



## CTC Laboratories, Inc.

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# TEST REPORT

**Report No.** ..... : **CTC20231447E12**

**FCC ID** ..... : **A5M-MD80**

**Applicant** ..... : **Lenovo (Beijing) Limited**

**Address** ..... : 201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing China

**Manufacturer** ..... : Lenovo (Beijing) Limited

**Address** ..... : 201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing China

**Product Name** ..... : **Lenovo Wireless Transmitter**

**Trade Mark** ..... : Lenovo

**Model/Type reference** ..... : Lenovo MD80

**Listed Model(s)** ..... : /

**Standard** ..... : **FCC CFR Title 47 Part 15 Subpart C Section 15.247**

**Date of receipt of test sample** ..... : Jun. 29, 2023

**Date of testing** ..... : Jun. 29, 2023 to Aug. 23, 2023

**Date of issue** ..... : Aug. 24, 2023

**Result** ..... : **PASS**

Compiled by:

(Printed name+signature)

Jim Jiang

*Jim Jiang*

Supervised by:

(Printed name+signature)

Eric Zhang

*Eric Zhang*

Approved by:

(Printed name+signature)

Totti Zhao

*Totti Zhao*

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# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Operation within the bands 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz.

[RSS-247 Issue 2](#): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

[RSS-Gen Issue 5](#): General Requirements for Compliance of Radio Apparatus.

[ANSI C63.10-2013](#): American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

## 1.2. Report Version

Revised No.	Date of issue	Description
01	Aug. 24, 2023	Original

## 1.3. Test Description

FCC Part 15 Subpart C (15.247) / RSS-247 Issue 2				
Test Item	Standard Section		Result	Test Engineer
	FCC	IC		
Antenna Requirement	15.203	RSS-Gen 6.8	Pass	Jim Jiang
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Jim Jiang
Conducted Band Edge and Spurious Emissions	15.247(d)	RSS-247 5.5	Pass	Jim Jiang
Radiated Band Edge and Spurious Emissions	15.205&15.209&15.247(d)	RSS-247 5.5	Pass	Jim Jiang
6dB Bandwidth	15.247(a)(2)	RSS-247 5.2 (a)	Pass	Jim Jiang
Conducted Max Output Power	15.247(b)(3)	RSS-247 5.4 (d)	Pass	Jim Jiang
Power Spectral Density	15.247(e)	RSS-247 5.2 (b)	Pass	Jim Jiang
Transmitter Radiated Spurious	15.209&15.247(d)	RSS-247 5.5&RSS-Gen 8.9	Pass	Jim Jiang

Note:

1. The measurement uncertainty is not included in the test result.
2. N/A: means this test item is not applicable for this device according to the technology characteristic of device.



## 1.4. Test Facility

### Address of the report laboratory

#### CTC Laboratories, Inc.

Add: 2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

### Laboratory accreditation

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

#### A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

#### FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. 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 951311, Aug 26, 2017.



## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

Test Items	Measurement Uncertainty	Notes
DTS Bandwidth	$\pm 0.0196\%$	(1)
Maximum Conducted Output Power	$\pm 0.686$ dB	(1)
Maximum Power Spectral Density Level	$\pm 0.743$ dB	(1)
Band-edge Compliance	$\pm 1.328$ dB	(1)
Unwanted Emissions In Non-restricted Freq Bands	9kHz-1GHz: $\pm 0.746$ dB 1GHz-26GHz: $\pm 1.328$ dB	(1)
Conducted Emissions 9kHz~30MHz	$\pm 3.08$ dB	(1)
Radiated Emissions 30~1000MHz	$\pm 4.51$ dB	(1)
Radiated Emissions 1~18GHz	$\pm 5.84$ dB	(1)
Radiated Emissions 18~40GHz	$\pm 6.12$ dB	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 1.6. Environmental Conditions

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

Temperature:	15 °C to 35 °C
Relative Humidity:	20 % to 75 %
Air Pressure:	101 kPa



## 2. GENERAL INFORMATION

### 2.1. Client Information

Applicant:	Lenovo (Beijing) Limited
Address:	201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing China
Manufacturer:	Lenovo (Beijing) Limited
Address:	201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing China

### 2.2. General Description of EUT

Product Name:	Lenovo Wireless Transmitter
Trade Mark:	Lenovo
Model/Type reference:	Lenovo MD80
Listed Model(s):	/
Model Difference:	/
Power Supply:	DC5V 500mA
Hardware Version:	20230513-1840-rv1126-md80-8.0.22
Software Version:	9.VMD80MBV01BSL
<b>2.4G Wi-Fi</b>	
Modulation:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Operation Frequency:	802.11b/ g/ n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Channel Number:	802.11b/ g/ n(HT20): 11 channels 802.11n(HT40): 7 channels
Channel Separation:	5MHz
Antenna 1 Type:	Iron Antenna
Antenna 2 Type:	FPC Antenna
Antenna 1 Gain:	5.75dBi
Antenna 2 Gain:	1.39dBi
Directional Gain:	6.85dBi



## 2.3. Accessory Equipment Information

Equipment Information			
Name	Model	S/N	Manufacturer
Notebook	ThinkPad T460s	/	Lenovo
Cable Information			
Name	Shielded Type	Ferrite Core	Length
/	/	/	/
Test Software Information			
Name	Version	/	/
SecureCRT	V7.1.1	/	/



## 2.4. Operation State

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Operation Frequency List:

Channel	Frequency (MHz)
01	2412
02	2417
03	2422
04	2427
05	2432
06	2437
07	2442
08	2447
09	2452
10	2457
11	2462

Note: CH 01~CH 11 for 802.11b/g/n(HT20), CH 03~CH 09 for 802.11n(HT40).

Data Rated:

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Test Mode	Data Rate (worst mode)
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)/ (HT40)	HT-MCS0

Test Mode:

For RF test items:
The engineering test program was provided and enabled to make EUT continuous transmit.
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.





## 2.5. Measurement Instruments List

Tonscend RF Test System					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 16, 2023
2	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
3	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14, 2024
4	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 16, 2023
5	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 16, 2023
6	Power Sensor	Keysight	U2021XA	MY55130004	Mar. 14, 2024
7	Power Sensor	Keysight	U2021XA	MY55130006	Mar. 14, 2024
8	Wideband Radio Communication Tester	R&S	CMW500	102414	Dec. 16, 2023
9	High and low temperature box	ESPEC	MT3035	/	Mar. 24, 2024
10	JS1120 RF Test System	TONSCEND	v2.6	/	/

Radiated Emission (3m chamber 2)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Dec. 07, 2024
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-648	Dec. 07, 2024
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
4	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14, 2024
5	Pre-Amplifier	SONOMA	310	186194	Dec. 16, 2023
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 16, 2023
7	Test Receiver	R&S	ESC17	100967	Dec. 16, 2023
8	3m chamber 2	Frankonia	EE025	/	Oct. 23, 2024

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	LISN	R&S	ENV216	101112	Dec. 16, 2023
2	LISN	R&S	ENV216	101113	Dec. 16, 2023
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 16, 2023
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 16, 2023
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 16, 2023

Note: 1. The Cal. Interval was one year.

2. The Cal. Interval was three years of the antenna.

3. The cable loss has been calculated in test result which connection between each test instruments.

### 3. TEST ITEM AND RESULTS

#### 3.1. Conducted Emission

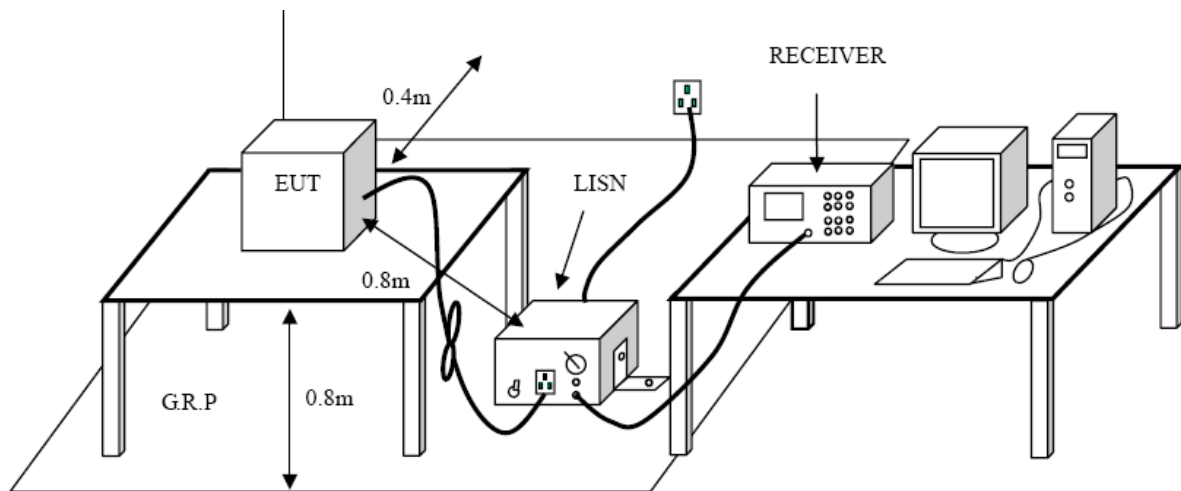
##### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.207 / RSS-Gen 8.8

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

\* Decreases with the logarithm of the frequency.

##### Test Configuration



##### Test Procedure

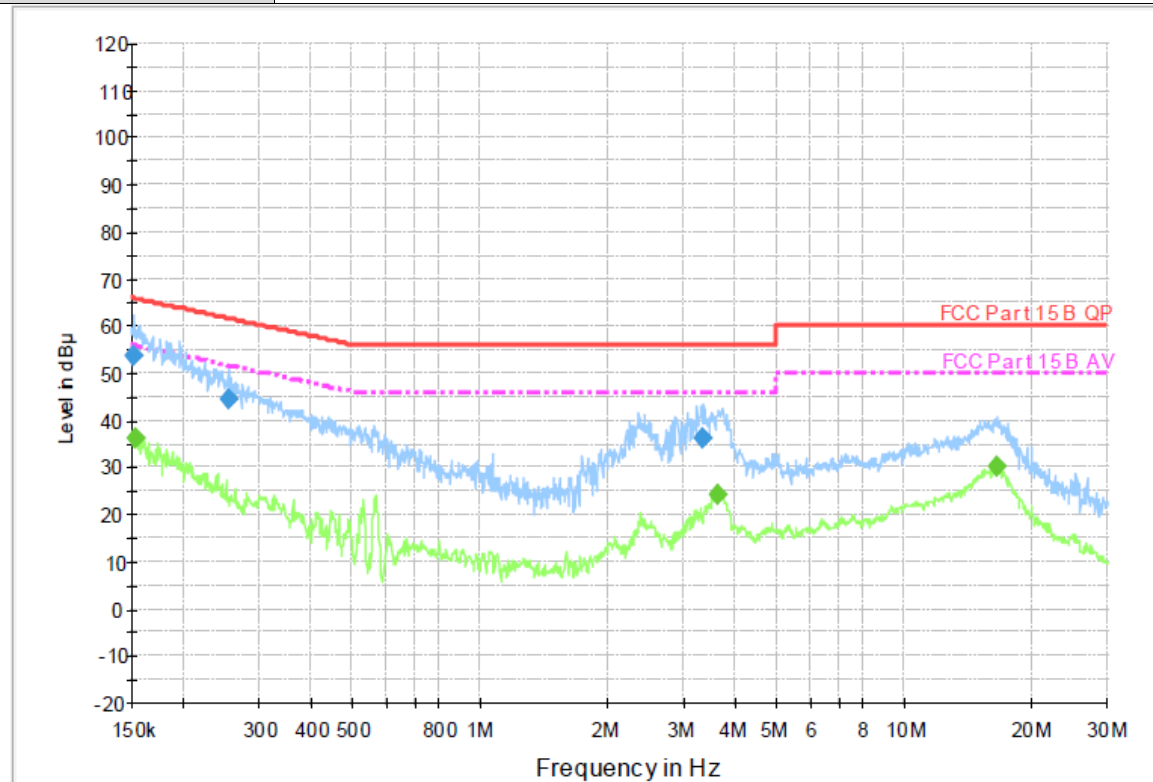
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm / 50 μH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

##### Test Mode

Please refer to the clause 2.4.

**Test Result**

Test Voltage:	AC 120V/60Hz
Terminal:	Line
Remark:	Only worse case is reported

**Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.151810	53.6	1000.00	9.000	On	L1	9.7	12.3	65.9	
0.253050	44.6	1000.00	9.000	On	L1	9.7	17.1	61.7	
3.349040	36.0	1000.00	9.000	On	L1	9.7	20.0	56.0	

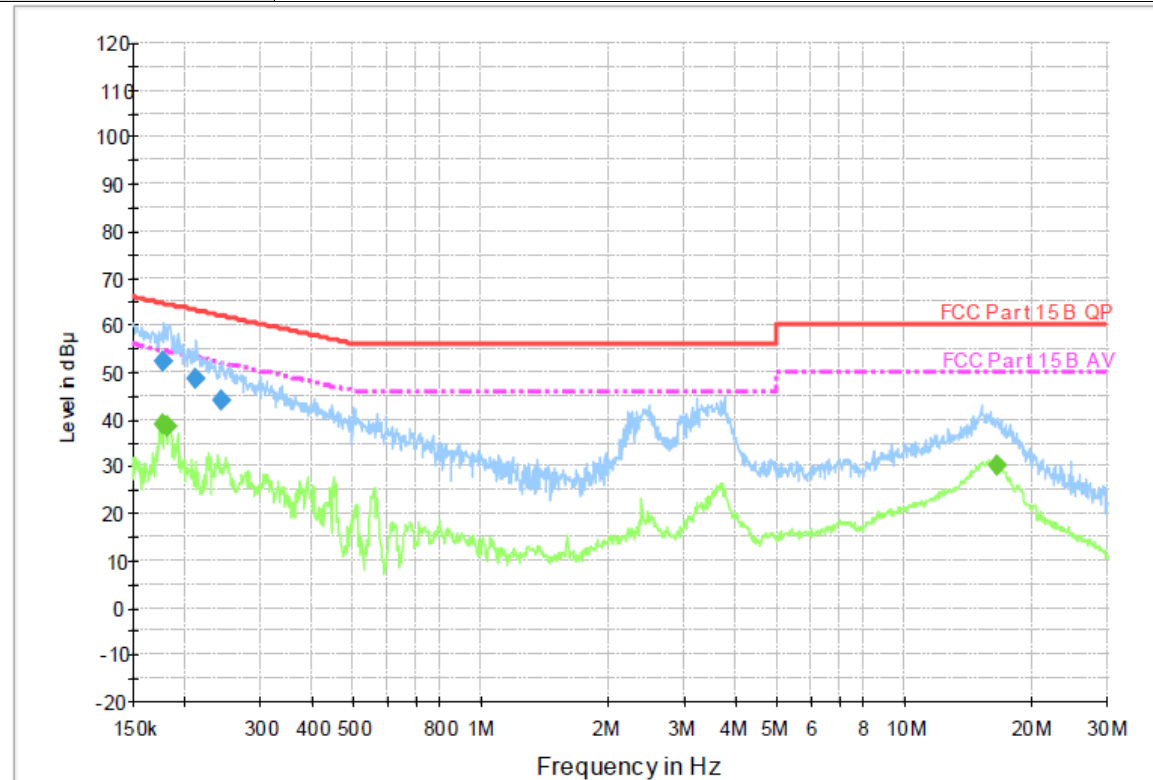
**Final Measurement Detector 2**

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.154250	36.0	1000.00	9.000	On	L1	9.7	19.8	55.8	
3.627390	24.4	1000.00	9.000	On	L1	9.7	21.6	46.0	
16.469160	30.4	1000.00	9.000	On	L1	9.8	19.6	50.0	

Emission Level = Read Level + Correct Factor



Test Voltage:	AC 120V/60Hz
Terminal:	Neutral
Remark:	Only worse case is reported



### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.177380	52.1	1000.00	9.000	On	N	10.0	12.5	64.6	
0.211440	48.6	1000.00	9.000	On	N	10.0	14.5	63.1	
0.244120	43.8	1000.00	9.000	On	N	10.0	18.2	62.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.177380	38.8	1000.00	9.000	On	N	10.0	15.8	54.6	
0.180960	38.6	1000.00	9.000	On	N	10.0	15.8	54.4	
16.403550	30.2	1000.00	9.000	On	N	10.0	19.8	50.0	

Emission Level = Read Level + Correct Factor

## 3.2. Radiated Emission

### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.209 / RSS-Gen 8.9

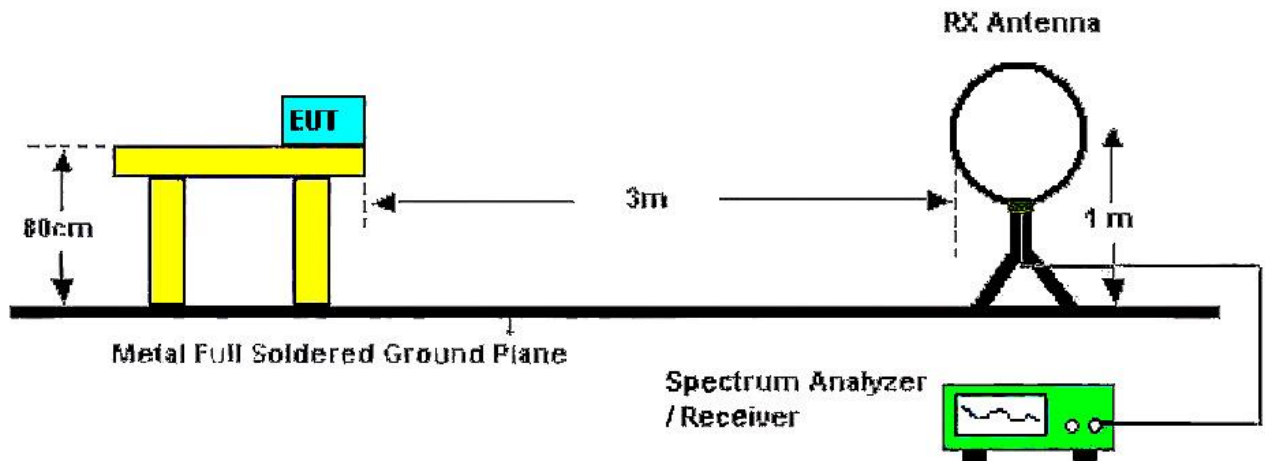
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F (kHz)	300
0.490~1.705	24000/F (kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Frequency Range (MHz)	dBμV/m (at 3 meters)	
	Peak	Average
Above 1000	74	54

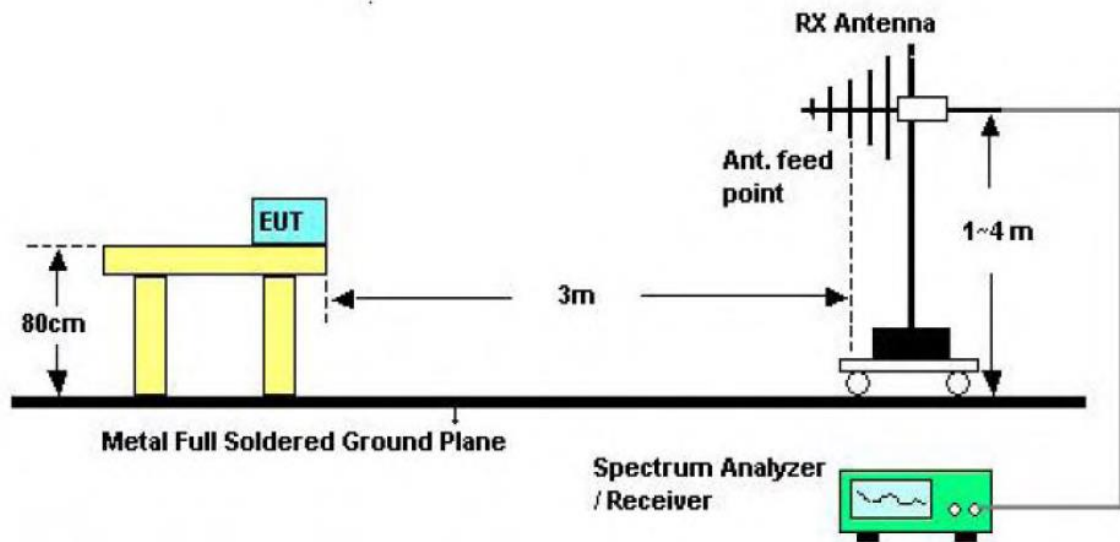
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBμV/m)=20log Emission Level (μV/m).

