

## FCC PART 15 SUBPART C TEST REPORT FCC PART 15.247

Report Reference No.....: A1212086016-1

FCC ID .....: ZRD-T301

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Date of issue.....: Jan 10, 2013

**Representative Laboratory Name** ..: Shenzhen CTL Electron Technology Co., Ltd.

Address .....: Room 405, The 3# of 4th Building, Zhuguang No.2 Industrial District, Xili Town, Nanshan, Shenzhen, China

**Testing Laboratory Name** .....: DTT Services Co.,Ltd

Address .....: 1F,2 Block,Jiaquan Building,Guanlan High-tech Park,Bao'an District, Shenzhen,Guangdong,China. 518110

**Applicant's name**.....: **Shenzhen livall Network Technology Co Ltd**

Address .....: 9/F, Jiuzhou Electric Building, Southern No.12 rd Technology Park, Shenzhen

### Test specification:

Standard .....: **FCC Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System**

TRF Originator.....: Shenzhen CTL Electron Technology Co., Ltd.

Master TRF.....: Dated 2012-06

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Test item description .....: TV Dongle

Trade Mark .....: Livall

Manufacturer .....: Shenzhen livall Network Technology Co Ltd

Model/Type reference.....: T301

Listed Models .....: /

Operation Frequency .....: From 2412MHz to 2462MHz

Modulation Type .....: CCK,OFDM

Result.....: **Positive**

**TEST REPORT**

<b>Test Report No. :</b>	<b>A1212086016-1</b>	Jan 10, 2013
		Date of issue

Equipment under Test : TV Dongle

Model /Type : T301

Listed Models : /

**Applicant** : **Shenzhen livall Network Technology Co Ltd**

Address : 9/F, Jiuzhou Electric Building, Southern No.12 rd  
Technology Park, Shenzhen

**Manufacturer** : **Shenzhen livall Network Technology Co Ltd**

Address : 9/F, Jiuzhou Electric Building, Southern No.12 rd  
Technology Park, Shenzhen

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## **1. TEST STANDARDS**

The tests were performed according to following standards:

**FCC Rules Part 15.247:** Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

**ANSI C63.10:2009:** American National Standard for Testing Unlicensed Wireless Devices

**KDB558074:** DTS Meas Guidance v01 of Measurement Procedure

## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample	:	Dec 22,2012
Testing commenced on	:	Dec 22,2012
Testing concluded on	:	Jan 10, 2013

### 2.2. Equipment Under Test

#### Power supply system utilised

Power supply voltage	:	<input type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 5.0V

---

### 2.3. Short description of the Equipment under Test (EUT)

2.4GHz (TV Dongle)

For more details, refer to the user's manual of the EUT.

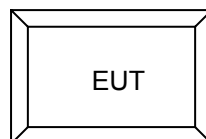
Serial number: Prototype

### 2.4. EUT operation mode

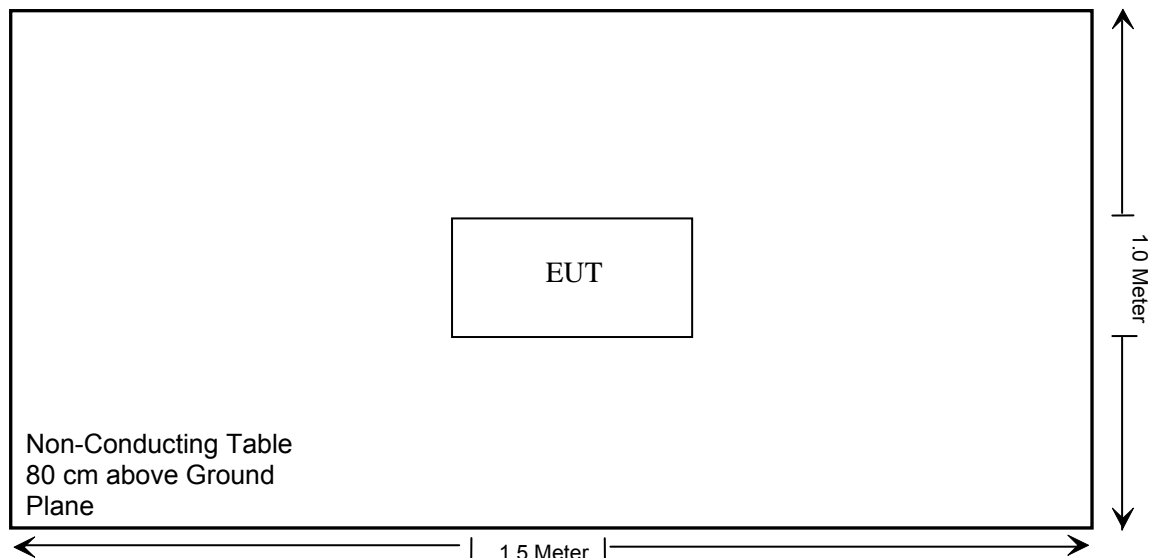
IEEE 802.11b/g/n: Eleven channels are provided to the EUT.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

### 2.5. Configuration of Test System



**Block Diagram of Test Setup**



## 2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID:ZRD-T301** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

## 2.7. Modifications

No modifications were implemented to meet testing criteria.

## 2.8. NOTE

- The functions of the EUT are listed as below:

	Test Standards	Reference Report
WLAN Radio	FCC Part 15 Subpart C (Section15.247)	A1212086016-1
WLAN MPE	MPE report	A1212086016-2
USB Port	FCC Part 15 Subpart B	A1212086016-3

- he frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	✓	—	—	—
802.11g	✓	—	—	—
802.11n(20MHz)	✓	—	—	—
802.11n(40MHz)	✓	—	—	—

- The EUT incorporates a SISO function,Physically,the EUT provides one completed transmitter and one completed receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

### 3. TEST ENVIRONMENT

#### 3.1. Address of the test laboratory

DTT Services Co.,Ltd  
1F,2 Block,Jiaquan Building,Guanlan High-tech Park,Bao'an District, Shenzhen,Guangdong,China.  
518110

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

#### 3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

##### IC Registration No.: 9783A

The 3m alternate test site of DTT Services Co.,Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Aug, 2011.

##### FCC-Registration No.: 214666

DTT Services Co.,Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 214666, Sep 19, 2011.

#### 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

#### 3.4. Test Description

FCC PART 15		
FCC Part 15.207	AC Power Conducted Emission	N/A
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Peak Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge	PASS
FCC Part 15.203/15.247 (b)	Antenna Requirement	PASS
FCC Part1.1307 (b)	RF Exposure	PASS

Remark: The measurement uncertainty is not included in the test result.

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135 Mbps	3/6/9
Band Edge	11b/DSSS	11 Mbps	1/11
	11g/OFDM	54 Mbps	1/11
	11n(20MHz)/OFDM	65Mbps	1/11
	11n(40MHz)/OFDM	135 Mbps	3/9

Note1: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

### 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the DTT Services Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for DTT Services Co.,Ltd is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-40 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	-----	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.



### 3.6. Equipments Used during the Test

Maximum Peak Output Power / Frequency Separation / 20dB Bandwidth / Band Edge Compliance of RF Emission / Spurious RF Conducted Emission/ Number of hopping frequency/ Time of Occupancy					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Spectrum Analyzer	AGILENT	E4407B	MY44210779	2012/4/23
2	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4425.40	2012/4/23

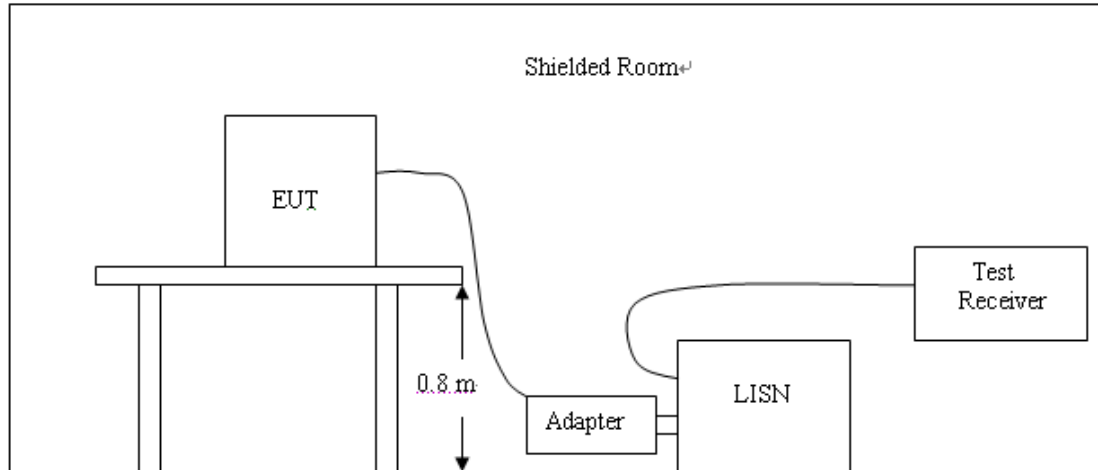
Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2012/4/23
2	EMI TEST SOFTWARE	Audix	Z3	N/A	----
3	HORN ANTENNA	Rohde&Schwarz	HF906	100039	2012/4/23
4	Amplifer	Sonoma	310N	E009-13	2012/4/23
5	JS amplifier	Rohde&Schwarz	JS4-00101800-28-5A	F201504	2012/4/23
6	High pass filter	Compliance Direction systems	BSU-6	34202	2012/4/23
7	Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	470	2012/4/23
8	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2012/4/23
9	HORN ANTENNA	ShwarzBeck	9120D	1011	2012/4/23
10	TURNTABLE	MATURO	TT2.0	----	2012/4/23
11	ANTENNA MAST	MATURO	TAM-4.0-P	----	2012/4/23
12	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100025	2012/4/23

The Calibration Interval was one year.

## 4. TEST CONDITIONS AND RESULTS

### 4.1. AC Power Conducted Emission(Not Applicable)

#### TEST CONFIGURATION



#### TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2009
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2009
- 4 The EUT received DC5V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

#### AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

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

\* Decreasing linearly with the logarithm of the frequency

#### TEST RESULTS

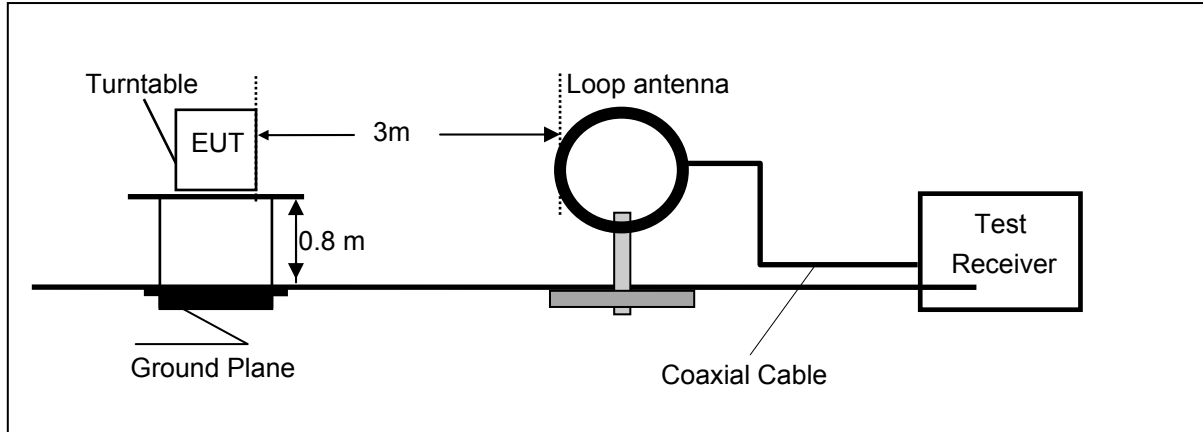
Not applicable to this device (The product powered by USB Port).

## 4.2. Radiated Emission

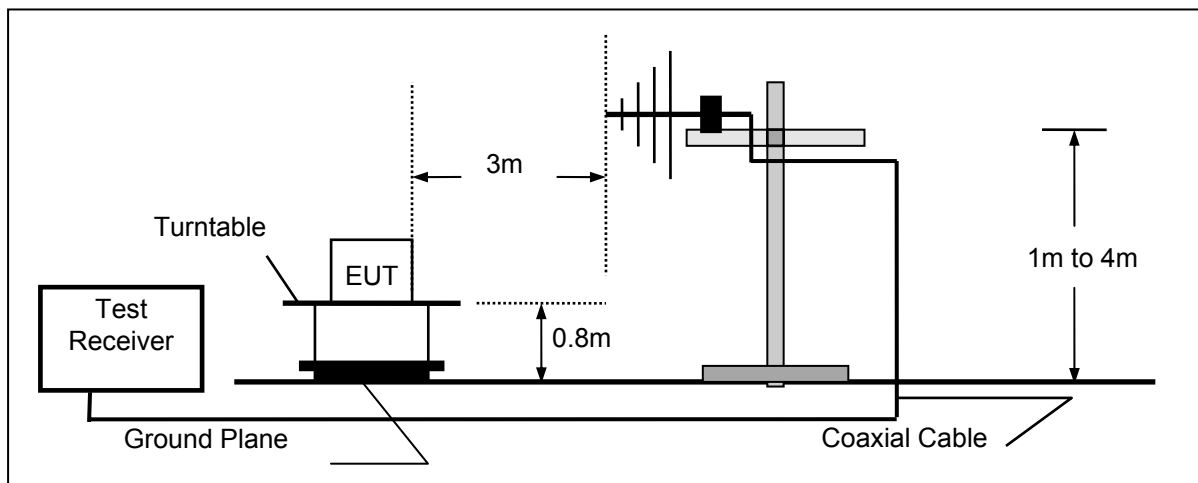
### TEST CONFIGURATION

Radiated Emission Test Set-Up

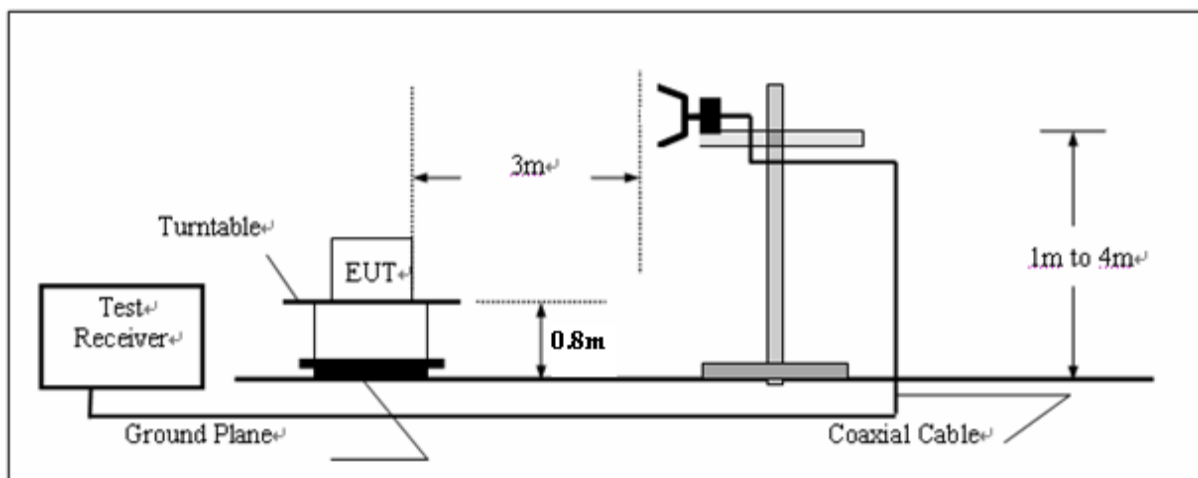
Frequency range 9KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



## **TEST PROCEDURE**

- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
- 2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. The minimum clock frequency was 12MHz, So the radiation emissions frequency range were tested from 9KHz to 25GHz.

## **Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

## **RADIATION LIMIT**

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emission not reported are much lower than the prescribed limits. Set the RBW=1MHz,VBW=3MHz for Peak Detector while the RBW=1MHz,VBW=10Hz for Average Detector,Readings are both peak and average values.

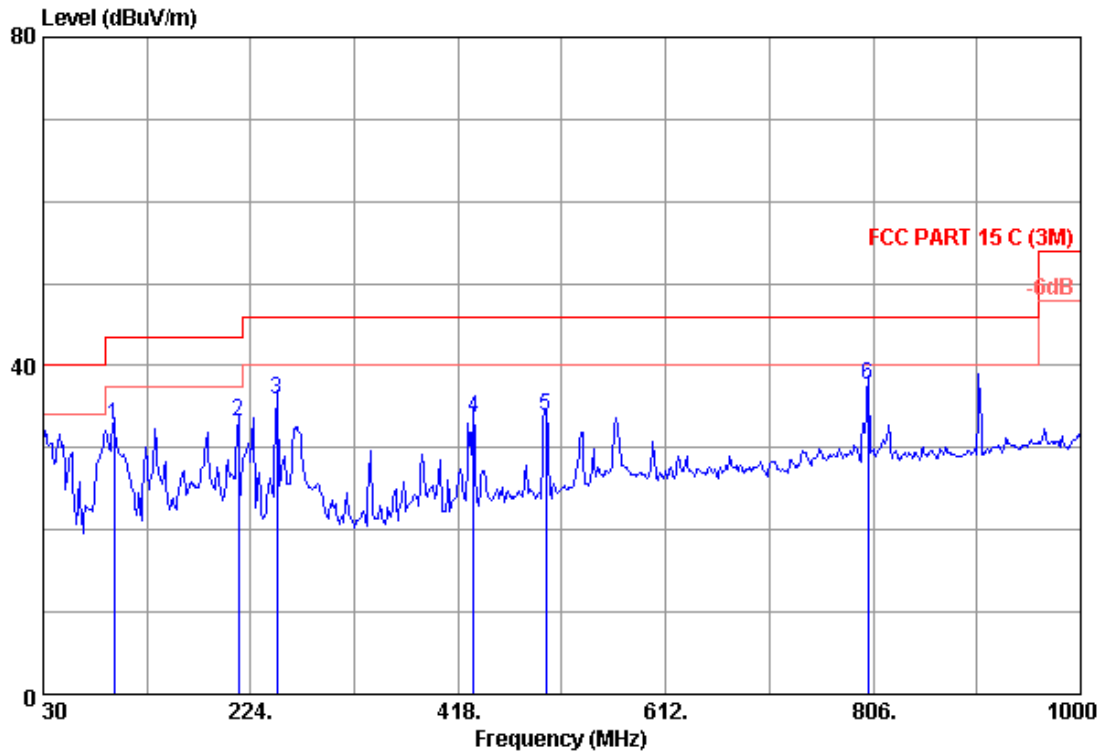
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

**Radiated emission in frequency band below 30MHz**

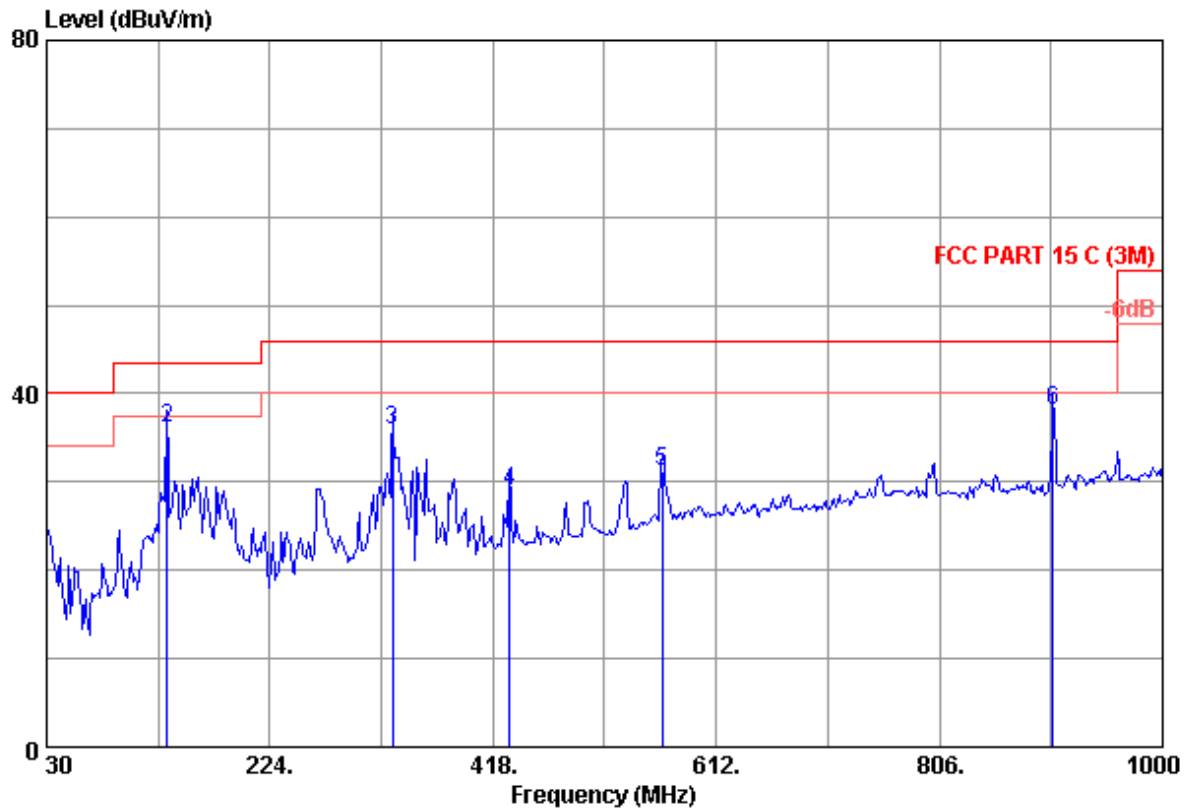
Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Polarization
802.11 b					
24	31.56	49.54	17.98	QP	/
802.11 g					
24	30.94	49.54	18.60	QP	/
802.11 n20					
24	31.37	49.54	18.17	QP	/
802.11 n40					
24	30.62	49.54	18.92	QP	/

Note: 1.The radiated measurement are performed the each test mode (b/g/n) and channel (low/mid/high), the datum recorded below (802.11b mode,the middle channel) is the worst case for all the test mode and channel.

2. Loop Antenna for the radiation emission test below 30MHz.

**TEST RESULTS****For 30MHz to 1000MHz (TX mode)**

No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	48.430	10.13	0.64	23.19	33.96	40.00	6.04	QP	Vertical
2	105.660	11.00	0.92	22.58	34.50	43.50	9.00	QP	Vertical
3	125.060	12.10	1.00	22.28	35.38	43.50	8.12	QP	Vertical
4	144.460	11.92	1.07	22.41	35.40	43.50	8.10	QP	Vertical
5	500.450	18.30	2.25	13.00	33.55	46.00	12.45	QP	Vertical
6	749.740	22.00	2.92	11.41	36.33	46.00	9.67	QP	Vertical



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	30.00	20.00	0.52	2.03	22.55	40.00	17.45	QP	Horizontal
2	134.760	12.10	1.03	22.89	36.02	43.50	7.48	QP	Horizontal
3	330.700	14.44	1.79	19.72	35.95	46.00	10.05	QP	Horizontal
4	432.550	17.42	2.03	9.55	29.00	46.00	17.00	QP	Horizontal
5	565.440	19.61	2.41	9.10	31.12	46.00	14.88	QP	Horizontal
6	904.940	22.95	3.19	11.98	38.12	46.00	7.88	QP	Horizontal

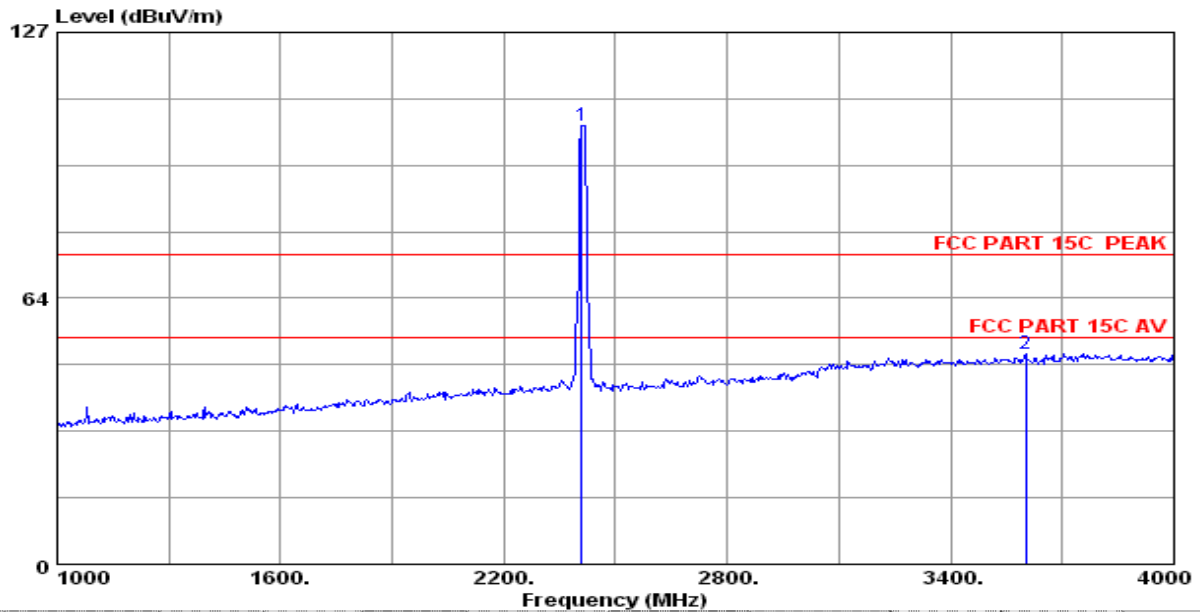
Remark: 1. Emission Level = Antenna Factor + Cable Loss + Reading.

2. The Emission levels that are 20dB below the official limit are not reported.

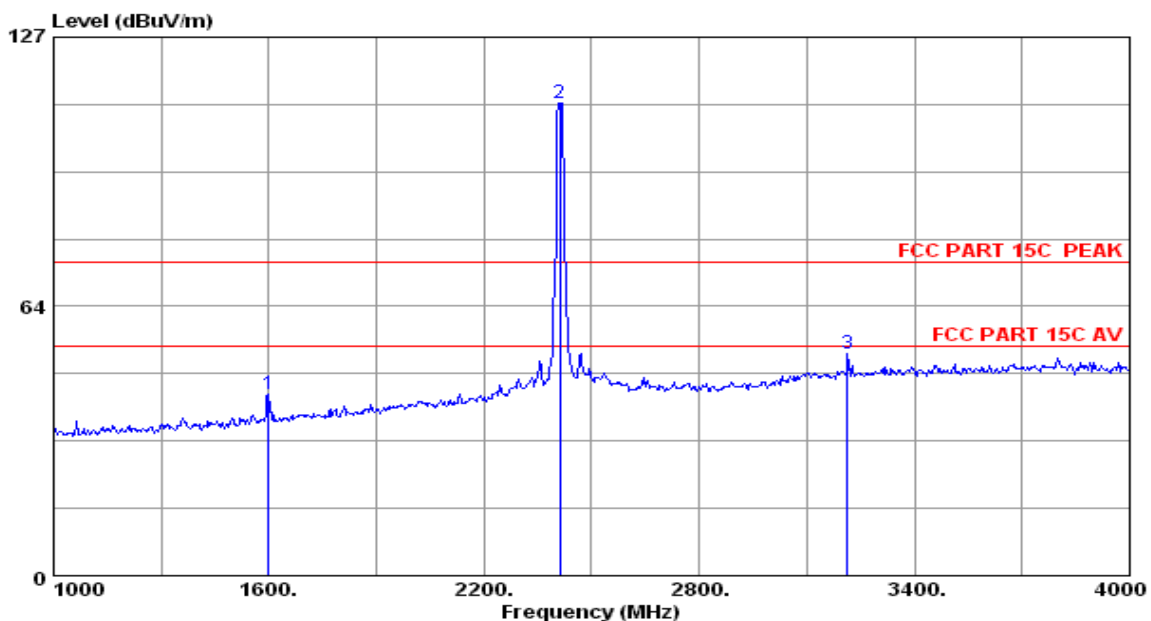
3. The radiated measurement are performed the each test mode (b/g/n) and channel (low/mid/high), the datum recorded below (802.11b mode, the middle channel) is the worst case for all the test mode and channel.

**Above 1G**

The frequency spectrum above 1 GHz for Transmitter was investigated. All emission not reported are much lower than the prescribed limits. Set the RBW=1MHz,VBW=3MHz for Peak Detector while the RBW=1MHz,VBW=10Hz for Average Detector,Readings are both peak and average values. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

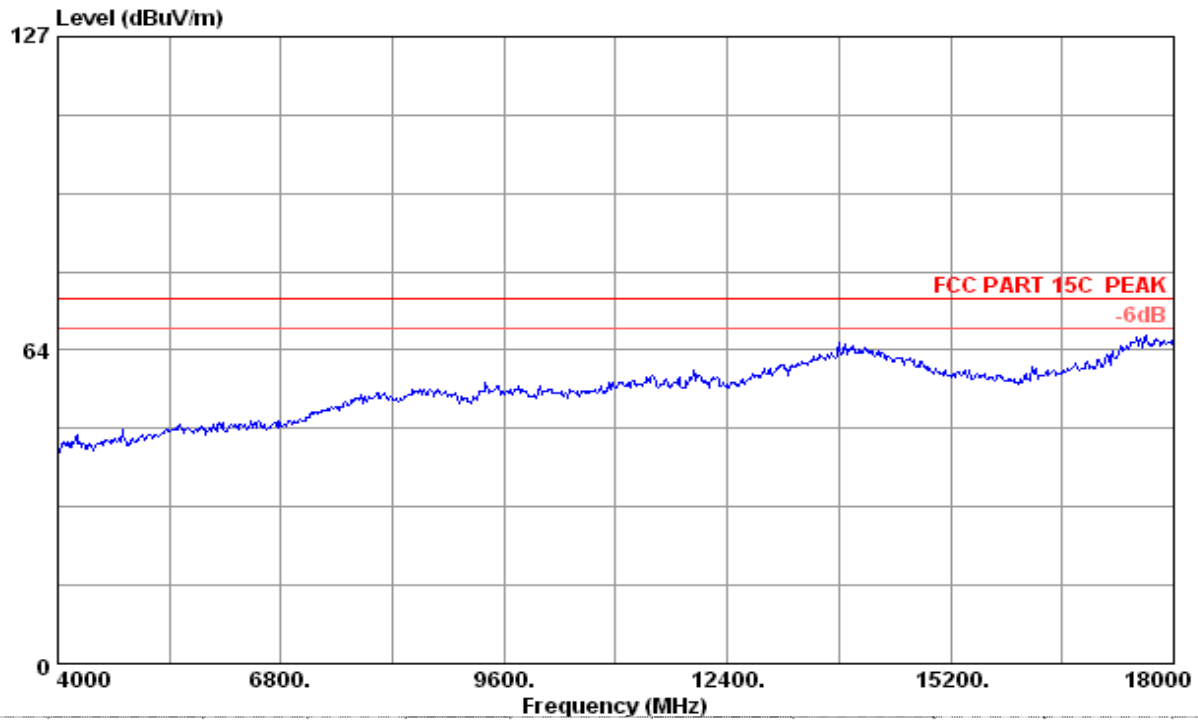
**For 802.11b&2412MHz**

No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2410.000	29.45	8.72	35.95	102.63	104.85	74.00	-30.85	Peak	Horizontal
2	3601.000	33.44	10.80	35.95	35.55	41.56	74.00	23.75	Peak	Horizontal

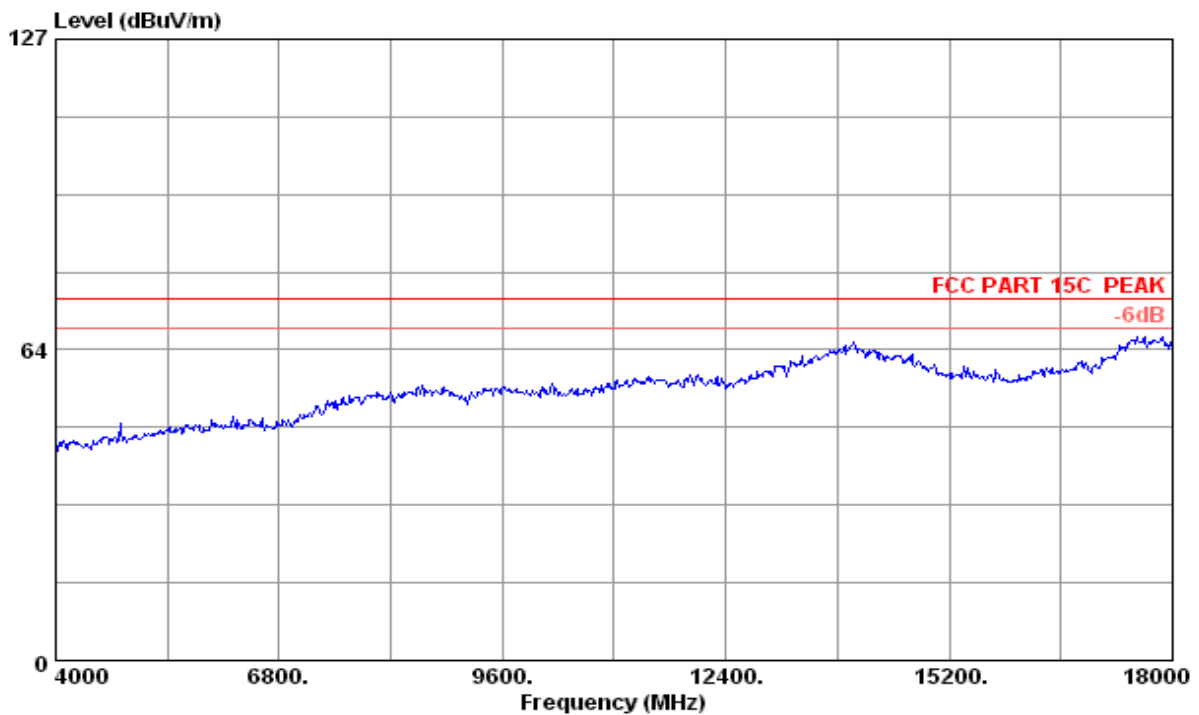


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	1600.000	26.96	6.98	36.43	36.43	42.87	74.00	31.13	Peak	Vertical
2	2412.000	29.45	8.72	35.95	109.34	109.34	74.00	-37.56	Peak	Vertical
3	3214.000	32.54	10.21	35.86	35.86	45.60	74.00	21.51	Peak	Vertical

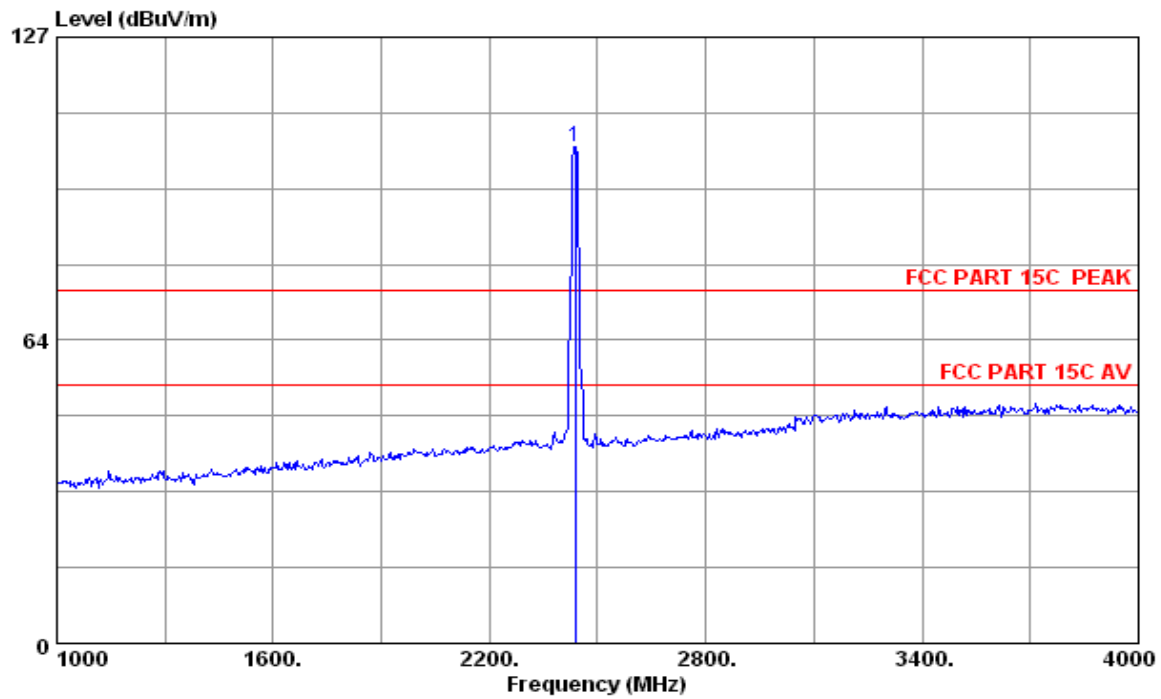




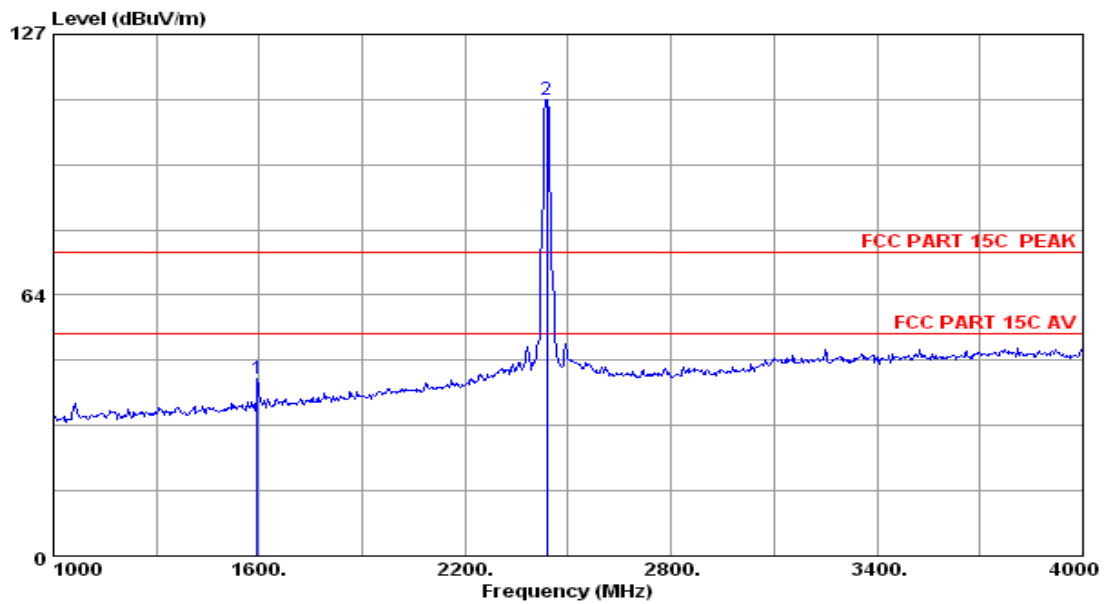
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4824.000	34.32	12.38	35.25	43.85	55.30	74.00	18.70	Peak	Horizontal
2	4824.000	34.32	12.38	35.25	34.98	46.43	54.00	7.57	Average	Horizontal



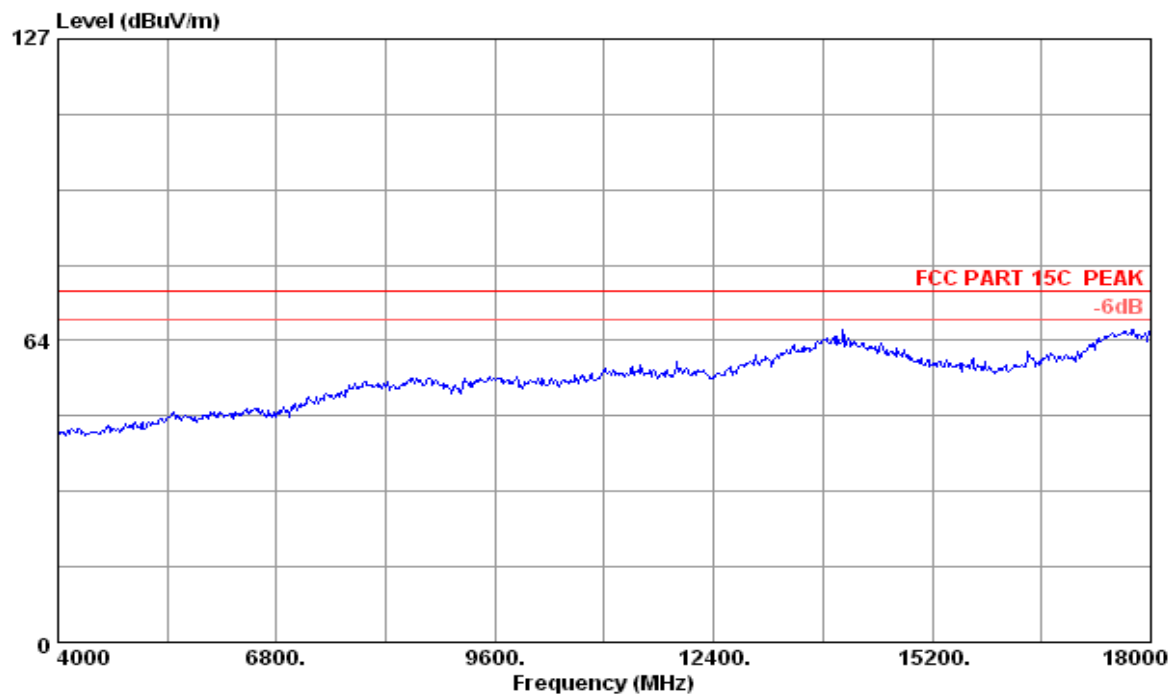
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4824.000	34.32	12.38	35.25	46.17	57.62	74.00	16.38	Peak	Vertical
2	4824.000	34.32	12.38	35.25	37.35	48.80	54.00	5.20	Average	Vertical

**For 802.11b&2437MHz**

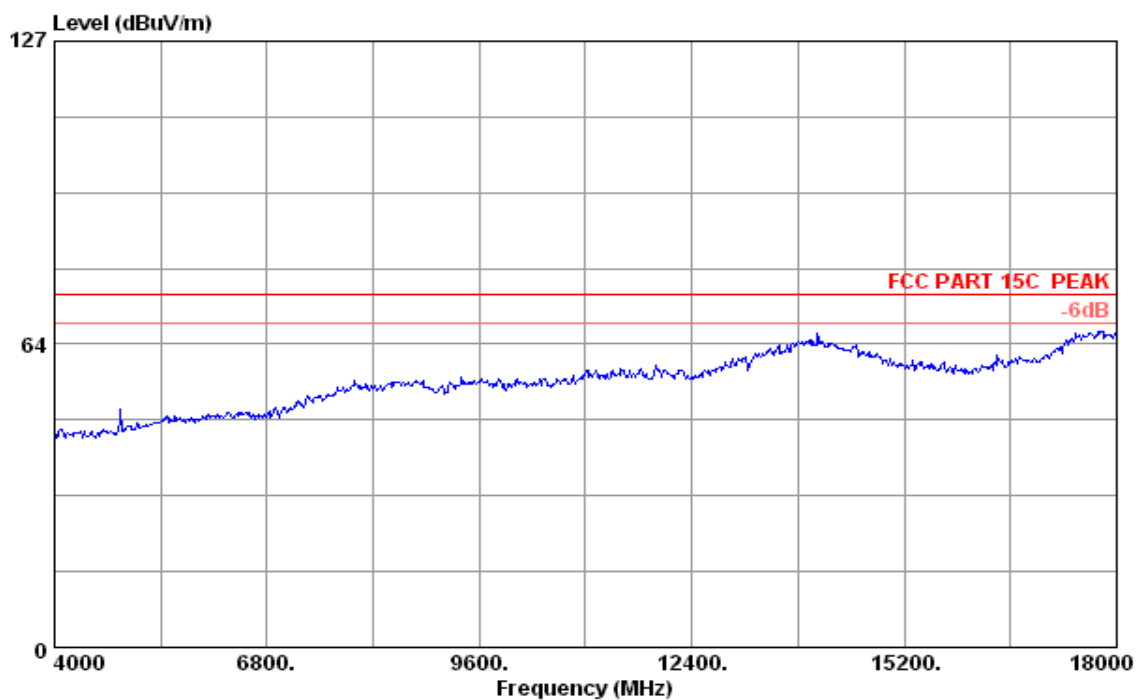
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2437.000	29.47	8.77	36.06	101.97	104.15	74.00	-30.15	Peak	Horizontal



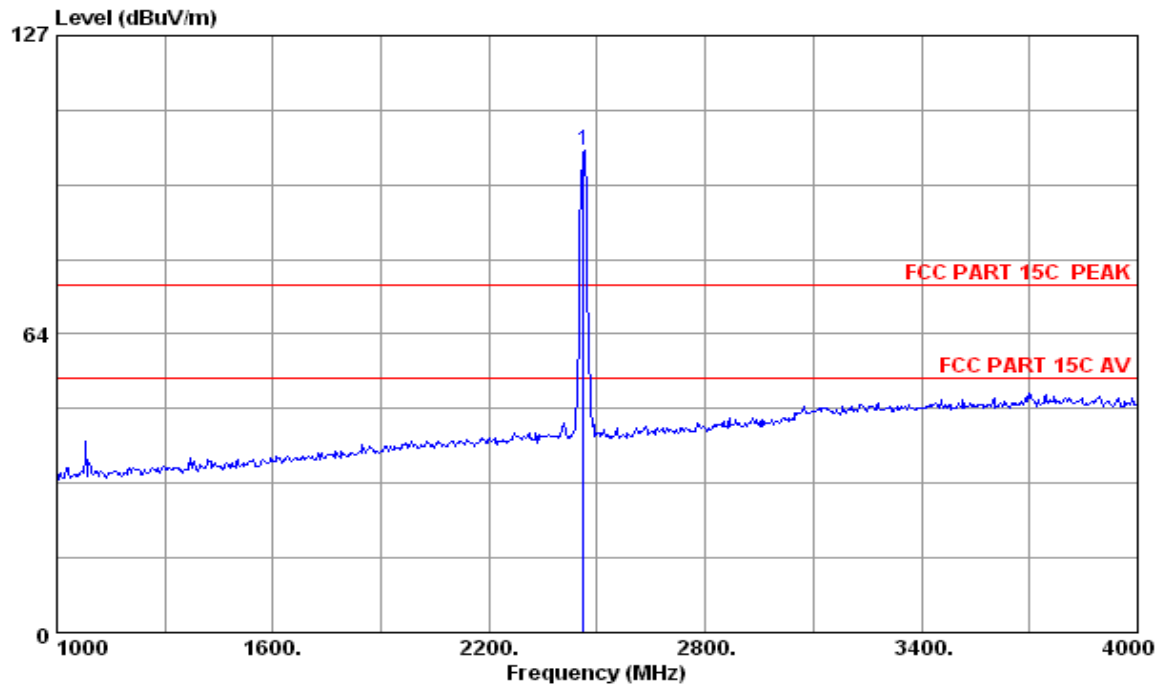
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	1594.000	26.96	6.92	36.43	45.89	43.34	74.00	30.66	Peak	Vertical
2	2437.000	29.47	8.77	36.06	108.99	111.17	74.00	-37.17	Peak	Vertical



