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TEST REPORT

Report No. : **CTC20231490E01**

FCC ID : **WNA-LC2203**

Applicant : **Shenzhen Skyworth Digital Technology Co.,LTD**

Address : 14/F,Block A,Skyworth Building,Gaoxin Ave.1.S.,Nanshan District,Shenzhen,China

Manufacturer : Shenzhen Skyworth Digital Technology Co.,LTD

Address : 14/F,Block A,Skyworth Building,Gaoxin Ave.1.S.,Nanshan District,Shenzhen,China

Product Name : **Smart Camera**

Trade Mark : SKYWORTH

Model/Type reference : LC2203

Listed Model(s) : LC2202, LC2203, LC2204, LC2205, LC2206, LC2207, LC2208, LC2209, LQB00, LCQ00

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

Date of receipt of test sample : Jul. 06, 2023

Date of testing : Jul. 06, 2023 ~ Jul. 23, 2023

Date of issue : Aug. 07, 2023

Result : **PASS**

Compiled by:

(Printed name+signature) Lucy Lan

Supervised by:

(Printed name+signature) Eric Zhang

Approved by:

(Printed name+signature) Totti Zhao

Testing Laboratory Name : **CTC Laboratories, Inc.**

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

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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.

[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. 07, 2023	Original

1.3. Test Description

FCC Part 15 Subpart C (15.247)			
Test Item	Standard Section	Result	Test Engineer
Antenna Requirement	15.203	Pass	Lucy
Conducted Emission	15.207	Pass	Lucy
Conducted Band Edge and Spurious Emissions	15.247(d)	Pass	Lucy
Radiated Band Edge and Spurious Emissions	15.205&15.209&15.247(d)	Pass	Lucy
6dB Bandwidth	15.247(a)(2)	Pass	Lucy
Conducted Max Output Power	15.247(b)(3)	Pass	Lucy
Power Spectral Density	15.247(e)	Pass	Lucy
Transmitter Radiated Spurious	15.209&15.247(d)	Pass	Lucy

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	± 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 Skyworth Digital Technology Co.,LTD
Address:	14/F,Block A,Skyworth Building,Gaoxin Ave.1.S.,Nanshan District,Shenzhen,China
Manufacturer:	Shenzhen Skyworth Digital Technology Co.,LTD
Address:	14/F,Block A,Skyworth Building,Gaoxin Ave.1.S.,Nanshan District,Shenzhen,China
Factory:	Shenzhen Skyworth Digital Technology Co.,LTD. Baoan Branch Factory
Address:	2-5F,Integration Multi-Storied Building, Skyworth Science and Technology Industrial Park, Tangtou Industrial Zone, Shiyao Street, Baoan District, Shenzhen city, China

2.2. General Description of EUT

Product Name:	Smart Camera
Trade Mark:	SKYWORTH
Model/Type reference:	LC2203
Listed Model(s):	LC2202, LC2203, LC2204, LC2205, LC2206, LC2207, LC2208, LC2209, LQB00, LCQ00
Model Difference:	All these models are identical in the same PCB, layout and electrical circuit, The difference is the product model number and the color of product shell and the screen printing of the shell.
Power Supply:	DC 5V 1A from AC/DC Adapter
Adapter Model 1:	UT-236A-5100 Input: 100-240V 50/60Hz 0.2A Output:5V/1A 5W
Hardware Version:	5800-2ALCQ00
Software Version:	V00001



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:	PIFA Antenna
Antenna Gain:	2.56dBi



2.3. Accessory Equipment Information

Equipment Information			
Name	Model	S/N	Manufacturer
Notebook	ThinkBook 14G3 ACL	MP246QDR	Lenovo
Cable Information			
Name	Shielded Type	Ferrite Core	Length
/	/	/	/
Test Software Information			
Name	Version	/	/
SecureCRT	/	/	/



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 worsted 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-647	Dec. 07, 2024
3	Loop Antenna	ETS	6507	1446	Dec. 16, 2023
4	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
5	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14, 2024
6	Pre-Amplifier	SONOMA	310	186194	Dec. 16, 2023
7	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 16, 2023
8	Test Receiver	R&S	ESC17	100967	Dec. 16, 2023
9	3m chamber 2	Frankonia	EE025	/	Oct. 23, 2024

Radiated Emission (3m chamber 3)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9163	01026	Dec. 18, 2024
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 01, 2024
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 16, 2023
4	Broadband Premplifier	SCHWARZBECK	BBV9743B	259	Dec. 16, 2023
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 16, 2023
6	3m chamber 3	YIHENG	EE106	/	Sep. 09, 2023



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

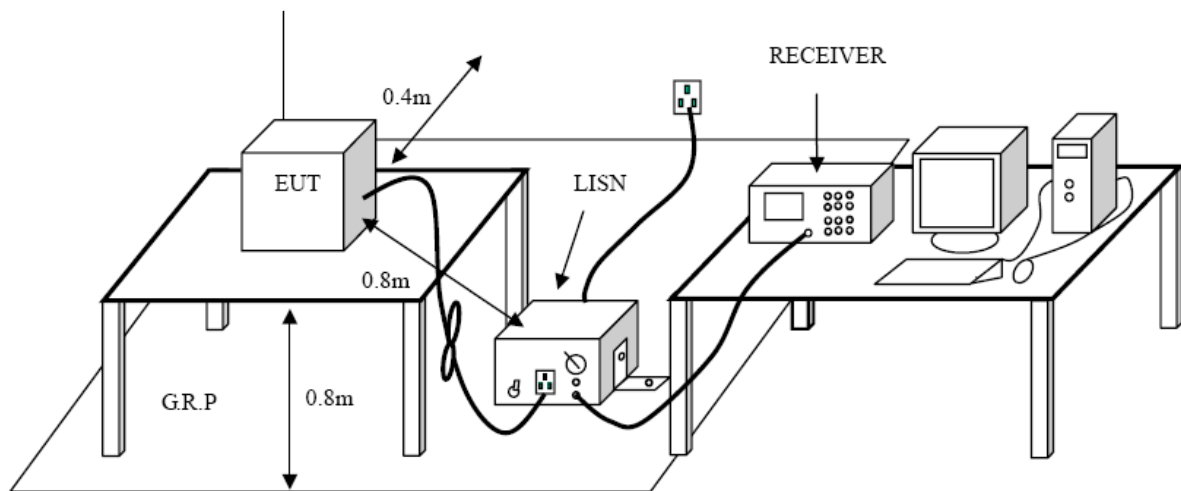
Limit

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

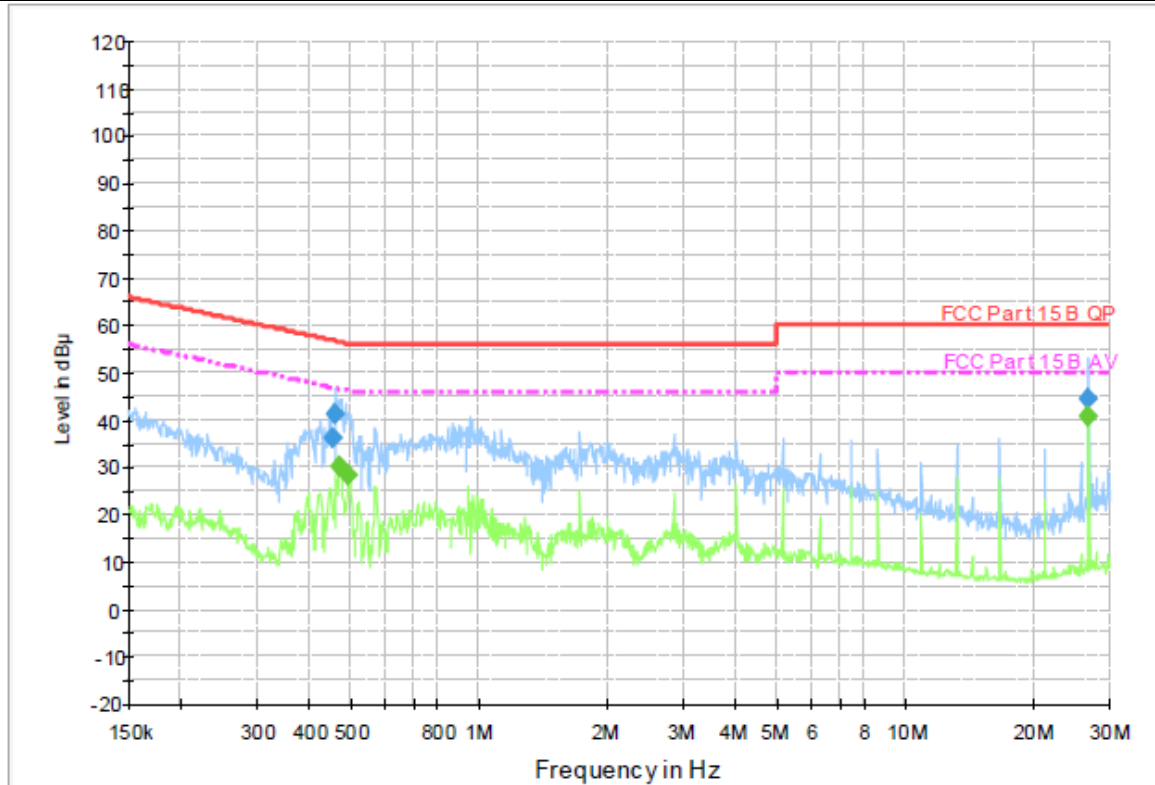
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from 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
0.451440	36.3	1000.00	9.000	On	L1	9.7	20.5	56.8	
0.460540	41.4	1000.00	9.000	On	L1	9.7	15.3	56.7	
26.803070	44.2	1000.00	9.000	On	L1	10.0	15.8	60.0	

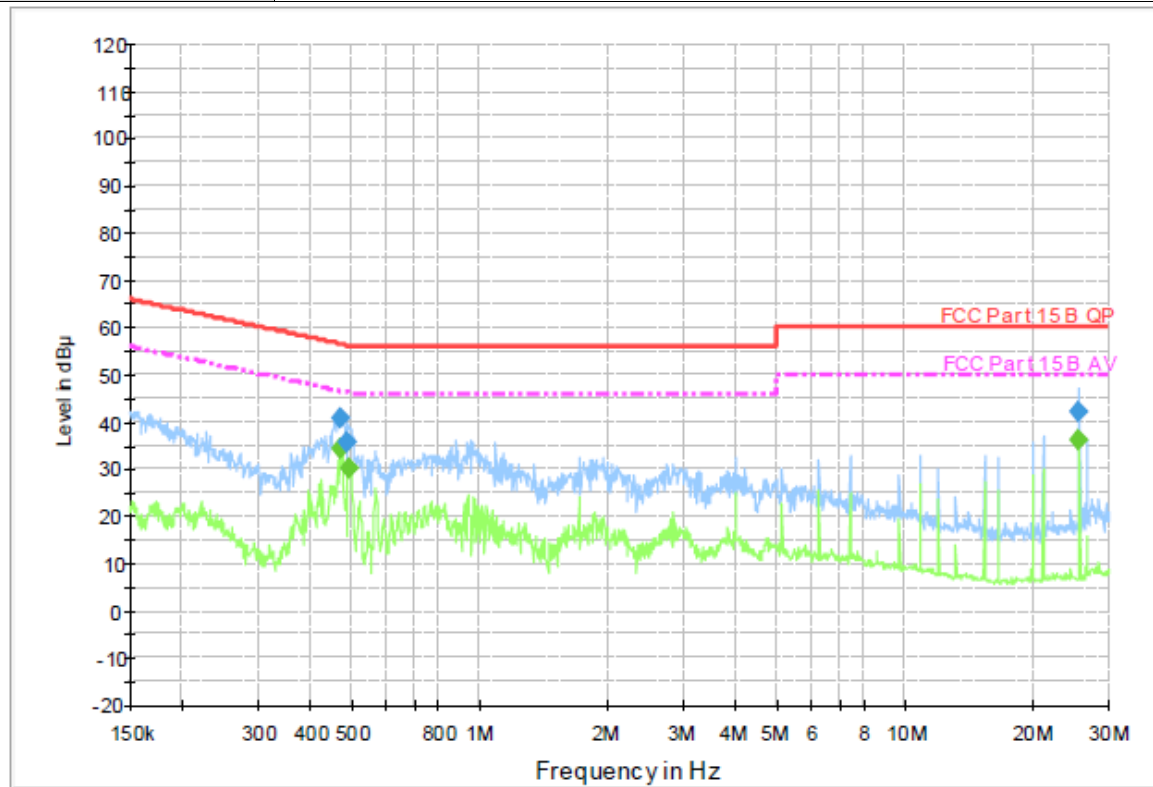
Final Measurement Detector 2

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.466090	30.2	1000.00	9.000	On	L1	9.7	16.4	46.6	
0.492880	28.3	1000.00	9.000	On	L1	9.7	17.8	46.1	
26.803070	41.0	1000.00	9.000	On	L1	10.0	9.0	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
0.467950	40.8	1000.00	9.000	On	N	10.0	15.8	56.6	
0.487010	35.6	1000.00	9.000	On	N	10.0	20.6	56.2	
25.549350	42.0	1000.00	9.000	On	N	10.0	18.0	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.467950	34.4	1000.00	9.000	On	N	10.0	12.2	46.6	
0.492880	30.3	1000.00	9.000	On	N	10.0	15.8	46.1	
25.549350	36.1	1000.00	9.000	On	N	10.0	13.9	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

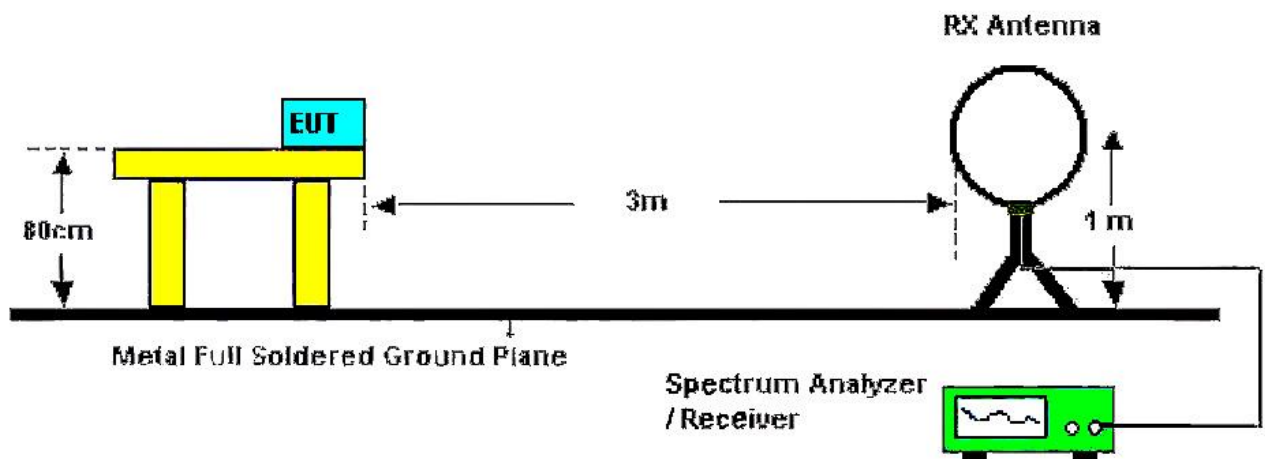
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F (kHz)	300
0.490~1.705	24000/F (kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

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

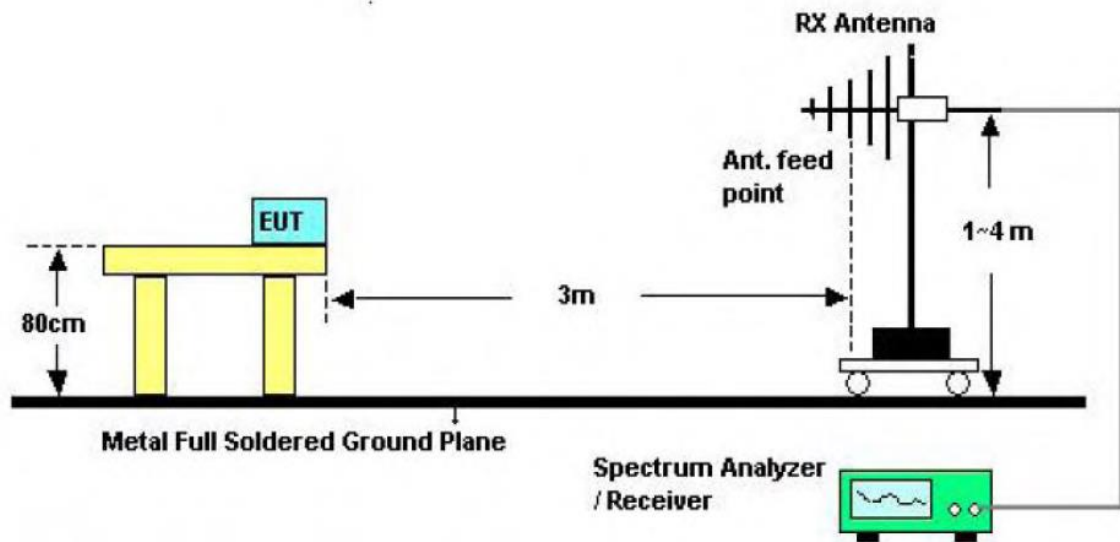
Note:

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

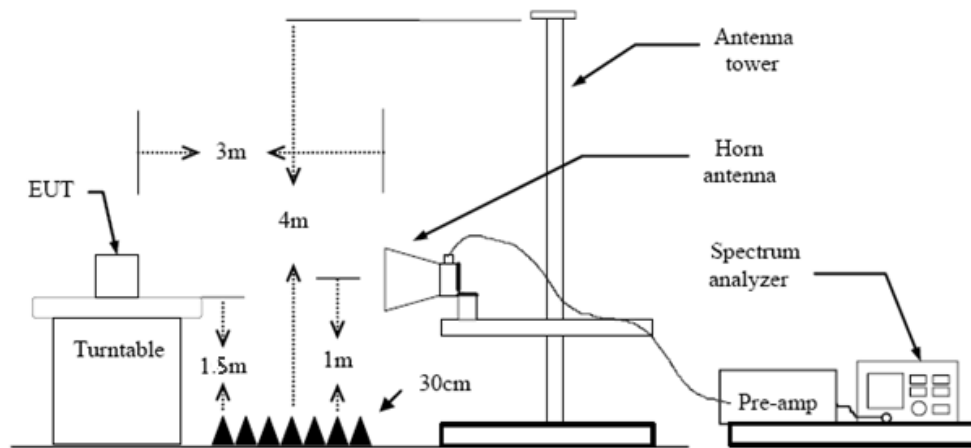
Test Configuration



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 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