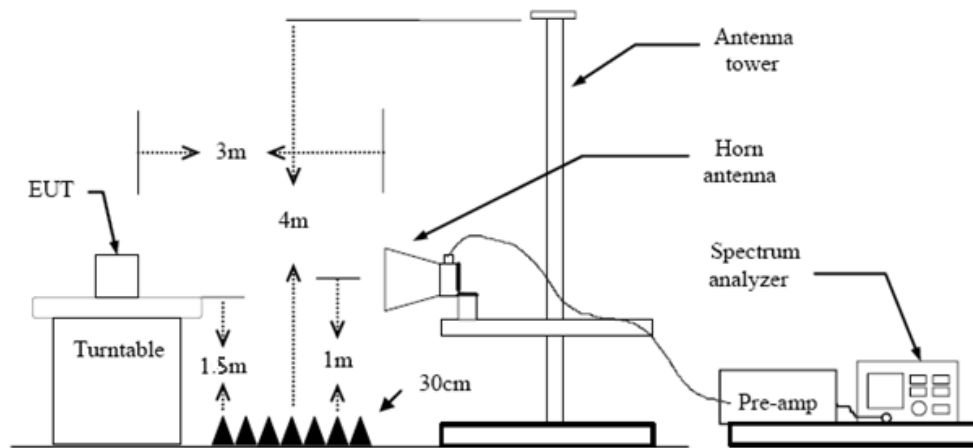
### Test Configuration



Below 30MHz Test Setup



30-1000MHz Test Setup



Above 1GHz Test Setup

### Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013.
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Below 1 GHz:  
RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;  
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
  - (3) From 1 GHz to 10<sup>th</sup> harmonic:  
RBW=1MHz, VBW=3MHz Peak detector for Peak value.



RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

### **Test Mode**

Please refer to the clause 2.4.

### **Test Result**

#### **9 kHz~30 MHz**

From 9 kHz to 30 MHz: The conclusion is PASS.

Note:

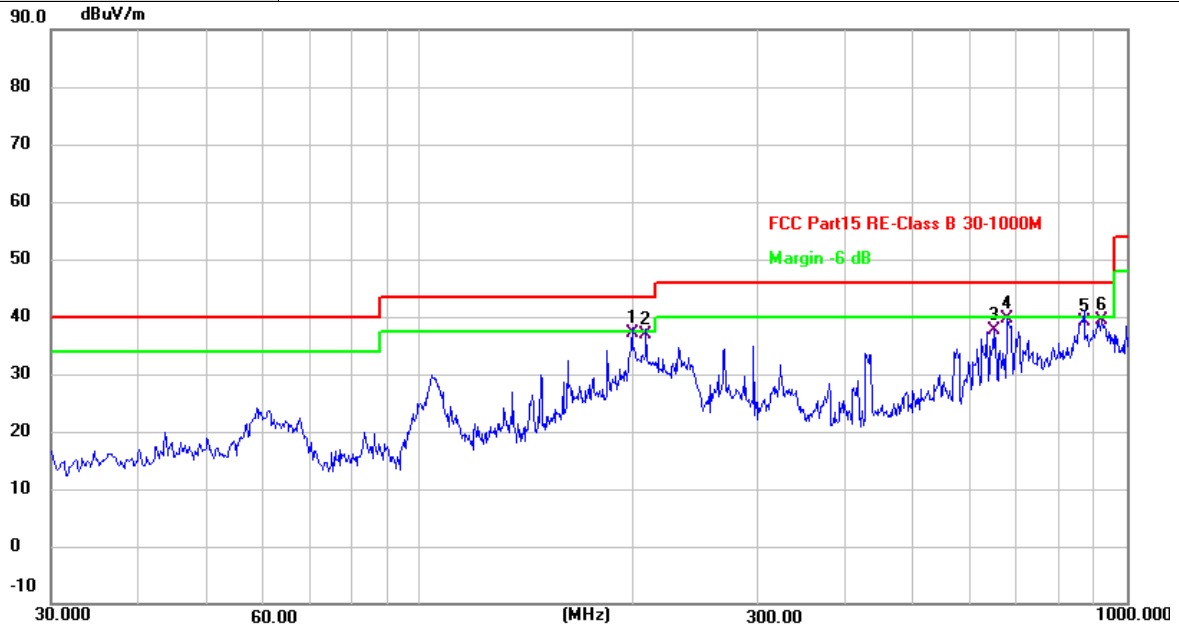
1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Pre-scan all antenna, only show the test data for worse case antenna on the test report.





## 30MHz-1GHz

Ant. No.	Ant 2
Ant. Pol.	Horizontal
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	199.7500	53.18	-16.09	37.09	43.50	-6.41	QP
2	208.8033	52.71	-15.82	36.89	43.50	-6.61	QP
3	647.8900	43.72	-6.14	37.58	46.00	-8.42	QP
4	677.9600	45.38	-5.79	39.59	46.00	-6.41	QP
5	869.6965	42.15	-3.06	39.09	46.00	-6.91	QP
6	921.7531	41.86	-2.42	39.44	46.00	-6.56	QP

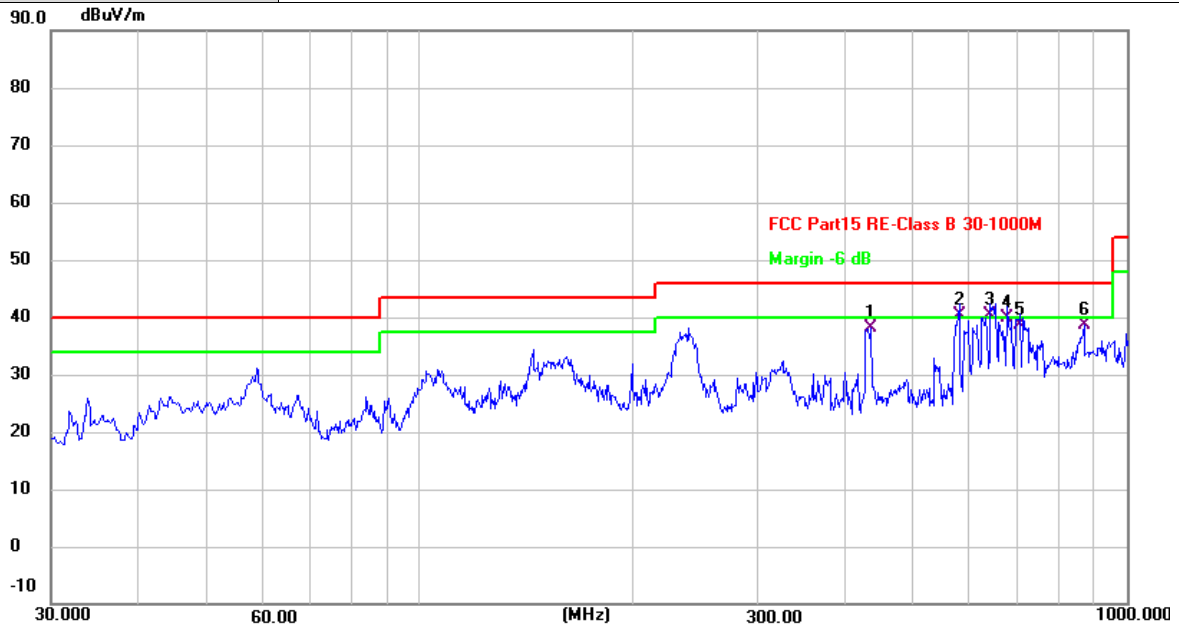
## Remarks:

- Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- Margin value = Level -Limit value





Ant. No.	Ant 2
Ant. Pol.	Vertical
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	434.8133	48.65	-10.40	38.25	46.00	-7.75	QP
2 *	579.6666	47.67	-7.20	40.47	46.00	-5.53	QP
3 !	641.7464	46.52	-6.21	40.31	46.00	-5.69	QP
4	677.3133	45.69	-5.79	39.90	46.00	-6.10	QP
5	707.0600	44.16	-5.43	38.73	46.00	-7.27	QP
6	869.3731	41.59	-3.07	38.52	46.00	-7.48	QP

## Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor

2. Margin value = Level - Limit value



## Above 1GHz

Ant. No.	Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11b Mode 2412MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><td>No.</td><td>Frequency (MHz)</td><td>Reading (dBUV)</td><td>Factor (dB/m)</td><td>Level (dBUV/m)</td><td>Limit (dBUV/m)</td><td>Margin (dB)</td><td>Detector</td></tr><tr><td>1 *</td><td>4823.950</td><td>31.40</td><td>2.62</td><td>34.02</td><td>54.00</td><td>-19.98</td><td>AVG</td></tr><tr><td>2</td><td>4824.120</td><td>43.36</td><td>2.62</td><td>45.98</td><td>74.00</td><td>-28.02</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	1 *	4823.950	31.40	2.62	34.02	54.00	-19.98	AVG	2	4824.120	43.36	2.62	45.98	74.00	-28.02	peak
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector																								
1 *	4823.950	31.40	2.62	34.02	54.00	-19.98	AVG																								
2	4824.120	43.36	2.62	45.98	74.00	-28.02	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 2						
Ant. Pol.	Vertical						
Test Mode:	TX 802.11b Mode 2412MHz						
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						



Ant. No.	Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11b Mode 2437MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1</td><td>4873.976</td><td>42.56</td><td>2.78</td><td>45.34</td><td>74.00</td><td>-28.66</td><td>peak</td></tr><tr><td>2 *</td><td>4873.979</td><td>30.67</td><td>2.78</td><td>33.45</td><td>54.00</td><td>-20.55</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4873.976	42.56	2.78	45.34	74.00	-28.66	peak	2 *	4873.979	30.67	2.78	33.45	54.00	-20.55	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4873.976	42.56	2.78	45.34	74.00	-28.66	peak																								
2 *	4873.979	30.67	2.78	33.45	54.00	-20.55	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11b Mode 2437MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBUV)</th><th>Factor (dB/m)</th><th>Level (dBUV/m)</th><th>Limit (dBUV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4873.975</td><td>29.91</td><td>2.78</td><td>32.69</td><td>54.00</td><td>-21.31</td><td>AVG</td></tr><tr><td>2</td><td>4874.016</td><td>41.06</td><td>2.78</td><td>43.84</td><td>74.00</td><td>-30.16</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	1 *	4873.975	29.91	2.78	32.69	54.00	-21.31	AVG	2	4874.016	41.06	2.78	43.84	74.00	-30.16	peak
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector																								
1 *	4873.975	29.91	2.78	32.69	54.00	-21.31	AVG																								
2	4874.016	41.06	2.78	43.84	74.00	-30.16	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



Ant. No.	Ant 2
Ant. Pol.	Horizontal
Test Mode:	TX 802.11b Mode 2462MHz
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4924.104	41.91	2.93	44.84	74.00	-29.16	peak
2 *	4924.203	30.31	2.93	33.24	54.00	-20.76	AVG

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

Ant. No.	Ant 2
Ant. Pol.	Vertical
Test Mode:	TX 802.11b Mode 2462MHz
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.935	40.46	2.62	43.08	74.00	-30.92	peak
2 *	4823.942	29.90	2.62	32.52	54.00	-21.48	AVG

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



Ant. No.	Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11g Mode 2412MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1</td><td>4823.991</td><td>42.40</td><td>2.62</td><td>45.02</td><td>74.00</td><td>-28.98</td><td>peak</td></tr><tr><td>2 *</td><td>4824.027</td><td>31.42</td><td>2.62</td><td>34.04</td><td>54.00</td><td>-19.96</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4823.991	42.40	2.62	45.02	74.00	-28.98	peak	2 *	4824.027	31.42	2.62	34.04	54.00	-19.96	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4823.991	42.40	2.62	45.02	74.00	-28.98	peak																								
2 *	4824.027	31.42	2.62	34.04	54.00	-19.96	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11g Mode 2412MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1</td><td>4824.159</td><td>40.33</td><td>2.62</td><td>42.95</td><td>74.00</td><td>-31.05</td><td>peak</td></tr><tr><td>2 *</td><td>4824.231</td><td>30.04</td><td>2.62</td><td>32.66</td><td>54.00</td><td>-21.34</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4824.159	40.33	2.62	42.95	74.00	-31.05	peak	2 *	4824.231	30.04	2.62	32.66	54.00	-21.34	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4824.159	40.33	2.62	42.95	74.00	-31.05	peak																								
2 *	4824.231	30.04	2.62	32.66	54.00	-21.34	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



Ant. No.	Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11g Mode 2437MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4873.862</td><td>30.45</td><td>2.78</td><td>33.23</td><td>54.00</td><td>-20.77</td><td>AVG</td></tr><tr><td>2</td><td>4874.062</td><td>42.53</td><td>2.78</td><td>45.31</td><td>74.00</td><td>-28.69</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4873.862	30.45	2.78	33.23	54.00	-20.77	AVG	2	4874.062	42.53	2.78	45.31	74.00	-28.69	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4873.862	30.45	2.78	33.23	54.00	-20.77	AVG																								
2	4874.062	42.53	2.78	45.31	74.00	-28.69	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11g Mode 2437MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBUV)</th><th>Factor (dB/m)</th><th>Level (dBUV/m)</th><th>Limit (dBUV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4874.008</td><td>30.02</td><td>2.78</td><td>32.80</td><td>54.00</td><td>-21.20</td><td>AVG</td></tr><tr><td>2</td><td>4874.929</td><td>39.88</td><td>2.78</td><td>42.66</td><td>74.00</td><td>-31.34</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	1 *	4874.008	30.02	2.78	32.80	54.00	-21.20	AVG	2	4874.929	39.88	2.78	42.66	74.00	-31.34	peak
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector																								
1 *	4874.008	30.02	2.78	32.80	54.00	-21.20	AVG																								
2	4874.929	39.88	2.78	42.66	74.00	-31.34	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



Ant. No.	Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11g Mode 2462MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1</td><td>4923.926</td><td>41.89</td><td>2.93</td><td>44.82</td><td>74.00</td><td>-29.18</td><td>peak</td></tr><tr><td>2 *</td><td>4924.054</td><td>30.64</td><td>2.93</td><td>33.57</td><td>54.00</td><td>-20.43</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4923.926	41.89	2.93	44.82	74.00	-29.18	peak	2 *	4924.054	30.64	2.93	33.57	54.00	-20.43	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4923.926	41.89	2.93	44.82	74.00	-29.18	peak																								
2 *	4924.054	30.64	2.93	33.57	54.00	-20.43	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11g Mode 2462MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4923.947</td><td>29.89</td><td>2.93</td><td>32.82</td><td>54.00</td><td>-21.18</td><td>AVG</td></tr><tr><td>2</td><td>4924.049</td><td>39.41</td><td>2.93</td><td>42.34</td><td>74.00</td><td>-31.66</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4923.947	29.89	2.93	32.82	54.00	-21.18	AVG	2	4924.049	39.41	2.93	42.34	74.00	-31.66	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4923.947	29.89	2.93	32.82	54.00	-21.18	AVG																								
2	4924.049	39.41	2.93	42.34	74.00	-31.66	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



Ant. No.	Ant 1 + Ant 2						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11n(HT20) Mode 2412MHz						
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						

Ant. No.	Ant 1 + Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11n(HT20) Mode 2412MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1</td><td>4823.834</td><td>40.54</td><td>2.62</td><td>43.16</td><td>74.00</td><td>-30.84</td><td>peak</td></tr><tr><td>2 *</td><td>4824.102</td><td>30.29</td><td>2.62</td><td>32.91</td><td>54.00</td><td>-21.09</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4823.834	40.54	2.62	43.16	74.00	-30.84	peak	2 *	4824.102	30.29	2.62	32.91	54.00	-21.09	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4823.834	40.54	2.62	43.16	74.00	-30.84	peak																								
2 *	4824.102	30.29	2.62	32.91	54.00	-21.09	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															





Ant. No.	Ant 1 + Ant 2						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11n(HT20) Mode 2437MHz						
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.925	31.24	2.78	34.02	54.00	-19.98	AVG
2	4874.044	42.08	2.78	44.86	74.00	-29.14	peak
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value							

Ant. No.	Ant 1 + Ant 2						
Ant. Pol.	Vertical						
Test Mode:	TX 802.11n(HT20) Mode 2437MHz						
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						



Ant. No.	Ant 1 + Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11n(HT20) Mode 2462MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBUV)</th><th>Factor (dB/m)</th><th>Level (dBUV/m)</th><th>Limit (dBUV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4924.215</td><td>30.74</td><td>2.93</td><td>33.67</td><td>54.00</td><td>-20.33</td><td>AVG</td></tr><tr><td>2</td><td>4924.311</td><td>42.27</td><td>2.93</td><td>45.20</td><td>74.00</td><td>-28.80</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	1 *	4924.215	30.74	2.93	33.67	54.00	-20.33	AVG	2	4924.311	42.27	2.93	45.20	74.00	-28.80	peak
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector																								
1 *	4924.215	30.74	2.93	33.67	54.00	-20.33	AVG																								
2	4924.311	42.27	2.93	45.20	74.00	-28.80	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 1 + Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11n(HT20) Mode 2462MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4923.953</td><td>29.80</td><td>2.93</td><td>32.73</td><td>54.00</td><td>-21.27</td><td>AVG</td></tr><tr><td>2</td><td>4923.974</td><td>40.77</td><td>2.93</td><td>43.70</td><td>74.00</td><td>-30.30</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4923.953	29.80	2.93	32.73	54.00	-21.27	AVG	2	4923.974	40.77	2.93	43.70	74.00	-30.30	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4923.953	29.80	2.93	32.73	54.00	-21.27	AVG																								
2	4923.974	40.77	2.93	43.70	74.00	-30.30	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



Ant. No.	Ant 1 + Ant 2
Ant. Pol.	Horizontal
Test Mode:	TX 802.11n(HT40) Mode 2422MHz
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4823.980	31.89	2.62	34.51	54.00	-19.49	AVG
2	4823.982	42.49	2.62	45.11	74.00	-28.89	peak

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

Ant. No.	Ant 1 + Ant 2
Ant. Pol.	Vertical
Test Mode:	TX 802.11n(HT40) Mode 2422MHz
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4844.110	29.47	2.68	32.15	54.00	-21.85	AVG
2	4844.117	40.72	2.68	43.40	74.00	-30.60	peak