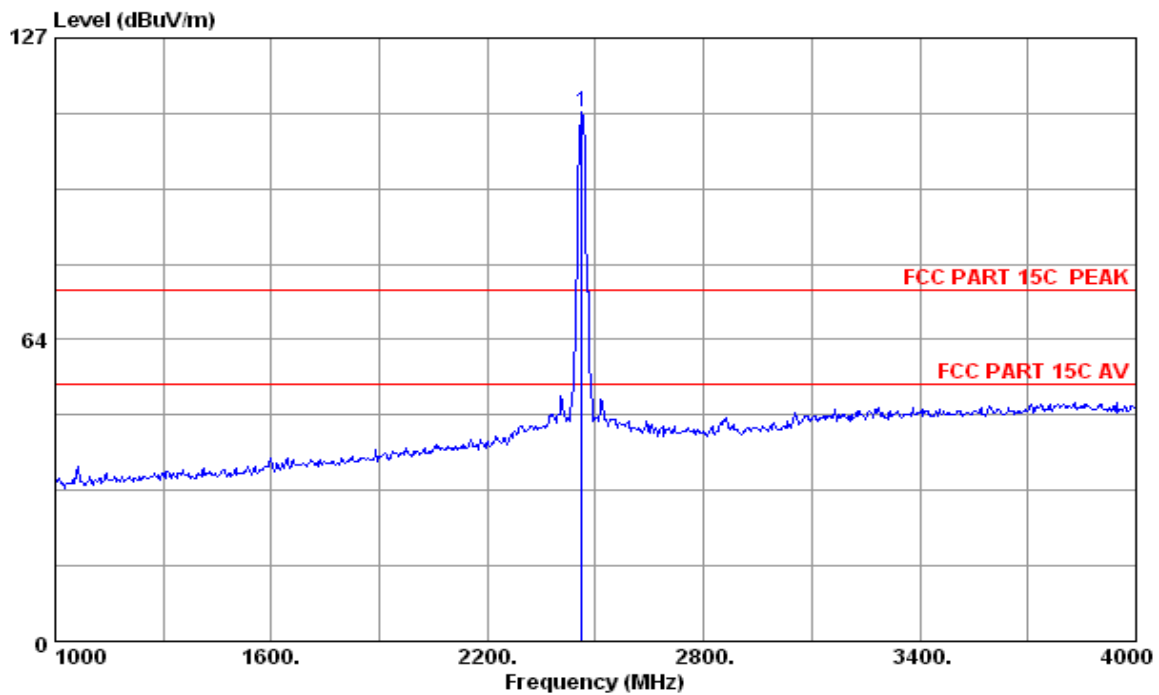
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	35.36	44.58	74.00	17.93	Peak	Horizontal
2	4874.000	34.41	12.44	35.36	35.36	35.23	54.00	7.28	Average	Horizontal



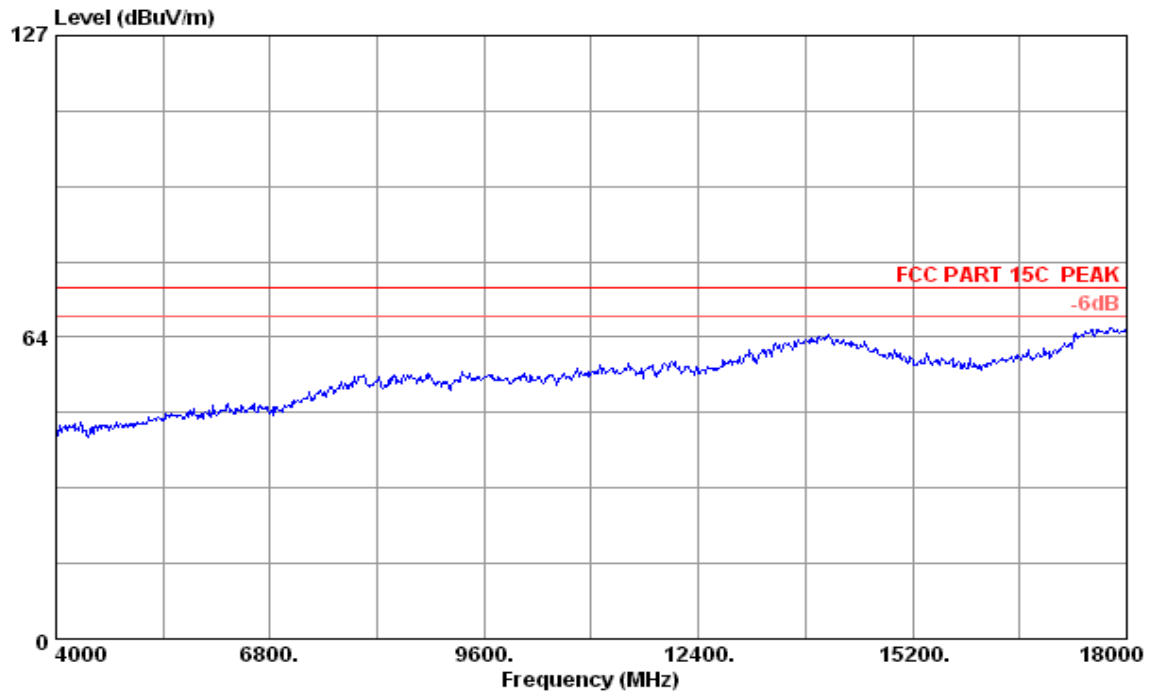
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	46.43	57.92	74.00	16.08	Peak	Vertical
2	4874.000	34.41	12.44	35.36	37.85	49.34	54.00	4.66	Average	Vertical

**For 802.11b&2462MHz**

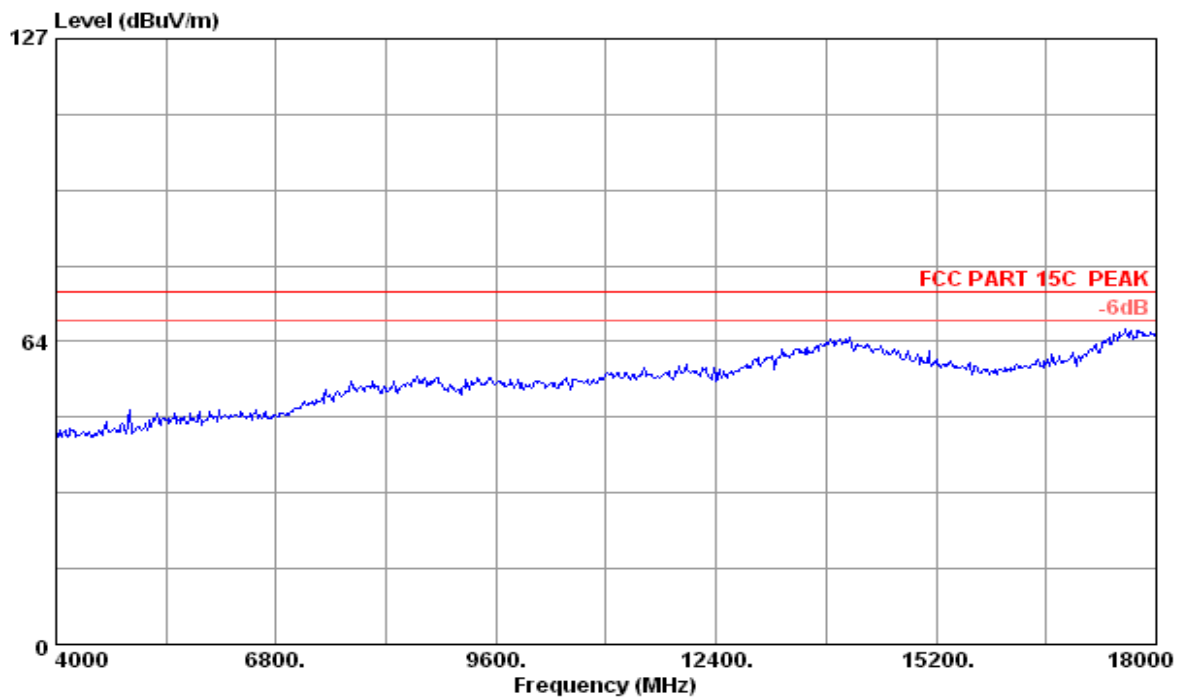
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2462.000	29.48	8.82	36.02	100.49	102.77	74.00	-28.77	Peak	Horizontal



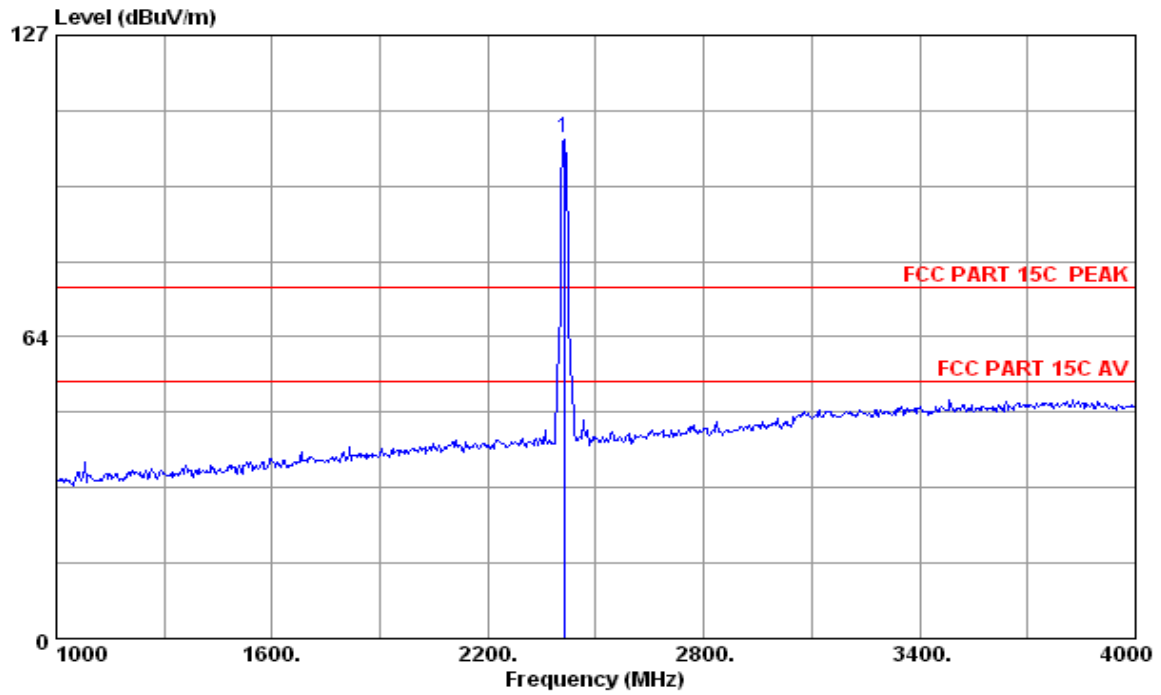
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2462.000	29.48	8.82	36.02	109.14	111.42	74.00	-37.42	Peak	Vertical



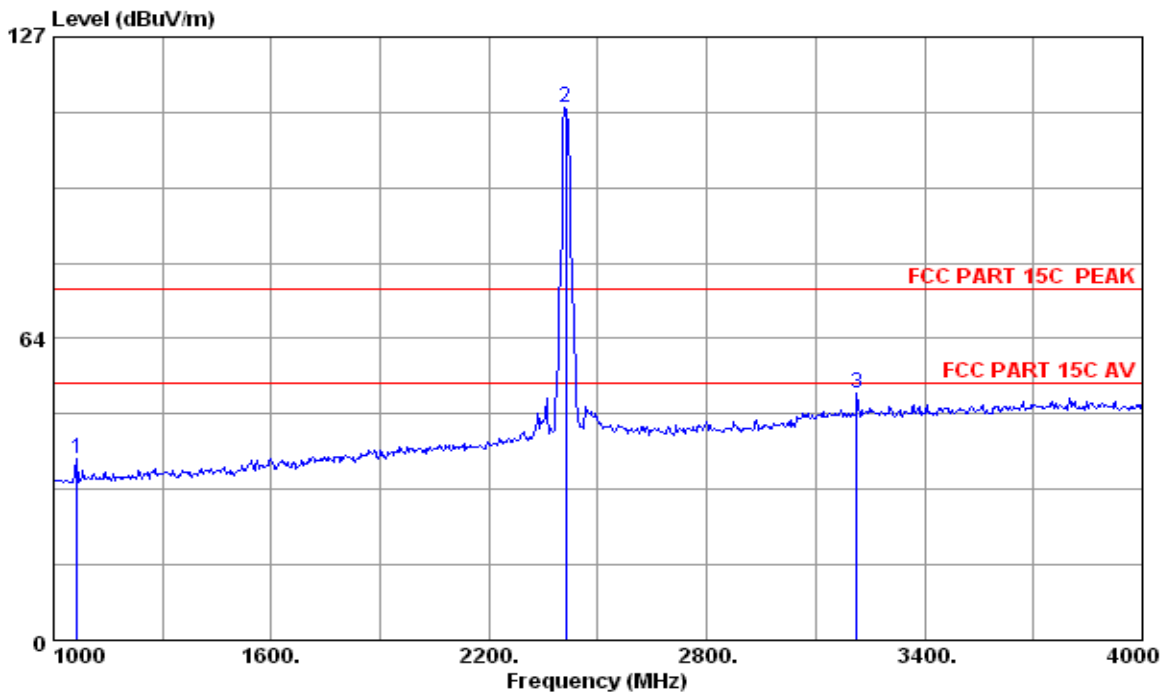
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4924.000	34.49	12.50	35.34	44.28	55.93	74.00	18.07	Peak	Horizontal
2	4924.000	34.49	12.50	35.34	34.21	45.86	54.00	8.14	Average	Horizontal



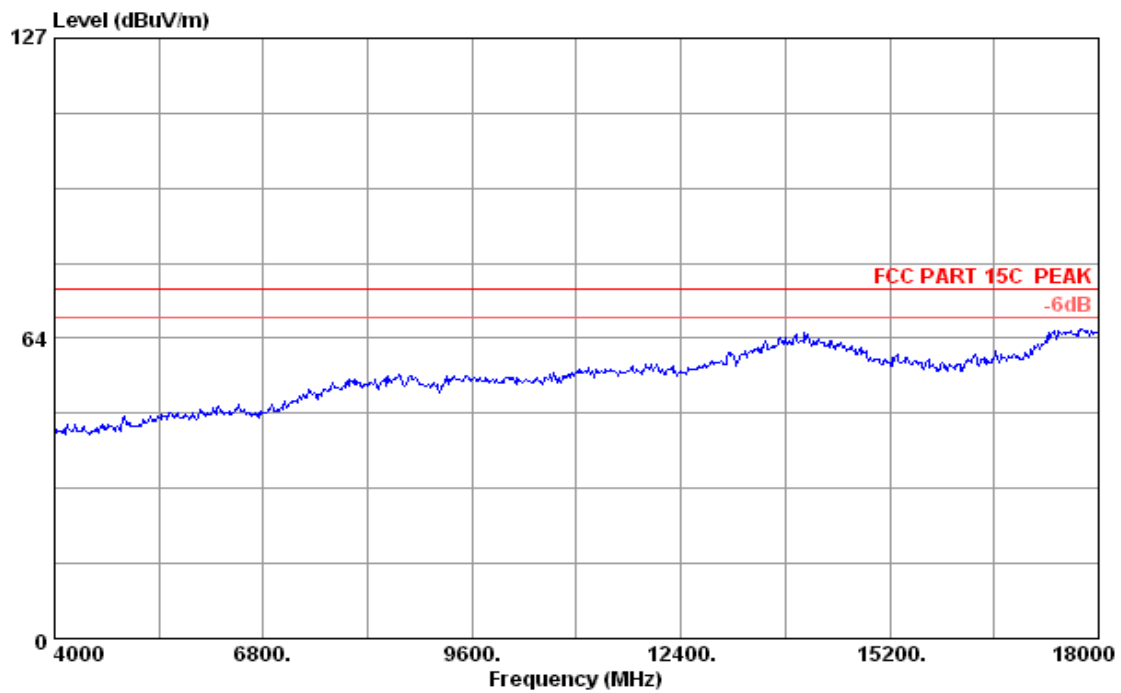
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4924.000	34.49	12.50	35.34	46.60	58.25	74.00	15.75	Peak	Vertical
2	4924.000	34.49	12.50	35.34	37.64	49.29	54.00	4.71	Average	Vertical

**For 802.11g&2412MHz**

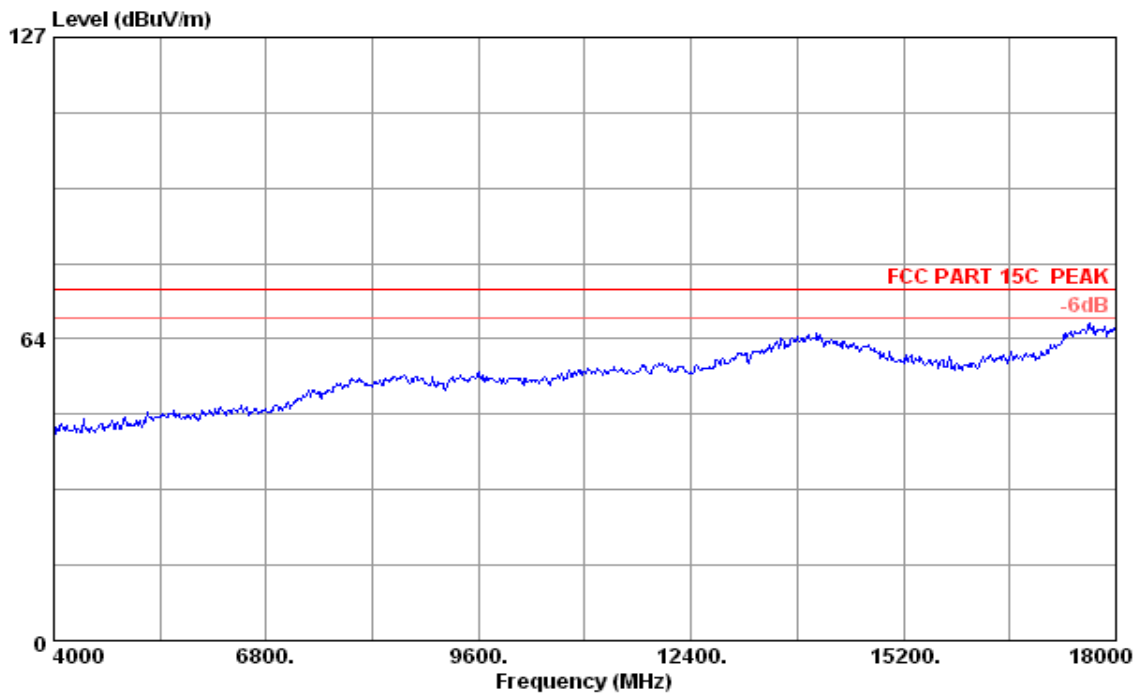
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2412.000	29.45	8.72	35.95	103.10	105.32	74.00	-31.32	Peak	Horizontal



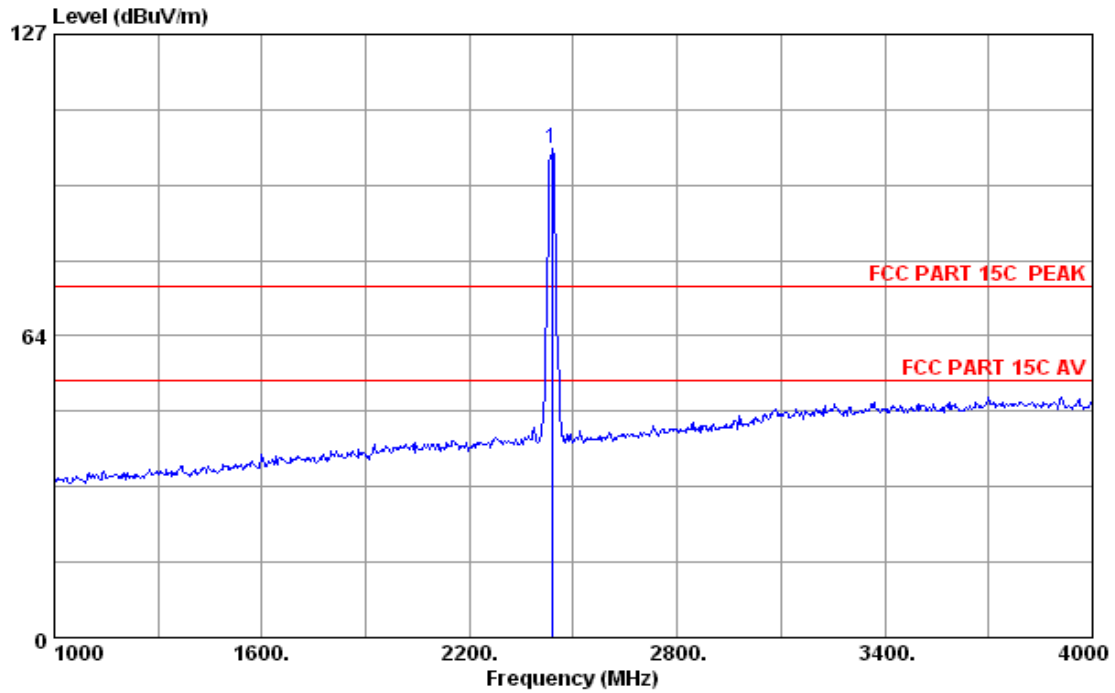
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	1066.000	25.54	5.60	37.26	44.32	38.20	74.00	35.80	Peak	Vertical
2	2412.000	29.45	8.72	35.95	109.86	112.08	74.00	-37.56	Peak	Vertical
3	3214.000	32.54	10.21	35.86	45.00	51.89	74.00	22.11	Peak	Vertical



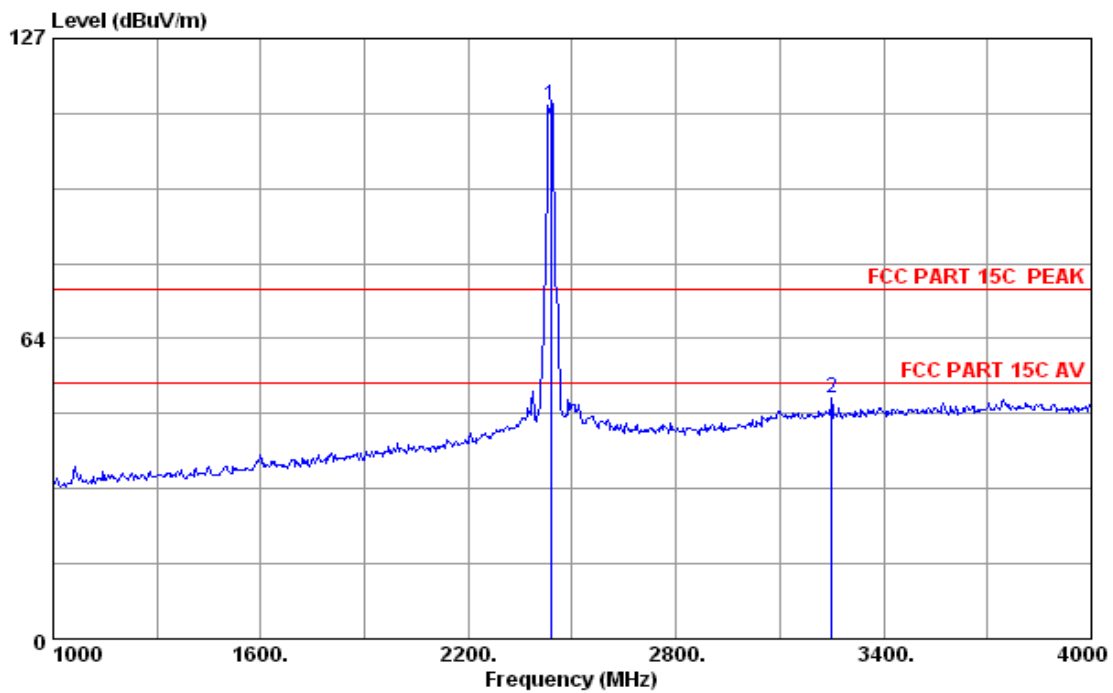
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	4824.000	34.32	12.38	35.25	43.88	55.33	74.00	18.67	Peak	Horizontal
2	4824.000	34.32	12.38	35.25	34.62	46.07	54.00	7.93	Average	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	4824.000	34.32	12.38	35.25	44.96	56.41	74.00	17.59	Peak	Vertical
2	4824.000	34.32	12.38	35.25	36.24	47.69	54.00	6.31	Average	Vertical

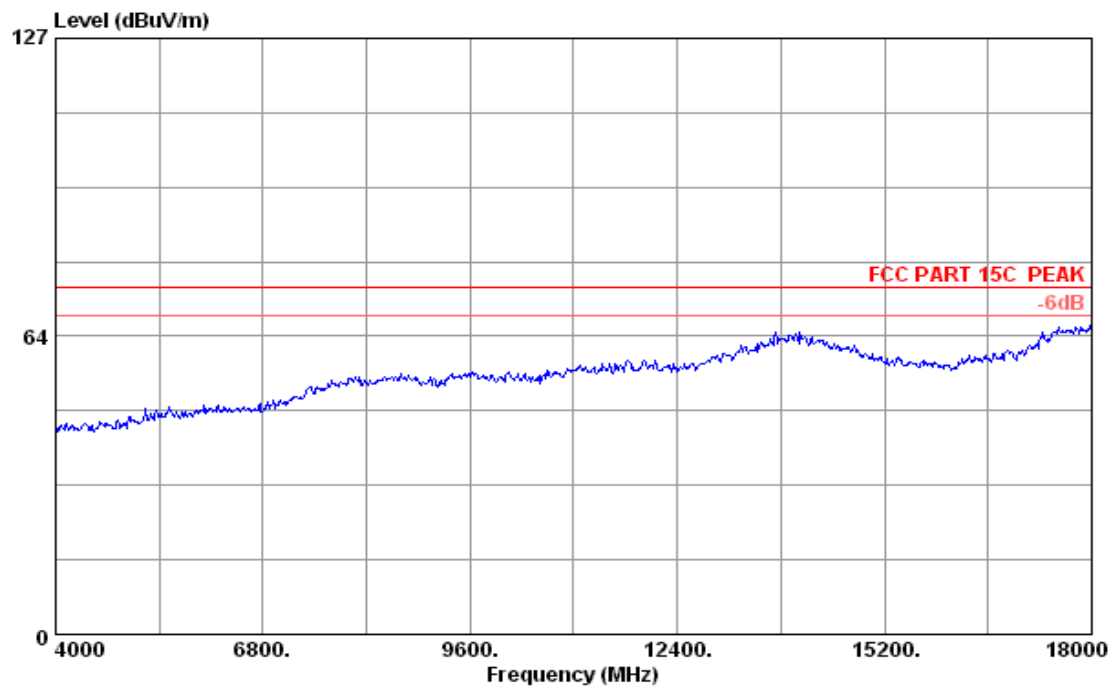
**For 802.11g&2437MHz**

No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2437.000	29.47	8.77	36.06	100.75	102.93	74.00	-28.93	Peak	Horizontal

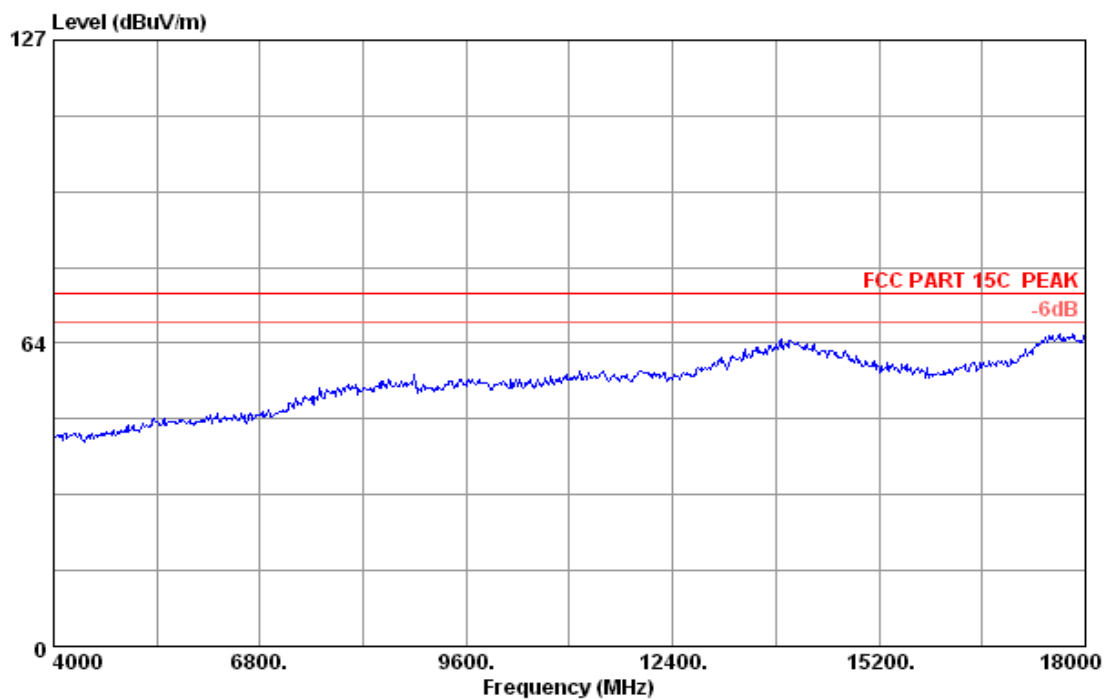


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2437.000	29.47	8.77	36.06	110.75	112.93	74.00	-38.93	Peak	Vertical
2	3250.000	32.63	10.28	35.68	43.60	50.83	74.00	23.17	Peak	Vertical

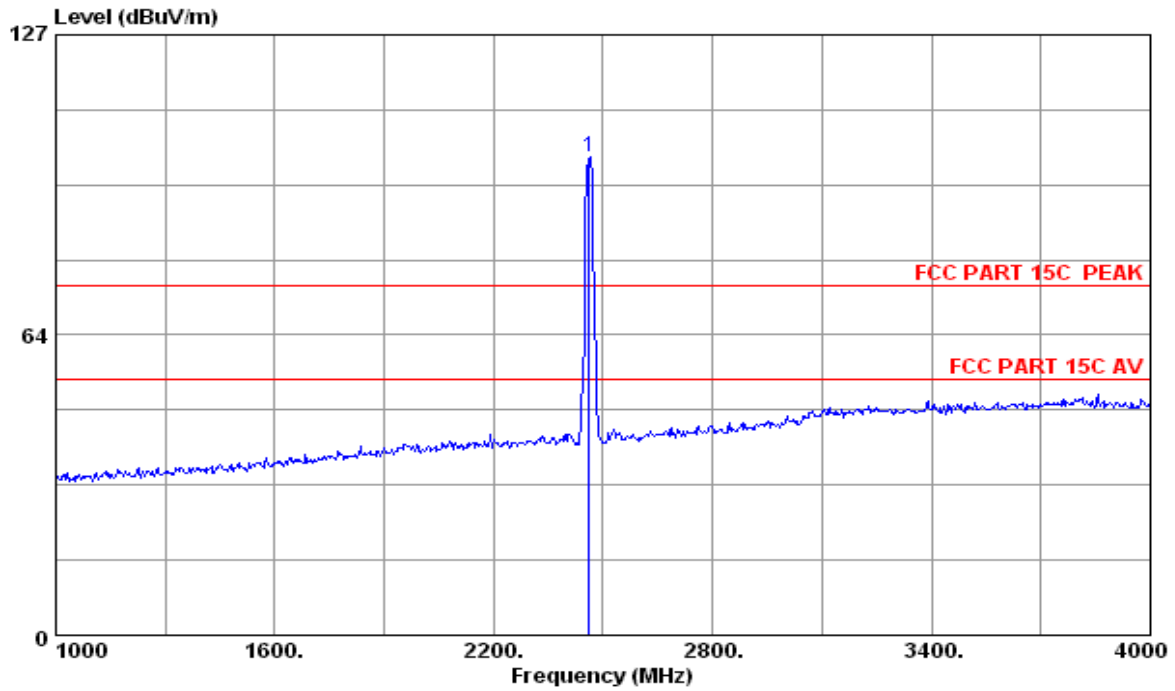




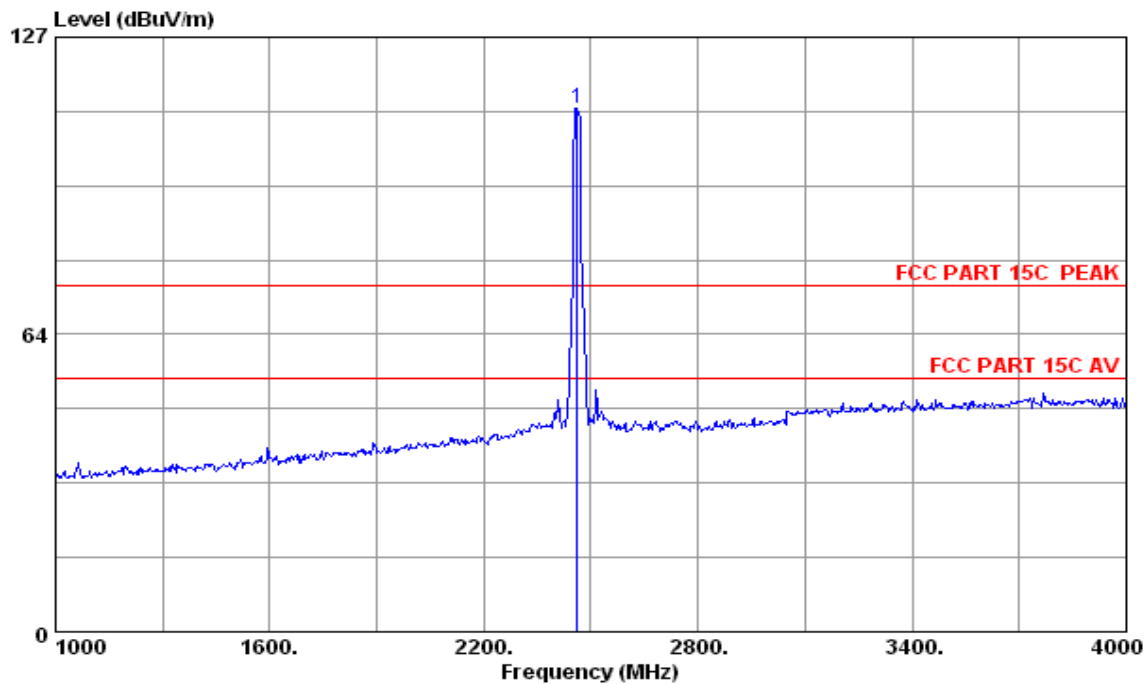
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	44.27	55.76	74.00	18.24	Peak	Horizontal
2	4874.000	34.41	12.44	35.36	35.14	46.63	54.00	7.37	Average	Horizontal



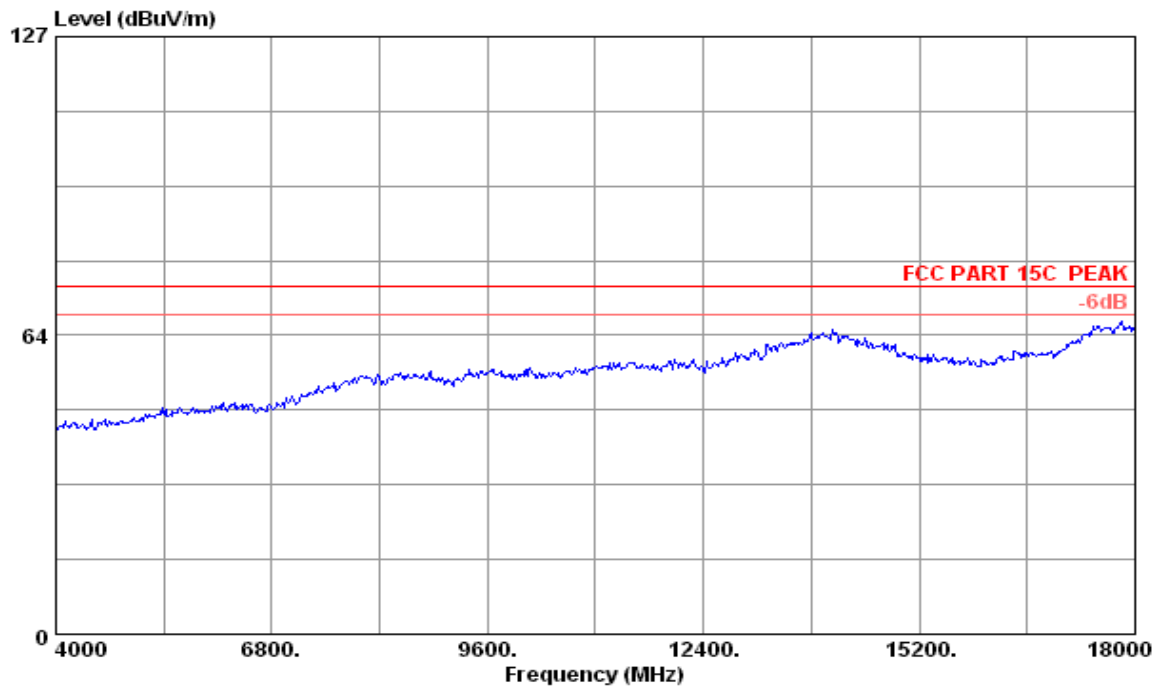
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	45.27	56.76	74.00	17.24	Peak	Vertical
2	4874.000	34.41	12.44	35.36	36.94	48.43	54.00	5.57	Average	Vertical

**For 802.11g&2462MHz**

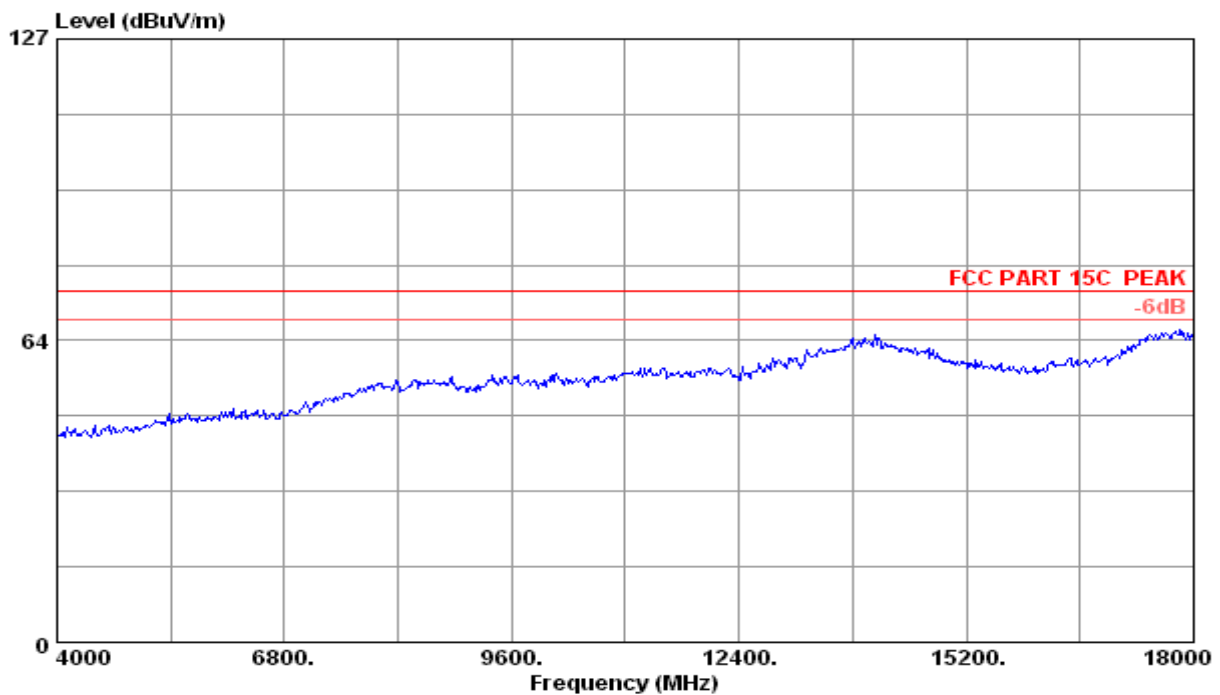
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2462.000	29.48	8.82	36.02	98.84	101.12	74.00	-27.12	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2462.000	29.48	8.82	36.02	109.56	111.84	74.00	-37.84	Peak	Vertical

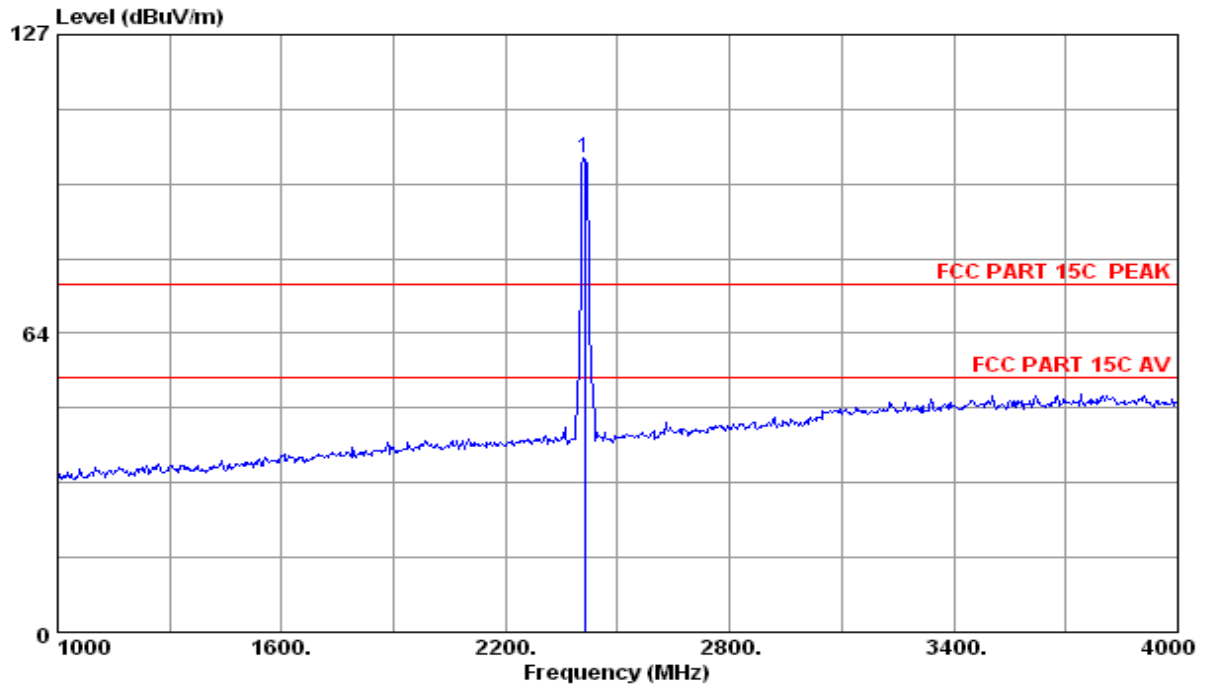


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4924.000	34.49	12.50	35.34	43.28	54.93	74.00	19.07	Peak	Horizontal
2	4924.000	34.49	12.50	35.34	34.20	45.85	54.00	8.15	Average	Horizontal

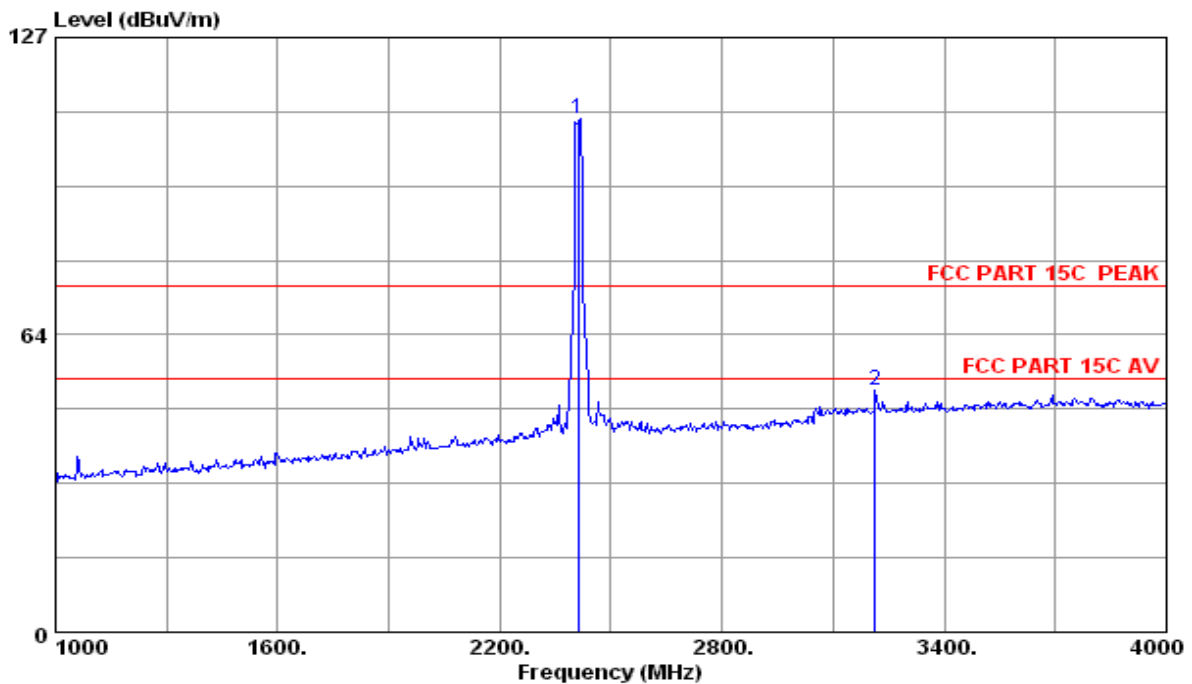


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4924.000	34.49	12.50	35.34	45.81	57.46	74.00	16.54	Peak	Vertical
2	4924.000	34.49	12.50	35.34	36.29	47.94	54.00	6.06	Average	Vertical

