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FCC REPORT

Application No.:	SZEM1209005505RF
Applicant:	VOXLAND
Manufacturer:	Kidsrock Ltd
Factory:	Kidsrock Ltd
Product Name:	WIFI REMOTE CONTROLLED BUGGY
Model No.(EUT):	BWZ200
FCC ID:	ZKI-BWZ200
Standards:	47 CFR Part 15, Subpart C (2011)
Date of Receipt:	2012-10-08
Date of Test:	2012-10-19 to 2012-10-30
Date of Issue:	2012-11-12
Test Result:	**PASS ***

. * In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 2009	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	KDB558074 D01	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	KDB558074 D01	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	KDB558074 D01	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	KDB558074 D01	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	KDB558074 D01	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2009	PASS
Band Edge (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2009	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	VOXLAND
Address of Applicant:	CS90234 - 13311 Marseille Cedex 14
Manufacturer:	Kidsrock Ltd
Address of Manufacturer:	unit 513, NO. 543Bldg, Bagua 2nd rd , Bagualing Industrial Zone, Futian Dist, Shenzhen
Factory:	Kidsrock Ltd
Address of Factory:	unit 513, NO. 543Bldg, Bagua 2nd rd , Bagualing Industrial Zone, Futian Dist, Shenzhen

4.2 General Description of EUT

Product Name:	WIFI REMOTE CONTROLLED BUGGY
Model No.:	BWZ200
Operation Frequency:	IEEE 802.11b/g: 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)
Sample Type:	Mobile production
Antenna Type:	Integral
Antenna Gain:	2.0dBi
Power Supply:	7.2V 500mAh Ni-MH rechargeable batteries
Test Voltage:	DC7.2V

Operation Frequency each of channel(802.11b/g)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11b/g:

Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

4.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in transmitting mode.

4.4 Description of Support Units

The EUT has been tested independent unit.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.6 Test Facility

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

- **CNAS (No. CNAS L2929)**
  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- **VCCI**
  The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.
- **FCC – Registration No.: 556682**
  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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 No.: 556682.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

4.10 Test Instruments List

RE in Chamber					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2013-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2013-05-17
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2013-10-24
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2013-10-24
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2013-10-24
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2013-05-17
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2013-10-24
9	Coaxial cable	SGS	N/A	SEL0027	2013-05-59
10	Coaxial cable	SGS	N/A	SEL0189	2013-05-29
11	Coaxial cable	SGS	N/A	SEL0121	2013-05-29
12	Coaxial cable	SGS	N/A	SEL0178	2013-05-29
13	Band filter	Amindeon	82346	SEL0094	2013-05-17
14	Barometer	Chang Chun	DYM3	SEL0088	2013-05-24
15	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2013-10-24
16	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2013-10-24
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2013-05-17
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2013-10-24
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2013-06-04

RF connected test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd))**
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2013-10-24
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2013-10-24
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2013-10-24
4	Coaxial cable	SGS	N/A	SEL0178	2013-05-29
5	Coaxial cable	SGS	N/A	SEL0179	2013-05-29
6	Barometer	ChangChun	DYM3	SEL0088	2013-05-24
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2013-05-17
8	Band filter	amideon	82346	SEL0094	2013-05-17
9	POWER METER	R & S	NRVS	SEL0144	2013-10-24
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2013-05-17
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2013-10-24

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)

15.203 requirement:

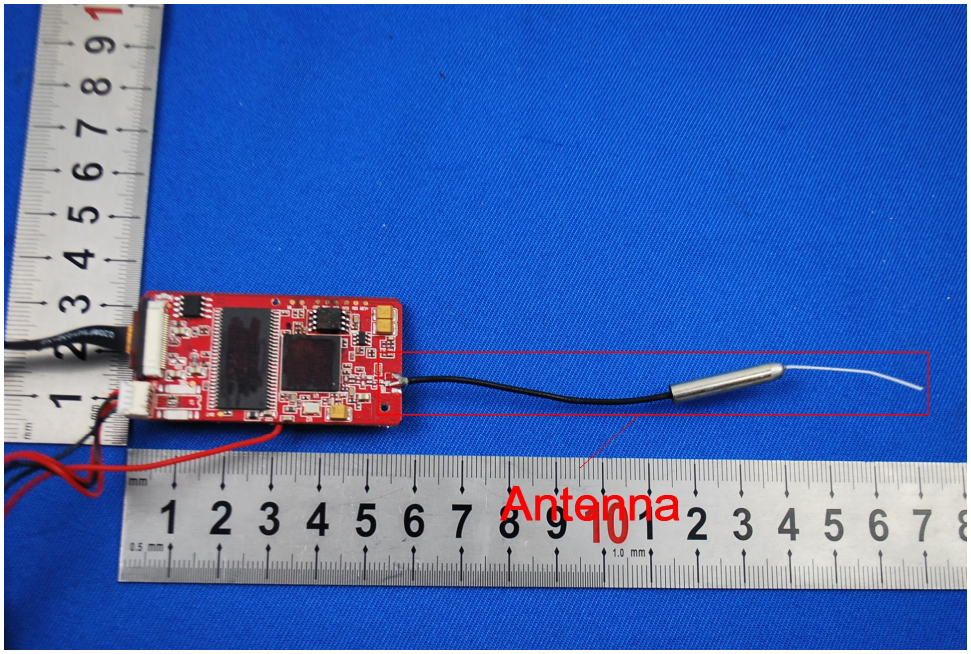
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

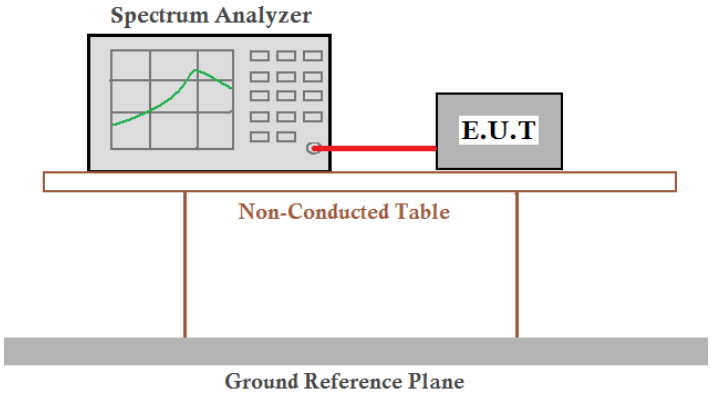
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output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

EUT Antenna:	

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.0dBi.



5.2 Conducted Peak Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	KDB558074 D01
Test Setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.10 for details
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Limit:	30dBm
Test Results:	Pass

Pre-scan under all rate at lowest channel 1								
Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power (dBm)	10.31	10.91	12.12	13.40				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power (dBm)	9.92	10.27	10.50	10.74	10.98	11.03	11.14	11.40

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.

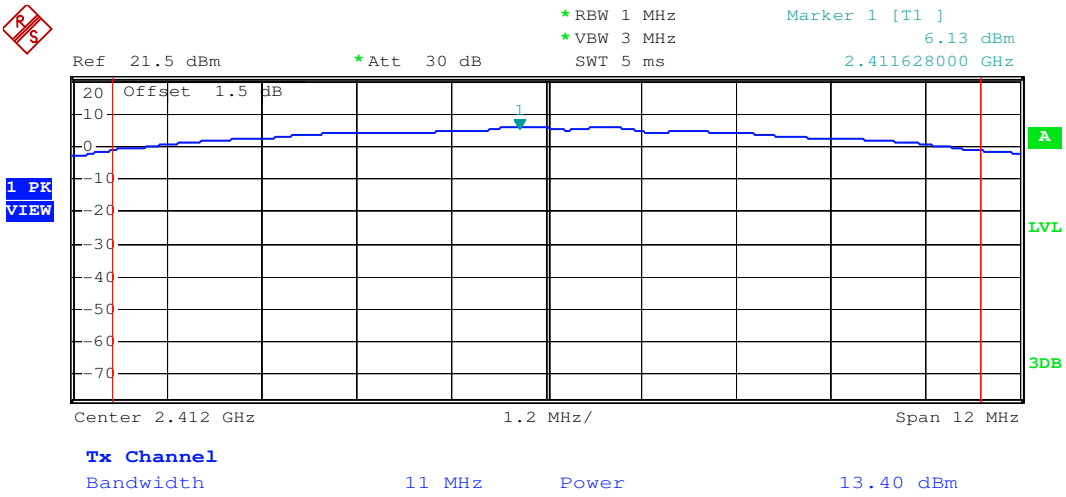
Measurement Data

802.11b mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	13.40	30.00	Pass
Middle	12.90	30.00	Pass
Highest	12.39	30.00	Pass
802.11g mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	11.40	30.00	Pass
Middle	10.92	30.00	Pass
Highest	10.55	30.00	Pass

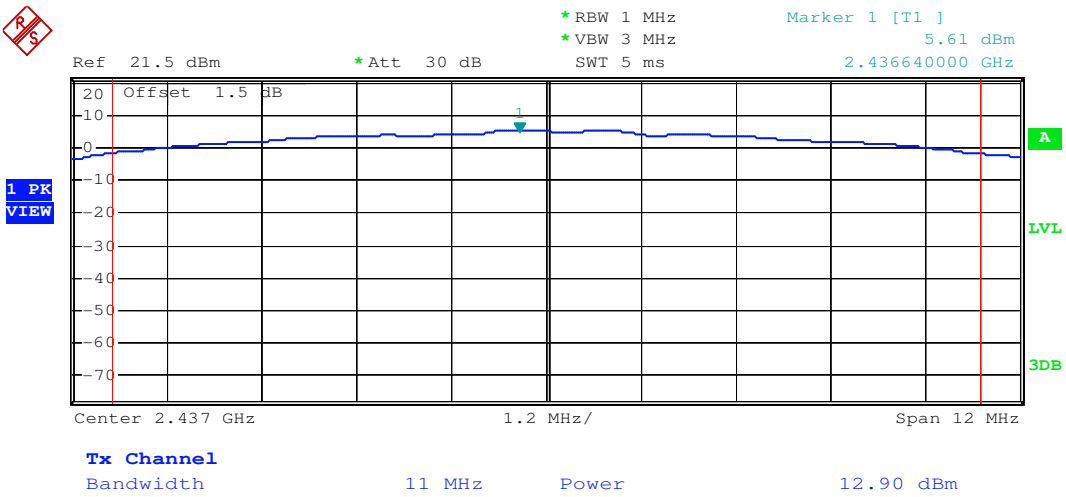
Test plot as follows:

Test plot as follows:

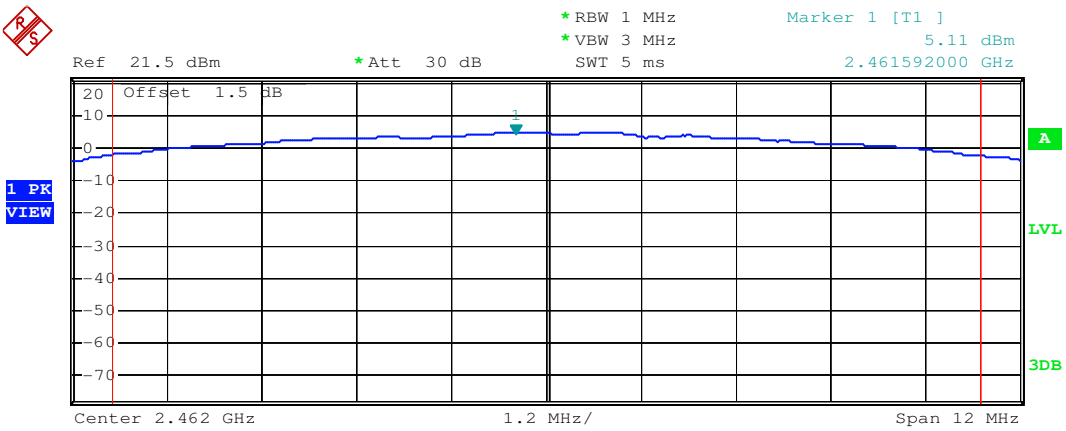
Test mode:	802.11b	Test channel:	Lowest



Test mode:	802.11b	Test channel:	Middle



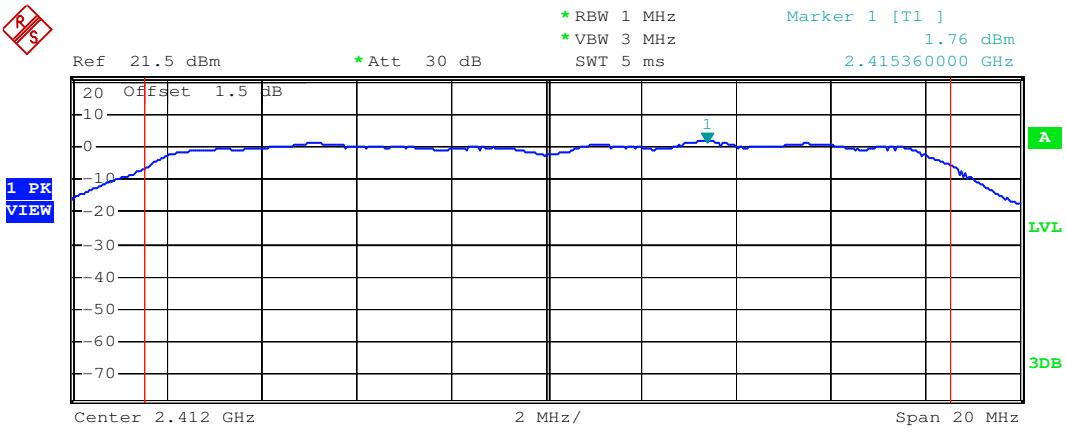
Test mode:	802.11b	Test channel:	Highest