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



Ant. No.	Ant 1 + Ant 2																														
Ant. Pol.	Horizontal																														
Test Mode:	TX 802.11n(HT40) Mode 2437MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4873.983</td><td>30.97</td><td>2.78</td><td>33.75</td><td>54.00</td><td>-20.25</td><td>AVG</td></tr><tr><td>2</td><td>4874.003</td><td>42.45</td><td>2.78</td><td>45.23</td><td>74.00</td><td>-28.77</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4873.983	30.97	2.78	33.75	54.00	-20.25	AVG	2	4874.003	42.45	2.78	45.23	74.00	-28.77	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4873.983	30.97	2.78	33.75	54.00	-20.25	AVG																								
2	4874.003	42.45	2.78	45.23	74.00	-28.77	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

Ant. No.	Ant 1 + Ant 2																														
Ant. Pol.	Vertical																														
Test Mode:	TX 802.11n(HT40) Mode 2437MHz																														
Remark:	No report for the emission which more than 20 dB below the prescribed limit.																														
<table><tr><th>No.</th><th>Frequency (MHz)</th><th>Reading (dBuV)</th><th>Factor (dB/m)</th><th>Level (dBuV/m)</th><th>Limit (dBuV/m)</th><th>Margin (dB)</th><th>Detector</th></tr><tr><td>1 *</td><td>4874.024</td><td>29.49</td><td>2.78</td><td>32.27</td><td>54.00</td><td>-21.73</td><td>AVG</td></tr><tr><td>2</td><td>4874.027</td><td>39.38</td><td>2.78</td><td>42.16</td><td>74.00</td><td>-31.84</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4874.024	29.49	2.78	32.27	54.00	-21.73	AVG	2	4874.027	39.38	2.78	42.16	74.00	-31.84	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4874.024	29.49	2.78	32.27	54.00	-21.73	AVG																								
2	4874.027	39.38	2.78	42.16	74.00	-31.84	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



Ant. No.	Ant 1 + Ant 2						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11n(HT40) Mode 2452MHz						
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						

Ant. No.	Ant 1 + Ant 2						
Ant. Pol.	Vertical						
Test Mode:	TX 802.11n(HT40) Mode 2452MHz						
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						

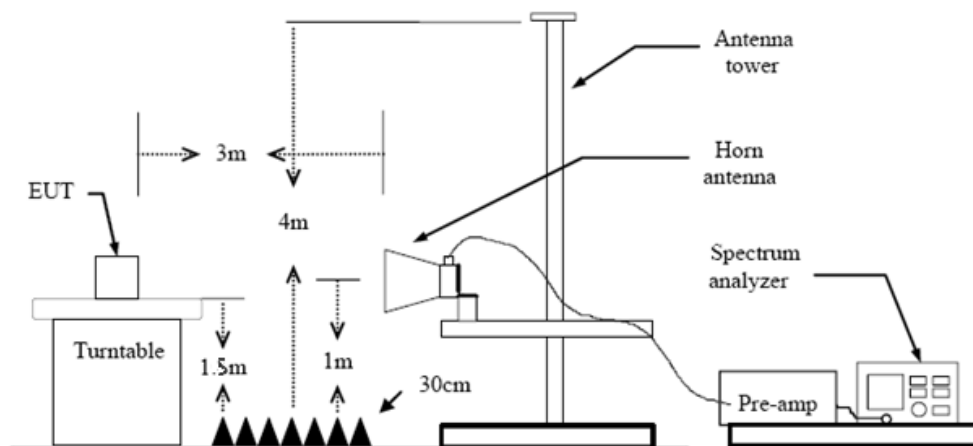
### 3.3. Band Edge Emissions (Radiated)

## Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d) / RSS-247 5.5

Restricted Frequency Band (MHz)	(dBμV/m) (at 3m)	
	Peak	Average
2310 ~ 2390	74	54
2483.5 ~ 2500	74	54

### Test Configuration



### Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:

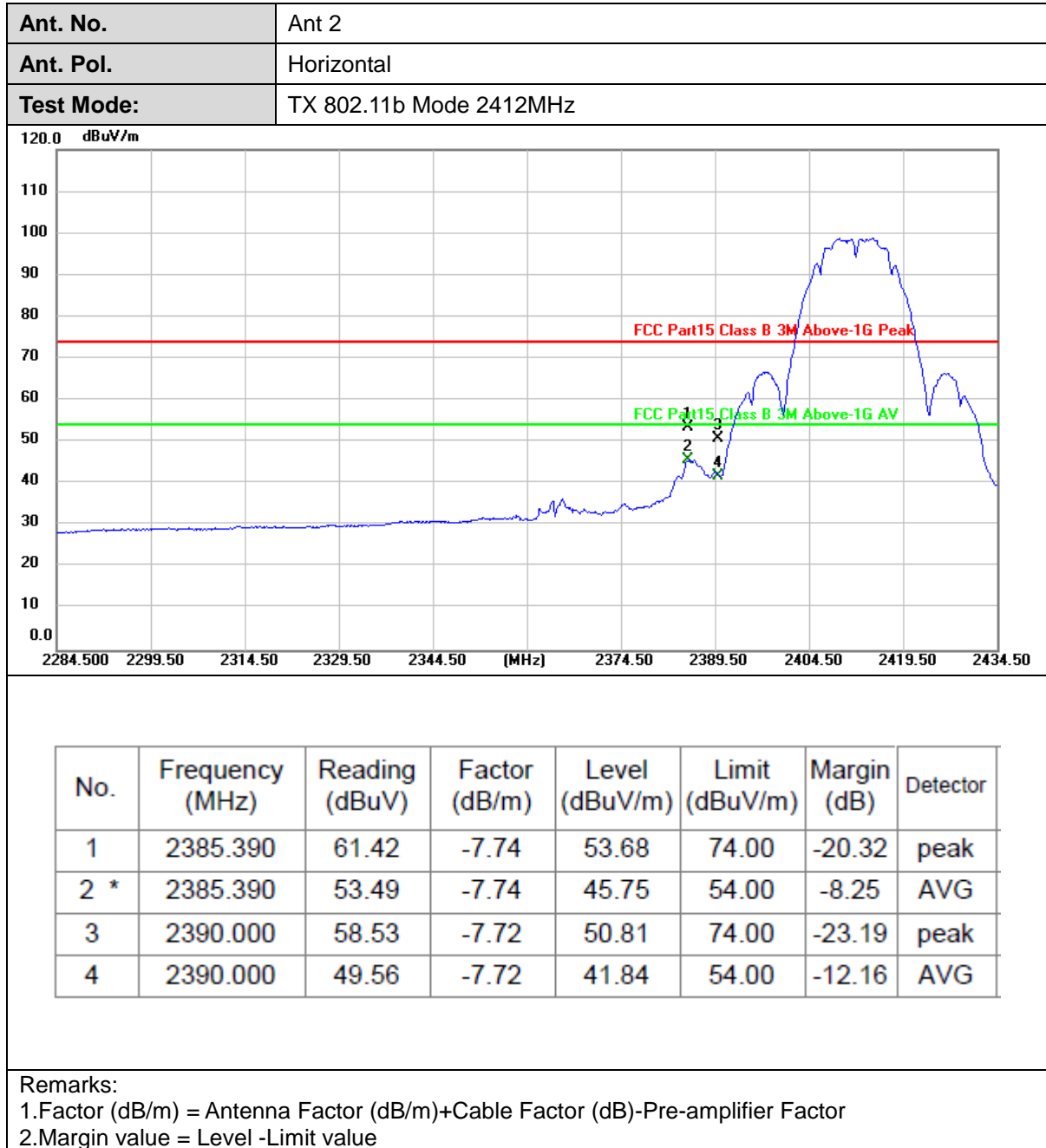
RBW=1MHz, VBW=3MHz Peak detector for Peak value.

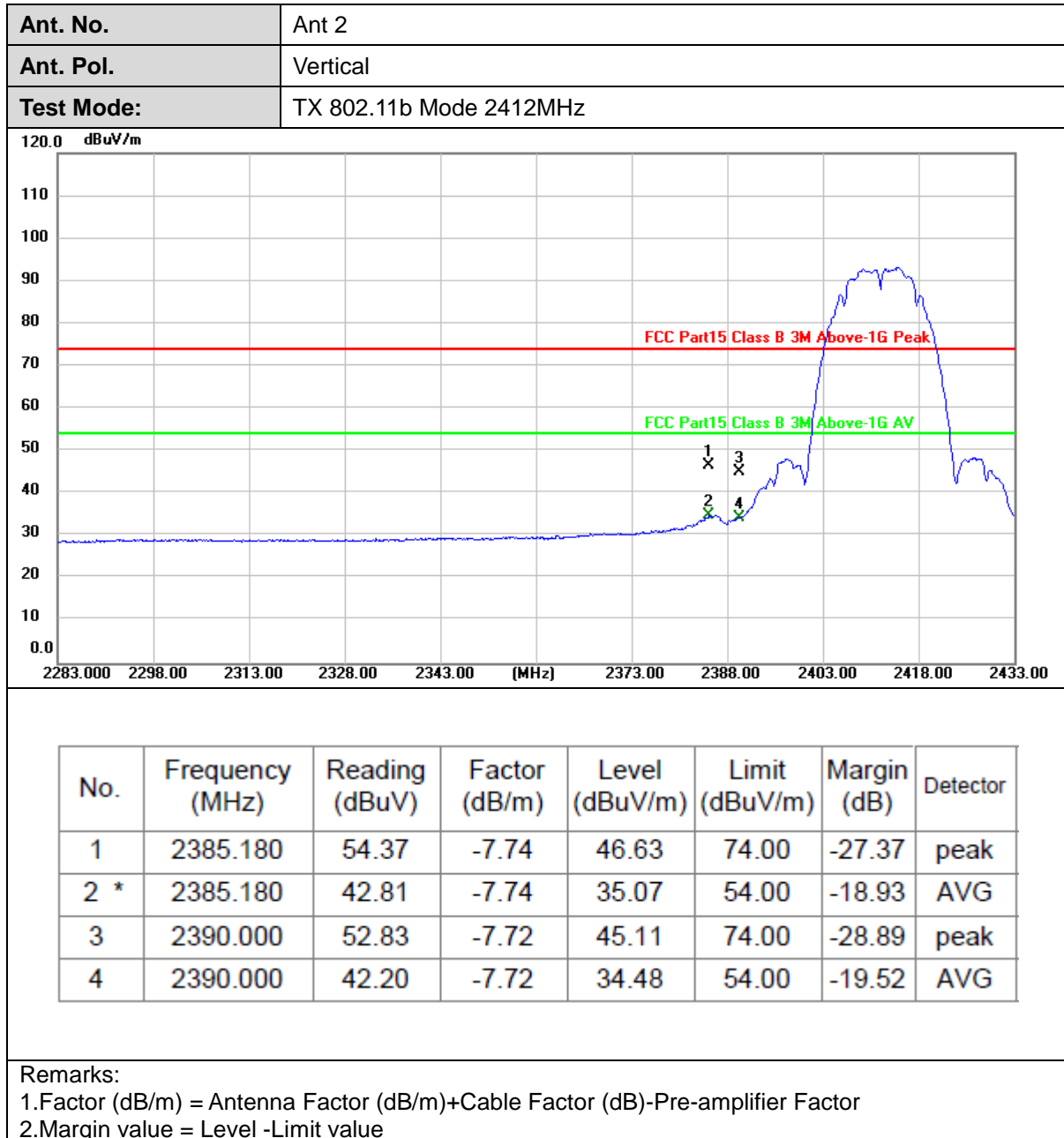
RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

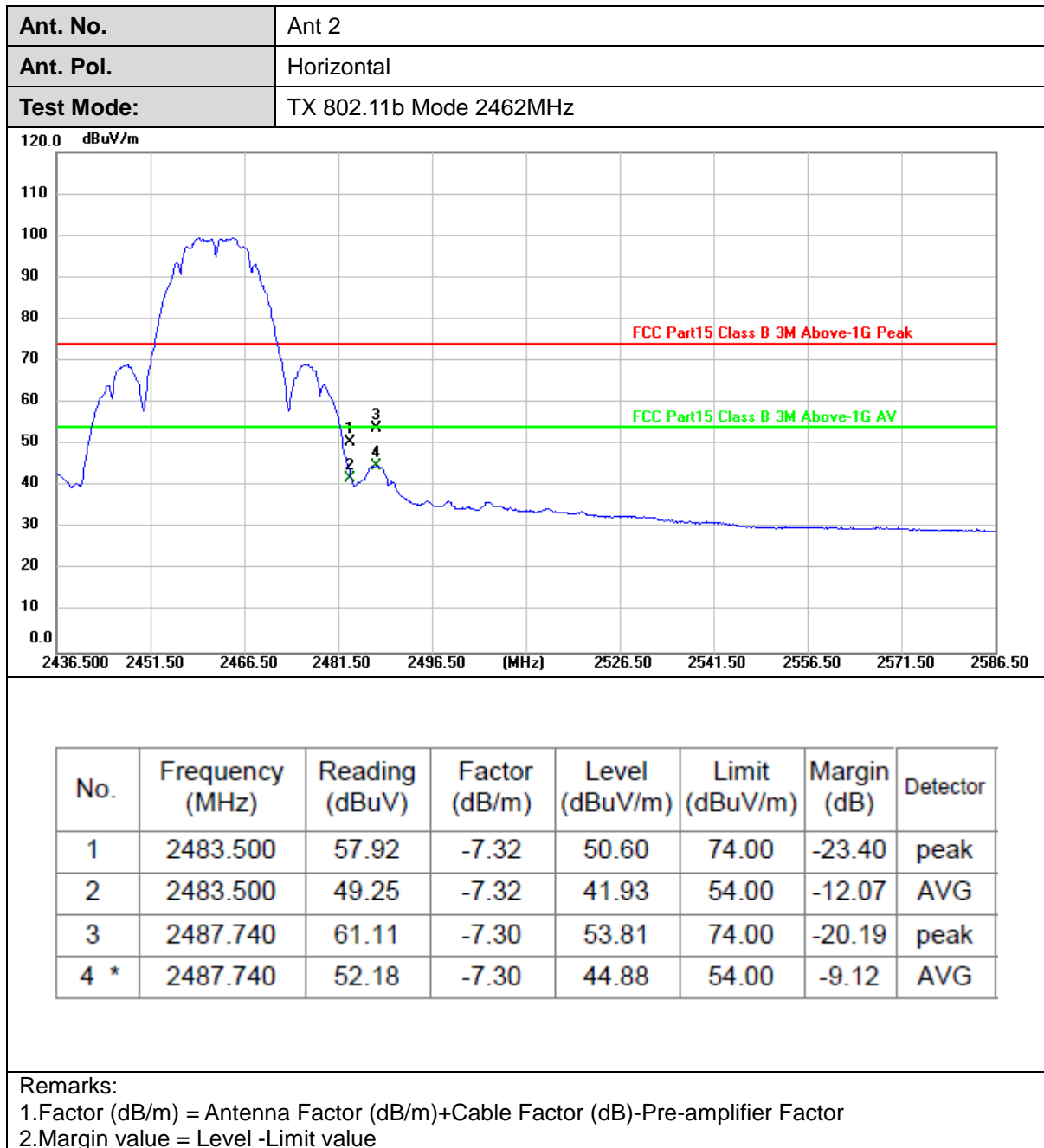
## Test Mode

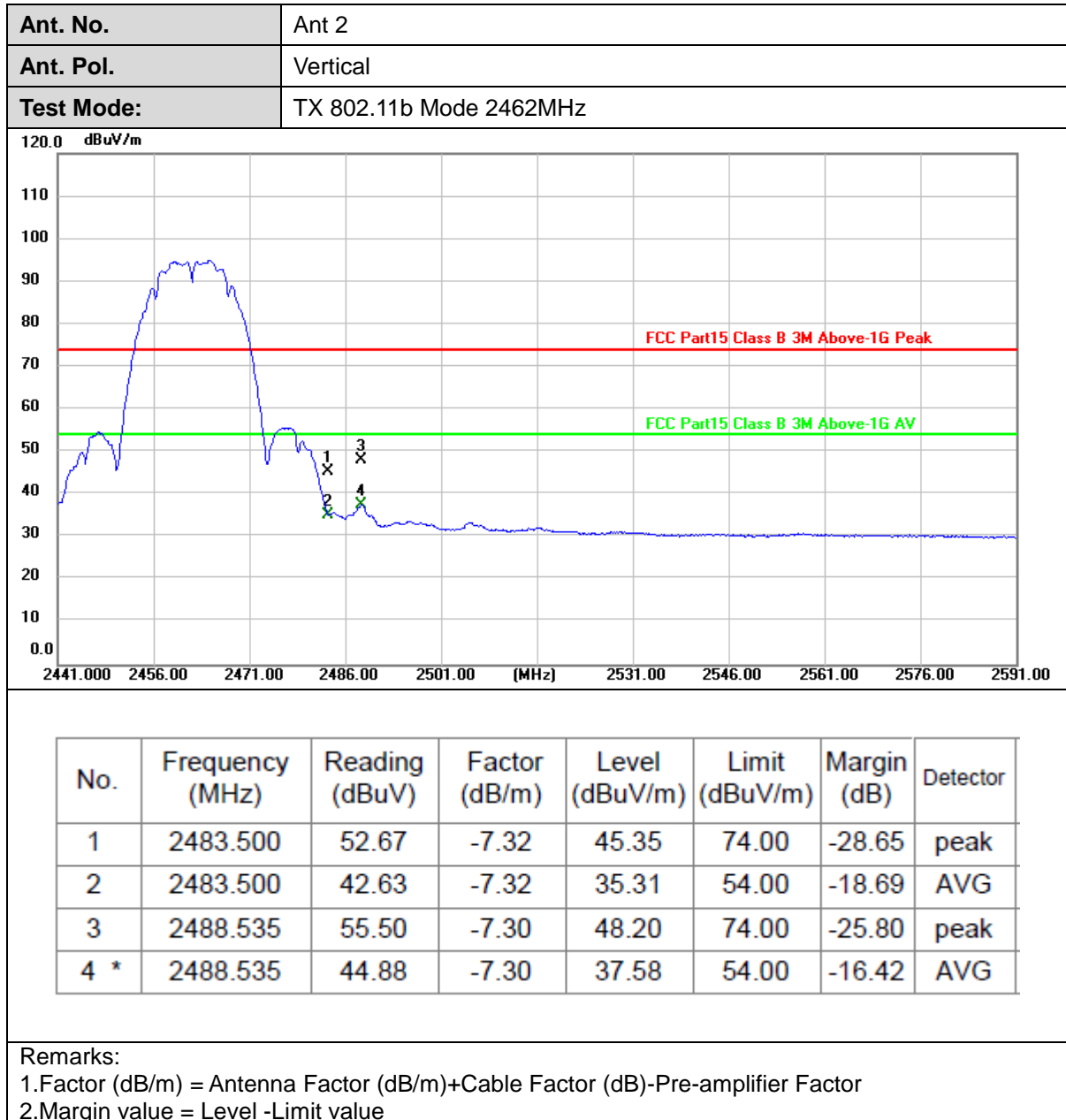
Please refer to the clause 2.4.