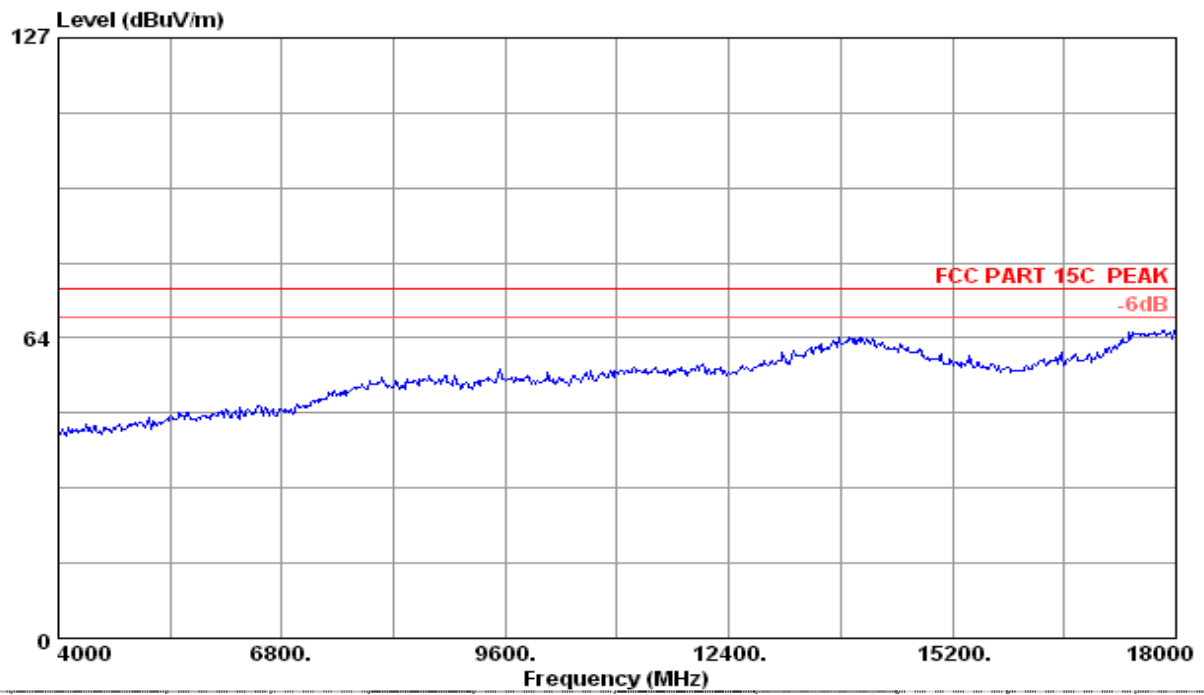
**For 802.11n(20MHz)&2412MHz**



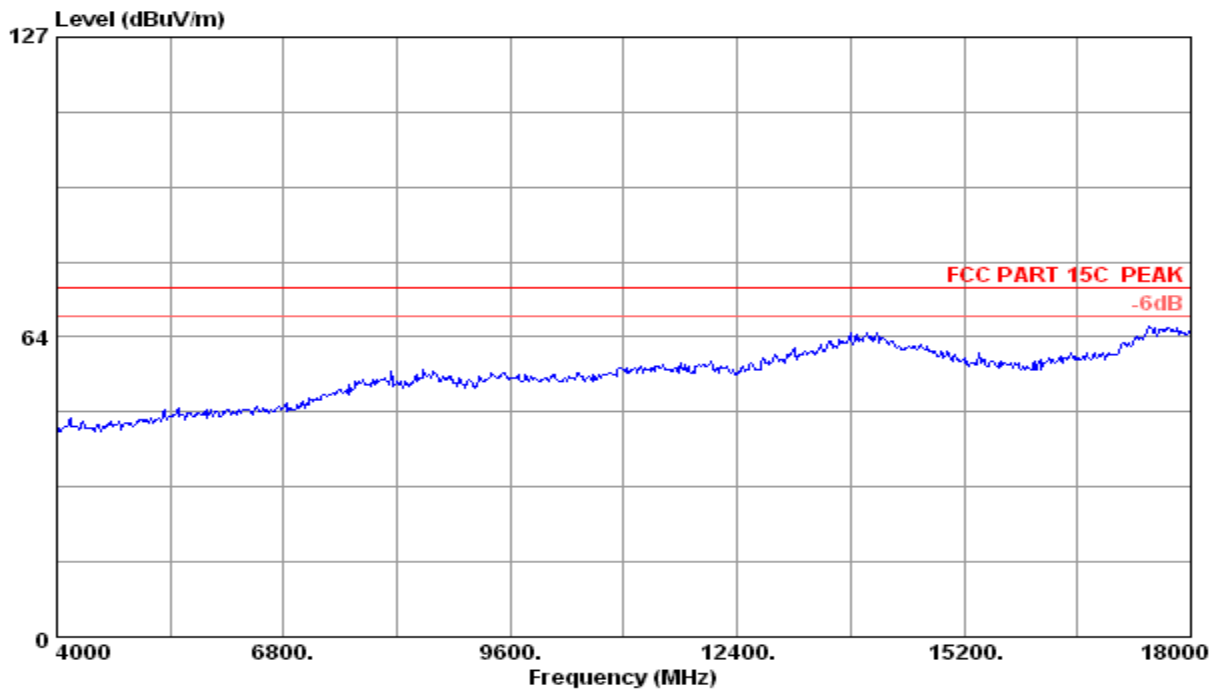
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2412.000	29.45	8.72	35.95	98.47	100.69	74.00	-26.69	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2412.000	29.45	8.72	35.95	107.28	109.50	74.00	-35.50	Peak	Vertical
2	3214.000	32.54	10.21	35.86	44.74	51.63	74.00	22.37	Peak	Vertical

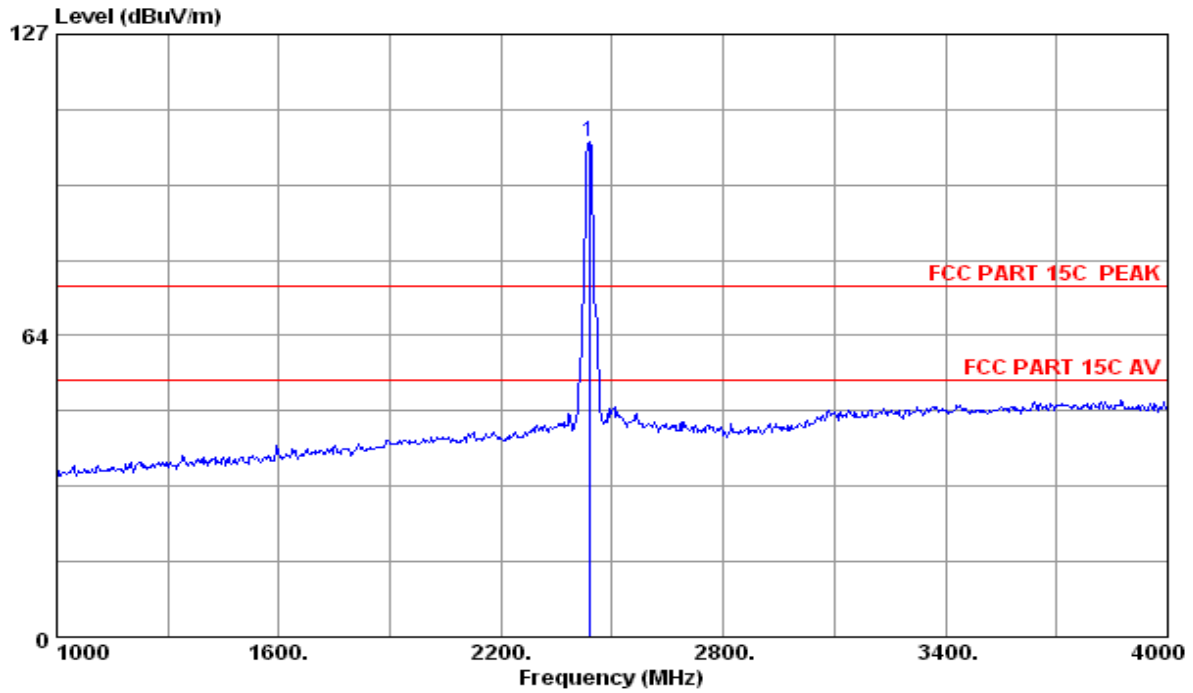


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	4824.000	34.32	12.38	35.25	43.59	55.04	74.00	18.96	Peak	Horizontal
2	4824.000	34.32	12.38	35.25	33.49	44.94	54.00	9.06	Average	Horizontal

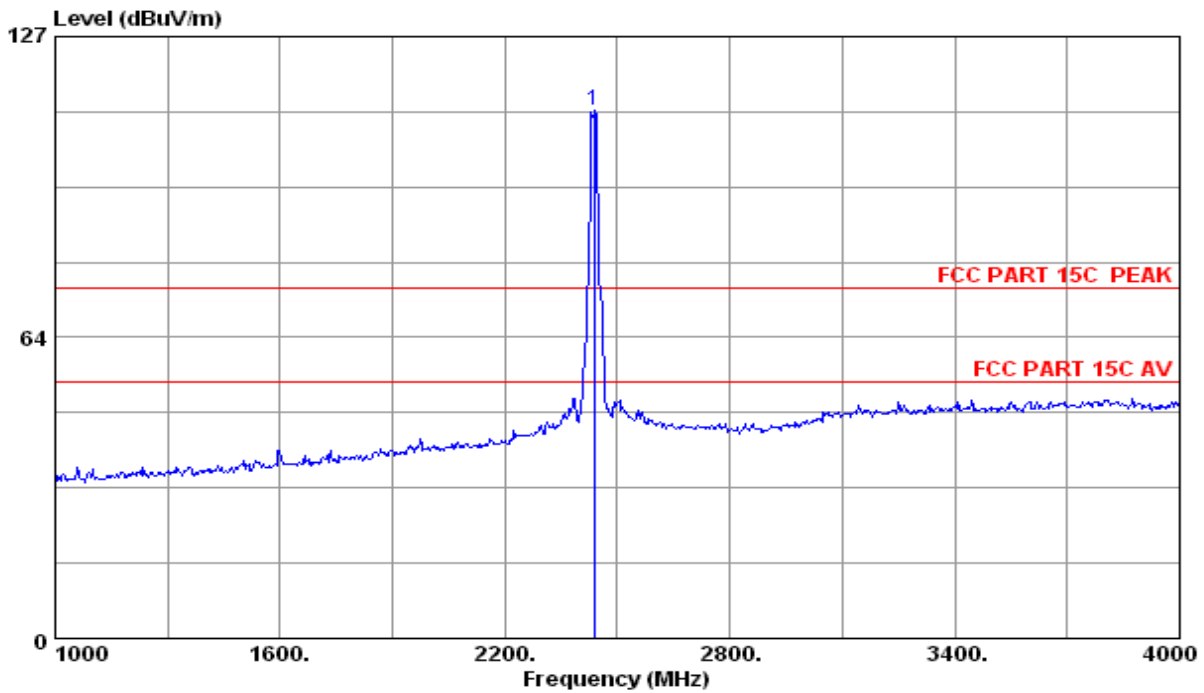


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	4824.000	34.32	12.38	35.25	45.61	57.06	74.00	16.94	Peak	Vertical
2	4824.000	34.32	12.38	35.25	36.21	47.66	54.00	6.34	Average	Vertical

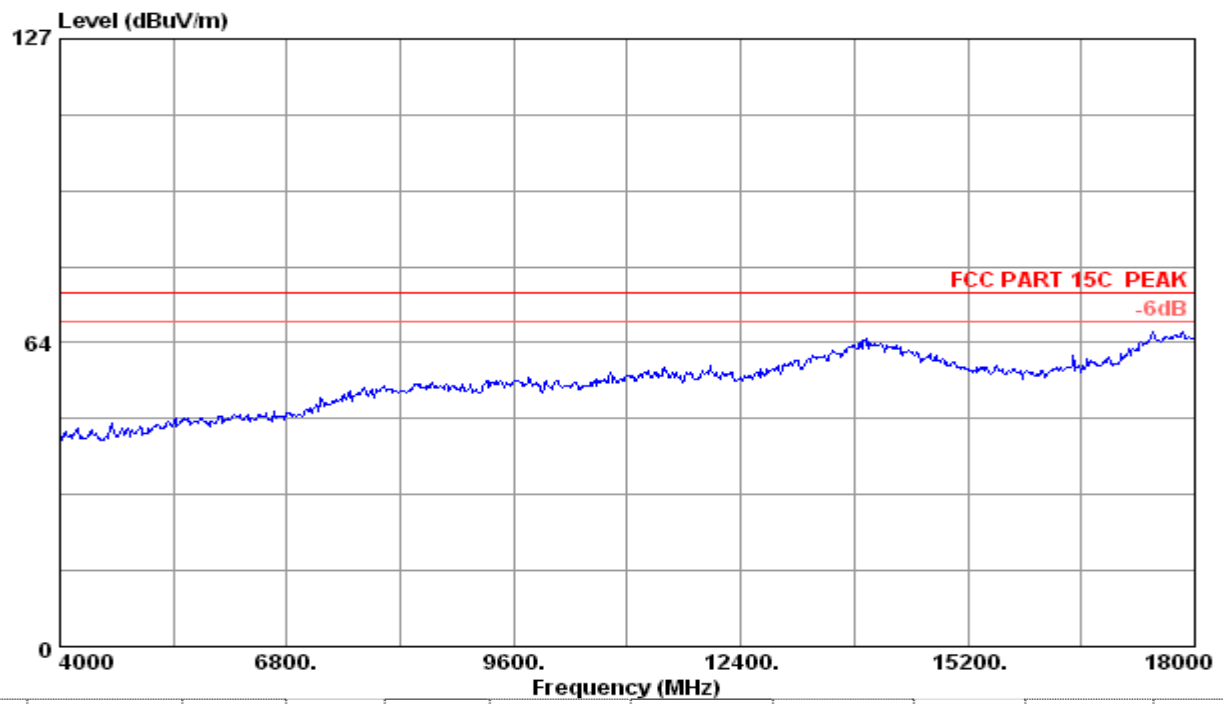
**For 802.11n(20MHz)&2437MHz**



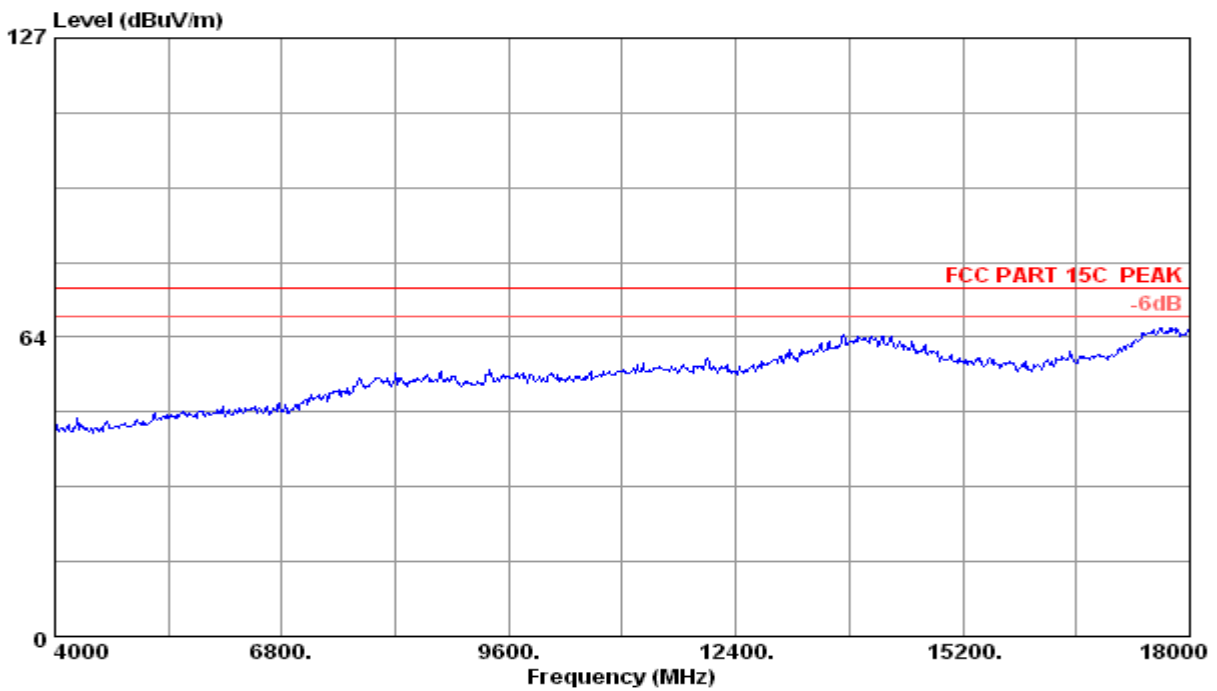
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2437.000	29.47	8.77	36.06	102.08	104.26	74.00	-30.26	Peak	Horizontal



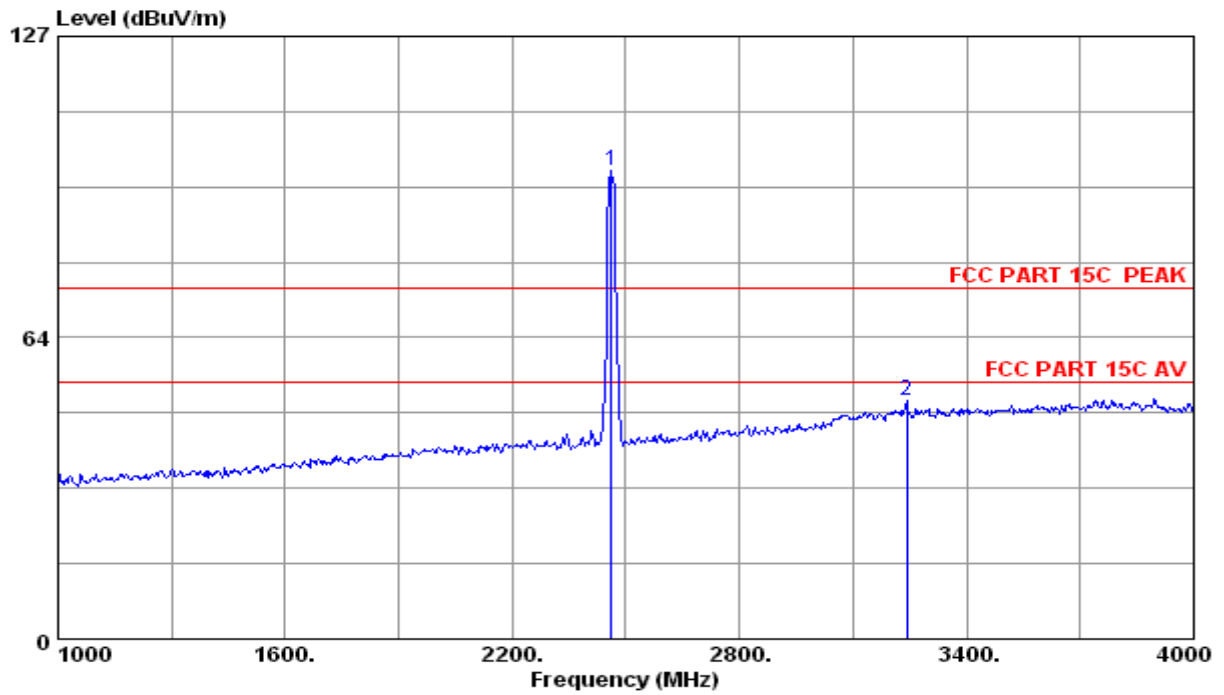
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2437.000	29.47	8.77	36.06	109.16	111.34	74.00	-37.34	Peak	Vertical



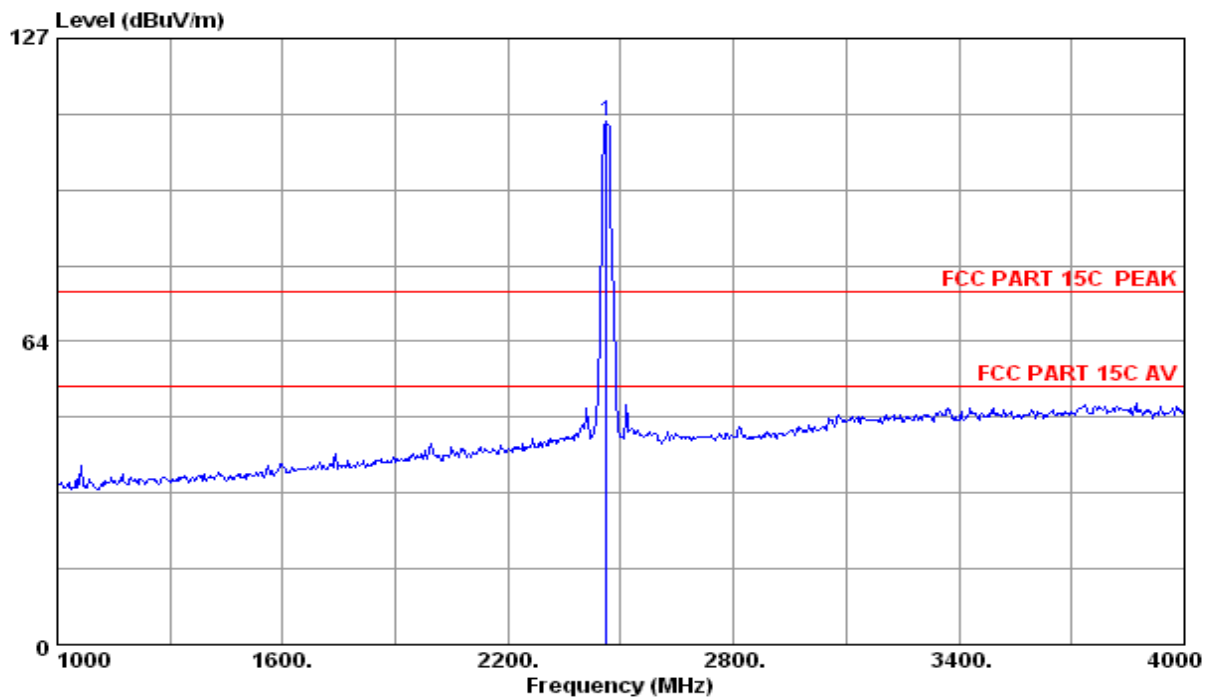
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	43.41	54.90	74.00	19.10	Peak	Horizontal
2	4874.000	34.41	12.44	35.36	33.94	45.43	54.00	8.57	Average	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	45.76	57.25	74.00	16.75	Peak	Vertical
2	4874.000	34.41	12.44	35.36	35.61	47.10	54.00	6.90	Average	Vertical

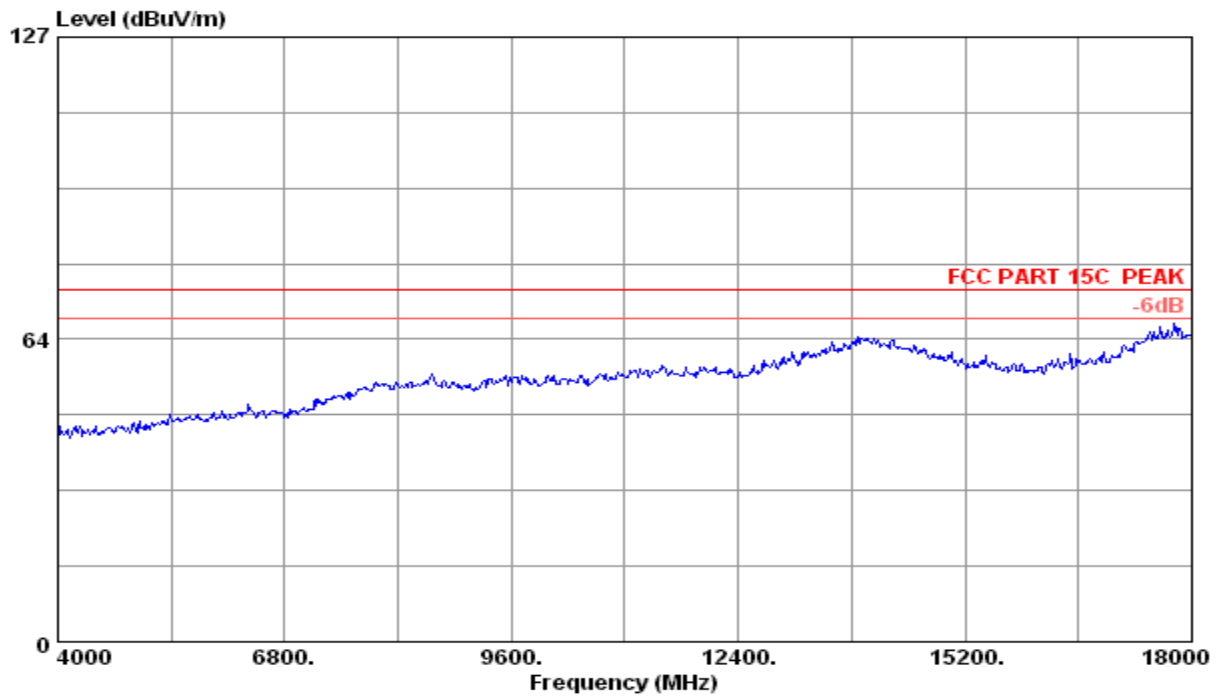
**For 802.11n(20MHz)&2462MHz**

No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2462.000	29.48	8.82	36.02	96.33	98.61	74.00	-24.61	Peak	Horizontal
2	3241.000	32.63	10.24	35.68	43.09	50.28	74.00	23.72	Peak	Horizontal

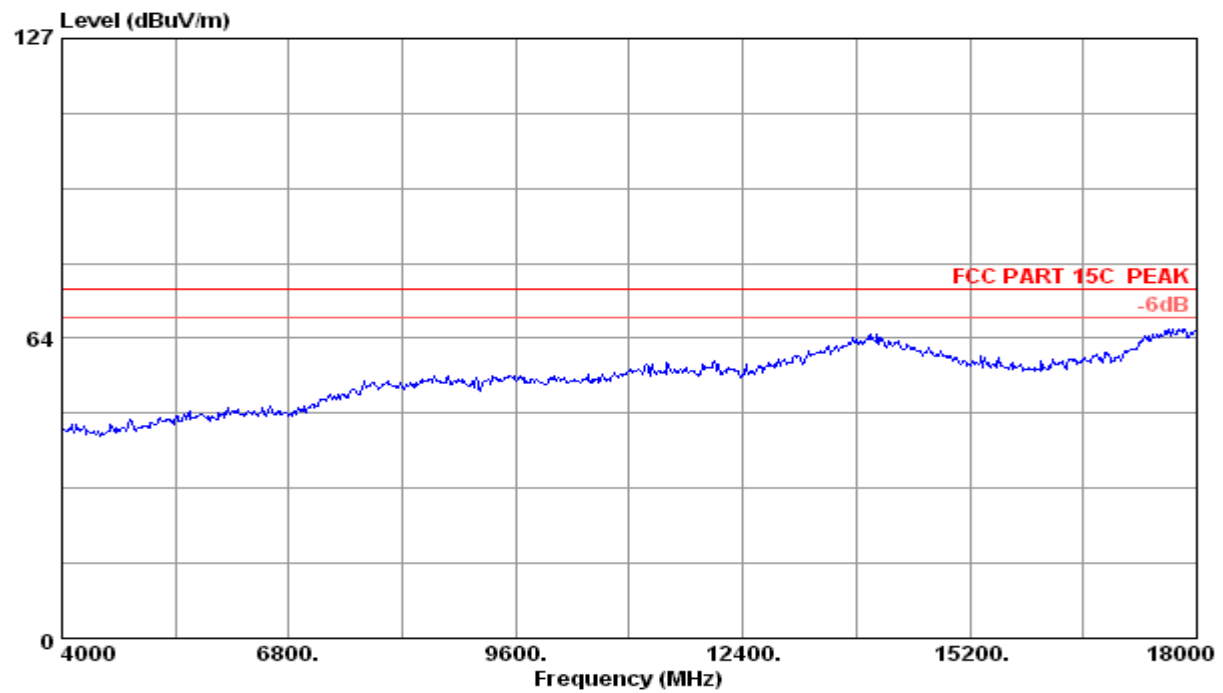


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2462.000	29.48	8.82	36.02	107.55	109.83	74.00	-35.83	Peak	Vertical



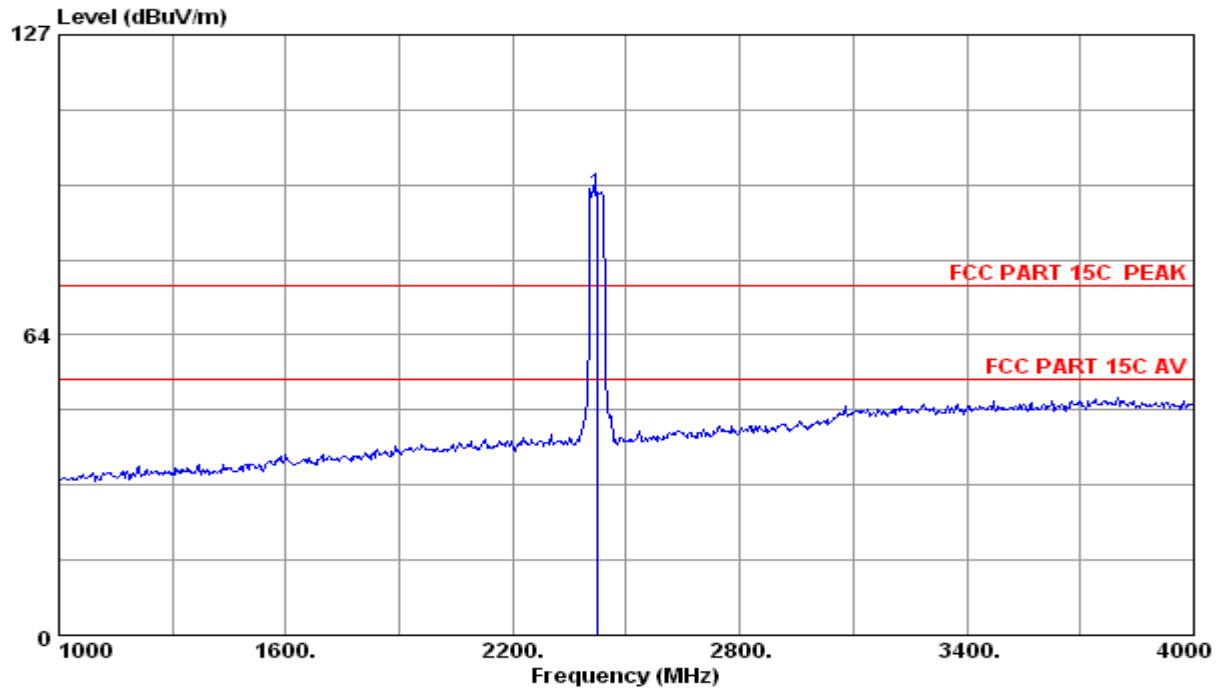


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4924.000	34.49	12.50	35.34	44.67	56.32	74.00	17.68	Peak	Horizontal
2	4924.000	34.49	12.50	35.34	34.28	45.93	54.00	8.07	Average	Horizontal

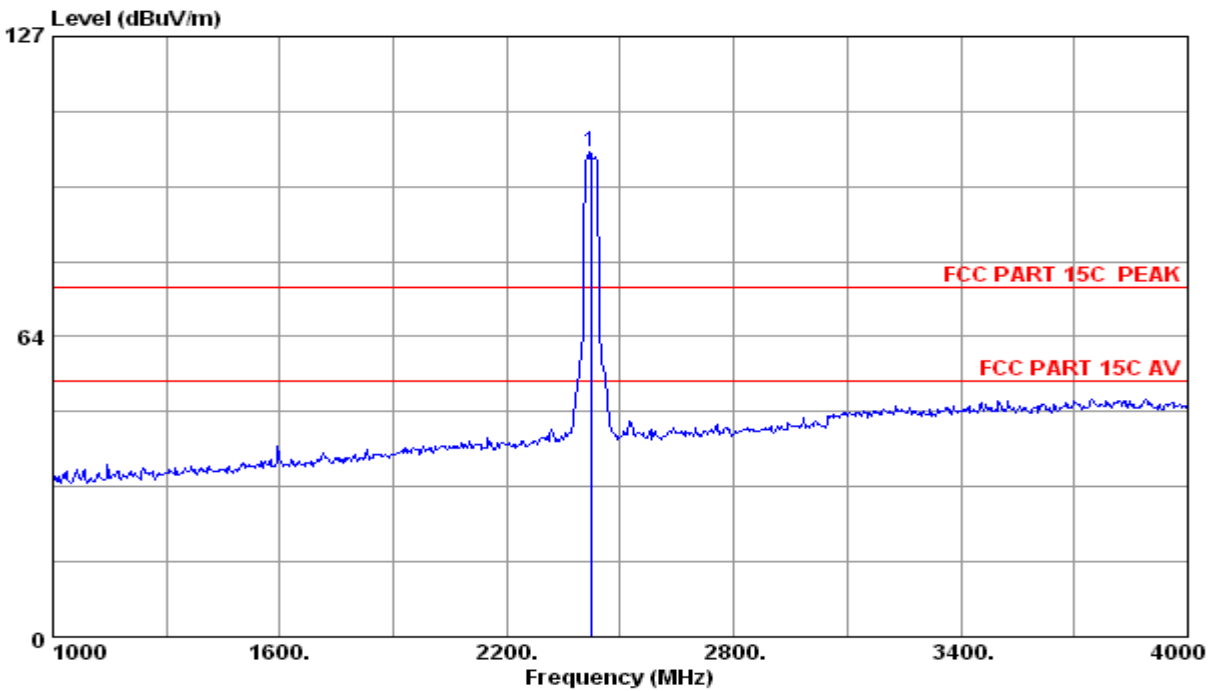


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4924.000	34.49	12.50	35.34	45.26	56.91	74.00	17.09	Peak	Vertical
2	4924.000	34.49	12.50	35.34	35.21	46.86	54.00	7.14	Average	Vertical

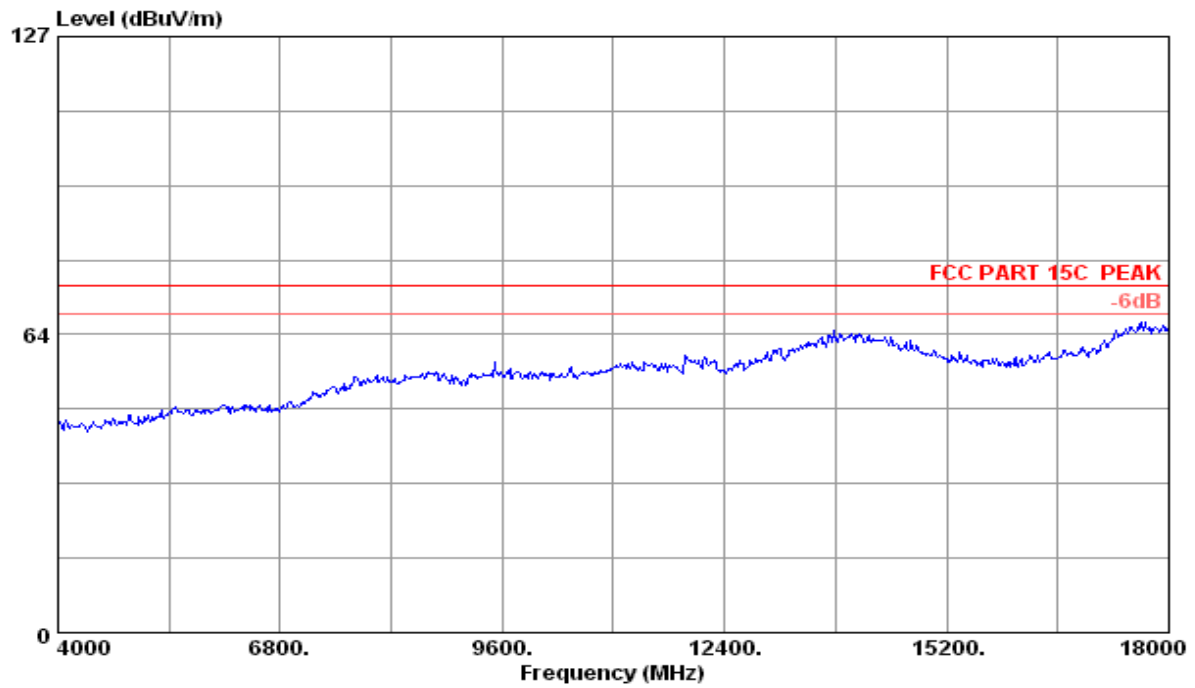
**For 802.11n(40MHz)&2422MHz**



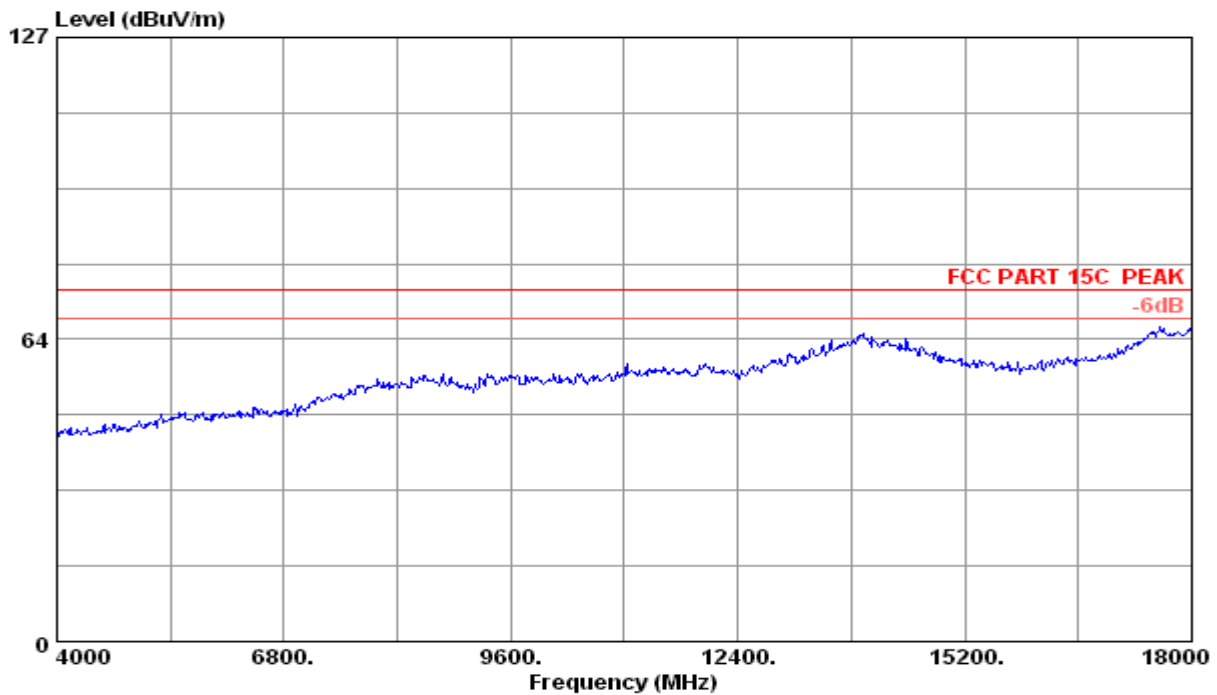
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2422.000	29.46	8.77	36.01	91.32	93.54	74.00	-19.54	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2422.000	29.46	8.77	36.01	100.26	102.48	74.00	-28.48	Peak	Vertical

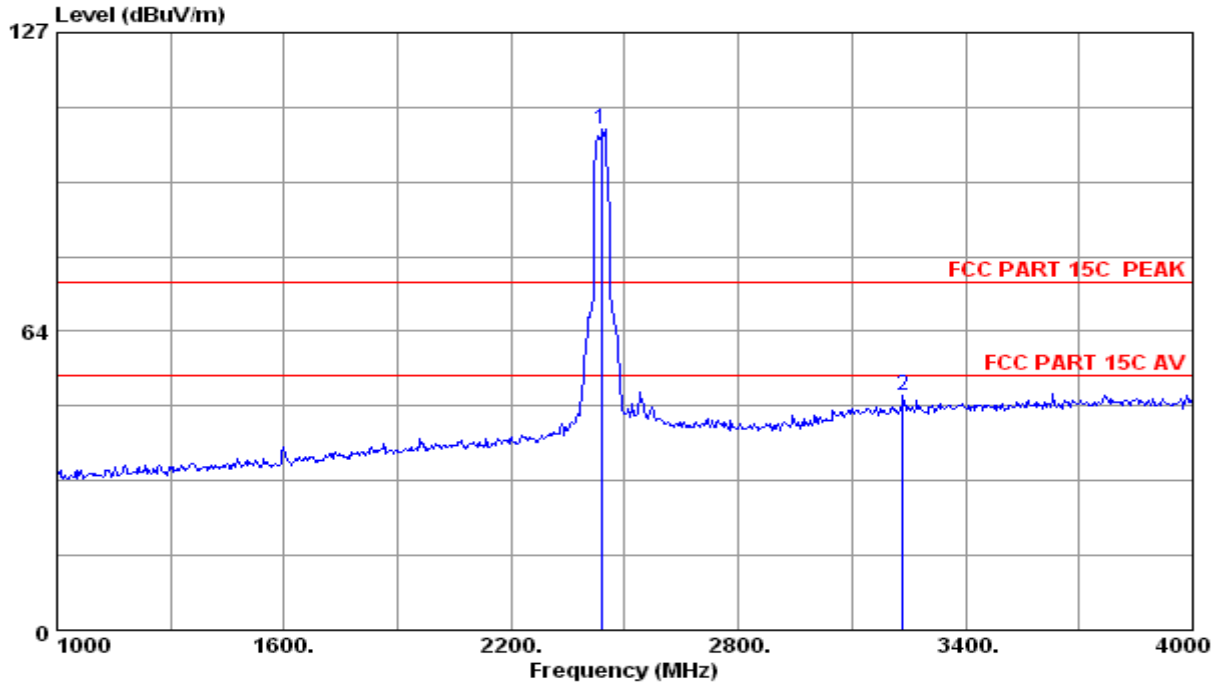


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4844.000	34.35	12.38	35.25	44.57	56.05	74.00	17.95	Peak	Horizontal
2	4844.000	34.35	12.38	35.25	33.56	45.04	54.00	8.96	Average	Horizontal

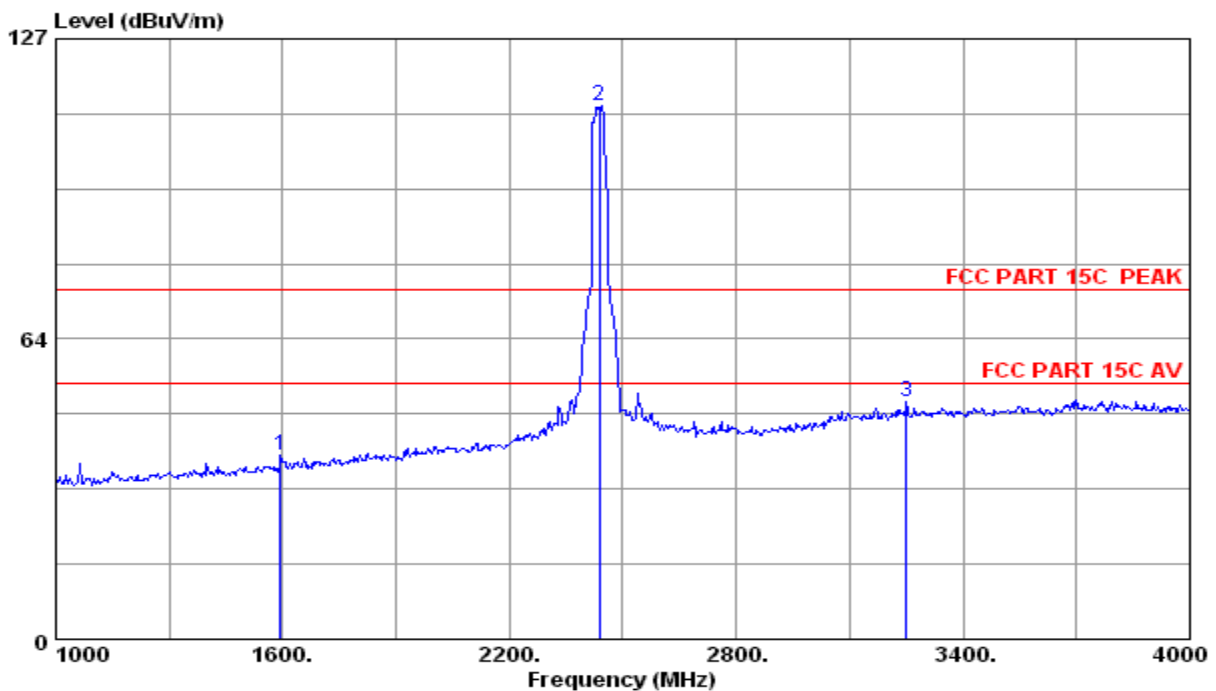


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4844.000	34.35	12.38	35.25	45.56	57.06	74.00	16.96	Peak	Vertical
2	4844.000	34.35	12.38	35.25	34.68	46.16	54.00	7.84	Average	Vertical

