



TEST REPORT

Report No.: CTC2024299407
FCC ID.....: 2AQ5R-WCN3988
IC: 24301-WCN3988
Applicant: Shenzhen KTC Commercial Display Technology CO.,LTD.
Address.....: No.4023, Northern Wuhe Road, Bantian Street, Longgang District, Shenzhen City, Guangdong Province, P.R. China
Manufacturer.....: Shenzhen KTC Commercial Display Technology CO.,LTD.
Address.....: No.4023, Northern Wuhe Road, Bantian Street, Longgang District, Shenzhen City, Guangdong Province, P.R. China
Product Name: WiFi Module
Trade Mark: /
Model/Type reference.....: WCN3988 A1
Listed Model(s): WCN3988 A2
Standard: FCC CFR Title 47 Part 15 Subpart C Section 15.247
RSS-247 Issue 3
Test Report Form No: CTC-TR-057_A1
Master TRF: Dated 2024-09-20
Date of receipt of test sample.....: Dec. 17, 2024
Date of testing.....: Dec. 17, 2024 ~ Feb. 18, 2025
Date of issue.....: Feb. 18, 2025
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 3](#): 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.	Report No.	Date of issue	Description
01	CTC2024299407	Feb. 18, 2025	Original

1.3. Test Description

FCC Part 15 Subpart C (15.247) / RSS-247 Issue 3				
Test Item	Standard Section		Result	Test Engineer
	FCC	ISED		
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
Occupied Bandwidth	/	RSS-Gen 6.7	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:

- The measurement uncertainty is not included in the test result.
- 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: Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luh Community, Guanhu Subdistrict, 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	± 0.686 dB	(1)
Maximum Power Spectral Density Level	± 0.743 dB	(1)
Band-edge Compliance	± 1.328 dB	(1)
Unwanted Emissions In Non-restricted Freq Bands	9kHz-1GHz: ± 0.746 dB 1GHz-26GHz: ± 1.328 dB	(1)
Conducted Emissions 9kHz~30MHz	± 3.08 dB	(1)
Radiated Emissions 30~1000MHz	± 4.51 dB	(1)
Radiated Emissions 1~18GHz	± 5.84 dB	(1)
Radiated Emissions 18~40GHz	± 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:	Shenzhen KTC Commercial Display Technology CO.,LTD.
Address:	No.4023, Northern Wuhe Road, Bantian Street, Longgang District, Shenzhen City, Guangdong Province, P.R. China
Manufacturer:	Shenzhen KTC Commercial Display Technology CO.,LTD.
Address:	No.4023, Northern Wuhe Road, Bantian Street, Longgang District, Shenzhen City, Guangdong Province, P.R. China

2.2. General Description of EUT

Product Name:	WiFi Module
Trade Mark:	/
Model/Type reference:	WCN3988 A1
Listed Model(s):	WCN3988 A2
Model Difference:	All these models are identical in the same PCB, layout, electrical circuit, RF module and antenna. The difference is part of the components.
Sample ID:	CTC241203-013-S001, CTC241203-013-S002
Power Supply:	Input: 19V  3.42A
Hardware Version:	SHAHESHANG_SM6115_MB_V03
Software Version:	FlatBuild_TurboX-C6115_20250106
2.4G Wi-Fi	
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 Type:	FPC Antenna
Antenna Gain:	5.64dBi



2.3. Accessory Equipment Information

Equipment Information			
Name	Model	S/N	Manufacturer
Notebook	ThinkPad T460s	MP246QDR	Lenovo
Switching Adapter	K65B3-2W19	/	KTC
Power Board	KB-6160A	/	KTC
Rechargeable Lithium ion Battery	AEC GK-18650-6200mAh-4S2P-01	/	Apower
Cable Information			
Name	Shielded Type	Ferrite Core	Length
USB Cable	Unshielded	NO	100cm
Test Software Information			
Name	Version	/	/
QRCT4	V 4.0-00201	/	/



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 the 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 engineering test program was provided and enabled to make EUT continuous transmit.
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

RF Test System - SRD					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 21, 2025
2	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 12, 2025
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 12, 2025
4	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 12, 2025
5	EXG Analog Signal Generator	Keysight	N5173B	MY59100842	Dec. 12, 2025
6	MXG Vector Signal Generator	Keysight	N5182B	MY59100212	Dec. 12, 2025
7	USB Wideband Power Sensor	Keysight	U2021XA	MY55130004	Mar. 21, 2025
8	USB Wideband Power Sensor	Keysight	U2021XA	MY55130006	Mar. 21, 2025
9	Wideband Radio Communication Tester	R&S	CMW500	102414	Dec. 12, 2025
10	High and low temperature test chamber	ESPEC	MT3035	/	Mar. 21, 2025
11	RF Control Unit	Tonscend	JS0806-2	/	Aug. 21, 2025

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9163	01026	Dec. 24, 2025
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Sep. 25, 2025
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 12, 2025
4	Broadband Amplifier	SCHWARZBECK	BBV9743B	259	Dec. 12, 2025
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 12, 2025
6	3m chamber 3	YIHENG	EE106	/	Aug. 28, 2026
7	Test Software	FARA	EZ-EMC	FA-03A2	/

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	LISN	R&S	ENV216	101112	Dec. 12, 2025
2	LISN	R&S	ENV216	101113	Dec. 12, 2025
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 12, 2025
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 12, 2025
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 12, 2025
6	Test Software	R&S	EMC32	6.10.10	/

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.

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TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : yz.cnca.cn

3. TEST ITEM AND RESULTS

3.1. Conducted Emission

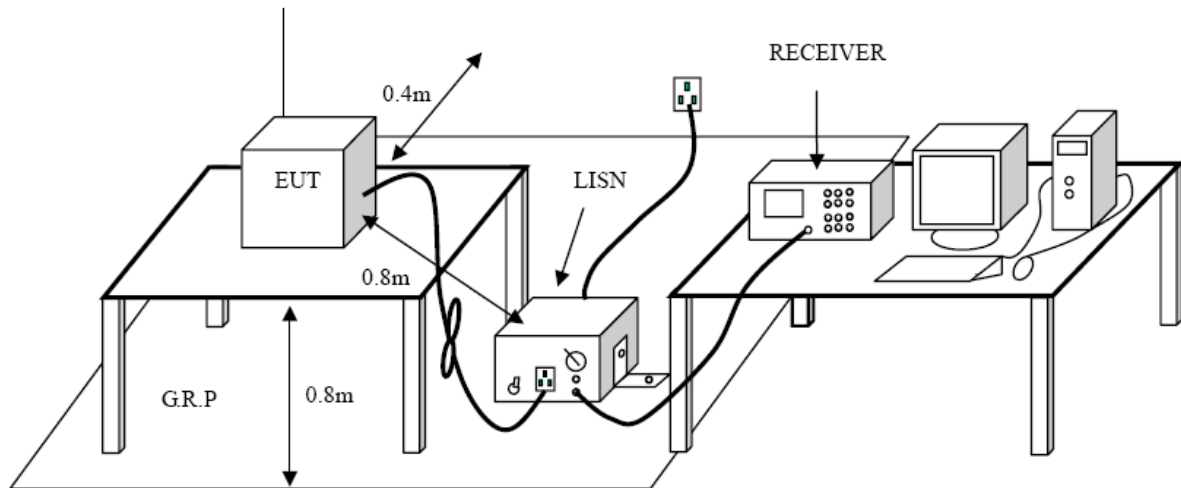
Limit

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

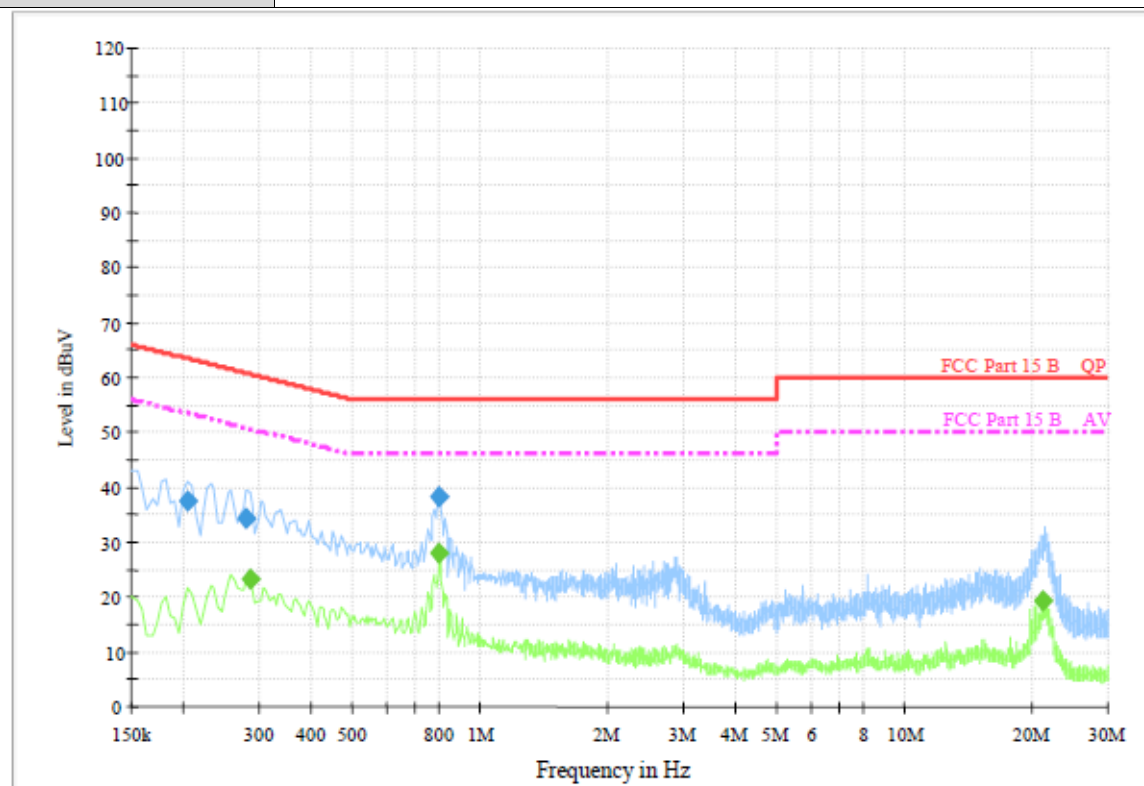
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from 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
0.204000	37.4	1000.00	9.000	On	L1	9.5	26.0	63.4	
0.280500	34.5	1000.00	9.000	On	L1	9.5	26.3	60.8	
0.798000	38.4	1000.00	9.000	On	L1	9.5	17.6	56.0	

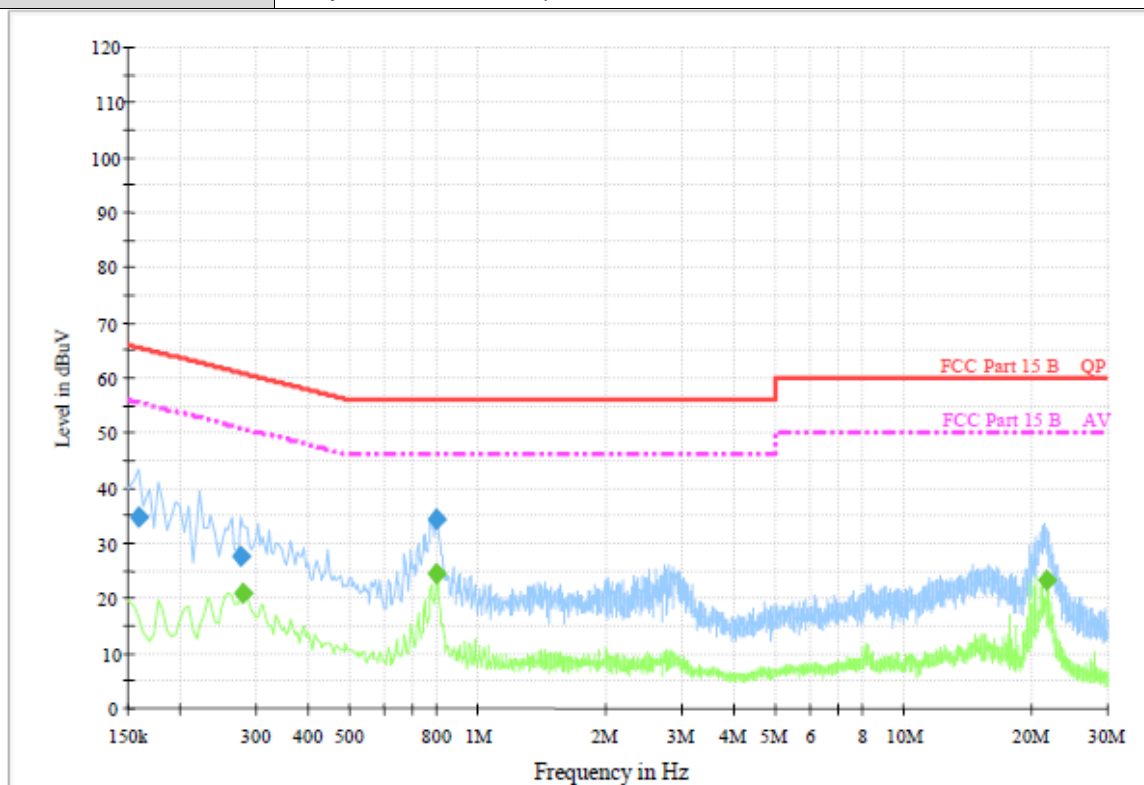
Final Measurement Detector 2

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.285000	23.4	1000.00	9.000	On	L1	9.5	27.3	50.7	
0.798000	28.1	1000.00	9.000	On	L1	9.5	17.9	46.0	
21.052500	19.3	1000.00	9.000	On	L1	9.7	30.7	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
0.159000	34.9	1000.00	9.000	On	N	9.5	30.6	65.5	
0.276000	27.8	1000.00	9.000	On	N	9.4	33.1	60.9	
0.798000	34.2	1000.00	9.000	On	N	9.4	21.8	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
0.280500	20.9	1000.00	9.000	On	N	9.4	29.9	50.8	
0.798000	24.4	1000.00	9.000	On	N	9.4	21.6	46.0	
21.664500	23.2	1000.00	9.000	On	N	9.5	26.8	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

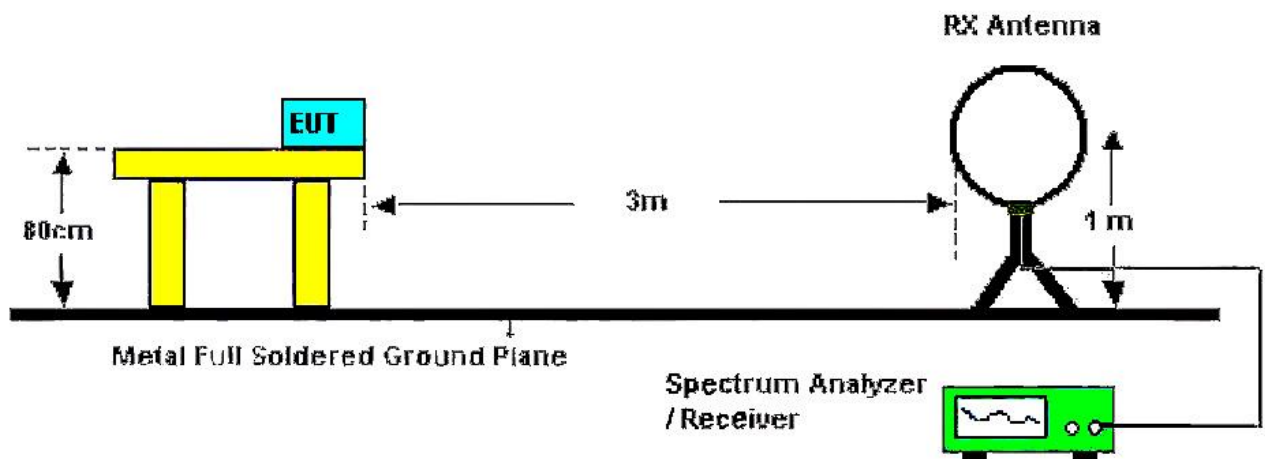
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F (kHz)	300
0.490~1.705	24000/F (kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

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

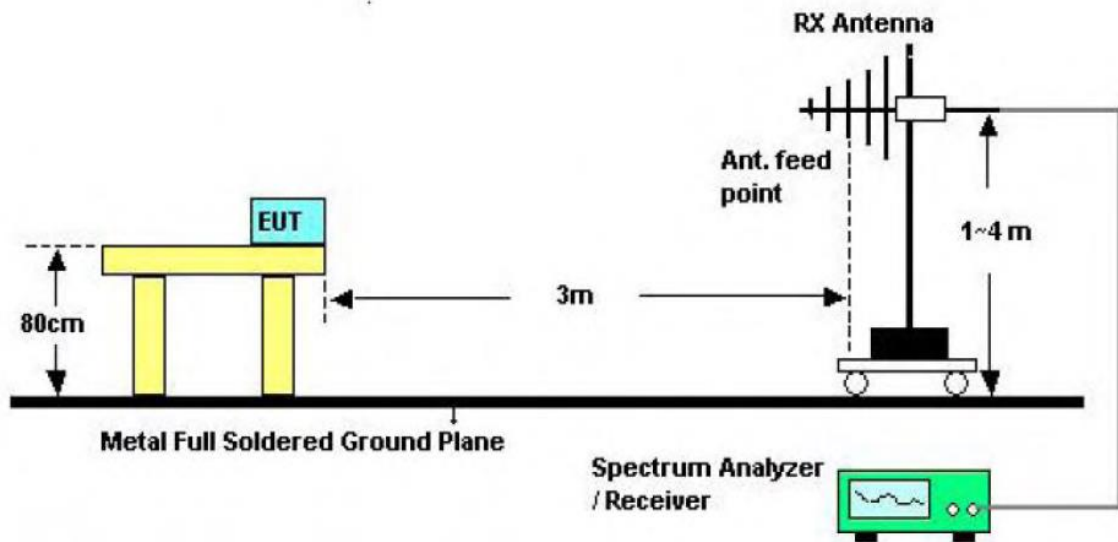
Note:

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

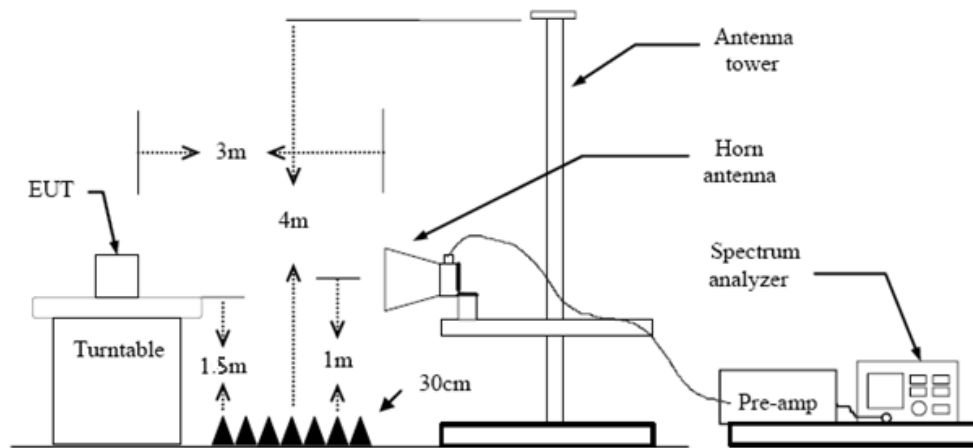
Test Configuration



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) 9k – 150kHz:
RBW=300 Hz, VBW=1 kHz, Sweep=auto, Detector function=peak, Trace=max hold
 - (3) 0.15M – 30MHz:
RBW=10 kHz, VBW=30 kHz, Sweep=auto, Detector function=peak, Trace=max hold
 - (4) 30M - 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.