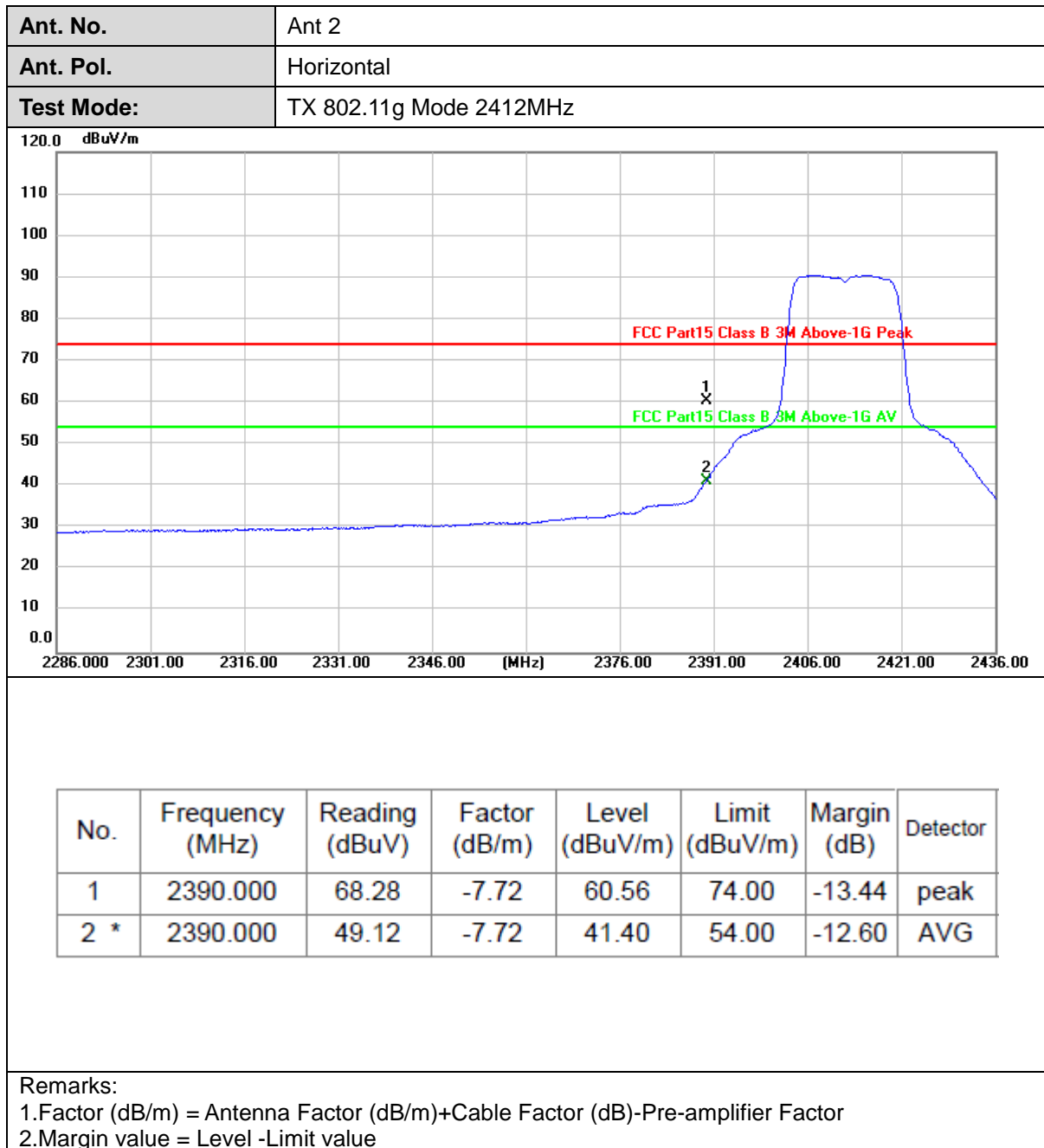
**Test Result**

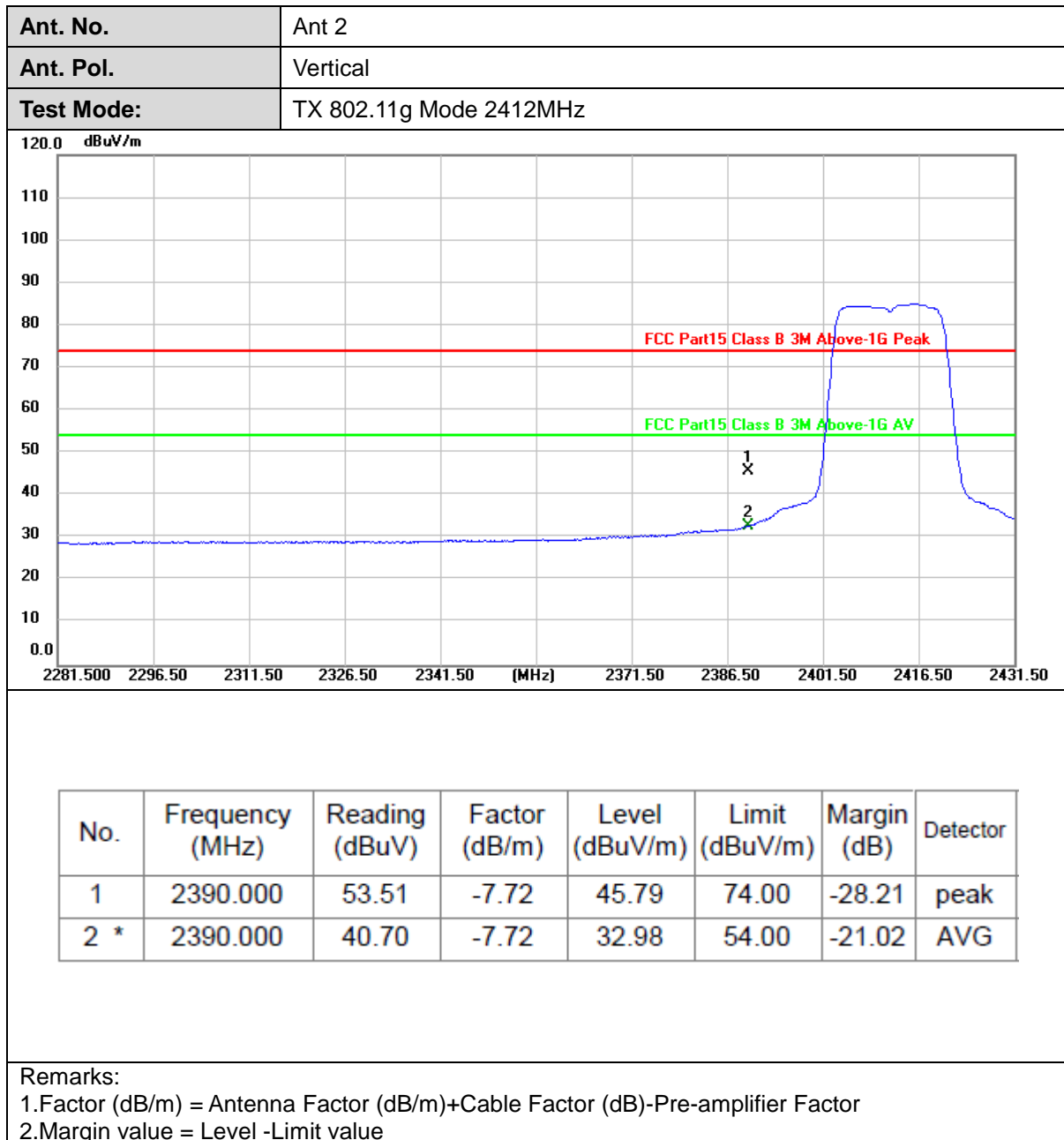


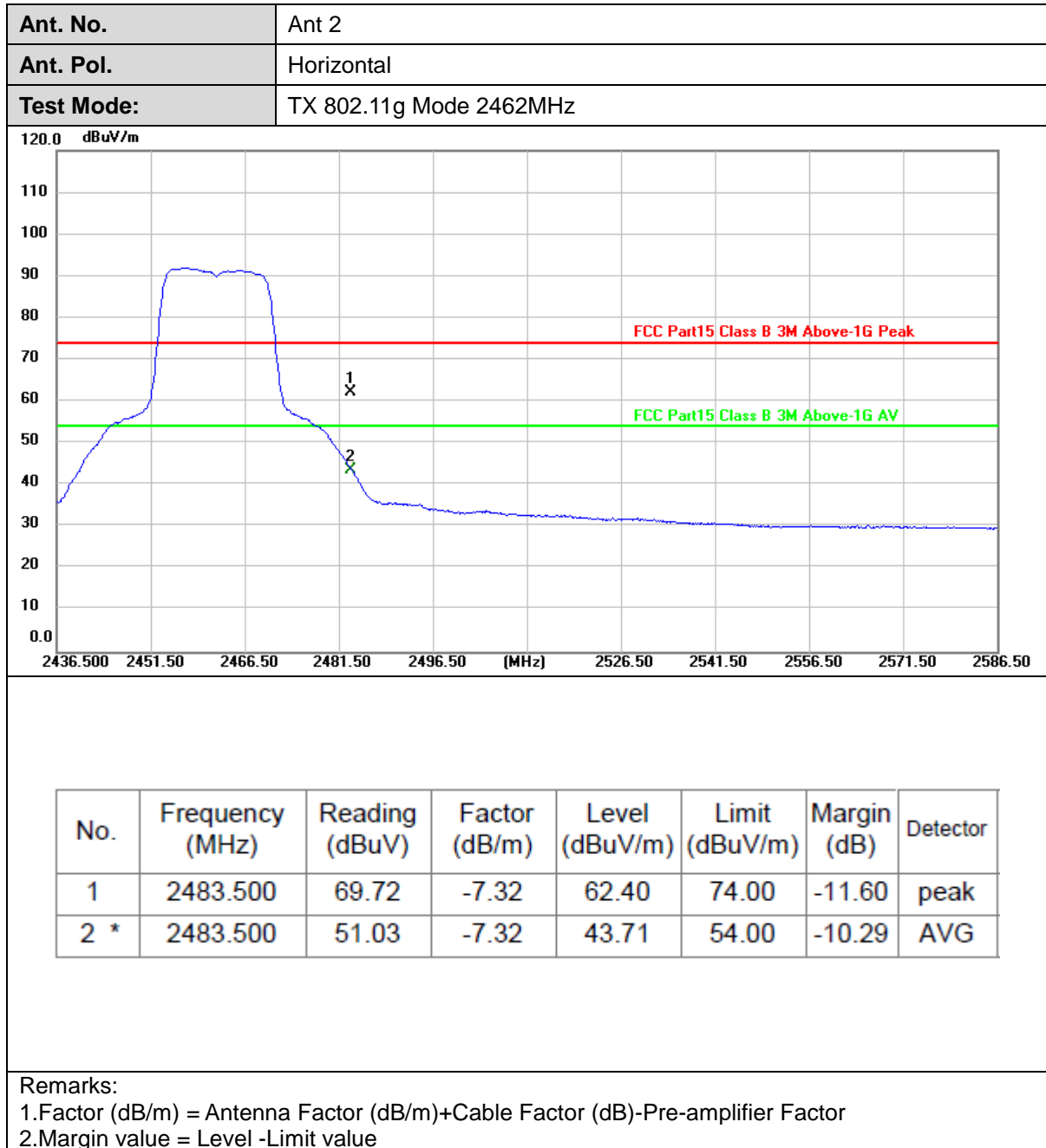


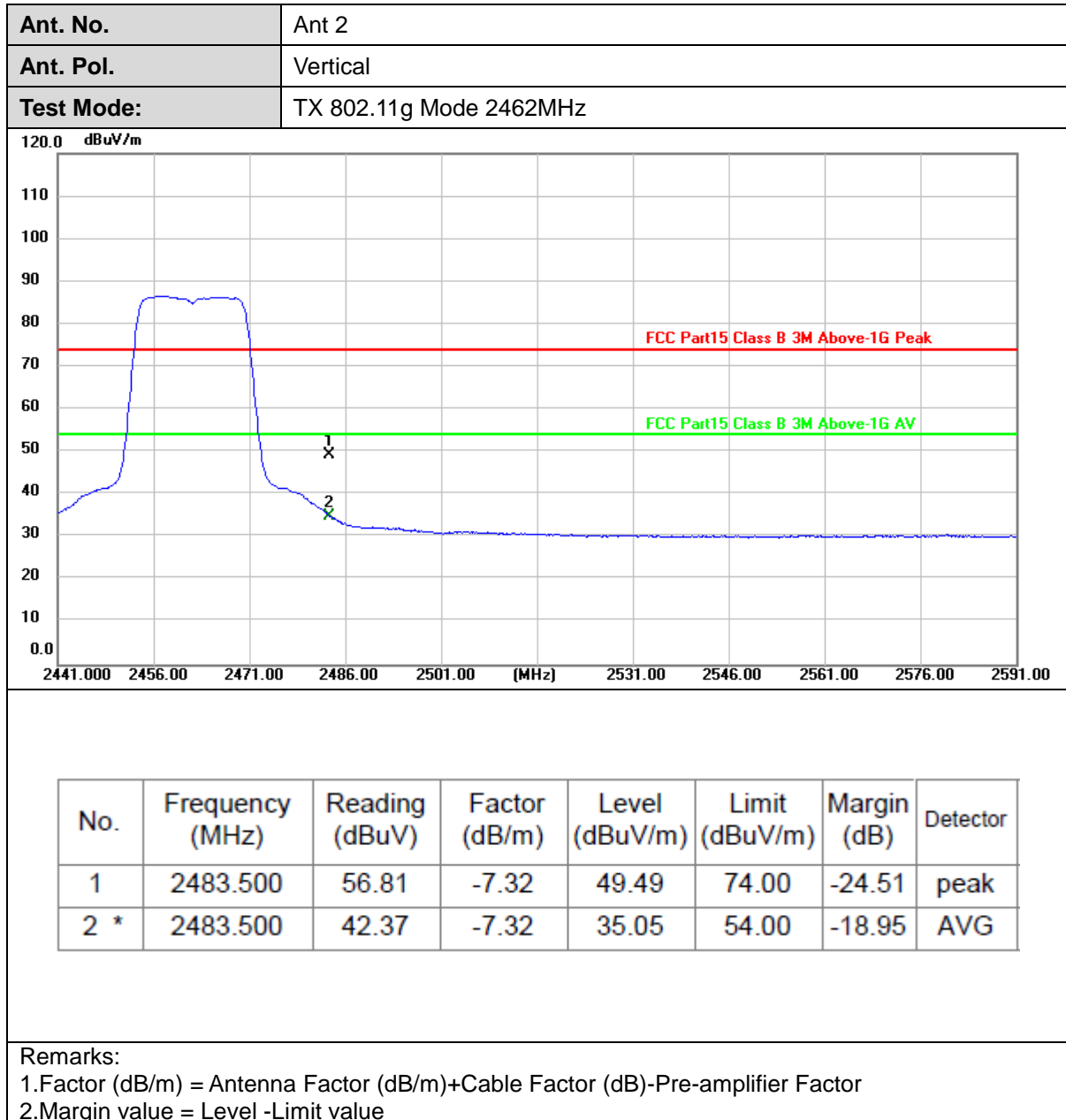


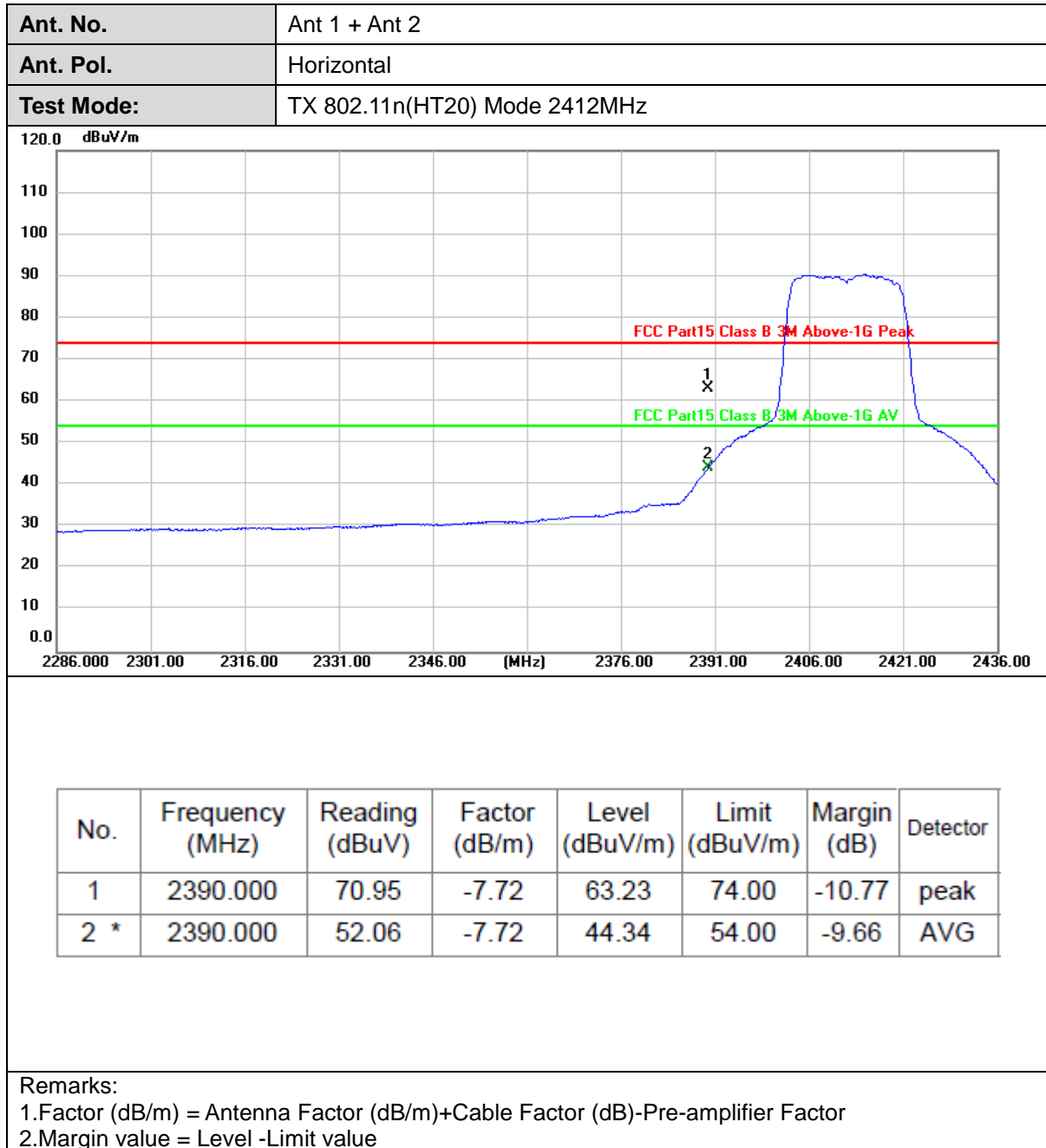


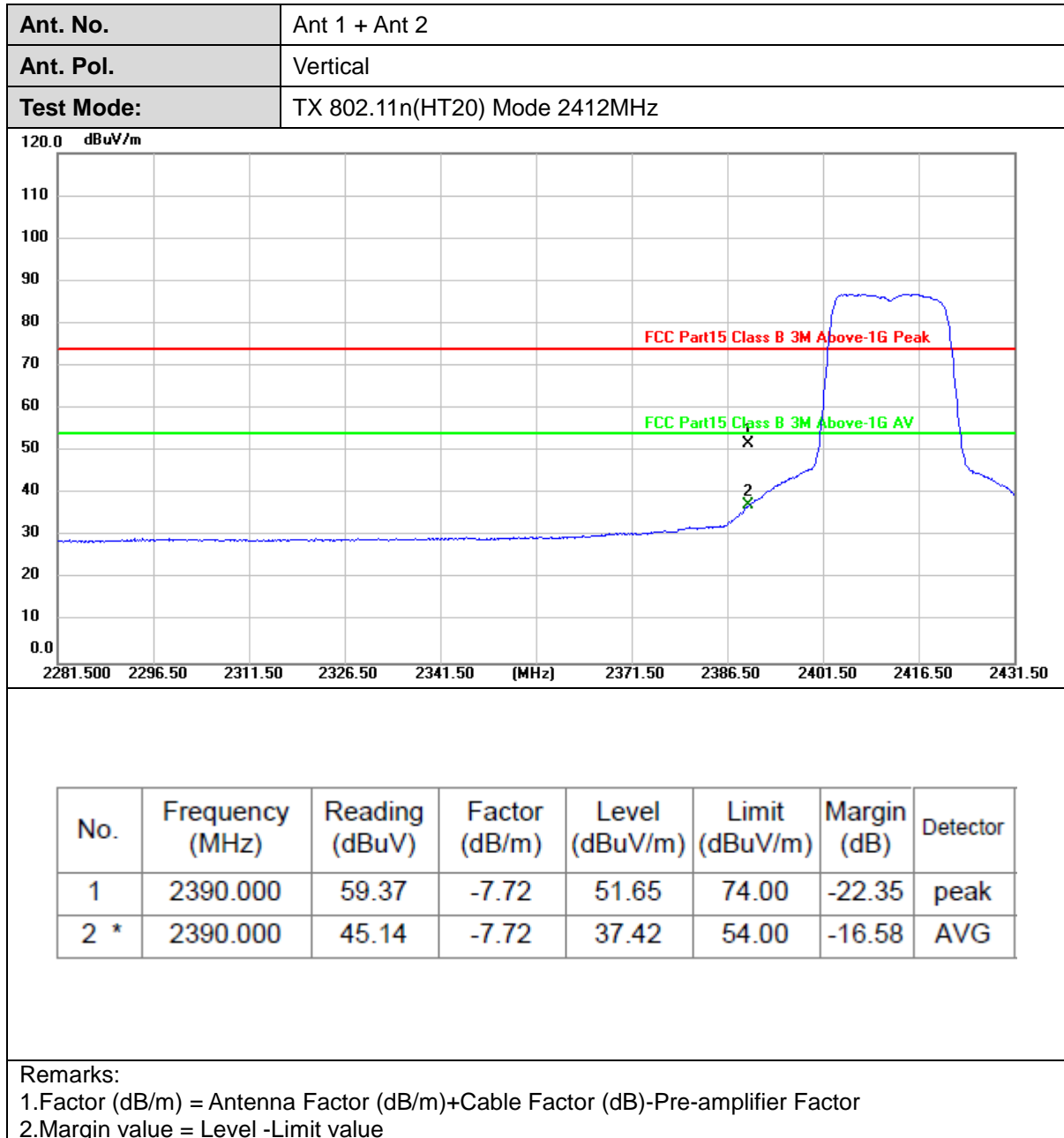




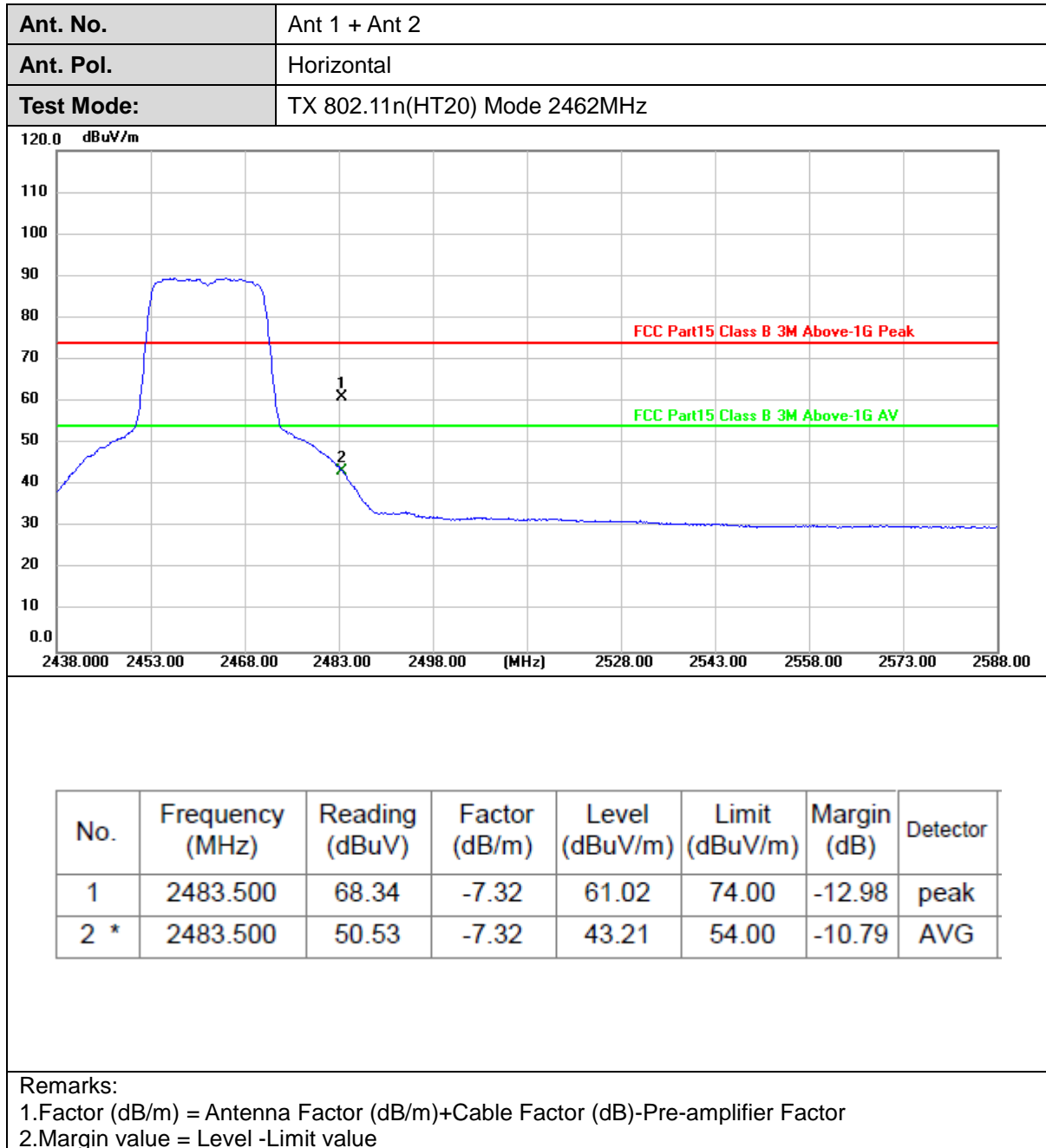


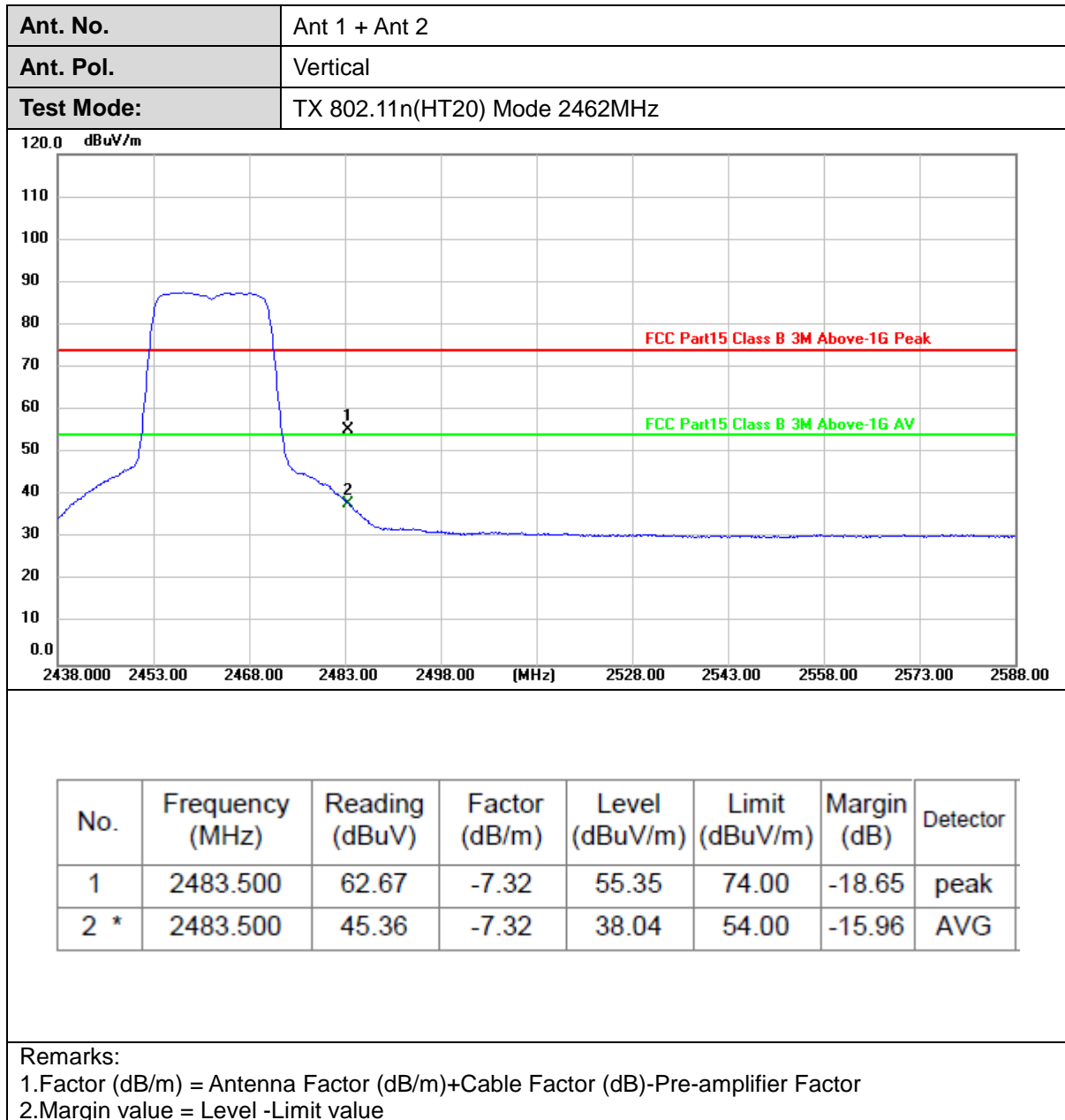


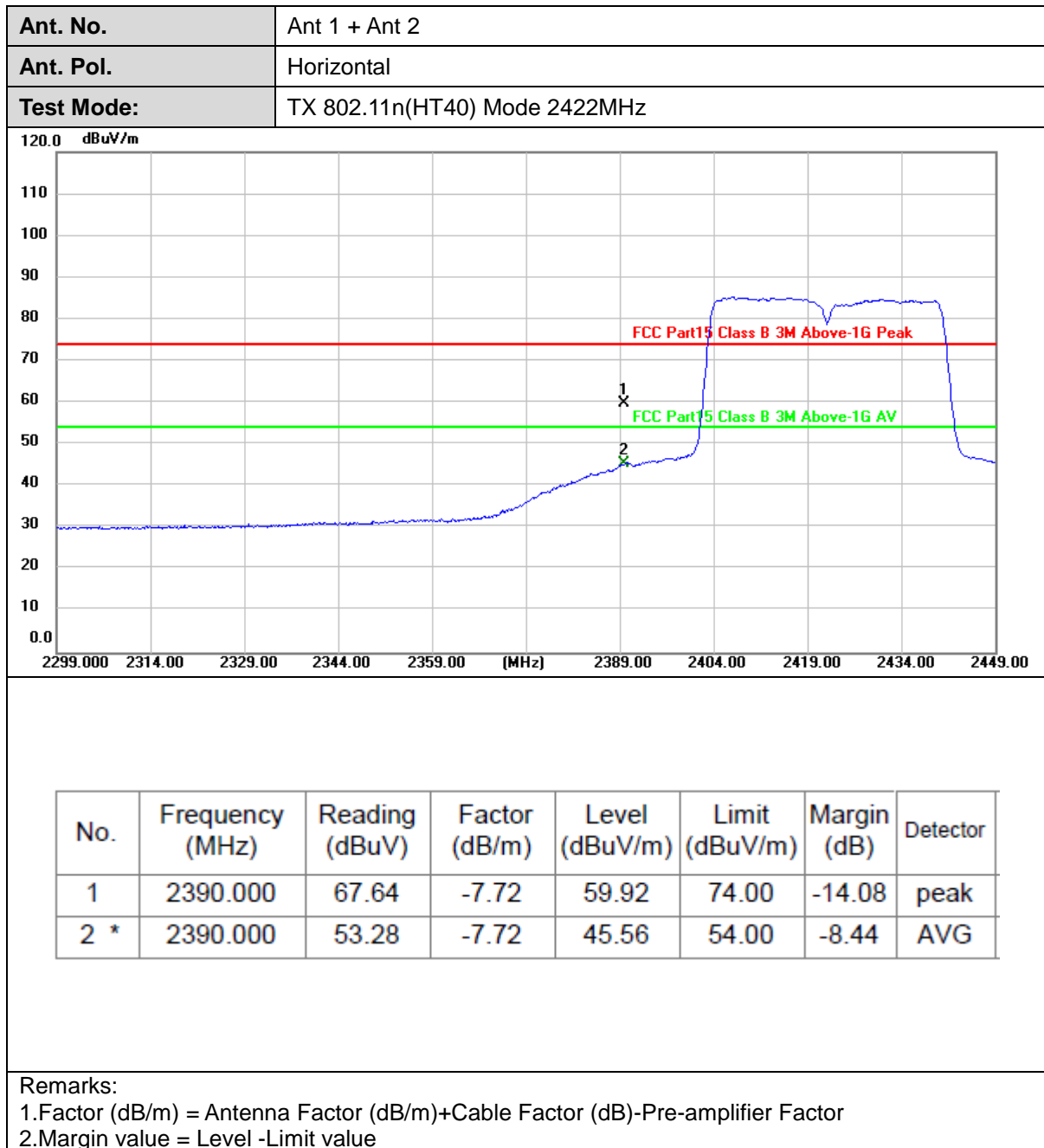


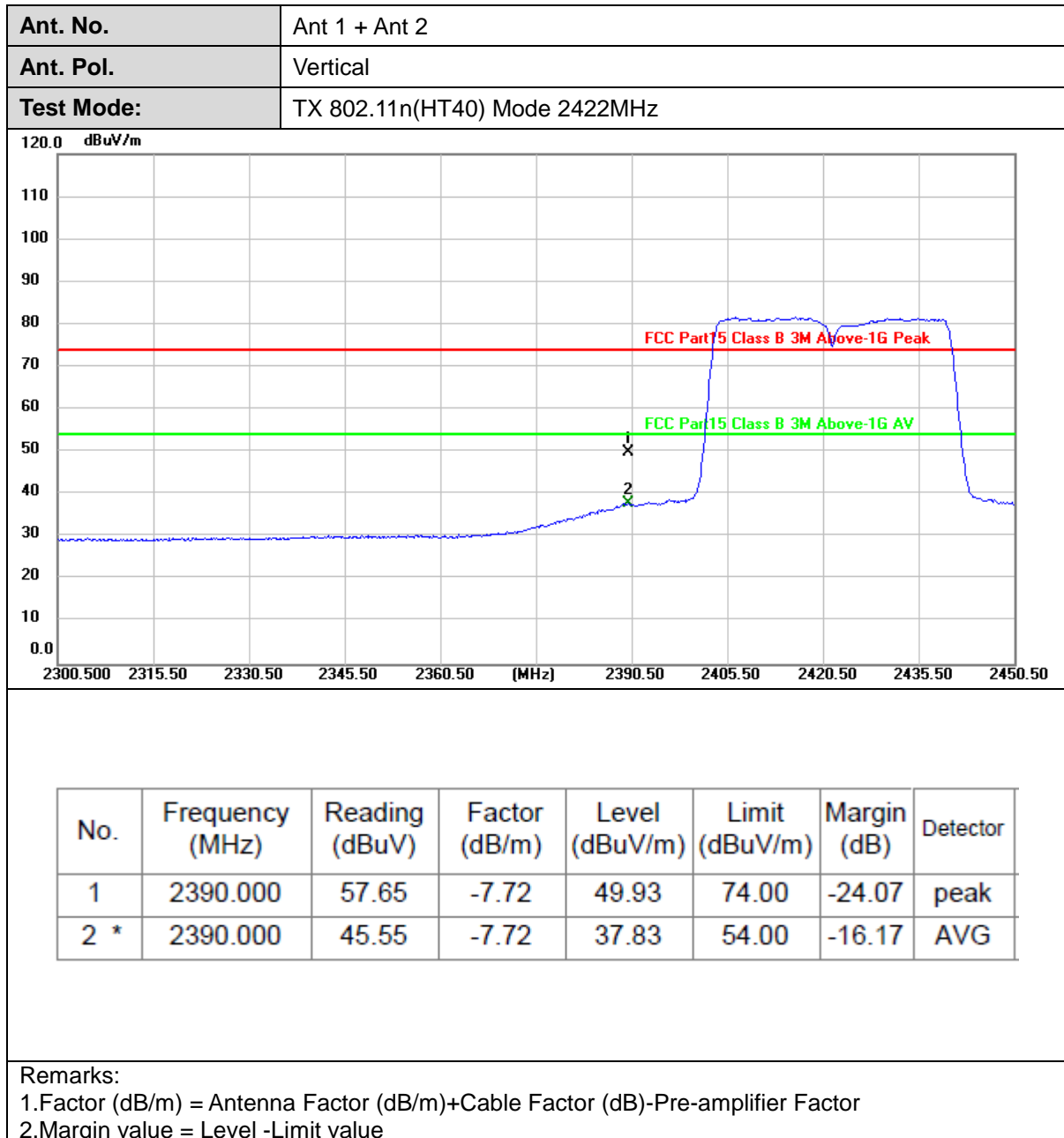


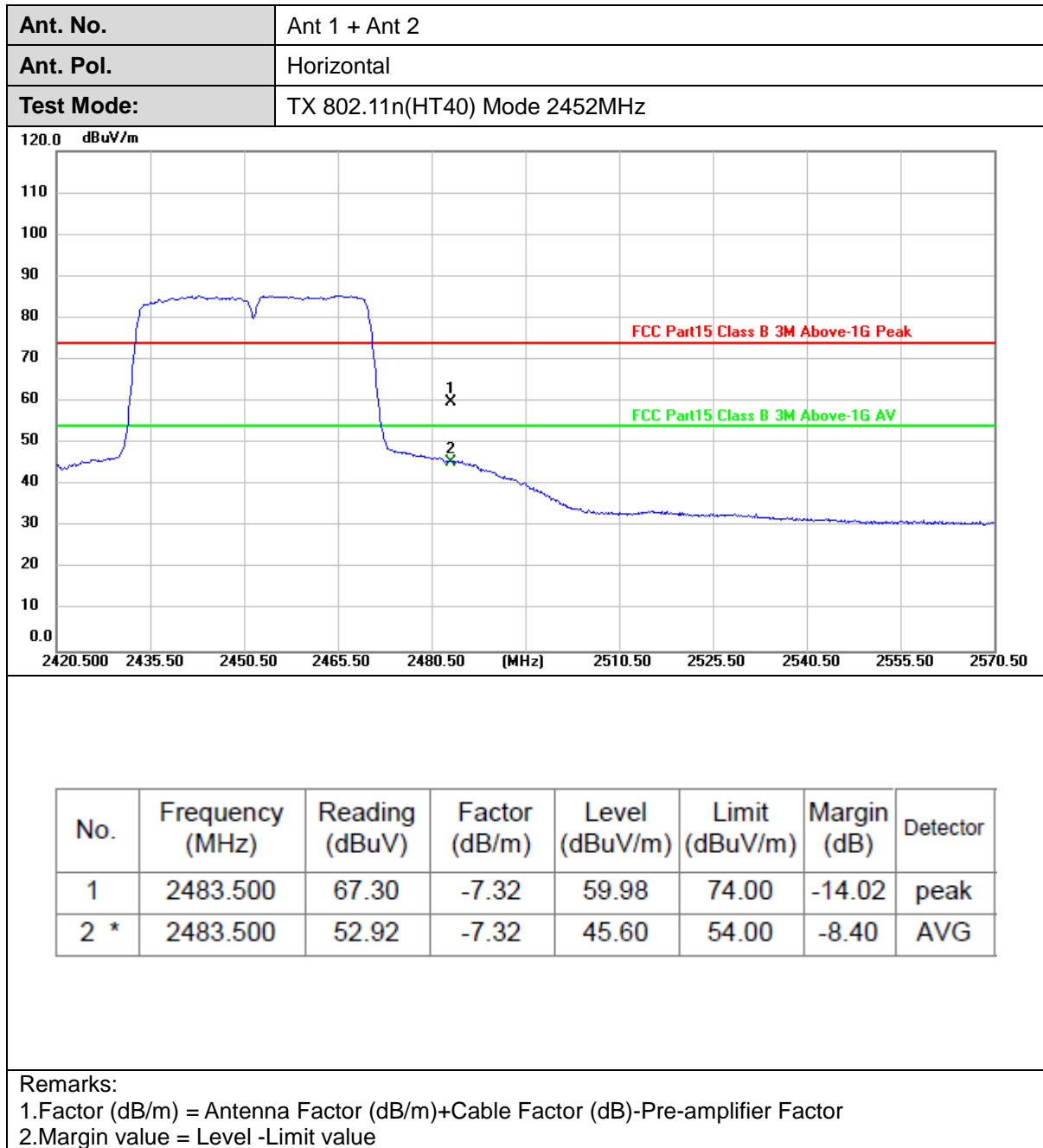


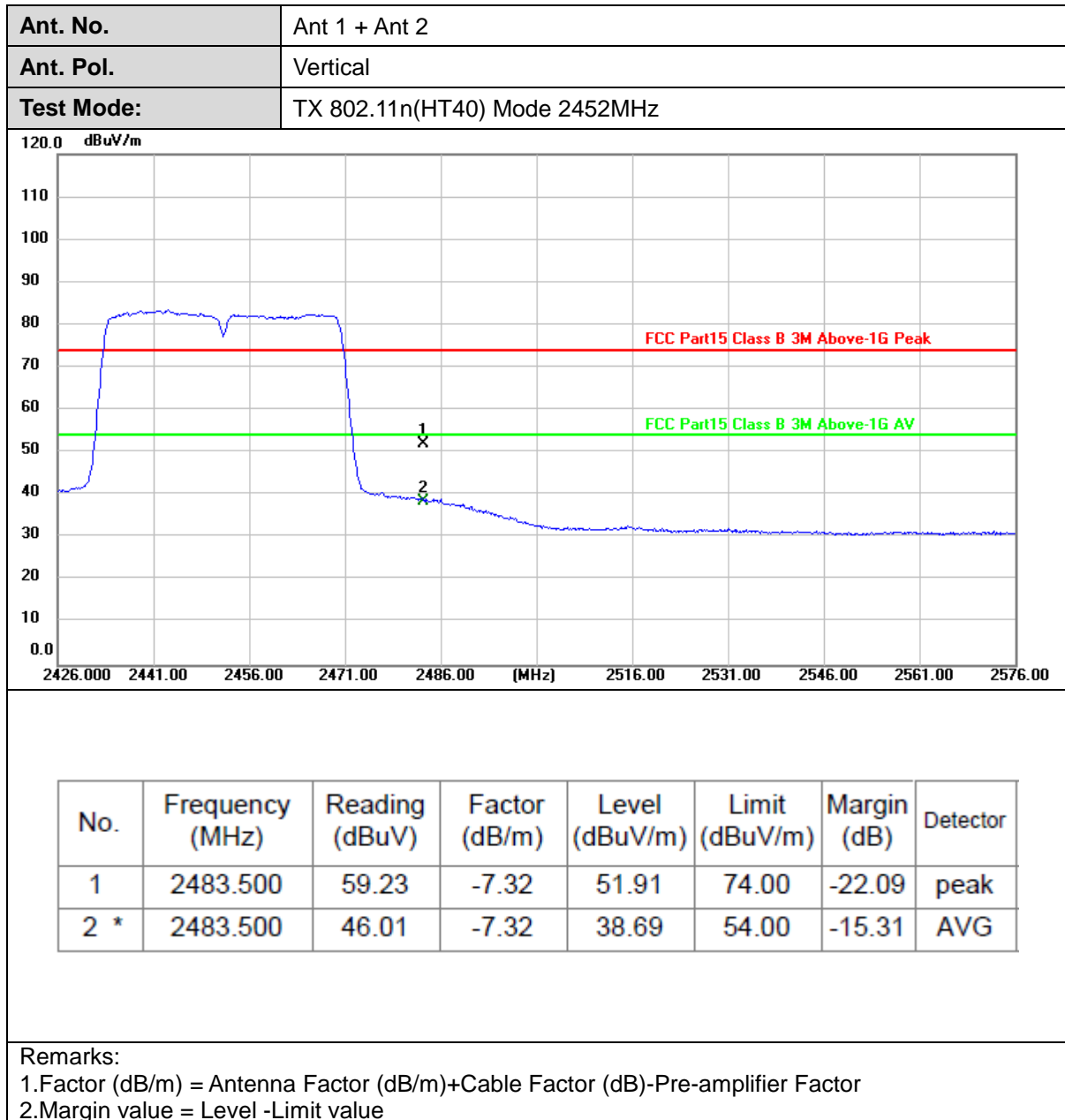














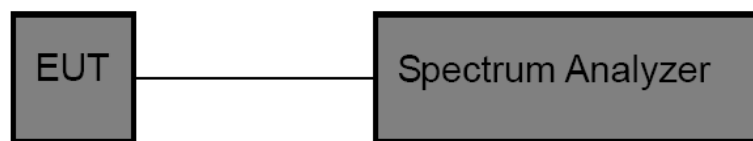
### 3.4. Band Edge and Spurious Emissions (Conducted)

#### Limit

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d) / RSS-247 5.5**

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

#### Test Configuration



#### Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:  
RBW = 100 kHz, VBW  $\geq$  RBW, scan up through 10<sup>th</sup> harmonic.  
Sweep = auto, Detector function = peak, Trace = max hold.
4. Measure and record the results in the test report.

#### Test Mode

Please refer to the clause 2.4.

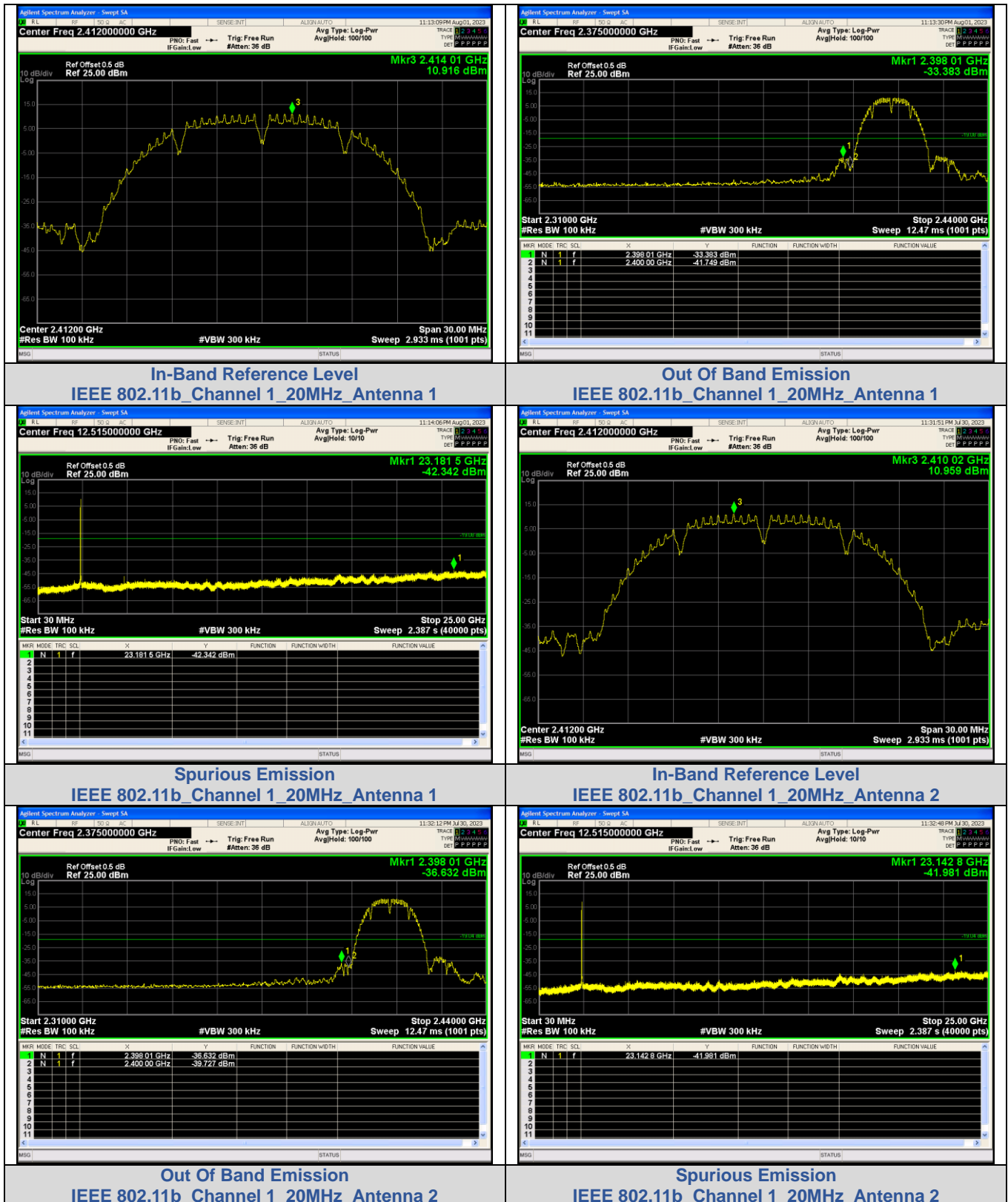
**Test Result**

Mode	Channel	Ant.	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11b	1	1	2400.00	-41.749	-19.08	-22.669	PASS
