SGS-CSTC Standards Technical Services Ltd

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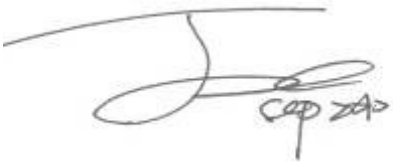
FCC REPORT

Application No:	SZEMO100704525RF
Applicant:	Electronics Co.,Ltd
Product Name:	E-Reader
Operation Frequency:	2412MHz to 2462MHz
FCC ID:	WED -1637287
Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2009
Date of Receipt:	2010-07-20
Date of Test:	2010-07-26 to 2010-09-08
Date of Issue:	2010-09-28
Test Result :	**PASS ***

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

Authorized Signature:



Jack Zhang
Laboratory Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf
This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the SGS PRODUCT CERTIFICATION MARK.. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. 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.

2 Contents

3 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Passed
AC Power Line Conducted Emission	15.207	Passed
Conducted Peak Output Power	15.247 (b)(3)	Passed
6dB Occupied Bandwidth	15.247 (a)(2)	Passed
Power Spectral Density	15.247 (e)	Passed
Radiated Emission	15.205/15.209	Passed
Band Edge	15.247(d)	Passed

Remark: Passed: The EUT complies with the essential requirements in the standard.

Failed: The EUT does not comply with the essential requirements in the standard.

4 General Information

4.1 Client Information

Applicant:	Electronics Co.,Ltd
Address of Applicant:	No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Jin Xia, Chang An Town, Dong Guan City, Guang Dong Province, China.
Manufacturer/ Factory:	Electronics Co.,Ltd
Address of Manufacturer/ Factory:	No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Jin Xia, Chang An Town, Dong Guan City, Guang Dong Province, China.

4.2 General Description of E.U.T.

Product Name:	E-Reader
Trade Name:	N/A
Model No.:	1637287
Operation Frequency:	2412MHz~2462MHz
Channel numbers:	11
Channel separation:	5MHz
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps
Antenna Type:	Integral
Antenna gain:	0dBi
Power supply:	AC adapter:HNA050150U Input: 100-240V Output: 5.0V AC adapter:SW013UF-0500150US Input: 100-240V Output: 5.0V

Operation Frequency each of channel							
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 channels for testing see below:

Channel	Frequency
lowest channel	2412MHz
middle channel	2437MHz
highest channel	2462MHz

4.3 Test environment and mode

Test Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
Test mode:	
Tx mode:	EUT transmitted the continuous modulation signal at the specified channel.
Rx mode:	EUT searched and received the useful signal

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-Test Mode:

Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power (dBm)	14.88	14.76	14.02	13.93				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power (dBm)	13.28	13.01	12.89	12.78	12.51	12.43	12.36	12.18

Final Test Mode:

According to ANSI C63.4 standard, the test results are both the “worst case” and “worst setup”

1Mbps for 802.11b, 6Mbps for 802.11g

4.4 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 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 and C-2383 respectively.
  Date of Registration: September 29, 2008. Valid until September 28, 2011.
- **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 556682, June 27, 2008.
- **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.

4.5 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

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.6 Other Information Requested by the Customer

None.

4.7 Test Instruments list

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2010-06-17	2011-06-17
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2009-11-05	2010-11-05
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2009-11-05	2010-11-05
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2009-11-10	2010-11-10
7	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2009-11-10	2010-11-10
8	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2010-06-02	2011-06-02
9	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2009-12-18	2010-12-18
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	2010-06-04	2011-06-04
11	Band filter	Amindeon	82346	SEL0094	2010-06-02	2011-06-02

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	N/A	N/A
2	LISN	ETS-LINDGREN	3816/2	SEL0021	2010-06-02	2011-06-02
3	Two-Line V-Network	Rohde & Schwarz	ENV216	SEL0152	2009-10-22	2010-10-22
4	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2010-06-02	2011-06-02
5	Coaxial Cable	SGS	N/A	SEL0024	2008-06-18	2011-06-18

RF conducted						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	Spectrum Analyzer	Rohde & Schwarz	FSP 30	SEL0154	2009-10-22	2010-10-22
2	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18

5 Test results and Measurement Data

5.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

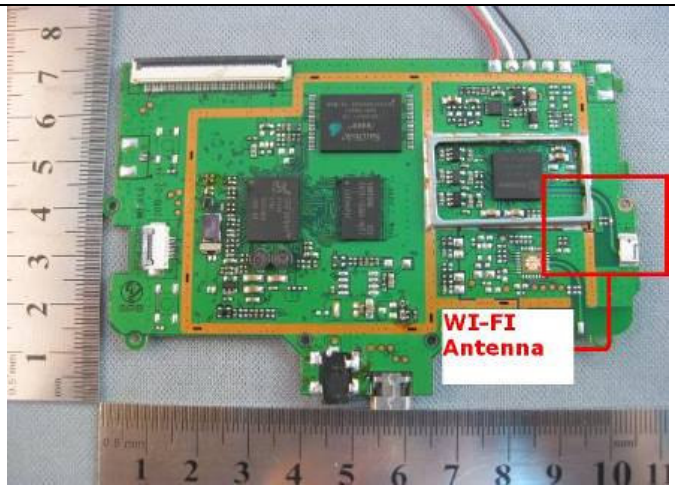
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit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

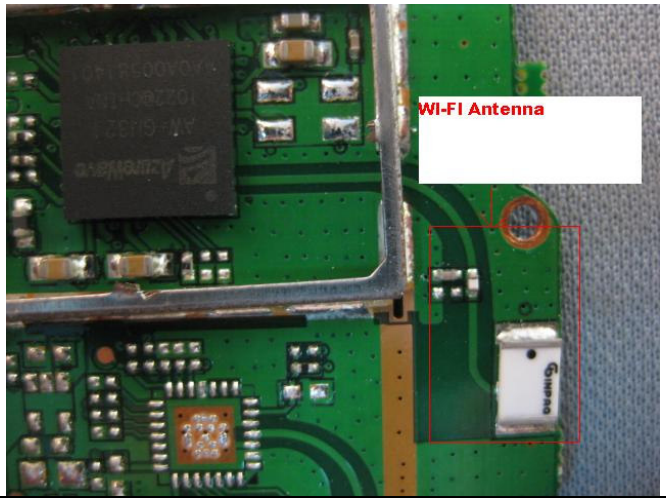
15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

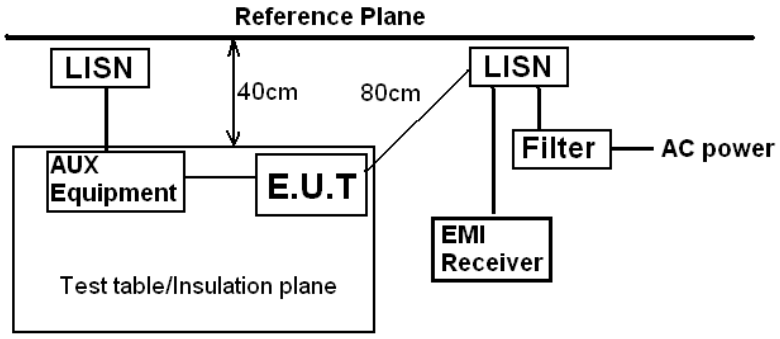
E.U.T Antenna:	

Antenna gain:0dBi





5.2 Conducted Emissions

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4: 2009</td></tr>
<tr><td>Test Frequency Range:</td><td>150kHz to 30MHz</td></tr>
<tr><td>Class / Severity:</td><td>Class B</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9kHz, VBW=30kHz</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test procedure</td><td>The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.</td></tr>
<tr><td>Test setup:</td><td> 

Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 4.7 for details</td></tr>
<tr><td>Test mode:</td><td>Tx mode</td></tr>
<tr><td>Test results:</td><td>Passed</td></tr>
</table>

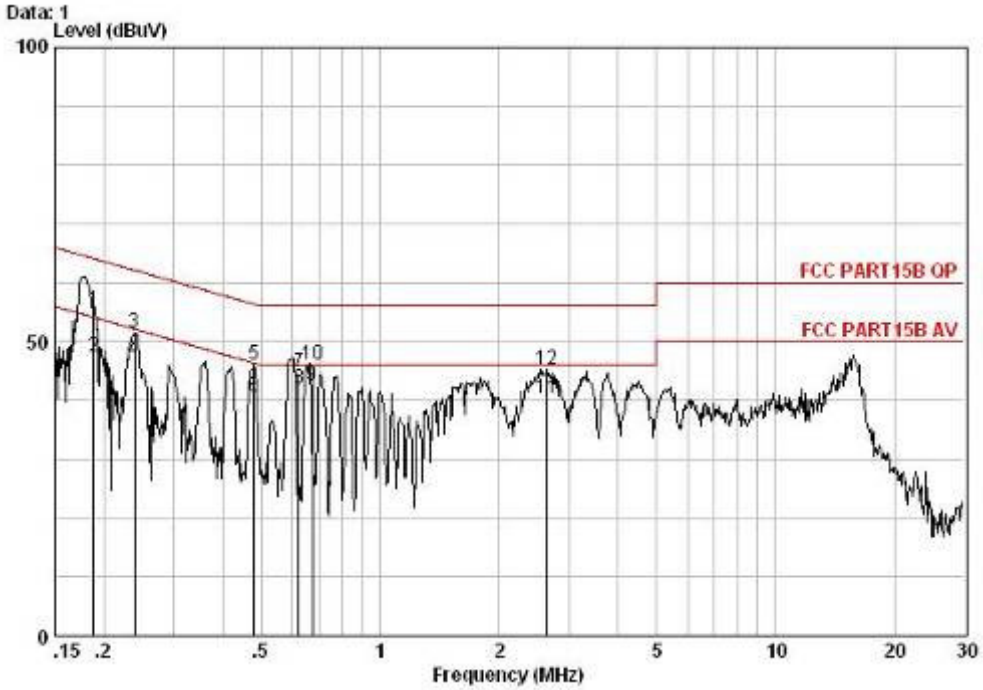
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Adapter model: SW013UF-0500150US

Live Line:



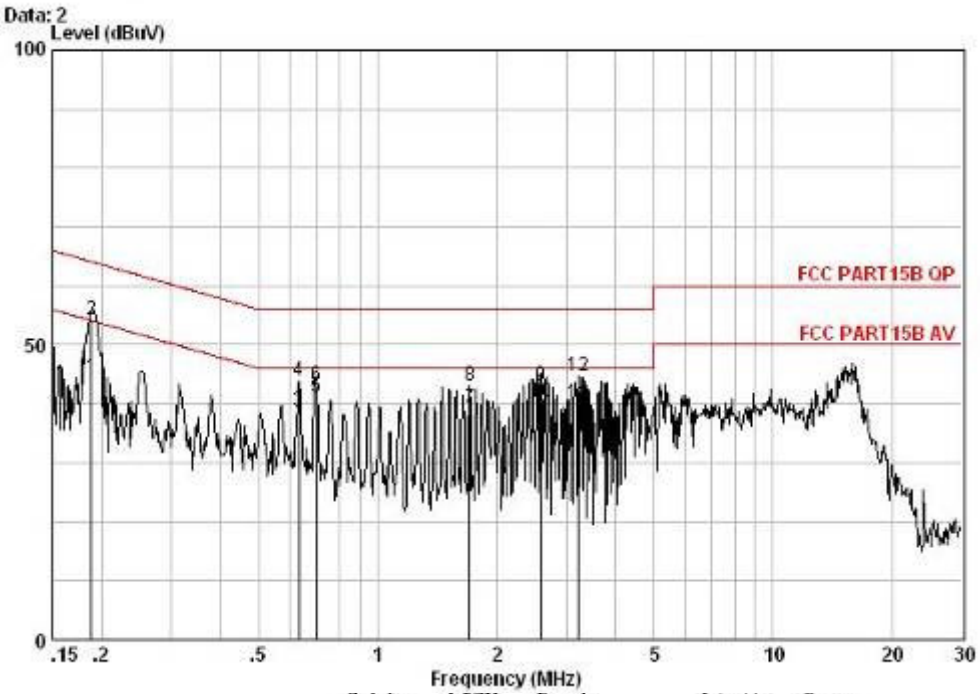
	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.18800	0.04	-0.04	55.30	55.30	64.12	-8.83	QP
2	0.18800	0.04	-0.04	47.40	47.40	54.12	-6.73	Average
3	0.23910	0.04	-0.04	51.39	51.39	62.13	-10.74	QP
4	0.23910	0.04	-0.04	47.00	47.00	52.13	-5.13	Average
5	0.47865	0.06	-0.04	45.97	45.98	56.36	-10.38	QP
6	0.47865	0.06	-0.04	40.60	40.62	46.36	-5.75	Average
7	0.62100	0.06	-0.04	44.70	44.72	56.00	-11.28	QP
8	0.62100	0.06	-0.04	42.00	42.02	46.00	-3.98	Average
9 @	0.67500	0.06	-0.04	42.50	42.52	46.00	-3.48	Average
10	0.67500	0.06	-0.04	46.00	46.02	56.00	-9.98	QP
11	2.650	0.13	-0.07	40.26	40.32	46.00	-5.68	Average
12	2.650	0.13	-0.07	45.20	45.26	56.00	-10.74	QP

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

Neutral Line:



	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.18800	0.04	-0.04	44.40	44.40	54.12	-9.73	Average
2	0.18800	0.04	-0.04	54.10	54.10	64.12	-10.03	QP
3	0.63048	0.06	-0.04	38.60	38.62	46.00	-7.38	Average
4	0.63048	0.06	-0.04	43.76	43.78	56.00	-12.22	QP
5	0.69900	0.06	-0.04	41.10	41.12	46.00	-4.88	Average
6	0.69900	0.06	-0.04	42.90	42.92	56.00	-13.08	QP
7	1.707	0.11	-0.06	39.10	39.15	46.00	-6.85	Average
8	1.707	0.11	-0.06	42.97	43.02	56.00	-12.98	QP
9	2.591	0.13	-0.07	43.00	43.06	56.00	-12.94	QP
10	2.591	0.13	-0.07	40.40	40.46	46.00	-5.54	Average
11	3.224	0.14	-0.08	40.00	40.06	46.00	-5.94	Average
12	3.224	0.14	-0.08	44.74	44.80	56.00	-11.20	QP

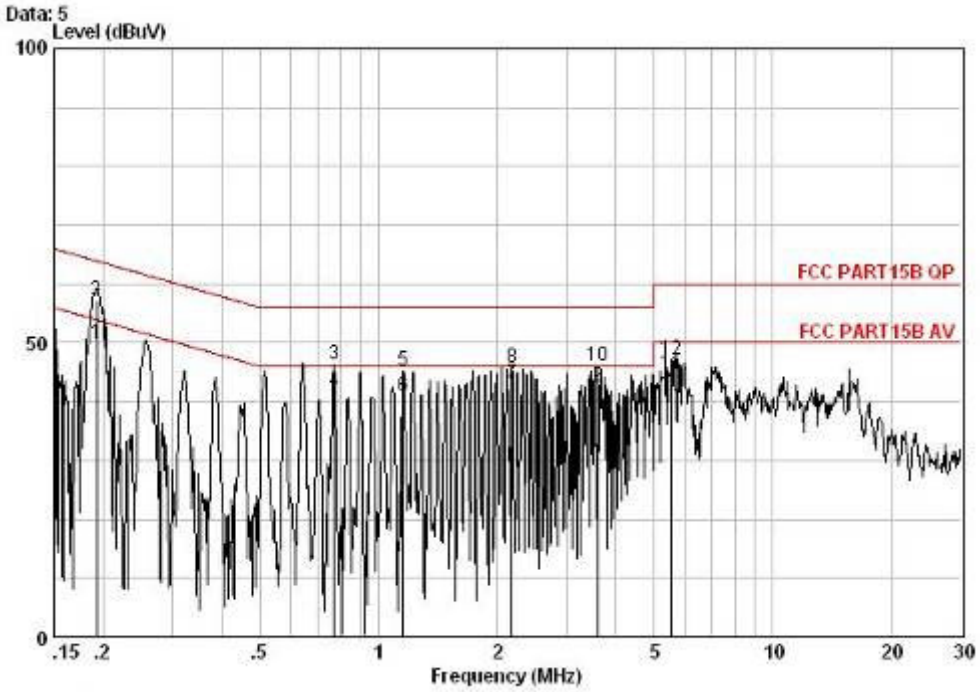
Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

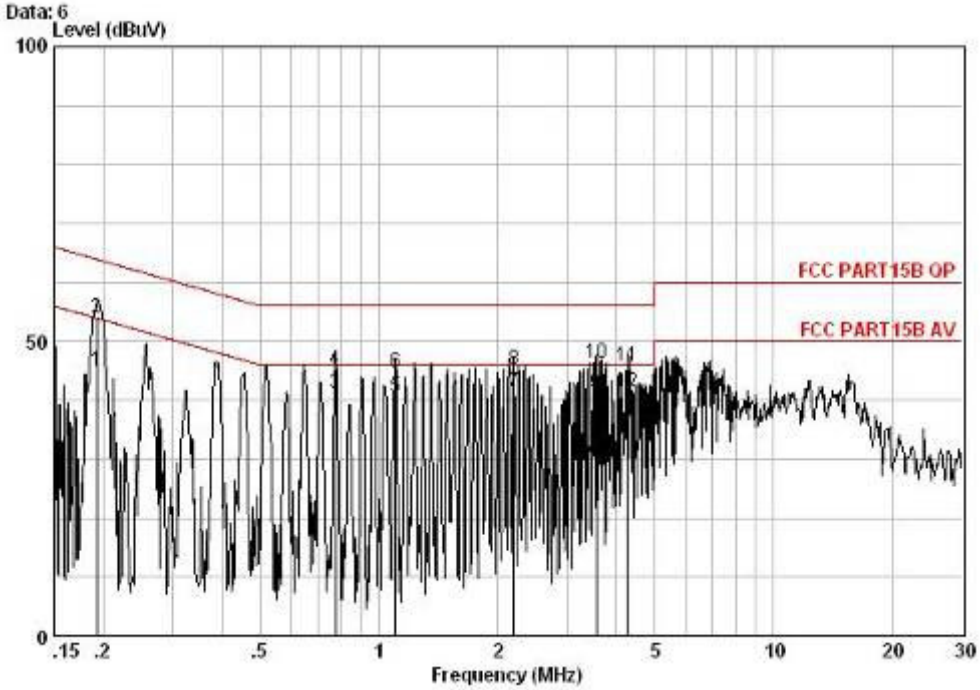
Adapter model: HNA050150U

Live Line:



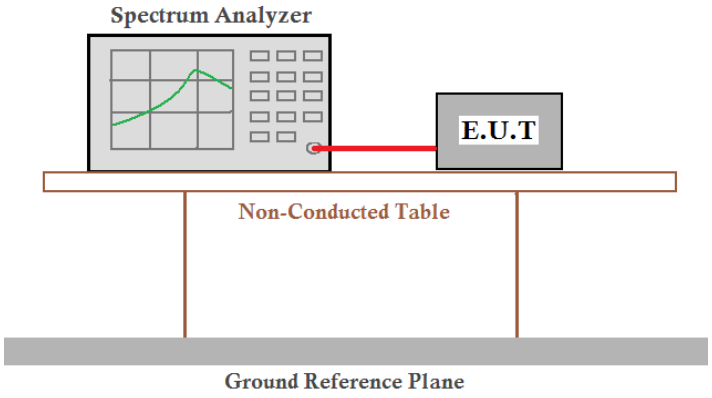
	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19242	0.04	-0.05	50.00	49.99	53.93	-3.94	Average
2	0.19242	0.04	-0.05	57.29	57.28	63.93	-6.65	QP
3	0.77110	0.07	-0.05	46.18	46.19	56.00	-9.81	QP
4	0.77110	0.07	-0.05	41.60	41.62	46.00	-4.38	Average
5	1.153	0.09	-0.05	45.11	45.15	56.00	-10.85	QP
6	1.153	0.09	-0.05	40.80	40.84	46.00	-5.16	Average
7	2.178	0.12	-0.06	42.88	42.94	46.00	-3.06	Average
8	2.178	0.12	-0.06	45.83	45.89	56.00	-10.11	QP
9	3.608	0.15	-0.09	42.50	42.57	46.00	-3.43	Average
10	3.608	0.15	-0.09	46.10	46.17	56.00	-9.83	QP
11	5.535	0.18	-0.12	44.55	44.61	50.00	-5.39	Average
12	5.535	0.18	-0.12	47.14	47.20	60.00	-12.80	QP

Neutral Line:



	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19242	0.04	-0.04	45.00	45.00	53.93	-8.93	Average
2	0.19242	0.04	-0.04	53.85	53.85	63.93	-10.08	QP
3	0.77519	0.07	-0.04	41.20	41.22	46.00	-4.78	Average
4	0.77519	0.07	-0.04	45.09	45.12	56.00	-10.88	QP
5	1.100	0.08	-0.05	40.50	40.54	46.00	-5.46	Average
6	1.100	0.08	-0.05	44.70	44.74	56.00	-11.26	QP
7	2.201	0.12	-0.06	41.40	41.46	46.00	-4.54	Average
8	2.201	0.12	-0.06	45.19	45.25	56.00	-10.75	QP
9	3.554	0.15	-0.09	41.10	41.16	46.00	-4.84	Average
10	3.554	0.15	-0.09	46.30	46.36	56.00	-9.64	QP
11	4.269	0.16	-0.10	45.79	45.85	56.00	-10.15	QP
12	4.269	0.16	-0.10	41.36	41.42	46.00	-4.58	Average

5.3 Conducted Peak Output Power

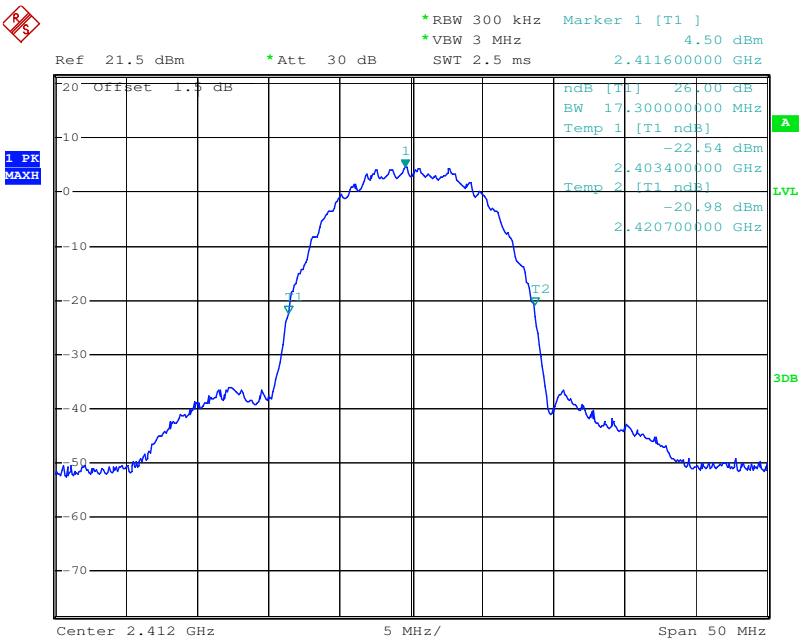
Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	30dBm
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

Measurement Data

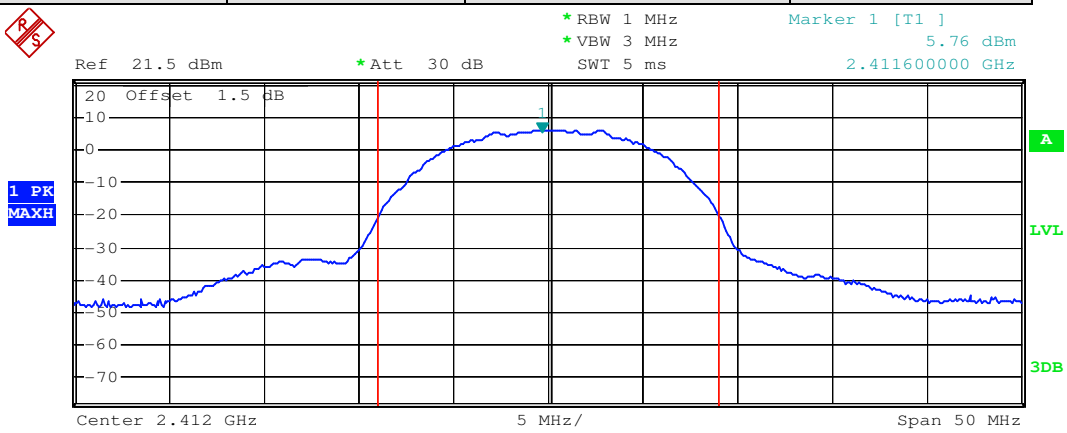
802.11b mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	14.39	30.00	Pass
Middle	14.88	30.00	Pass
Highest	13.60	30.00	Pass
802.11g mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	13.21	30.00	Pass
Middle	13.28	30.00	Pass
Highest	12.36	30.00	Pass

Test plot as follows:

Test mode:	11b	Test channel:	Lowest	-26dB



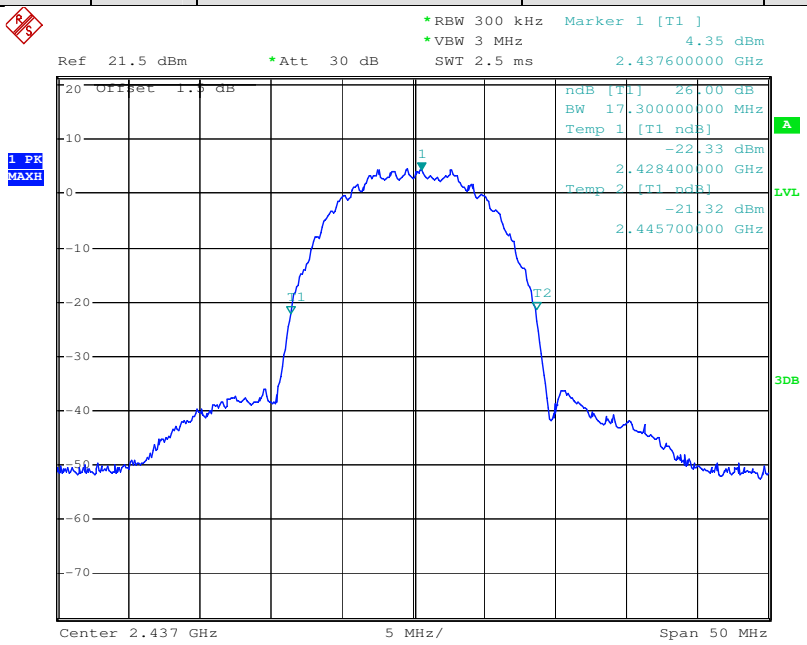
Test mode:	11b	Test channel:	Lowest



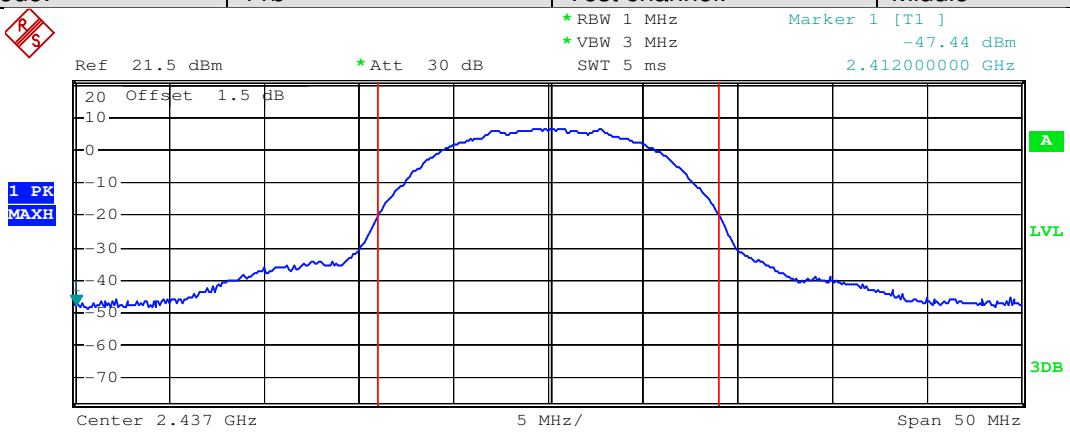
Tx Channel

Bandwidth 18 MHz Power 14.39 dBm

Test mode:	11b	Test channel:	Middle	-26dB



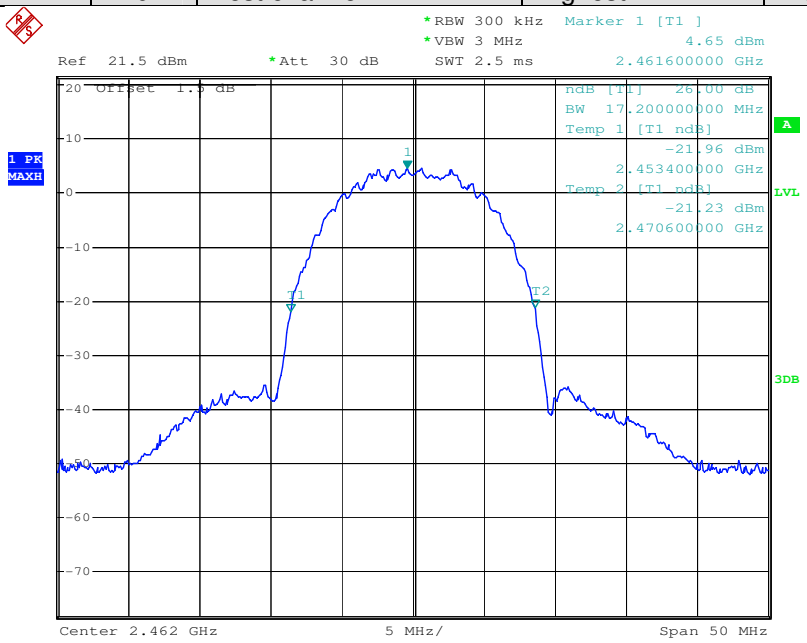
Test mode:	11b	Test channel:	Middle



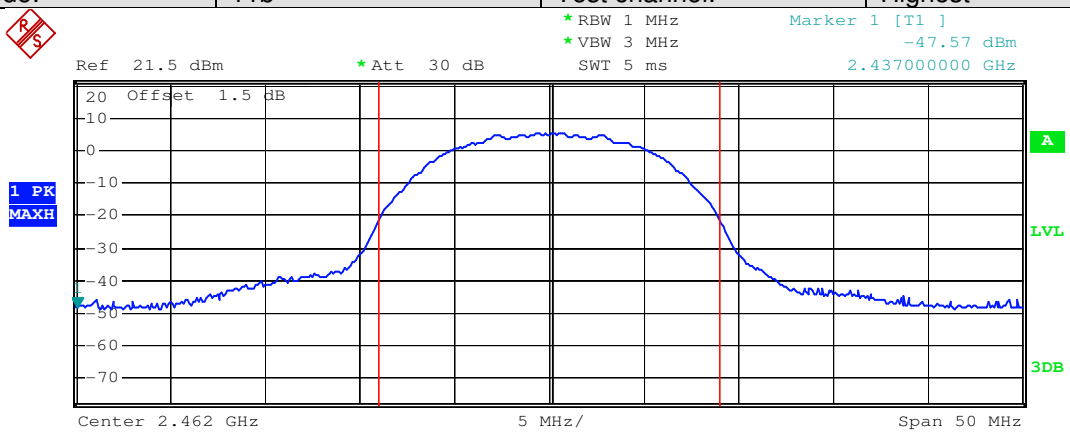
Tx Channel

Bandwidth	18 MHz	Power	14.88 dBm

Test mode:	11b	Test channel:	Highest	-26dB



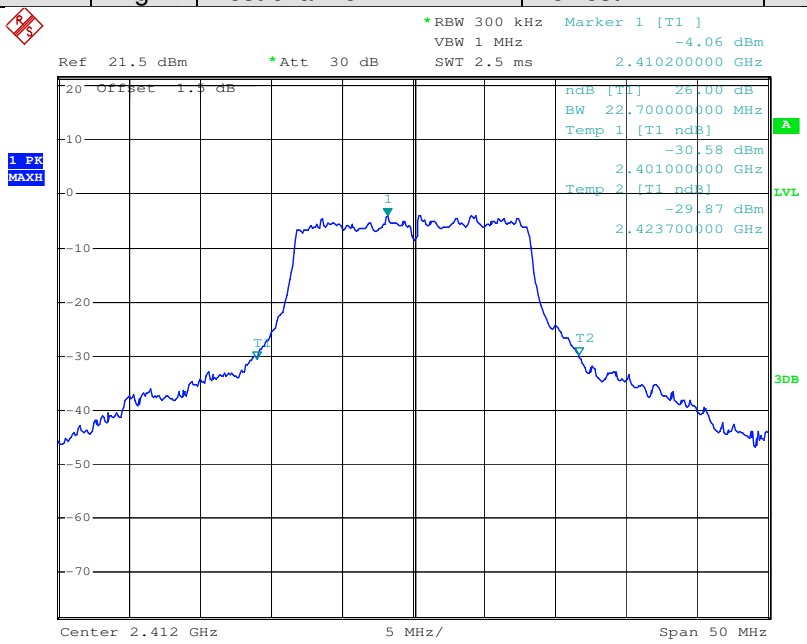
Test mode:	11b	Test channel:	Highest



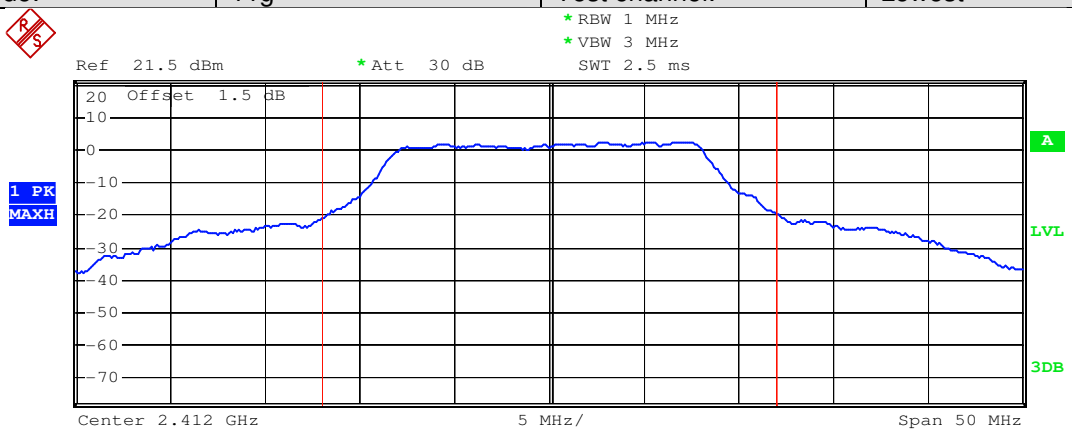
Tx Channel

Bandwidth 18 MHz Power 13.60 dBm

Test mode:	11g	Test channel:	Lowest	-26dB



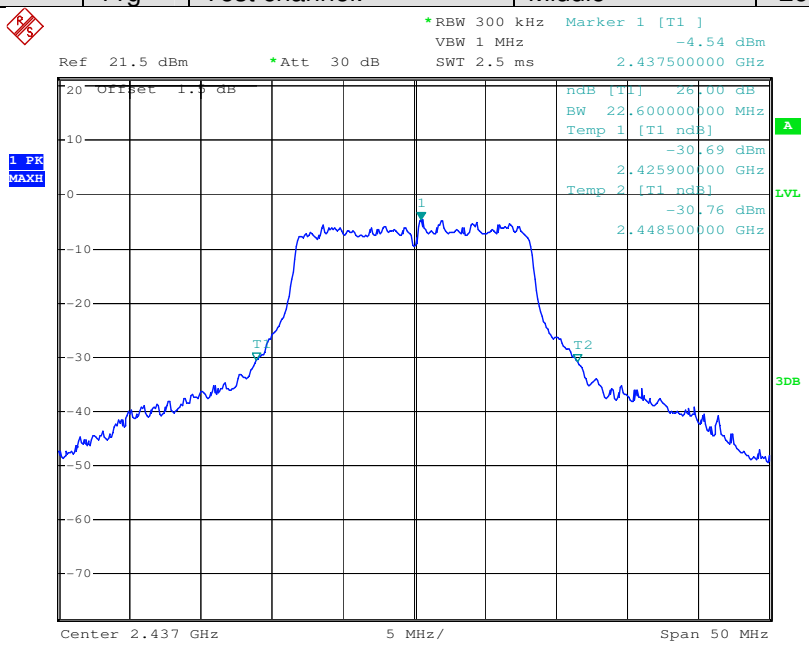
Test mode:	11g	Test channel:	Lowest



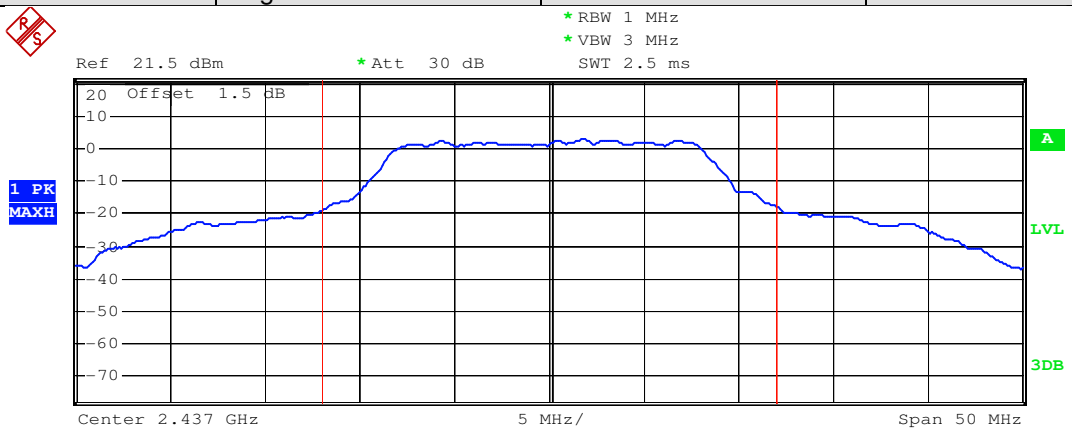
Tx Channel

Bandwidth 24 MHz Power 13.21 dBm

Test mode:	11g	Test channel:	Middle	-26dB



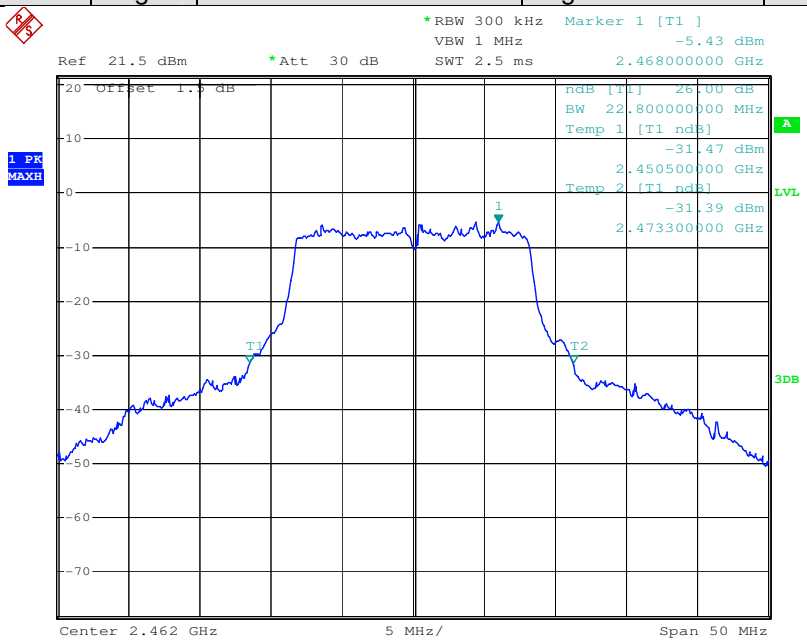
Test mode:	11g	Test channel:	Middle



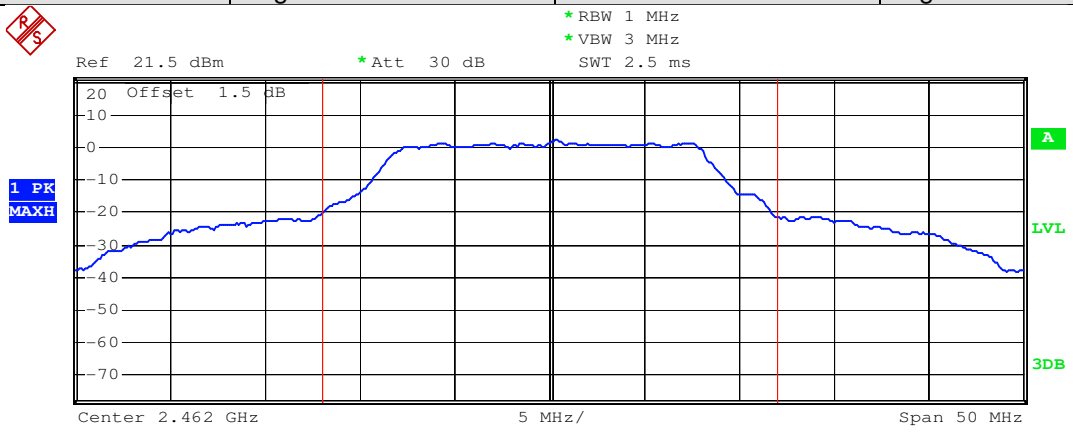
Tx Channel

Bandwidth 24 MHz Power 13.28 dBm

Test mode:	11g	Test channel:	Highest	-26dB



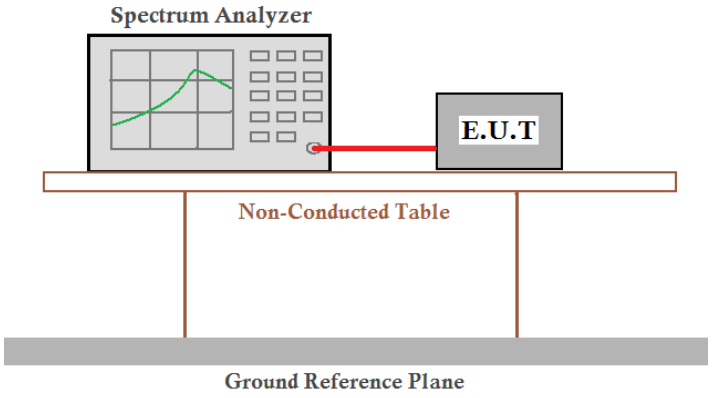
Test mode:	11g	Test channel:	Highest



Tx Channel

Bandwidth 24 MHz Power 12.36 dBm

5.4 6dB Occupy Bandwidth

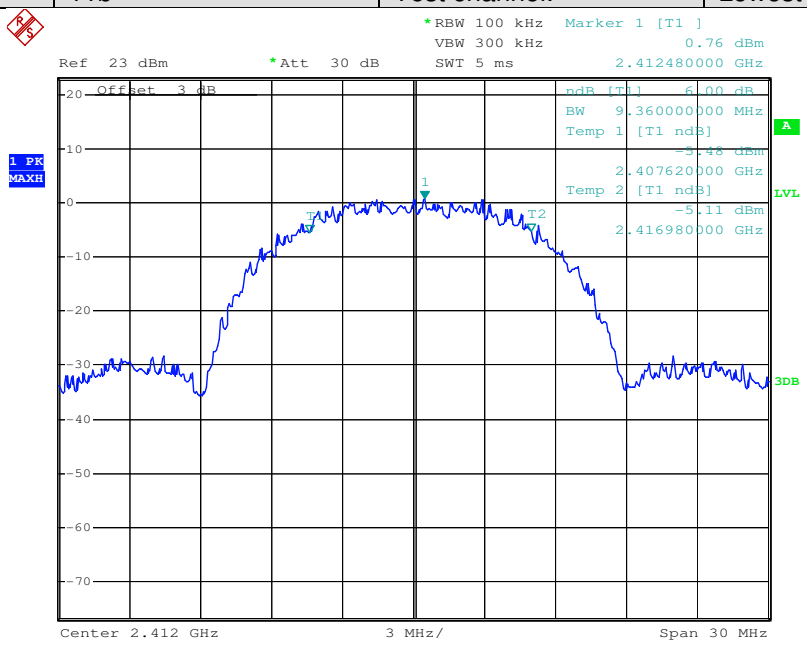
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

Measurement Data

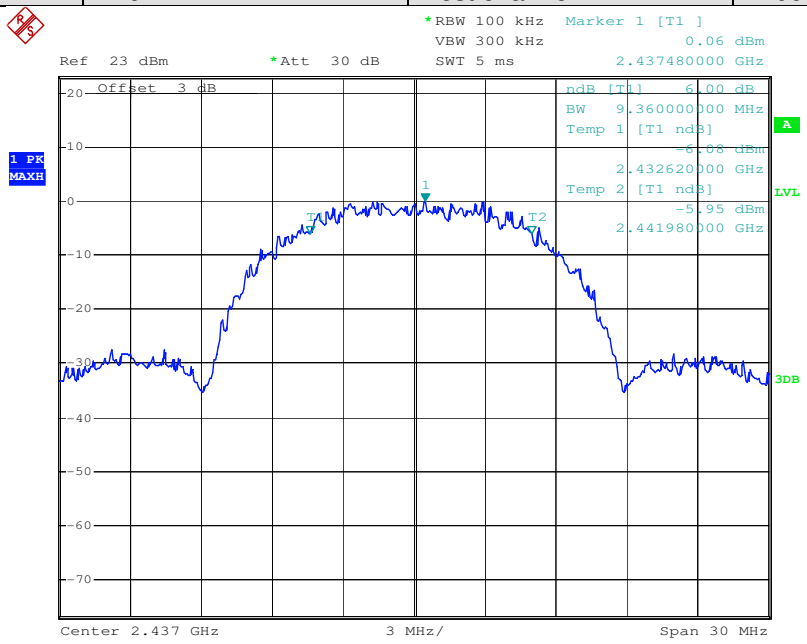
802.11b mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (KHz)	Result
Lowest	9.36	>500	Pass
Middle	9.36	>500	Pass
Highest	9.36	>500	Pass
802.11g mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (KHz)	Result
Lowest	16.60	>500	Pass
Middle	16.60	>500	Pass
Highest	16.60	>500	Pass

Test plot as follows:

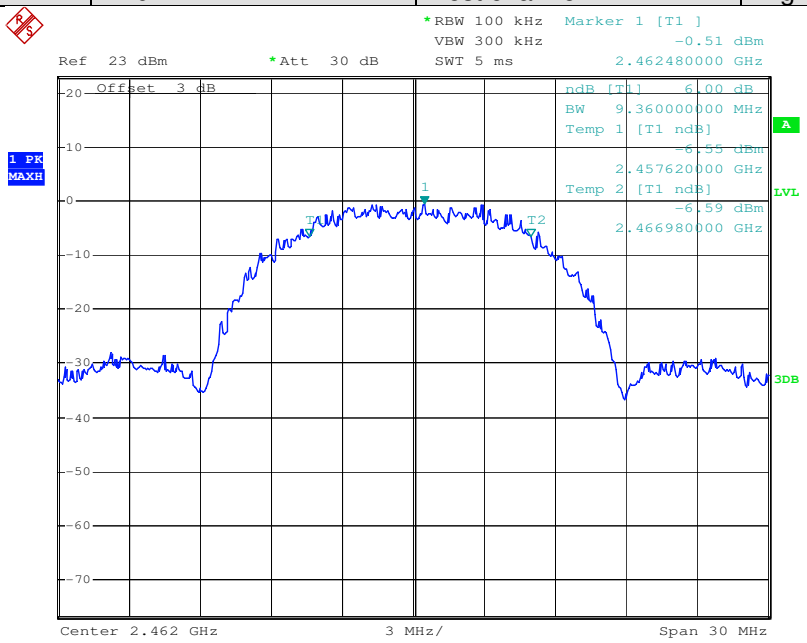
Test mode:	11b	Test channel:	Lowest



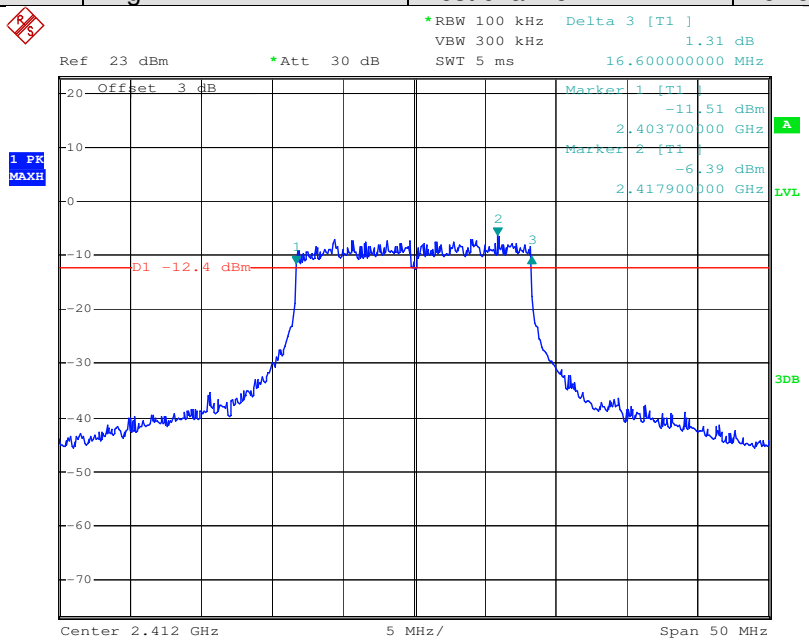
Test mode:	11b	Test channel:	Middle



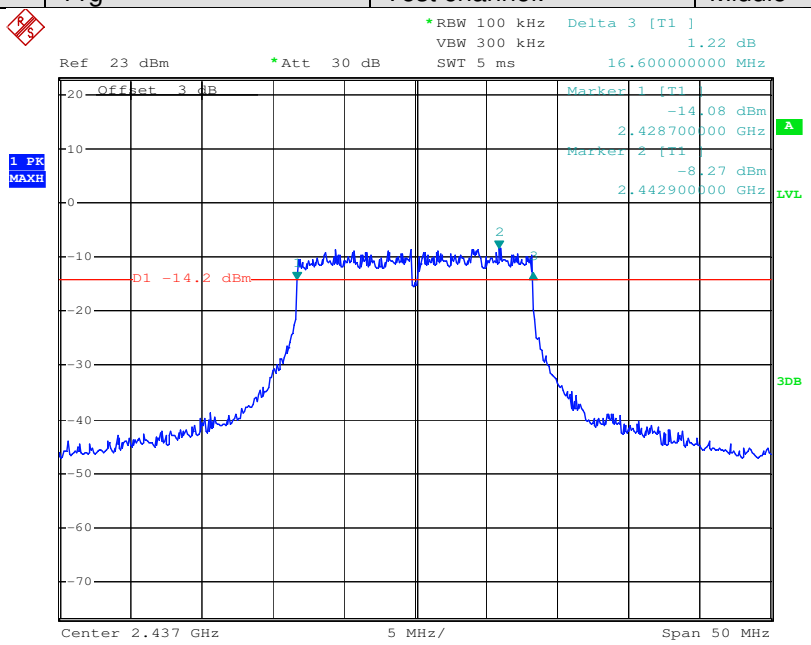
Test mode:	11b	Test channel:	Highest



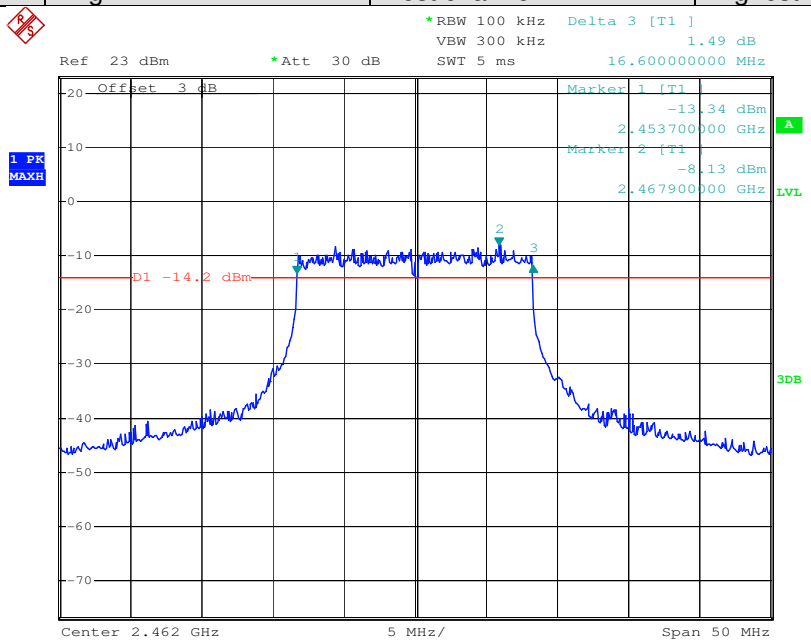
Test mode:	11g	Test channel:	Lowest



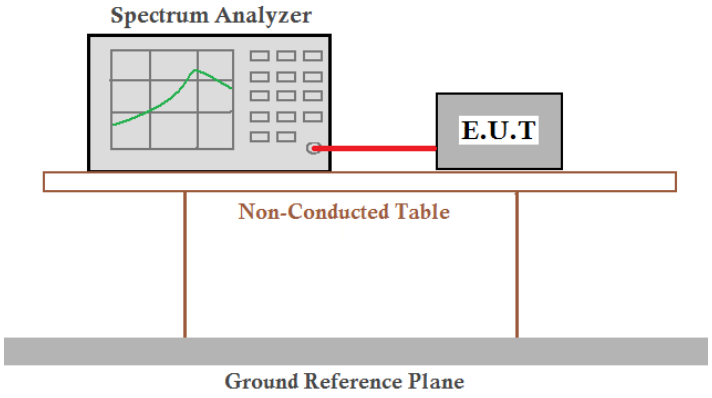
Test mode:	11g	Test channel:	Middle



Test mode:	11g	Test channel:	Highest



5.5 Power Spectral Density

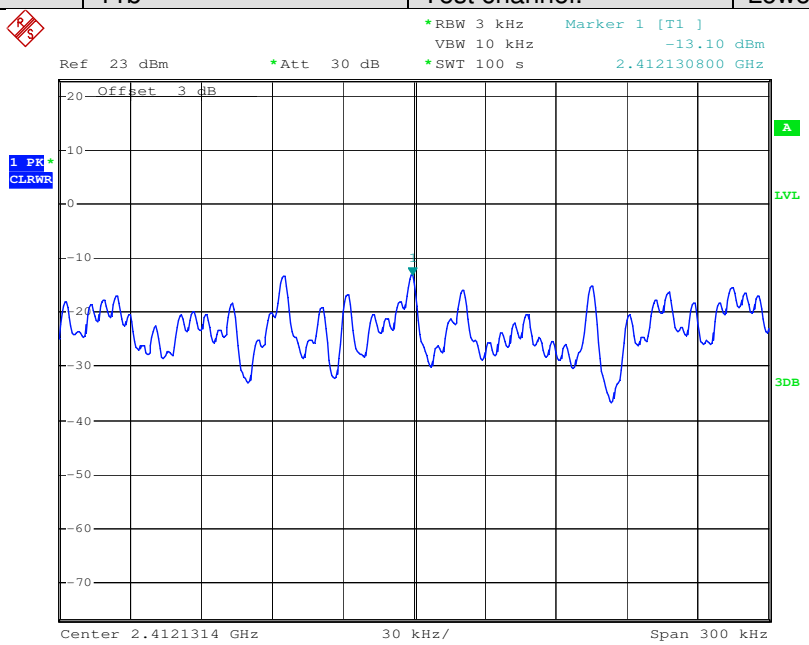
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	<8dBm
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

Measurement Data

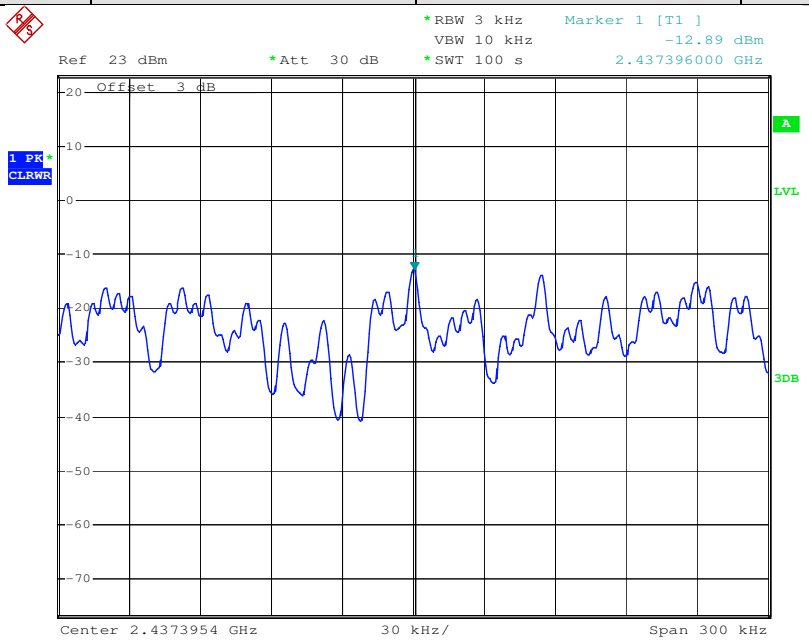
802.11b mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-13.10	<8.00	Pass
Middle	-12.89	<8.00	Pass
Highest	-12.48	<8.00	Pass
802.11g mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-22.49	<8.00	Pass
Middle	-22.91	<8.00	Pass
Highest	-23.97	<8.00	Pass

Test plot as follows:

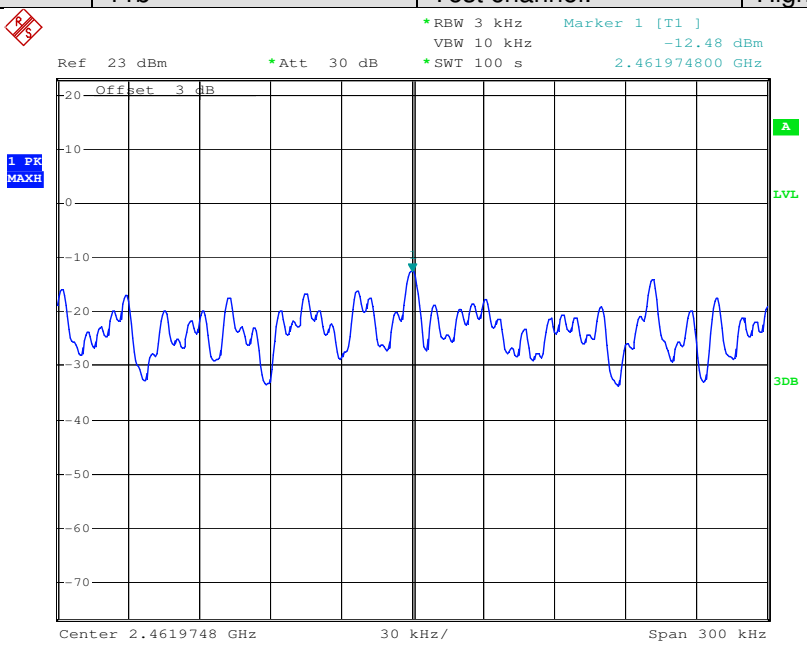
Test mode:	11b	Test channel:	Lowest



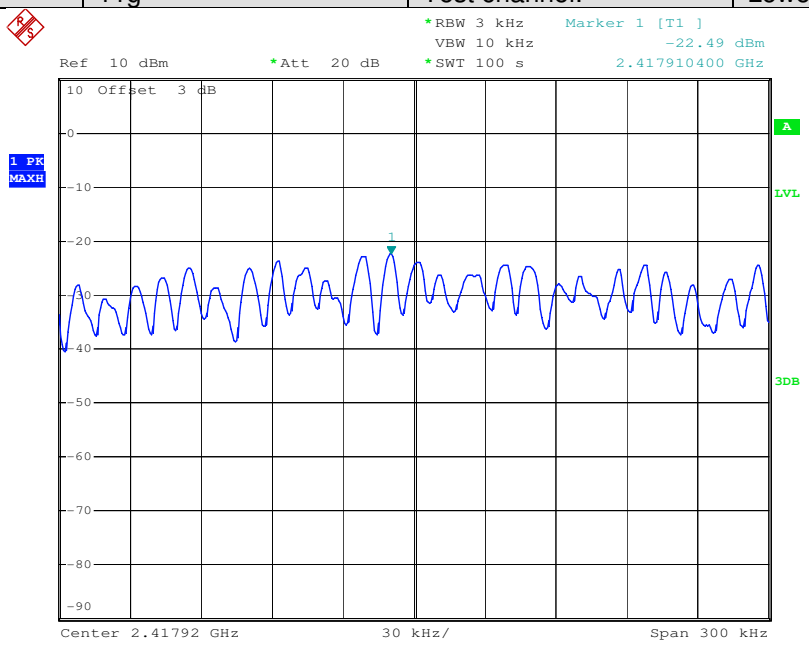
Test mode:	11b	Test channel:	Middle



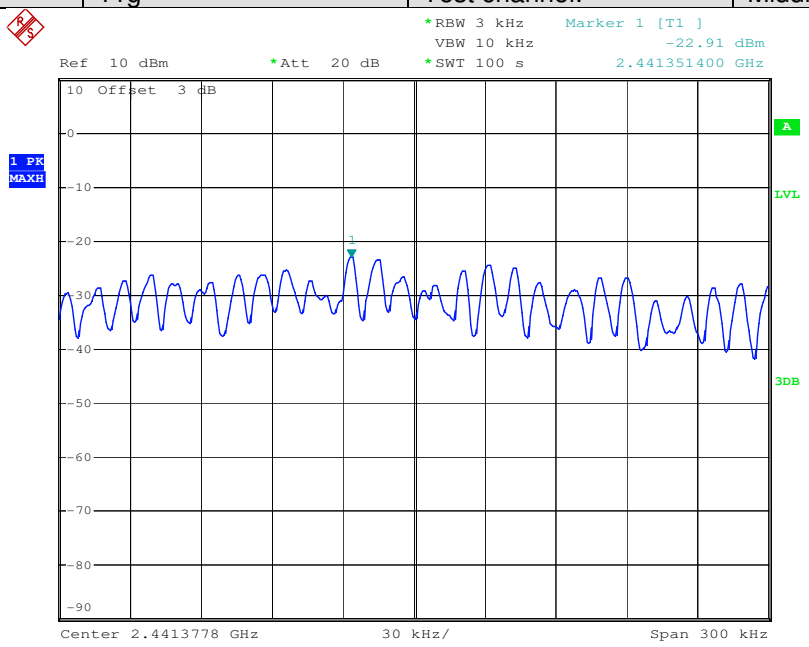
Test mode:	11b	Test channel:	Highest



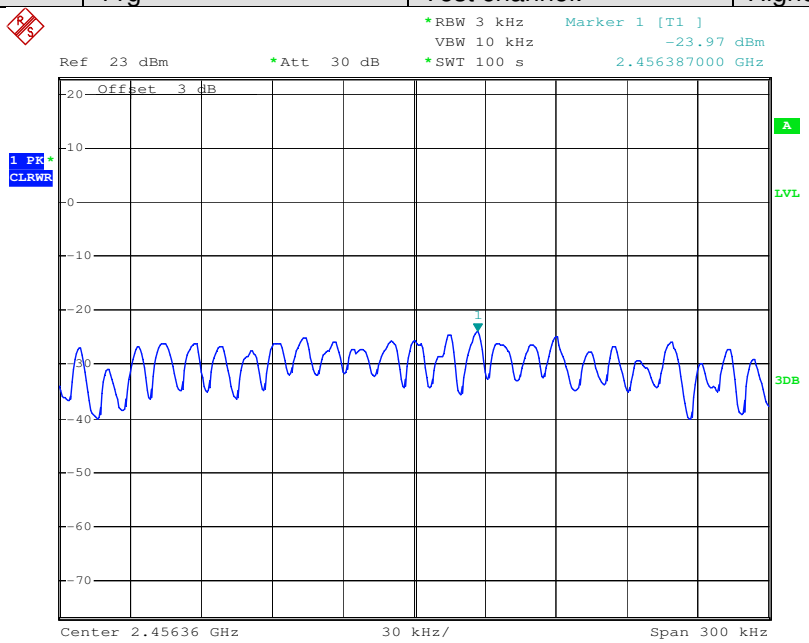
Test mode:	11g	Test channel:	Lowest



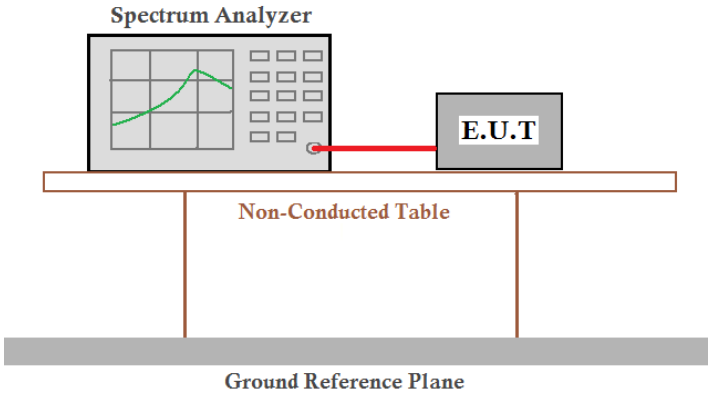
Test mode:	11g	Test channel:	Middle



Test mode:	11g	Test channel:	Highest

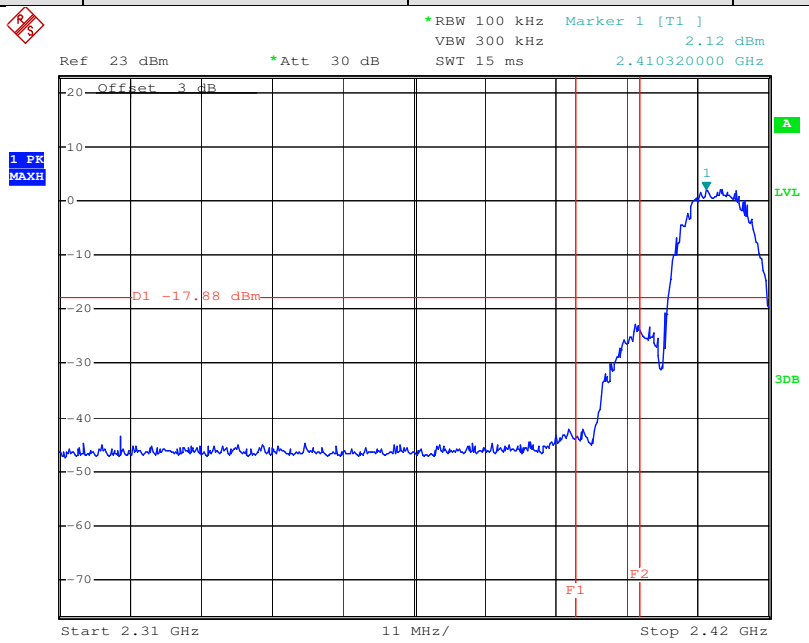


5.6 Band Edge

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2009 and KDB558074
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.
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

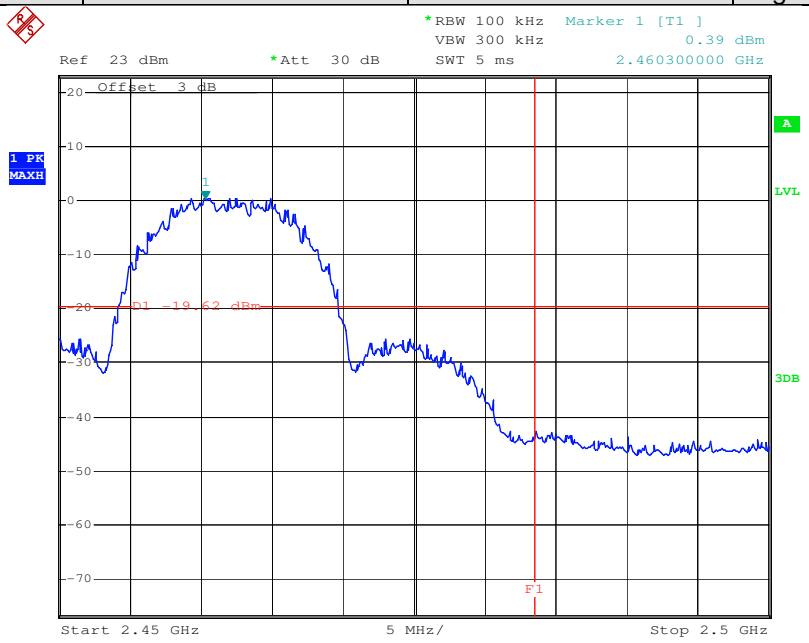
Test plot as follows:

Test mode:	11b	Test channel:	Lowest



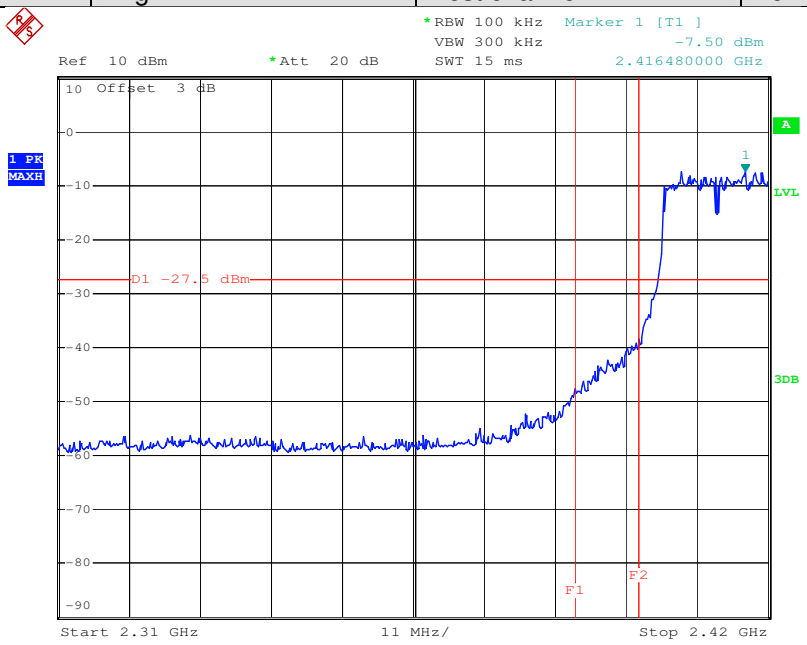
F1=2390MHz F2=2400MHz

Test mode:	11b	Test channel:	Highest



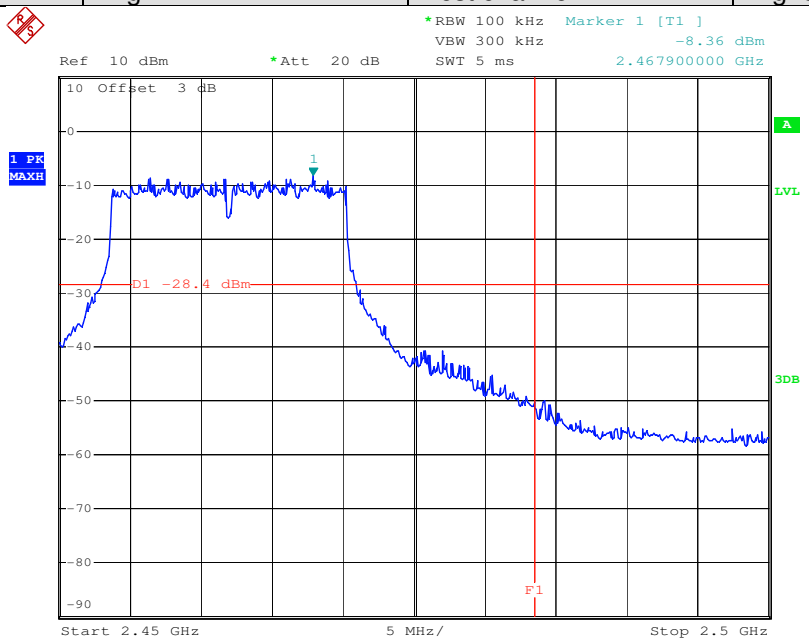
F1=2483.5MHz

Test mode:	11g	Test channel:	Lowest



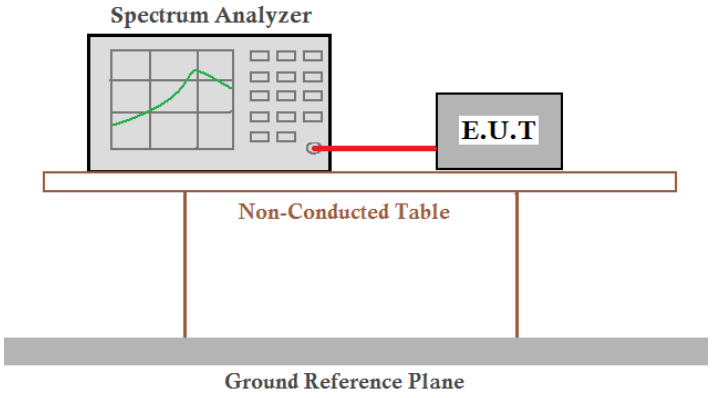
F1=2390MHz F2=2400MHz

Test mode:	11g	Test channel:	Highest



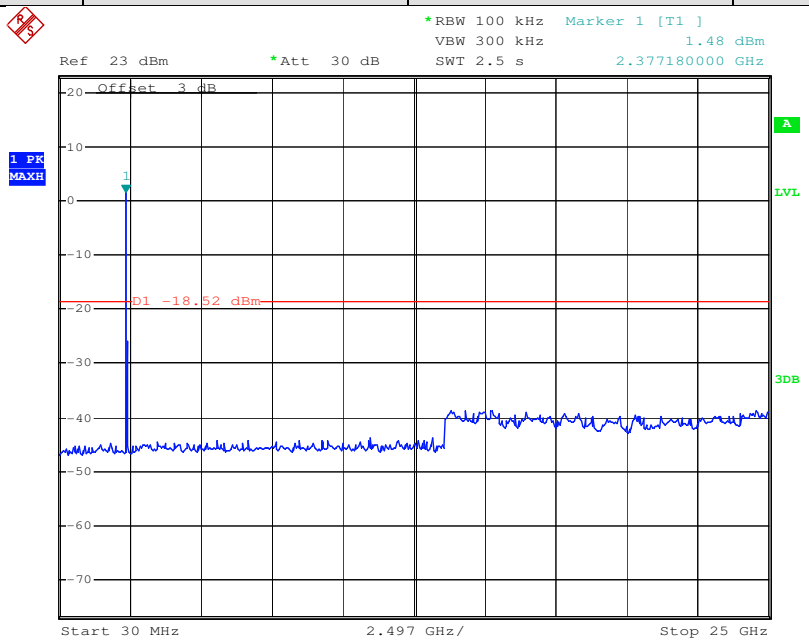
F1=2483.5MHz

5.7 RF Antenna Conducted spurious emissions

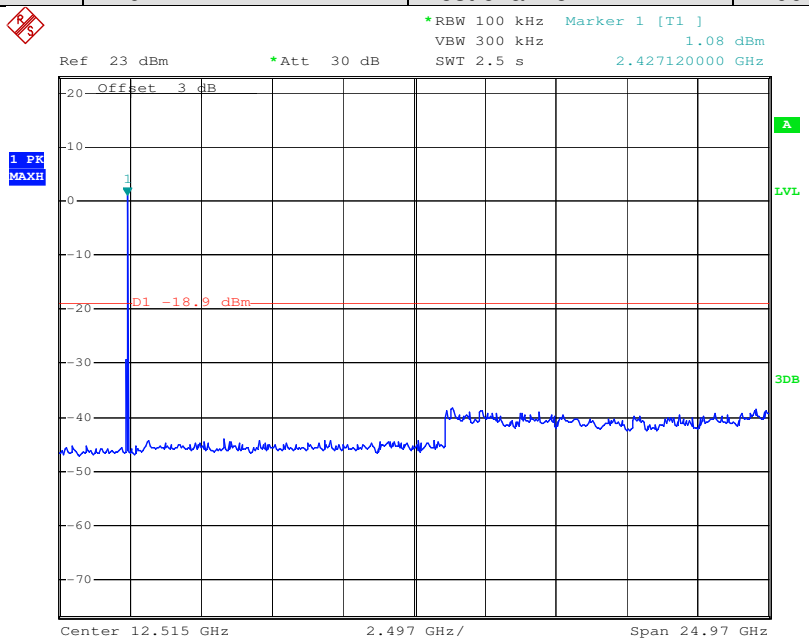
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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.
Test setup:	 *Remark:* *Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.*
Test Instruments:	Refer to section 4.7 for details
Test results:	Passed

Test plot as follows:

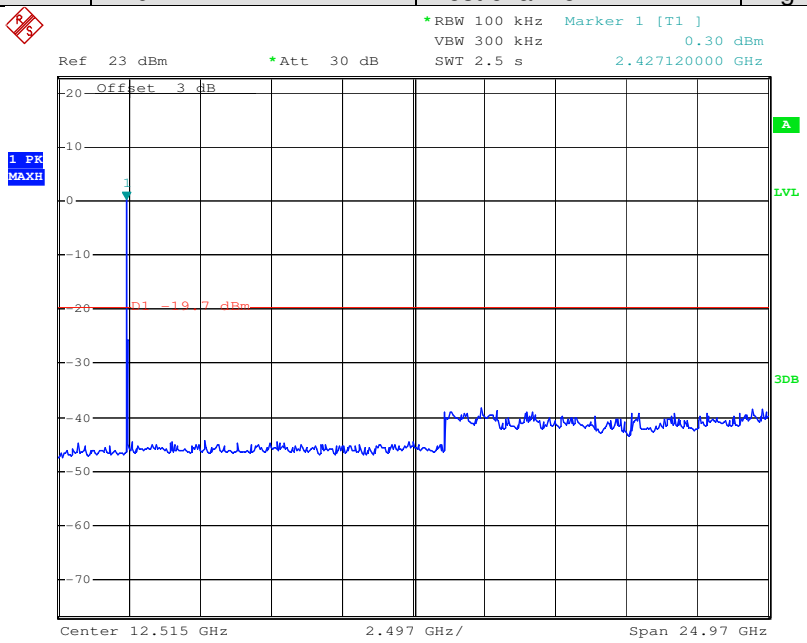
Test mode:	11b	Test channel:	Lowest



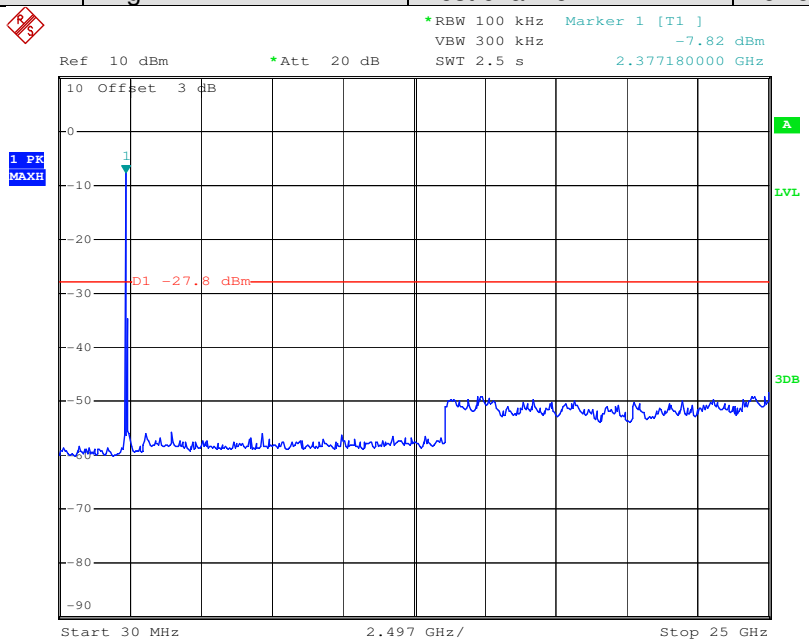
Test mode:	11b	Test channel:	Middle



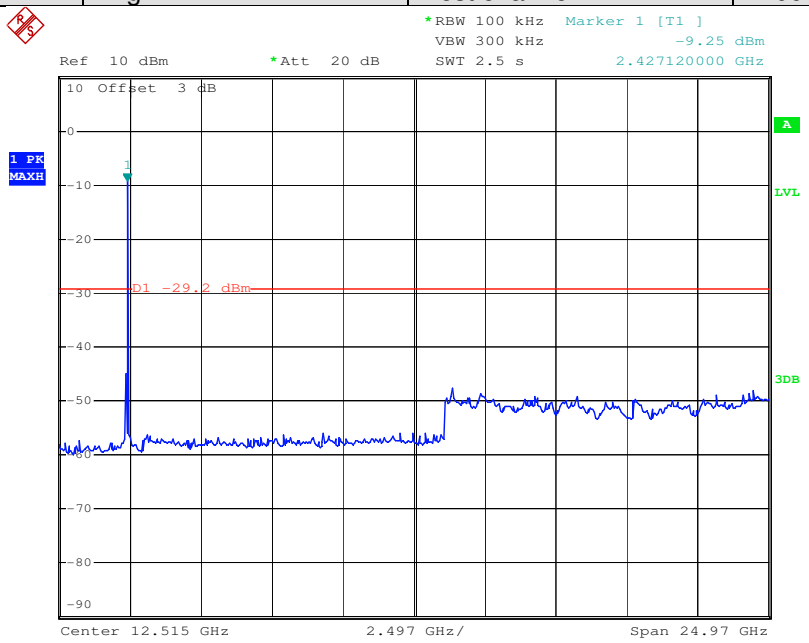
Test mode:	11b	Test channel:	Highest



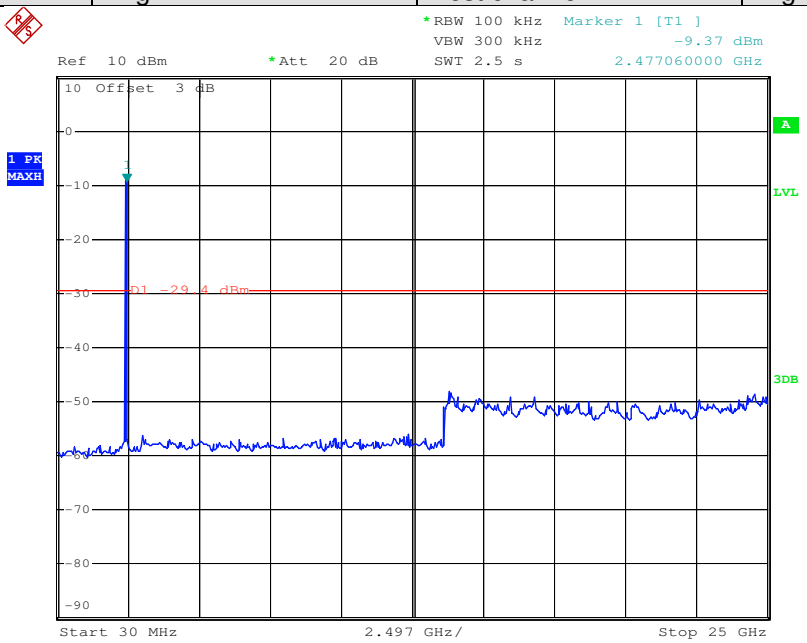
Test mode:	11g	Test channel:	Lowest



Test mode:	11g	Test channel:	Middle



Test mode:	11g	Test channel:	Highest



5.8 Radiated Emission

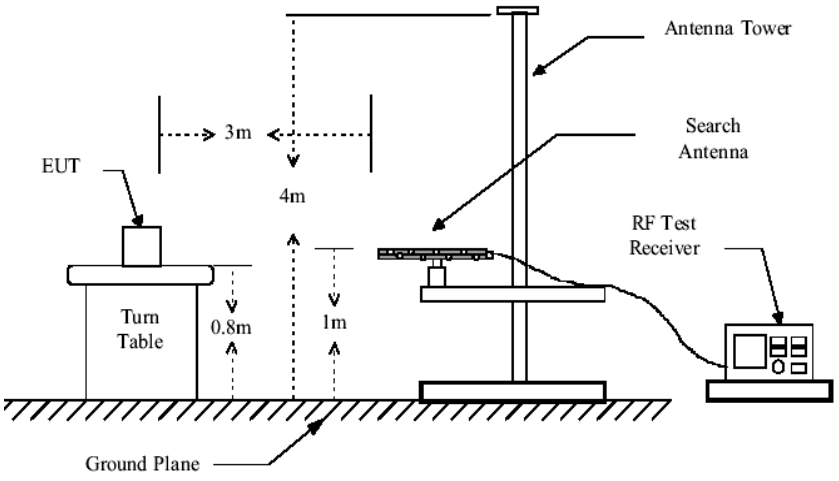
<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4: 2009</td></tr>
<tr><td>Test Frequency Range:</td><td>30MHz to 25GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr>
<tr><td>74.0</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure:</td><td>The E.U.T and its simulators are placed on a turn table which is 0.8meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

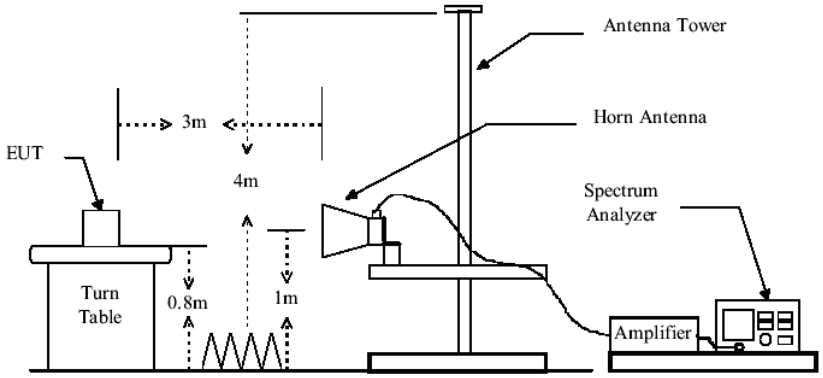
Adapter model: HNA050150U ,Adapter model: SW013UF-0500150US
Pre-scan was performed on the EUT on above modes, and then found the worse case mode is adapter model: HNA050150U in the 802.11b mode

Only the worse case data was displayed.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 4.7 for details</td></tr>
<tr><td>Test mode:</td><td>Tx mode（802.11b and 802.11g）</td></tr>
<tr><td>Test results:</td><td>Passed</td></tr>
</table>

Test setup:	Below 1GHz



Above 1GHz



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

5.8.1 Radiated emission below 1GHz

Adapter model: HNA050150U

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
86.260	1.10	8.36	27.97	54.63	36.12	40.00	-3.88	Vertical
120.210	1.25	7.89	27.69	56.22	37.67	43.50	-5.83	Vertical
299.660	1.90	13.85	26.72	49.95	38.98	46.00	-7.02	Vertical
548.950	2.65	18.87	27.66	47.59	41.45	46.00	-4.55	Vertical
718.700	2.96	21.60	27.21	43.87	41.22	46.00	-4.78	Vertical
793.390	3.18	22.07	26.96	43.27	41.56	46.00	-4.44	Vertical
109.540	1.23	8.62	27.78	53.13	35.20	43.50	-8.30	Horizontal
179.380	1.37	9.87	27.26	50.37	34.35	43.50	-9.15	Horizontal
299.660	1.90	13.85	26.72	51.99	41.02	46.00	-4.98	Horizontal
448.070	2.40	16.84	27.56	47.80	39.48	46.00	-6.52	Horizontal
548.950	2.65	18.87	27.66	43.78	37.64	46.00	-8.36	Horizontal
793.390	3.18	22.07	26.96	42.50	40.79	46.00	-5.21	Horizontal

Adapter model: SW013UF-0500150US

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
109.540	1.23	8.62	27.78	56.19	38.26	43.50	-5.24	Vertical
299.660	1.90	13.85	26.72	48.88	37.91	46.00	-8.09	Vertical
347.190	2.05	15.34	27.07	48.15	38.47	46.00	-7.53	Vertical
448.070	2.40	16.84	27.56	48.12	39.80	46.00	-6.20	Vertical
548.950	2.65	18.87	27.66	45.32	39.18	46.00	-6.82	Vertical
657.590	2.82	20.84	27.42	44.95	41.19	46.00	-4.81	Vertical
94.020	1.14	8.87	27.92	57.22	39.31	43.50	-4.19	Horizontal
119.240	1.25	7.93	27.70	55.37	36.85	43.50	-6.65	Horizontal
300.000	1.90	13.90	26.72	53.00	42.08	46.00	-3.92	Horizontal
397.630	2.19	16.27	27.39	50.74	41.81	46.00	-4.19	Horizontal
548.950	2.65	18.87	27.66	47.66	41.52	46.00	-4.48	Horizontal
793.390	3.18	22.07	26.96	42.46	40.75	46.00	-5.25	Horizontal

5.8.2 Transmitter emission above 1GHz

Test channel:	Lowest	Remark:	Peak	Mode:	802.11b

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
4825	10.34	34.03	41.43	47.90	50.84	74.00	-23.16	Vertical
7239	13.22	36.25	40.78	46.32	55.01	74.00	-18.99	Vertical
9670	13.59	37.03	37.71	43.67	56.58	74.00	-17.42	Vertical
12050	16.77	38.82	39.13	42.12	58.58	74.00	-15.42	Vertical
14464	17.43	39.45	45.11	42.97	54.74	74.00	-19.26	Vertical
16861	19.09	41.12	39.49	40.55	61.27	74.00	-12.73	Vertical
4825	10.34	34.03	41.43	47.44	50.38	74.00	-23.62	Horizontal
7239	13.22	36.25	40.78	48.66	57.35	74.00	-16.65	Horizontal
9636	13.49	37.01	37.64	45.00	57.86	74.00	-16.14	Horizontal
12050	16.77	38.82	39.13	42.40	58.86	74.00	-15.14	Horizontal
14447	17.43	39.45	45.11	42.88	54.65	74.00	-19.35	Horizontal
16861	19.09	41.12	39.49	39.41	60.13	74.00	-13.87	Horizontal

Test channel:	Lowest	Remark:	Average	Mode:	802.11b

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over limit	polarization
4825	10.34	34.03	41.43	36.59	39.53	54.00	-14.47	Vertical
7239	13.22	36.25	40.78	36.00	44.69	54.00	-9.31	Vertical
9670	13.59	37.03	37.71	31.66	44.57	54.00	-9.43	Vertical
12050	16.77	38.82	39.13	28.90	45.36	54.00	-8.64	Vertical
14464	17.43	39.45	45.11	32.60	44.37	54.00	-9.63	Vertical
16861	19.09	41.12	39.49	25.26	45.98	54.00	-8.02	Vertical
4825	10.34	34.03	41.43	38.00	40.94	54.00	-13.06	Horizontal
7239	13.22	36.25	40.78	35.20	43.89	54.00	-10.11	Horizontal
9636	13.49	37.01	37.64	32.50	45.36	54.00	-8.64	Horizontal
12050	16.77	38.82	39.13	28.66	45.12	54.00	-8.88	Horizontal
14447	17.43	39.45	45.11	30.26	42.03	54.00	-11.97	Horizontal
16861	19.09	41.12	39.49	24.90	45.62	54.00	-8.38	Horizontal

Test channel:	Middle	Remark:	Peak	Mode:	802.11b

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
4876	10.36	34.02	39.89	47.02	51.51	74.00	-22.49	Vertical
7324	12.91	36.10	40.40	47.60	56.21	74.00	-17.79	Vertical
9755	13.89	37.10	37.94	44.85	57.90	74.00	-16.10	Vertical
12186	18.03	38.91	39.27	40.41	58.08	74.00	-15.92	Vertical
14634	17.38	39.60	45.83	44.00	55.15	74.00	-18.85	Vertical
17218	19.67	41.20	39.53	38.78	60.12	74.00	-13.88	Vertical
4876	10.36	34.02	39.89	47.40	51.89	74.00	-22.11	Horizontal
7324	12.91	36.10	40.40	47.25	55.86	74.00	-18.14	Horizontal
9755	13.89	37.10	37.94	43.86	56.91	74.00	-17.09	Horizontal
12186	18.03	38.91	39.27	40.68	58.35	74.00	-15.65	Horizontal
14634	17.38	39.60	45.83	43.75	54.90	74.00	-19.10	Horizontal
17065	19.55	41.08	39.41	39.34	60.56	74.00	-13.44	Horizontal

Test channel:	Middle	Remark:	Average	Mode:	802.11b

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over limit	polarization
4876	10.36	34.02	39.89	35.26	39.75	54.00	-14.25	Vertical
7324	12.91	36.10	40.40	36.24	44.85	54.00	-9.15	Vertical
9755	13.89	37.10	37.94	31.29	44.34	54.00	-9.66	Vertical
12186	18.03	38.91	39.27	26.48	44.15	54.00	-9.85	Vertical
14634	17.38	39.60	45.83	30.47	41.62	54.00	-12.38	Vertical
17218	19.67	41.20	39.53	24.58	45.92	54.00	-8.08	Vertical
4876	10.36	34.02	39.89	36.20	40.69	54.00	-13.31	Horizontal
7324	12.91	36.10	40.40	32.26	40.87	54.00	-13.13	Horizontal
9755	13.89	37.10	37.94	30.66	43.71	54.00	-10.29	Horizontal
12186	18.03	38.91	39.27	27.29	44.96	54.00	-9.04	Horizontal
14634	17.38	39.60	45.83	30.87	42.02	54.00	-11.98	Horizontal
17065	19.55	41.08	39.41	23.00	44.22	54.00	-9.78	Horizontal

Test channel:	Highest	Remark:	Peak	Mode:	802.11b

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
4927	10.53	34.01	40.90	47.07	50.71	74.00	-23.29	Vertical
7392	12.68	35.99	40.11	47.20	55.76	74.00	-18.24	Vertical
9840	14.13	37.17	38.01	44.68	57.97	74.00	-16.03	Vertical
12322	17.71	38.99	39.41	40.47	57.76	74.00	-16.24	Vertical
14770	16.57	39.73	46.35	45.83	55.78	74.00	-18.22	Vertical
17235	19.67	41.20	39.53	38.37	59.71	74.00	-14.29	Vertical
4927	10.53	34.01	40.90	47.48	51.12	74.00	-22.88	Horizontal
7392	12.68	35.99	40.11	47.37	55.93	74.00	-18.07	Horizontal
9857	14.17	37.19	37.93	44.03	57.46	74.00	-16.54	Horizontal
12322	17.71	38.99	39.41	41.92	59.21	74.00	-14.79	Horizontal
14770	16.57	39.73	46.35	44.19	54.14	74.00	-19.86	Horizontal
17235	19.67	41.20	39.53	38.41	59.75	74.00	-14.25	Horizontal

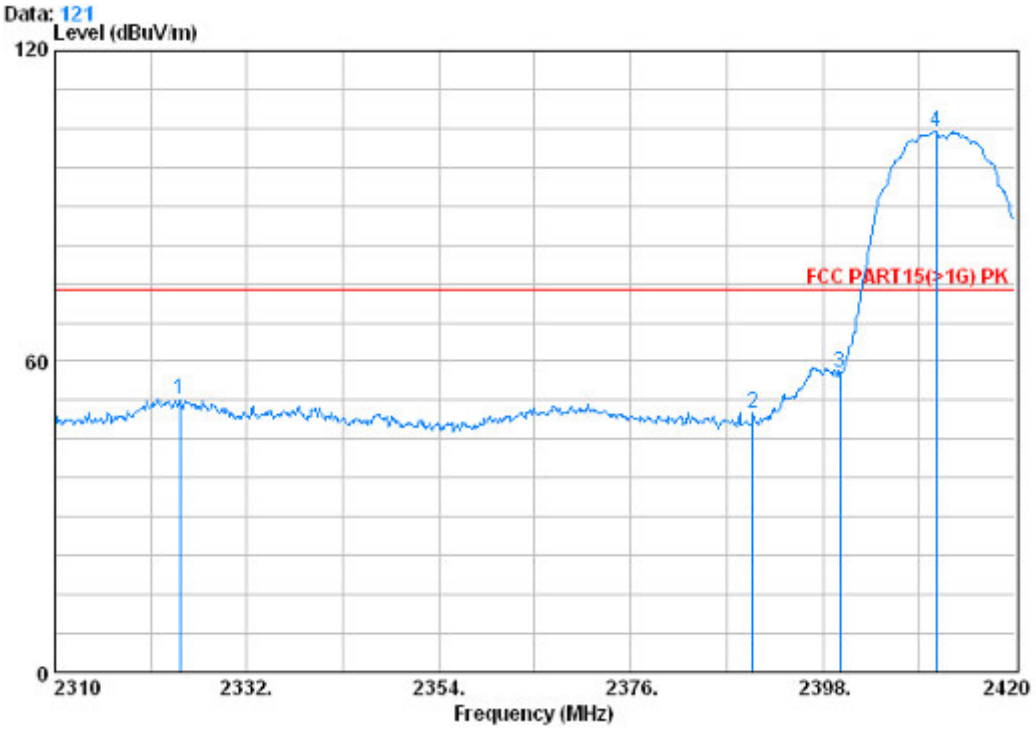
Test channel:	Highest	Remark:	Average	Mode:	802.11b

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over limit	polarization
4927	10.53	34.01	40.90	36.27	39.91	54.00	-14.09	Vertical
7392	12.68	35.99	40.11	36.30	44.86	54.00	-9.14	Vertical
9840	14.13	37.17	38.01	31.29	44.58	54.00	-9.42	Vertical
12322	17.71	38.99	39.41	27.26	44.55	54.00	-9.45	Vertical
14770	16.57	39.73	46.35	30.26	40.21	54.00	-13.79	Vertical
17235	19.67	41.20	39.53	24.58	45.92	54.00	-8.08	Vertical
4927	10.53	34.01	40.90	35.27	38.91	54.00	-15.09	Horizontal
7392	12.68	35.99	40.11	34.29	42.85	54.00	-11.15	Horizontal
9857	14.17	37.19	37.93	31.28	44.71	54.00	-9.29	Horizontal
12322	17.71	38.99	39.41	28.06	45.35	54.00	-8.65	Horizontal
14770	16.57	39.73	46.35	33.29	43.24	54.00	-10.76	Horizontal
17235	19.67	41.20	39.53	24.25	45.59	54.00	-8.41	Horizontal

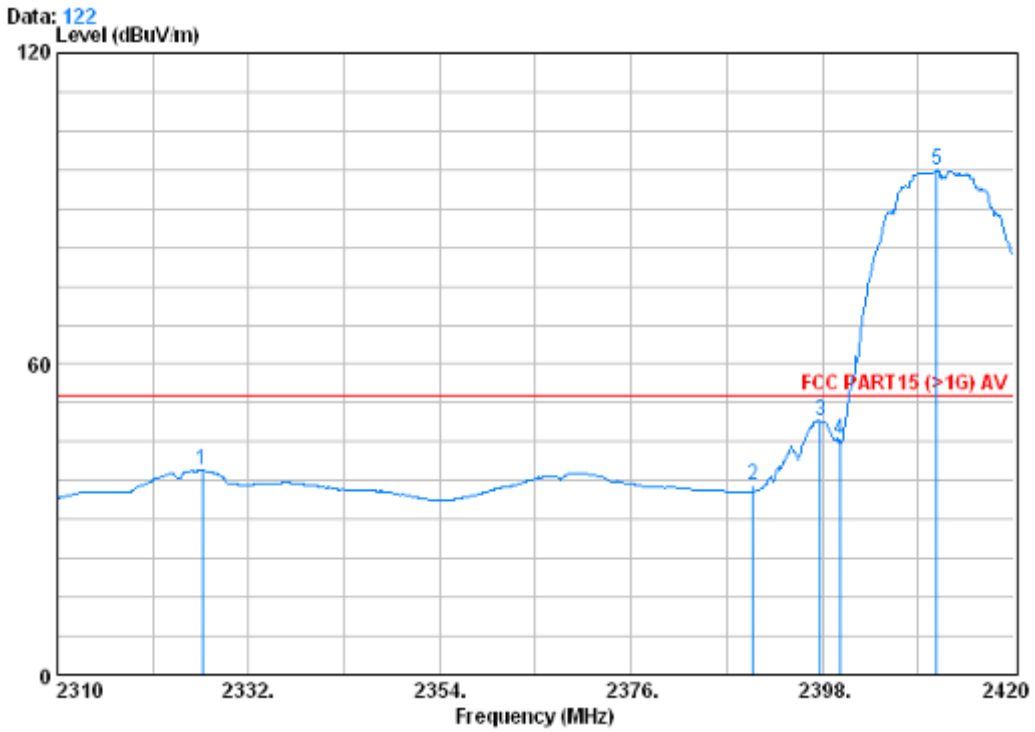
5.8.3 Band edge (Radiated Emission)

Vertical:

Test mode:	802.11b	Test channel:	Lowest

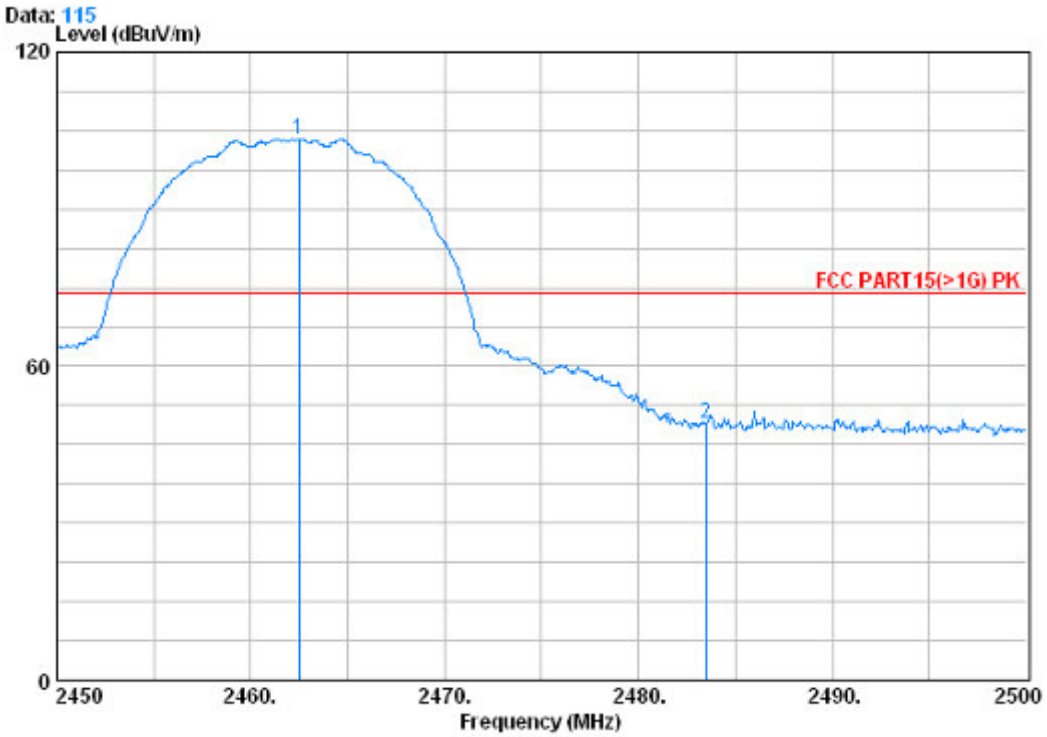


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2324.300	6.02	32.20	39.75	54.29	52.76	74.00	-21.24	Peak
2	2390.000	6.28	32.24	39.03	50.51	50.00	74.00	-24.00	Peak
3	2400.000	6.34	32.25	38.87	58.29	58.01	74.00	-15.99	Peak
4 @	2410.980	6.25	32.25	38.83	104.59	104.26	74.00	30.26	Peak

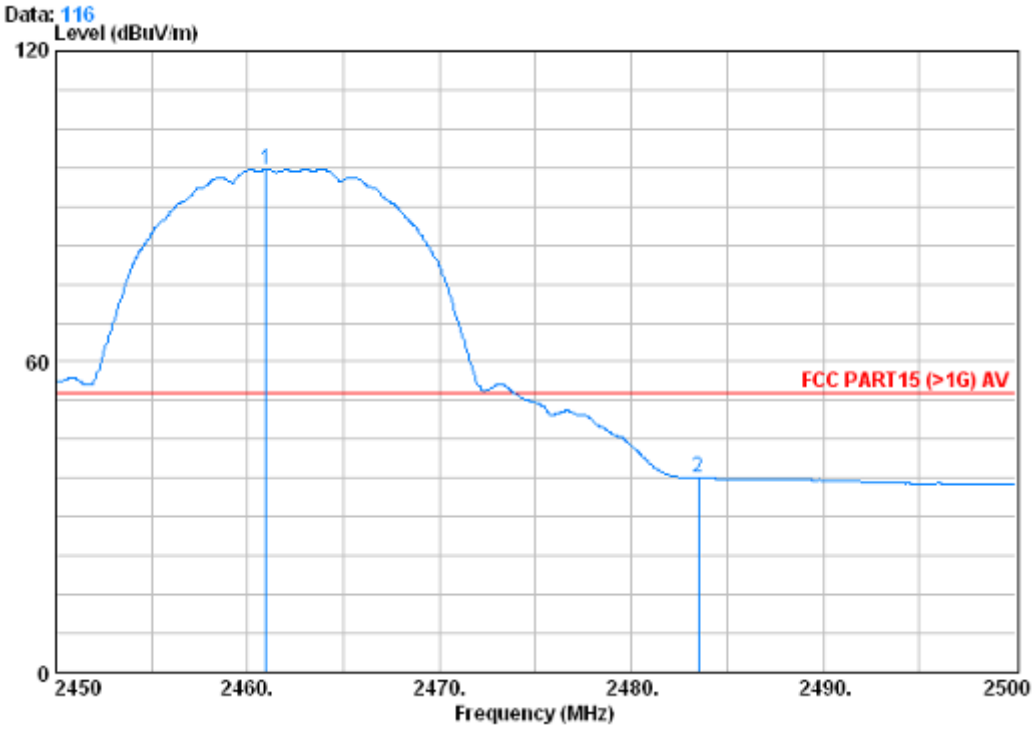


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2326.610	6.02	32.20	39.75	40.98	39.46	54.00	-14.54	Average
2	2390.000	6.28	32.24	39.03	36.97	36.46	54.00	-17.54	Average
3	2397.780	6.34	32.25	38.87	49.33	49.05	54.00	-4.95	Average
4	2400.000	6.34	32.25	38.87	45.59	45.30	54.00	-8.70	Average
5 @	2411.090	6.25	32.25	38.83	97.64	97.31	54.00	43.31	Average

Test mode:	802.11b	Test channel:	Highest



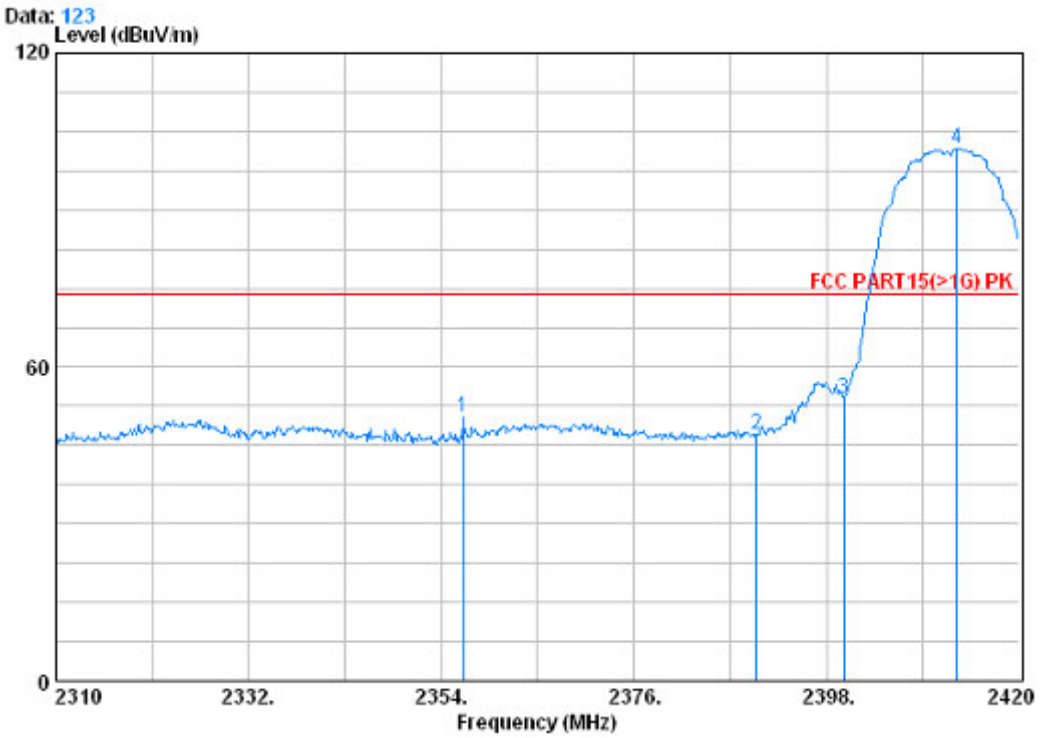
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2462.500	6.70	32.28	39.61	104.07	103.45	74.00	29.45	Peak
2	2483.500	6.22	32.29	39.53	50.09	49.07	74.00	-24.93	Peak



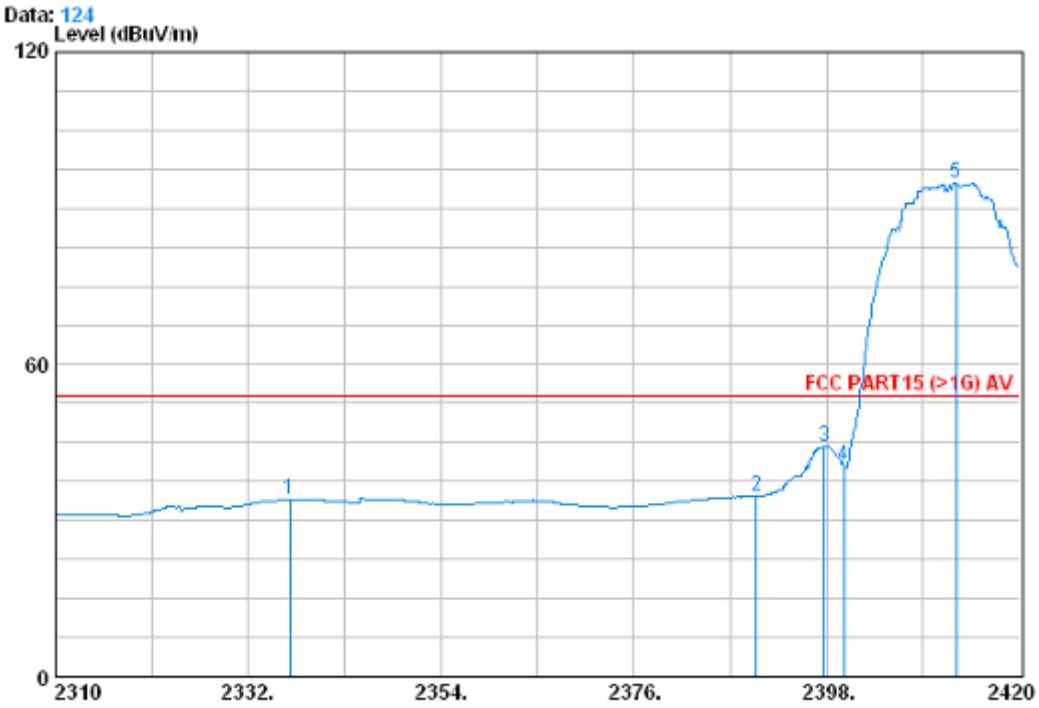
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2460.950	6.70	32.28	39.61	97.79	97.16	54.00	43.16	Peak
2	2483.500	6.22	32.29	39.53	38.58	37.56	54.00	-16.44	Peak

Horizontal:

Test mode:	802.11b	Test channel:	highest

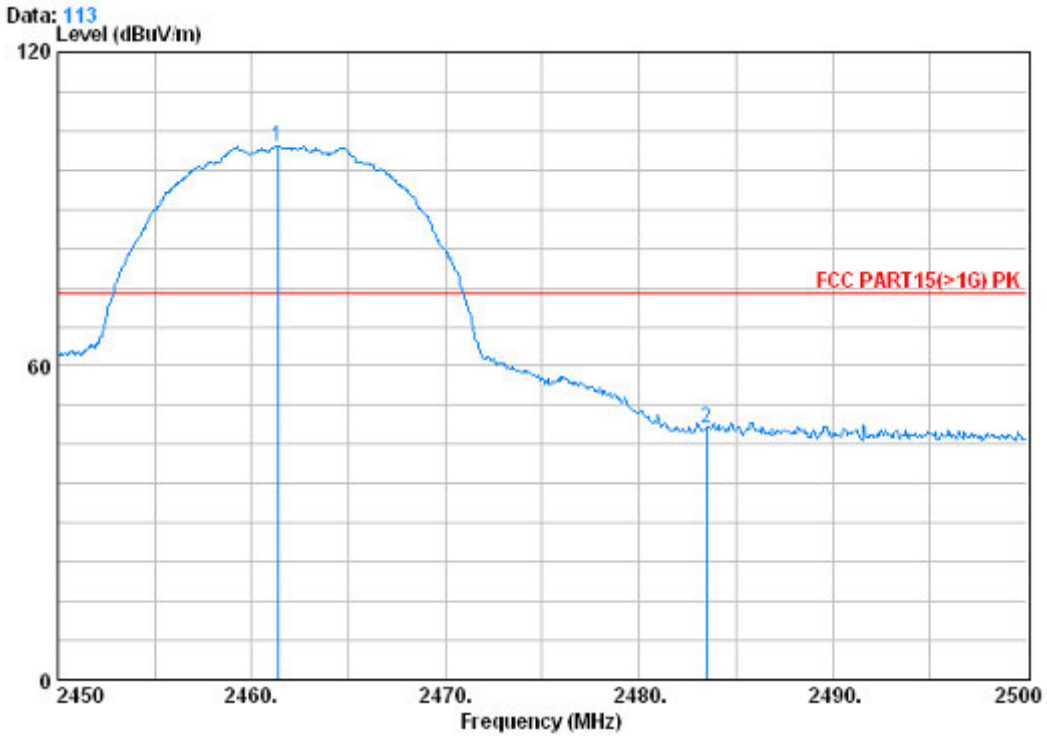


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2356.530	6.17	32.22	39.35	51.20	50.24	74.00	-23.76	Peak
2	2390.000	6.28	32.24	39.03	47.62	47.11	74.00	-26.89	Peak
3	2400.000	6.34	32.25	38.87	54.12	53.83	74.00	-20.17	Peak
4 @	2412.850	6.15	32.25	38.78	102.12	101.75	74.00	27.75	Peak

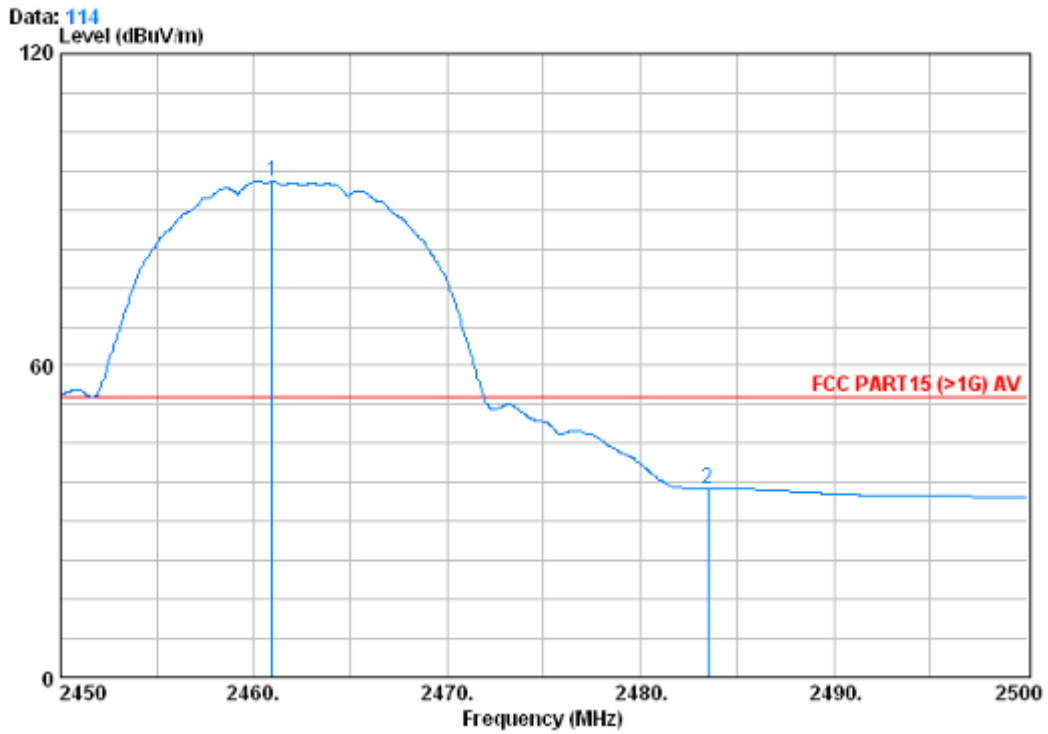


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2336.730	6.08	32.21	39.59	35.46	34.16	54.00	-19.84	Average
2	2390.000	6.28	32.24	39.03	35.12	34.61	54.00	-19.39	Average
3	2397.780	6.34	32.25	38.87	44.58	44.30	54.00	-9.70	Average
4	2400.000	6.34	32.25	38.87	40.87	40.58	54.00	-13.42	Average
5 @	2412.740	6.15	32.25	38.78	95.13	94.75	54.00	40.75	Average

Test mode:	802.11b	Test channel:	lowest



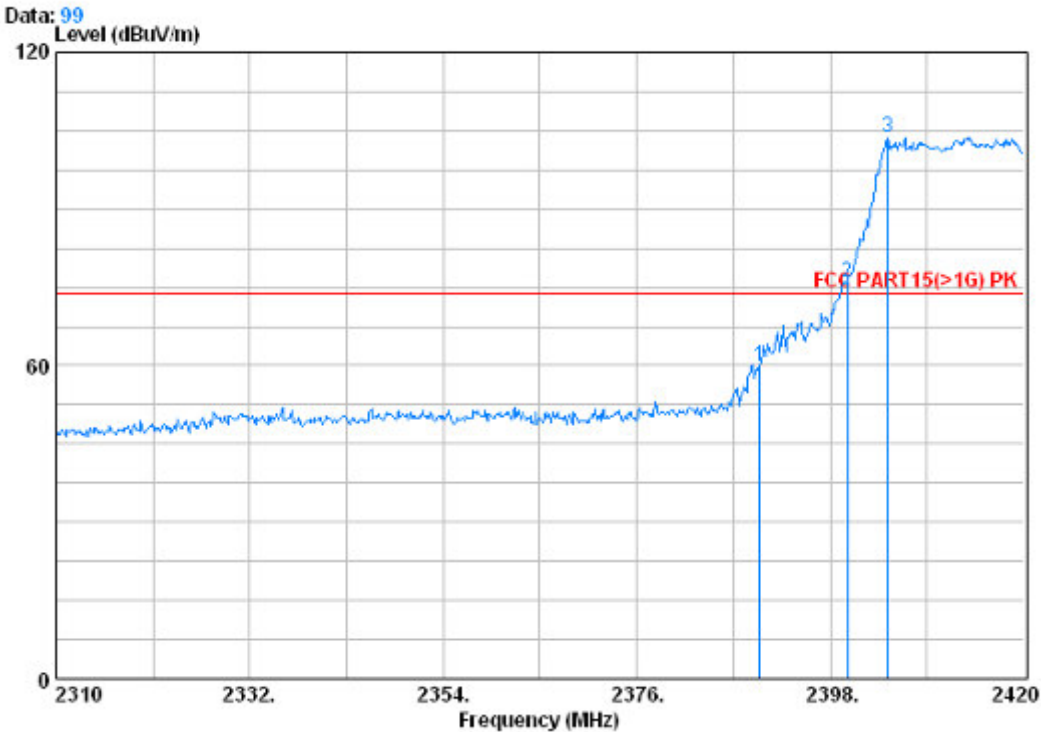
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2461.350	6.70	32.28	39.61	102.65	102.02	74.00	28.02	Peak
2	2483.500	6.22	32.29	39.53	49.15	48.13	74.00	-25.87	Peak



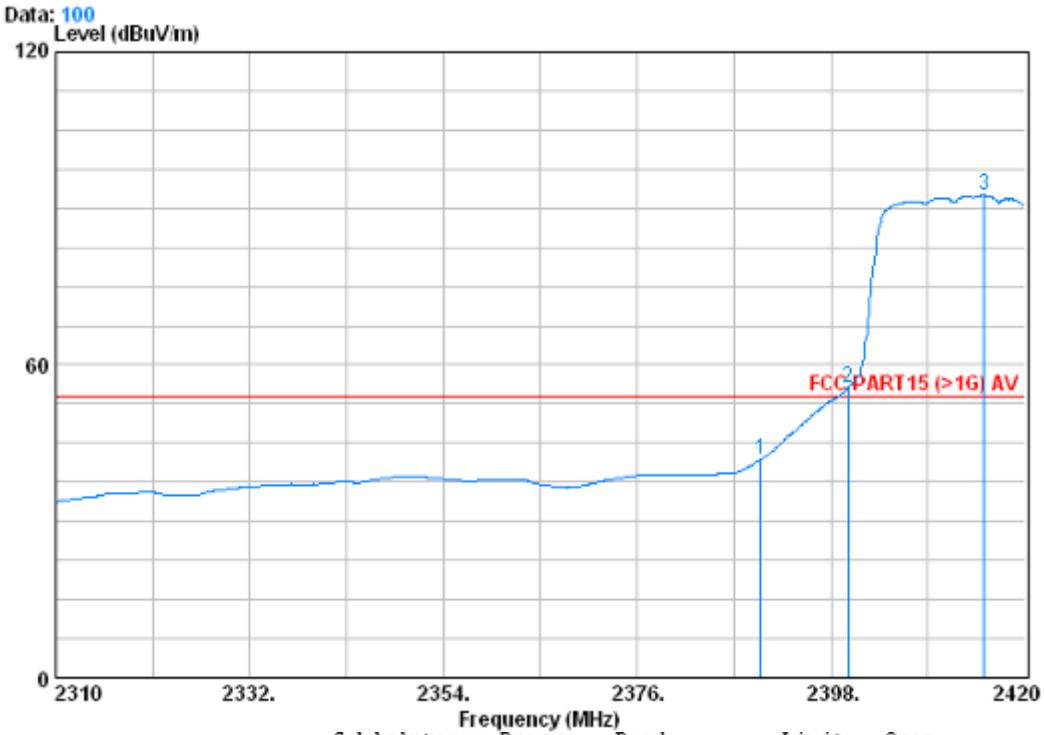
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2460.950	6.70	32.28	39.61	96.11	95.48	54.00	41.48	Average
2	2483.500	6.22	32.29	39.53	37.42	36.40	54.00	-17.60	Average

Vertical:

Test mode:	802.11g	Test channel:	Lowest

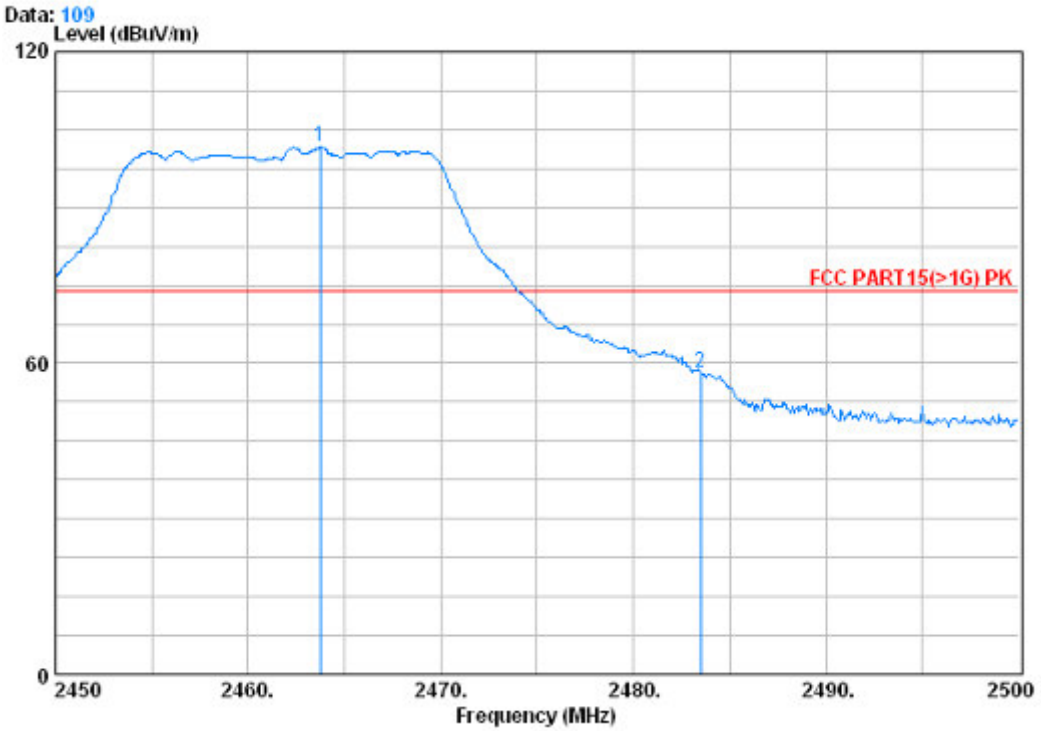


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	6.28	32.24	39.03	60.41	59.90	74.00	-14.10	Peak
2 X	2400.000	6.34	32.25	38.87	76.13	75.85	74.00	1.85	Peak
3 @	2404.490	6.25	32.25	38.83	103.98	103.65	74.00	29.65	Peak

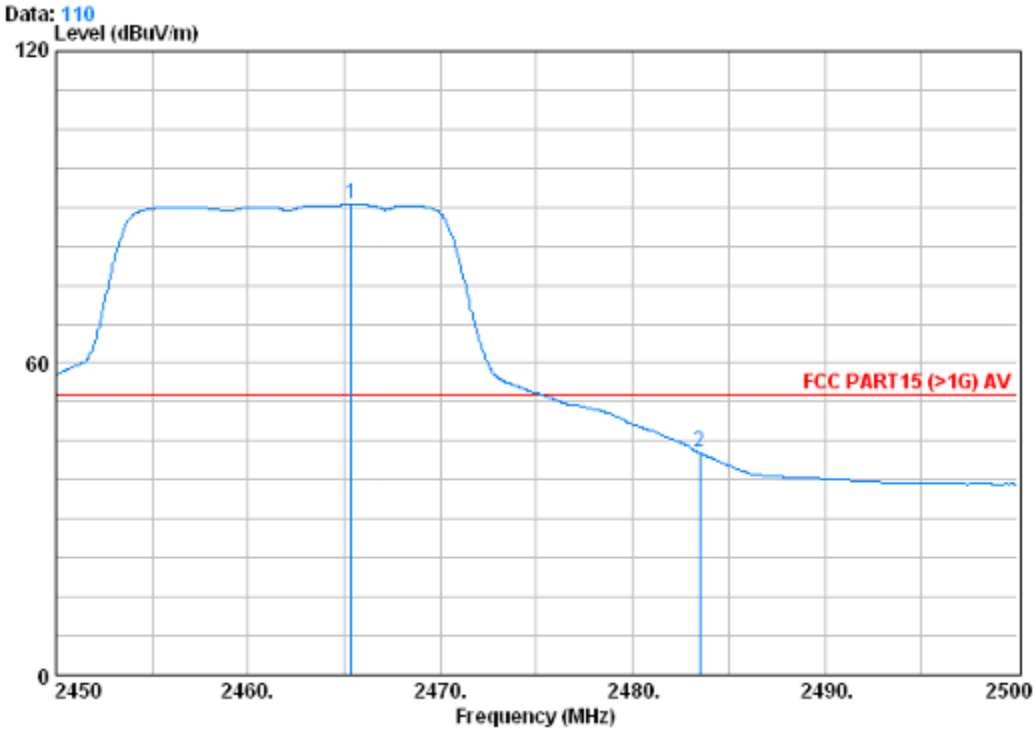


		Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		2390.000	6.28	32.24	39.03	42.30	41.79	54.00	-12.21	Average
2	X	2400.000	6.34	32.25	38.87	55.91	55.63	54.00	1.63	Average
3	0	2415.380	6.15	32.25	38.78	92.81	92.43	54.00	38.43	Average

Test mode:	802.11g	Test channel:	Highest



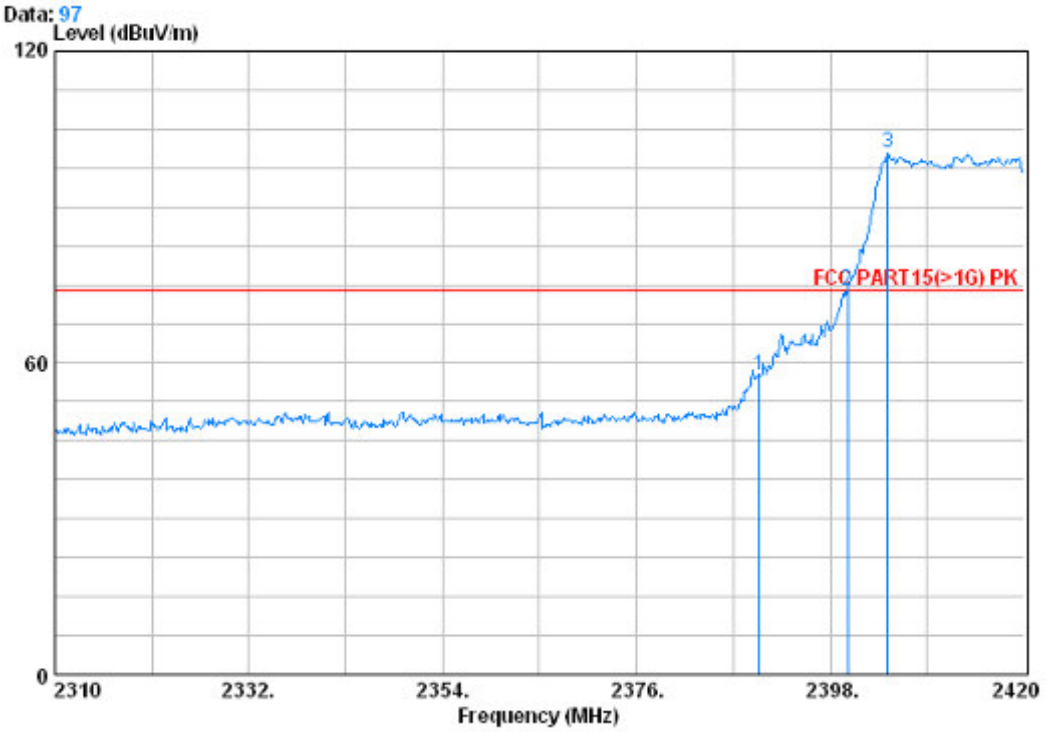
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2463.750	6.70	32.28	39.61	102.24	101.61	74.00	27.61	Peak
2	2483.500	6.22	32.29	39.53	59.26	58.24	74.00	-15.76	Peak



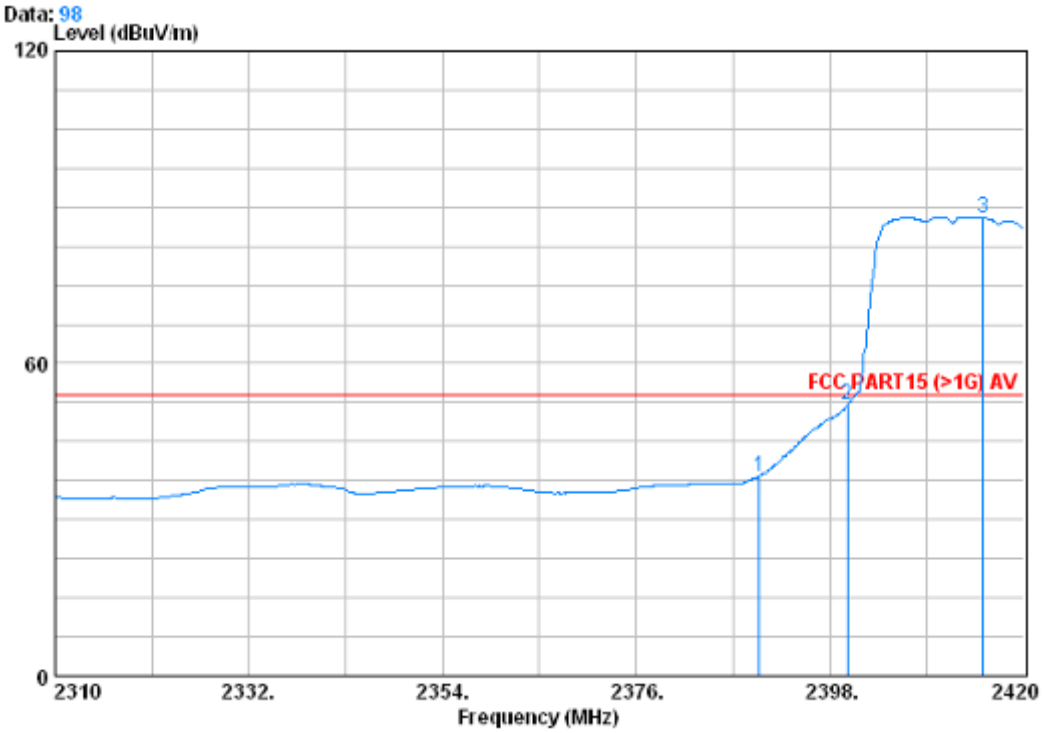
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2465.350	6.70	32.28	39.61	91.29	90.66	54.00	36.66	Average
2	2483.500	6.22	32.29	39.53	43.70	42.68	54.00	-11.32	Average

Horizontal:

Test mode:	802.11g	Test channel:	Lowest

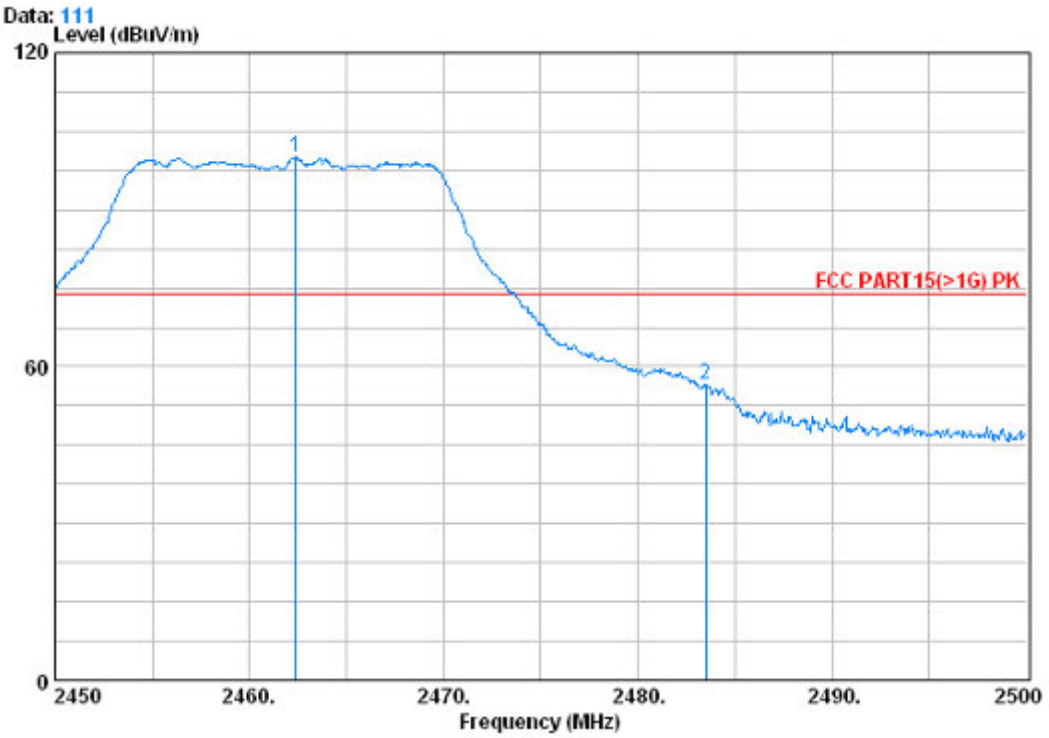


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	6.28	32.24	39.03	58.00	57.49	74.00	-16.51	Peak
2	2400.000	6.34	32.25	38.87	74.26	73.97	74.00	-0.03	Peak
3 @	2404.490	6.25	32.25	38.83	100.68	100.35	74.00	26.35	Peak

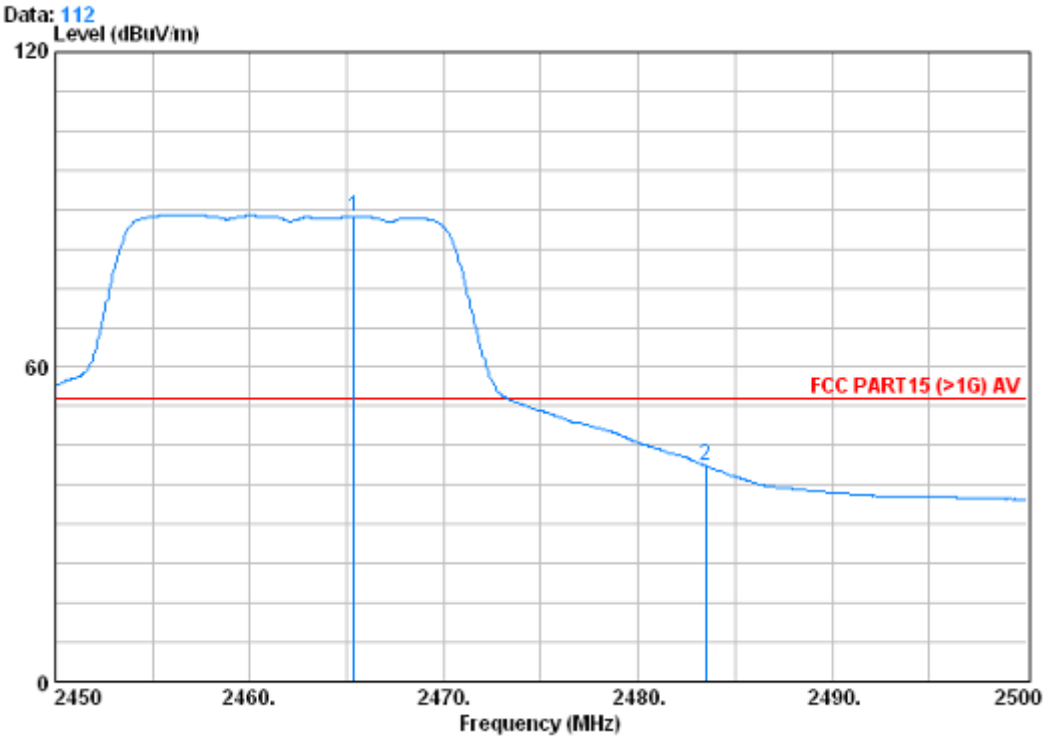


	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	6.28	32.24	39.03	38.90	38.39	54.00	-15.61	Average
2	2400.000	6.34	32.25	38.87	52.16	51.87	54.00	-2.13	Average
3	2415.380	6.15	32.25	38.78	88.49	88.11	54.00	34.11	Average

Test mode:	802.11g	Test channel:	Highest



	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	2462.350	6.70	32.28	39.61	100.55	99.92	74.00	25.92	Peak
2	2483.500	6.22	32.29	39.53	57.60	56.58	74.00	-17.42	Peak



	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	6.70	32.28	39.61	89.36	88.73	54.00	34.73	Average
2	2483.500	6.22	32.29	39.53	42.07	41.05	54.00	-12.95	Average