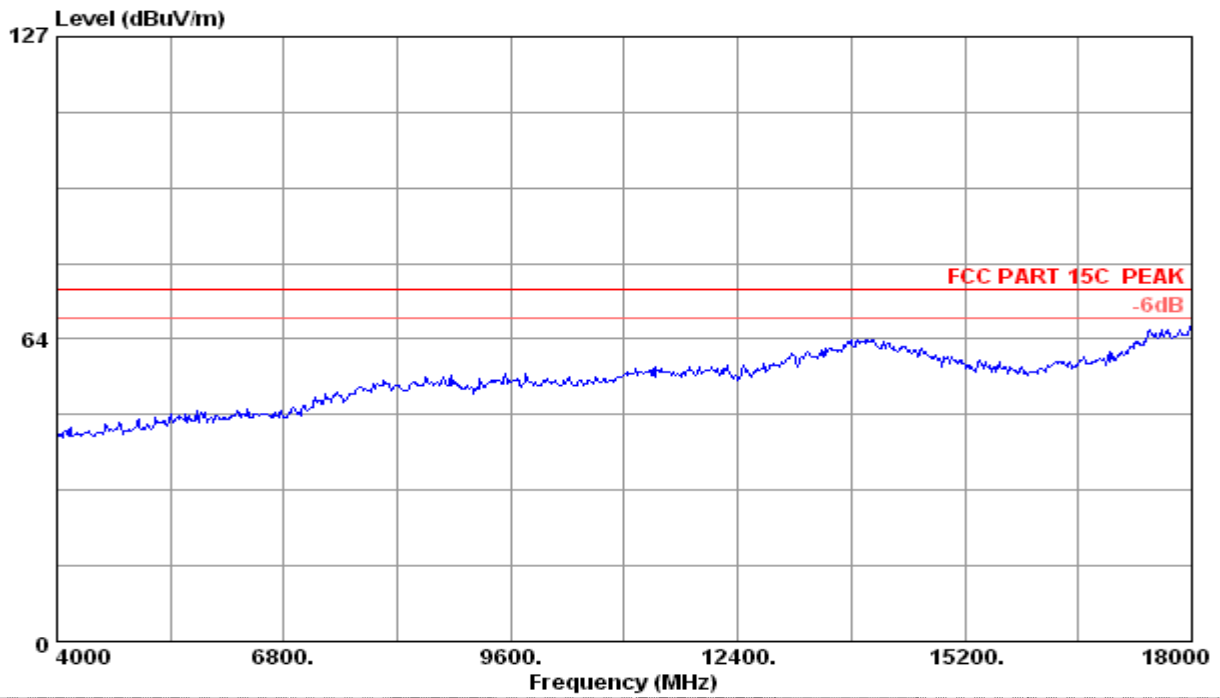
**For 802.11n(40MHz)&2437MHz**



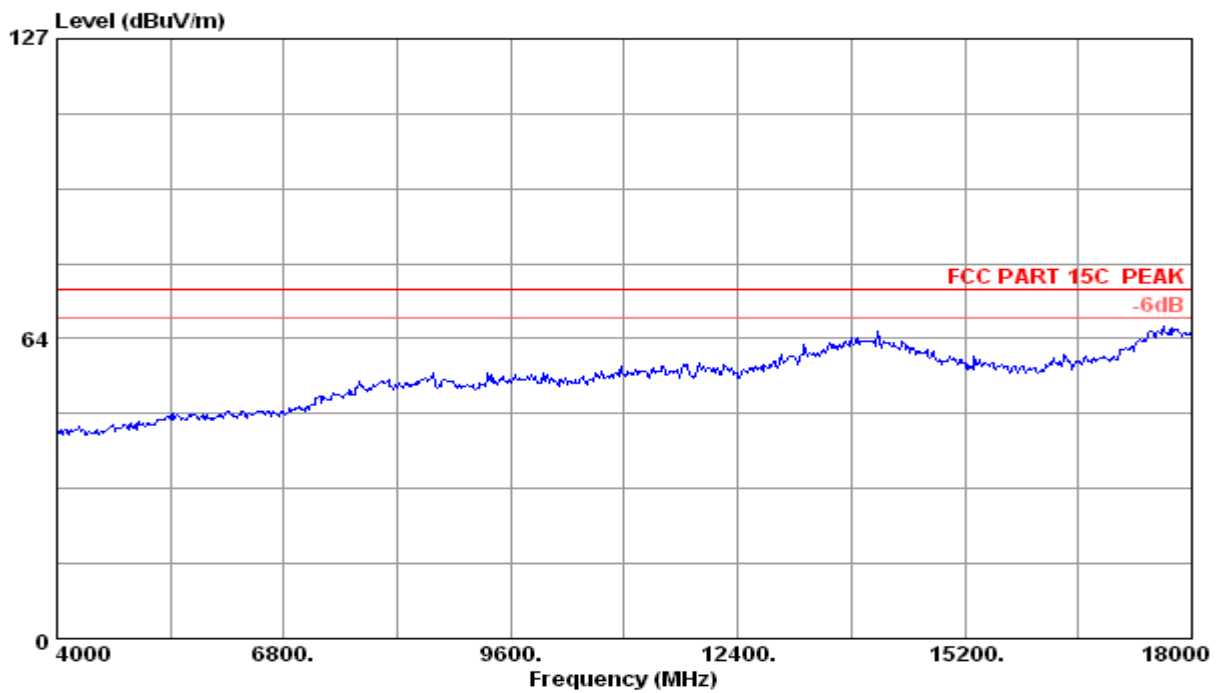
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2437.000	29.47	8.77	36.06	104.45	106.63	74.00	-32.63	Peak	Horizontal
2	3235.000	32.58	10.24	35.77	42.75	49.80	74.00	24.20	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	1594.000	26.96	6.92	36.43	41.52	38.97	74.00	35.03	Peak	Vertical
2	2437.000	29.47	8.77	36.06	109.16	111.34	74.00	-37.34	Peak	Vertical
3	3250.00	32.63	10.28	35.68	42.90	50.13	74.00	23.87	Peak	Vertical

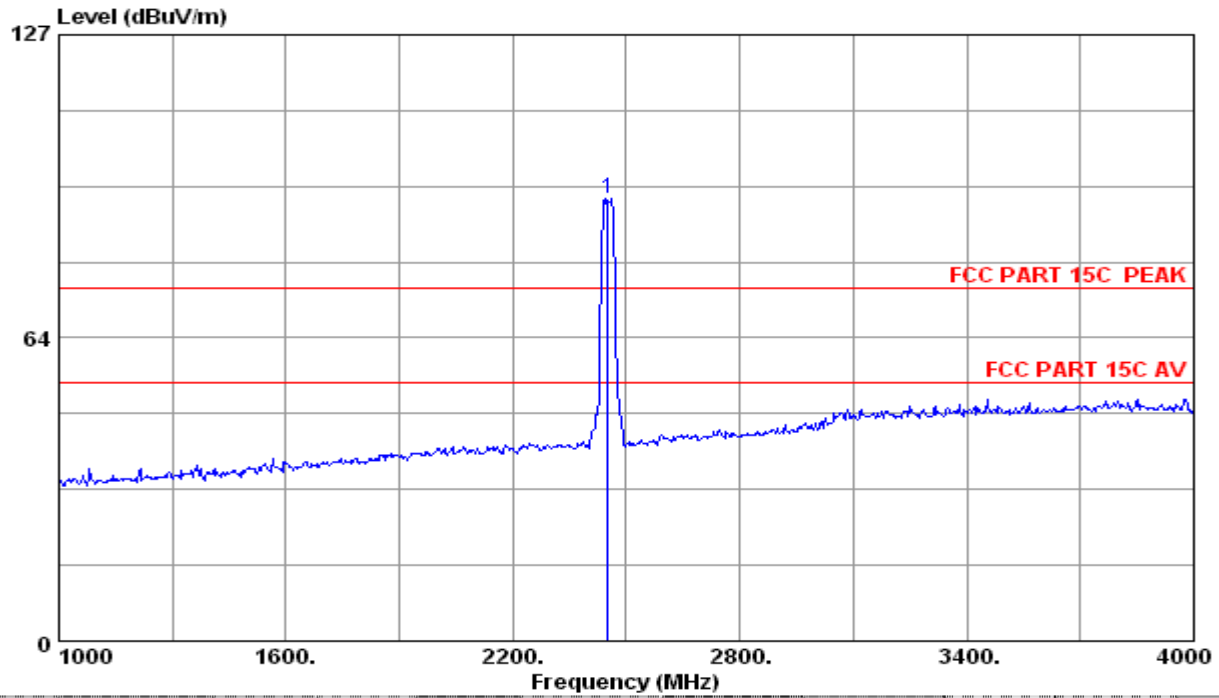


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	44.61	56.10	74.00	17.90	Peak	Horizontal
2	4874.000	34.41	12.44	35.36	34.23	45.72	54.00	8.28	Average	Horizontal

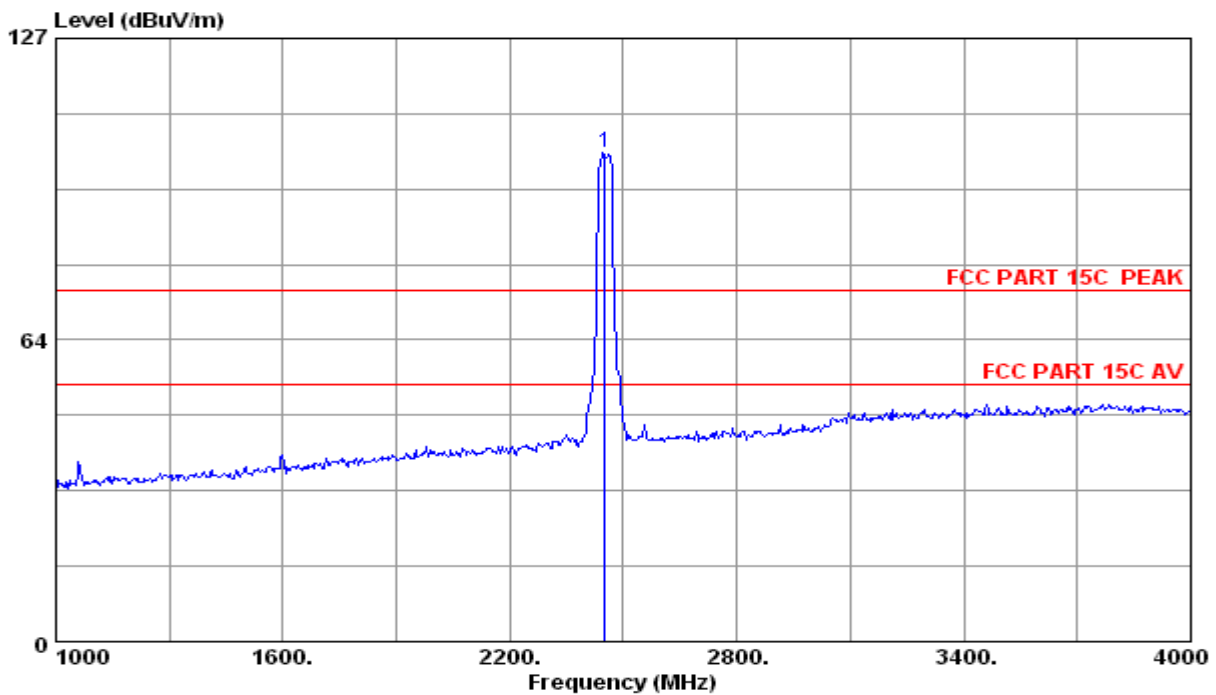


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4874.000	34.41	12.44	35.36	45.09	56.58	74.00	17.42	Peak	Vertical
2	4874.000	34.41	12.44	35.36	35.61	47.10	54.00	6.90	Average	Vertical

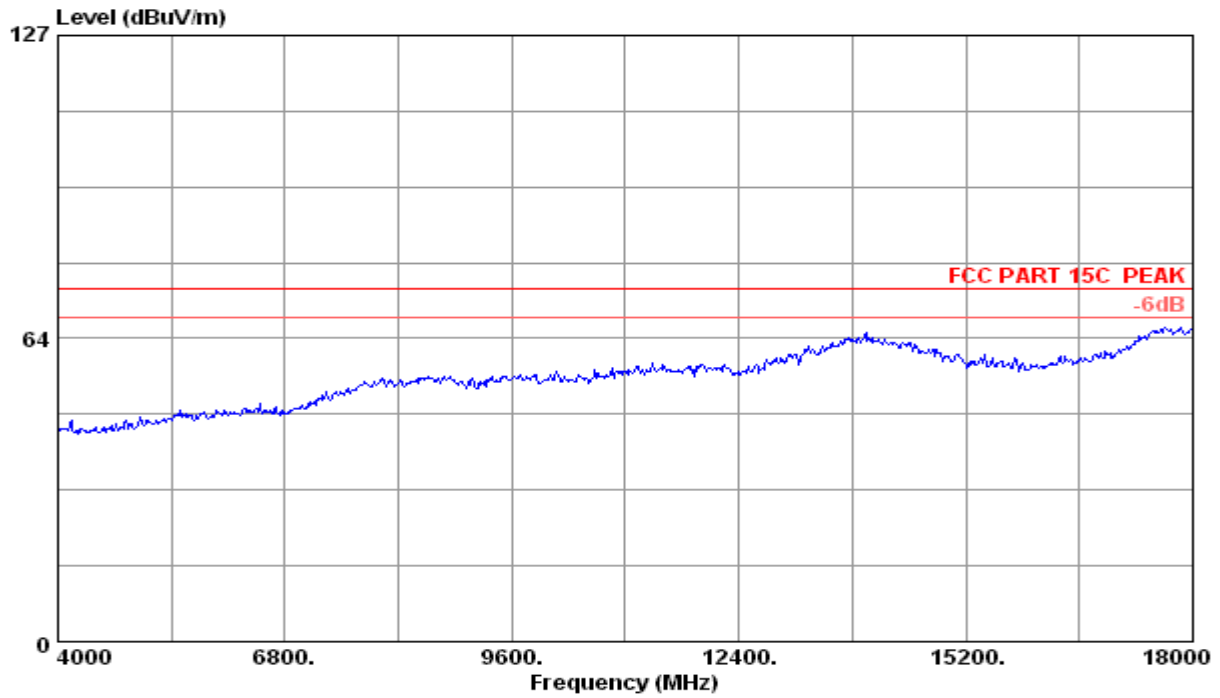
**For 802.11n(40MHz)&2452MHz**



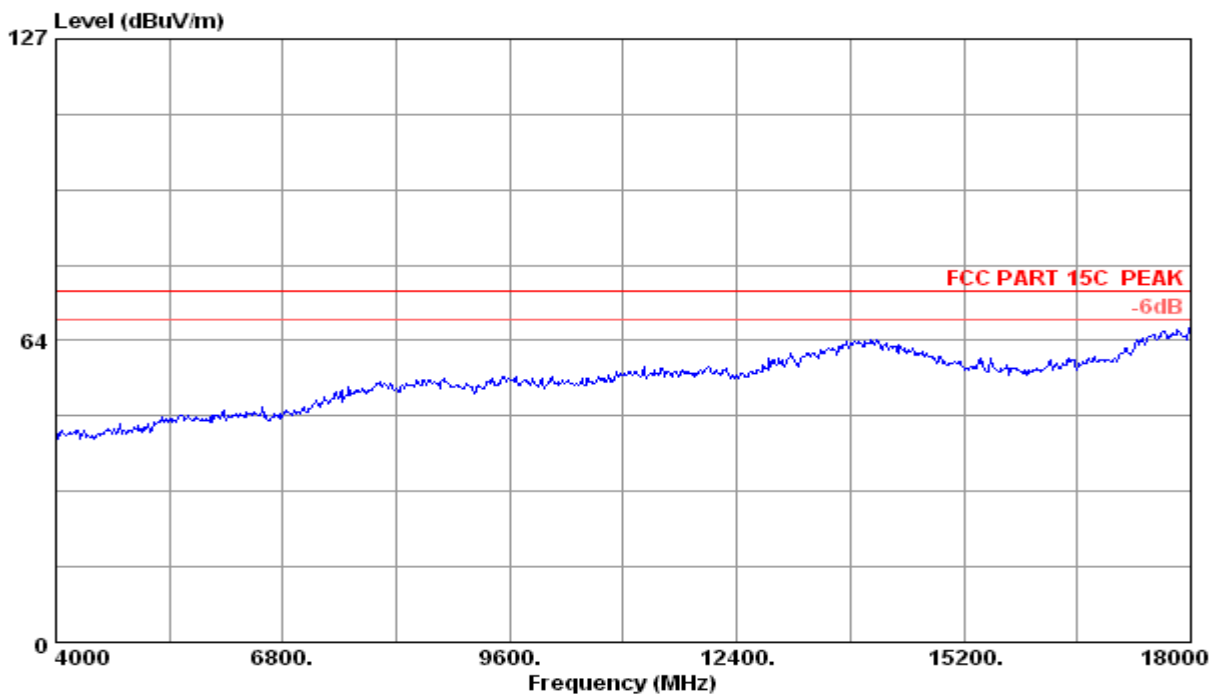
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2452.000	29.47	8.82	36.06	90.58	92.81	74.00	-18.81	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2452.000	29.47	8.82	36.06	100.66	102.89	74.00	-28.89	Peak	Vertical



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4904.000	34.49	12.47	35.27	44.85	56.51	74.00	17.49	Peak	Horizontal
2	4904.000	34.49	12.47	35.27	33.87	45.53	54.00	8.47	Average	Horizontal



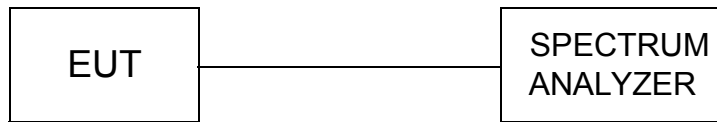
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	4904.000	34.49	12.47	35.27	45.98	57.64	74.00	16.36	Peak	Vertical
2	4904.000	34.49	12.47	35.27	34.98	46.64	54.00	7.36	Average	Vertical

Remark: 1. Emission Level = Antenna Factor + Cable Loss + Reading.

2. The Emission levels that are 20dB below the official limit are not reported.

### 4.3. Maximum Peak Output Power

#### TEST CONFIGURATION



#### TEST PROCEDURE

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.

#### LIMIT

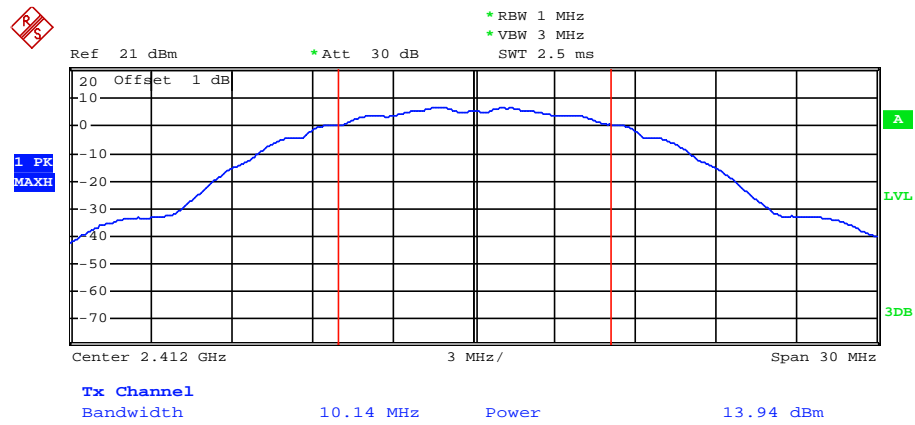
The Maximum Peak Output Power Measurement is 30dBm.

#### TEST RESULTS

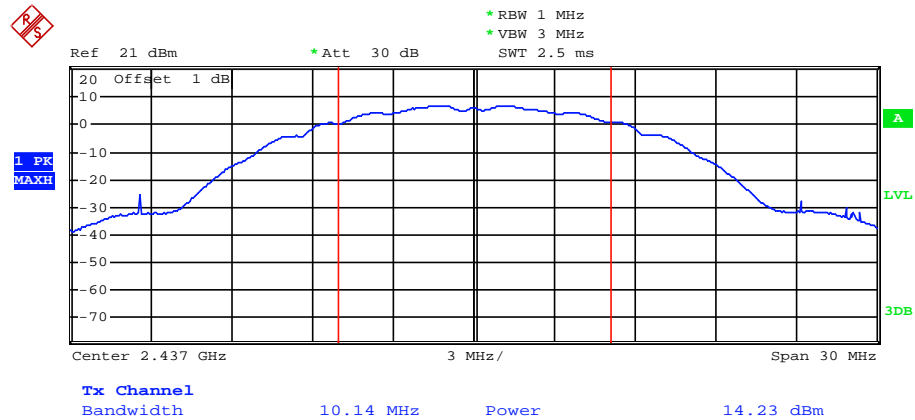
Channel	Frequency (MHz)	Reading Power Output(dBm)	Limit (dBm)	Pass / Fail
802.11b				
Low	2412	13.94	30	PASS
Middle	2437	14.23	30	PASS
High	2462	13.55	30	PASS
802.11g				
Low	2412	14.67	30	PASS
Middle	2437	14.44	30	PASS
High	2462	13.63	30	PASS
802.11n20				
Low	2412	13.36	30	PASS
Middle	2437	12.96	30	PASS
High	2462	12.23	30	PASS
802.11n40				
Low	2422	12.52	30	PASS
Middle	2437	12.85	30	PASS
High	2452	12.40	30	PASS

Remark: 1. Test results including cable loss;  
2. Each mode test difference speeds and recorded worst cases at each mode.



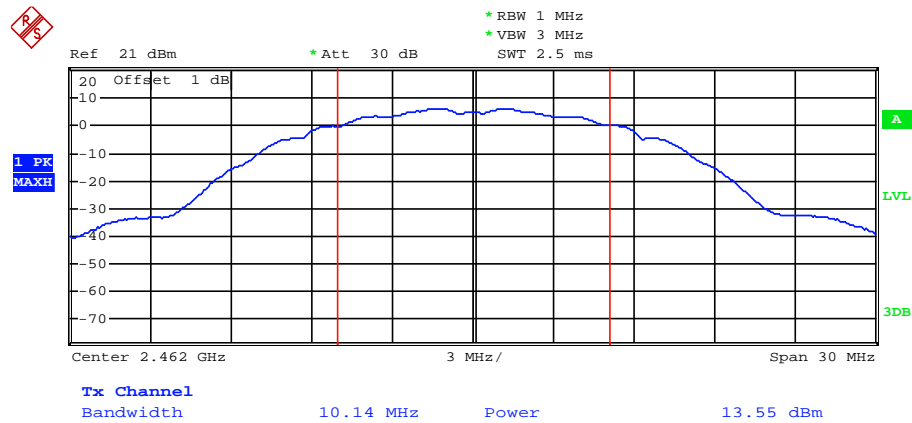
**Photos of Maximum Peak Output Power***802.11b Mode channel 1*

Date: 10.JAN.2013 13:55:14

*802.11b Mode channel 6*

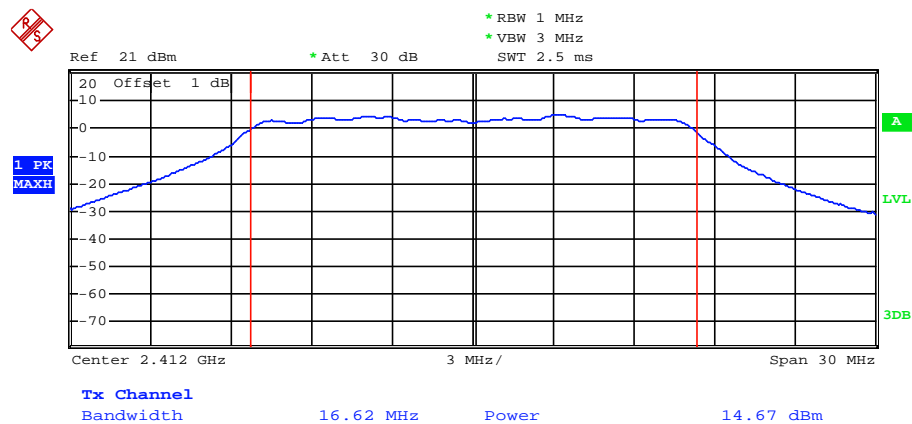
Date: 10.JAN.2013 14:21:36

## 802.11b Mode channel 11



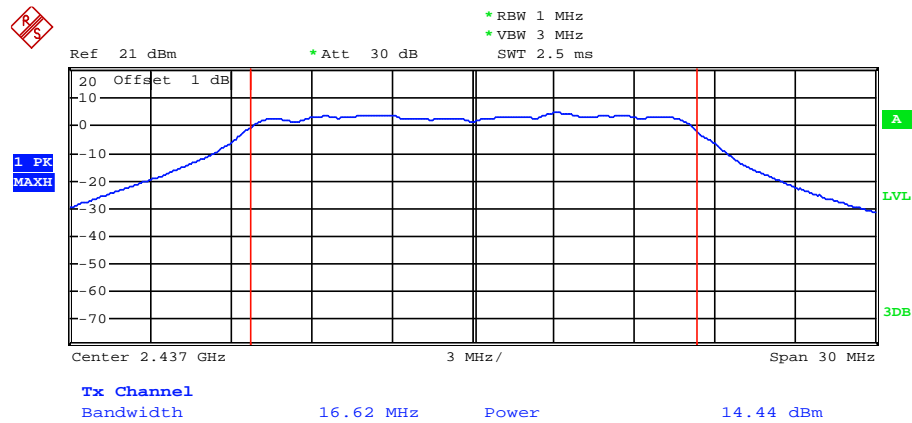
Date: 10.JAN.2013 14:26:45

## 802.11g Mode channel 1



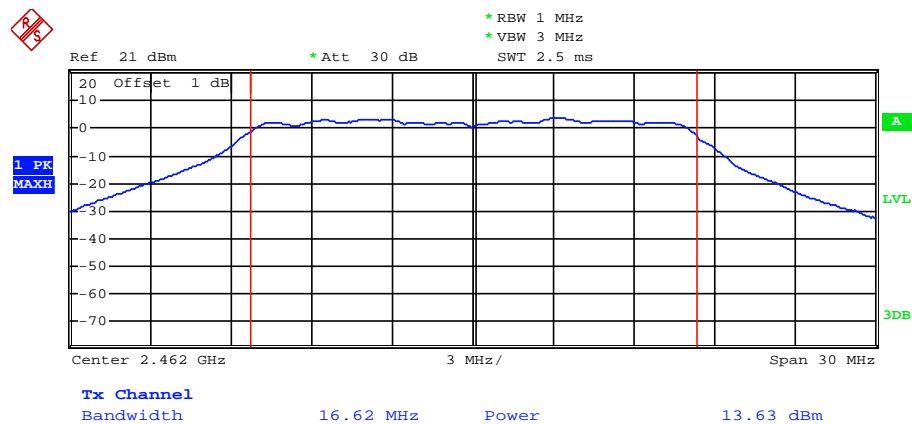
Date: 10.JAN.2013 14:36:28

## 802.11g Mode channel 6



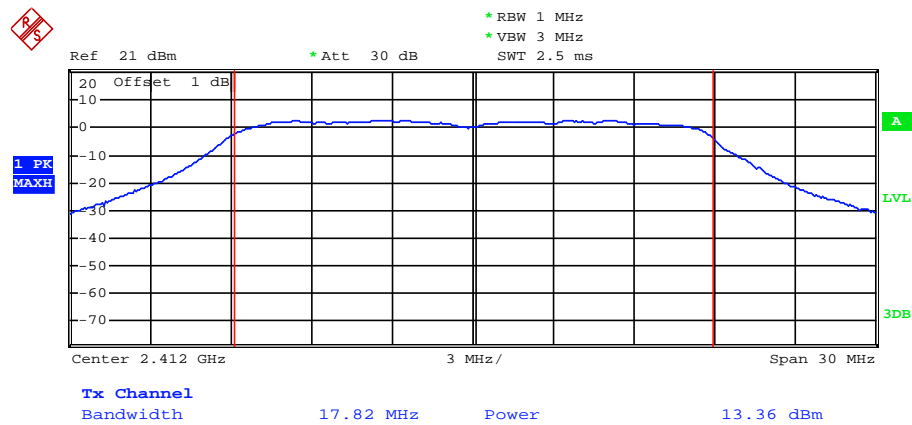
Date: 10.JAN.2013 14:44:27

## 802.11g Mode channel 11



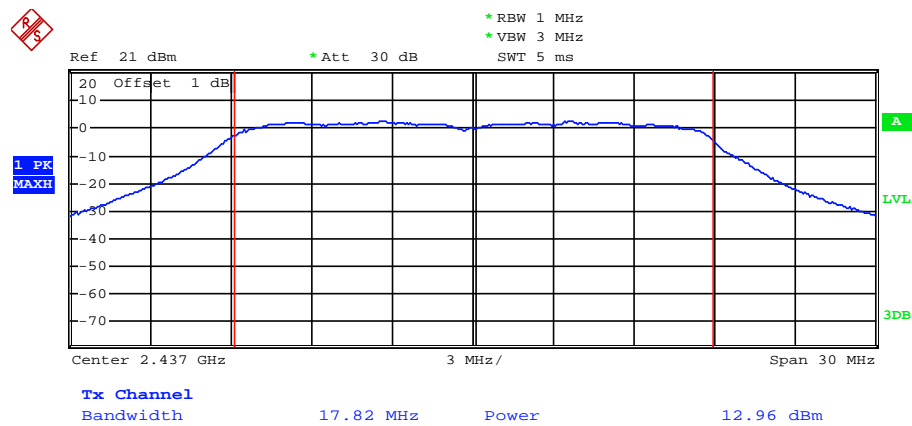
Date: 10.JAN.2013 15:02:16

## 802.11n20 Mode channel 1



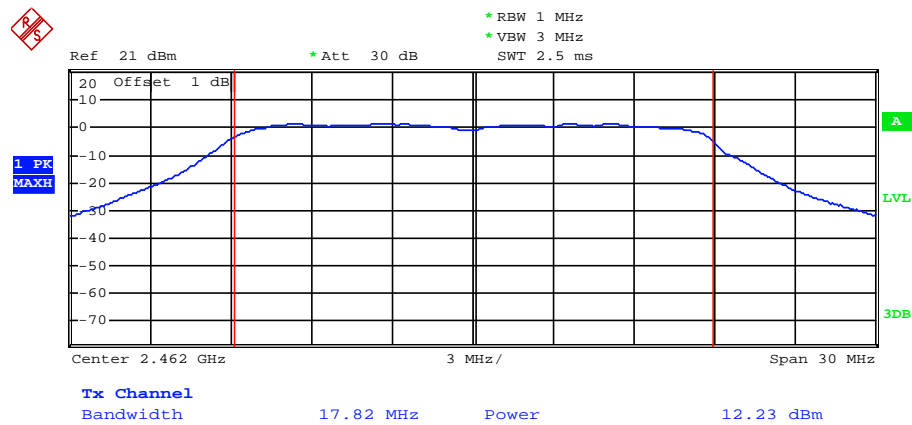
Date: 10.JAN.2013 15:09:45

## 802.11n20 Mode channel 6



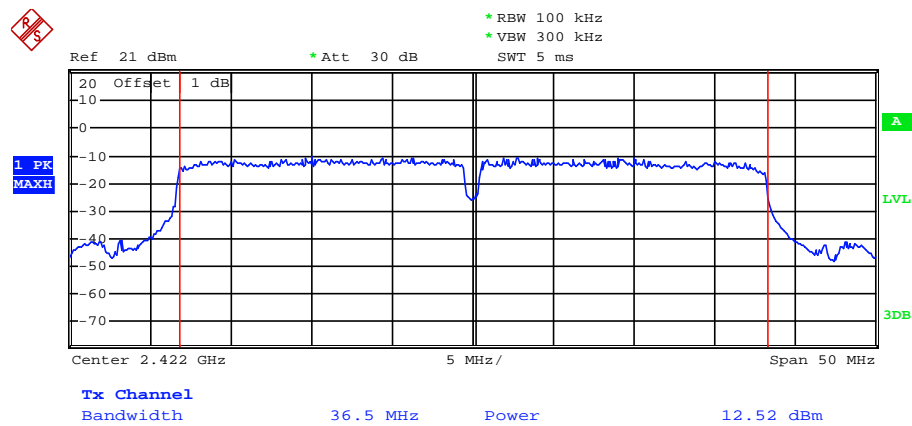
Date: 10.JAN.2013 15:16:53

## 802.11n20 Mode channel 11



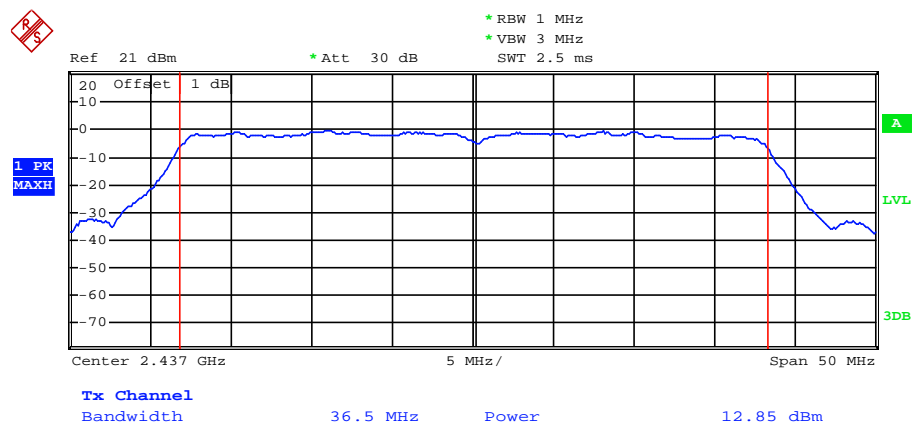
Date: 10.JAN.2013 15:20:45

## 802.11n40 Mode channel 3



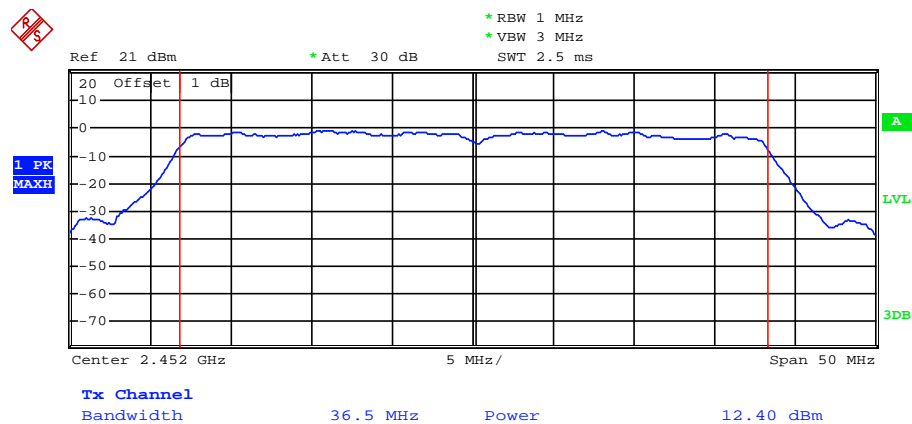
Date: 10.JAN.2013 15:29:32

## 802.11n40 Mode channel 6



Date: 10.JAN.2013 15:35:39

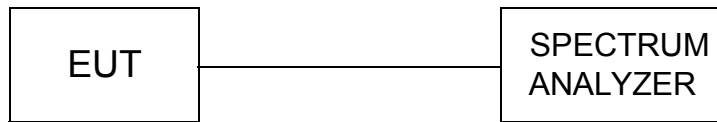
## 802.11n40 Mode channel 9



Date: 10.JAN.2013 15:41:12

## 4.4. Power Spectral Density

### TEST CONFIGURATION



### TEST PROCEDURE

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW 300 kHz.
4. Set the span to 5-30 % greater than the EBW
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3 \text{ kHz}/100 \text{ kHz}) = -15.2 \text{ dB}$ .
11. The resulting peak PSD level must be 8 dBm.

Follow KDB 558074 D01 DTS Meas Guidance v01 of measurement procedure PKPSD

### LIMIT

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.

### TEST RESULTS

CHANNEL NUMBER	FREQUENCY (MHz )	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
1	2412	0.29	-14.91	8	PASS
6	2437	0.76	-14.44	8	PASS
11	2462	0.04	-15.16	8	PASS

Note: 1. For 802.11b mode at final test to get the worst-case emission at 11Mbps.  
2. The test results including the cable loss.

CHANNEL NUMBER	FREQUENCY (MHz )	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
1	2412	-6.29	-21.49	8	PASS
6	2437	-6.55	-21.75	8	PASS
11	2462	-7.52	-22.72	8	PASS

Note: 1. For 802.11g mode at final test to get the worst-case emission at 54Mbps.  
2. The test results including the cable loss.

CHANNEL NUMBER	FREQUENCY (MHz )	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
1	2412	-8.78	-23.96	8	PASS
6	2437	-8.73	-23.93	8	PASS
11	2462	-9.61	-24.81	8	PASS

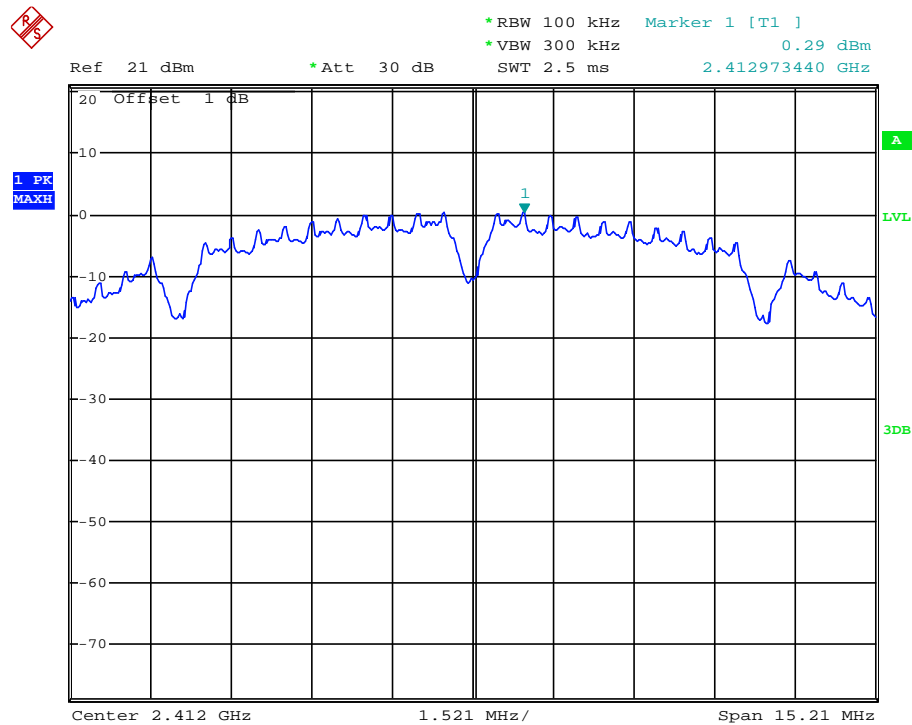
Note: 1. For 802.11n(20MHz) mode at final test to get the worst-case emission at 65 Mbps.  
2. The test results including the cable lose.

CHANNEL NUMBER	FREQUENCY (MHz )	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
3	2422	-10.63	-25.83	8	PASS
6	2437	-11.32	-26.52	8	PASS
9	2452	-11.64	-26.84	8	PASS

Note: 1. For 802.11n(40MHz) mode at final test to get the worst-case emission at 135Mbps.  
2. The test results including the cable lose.