			2398.01	-33.383	-19.08	-14.303	PASS
			23181.5	-42.342	-19.08	-23.262	PASS
		2	2400.00	-39.727	-19.04	-20.687	PASS
			2398.01	-36.632	-19.04	-17.592	PASS
			23142.8	-41.981	-19.04	-22.941	PASS
	6	1	23205.9	-42.082	-19.35	-22.732	PASS
		2	23652.8	-42.267	-18.94	-23.327	PASS
	11	1	2483.50	-50.610	-19.88	-31	PASS
			24847.7	-42.081	-19.88	-22.201	PASS
		2	2483.50	-50.519	-19.12	-31	PASS
			23335.1	-42.173	-19.12	-23.053	PASS
IEEE 802.11g	1	1	2400.00	-30.439	-21.94	-8.499	PASS
			2398.27	-29.247	-21.94	-7.306	PASS
			24819.0	-41.707	-21.94	-19.767	PASS
		2	2400.00	-24.474	-21.04	-3.434	PASS
			2398.27	-23.767	-21.04	-2.727	PASS
			24732.2	-41.628	-21.04	-20.588	PASS
	6	1	23553.0	-41.639	-22.62	-19.019	PASS
		2	23768.3	-41.397	-21.1	-20.297	PASS
	11	1	2483.50	-41.823	-23.12	-19	PASS
			24789.0	-41.818	-23.12	-18.698	PASS
		2	2483.50	-36.506	-21.41	-15	PASS
			24829.6	-41.578	-21.41	-20.168	PASS
IEEE 802.11n_20	1	1	2400.00	-33.344	-23.85	-9.494	PASS
			2397.10	-32.432	-23.85	-8.582	PASS
			24466.9	-42.232	-23.85	-18.382	PASS
		2	2400.00	-29.258	-22.75	-6.508	PASS
			2398.01	-27.927	-22.75	-5.177	PASS
			24906.4	-42.194	-22.75	-19.444	PASS
	6	1	24827.1	-41.763	-24.47	-17.293	PASS
		2	24877.6	-41.945	-23.34	-18.605	PASS