(5) From 1 GHz to 10th 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

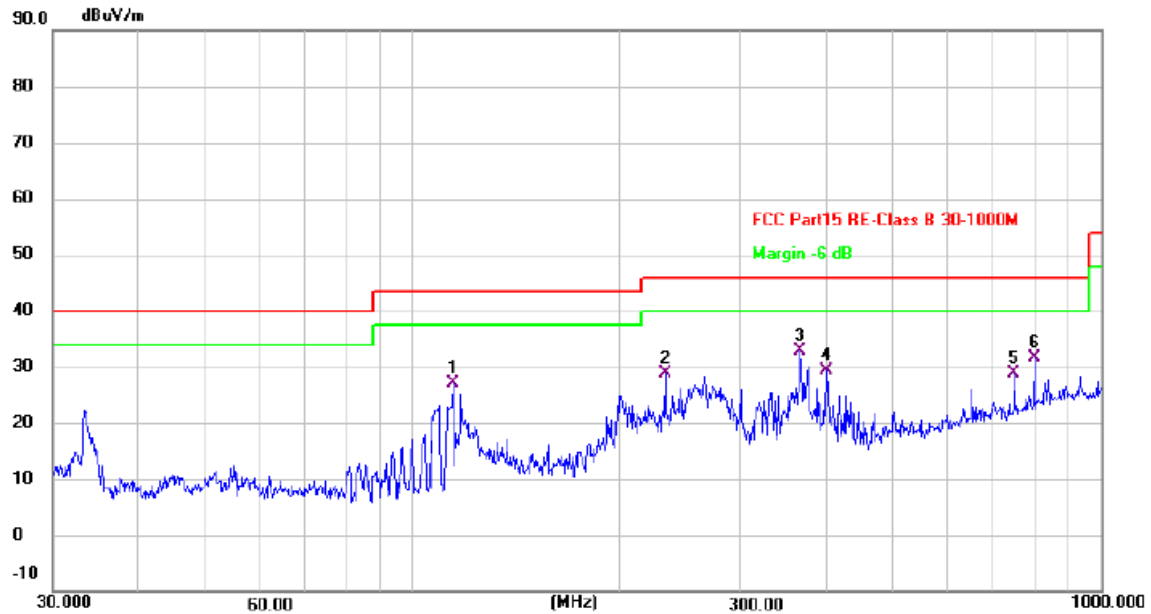
From 9 kHz to 30 MHz: The conclusion is PASS.

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



30MHz-1GHz

Ant. Pol.	Horizontal
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.
Model:	WCN3988 A1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	114.6754	48.03	-21.00	27.03	43.50	-16.47	QP
2	232.5318	48.94	-20.06	28.88	46.00	-17.12	QP
3 *	365.2828	48.76	-15.89	32.87	46.00	-13.13	QP
4	399.5901	44.45	-15.09	29.36	46.00	-16.64	QP
5	749.0569	36.42	-7.61	28.81	46.00	-17.19	QP
6	798.9797	37.60	-5.94	31.66	46.00	-14.34	QP

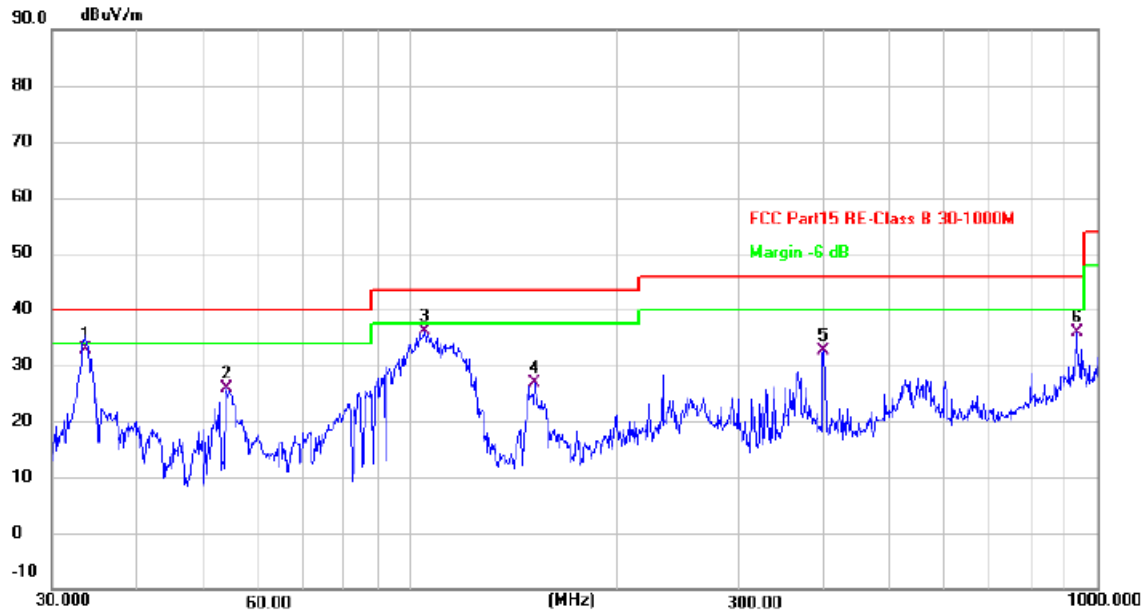
Remarks:

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

2.Margin value = Level -Limit value



Ant. Pol.	Vertical
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.
Model:	WCN3988 A1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	33.6567	51.87	-18.87	33.00	40.00	-7.00	QP
2	54.0711	44.10	-18.33	25.77	40.00	-14.23	QP
3	105.1242	57.72	-21.62	36.10	43.50	-7.40	QP
4	151.8100	44.97	-18.12	26.85	43.50	-16.65	QP
5	399.5903	47.82	-15.09	32.73	46.00	-13.27	QP
6	932.2715	40.20	-4.30	35.90	46.00	-10.10	QP

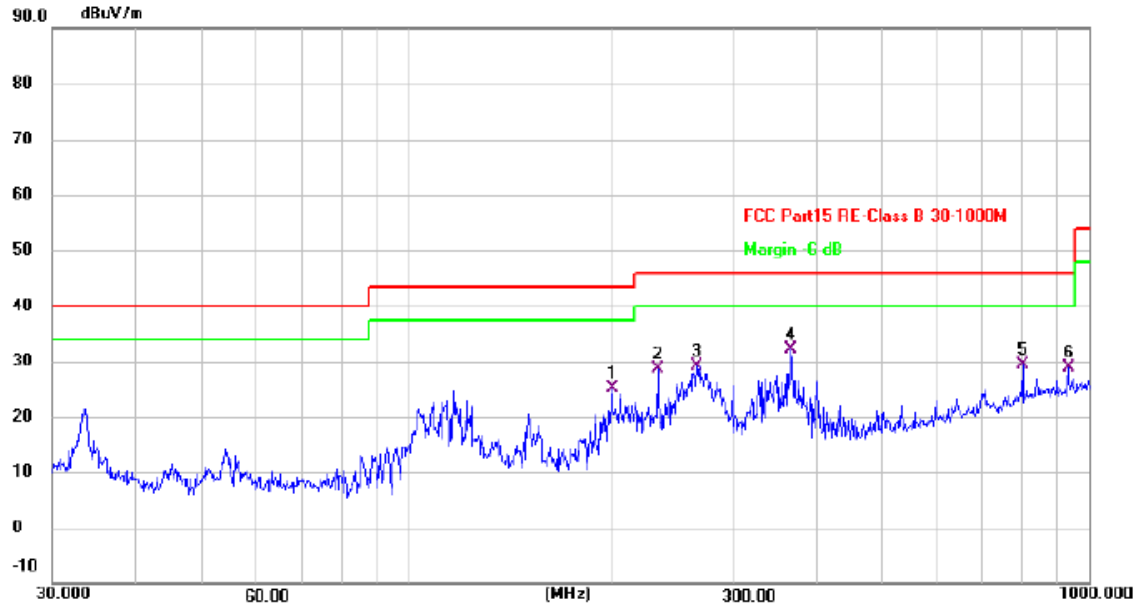
Remarks:

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

2. Margin value = Level - Limit value



Ant. Pol.	Horizontal
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.
Model:	WCN3988 A2



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	199.8453	46.35	-21.21	25.14	43.50	-18.36	QP
2	233.1850	48.79	-20.04	28.75	46.00	-17.25	QP
3	266.0486	47.98	-18.81	29.17	46.00	-16.83	QP
4 *	366.3088	48.04	-15.87	32.17	46.00	-13.83	QP
5	801.2241	35.25	-5.90	29.35	46.00	-16.65	QP
6	932.2712	33.27	-4.30	28.97	46.00	-17.03	QP

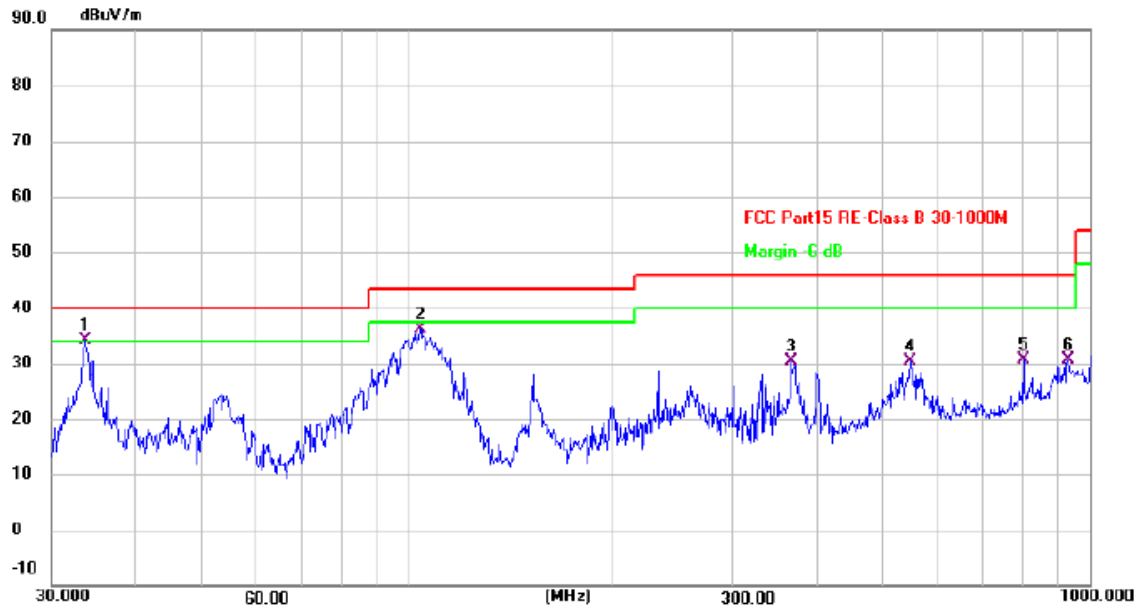
Remarks:

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

2. Margin value = Level - Limit value



Ant. Pol.	Vertical
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.
Model:	WCN3988 A2



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	33.5623	53.09	-18.88	34.21	40.00	-5.79	QP
2	104.5360	57.89	-21.64	36.25	43.50	-7.25	QP
3	365.2828	46.28	-15.89	30.39	46.00	-15.61	QP
4	545.5650	41.26	-10.94	30.32	46.00	-15.68	QP
5	801.2241	36.56	-5.90	30.66	46.00	-15.34	QP
6	929.6600	34.99	-4.35	30.64	46.00	-15.36	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. 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><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>4824.060</td><td>40.06</td><td>1.87</td><td>41.93</td><td>54.00</td><td>-12.07</td><td>AVG</td></tr><tr><td>2</td><td>4824.070</td><td>44.62</td><td>1.87</td><td>46.49</td><td>74.00</td><td>-27.51</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4824.060	40.06	1.87	41.93	54.00	-12.07	AVG	2	4824.070	44.62	1.87	46.49	74.00	-27.51	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4824.060	40.06	1.87	41.93	54.00	-12.07	AVG																								
2	4824.070	44.62	1.87	46.49	74.00	-27.51	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

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.																														
<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>4823.883</td><td>29.49</td><td>1.87</td><td>31.36</td><td>54.00</td><td>-22.64</td><td>AVG</td></tr><tr><td>2</td><td>4824.030</td><td>41.11</td><td>1.87</td><td>42.98</td><td>74.00</td><td>-31.02</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4823.883	29.49	1.87	31.36	54.00	-22.64	AVG	2	4824.030	41.11	1.87	42.98	74.00	-31.02	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4823.883	29.49	1.87	31.36	54.00	-22.64	AVG																								
2	4824.030	41.11	1.87	42.98	74.00	-31.02	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4874.033	39.80	1.95	41.75	54.00	-12.25	AVG
2	4874.046	45.15	1.95	47.10	74.00	-26.90	peak

Remarks:

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

2. Margin value = Level -Limit value

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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	4873.940	41.40	1.95	43.35	74.00	-30.65	peak
2 *	4873.959	29.59	1.95	31.54	54.00	-22.46	AVG

Remarks:

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

2. Margin value = Level -Limit value



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	4924.005	44.81	2.04	46.85	74.00	-27.15	peak
2 *	4924.021	39.78	2.04	41.82	54.00	-12.18	AVG

Remarks:

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

2. Margin value = Level - Limit value

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	4924.103	41.30	2.04	43.34	74.00	-30.66	peak
2 *	4924.120	29.10	2.04	31.14	54.00	-22.86	AVG

Remarks:

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

2. Margin value = Level - Limit value



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>4824.120</td><td>40.58</td><td>1.87</td><td>42.45</td><td>74.00</td><td>-31.55</td><td>peak</td></tr><tr><td>2 *</td><td>4824.337</td><td>26.56</td><td>1.87</td><td>28.43</td><td>54.00</td><td>-25.57</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4824.120	40.58	1.87	42.45	74.00	-31.55	peak	2 *	4824.337	26.56	1.87	28.43	54.00	-25.57	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4824.120	40.58	1.87	42.45	74.00	-31.55	peak																								
2 *	4824.337	26.56	1.87	28.43	54.00	-25.57	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

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>4823.728</td><td>26.22</td><td>1.87</td><td>28.09</td><td>54.00</td><td>-25.91</td><td>AVG</td></tr><tr><td>2</td><td>4823.730</td><td>40.66</td><td>1.87</td><td>42.53</td><td>74.00</td><td>-31.47</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4823.728	26.22	1.87	28.09	54.00	-25.91	AVG	2	4823.730	40.66	1.87	42.53	74.00	-31.47	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4823.728	26.22	1.87	28.09	54.00	-25.91	AVG																								
2	4823.730	40.66	1.87	42.53	74.00	-31.47	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	4873.765	41.68	1.95	43.63	74.00	-30.37	peak
2 *	4874.050	26.19	1.95	28.14	54.00	-25.86	AVG

Remarks:

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

2. Margin value = Level - Limit value

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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	4873.890	40.80	1.95	42.75	74.00	-31.25	peak
2 *	4874.210	26.26	1.95	28.21	54.00	-25.79	AVG

Remarks:

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

2. Margin value = Level - Limit value



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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	4924.111	40.85	2.04	42.89	74.00	-31.11	peak
2 *	4924.123	26.20	2.04	28.24	54.00	-25.76	AVG

Remarks:

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

2. Margin value = Level - Limit value

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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4923.784	26.11	2.04	28.15	54.00	-25.85	AVG
2	4923.830	41.48	2.04	43.52	74.00	-30.48	peak

Remarks:

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

2. Margin value = Level - Limit value



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.																														
<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>4823.880</td><td>41.43</td><td>1.87</td><td>43.30</td><td>74.00</td><td>-30.70</td><td>peak</td></tr><tr><td>2 *</td><td>4824.013</td><td>26.24</td><td>1.87</td><td>28.11</td><td>54.00</td><td>-25.89</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	1	4823.880	41.43	1.87	43.30	74.00	-30.70	peak	2 *	4824.013	26.24	1.87	28.11	54.00	-25.89	AVG
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector																								
1	4823.880	41.43	1.87	43.30	74.00	-30.70	peak																								
2 *	4824.013	26.24	1.87	28.11	54.00	-25.89	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

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>4823.853</td><td>26.36</td><td>1.87</td><td>28.23</td><td>54.00</td><td>-25.77</td><td>AVG</td></tr><tr><td>2</td><td>4823.902</td><td>41.08</td><td>1.87</td><td>42.95</td><td>74.00</td><td>-31.05</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	1 *	4823.853	26.36	1.87	28.23	54.00	-25.77	AVG	2	4823.902	41.08	1.87	42.95	74.00	-31.05	peak
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector																								
1 *	4823.853	26.36	1.87	28.23	54.00	-25.77	AVG																								
2	4823.902	41.08	1.87	42.95	74.00	-31.05	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



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	4874.174	41.21	1.95	43.16	74.00	-30.84	peak
2 *	4874.205	26.35	1.95	28.30	54.00	-25.70	AVG

Remarks:

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

2.Margin value = Level -Limit value

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.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4874.002	26.13	1.95	28.08	54.00	-25.92	AVG
2	4874.030	40.50	1.95	42.45	74.00	-31.55	peak

Remarks:

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

2.Margin value = Level -Limit value



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.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4923.861	40.96	2.04	43.00	74.00	-31.00	peak
2 *	4924.112	26.38	2.04	28.42	54.00	-25.58	AVG

Remarks:

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

2.Margin value = Level -Limit value

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.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4923.983	41.65	2.04	43.69	74.00	-30.31	peak
2 *	4924.861	26.06	2.04	28.10	54.00	-25.90	AVG

Remarks:

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

2.Margin value = Level -Limit value



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.																														
<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>4844.057</td><td>41.40</td><td>1.90</td><td>43.30</td><td>74.00</td><td>-30.70</td><td>peak</td></tr><tr><td>2 *</td><td>4843.930</td><td>26.21</td><td>1.90</td><td>28.11</td><td>54.00</td><td>-25.89</td><td>AVG</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1	4844.057	41.40	1.90	43.30	74.00	-30.70	peak	2 *	4843.930	26.21	1.90	28.11	54.00	-25.89	AVG
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1	4844.057	41.40	1.90	43.30	74.00	-30.70	peak																								
2 *	4843.930	26.21	1.90	28.11	54.00	-25.89	AVG																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															

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.																														
<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>4843.725</td><td>26.22</td><td>1.90</td><td>28.12</td><td>54.00</td><td>-25.88</td><td>AVG</td></tr><tr><td>2</td><td>4843.749</td><td>40.74</td><td>1.90</td><td>42.64</td><td>74.00</td><td>-31.36</td><td>peak</td></tr></table>								No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	1 *	4843.725	26.22	1.90	28.12	54.00	-25.88	AVG	2	4843.749	40.74	1.90	42.64	74.00	-31.36	peak
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector																								
1 *	4843.725	26.22	1.90	28.12	54.00	-25.88	AVG																								
2	4843.749	40.74	1.90	42.64	74.00	-31.36	peak																								
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value																															



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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	4873.874	41.67	1.95	43.62	74.00	-30.38	peak
2 *	4874.112	26.18	1.95	28.13	54.00	-25.87	AVG

Remarks:

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

2.Margin value = Level -Limit value

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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4874.188	26.45	1.95	28.40	54.00	-25.60	AVG
2	4874.203	41.39	1.95	43.34	74.00	-30.66	peak

Remarks:

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

2.Margin value = Level -Limit value



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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4903.932	26.14	2.00	28.14	54.00	-25.86	AVG
2	4904.044	41.22	2.00	43.22	74.00	-30.78	peak

Remarks:

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

2.Margin value = Level -Limit value

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.

No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4903.796	26.31	2.00	28.31	54.00	-25.69	AVG
2	4904.012	41.17	2.00	43.17	74.00	-30.83	peak

Remarks:

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

2.Margin value = Level -Limit value

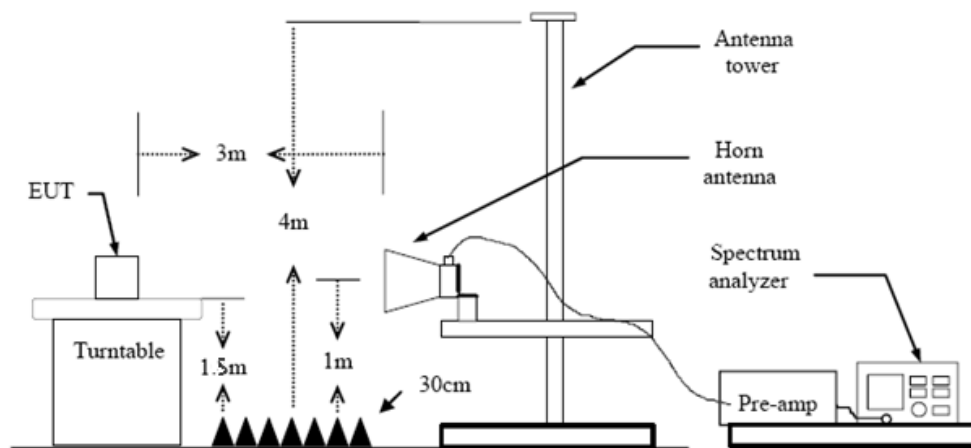
3.3. Band Edge Emissions (Radiated)

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:

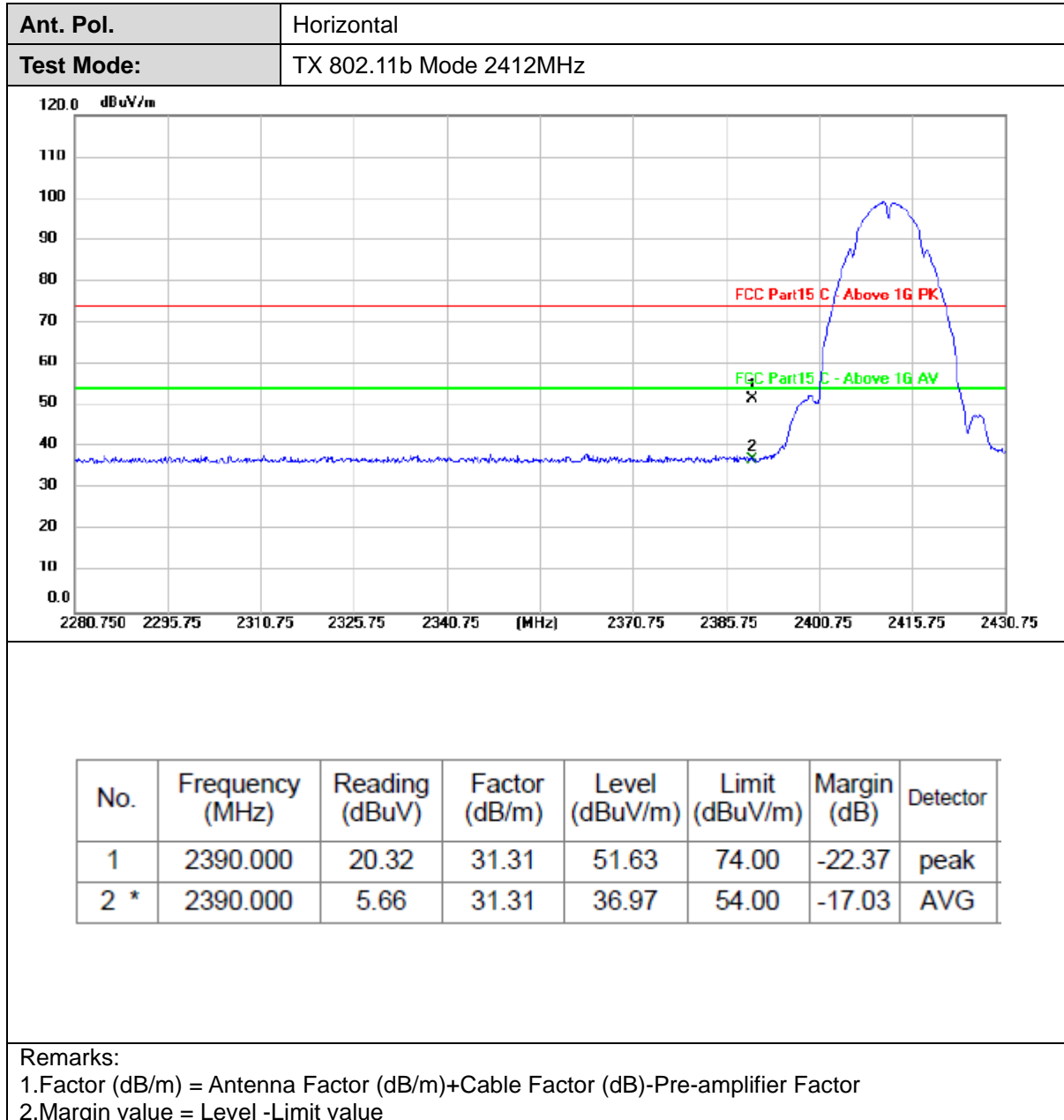
RBW=1MHz, VBW=3MHz Peak detector for Peak value.

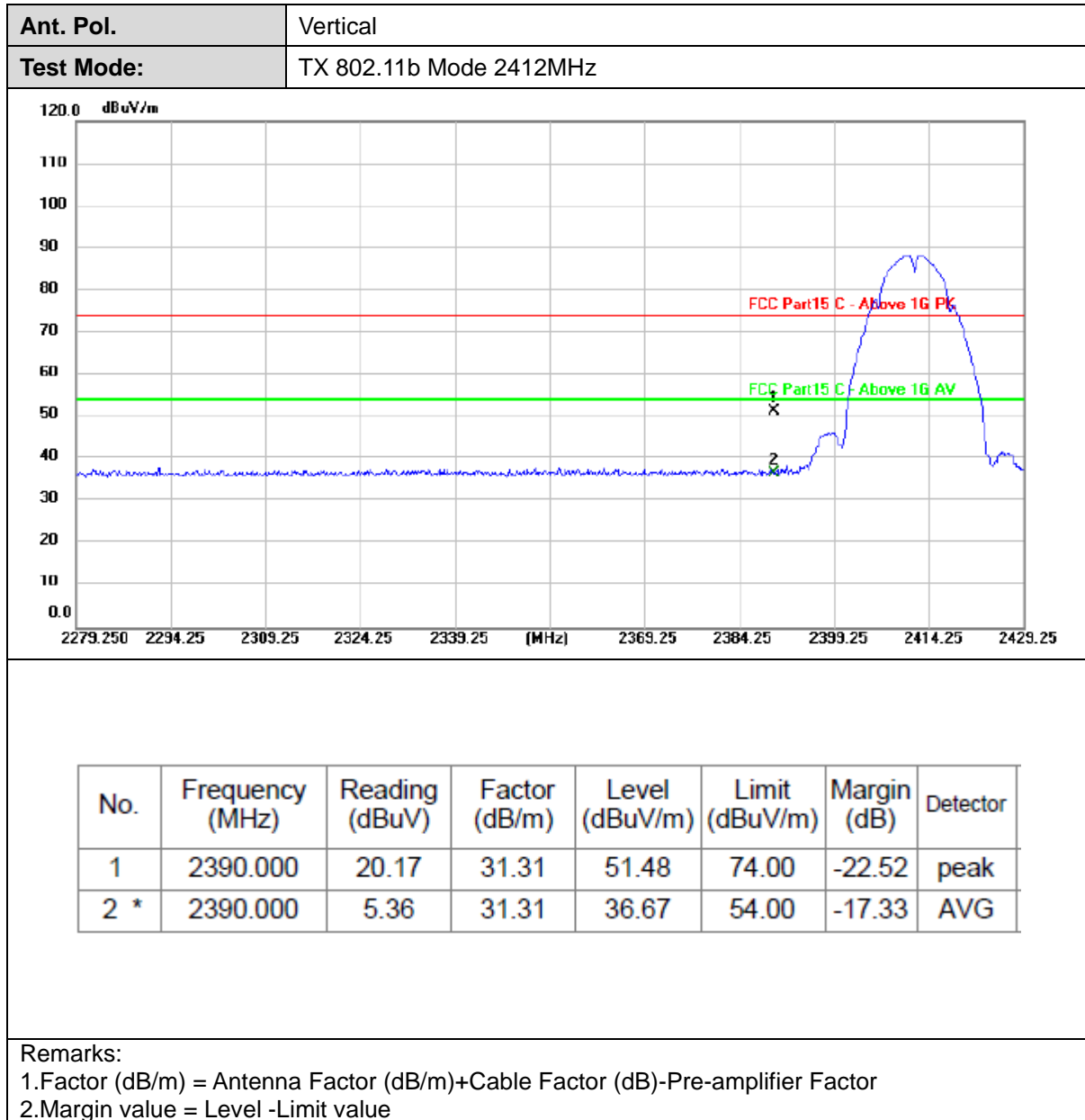
RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

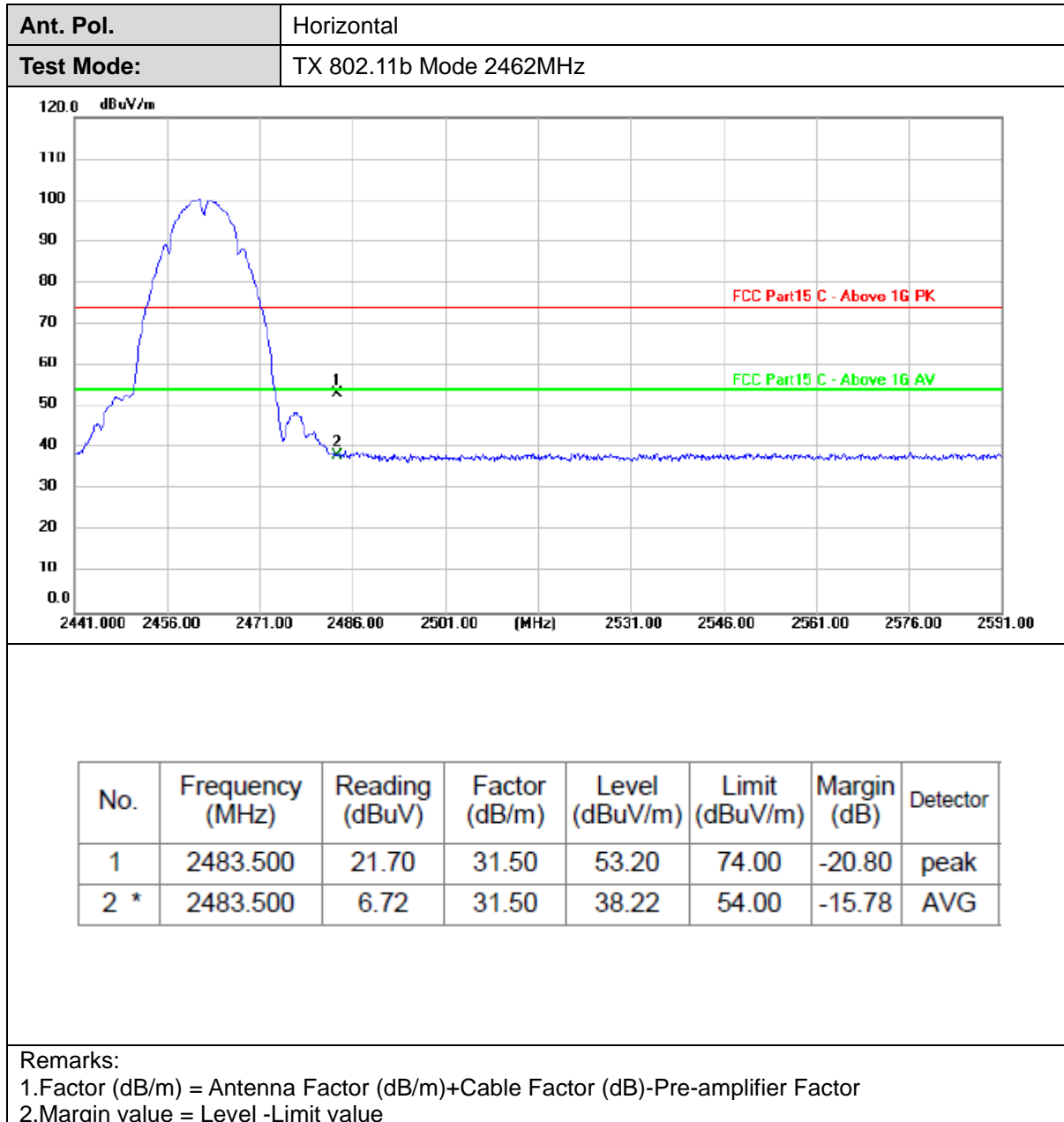
Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