### Photos of Power Spectral Density Measurement

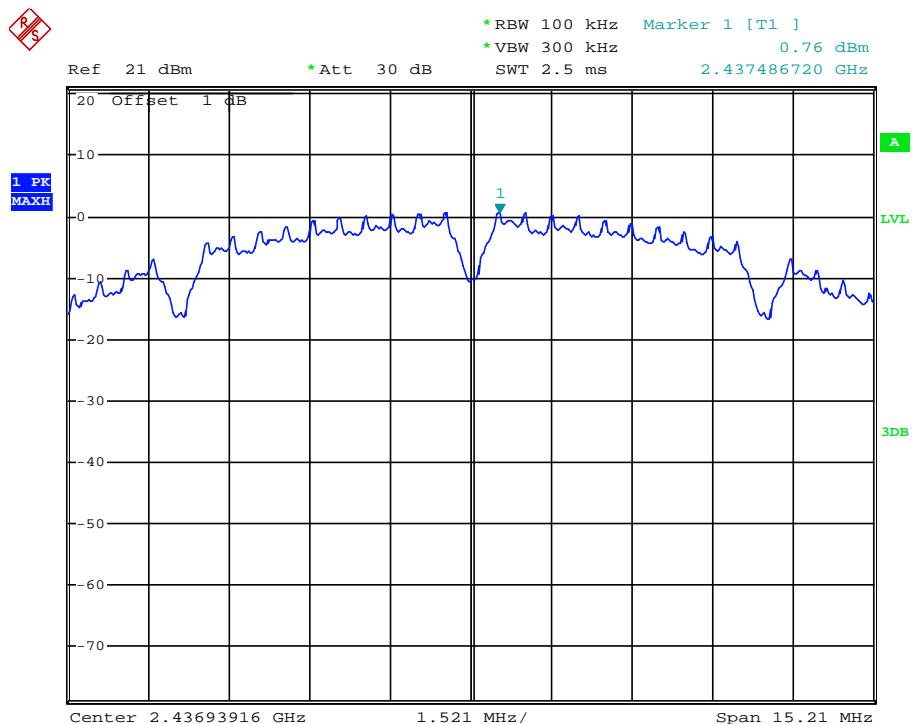
802.11b Mode channel 1



Date: 10.JAN.2013 13:57:34

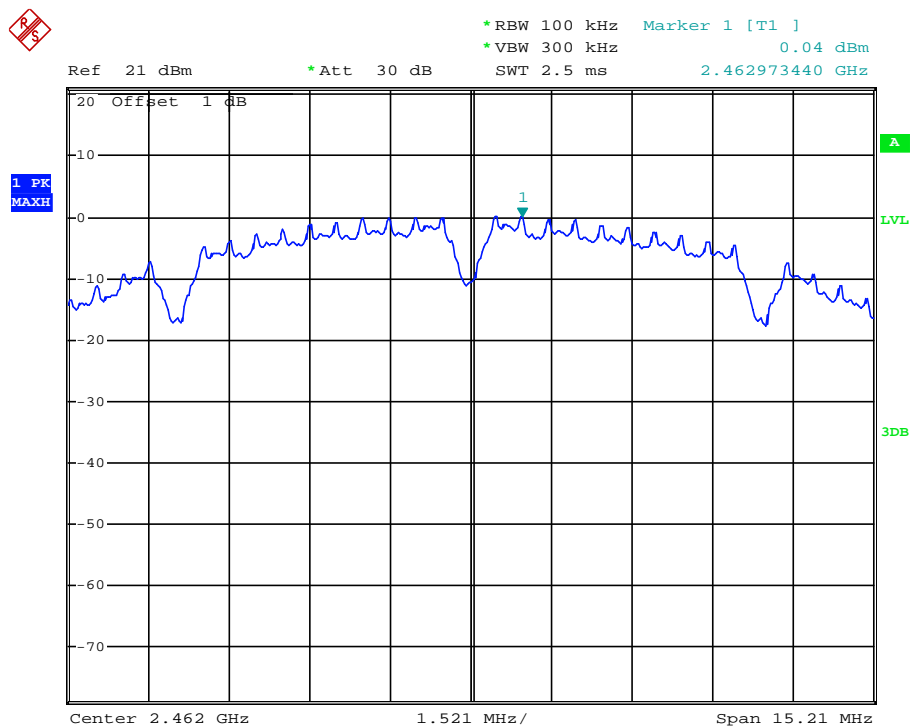


## 802.11b Mode channel 6

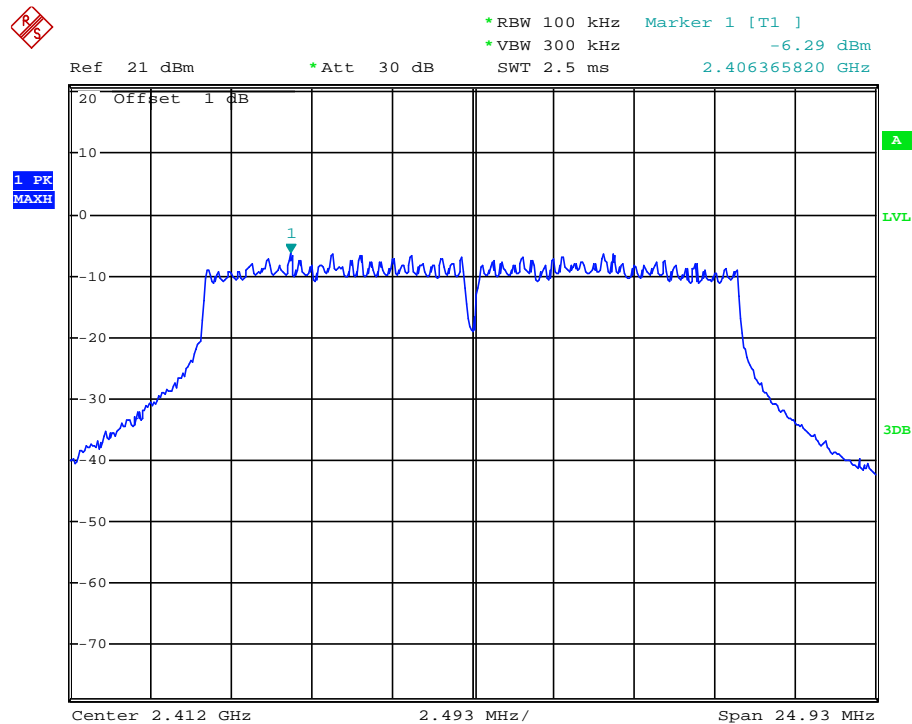


Date: 10.JAN.2013 14:22:46

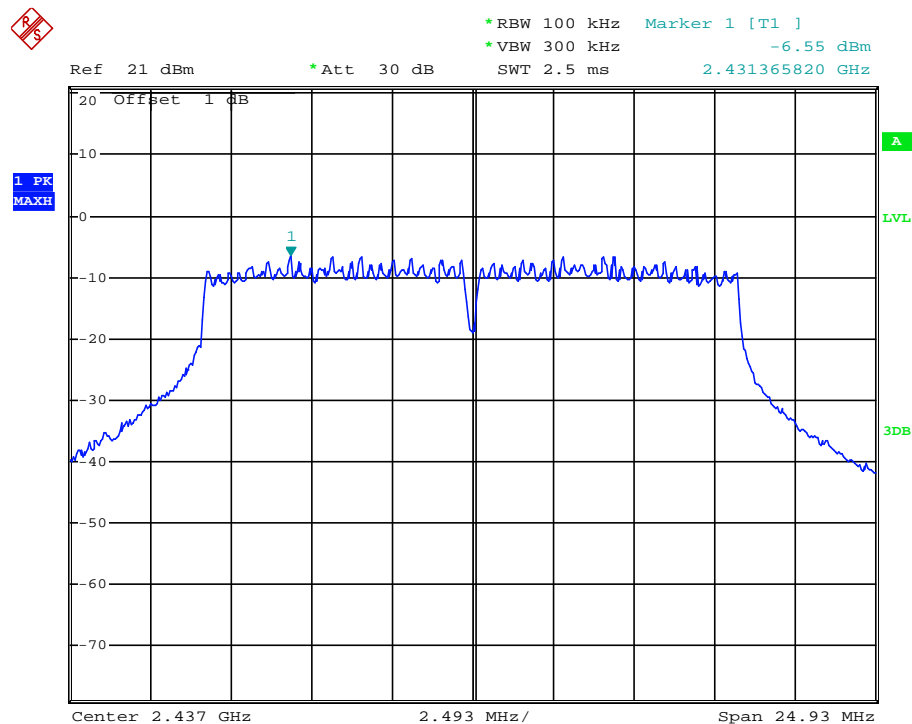
## 802.11b Mode channel 11



Date: 10.JAN.2013 14:27:51

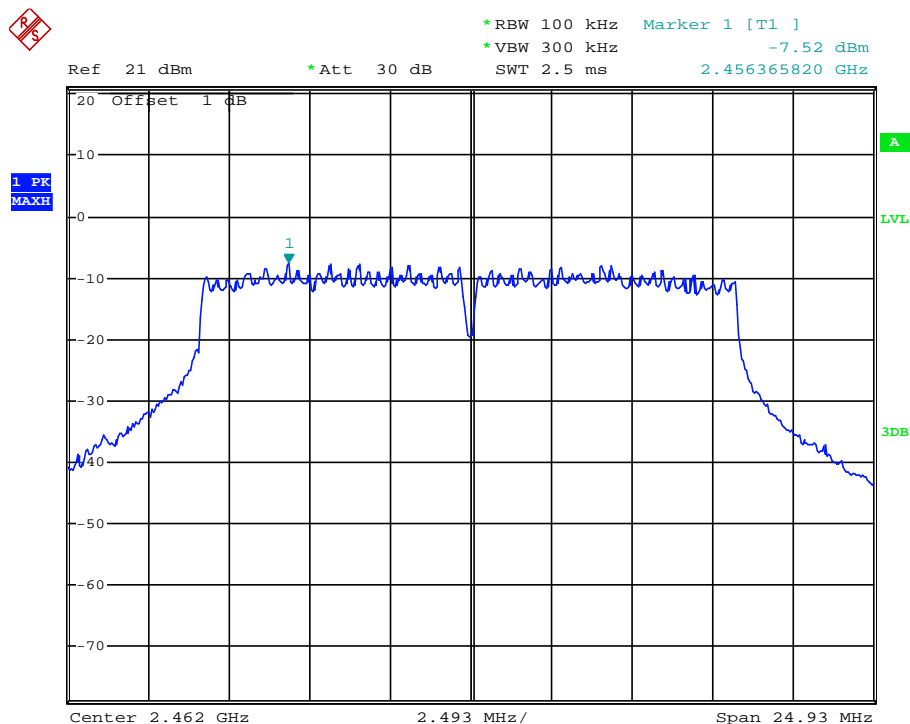
*802.11g Mode channel 1*

Date: 10.JAN.2013 14:37:17

*802.11g Mode channel 6*

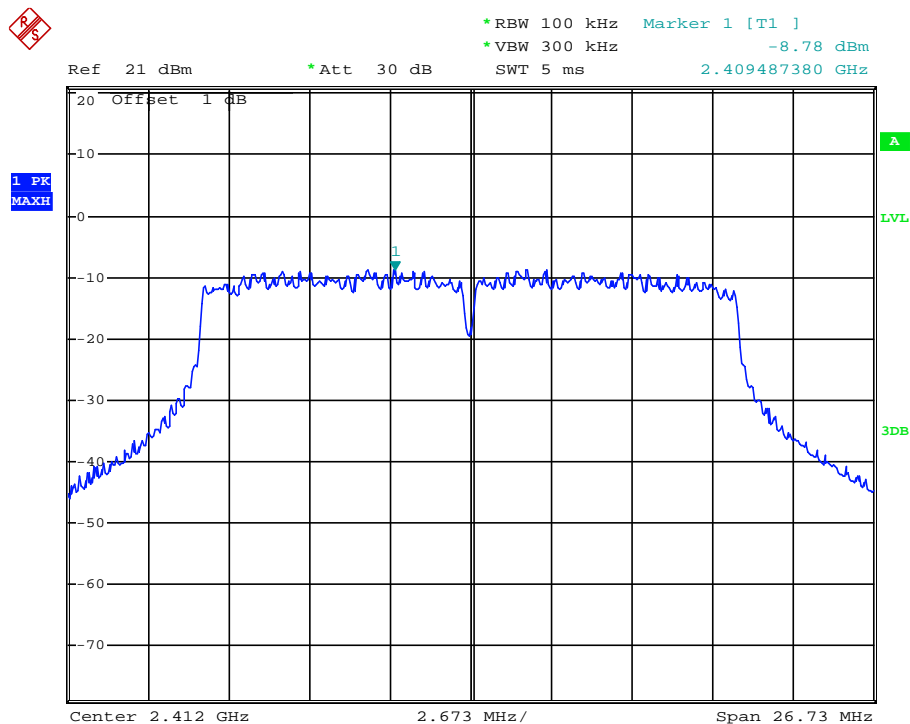
Date: 10.JAN.2013 14:45:47

## 802.11g Mode channel 11



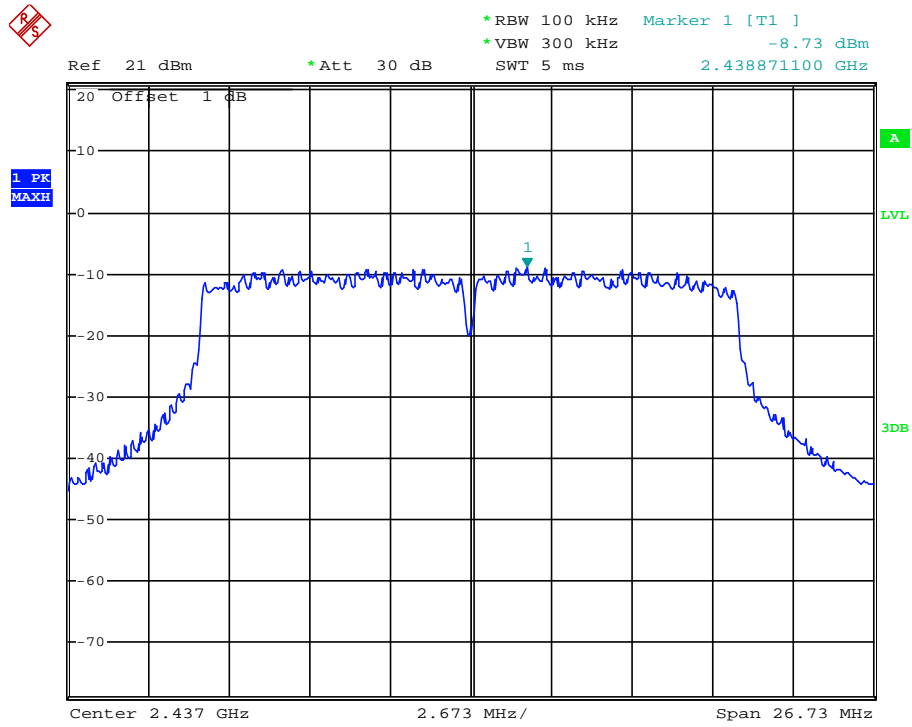
Date: 10.JAN.2013 15:03:10

## 802.11n20 Mode channel 1



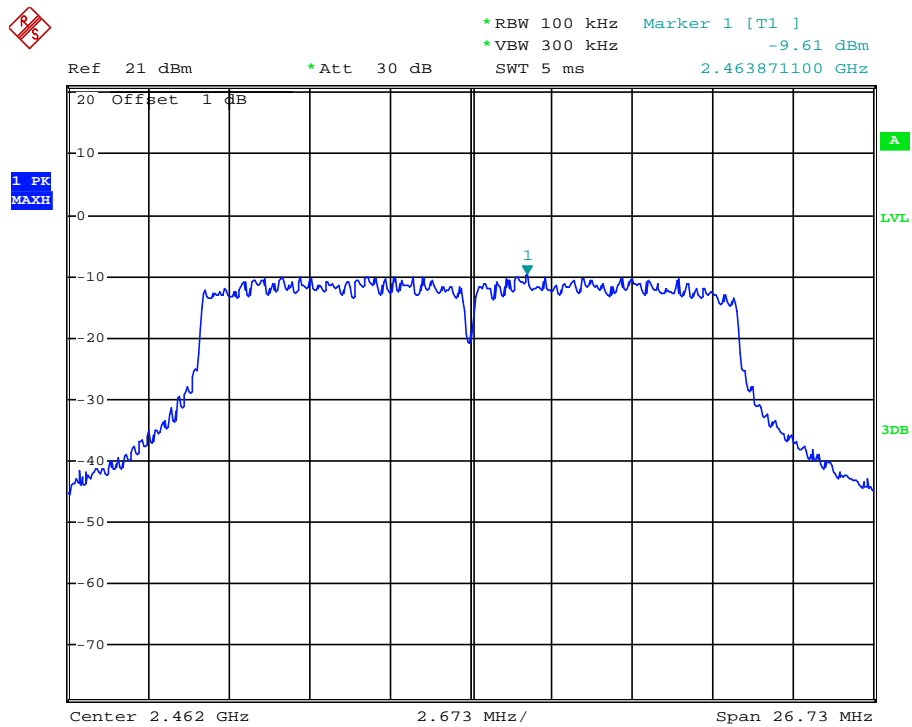
Date: 10.JAN.2013 15:10:32

## 802.11n20 Mode channel 6



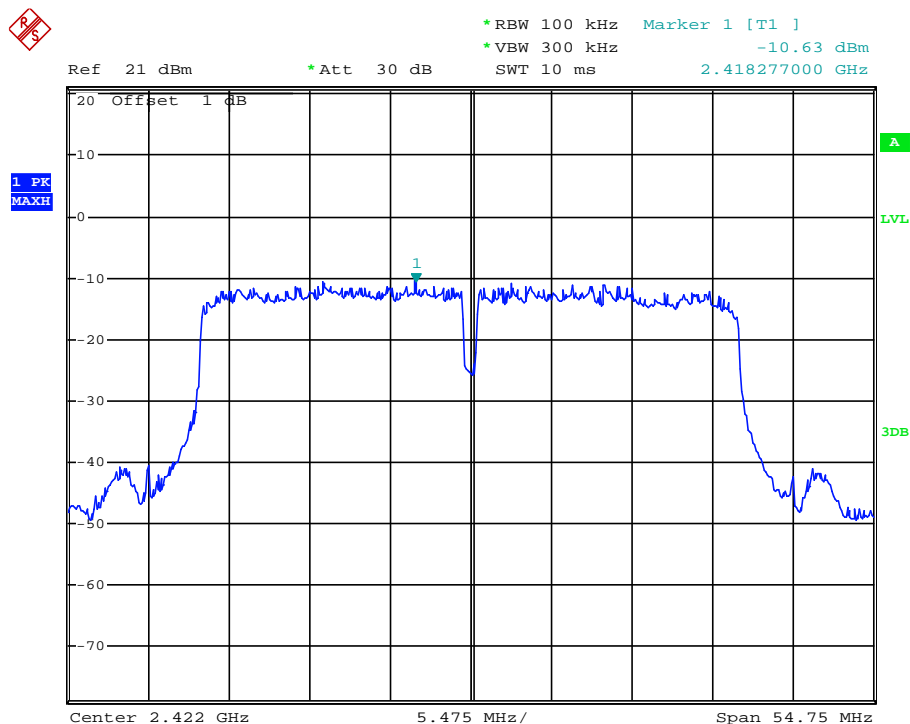
Date: 10.JAN.2013 15:17:37

## 802.11n20 Mode channel 11



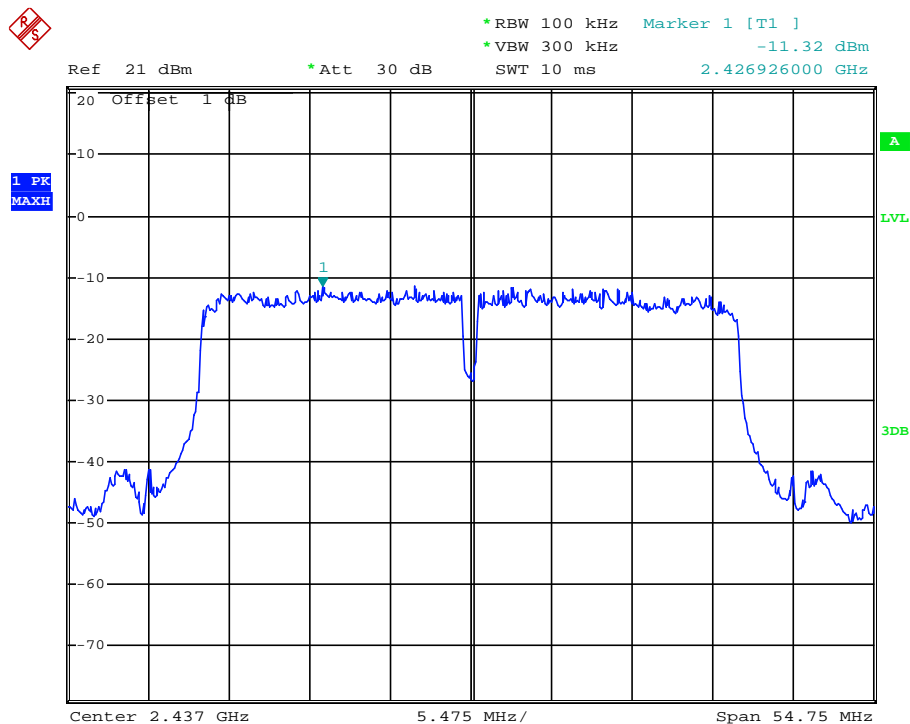
Date: 10.JAN.2013 15:21:28

## 802.11n40 Mode channel 3



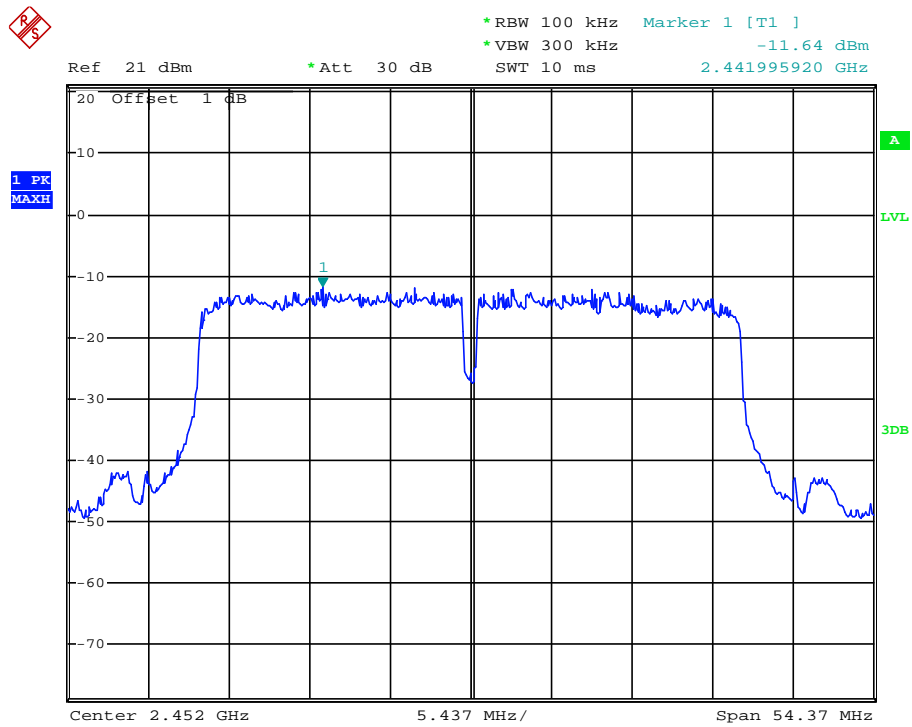
Date: 10.JAN.2013 15:30:36

## 802.11n40 Mode channel 6



Date: 10.JAN.2013 15:37:23

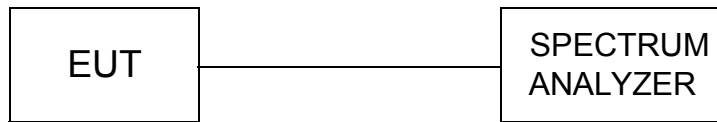
## 802.11n40 Mode channel 9



Date: 10.JAN.2013 15:42:10

## 4.5. 6dB Bandwidth

### TEST CONFIGURATION



### TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300KHz VBW.

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

### LIMIT

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

### TEST RESULTS

#### For 802.11b Mode

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.14	0.5	PASS
6	2437	10.14	0.5	PASS
11	2462	10.14	0.5	PASS

#### For 802.11g Mode

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.62	0.5	PASS
6	2437	16.62	0.5	PASS
11	2462	16.62	0.5	PASS

#### For 802.11n (20MHz) Mode

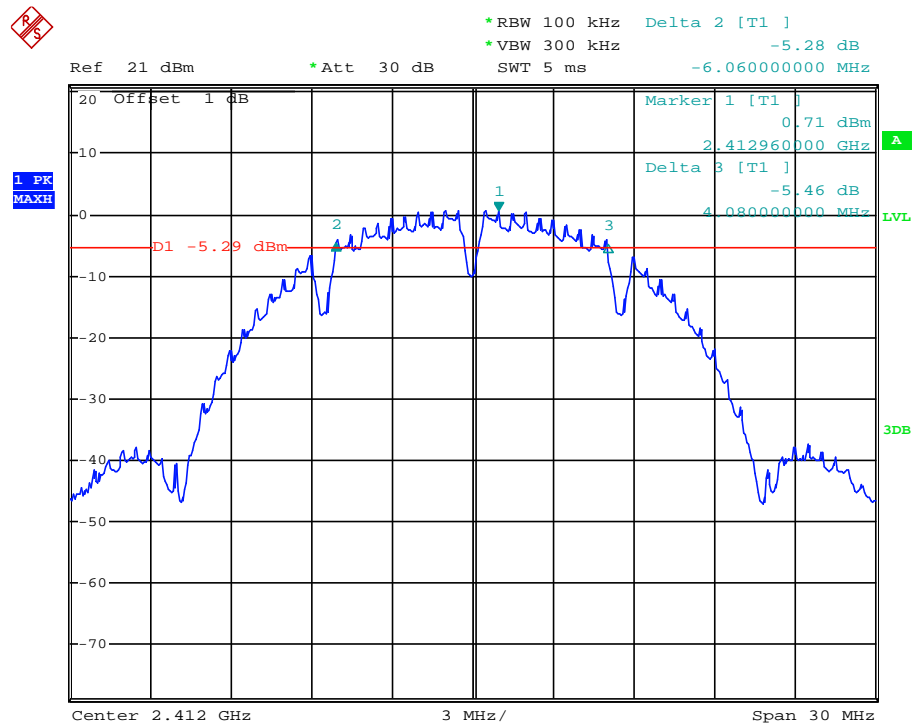
CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	17.82	0.5	PASS
6	2437	17.82	0.5	PASS
11	2462	17.82	0.5	PASS

#### For 802.11n (40MHz) Mode

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
3	2422	36.50	0.5	PASS
6	2437	36.50	0.5	PASS
9	2452	36.50	0.5	PASS

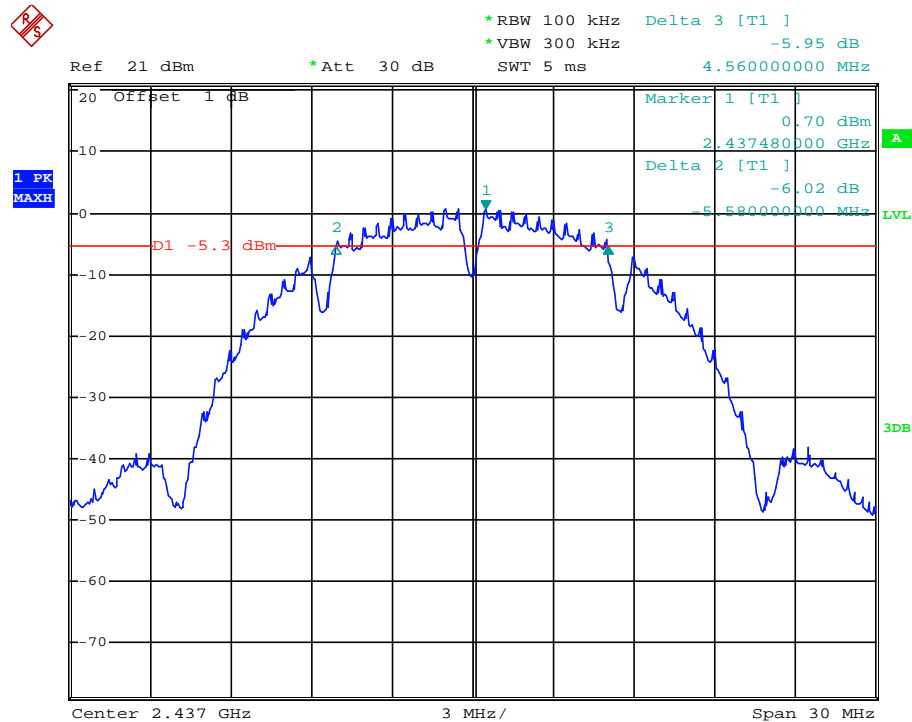
**Photos of 6dB Bandwidth Measurement**

802.11b Mode channel 1



Date: 10.JAN.2013 13:53:04

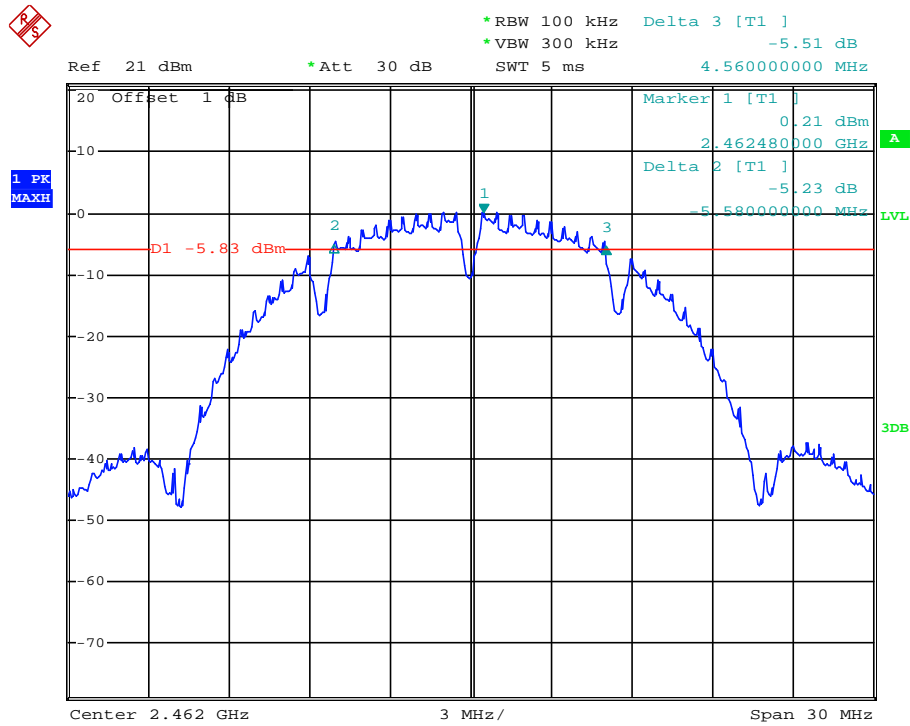
802.11b Mode channel 6



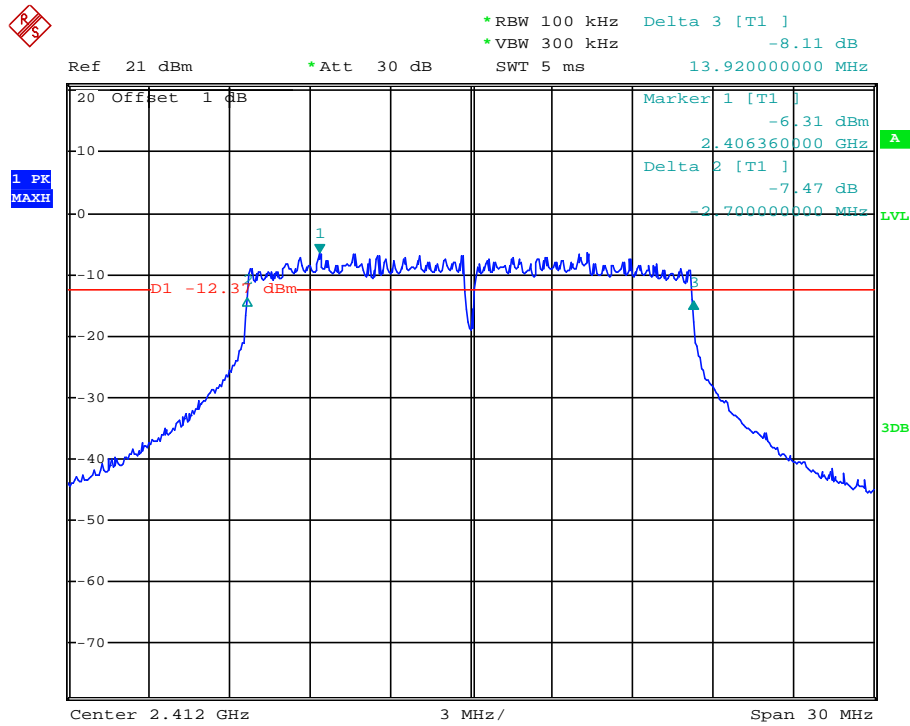
Date: 10.JAN.2013 14:20:38



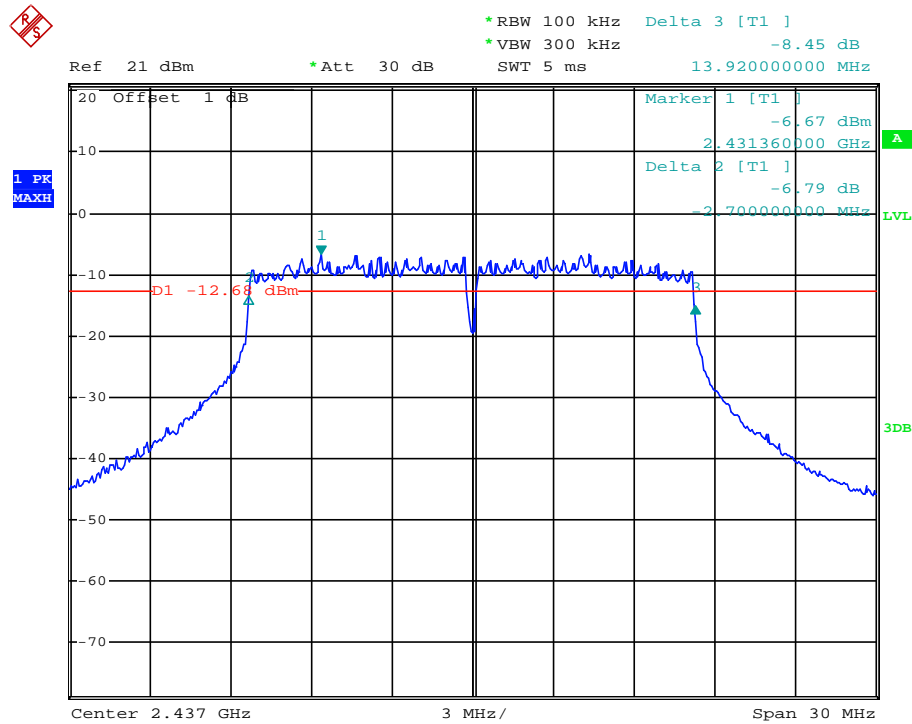
## 802.11b Mode channel 11



## 802.11g Mode channel 1

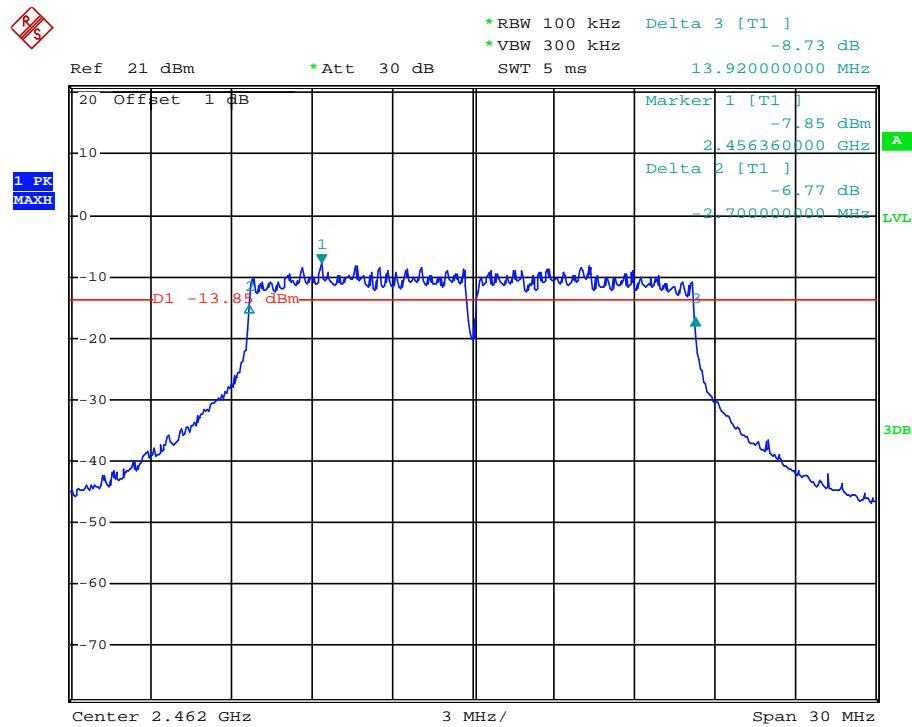


## 802.11g Mode channel 6



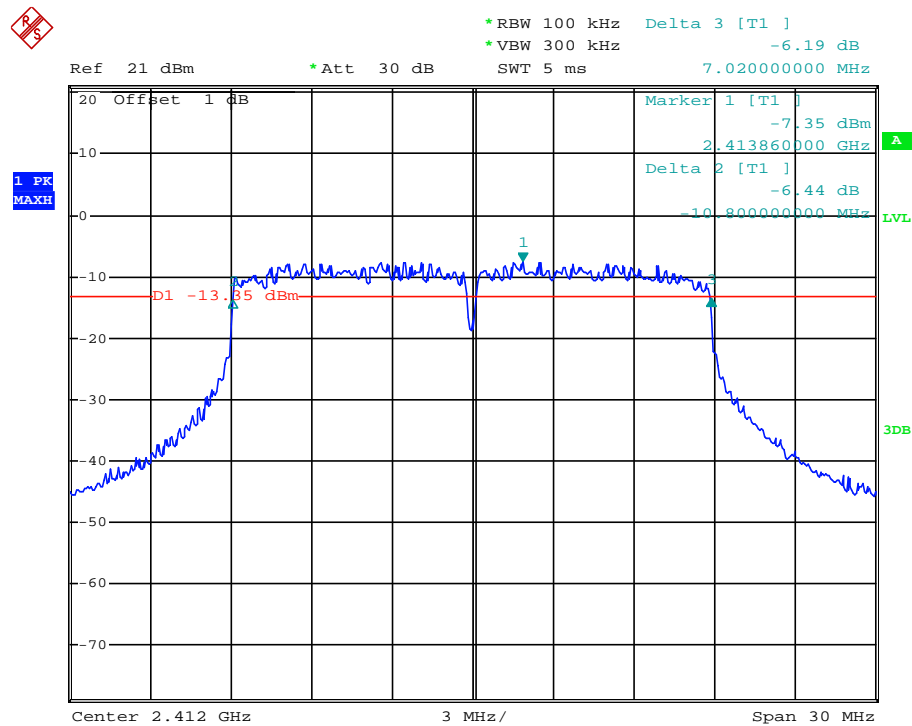
Date: 10.JAN.2013 14:43:47

## 802.11g Mode channel 11



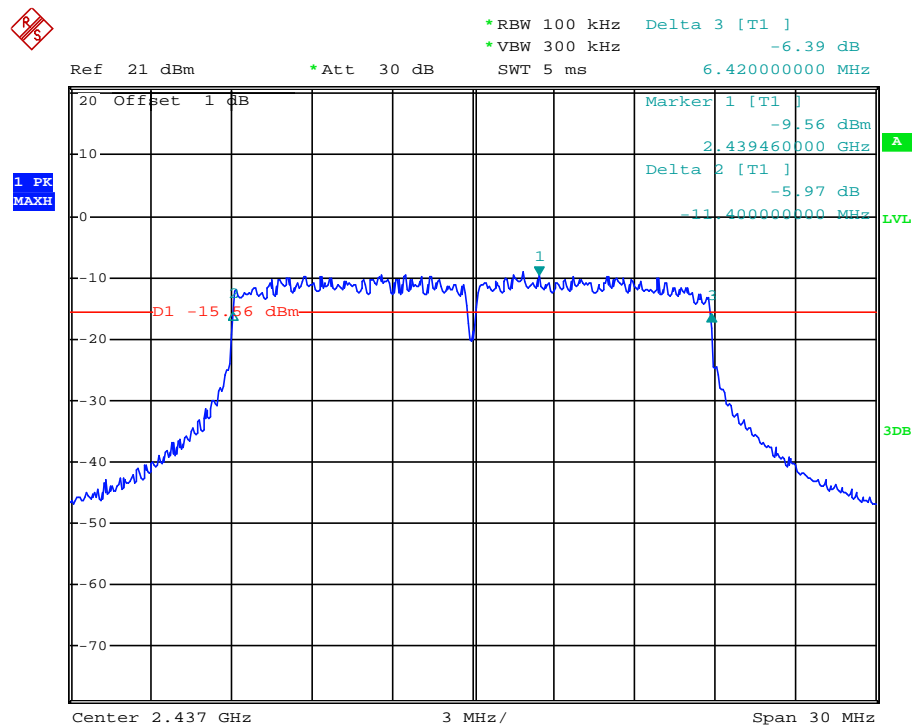
Date: 10.JAN.2013 15:01:08

## 802.11n20 Mode channel 1



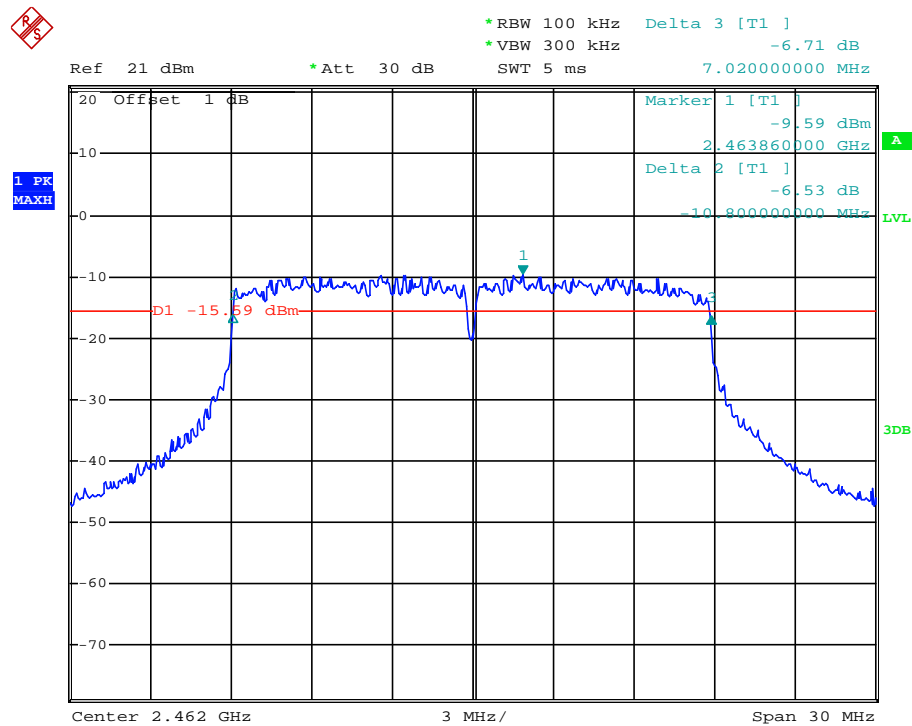
Date: 10.JAN.2013 15:08:22

## 802.11n20 Mode channel 6



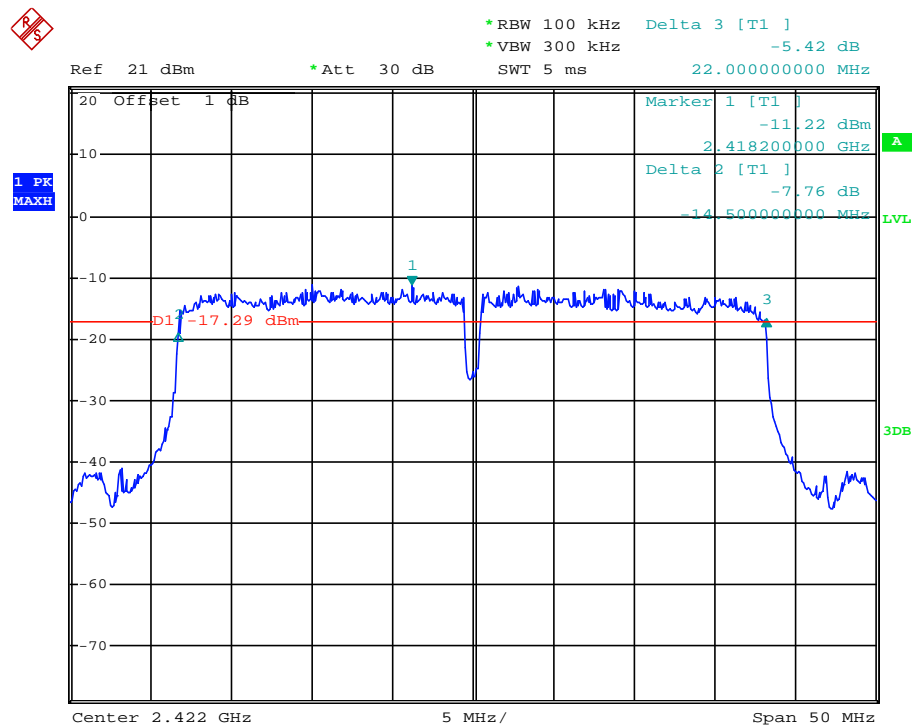
Date: 10.JAN.2013 15:15:40

## 802.11n20 Mode channel 11



Date: 10.JAN.2013 15:19:52

## 802.11n40 Mode channel 3



Date: 10.JAN.2013 15:27:37

Top status bar:

- \*RBW 100 kHz
- \*Att 30 dB
- SWT 5 ms
- Delta 3 [T1]
- 5.37 dB
- 15.400000000 MHz

Bottom status bar:

- Center 2.437 GHz
- Span 50 MHz
- Offset 1 dB

Marker data:

Marker	Frequency	Amplitude
1 [T1]	2.439800000 GHz	-10.87 dBm
2 [T1]	2.439800000 GHz	-7.27 dB
3 [T1]	2.439800000 GHz	-21.100000000 MHz

Signal characteristics:

- Signal level: -16.87 dBm
- Signal type: 1 PK MAXH
- Signal name: Delta 1

Date: 10.JAN.2013 15:34:53

Ref 21 dBm      \* Att 30 dB      SWT 5 ms      28.200000000 MHz

1 PK MAXH

Marker 1 [T1]      -11.56 dBm      2.442000000 GHz      Delta 2 [T1]      -7.32 dBm      8.300000000 MHz

D1 -17.6 dBm

Center 2.452 GHz      5 MHz/      Span 50 MHz

Date: 10.JAN.2013 15:40:22

## 4.6. Band Edge Compliance of RF Emission

### Applicable Standard

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

### TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=10Hz for average detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

### LIMIT

Below -20dB of the highest emission level in operating band.

Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)

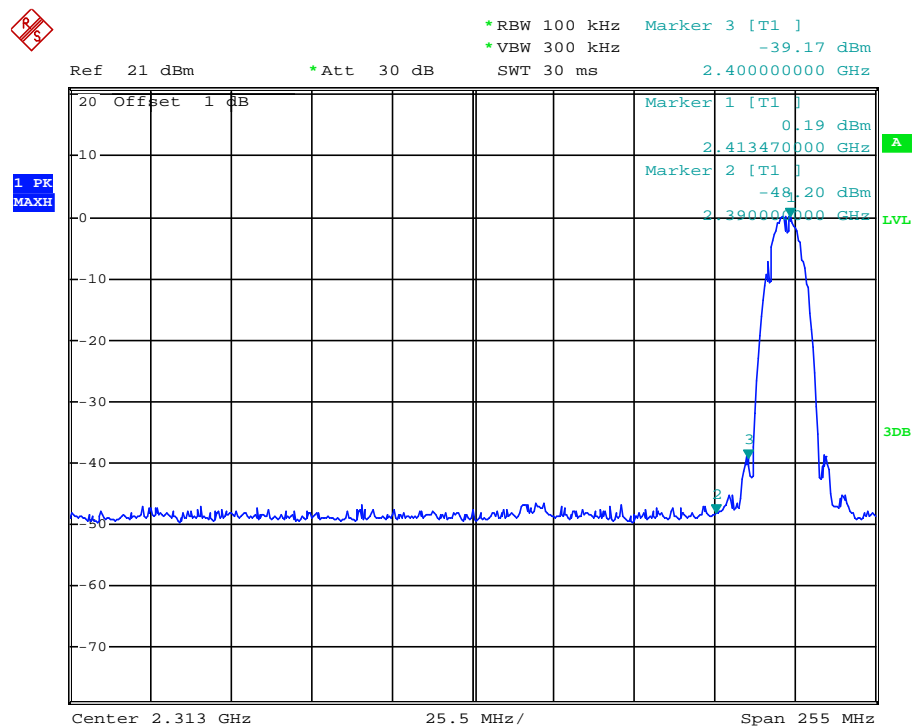
### TEST RESULTS

Both radiated and conducted band edge were measurement for 802.11b,802.11g,802.11n(20MHz) and 802.11n(40MHz) mode at each difference data transmission speeds,recording worst case in test report.