	11	1	2483.50	-37.803	-24.91	-13	PASS
			23366.3	-51.354	-24.91	-26.444	PASS
		2	2483.50	-38.833	-24.12	-15	PASS
			22739.5	-42.018	-24.12	-17.898	PASS
IEEE 802.11n_40	3	1	2400.00	-33.794	-26.86	-6.934	PASS
			2398.79	-32.664	-26.86	-5.804	PASS
			23551.1	-41.790	-26.86	-14.930	PASS
		2	2400.00	-32.419	-25.59	-6.829	PASS
			2391.25	-28.393	-25.59	-2.803	PASS
			23672.2	-41.268	-25.59	-15.678	PASS
	6	1	24923.8	-42.339	-27.32	-15.019	PASS
		2	21891.2	-41.613	-26.0	-15.613	PASS
	9	1	2483.50	-37.327	-26.85	-10	PASS
			23406.9	-41.554	-26.85	-14.704	PASS
		2	2483.50	-36.476	-26.75	-10	PASS
			23508.0	-42.035	-26.75	-15.285	PASS





Test plot as follows:

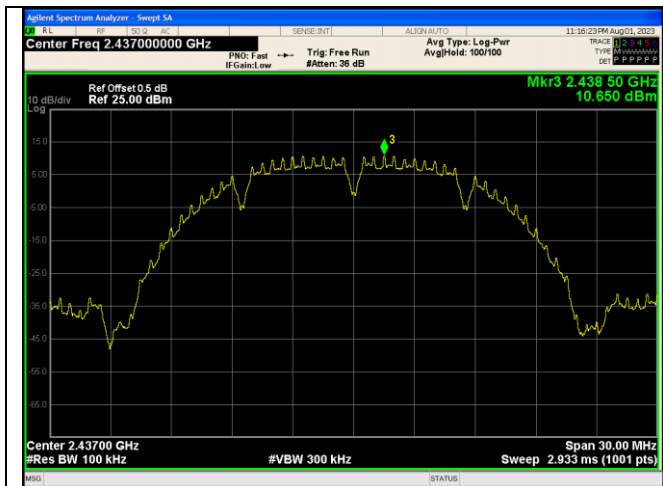


CTC Laboratories, Inc.

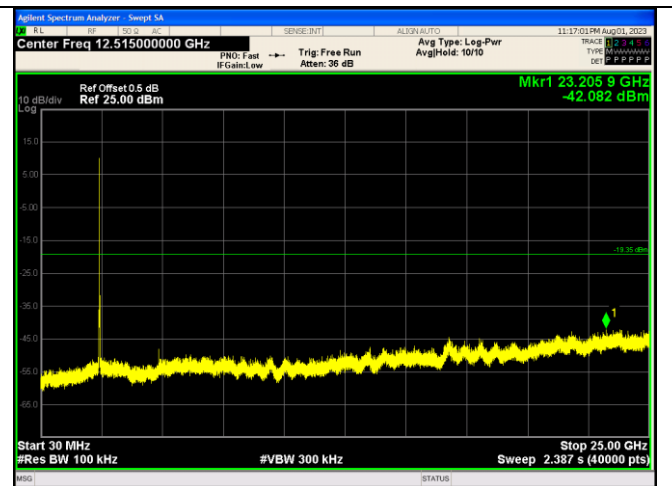
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China  
Tel.: (86)755-27521059 Fax: (86)755-27521011 Http://www.sz-ctc.org.cn



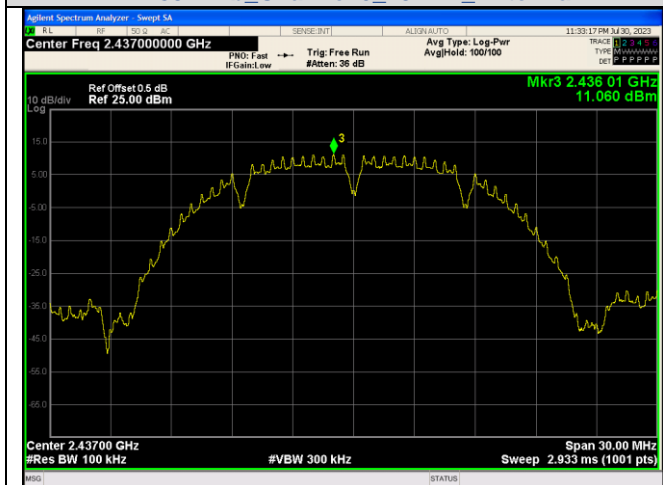
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : <http://yz.cnca.cn>



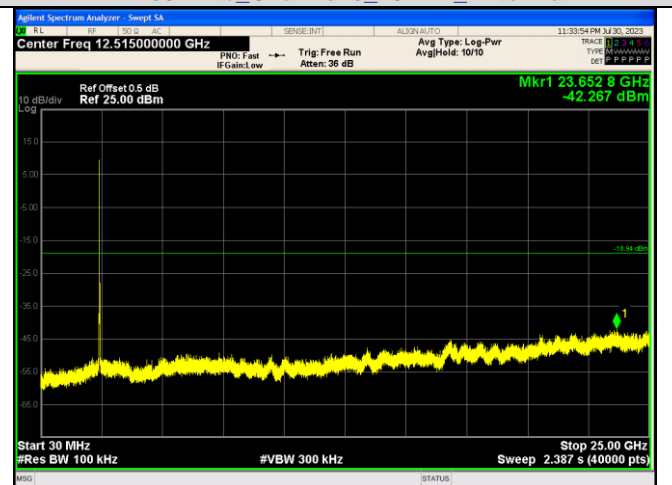
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IEEE 802.11b Channel 6 20MHz Antenna 1



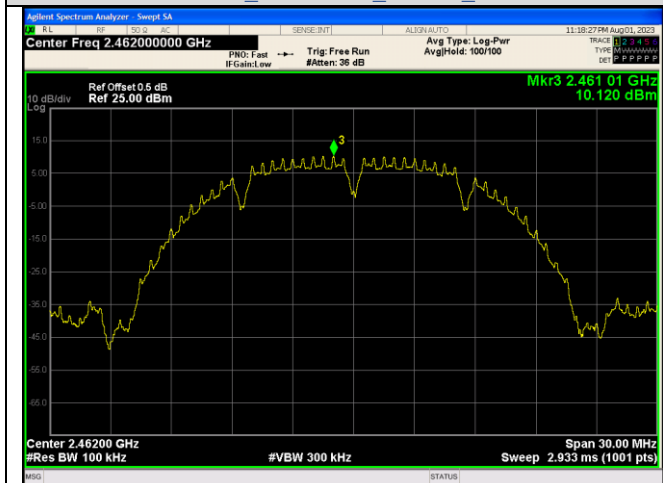
Spurious Emissions  
IEEE 802.11b Channel 6 20MHz Antenna 1