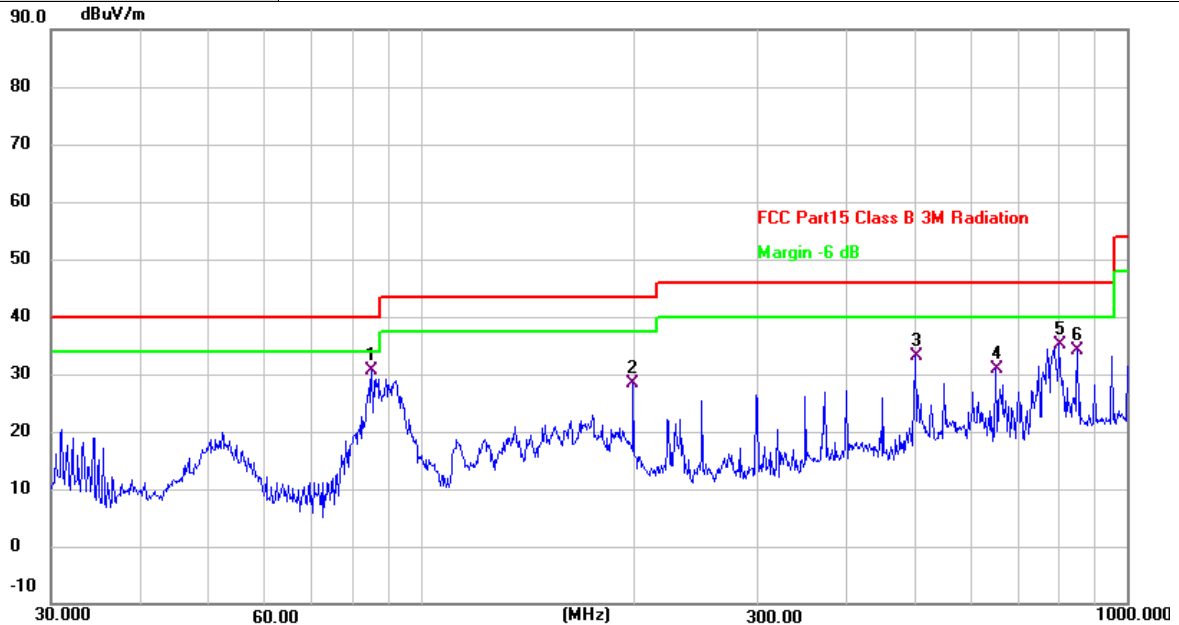
From 9 kHz to 30 MHz: The conclusion is PASS.

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. No.	Ant 1
Ant. Pol.	Horizontal
Test Mode:	TX 802.11b Mode 2412MHz
Remark:	Only worse case is reported.



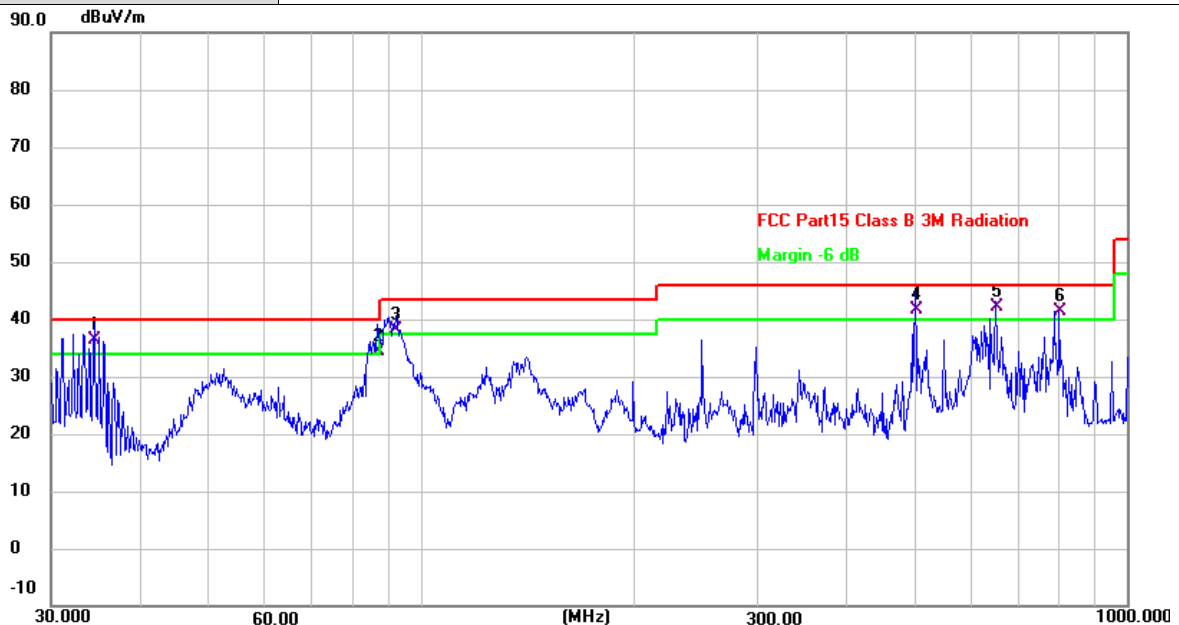
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	85.2980	52.63	-21.88	30.75	40.00	-9.25	QP
2	199.9855	48.69	-20.42	28.27	43.50	-15.23	QP
3	501.1790	45.81	-12.64	33.17	46.00	-12.83	QP
4	651.9417	40.65	-9.79	30.86	46.00	-15.14	QP
5	801.7863	42.29	-7.28	35.01	46.00	-10.99	QP
6	851.0353	40.74	-6.58	34.16	46.00	-11.84	QP

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. 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 *	34.5173	54.48	-18.08	36.40	40.00	-3.60	QP
2 !	86.8068	56.25	-21.85	34.40	40.00	-5.60	QP
3 !	92.4624	59.72	-21.57	38.15	43.50	-5.35	QP
4 !	501.1790	54.39	-12.64	41.75	46.00	-4.25	QP
5 !	651.9417	51.89	-9.79	42.10	46.00	-3.90	QP
6 !	801.7863	48.70	-7.28	41.42	46.00	-4.58	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 1						
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.						
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4824.058	40.77	-2.36	38.41	54.00	-15.59	AVG
2	4824.140	49.18	-2.36	46.82	74.00	-27.18	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. Pol.	Vertical						
Test Mode:	TX 802.11b Mode 2412MHz						
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 *	4824.044	41.30	-2.36	38.94	54.00	-15.06	AVG
2	4824.098	49.53	-2.36	47.17	74.00	-26.83	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. 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	4873.114	47.47	-2.14	45.33	74.00	-28.67	peak
2 *	4874.150	33.95	-2.14	31.81	54.00	-22.19	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. 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 *	4873.496	33.79	-2.14	31.65	54.00	-22.35	AVG
2	4874.284	47.98	-2.14	45.84	74.00	-28.16	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 1
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	4923.950	47.25	-1.93	45.32	74.00	-28.68	peak
2 *	4924.056	34.92	-1.93	32.99	54.00	-21.01	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. 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 *	4924.036	34.86	-1.93	32.93	54.00	-21.07	AVG
2	4924.122	47.43	-1.93	45.50	74.00	-28.50	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. Pol.	Horizontal						
Test Mode:	TX 802.11g Mode 2412MHz						
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	4823.376	48.16	-2.36	45.80	74.00	-28.20	peak
2 *	4824.070	34.42	-2.36	32.06	54.00	-21.94	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. Pol.	Vertical						
Test Mode:	TX 802.11g Mode 2412MHz						
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 *	4823.612	34.35	-2.36	31.99	54.00	-22.01	AVG
2	4824.032	47.89	-2.36	45.53	74.00	-28.47	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. 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	4873.572	47.69	-2.14	45.55	74.00	-28.45	peak
2 *	4874.530	34.09	-2.14	31.95	54.00	-22.05	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. 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	4873.070	47.48	-2.14	45.34	74.00	-28.66	peak
2 *	4874.096	33.94	-2.14	31.80	54.00	-22.20	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. 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	4923.386	47.43	-1.93	45.50	74.00	-28.50	peak
2 *	4923.860	33.49	-1.93	31.56	54.00	-22.44	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. 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 *	4923.302	33.38	-1.93	31.45	54.00	-22.55	AVG
2	4923.522	47.04	-1.93	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. 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.						
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	4824.036	34.19	-2.36	31.83	54.00	-22.17	AVG
2	4824.286	48.03	-2.36	45.67	74.00	-28.33	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. 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.



Ant. No.	Ant 1						
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	4873.152	42.86	-2.14	40.72	74.00	-33.28	peak
2 *	4874.852	29.70	-2.14	27.56	54.00	-26.44	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. 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	4873.920	48.23	-2.14	46.09	74.00	-27.91	peak
2 *	4874.558	33.90	-2.14	31.76	54.00	-22.24	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. 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 *	4924.256	33.53	-1.93	31.60	54.00	-22.40	AVG
2	4924.762	46.80	-1.93	44.87	74.00	-29.13	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. 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	4923.330	47.47	-1.93	45.54	74.00	-28.46	peak
2 *	4923.978	33.37	-1.93	31.44	54.00	-22.56	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. 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	4844.900	44.01	-2.26	41.75	74.00	-32.25	peak
2 *	4844.900	33.90	-2.26	31.64	54.00	-22.36	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. 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.



Ant. No.	Ant 1
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	4873.734	46.99	-2.14	44.85	74.00	-29.15	peak
2 *	4874.040	33.97	-2.14	31.83	54.00	-22.17	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. 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 *	4873.970	33.57	-2.14	31.43	54.00	-22.57	AVG
2	4874.202	47.36	-2.14	45.22	74.00	-28.78	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. 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	4904.006	47.45	-2.01	45.44	74.00	-28.56	peak
2 *	4904.274	33.53	-2.01	31.52	54.00	-22.48	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 1						
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	4903.662	47.13	-2.01	45.12	74.00	-28.88	peak
2 *	4903.934	33.54	-2.01	31.53	54.00	-22.47	AVG
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value							

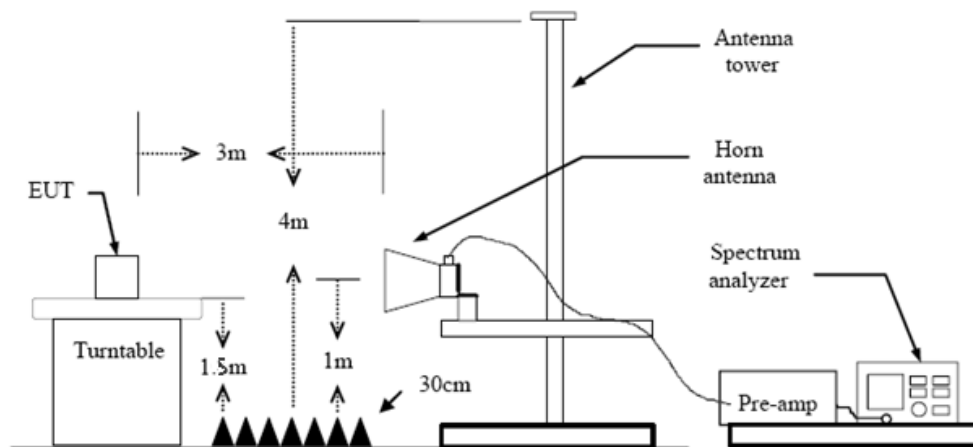
3.3. Band Edge Emissions (Radiated)

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



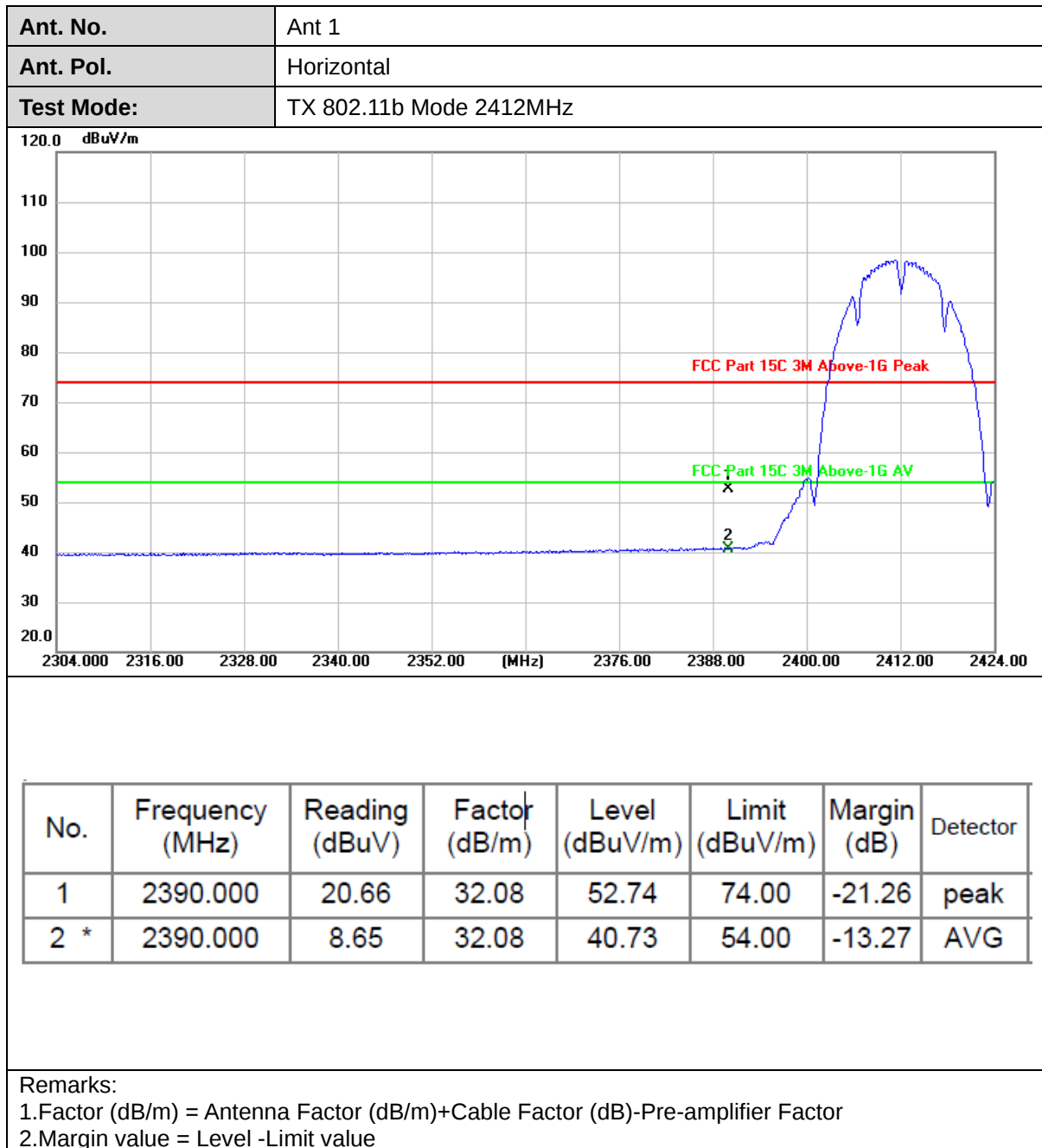
Test Procedure

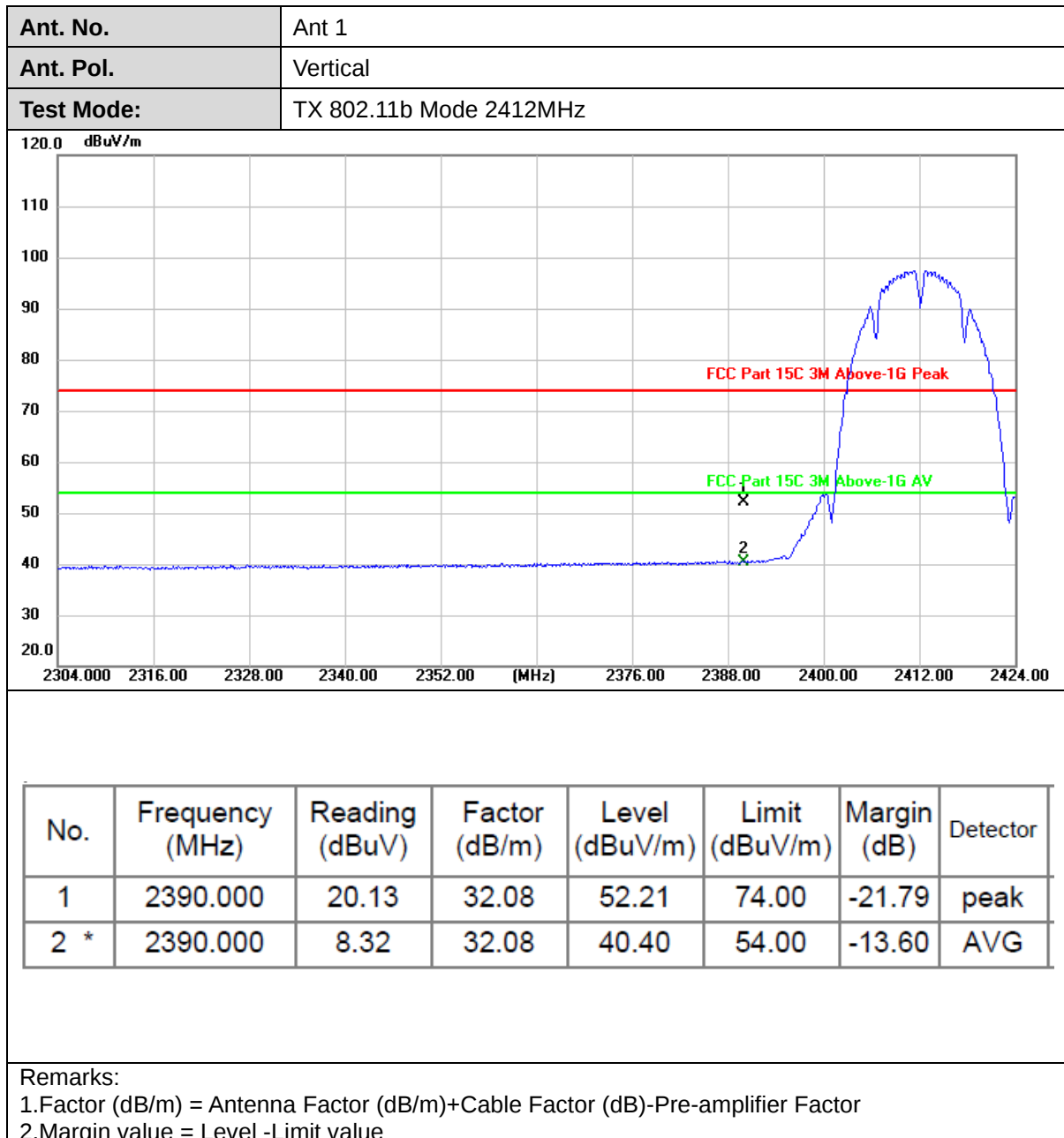
1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna 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

