Humidity :60%

### 6.3 Measurement Procedure

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. The software provided by client enabled the EUT to transmit data at low and high channel frequencies individually.
- c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r05 section 11.
- d. Measurement the conducted spurious and compare with the required limit.

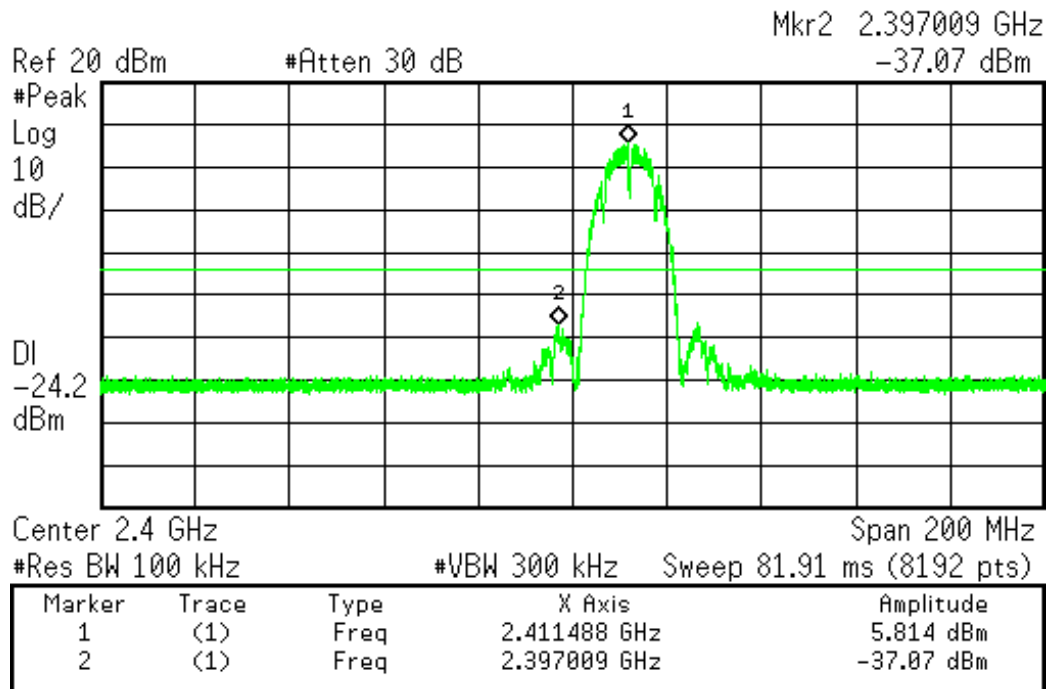
### 6.4 Test configuration



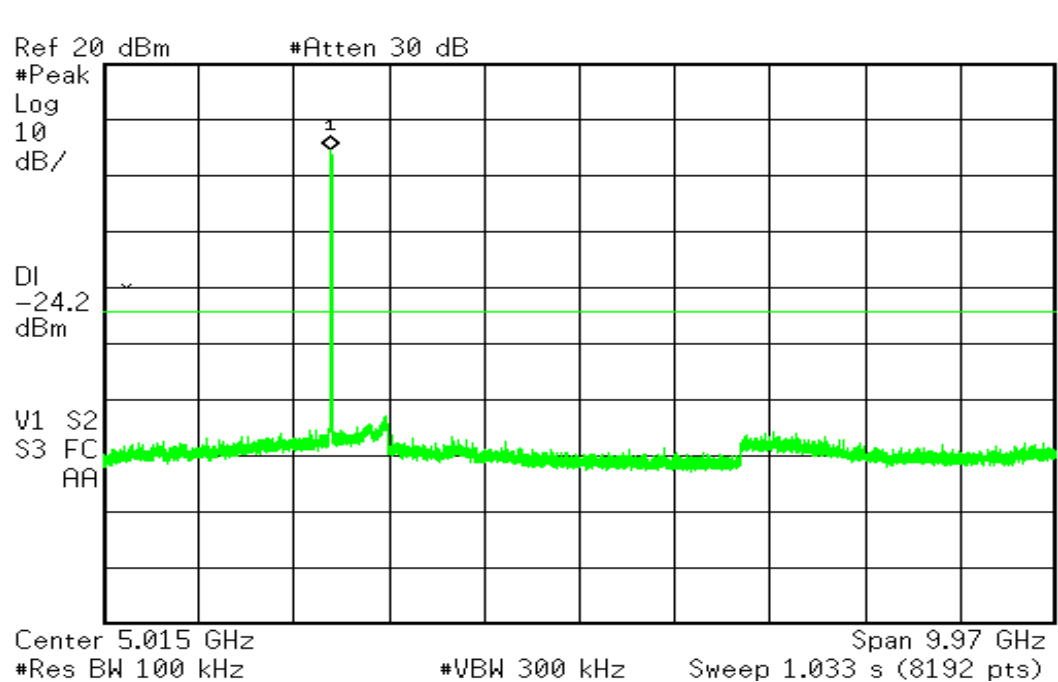


6.5 Test Data

Test Mode : 802.11b, Continuous Transmitting Tester : Martin  
 Test Frequency: 2412MHz  
 Limit Line : -24.18dBm