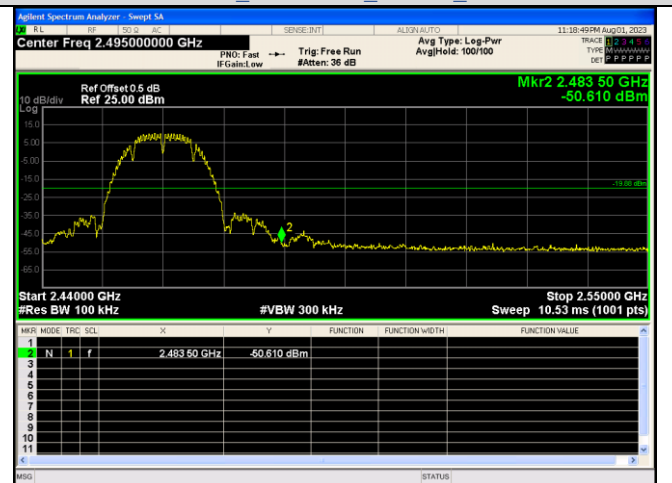
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IEEE 802.11b Channel 6 20MHz Antenna 2



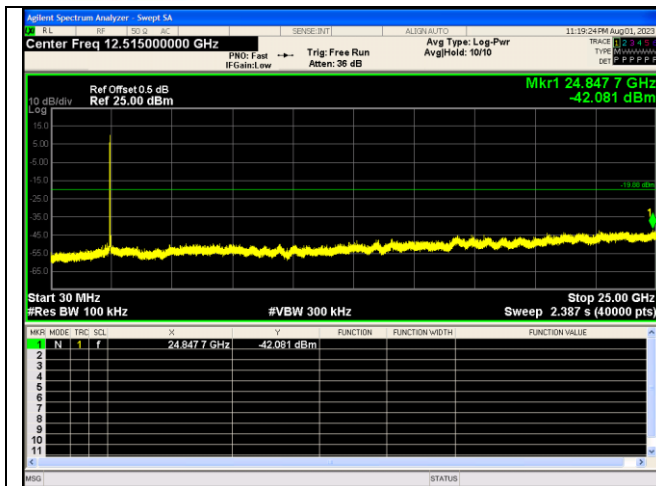
Spurious Emissions  
IEEE 802.11b Channel 6 20MHz Antenna 2



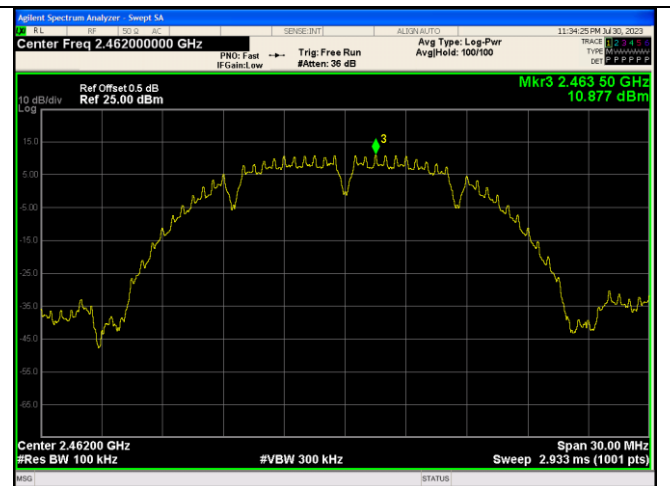
In-Band Reference Level  
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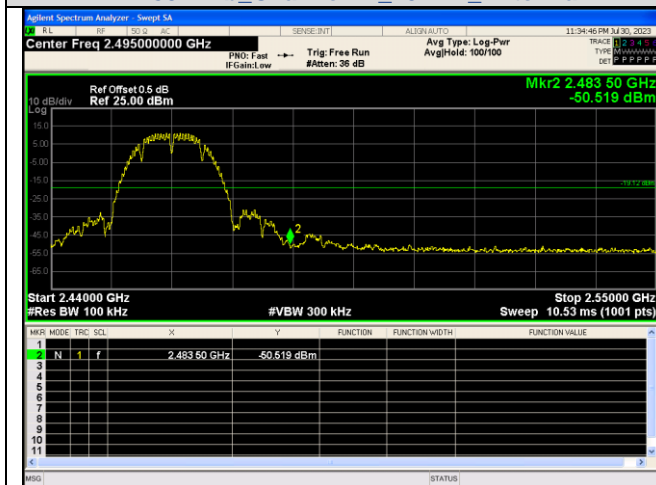
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IEEE 802.11b Channel 11 20MHz Antenna 1



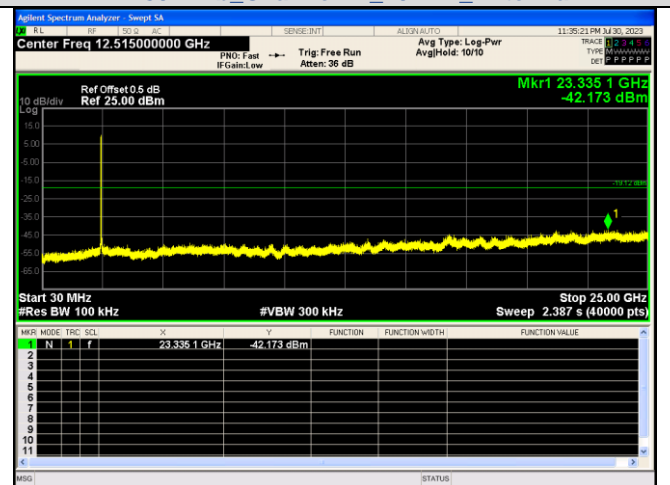
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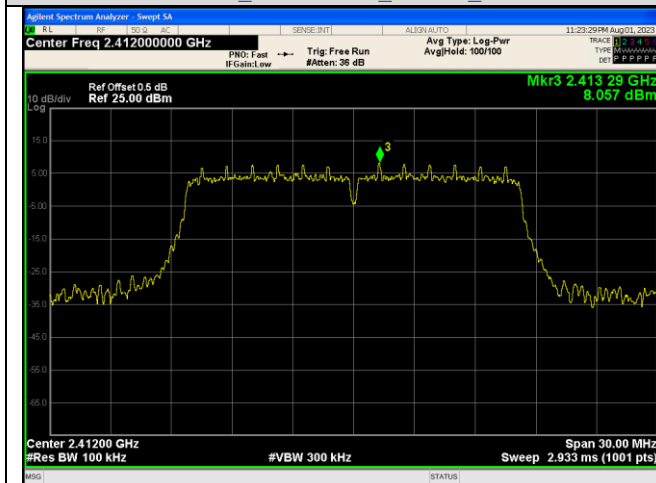
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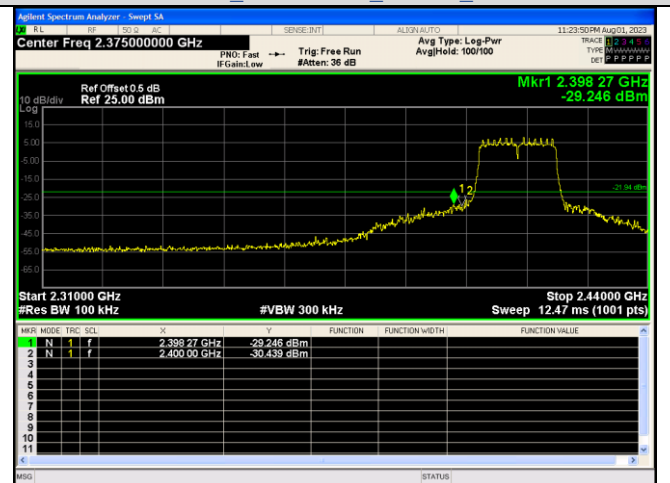
Out Of Band Emission  
IEEE 802.11b Channel 11\_20MHz\_Antenna 2



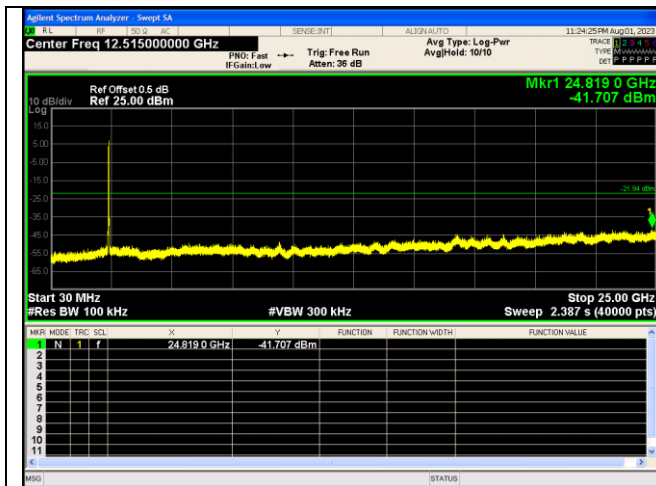
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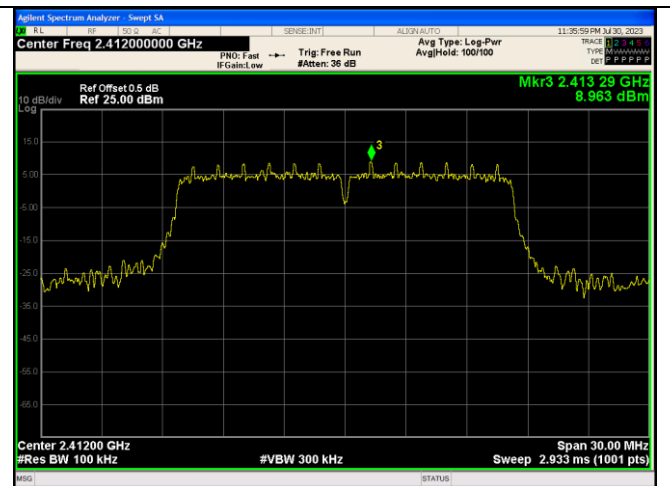
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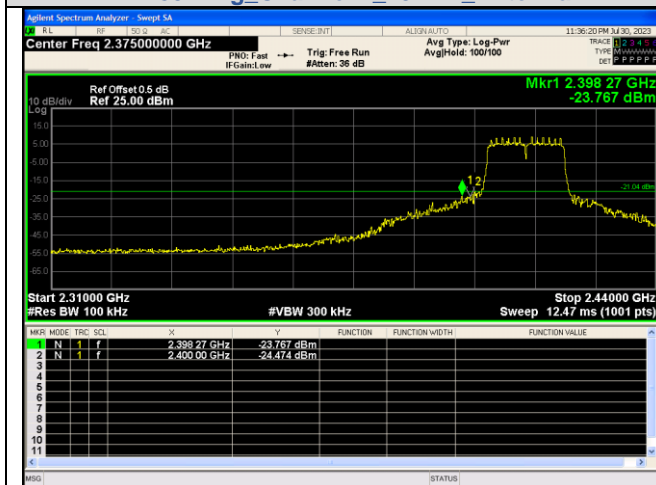
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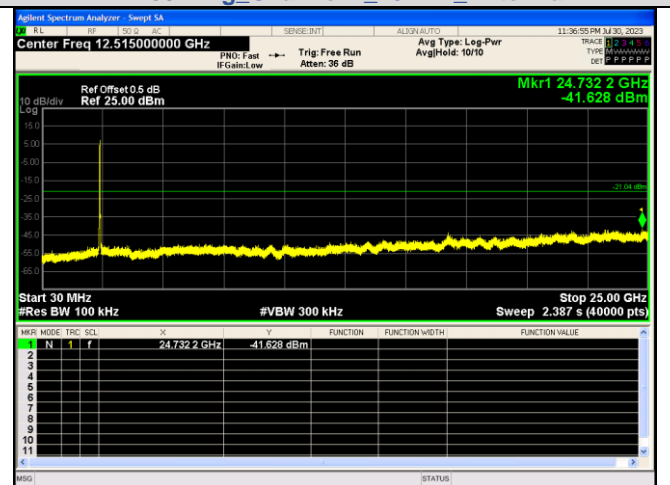
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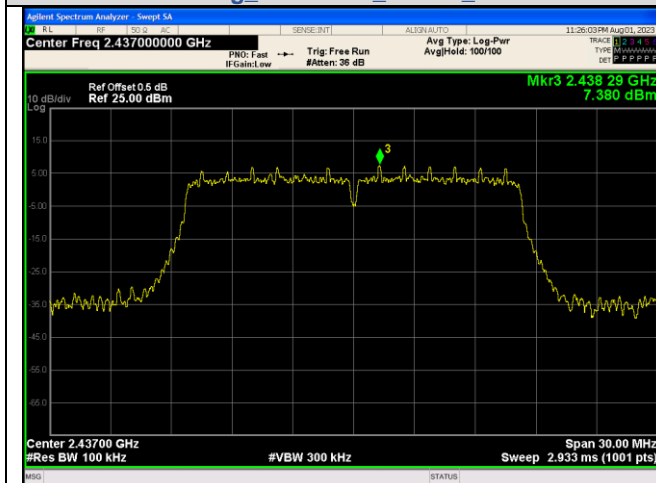
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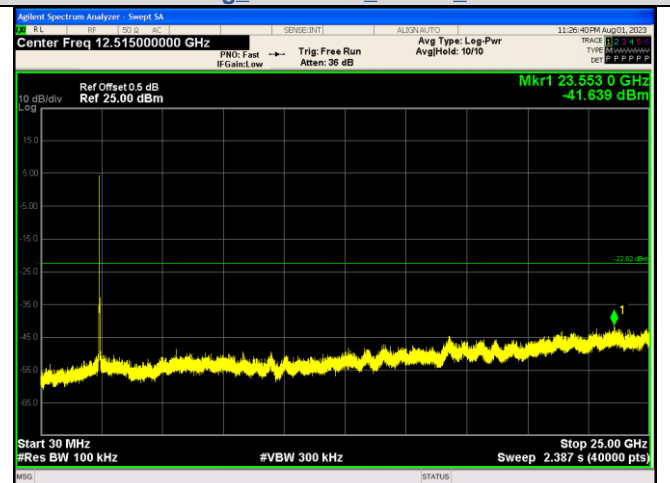
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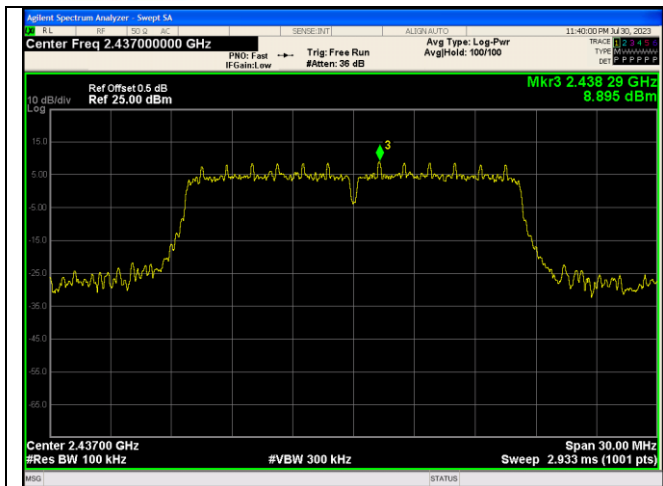
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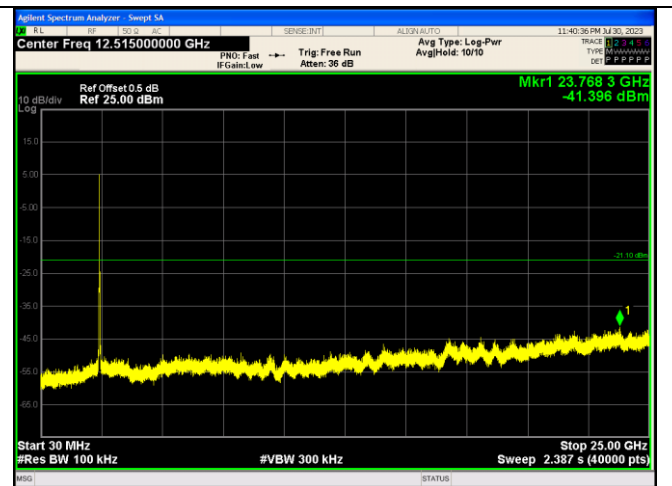
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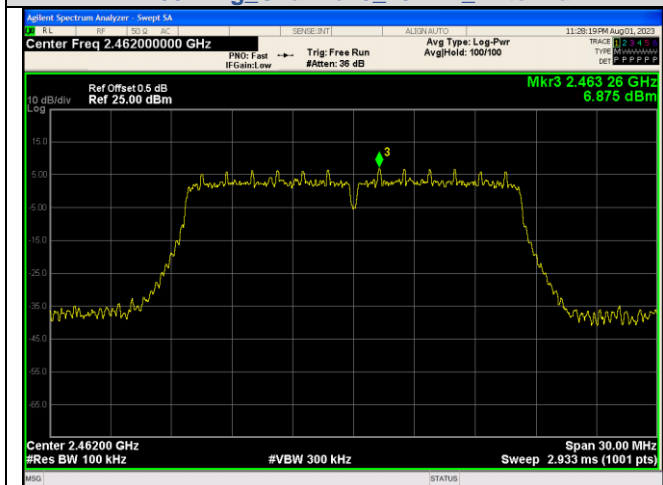
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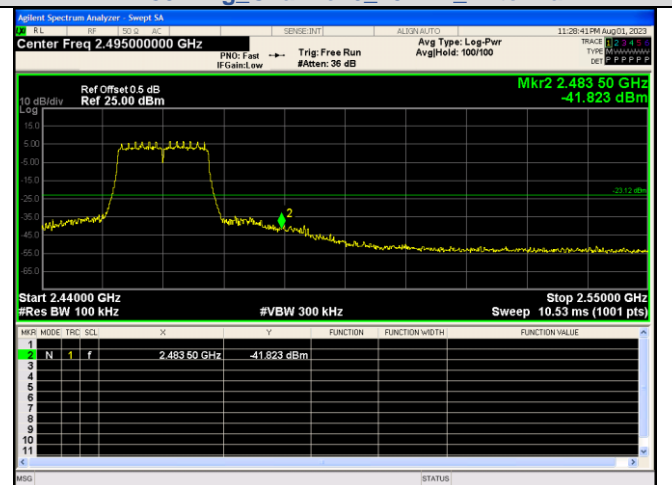
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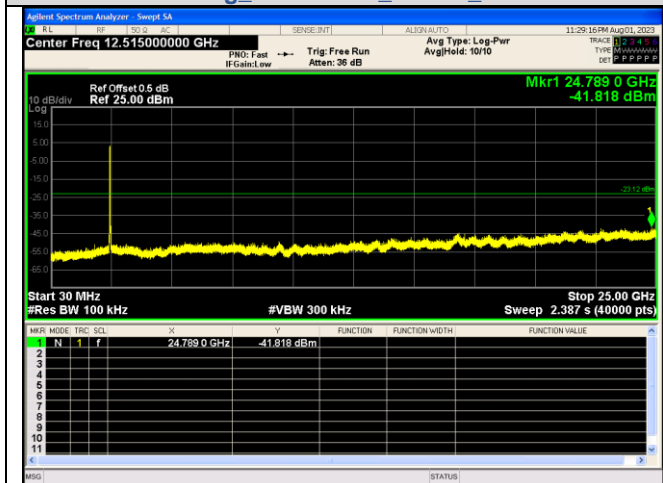
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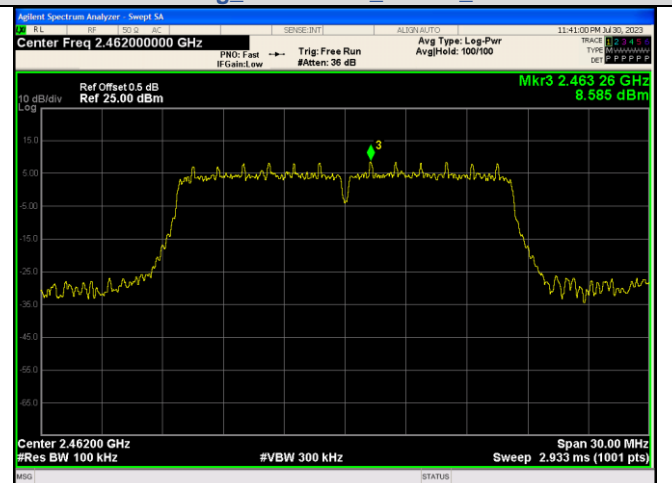
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Out Of Band Emission  
IEEE 802.11g Channel 11 20MHz Antenna 1