Tx Channel

Bandwidth 11 MHz Power 12.39 dBm

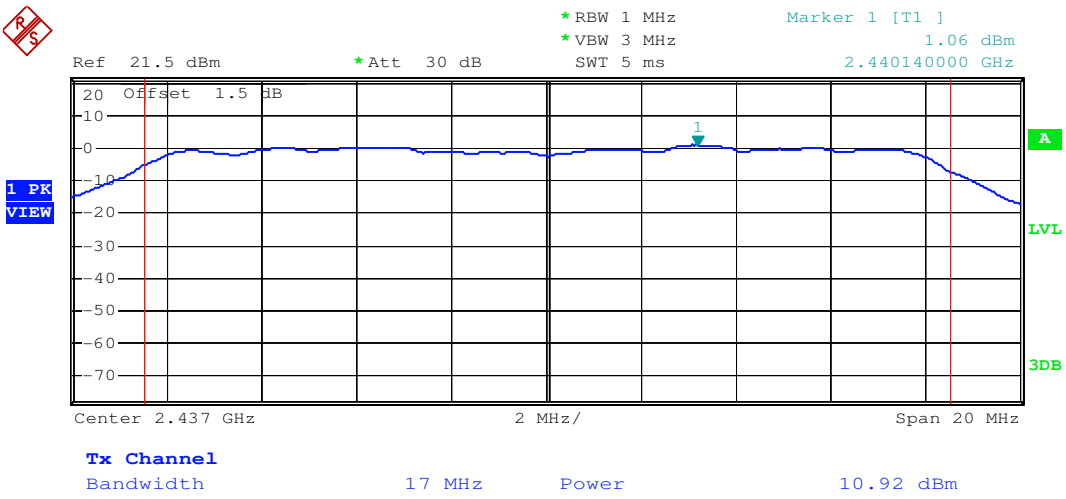
Test mode:	802.11g	Test channel:	Lowest



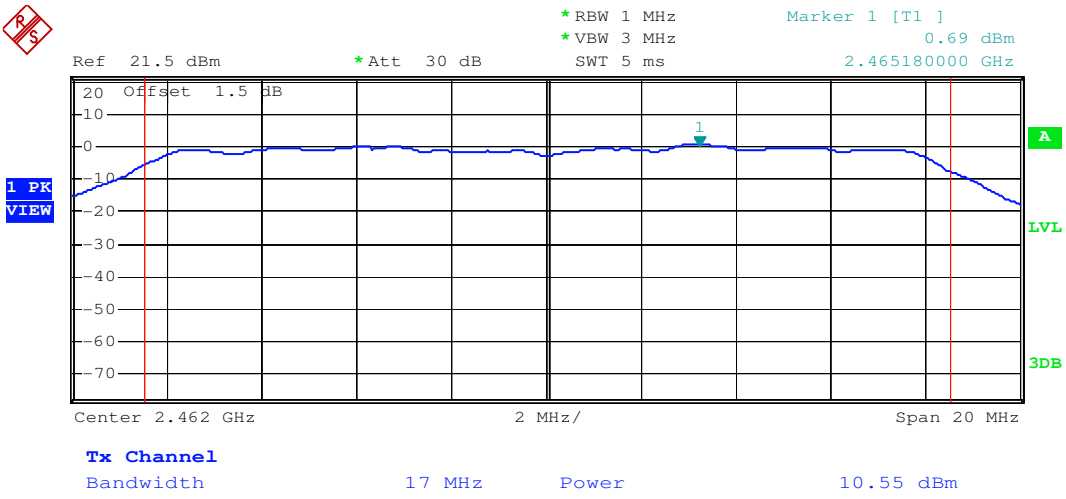
Tx Channel

Bandwidth 17 MHz Power 11.40 dBm

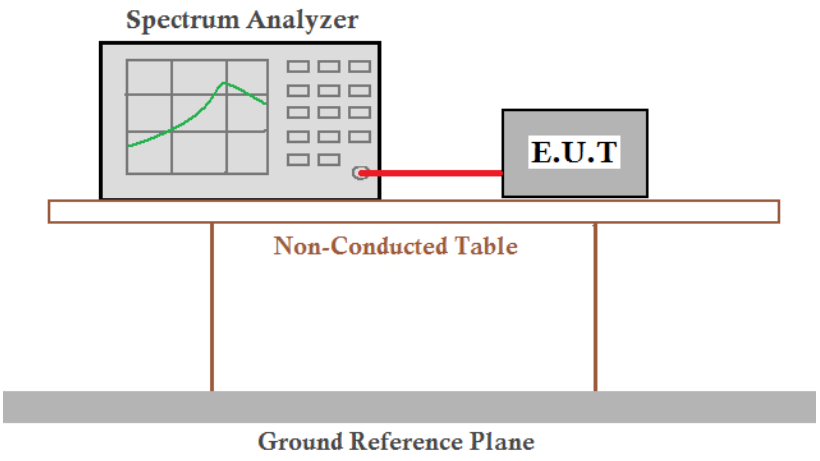
Test mode:	802.11g	Test channel:	Middle



Test mode:	802.11g	Test channel:	Highest



5.3 6dB Occupy Bandwidth

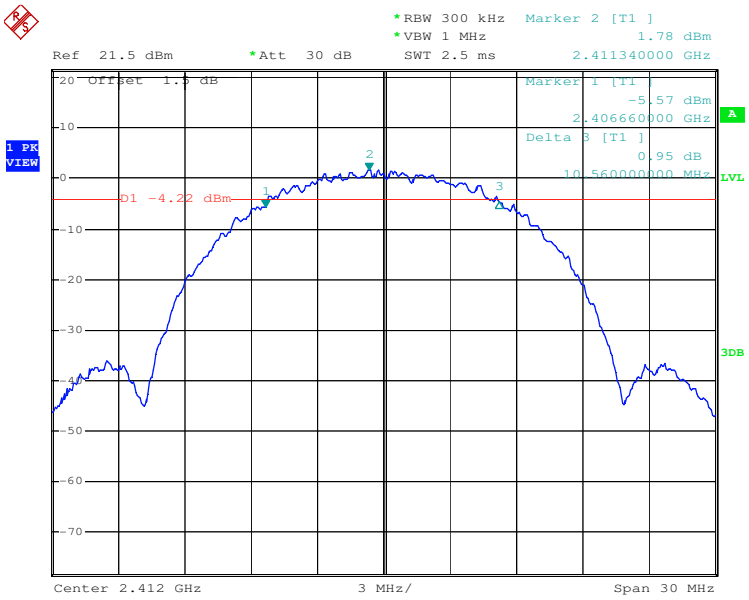
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	KDB558074 D01
Test Setup:	
Instruments Used:	Refer to section 4.10 for details
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Limit:	≥ 500 kHz
Test Results:	Pass

Measurement Data

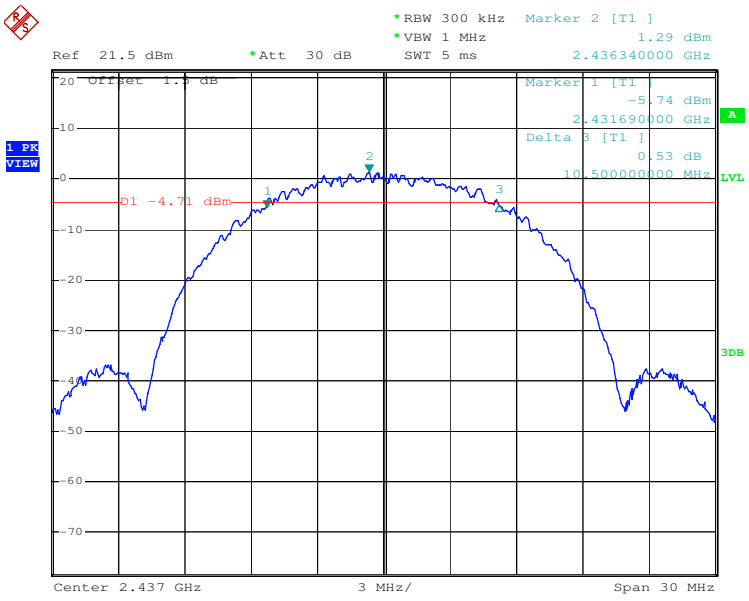
802.11b mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
Lowest	10.56	≥500	Pass
Middle	10.50	≥500	Pass
Highest	10.65	≥500	Pass
802.11g mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
Lowest	16.62	≥500	Pass
Middle	16.62	≥500	Pass
Highest	16.68	≥500	Pass

Test plot as follows:

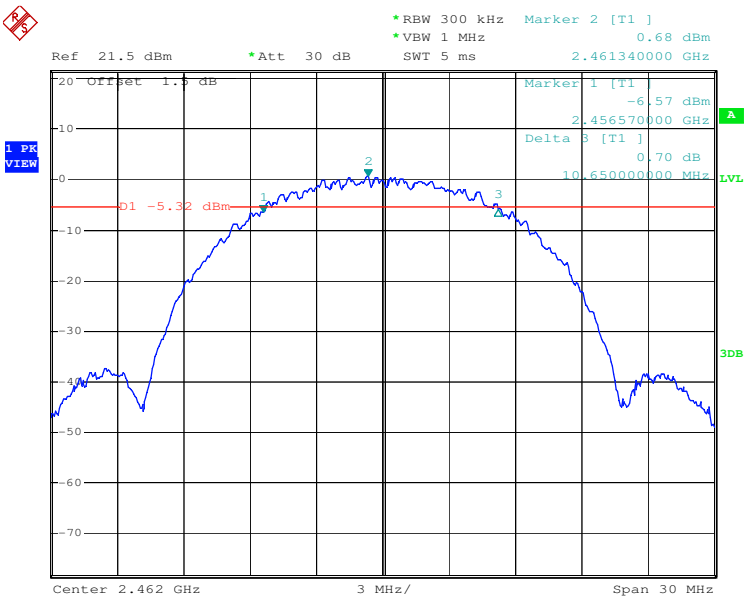
Test mode:	802.11b	Test channel:	Lowest



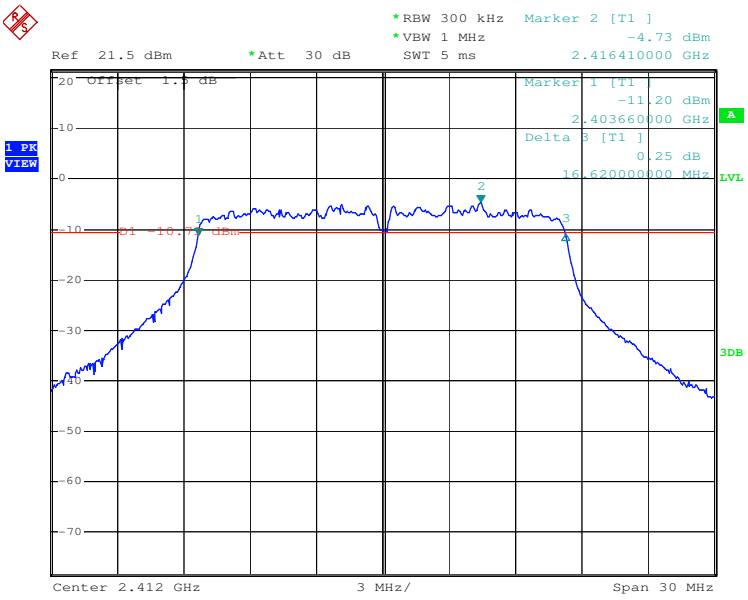
Test mode:	802.11b	Test channel:	Middle



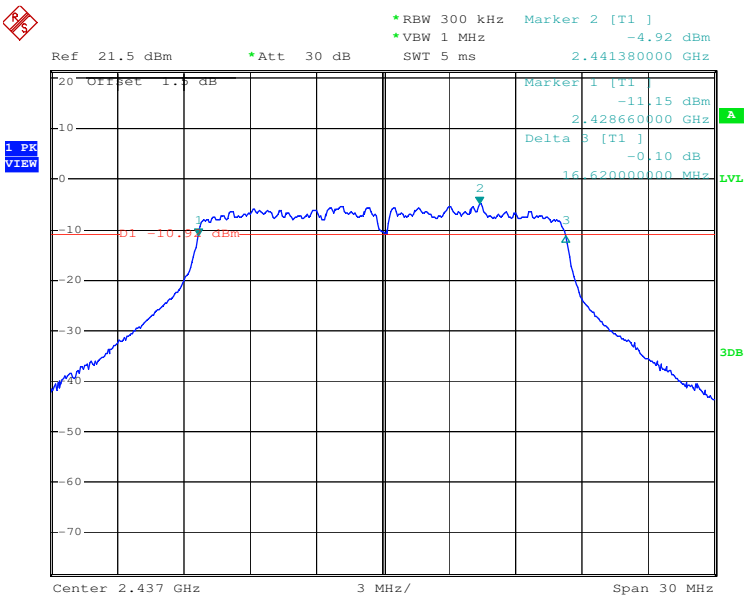
Test mode:	802.11b	Test channel:	Highest



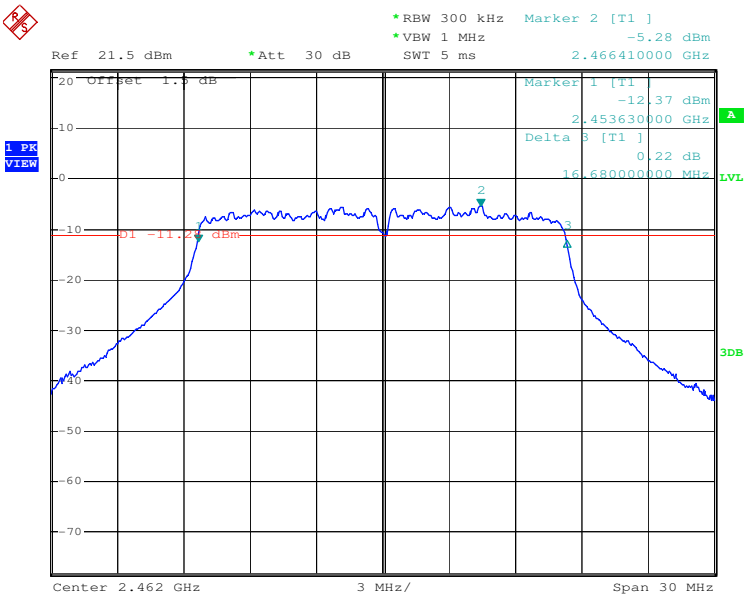
Test mode:	802.11g	Test channel:	Lowest



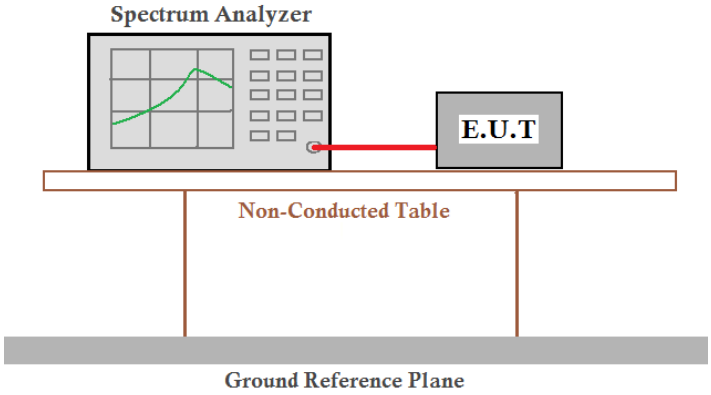
Test mode:	802.11g	Test channel:	Middle



Test mode:	802.11g	Test channel:	Highest



5.4 Power Spectral Density

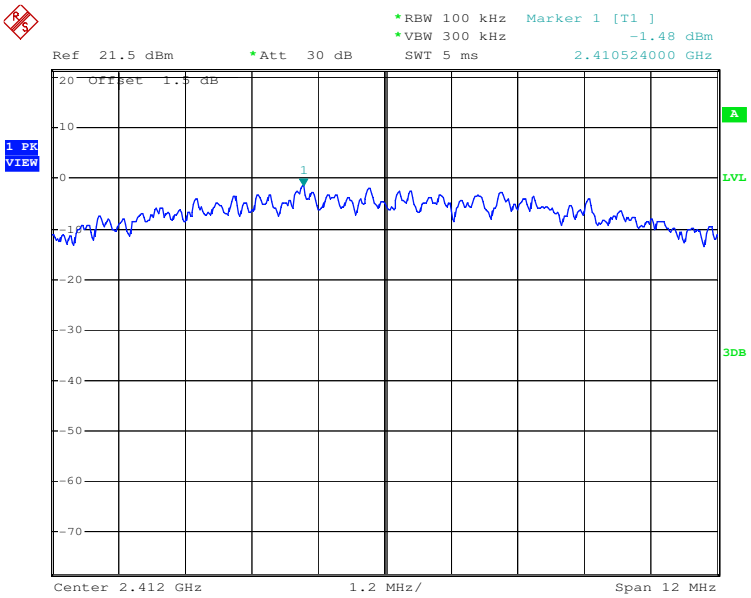
Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	KDB558074 D01
Test Setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.10 for details
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Limit:	≤8.00dBm
Test Results:	Pass
Remark:	Scale the observed power level to an equivalent level in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where: BWCF = 10log (3kHz/100 kHz = -15.2 dB).