30MHz-10GHz



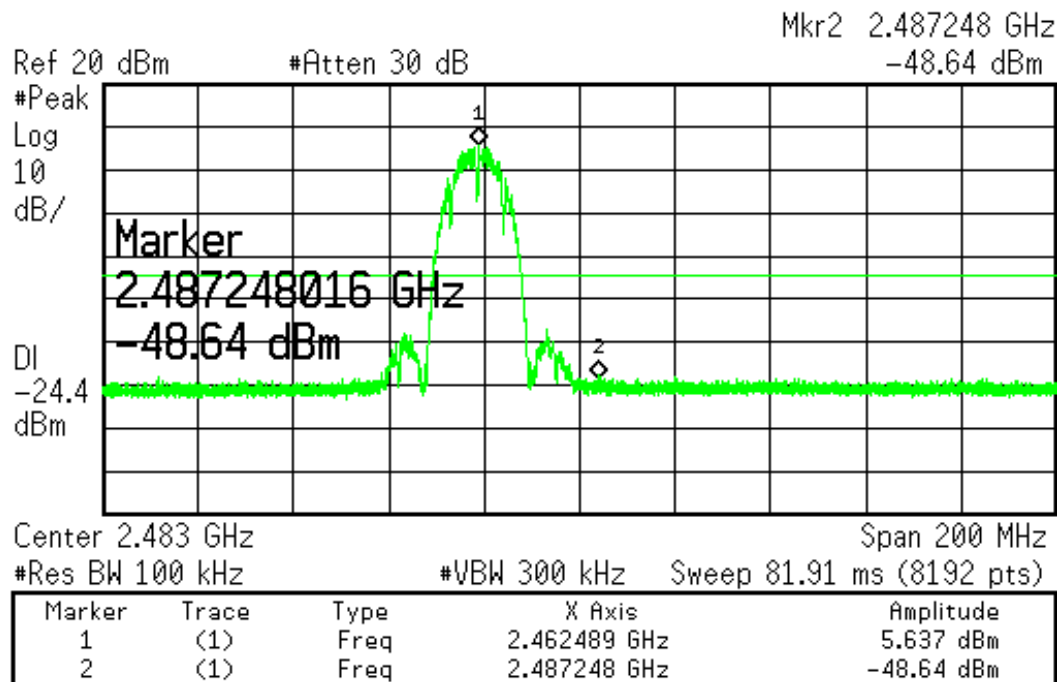


Test Mode : 802.11b, Continuous Transmitting

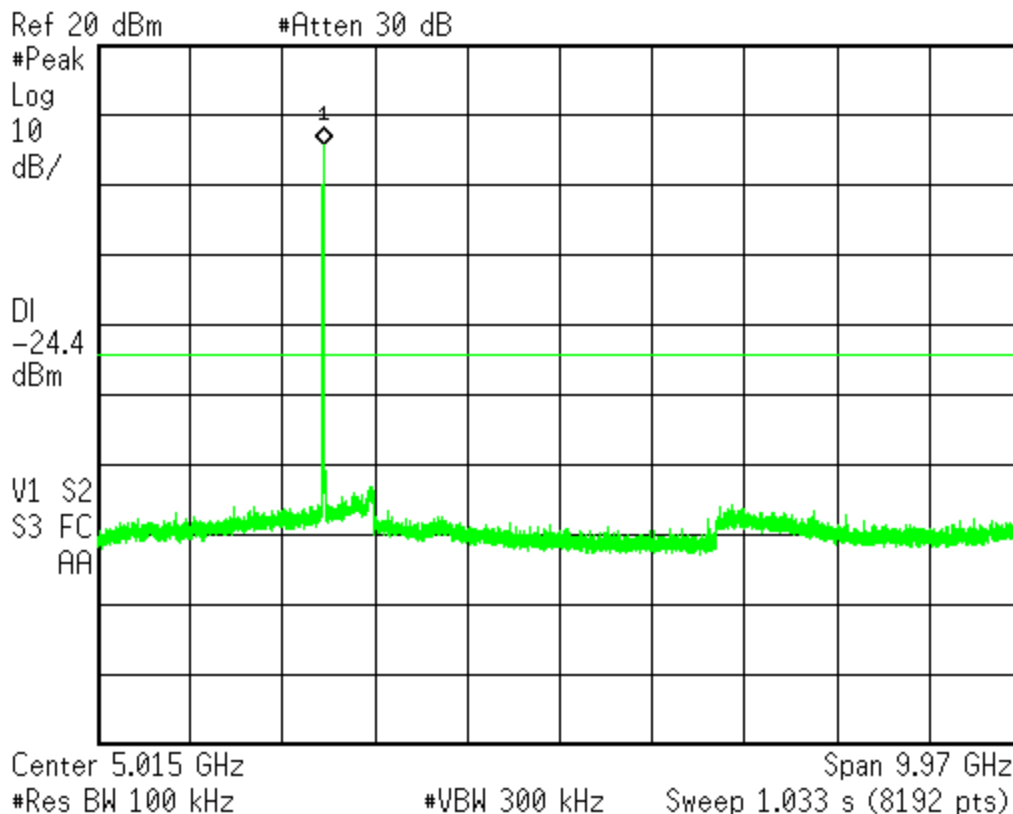
Tester : Martin

Test Frequency: 2462MHz

Limit Line : -24.36dBm



30MHz-10GHz



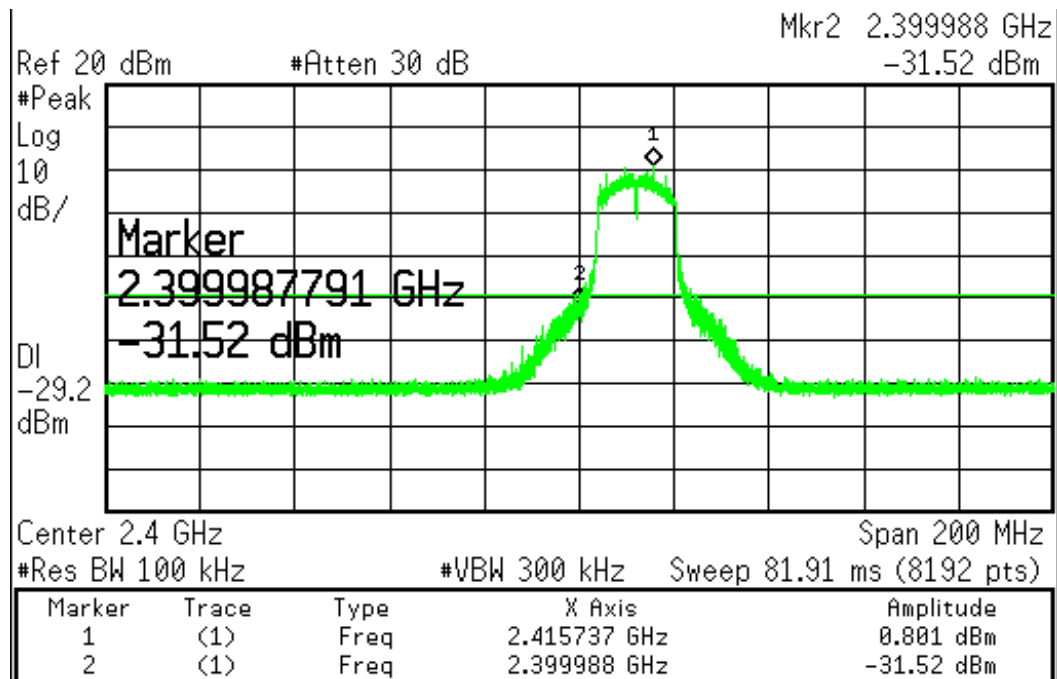


Test Mode : 802.11g, Continuous Transmitting

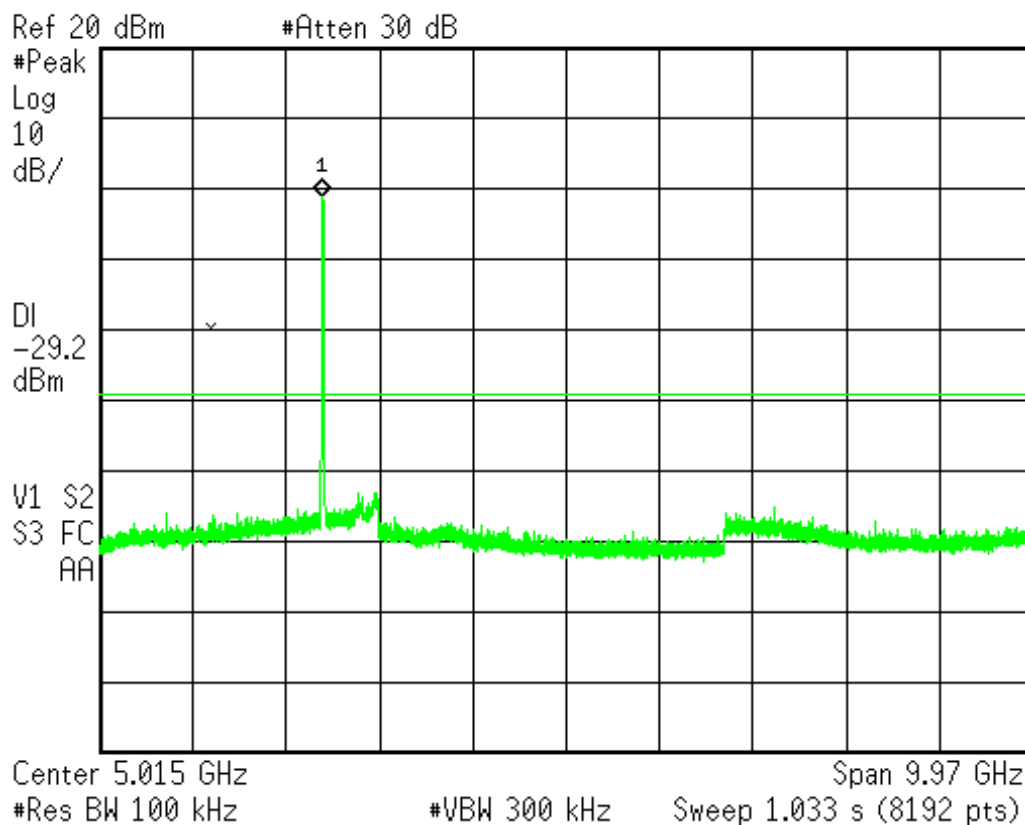
Tester : Martin

Test Frequency: 2412MHz

Limit Line : -29.19dBm



30MHz-10GHz



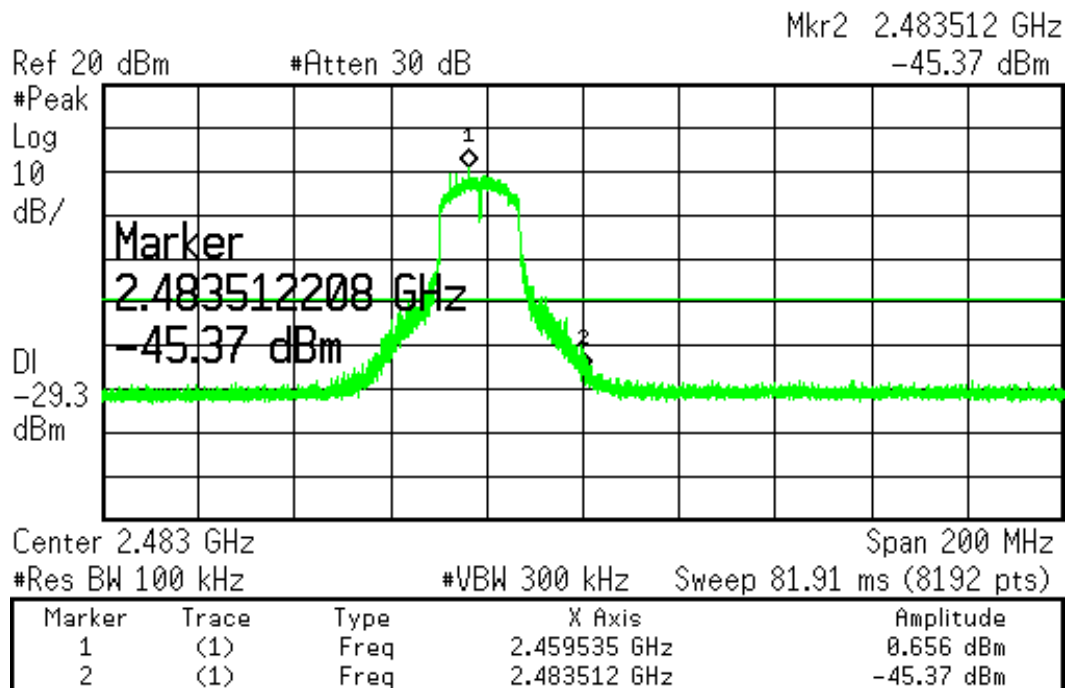


Test Mode : 802.11g, Continuous Transmitting

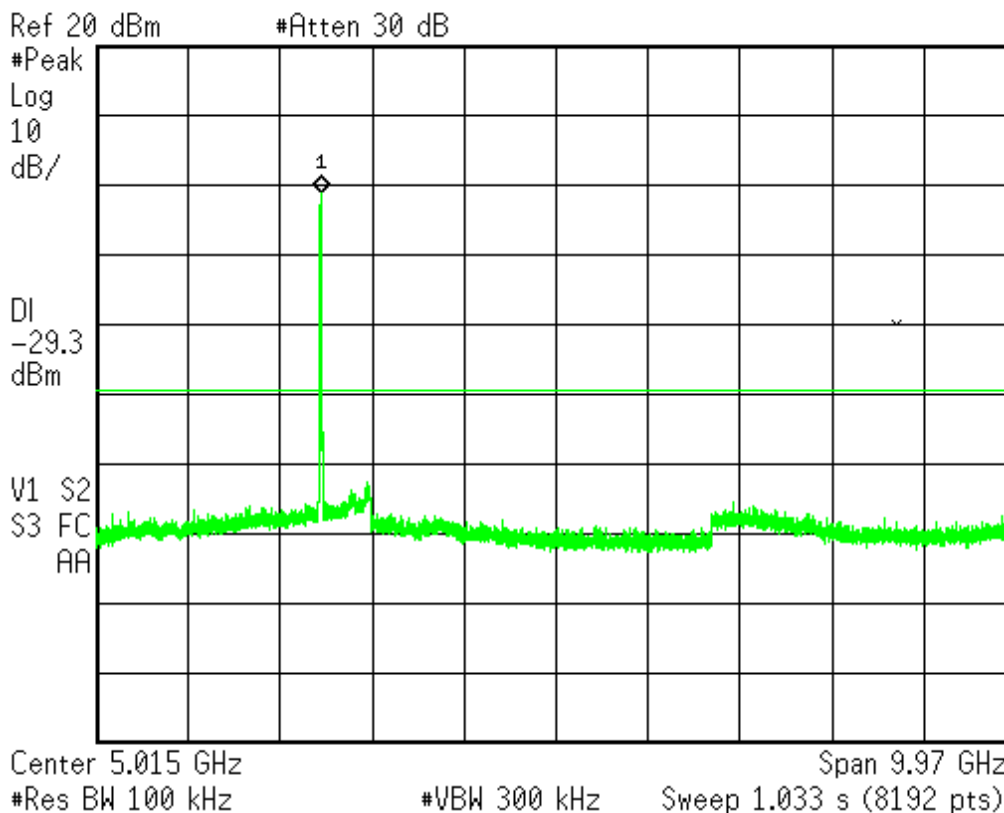
Tester : Martin

Test Frequency: 2462MHz

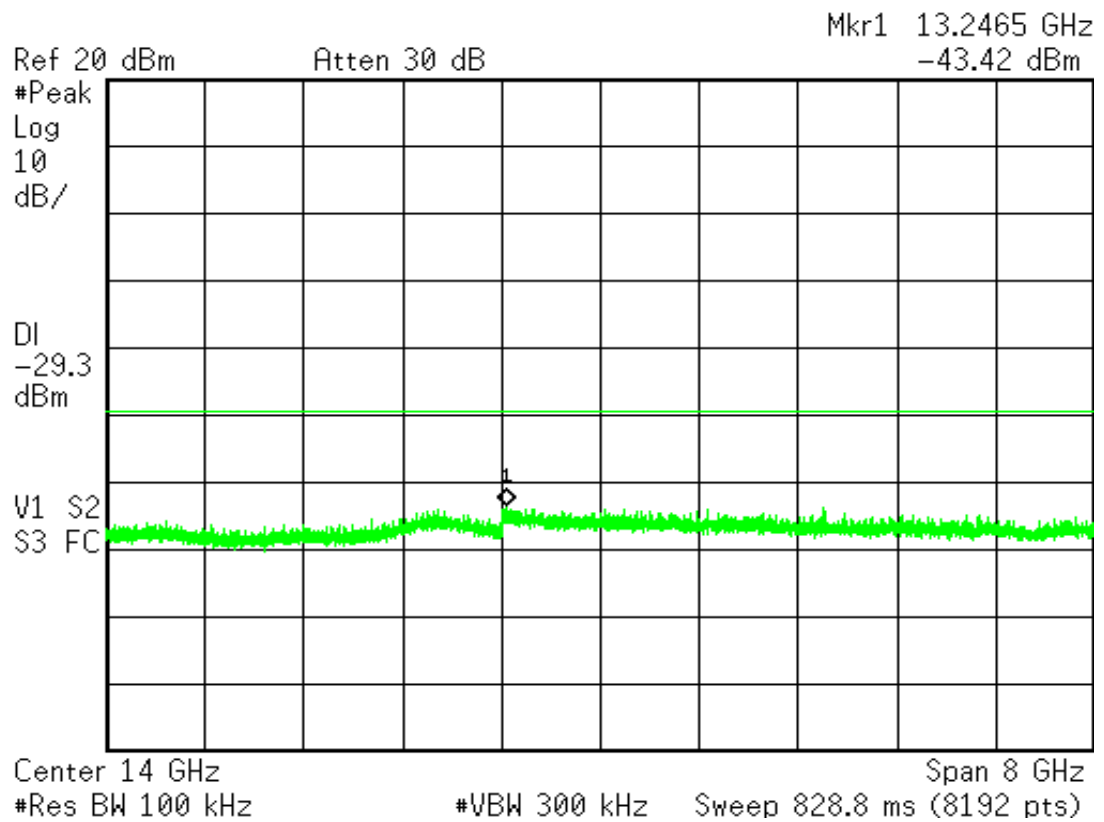
Limit Line : -29.34dBm



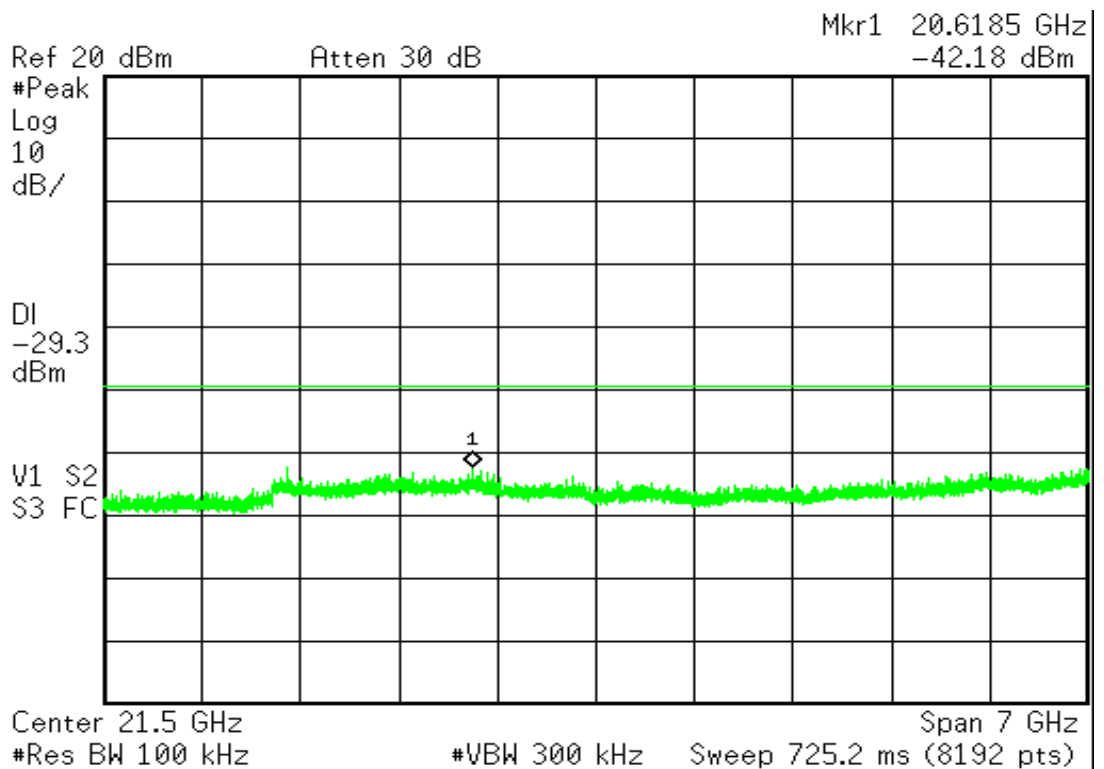
30MHz-10GHz



10GHz~18GHz



18GHz~25GHz



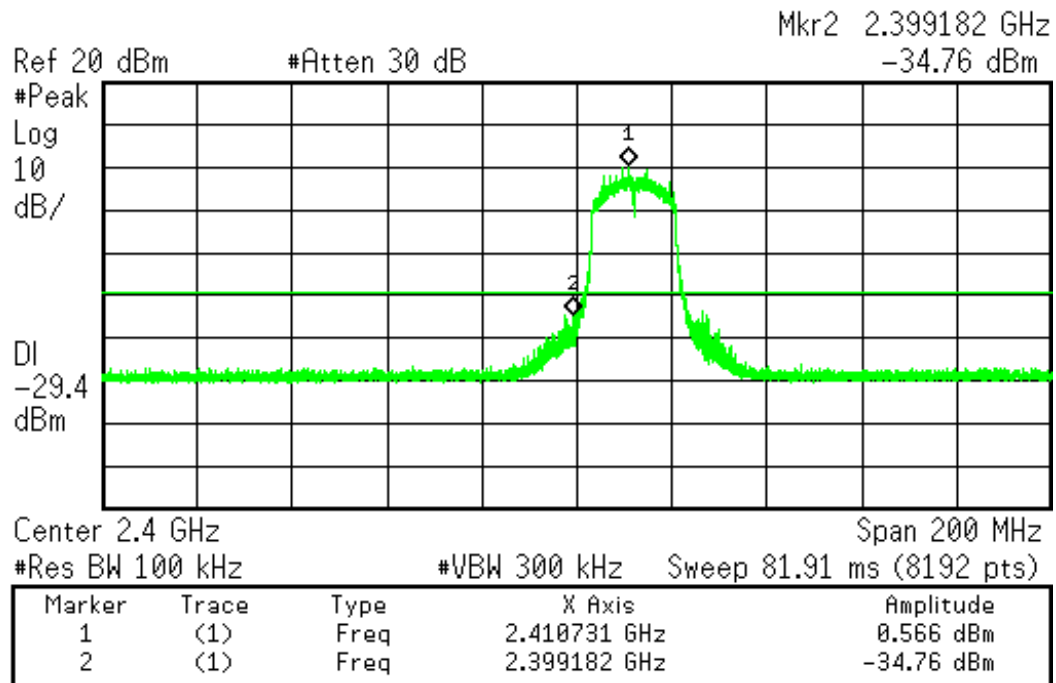


Test Mode : 802.11n 20HT, Continuous Transmitting

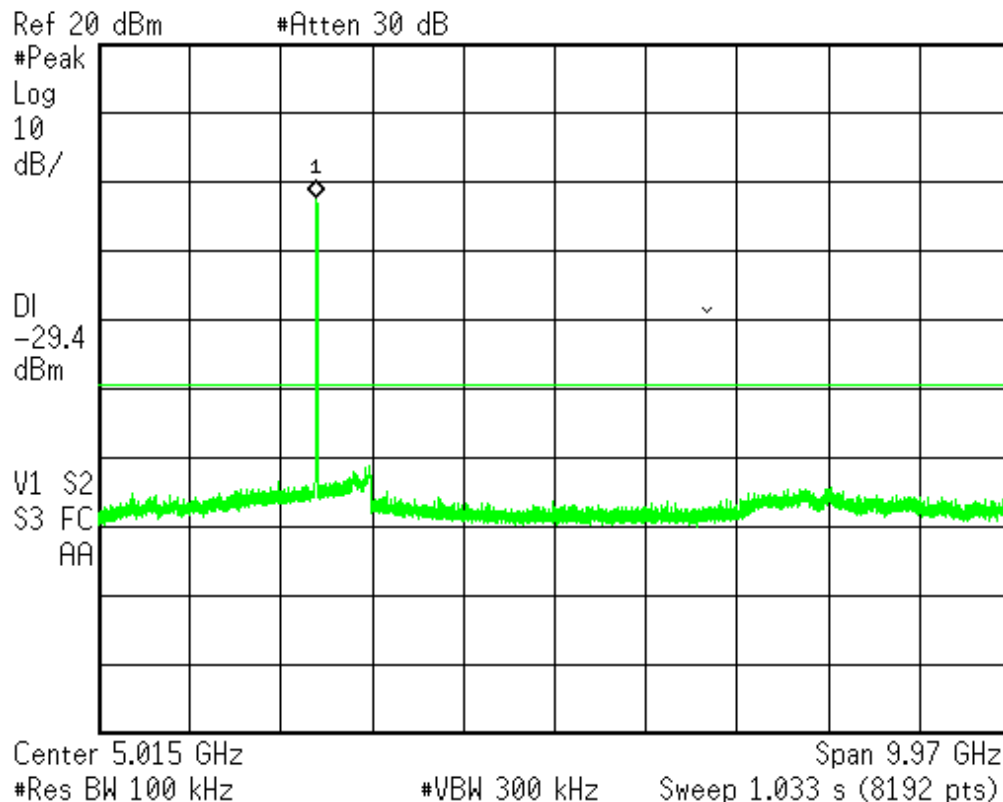
Tester : Martin

Test Frequency: 2412MHz

Limit Line : -29.43dBm



30MHz-10GHz



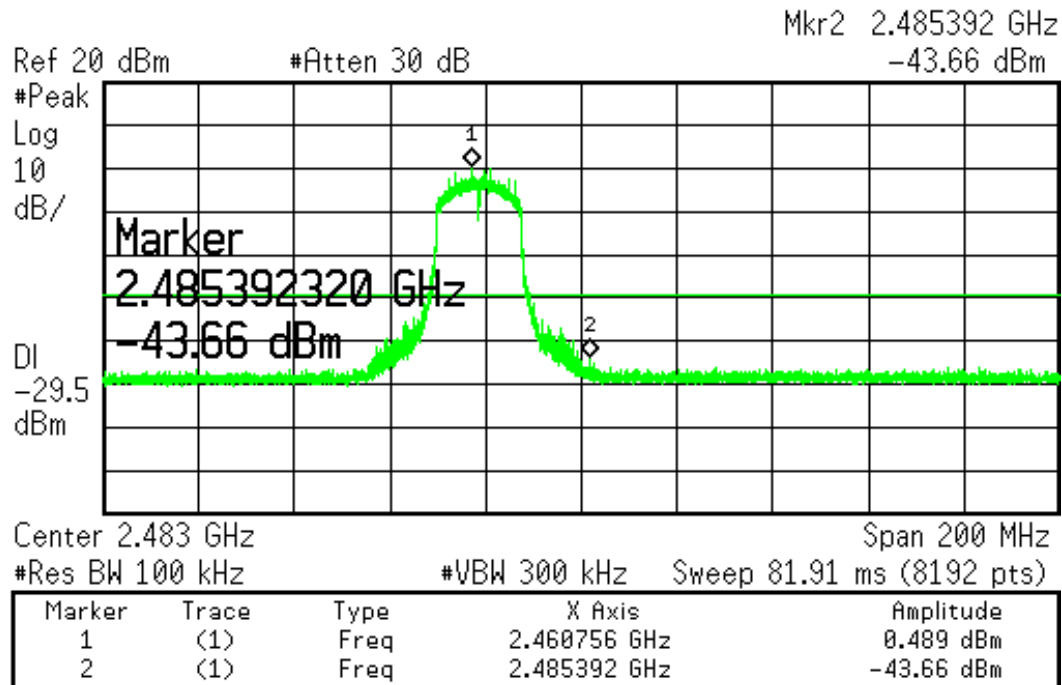


Test Mode : 802.11n 20HT, Continuous Transmitting

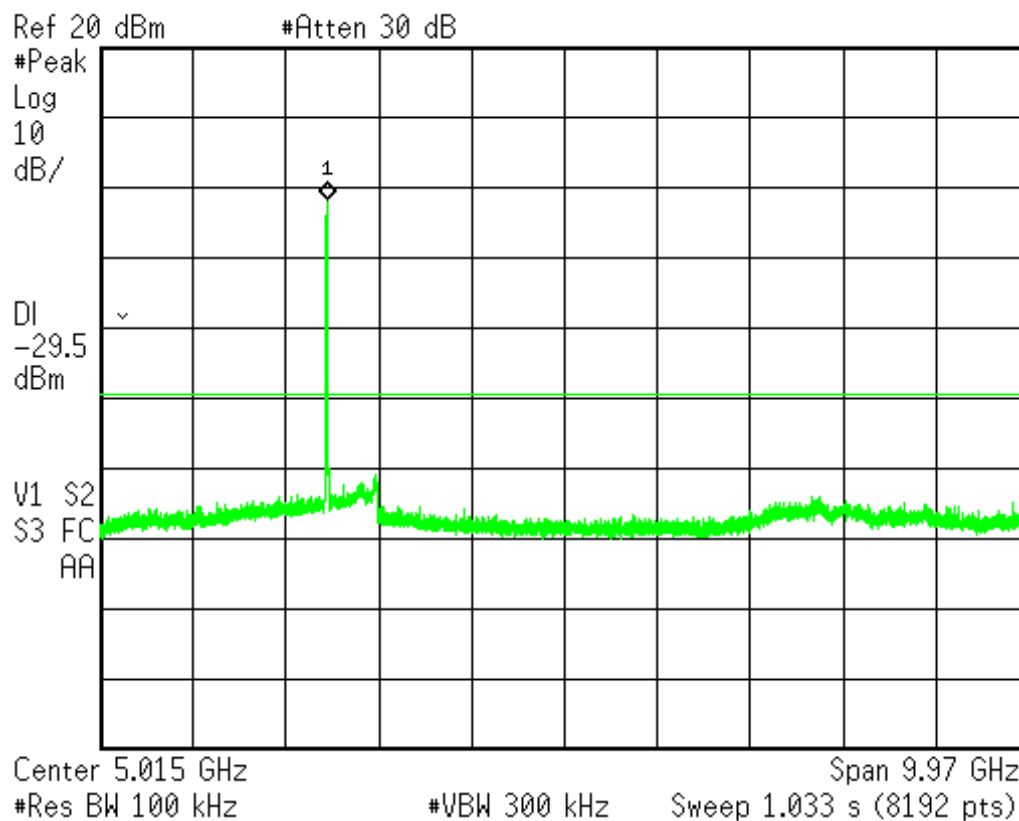
Tester : Martin

Test Frequency: 2462MHz

Limit Line : -29.51dBm



30MHz-10GHz



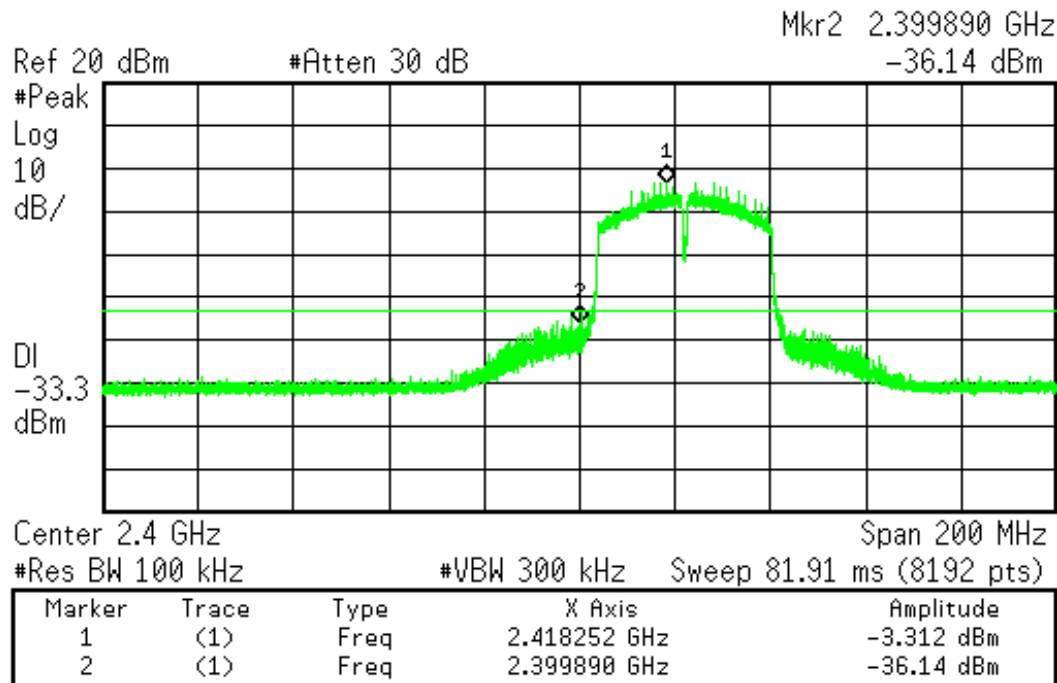


Test Mode : 802.11n 40HT, Continuous Transmitting

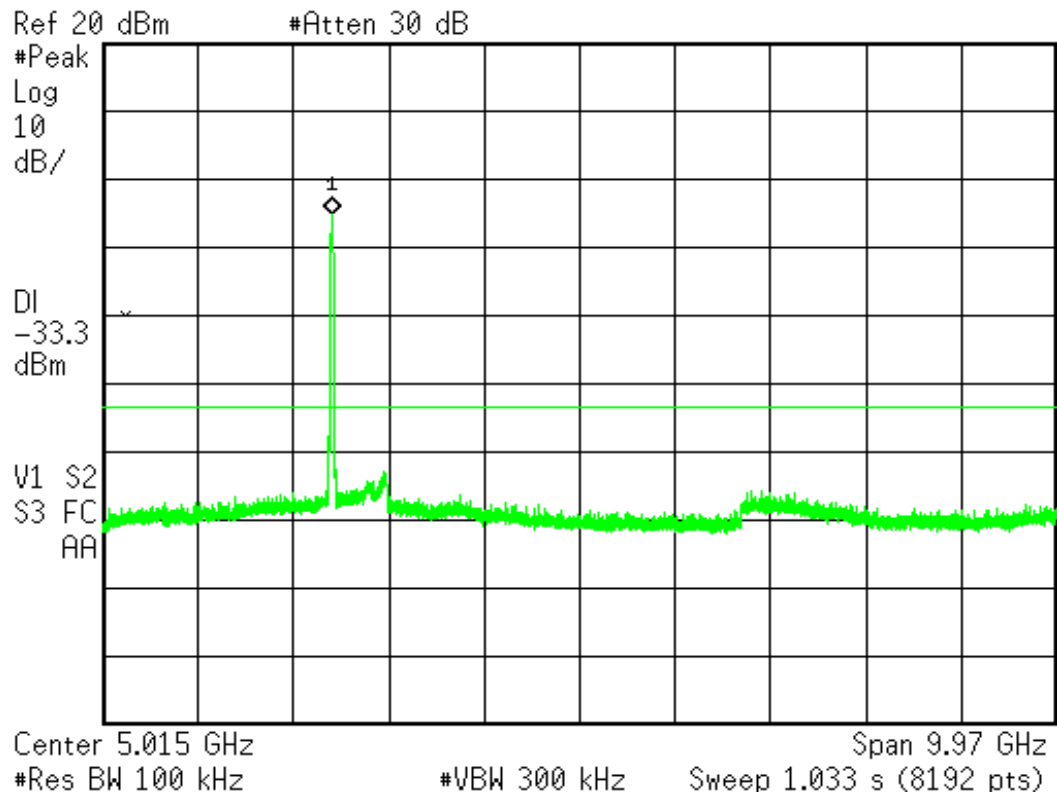
Tester : Martin

Test Frequency: 2422MHz

Limit Line : -33.31dBm



30MHz-10GHz



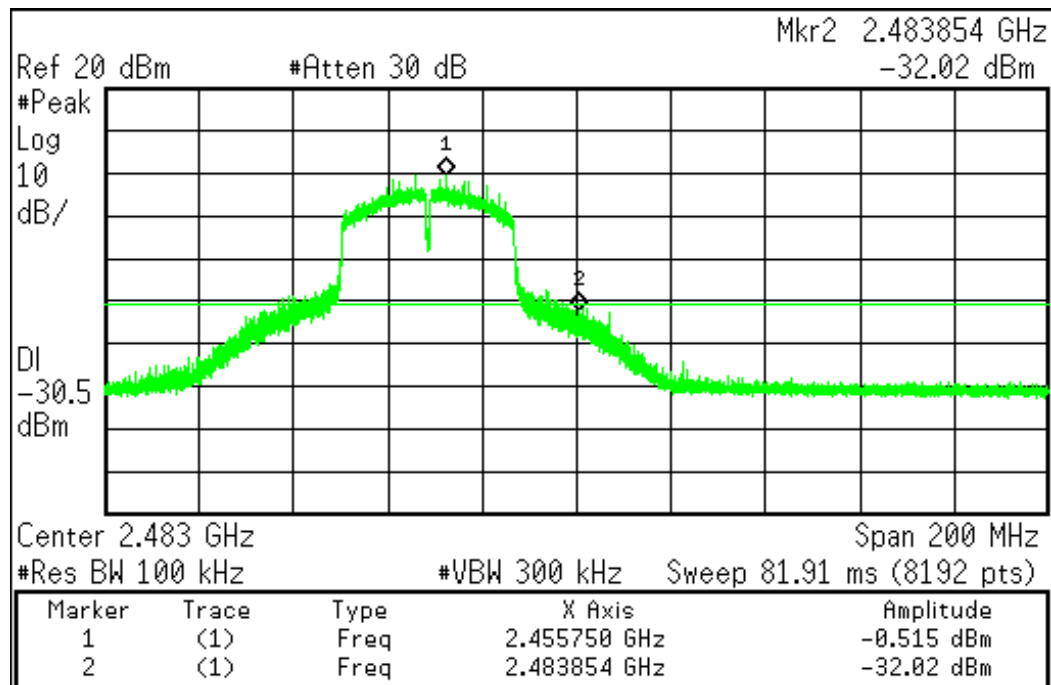


Test Mode : 802.11n 40HT, Continuous Transmitting

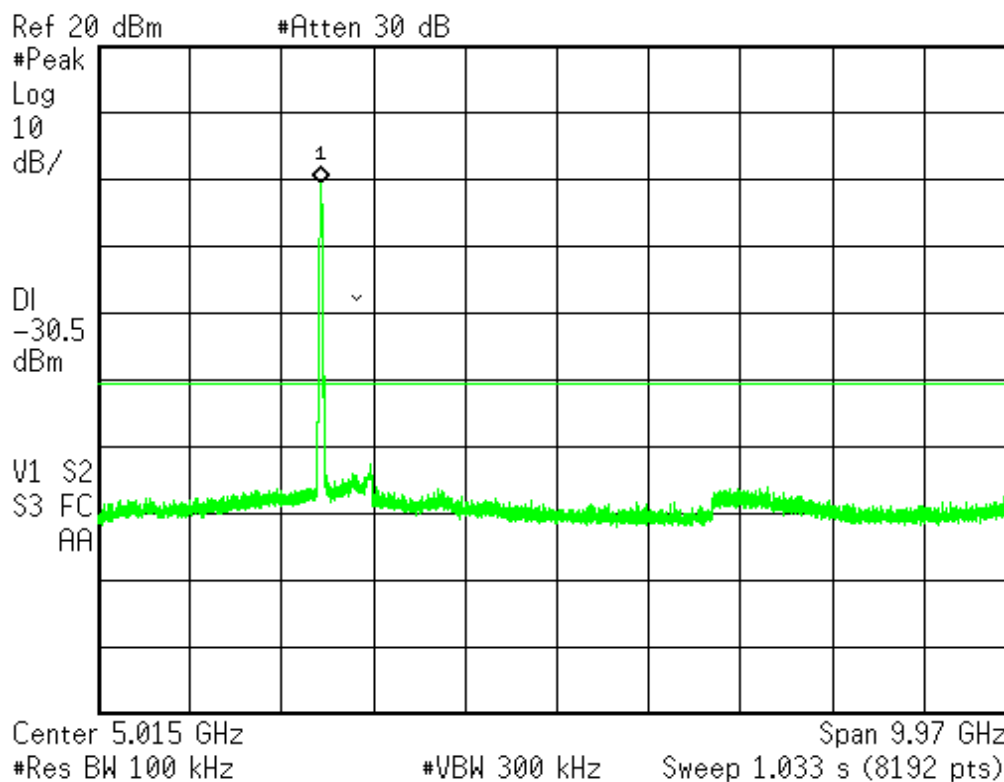
Tester : Martin

Test Frequency: 2452MHz

Limit Line : -24.36dBm



30MHz-10GHz







## 7 Band Edge

**Result: Pass**

### 7.1 Applied standard

According to FCC 15.247(d) and RSS-247 section 5.5, fall in the restricted bands, as defined in FCC 15.205(a) RSS-Gen section 8.10, must also comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Geb section 8.9.

## 7.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Horn Antenna	EMCO	3117/ 0082847	Nov. 25, 2015	Nov. 25, 2016
Bore-sight Antenna Mast	Sunol	TLT2/ 051110-5	NCR	NCR
Pre-Amplifier	MITEQ	TTA1800-30-HG-N-M/ 1904295	Nov. 16, 2015	Nov. 16, 2016
RF Cable	Suhner	Sucoflex 104 / C0093	Nov. 16, 2015	Nov. 16, 2016
MXA Signal Analyzer	KeySight	N9020A/ MY54420147	June 23, 2015	June 23, 2016
Test Software	Audix	e3/ V9 20150907c	NCR	NCR
TR1 Fully -anechoic Chamber	ETS. LINDGREN	TR1/ 17627-B	Feb. 21, 2016	Feb. 21, 2017

Note:

- 1.The calibrations are traceable to NML/ROC.
- 2.NCR : No Calibration Required.

### Instrument Setting

RBW	VBW	Detector	Trace	Comment
1MHz	3MHz	Peak	Maxhold	Peak
1MHz	10Hz	Peak	Maxhold	Average

### Climatic Condition

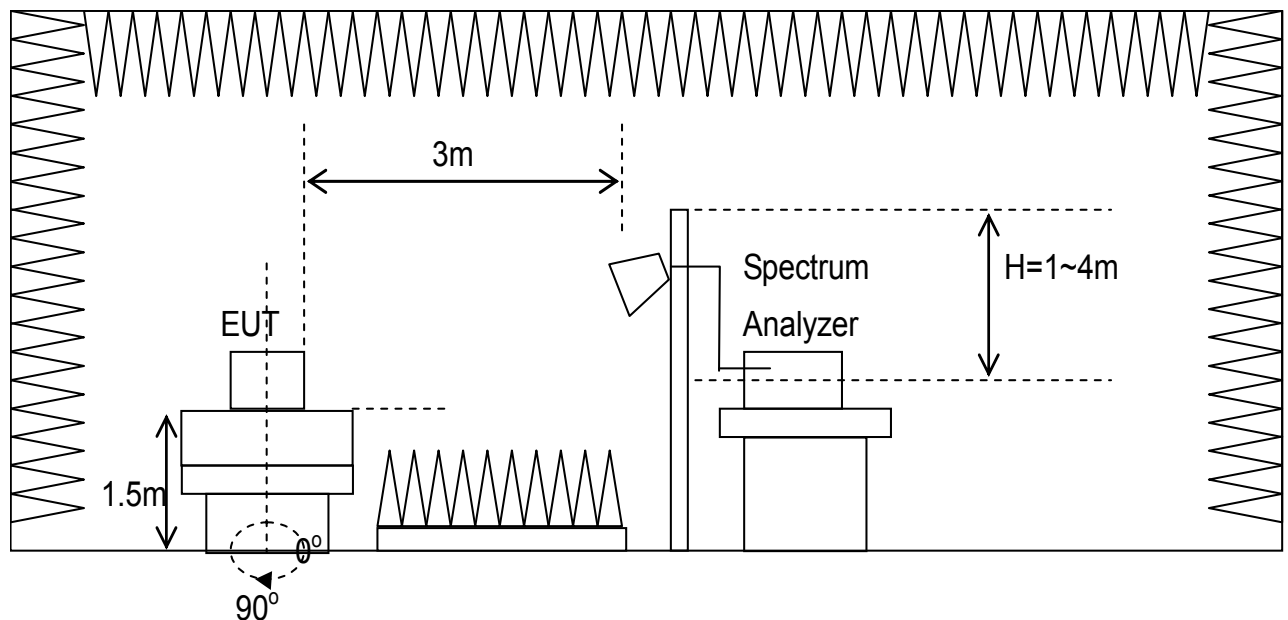
Ambient Temperature : 25°C

Relative Humidity : 69%

### 7.3 Measurement Procedure

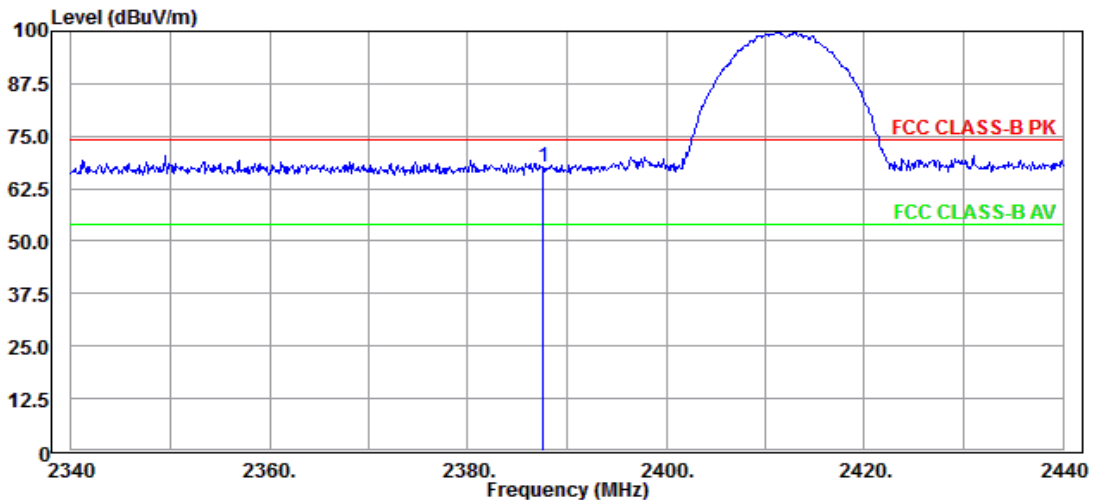
- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. The software provided by client enabled the EUT to transmit data at lowest and highest channel frequencies individually.
- c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r05 section 12.
- d. Measurement the band edge and compare with the required limit.