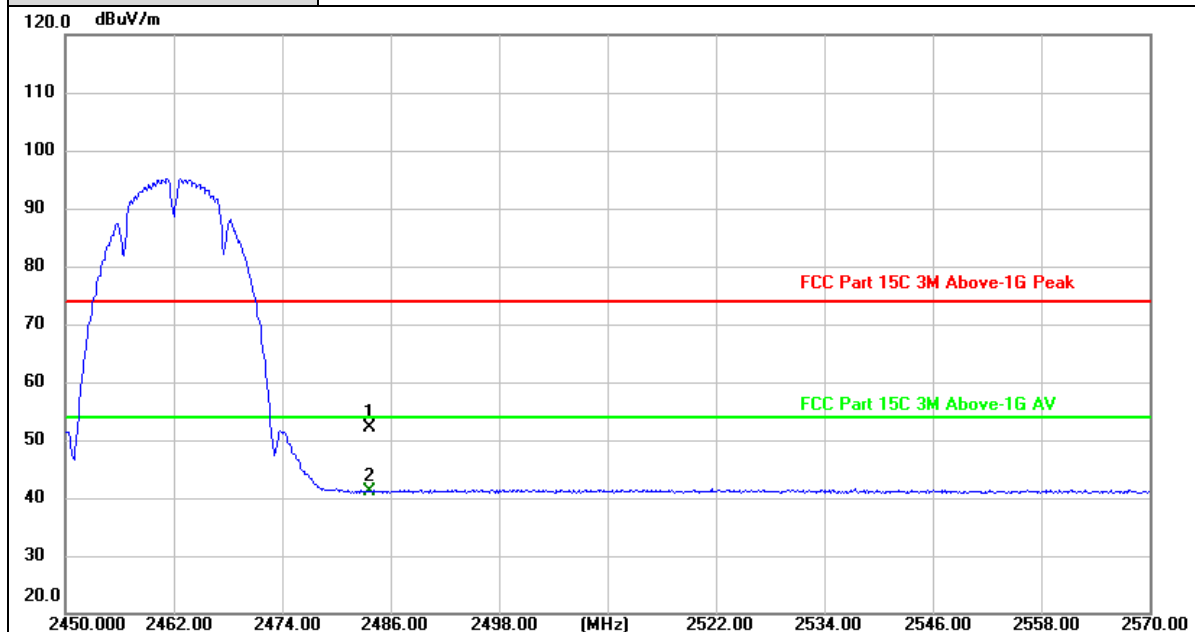
Please refer to the clause 2.4.

**Test Result**





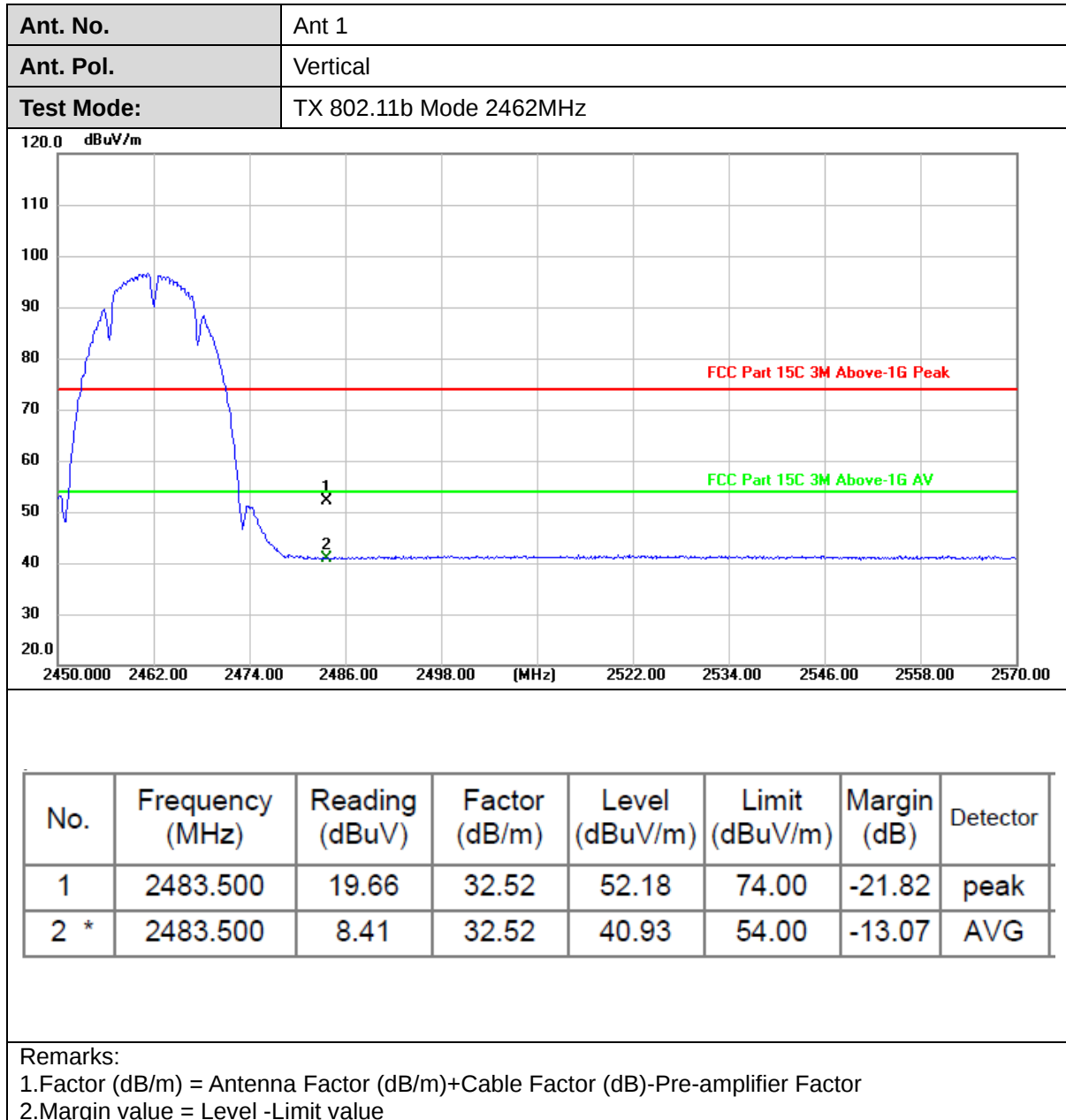
Ant. No.	Ant 1
Ant. Pol.	Horizontal
Test Mode:	TX 802.11b Mode 2462MHz

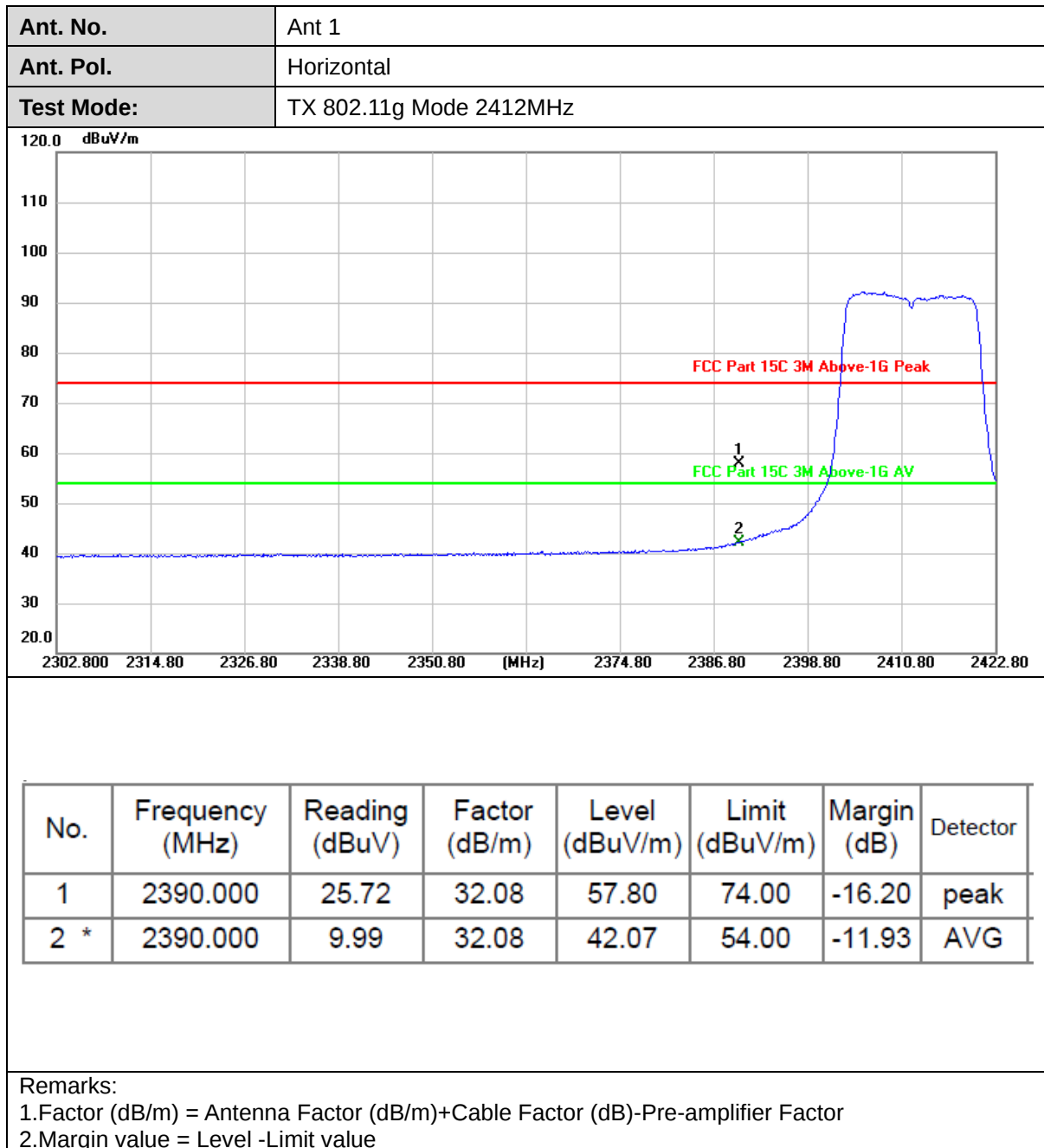


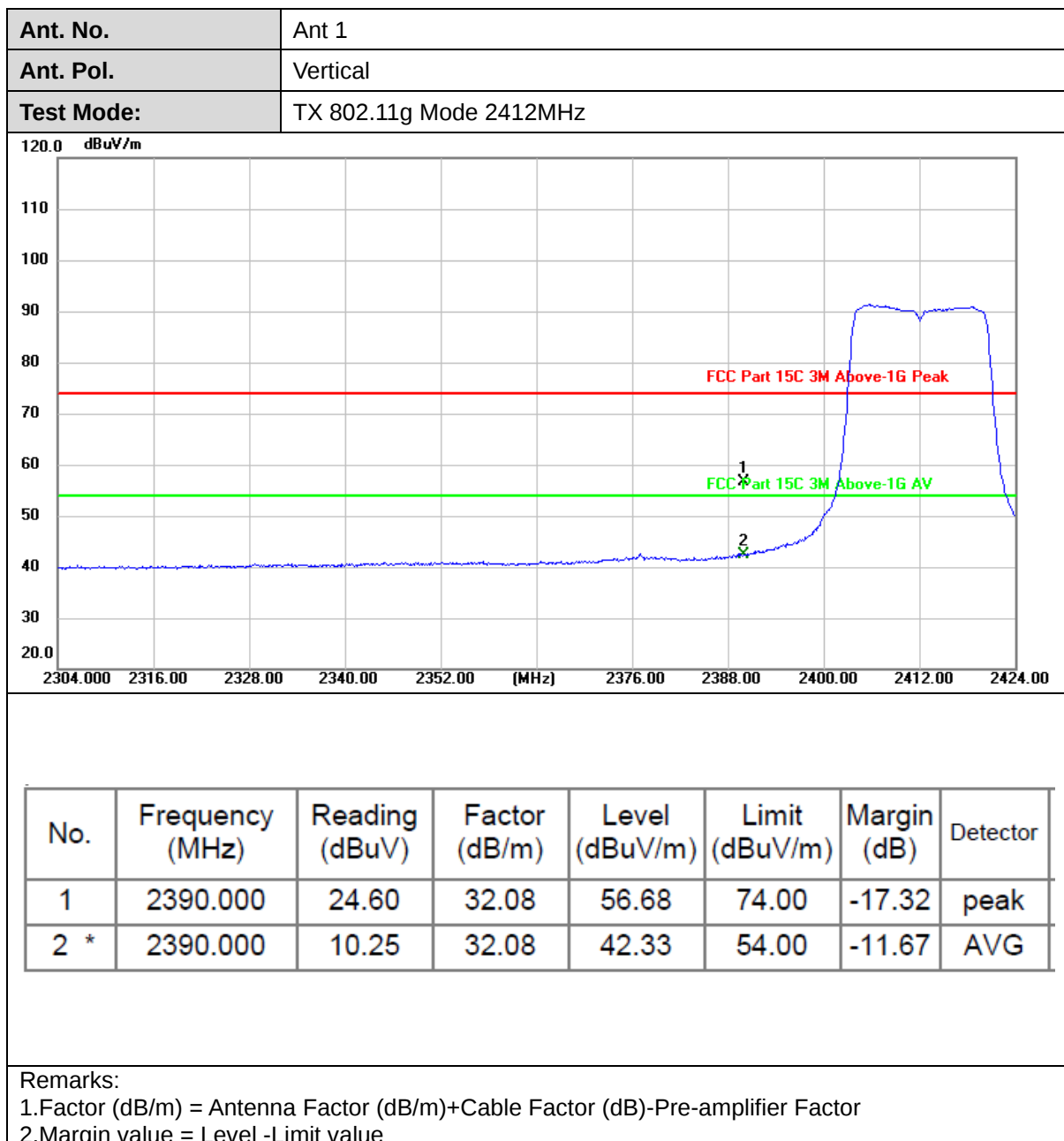
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	19.69	32.52	52.21	74.00	-21.79	peak
2 *	2483.500	8.52	32.52	41.04	54.00	-12.96	AVG

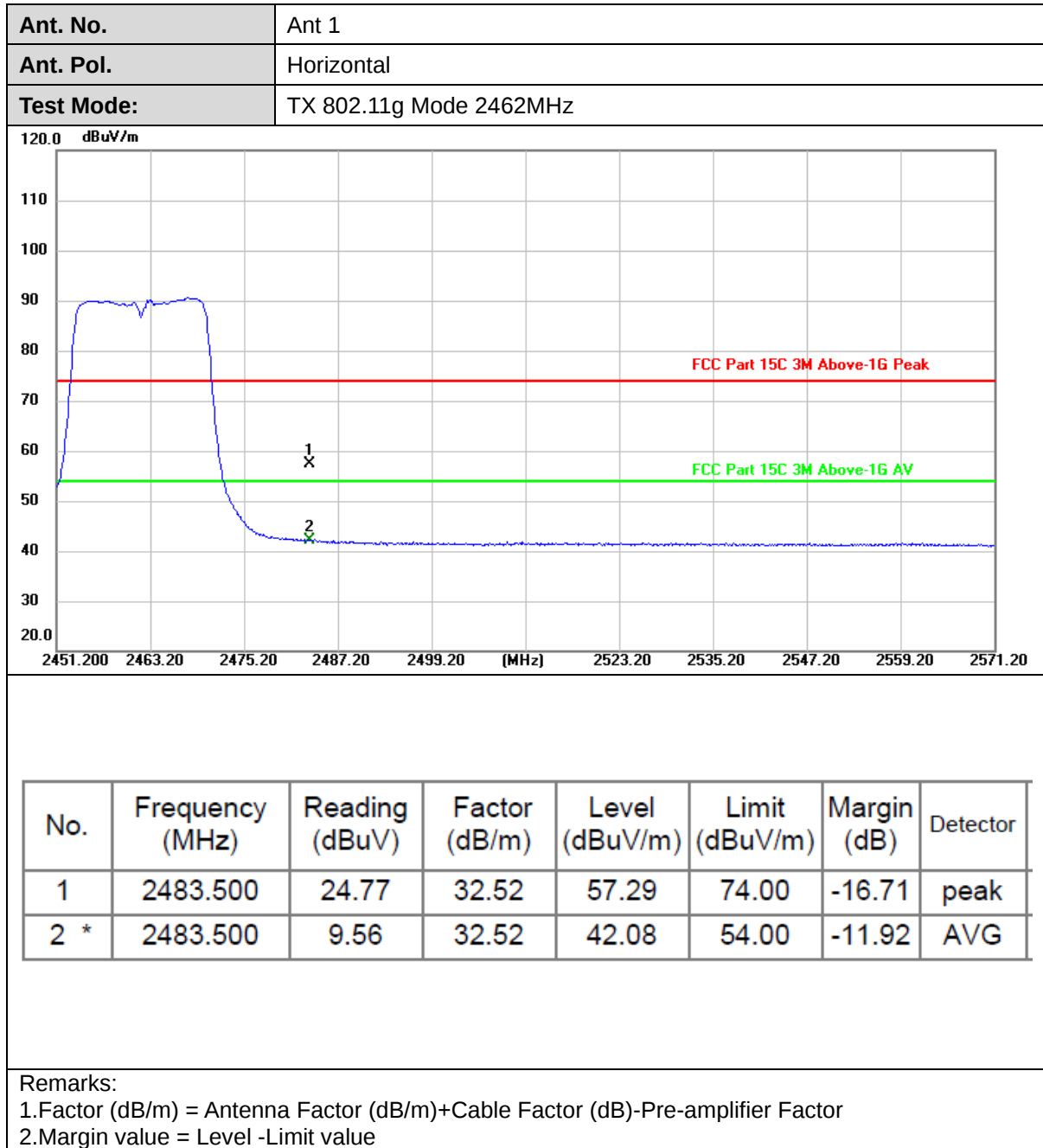
Remarks:

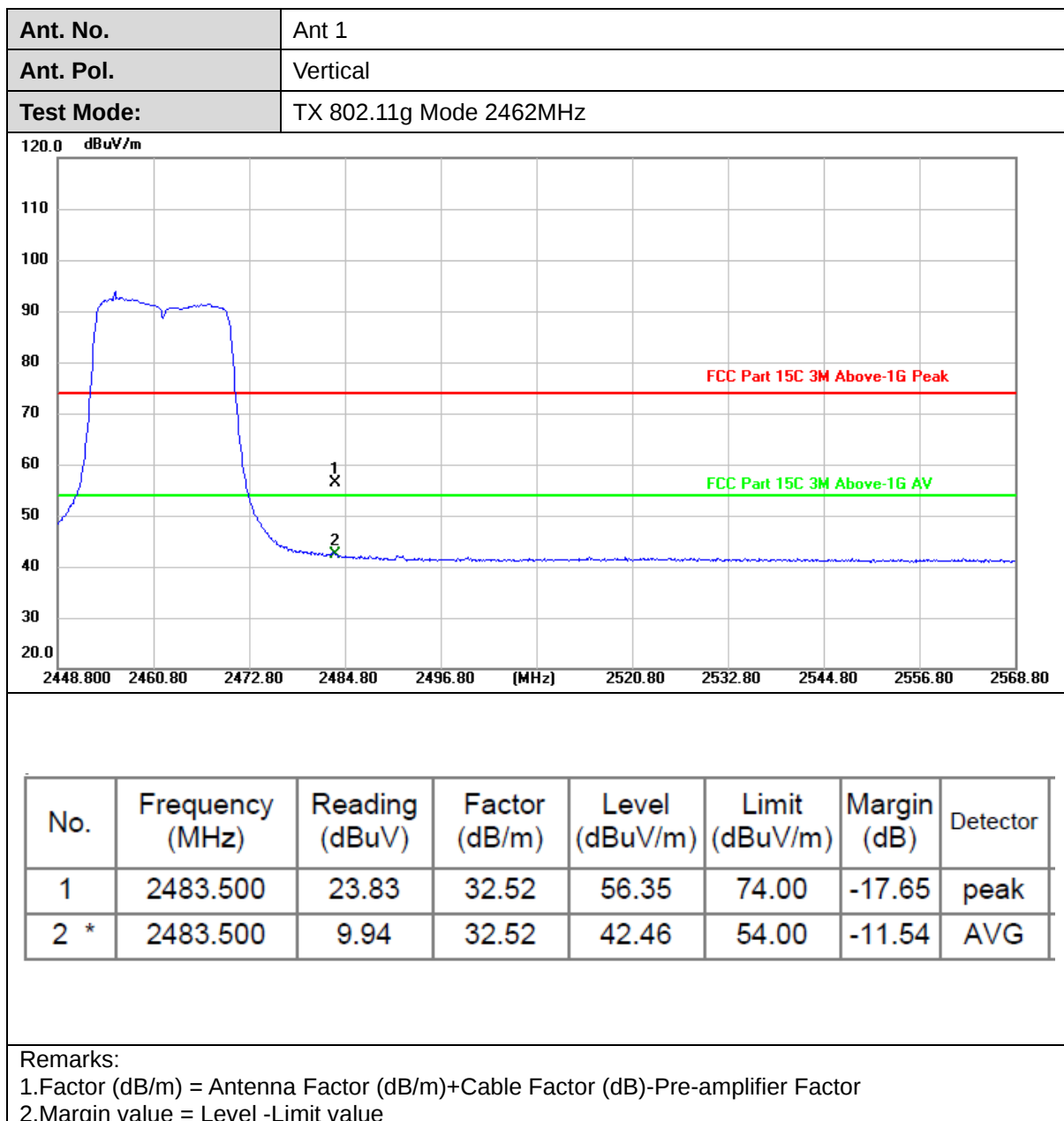
1. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor
2. Margin value = Level - Limit value

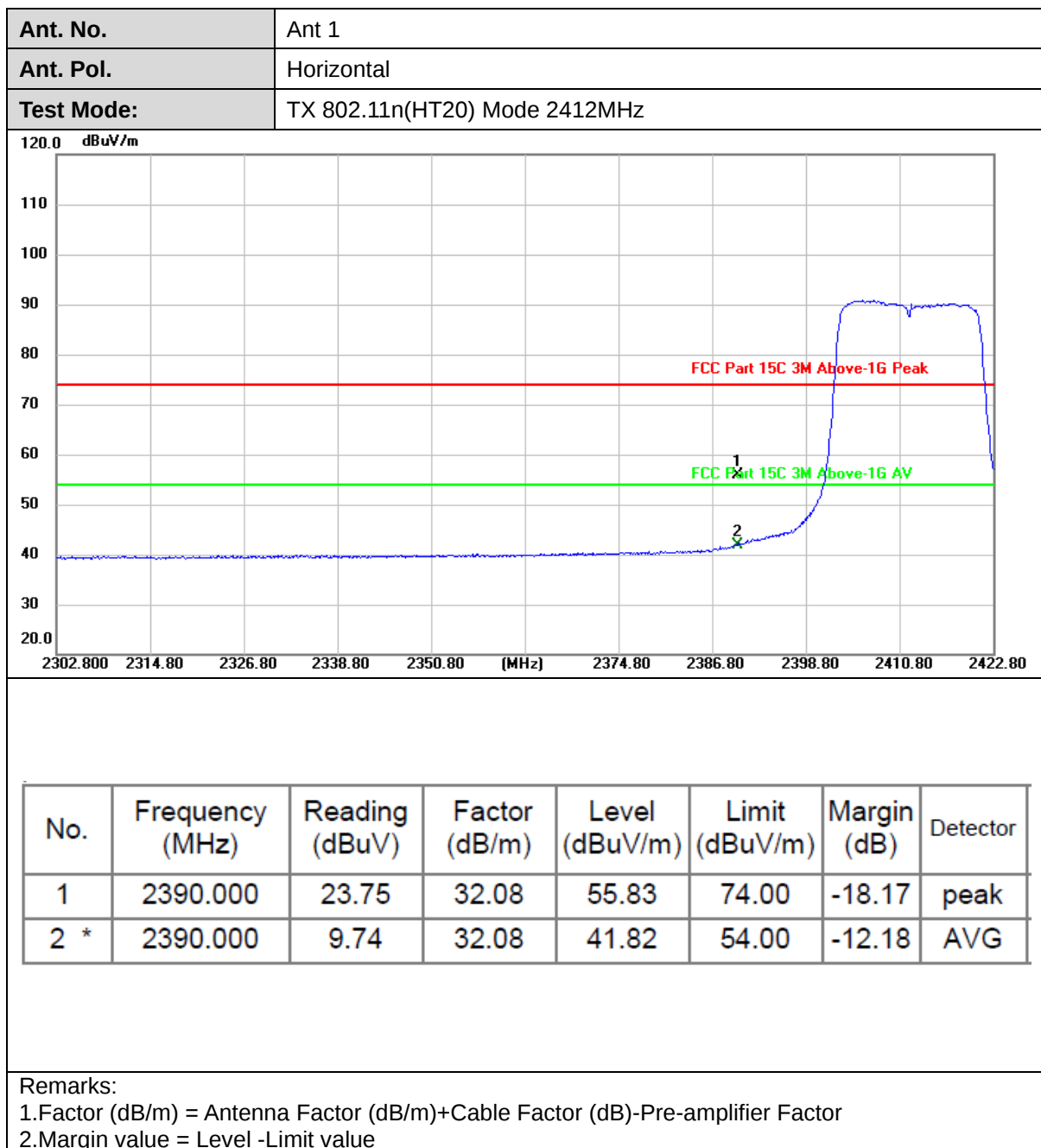


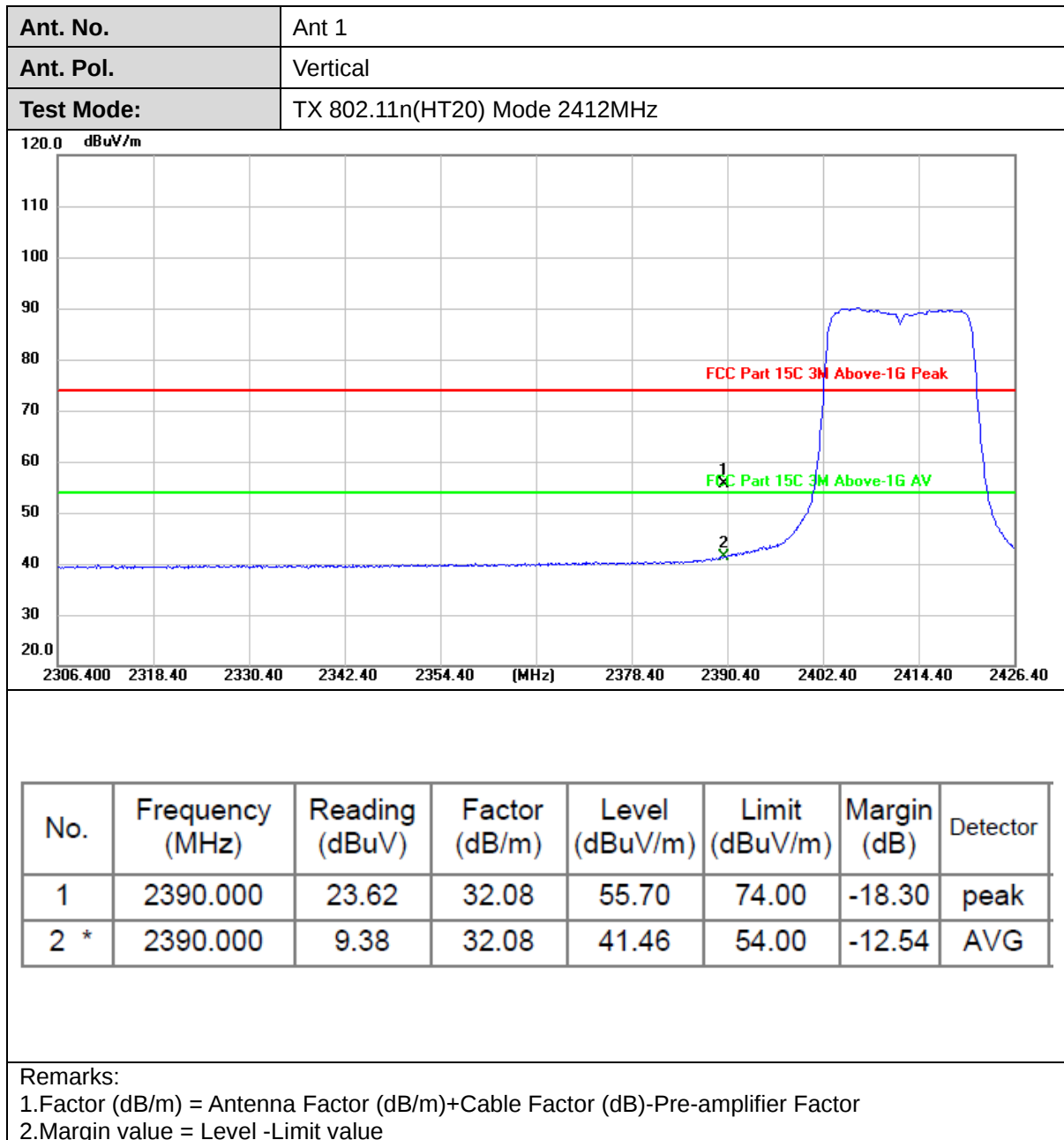


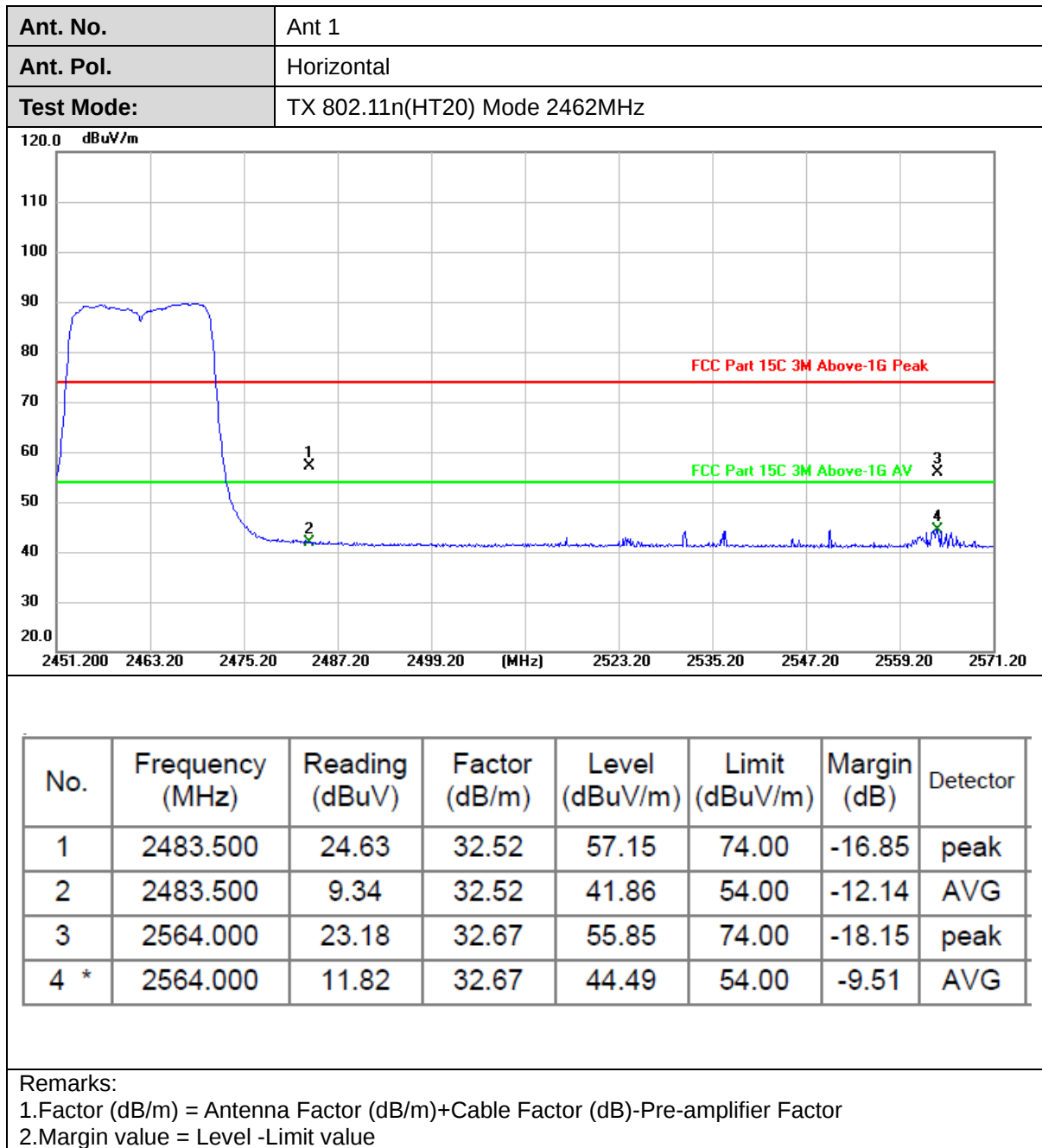


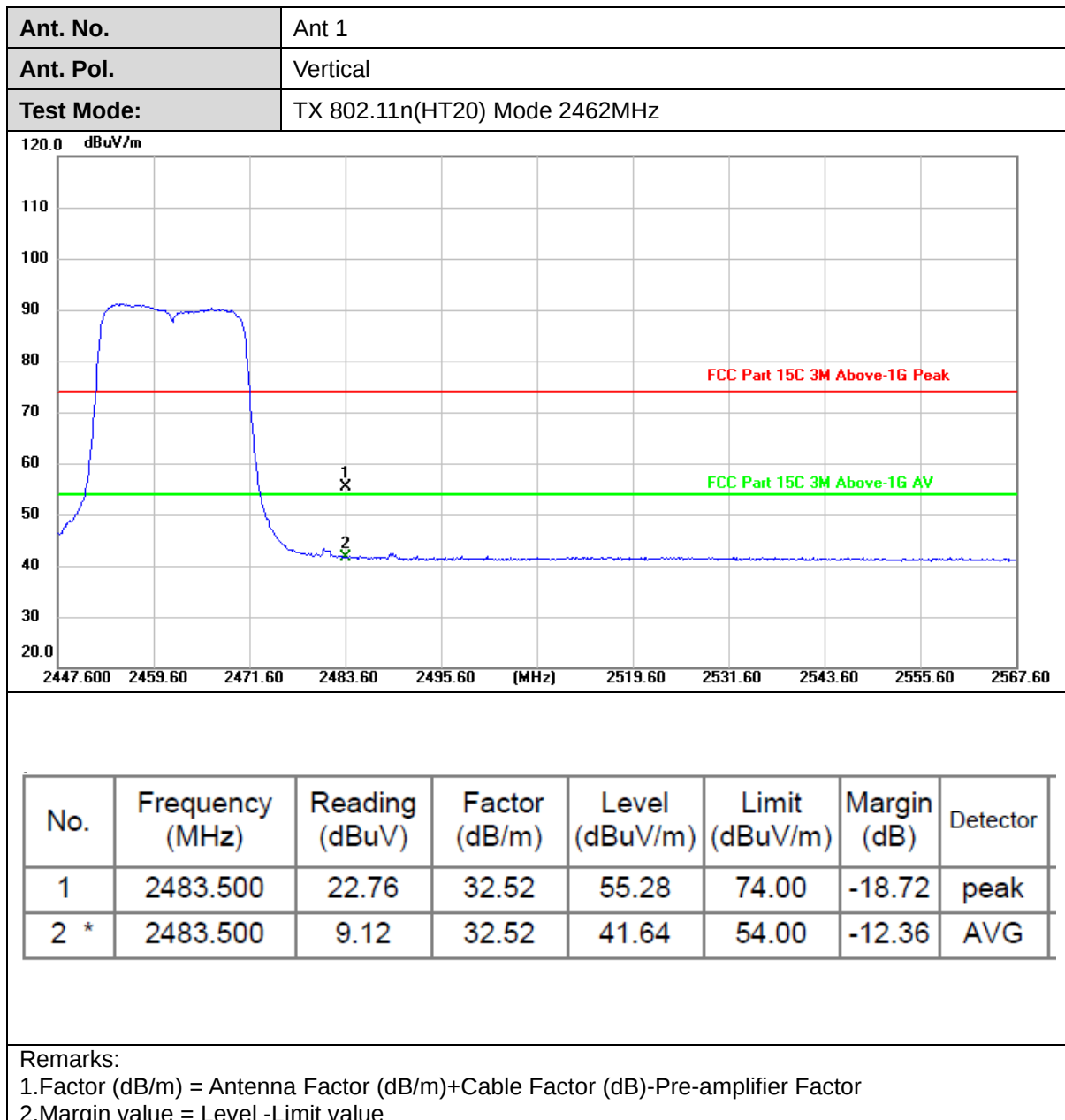


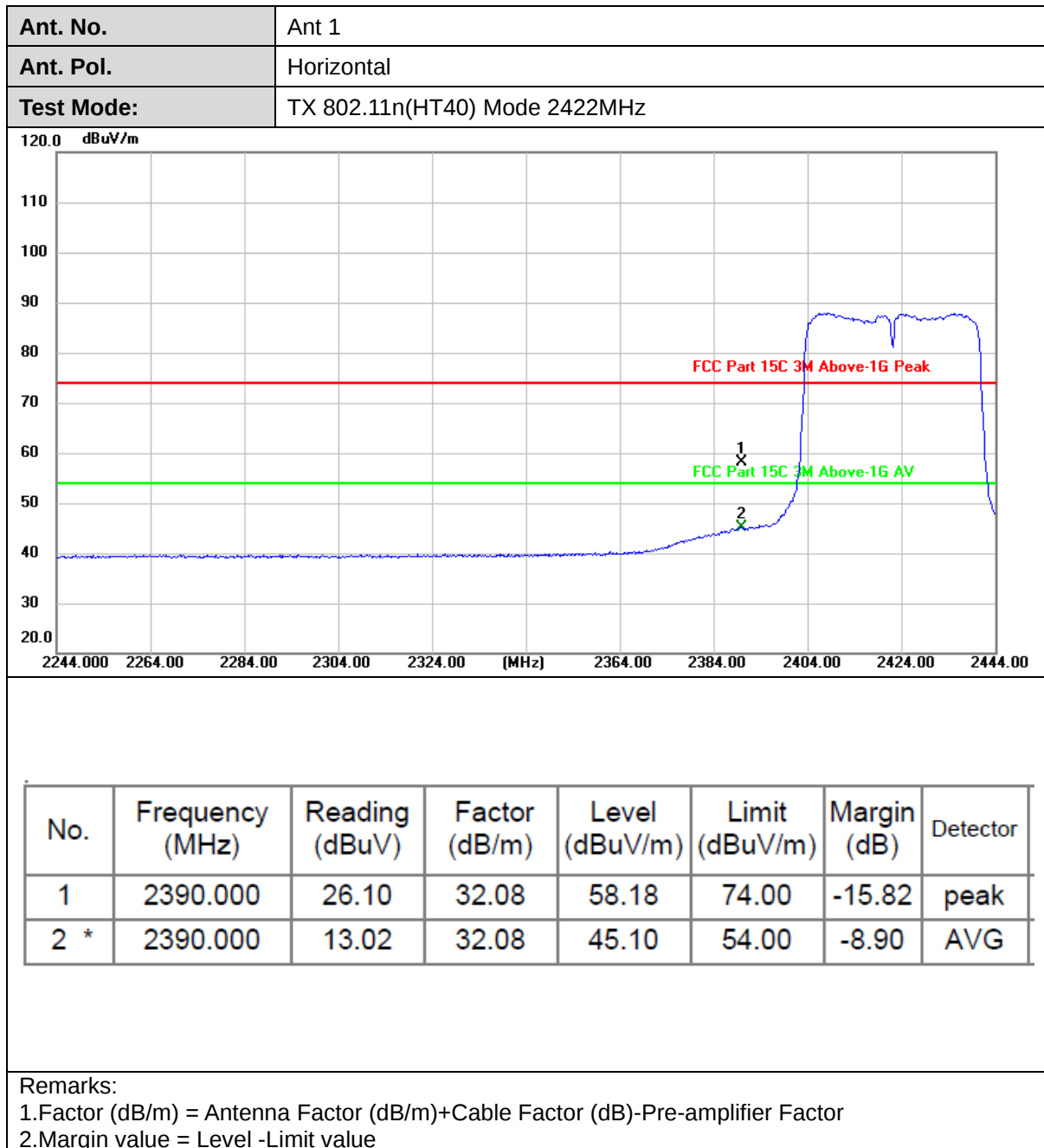


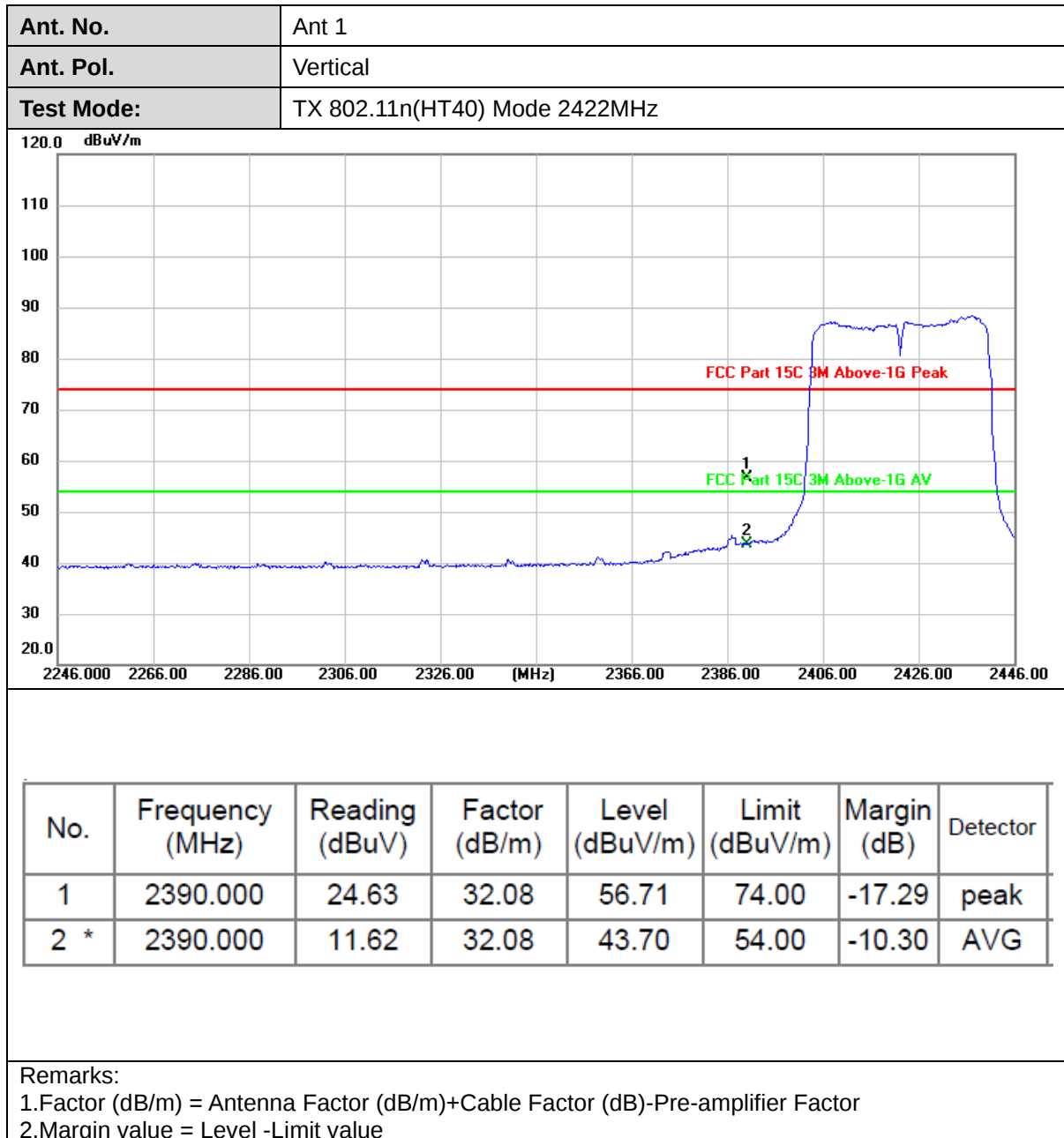


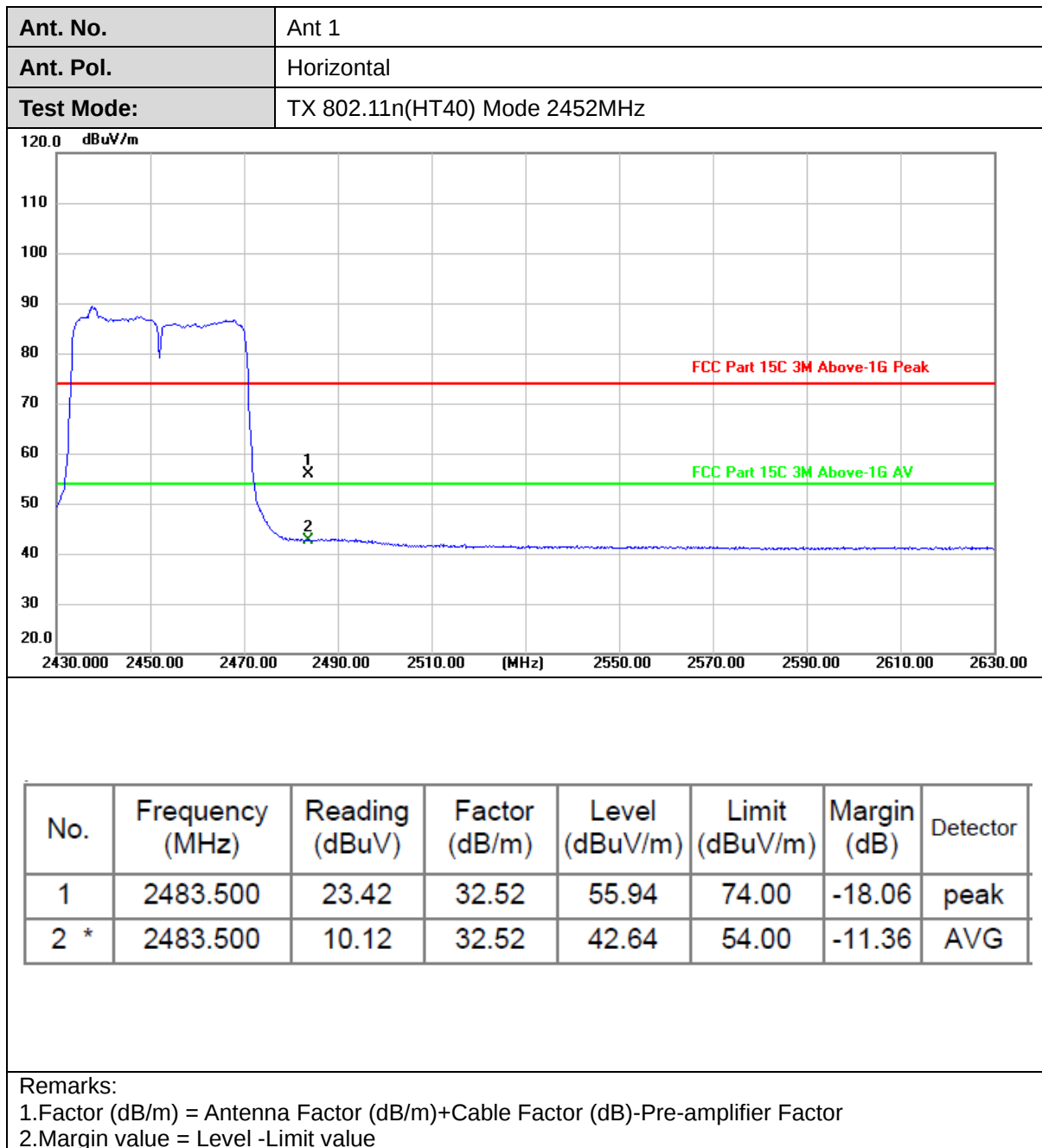


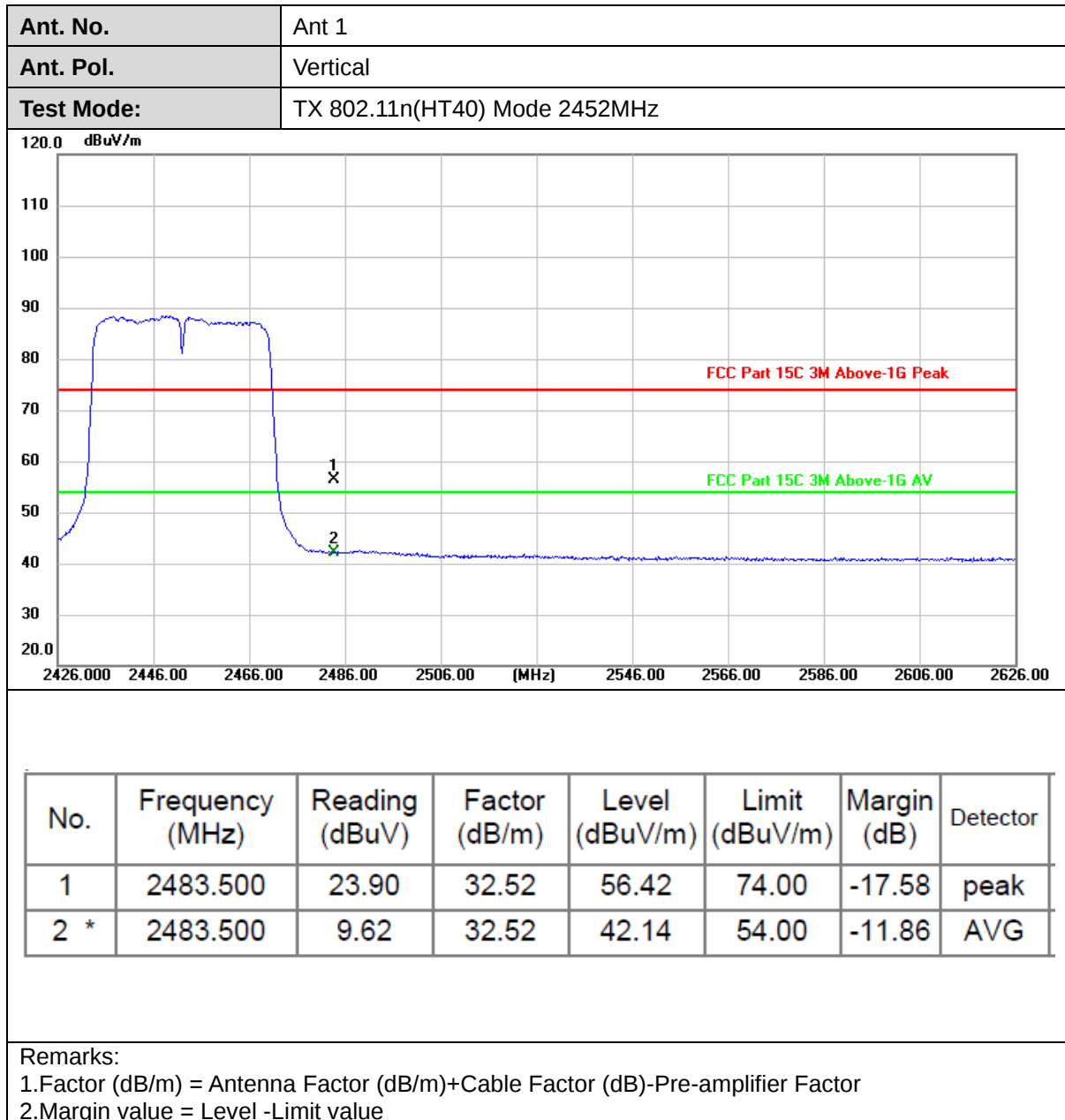














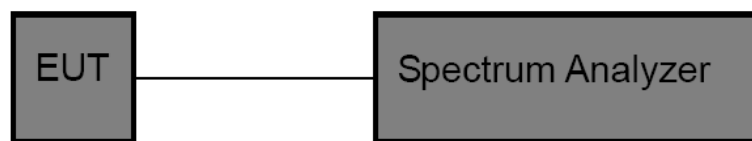
3.4. Band Edge and Spurious Emissions (Conducted)

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 10th harmonic.
Sweep = auto, Detector function = peak, Trace = max hold.
4. Measure and record the results in the test report.