Measurement Data

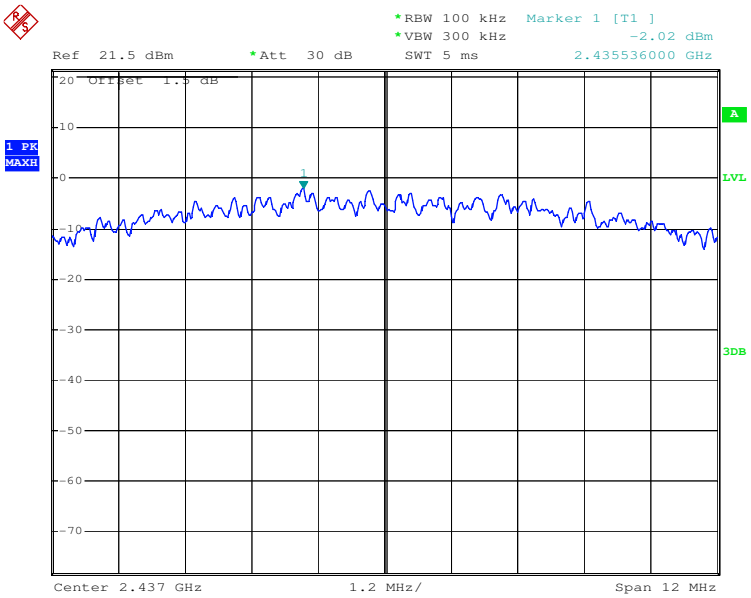
802.11b mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-16.68	≤8.00	Pass
Middle	-17.22	≤8.00	Pass
Highest	-17.73	≤8.00	Pass
802.11g mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-24.50	≤8.00	Pass
Middle	-24.62	≤8.00	Pass
Highest	-24.97	≤8.00	Pass

Test plot as follows:

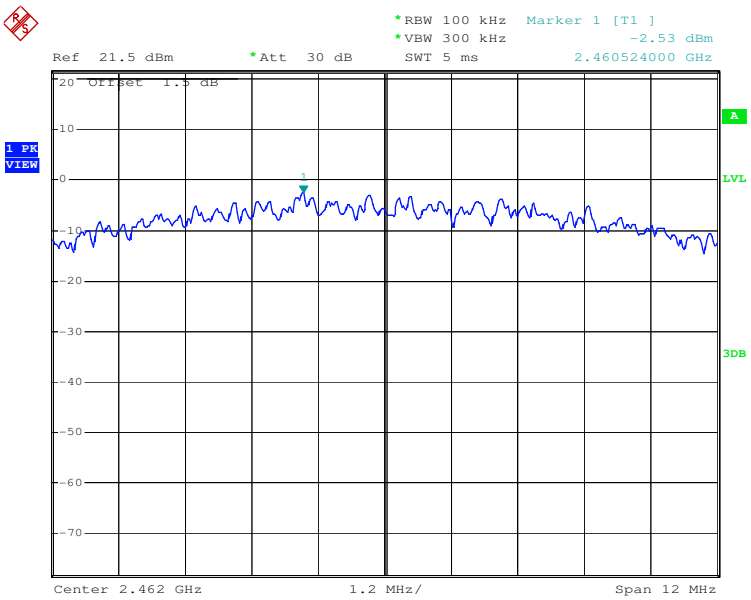
Test mode:	802.11b	Test channel:	Lowest



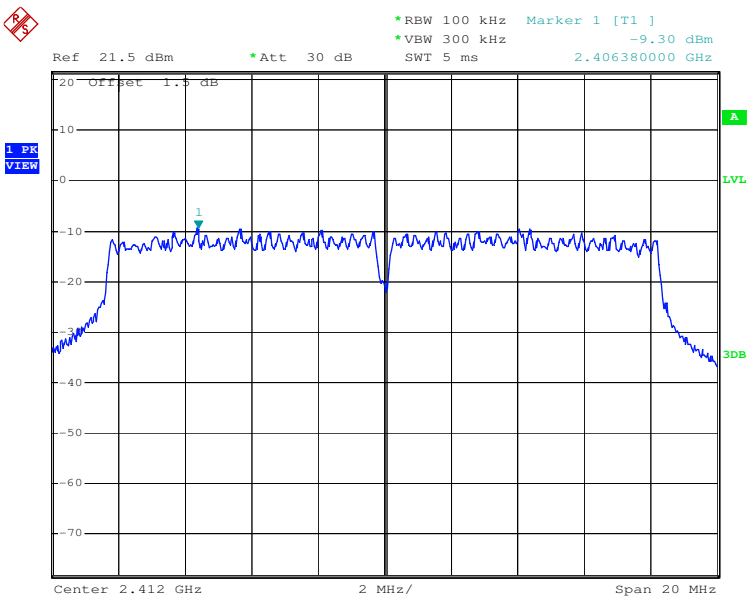
Test mode:	802.11b	Test channel:	Middle



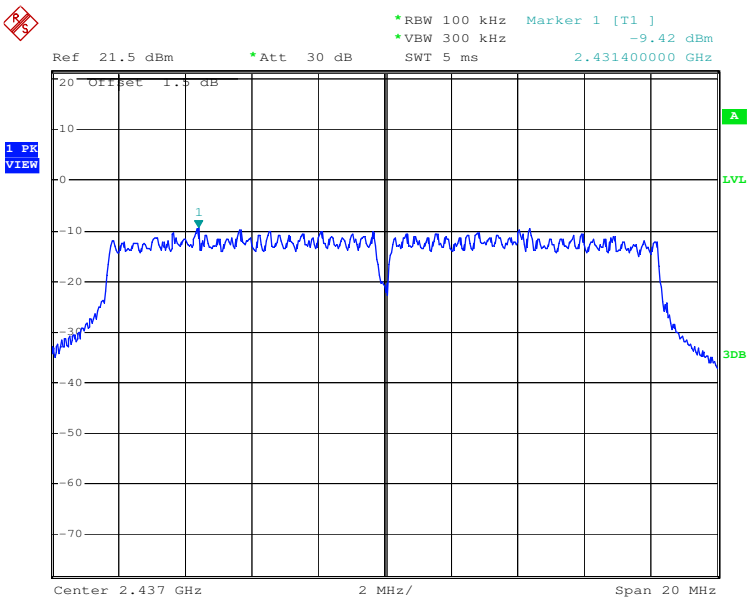
Test mode:	802.11b	Test channel:	Highest



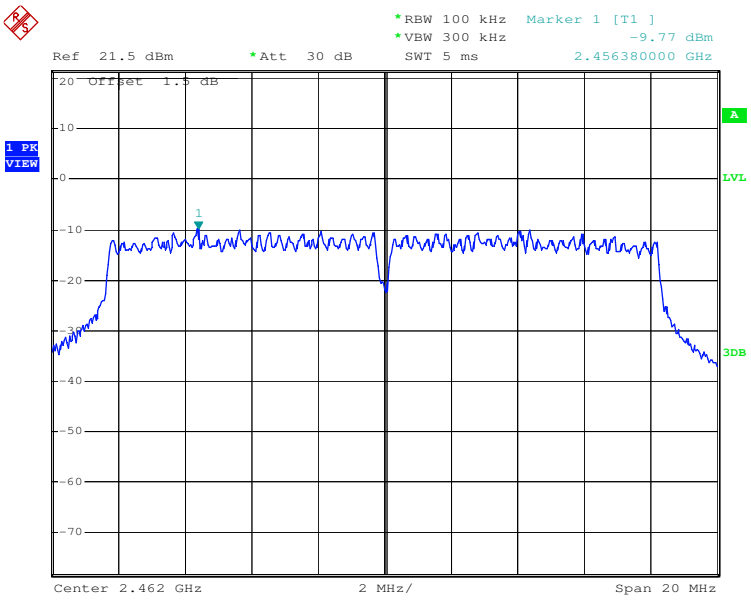
Test mode:	802.11g	Test channel:	Lowest



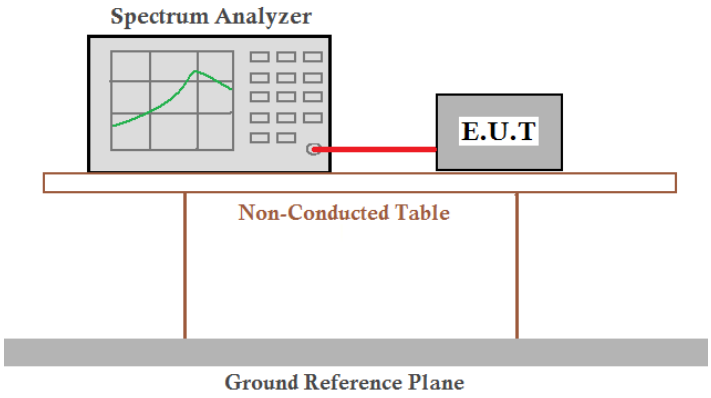
Test mode:	802.11g	Test channel:	Middle



Test mode:	802.11g	Test channel:	Highest

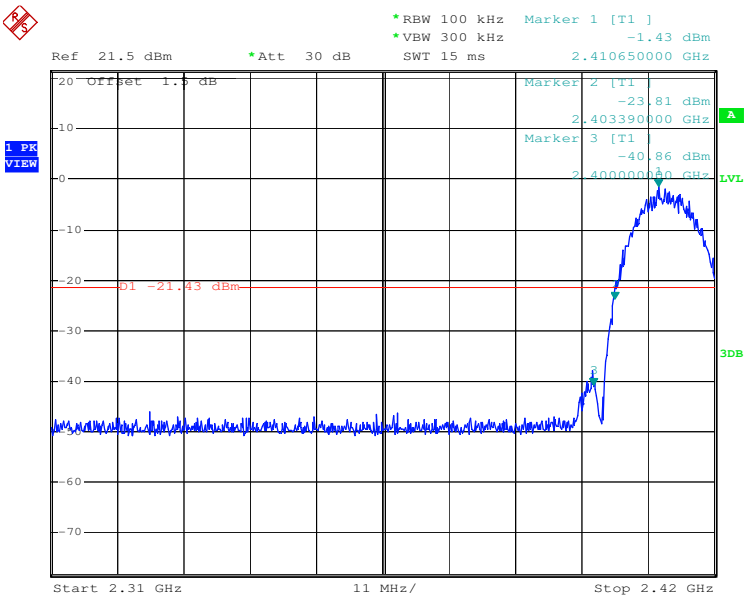


5.5 Band-edge for RF Conducted Emissions

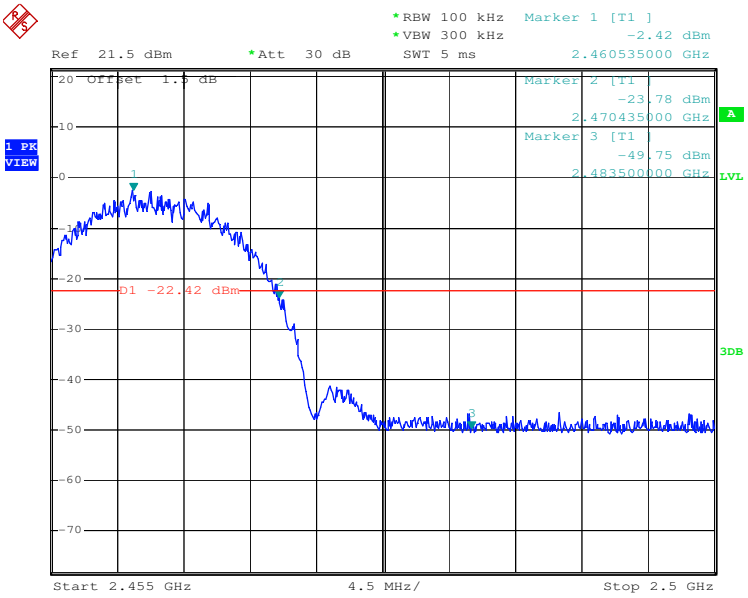
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	KDB558074 D01
Test Setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Test plot as follows:

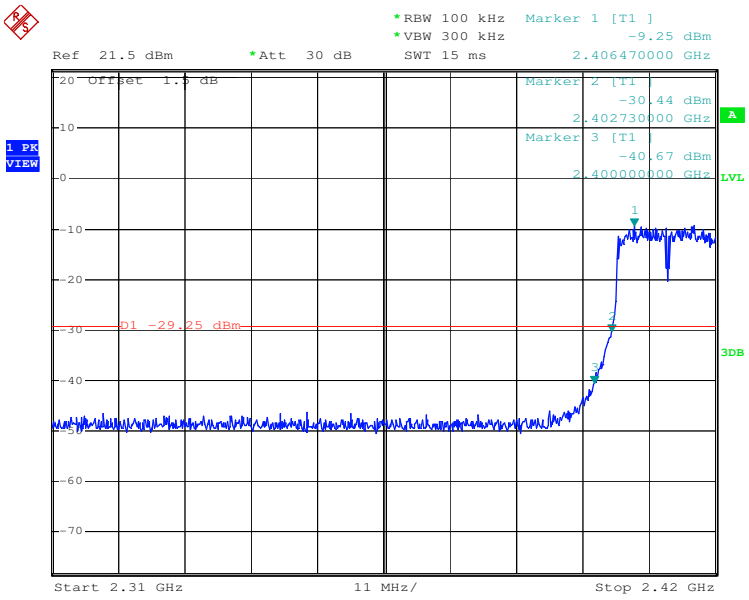
Test mode:	802.11b	Test channel:	Lowest



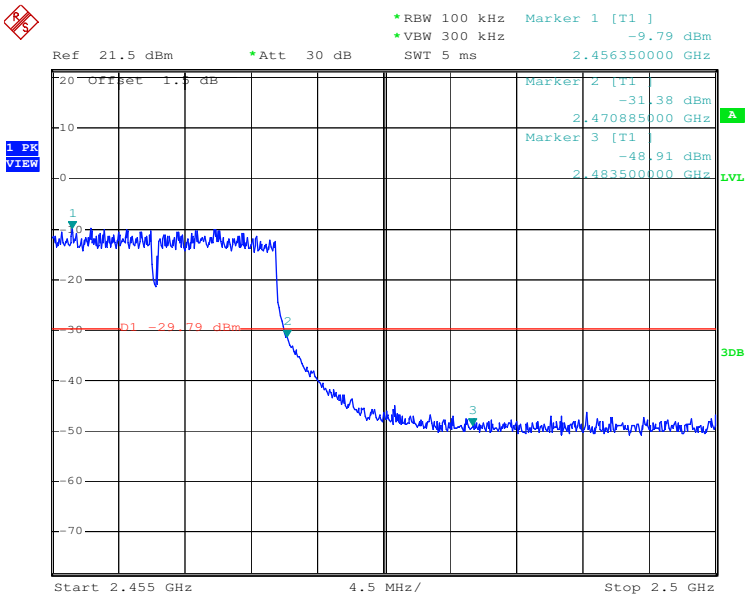
Test mode:	802.11b	Test channel:	Highest



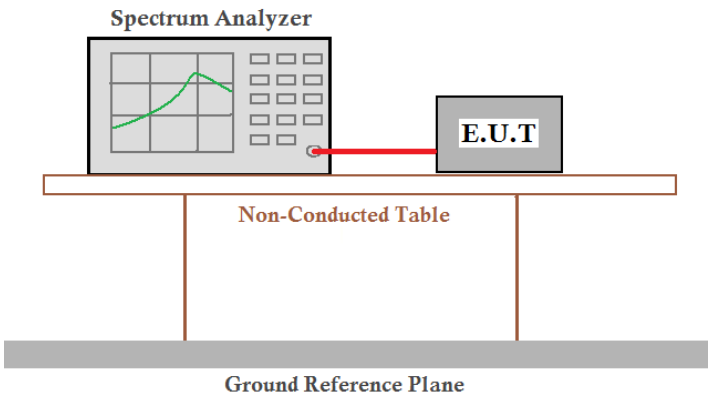
Test mode:	802.11g	Test channel:	Lowest



Test mode:	802.11g	Test channel:	Highest

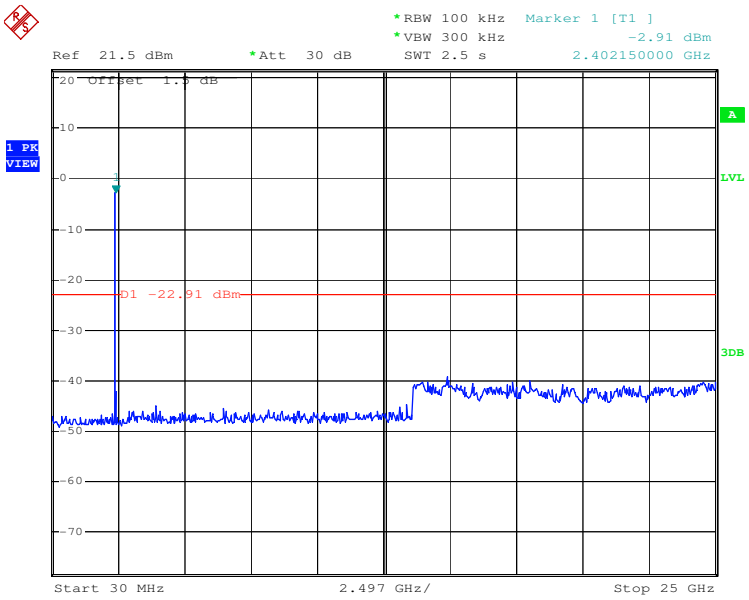


5.6 RF Conducted Spurious Emissions

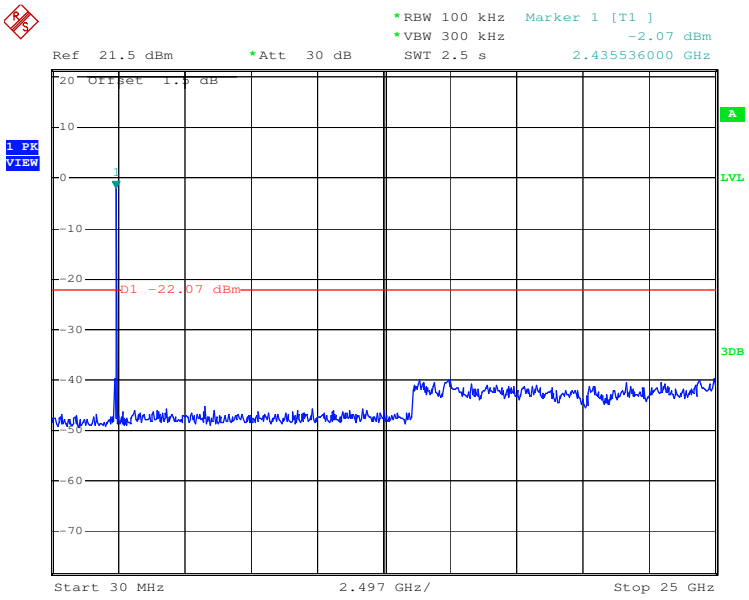
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	KDB558074 D01
Test Setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Test plot as follows:

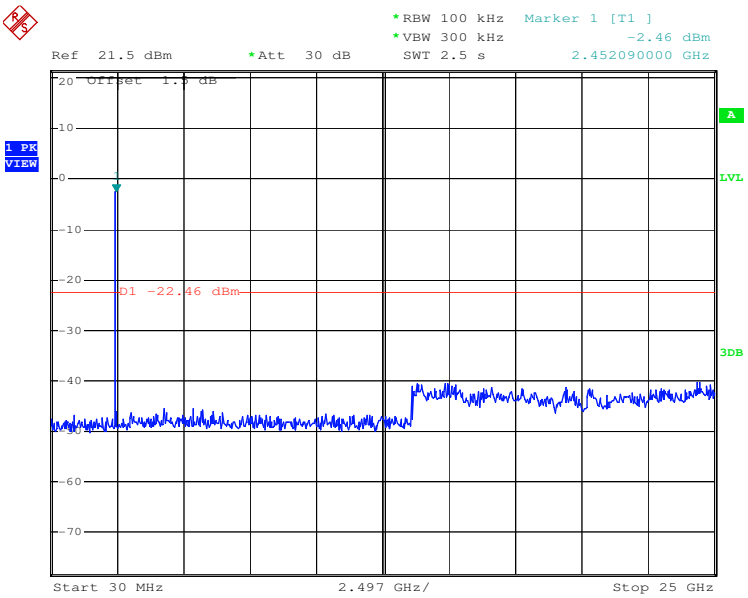
Test mode:	802.11b	Test channel:	Lowest



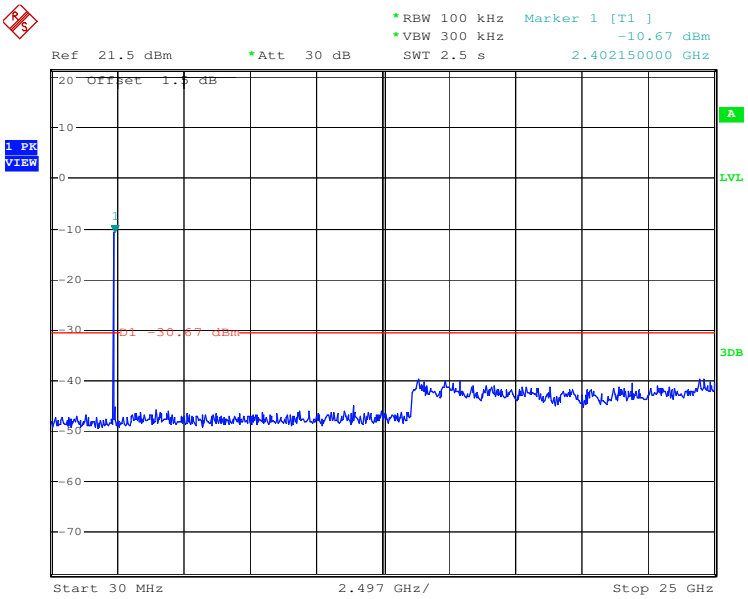
Test mode:	802.11b	Test channel:	Middle



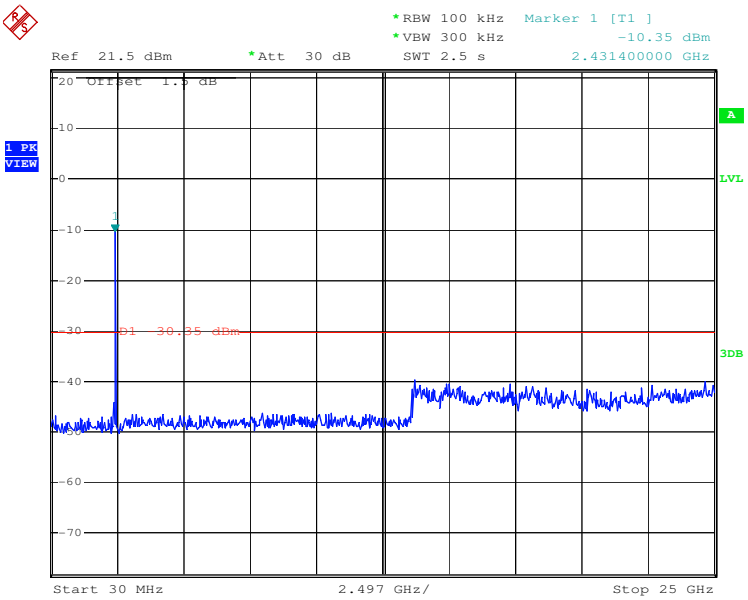
Test mode:	802.11b	Test channel:	Highest



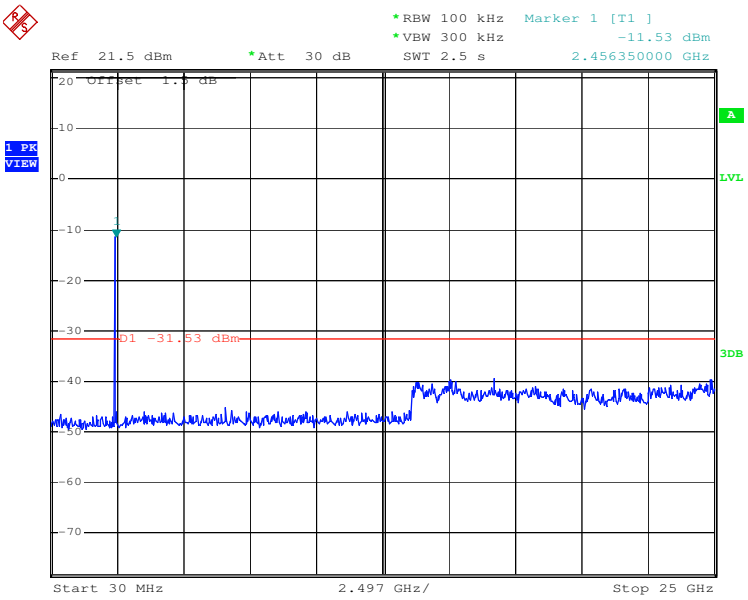
Test mode:	802.11g	Test channel:	Lowest



Test mode:	802.11g	Test channel:	Middle



Test mode:	802.11g	Test channel:	Highest



5.7 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10 2009
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Setup:	

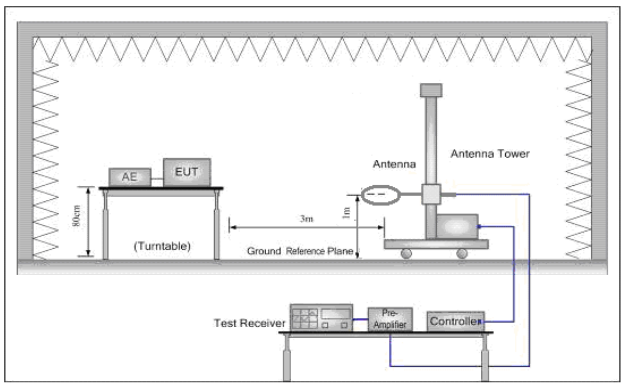


Figure 1. Below 30MHz

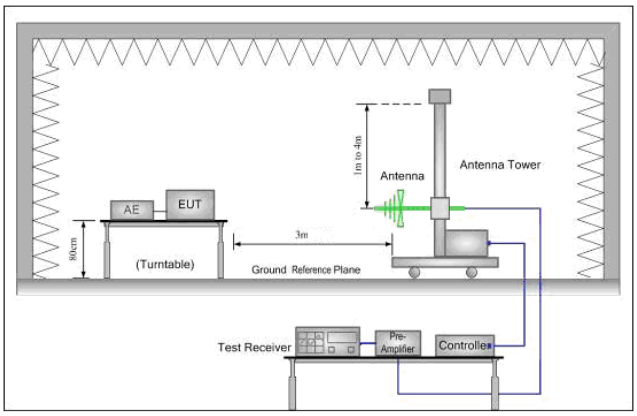


Figure 2. 30MHz to 1GHz

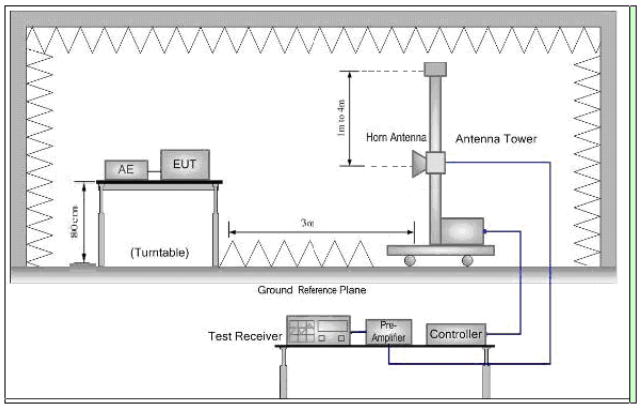


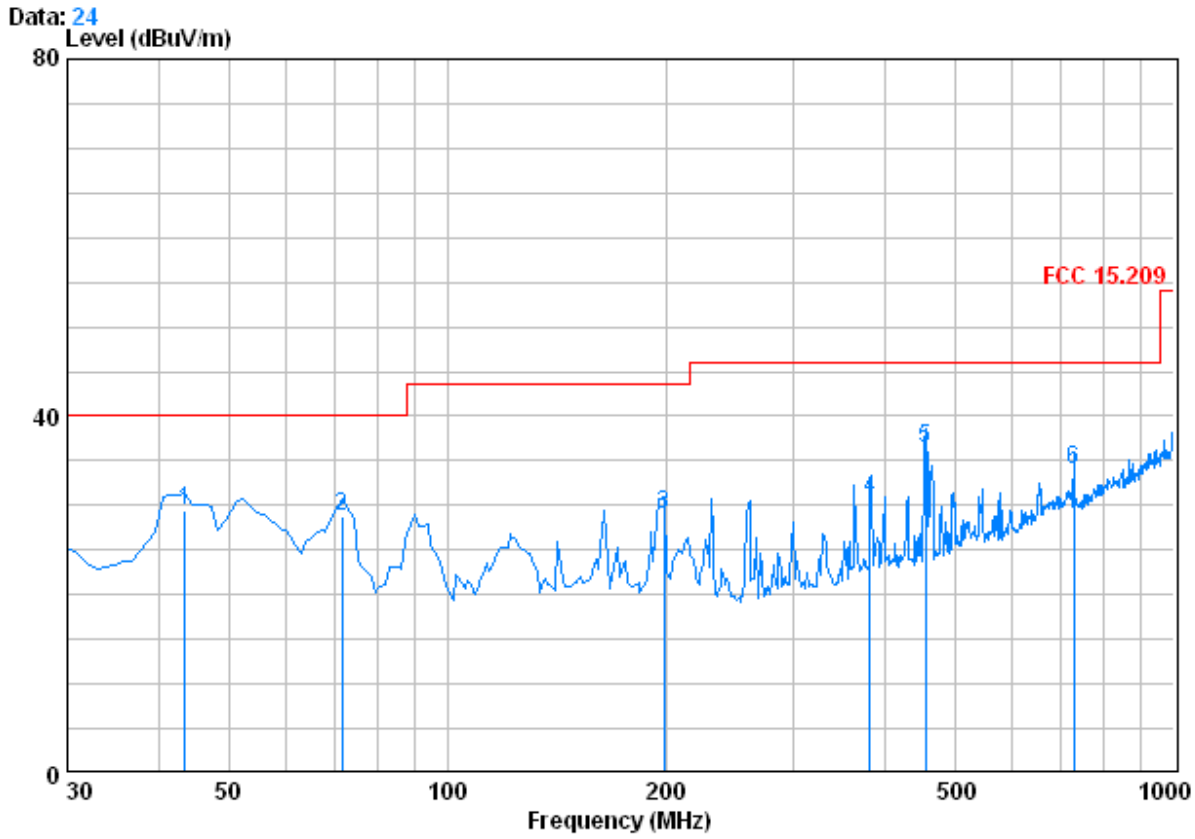
Figure 3. Above 1 GHz

Test Procedure:	a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB

	margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel ,the middle channel ,the Highest channel. h. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

5.7.1 Radiated emission below 1GHz

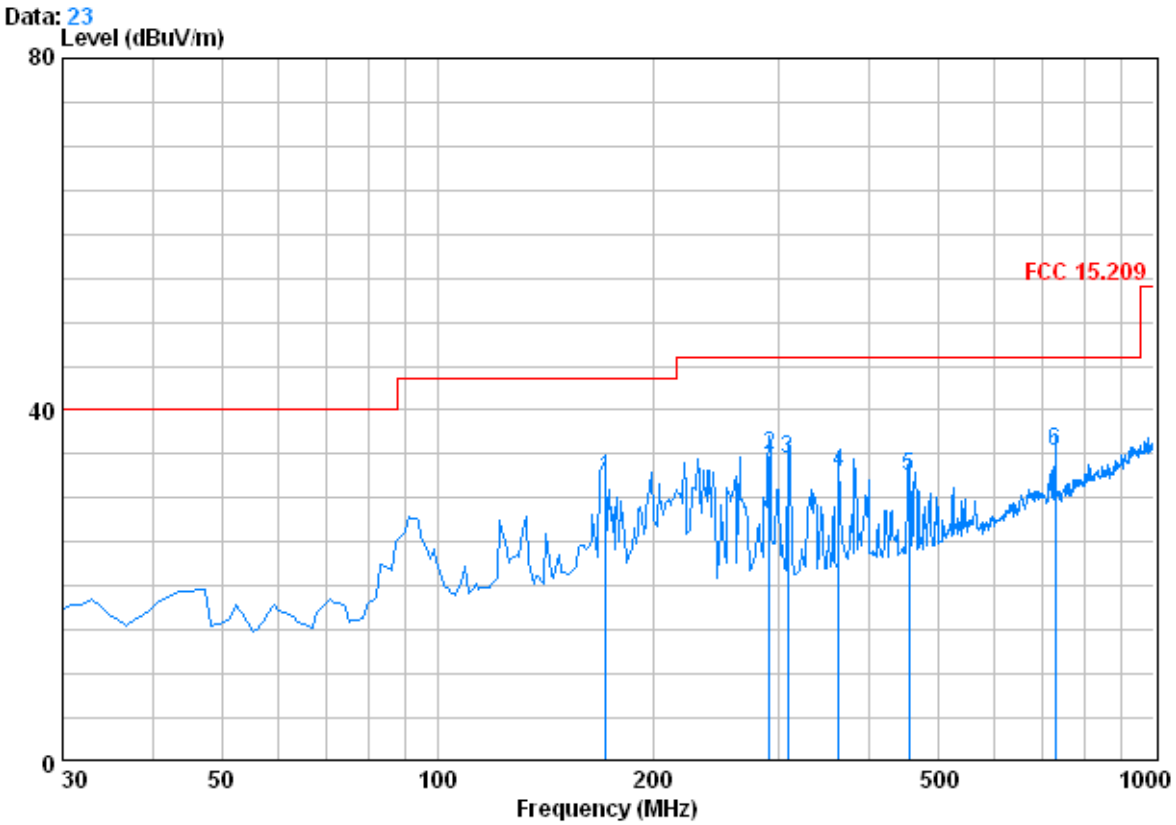
30MHz~1GHz（QP）		
Test mode:	Transmitting	Vertical