### 7.4 Test configuration

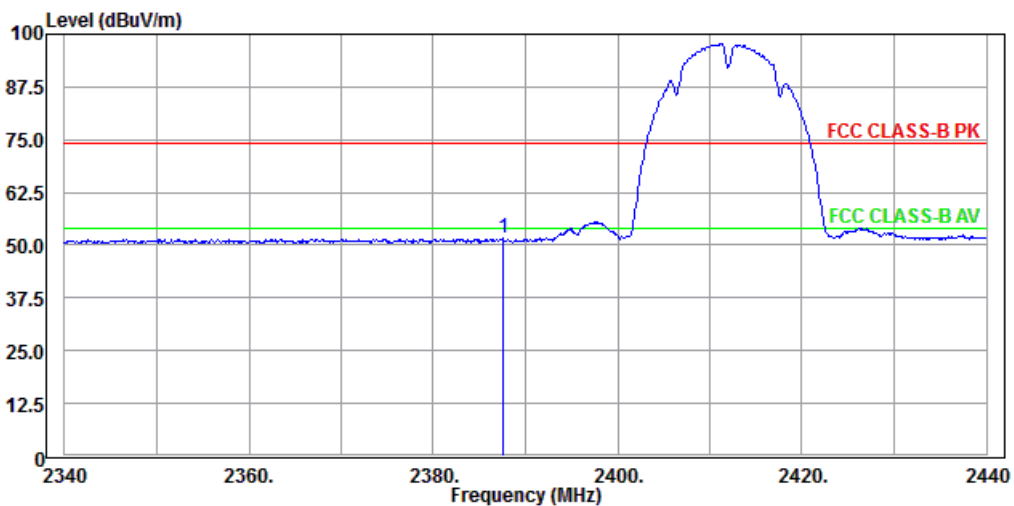


7.5 Test Data

Test Mode : 802.11b, Continuous Transmitting      Tester : Carl  
 Test Frequency: 2412MHz      Polarization : Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2387.500	67.57	32.44	35.13	74.00	-6.43	205	179	HORIZONTAL	Peak



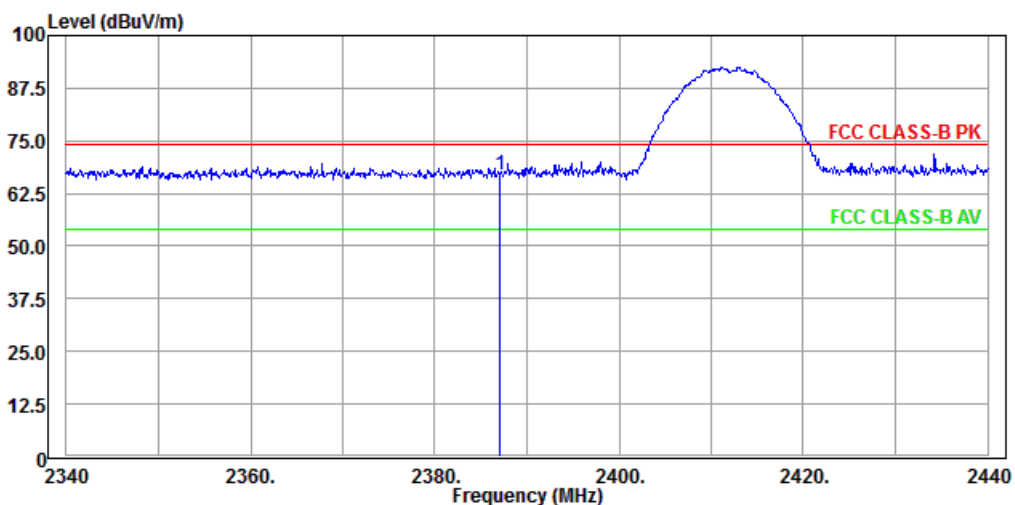
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2387.500	51.54	16.41	35.13	54.00	-2.46	205	179	HORIZONTAL	Average

Note:

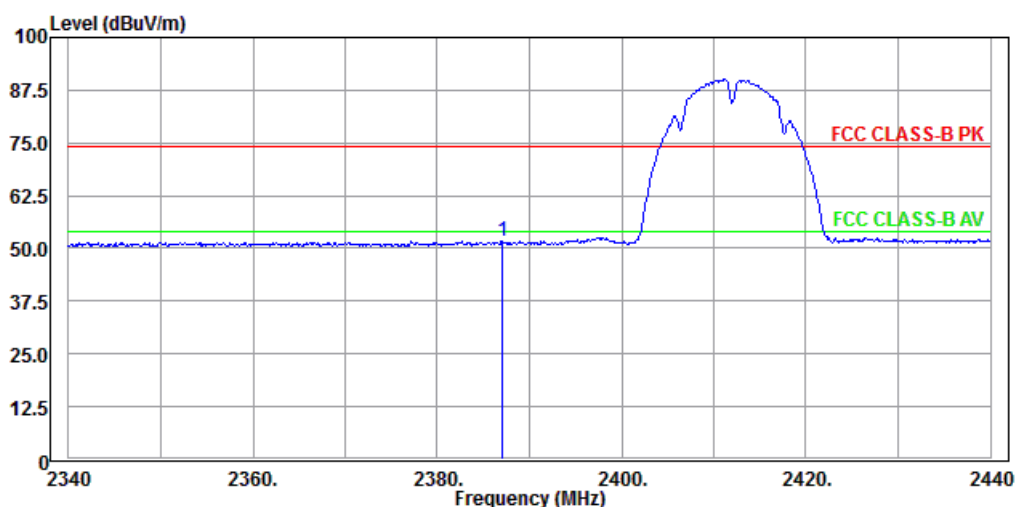
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11b, Continuous Transmitting  
 Test Frequency: 2412MHz

Tester : Carl  
 Polarization : Vertical



	Read	Limit	Over	APos	TPos	Pol/Phase	Remark			
Freq	Level	Level	Factor	Line	Limit					
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	2387.000	66.90	31.77	35.13	74.00	-7.10	205	215	VERTICAL	Peak



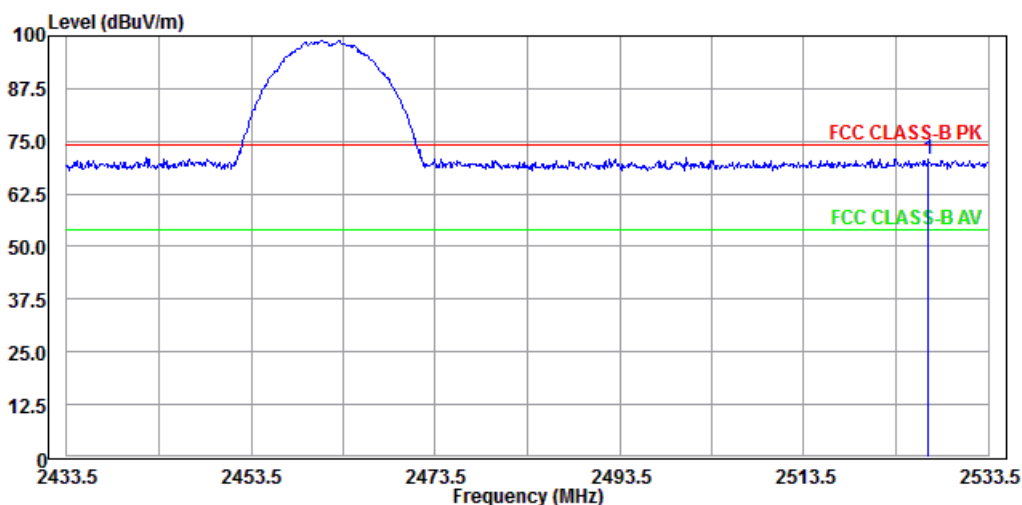
	Read	Limit	Over	APos	TPos	Pol/Phase	Remark			
Freq	Level	Level	Factor	Line	Limit					
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	2387.000	51.72	16.59	35.13	54.00	-2.28	205	215	VERTICAL	Average

Note:

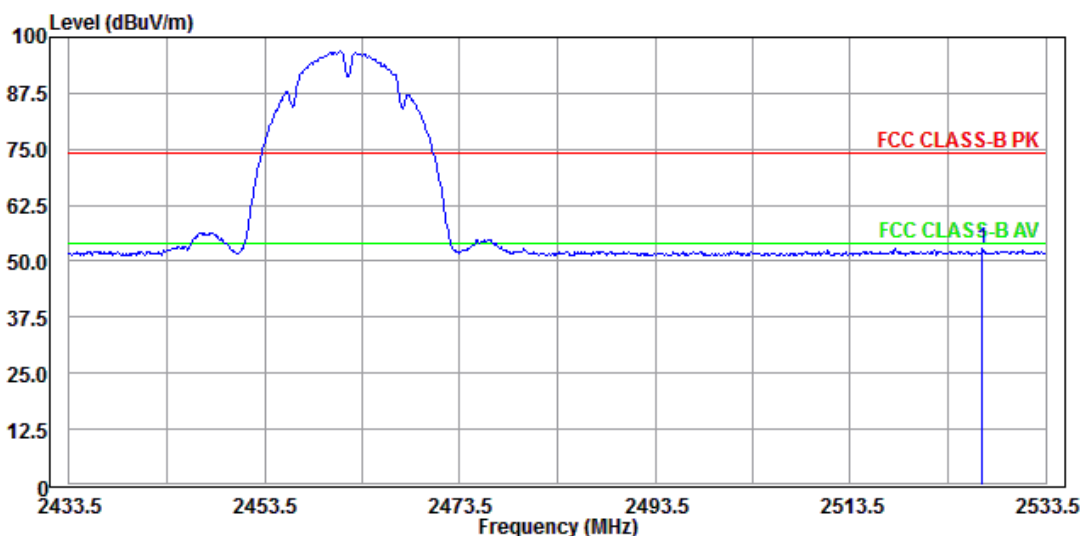
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11b, Continuous Transmitting  
 Test Frequency: 2462MHz

Tester : Carl  
 Polarization : Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2527.000	70.63	35.21	35.42	74.00	-3.37	259	180	HORIZONTAL	Peak



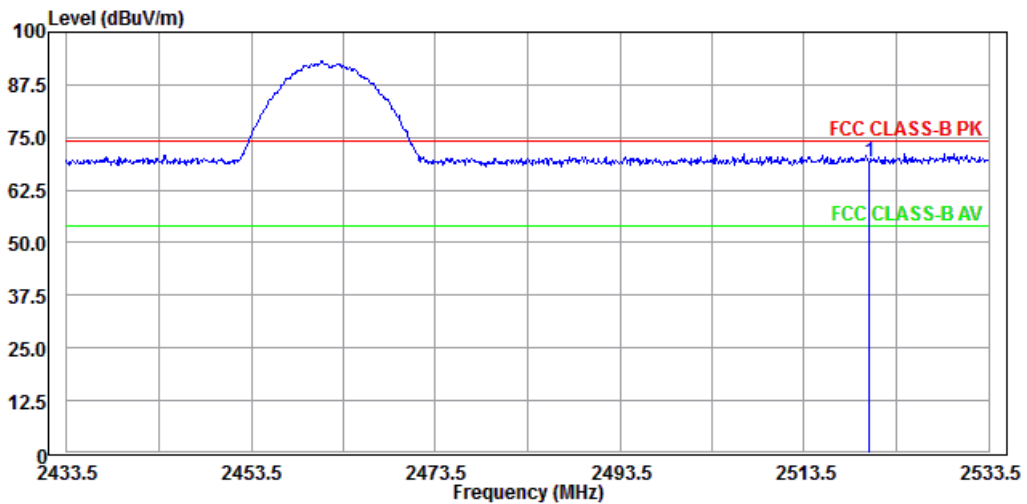
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2527.000	52.89	17.47	35.42	54.00	-1.11	259	180	HORIZONTAL	Average

Note:

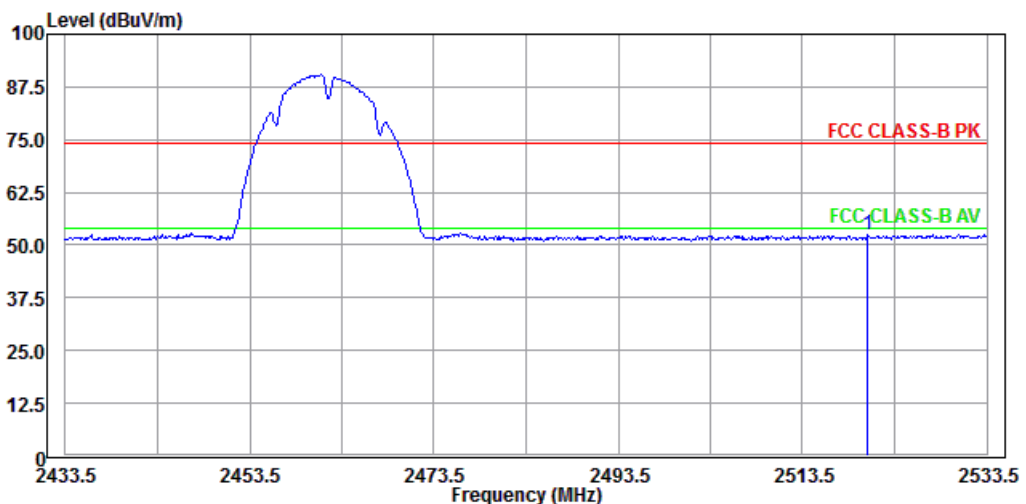
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

**Test Mode : 802.11b, Continuous Transmitting**  
**Test Frequency: 2462MHz**

**Tester : Carl**  
**Polarization : Vertical**



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2520.600	69.14	33.74	35.40	74.00	-4.86	205	247	VERTICAL	Peak



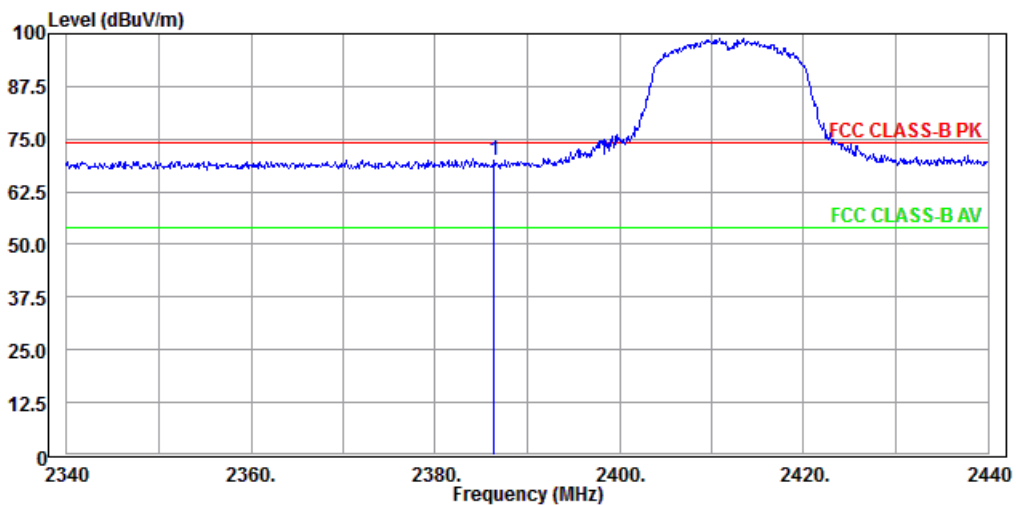
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2520.600	52.49	17.09	35.40	54.00	-1.51	205	247	VERTICAL	Average

**Note:**

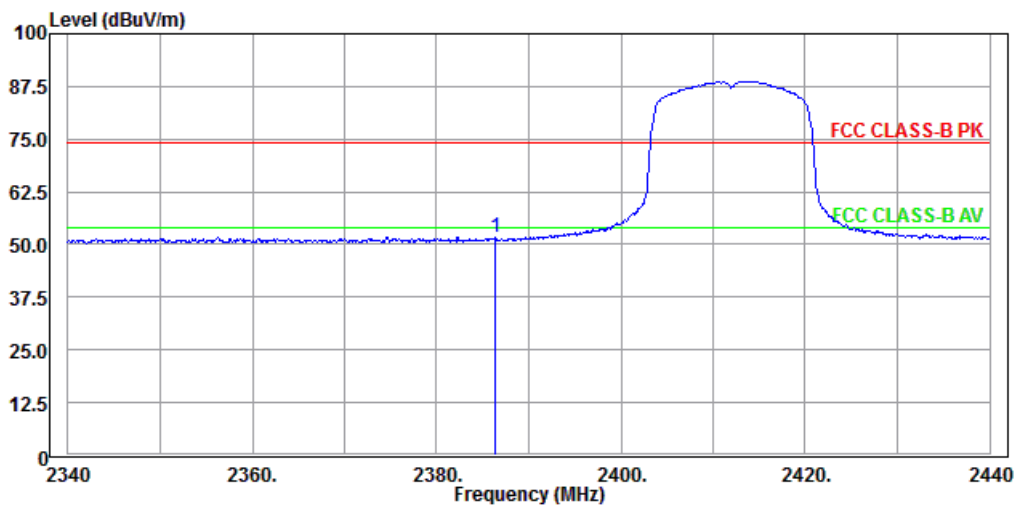
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11g, Continuous Transmitting  
 Test Frequency: 2412MHz

Tester : Carl  
 Polarization : Horizontal



	Read	Limit	Over	APos	TPos	Pol/Phase	Remark
Freq	Level	Factor	Line	Limit			
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2386.400	70.11	34.98	35.13	74.00	-3.89	135	10 HORIZONTAL Peak



	Read	Limit	Over	APos	TPos	Pol/Phase	Remark
Freq	Level	Factor	Line	Limit			
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2386.400	51.78	16.65	35.13	54.00	-2.22	135	10 HORIZONTAL Average

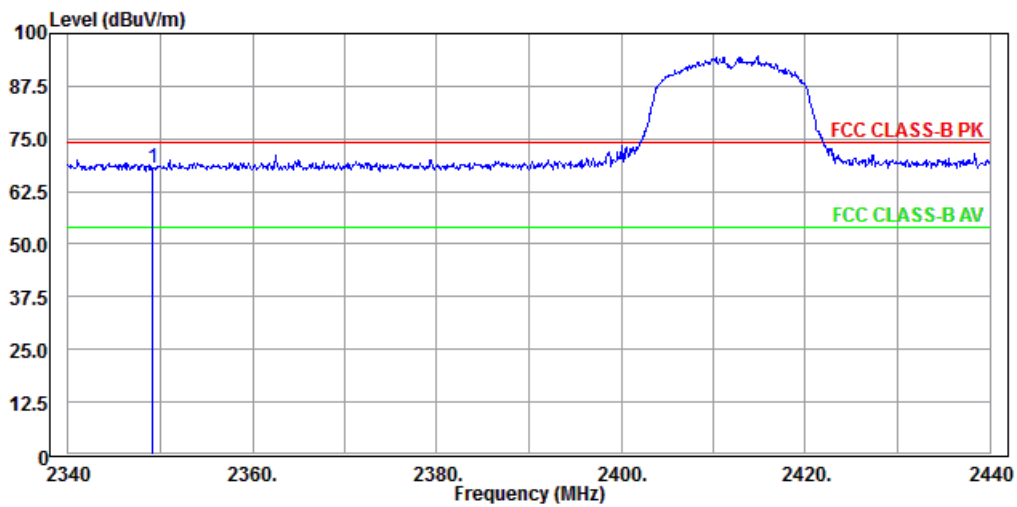
Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

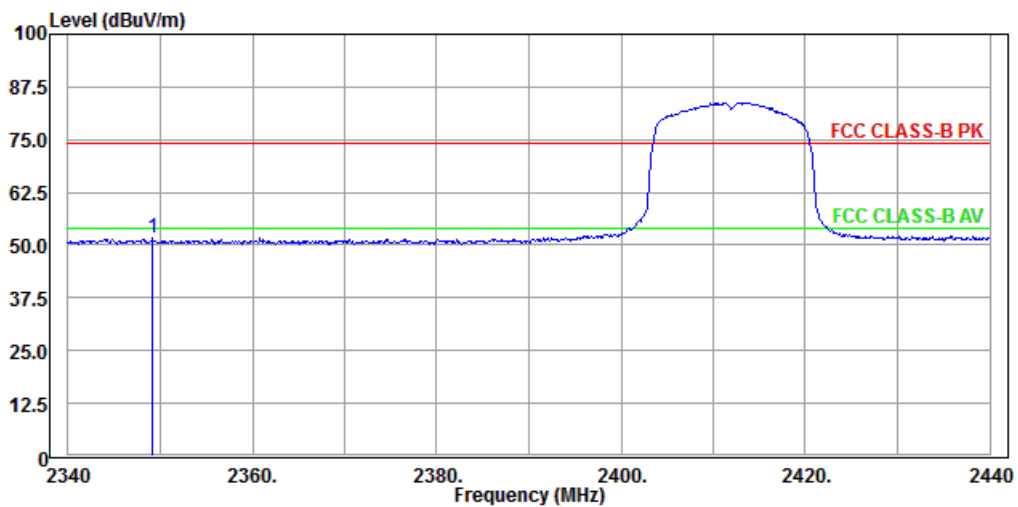


Test Mode : 802.11g, Continuous Transmitting  
 Test Frequency: 2412MHz

Tester : Carl  
 Polarization : Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2349.200	68.07	32.98	35.09	74.00	-5.93	145	217	VERTICAL	Peak



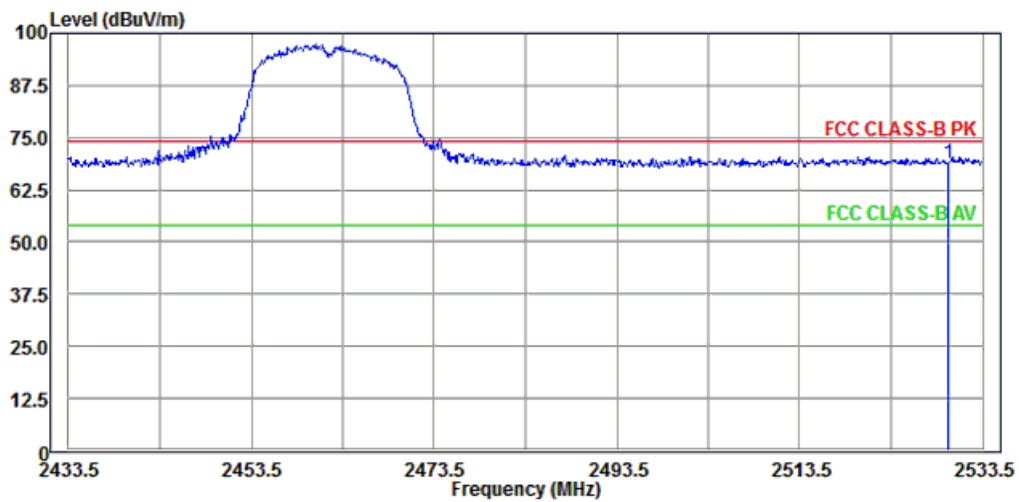
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2349.200	51.56	16.47	35.09	54.00	-2.44	145	217	VERTICAL	Average

Note:

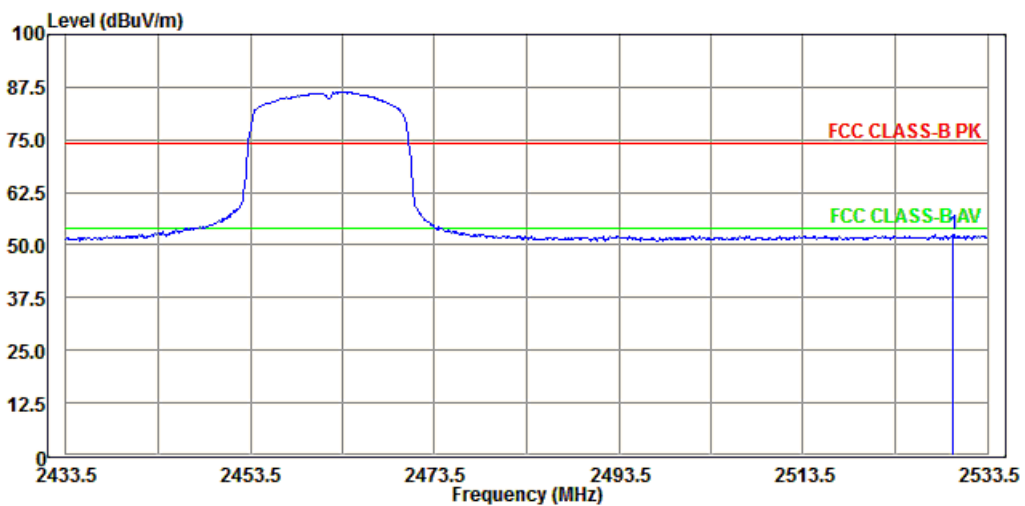
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11g, Continuous Transmitting  
 Test Frequency: 2462MHz

Tester : Carl  
 Polarization : Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2529.800	68.26	32.84	35.42	74.00	-5.74	110	20	HORIZONTAL	Peak



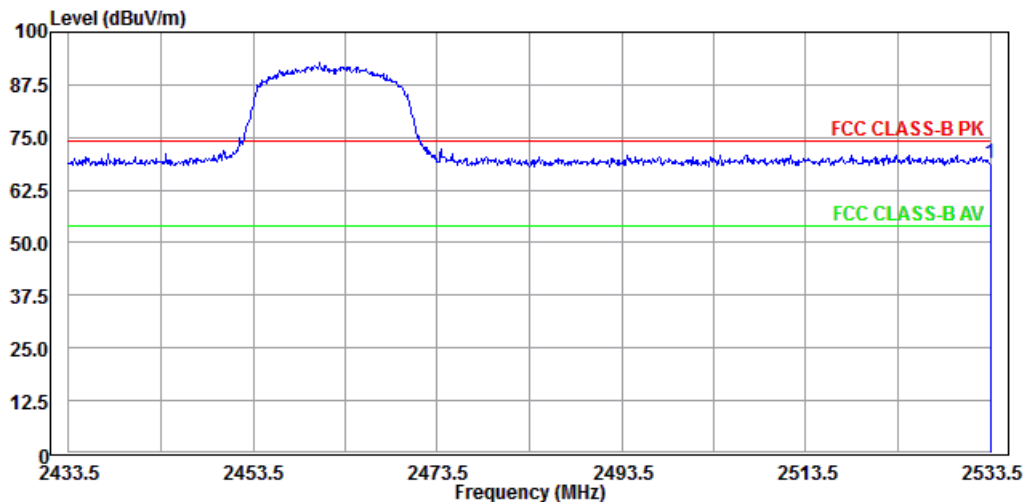
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2529.800	52.14	16.72	35.42	54.00	-1.86	110	20	HORIZONTAL	Average

Note:

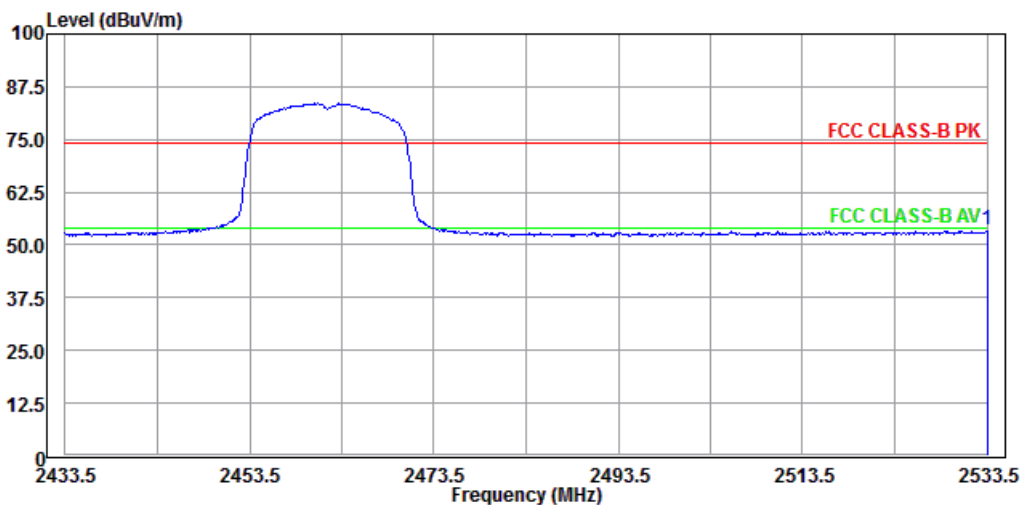
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11g, Continuous Transmitting  
 Test Frequency: 2462MHz