Test Mode

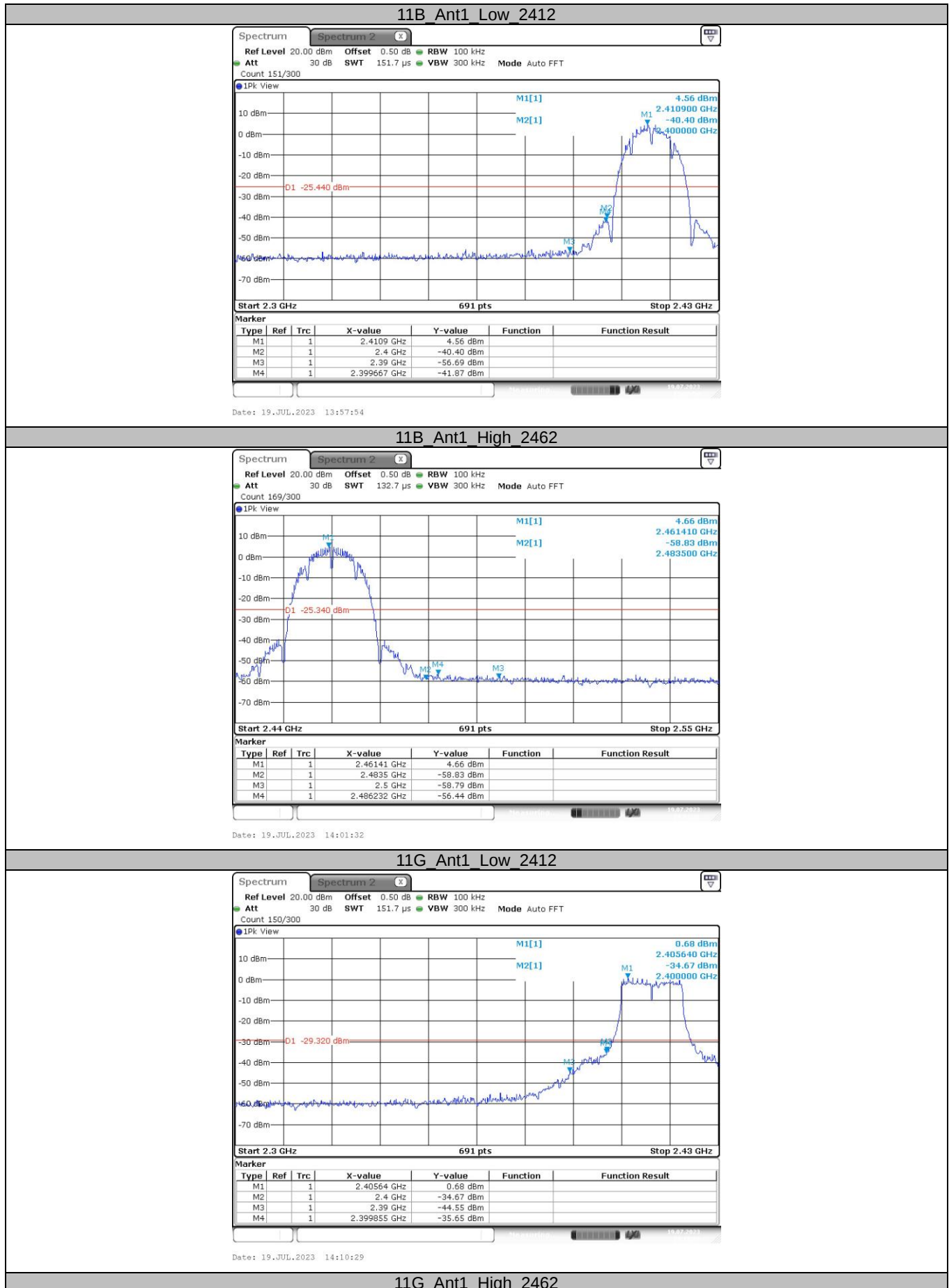
Please refer to the clause 2.4.

**Test Result****(1) Band Edge Conducted Test**

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	4.56	-41.87	≤ -25.44	PASS
		High	2462	4.66	-56.44	≤ -25.34	PASS
11G	Ant1	Low	2412	0.68	-35.65	≤ -29.32	PASS
		High	2462	-0.37	-47.01	≤ -30.37	PASS
11N20SISO	Ant1	Low	2412	1.23	-36.66	≤ -28.77	PASS
		High	2462	-1.15	-45.48	≤ -31.15	PASS
11N40SISO	Ant1	Low	2422	-2.63	-36.29	≤ -32.63	PASS
		High	2452	-1.37	-40.09	≤ -31.37	PASS



Test plot as follows:



CTC Laboratories, Inc.

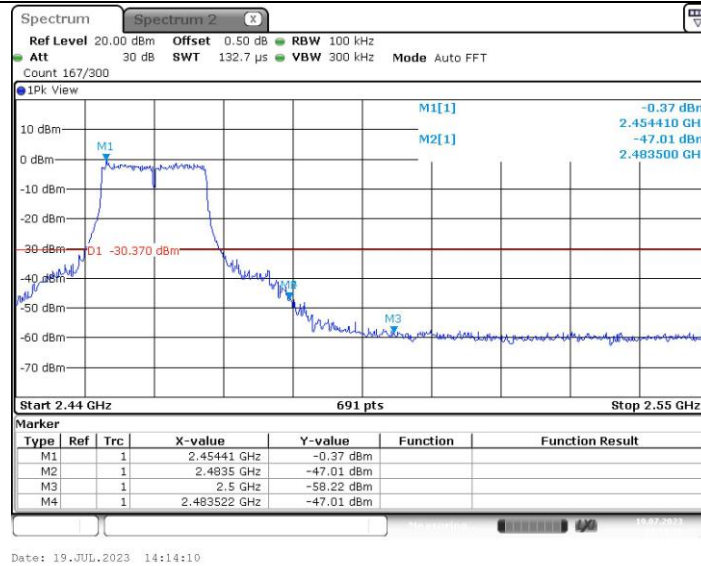
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

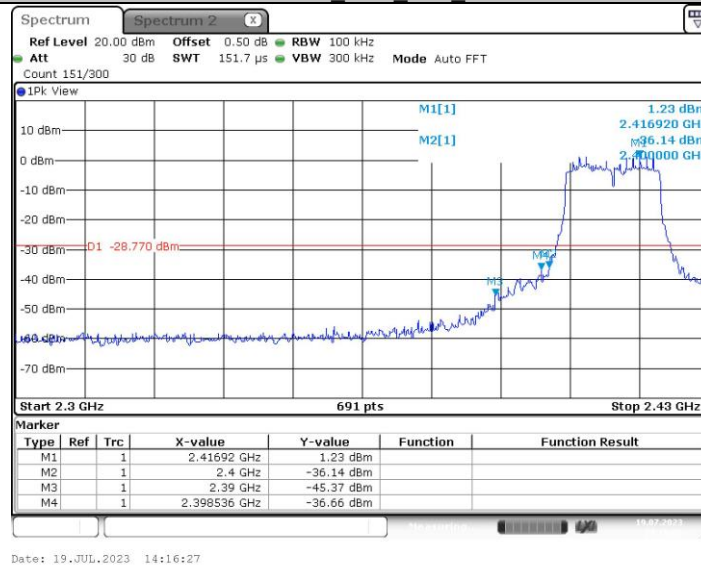
Fax: (86)755-27521011

Http://www.sz-ctc.org.cn

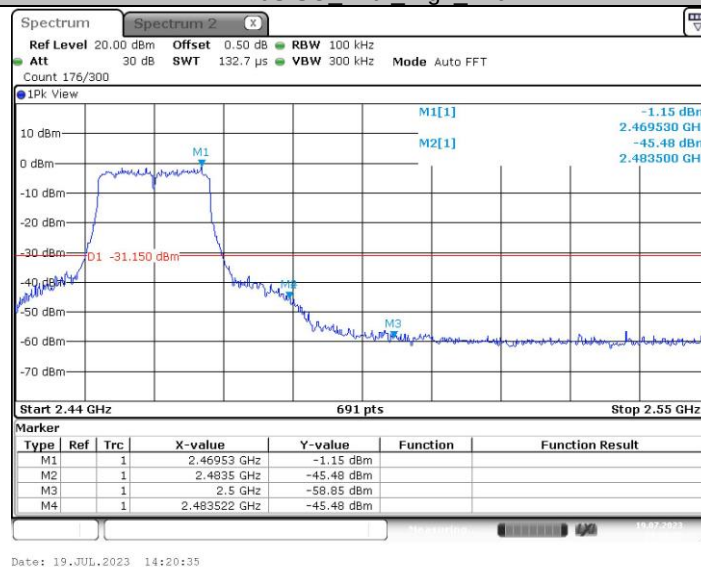
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : <http://yz.cnca.cn>



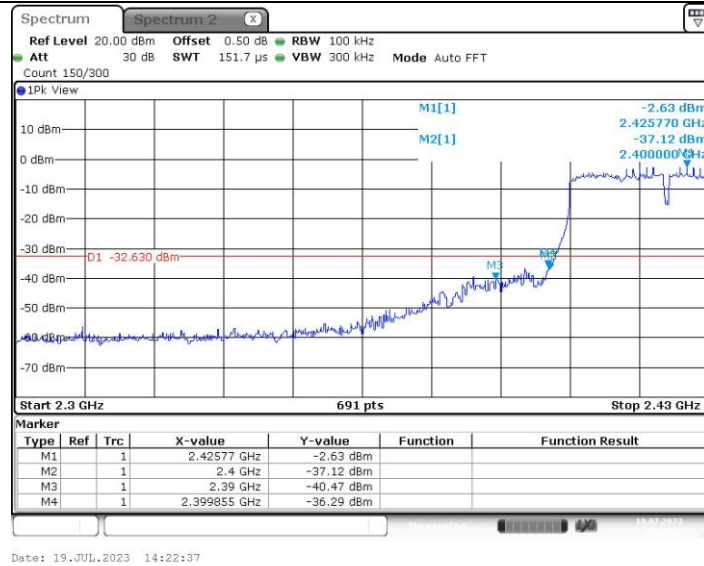
11N20SISO Ant1 Low 2412



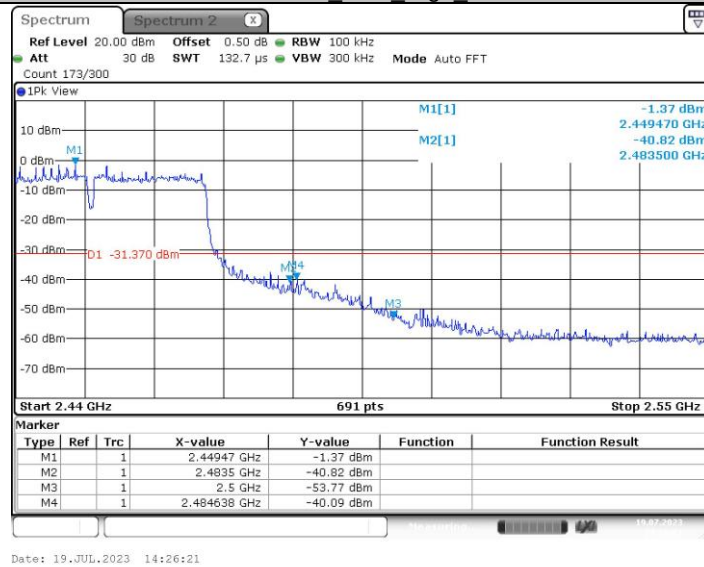
11N20SISO Ant1 High 2462



11N40SISO Ant1 Low 2422



11N40SISO_Ant1_High_2452



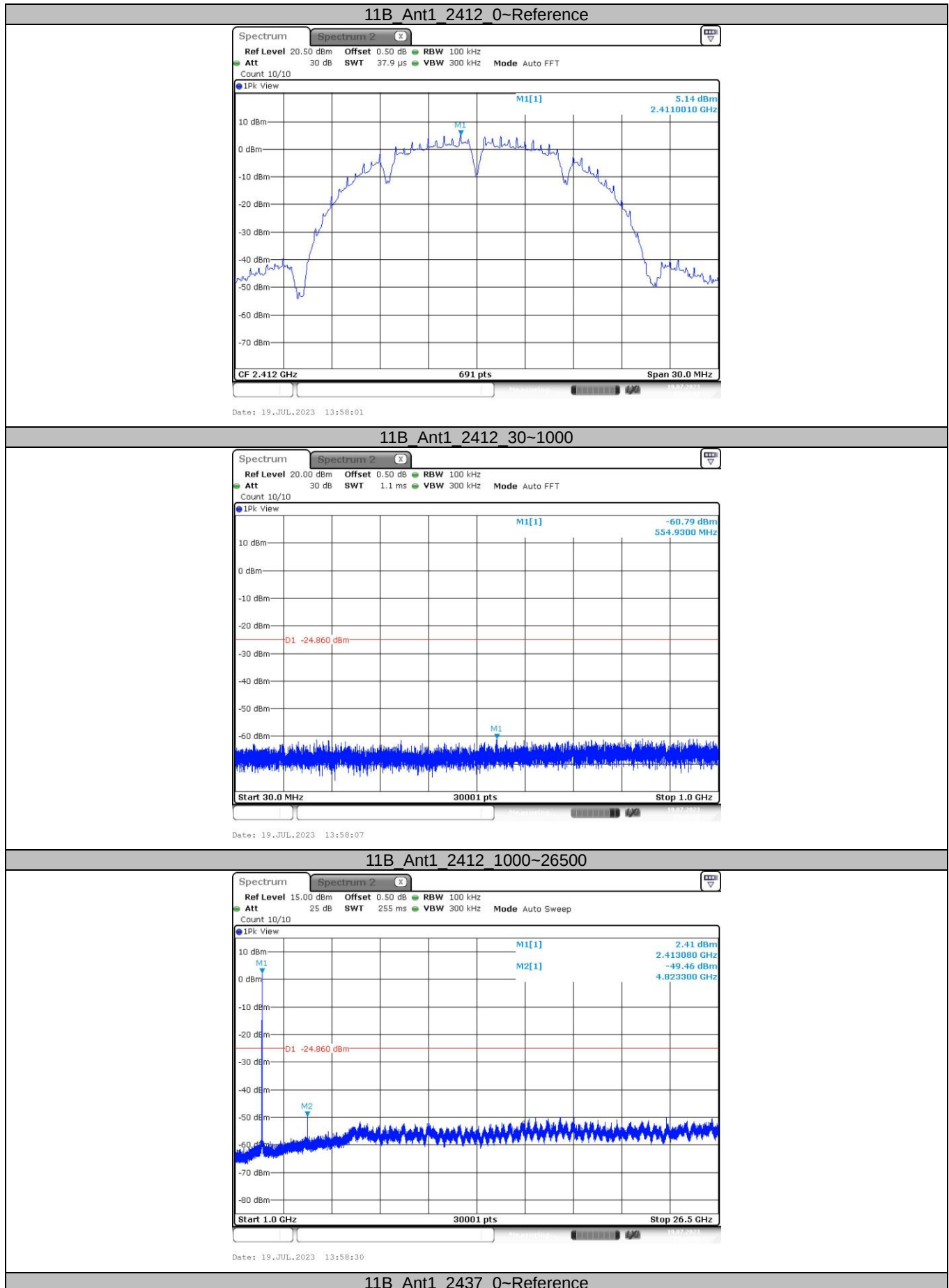


(2) Spurious Emissions Conducted Test

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.14	5.14	---	PASS
			30~1000	5.14	-60.79	≤-24.86	PASS
			1000~26500	5.14	-49.46	≤-24.86	PASS
		2437	Reference	4.71	4.71	---	PASS
			30~1000	4.71	-60.43	≤-25.29	PASS
			1000~26500	4.71	-49.43	≤-25.29	PASS
		2462	Reference	4.55	4.55	---	PASS
			30~1000	4.55	-60.09	≤-25.45	PASS
			1000~26500	4.55	-49.88	≤-25.45	PASS
11G	Ant1	2412	Reference	1.01	1.01	---	PASS
			30~1000	1.01	-59.63	≤-28.99	PASS
			1000~26500	1.01	-50.26	≤-28.99	PASS
		2437	Reference	1.88	1.88	---	PASS
			30~1000	1.88	-60.12	≤-28.12	PASS
			1000~26500	1.88	-49.8	≤-28.12	PASS
		2462	Reference	1.89	1.89	---	PASS
			30~1000	1.89	-60.2	≤-28.11	PASS
			1000~26500	1.89	-49.82	≤-28.11	PASS
11N20SISO	Ant1	2412	Reference	1.05	1.05	---	PASS
			30~1000	1.05	-59.29	≤-28.95	PASS
			1000~26500	1.05	-50.36	≤-28.95	PASS
		2437	Reference	1.87	1.87	---	PASS
			30~1000	1.87	-60.36	≤-28.13	PASS
			1000~26500	1.87	-50.05	≤-28.13	PASS
		2462	Reference	1.54	1.54	---	PASS
			30~1000	1.54	-60.13	≤-28.46	PASS
			1000~26500	1.54	-50.61	≤-28.46	PASS
11N40SISO	Ant1	2422	Reference	-1.28	-1.28	---	PASS
			30~1000	-1.28	-60.03	≤-31.28	PASS
			1000~26500	-1.28	-50.01	≤-31.28	PASS
		2437	Reference	-1.67	-1.67	---	PASS
			30~1000	-1.67	-60.41	≤-31.67	PASS
			1000~26500	-1.67	-50.5	≤-31.67	PASS
		2452	Reference	-1.53	-1.53	---	PASS
			30~1000	-1.53	-60.26	≤-31.53	PASS
			1000~26500	-1.53	-50.87	≤-31.53	PASS



Test plot as follows:



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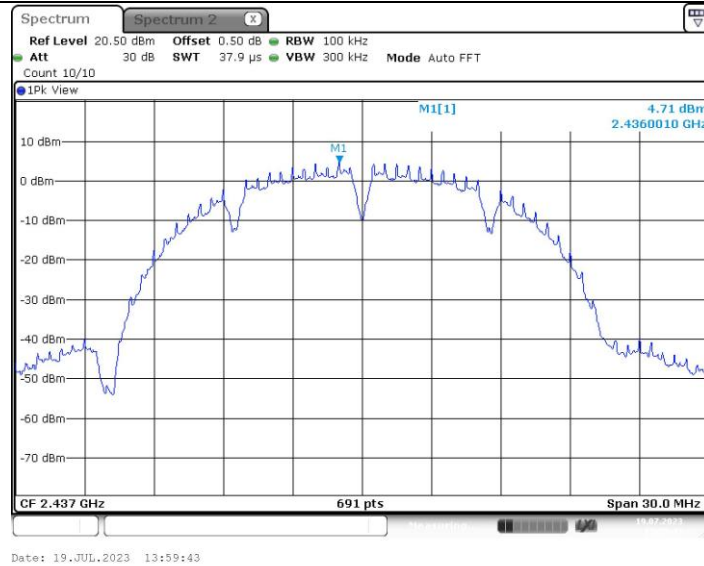
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

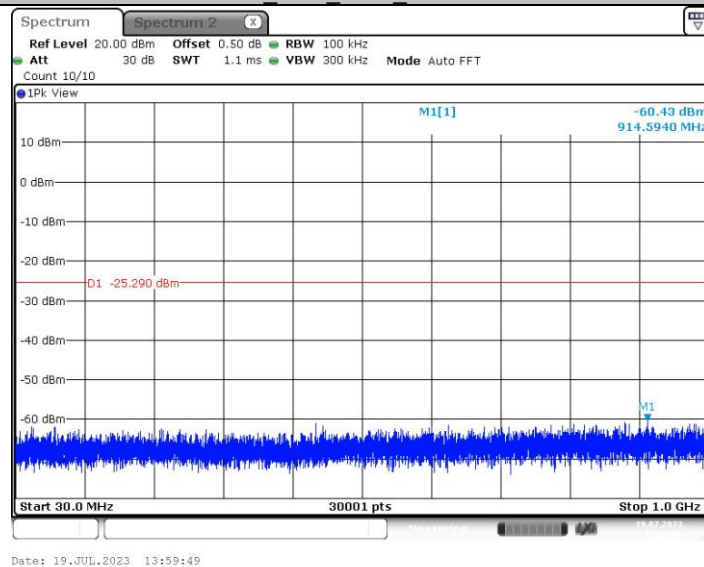
Fax: (86)755-27521011

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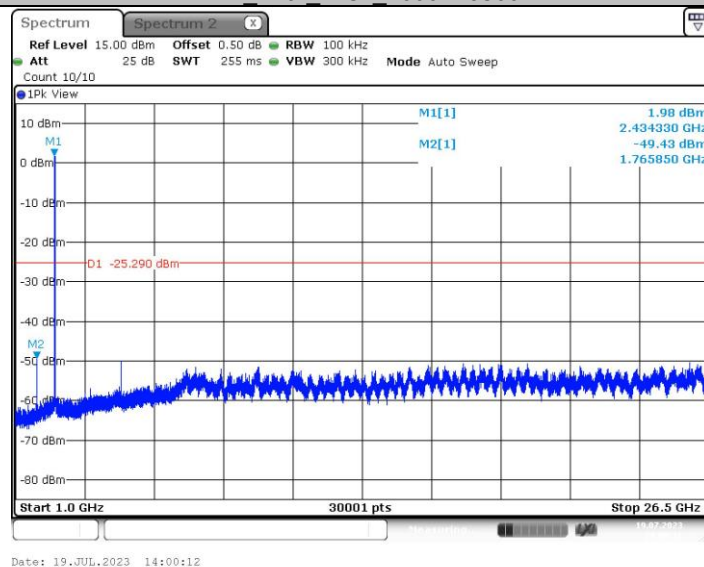
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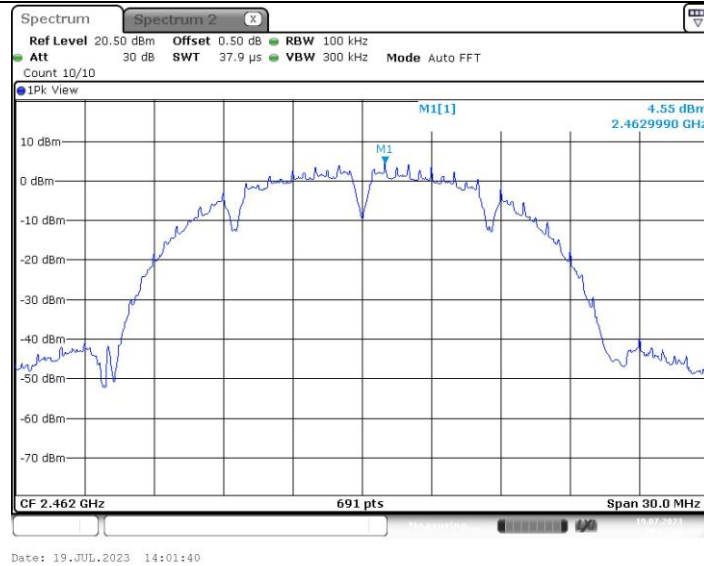
11B Ant1 2437_30~1000



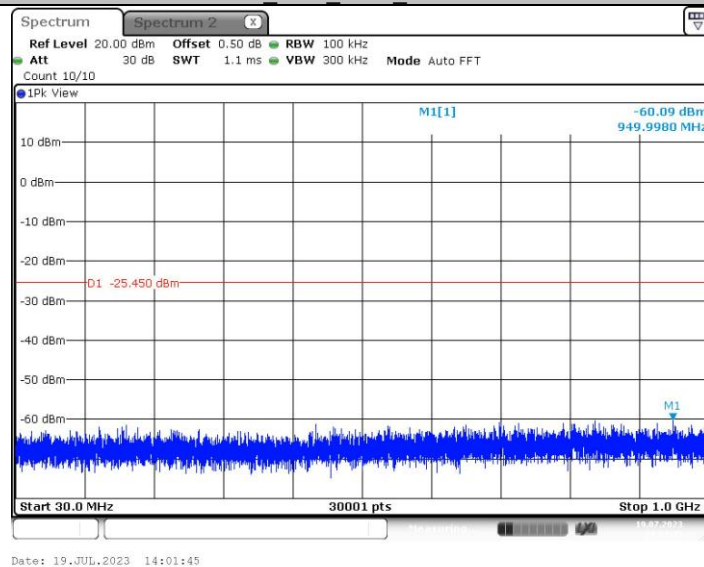
11B Ant1 2437_1000~26500



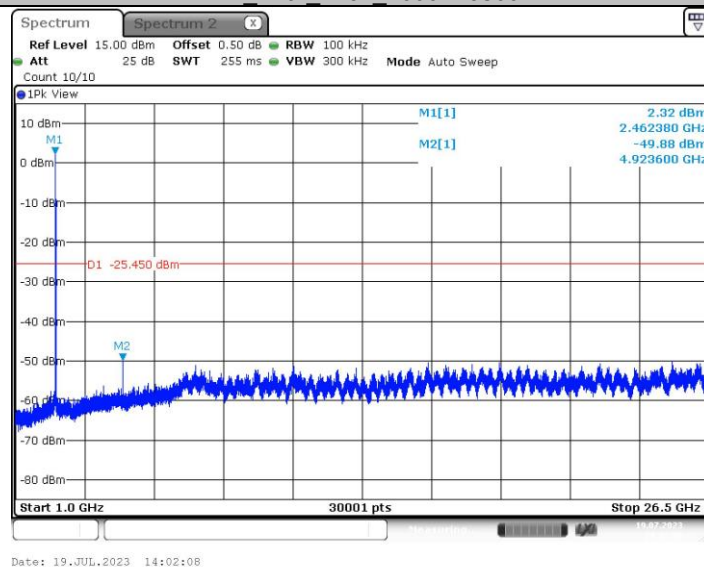
11B Ant1 2462_0~Reference



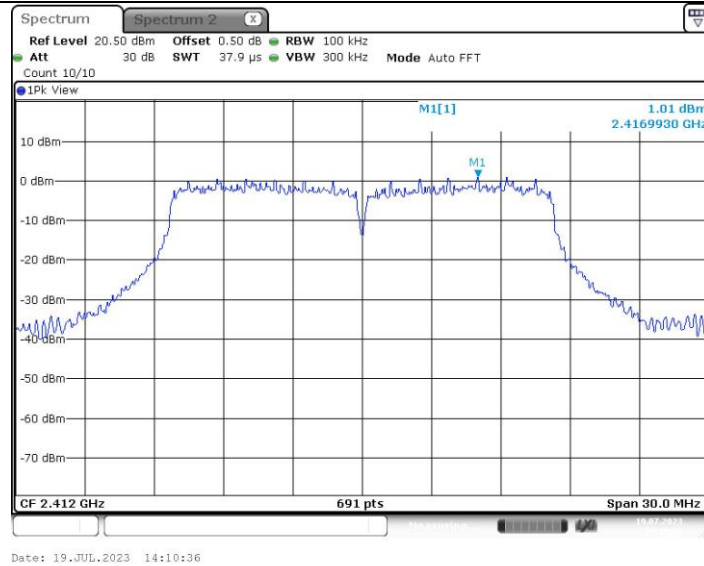
11B Ant1 2462 30~1000



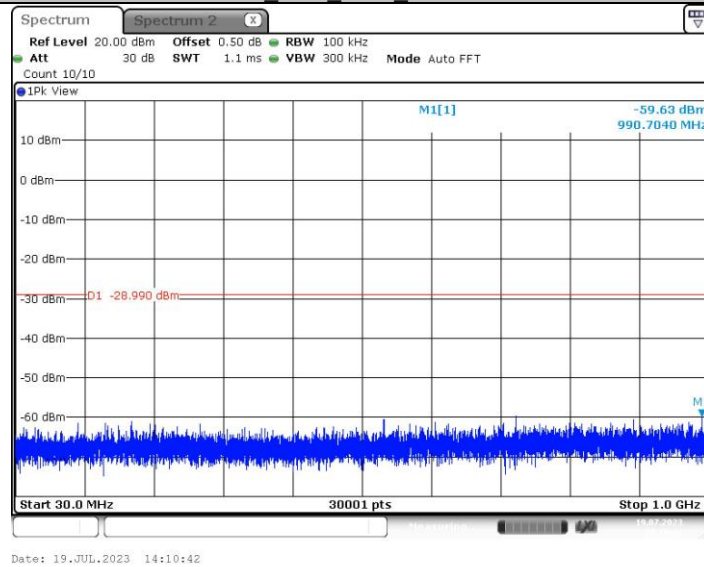
11B Ant1 2462 1000~26500



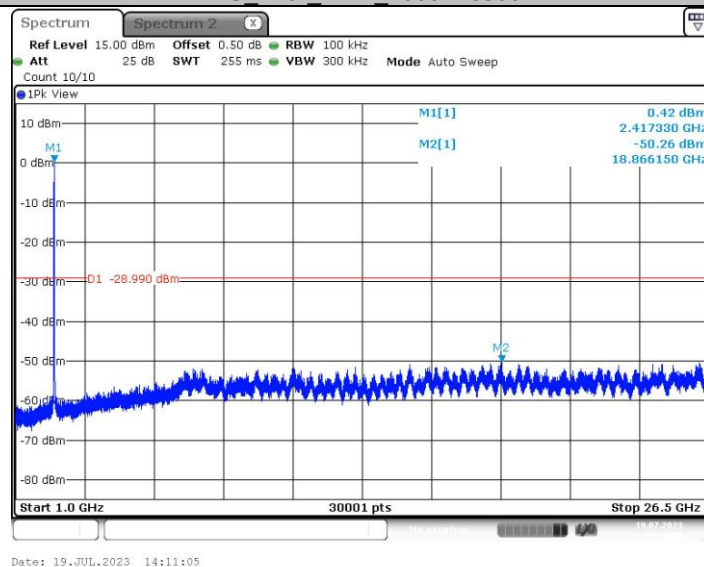
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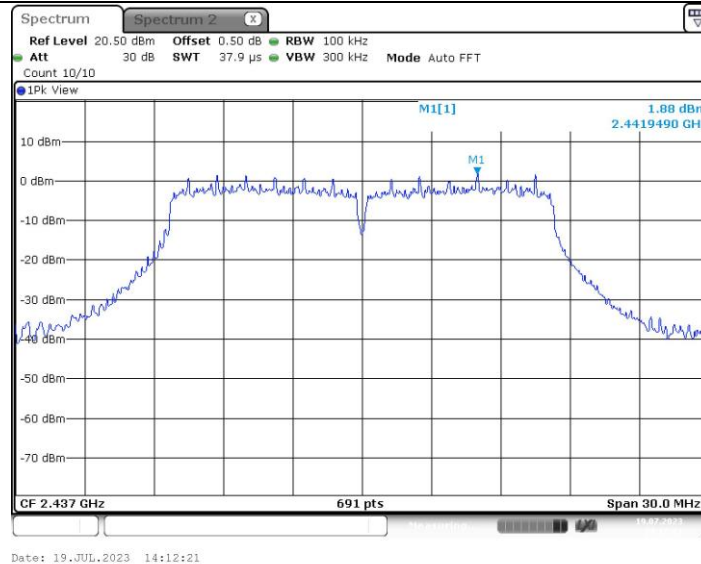
11G Ant1 2412 30~1000



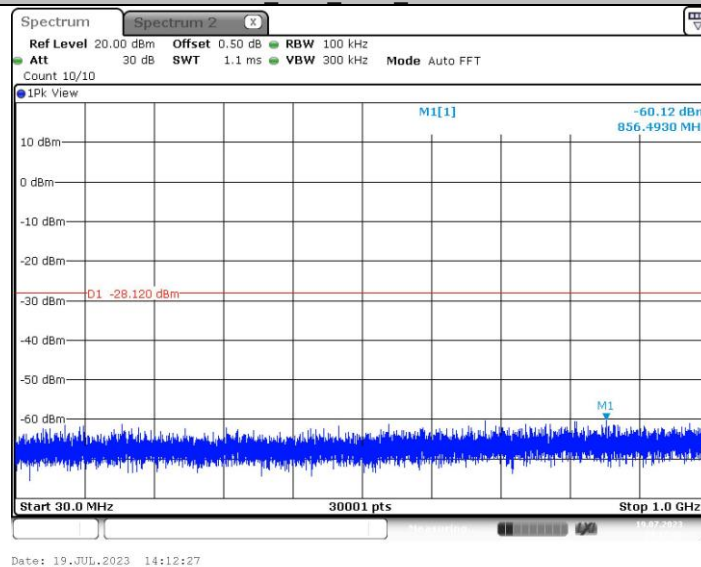
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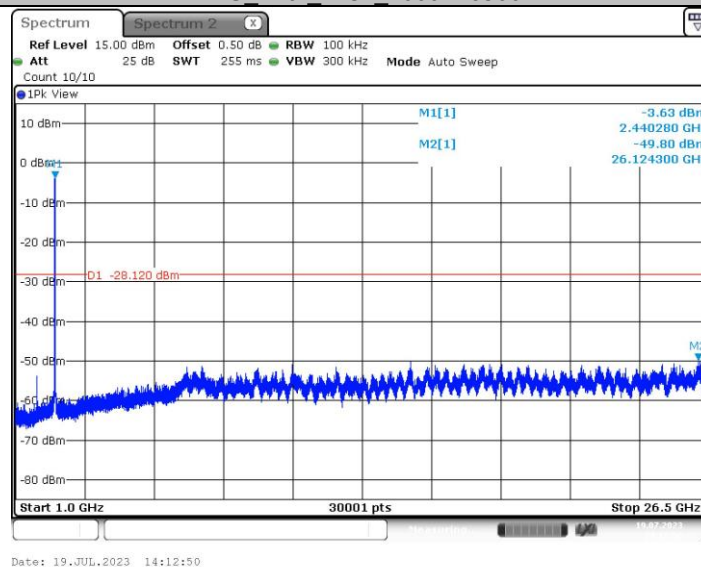
11G Ant1 2437 0~Reference



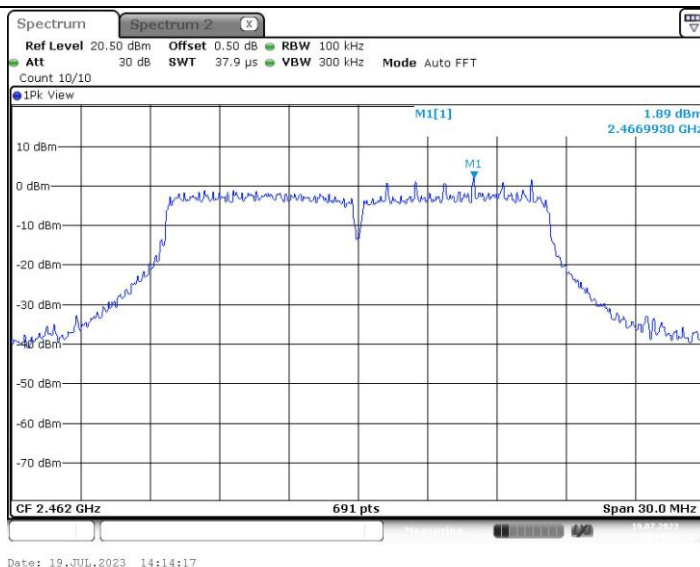
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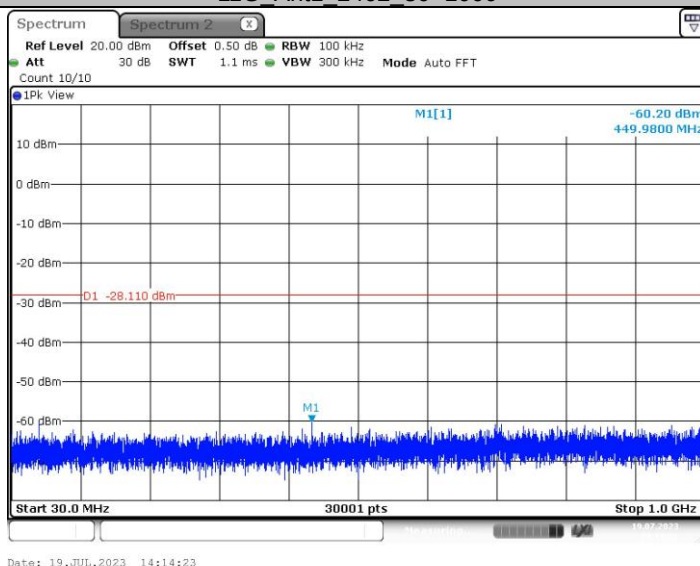
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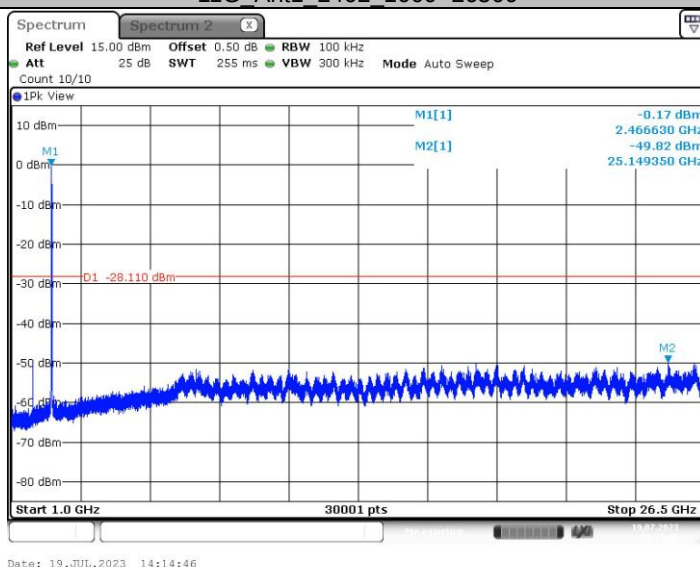
11G Ant1 2462 0-Reference