Condition : FCC 15.209 3m 3142C VERTICAL
Job No. : 5505RF
test mode : TX mode

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	43.580	0.68	9.93	27.31	46.02	29.33	40.00	-10.67
2	71.710	0.85	7.06	27.24	48.08	28.75	40.00	-11.25
3	198.780	1.40	10.19	26.70	44.05	28.93	43.50	-14.57
4	382.110	2.15	16.08	27.01	39.56	30.79	46.00	-15.21
5 @	454.860	2.43	17.03	27.46	44.47	36.48	46.00	-9.52
6	727.430	2.98	21.61	27.38	36.72	33.94	46.00	-12.06

Test mode:	Transmitting	Horizontal



Condition : FCC 15.209 3m 3142C HORIZONTAL
Job No. : 5505RF
test mode : TX mode

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	171.620	1.36	9.55	26.81	48.14	32.23	43.50	-11.27
2	290.930	1.86	13.49	26.42	46.03	34.96	46.00	-11.04
3	308.390	1.93	14.20	26.46	44.81	34.48	46.00	-11.52
4	362.710	2.10	15.72	26.89	41.99	32.91	46.00	-13.09
5	454.860	2.43	17.03	27.46	40.40	32.41	46.00	-13.59
6	727.430	2.98	21.61	27.38	38.00	35.21	46.00	-10.79

5.7.2 Transmitter emission above 1GHz

Test mode:	802.11b	Test channel:	Lowest	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3625.669	3.84	33.34	40.76	52.04	48.46	74	-25.54	Vertical
4821.757	4.70	34.68	41.64	50.84	48.58	74	-25.42	Vertical
6428.771	5.24	36.20	40.55	49.54	50.43	74	-23.57	Vertical
7489.599	6.10	36.00	39.62	48.49	50.97	74	-23.03	Vertical
9441.913	6.03	37.14	37.94	47.42	52.65	74	-21.35	Vertical
11370.050	6.31	38.43	38.02	45.50	52.22	74	-21.78	Vertical
3489.840	3.73	33.21	40.66	49.95	46.23	74	-27.77	Horizontal
4629.319	4.57	35.01	41.50	50.23	48.31	74	-25.69	Horizontal
6363.645	5.22	36.14	40.61	51.25	52.00	74	-22.00	Horizontal
7394.878	6.00	35.96	39.71	49.42	51.67	74	-22.33	Horizontal
9370.083	6.05	37.03	37.99	47.25	52.34	74	-21.66	Horizontal
11457.210	6.34	38.41	38.05	45.90	52.60	74	-21.40	Horizontal

Test mode:	802.11b	Test channel:	Middle	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3662.775	3.87	33.41	40.79	50.04	46.53	74	-27.47	Vertical
4536.000	4.52	35.14	41.43	48.34	46.57	74	-27.43	Vertical
6478.053	5.25	36.26	40.51	49.09	50.09	74	-23.91	Vertical
7489.599	6.10	36.00	39.62	48.14	50.62	74	-23.38	Vertical
9370.083	6.05	37.03	37.99	47.02	52.11	74	-21.89	Vertical
12148.020	6.51	39.06	38.34	46.47	53.70	74	-20.30	Vertical
3662.775	3.87	33.41	40.79	52.38	48.87	74	-25.13	Horizontal
4871.103	4.72	34.59	41.68	49.95	47.58	74	-26.42	Horizontal
6494.564	5.26	36.28	40.50	49.38	50.42	74	-23.58	Horizontal
7547.013	6.17	36.00	39.57	48.64	51.24	74	-22.76	Horizontal
9370.083	6.05	37.03	37.99	47.16	52.25	74	-21.75	Horizontal
11842.690	6.43	38.74	38.21	46.05	53.01	74	-20.99	Horizontal

Test mode:	802.11b	Test channel:	Highest	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3410.797	3.65	33.23	40.61	49.11	45.38	74	-28.62	Vertical
4455.890	4.47	35.06	41.37	48.94	47.10	74	-26.90	Vertical
5747.586	5.04	35.29	41.14	49.69	48.88	74	-25.12	Vertical
7413.726	6.02	35.97	39.69	48.78	51.08	74	-22.92	Vertical
9275.160	6.08	36.93	38.08	46.98	51.91	74	-22.09	Vertical
11370.050	6.31	38.43	38.02	46.26	52.98	74	-21.02	Vertical
3384.850	3.64	33.25	40.59	49.41	45.71	74	-28.29	Horizontal
4455.890	4.47	35.06	41.37	49.85	48.01	74	-25.99	Horizontal
6032.401	5.13	35.74	40.89	50.44	50.42	74	-23.58	Horizontal
7566.249	6.19	36.00	39.56	48.72	51.35	74	-22.65	Horizontal
9538.543	6.00	37.23	37.86	47.20	52.57	74	-21.43	Horizontal
12303.620	6.55	39.21	38.40	45.85	53.21	74	-20.79	Horizontal

Test mode:	802.11g	Test channel:	Lowest	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3625.669	3.84	33.34	40.76	49.59	46.01	74	-27.99	Vertical
4536.000	4.52	35.14	41.43	48.58	46.81	74	-27.19	Vertical
6363.645	5.22	36.14	40.61	48.56	49.31	74	-24.69	Vertical
7547.013	6.17	36.00	39.57	48.83	51.43	74	-22.57	Vertical
9538.543	6.00	37.23	37.86	46.32	51.69	74	-22.31	Vertical
11603.960	6.37	38.50	38.11	46.45	53.21	74	-20.79	Vertical
3625.669	3.84	33.34	40.76	51.09	47.51	74	-26.49	Horizontal
4629.319	4.57	35.01	41.50	49.19	47.27	74	-26.73	Horizontal
6544.350	5.27	36.27	40.45	49.29	50.38	74	-23.62	Horizontal
7413.726	6.02	35.97	39.69	49.54	51.84	74	-22.16	Horizontal
9346.262	6.06	37.01	38.03	47.75	52.79	74	-21.21	Horizontal
11903.140	6.44	38.80	38.24	46.24	53.24	74	-20.76	Horizontal

Test mode:	802.11g	Test channel:	Middle	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3662.775	3.87	33.41	40.79	50.95	47.44	74	-26.56	Vertical
4501.492	4.49	35.20	41.40	48.16	46.45	74	-27.55	Vertical
6478.053	5.25	36.26	40.51	48.79	49.79	74	-24.21	Vertical
7547.013	6.17	36.00	39.57	47.94	50.54	74	-23.46	Vertical
9157.857	6.11	36.79	38.19	46.28	50.99	74	-23.01	Vertical
11963.890	6.46	38.87	38.26	46.60	53.67	74	-20.33	Vertical
3709.691	3.91	33.45	40.83	50.05	46.58	74	-27.42	Horizontal
4536.000	4.52	35.14	41.43	49.85	48.08	74	-25.92	Horizontal
6156.505	5.17	35.88	40.79	50.00	50.26	74	-23.74	Horizontal
7566.249	6.19	36.00	39.56	49.23	51.86	74	-22.14	Horizontal
9465.979	6.02	37.16	37.91	47.14	52.41	74	-21.59	Horizontal
11903.140	6.44	38.80	38.24	46.12	53.12	74	-20.88	Horizontal

Test mode:	802.11g	Test channel:	Highest	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3933.367	4.11	33.74	40.98	48.17	45.04	74	-28.96	Vertical
4641.118	4.59	34.98	41.51	48.56	46.62	74	-27.38	Vertical
6494.564	5.26	36.28	40.50	49.08	50.12	74	-23.88	Vertical
8022.456	6.20	36.01	39.16	48.31	51.36	74	-22.64	Vertical
9465.979	6.02	37.16	37.91	46.31	51.58	74	-22.42	Vertical
11140.850	6.26	38.47	37.92	46.72	53.53	74	-20.47	Vertical
3525.555	3.76	33.24	40.69	49.10	45.41	74	-28.59	Horizontal
4455.890	4.47	35.06	41.37	49.92	48.08	74	-25.92	Horizontal
6478.053	5.25	36.26	40.51	49.85	50.85	74	-23.15	Horizontal
7643.683	6.23	36.00	39.49	48.92	51.66	74	-22.34	Horizontal
9251.580	6.08	36.89	38.11	47.45	52.31	74	-21.69	Horizontal
11312.310	6.30	38.44	37.99	46.29	53.04	74	-20.96	Horizontal

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

3) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

5.8 Band Edge (Radiated Emission)

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10 2009
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Setup:

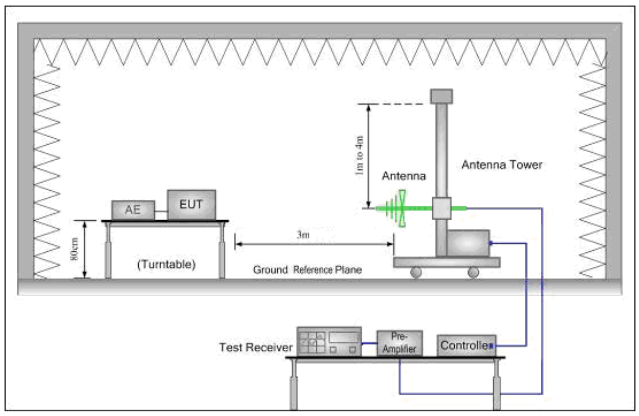


Figure 1. 30MHz to 1GHz

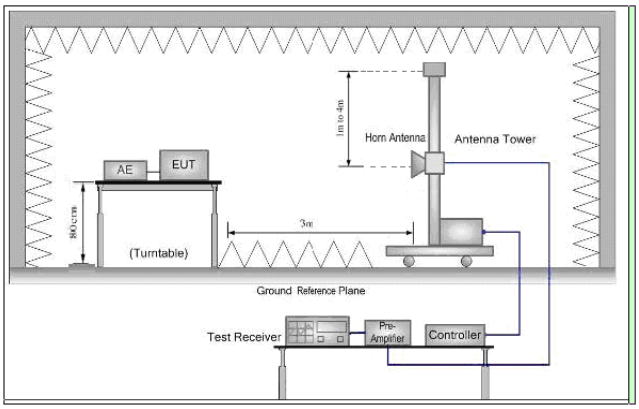


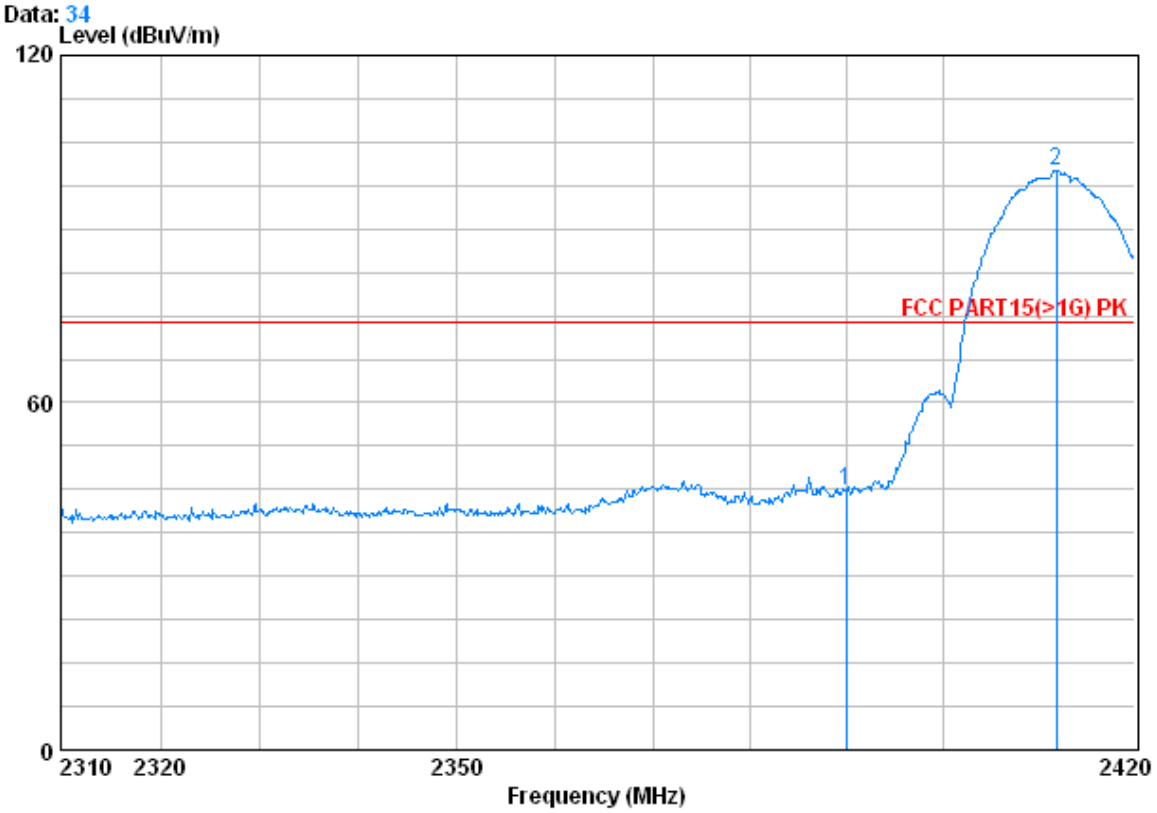
Figure 2. Above 1 GHz

Test Procedure:	a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel g. Test the EUT in the lowest channel , the highest channel. h. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the 11Mbps of rate is the worst case of 802.11b; 54Mbps of rate is the worst case of 802.11g.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Test plot as follows:

Test mode:	802.11b	Test channel:	Lowest	Remark:	Peak

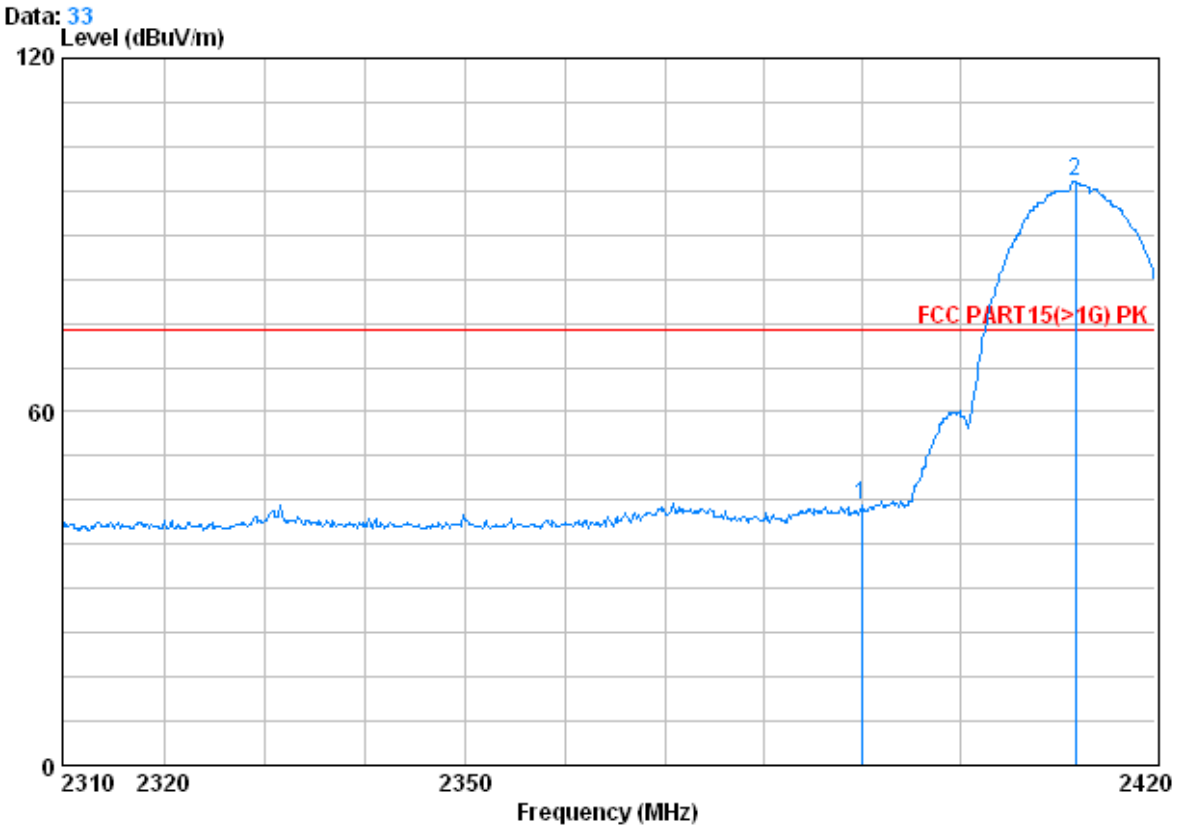
Vertical:



Condition : FCC PART15(>1G) PK 3m VERTICAL
Job No. : 5505RF
Mode : b 2412 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	49.22	44.86	74.00	-29.14	Peak
2 @	2411.860	2.99	32.54	39.86	104.47	100.14	74.00	26.14	Peak

Horizontal:

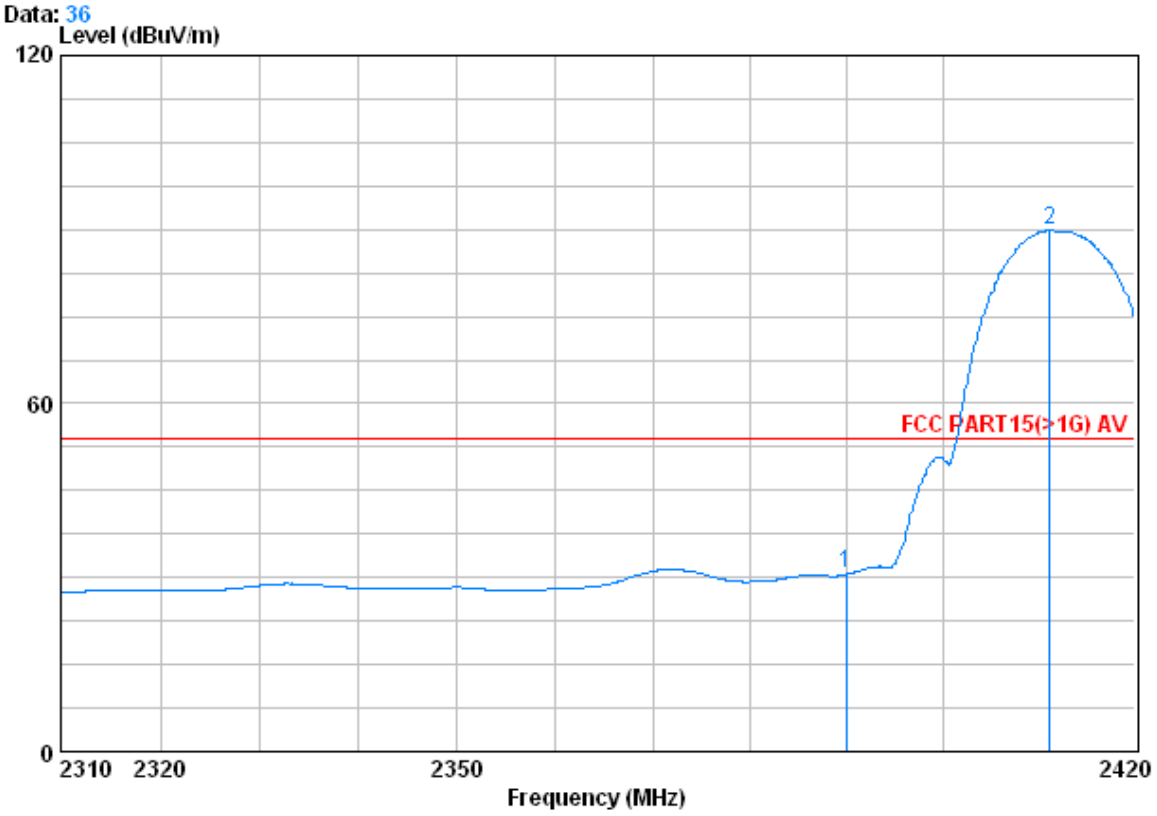


Condition : FCC PART15(>1G) PK 3m HORIZONTAL
Job No. : 5505RF
Mode : b 2412 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	48.35	44.00	74.00	-30.00	Peak
2 X	2411.860	2.99	32.54	39.86	103.38	99.05	74.00	25.05	Peak

Test mode:	802.11b	Test channel:	Lowest	Remark:	average

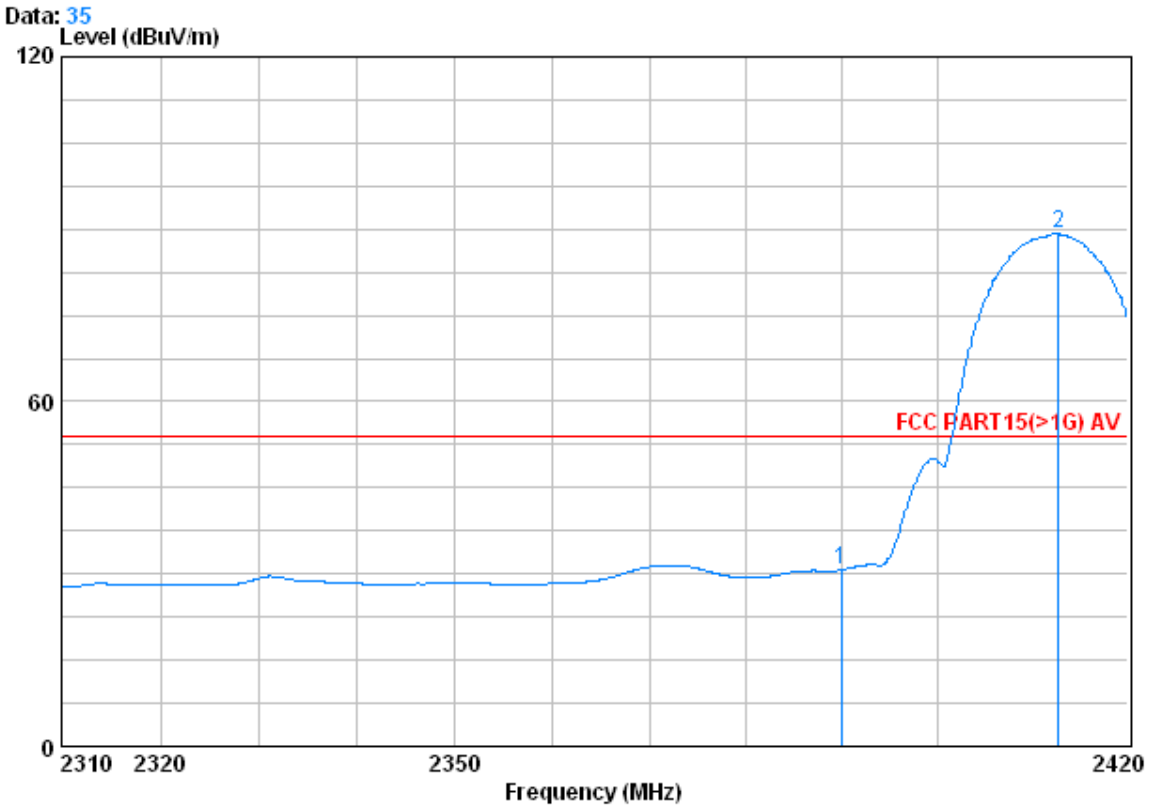
Vertical:



Condition : FCC PART15(>1G) AV 3m VERTICAL
Job No. : 5505RF
Mode : b 2412 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	34.98	30.63	54.00	-23.37	Average
2 @	2411.090	2.99	32.54	39.86	94.14	89.81	54.00	35.81	Average

Horizontal:

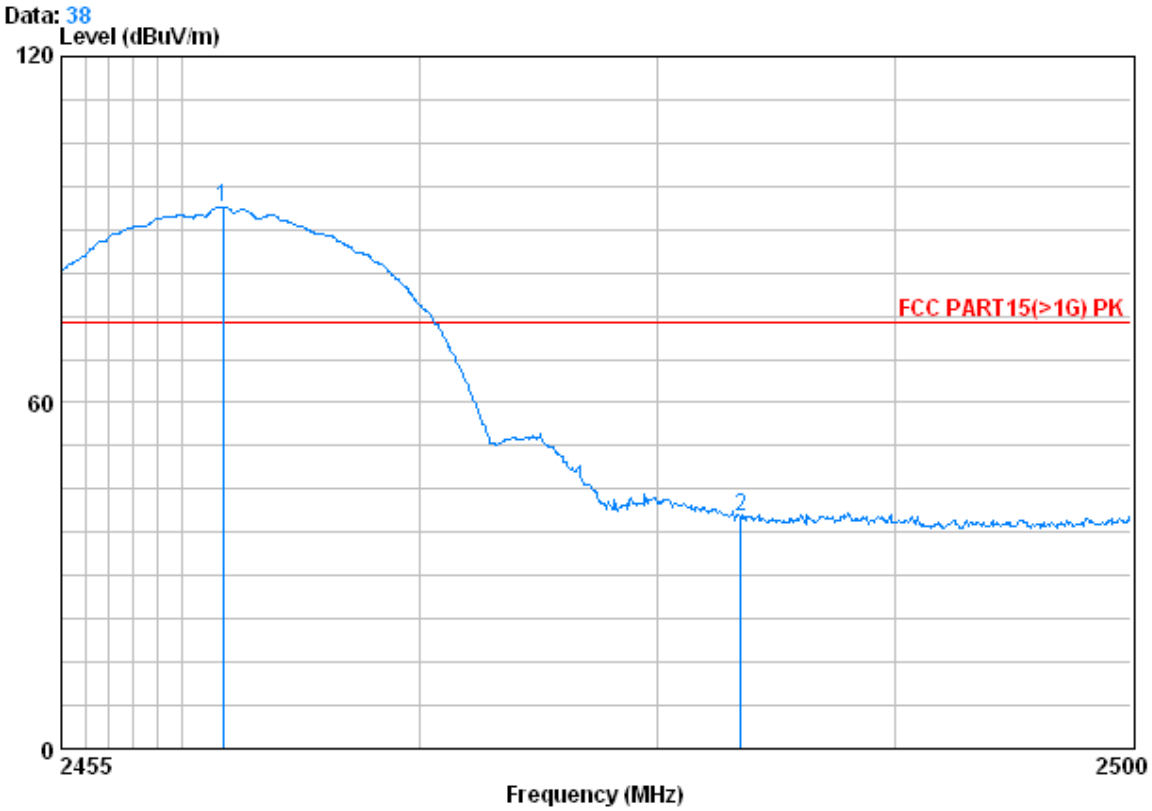


Condition : FCC PART15(>1G) AV 3m HORIZONTAL
Job No. : 5505RF
Mode : b 2412 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	35.15	30.79	54.00	-23.21	Average
2 @	2412.740	2.99	32.54	39.86	93.48	89.15	54.00	35.15	Average

Test mode:	802.11b	Test channel:	Highest	Remark:	Peak

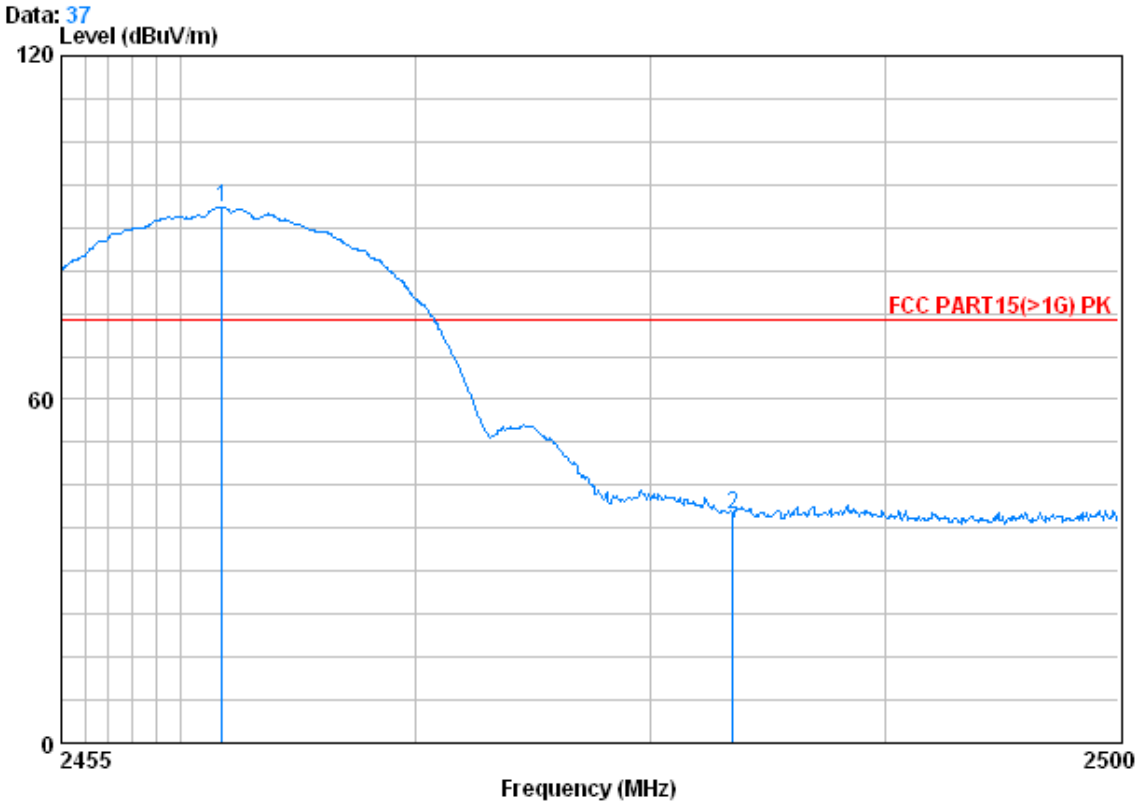
Vertical:



Condition : FCC PART15(>1G) PK 3m VERTICAL
Job No. : 5505RF
Mode : b 2462 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 X	2461.750	3.02	32.64	39.91	98.14	93.90	74.00	19.90	Peak
2	2483.500	3.03	32.67	39.92	44.33	40.11	74.00	-33.89	Peak

Horizontal:

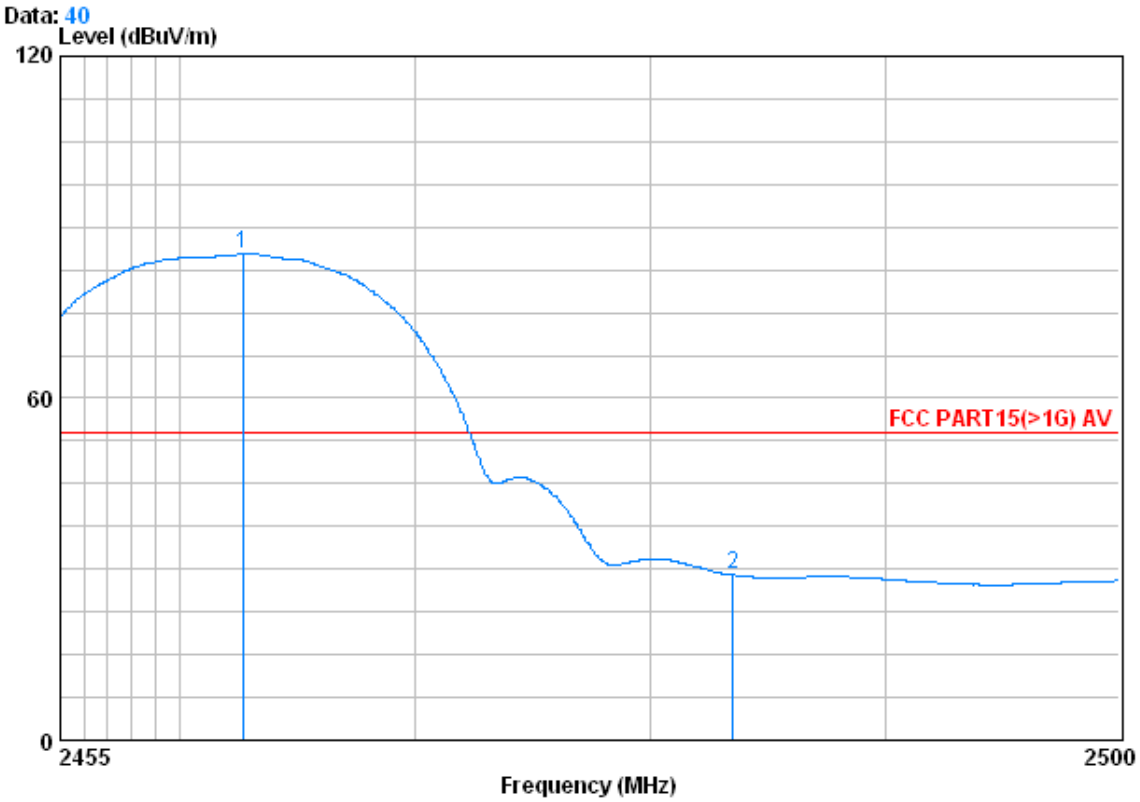


Condition : FCC PART15(>1G) PK 3m HORIZONTAL
Job No. : 5505RF
Mode : b 2462 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 X	2461.795	3.02	32.64	39.91	97.75	93.51	74.00	19.51	Peak
2	2483.500	3.03	32.67	39.92	44.21	39.99	74.00	-34.01	Peak