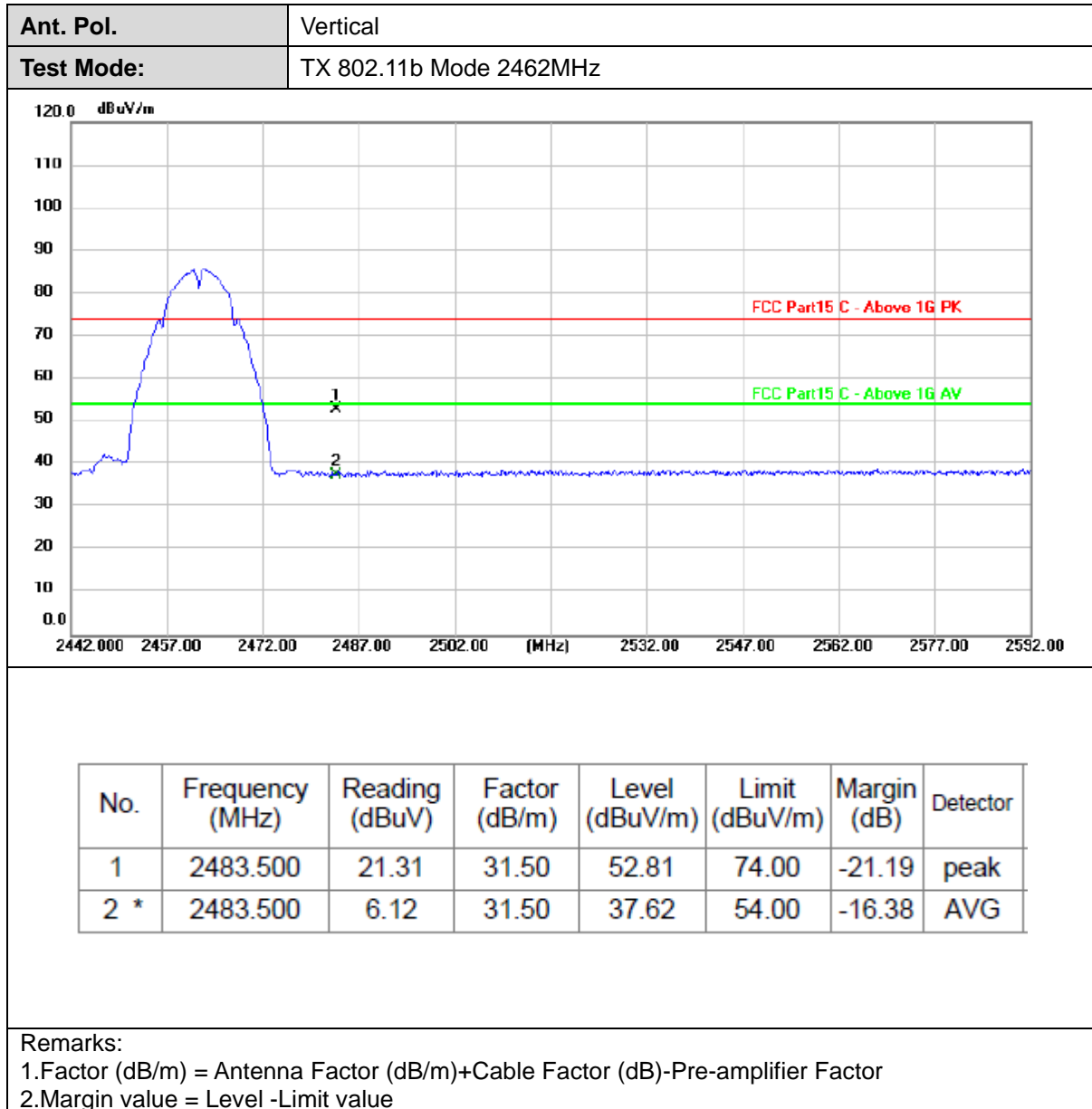
Test Mode

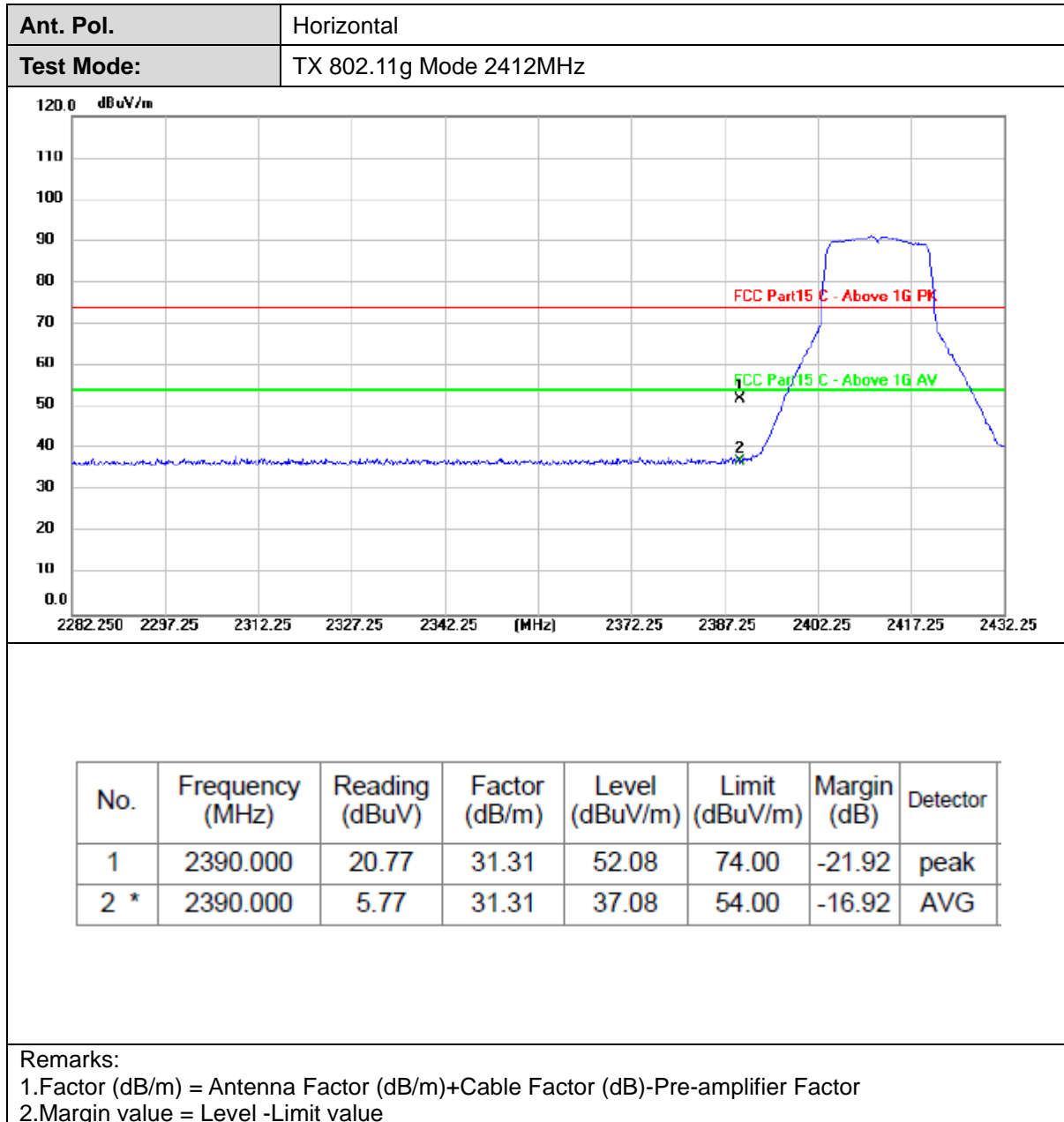
Please refer to the clause 2.4.