Tester : Carl  
 Polarization : Vertical



	Read	Limit	Over	APos	TPos	Pol/Phase	Remark
Freq	Level	Factor	Line	Limit			
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2533.500	68.98	33.56	35.42	74.00	-5.02	212	75 VERTICAL Peak

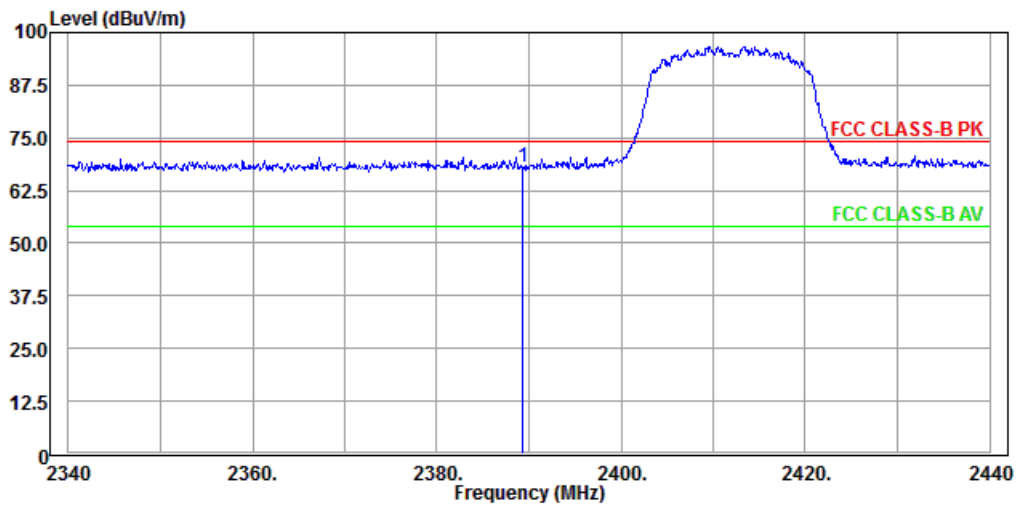


	Read	Limit	Over	APos	TPos	Pol/Phase	Remark
Freq	Level	Factor	Line	Limit			
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2533.500	53.45	18.03	35.42	54.00	-0.55	212	75 VERTICAL Average

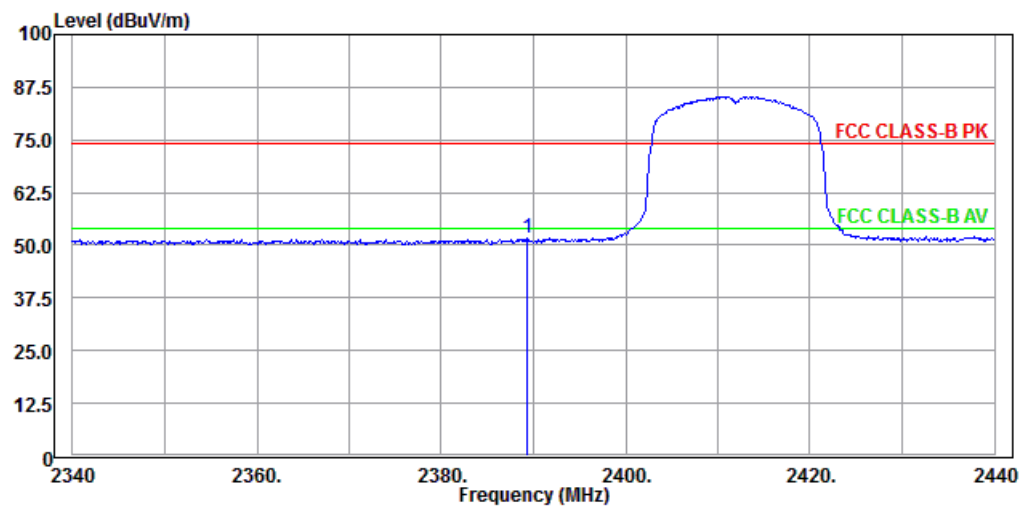
Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11n 20HT, Continuous Transmitting Tester : Carl  
 Test Frequency: 2412MHz Polarization : Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2389.300	67.89	32.76	35.13	74.00	-6.11	132	177	HORIZONTAL	Peak



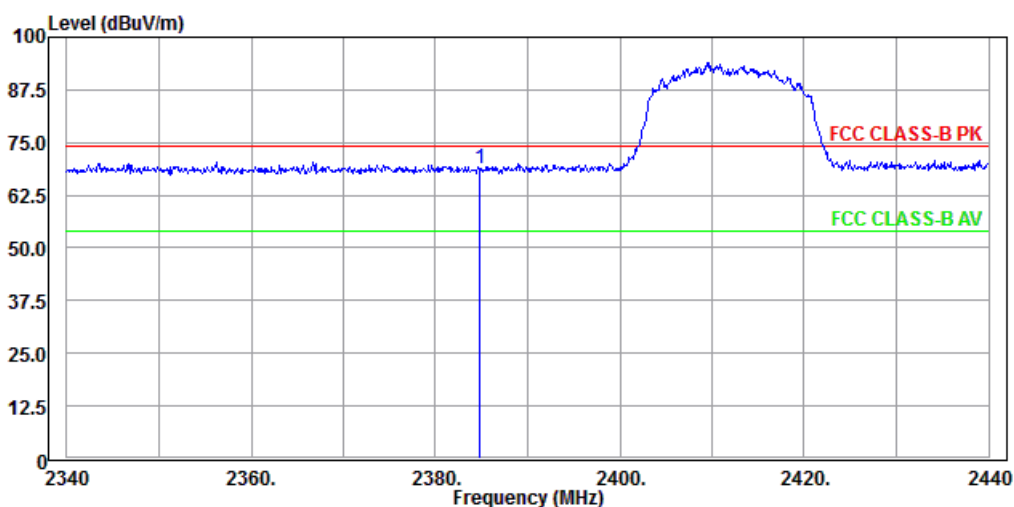
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2389.300	51.53	16.40	35.13	54.00	-2.47	132	177	HORIZONTAL	Average

**Note:**

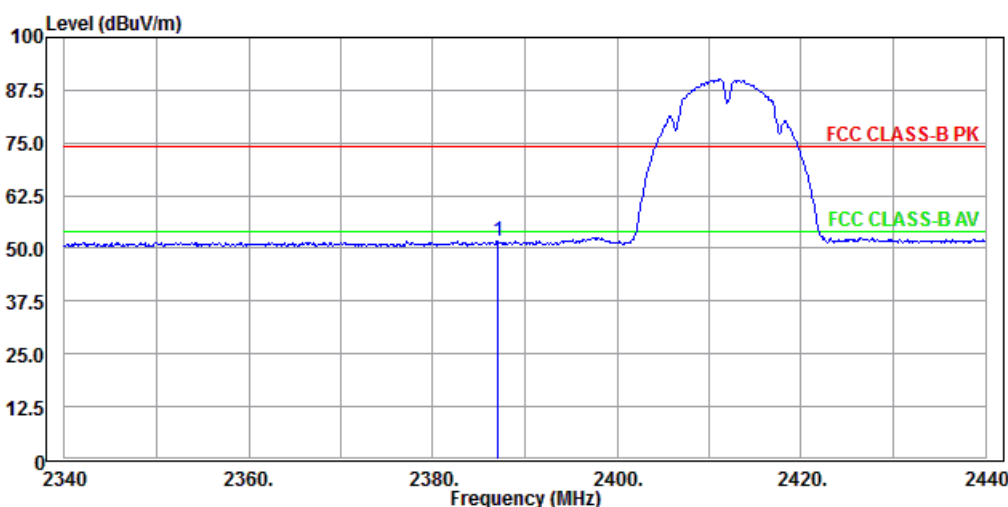
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11n 20HT, Continuous Transmitting  
 Test Frequency: 2412MHz

Tester : Carl  
 Polarization: Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2384.800	68.73	33.60	35.13	74.00	-5.27	135	249	VERTICAL	Peak



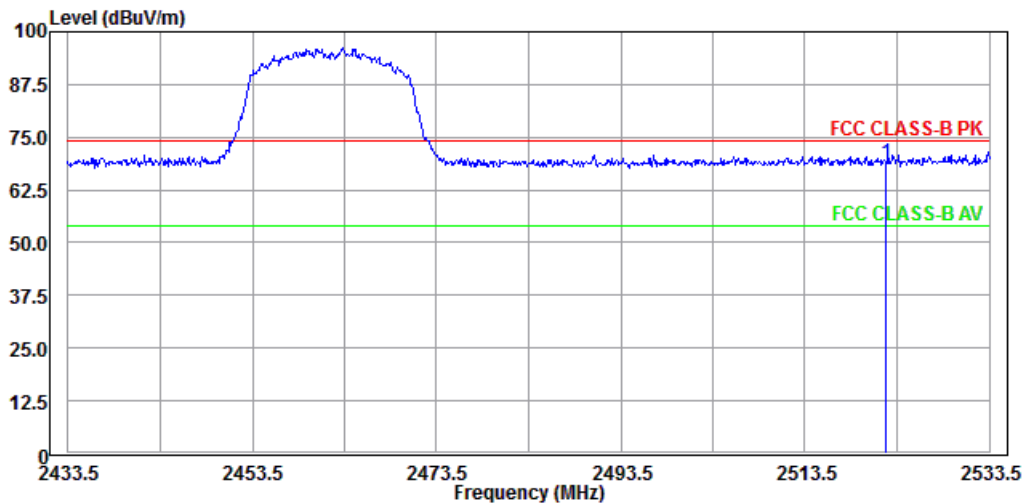
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2387.000	51.72	16.59	35.13	54.00	-2.28	205	215	VERTICAL	Average

Note:

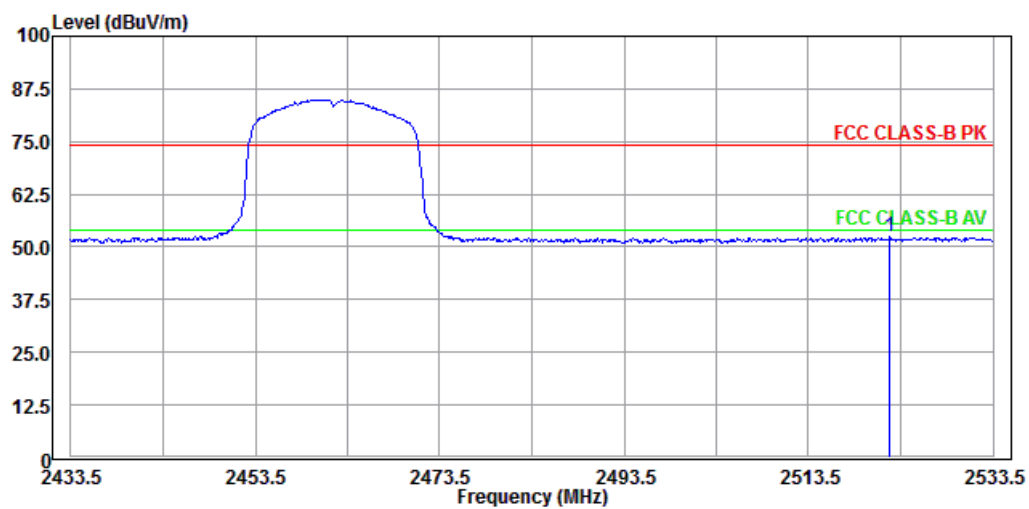
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

**Test Mode : 802.11n 20HT, Continuous Transmitting**  
**Test Frequency: 2462MHz**

**Tester : Carl**  
**Polarization : Horizontal**



	Read	Limit	Over	APos	TPos	Pol/Phase	Remark
Freq	Level	Level	Factor	Line	Limit		
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2522.300	68.73	33.33	35.40	74.00	-5.27	140	21 HORIZONTAL Peak



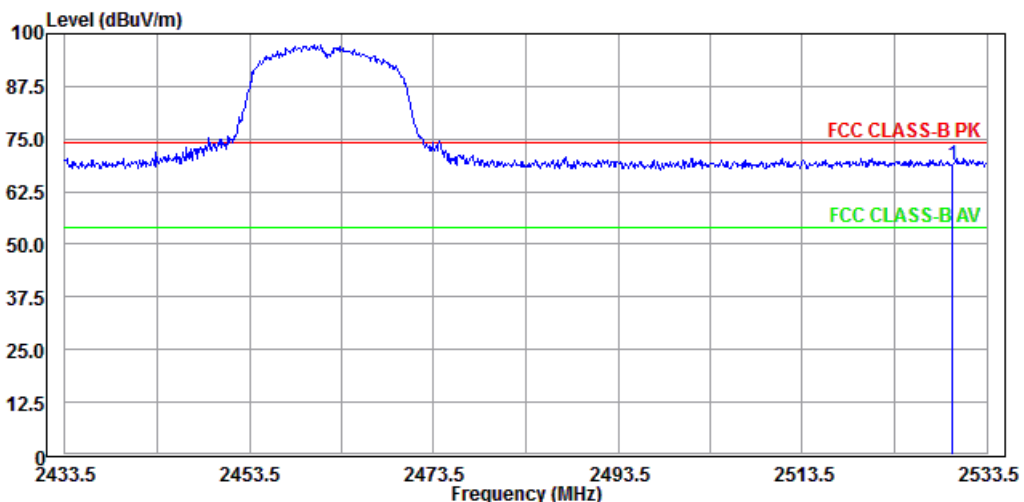
	Read	Limit	Over	APos	TPos	Pol/Phase	Remark
Freq	Level	Level	Factor	Line	Limit		
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2522.300	52.34	16.94	35.40	54.00	-1.66	140	21 HORIZONTAL Average

**Note:**

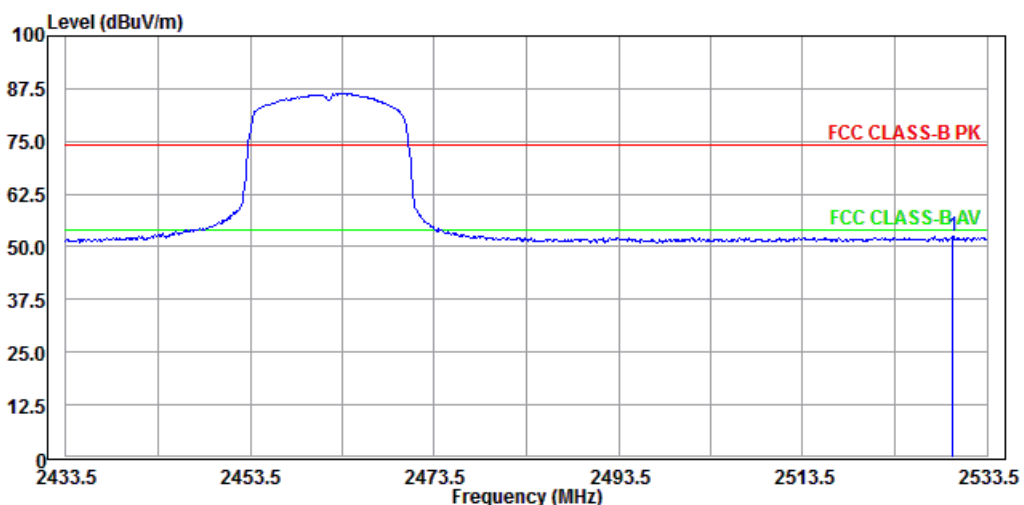
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11n 20HT, Continuous Transmitting  
 Test Frequency: 2462MHz

Tester : Carl  
 Polarization: Vertical



	Read	Limit	Over	APos	TPos	Pol/Phase	Remark			
Freq	Level	Level	Factor	Line	Limit					
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	2529.800	68.68	33.26	35.42	74.00	-5.32	110	20	Vertical	Peak

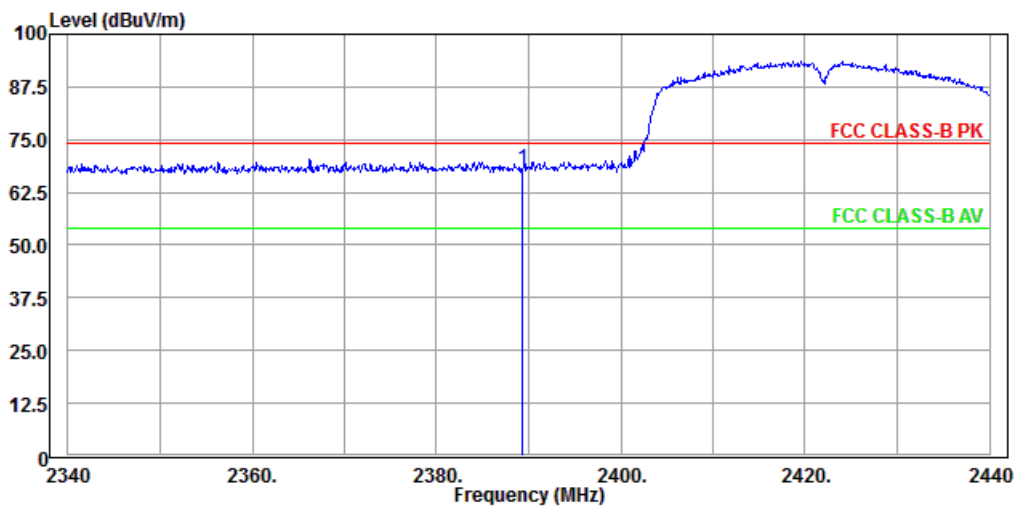


	Read	Limit	Over	APos	TPos	Pol/Phase	Remark			
Freq	Level	Level	Factor	Line	Limit					
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	2529.800	52.53	17.11	35.42	54.00	-1.47	110	20	Vertical	Average

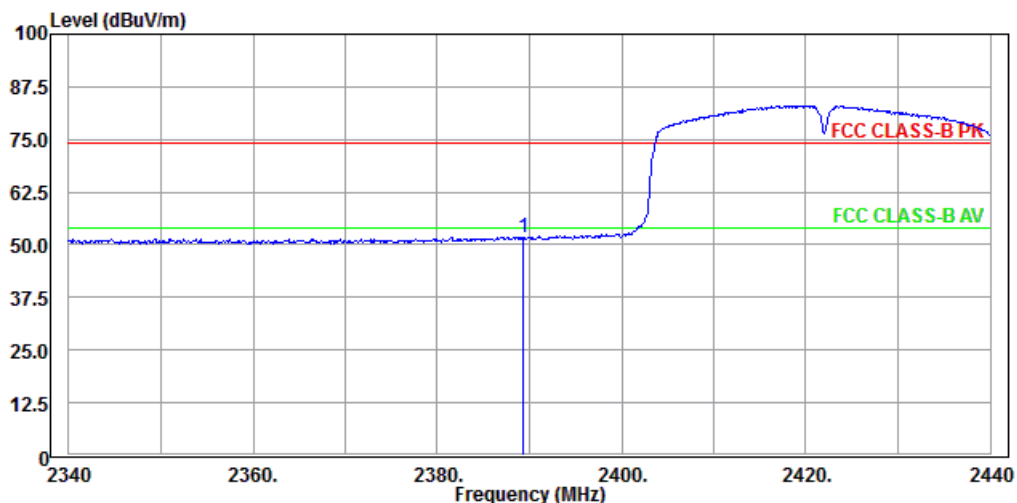
Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11n 40HT, Continuous Transmitting Tester : Carl  
 Test Frequency: 2422MHz Polarization : Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2389.300	68.02	32.89	35.13	74.00	-5.98	117	17	HORIZONTAL	Peak



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2389.300	51.81	16.68	35.13	54.00	-2.19	117	17	HORIZONTAL	Average

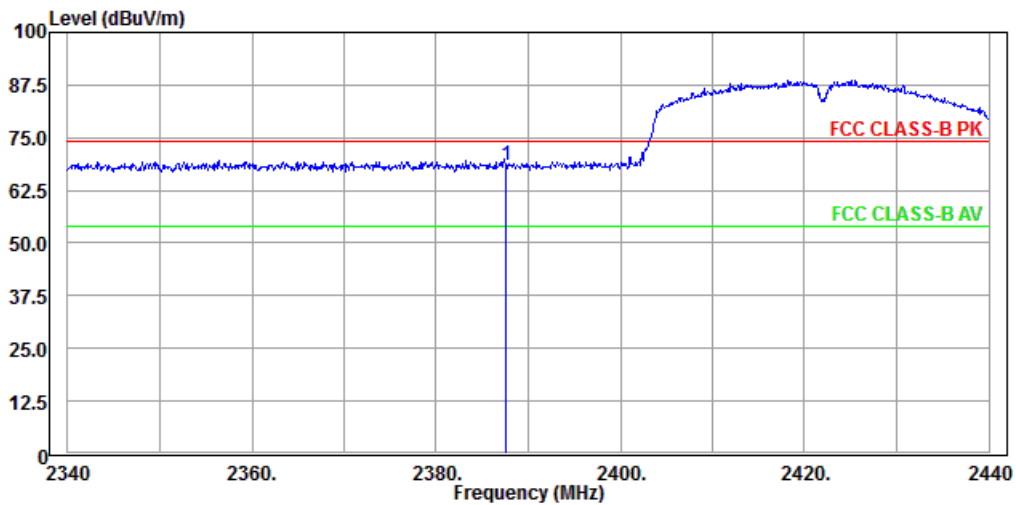
Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

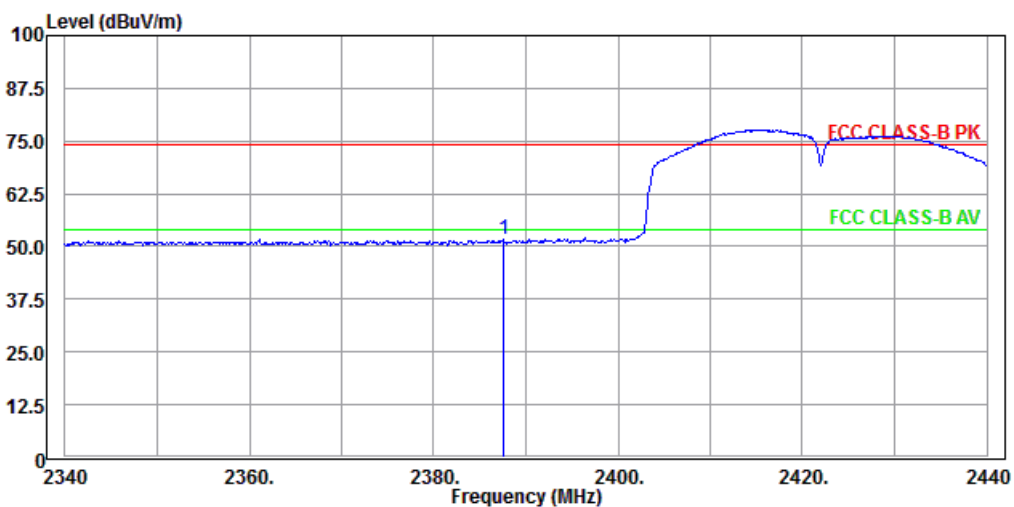


Test Mode : 802.11n 40HT, Continuous Transmitting  
 Test Frequency: 2422MHz

Tester : Carl  
 Polarization: Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2387.500	68.59	33.46	35.13	74.00	-5.41	120	246	VERTICAL	Peak



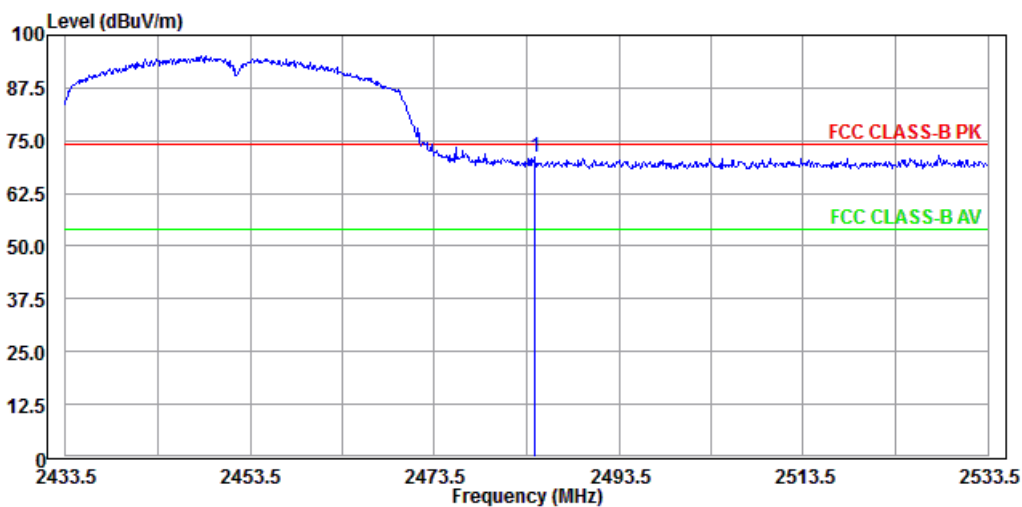
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2387.500	51.67	16.54	35.13	54.00	-2.33	120	246	VERTICAL	Average

Note:

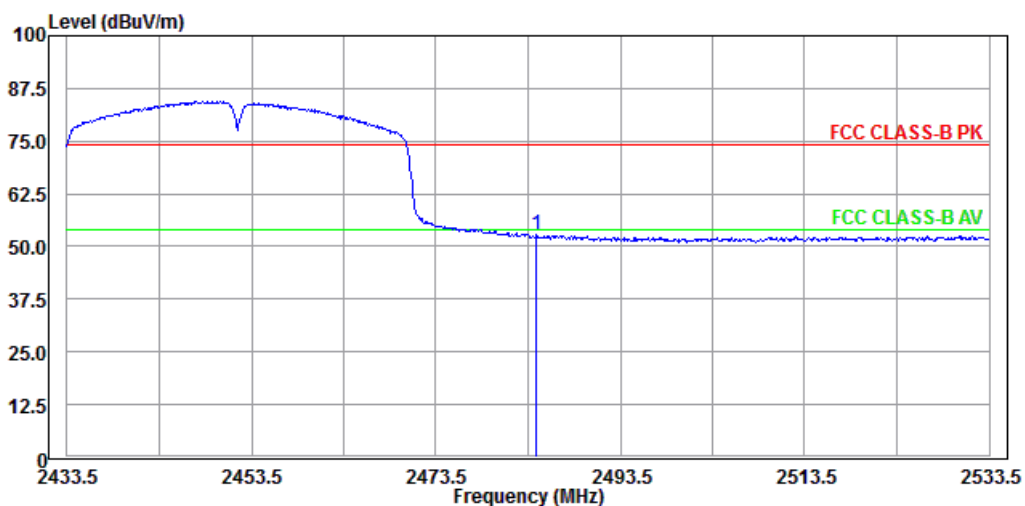
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11n 40HT, Continuous Transmitting  
 Test Frequency: 2452MHz

Tester : Carl  
 Polarization : Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2484.400	71.16	35.82	35.34	74.00	-2.84	139	11	HORIZONTAL	Peak



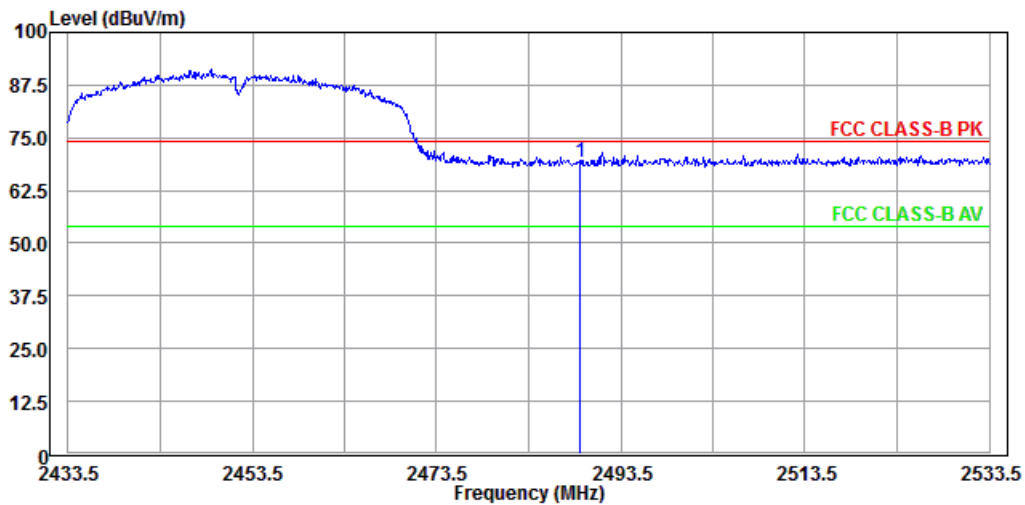
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2484.400	52.81	17.47	35.34	54.00	-1.19	139	11	HORIZONTAL	Average

Note:

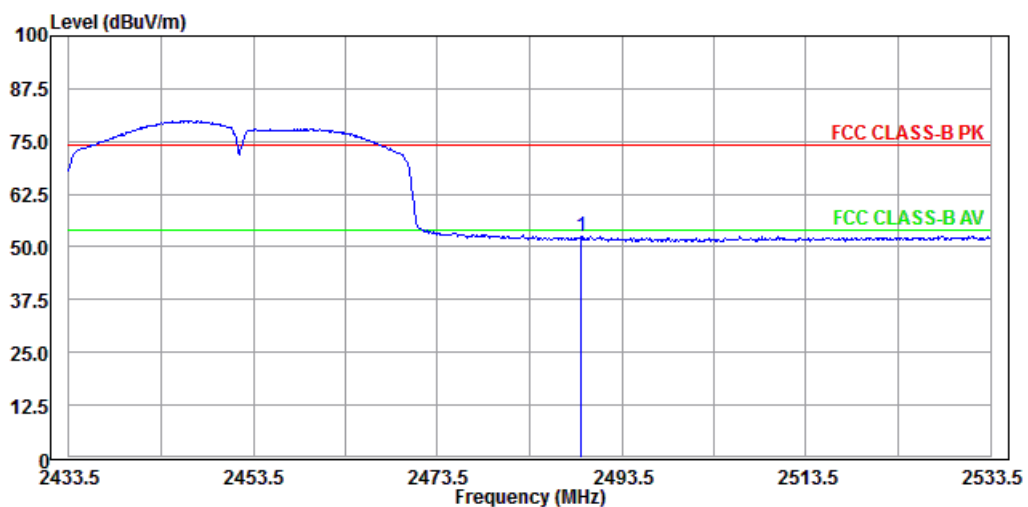
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : 802.11n 40HT, Continuous Transmitting  
 Test Frequency: 2452MHz

Tester : Carl  
 Polarization: Vertical



	Read	Limit	Over	APos	TPos		
Freq	Level	Factor	Line	Limit		Pol/Phase	Remark
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2489.100	69.05	33.70	35.35	74.00	-4.95	166	215 VERTICAL Peak



	Read	Limit	Over	APos	TPos		
Freq	Level	Factor	Line	Limit		Pol/Phase	Remark
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 2489.100	52.57	17.22	35.35	54.00	-1.43	166	215 VERTICAL Average

Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Emission (dBUV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

## 8 Radiated Emission

**Result: Pass**

### 8.1 Applied standard

According to FCC 15.247(d) and RSS-247 section 5.5, fall in the restricted bands, as defined in FCC 15.205(a) RSS-Gen section 8.10, must also comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Geb section 8.9.

## 8.2 Test Instruments

 For Measurement below 1000MHz

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESCI/ 100019	June 18, 2015	June 18, 2016
Spectrum Analyzer	Agilent	E4407B/ MY45106795	June 3, 2015	June 3, 2016
Bi-Log Antenna	SCHWARZBE CK & Mini-Circuits	VULB 9168 & UNAT-4+/ VULB 9168-612 & 003	July 31, 2015	July 31, 2016
Pre-Amplifier	Mini-circuit	ZKL-1R5+/ 004	Feb. 21, 2016	Aug. 21, 2016
RF Cable	N/A	N/A/ C0080	Feb. 21, 2016	Aug. 21, 2016
Test Software	Audix	e3/ V4.2003-7-14k	NCR	NCR
TR11 Semi - anechoic Chamber	ETS. LINDGREN	TR11/ 906-A	May 17, 2016	May 17, 2017

## Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the semi-anechoic chamber listed above is the date of NSA measurement.

**For Measurement above 1000MHz**

<b>Test Site and Equipment</b>	<b>Manufacturer</b>	<b>Model No./ Serial No.</b>	<b>Last Calibration Date</b>	<b>Calibration Due Date</b>
Horn Antenna	EMCO	3117/ 0082847	Nov. 25, 2015	Nov. 25, 2016
Bore-sight Antenna Mast	Sunol	TLT2/ 051110-5	NCR	NCR
Pre-Amplifier	MITEQ	TTA1800-30-HG-N-M/ 1904295	Nov. 16, 2015	Nov. 16, 2016
RF Cable	Suhner	Sucoflex 104 / C0093	Nov. 16, 2015	Nov. 16, 2016
MXA Signal Analyzer	KeySight	N9020A/ MY54420147	June 23, 2015	June 23, 2016
Test Software	Audix	e3/ V9 20150907c	NCR	NCR
TR1 Fully -anechoic Chamber	ETS. LINDGREN	TR1/ 17627-B	Feb. 21, 2016	Feb. 21, 2017

**Note:**

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the chamber TR1 listed above is the date of site VSWR measurement.

**Instrument Setting**

<b>RBW</b>	<b>VBW</b>	<b>Detector</b>	<b>Trace</b>	<b>Comment</b>
120kHz	N/A	Quasi-Peak	Maxhold	Below 1GHz
1MHz	3MHz	Peak	Maxhold	Above 1GHz, Peak
1MHz	10Hz	Peak	Maxhold	Above 1GHz, Average

**Climatic Condition**

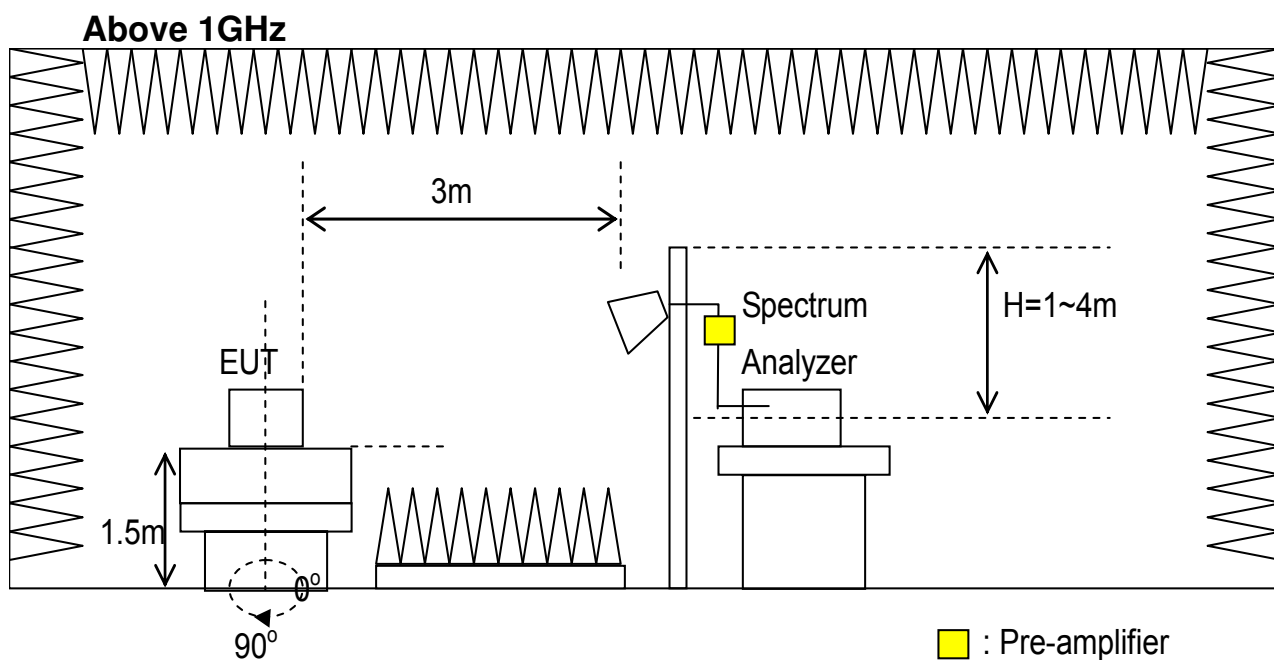
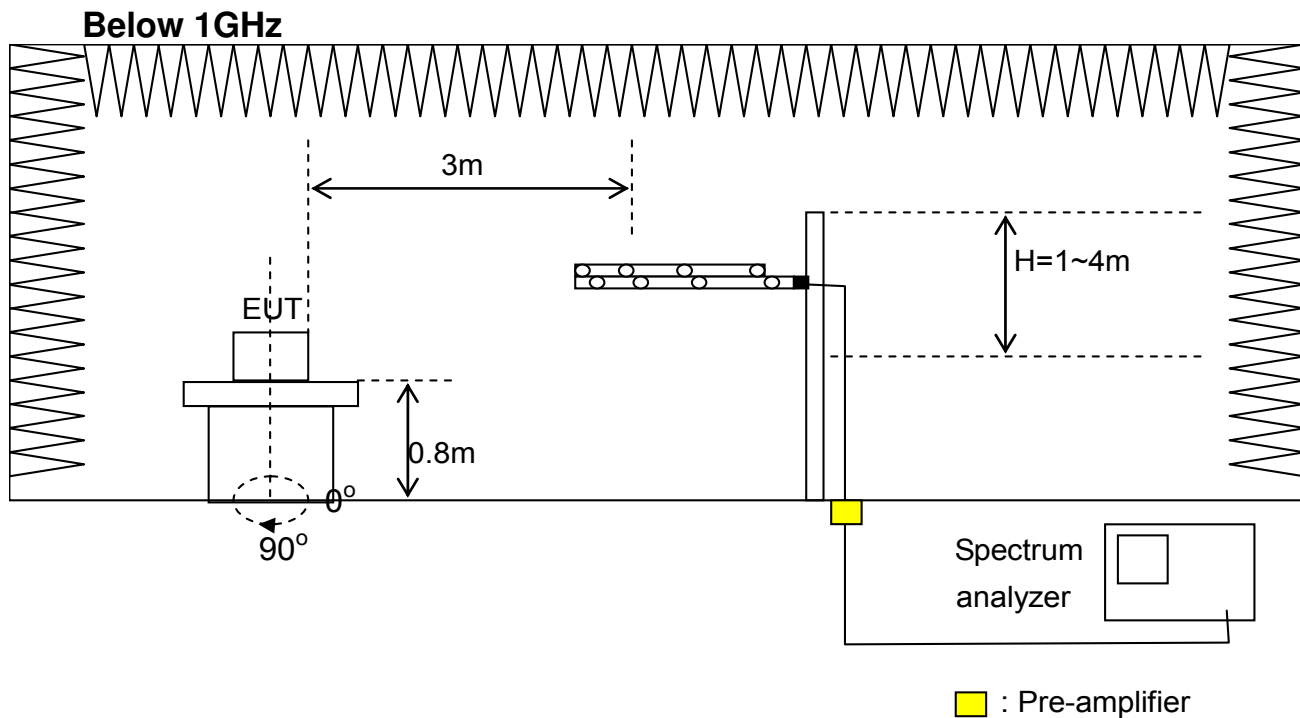
Ambient Temperature : 25°C

Relative Humidity :58%

### 8.3 Measurement Procedure

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. A software provided by client enabled the EUT to transmit and receive data at operating frequency.(if necessary)
- c. If the EUT is tabletop equipment, it should be placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it should be placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.
- d. The EUT is set 3m away from the interference receiving antenna.
- e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.
- f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.
- g. Then measure each frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.
- h. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.
- i. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.
- j. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.
- k. Change the receiving antenna to another polarization to measure radiated emission by following step e. to j. again.
- l. If the peak emission level below 1000MHz measured from step f. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.
- m. If the peak emission level above 1000MHz measured from step f. is 20dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate A.V. value will be measured and presented.

8.4 Test configuration





8.5 Test Data

Radiated Emission Measurement below 1000MHz

Test Mode : 802.11b, Continuous Transmitting

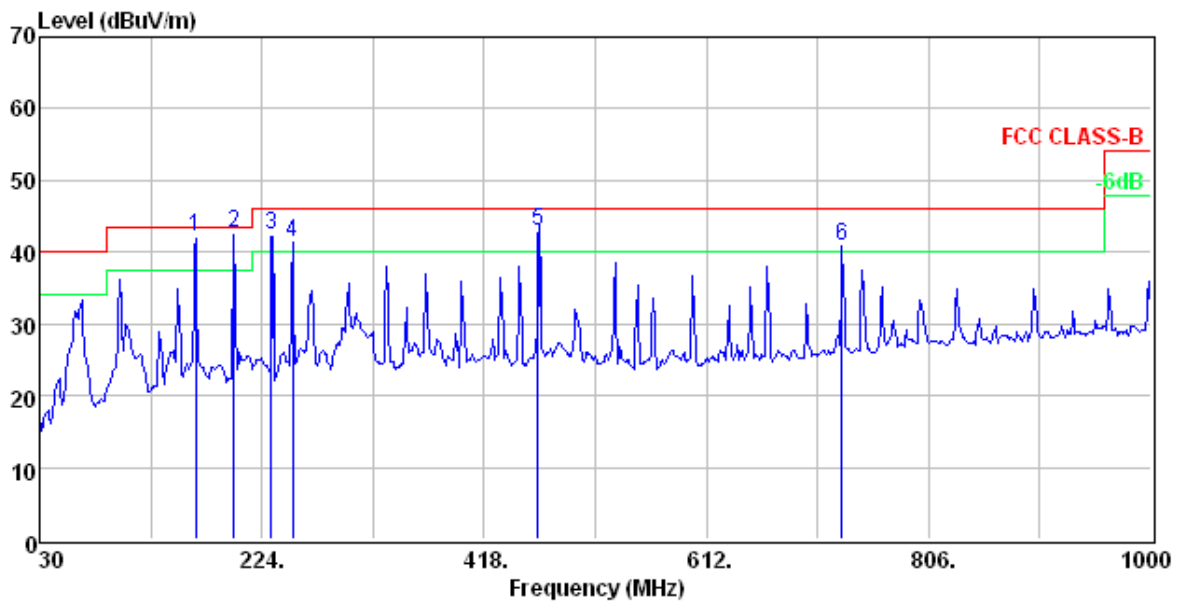
Test Frequency : 2437MHz

Test Distance : 3m

Tester : Ray

Polarization : Horizontal

Frequency Range : 30MHz~1000MHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 !	166.15	42.05	63.00	-20.95	43.50	-1.45	152	223	HORIZONTAL	QP
2 !	199.39	42.75	66.23	-23.48	43.50	-0.75	228	131	HORIZONTAL	QP
3 !	232.62	42.49	64.89	-22.40	46.00	-3.51	132	187	HORIZONTAL	QP
4 !	251.16	41.33	63.00	-21.67	46.00	-4.67	---	---	HORIZONTAL	Peak
5 !	465.24	42.95	58.80	-15.85	46.00	-3.05	139	181	HORIZONTAL	QP
6 !	730.34	40.79	51.87	-11.08	46.00	-5.21	---	---	HORIZONTAL	Peak

Note :

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

**Test Mode : 802.11b, Continuous Transmitting**

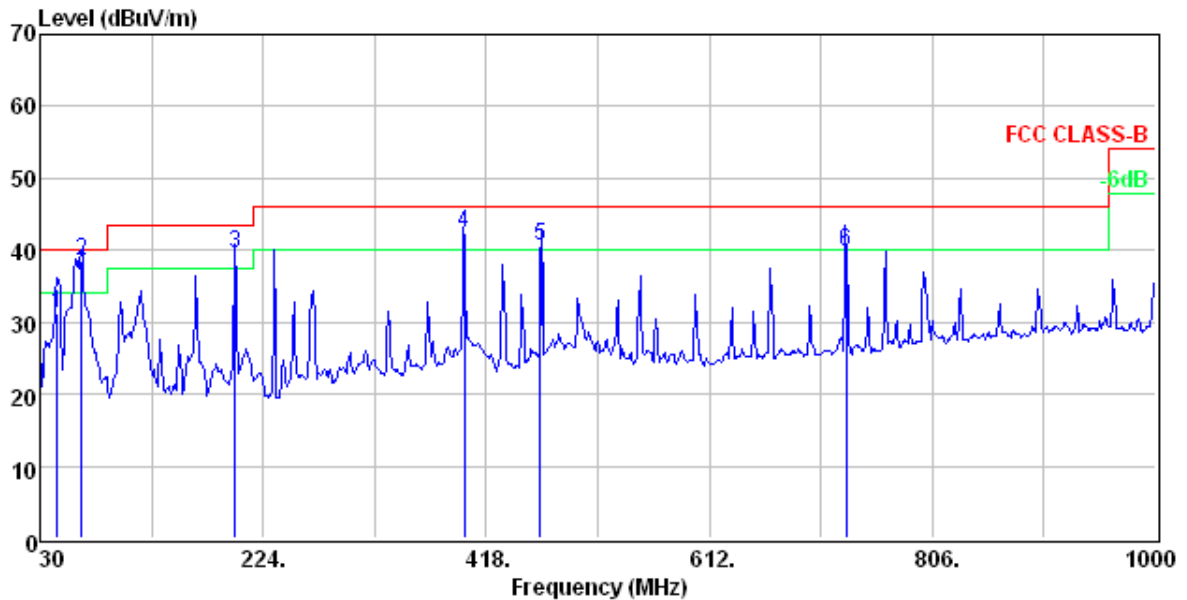
**Test Frequency : 2437MHz**

**Test Distance : 3m**

**Tester : Ray**

**Polarization : Vertical**

**Frequency Range : 30MHz~1000MHz**



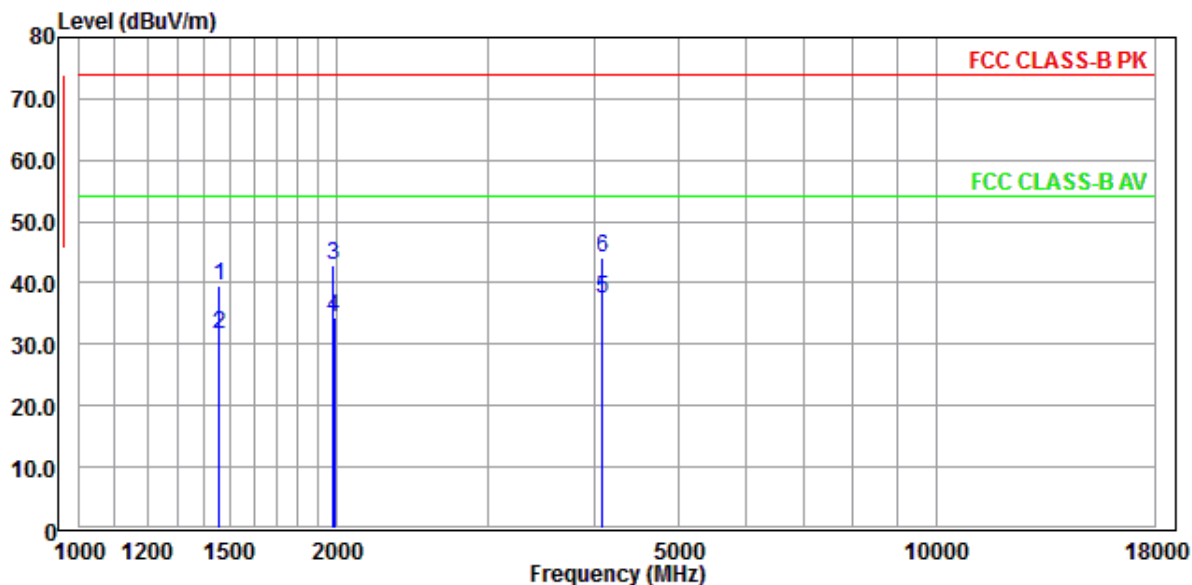
	Freq	Level	Read Level	Limit Factor	Over Line	Over Limit	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	44.90	31.18	52.39	-21.21	40.00	-8.82	101	341	VERTICAL	QP
2 !	66.47	38.64	61.81	-23.17	40.00	-1.36	100	206	VERTICAL	QP
3 !	199.40	39.64	63.12	-23.48	43.50	-3.86	100	358	VERTICAL	QP
4 !	398.77	42.29	59.60	-17.31	46.00	-3.71	114	164	VERTICAL	QP
5 !	465.23	40.57	56.42	-15.85	46.00	-5.43	100	350	VERTICAL	QP
6	731.07	39.69	50.76	-11.07	46.00	-6.31	112	152	VERTICAL	QP

**Note :**

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

**Radiated Emission Measurement above 1000MHz**

**Test Model** : 802.11b, Continuous Transmitting  
**Test Frequency** : 2412MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



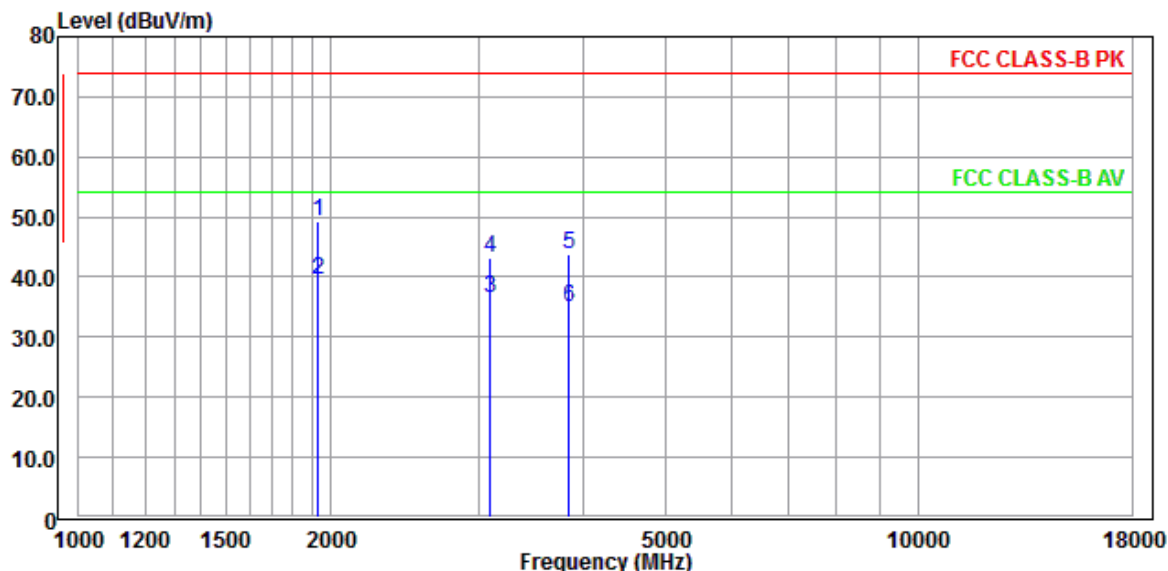
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.360	39.67	60.75	-21.08	74.00	-34.33	352	315	HORIZONTAL	Peak
2	1452.470	31.52	52.60	-21.08	54.00	-22.48	355	318	HORIZONTAL	Average
3	1980.160	42.95	60.32	-17.37	74.00	-31.05	124	247	HORIZONTAL	Peak
4	1981.390	34.23	51.60	-17.37	54.00	-19.77	127	241	HORIZONTAL	Average
5	4078.420	37.40	52.49	-15.09	54.00	-16.60	394	50	HORIZONTAL	Average
6	4079.570	44.21	59.30	-15.09	74.00	-29.79	400	46	HORIZONTAL	Peak

Note:

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11b, Continuous Transmitting  
**Test Frequency** : 2412MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