Test mode:	802.11b	Test channel:	Highest	Remark:	average

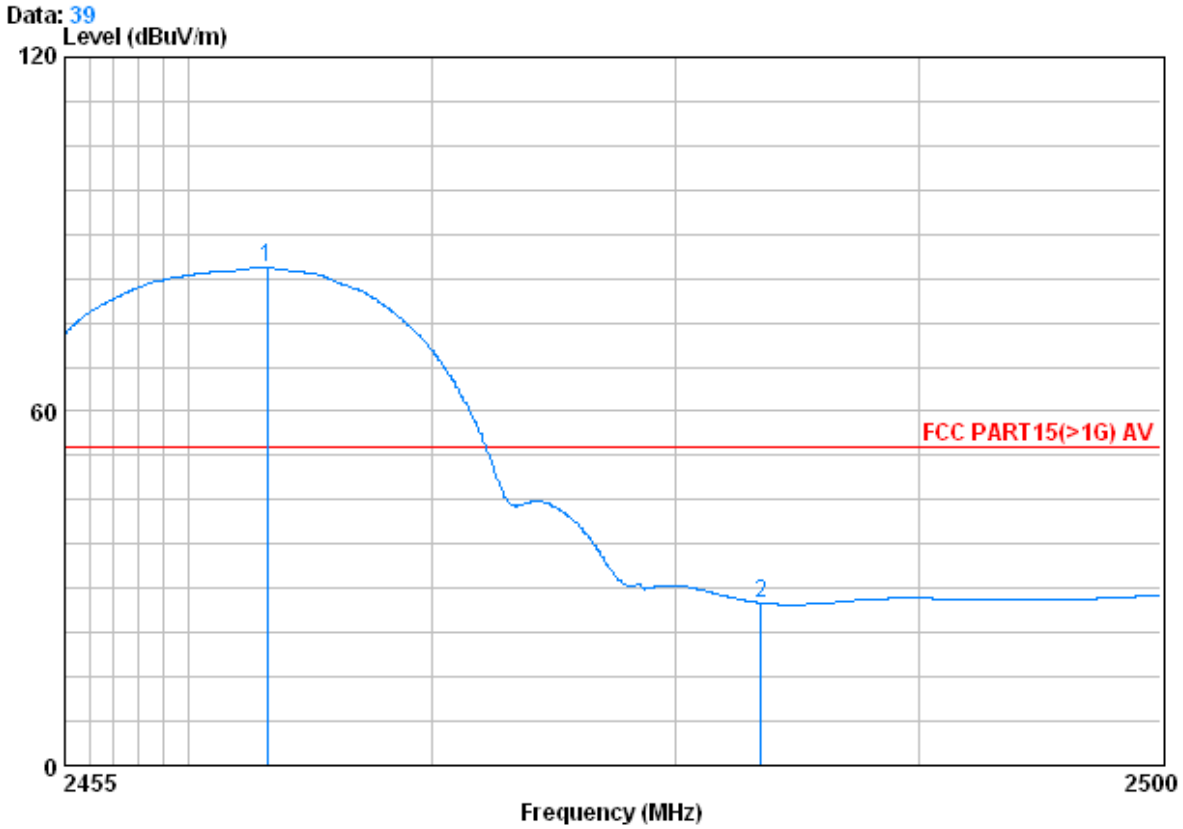
Vertical:



Condition : FCC PART15(>1G) AV 3m VERTICAL
Job No. : 5505RF
Mode : b 2462 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2462.695	3.02	32.64	39.91	89.50	85.25	54.00	31.25	Average
2	2483.500	3.03	32.67	39.92	33.19	28.97	54.00	-25.03	Average

Horizontal:

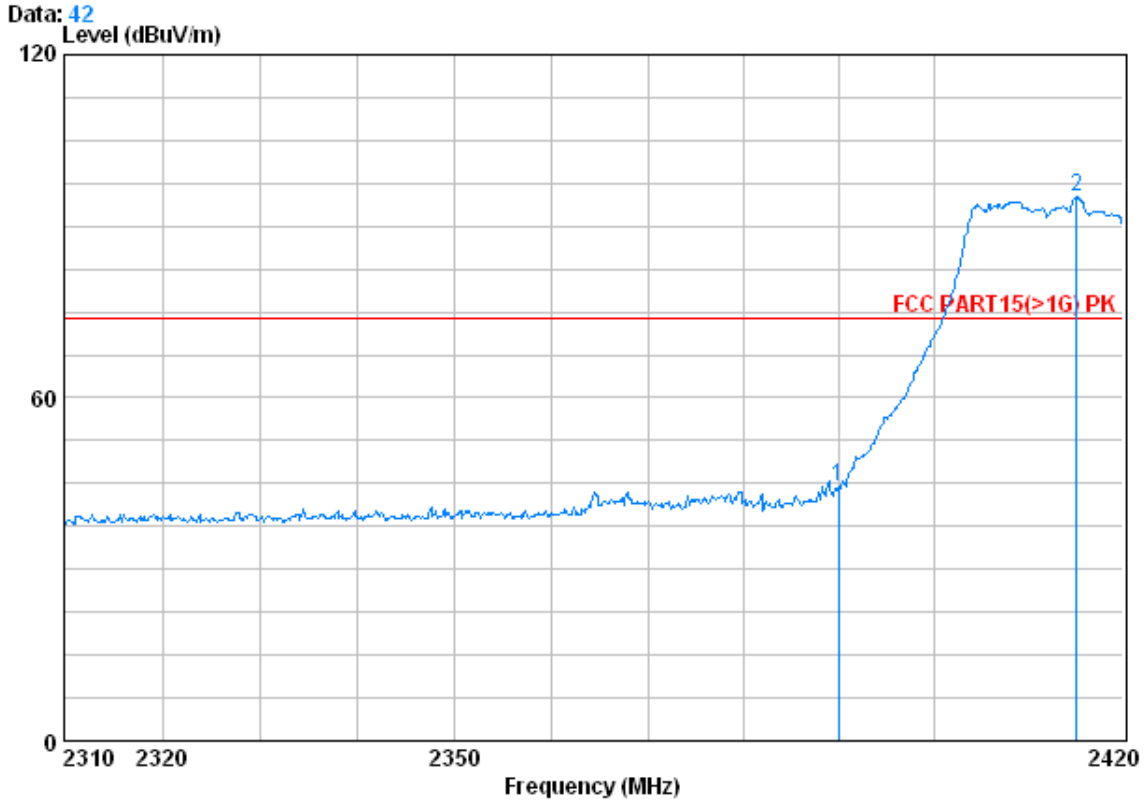


Condition : FCC PART15(>1G) AV 3m HORIZONTAL
Job No. : 5505RF
Mode : b 2462 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2463.235	3.02	32.64	39.91	88.51	84.26	54.00	30.26	Average
2	2483.500	3.03	32.67	39.92	31.78	27.56	54.00	-26.44	Average

Test mode:	802.11g	Test channel:	Lowest	Remark:	Peak

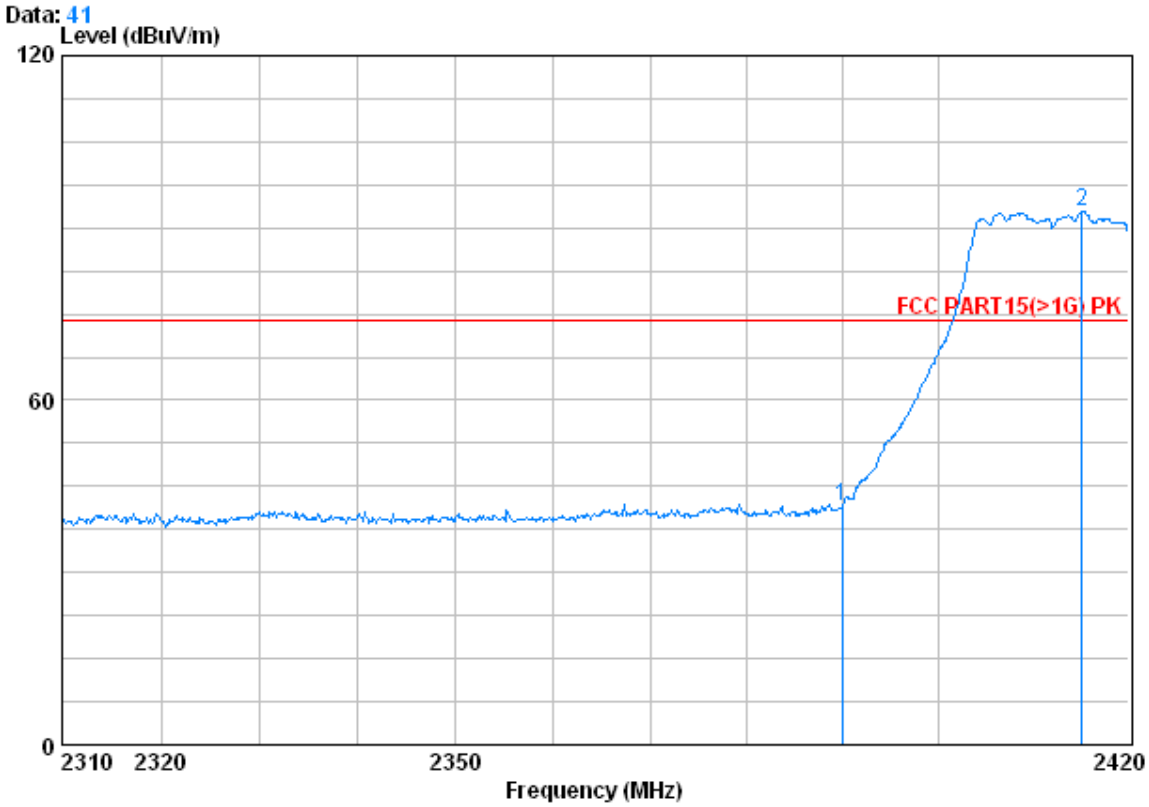
Vertical:



Condition : FCC PART15(>1G) PK 3m VERTICAL
Job No. : 5505RF
Mode : g 2412 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	48.89	44.53	74.00	-29.47	Peak
2 X	2415.050	2.99	32.54	39.86	99.36	95.03	74.00	21.03	Peak

Horizontal:

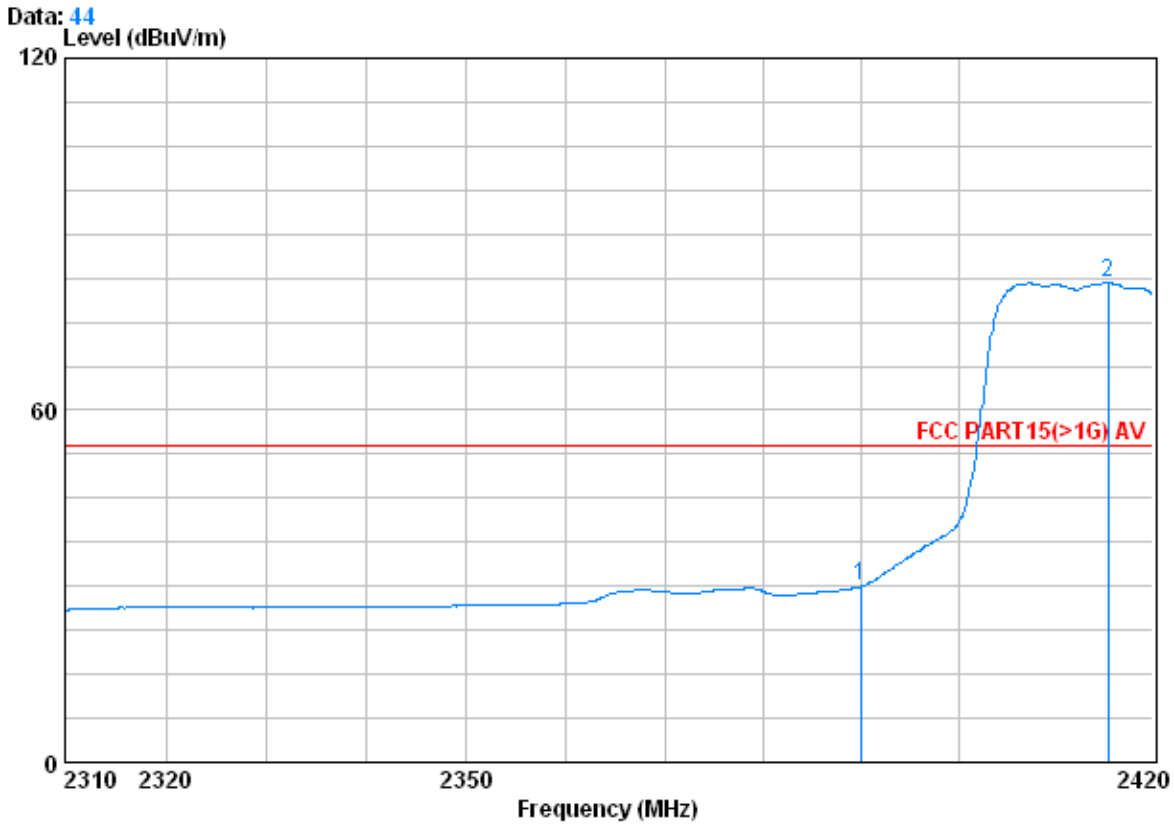


Condition : FCC PART15(>1G) PK 3m HORIZONTAL
Job No. : 5505RF
Mode : g 2412 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	45.94	41.59	74.00	-32.41	Peak
2 X	2415.050	2.99	32.54	39.86	97.13	92.81	74.00	18.81	Peak