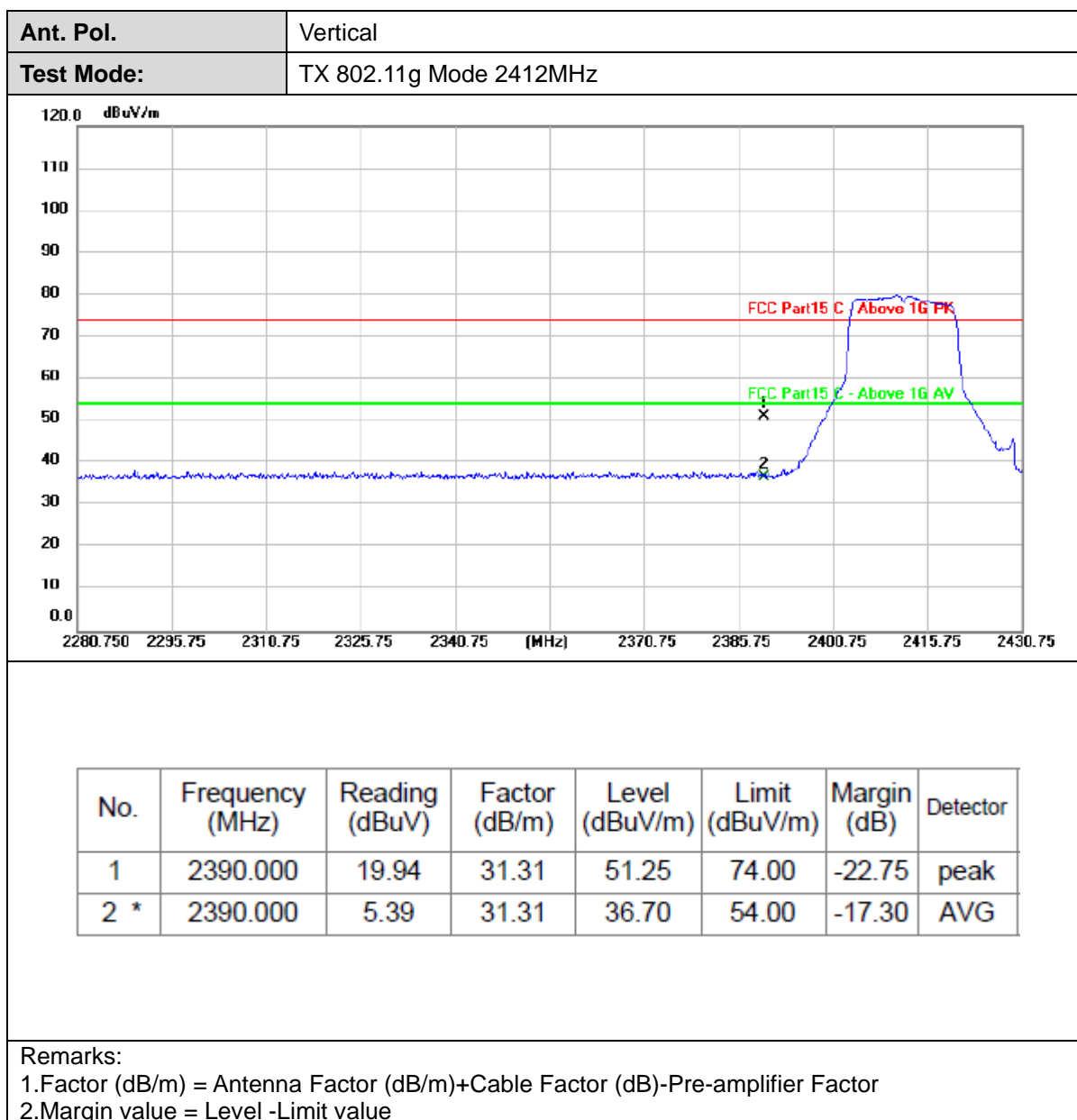
**Test Result**

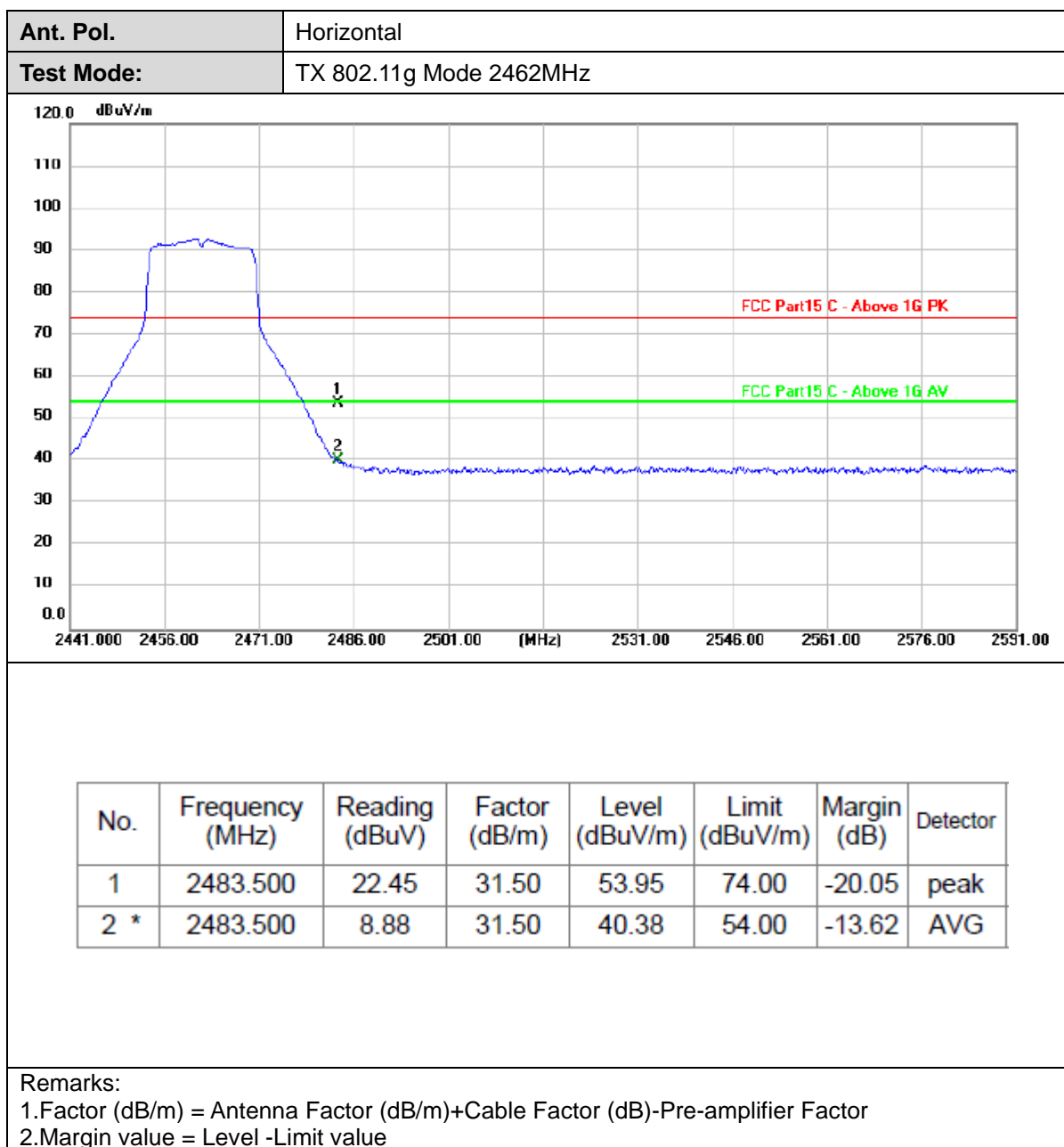


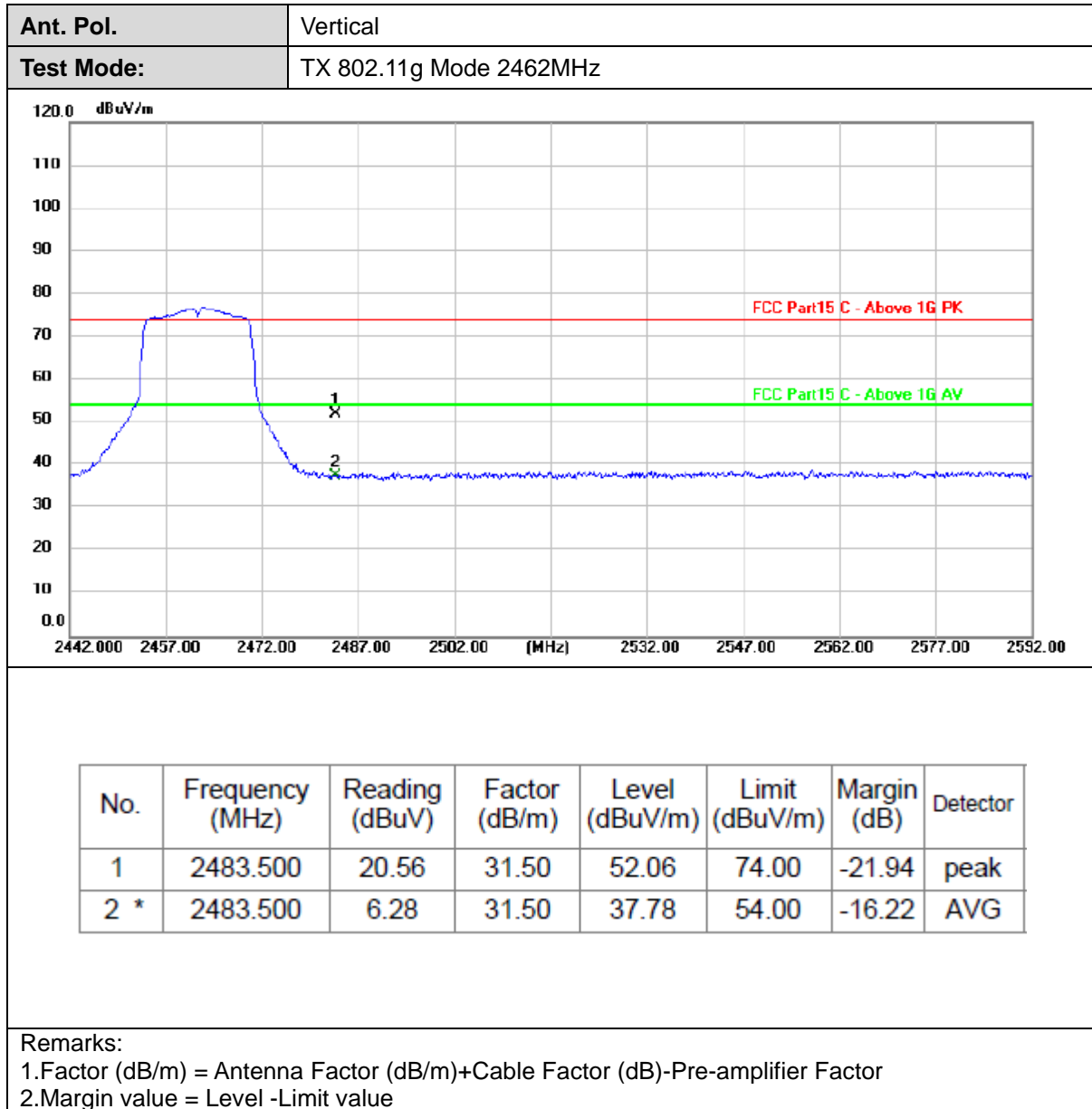


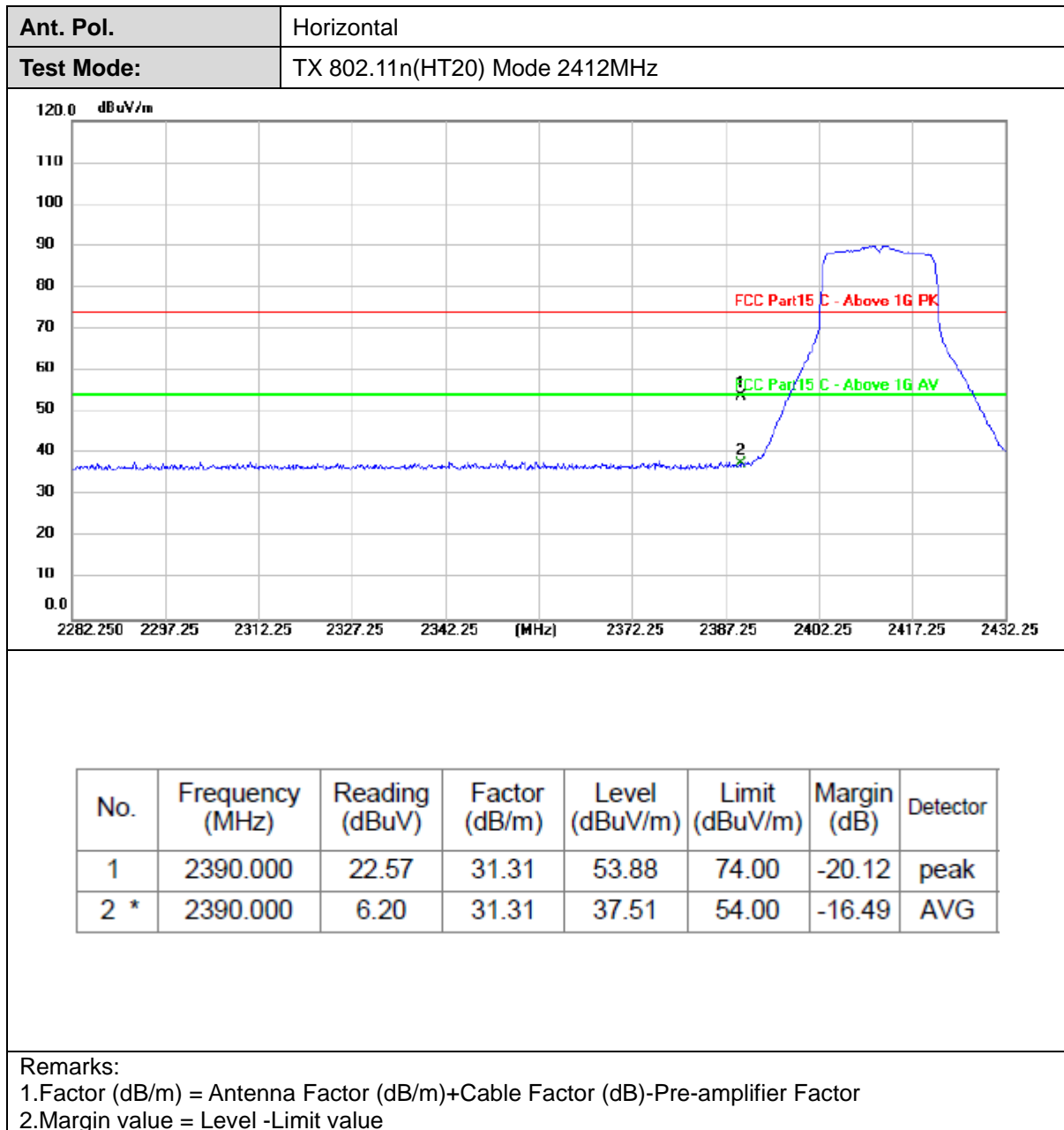


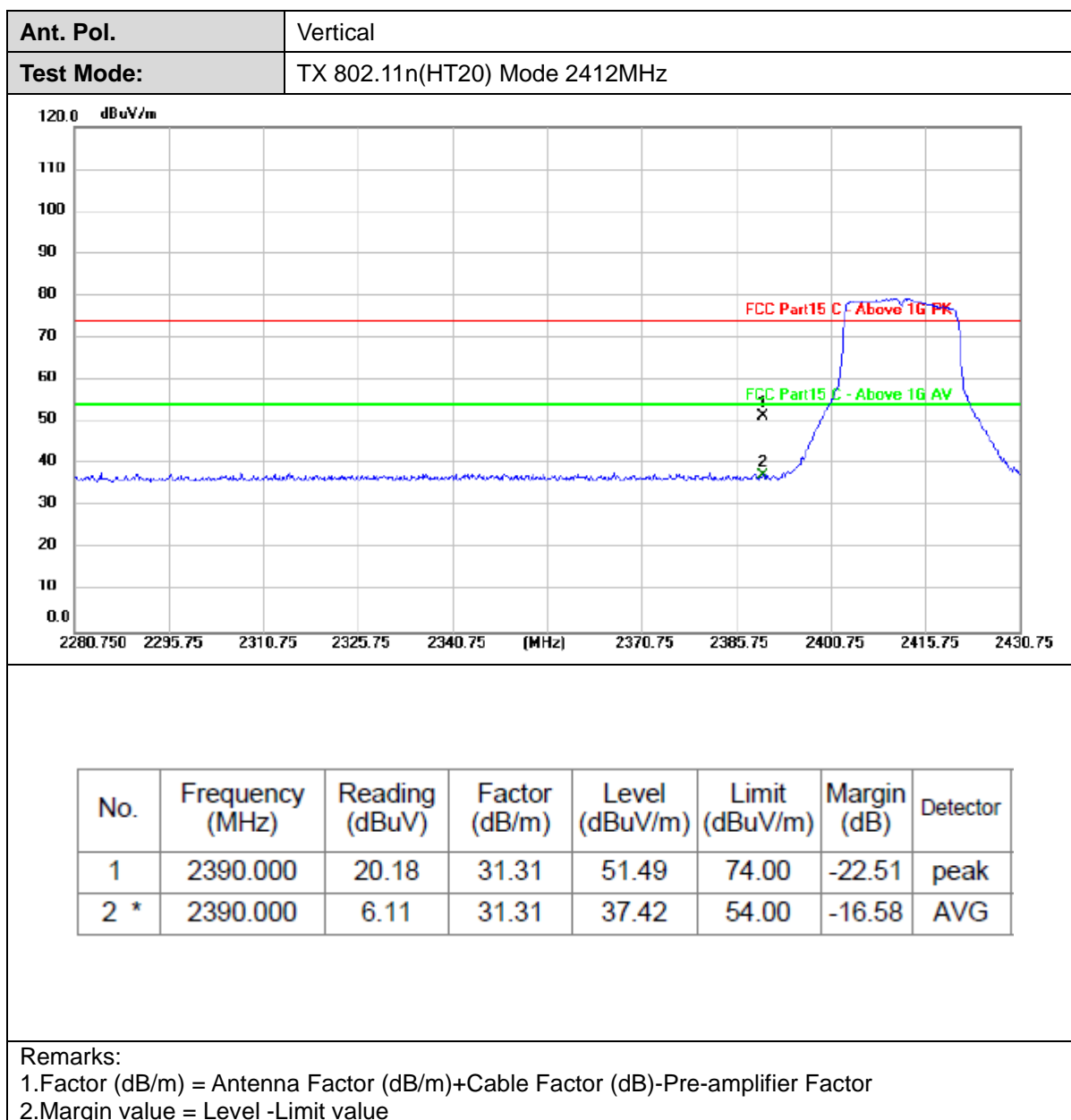


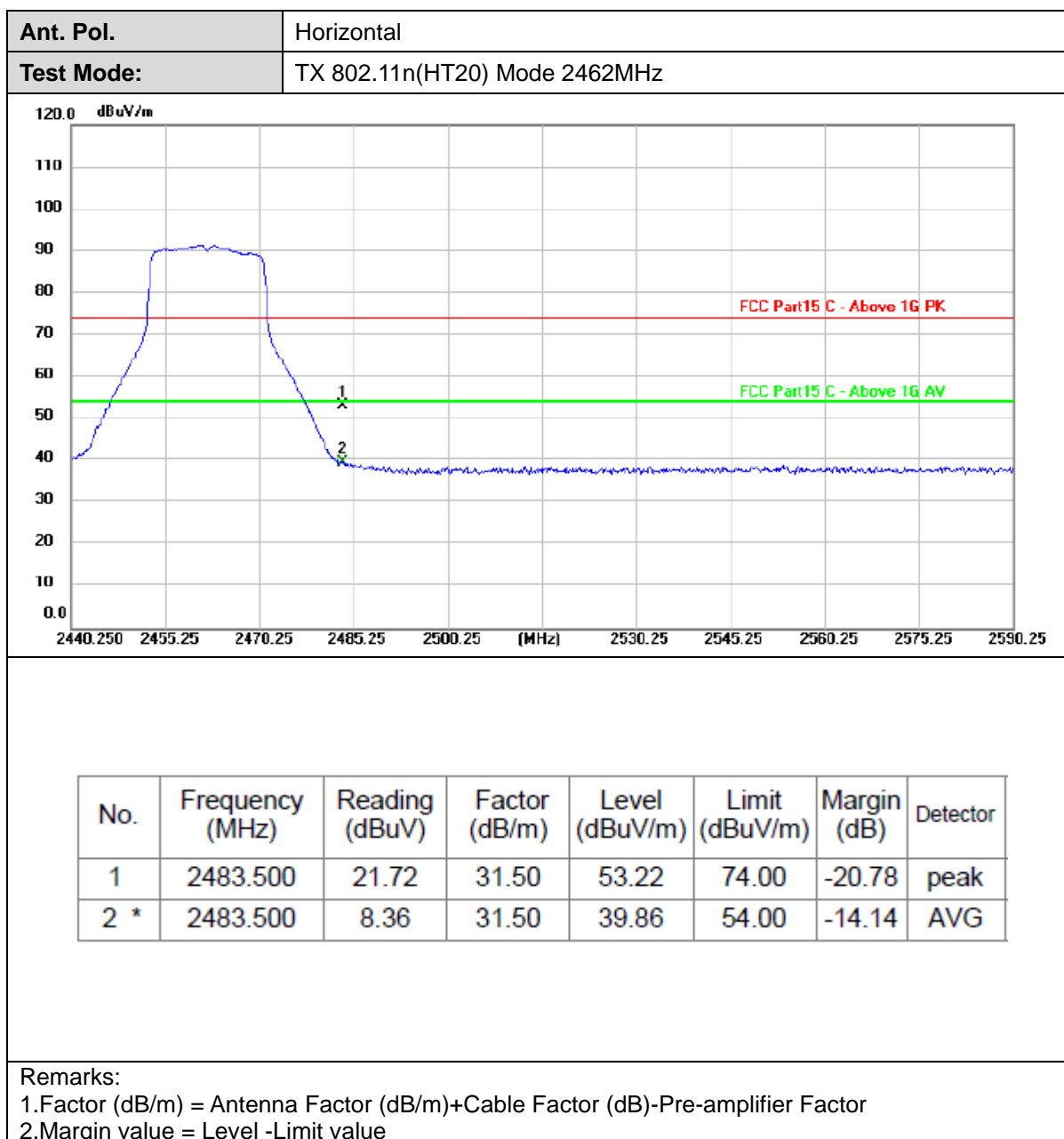


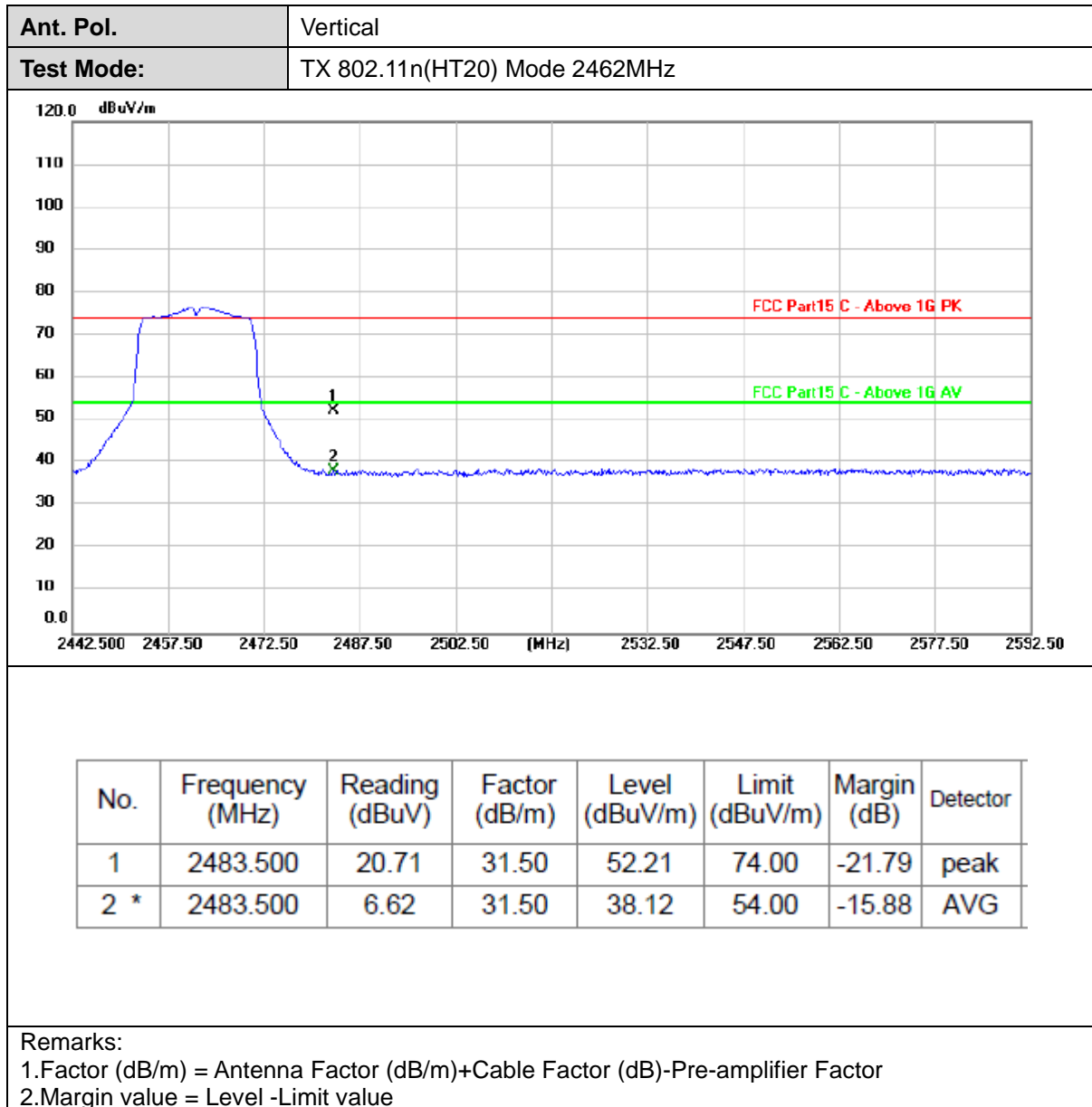


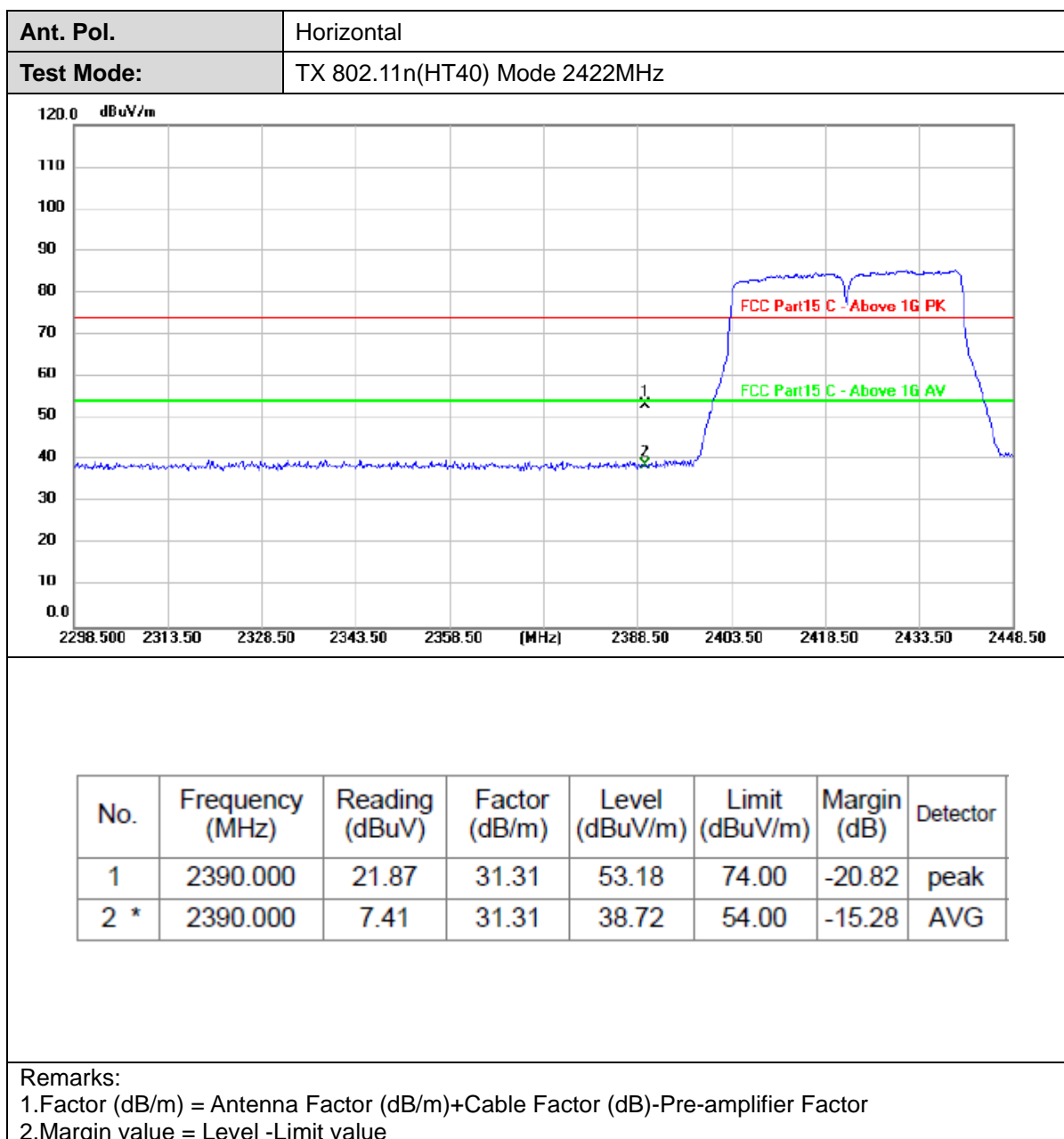


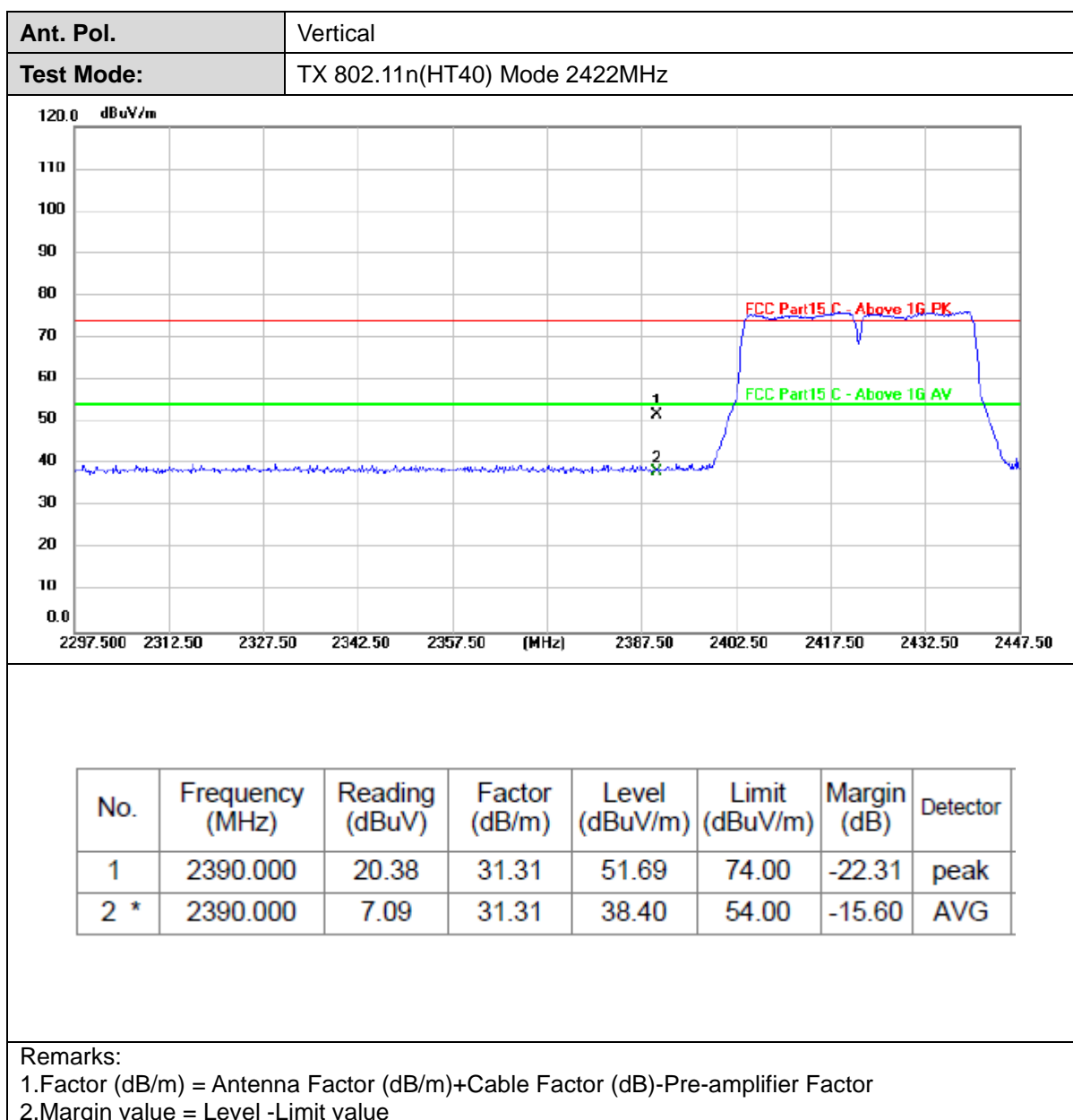


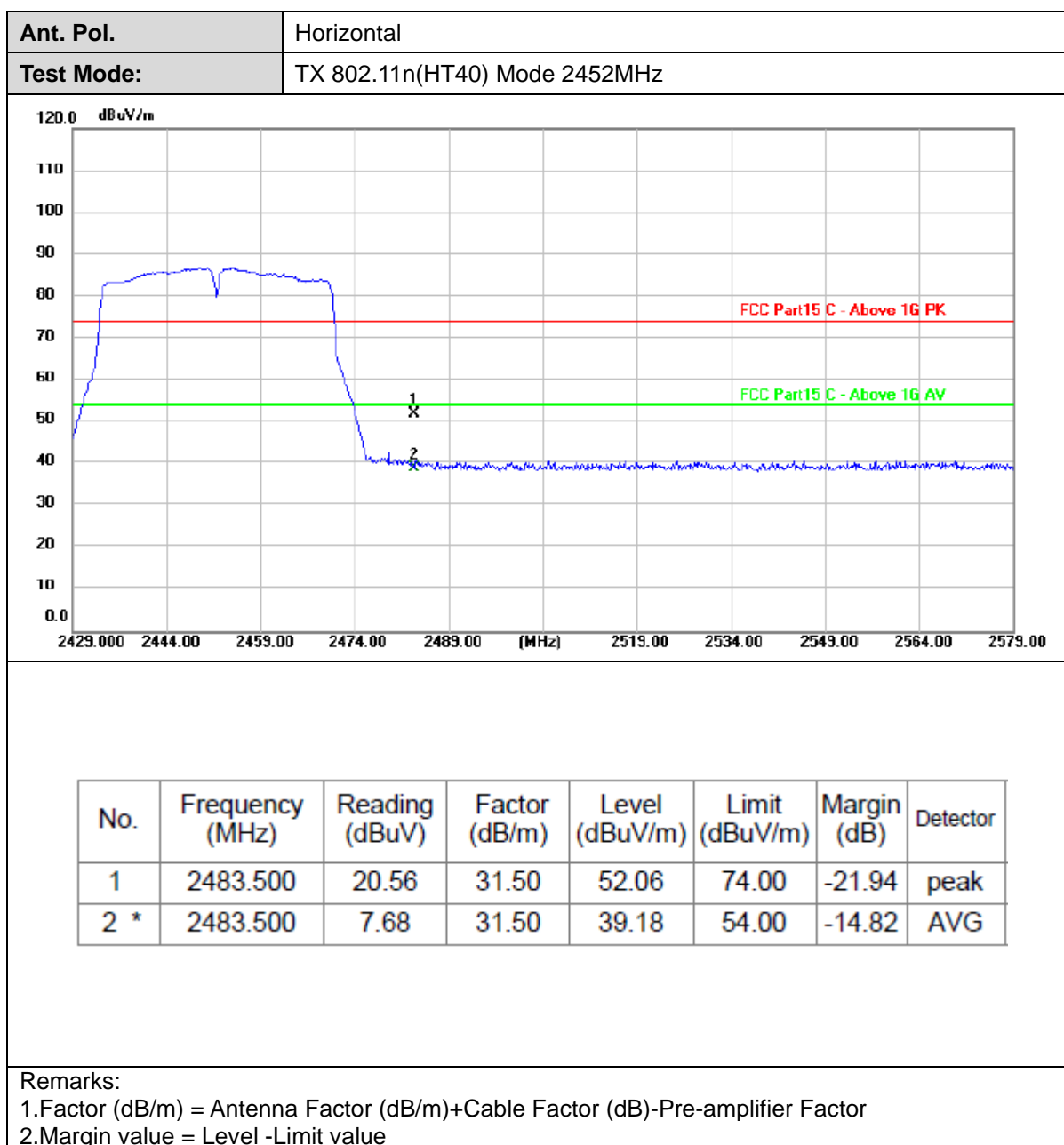


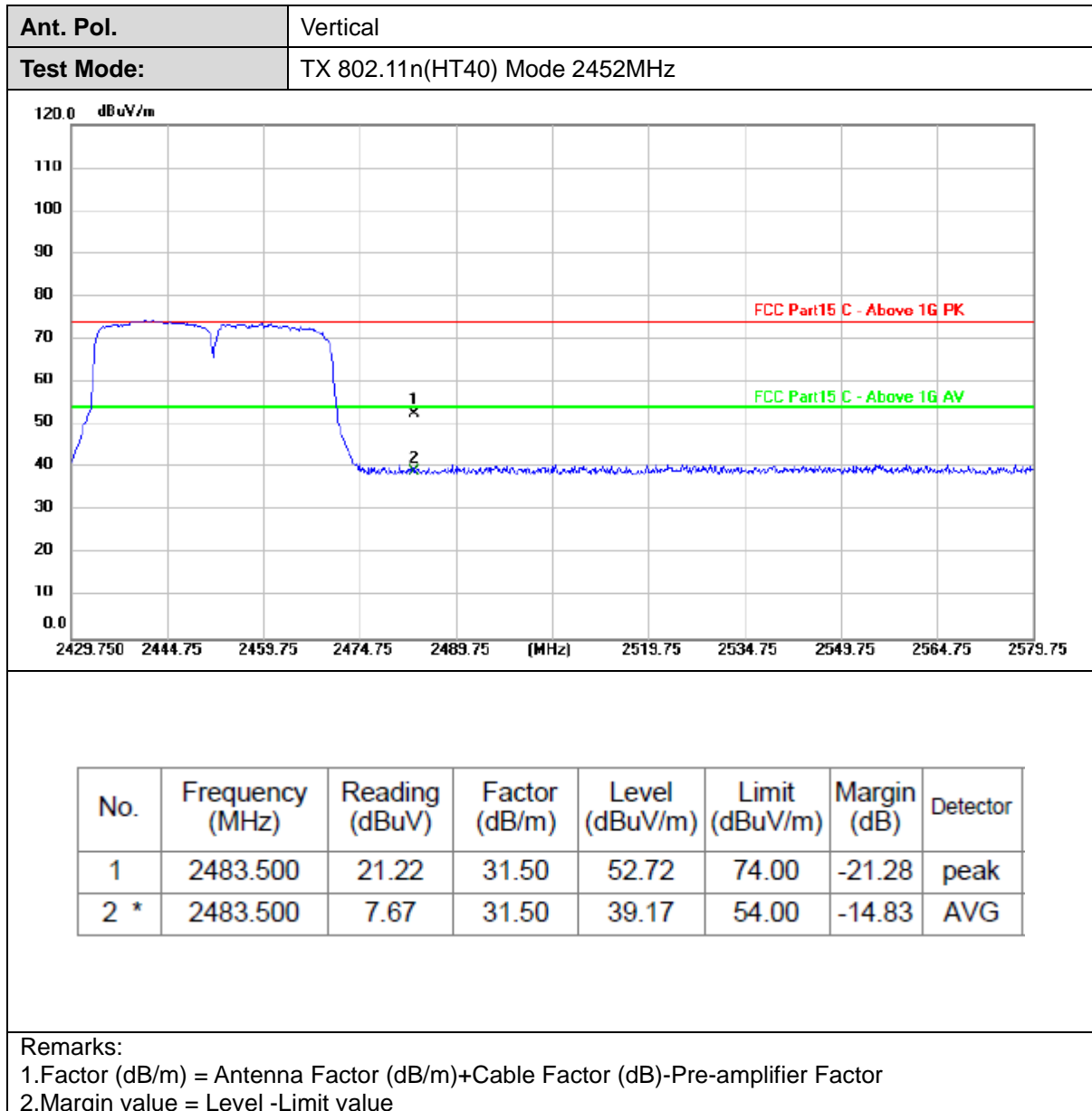














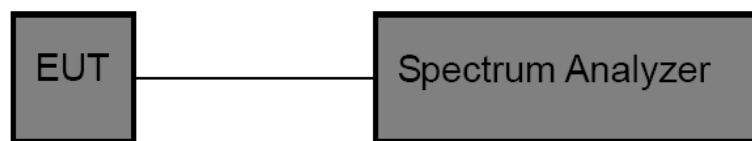
3.4. Band Edge and Spurious Emissions (Conducted)

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 ≥ RBW, scan up through 10th 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.

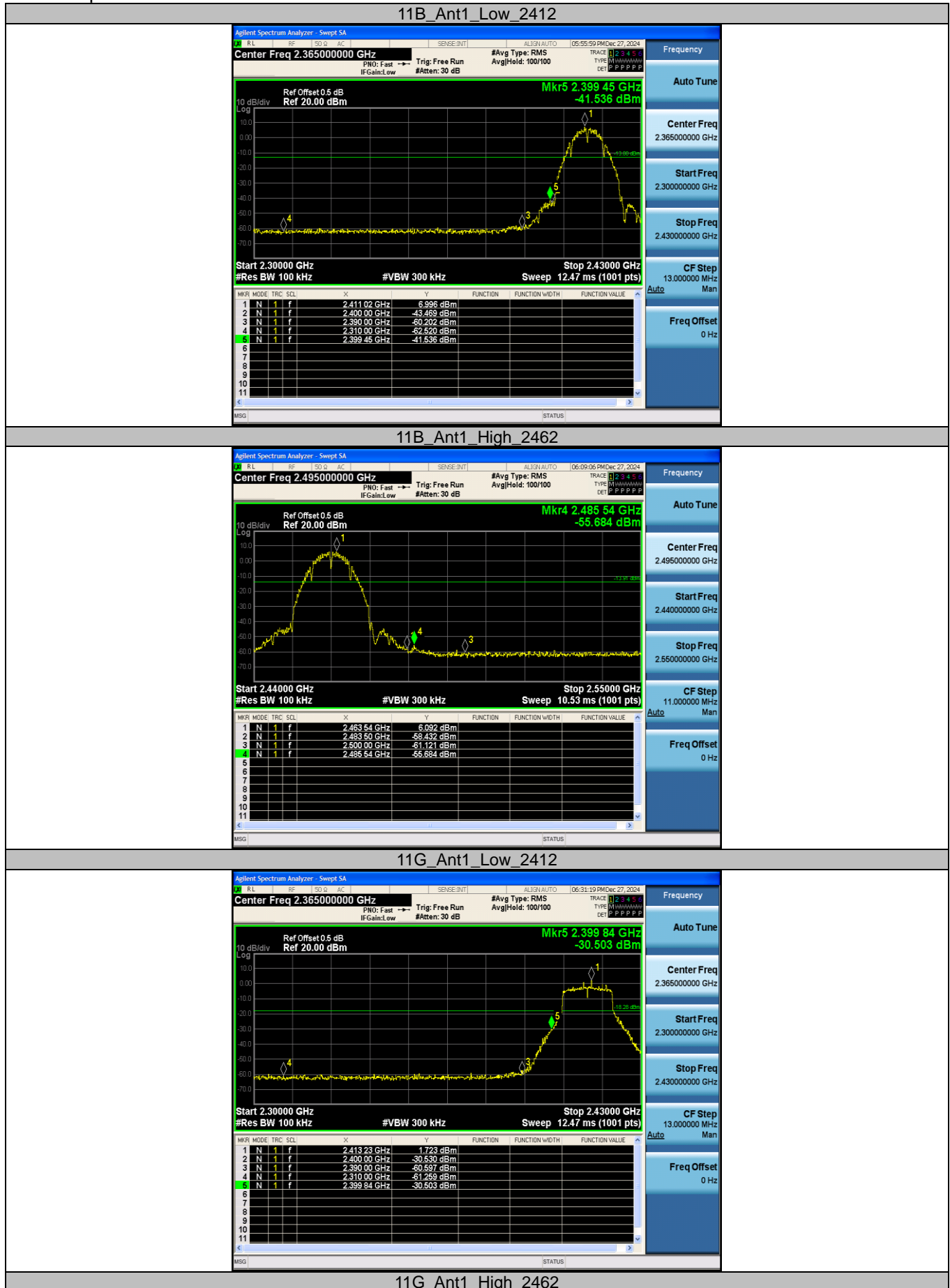
Test Result

Band edge measurements

Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	7.00	-41.54	≤-13.00	PASS
		High	2462	6.09	-55.68	≤-13.91	PASS
11G	Ant1	Low	2412	1.72	-30.50	≤-18.28	PASS
		High	2462	0.44	-54.08	≤-19.56	PASS
11N20SISO	Ant1	Low	2412	-0.37	-30.80	≤-20.37	PASS
		High	2462	0.05	-52.97	≤-19.95	PASS
11N40SISO	Ant1	Low	2422	-4.14	-41.52	≤-24.14	PASS
		High	2452	-8.59	-56.50	≤-28.59	PASS