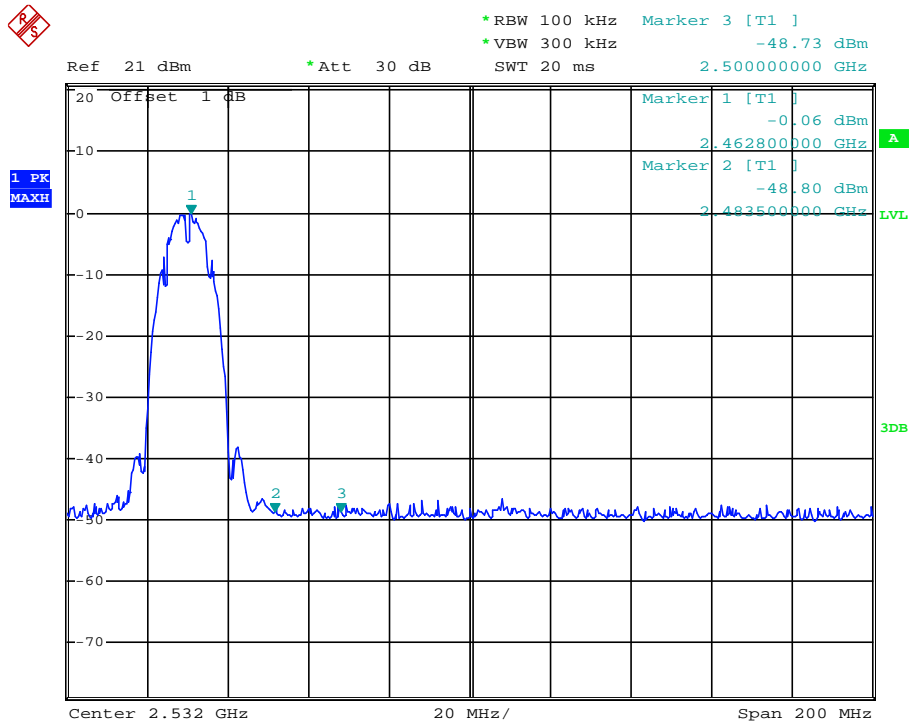
### Conducted Band Edge Measurement

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz )	Delta Peak to Band emission (dBc)	LIMIT (dBc)	PASS/FAIL
802.11b				
Low	2390.00	-48.39	-20	PASS
	2400.00	-39.36	-20	PASS
High	2483.50	-48.74	-20	PASS
	2500.00	-48.67	-20	PASS
802.11g				
Low	2390.00	-41.93	-20	PASS
	2400.00	-31.63	-20	PASS
High	2483.50	-40.42	-20	PASS
	2500.00	-40.93	-20	PASS
802.11n20				
Low	2390.00	-39.86	-20	PASS
	2400.00	-31.49	-20	PASS
High	2483.50	-40.04	-20	PASS
	2500.00	-38.93	-20	PASS
802.11n40				
Low	2390.00	-37.94	-20	PASS
	2400.00	-34.45	-20	PASS
High	2483.50	-37.64	-20	PASS
	2500.00	-38.10	-20	PASS

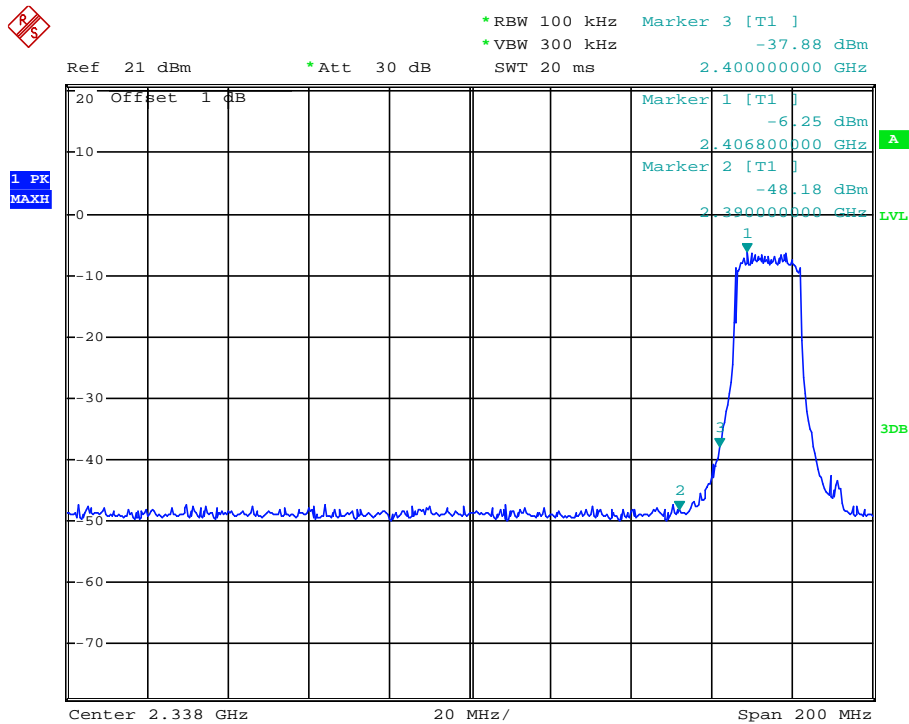
## For 802.11b Mode



Date: 10.JAN.2013 14:02:56

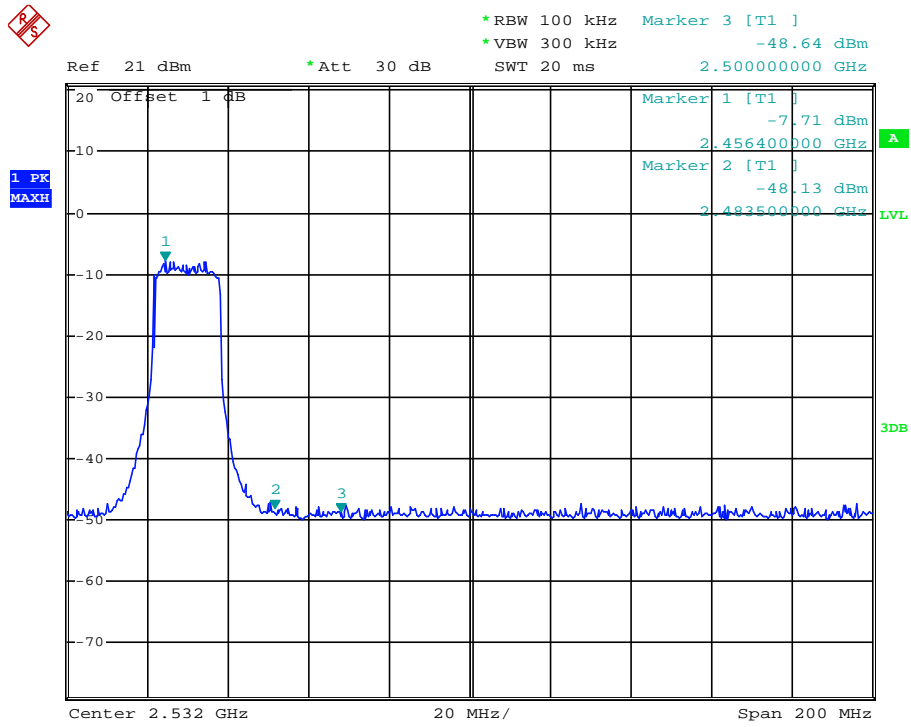


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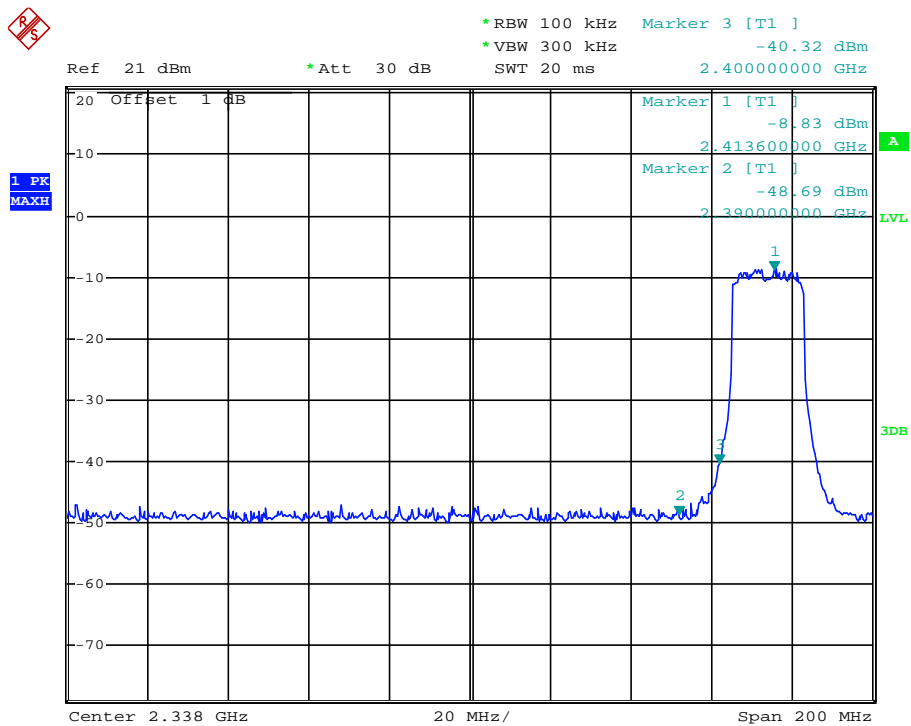
**For 802.11g Mode**

Date: 10.JAN.2013 14:40:11

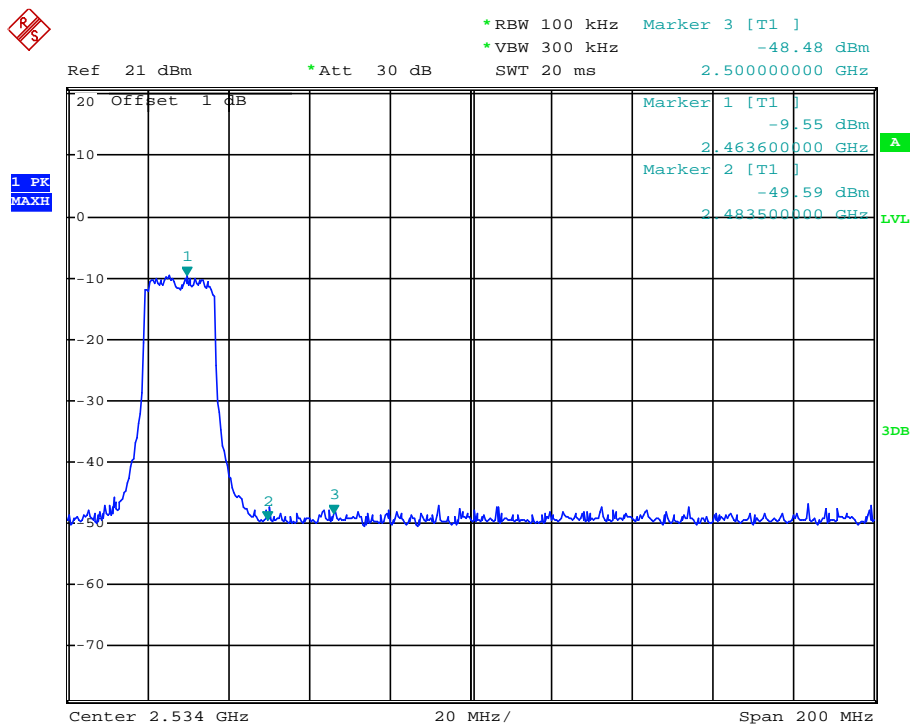




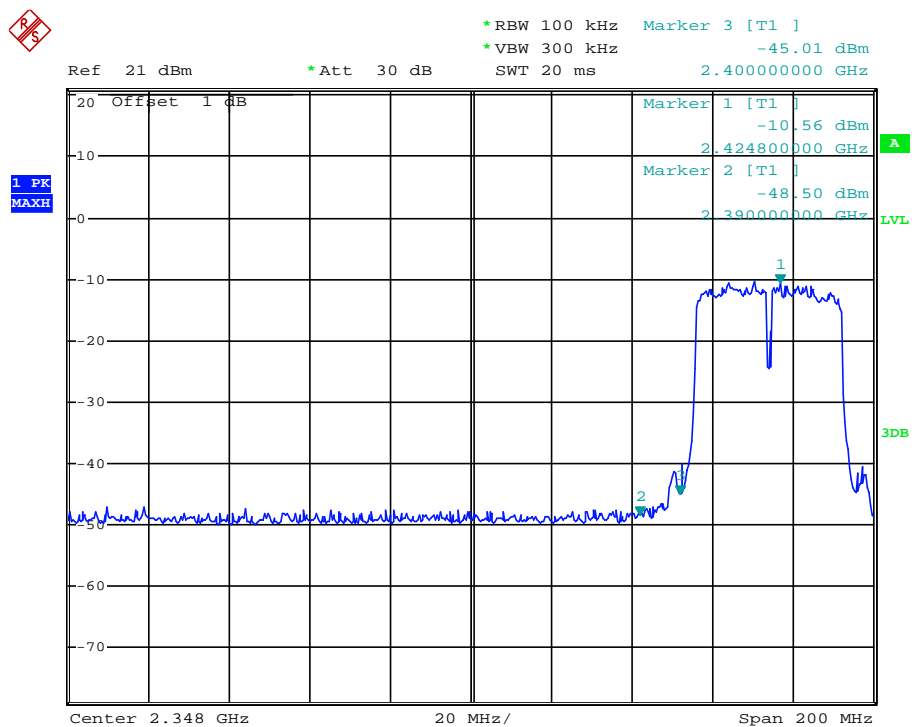
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**802.11n (20MHz) Mode**

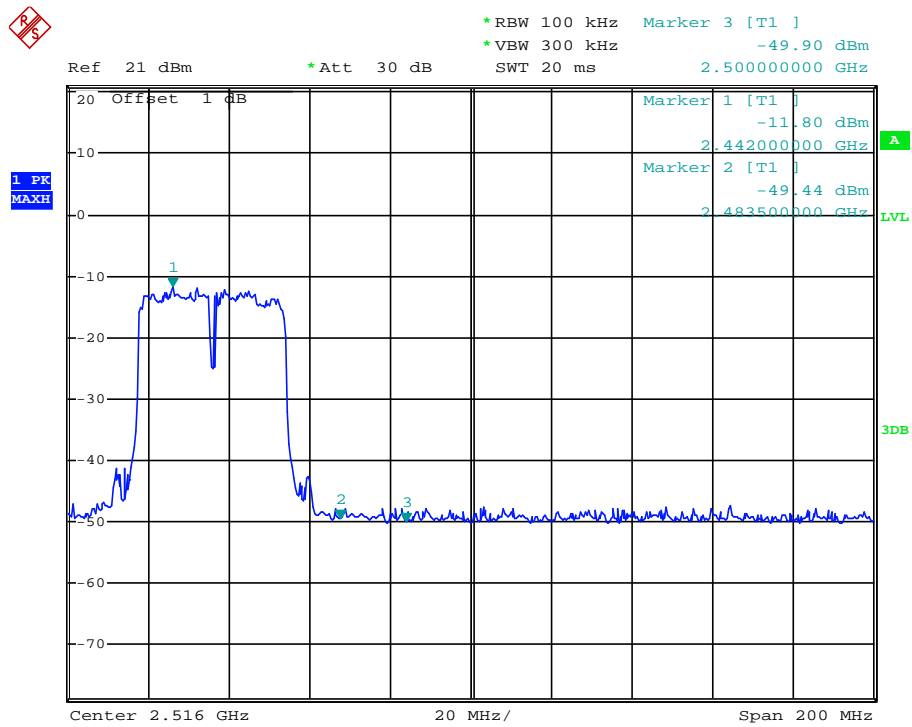
Date: 10.JAN.2013 15:13:00



Date: 10.JAN.2013 15:23:23

**802.11n (40MHz) Mode**

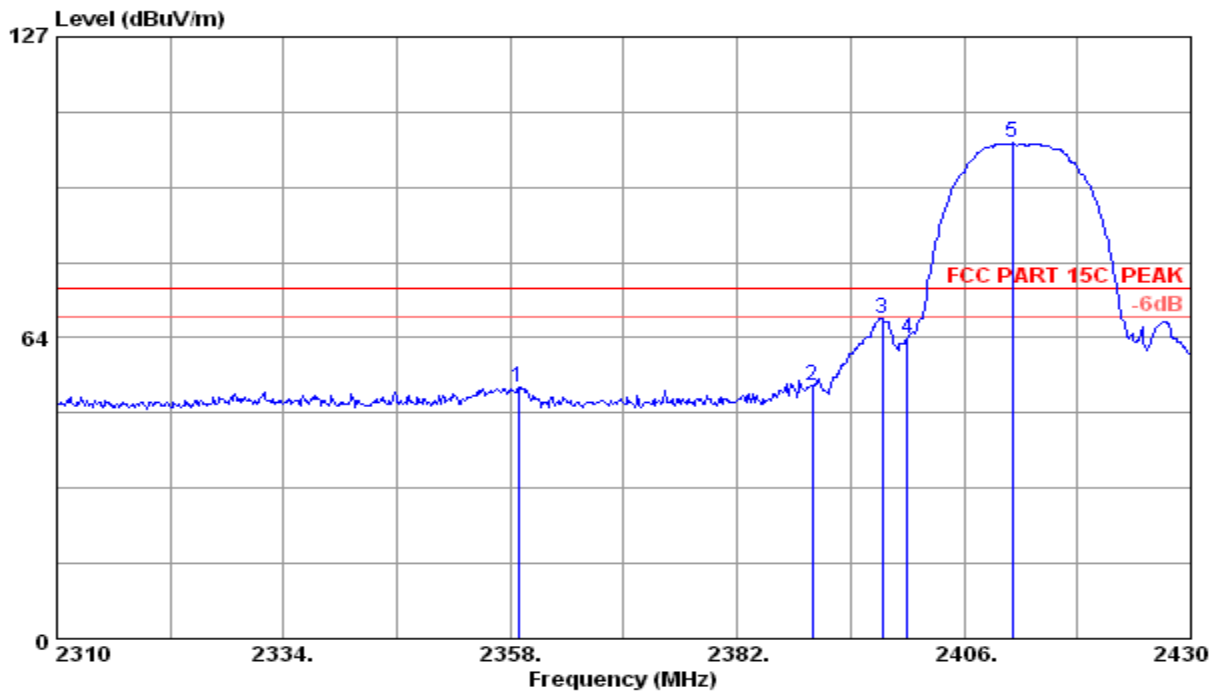
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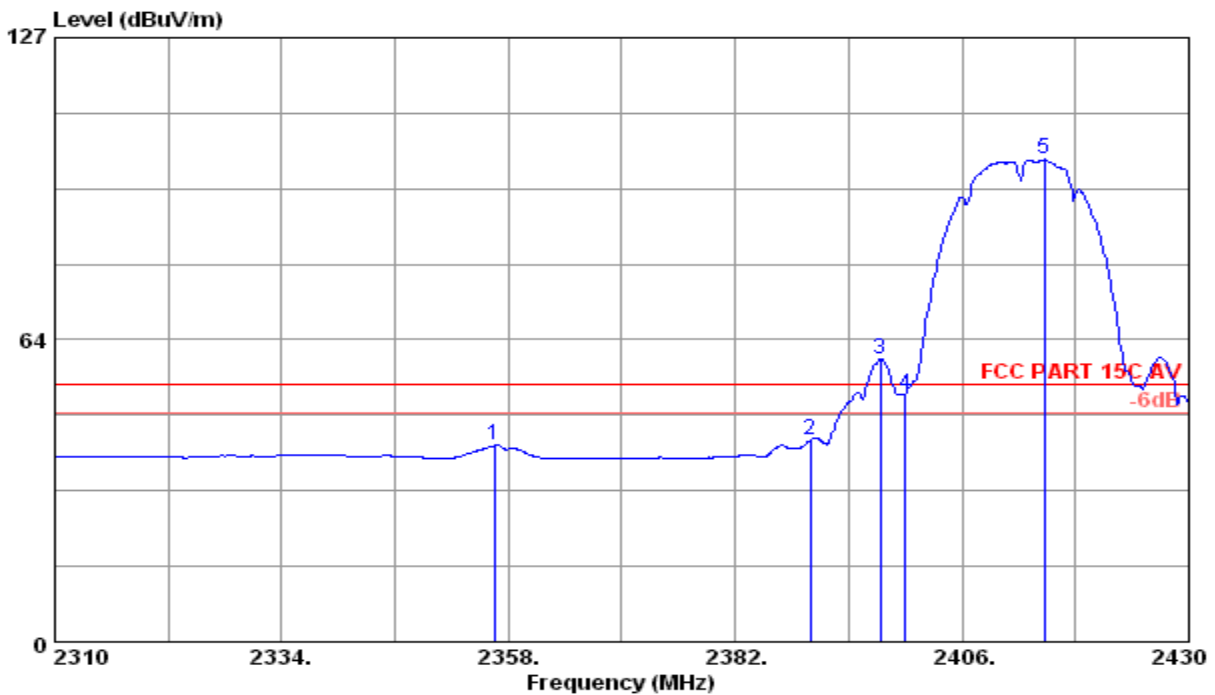
Date: 10.JAN.2013 15:43:55

### Radiated Band Edge Measurement

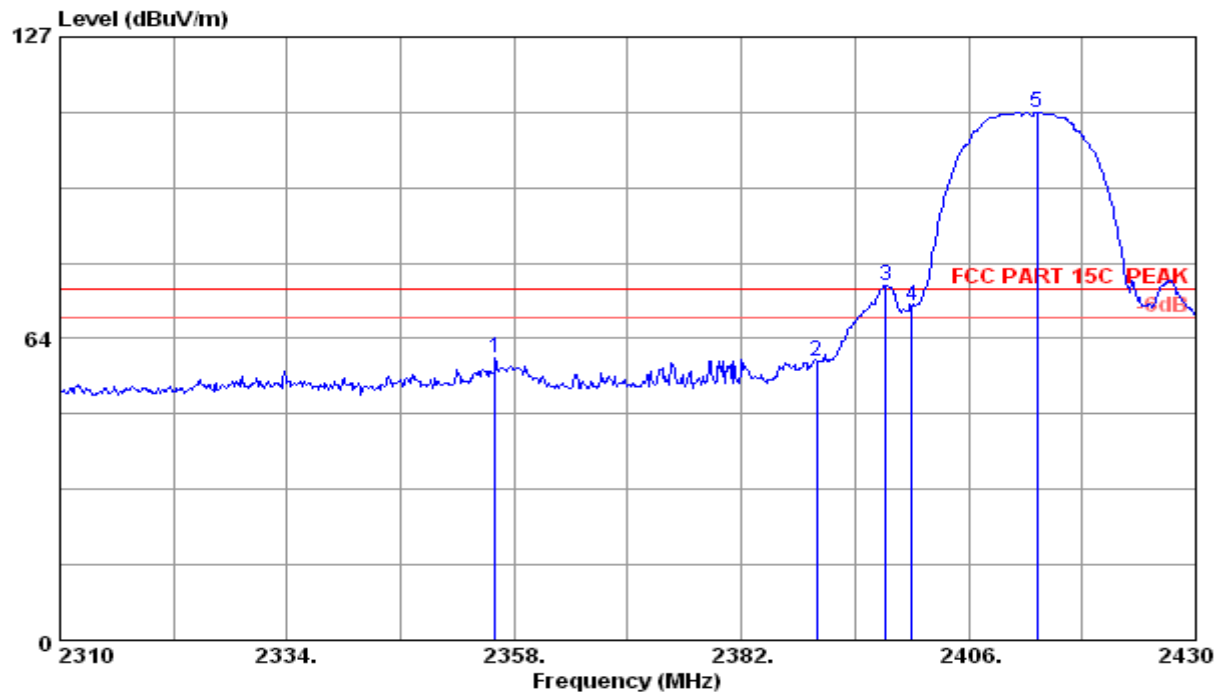
*For 802.11b&2412MHz*



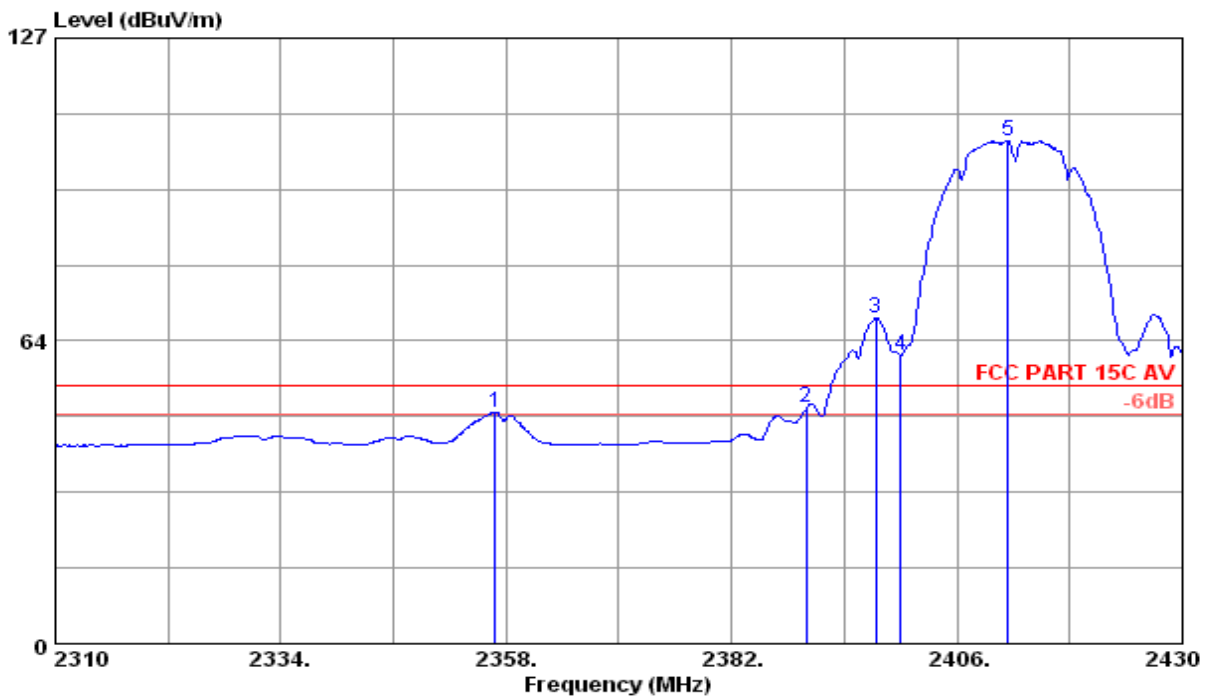
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2358.840	29.42	8.62	35.91	51.04	53.17	74.00	20.83	Peak	Horizontal
2	2390.000	29.44	8.67	36.09	51.42	53.44	74.00	20.56	Peak	Horizontal
3	2397.360	29.44	8.72	36.09	65.63	67.70	74.00	6.30	Peak	Horizontal
4	2400.000	29.44	8.72	36.09	61.14	63.21	74.00	10.79	Peak	Horizontal
5	2411.160	29.45	8.72	35.95	102.41	104.63	74.00	-30.63	Peak	Horizontal



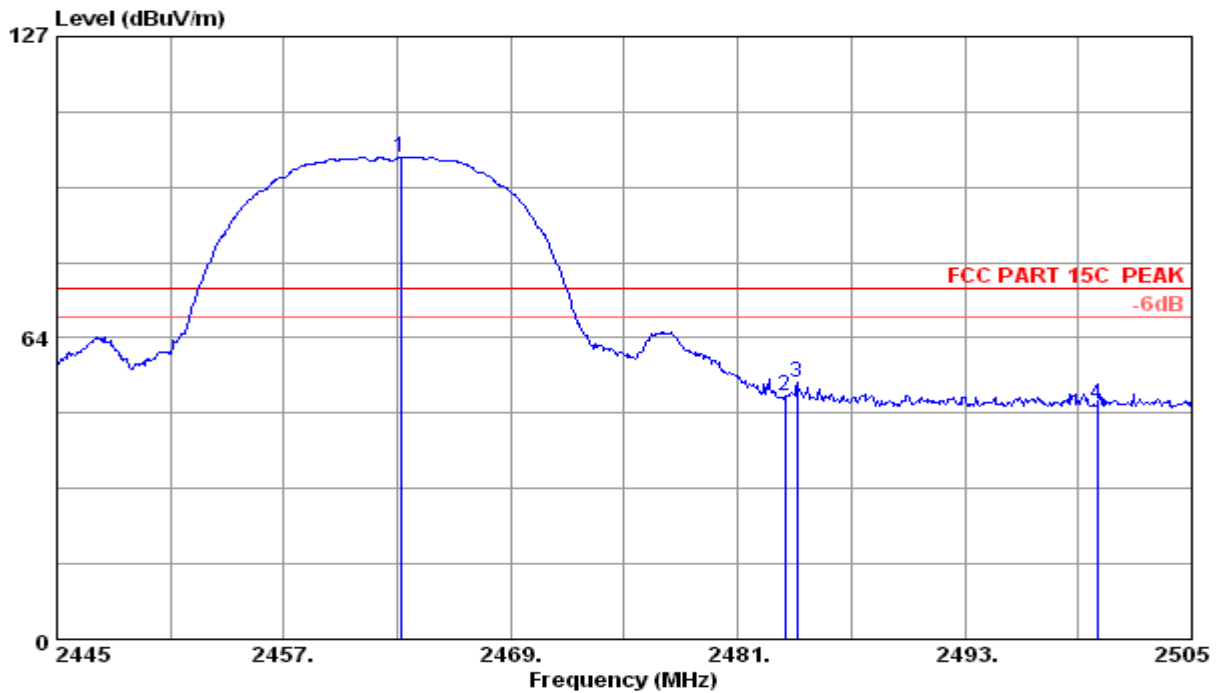
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2356.560	29.42	8.62	35.91	39.18	41.31	54.00	12.69	Average	Horizontal
2	2390.000	29.44	8.67	36.09	40.61	42.63	54.00	11.37	Average	Horizontal
3	2397.360	29.44	8.72	36.09	57.41	59.48	54.00	-5.48	Average	Horizontal
4	2400.000	29.44	8.72	36.09	50.06	52.13	54.00	1.87	Average	Horizontal
5	2414.760	29.45	8.72	35.95	99.15	101.37	54.00	-47.37	Average	Horizontal



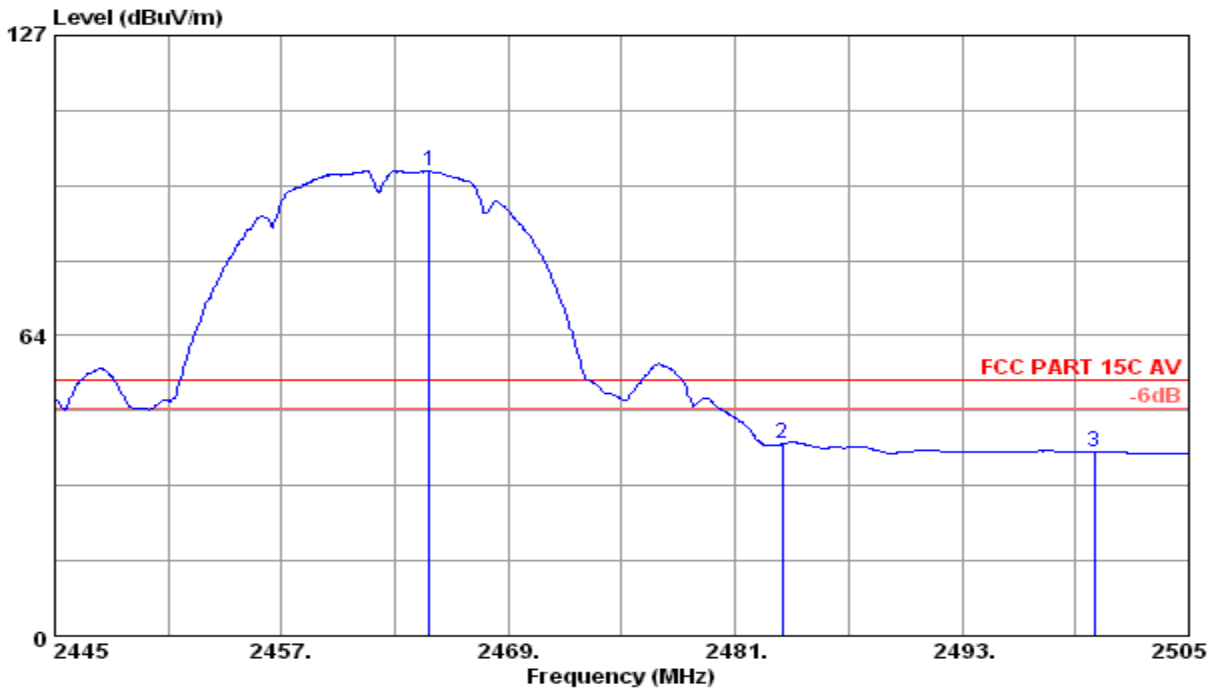
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2355.960	29.42	8.62	35.91	57.41	59.54	74.00	14.46	Peak	Vertical
2	2390.000	29.44	8.67	36.09	56.62	58.64	74.00	15.36	Peak	Vertical
3	2397.240	29.44	8.72	36.09	72.64	74.71	74.00	-0.71	Peak	Vertical
4	2400.000	29.44	8.72	36.09	68.28	70.35	74.00	3.65	Peak	Vertical
5	2413.000	29.45	8.72	36.09	108.88	111.10	74.00	-37.10	Peak	Vertical



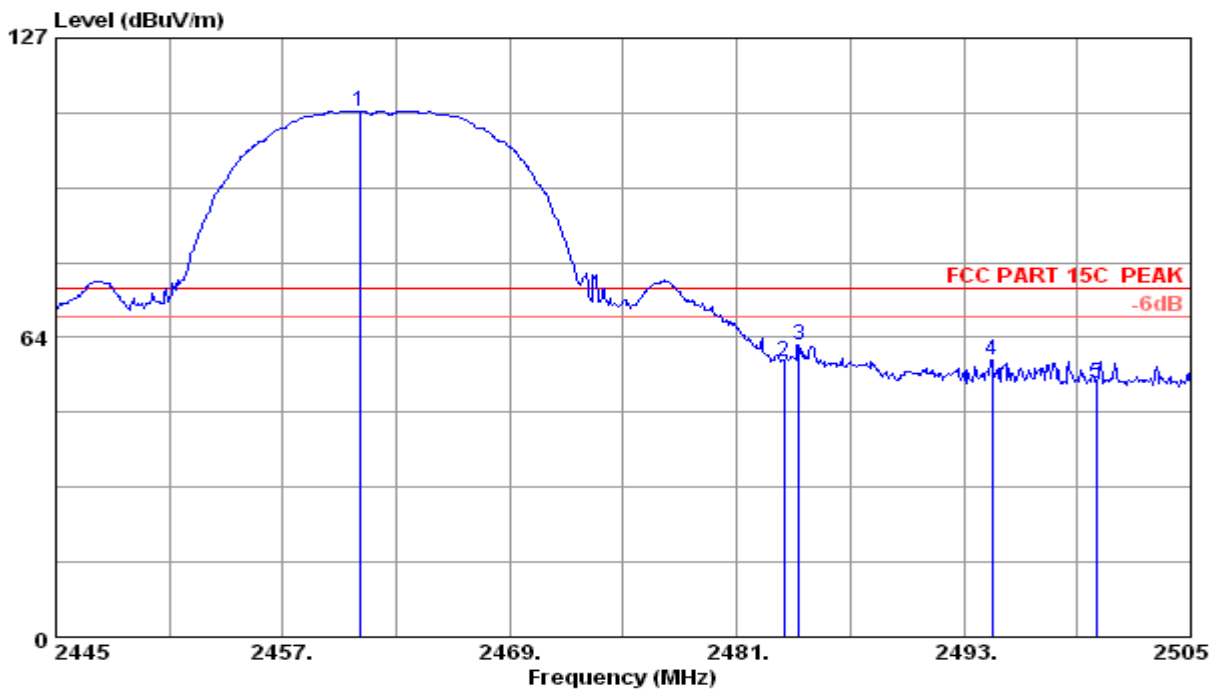
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2356.800	29.42	8.62	35.91	46.51	48.64	54.00	5.36	Average	Vertical
2	2390.000	29.44	8.67	36.09	47.56	49.58	54.00	4.42	Average	Vertical
3	2397.360	29.44	8.72	36.09	66.31	68.38	54.00	-14.38	Average	Vertical
4	2400.000	29.44	8.72	36.09	58.46	60.53	54.00	-6.53	Average	Vertical
5	2411.400	29.45	8.72	36.09	103.28	105.50	54.00	-51.50	Average	Vertical

**For 802.11b&2462MHz**

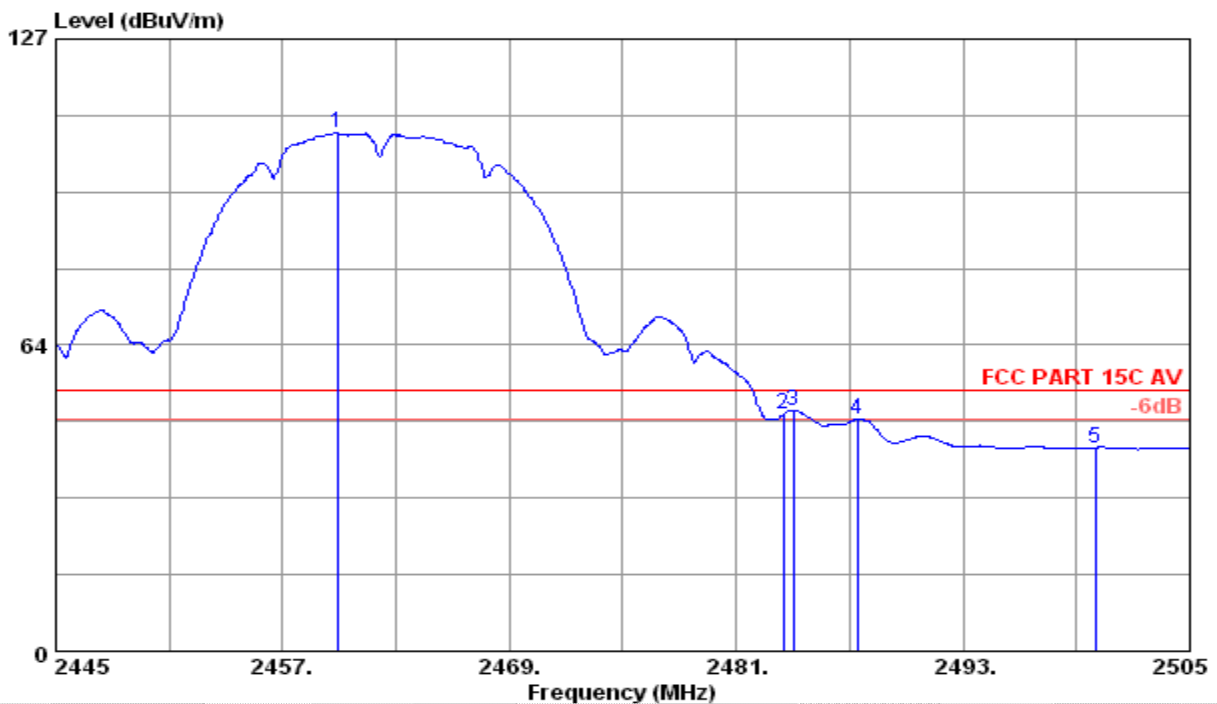
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2463.180	29.48	8.82	36.02	99.31	101.59	74.00	-27.59	Peak	Horizontal
2	2483.500	29.49	8.87	35.97	49.04	51.53	74.00	22.57	Peak	Horizontal
3	2484.120	29.49	8.87	35.97	51.82	54.21	74.00	19.79	Peak	Horizontal
4	2500.000	29.50	8.93	36.00	46.94	49.36	74.00	24.64	Peak	Horizontal



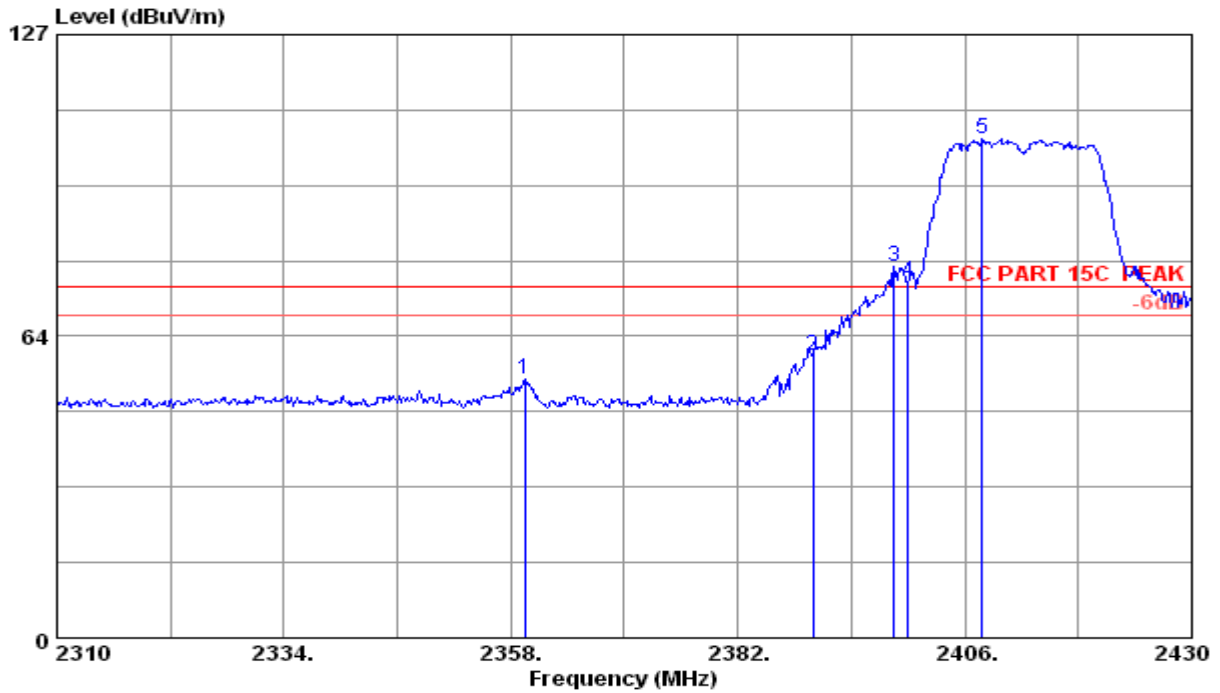
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2464.800	29.48	8.82	36.02	96.22	98.50	54.00	-44.50	Average	Horizontal
2	2483.500	29.49	8.87	35.97	38.20	40.59	54.00	13.41	Average	Horizontal
3	2500.000	29.50	8.93	36.00	36.50	38.92	54.00	15.08	Average	Horizontal



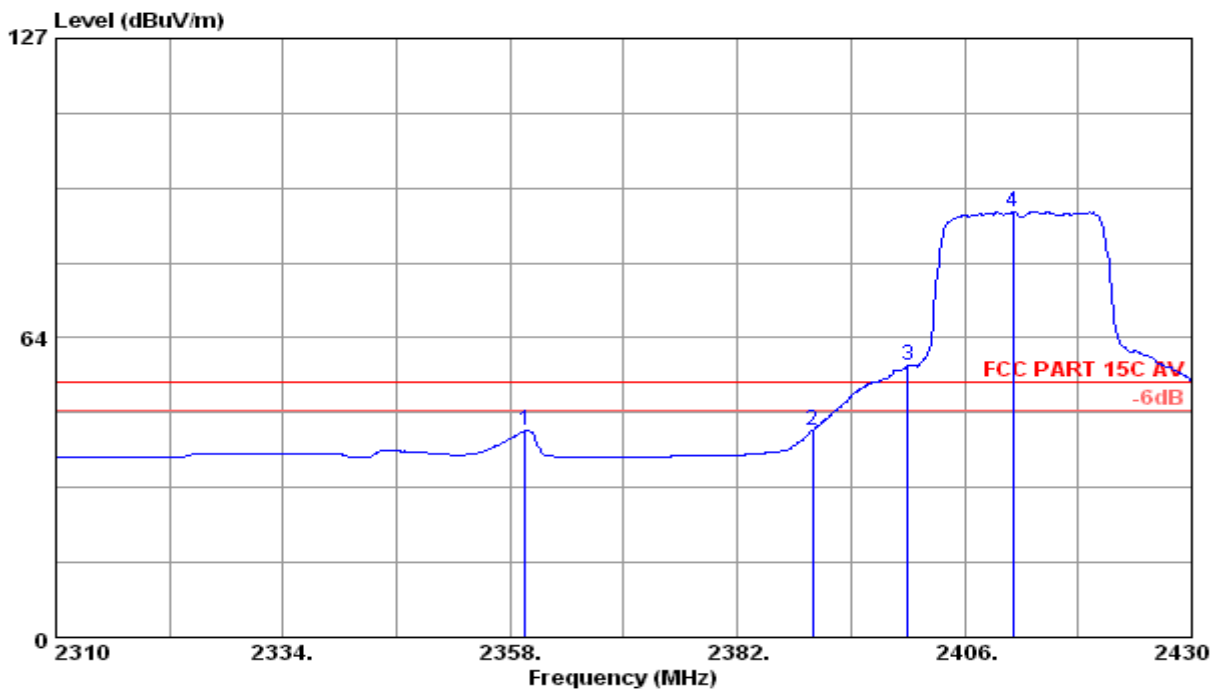
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2461.080	29.48	8.82	36.02	109.30	111.58	74.00	-37.58	Peak	Vertical
2	2483.500	29.49	8.87	35.97	56.15	58.54	74.00	15.46	Peak	Vertical
3	2484.300	29.49	8.87	35.97	59.52	61.91	74.00	12.09	Peak	Vertical
4	2494.500	29.50	8.87	36.00	56.28	58.65	74.00	15.35	Peak	Vertical
5	2500.000	29.50	8.92	36.00	51.36	53.78	74.00	20.22	Peak	Vertical



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2459.880	29.48	8.82	36.02	105.32	107.60	54.00	-53.60	Average	Vertical
2	2483.500	29.49	8.87	35.97	46.78	49.17	54.00	4.83	Average	Vertical
3	2484.000	29.49	8.87	35.97	47.61	50.00	54.00	4.00	Average	Vertical
4	2487.420	29.49	8.87	35.97	45.74	48.13	54.00	5.87	Average	Vertical
5	2500.000	29.50	8.92	36.00	39.83	42.25	54.00	11.75	Average	Vertical

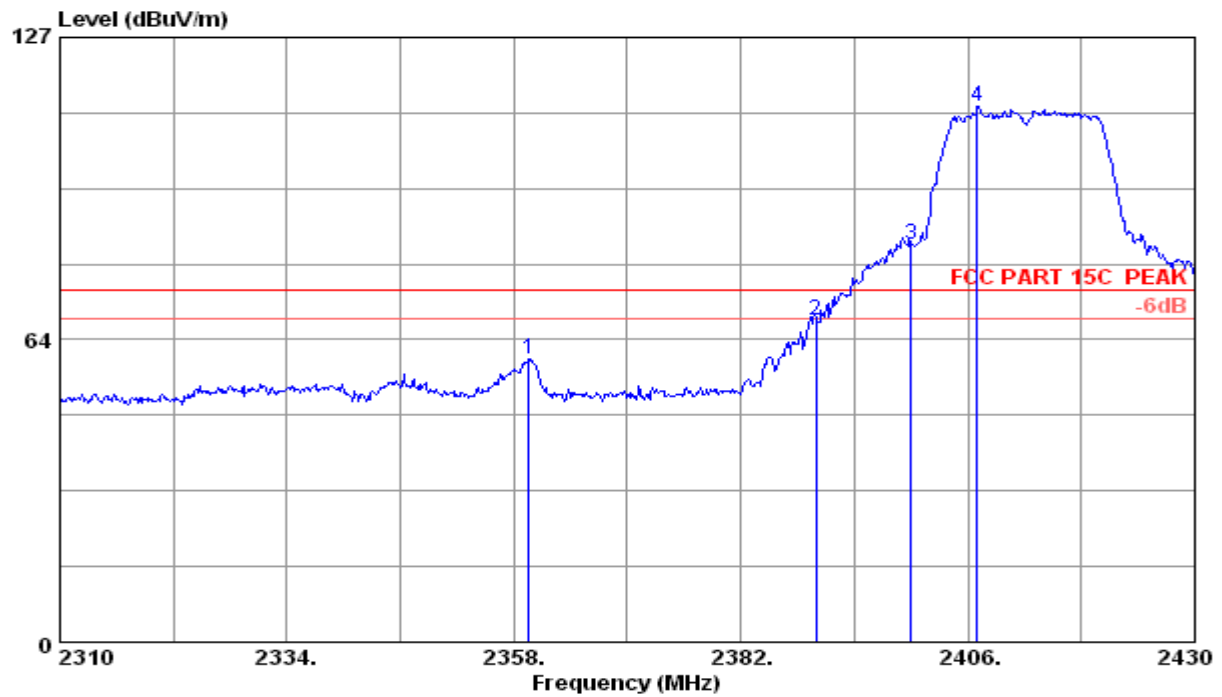
**For 802.11g&2412MHz**

No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2359.440	29.42	8.62	35.91	52.51	54.64	74.00	19.36	Peak	Horizontal
2	2390.000	29.44	8.67	36.09	57.45	59.47	74.00	14.53	Peak	Horizontal
3	2398.560	29.44	8.72	36.09	76.15	78.22	74.00	-4.22	Peak	Horizontal
4	2400.000	29.44	8.72	36.09	72.80	74.87	74.00	-0.87	Peak	Horizontal
5	2407.800	29.45	8.72	35.95	102.87	105.09	74.00	-31.09	Peak	Horizontal

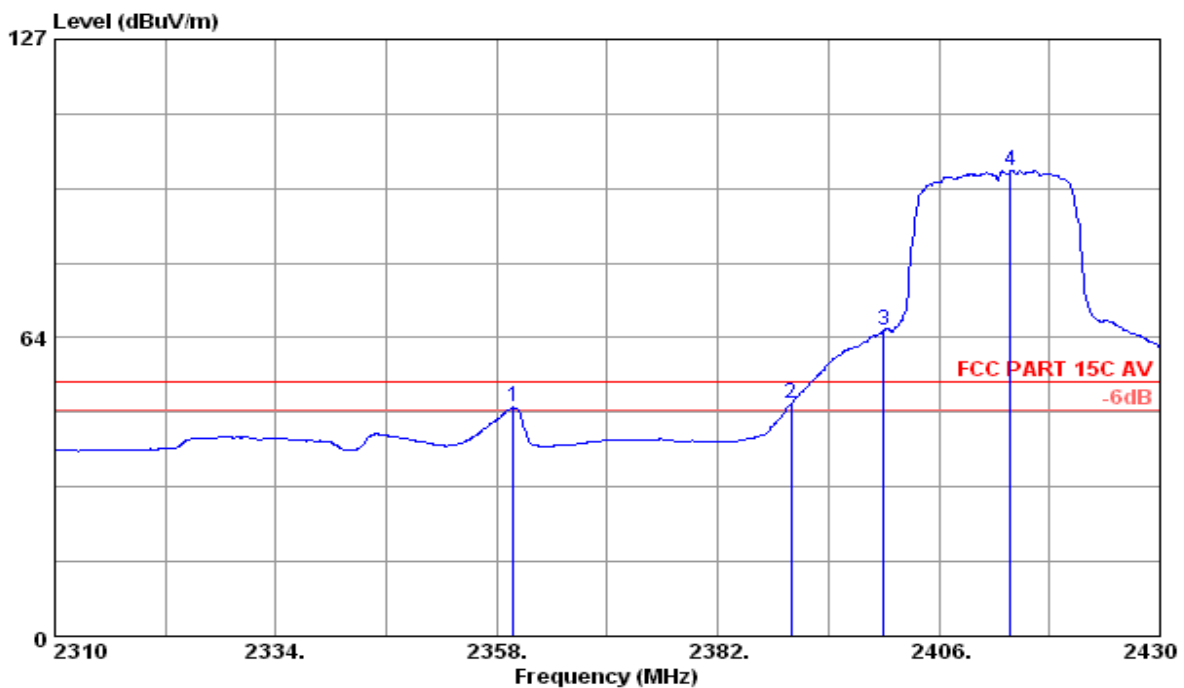


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2359.560	29.42	8.62	35.91	41.71	43.84	54.00	10.16	Average	Horizontal
2	2390.000	29.44	8.67	36.09	42.00	44.02	54.00	9.98	Average	Horizontal
3	2400.000	29.44	8.72	36.09	55.44	57.51	54.00	-3.51	Average	Horizontal
4	2411.160	29.45	8.72	35.95	88.14	90.36	54.00	-36.36	Average	Horizontal