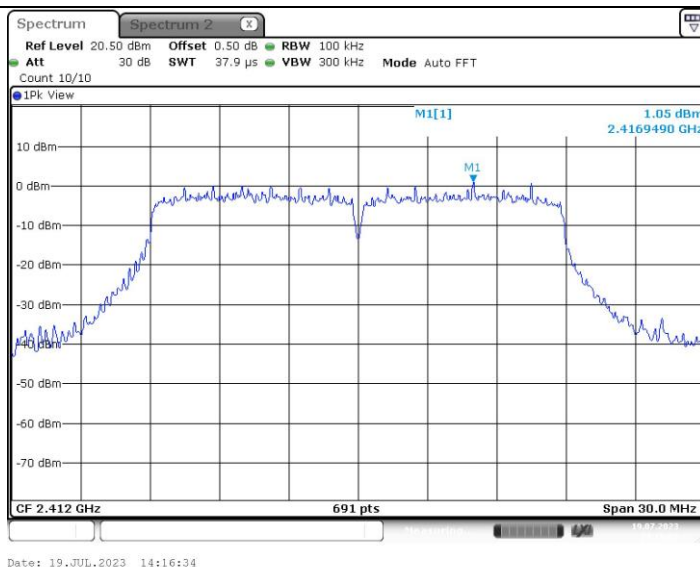
11G Ant1_2462_30~1000



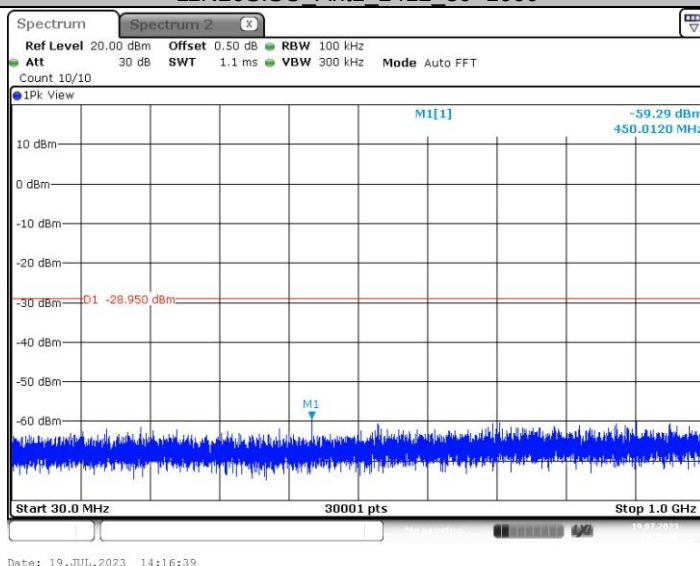
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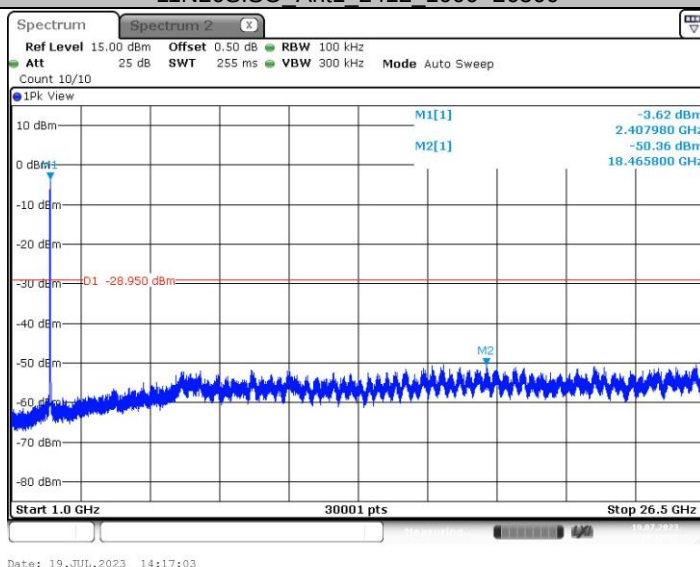
11N20SISO_Ant1_2412_0~Reference



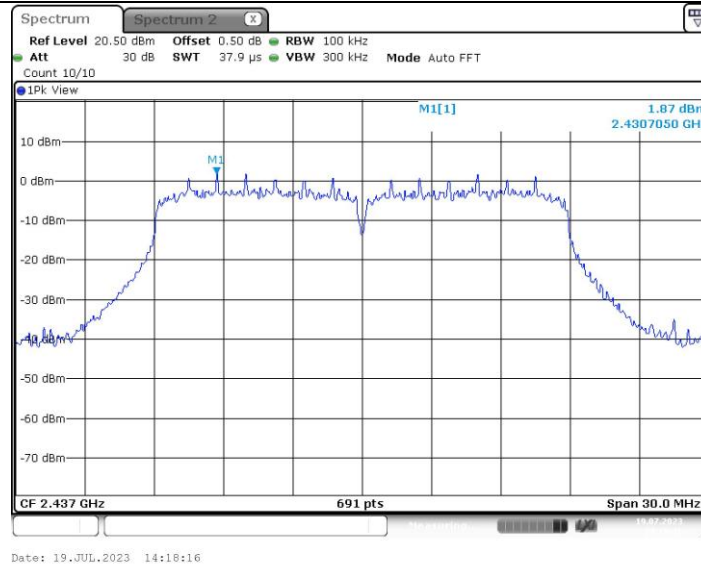
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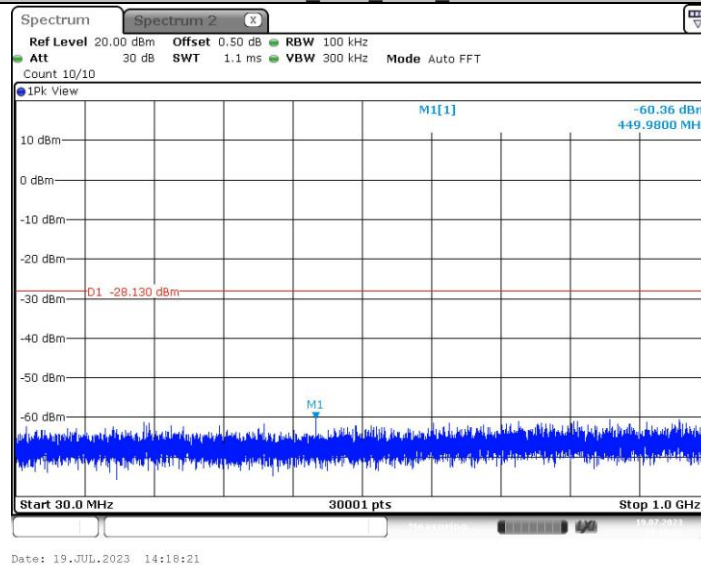
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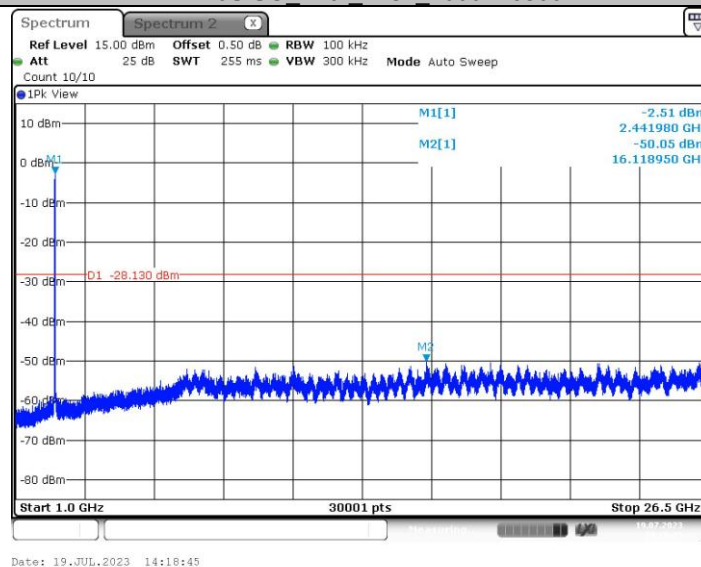
11N20SISO_Ant1_2437_0~Reference



11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500



11N20SISO_Ant1_2462_0~Reference

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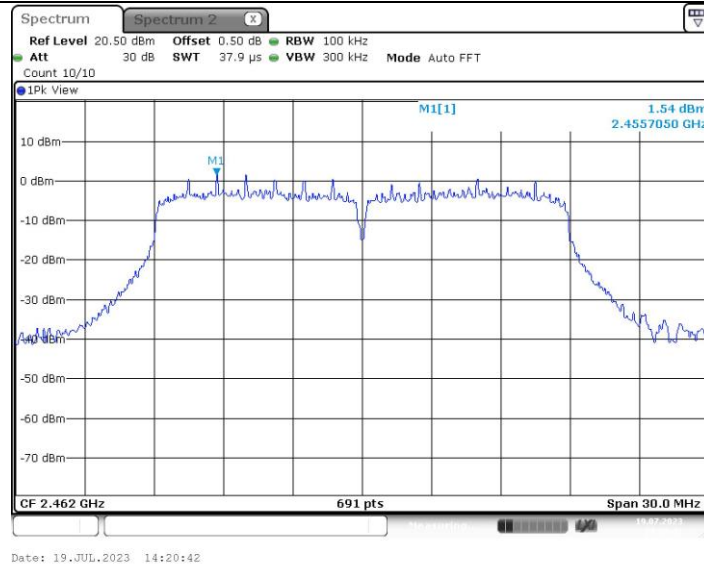
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

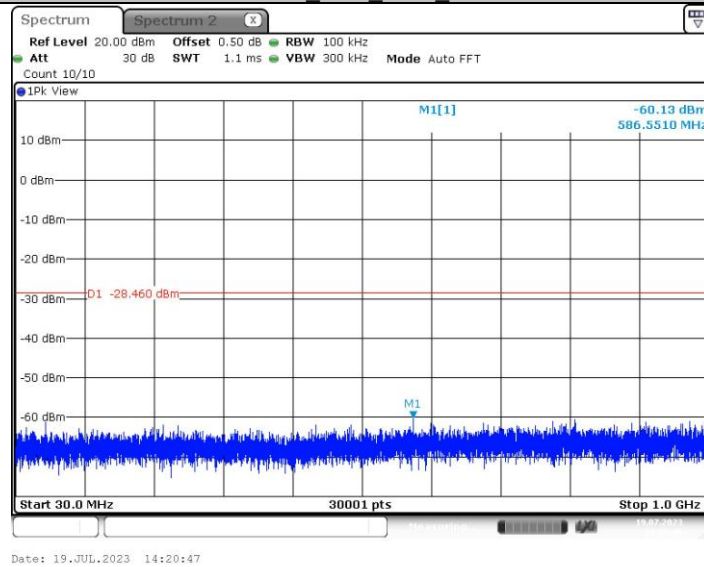
Fax: (86)755-27521011

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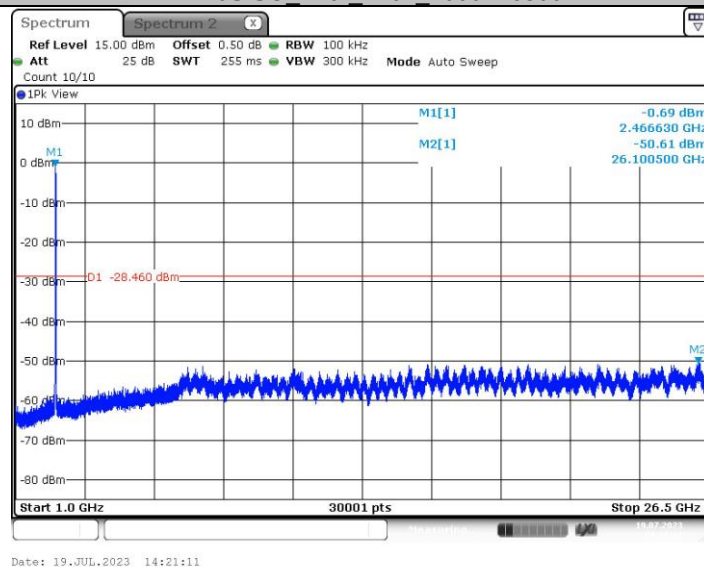
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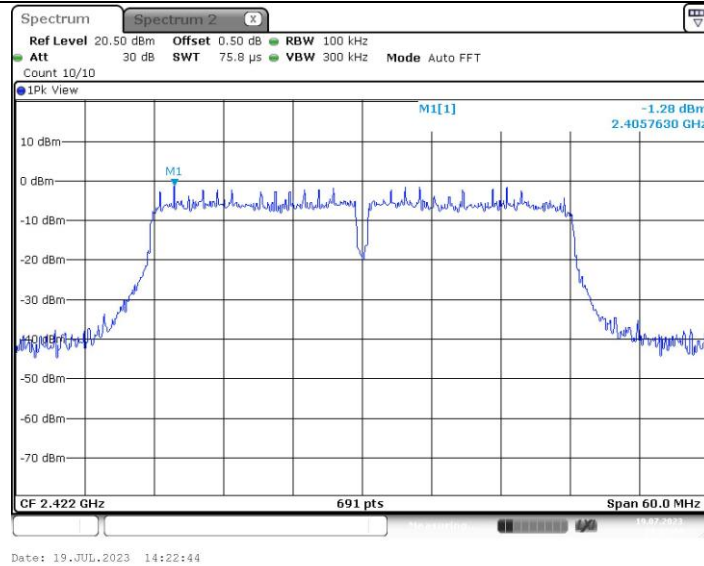
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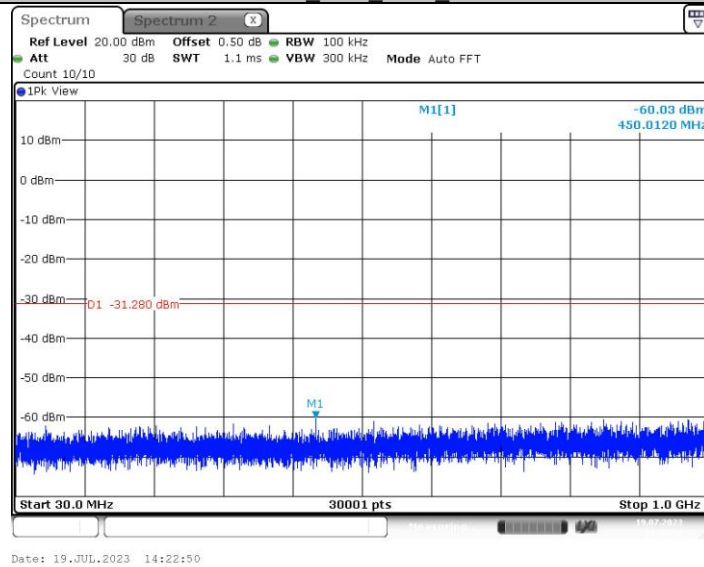
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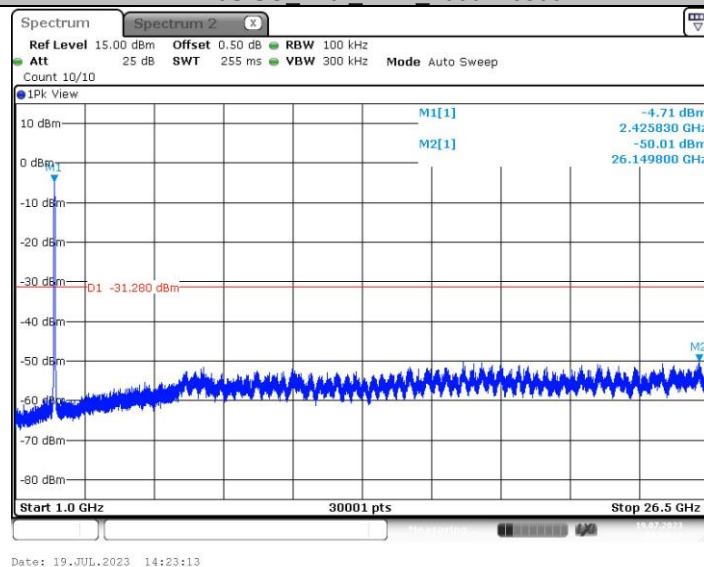
11N40SISO Ant1 2422 0~Reference



11N40SISO_Ant1_2422_30-1000



11N40SISO_Ant1_2422_1000-26500



11N40SISO_Ant1_2437_0-Reference

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