Spurious Emission  
IEEE 802.11g Channel 11 20MHz Antenna 1

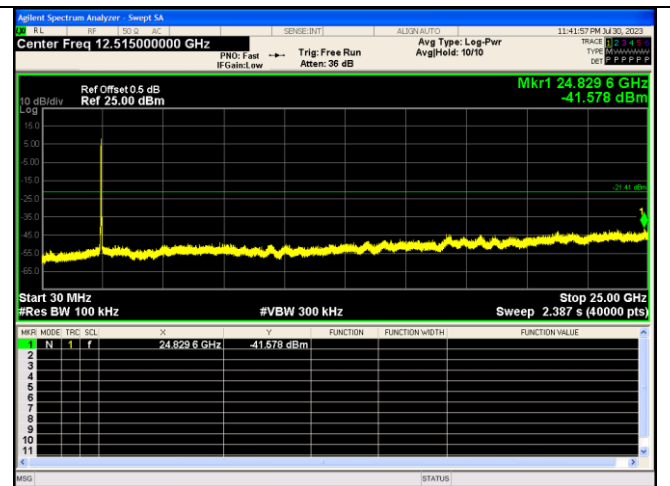


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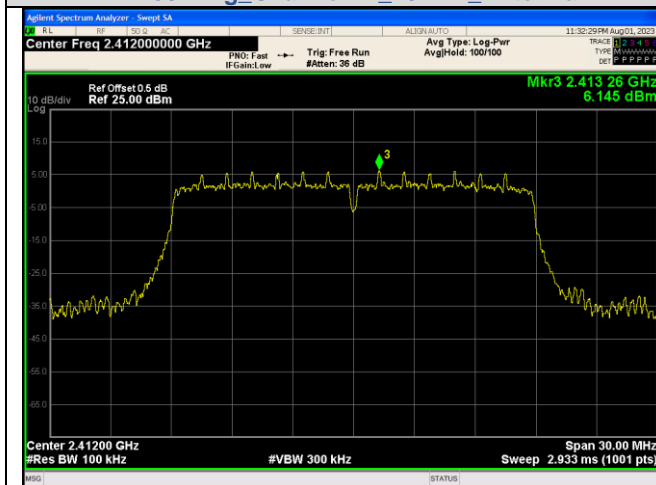




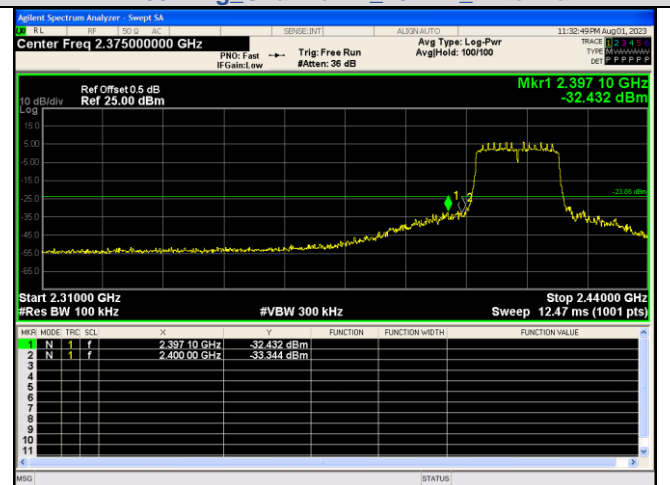
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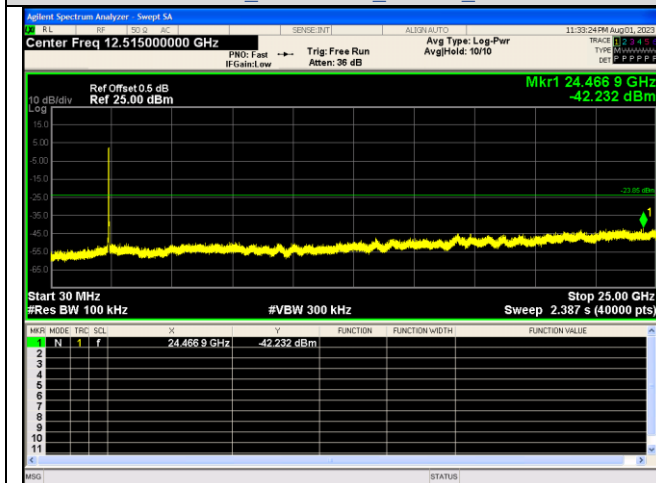
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IEEE 802.11g Channel 11\_20MHz\_Antenna 2



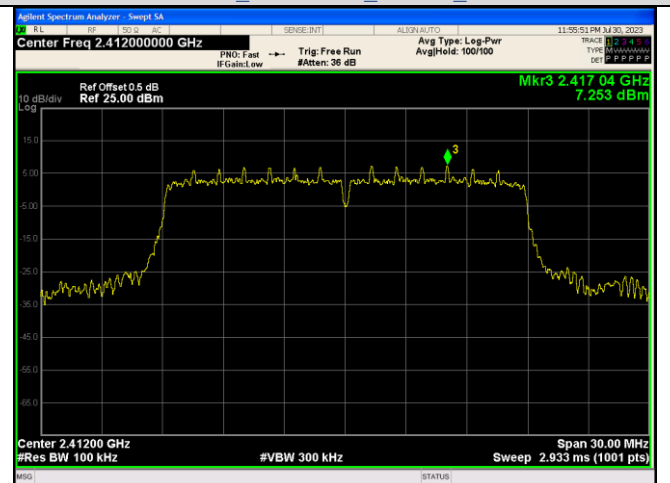
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IEEE 802.11n Channel 1\_20MHz\_Antenna 1



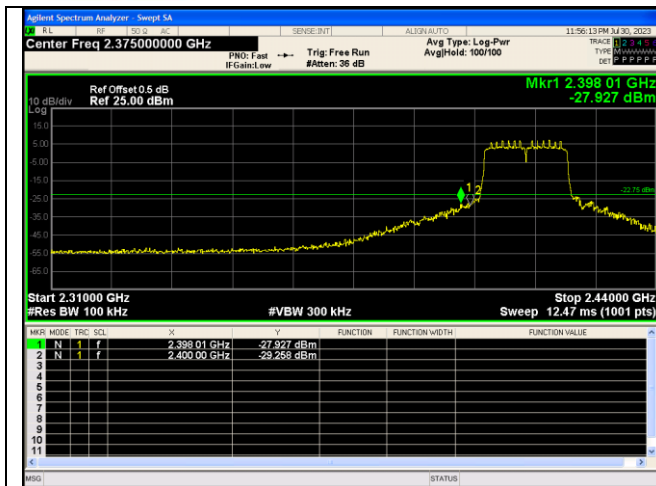
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IEEE 802.11n Channel 1\_20MHz\_Antenna 1



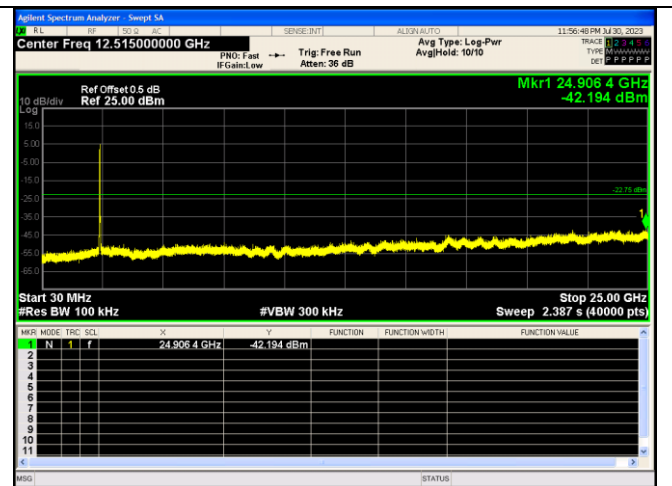
Spurious Emission  
IEEE 802.11n Channel 1\_20MHz\_Antenna 1



In-Band Reference Level  
IEEE 802.11n Channel 1\_20MHz\_Antenna 2



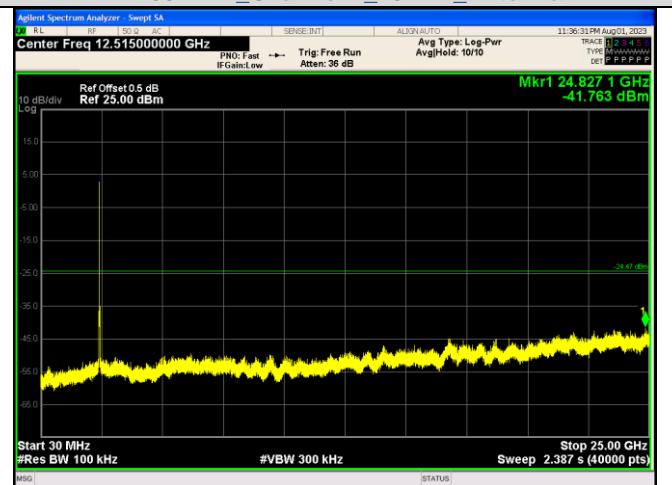
Out Of Band Emission  
IEEE 802.11n\_Channel 1\_20MHz\_Antenna 2



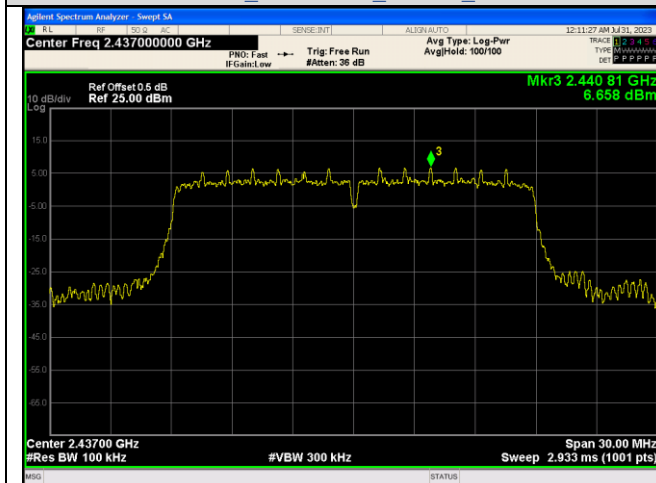
Spurious Emission  
IEEE 802.11n\_Channel 1\_20MHz\_Antenna 2



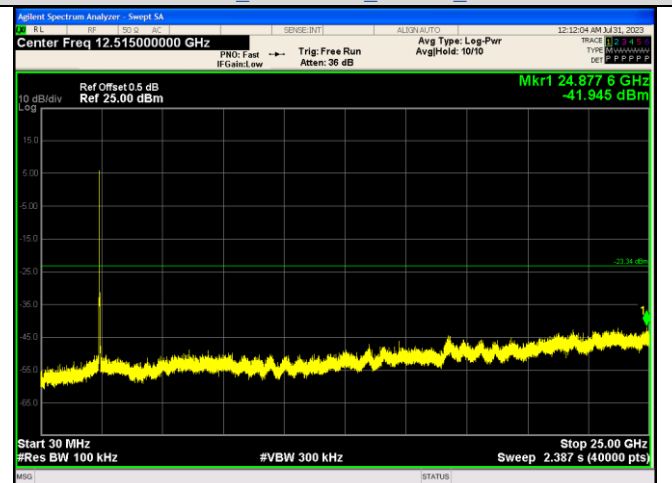
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IEEE 802.11n\_Channel 6\_20MHz\_Antenna 1



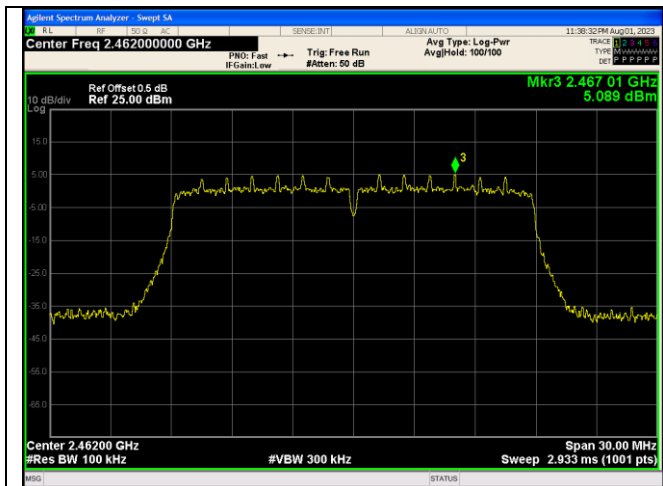
Spurious Emissions  
IEEE 802.11n\_Channel 6\_20MHz\_Antenna 1



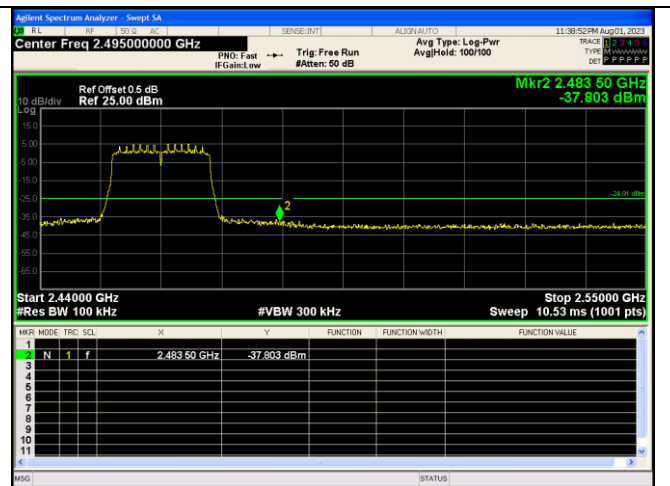
In-Band Reference Level  
IEEE 802.11n\_Channel 6\_20MHz\_Antenna 2



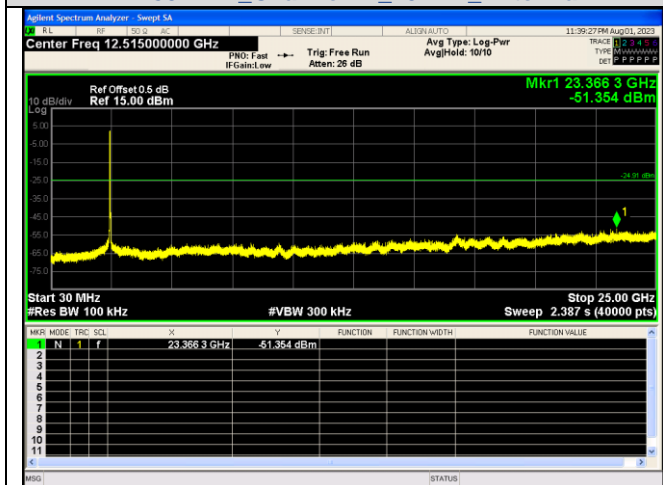
Spurious Emissions  
IEEE 802.11n\_Channel 6\_20MHz\_Antenna 2



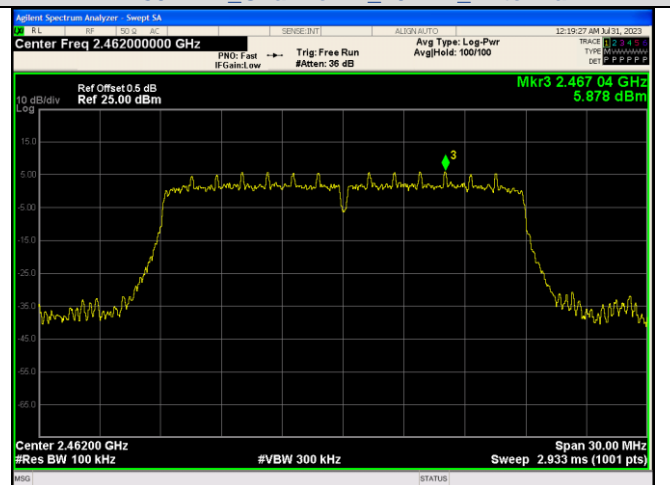
In-Band Reference Level  
IEEE 802.11n Channel 11\_20MHz\_Antenna 1



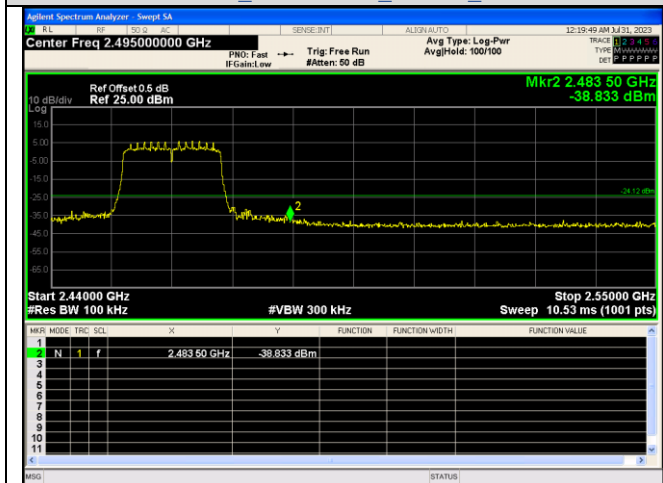
Out Of Band Emission  
IEEE 802.11n Channel 11\_20MHz\_Antenna 1



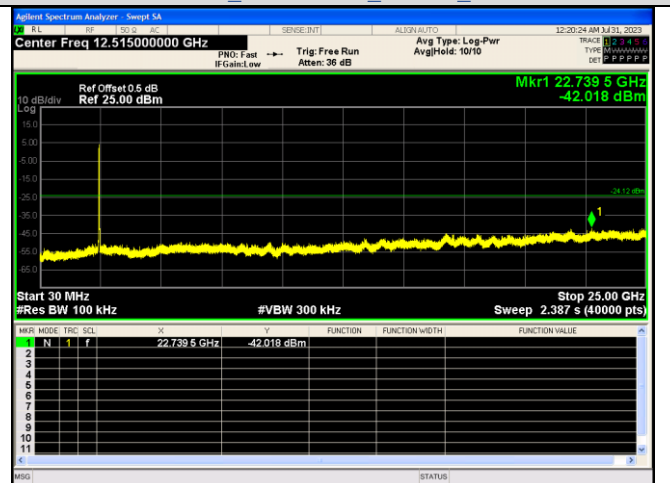
Spurious Emission  
IEEE 802.11n Channel 11\_20MHz\_Antenna 1



In-Band Reference Level  
IEEE 802.11n Channel 11\_20MHz\_Antenna 2



Out Of Band Emission  
IEEE 802.11n Channel 11\_20MHz\_Antenna 2



Spurious Emission  
IEEE 802.11n Channel 11\_20MHz\_Antenna 2

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