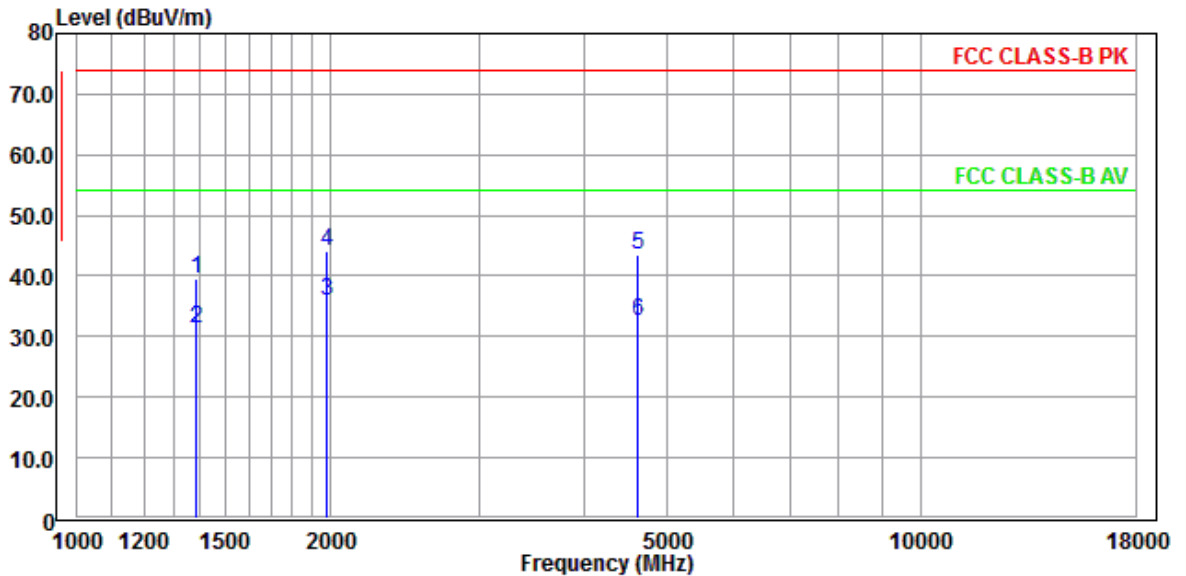
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1928.550	49.27	67.04	-17.77	74.00	-24.73	275	211	VERTICAL	Peak
2	1929.470	39.54	57.30	-17.76	54.00	-14.46	277	214	VERTICAL	Average
3	3088.520	36.51	52.30	-15.79	54.00	-17.49	344	15	VERTICAL	Average
4	3089.360	43.11	58.90	-15.79	74.00	-30.89	348	10	VERTICAL	Peak
5	3832.560	43.66	59.06	-15.40	74.00	-30.34	154	189	VERTICAL	Peak
6	3833.520	35.00	50.40	-15.40	54.00	-19.00	158	183	VERTICAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11b, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



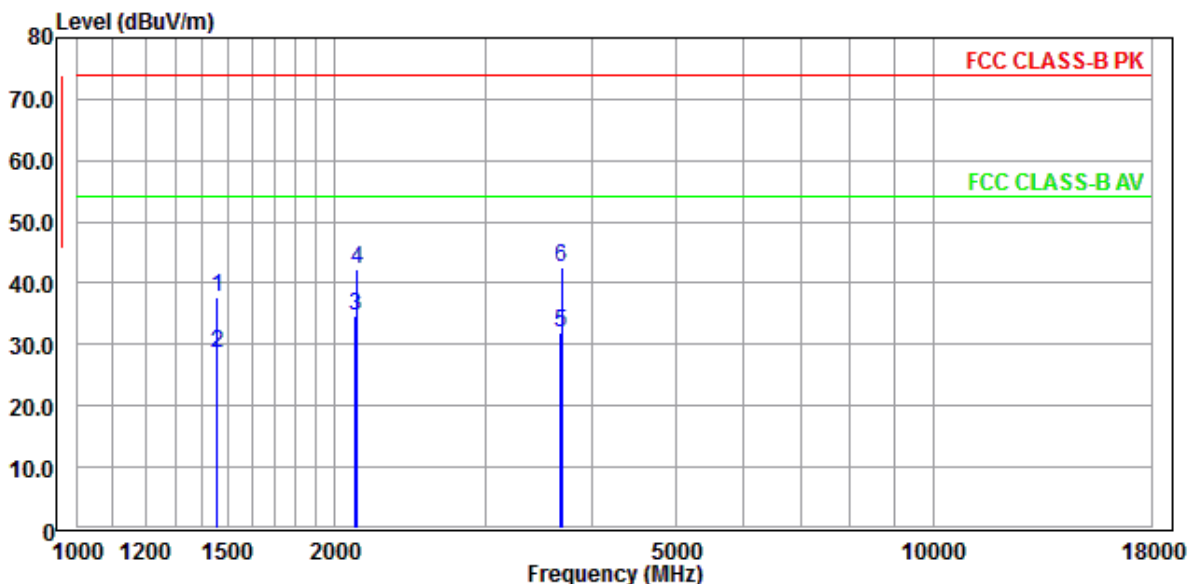
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1383.560	39.58	60.79	-21.21	74.00	-34.42	247	193	HORIZONTAL	Peak
2	1384.700	31.19	52.39	-21.20	54.00	-22.81	244	196	HORIZONTAL	Average
3	1978.370	35.98	53.38	-17.40	54.00	-18.02	294	8	HORIZONTAL	Average
4	1979.510	44.14	61.52	-17.38	74.00	-29.86	298	0	HORIZONTAL	Peak
5	4614.310	43.43	58.15	-14.72	74.00	-30.57	175	178	HORIZONTAL	Peak
6	4615.380	32.58	47.30	-14.72	54.00	-21.42	177	173	HORIZONTAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11b, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



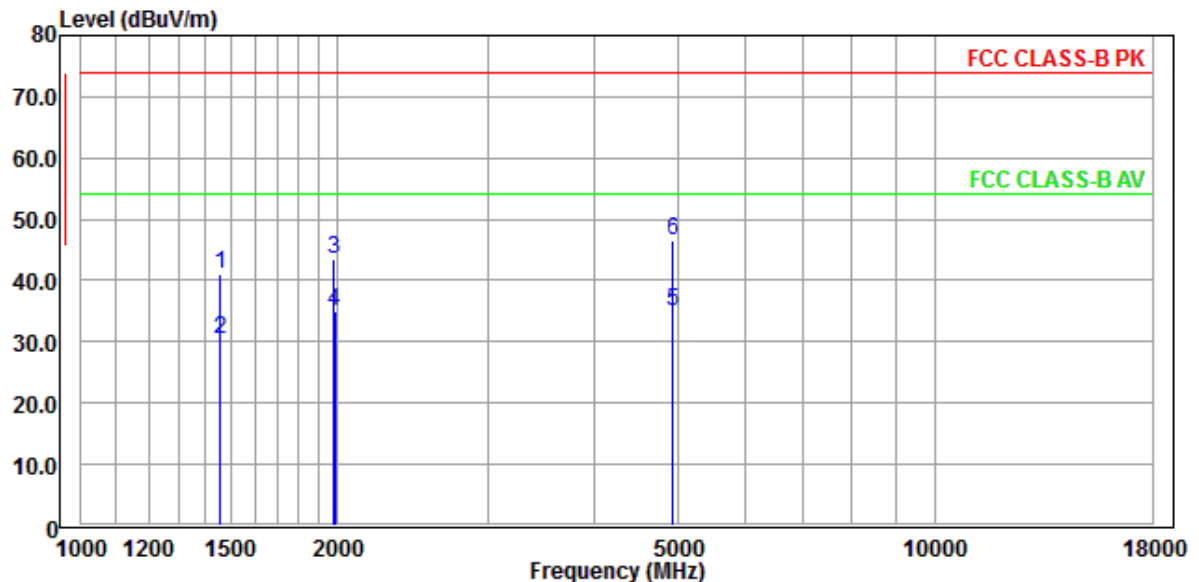
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.380	37.71	58.79	-21.08	74.00	-36.29	108	343	VERTICAL	Peak
2	1452.720	28.54	49.62	-21.08	54.00	-25.46	103	345	VERTICAL	Average
3	2114.290	34.56	51.60	-17.04	54.00	-19.44	333	127	VERTICAL	Average
4	2115.560	42.42	59.46	-17.04	74.00	-31.58	330	126	VERTICAL	Peak
5	3675.360	31.79	47.40	-15.61	54.00	-22.21	152	18	VERTICAL	Average
6	3676.510	42.56	58.17	-15.61	74.00	-31.44	155	14	VERTICAL	Peak

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11b, Continuous Transmitting  
**Test Frequency** : 2462MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



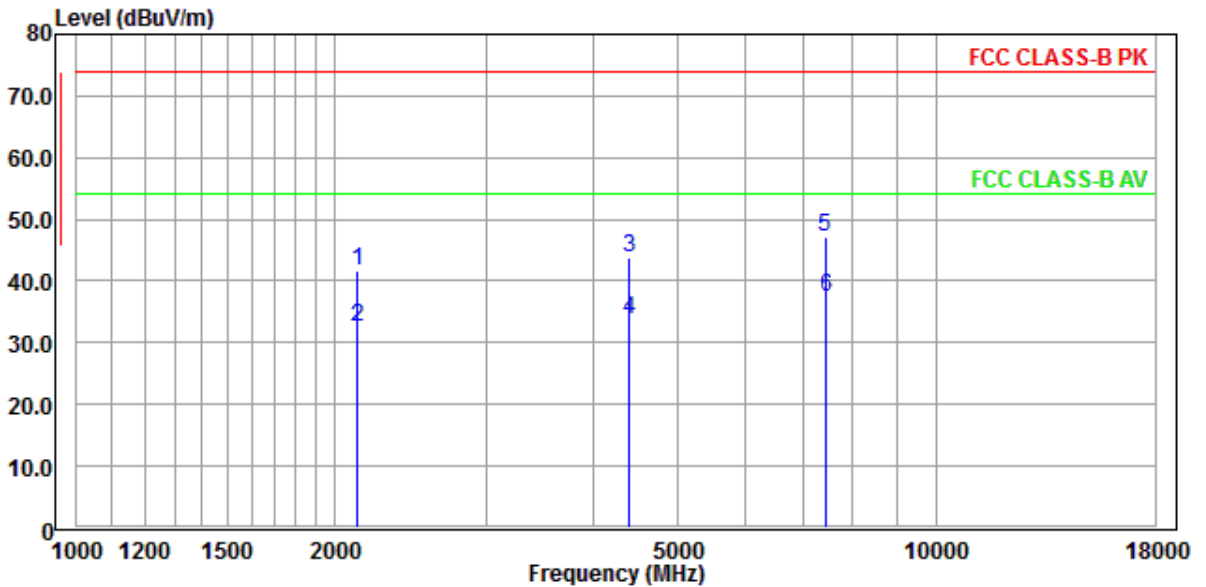
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.310	41.17	62.25	-21.08	74.00	-32.83	232	157	HORIZONTAL	Peak
2	1452.530	30.52	51.60	-21.08	54.00	-23.48	234	159	HORIZONTAL	Average
3	1980.160	43.60	60.97	-17.37	74.00	-30.40	249	350	HORIZONTAL	Peak
4	1981.380	35.13	52.50	-17.37	54.00	-18.87	244	352	HORIZONTAL	Average
5	4923.600	34.84	49.60	-14.76	54.00	-19.16	266	215	HORIZONTAL	Average
6	4924.350	46.41	61.17	-14.76	74.00	-27.59	269	212	HORIZONTAL	Peak

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11b, Continuous Transmitting  
**Test Frequency** : 2462MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2115.510	41.74	58.78	-17.04	74.00	-32.26	349	1	VERTICAL	Peak
2	2116.300	32.57	49.60	-17.03	54.00	-21.43	341	5	VERTICAL	Average
3	4400.300	43.92	58.71	-14.79	74.00	-30.08	112	214	VERTICAL	Peak
4	4401.500	33.81	48.60	-14.79	54.00	-20.19	111	211	VERTICAL	Average
5	7432.520	47.18	58.48	-11.30	74.00	-26.82	338	329	VERTICAL	Peak
6	7433.700	37.30	48.60	-11.30	54.00	-16.70	331	326	VERTICAL	Average

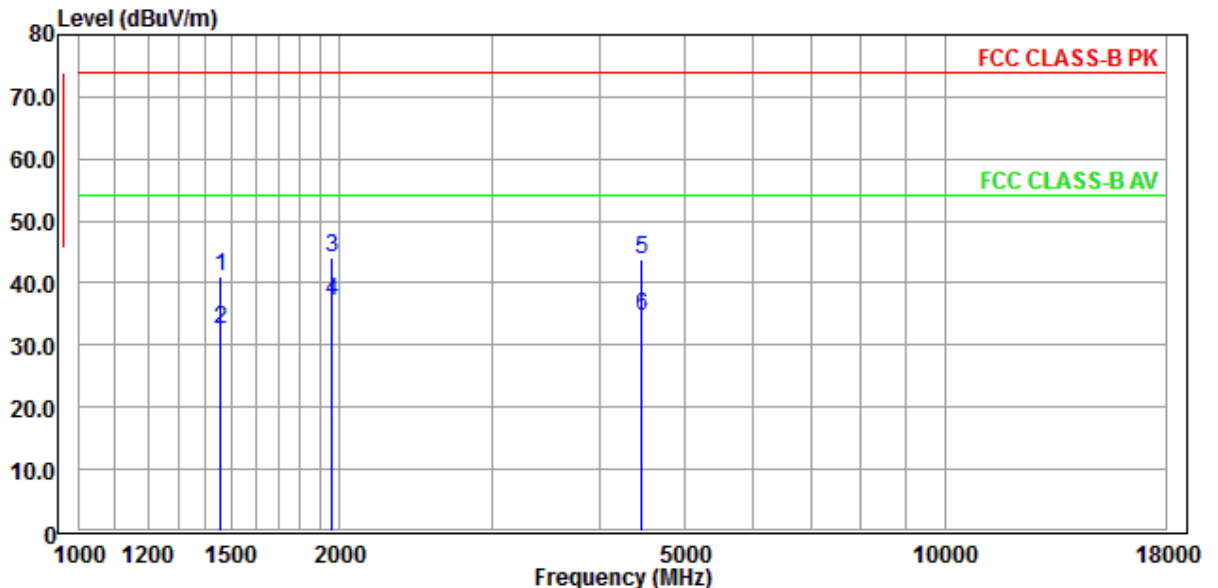
**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**



Test Model : 802.11g, Continuous Transmitting  
 Test Frequency : 2412MHz  
 Test Distance : 3m Tester : Carl  
 Antenna Polarization : Horizontal Frequency Range :1GHz~25GHz



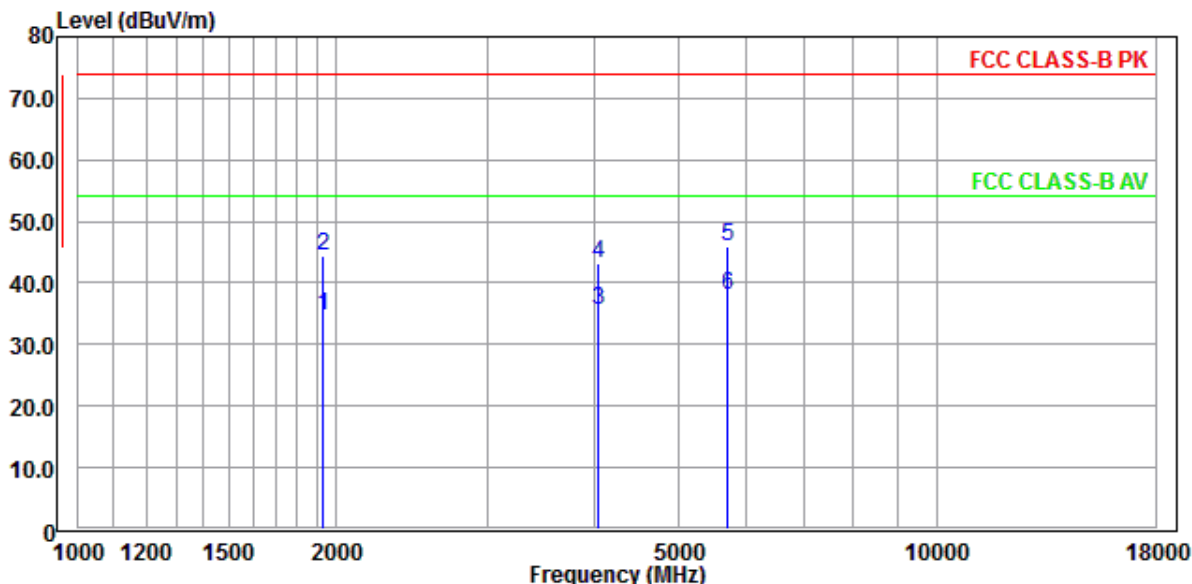
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.620	41.15	62.23	-21.08	74.00	-32.85	213	186	HORIZONTAL	Peak
2	1452.680	32.52	53.60	-21.08	54.00	-21.48	215	189	HORIZONTAL	Average
3	1952.520	44.05	61.63	-17.58	74.00	-29.95	267	0	HORIZONTAL	Peak
4	1953.520	37.02	54.60	-17.58	54.00	-16.98	263	0	HORIZONTAL	Average
5	4451.580	43.74	58.49	-14.75	74.00	-30.26	243	161	HORIZONTAL	Peak
6	4452.490	34.72	49.47	-14.75	54.00	-19.28	245	168	HORIZONTAL	Average

Note:

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11g, Continuous Transmitting  
**Test Frequency** : 2412MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



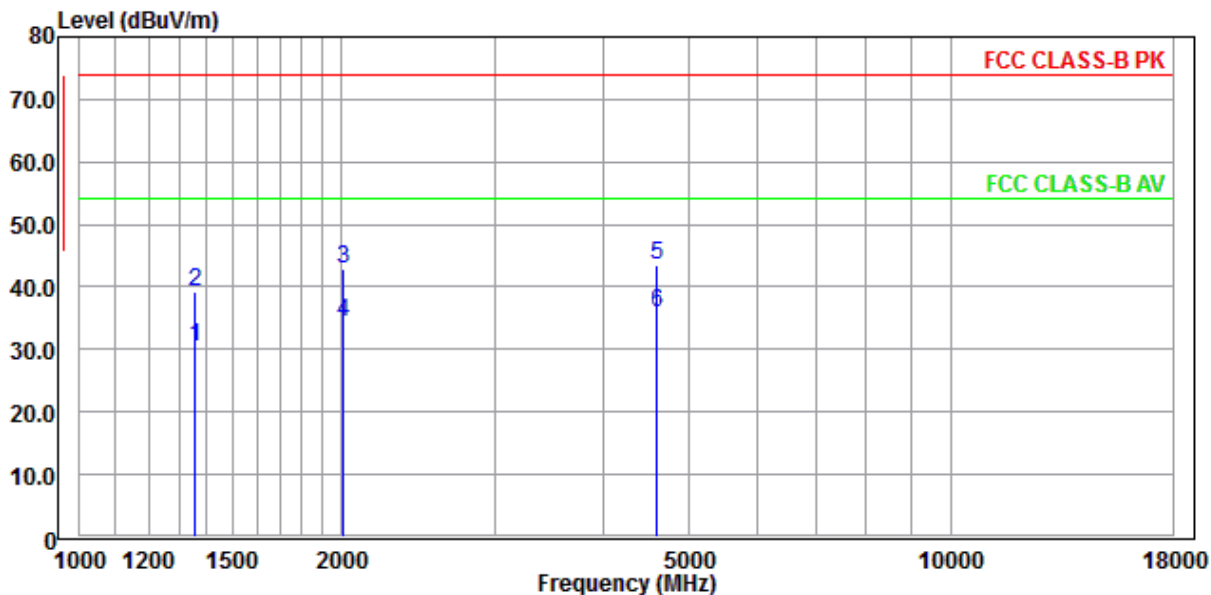
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	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1926.360	34.82	52.60	-17.78	54.00	-19.18	195	80	VERTICAL	Average
2	1927.250	44.51	62.28	-17.77	74.00	-29.49	193	76	VERTICAL	Peak
3	4028.480	35.46	50.60	-15.14	54.00	-18.54	100	195	VERTICAL	Average
4	4029.510	43.21	58.35	-15.14	74.00	-30.79	103	199	VERTICAL	Peak
5	5703.500	46.00	60.34	-14.34	74.00	-28.00	353	345	VERTICAL	Peak
6	5703.510	37.95	52.29	-14.34	54.00	-16.05	355	341	VERTICAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11g, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



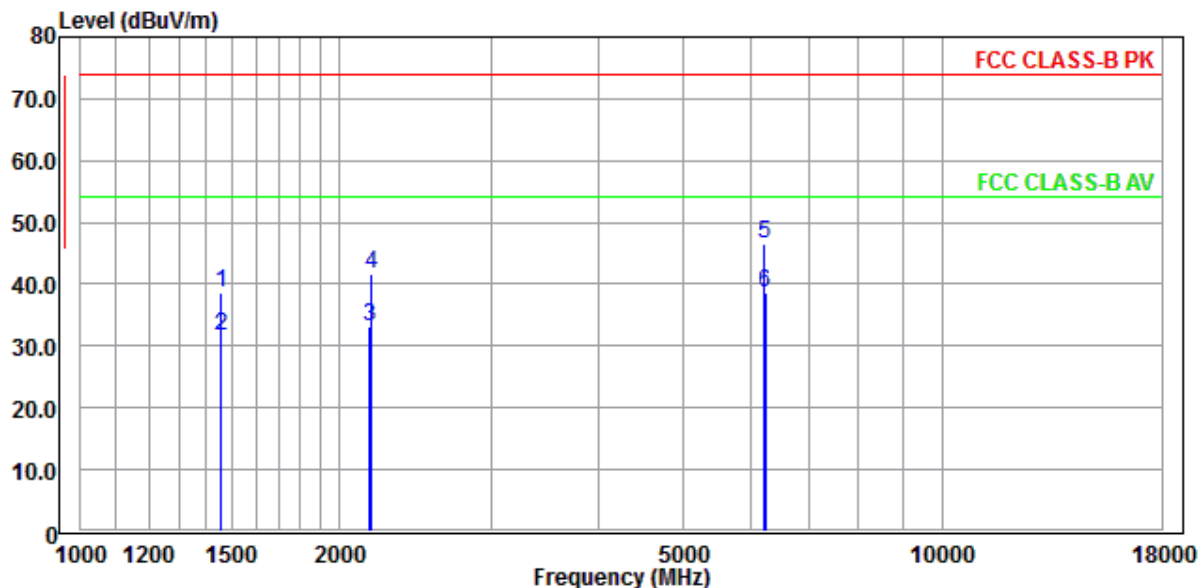
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1355.370	30.44	51.71	-21.27	54.00	-23.56	222	50	HORIZONTAL	Average
2	1356.790	39.24	60.49	-21.25	74.00	-34.76	220	46	HORIZONTAL	Peak
3	2007.620	42.89	60.11	-17.22	74.00	-31.11	107	330	HORIZONTAL	Peak
4	2008.630	34.38	51.60	-17.22	54.00	-19.62	103	333	HORIZONTAL	Average
5	4596.310	43.62	58.33	-14.71	74.00	-30.38	344	199	HORIZONTAL	Peak
6	4597.530	36.02	50.73	-14.71	54.00	-17.98	341	195	HORIZONTAL	Average

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11g, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



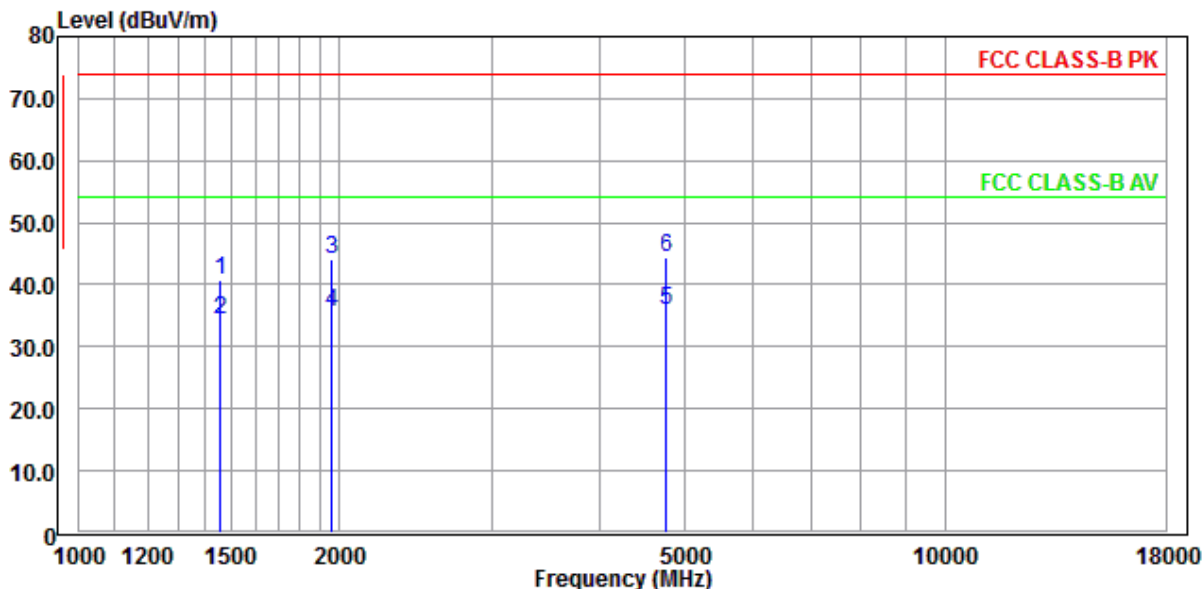
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.170	38.71	59.79	-21.08	74.00	-35.29	358	141	VERTICAL	Peak
2	1452.490	31.52	52.60	-21.08	54.00	-22.48	354	144	VERTICAL	Average
3	2168.420	33.26	50.20	-16.94	54.00	-20.74	277	351	VERTICAL	Average
4	2169.550	41.53	58.47	-16.94	74.00	-32.47	275	353	VERTICAL	Peak
5	6231.460	46.62	59.84	-13.22	74.00	-27.38	198	154	VERTICAL	Peak
6	6232.350	38.49	51.70	-13.21	54.00	-15.51	194	157	VERTICAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11g, Continuous Transmitting  
**Test Frequency** : 2462MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



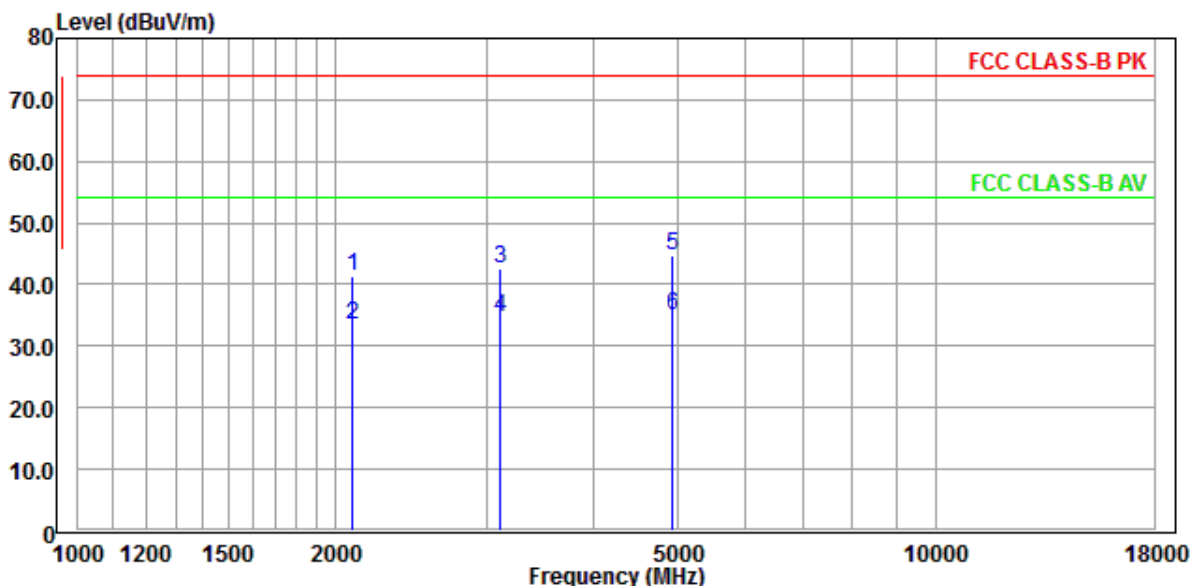
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.350	40.77	61.85	-21.08	74.00	-33.23	380	340	Horizontal	Peak
2	1452.480	34.32	55.40	-21.08	54.00	-19.68	385	342	Horizontal	Average
3	1953.160	44.06	61.64	-17.58	74.00	-29.94	370	84	Horizontal	Peak
4	1954.580	35.63	53.20	-17.57	54.00	-18.37	374	8	Horizontal	Average
5	4768.630	35.86	50.60	-14.74	54.00	-18.14	104	77	Horizontal	Average
6	4769.510	44.48	59.22	-14.74	74.00	-29.52	109	75	Horizontal	Peak

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11g, Continuous Transmitting  
**Test Frequency** : 2462MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



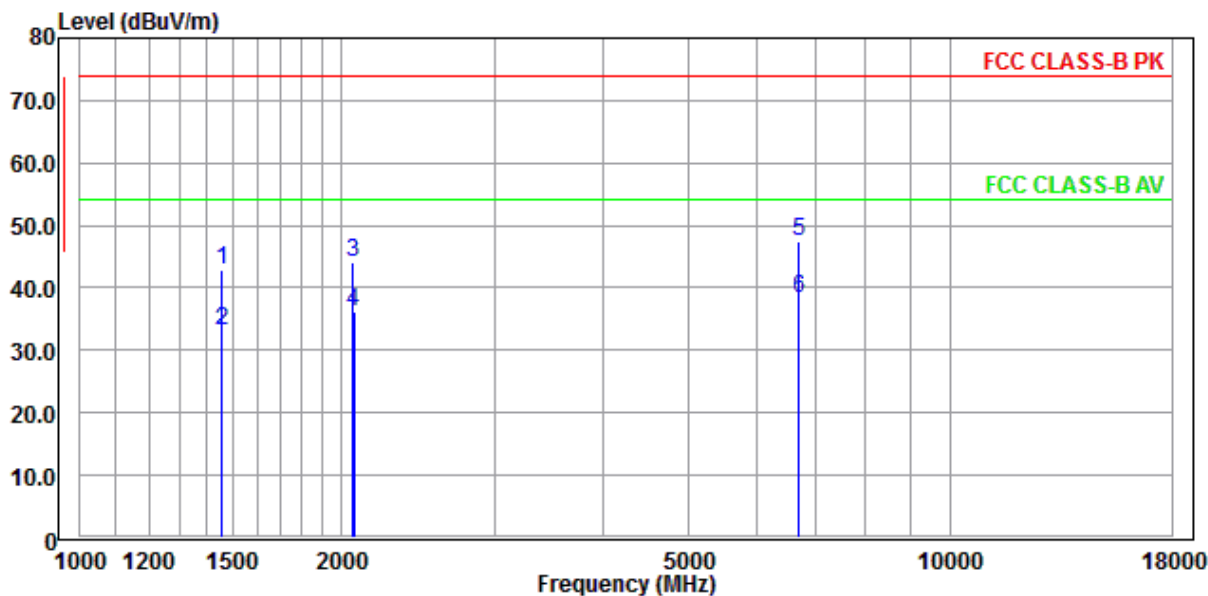
	Read	Limit	Over	APos	TPos			Remark	
Freq	Level	Level	Factor	Line	Limit	cm	deg	Pol/Phase	
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2088.500	41.33	58.41	-17.08	74.00	-32.67	111	284 VERTICAL	Peak
2	2089.420	33.55	50.63	-17.08	54.00	-20.45	112	288 VERTICAL	Average
3	3113.570	42.61	58.40	-15.79	74.00	-31.39	278	222 VERTICAL	Peak
4	3113.830	34.60	50.39	-15.79	54.00	-19.40	274	226 VERTICAL	Average
5	4923.550	44.76	59.52	-14.76	74.00	-29.24	257	18 VERTICAL	Peak
6	4924.800	34.94	49.70	-14.76	54.00	-19.06	255	21 VERTICAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11n 20HT, Continuous Transmitting  
**Test Frequency** : 2412MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



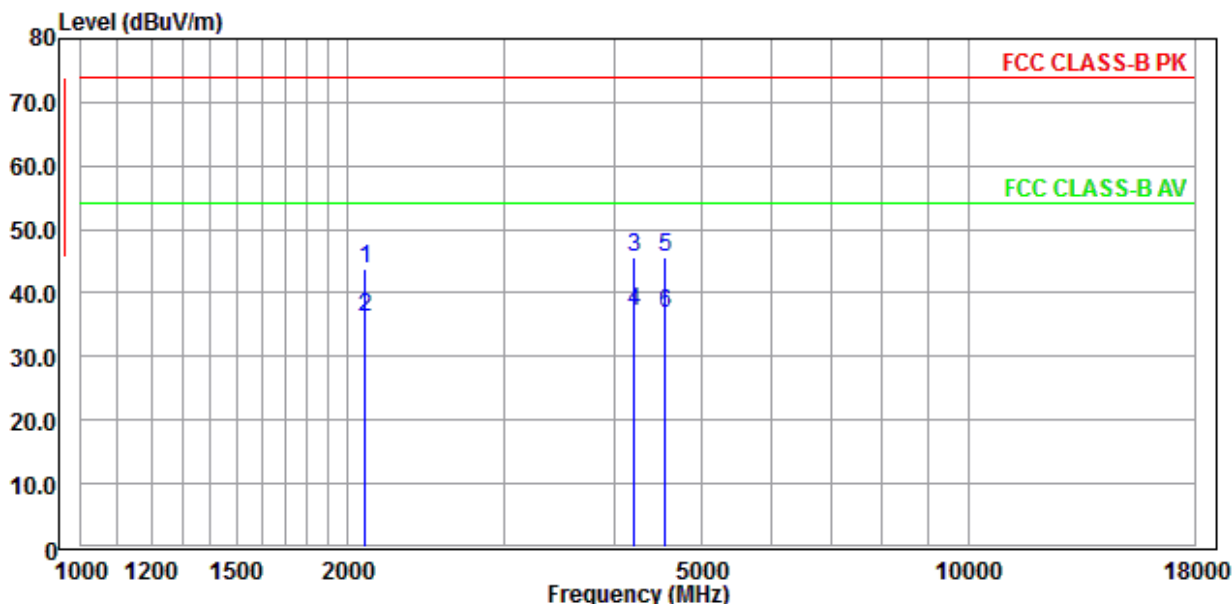
	Freq	Level	Read Level	Limit Factor	Over Line	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	1451.160	42.76	63.84	-21.08	74.00	-31.24	366	302	HORIZONTAL Peak
2	1452.560	33.22	54.30	-21.08	54.00	-20.78	362	300	HORIZONTAL Average
3	2061.510	44.00	61.12	-17.12	74.00	-30.00	152	277	HORIZONTAL Peak
4	2062.360	36.18	53.30	-17.12	54.00	-17.82	155	274	HORIZONTAL Average
5	6704.130	47.44	59.67	-12.23	74.00	-26.56	371	82	HORIZONTAL Peak
6	6705.420	38.20	50.42	-12.22	54.00	-15.80	375	88	HORIZONTAL Average

Note:

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model : 802.11n 20HT, Continuous Transmitting  
 Test Frequency : 2412MHz  
 Test Distance : 3m Tester : Carl  
 Antenna Polarization : Vertical Frequency Range :1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2088.510	43.66	60.74	-17.08	74.00	-30.34	136	296	VERTICAL	Peak
2	2089.350	36.22	53.30	-17.08	54.00	-17.78	133	299	VERTICAL	Average
3	4191.360	45.69	60.68	-14.99	74.00	-28.31	294	72	VERTICAL	Peak
4	4192.420	37.21	52.20	-14.99	54.00	-16.79	296	77	VERTICAL	Average
5	4560.310	45.74	60.45	-14.71	74.00	-28.26	278	121	VERTICAL	Peak
6	4561.580	36.89	51.60	-14.71	54.00	-17.11	273	124	VERTICAL	Average

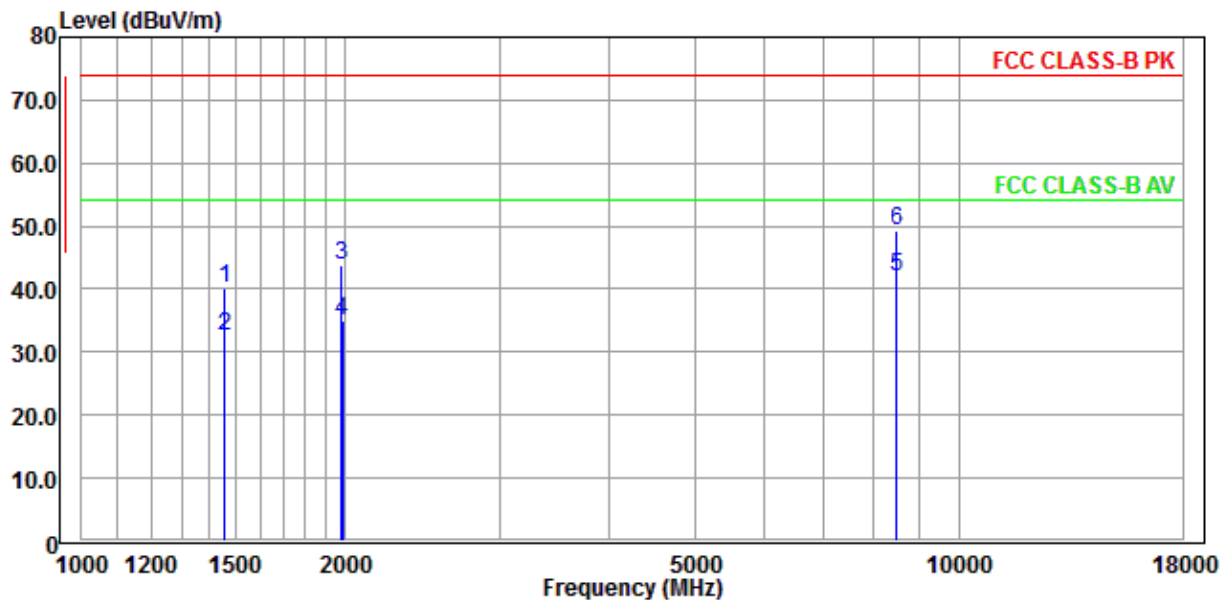
Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.



Test Model : 802.11n 20HT, Continuous Transmitting  
 Test Frequency : 2437MHz  
 Test Distance : 3m Tester : Carl  
 Antenna Polarization : Horizontal Frequency Range :1GHz~25GHz



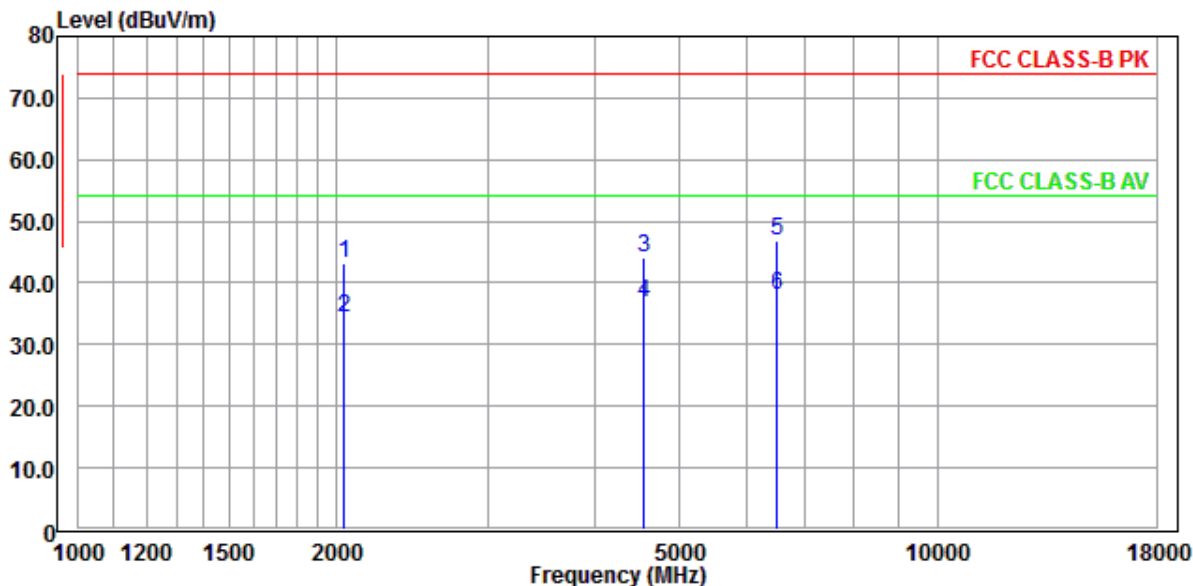
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.320	40.13	61.21	-21.08	74.00	-33.87	193	213	HORIZONTAL	Peak
2	1452.680	32.42	53.50	-21.08	54.00	-21.58	195	216	HORIZONTAL	Average
3	1980.120	43.78	61.16	-17.38	74.00	-30.22	348	8	HORIZONTAL	Peak
4	1981.480	35.03	52.40	-17.37	54.00	-18.97	344	10	HORIZONTAL	Average
5	8484.570	41.91	52.35	-10.44	54.00	-12.09	178	288	HORIZONTAL	Average
6	8485.230	49.25	59.69	-10.44	74.00	-24.75	176	282	HORIZONTAL	Peak

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11n 20HT, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



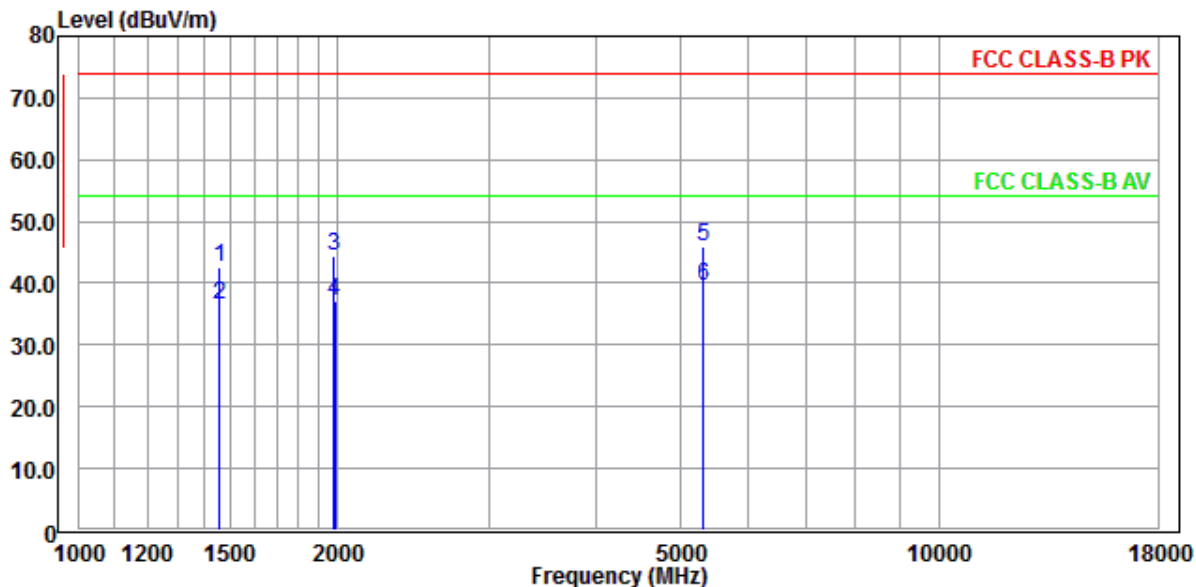
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2034.570	43.30	60.47	-17.17	74.00	-30.70	165	222	VERTICAL	Peak
2	2035.370	34.23	51.40	-17.17	54.00	-19.77	165	222	VERTICAL	Average
3	4562.580	44.05	58.76	-14.71	74.00	-29.95	291	360	VERTICAL	Peak
4	4563.420	36.69	51.40	-14.71	54.00	-17.31	294	353	VERTICAL	Average
5	6495.260	46.93	59.51	-12.58	74.00	-27.07	157	161	VERTICAL	Peak
6	6496.520	38.05	50.62	-12.57	54.00	-15.95	153	165	VERTICAL	Average

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11n 20HT, Continuous Transmitting  
**Test Frequency** : 2462MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



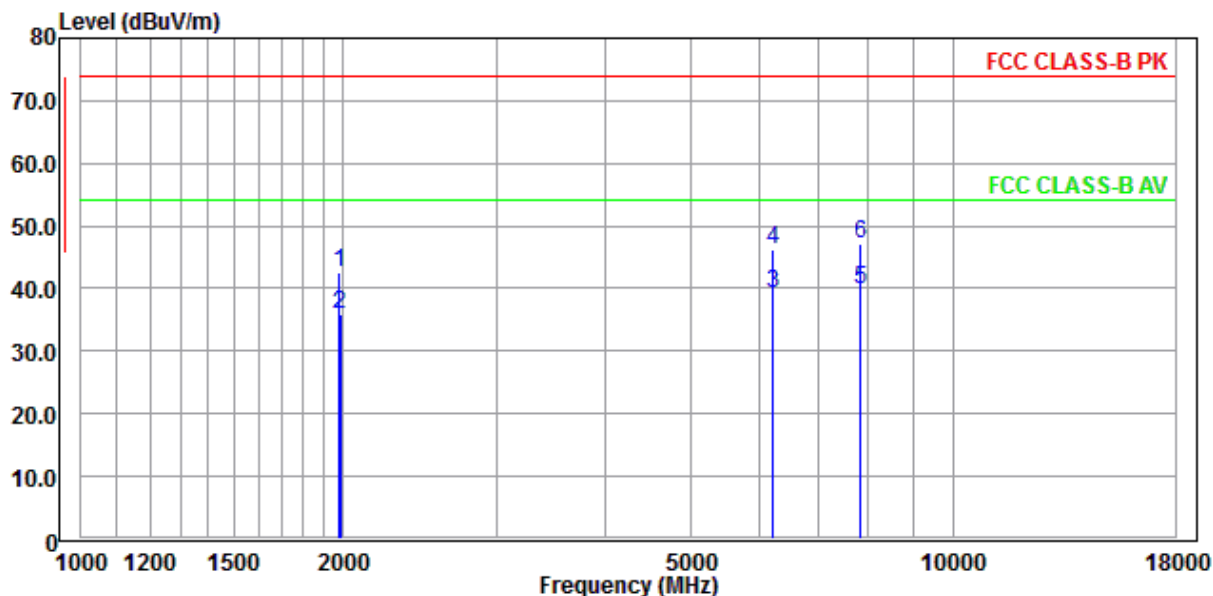
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.150	42.47	63.55	-21.08	74.00	-31.53	223	318	HORIZONTAL	Peak
2	1452.570	36.52	57.60	-21.08	54.00	-17.48	0	314	Horizontal	Average
3	1980.790	44.43	61.80	-17.37	74.00	-29.57	281	200	HORIZONTAL	Peak
4	1981.490	37.20	54.57	-17.37	54.00	-16.80	285	6	HORIZONTAL	Average
5	5321.300	45.94	60.69	-14.75	74.00	-28.06	174	250	HORIZONTAL	Peak
6	5322.480	39.45	54.20	-14.75	54.00	-14.55	175	255	HORIZONTAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

Test Model : 802.11n 20HT, Continuous Transmitting  
 Test Frequency : 2462MHz  
 Test Distance : 3m Tester : Carl  
 Antenna Polarization : Vertical Frequency Range :1GHz~25GHz



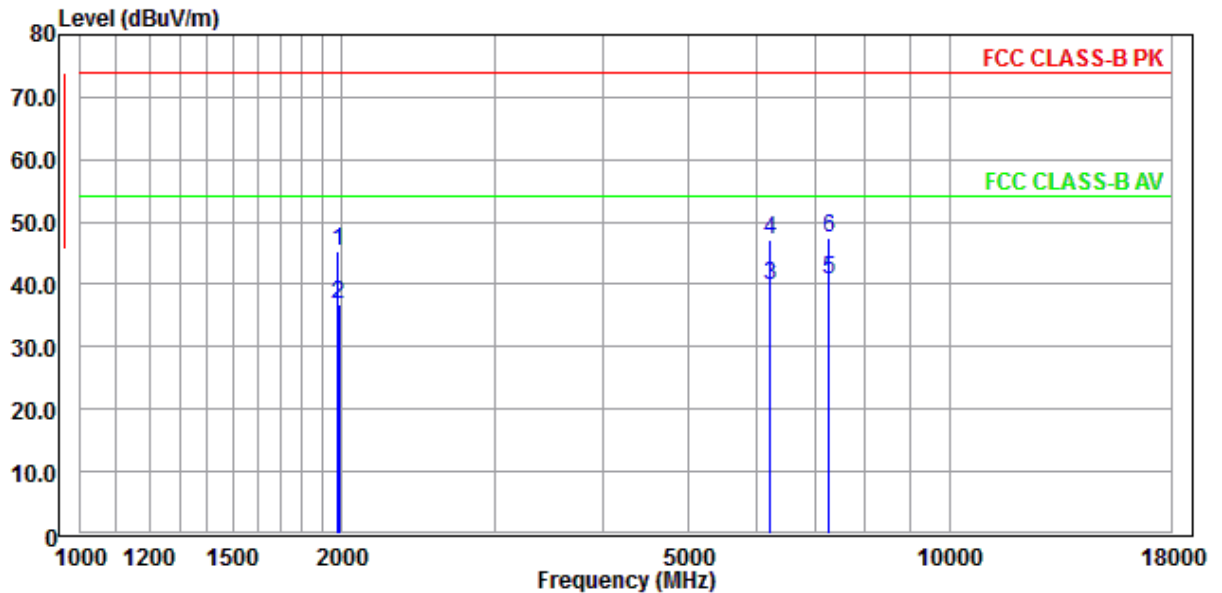
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1980.200	42.73	60.10	-17.37	74.00	-31.27	400	107	VERTICAL	Peak
2	1981.290	35.83	53.20	-17.37	54.00	-18.17	395	104	VERTICAL	Average
3	6218.410	39.16	52.40	-13.24	54.00	-14.84	121	355	VERTICAL	Average
4	6219.550	46.21	59.45	-13.24	74.00	-27.79	124	358	VERTICAL	Peak
5	7846.690	39.71	50.57	-10.86	54.00	-14.29	135	65	VERTICAL	Average
6	7847.520	47.28	58.14	-10.86	74.00	-26.72	138	63	VERTICAL	Peak

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

**Test Model** : 802.11n 40HT, Continuous Transmitting  
**Test Frequency** : 2422MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



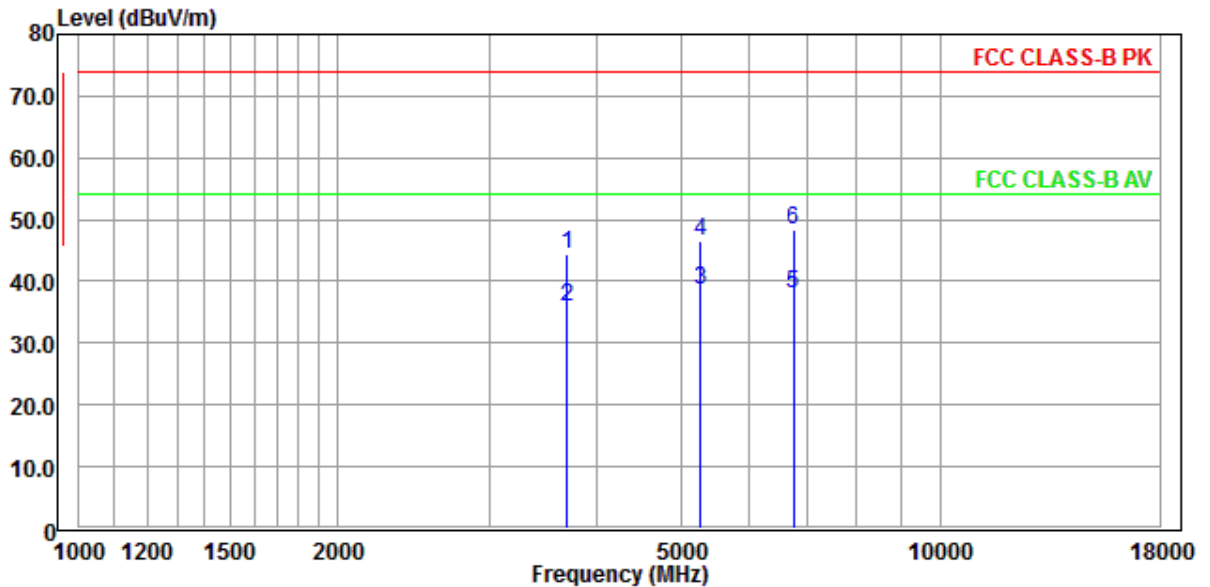
	Freq	Level	Read Level	Correction Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1980.520	45.34	62.71	-17.37	74.00	-28.66	123	211	HORIZONTAL	Peak
2	1981.370	36.93	54.30	-17.37	54.00	-17.07	127	213	HORIZONTAL	Average
3	6218.320	39.95	53.19	-13.24	54.00	-14.05	126	284	HORIZONTAL	Average
4	6219.580	47.09	60.33	-13.24	74.00	-26.91	123	282	HORIZONTAL	Peak
5	7255.370	40.73	52.20	-11.47	54.00	-13.27	155	13	HORIZONTAL	Average
6	7256.140	47.56	59.03	-11.47	74.00	-26.44	150	11	HORIZONTAL	Peak

**Note:**

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11n 40HT, Continuous Transmitting  
**Test Frequency** : 2422MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



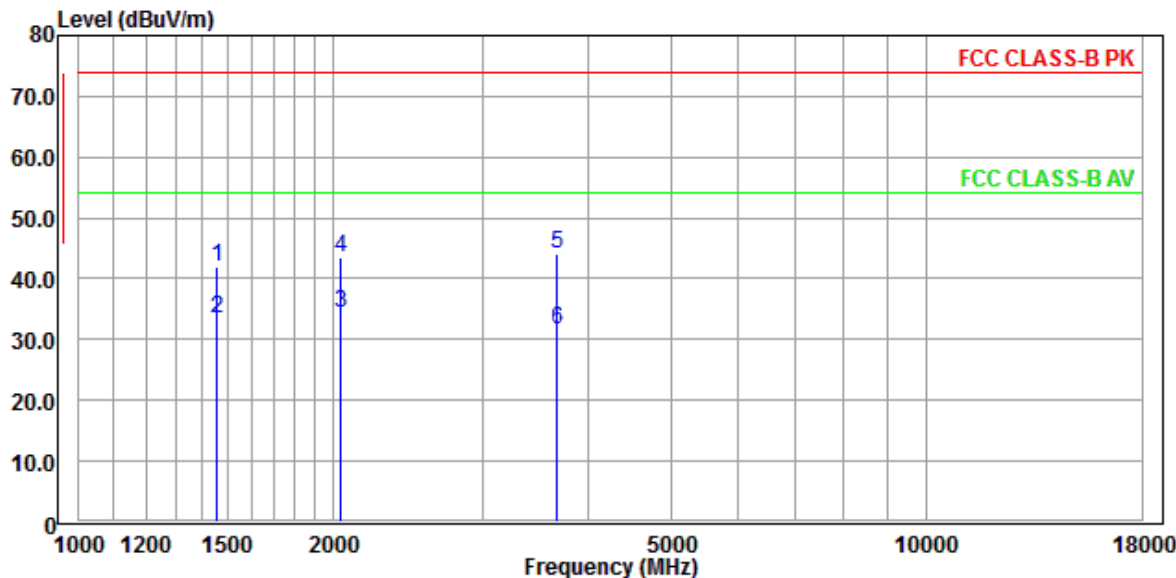
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	3680.520	44.50	60.10	-15.60	74.00	-29.50	329	163	VERTICAL	Peak
2	3681.460	35.75	51.35	-15.60	54.00	-18.25	326	266	VERTICAL	Average
3	5272.470	38.55	53.31	-14.76	54.00	-15.45	164	88	VERTICAL	Average
4	5273.570	46.39	61.15	-14.76	74.00	-27.61	166	83	VERTICAL	Peak
5	6754.370	38.06	50.20	-12.14	54.00	-15.94	300	294	VERTICAL	Average
6	6755.550	48.38	60.52	-12.14	74.00	-25.62	303	290	VERTICAL	Peak

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11n 40HT, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



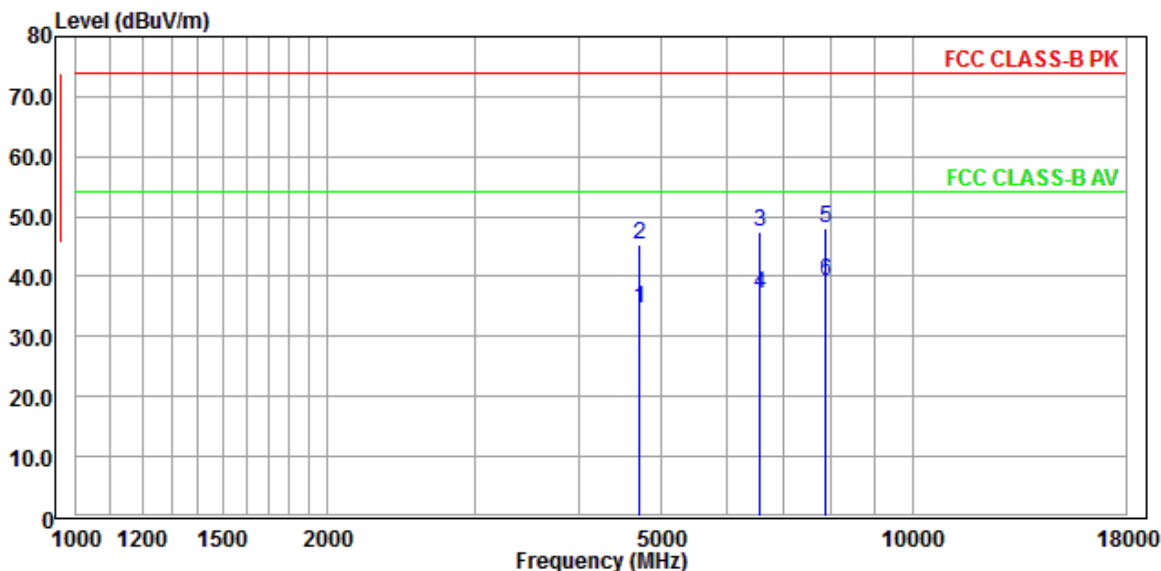
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.210	41.94	63.02	-21.08	74.00	-32.06	346	301	HORIZONTAL	Peak
2	1452.580	33.45	54.53	-21.08	54.00	-20.55	344	300	HORIZONTAL	Average
3	2033.310	34.43	51.61	-17.18	54.00	-19.57	122	57	HORIZONTAL	Average
4	2034.470	43.57	60.74	-17.17	74.00	-30.43	125	58	HORIZONTAL	Peak
5	3672.520	43.98	59.59	-15.61	74.00	-30.02	245	170	HORIZONTAL	Peak
6	3673.630	31.75	47.36	-15.61	54.00	-22.25	246	273	HORIZONTAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11n 40HT, Continuous Transmitting  
**Test Frequency** : 2437MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4723.470	34.77	49.50	-14.73	54.00	-19.23	200	80	VERTICAL	Average
2	4724.530	45.27	60.00	-14.73	74.00	-28.73	201	76	VERTICAL	Peak
3	6561.470	47.41	59.88	-12.47	74.00	-26.59	212	318	VERTICAL	Peak
4	6562.580	37.01	49.47	-12.46	54.00	-16.99	215	315	VERTICAL	Average
5	7884.570	48.12	58.95	-10.83	74.00	-25.88	339	135	VERTICAL	Peak
6	7885.320	39.18	50.01	-10.83	54.00	-14.82	335	131	VERTICAL	Average

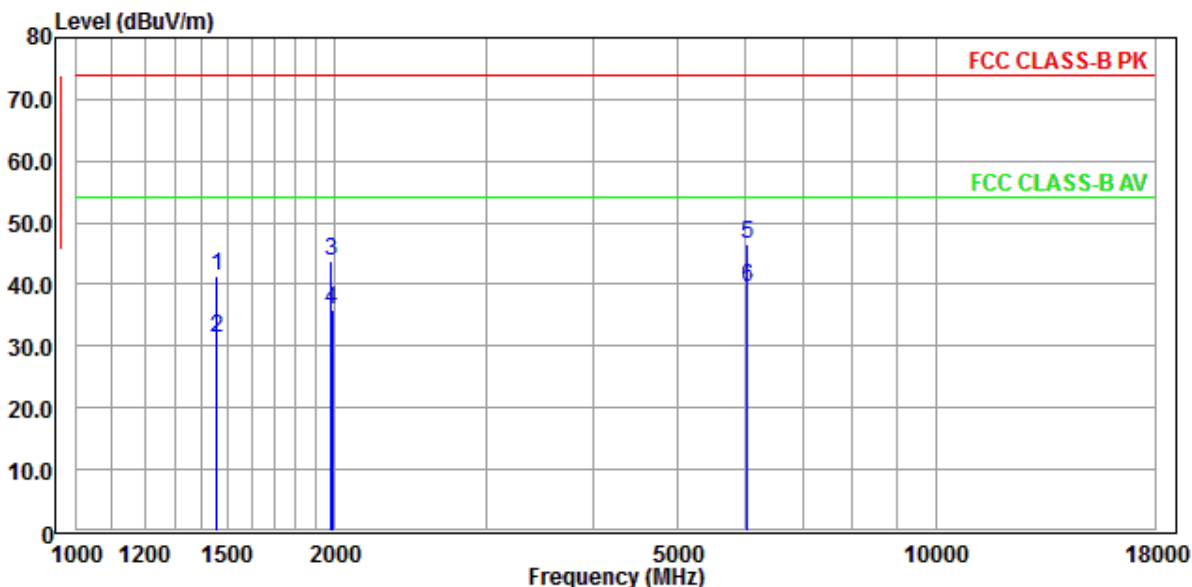
**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**



**Test Model** : 802.11n 40HT, Continuous Transmitting  
**Test Frequency** : 2452MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Horizontal **Frequency Range** :1GHz~25GHz



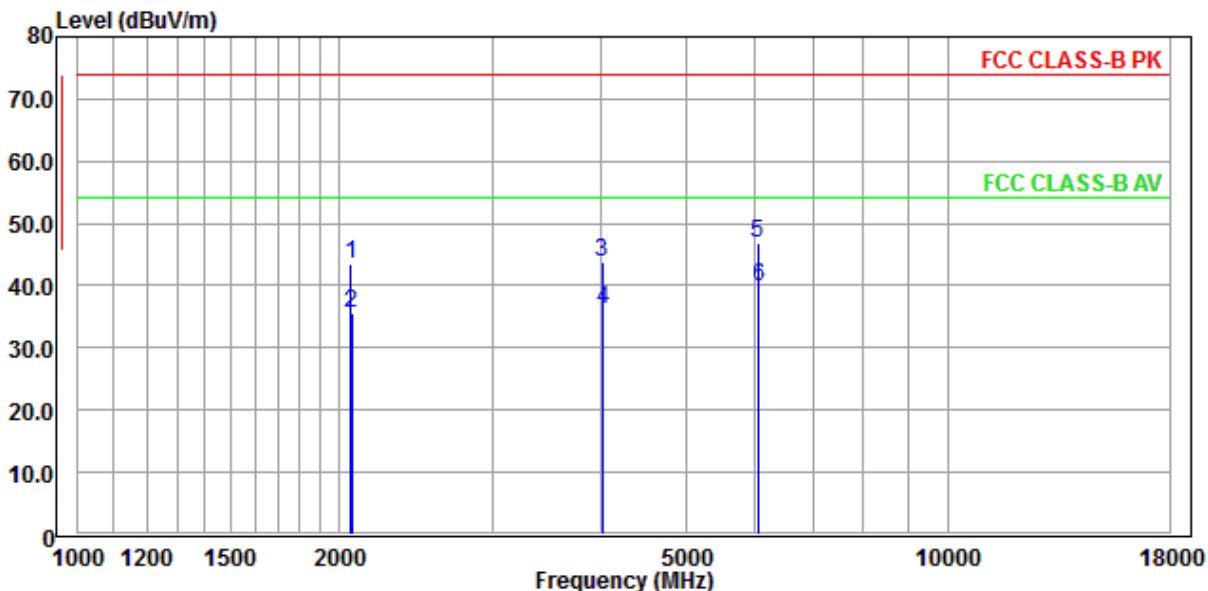
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.350	41.34	62.42	-21.08	74.00	-32.66	396	360	HORIZONTAL	Peak
2	1452.580	31.42	52.50	-21.08	54.00	-22.58	399	352	HORIZONTAL	Average
3	1980.350	43.95	61.32	-17.37	74.00	-30.05	336	67	HORIZONTAL	Peak
4	1981.470	35.93	53.30	-17.37	54.00	-18.07	333	66	HORIZONTAL	Average
5	6035.500	46.64	60.32	-13.68	74.00	-27.36	102	124	HORIZONTAL	
6	6035.510	39.68	53.36	-13.68	54.00	-14.32	100	121	HORIZONTAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

**Test Model** : 802.11n 40HT, Continuous Transmitting  
**Test Frequency** : 2452MHz  
**Test Distance** : 3m **Tester** : Carl  
**Antenna Polarization** : Vertical **Frequency Range** :1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2061.550	43.45	60.57	-17.12	74.00	-30.55	327	41	VERTICAL	Peak
2	2062.490	35.58	52.70	-17.12	54.00	-18.42	321	45	VERTICAL	Average
3	4004.530	43.72	58.89	-15.17	74.00	-30.28	349	263	VERTICAL	Peak
4	4005.380	36.11	51.27	-15.16	54.00	-17.89	344	266	VERTICAL	Average
5	6047.390	46.93	60.58	-13.65	74.00	-27.07	140	245	VERTICAL	Peak
6	6048.420	39.73	53.38	-13.65	54.00	-14.27	144	241	VERTICAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

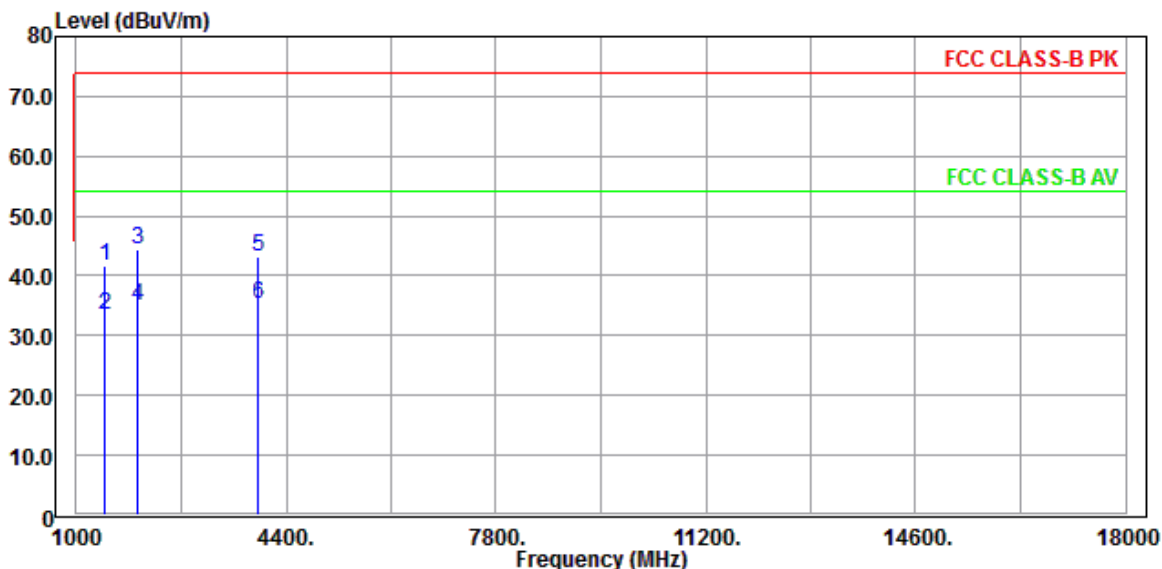
**Test Model : Continuous Receiving**

**Test Distance : 3m**

**Tester : Carl**

**Antenna Polarization : Horizontal**

**Frequency Range :1GHz~25GHz**



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1451.700	41.80	62.88	-21.08	74.00	-32.20	102	0	HORIZONTAL	Peak
2	1452.500	33.39	54.47	-21.08	54.00	-20.61	100	5	HORIZONTAL	Average
3	1980.360	44.29	61.66	-17.37	74.00	-29.71	317	168	HORIZONTAL	Peak
4	1981.600	34.95	52.32	-17.37	54.00	-19.05	315	164	HORIZONTAL	Average
5	3941.370	43.18	58.43	-15.25	74.00	-30.82	247	360	HORIZONTAL	Peak
6	3942.620	35.42	50.67	-15.25	54.00	-18.58	244	353	HORIZONTAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

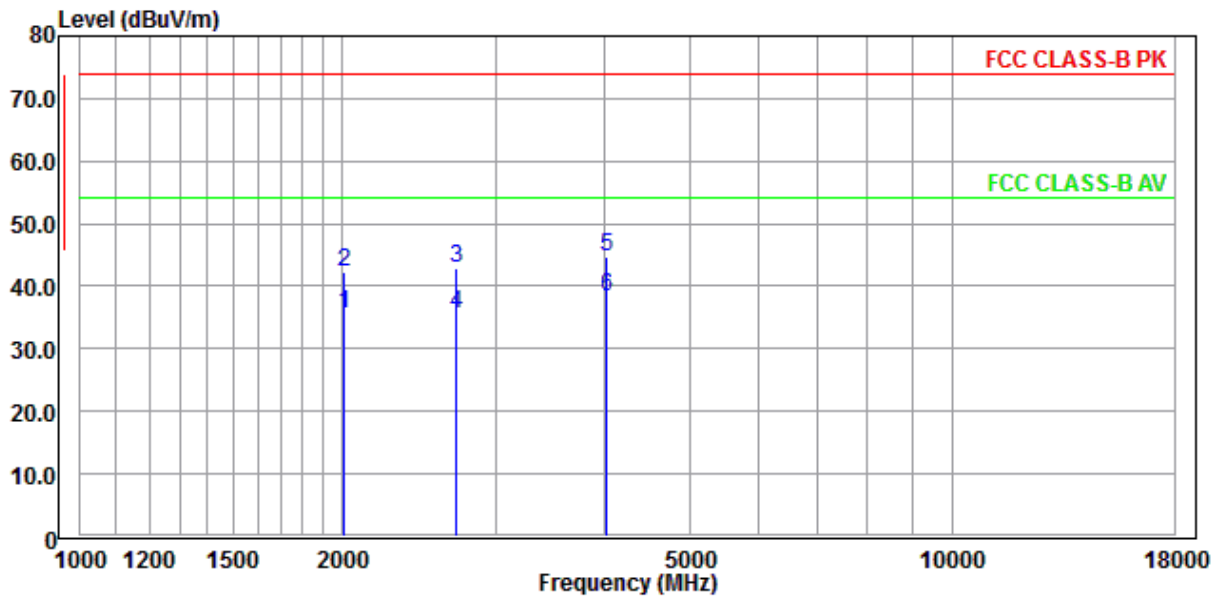
**Test Model : Continuous Receiving**

**Test Distance : 3m**

**Tester : Carl**

**Antenna Polarization : Vertical**

**Frequency Range :1GHz~25GHz**



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2006.520	35.53	52.45	-16.92	54.00	-18.47	122	18	VERTICAL	Average
2	2007.170	42.30	59.22	-16.92	74.00	-31.70	125	12	VERTICAL	Peak
3	2698.420	42.90	58.84	-15.94	74.00	-31.10	373	160	VERTICAL	Peak
4	2699.532	35.53	51.47	-15.94	54.00	-18.47	377	164	VERTICAL	Average
5	4020.550	44.76	59.90	-15.14	74.00	-29.24	173	360	VERTICAL	Peak
6	4021.390	38.23	53.37	-15.14	54.00	-15.77	177	352	VERTICAL	Average

**Note:**

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

**No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.**

## 9 Occupied Bandwidth

**Result: Pass**

### 9.1 Applied Standard

According RSS-Gen section 6.6, when the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

**9.2 Test Instruments**

<b>Test Site and Equipment</b>	<b>Manufacturer</b>	<b>Model No./ Serial No.</b>	<b>Last Calibration Date</b>	<b>Calibration Due Date</b>
Spectrum Analyzer	Agilent	E4405B/ MY45106706	May 29, 2015	May 29, 2016
Test Site	N.A.	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

**Instrument Setting**

<b>RBW</b>	<b>VBW</b>	<b>Detector</b>	<b>Trace</b>	<b>Comment</b>
100kz	300kHz	Sample	Maxhold	11b/g/n 20HT
300kz	1MkHz	Sample	Maxhold	11n 40HT

**Climatic Condition**

Ambient Temperature : 24°C;

Relative Humidity : 55%

**9.3 Measurement Procedure**

- a. The EUT was set up per the test configuration figured in the next section of this chapter and to simulate the typical usage described in the user’s manual supported by the manufacturer in chamber TR13.
- b. Measure the 99% bandwidth by using the spectrum analyzer and following the test conditions described in RSS-Gen.
- c. Record the frequency and compare with the required limit.

**9.4 Test Configuration**

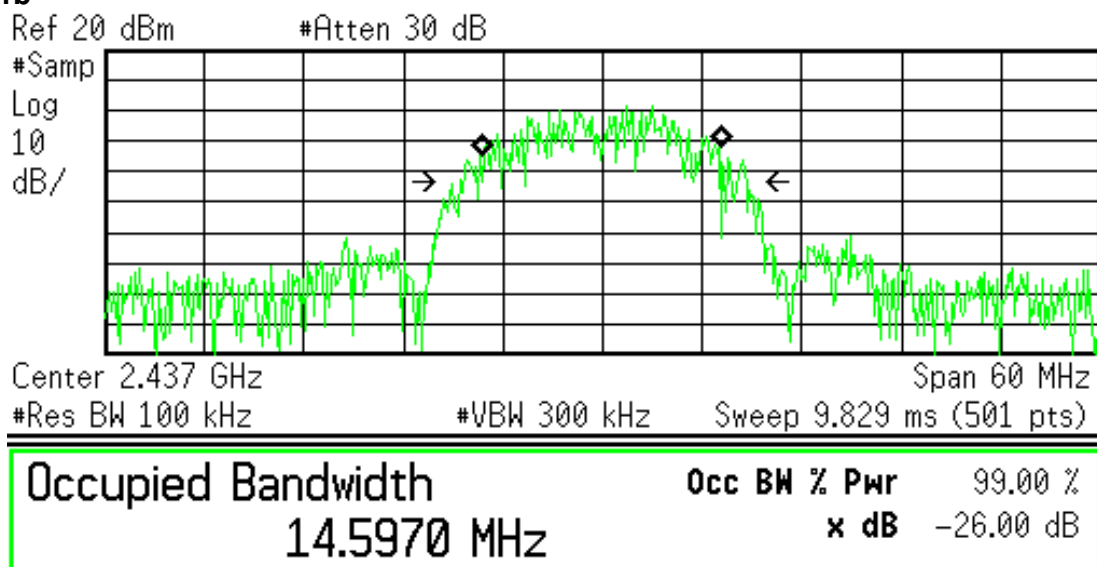


9.5 Test Data

Test Model : Continuous Transmitter  
 Tester : Martin

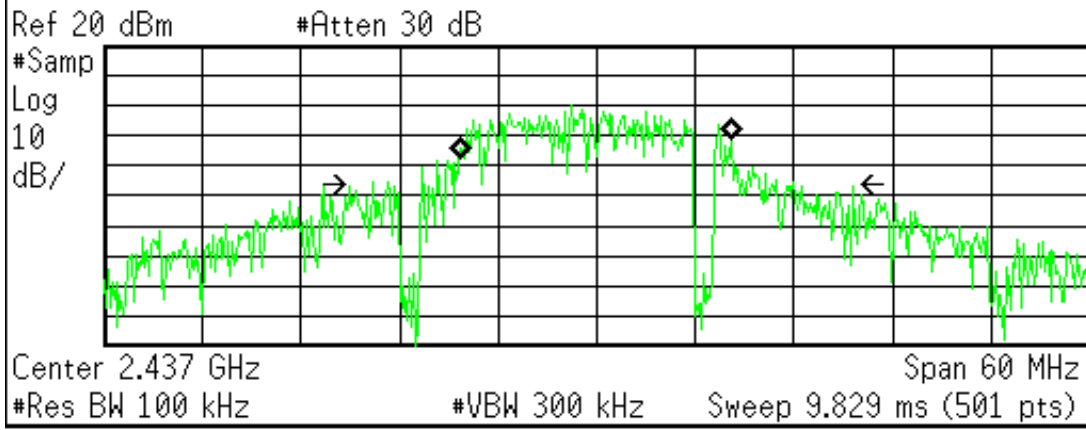
Mode	Operating Frequency (MHz)	OBW (MHz)
802.11b	2437	14.59
802.11g	2437	16.49
802.11n 20HT	2437	17.55
802.11n 40HT	2437	35.86

802.11b



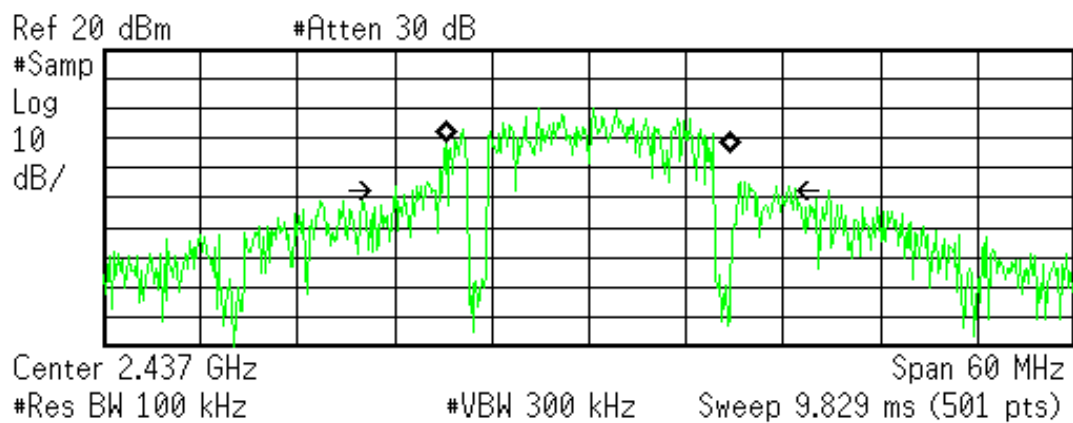


802.11g



<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
<b>16.4949 MHz</b>	<b>x dB</b>	-26.00 dB

802.11n 20HT



<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
<b>17.5507 MHz</b>	<b>x dB</b>	-26.00 dB

802.11n 40HT

Ref 20 dBm

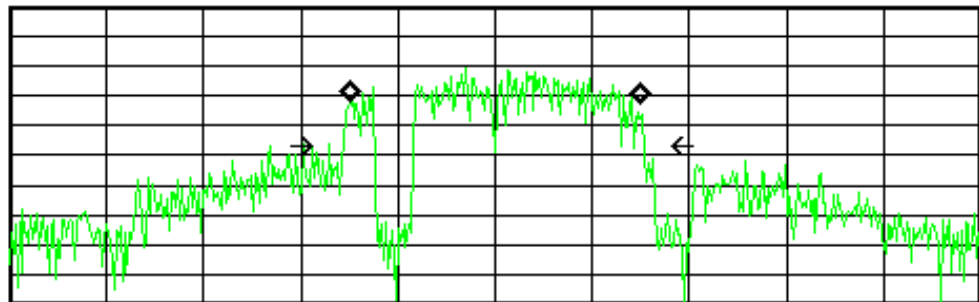
#Atten 30 dB

#Samp

Log

10

dB/



Center 2.437 GHz

Span 120 MHz

#Res BW 300 kHz

#VBW 1 MHz

Sweep 5 ms (501 pts)

Occupied Bandwidth

35.8678 MHz

Occ BW % Pwr

99.00 %

x dB

-26.00 dB

## 10 Antenna Requirement

### 10.1 Applied standard

According to FCC 15.247(4), The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

### 10.2 Antenna Information

This antenna's relative information as follow:

Brand	Model	Frequency Range (MHz)	Gain (dBi)	Comment
Lite-on	PCB Antenna Assembly	2.4GHz~2.5GHz	2.43	

### 10.3 Result

Gain of the antenna is less than 6dBi.