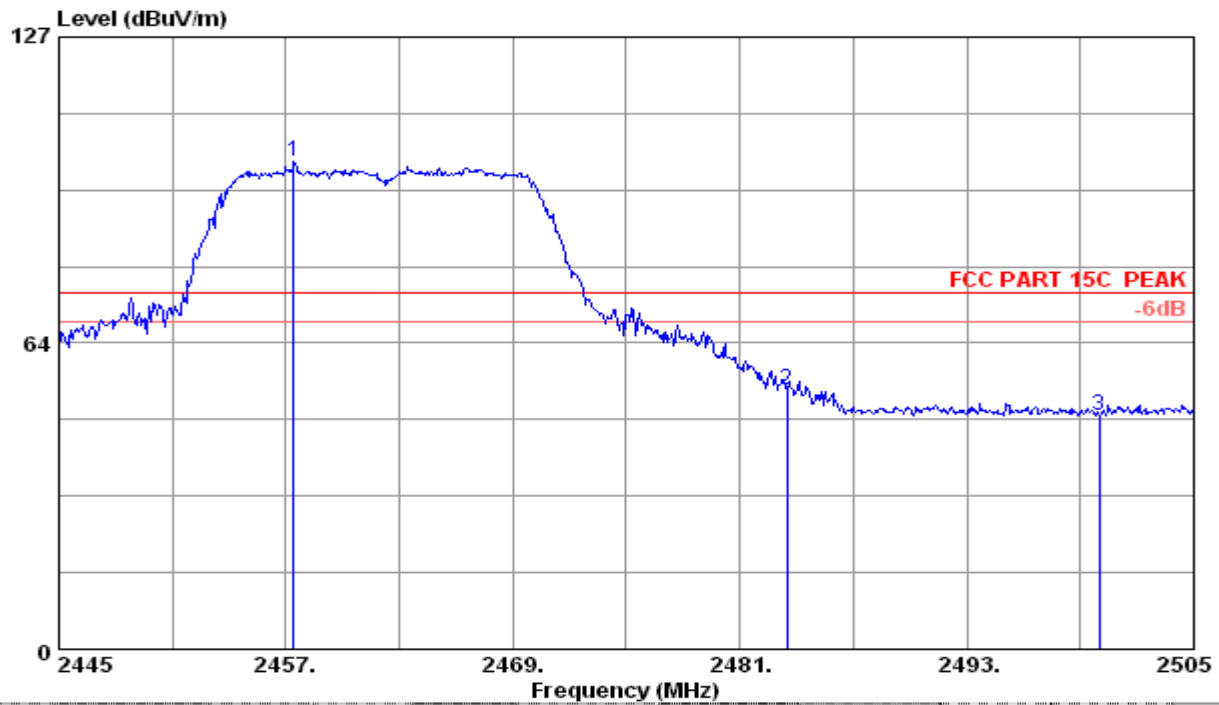




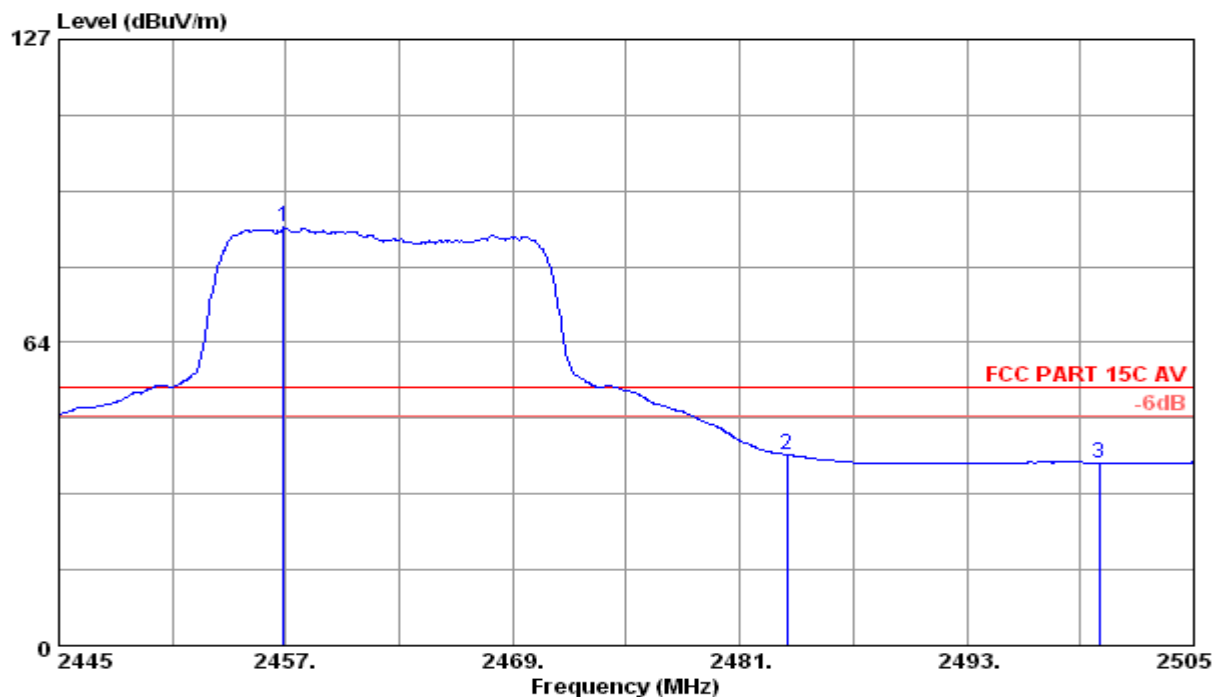
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2359.560	29.42	8.62	35.91	57.41	59.54	74.00	14.46	Peak	Vertical
2	2390.000	29.44	8.67	36.09	65.38	67.40	74.00	6.60	Peak	Vertical
3	2400.000	29.44	8.72	36.09	81.54	83.61	74.00	-9.61	Peak	Vertical
4	2406.960	29.45	8.72	36.09	110.35	112.57	74.00	-38.57	Peak	Vertical



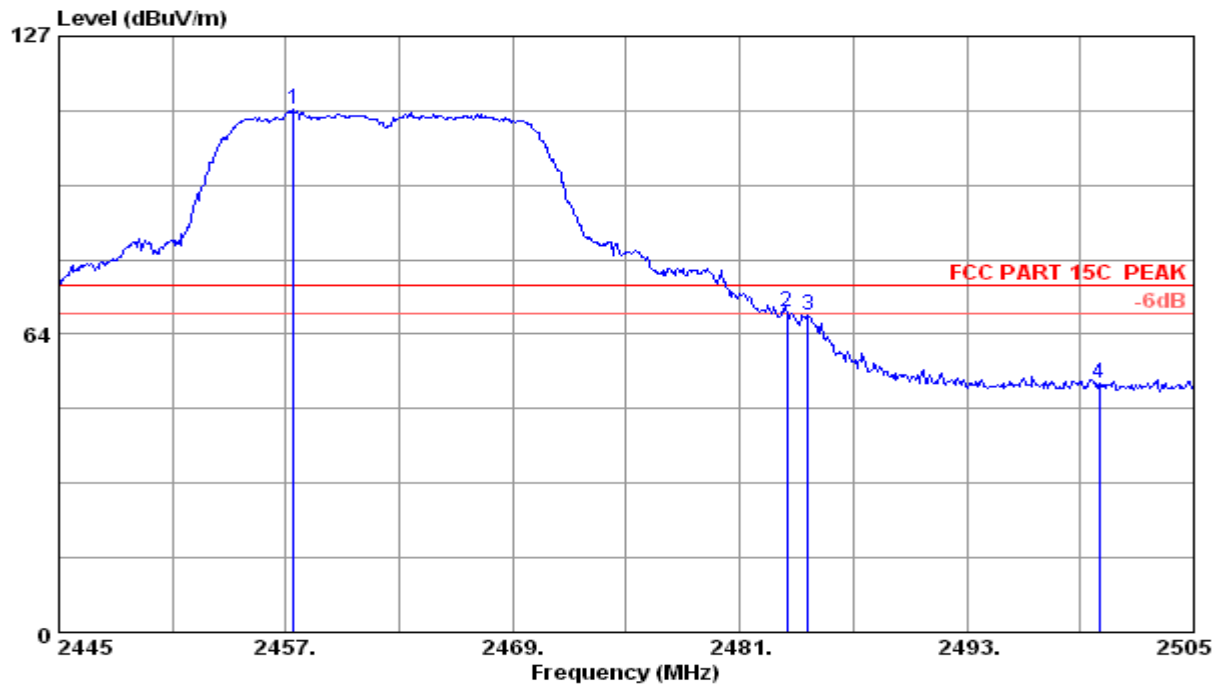
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2359.800	29.42	8.62	35.91	46.53	48.66	54.00	5.34	Average	Vertical
2	2390.000	29.44	8.67	36.09	47.56	49.58	54.00	4.42	Average	Vertical
3	2400.000	29.44	8.72	36.09	62.94	65.01	54.00	-11.01	Average	Vertical
4	2411.400	29.45	8.72	36.09	97.00	99.22	54.00	-45.22	Average	Vertical

**For 802.11g&2462MHz**

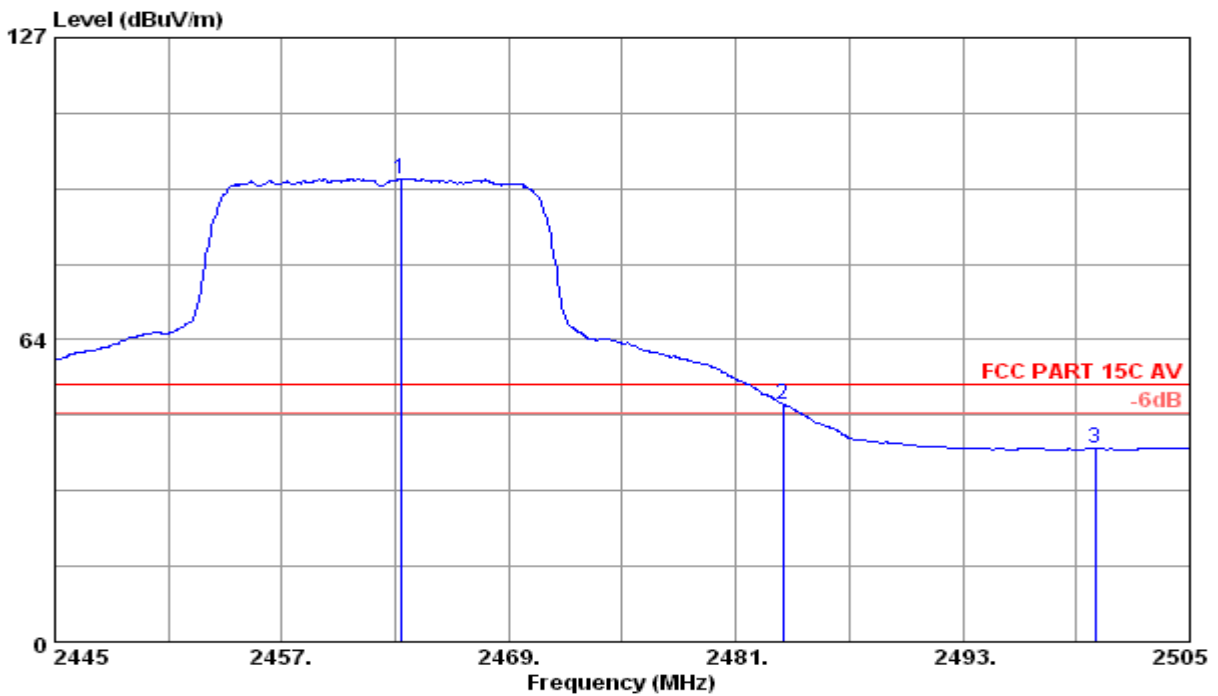
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2457.420	29.48	8.82	36.02	98.90	101.18	74.00	-27.18	Peak	Horizontal
2	2483.500	29.49	8.87	35.97	51.22	53.61	74.00	20.39	Peak	Horizontal
3	2500.000	29.50	8.93	36.00	46.13	48.55	74.00	24.45	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2456.880	29.48	8.82	36.02	85.31	87.59	54.00	-33.59	Average	Horizontal
2	2483.500	29.49	8.87	35.97	37.60	39.99	54.00	14.01	Average	Horizontal
3	2500.000	29.50	8.93	36.00	35.92	38.34	54.00	15.66	Average	Horizontal

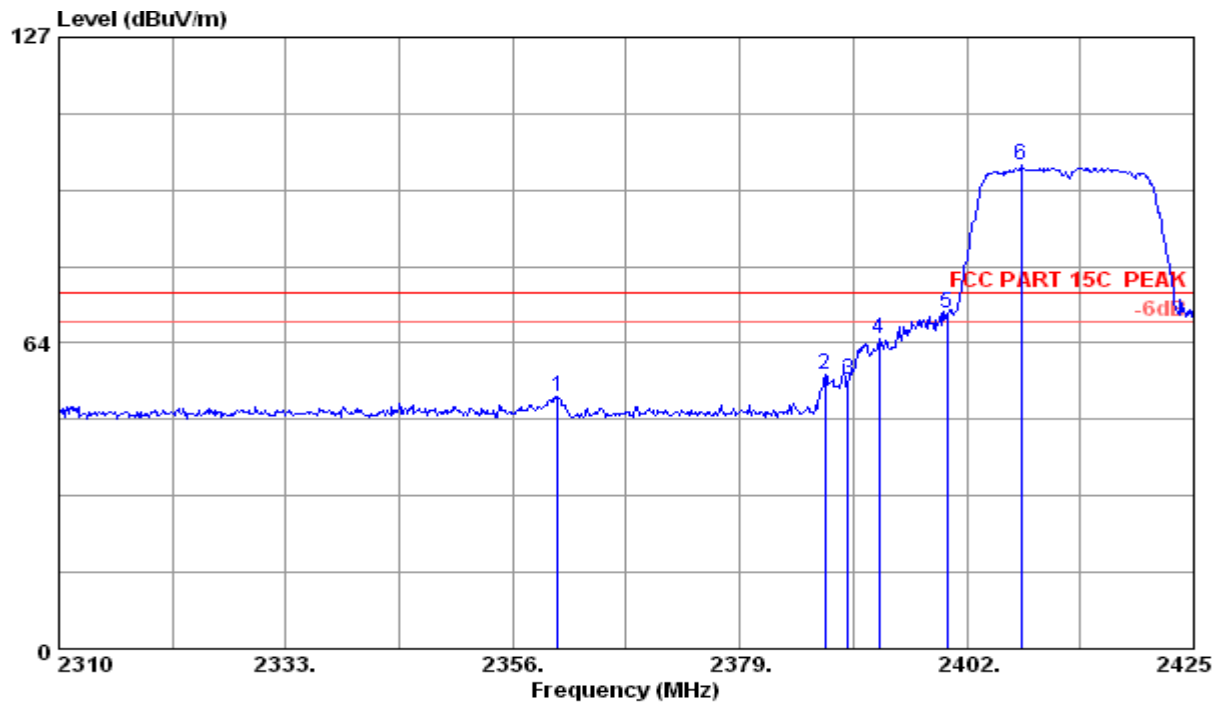


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2457.420	29.48	8.82	36.02	108.99	111.27	74.00	-37.27	Peak	Vertical
2	2483.500	29.49	8.87	35.97	66.05	68.44	74.00	5.56	Peak	Vertical
3	2484.600	29.49	8.87	35.97	65.29	67.68	74.00	6.32	Peak	Vertical
4	2500.000	29.50	8.92	36.00	50.60	53.02	74.00	20.98	Peak	Vertical

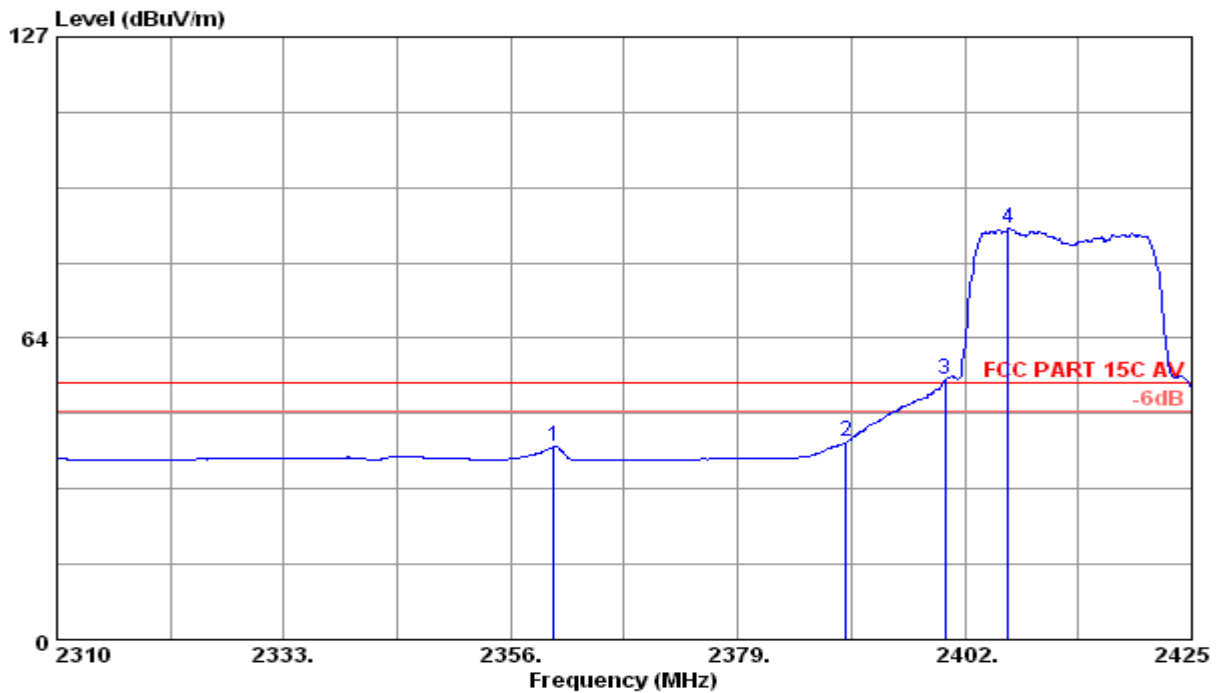


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2463.300	29.48	8.82	36.02	95.16	97.44	54.00	-43.44	Average	Vertical
2	2483.500	29.49	8.87	35.97	47.66	50.05	54.00	3.95	Average	Vertical
3	2500.000	29.50	8.92	36.00	38.15	40.57	54.00	13.43	Average	Vertical

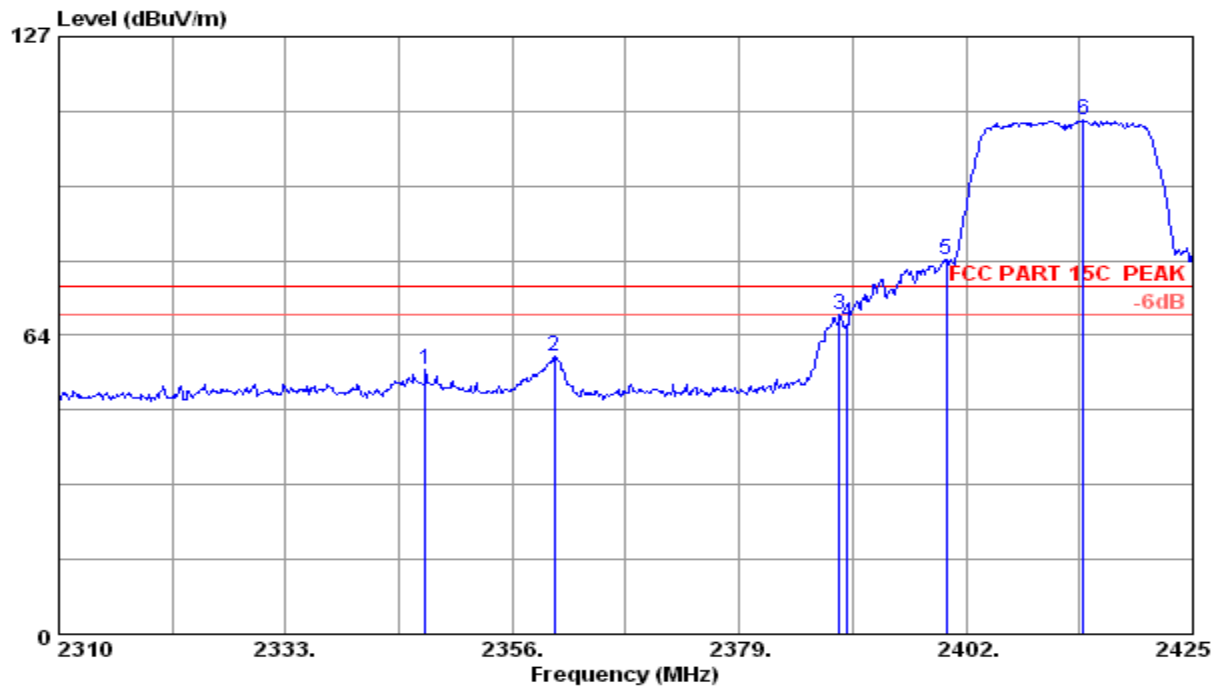
**For 802.11n(20MHz)&2412MHz**



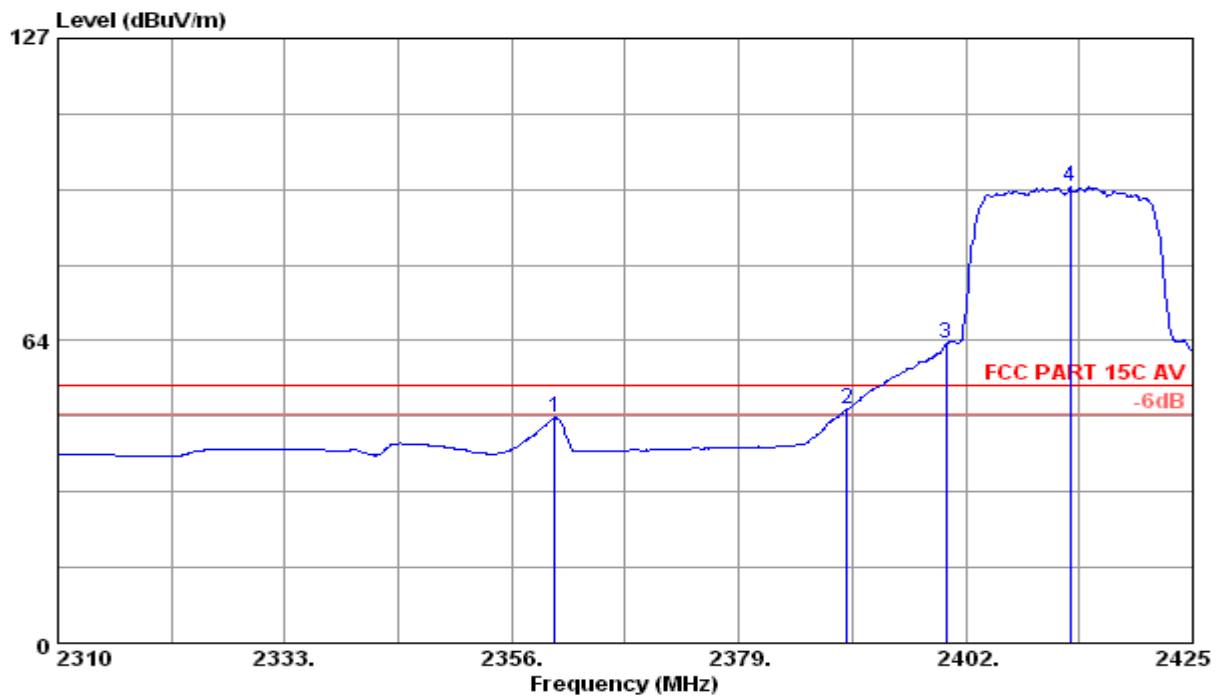
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2360.600	29.42	8.62	35.91	50.16	52.29	74.00	21.71	Peak	Horizontal
2	2387.625	29.44	8.67	36.09	54.94	56.96	74.00	17.04	Peak	Horizontal
3	2390.000	29.44	8.67	36.09	53.99	56.01	74.00	17.99	Peak	Horizontal
4	2393.145	29.44	8.72	36.09	62.49	64.51	74.00	9.49	Peak	Horizontal
5	2400.000	29.44	8.72	36.09	67.55	69.62	74.00	4.38	Peak	Horizontal
6	2407.520	29.45	8.72	35.95	98.10	100.32	74.00	-26.32	Peak	Horizontal



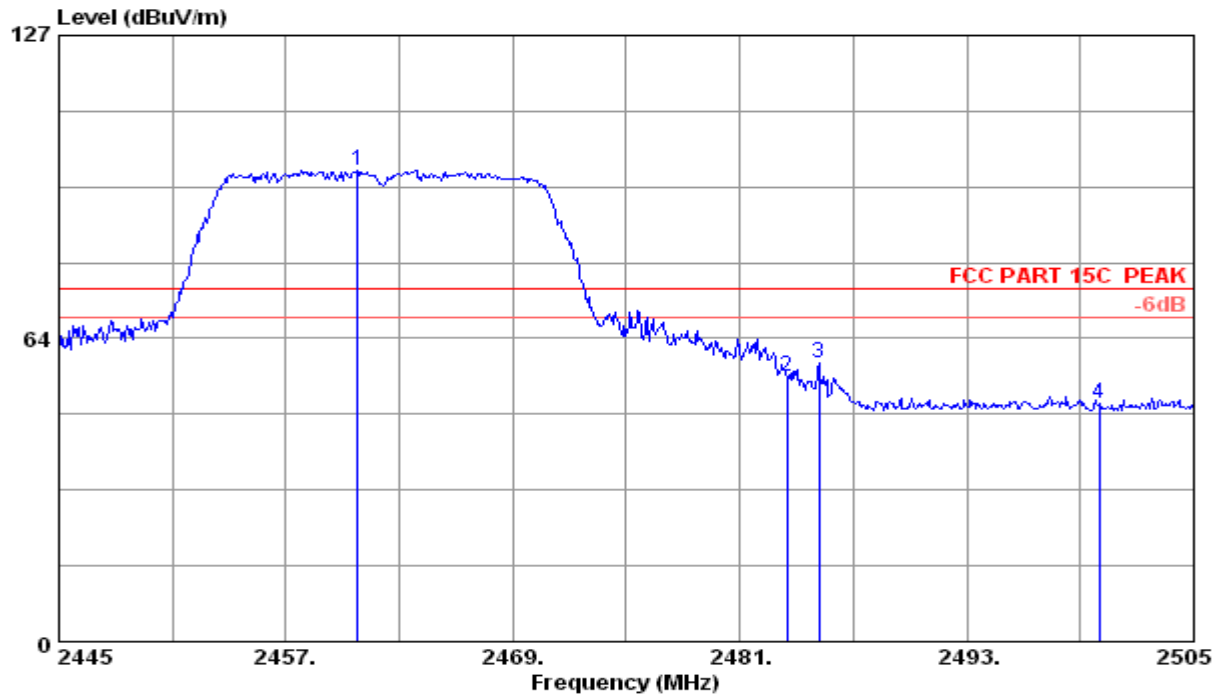
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2360.370	29.42	8.62	35.91	38.45	40.58	54.00	13.42	Average	Horizontal
2	2390.000	29.44	8.67	36.09	39.56	41.58	54.00	12.42	Average	Horizontal
3	2400.000	29.44	8.72	36.09	52.81	54.88	54.00	-0.88	Average	Horizontal
4	2406.370	29.45	8.72	35.95	84.46	86.68	54.00	-32.68	Average	Horizontal



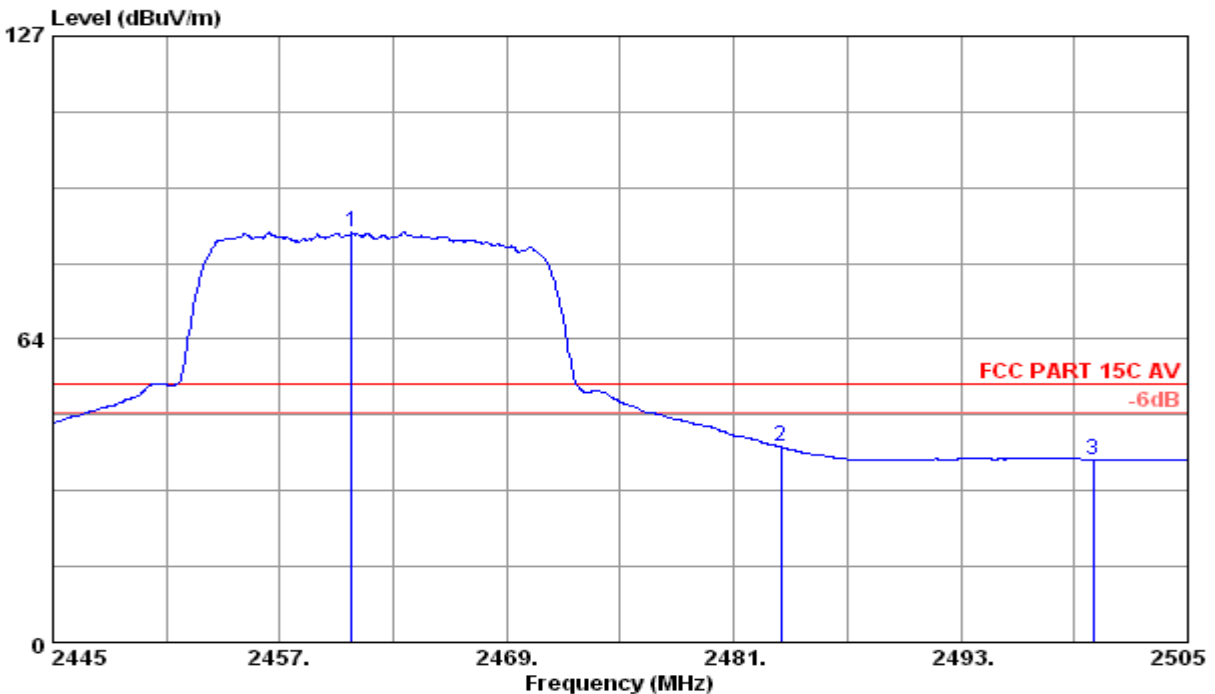
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2347.145	29.41	8.62	35.99	54.21	56.25	74.00	17.75	Peak	Vertical
2	2360.255	29.42	8.62	35.99	56.97	59.10	74.00	14.90	Peak	Vertical
3	2389.120	29.44	8.67	36.09	65.89	67.91	74.00	6.09	Peak	Vertical
4	2390.000	29.44	8.67	36.09	63.99	66.01	74.00	7.99	Peak	Vertical
5	2400.000	29.44	8.72	36.09	77.62	79.69	74.00	-5.69	Peak	Vertical
6	2413.845	29.45	8.72	36.09	106.94	109.16	74.00	-35.16	Peak	Vertical



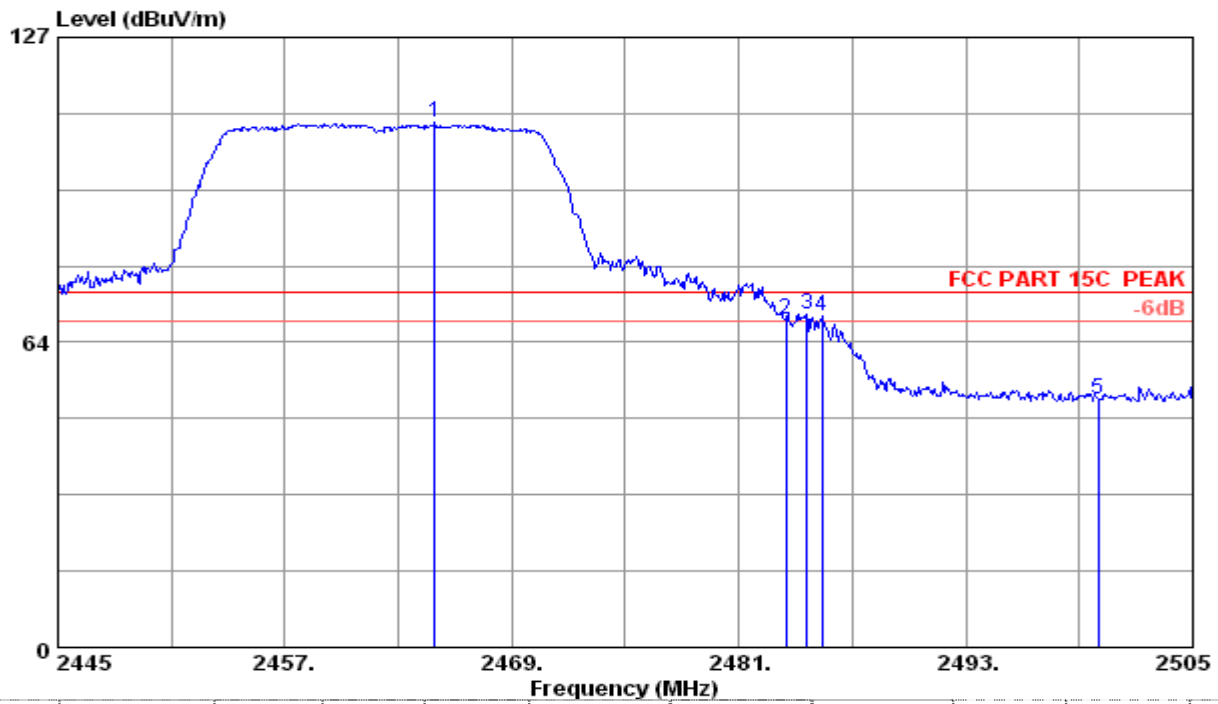
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2360.370	29.42	8.62	35.91	45.17	47.30	54.00	6.70	Average	Vertical
2	2390.000	29.44	8.67	36.09	47.04	49.06	54.00	4.94	Average	Vertical
3	2400.000	29.44	8.72	36.09	60.97	63.04	54.00	-9.04	Average	Vertical
4	2412.580	29.45	8.72	36.09	93.58	95.80	54.00	-41.80	Average	Vertical

**For 802.11n(20MHz)&2462MHz**

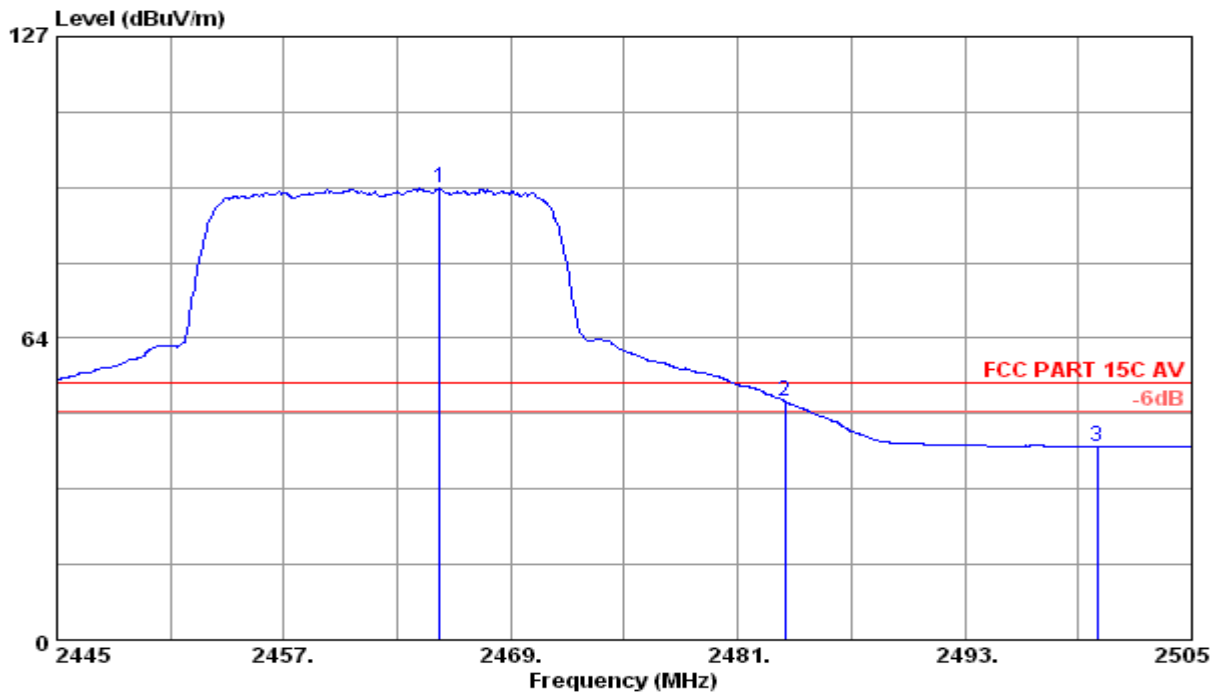
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2460.780	29.48	8.82	36.02	96.53	98.81	74.00	-24.81	Peak	Horizontal
2	2483.500	29.49	8.87	35.97	53.21	55.60	74.00	18.40	Peak	Horizontal
3	2485.200	29.49	8.87	35.97	55.92	58.31	74.00	15.69	Peak	Horizontal
3	2500.000	29.50	8.93	36.00	47.54	49.96	74.00	24.04	Peak	Horizontal



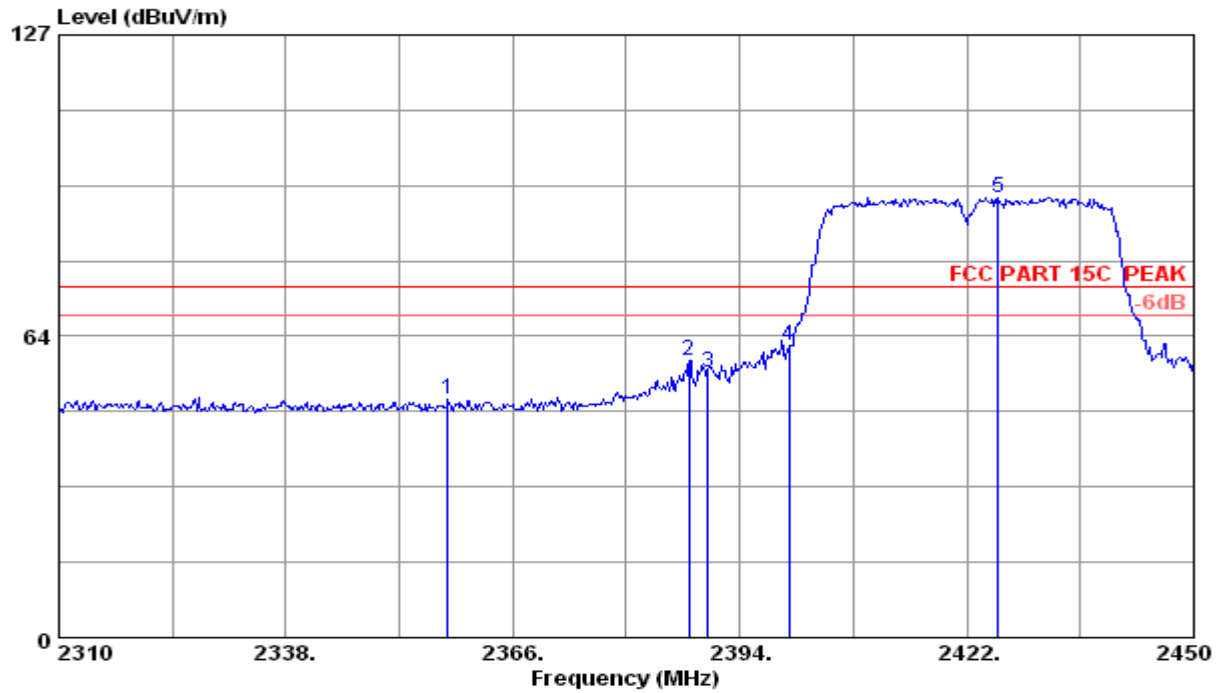
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV/m)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark	Polarization
1	2460.780	29.48	8.82	36.02	83.63	85.91	54.00	-31.91	Average	Horizontal
2	2483.500	29.49	8.87	35.97	38.50	40.89	54.00	13.11	Average	Horizontal
3	2500.000	29.50	8.93	36.00	35.90	38.32	54.00	15.68	Average	Horizontal



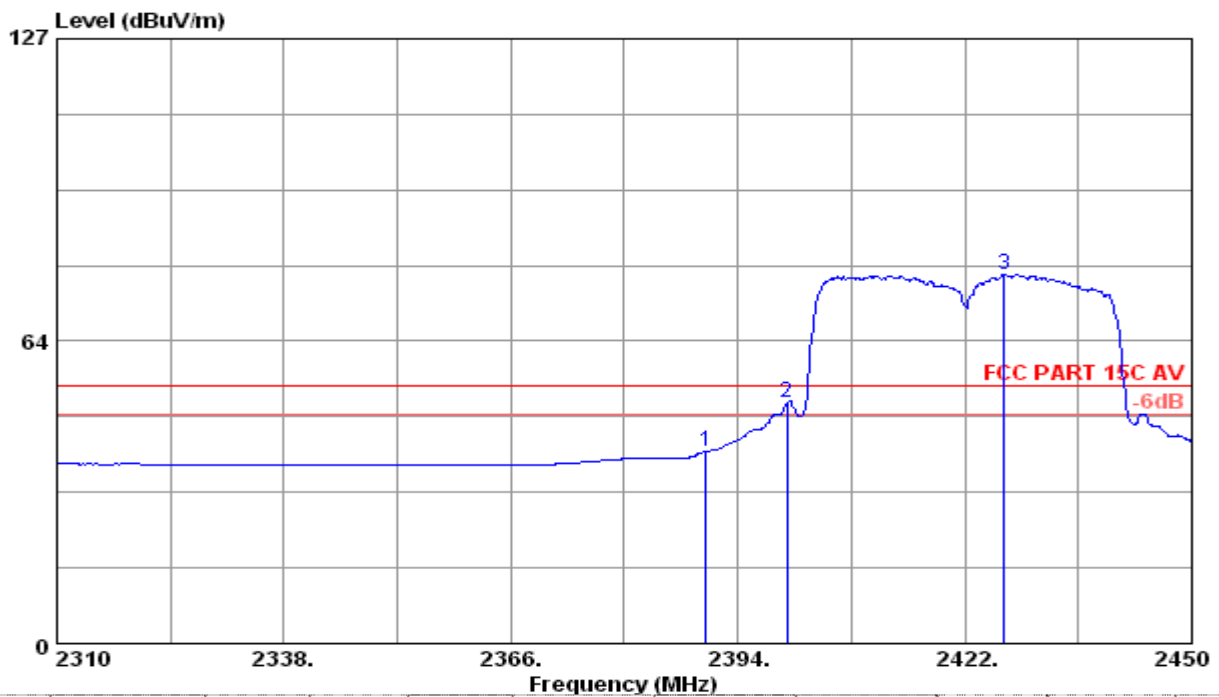
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2464.920	29.48	8.82	36.02	107.08	109.36	74.00	-35.36	Peak	Vertical
2	2483.500	29.49	8.87	35.97	65.99	68.38	74.00	5.62	Peak	Vertical
3	2484.600	29.49	8.87	35.97	67.00	69.39	74.00	4.61	Peak	Vertical
4	2485.380	29.49	8.87	35.97	66.52	68.91	74.00	5.09	Peak	Vertical
5	2500.000	29.50	8.92	36.00	49.39	51.81	74.00	22.19	Peak	Vertical



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2465.220	29.48	8.82	36.02	92.83	95.11	54.00	-41.11	Average	Vertical
2	2483.500	29.49	8.87	35.97	47.77	50.16	54.00	3.84	Average	Vertical
3	2500.000	29.50	8.92	36.00	38.27	40.69	54.00	13.31	Average	Vertical

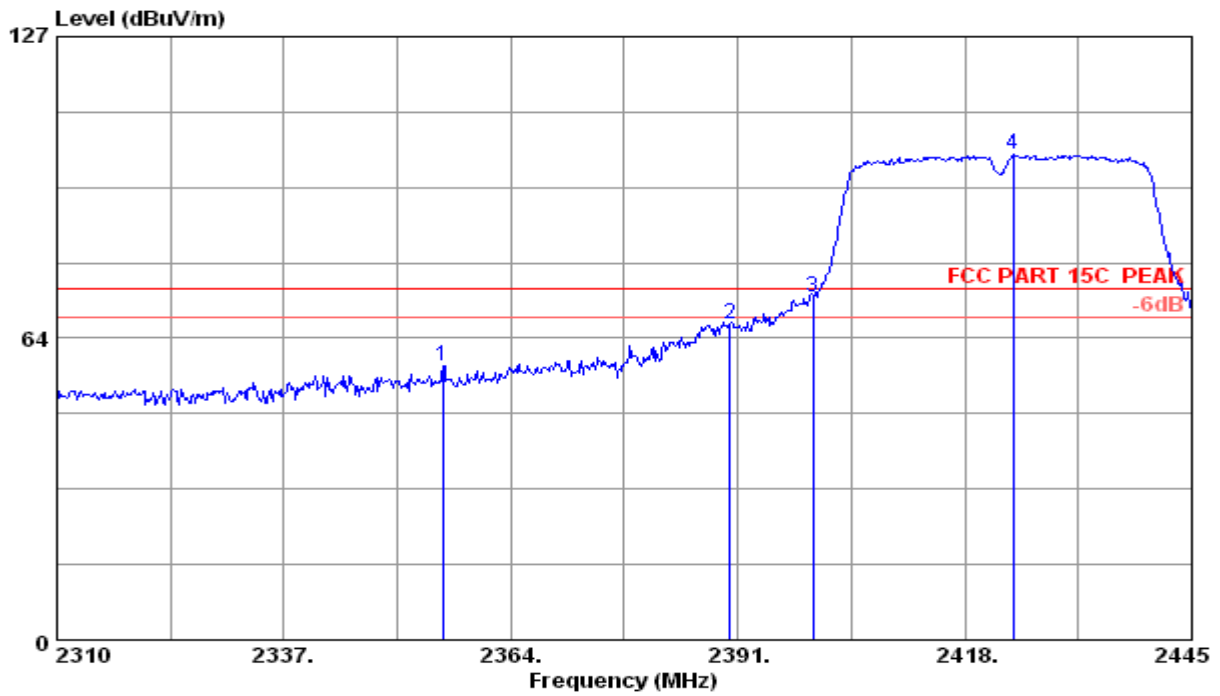
**For 802.11n(40MHz)&2422MHz**

No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2358.020	29.42	8.62	35.91	48.09	50.22	74.00	23.78	Peak	Horizontal
2	2387.700	29.44	8.67	36.09	56.40	58.42	74.00	15.58	Peak	Horizontal
3	2390.000	29.44	8.67	36.09	53.73	55.75	74.00	18.25	Peak	Horizontal
4	2400.000	29.44	8.72	36.09	59.64	61.71	74.00	12.29	Peak	Horizontal
5	2425.920	29.46	8.77	36.01	90.54	92.76	74.00	-18.76	Peak	Horizontal