Test Graphs

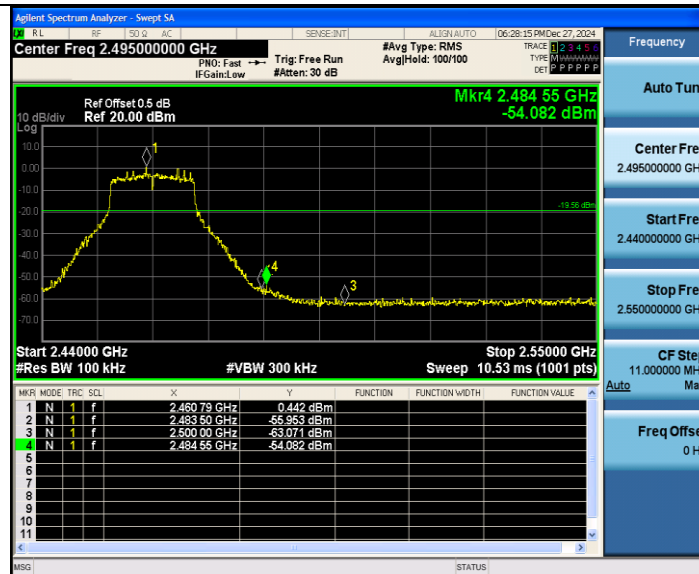


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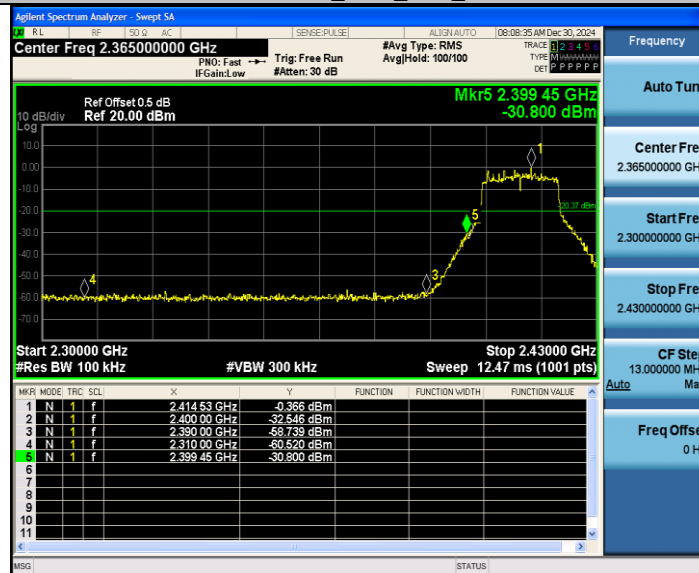
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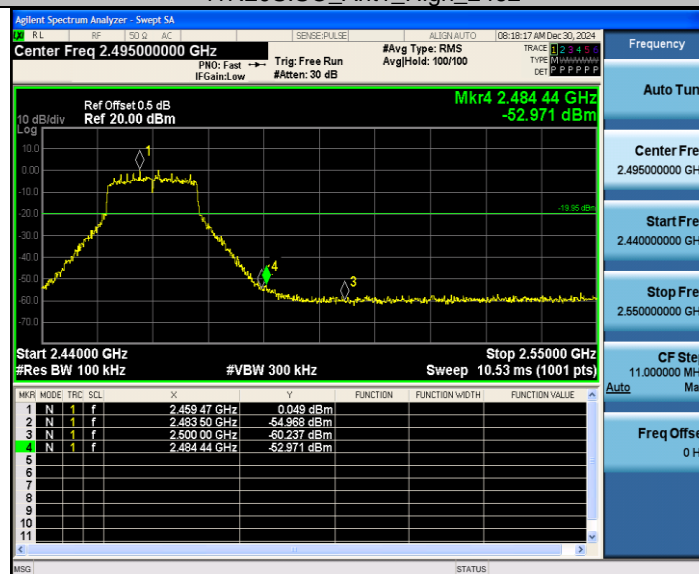
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11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



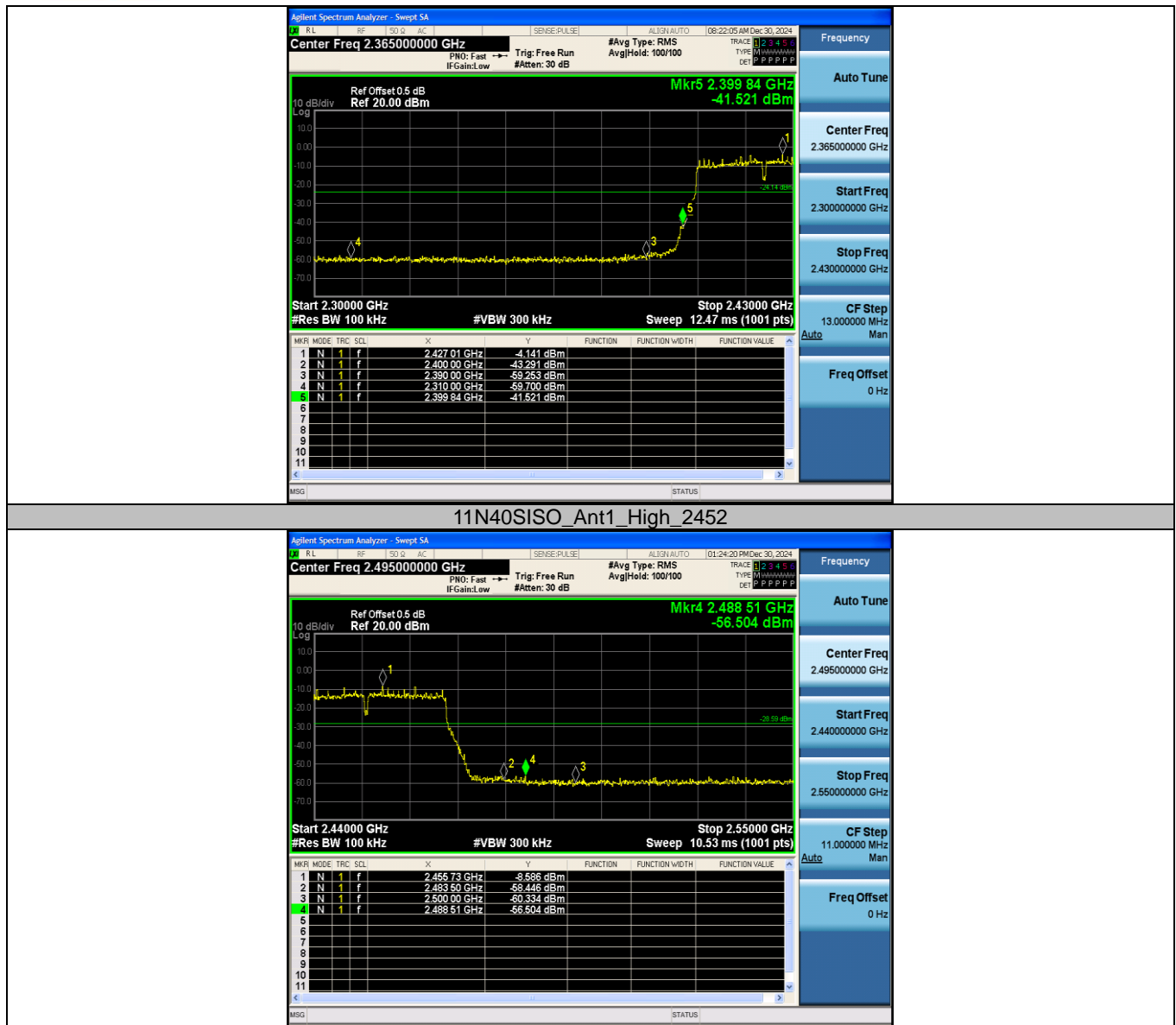
11N40SISO_Ant1_Low_2422

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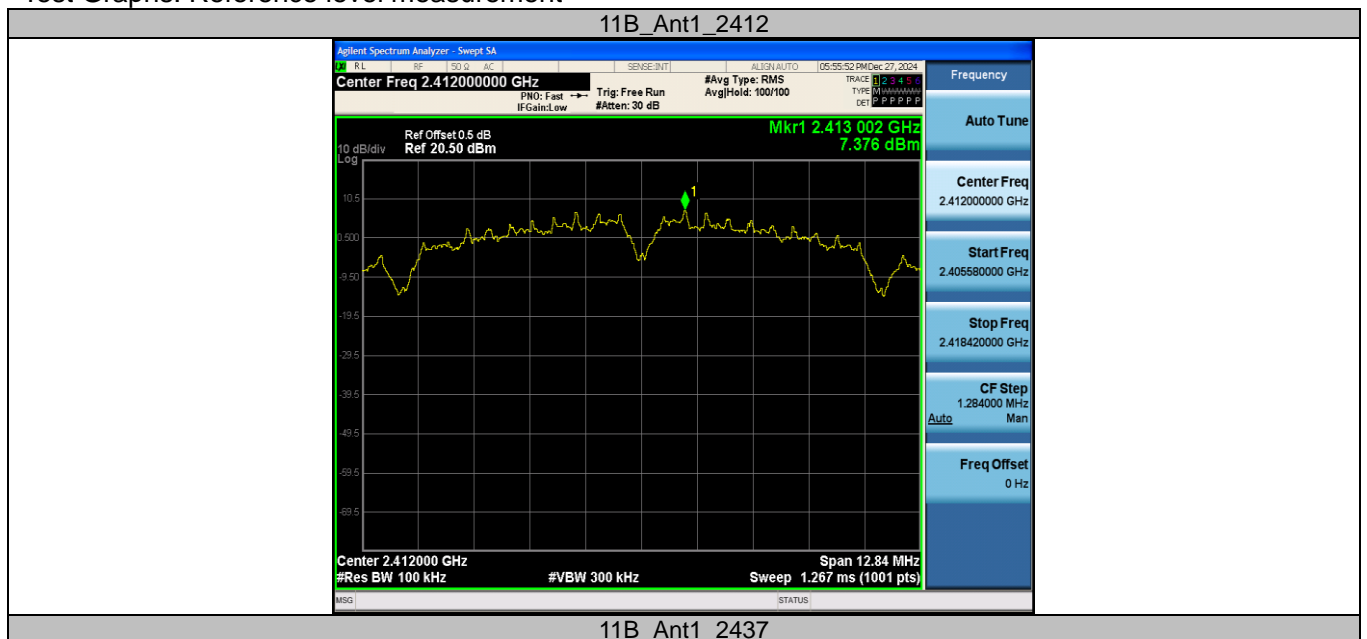
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**Conducted Spurious Emission**

Test Mode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	30~1000	7.38	-64.33	≤-12.62	PASS
			1000~26500	7.38	-48.37	≤-12.62	PASS
		2437	30~1000	6.48	-63.28	≤-13.52	PASS
			1000~26500	6.48	-51.76	≤-13.52	PASS
		2462	30~1000	6.87	-63.58	≤-13.13	PASS
			1000~26500	6.87	-50.19	≤-13.13	PASS
11G	Ant1	2412	30~1000	1.58	-64.06	≤-18.42	PASS
			1000~26500	1.58	-55.25	≤-18.42	PASS
		2437	30~1000	-0.62	-64.36	≤-20.62	PASS
			1000~26500	-0.62	-56.40	≤-20.62	PASS
		2462	30~1000	0.70	-63.95	≤-19.30	PASS
			1000~26500	0.70	-55.03	≤-19.30	PASS
11N20SISO	Ant1	2412	30~1000	0.00	-63.57	≤-20.00	PASS
			1000~26500	0.00	-49.87	≤-20.00	PASS
		2437	30~1000	-0.86	-63.49	≤-20.86	PASS
			1000~26500	-0.86	-49.27	≤-20.86	PASS
		2462	30~1000	0.41	-61.88	≤-19.59	PASS
			1000~26500	0.41	-49.74	≤-19.59	PASS
11N40SISO	Ant1	2422	30~1000	-3.72	-63.04	≤-23.72	PASS
			1000~26500	-3.72	-49.44	≤-23.72	PASS
		2437	30~1000	-3.36	-62.82	≤-23.36	PASS
			1000~26500	-3.36	-49.32	≤-23.36	PASS
		2452	30~1000	-3.94	-62.88	≤-23.94	PASS
			1000~26500	-3.94	-50.02	≤-23.94	PASS

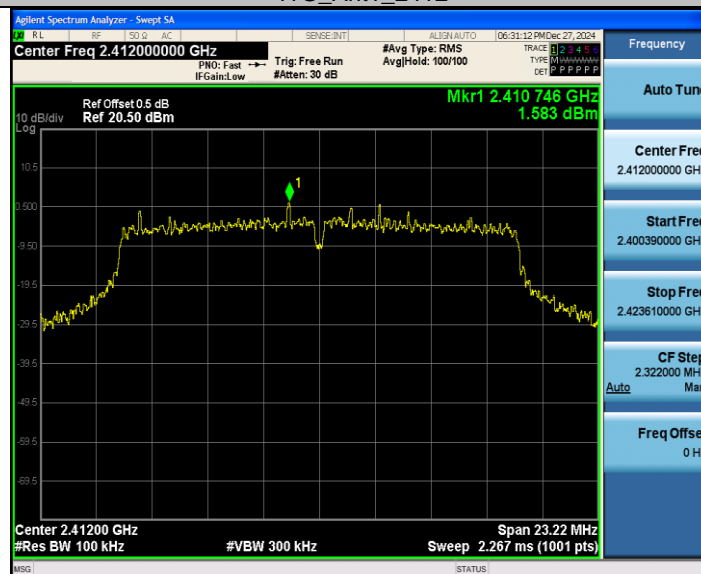
Test Graphs: Reference level measurement



11B_Ant1_2462



11G_Ant1_2412



11G_Ant1_2437

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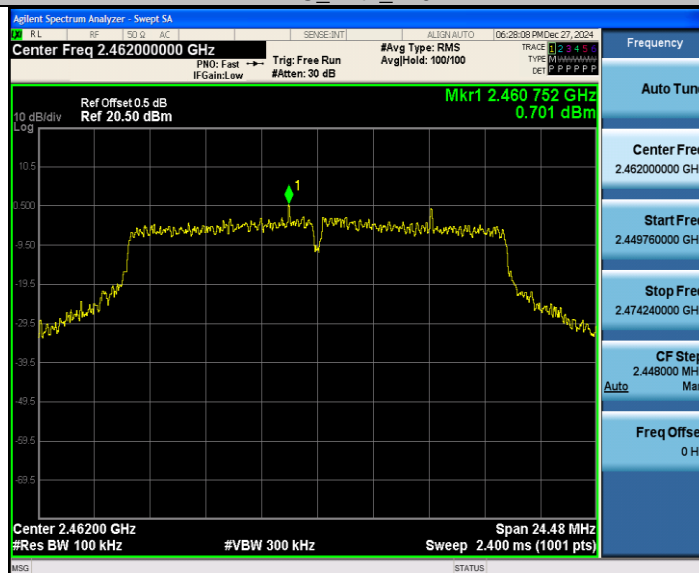
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11G_Ant1_2462



