CTC Laboratories, Inc.

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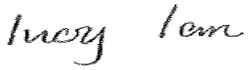
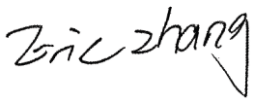
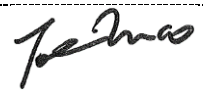
TEST REPORT

Report No. ·····:	**CTC20221783E03**
FCC ID·····:	**WNA-HP46E-R**
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·····:	**4K UHD Streaming TV Box**
Trade Mark·····:	STRONG, SKYWORTH, MECOOL, THOMSON
Model/Type reference·····:	Leap-S3
Listed Model(s) ·····:	LEAP-S3, HP46E, HP4618, KM7 PLUS, THA 200, THA200
Standard·····:	**FCC CFR Title 47 Part 15 Subpart C Section 15.247**
Date of receipt of test sample…:	Oct. 11, 2022
Date of testing……...:	Oct. 11, 2022 ~ Oct. 28, 2022
Date of issue……....:	Nov. 30, 2022
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……:	1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, 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 of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	Nov. 30, 2022	Original

1.3. Test Description

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

Note: The measurement uncertainty is not included in the test result.

1.4. Test Facility

CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, 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 th e 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 Indus try 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 (F CC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour 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
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.20 dB	(1)
Radiated Emissions 30~1000MHz	4.70 dB	(1)
Radiated Emissions 1~18GHz	5.00 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

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

Temperature:	25°C
Relative Humidity:	40%
Air Pressure:	101kPa

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, Shiyan Street, Baoan District, Shenzhen city, China

2.2. General Description of EUT

Product Name:	4K UHD Streaming TV Box
Trade Mark:	STRONG, SKYWORTH, MECOOL, THOMSON
Model/Type reference:	Leap-S3
Listed Model(s):	LEAP-S3, HP46E, HP4618, KM7 PLUS, THA 200, THA200
Model Difference:	All these models are identical in the same PCB, layout and electrical circuit, Different is trade mark and model number.
Power supply:	DC12V 1A from AC/DC Adapter
Adapter model 1:	RJ-SKY120100U60S[Note1] Input: 100-240V~ 50/60Hz 0.5A Output: 12Vdc/1A
Adapter model 2:	YS-SKY120100U00P[Note2] Input: 100-240V~ 50/60Hz 05A Output: 12Vdc/1A
Hardware version:	54024
Software version:	P2.0.3_20220929
WIFI 802.11b/ g/ n(HT20)/n(HT40)	
Modulation:	DSSS for 802.11b OFDM for 802.11g/802.11n(HT20)/802.11n(HT40)
Operation frequency:	2412MHz~2462MHz for 802.11b/802.11g/802.11n(HT20) 2422MHz~2452MHz for 802.11n(HT40)
Channel number:	11 for 802.11b/802.11g/802.11n(HT20) 7 for 802.11n(HT40)
Channel separation:	5MHz
Antenna 1 and 2 type:	PCBA Antenna
Antenna 1 & 2 gain:	1dBi

Note:
1. RJ-SKY120100AXXS,(A = E or B , stands for different plug, E means for Europe plug, B means for UK plug, M or U means for US plug.XX = 00-99. stands for customer code)
2. YS-SKY120100N0XP (N = E, B ,1character indicate difference plug type: E denote EU plug, B denote UK plug,X = 0-9, 1 digit, only for marketing purpose, no impact on safety)

2.3. Operation state

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

Operation Frequency List:

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

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

Data Rated

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

Mode	Data rate (worst mode)
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)	HT-MCS0
802.11n(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 (duty cycle>98%). EUT support for SISO and MIMO Transmission,802.11b/g only supports SISO Mode, SISO mode sets the same power level as MIMO mode, so MIMO mode is the worst case. Recorded in the report.

2.4. Accessory Equipment information

Equipment Information			
Name	Model	S/N	Manufacturer
Notebook	ThinkBook 14G3 ACL	MP246QDR	Lenovo
Displayer	EW3270-T	EW3270U	BenQ
Cable Information			
Name	Shielded Type	Ferrite Core	Length
LAN Cable	Without	Without	1.5M
HDMI Cable	Without	Without	1.5M
Test Software Information			
Name	Versions	/	/
WLAN TEST	/	/	/

2.5. Measurement Instruments List

Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Keysight	N9020A	MY46471737	Dec.23, 2022
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 15, 2023
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec.23, 2022
4	Signal Generator	Agilent	E8257D	MY46521908	Dec.23, 2022
5	Power Sensor	Agilent	U2021XA	MY5365004	Mar. 15, 2023
6	Power Sensor	Agilent	U2021XA	MY5365006	Mar. 15, 2023
7	Simultaneous Sampling DAQ	Agilent	U2531A	TW54493510	Mar. 15, 2023
8	Climate Chamber	TABAI	PR-4G	A8708055	Dec.23, 2022
9	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec.23, 2022
10	Climate Chamber	ESPEC	MT3065	/	Dec.23, 2022
11	300328 v2.2.2 test system	TONSCEND	v2.6	/	/

Radiated emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-759	Mar. 30, 2023
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 23, 2022
4	Broadband Premplifier	SCHWARZBECK	BBV9743B	259	Dec. 23, 2022
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 23, 2022
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. 23, 2022
2	LISN	R&S	ENV216	101113	Dec. 23, 2022
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 23, 2022
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 23, 2022
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 23, 2022

Note:1. The Cal. Interval was one year.
2. The cable loss has calculated in test result which connection between each test instruments.

3. TEST ITEM AND RESULTS

3.1. Conducted Emission

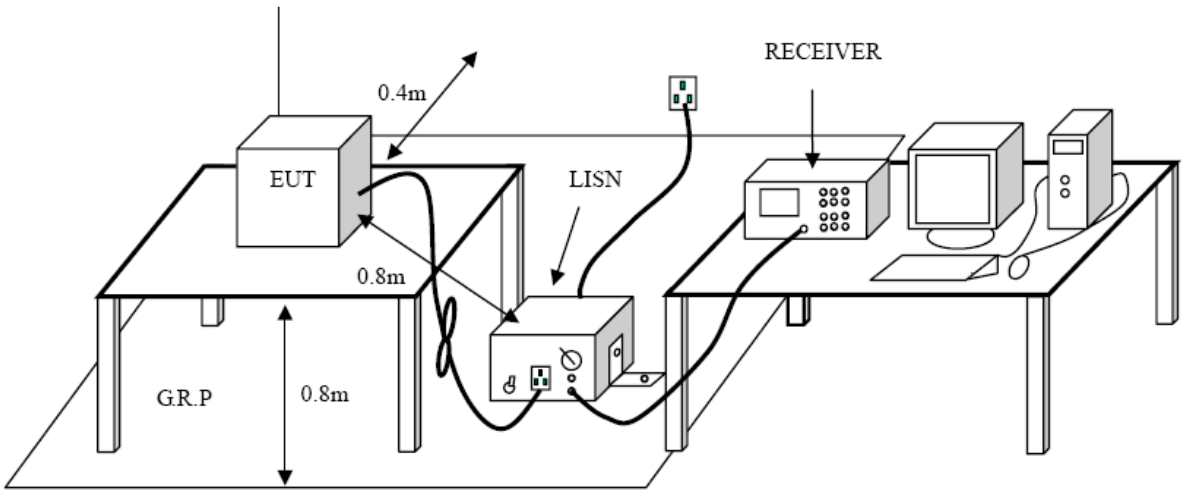
Limit

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

Frequency range (MHz)	Limit (dBuV)	
	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

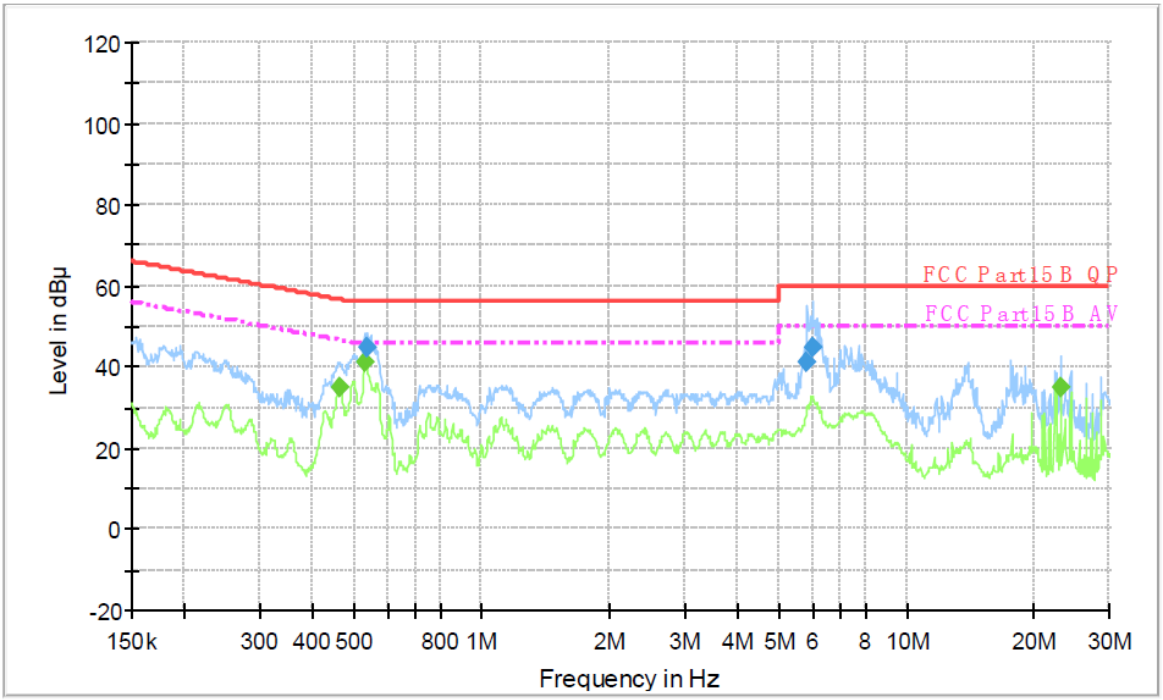
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. 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)
4. 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.
5. 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.
6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
7. During the above scans, the emissions were maximized by cable manipulation.

Test Mode:

Please refer to the clause 2.3.

Test Results

Test Voltage:	AC 120V/60 Hz
Terminal:	Line



Final Measurement Detector 1

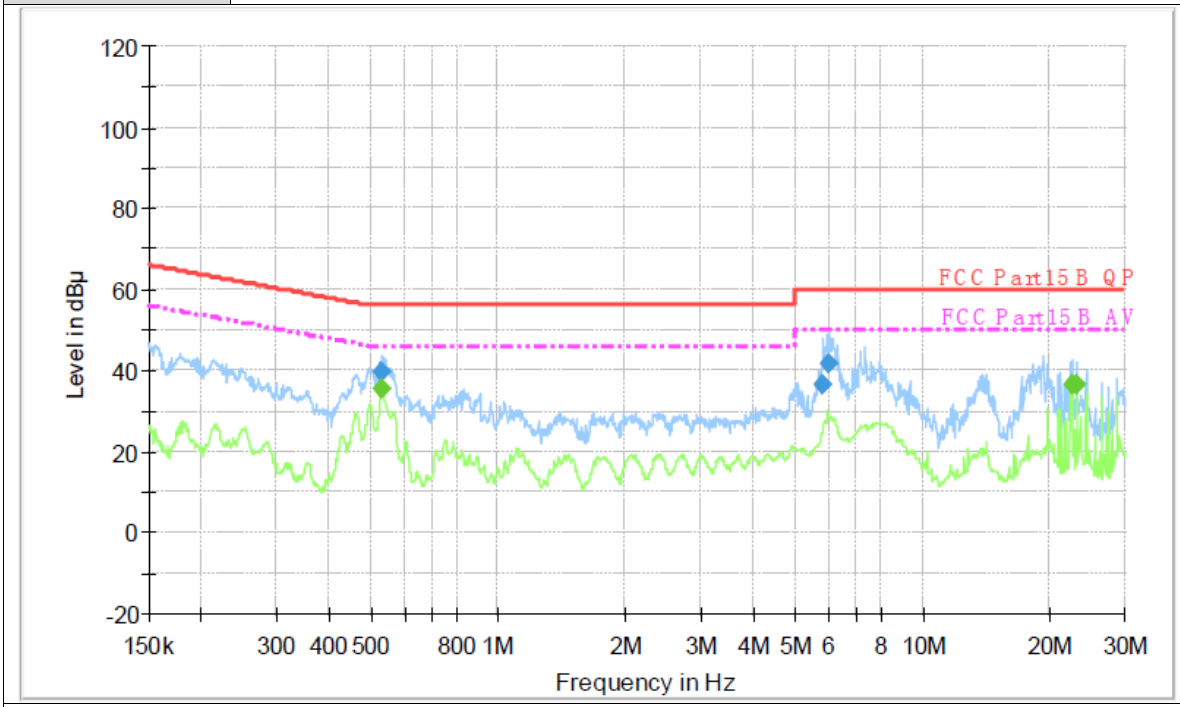
Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.538120	44.7	1000.00	9.000	On	L1	9.7	11.3	56.0	
5.833190	41.1	1000.00	9.000	On	L1	9.7	18.9	60.0	
6.022490	44.9	1000.00	9.000	On	L1	9.7	15.1	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.462380	34.8	1000.00	9.000	On	L1	9.7	11.8	46.6	
0.533840	41.3	1000.00	9.000	On	L1	9.7	4.7	46.0	
23.122620	34.7	1000.00	9.000	On	L1	10.1	15.3	50.0	

Emission Level= Read Level+ Correct Factor

Test Voltage:	AC 120V/60 Hz
Terminal:	Neutral



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.531710	39.4	1000.00	9.000	On	N	10.0	16.6	56.0	
5.809950	36.5	1000.00	9.000	On	N	10.0	23.5	60.0	
6.022490	41.7	1000.00	9.000	On	N	10.0	18.3	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
0.533840	35.3	1000.00	9.000	On	N	10.0	10.7	46.0	
22.575370	36.6	1000.00	9.000	On	N	10.0	13.4	50.0	
23.122620	36.3	1000.00	9.000	On	N	10.0	13.7	50.0	

Emission Level= Read Level+ Correct Factor

3.2. Radiated Emission

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.209:

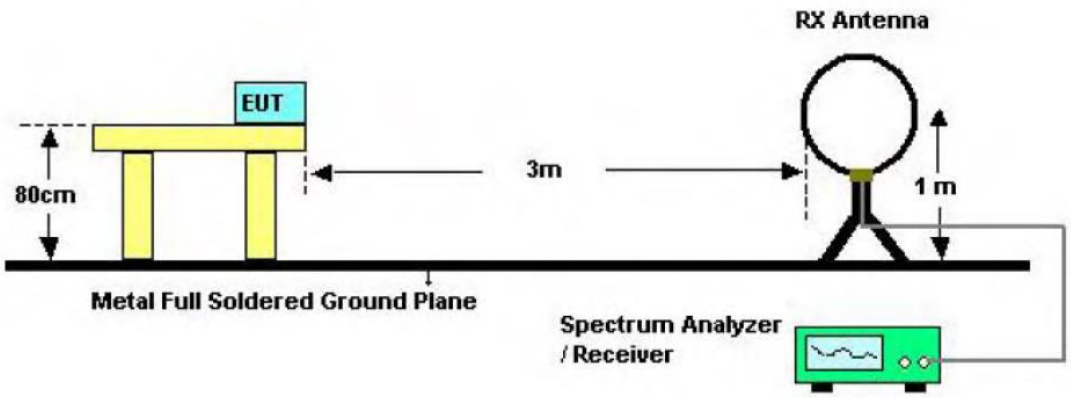
Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
Above 1 GHz	54.00	Average
	74.00	Peak

Note:

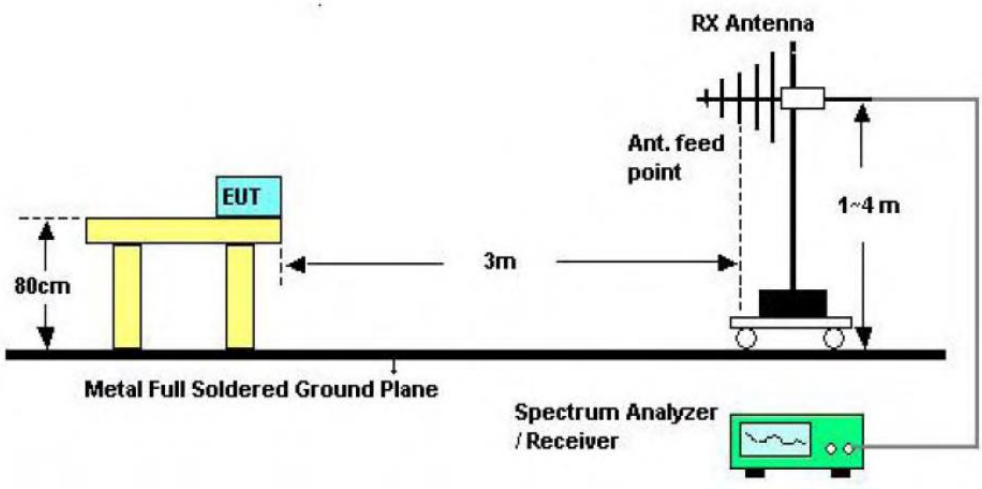
(1) The tighter limit applies at the band edges.

(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

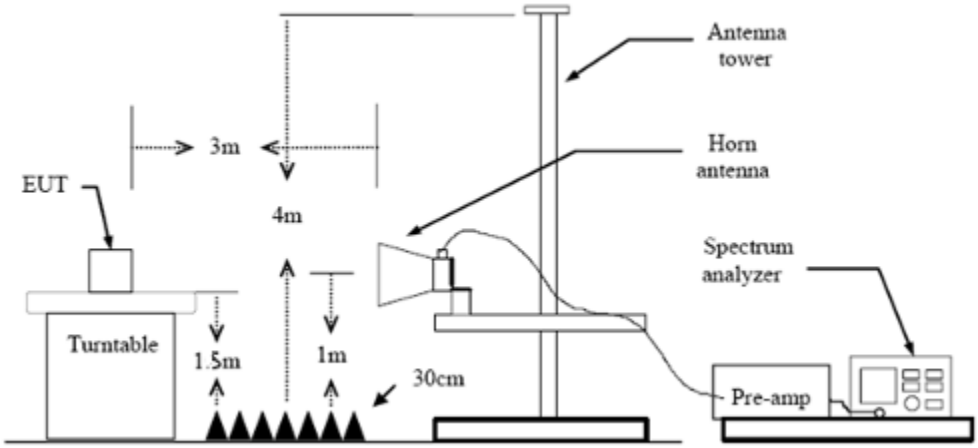
Test Configuration



Below 30MHz Test Setup



Below1000MHz 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=3MHz RMS detector for Average value.

Test Mode

Please refer to the clause 2.3.

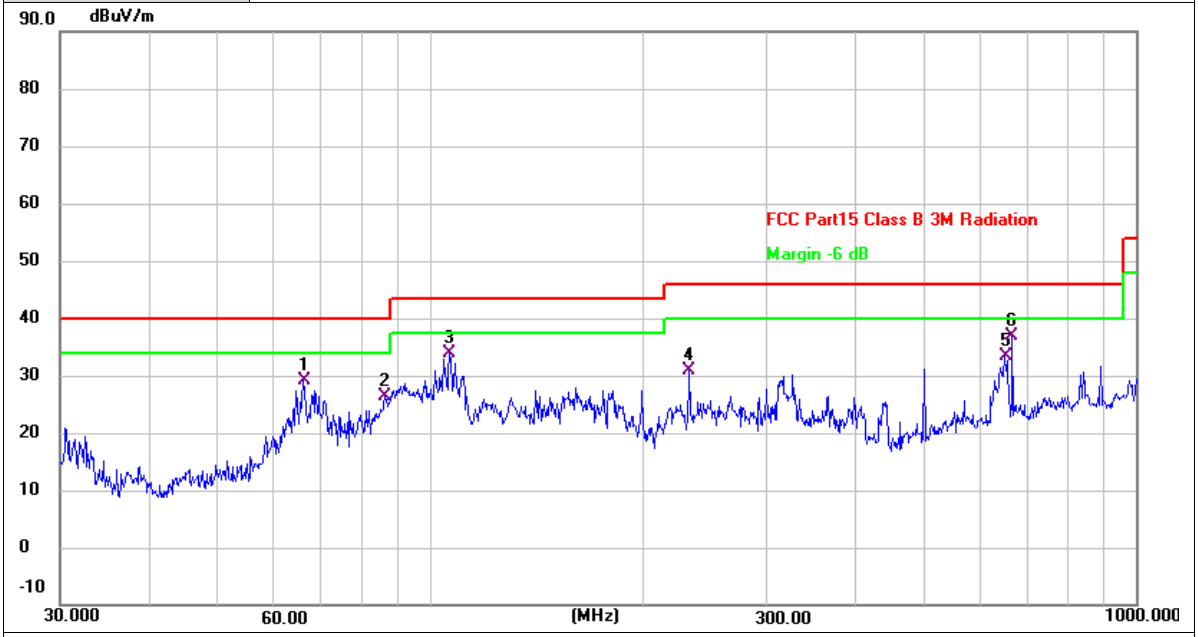
Test Result

9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: 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

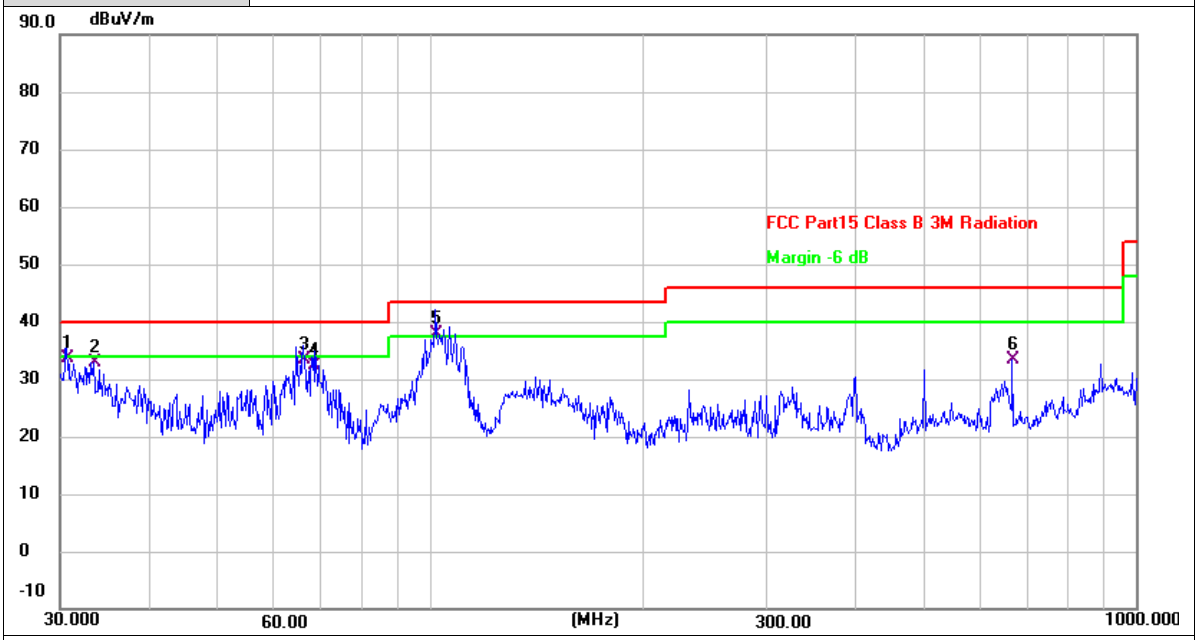
Ant. Pol.	Horizontal
Test Mode:	802.11b Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	66.2661	48.79	-19.78	29.01	40.00	-10.99	QP
2	86.5027	48.19	-21.85	26.34	40.00	-13.66	QP
3	106.7587	54.24	-20.41	33.83	43.50	-9.67	QP
4	233.3486	50.07	-19.21	30.86	46.00	-15.14	QP
5	651.9417	43.05	-9.79	33.26	46.00	-12.74	QP
6 *	668.1422	46.48	-9.51	36.97	46.00	-9.03	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:	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	30.6379	51.78	-18.22	33.56	40.00	-6.44	QP
2	33.4449	51.01	-18.11	32.90	40.00	-7.10	QP
3	66.2662	53.24	-19.78	33.46	40.00	-6.54	QP
4	68.8721	52.77	-20.27	32.50	40.00	-7.50	QP
5 *	102.0014	58.47	-20.63	37.84	43.50	-5.66	QP
6	668.1423	43.00	-9.51	33.49	46.00	-12.51	QP

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

Adobe 1GHz

Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.994	43.45	2.20	45.65	74.00	-28.35	peak
2 *	4824.026	35.17	2.20	37.37	54.00	-16.63	AVG

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

Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.984	43.52	2.20	45.72	74.00	-28.28	peak
2 *	4824.076	36.00	2.20	38.20	54.00	-15.80	AVG

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

Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4874.025	35.69	2.30	37.99	54.00	-16.01	AVG
2	4874.066	43.83	2.30	46.13	74.00	-27.87	peak

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

Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.991	36.18	2.30	38.48	54.00	-15.52	AVG
2	4874.079	43.27	2.30	45.57	74.00	-28.43	peak

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

Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4924.001	35.44	2.41	37.85	54.00	-16.15	AVG
2	4924.151	44.53	2.41	46.94	74.00	-27.06	peak

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

Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4924.095	41.99	2.41	44.40	74.00	-29.60	peak
2 *	4924.109	32.94	2.41	35.35	54.00	-18.65	AVG

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

Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	TX G Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.681	41.67	2.20	43.87	74.00	-30.13	peak
2 *	4823.811	26.99	2.20	29.19	54.00	-24.81	AVG

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

Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	TX G Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.572	40.56	2.20	42.76	74.00	-31.24	peak
2 *	4823.716	26.94	2.20	29.14	54.00	-24.86	AVG

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

Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	TX G Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.601	27.18	2.30	29.48	54.00	-24.52	AVG
2	4873.682	41.56	2.30	43.86	74.00	-30.14	peak

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

Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	TX G Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4873.815	40.02	2.30	42.32	74.00	-31.68	peak
2 *	4874.332	25.76	2.30	28.06	54.00	-25.94	AVG

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

Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	TX G Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4923.714	41.44	2.41	43.85	74.00	-30.15	peak
2 *	4923.944	26.29	2.41	28.70	54.00	-25.30	AVG

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

Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	TX G Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4923.644	39.86	2.41	42.27	74.00	-31.73	peak
2 *	4924.013	24.59	2.41	27.00	54.00	-27.00	AVG

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

Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4824.500	43.50	2.20	45.70	74.00	-28.30	peak
2 *	4824.767	32.33	2.20	34.53	54.00	-19.47	AVG

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

Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4823.995	34.16	2.20	36.36	54.00	-17.64	AVG
2	4824.323	43.73	2.20	45.93	74.00	-28.07	peak

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

Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4874.067	42.45	2.30	44.75	74.00	-29.25	peak
2 *	4874.417	33.85	2.30	36.15	54.00	-17.85	AVG

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

Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4874.064	33.85	2.30	36.15	54.00	-17.85	AVG
2	4874.149	42.92	2.30	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.	ANT2
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4924.383	35.38	2.41	37.79	54.00	-16.21	AVG
2	4924.633	44.39	2.41	46.80	74.00	-27.20	peak

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

Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4924.054	32.67	2.41	35.08	54.00	-18.92	AVG
2	4924.057	42.17	2.41	44.58	74.00	-29.42	peak

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

Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	TX G Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4824.117	41.00	2.20	43.20	74.00	-30.80	peak
2 *	4824.583	25.99	2.20	28.19	54.00	-25.81	AVG

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

Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	TX G Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4824.204	26.75	2.20	28.95	54.00	-25.05	AVG
2	4824.306	40.86	2.20	43.06	74.00	-30.94	peak

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

Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	TX G Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4874.167	25.17	2.30	27.47	54.00	-26.53	AVG
2	4874.583	39.24	2.30	41.54	74.00	-32.46	peak

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

Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	TX G Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.531	25.53	2.30	27.83	54.00	-26.17	AVG
2	4874.255	39.73	2.30	42.03	74.00	-31.97	peak

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

Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	TX G Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4924.300	25.10	2.41	27.51	54.00	-26.49	AVG
2	4924.483	40.84	2.41	43.25	74.00	-30.75	peak

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

Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	TX G Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4923.711	24.44	2.41	26.85	54.00	-27.15	AVG
2	4924.283	39.13	2.41	41.54	74.00	-32.46	peak

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

Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	TX N20 Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4823.521	27.39	2.20	29.59	54.00	-24.41	AVG
2	4823.982	41.63	2.20	43.83	74.00	-30.17	peak

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	TX N20 Mode 2412MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4823.035	27.35	2.20	29.55	54.00	-24.45	AVG
2	4823.680	42.06	2.20	44.26	74.00	-29.74	peak

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

Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	TX N20 Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4873.237	42.12	2.30	44.42	74.00	-29.58	peak
2 *	4874.049	27.23	2.30	29.53	54.00	-24.47	AVG

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	TX N20 Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4873.363	41.45	2.30	43.75	74.00	-30.25	peak
2 *	4873.867	27.18	2.30	29.48	54.00	-24.52	AVG

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

Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	TX N20 Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4923.785	41.25	2.41	43.66	74.00	-30.34	peak
2 *	4924.716	26.25	2.41	28.66	54.00	-25.34	AVG

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	TX N20 Mode 2462MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4924.766	25.91	2.41	28.32	54.00	-25.68	AVG
2	4924.914	41.34	2.41	43.75	74.00	-30.25	peak

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

Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	TX N40 Mode 2422MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4843.498	26.28	2.24	28.52	54.00	-25.48	AVG
2	4843.961	41.37	2.24	43.61	74.00	-30.39	peak

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	TX N40 Mode 2422MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4843.124	26.26	2.24	28.50	54.00	-25.50	AVG
2	4844.721	42.13	2.24	44.37	74.00	-29.63	peak

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

Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	TX N40 Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.800	27.15	2.30	29.45	54.00	-24.55	AVG
2	4874.423	41.53	2.30	43.83	74.00	-30.17	peak

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	TX N40 Mode 2437MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4874.681	27.40	2.30	29.70	54.00	-24.30	AVG
2	4874.748	41.41	2.30	43.71	74.00	-30.29	peak

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

Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	TX N40 Mode 2452MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4904.386	24.52	2.36	26.88	54.00	-27.12	AVG
2	4904.819	40.58	2.36	42.94	74.00	-31.06	peak

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	TX N40 Mode 2452MHz
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4904.675	24.46	2.36	26.82	54.00	-27.18	AVG
2	4904.681	39.68	2.36	42.04	74.00	-31.96	peak

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

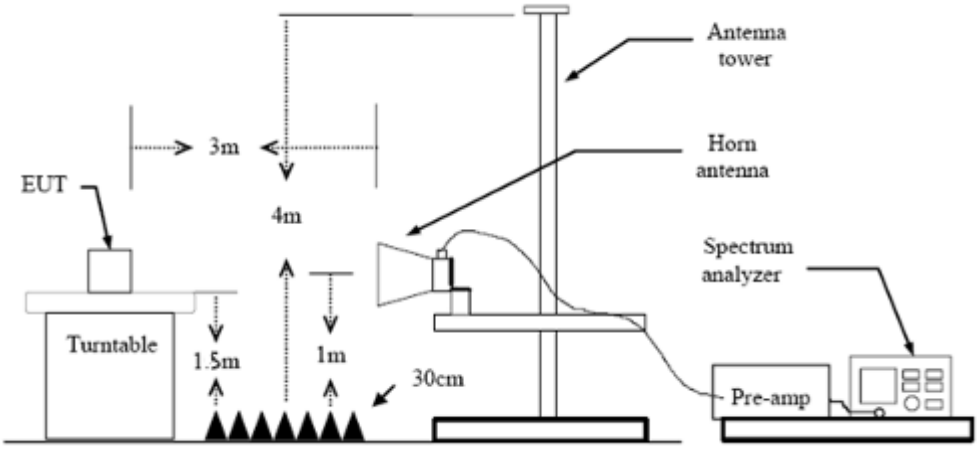
3.3. Band Edge Emissions

Limit

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

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

Test Configuration



Test Procedure

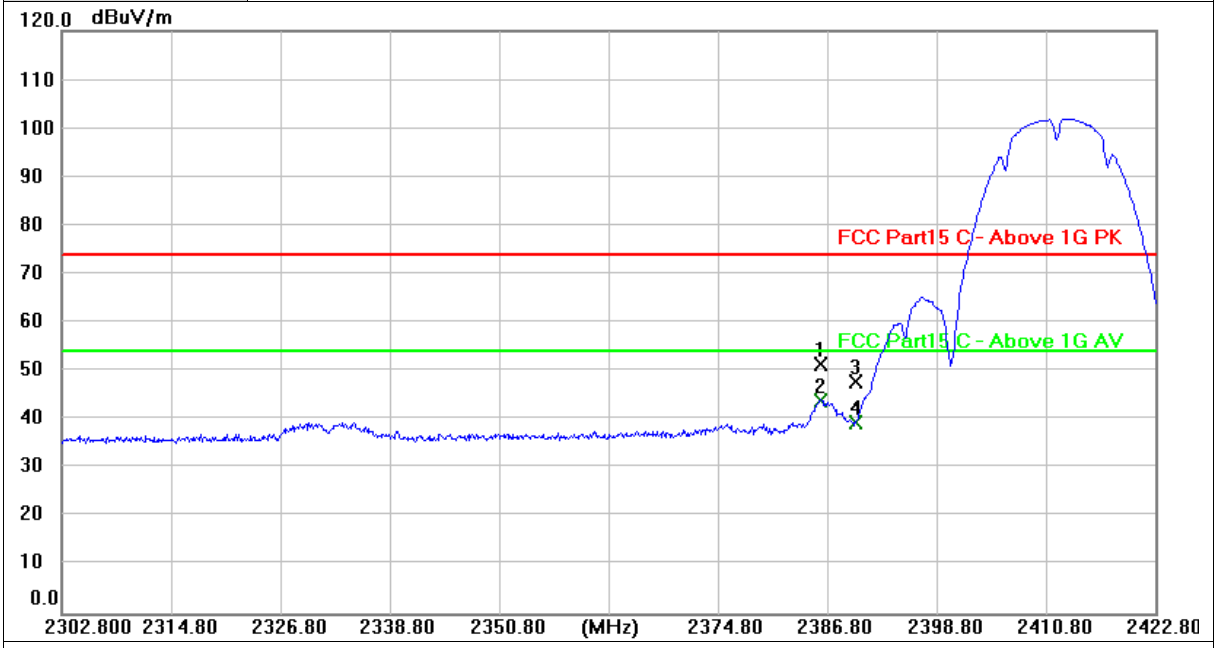
1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna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

Test Mode

Please refer to the clause 2.3.

Test Results

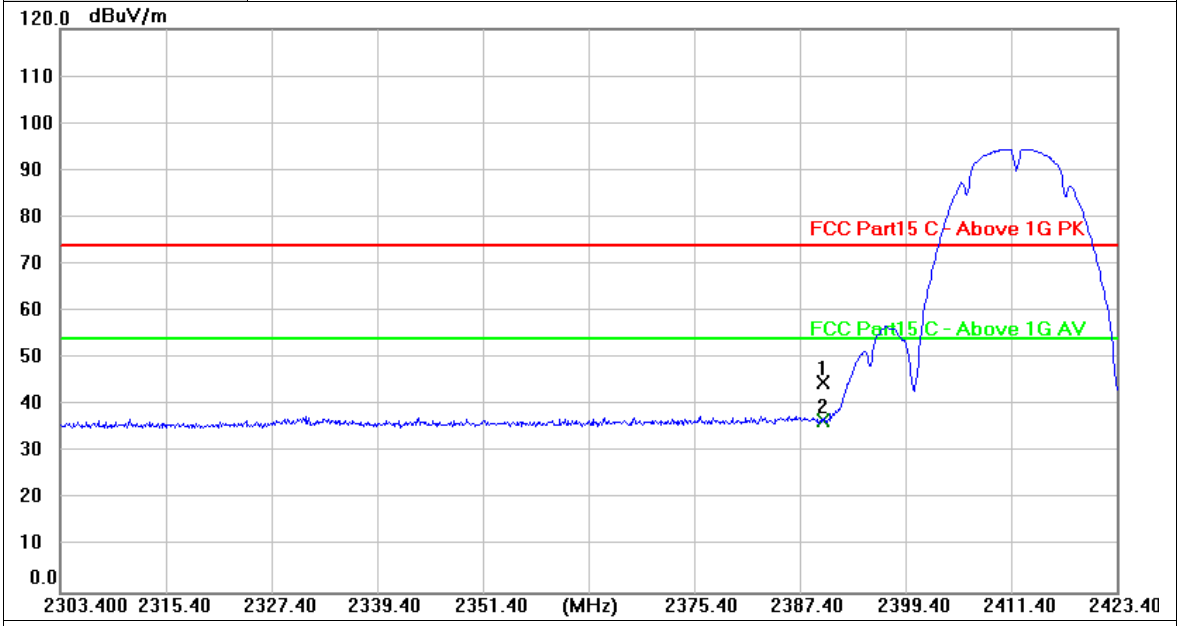
Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	B Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2386.160	20.56	30.82	51.38	74.00	-22.62	peak
2 *	2386.160	13.28	30.82	44.10	54.00	-9.90	AVG
3	2390.000	16.99	30.84	47.83	74.00	-26.17	peak
4	2390.000	8.68	30.84	39.52	54.00	-14.48	AVG

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

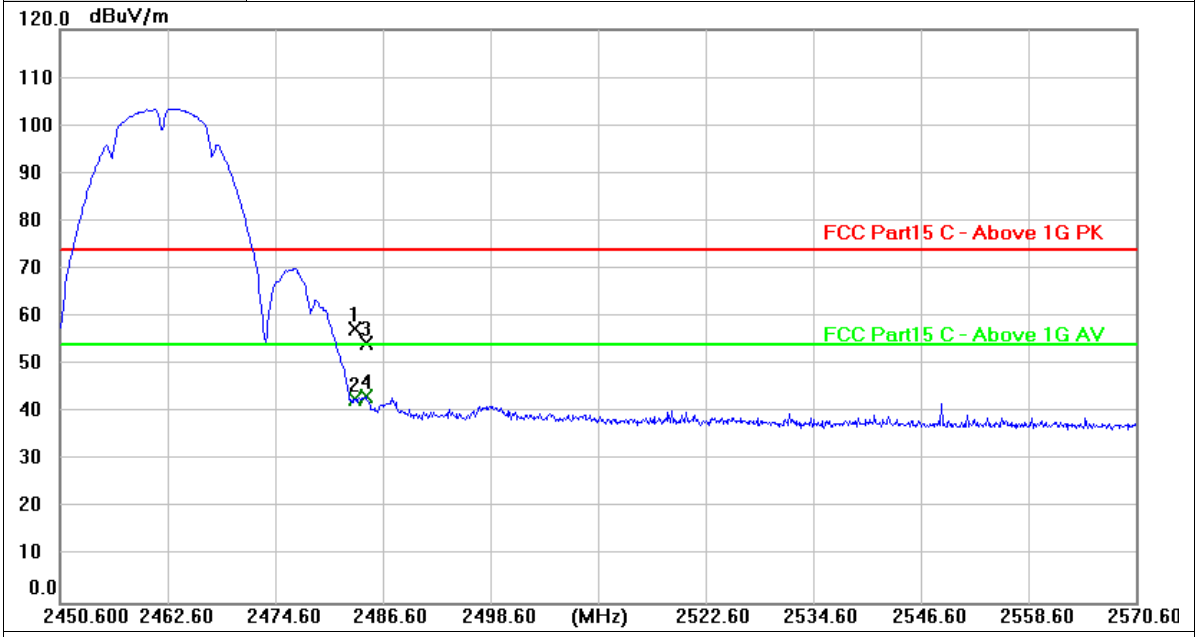
Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	B Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	14.07	30.84	44.91	74.00	-29.09	peak
2 *	2390.000	5.86	30.84	36.70	54.00	-17.30	AVG

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

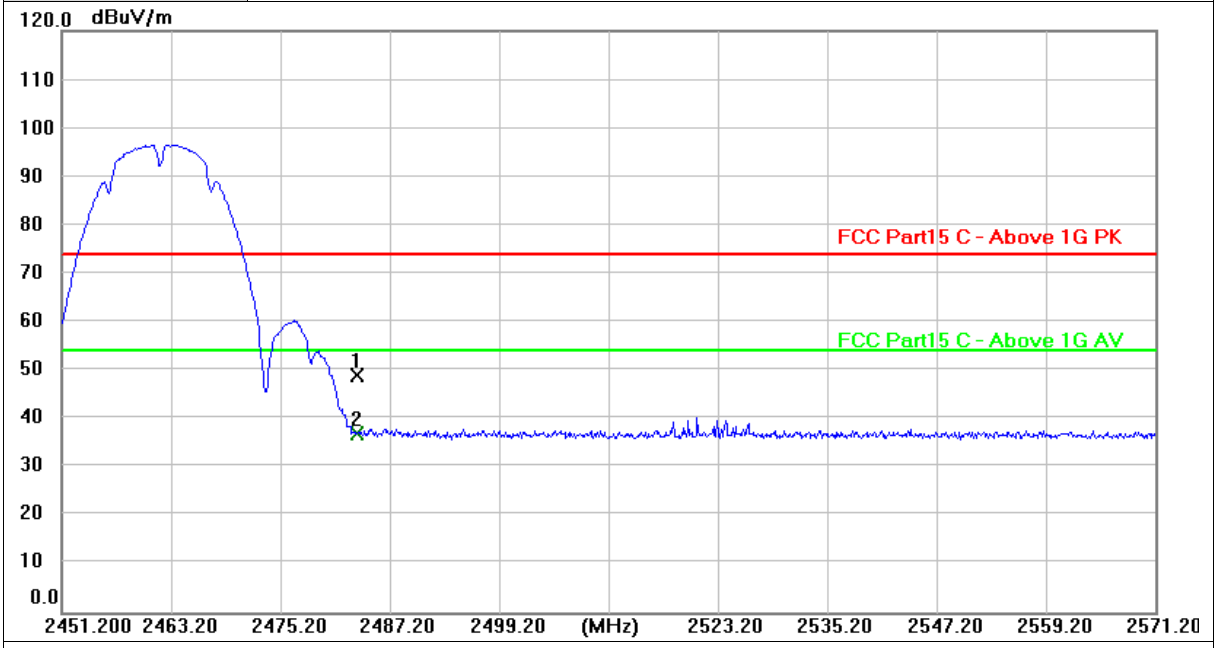
Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	B Mode 2462 MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	26.32	31.24	57.56	74.00	-16.44	peak
2	2483.500	11.50	31.24	42.74	54.00	-11.26	AVG
3	2484.720	23.10	31.25	54.35	74.00	-19.65	peak
4 *	2484.720	12.03	31.25	43.28	54.00	-10.72	AVG

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

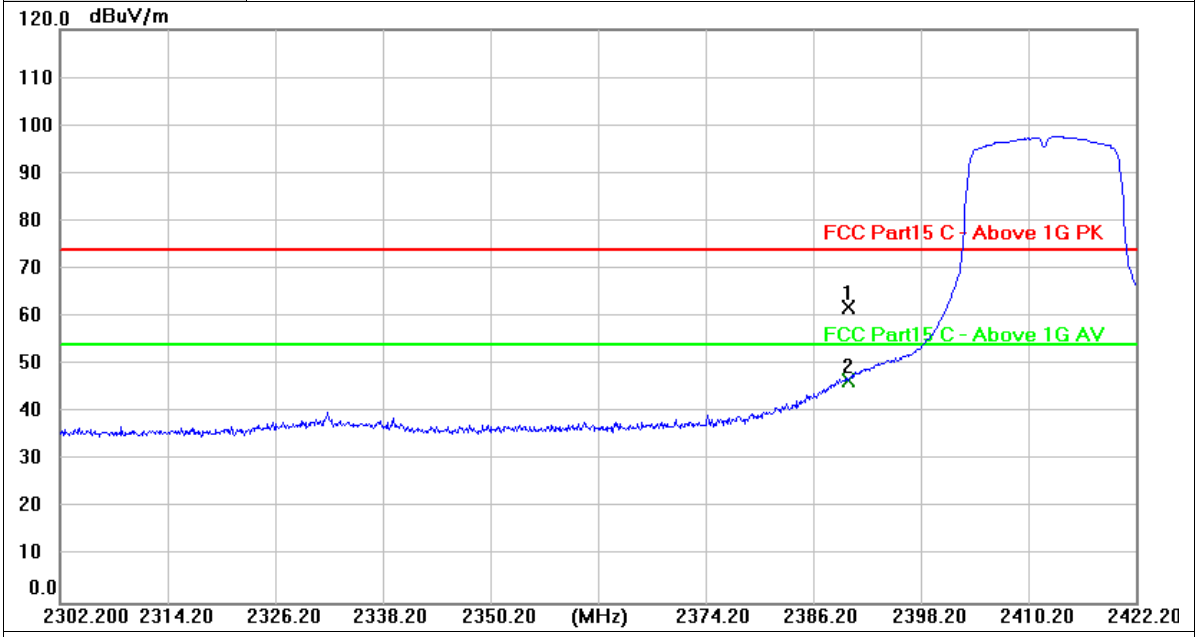
Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	B Mode 2462 MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	17.75	31.24	48.99	74.00	-25.01	peak
2 *	2483.500	5.93	31.24	37.17	54.00	-16.83	AVG

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

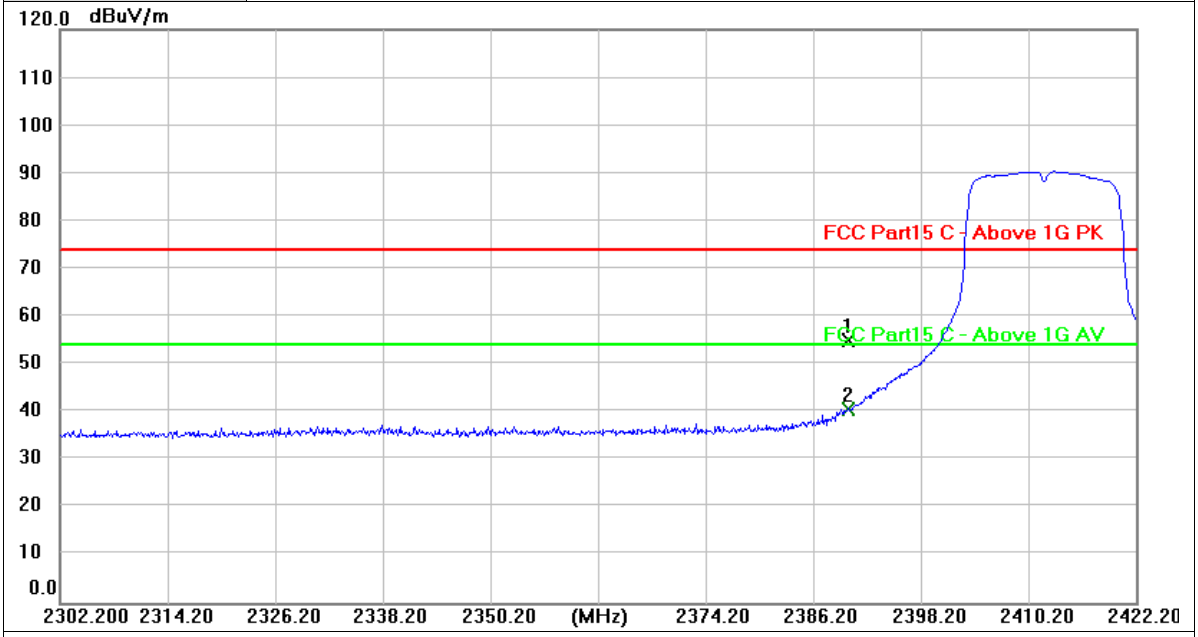
Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	G Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	31.20	30.84	62.04	74.00	-11.96	peak
2 *	2390.000	15.86	30.84	46.70	54.00	-7.30	AVG

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

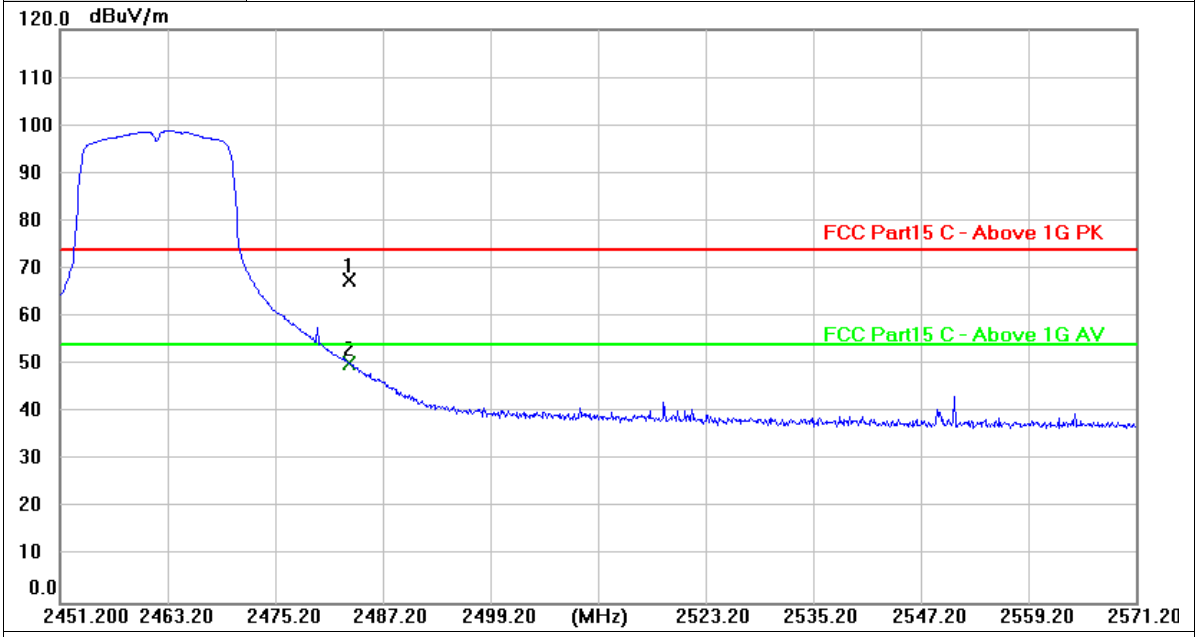
Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	G Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	24.21	30.84	55.05	74.00	-18.95	peak
2 *	2390.000	9.88	30.84	40.72	54.00	-13.28	AVG

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

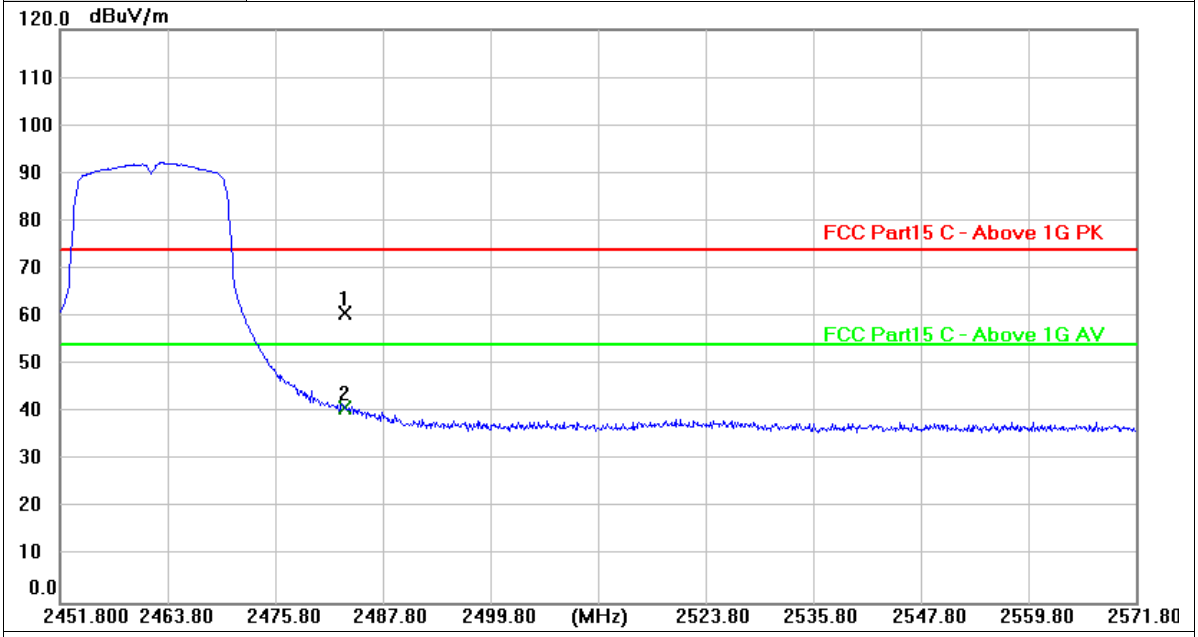
Ant No.	ANT1
Ant. Pol.	Horizontal
Test Mode:	G Mode 2462MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	36.31	31.24	67.55	74.00	-6.45	peak
2 *	2483.500	18.94	31.24	50.18	54.00	-3.82	AVG

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

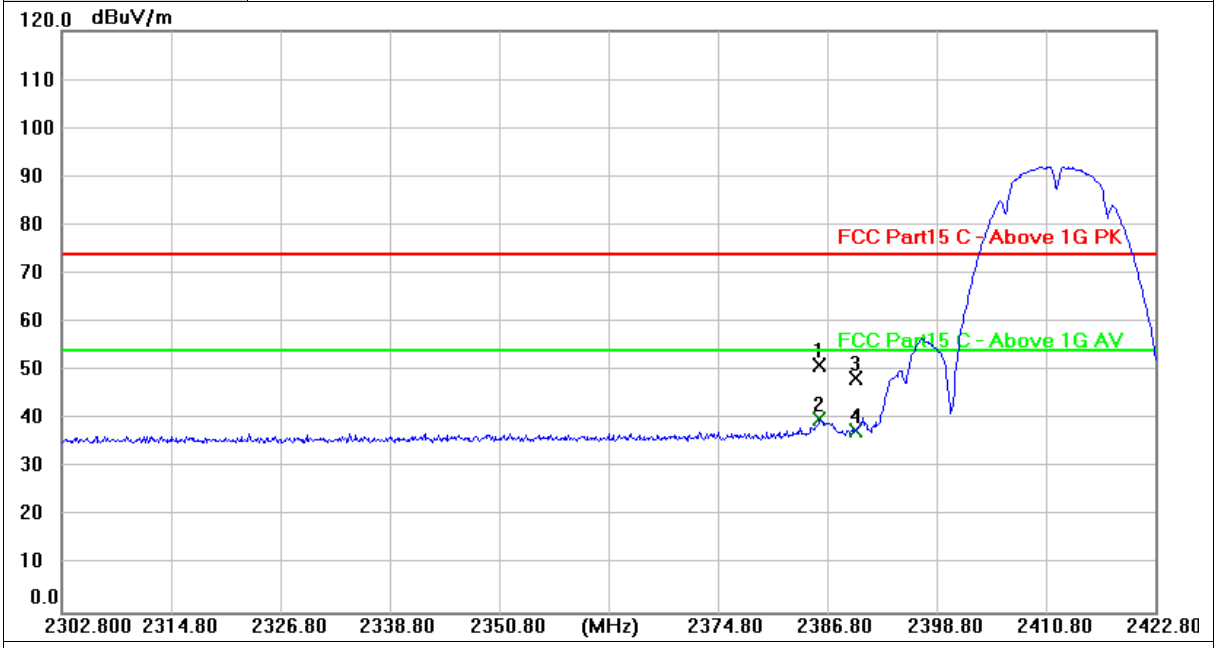
Ant No.	ANT1
Ant. Pol.	Vertical
Test Mode:	G Mode 2462MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	29.37	31.24	60.61	74.00	-13.39	peak
2 *	2483.500	9.86	31.24	41.10	54.00	-12.90	AVG

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

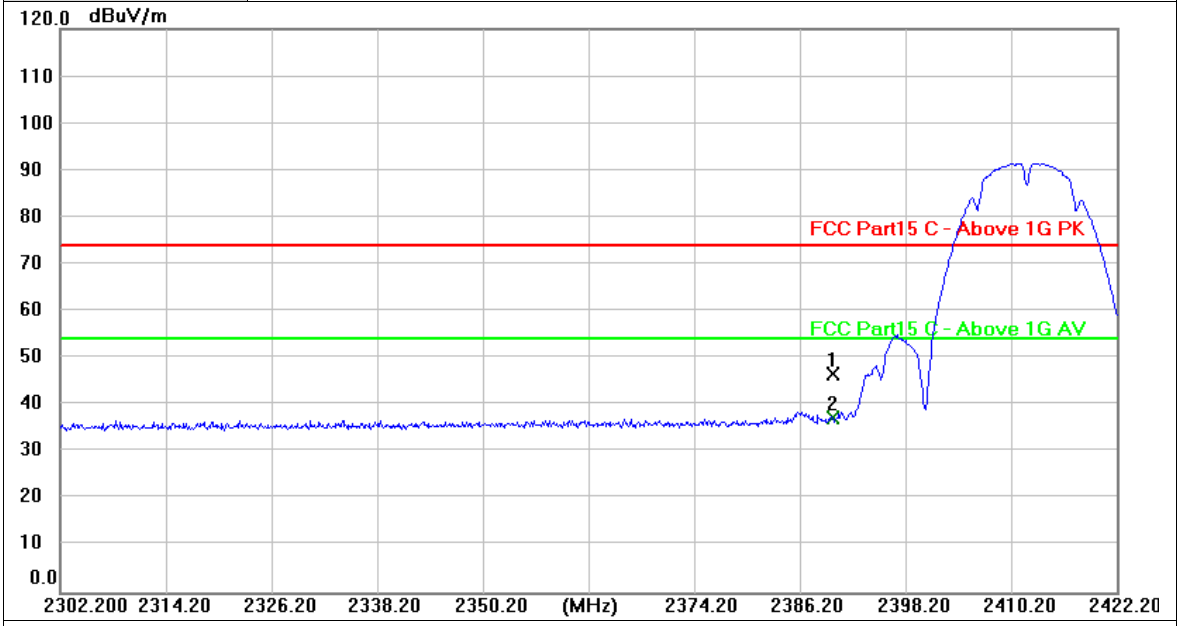
Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	B Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2386.000	20.21	30.82	51.03	74.00	-22.97	peak
2 *	2386.000	9.21	30.82	40.03	54.00	-13.97	AVG
3	2390.000	17.71	30.84	48.55	74.00	-25.45	peak
4	2390.000	6.78	30.84	37.62	54.00	-16.38	AVG

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

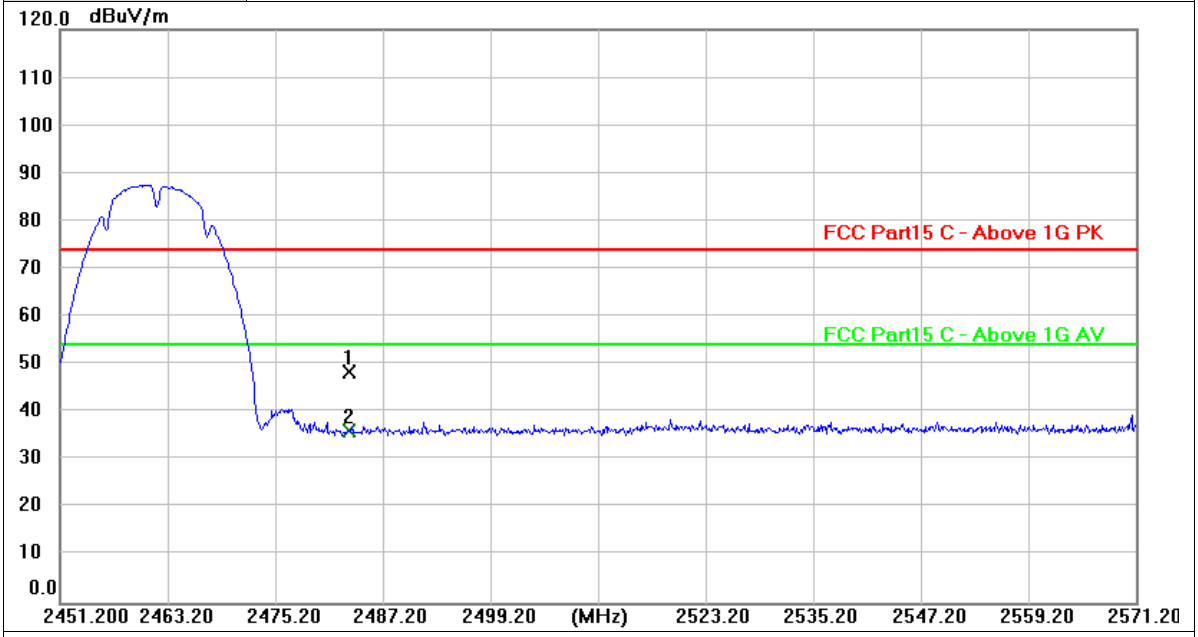
Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	B Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	15.94	30.84	46.78	74.00	-27.22	peak
2 *	2390.000	6.49	30.84	37.33	54.00	-16.67	AVG

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

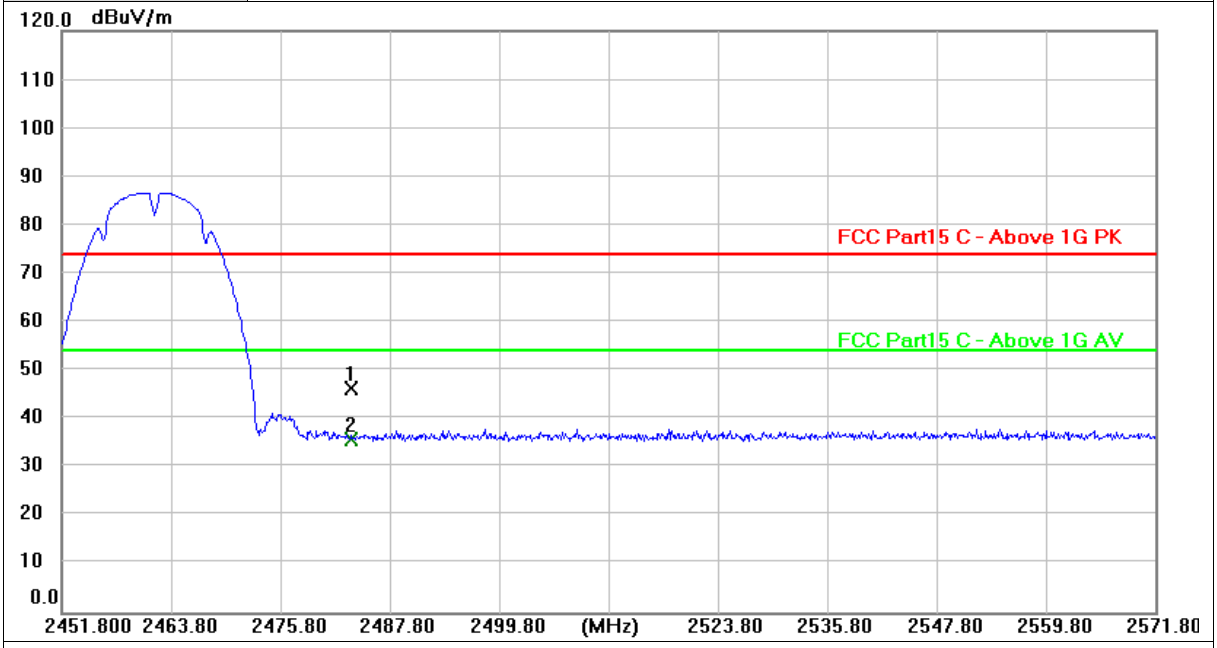
Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	B Mode 2462 MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	17.24	31.24	48.48	74.00	-25.52	peak
2 *	2483.500	4.98	31.24	36.22	54.00	-17.78	AVG

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

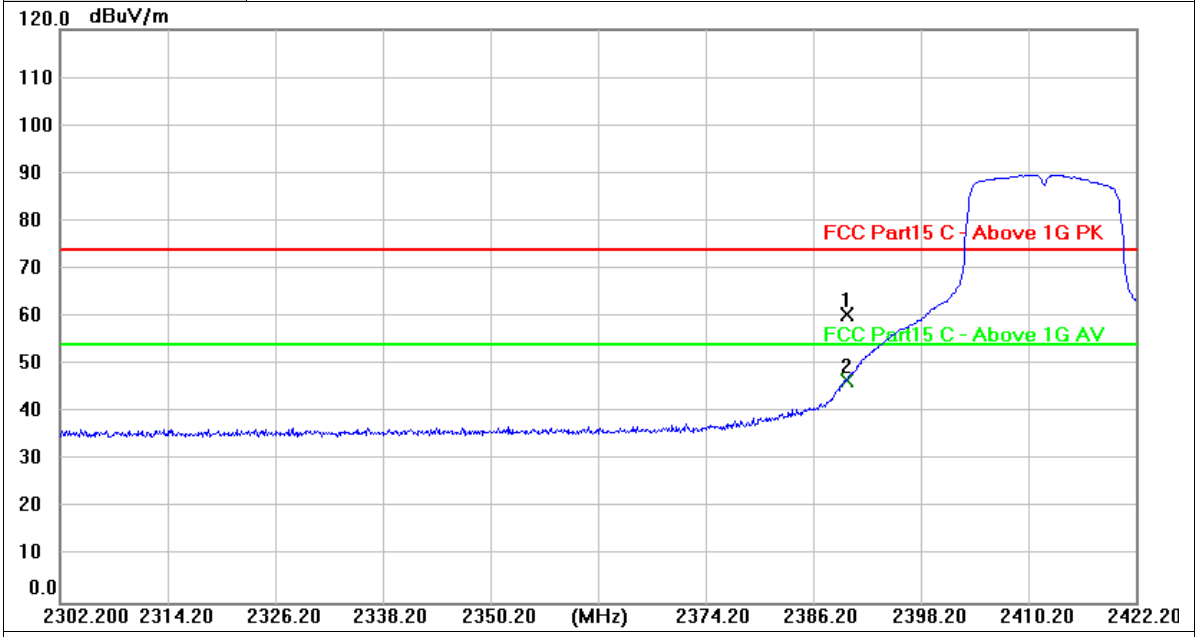
Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	B Mode 2462 MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	15.13	31.24	46.37	74.00	-27.63	peak
2 *	2483.500	4.76	31.24	36.00	54.00	-18.00	AVG

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

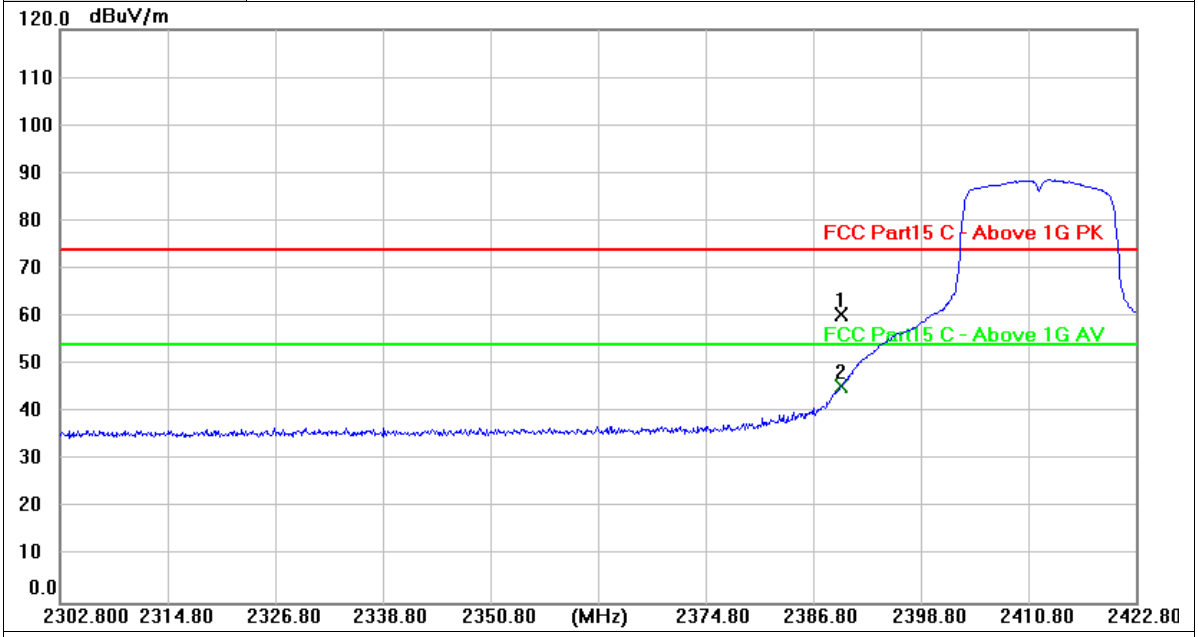
Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	G Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	29.67	30.84	60.51	74.00	-13.49	peak
2 *	2390.000	15.95	30.84	46.79	54.00	-7.21	AVG

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

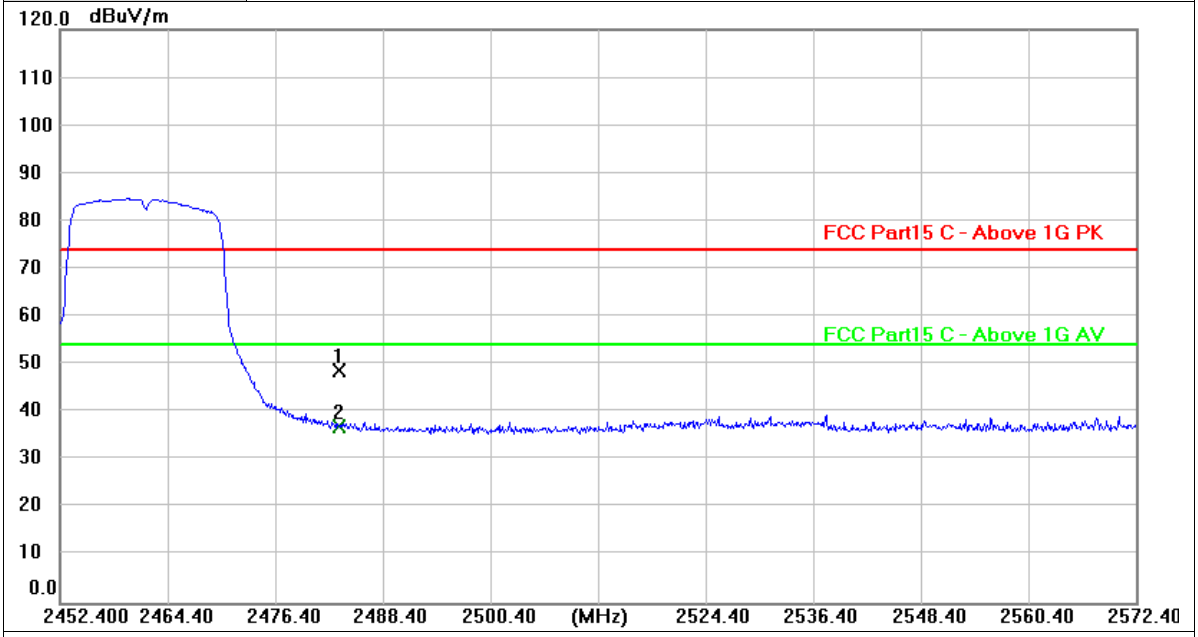
Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	G Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	29.56	30.84	60.40	74.00	-13.60	peak
2 *	2390.000	14.70	30.84	45.54	54.00	-8.46	AVG

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

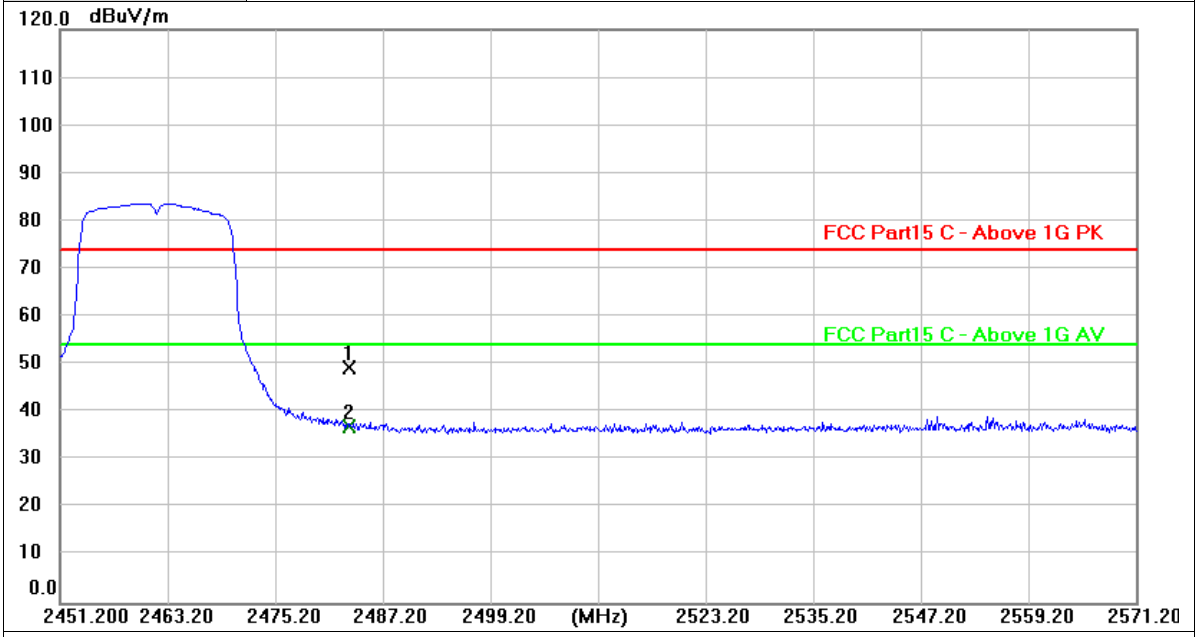
Ant No.	ANT2
Ant. Pol.	Horizontal
Test Mode:	G Mode 2462MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	17.58	31.24	48.82	74.00	-25.18	peak
2 *	2483.500	5.85	31.24	37.09	54.00	-16.91	AVG

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

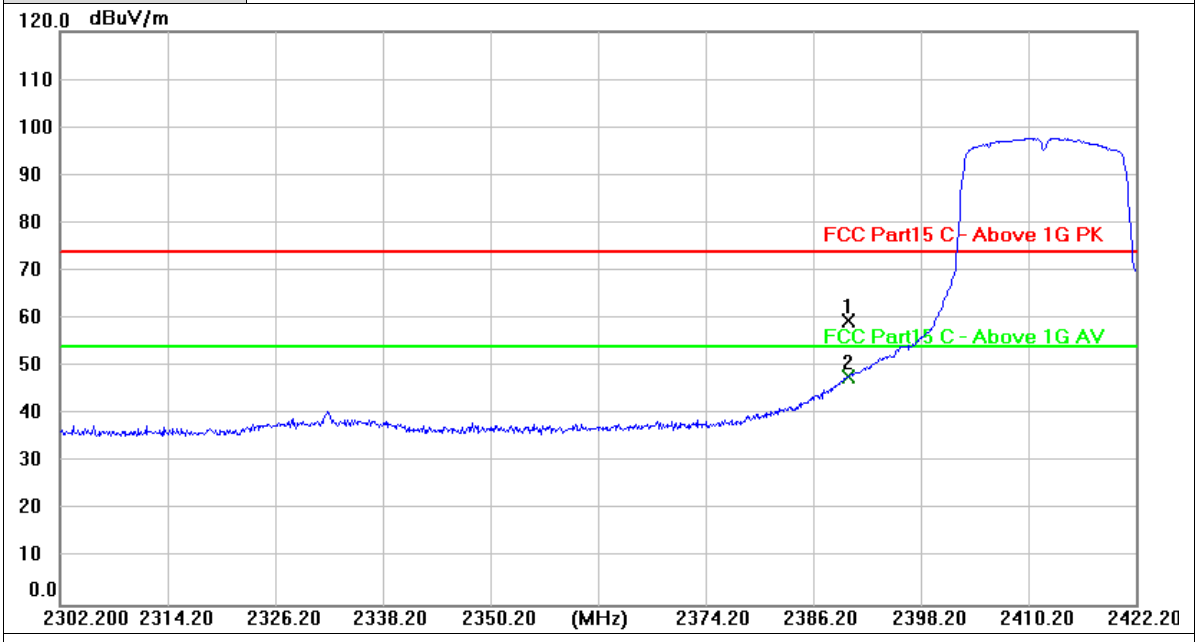
Ant No.	ANT2
Ant. Pol.	Vertical
Test Mode:	G Mode 2462MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	18.18	31.24	49.42	74.00	-24.58	peak
2 *	2483.500	5.86	31.24	37.10	54.00	-16.90	AVG

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

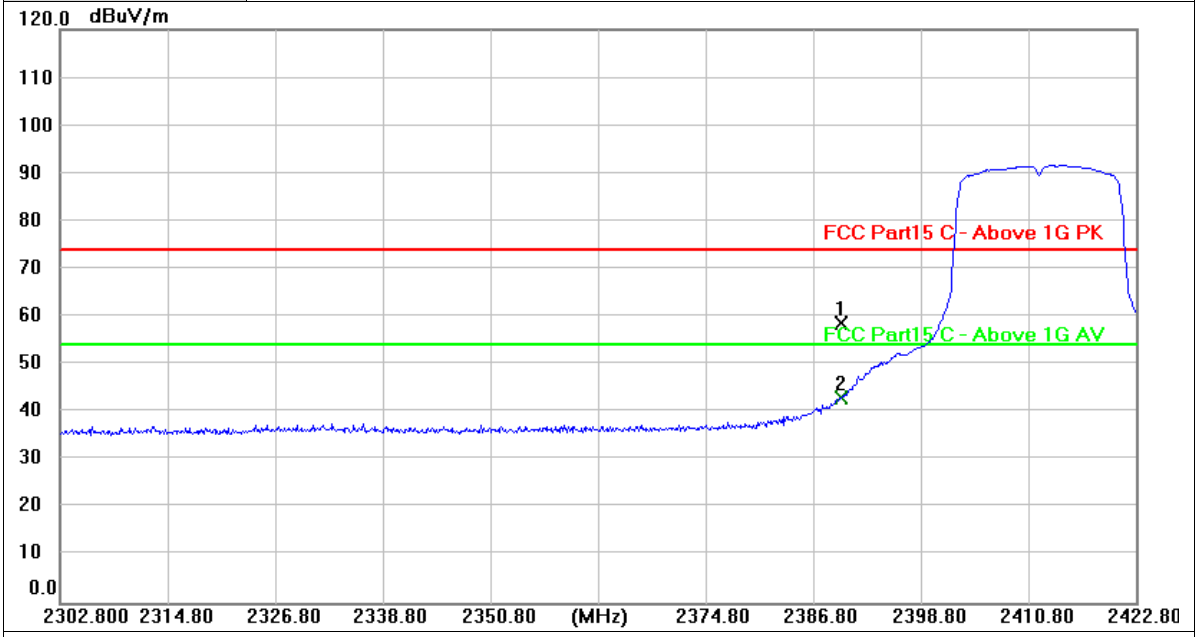
Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	N(HT20) Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	28.62	30.84	59.46	74.00	-14.54	peak
2 *	2390.000	17.10	30.84	47.94	54.00	-6.06	AVG

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

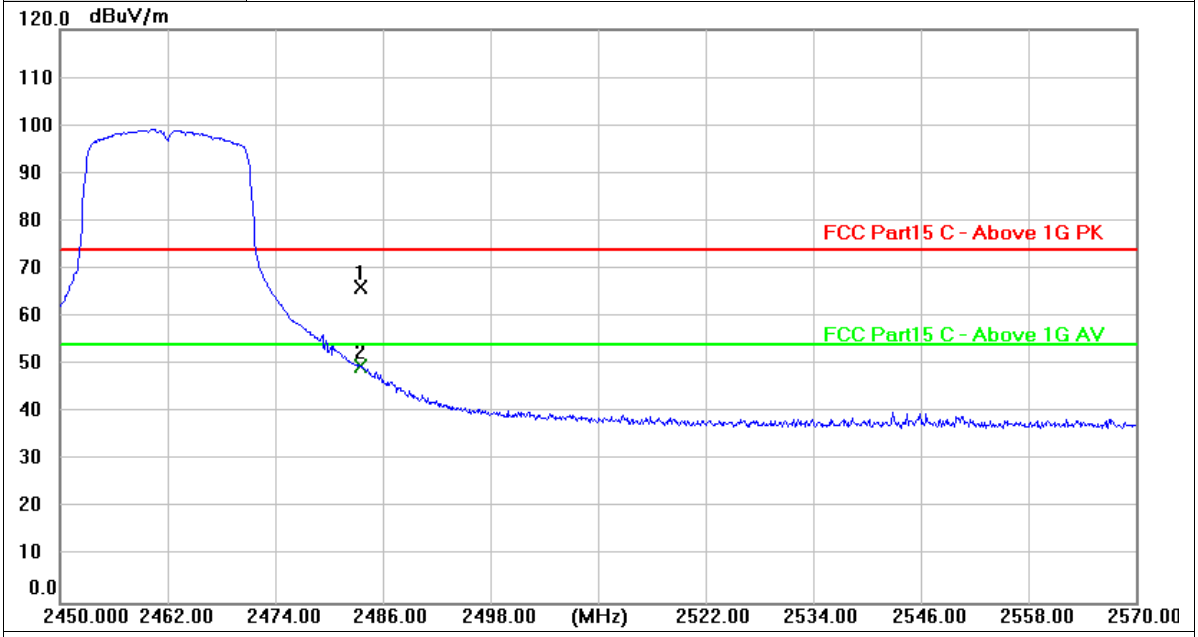
Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	N(HT20) Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	27.69	30.84	58.53	74.00	-15.47	peak
2 *	2390.000	12.21	30.84	43.05	54.00	-10.95	AVG

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

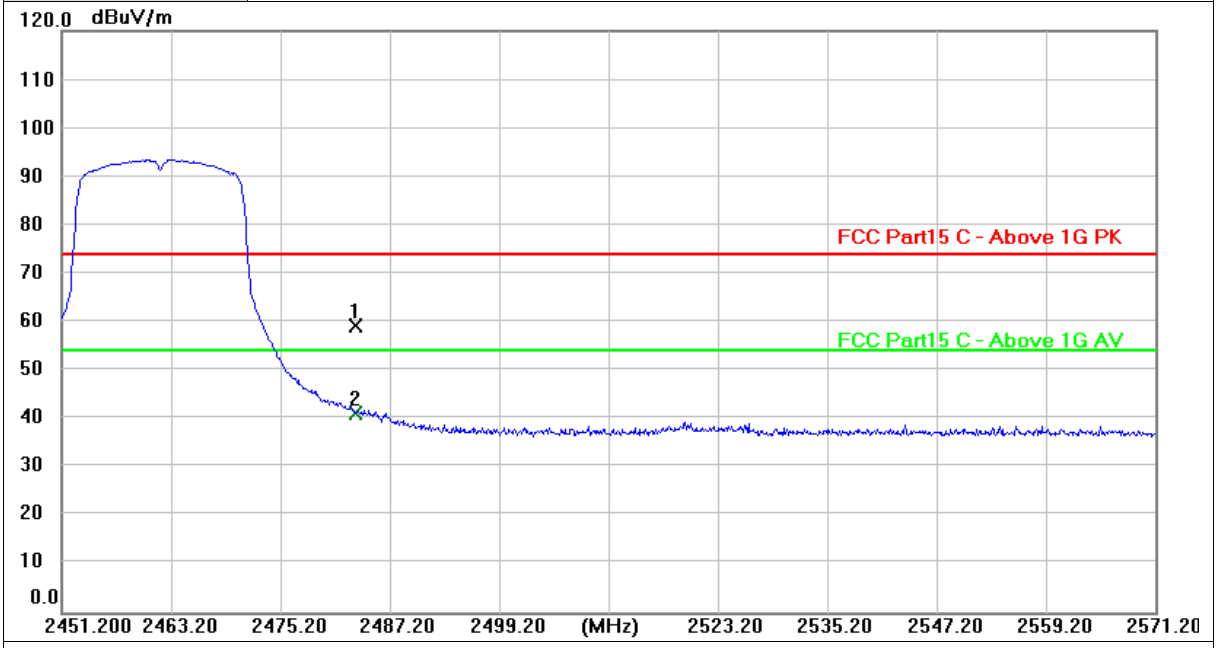
Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	N(HT20) Mode 2462MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	34.78	31.24	66.02	74.00	-7.98	peak
2 *	2483.500	18.53	31.24	49.77	54.00	-4.23	AVG

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

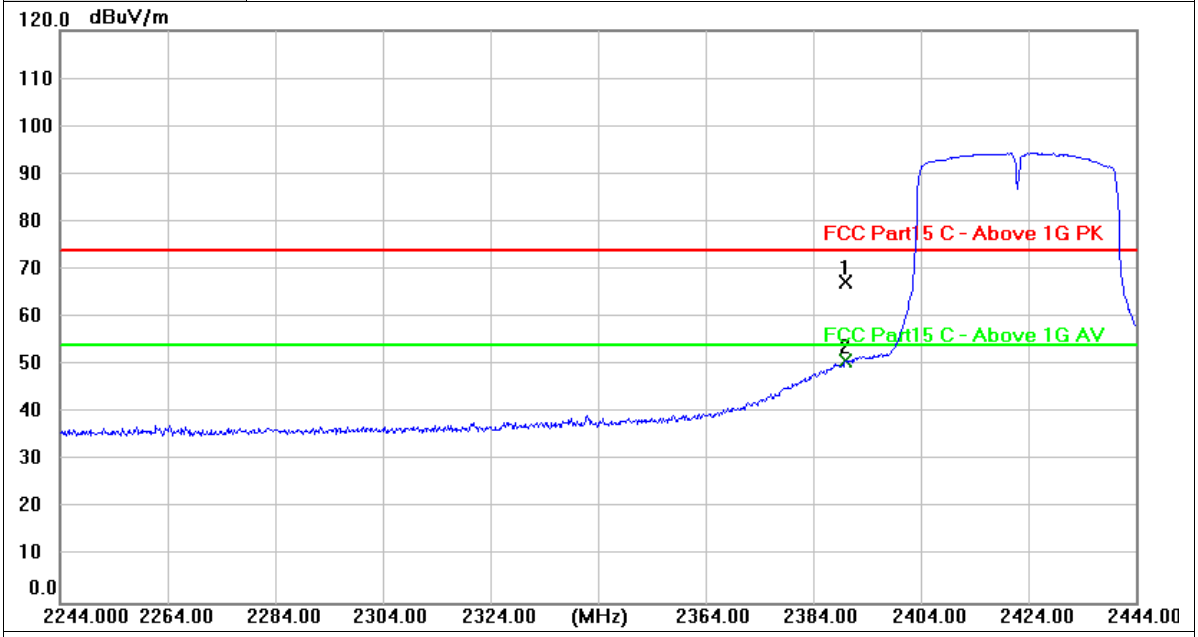
Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	N(HT20) Mode 2462MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	28.04	31.24	59.28	74.00	-14.72	peak
2 *	2483.500	10.15	31.24	41.39	54.00	-12.61	AVG

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

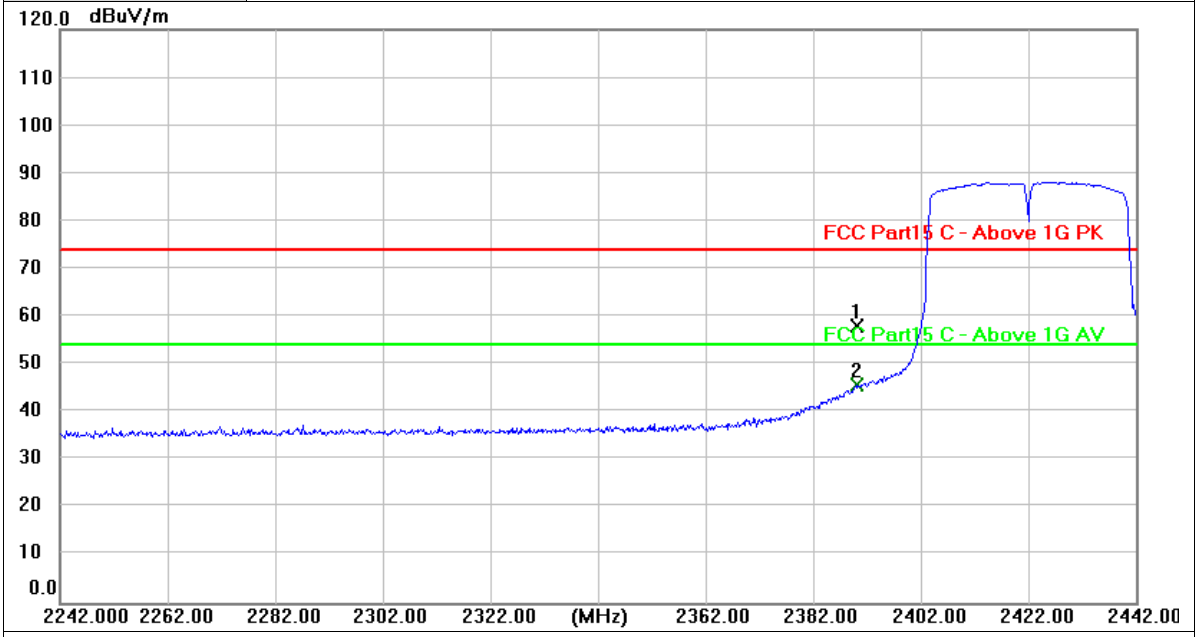
Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	N(HT40) Mode 2422MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	36.47	30.84	67.31	74.00	-6.69	peak
2 *	2390.000	20.04	30.84	50.88	54.00	-3.12	AVG

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

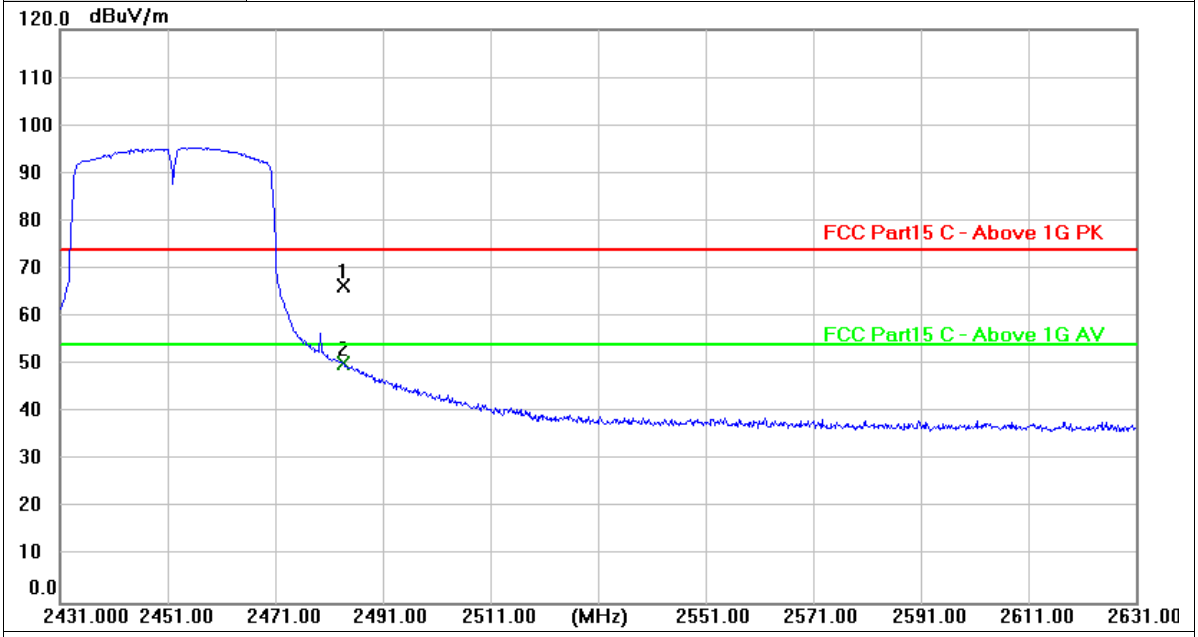
Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	N(HT40) Mode 2422MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	27.28	30.84	58.12	74.00	-15.88	peak
2 *	2390.000	14.94	30.84	45.78	54.00	-8.22	AVG

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

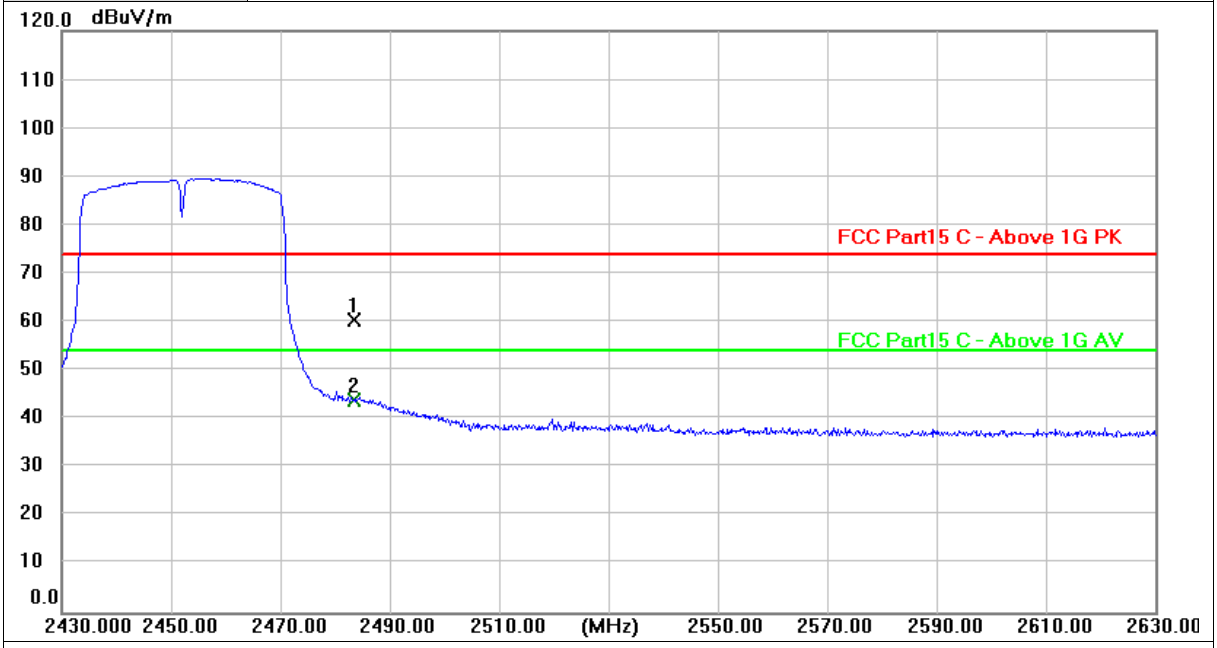
Ant No.	MIMO
Ant. Pol.	Horizontal
Test Mode:	N(HT40) Mode 2452MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	35.23	31.24	66.47	74.00	-7.53	peak
2 *	2483.500	18.87	31.24	50.11	54.00	-3.89	AVG

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

Ant No.	MIMO
Ant. Pol.	Vertical
Test Mode:	N(HT40) Mode 2452MHz
Remark:	Only worse case is reported



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	29.27	31.24	60.51	74.00	-13.49	peak
2 *	2483.500	12.65	31.24	43.89	54.00	-10.11	AVG

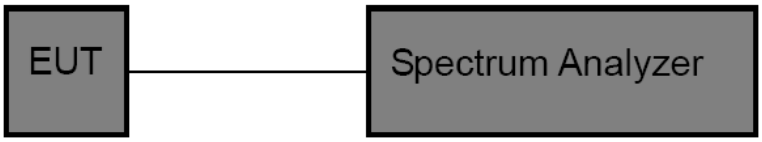
Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

3.4. Band edge and Spurious Emissions (Conducted)

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 Results

Band edge measurements

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	9.54	-27.51	≤-20.46	PASS
	Ant2	Low	2412	8.48	-40.14	≤-21.52	PASS
	Ant1	High	2462	8.50	-51.78	≤-21.5	PASS
	Ant2	High	2462	7.57	-51.68	≤-22.43	PASS
11G	Ant1	Low	2412	6.22	-30.2	≤-23.78	PASS
	Ant2	Low	2412	6.51	-27.75	≤-23.49	PASS
	Ant1	High	2462	2.71	-40.7	≤-27.29	PASS
	Ant2	High	2462	6.08	-39.22	≤-23.92	PASS
11N20MIMO	Ant1	Low	2412	6.48	-28.24	≤-23.52	PASS
	Ant2	Low	2412	5.91	-29.04	≤-24.09	PASS
	Ant1	High	2462	4.78	-38.67	≤-25.22	PASS
	Ant2	High	2462	6.38	-36.31	≤-23.62	PASS
11N40MIMO	Ant1	Low	2422	2.60	-36.11	≤-27.4	PASS
	Ant2	Low	2422	2.56	-34.14	≤-27.44	PASS
	Ant1	High	2452	2.96	-37.28	≤-27.04	PASS
	Ant2	High	2452	-0.15	-33.29	≤-30.15	PASS

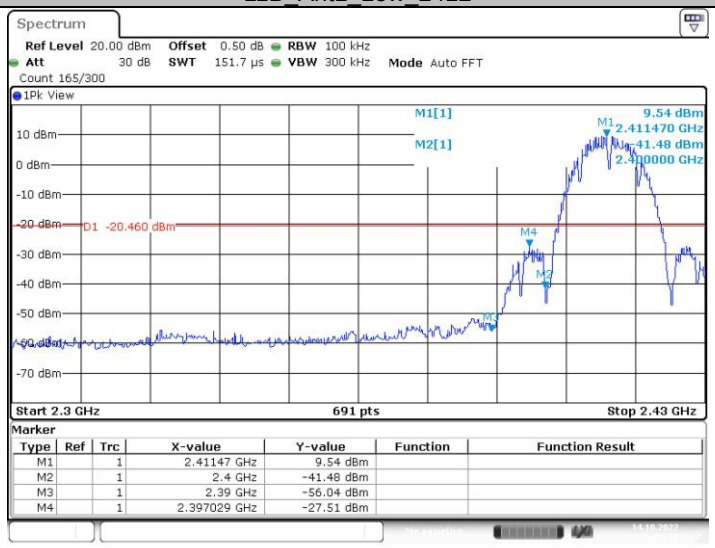
Conducted Spurious Emission

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	8.74	8.74	---	PASS
			30~1000	8.74	-69.82	≤-21.26	PASS
			1000~26500	8.74	-40.03	≤-21.26	PASS
	Ant2	2412	Reference	9.30	9.30	---	PASS
			30~1000	9.30	-70.03	≤-20.7	PASS
			1000~26500	9.30	-38.35	≤-20.7	PASS
	Ant1	2437	Reference	8.89	8.89	---	PASS
			30~1000	8.89	-70.36	≤-21.11	PASS
			1000~26500	8.89	-41.22	≤-21.11	PASS
	Ant2	2437	Reference	8.74	8.74	---	PASS
			30~1000	8.74	-70.89	≤-21.26	PASS
			1000~26500	8.74	-39.42	≤-21.26	PASS
	Ant1	2462	Reference	8.62	8.62	---	PASS
			30~1000	8.62	-61.59	≤-21.38	PASS
			1000~26500	8.62	-41.91	≤-21.38	PASS
	Ant2	2462	Reference	7.51	7.51	---	PASS
			30~1000	7.51	-62.29	≤-22.49	PASS
			1000~26500	7.51	-40.85	≤-22.49	PASS
11G	Ant1	2412	Reference	5.41	5.41	---	PASS
			30~1000	5.41	-67.57	≤-24.59	PASS
			1000~26500	5.41	-42.31	≤-24.59	PASS
	Ant2	2412	Reference	7.29	7.29	---	PASS
			30~1000	7.29	-67.21	≤-22.71	PASS
			1000~26500	7.29	-47.85	≤-22.71	PASS
	Ant1	2437	Reference	3.14	3.14	---	PASS
			30~1000	3.14	-70.81	≤-26.86	PASS
			1000~26500	3.14	-42.56	≤-26.86	PASS
	Ant2	2437	Reference	6.66	6.66	---	PASS
			30~1000	6.66	-67.45	≤-23.34	PASS
			1000~26500	6.66	-49.58	≤-23.34	PASS
	Ant1	2462	Reference	4.72	4.72	---	PASS
			30~1000	4.72	-66.97	≤-25.28	PASS
			1000~26500	4.72	-42.82	≤-25.28	PASS
	Ant2	2462	Reference	6.00	6.00	---	PASS
			30~1000	6.00	-64.63	≤-24	PASS
			1000~26500	6.00	-49.68	≤-24	PASS
11N20MIMO	Ant1	2412	Reference	6.48	6.48	---	PASS
			30~1000	6.48	-68.57	≤-23.52	PASS
			1000~26500	6.48	-49.6	≤-23.52	PASS
	Ant2	2412	Reference	6.49	6.49	---	PASS
			30~1000	6.49	-68.59	≤-23.51	PASS
			1000~26500	6.49	-49.83	≤-23.51	PASS
	Ant1	2437	Reference	6.20	6.20	---	PASS
			30~1000	6.20	-67.8	≤-23.8	PASS
			1000~26500	6.20	-50.44	≤-23.8	PASS
	Ant2	2437	Reference	6.16	6.16	---	PASS
			30~1000	6.16	-67.18	≤-23.84	PASS
			1000~26500	6.16	-48.85	≤-23.84	PASS
	Ant1	2462	Reference	6.10	6.10	---	PASS
			30~1000	6.10	-66.76	≤-23.9	PASS
			1000~26500	6.10	-48.66	≤-23.9	PASS
	Ant2	2462	Reference	5.47	5.47	---	PASS
			30~1000	5.47	-66.81	≤-24.53	PASS
			1000~26500	5.47	-49.34	≤-24.53	PASS
11N40MIMO	Ant1	2422	Reference	1.63	1.63	---	PASS
			30~1000	1.63	-70.36	≤-28.37	PASS
			1000~26500	1.63	-42.41	≤-28.37	PASS
	Ant2	2422	Reference	2.35	2.35	---	PASS
			30~1000	2.35	-70.12	≤-27.65	PASS
			1000~26500	2.35	-42.22	≤-27.65	PASS
	Ant1	2437	Reference	2.47	2.47	---	PASS
			30~1000	2.47	-70.45	≤-27.53	PASS
			1000~26500	2.47	-42.67	≤-27.53	PASS

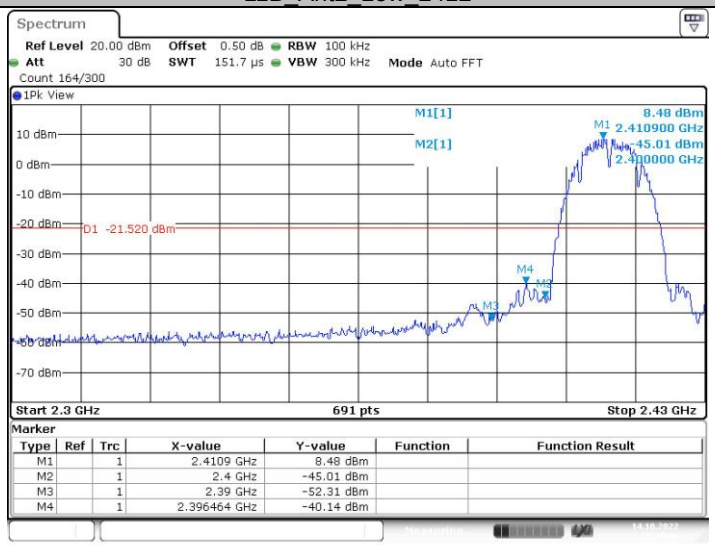
	Ant2	2437	Reference	3.21	3.21	---	PASS
			30~1000	3.21	-69.94	≤-26.79	PASS
			1000~26500	3.21	-40.94	≤-26.79	PASS
	Ant1	2452	Reference	1.91	1.91	---	PASS
			30~1000	1.91	-66.34	≤-28.09	PASS
			1000~26500	1.91	-42.39	≤-28.09	PASS
	Ant2	2452	Reference	2.22	2.22	---	PASS
			30~1000	2.22	-70.2	≤-27.78	PASS
			1000~26500	2.22	-42.74	≤-27.78	PASS

Band edge Test Graphs

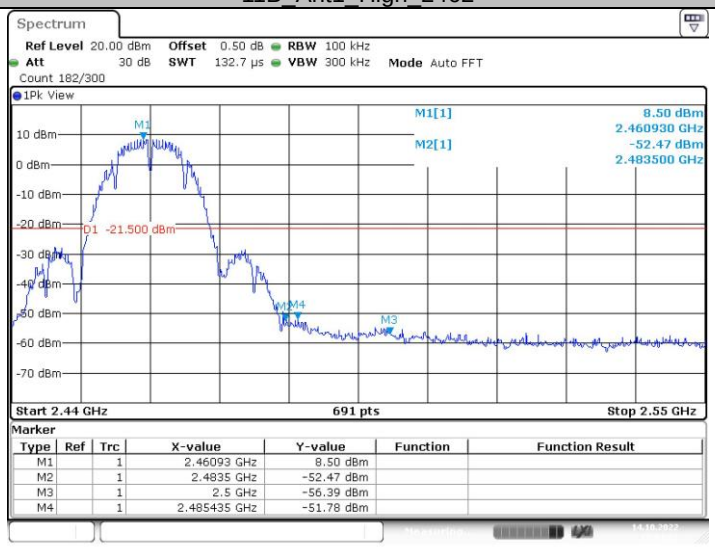
11B_Ant1_Low_2412



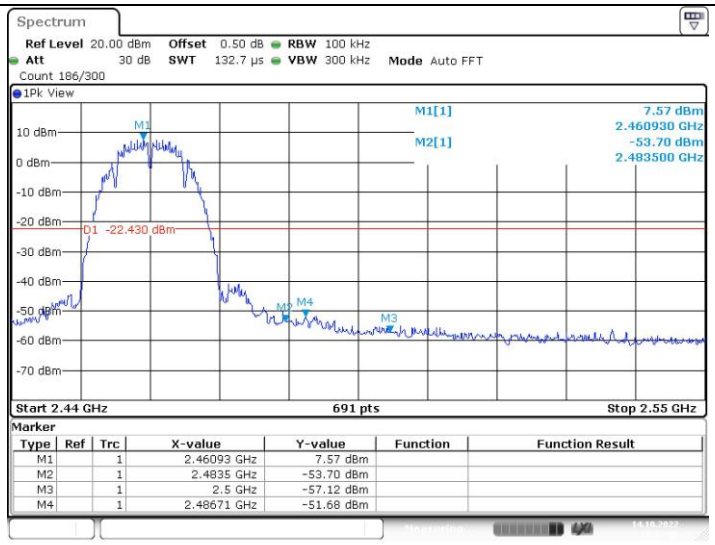
11B_Ant2_Low_2412



11B_Ant1_High_2462

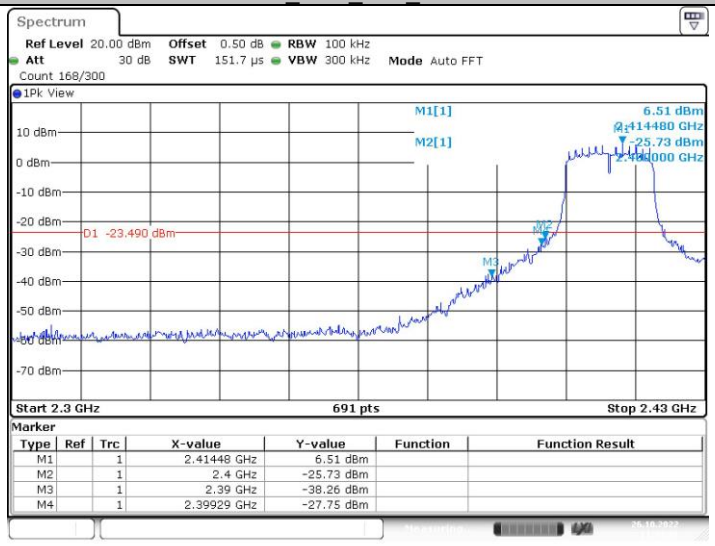


11B_Ant2_High_2462

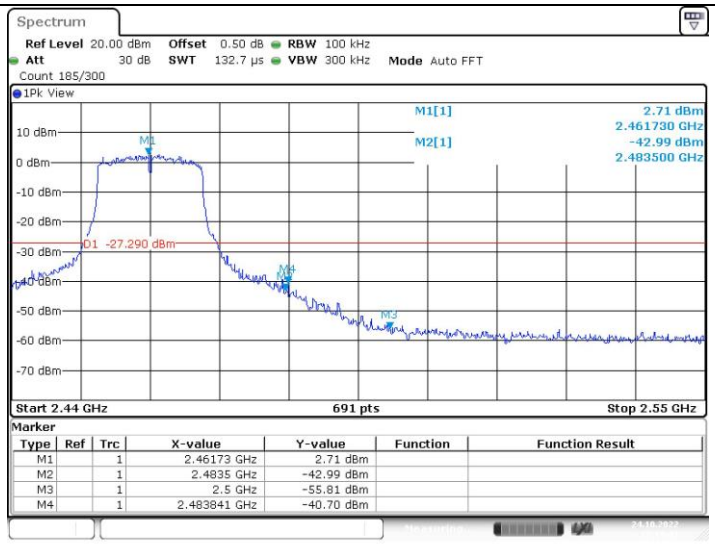


11G_Ant1_Low_2412

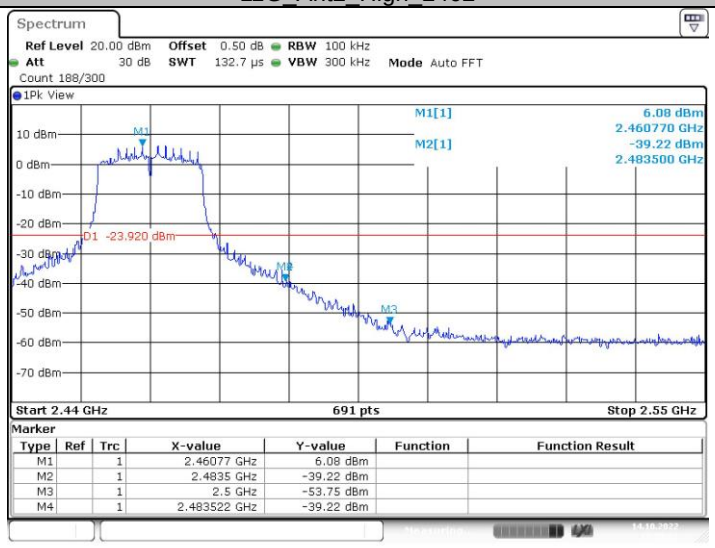
11G_Ant2_Low_2412



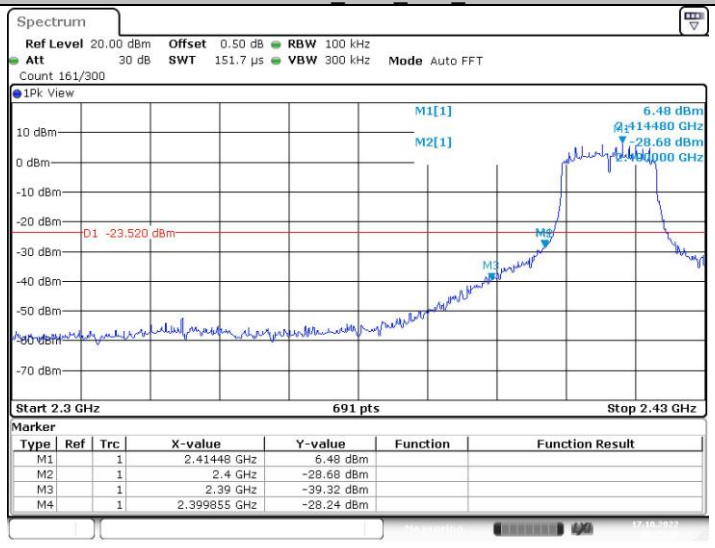
11G_Ant1_High_2462



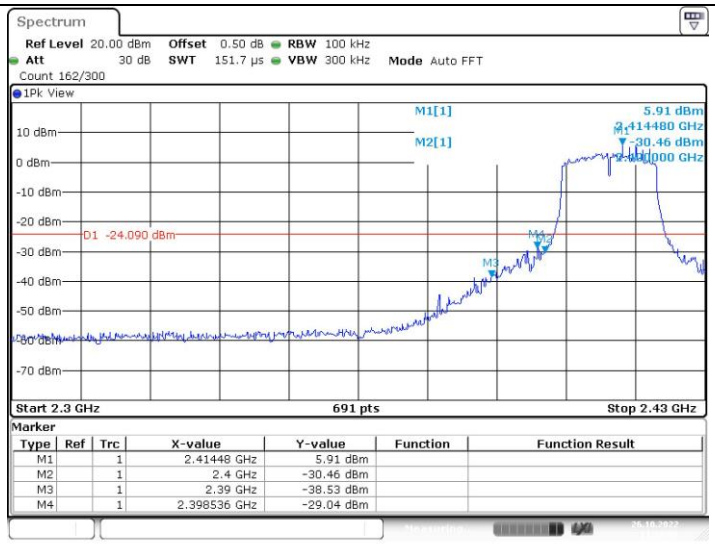
11G_Ant2_High_2462



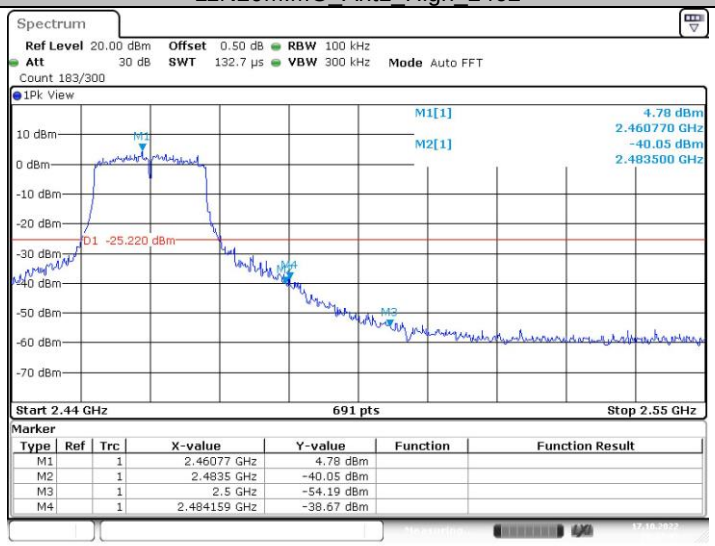
11N20MIMO_Ant1_Low_2412



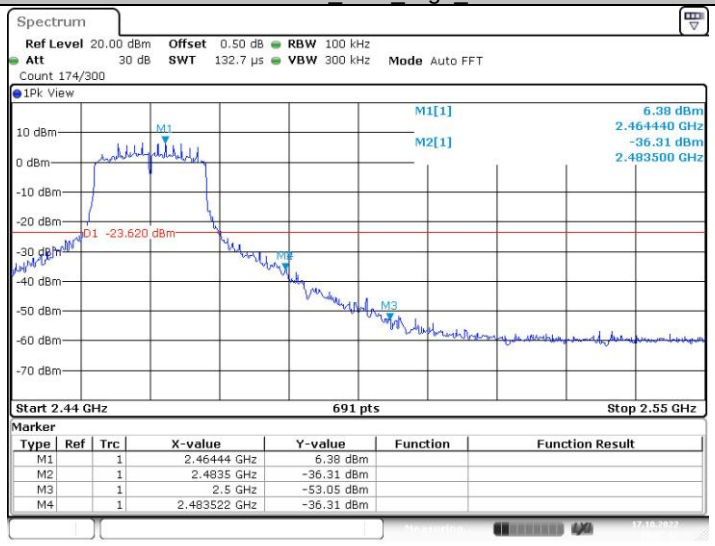
11N20MIMO_Ant2_Low_2412



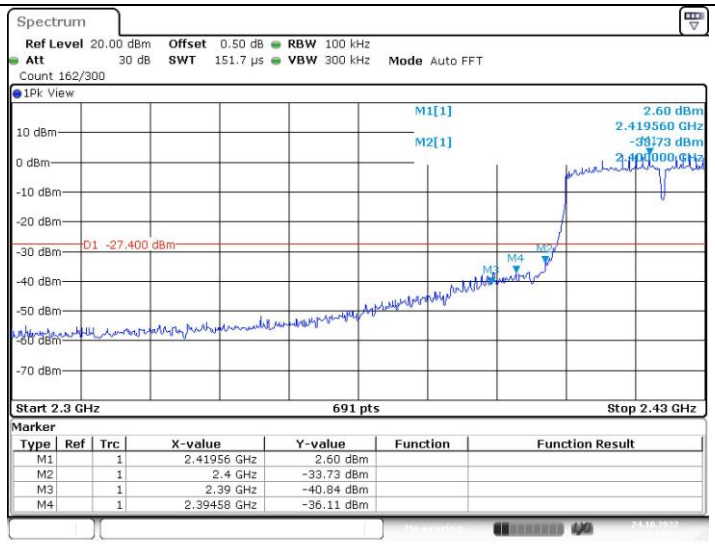
11N20MIMO_Ant1_High_2462



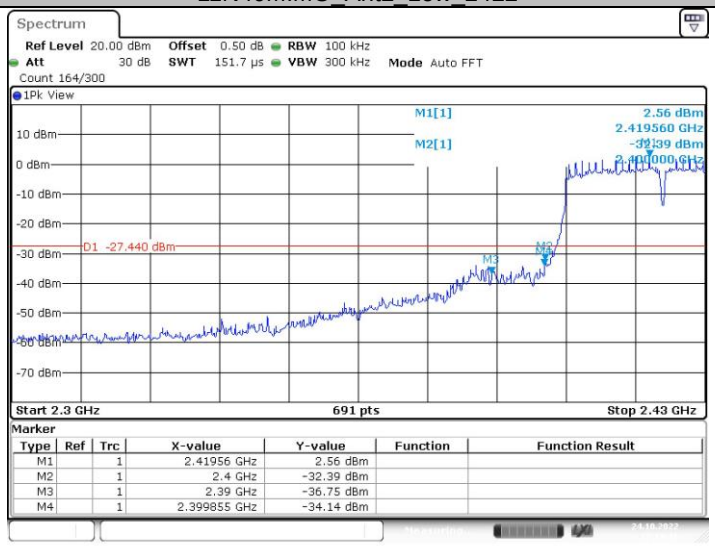
11N20MIMO_Ant2_High_2462



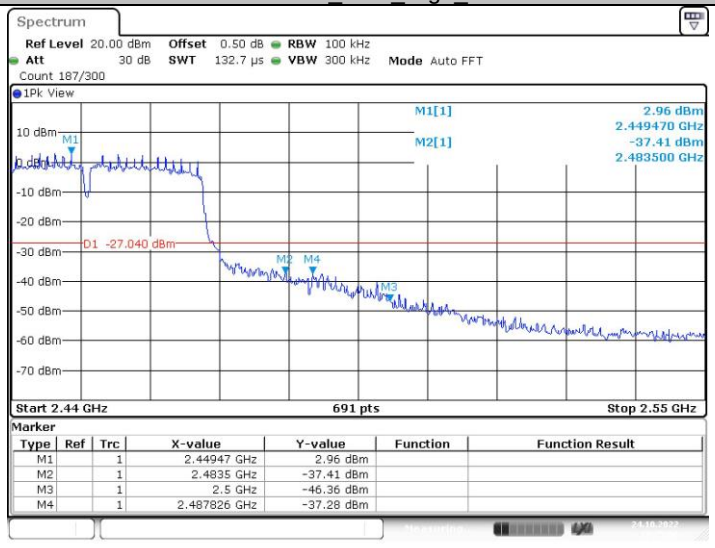
11N40MIMO_Ant1_Low_2422



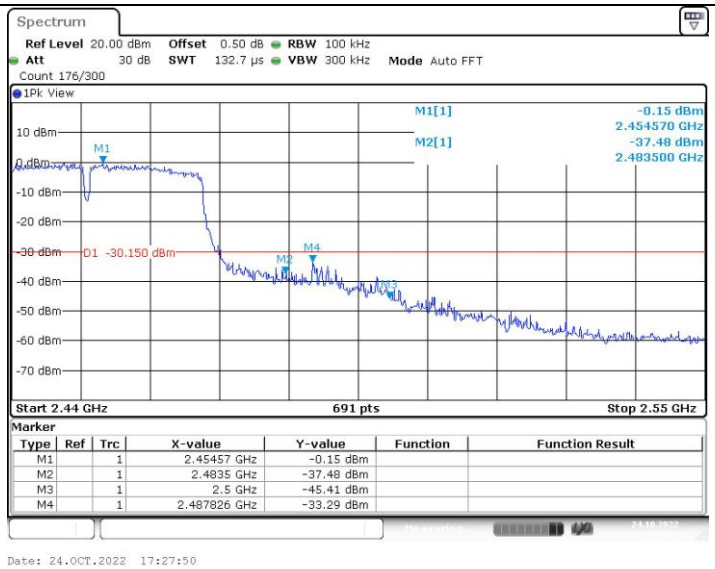
11N40MIMO_Ant2_Low_2422



11N40MIMO_Ant1_High_2452

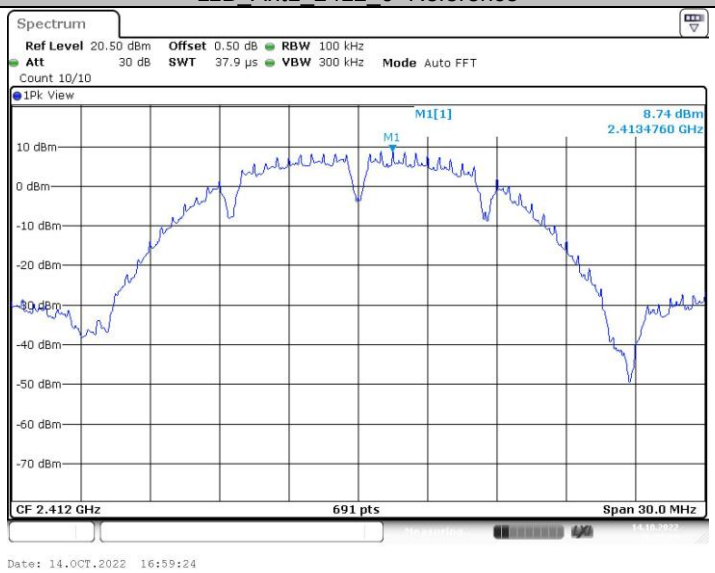


11N40MIMO_Ant2_High_2452

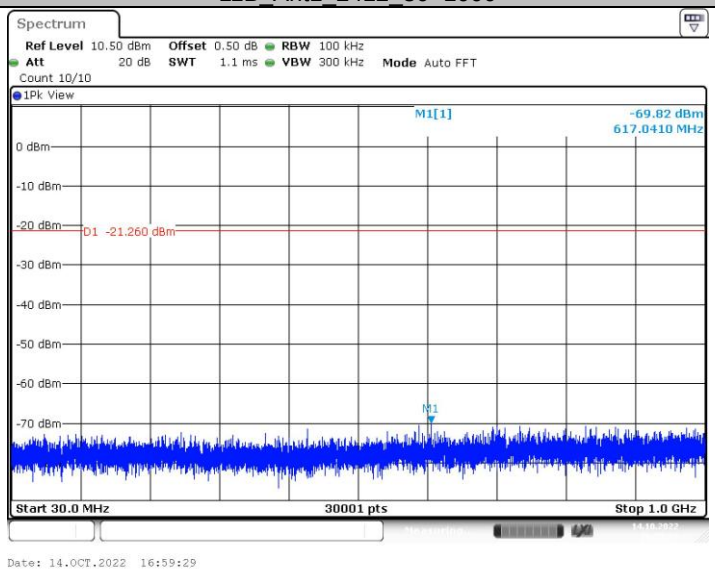

Spectrum
Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz
Att 30 dB SWT 132.7 µs VBW 300 kHz Mode Auto FFT
Count 176/300
1Pk View
M1[1] -0.15 dBm
2.454570 GHz
M2[1] -37.48 dBm
2.483500 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -30.150 dBm
Start 2.44 GHz
691 pts
Stop 2.55 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.45457 GHz -0.15 dBm
M2 1 2.4835 GHz -37.48 dBm
M3 1 2.5 GHz -45.41 dBm
M4 1 2.487826 GHz -33.29 dBm
Date: 24.OCT.2022 17:27:50

Conducted Spurious Emission Test Graphs

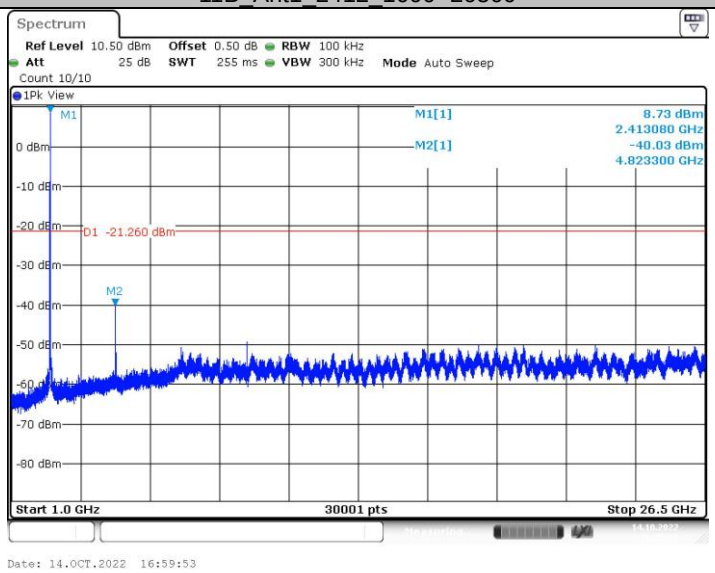
11B_Ant1_2412_0~Reference



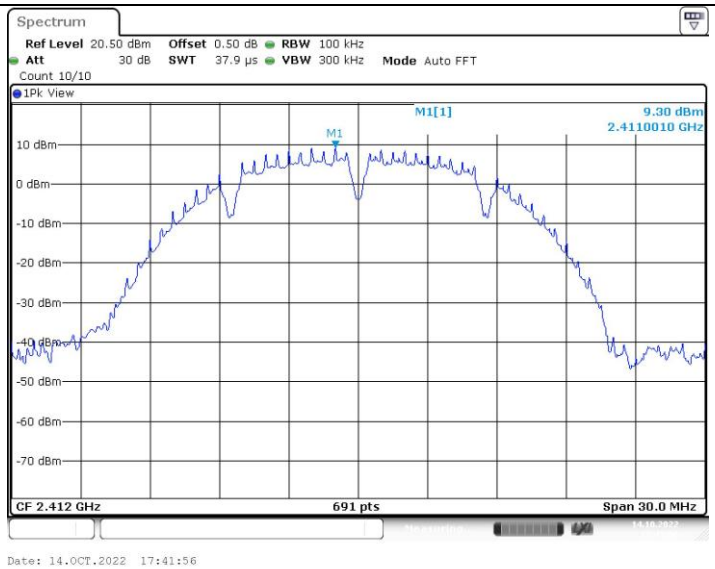
11B_Ant1_2412_30~1000



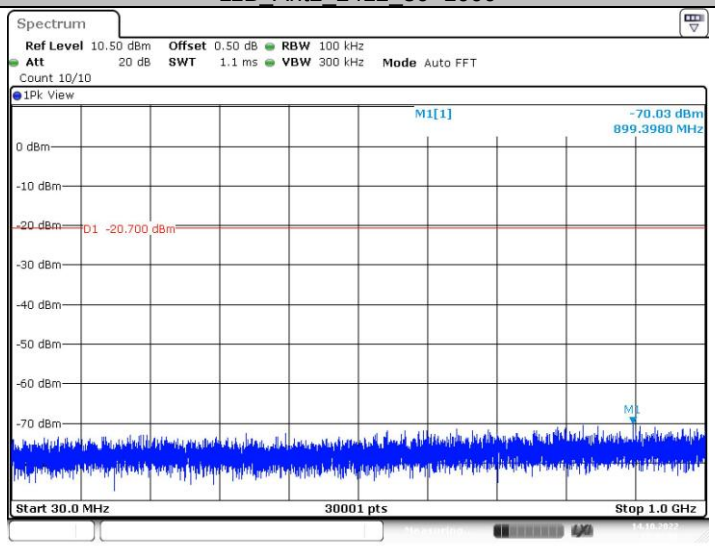
11B_Ant1_2412_1000~26500



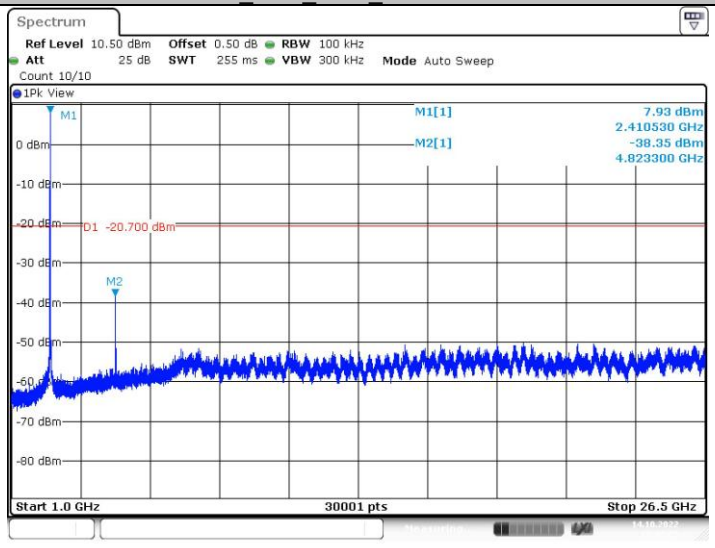
11B_Ant2_2412_0~Reference



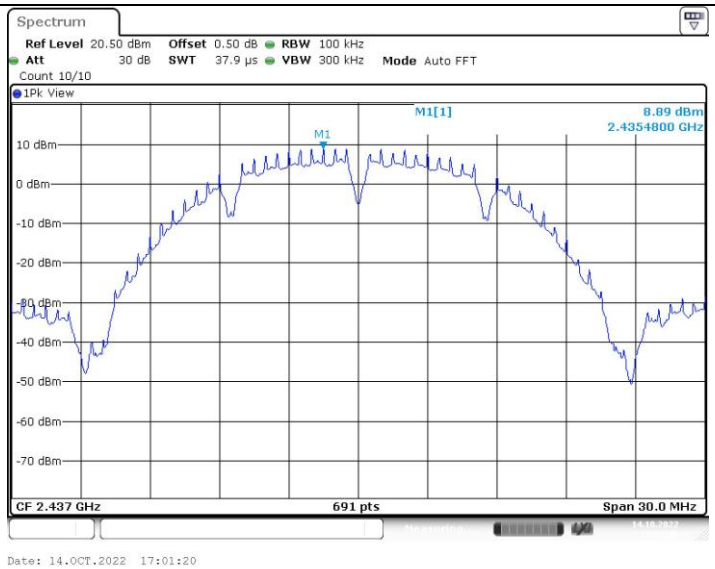
11B_Ant2_2412_30~1000



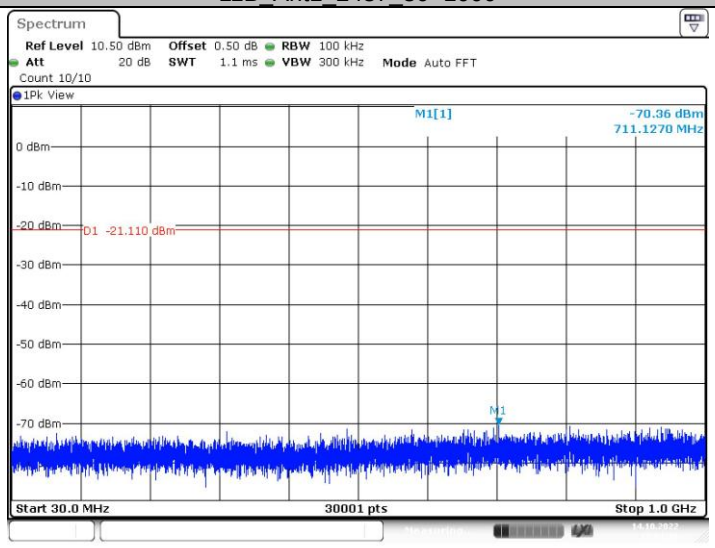
11B_Ant2_2412_1000~26500



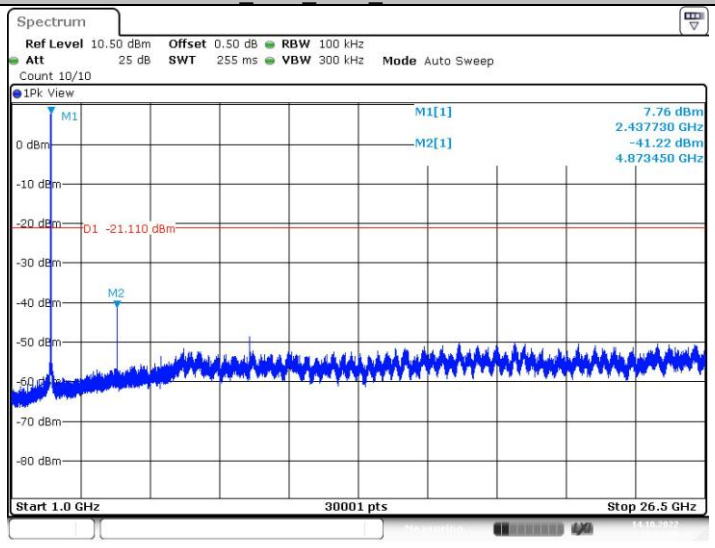
11B_Ant1_2437_0~Reference



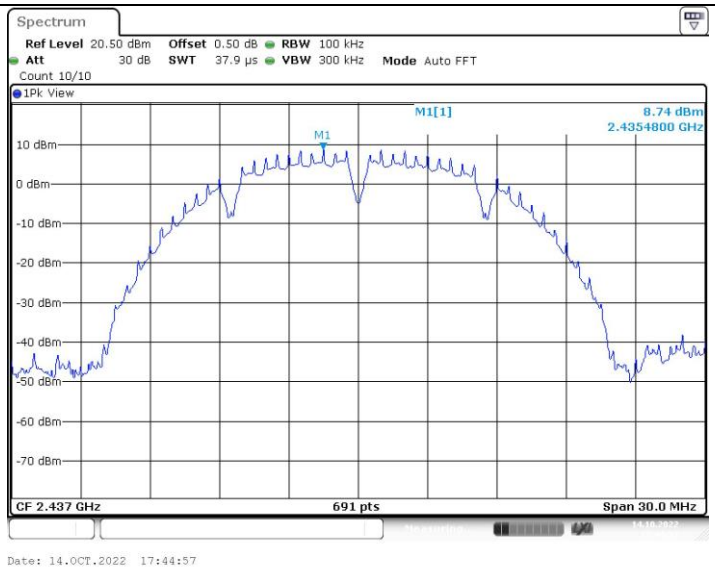
11B_Ant1_2437_30~1000



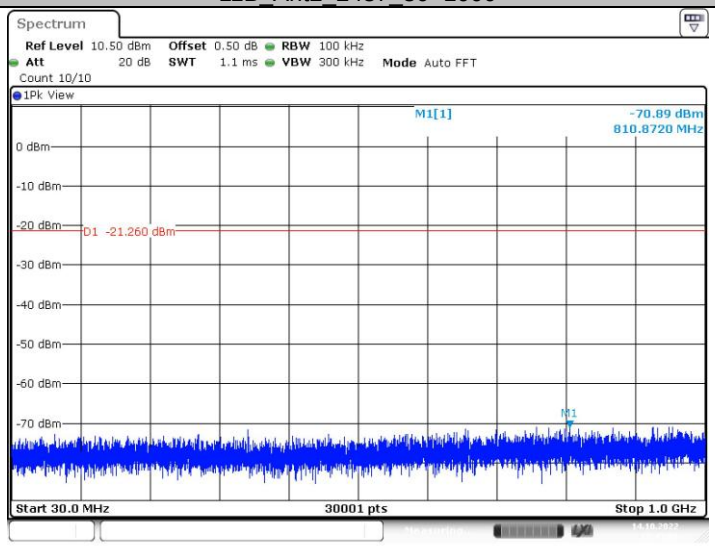
11B_Ant1_2437_1000~26500



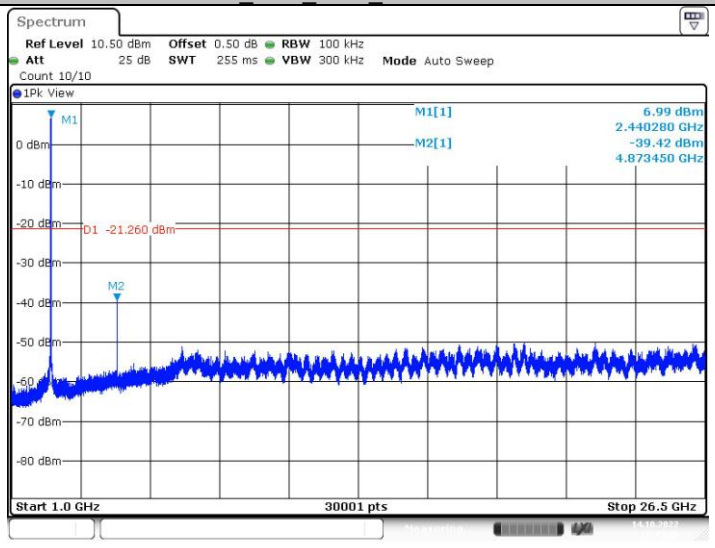
11B_Ant2_2437_0~Reference



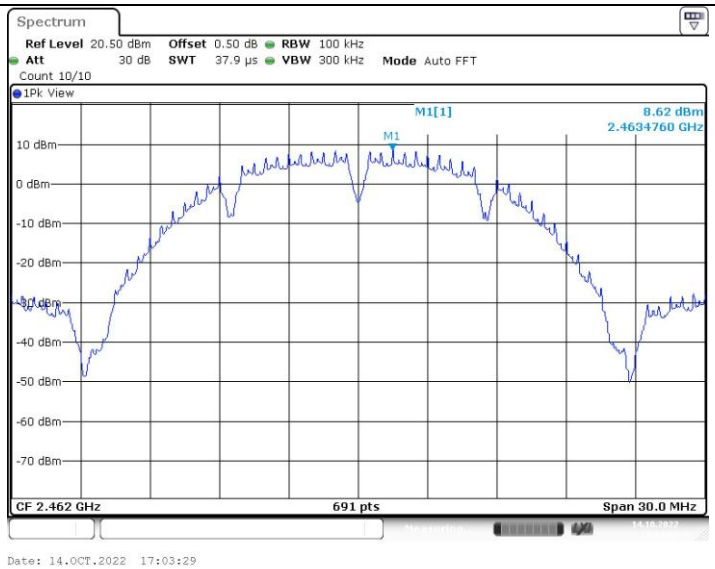
11B_Ant2_2437_30~1000



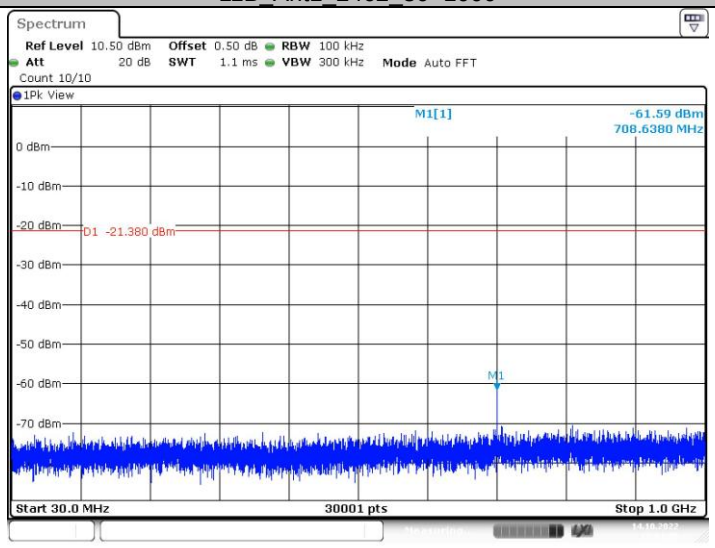
11B_Ant2_2437_1000~26500



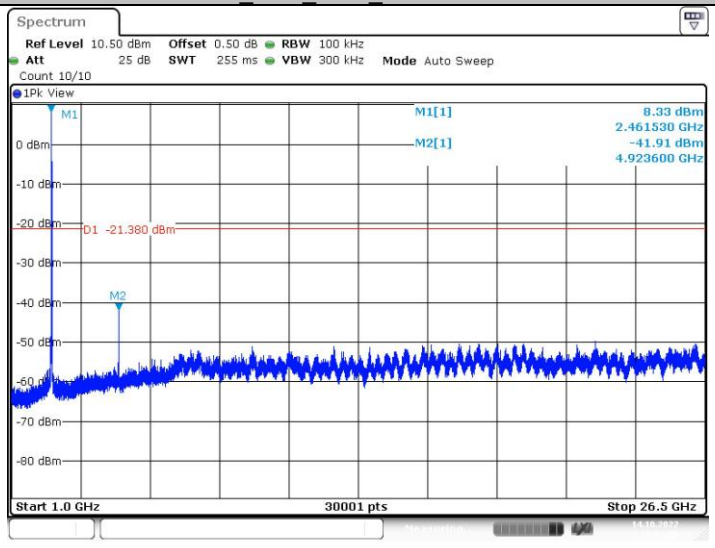
11B_Ant1_2462_0~Reference



11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500



11B_Ant2_2462_0~Reference