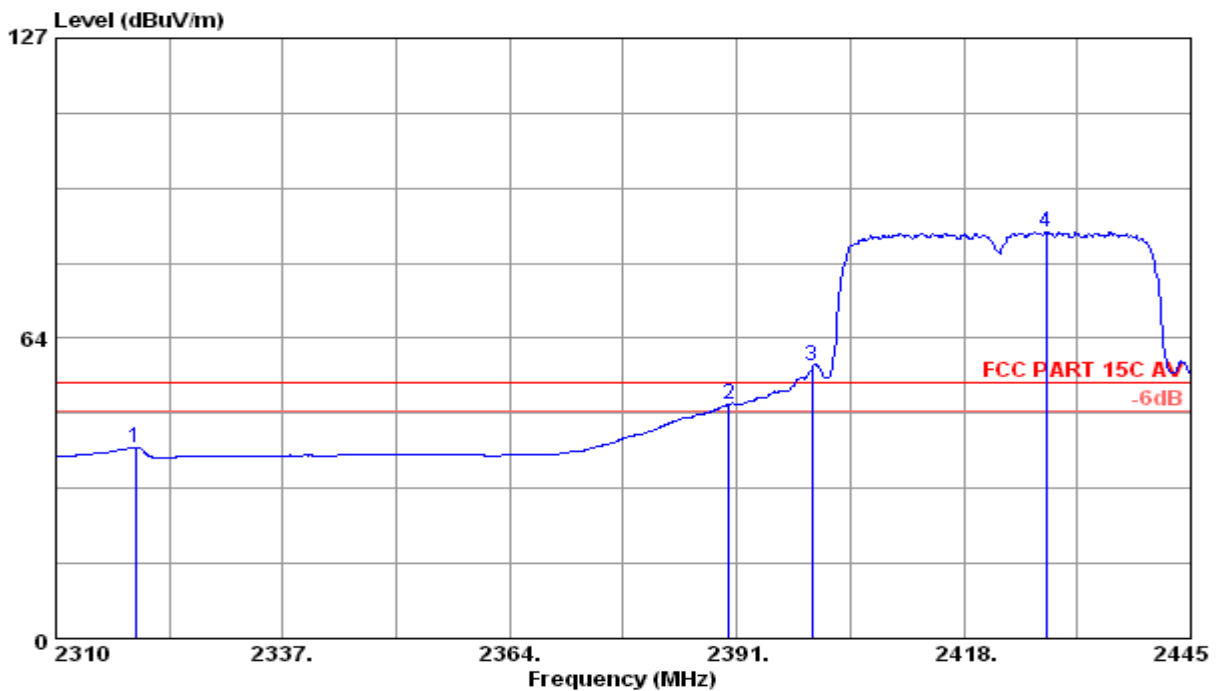


No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2390.000	29.44	8.67	36.09	38.23	40.25	54.00	13.75	Average	Horizontal
2	2400.000	29.44	8.72	36.09	48.59	50.66	54.00	3.34	Average	Horizontal
3	2426.900	29.46	8.77	36.01	75.30	77.52	54.00	-23.52	Average	Horizontal

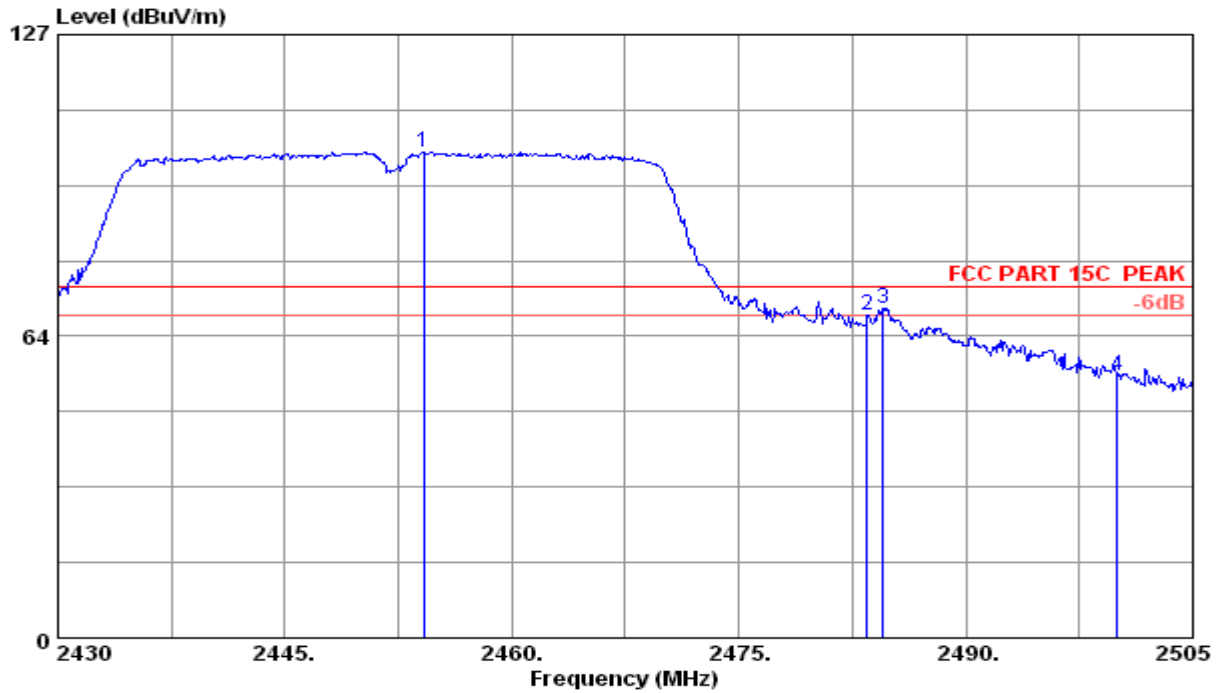




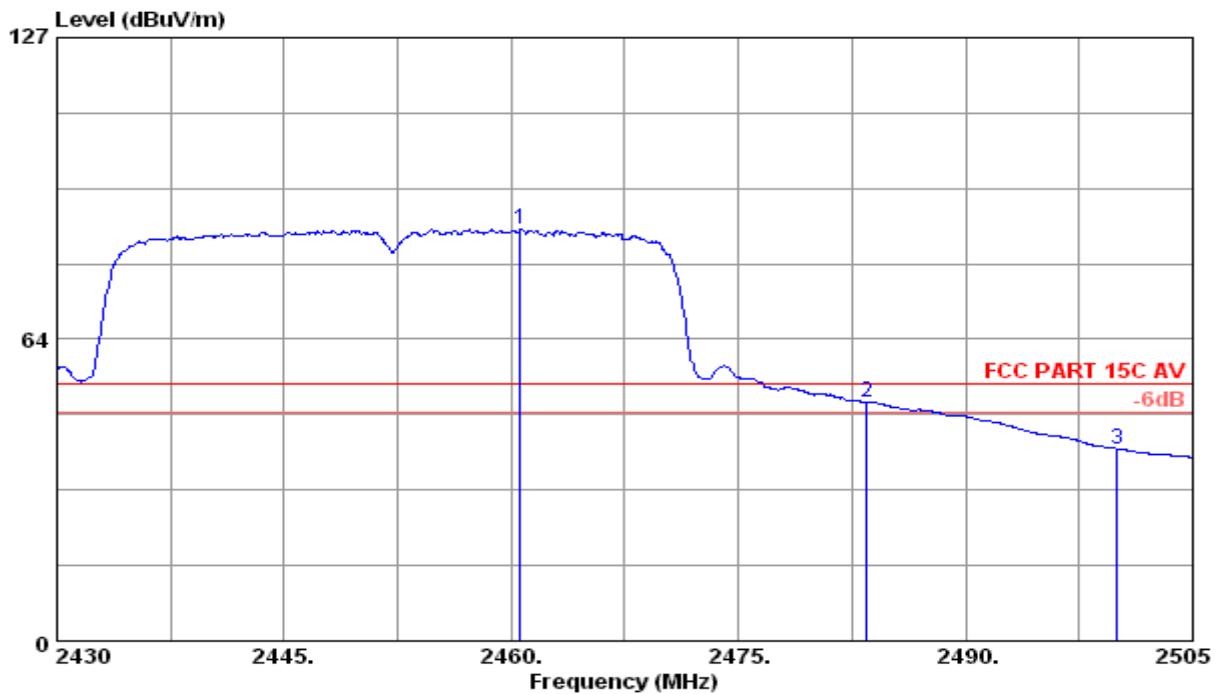
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2355.900	29.42	8.62	35.91	55.38	57.51	74.00	16.49	Peak	Vertical
2	2390.000	29.44	8.67	36.09	64.66	66.68	74.00	7.32	Peak	Vertical
3	2400.000	29.44	8.72	36.09	70.21	72.28	74.00	1.72	Peak	Vertical
4	2423.805	29.46	8.77	36.01	99.92	102.14	74.00	-28.14	Peak	Vertical



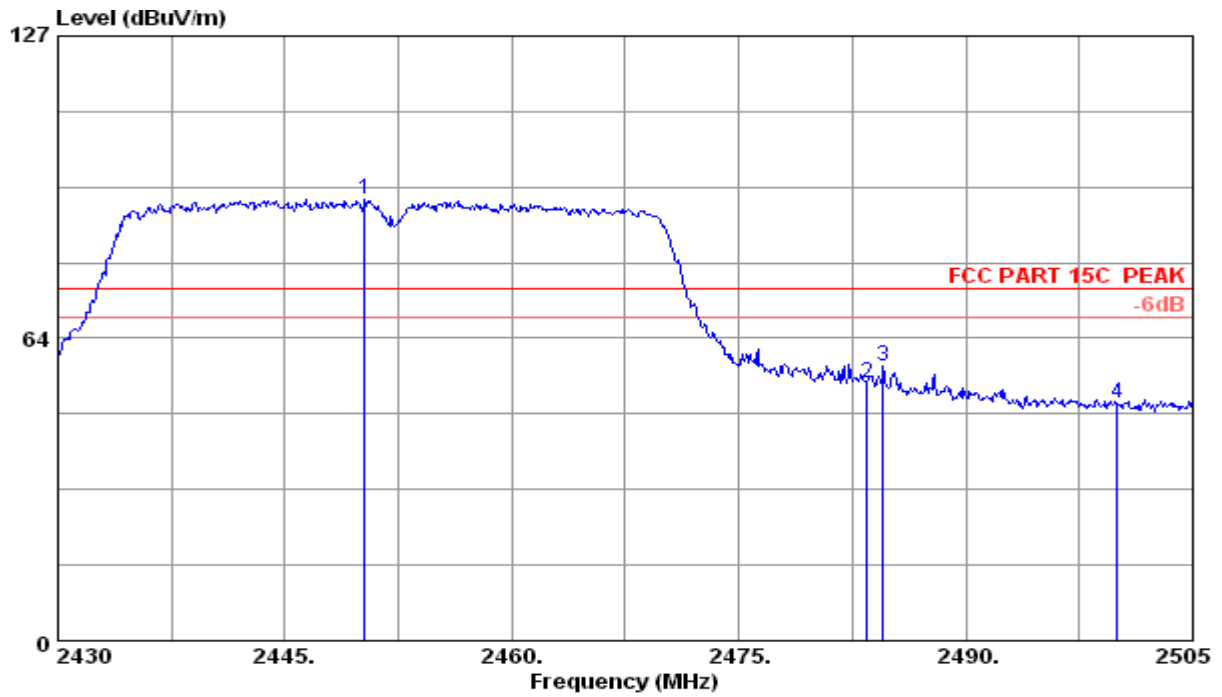
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2319.450	29.40	8.52	36.06	38.53	40.39	54.00	13.61	Average	Vertical
2	2390.000	29.44	8.67	36.09	47.52	49.54	54.00	4.46	Average	Vertical
3	2400.000	29.44	8.72	36.09	55.46	57.53	54.00	-3.53	Average	Vertical
4	2427.855	29.46	8.77	36.01	83.81	86.03	54.00	-32.03	Average	Vertical

**For 802.11n(40MHz)&2452MHz**

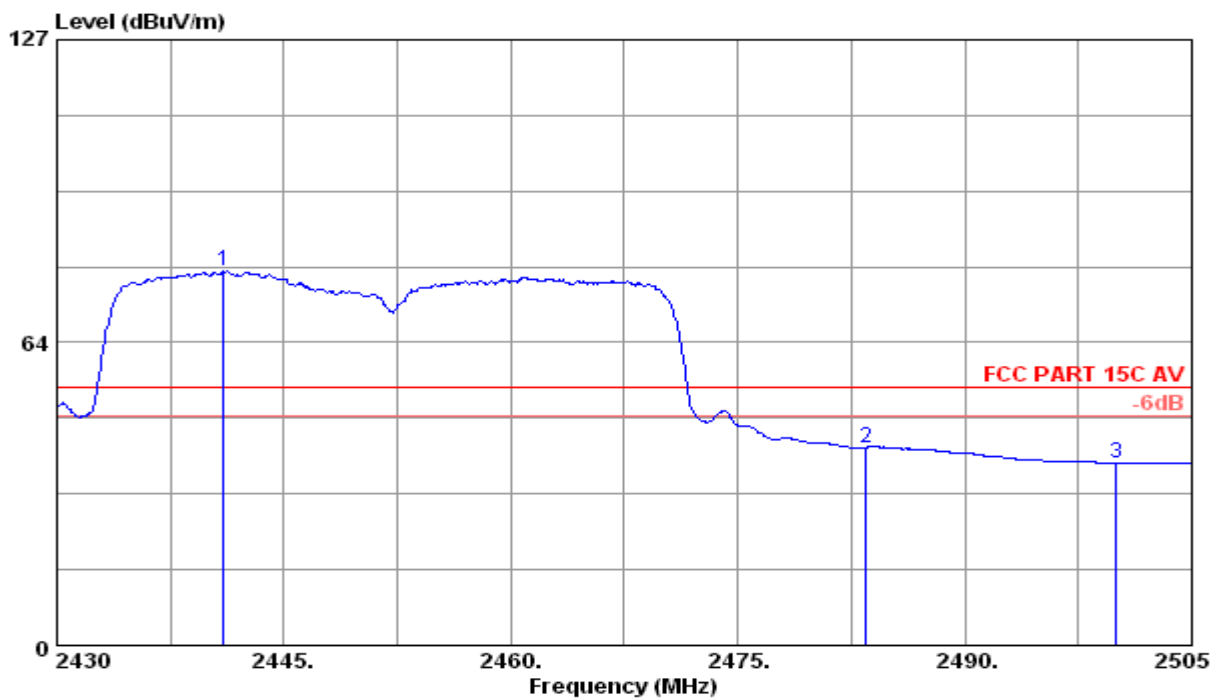
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2454.150	29.48	8.82	36.02	100.11	102.39	74.00	-28.39	Peak	Horizontal
2	2483.500	29.49	8.87	35.97	65.37	67.76	74.00	6.24	Peak	Horizontal
3	2484.525	29.49	8.87	35.97	67.00	69.39	74.00	4.61	Peak	Horizontal
3	2500.000	29.50	8.93	36.00	52.64	55.06	74.00	18.94	Peak	Horizontal



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2460.600	29.48	8.82	36.02	84.35	86.63	54.00	-32.63	Average	Horizontal
2	2483.500	29.49	8.87	35.97	47.70	50.09	54.00	3.91	Average	Horizontal
3	2500.000	29.50	8.93	36.00	38.06	40.48	54.00	13.52	Average	Horizontal



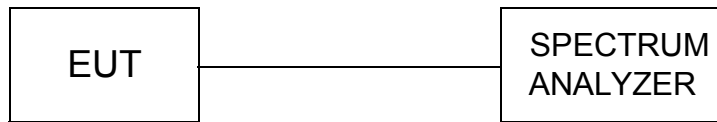
No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2450.250	29.47	8.82	36.02	90.45	92.68	74.00	-18.68	Peak	Vertical
2	2483.500	29.49	8.87	35.97	51.80	54.19	74.00	19.81	Peak	Vertical
3	2484.525	29.49	8.87	35.97	55.24	57.63	74.00	16.37	Peak	Vertical
4	2500.000	29.50	8.92	36.00	47.45	49.87	74.00	24.13	Peak	Vertical



No.	Frequency (MHz)	Ant Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	Polarization
1	2441.025	29.47	8.77	36.06	76.25	78.43	54.00	-24.43	Average	Vertical
2	2483.500	29.49	8.87	35.97	39.13	41.52	54.00	12.48	Average	Vertical
3	2500.000	29.50	8.92	36.00	35.83	38.25	54.00	15.75	Average	Vertical

## 4.7. Spurious RF Conducted Emission

### TEST CONFIGURATION



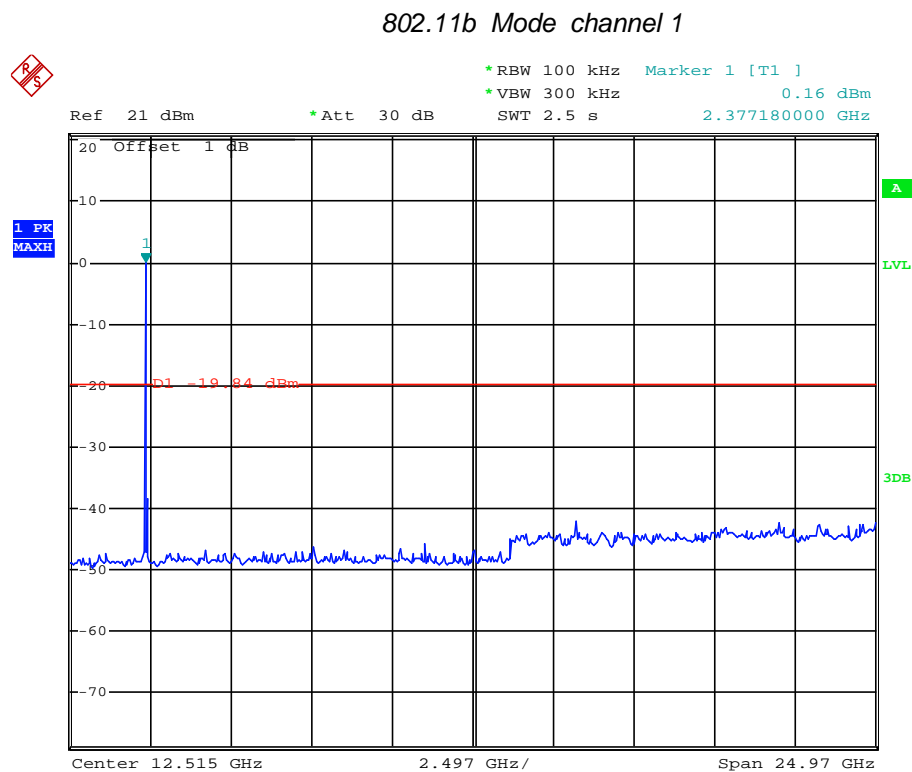
### TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBM= 300KHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

### LIMIT

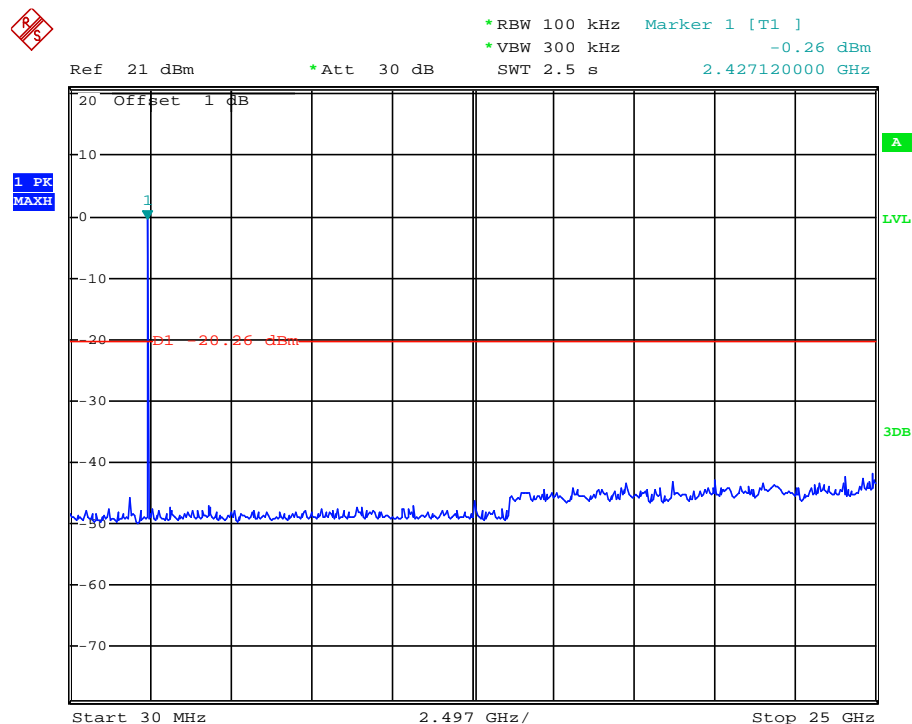
1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

### TEST RESULTS



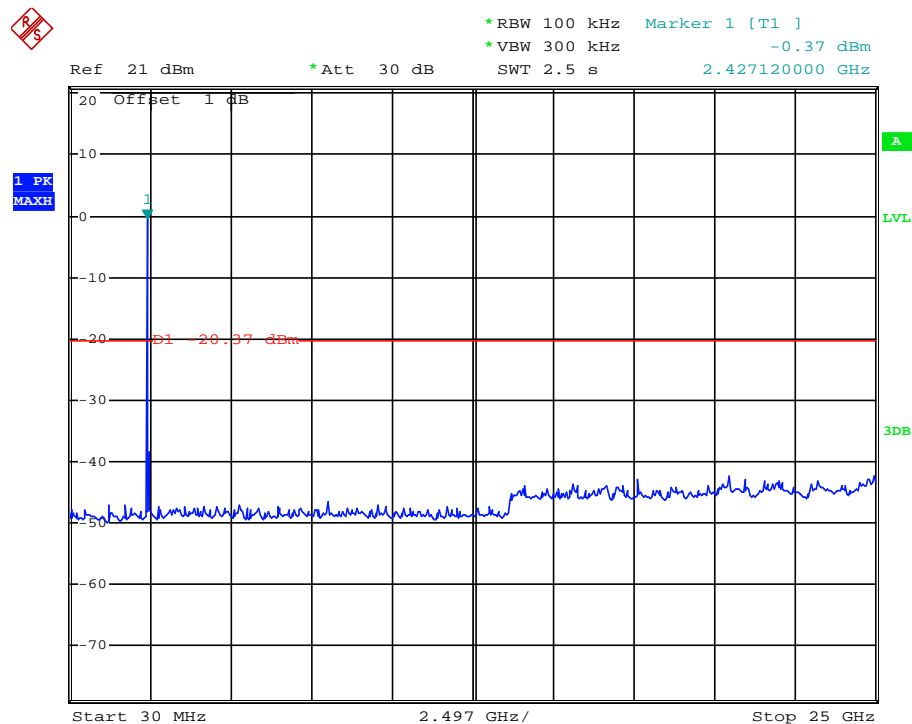
Date: 10.JAN.2013 14:00:12

## 802.11b Mode channel 6



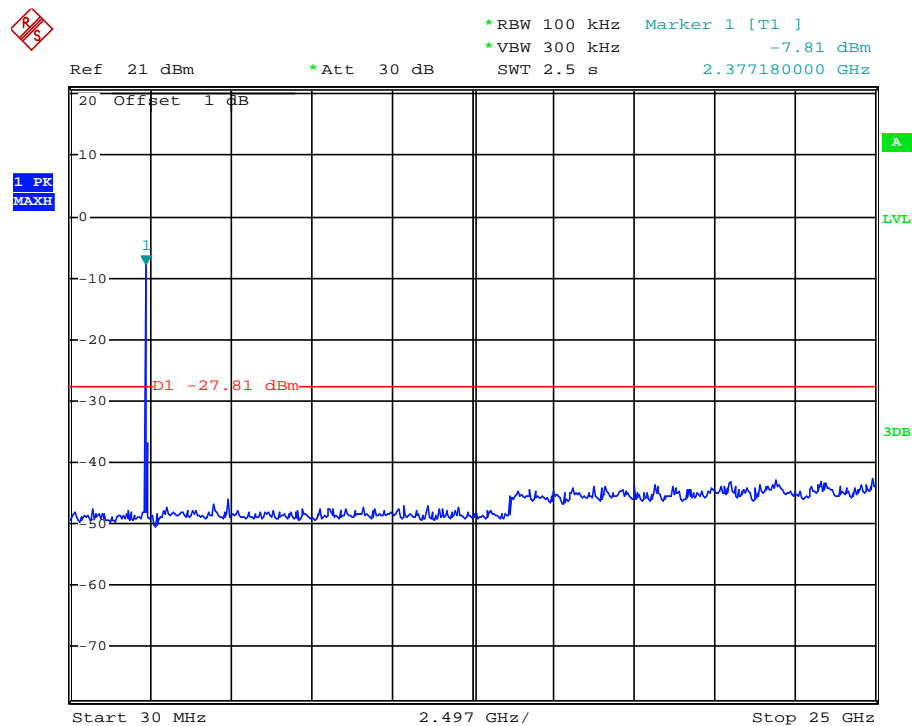
Date: 10.JAN.2013 14:23:34

## 802.11b Mode channel 11



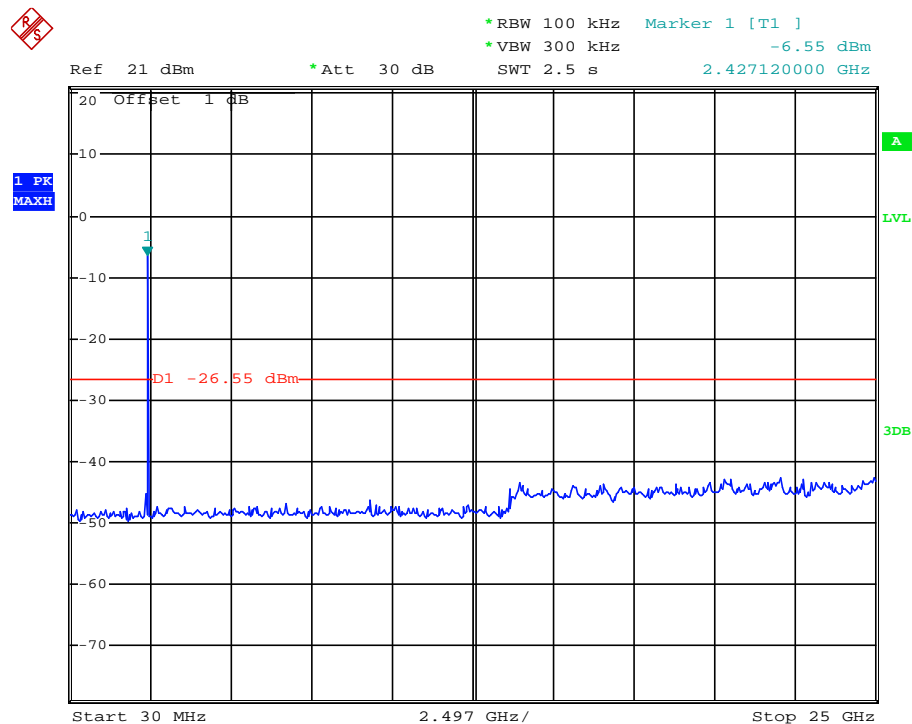
Date: 10.JAN.2013 14:28:56

## 802.11g Mode channel 1



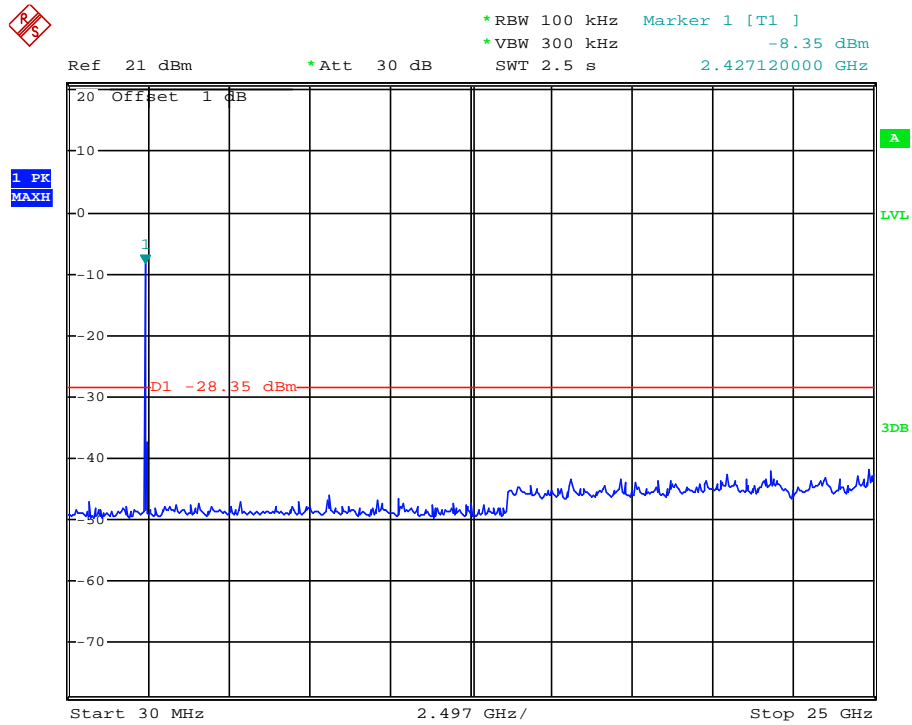
Date: 10.JAN.2013 14:38:22

## 802.11g Mode channel 6



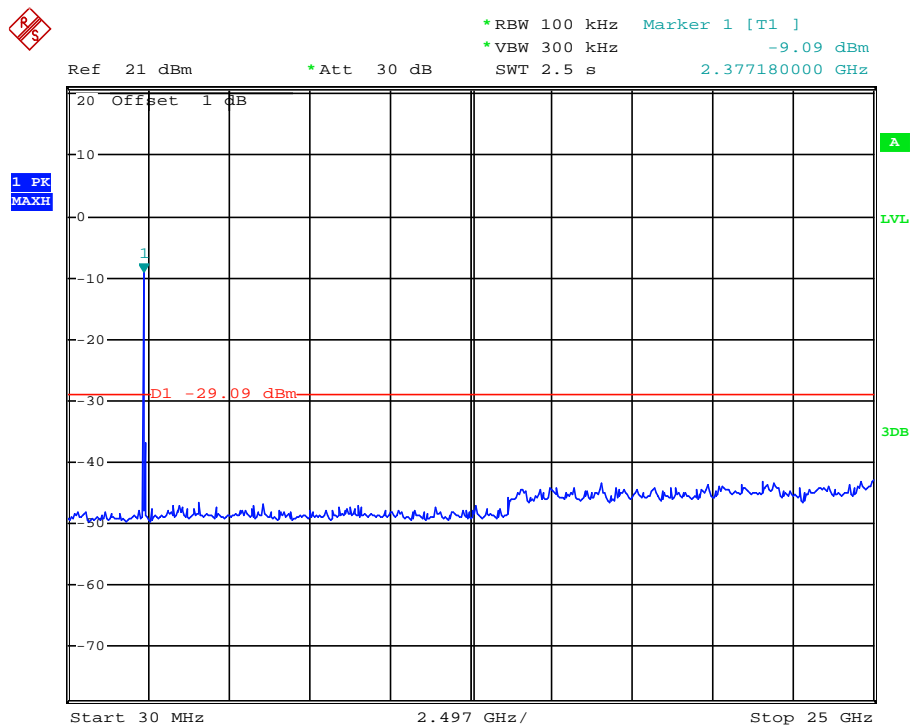
Date: 10.JAN.2013 14:47:39

## 802.11g Mode channel 11



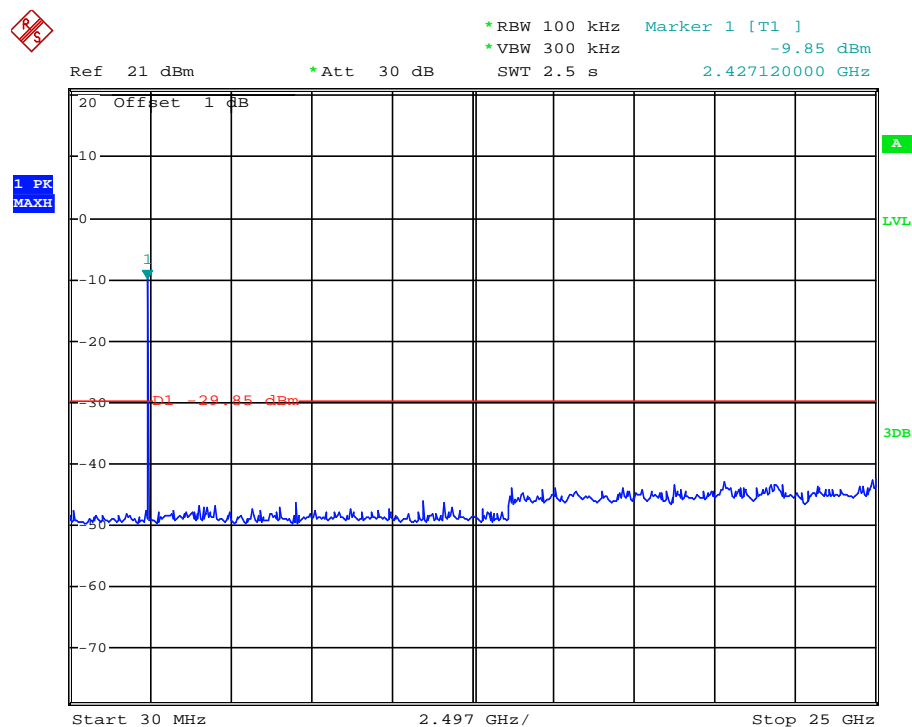
Date: 10.JAN.2013 15:04:02

## 802.11n20 Mode channel 1



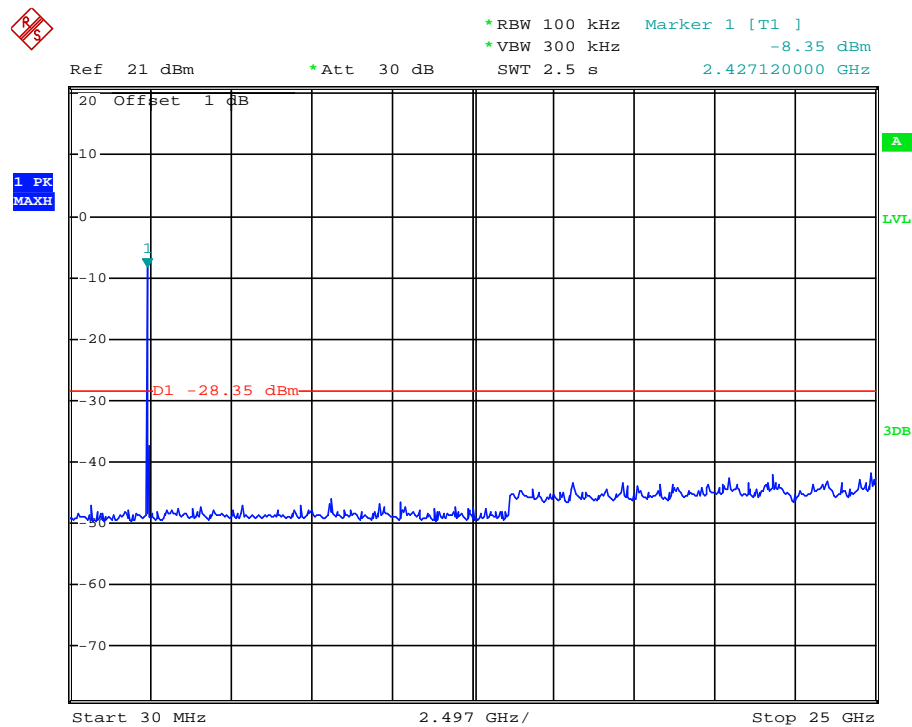
Date: 10.JAN.2013 15:11:27

## 802.11n20 Mode channel 6



Date: 10.JAN.2013 15:18:27

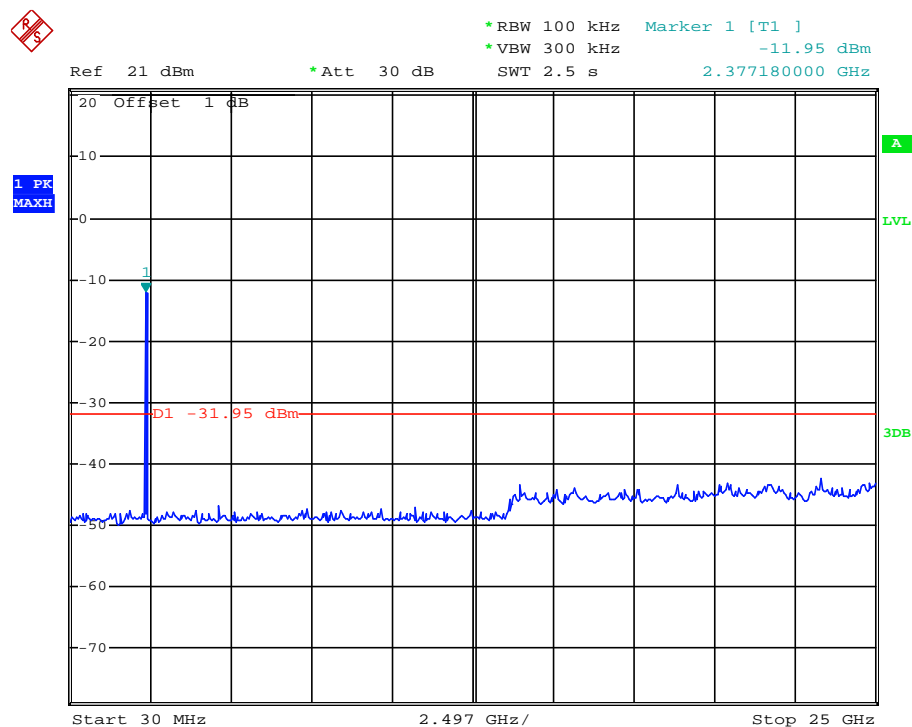
## 802.11n20 Mode channel 11



Date: 10.JAN.2013 15:04:02

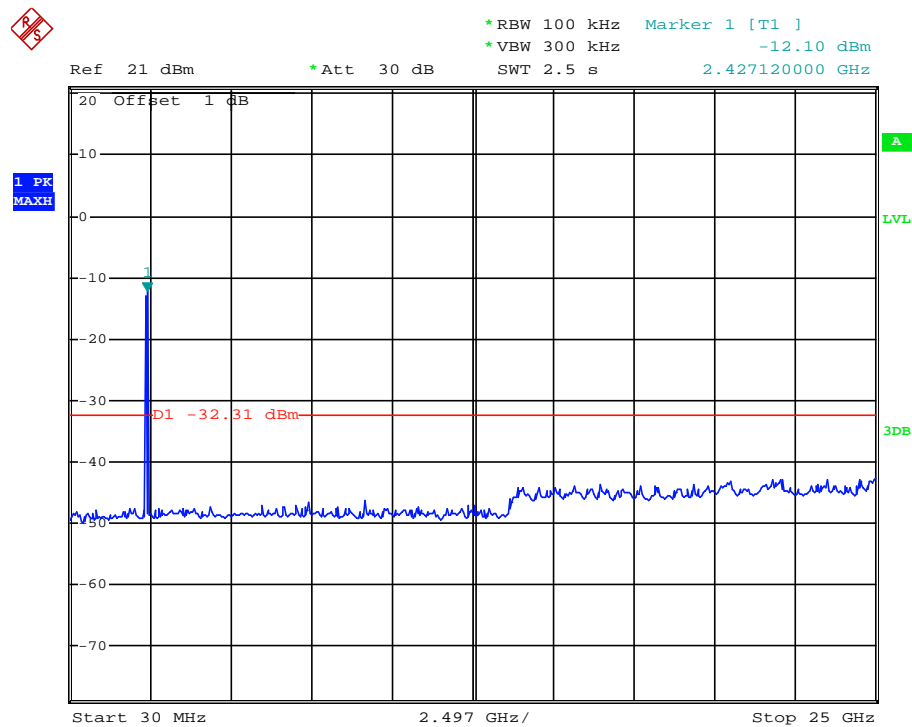


## 802.11n40 Mode channel 3



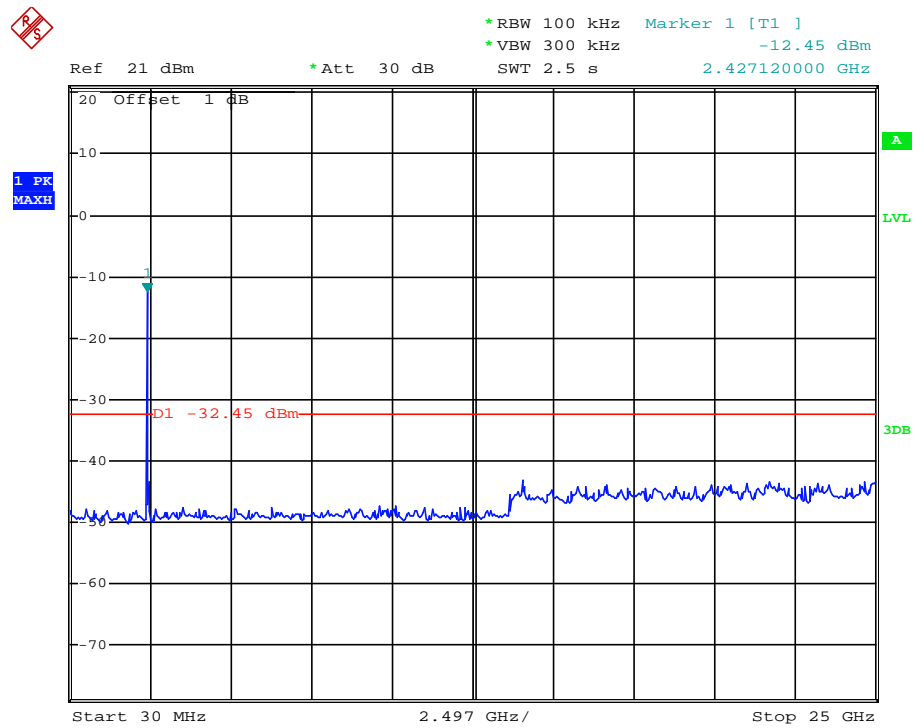
Date: 10.JAN.2013 15:31:28

## 802.11n40 Mode channel 6



Date: 10.JAN.2013 15:38:45

## 802.11n40 Mode channel 9



Date: 10.JAN.2013 15:42:48

## 4.8. Antenna Requirement

### Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

**Refer to statement below for compliance.**

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

### Antenna Connected Construction

The antenna used in this product is a PCB Antenna .The maximum Gain of the antenna only 2.0dBi. Detail please see the photos as following:



## **5. Test Setup Photos of the EUT**

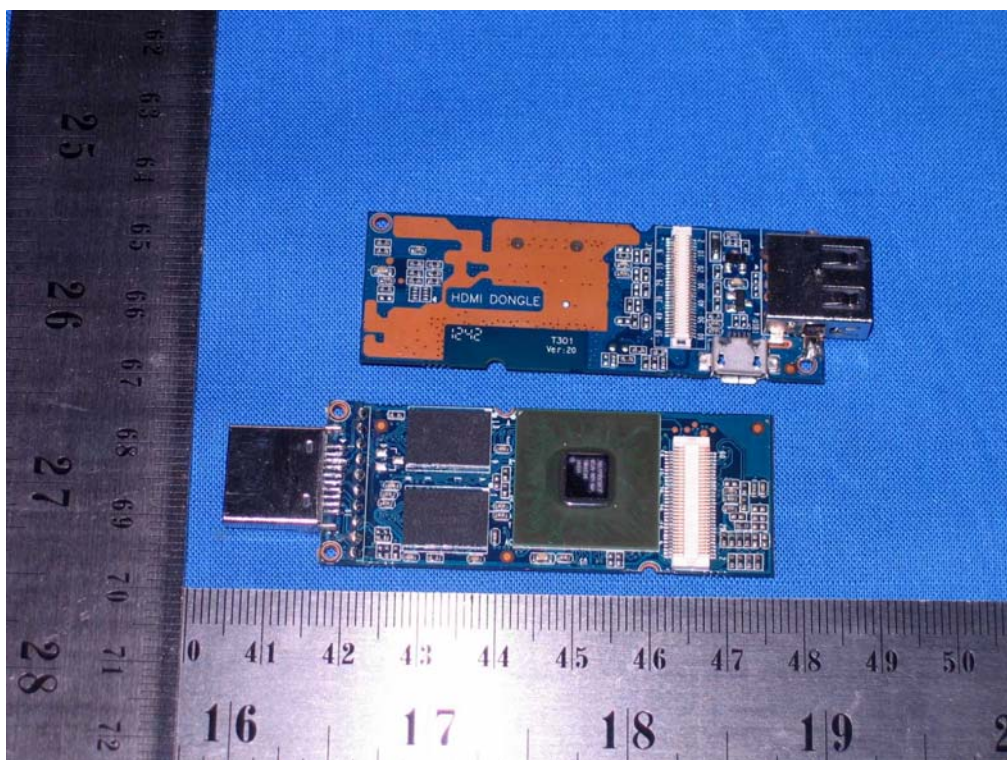


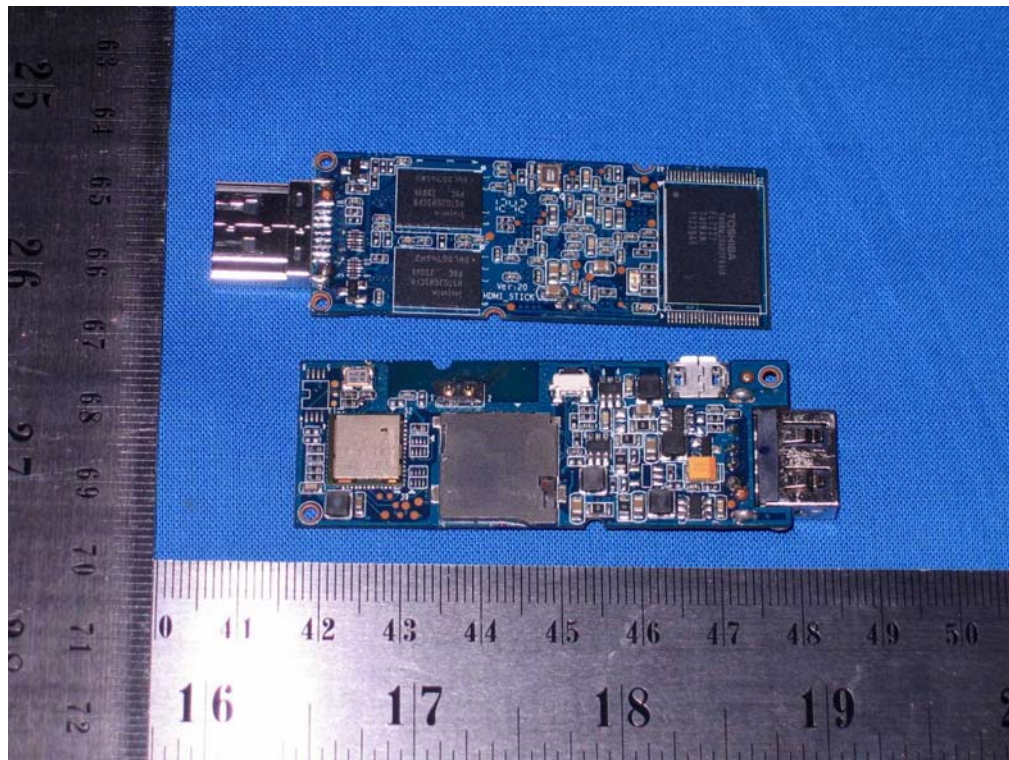
## 6. External and Internal Photos of the EUT

### External Photos





Internal Photos



.....End of Report.....