11N20SISO_Ant1_2412



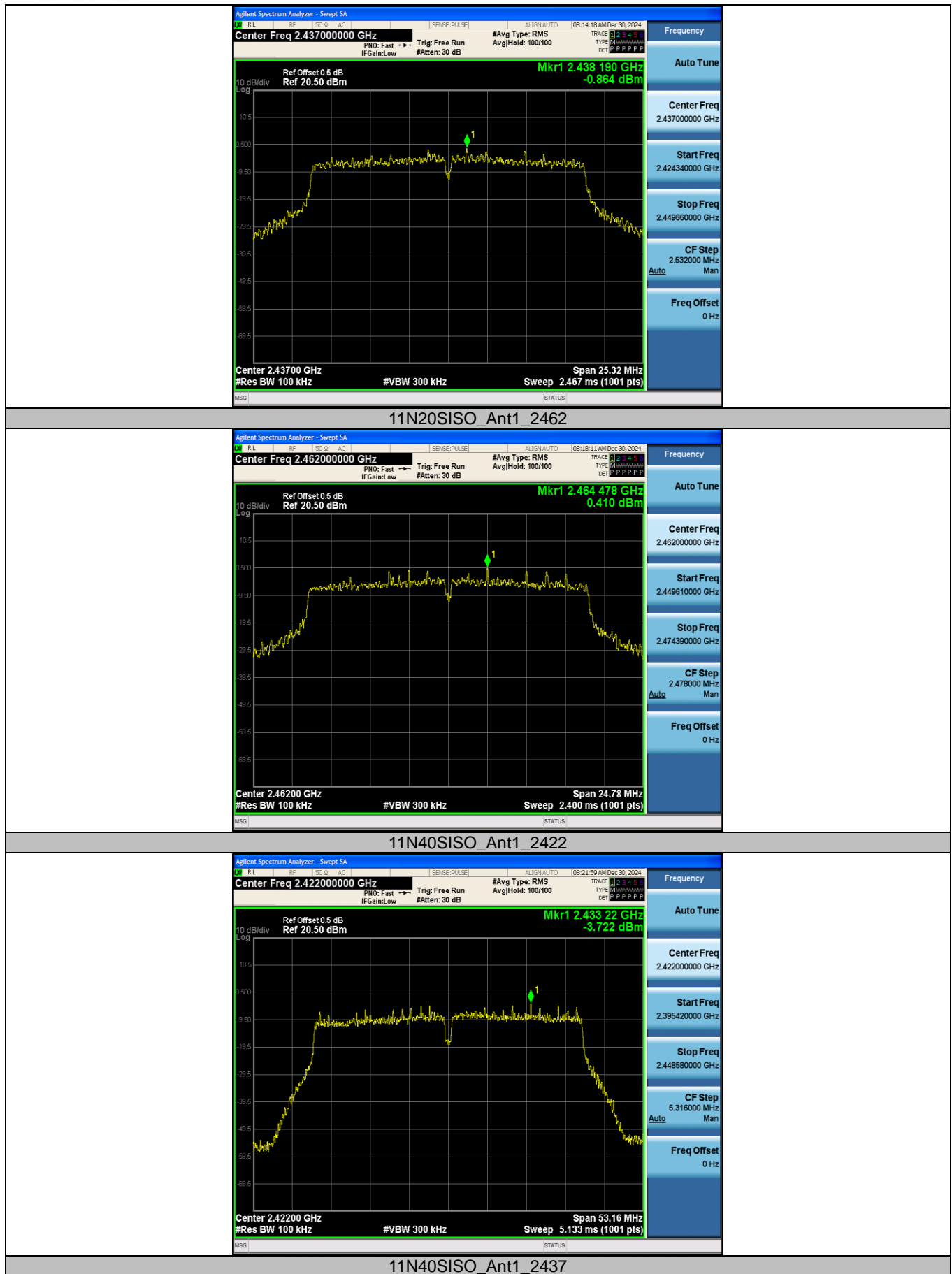
11N20SISO_Ant1_2437

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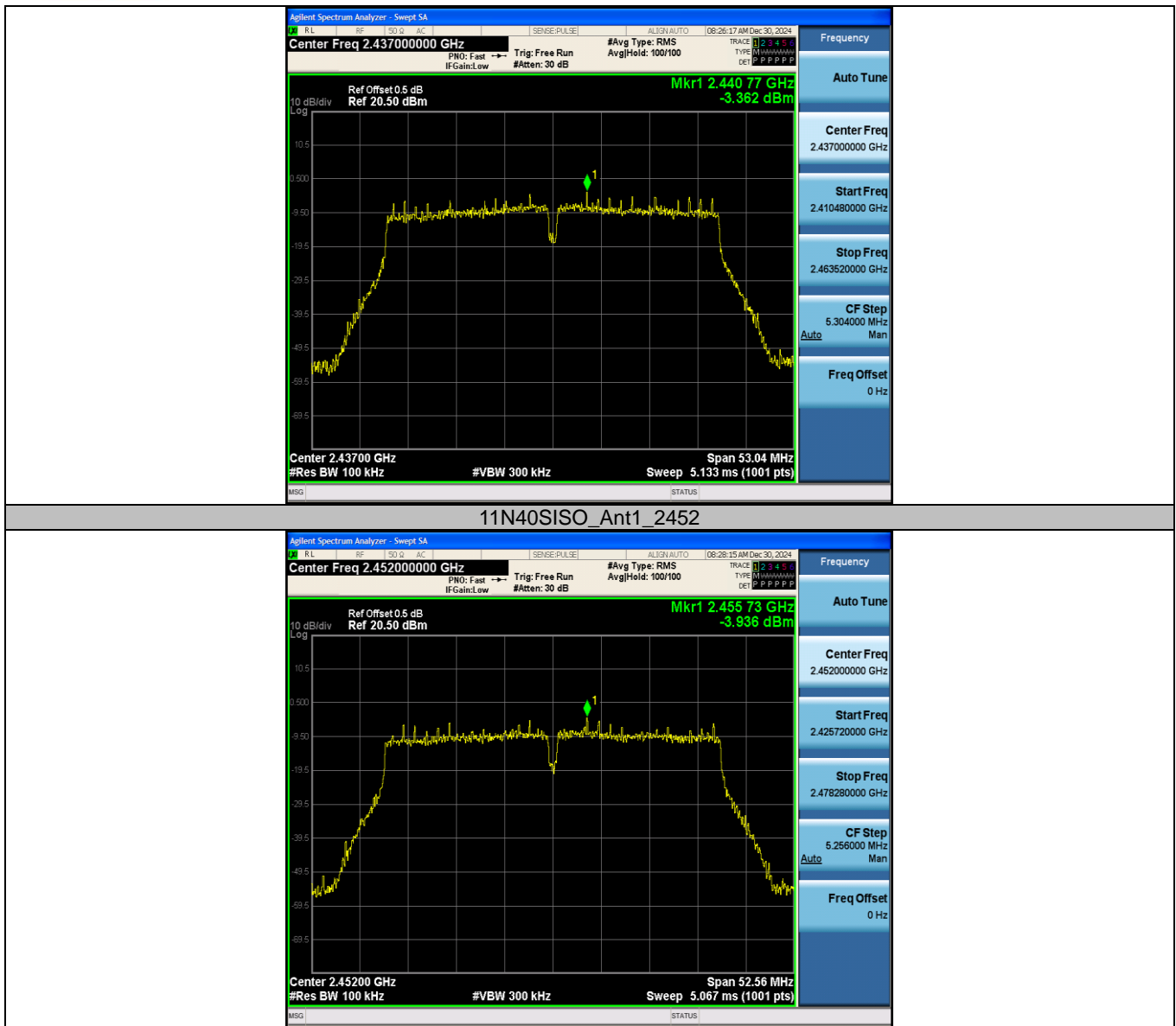


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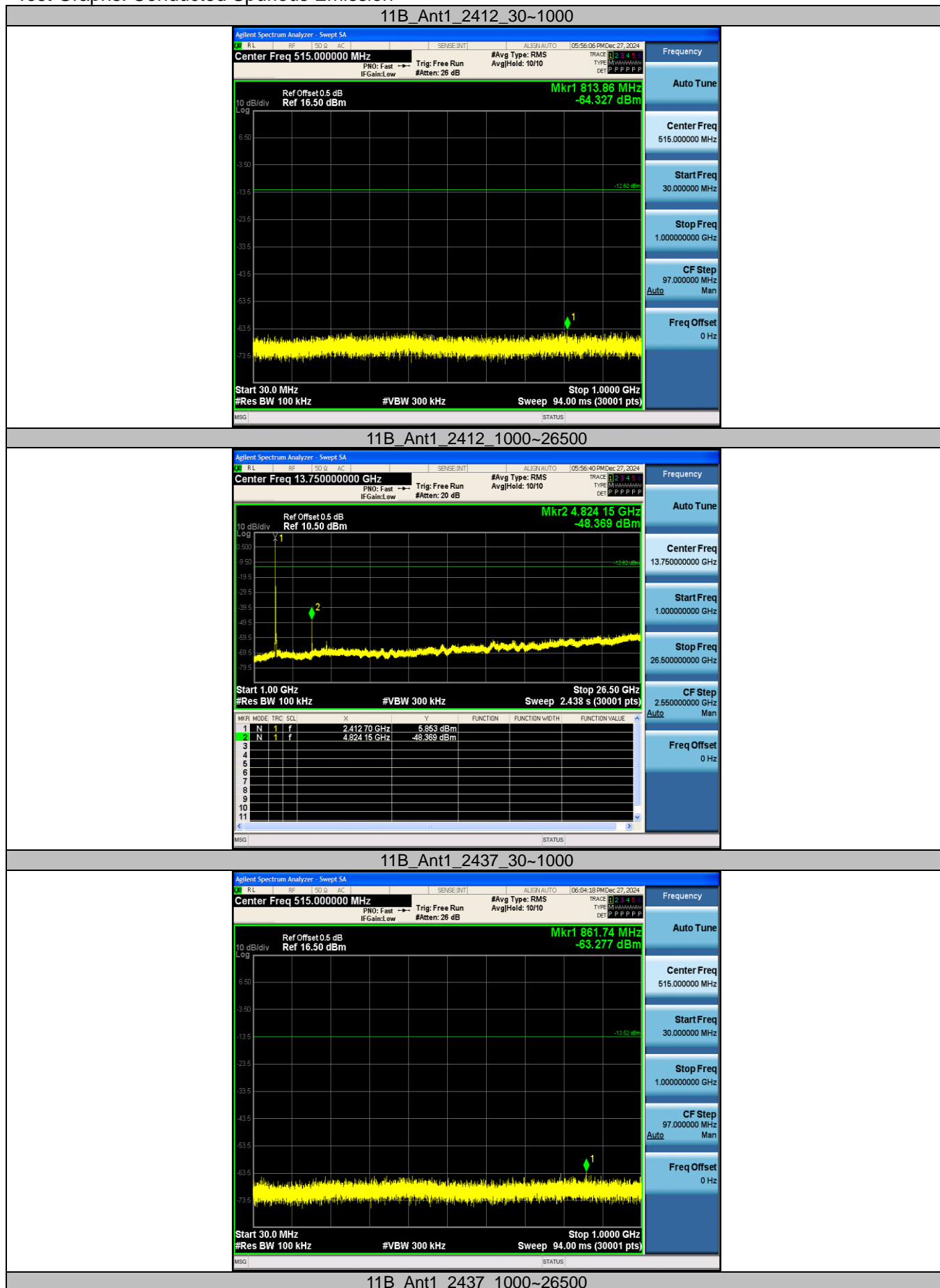
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Test Graphs: Conducted Spurious Emission

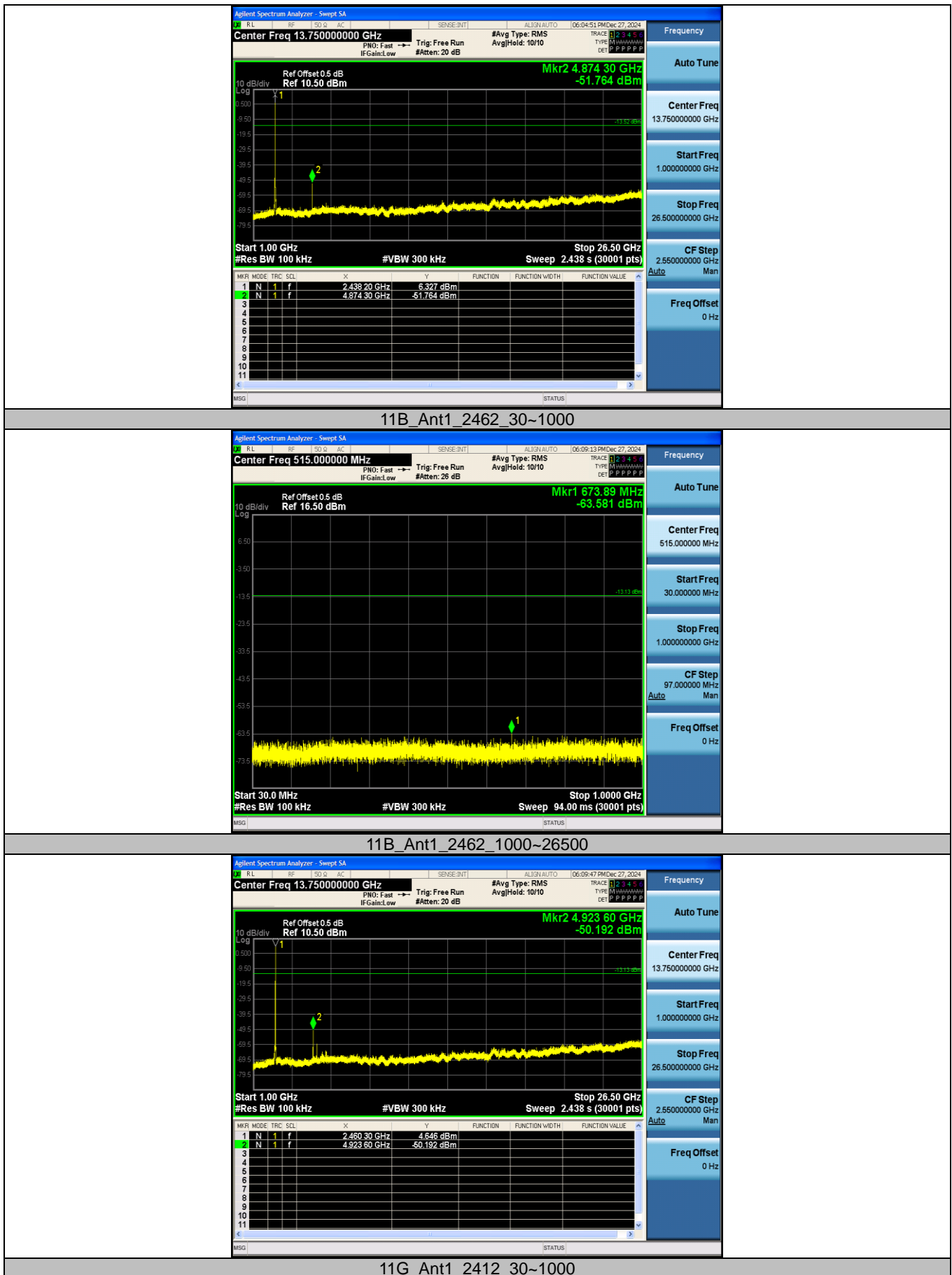


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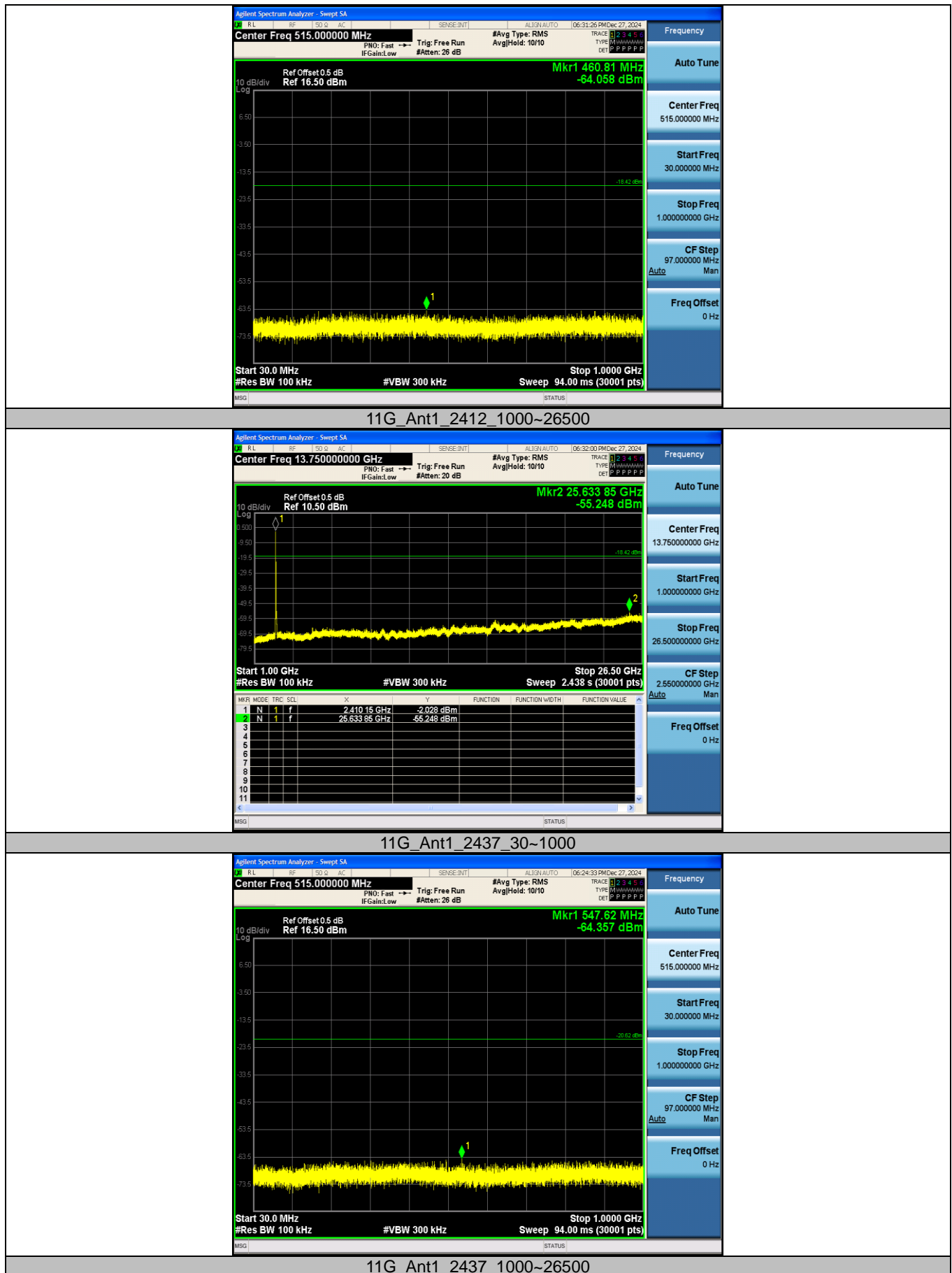


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