Test mode:	802.11g	Test channel:	Lowest	Remark:	average

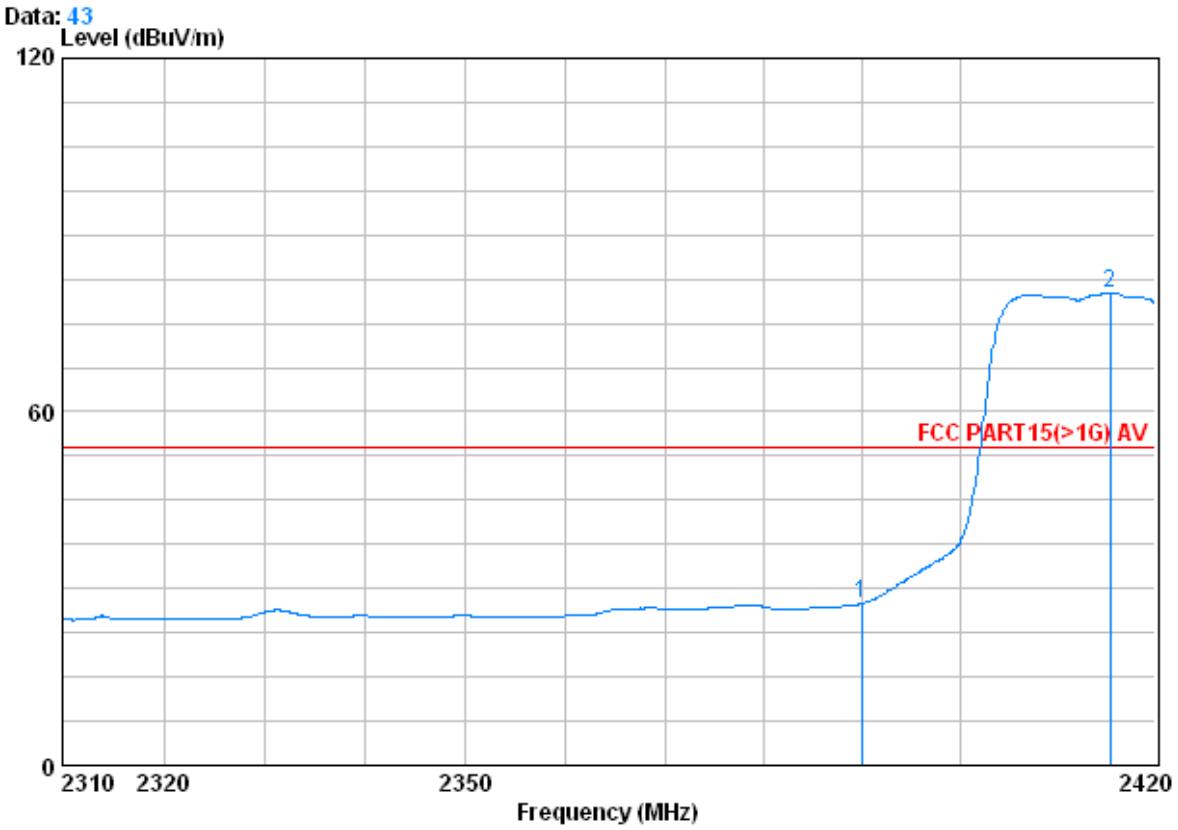
Vertical:



Condition : FCC PART15(>1G) AV 3m VERTICAL
Job No. : 5505RF
Mode : g 2412 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	34.32	29.97	54.00	-24.03	Average
2 @	2415.380	2.99	32.54	39.86	86.02	81.70	54.00	27.70	Average

Horizontal:

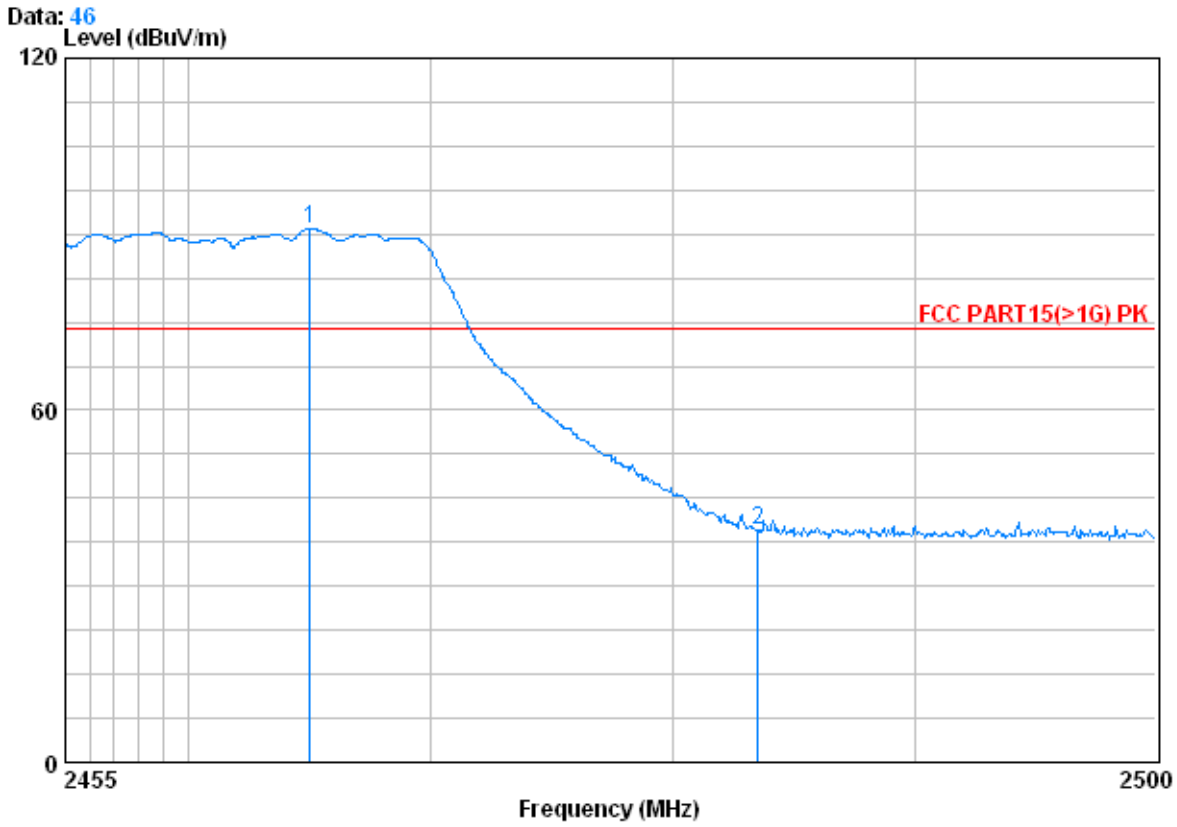


Condition : FCC PART15(>1G) AV 3m HORIZONTAL
Job No. : 5505RF
Mode : g 2412 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	2.98	32.51	39.85	31.78	27.43	54.00	-26.57	Average
2 @	2415.380	2.99	32.54	39.86	84.54	80.22	54.00	26.22	Average

Test mode:	802.11g	Test channel:	Highest	Remark:	Peak

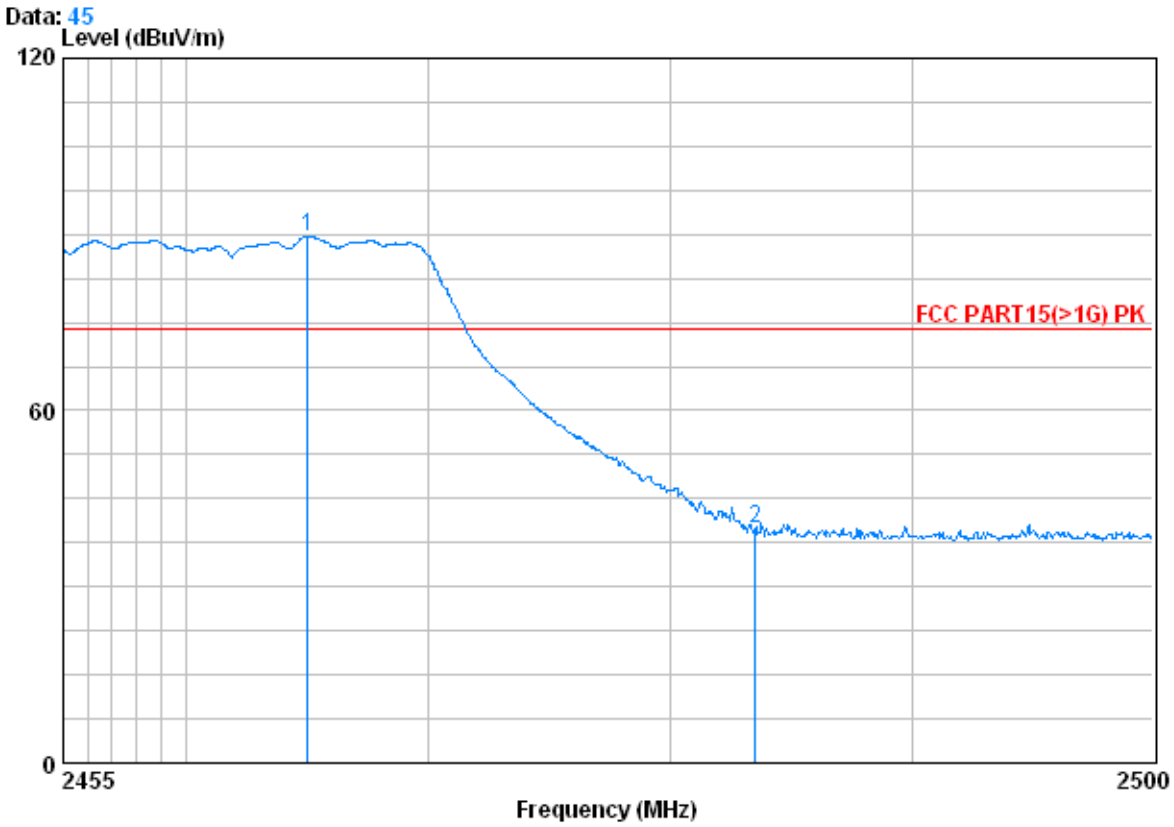
Vertical:



Condition : FCC PART15(>1G) PK 3m VERTICAL
Job No. : 5505RF
Mode : g 2462 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 X	2465.035	3.02	32.64	39.91	95.23	90.98	74.00	16.98	Peak
2	2483.500	3.03	32.67	39.92	43.76	39.54	74.00	-34.46	Peak

Horizontal:

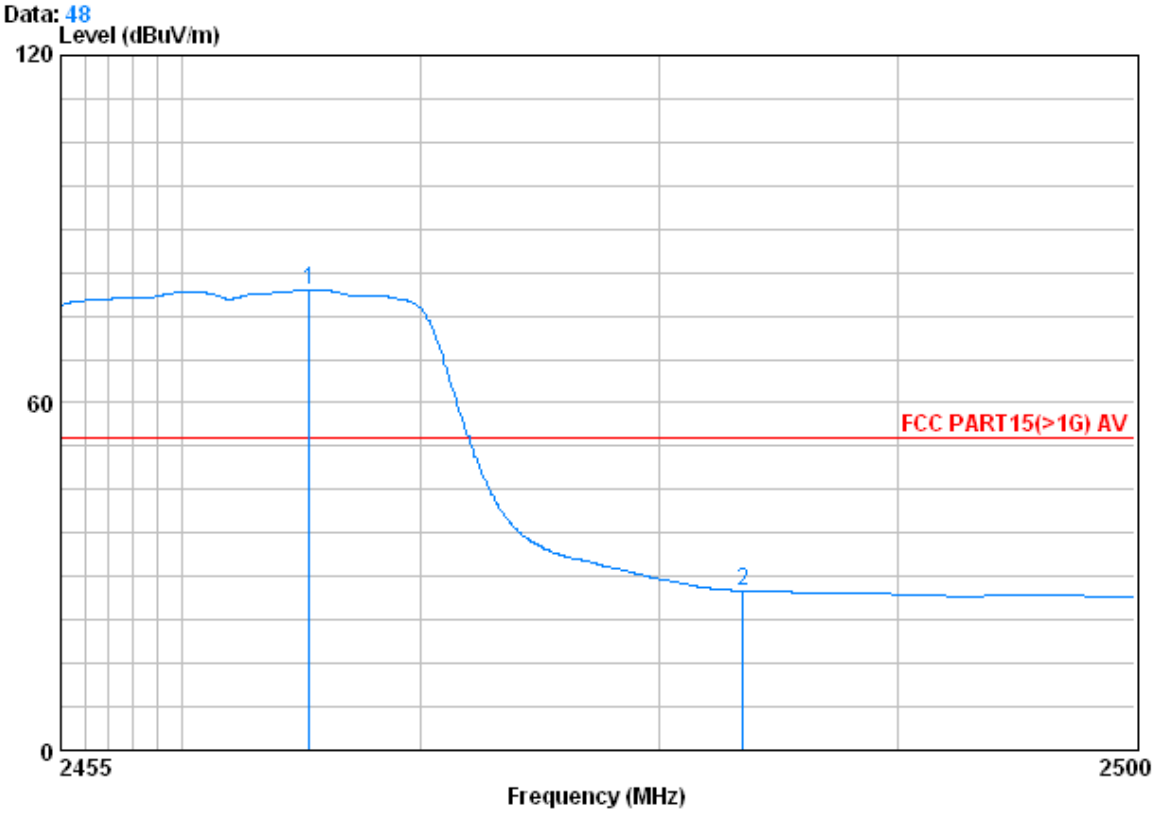


Condition : FCC PART15(>1G) PK 3m HORIZONTAL
Job No. : 5505RF
Mode : g 2462 Bandedge PK

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 X	2465.035	3.02	32.64	39.91	93.88	89.63	74.00	15.63	Peak
2	2483.500	3.03	32.67	39.92	44.21	39.99	74.00	-34.01	Peak

Test mode:	802.11g	Test channel:	Highest	Remark:	average

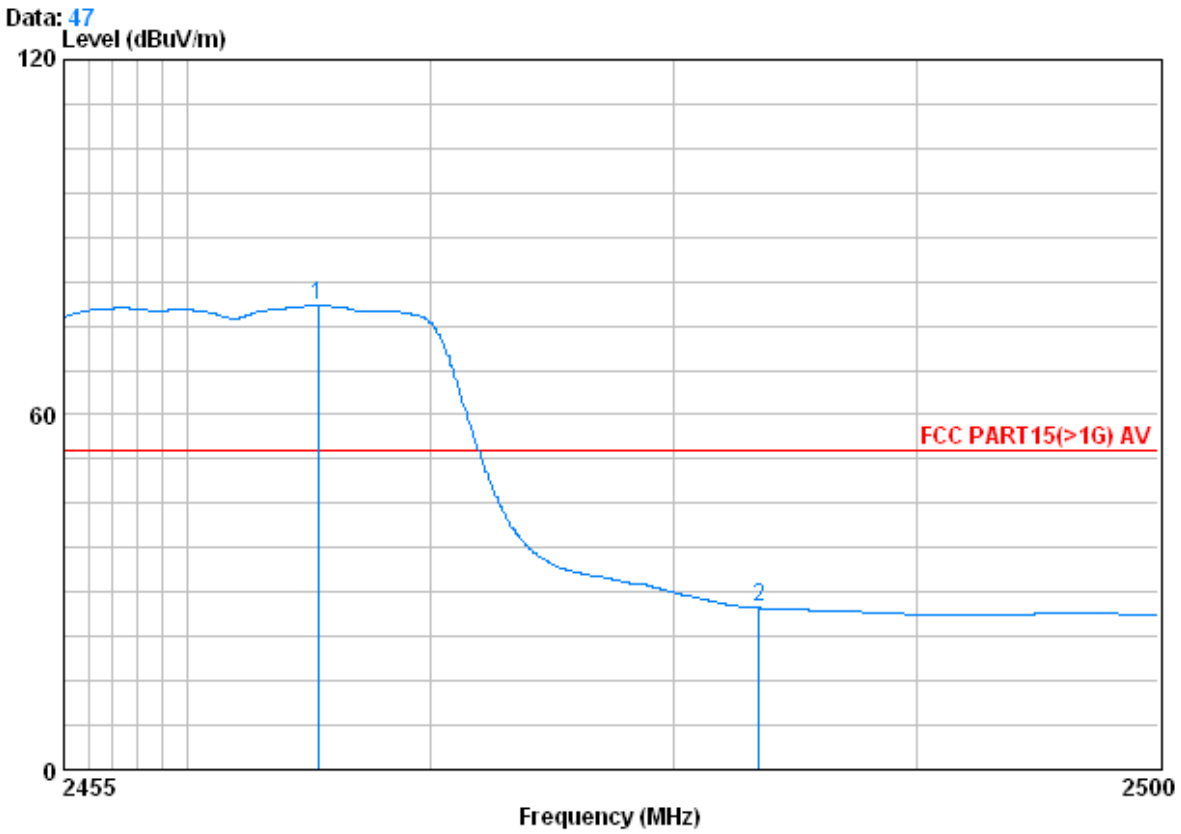
Vertical:



Condition : FCC PART15(>1G) AV 3m VERTICAL
Job No. : 5505RF
Mode : g 2462 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2465.350	3.02	32.64	39.91	83.85	79.60	54.00	25.60	Average
2	2483.500	3.03	32.67	39.92	31.72	27.50	54.00	-26.50	Average

Horizontal:



Condition : FCC PART15(>1G) AV 3m HORIZONTAL
Job No. : 5505RF
Mode : g 2462 Bandedge AV

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 X	2465.395	3.02	32.64	39.91	82.74	78.49	54.00	24.49	Average
2	2483.500	3.03	32.67	39.92	31.54	27.32	54.00	-26.68	Average

Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor