TEST REPORT

Applicant	:	Shenzhen Gotron Electronic CO.,LTD.
Product Name	:	Smart Phone
Brand Name	:	ulefone
Model Name	:	GQ5012
Series Model	:	Armor 29 Pro, Armor 29 Ultra, Armor 29, Armor 29T Ultra, Armor 29T Pro, Armor 29 Lite, Armor 29s, Armor 29s Pro
FCC ID	:	2AOWK-5012
Test Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of Receipt	:	2025.02.11
Date of Test	:	2025.02.11~2025.04.11
Issue Date	:	2025.04.29

Report Prepared by : Jacob. Cai

(Jacob Cai)

Report Approved by : Jason Wu

(Jason Wu)

Authorized Signatory : Robinson Luo

(Robinson Luo)

Authorized Signature:

Robinson Luo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

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REVISION HISTORY

Rev.	Issue Date	Revisions	Revised by
A0	2025.04.29	Initial Release	Terry Yang

DECLARATION OF REPORT

1. The device has been tested by GTS, and the test results show that the equipment under test (EUT) is in compliance with the requirements of 47 CFR 15.247. And it is applicable only to the tested sample identified in the report.

2. This report shall not be reproduced except in full, without the written approval of GTS, this document only be altered or revised by GTS, personal only, and shall be noted in the revision of the document.

3. The general information of EUT in this report is provided by the customer or manufacture, GTS is only responsible for the test data but not for the information provided by the customer or manufacture.

4. The results in this report is only apply to the sample as tested under conditions. The customer or manufacturer is responsible for ensuring that the additional production units of this model have the same electrical and mechanical components.

5. In this report, '☐' indicates that EUT does not support content after '☐', and '☑' indicates that it supports content after '☑'

SUMMARY OF TEST RESULT

Report Section	Standard Section	Test Item	Judgment	Remark
3.1	47 CFR 15.247(b)(3)	Maximum Peak Conducted Output Power	PASS	--
3.2	--	Duty Cycle	Report only	--
3.3	47 CFR 15.247(a)(2)	6dB Bandwidth	PASS	--
	--	99% Bandwidth	Report only	--
3.4	47 CFR 15.247(e)	Power Spectral Density	PASS	--
3.5	47 CFR 15.247(d)	Conducted Band Edge	PASS	--
3.6	47 CFR 15.247(d)	Conducted Spurious Emission	PASS	--
3.7	47 CFR 15.247(d)/15.209(a)/15.205(a)	Radiated Spurious Emission and Restricted Band	PASS	--
3.8	47 CFR 15.207(a)	AC Power-Line Conducted Emission	PASS	--
3.9	47 CFR 15.203	Antenna Requirements	PASS	--

1. GENERAL DESCRIPTION

1.1. Applicant

Name	:	Shenzhen Gotron Electronic CO.,LTD.
Address	:	7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China

1.2. Manufacturer

Name	:	Shenzhen Gotron Electronic CO.,LTD.
Address	:	7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China

1.3. Factory

Name	:	Shenzhen Gotron Electronic CO.,LTD.
Address	:	7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China

1.4. General Information of EUT

General Information	
Equipment Name	Smart Phone
Brand Name	ulefone
Model Name	GQ5012
Series Model	Armor 29 Pro, Armor 29 Ultra, Armor 29, Armor 29T Ultra, Armor 29T Pro, Armor 29 Lite, Armor 29s, Armor 29s Pro
Model Difference	All the same except for model name
Antenna Type	PIFA Antenna
Antenna Gain	2.6dBi
Sample No:	202502060001001
Adapter:	Input:100-240V~50/60Hz 1.8AOutput:5.0V⎓ 3.0A 15.0W OR 9.0V⎓ 3.0A 27.0W OR 12.0V⎓ 3.0A 36.0W OR 15.0V⎓ 3.0A 45.0W OR 20.0V⎓ 5.0A 100.0W MAX PPS:3.6V-20.0V⎓ 6.0A 120.0W MAX
Battery	Rated Voltage:7.74V Charge Limit Voltage:8.9V Capacity:10600mAh
Hardware version	N/A
Software version	N/A
Connecting I/O Port(s)	Refer to the remark below.

Remark:

The above information of EUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.5. Equipment Specification

Equipment Specification			
Frequency Range	2412MHz - 2462MHz		
Maximum AVG Output Power To Antenna	☑802.11b:	17.78dBm (0.05998W)	
	☑802.11g:	21.96dBm (0.15704W)	
	☑802.11n(HT)20:	24.066dBm (0.25504W)	
	☑802.11n(HT)40:	23.858dBm (0.24311W)	
	☑802.11ax(HE)20:	24.614dBm (0.28933W)	
	☑802.11ax(HE)40:	24.069dBm (0.25521W)	
Type of Modulation	☑802.11b: DSSS (DBPSK/DQPSK/CCK)		
	☑802.11g/n(HT): OFDM (BPSK/QPSK/16QAM/64QAM)		
	☑802.11ax(HE): OFDM (BPSK/QPSK/16QAM/64QAM)		
Antenna Information	☑SISO	Antenna Type:	PIFA
		Antenna 0 Gain:	2.6dBi
		Antenna 1 Gain:	2.6dBi
	☑MIMO	Antenna Type:	PIFA
		Antenna 0 Gain:	2.6dBi
		Antenna 1 Gain:	2.6dBi

Note:

1. The 802.11b&802.11g mode cannot transmit with dual antennas simultaneously.

1.6. Modification of EUT

No modifications are made to the EUT during all test items.

1.7. Laboratory Information

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

- **FCC —Registration No.: 381383**
  Designation Number: CN5029
  Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.
- **ISED—Registration No.: 9079A**
  CAB identifier: CN0091
  The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing.
- **NVLAP (LAB CODE:600179-0)**
  Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

All tests were performed at:
Global United Technology Services Co., Ltd.
Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

1.8. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

47 CFR Part 15 Subpart C §15.247

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

2. TEST CONFIGURATION OF EUT

2.1. Carrier Frequency Channel

Frequency Band	Channel	Frequency MHz	Channel	Frequency MHz
2400 - 2483.5 MHz	**01**	**2412**	07	2442
	02	2417	08	2447
	03	**2422**	**09**	**2452**
	04	2427	10	2457
	05	2432	**11**	**2462**
	06	**2437**		

Remark:

1. For 20 MHz Bandwidth: Low Channel: **CH 01_2412 MHz**; Middle Channel: **CH 06_2437 MHz**; High Channel: **CH 11_2462 MHz**. For 40 MHz Bandwidth: Low Channel: **CH 03_2422 MHz**; Middle Channel: **CH 06_2437 MHz**; High Channel: **CH 09_2452 MHz**.

2.2. Test Modes

Final test modes are considering the modulation and worse data rates as below table.

Summary Table of Test Modes			
Test Item	Mode	Data Rate	Channel
For Conducted and Radiated Test	☑802.11b:	1 Mbps	Low, Middle, High
	☑802.11g:	6 Mbps	Low, Middle, High
	☑802.11n(HT)20:	MCS 0	Low, Middle, High
	☑802.11n(HT)40:	MCS 0	Low, Middle, High
	☐802.11ac(VHT)20:	MCS 0	Low, Middle, High
	☐802.11ac(VHT)40:	MCS 0	Low, Middle, High
	☑802.11ax(HE)20:	MCS 0	Low, Middle, High
	☑802.11ax(HE)40:	MCS 0	Low, Middle, High
For AC Power-line Conducted Emission	802.11b: High Channel		

Remark:

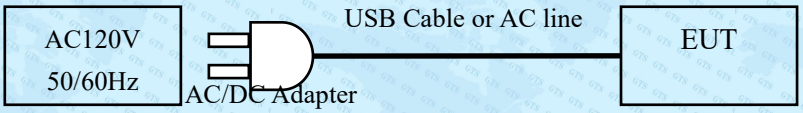
1.All the test modes of Radiated Spurious Emission (RSE) were tested at the worst data rate; only the worse data shown in report.

2.The worst test data below 1GHz is 802.11ax20_ MIMO_CH1.

3.The worst test data above 1GHz is the 802.11b/g mode antenna 0, and 11n/ax is the MIMO mode.

2.3. Block Diagram of Test System

2.3.1. For AC Power-Line Conducted Emission



2.3.2. For Radiated Spurious Emission

2.3.3. For Conducted Test

2.4. Description of Support Units

NO.	Unit	Brand	Model	Description
1	ROUTER	NETGEAR	R7000	N/A
2	PC	Redmi G	2021Ryzen	N/A

2.5. Test Software and Power Level

During the test, the channel and power control software provided by the customer is used to control the operation channel and output power level.

2.6. EUT Operating Conditions

For AC power-line conducted emission, the EUT was connected under the large package sizes transmission.

For radiated spurious emission and conducted test, the engineering test program was provided and make the EUT to continuous transmit/receive.

2.7. Equipment List

2.7.1. For AC Power-Line Conducted Emission

Equipment Name	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date
Test Receiver	R&S	ESPI	101679	2024.05.22	2025.05.21
LISN	R&S	ENV216	100300	2024.05.22	2025.05.21
LISN	R&S	ENV216	100333	2024.05.22	2025.05.21
Thermometer	DeLi	N/A	N/A	2024.09.22	2025.09.21
Test Software	FALA	EZ-EMC	N/A	N/A	N/A

2.7.2. For Radiated Spurious Emission

Equipment Name	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date
Signal analyzer	Agilent	N9020A	MY50200811	2024.05.22	2025.05.21
Amplifier	JPT	JPA0118-55-303A	1910001800055000	2024.05.22	2025.05.21
Amplifier	JPT	JPA-10M1G32	21010100035001	2024.05.22	2025.05.21
Antenna/Turn table Controller	Brilliant	N/A	N/A	N/A	N/A
Loop Antenna	Daze	ZN30900C	20077	2024.05.22	2025.05.21
Bilog Antenna	SCHWARZBECK	VULB 9168	01174	2024.05.22	2025.05.21
Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120D	02334	2024.05.22	2025.05.21
Horn Antenna	COM-POWER	AH-1840	10100008	2024.05.22	2025.05.21
Thermometer	DeLi	N/A	N/A	2024.09.22	2025.09.21
Test Software	FALA	EMC-RI	N/A	N/A	N/A
Cable	Lyle Microwave	SMAM	RG142	/	/
Vector signal generator	Keysight	N5182B	MY50200811	2025.05.21	2026.05.20
Horn Antenna	Schwarzbeck	BBHA 9120D	2802	2024-08-11	2025-08-10

2.7.3. For Conducted Test

Equipment Name	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date
Power meter	Anritsu	ML2496A	1935001	2024.09.29	2025.09.28
Power sensor	Anritsu	MA2411B	1911006	2024.09.29	2025.09.28
Power sensor	DARE	RPR3006W	16I00054SN016	2024.09.29	2025.09.28
Power sensor	DARE	RPR3006W	RPR6W-2001005	2024.09.29	2025.09.28
Power sensor	Rediteq	RPR3006W	RPR6W-2201002	2024.11.15	2025.11.14
Power sensor	Rediteq	RPR3006W	RPR6W-2201003	2024.11.15	2025.11.14
Power sensor	Keysight	U2021XA	MY59120004	2024.08.14	2025.08.13
Adjustable Attenuator	Agilent	8494B	MY42144015	2024.09.29	2025.09.28
Adjustable Attenuator	Agilent	8496B	MY42143776	2024.09.29	2025.09.28
Environmental Test Chamber	KSON	THS-B6C-150	9159K	2024.01.18	2025.01.17
Signal analyzer	Keysight	N9020A	MY50510136	2024.09.29	2025.09.28
Vector signal generator	Keysight	N5182B	MY57300196	2024.09.29	2025.09.28
Vector signal generator	Agilent	N5182A	MY50143555	2024.01.18	2025.07.17
Analog signal generator	Keysight	N5173B	MY60403026	2024.01.18	2025.07.17
Wideband radio communication tester	R&S	CMW500	101331	2024.09.29	2025.09.28
Spectrum analyzer	R&S	FSV40-N	101761	2024.08.23	2025.08.22
Switch Box	N/A	RFSW3003328	RFSW201019	N/A	N/A
Thermometer	DeLi	N/A	N/A	2024.09.22	2025.09.21
Test Software	FALA	LZ-RF	N/A	N/A	N/A

2.8. Measurement Uncertainty

The reported uncertainty of measurement y±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	RF output power, conducted	±0.958dB
2	Conducted spurious emissions	±2.988dB
3	All emissions, radiated 9KHz-30MHz	±0.96dB
4	All emissions, radiated 30MHz-1GHz	±2.50dB
5	All emissions, radiated 1GHz-18GHz	±3.51dB
6	Occupied bandwidth	±23.20Hz
7	Power spectral density	±0.886dB

3. TEST RESULT

3.1. Maximum conducted output power

3.1.1. Limit

47 CFR 15.247(b)(3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

47 CFR 15.247(b)(4): If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

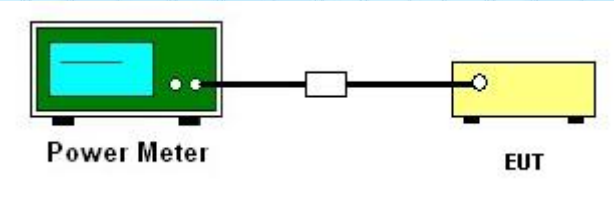
47 CFR 15.247(c)(1)(i): Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

3.1.2. Test Procedure

ANSI C63.10-2013 clause 11.9.2.3.2 Method AVGPM: Method AVGPM is a measurement using an RF average power meter, as follows:

measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at itsl maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.1.3. Test Setup



3.1.4. Test Result of Maximum Conducted Output Power

Please refer to the Appendix A1.

3.2. Duty Cycle

3.2.1. Limit

There is no limit requirement for Duty Cycle.

3.2.2. Test Procedure

ANSI C63.10-2013 clause 11.6: Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

1. A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.

2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

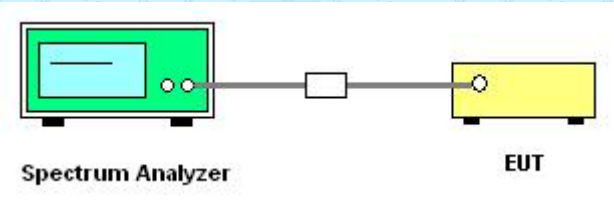
① Set the center frequency of the instrument to the center frequency of the transmission.

② Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

③ Set VBW ≥ RBW. Set detector = peak or average.

④ The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if T ≤ 16.7 μs.)

3.2.3. Test Setup



3.2.4. Test Result of Duty Cycle

Please refer to the Appendix A2.

3.3. 6dB Bandwidth and 99% Bandwidth

3.3.1. Limit

47 CFR 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

There is no limit requirement for 99% Bandwidth.

3.3.2. Test Procedure

1. The testing of 6dB Bandwidth follows *ANSI C63.10-2013 clause 11.8.1*: The steps for the first option are as follows:

① Set RBW = 100 kHz.

② Set the VBW ≥ [3 × RBW].

③ Detector = peak.

④ Trace mode = max hold.

⑤ Sweep = auto couple.

⑥ Allow the trace to stabilize.

⑦ Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

2. The testing of 99% Bandwidth follows *ANSI C63.10-2013 clause 6.9.3*: The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

① The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

② The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

③ Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in *ANSI C63.10-2013 clause 4.1.5.2*.

④ Step a) through step c) might require iteration to adjust within the specified range.

⑤ Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes)

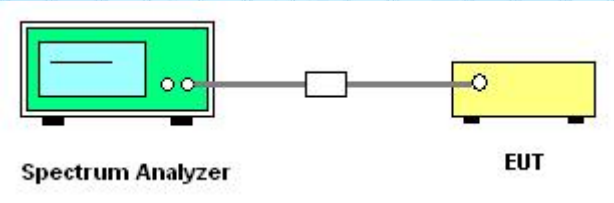
shall be used.

⑥ Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

⑦ If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

⑧ The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

3.3.3. Test Setup



3.3.4. Test Result of 6dB Bandwidth and 99% Bandwidth

Please refer to the Appendix A3.

3.4. Power Spectral Density

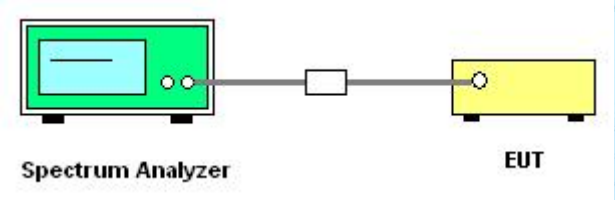
3.4.1. Limit

47 CFR 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

3.4.2. Test Procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to 3 kHz.
4. Set the VBW ≥ [3 × RBW].
5. Detector =RMS.
6. Sweep time = auto couple.
7. Trace mode = averaging.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.

3.4.3. Test Setup



3.4.4. Test Result of Power Spectral Density

Please refer to the Appendix A4.

3.5. Conducted Band Edge

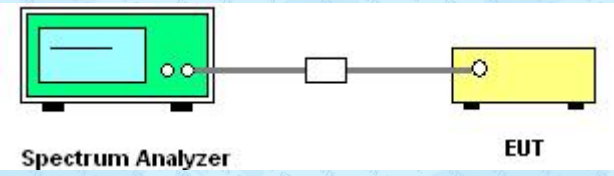
3.5.1. Limit

47 CFR 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.

3.5.2. Test Procedure

1. The testing follows *ANSI C63.10-2013 clause 11.13*.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW=300 kHz, RMS Detector. Conducted Band Edge measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the 100 kHz bandwidth within the band that contains the highest level of the desired power when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.5.3. Test Setup



3.5.4. Test Result of Conducted Band Edge

Please refer to the Appendix A5.

3.6. Conducted Spurious Emission

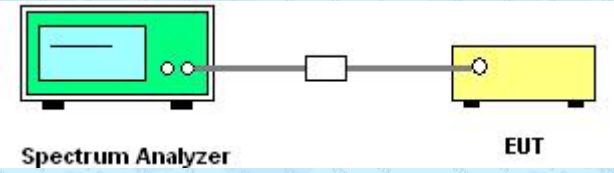
3.6.1. Limit

47 CFR 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.

3.6.2. Test Procedure

1. The testing follows *ANSI C63.10-2013 clause 7.8.8*.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 30 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.6.3. Test Setup



3.6.4. Test Result of Conducted Spurious Emission

Please refer to the Appendix A5.

3.7. Radiated Spurious Emission and Restricted Band

3.7.1. Limit

47 CFR 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.

47 CFR 15.205(a): Only spurious emissions are permitted in any of the frequency bands listed below:

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
0.090-0.110	12.29-12.293	149.9-150.05	1660-1710	8.025-8.5
0.495-0.505	12.51975-12.52025	156.52475-156.52525	1718.8-1722.2	9.0-9.2
2.1735-2.1905	12.57675-12.57725	156.7-156.9	2200-2300	9.3-9.5
4.125-4.128	13.36-13.41	162.0125-167.17	2310-2390	10.6-12.7
4.17725-4.17775	16.42-16.423	167.72-173.2	2483.5-2500	13.25-13.4
4.20725-4.20775	16.69475-16.69525	240-285	2690-2900	14.47-14.5
6.215-6.218	16.80425-16.80475	322-335.4	3260-3267	15.35-16.2
6.26775-6.26825	25.5-25.67	399.9-410	3332-3339	17.7-21.4
6.31175-6.31225	37.5-38.25	608-614	3345.8-3358	22.01-23.12
8.291-8.294	73-74.6	960-1240	3600-4400	23.6-24.0
8.362-8.366	74.8-75.2	1300-1427	4500-5150	31.2-31.8
8.37625-8.38675	108-121.94	1435-1626.5	5350-5460	36.43-36.5
8.41425-8.41475	123-138	1645.5-1646.5	7250-7750	Above 38.6

47 CFR 15.209(a): The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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
Above 960	500	3

3.7.2. Test Procedure

1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12.
2. 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.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Pre-amp Factor = Level.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:

① Span shall wide enough to fully capture the emission being measured;

② When frequency < 1 GHz:

• Set RBW=100 kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;

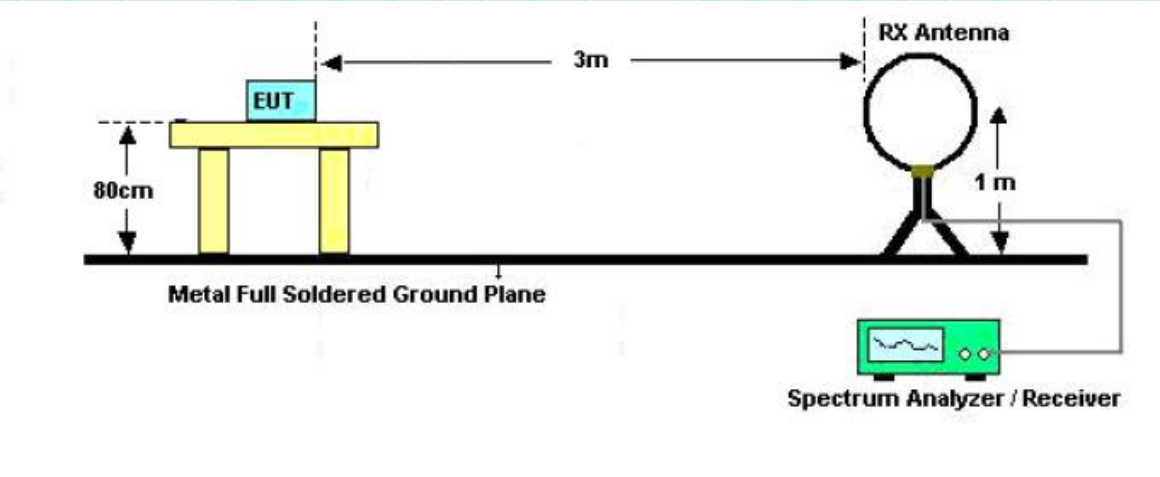
③ When frequency ≥ 1 GHz:

• Set RBW = 1 MHz; VBW = 3 MHz for peak measurement;

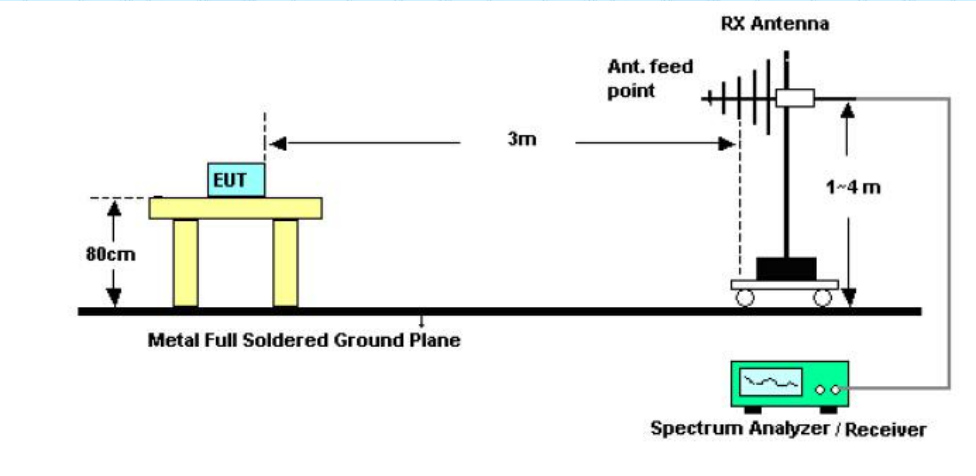
• Set RBW = 1 MHz; VBW = 10 Hz, when duty cycle is no less than 98 percent or VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.7.3. Test Setup

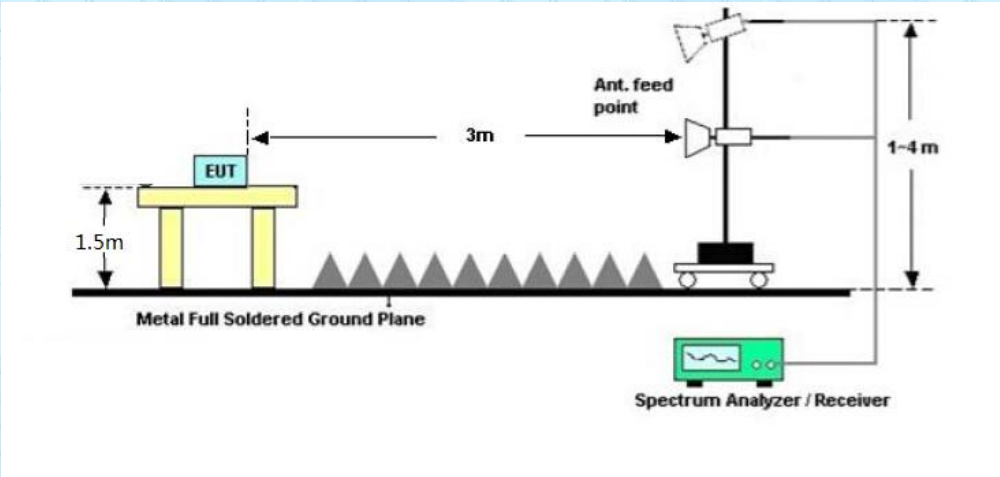
3.7.3.1. For radiated emissions below 30MHz



3.7.3.2. For radiated emissions from 30MHz to 1GHz



3.7.3.3. For radiated emissions above 1GHz



3.7.4. Test Result of Radiated Spurious Emission

For 9 kHz ~ 30 MHz

Note:

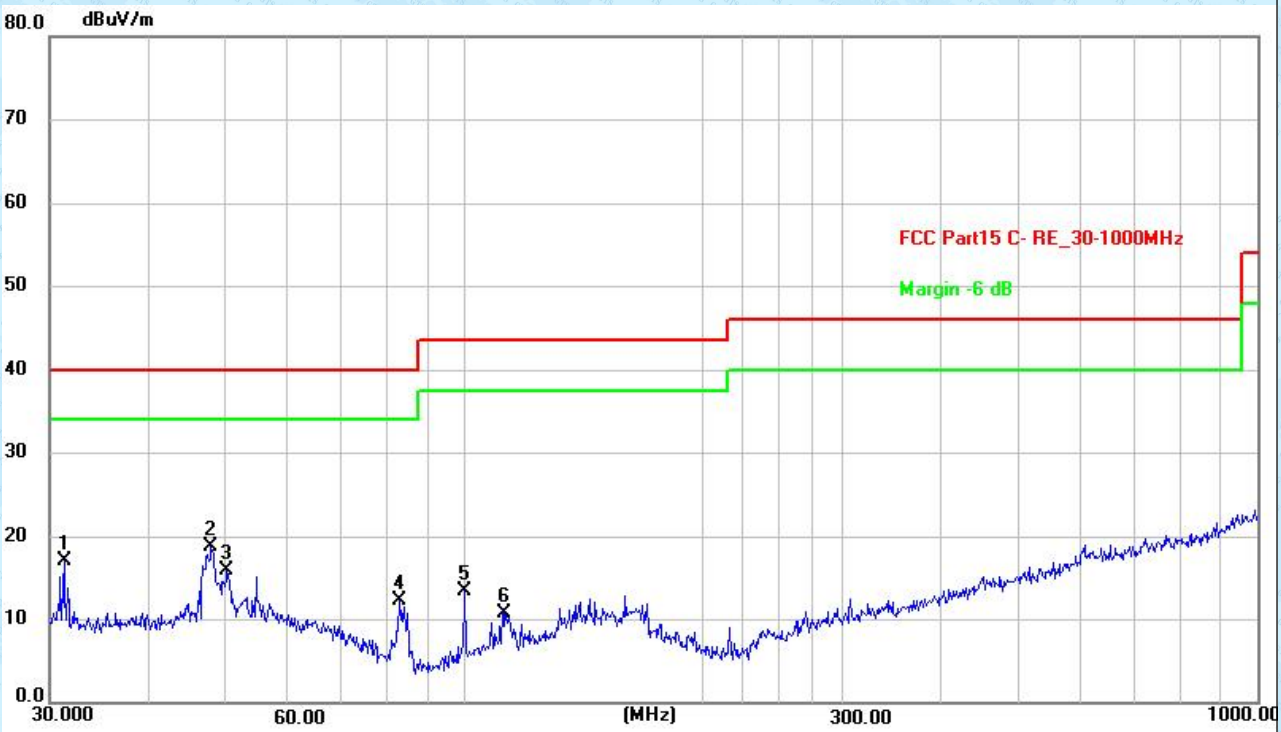
1.The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Below 1GHz:

Note:

1. All modes have been tested, only worst case MIMO(802.11ax20-TX Channel 1) mode was recorded in the test report.
2. Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. The emission levels of other frequencies were less than 20dB margin against the limit.
5. Margin value = Emission level-Limit value.

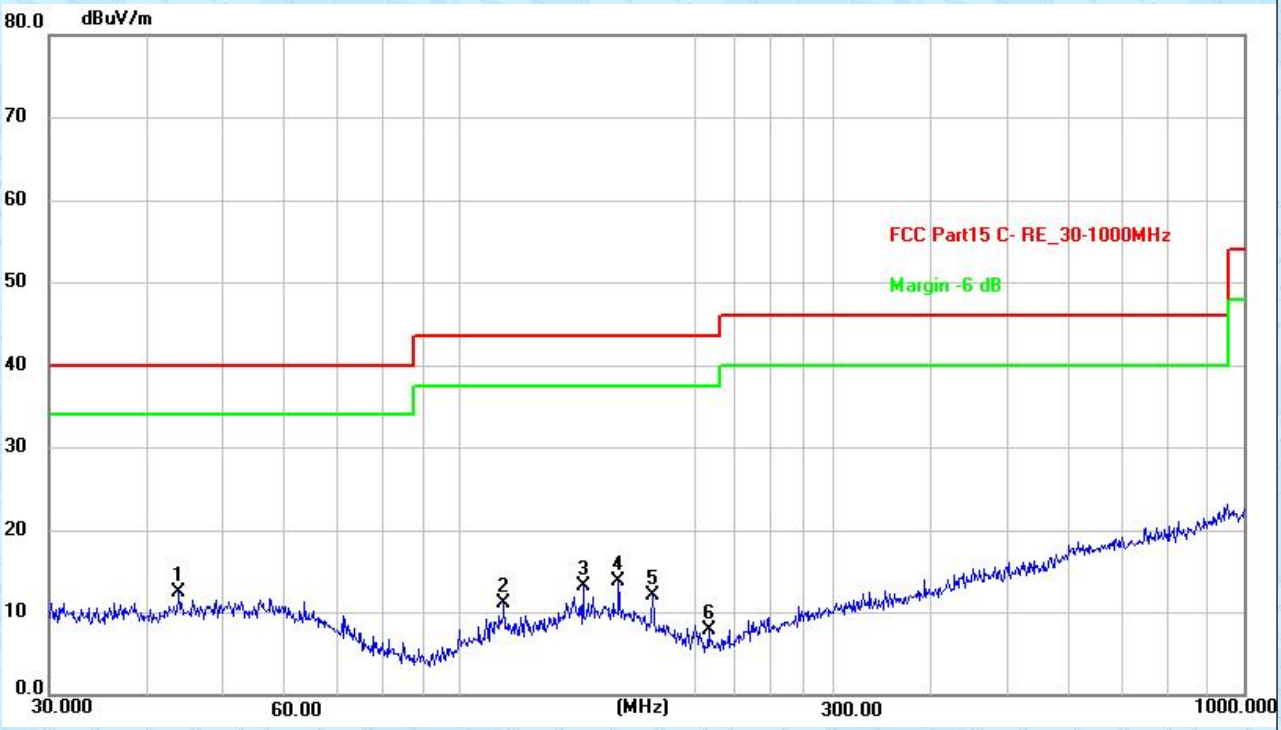
Polarization	Horizontal	Mode	TX Channel 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	31.2893	46.89	-29.75	17.14	40.00	-22.86	peak
2 *	47.9940	47.69	-29.00	18.69	40.00	-21.31	peak
3	50.2324	44.86	-28.98	15.88	40.00	-24.12	peak
4	82.9385	46.96	-34.63	12.33	40.00	-27.67	peak
5	100.2286	46.86	-33.52	13.34	43.50	-30.16	peak

6	112.1305	43.11	-32.29	10.82	43.50	-32.68	peak

Polarization	Vertical	Mode	TX Channel 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	43.9658	41.58	-29.11	12.47	40.00	-27.53	peak
2	114.1138	43.52	-32.32	11.20	43.50	-32.30	peak
3	143.8295	42.59	-29.37	13.22	43.50	-30.28	peak
4	159.7844	42.68	-28.92	13.76	43.50	-29.74	peak
5	176.2686	42.76	-30.59	12.17	43.50	-31.33	peak
6	207.8501	40.84	-32.84	8.00	43.50	-35.50	peak

Above 1GHz:

Note:

1.The worst test data above 1GHz is the 802.11b/g mode antenna 0, and 802.11N/AX is the MIMO mode test data was recorded in the test report.

2.In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.

3.We used the filter to test and the main frequency was filtered out.

4.Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).

5. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

6. The emission levels of other frequencies were less than 20dB margin against the limit.

7. Margin value = Emission level-Limit value.

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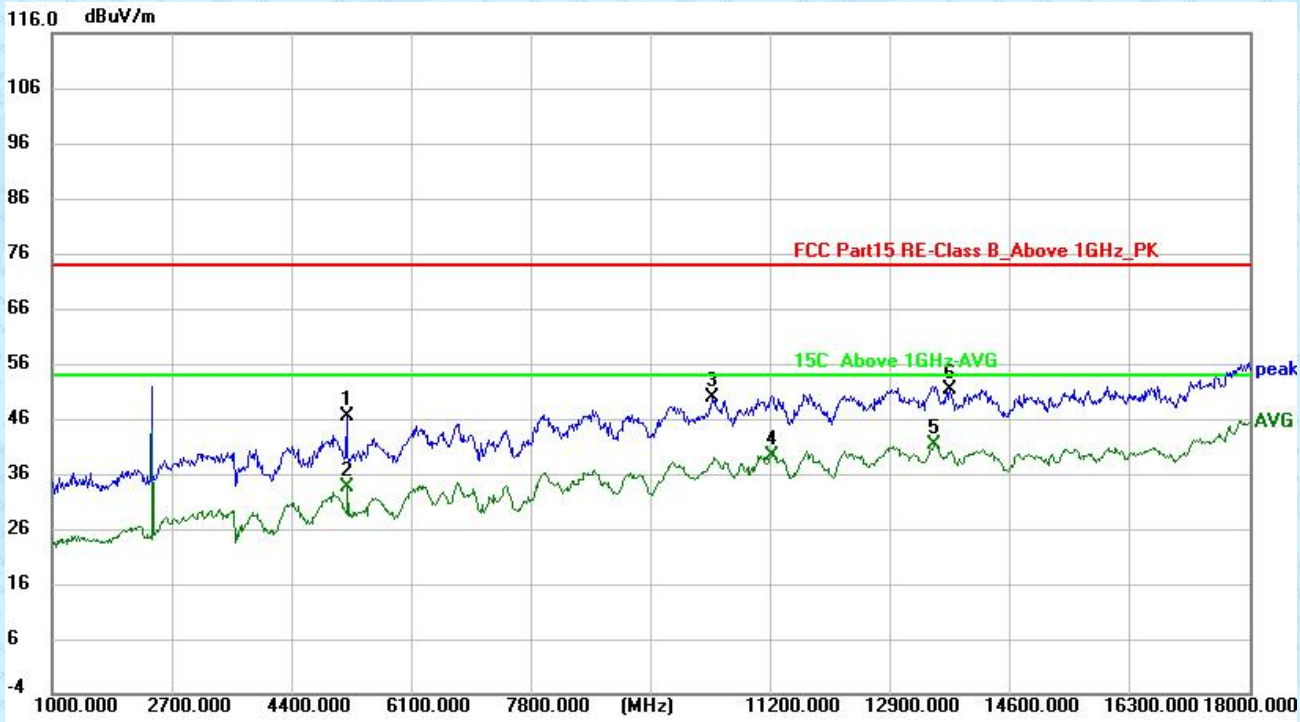
Polarization	Horizontal	Mode	TX Channel 1

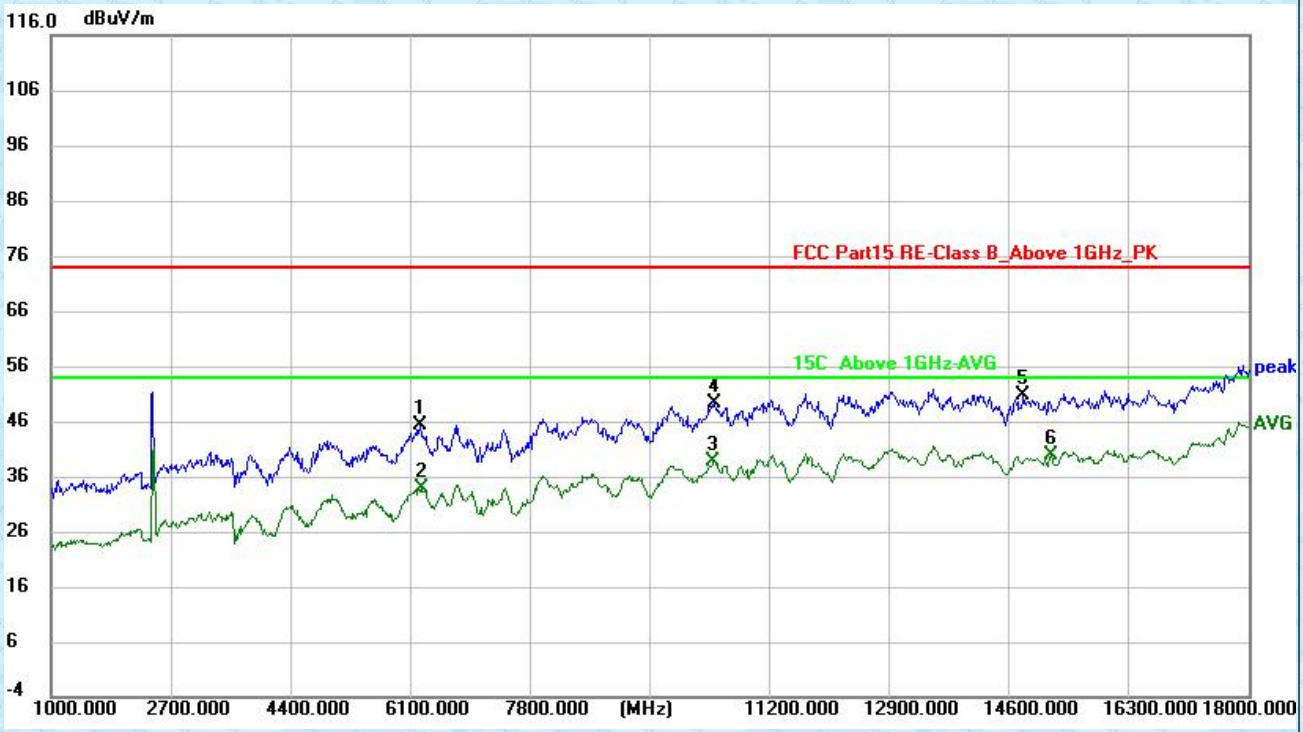


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5182.000	51.30	-4.78	46.52	74.00	-27.48	peak
2	5199.000	38.25	-4.74	33.51	54.00	-20.49	AVG
3	10367.000	44.08	5.77	49.85	74.00	-24.15	peak
4	11217.000	31.90	7.37	39.27	54.00	-14.73	AVG
5 *	13529.000	31.17	10.18	41.35	54.00	-12.65	AVG
6	13750.000	40.88	10.37	51.25	74.00	-22.75	peak

Polarization	Vertical	Mode	TX Channel 1

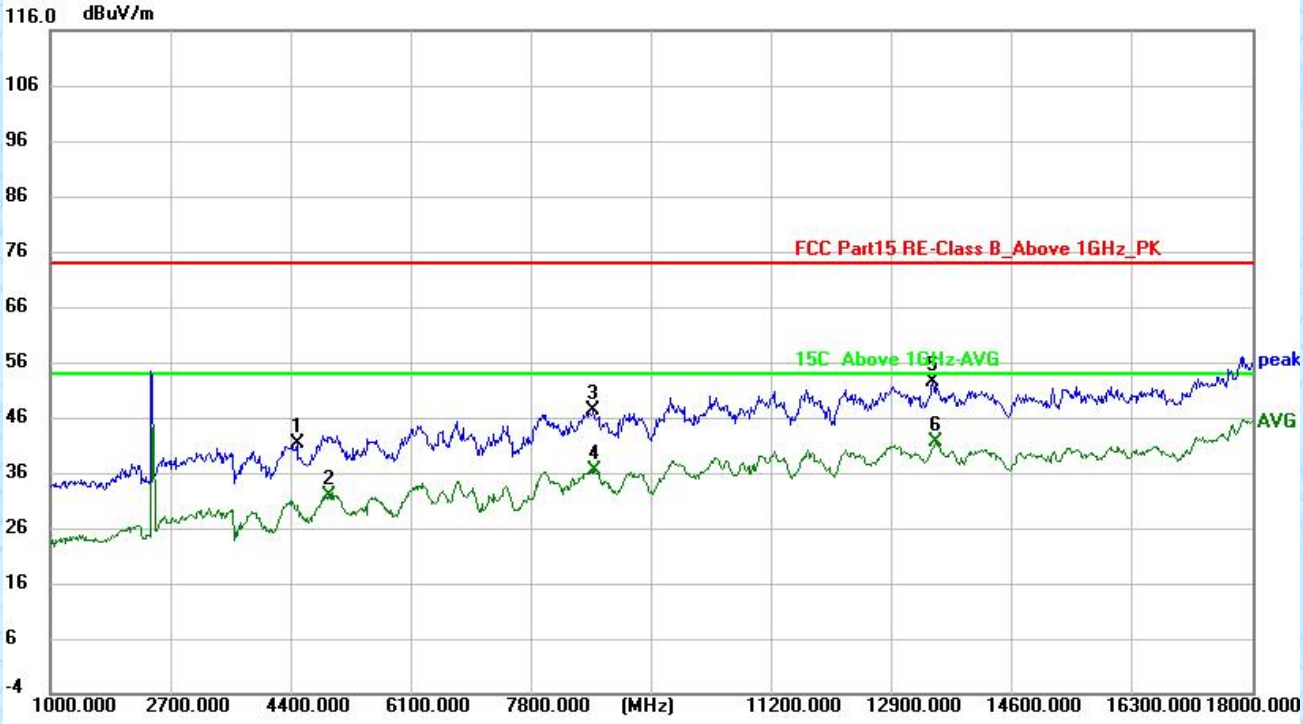
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6253.000	35.77	-1.79	33.98	54.00	-20.02	AVG
2	6287.000	46.43	-1.70	44.73	74.00	-29.27	peak
3	10350.000	42.69	5.73	48.42	74.00	-25.58	peak
4	10401.000	32.77	5.82	38.59	54.00	-15.41	AVG
5 *	13529.000	31.23	10.18	41.41	54.00	-12.59	AVG
6	14209.000	41.23	10.49	51.72	74.00	-22.28	peak

Polarization	Horizontal	Mode	TX Channel 6



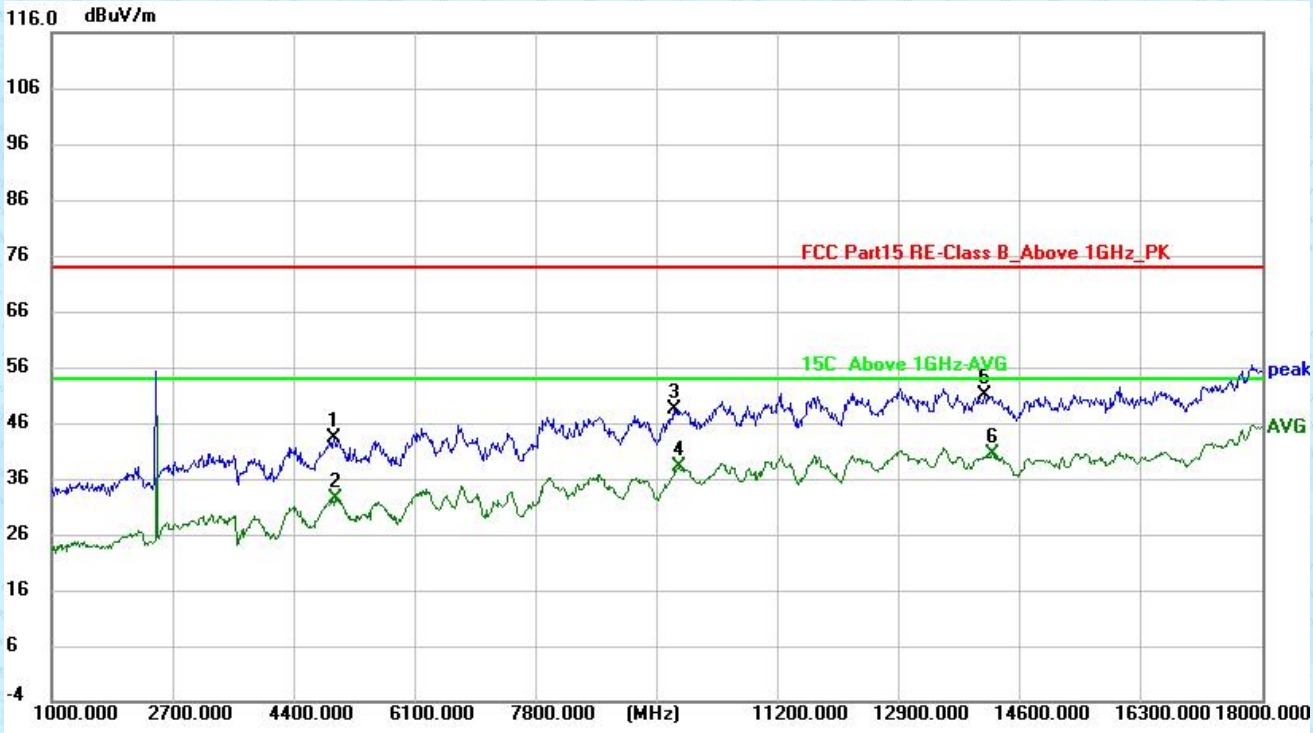
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6236.000	46.99	-1.84	45.15	74.00	-28.85	peak
2	6253.000	35.70	-1.79	33.91	54.00	-20.09	AVG
3	10401.000	32.97	5.82	38.79	54.00	-15.21	AVG
4	10418.000	43.40	5.86	49.26	74.00	-24.74	peak
5	14804.000	40.18	10.44	50.62	74.00	-23.38	peak
6 *	15195.000	28.80	11.03	39.83	54.00	-14.17	AVG

Polarization	Vertical	Mode	TX Channel 6



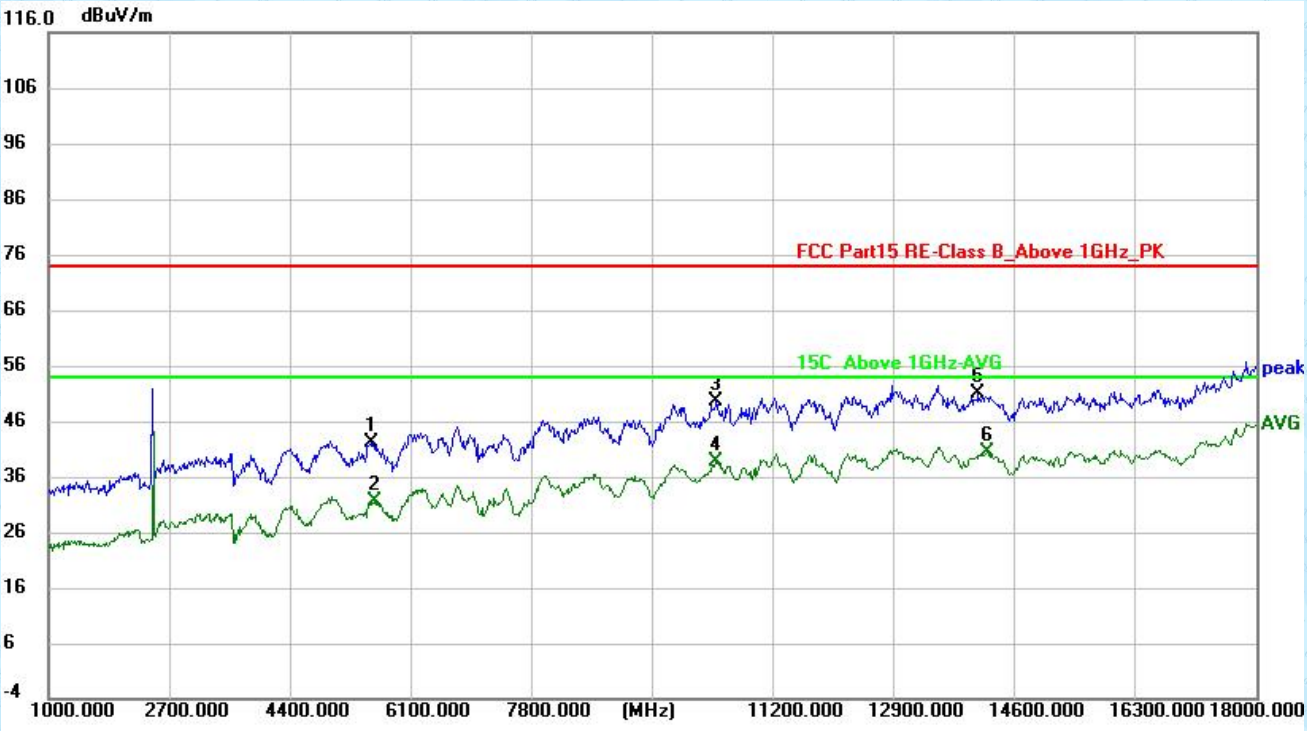
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4485.000	48.49	-7.22	41.27	74.00	-32.73	peak
2	4944.000	37.38	-5.39	31.99	54.00	-22.01	AVG
3	8684.000	44.47	2.78	47.25	74.00	-26.75	peak
4	8701.000	33.71	2.82	36.53	54.00	-17.47	AVG
5	13478.000	42.16	10.14	52.30	74.00	-21.70	peak
6 *	13529.000	31.35	10.18	41.53	54.00	-12.47	AVG

Polarization	Horizontal	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	48.53	-5.34	43.19	74.00	-30.81	peak
2	4978.000	37.79	-5.28	32.51	54.00	-21.49	AVG
3	9738.000	43.92	4.63	48.55	74.00	-25.45	peak
4	9823.000	33.35	4.78	38.13	54.00	-15.87	AVG
5	14107.000	40.55	10.55	51.10	74.00	-22.90	peak
6 *	14209.000	30.06	10.49	40.55	54.00	-13.45	AVG

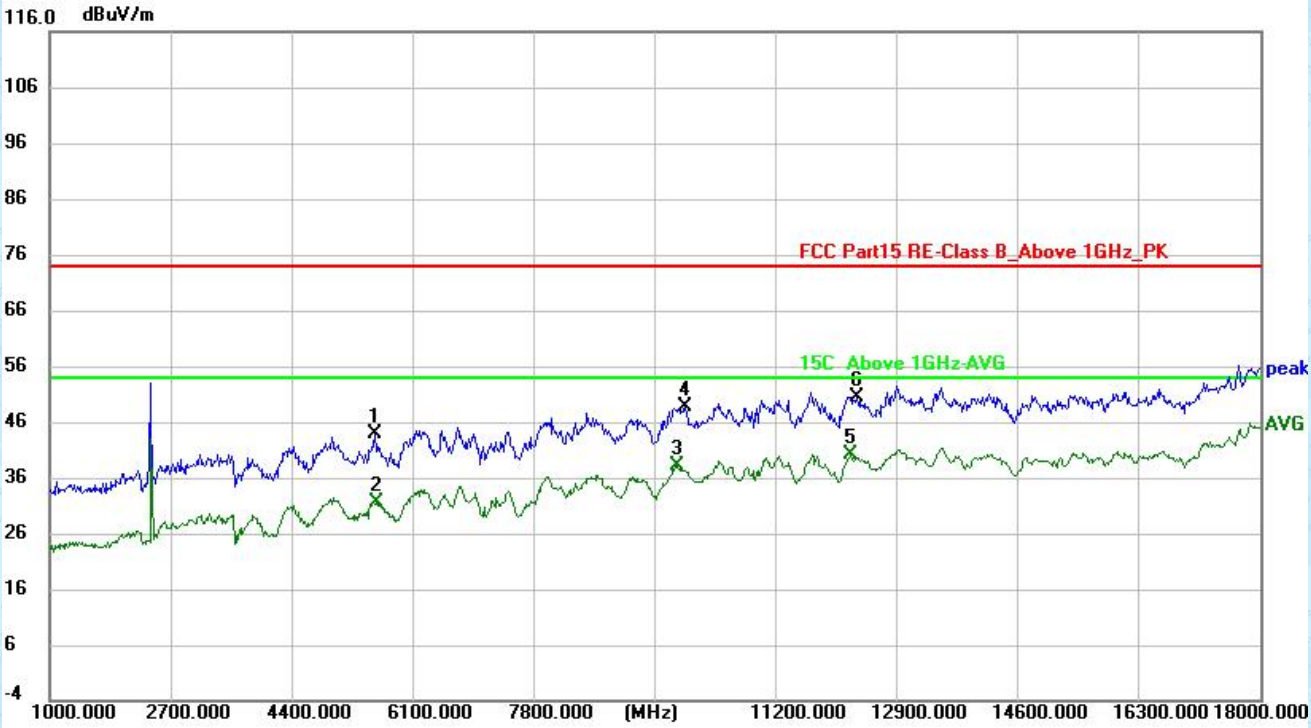
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5539.000	46.68	-4.50	42.18	74.00	-31.82	peak
2	5590.000	36.14	-4.50	31.64	54.00	-22.36	AVG
3	10401.000	43.71	5.82	49.53	74.00	-24.47	peak
4	10401.000	32.89	5.82	38.71	54.00	-15.29	AVG
5	14090.000	40.43	10.56	50.99	74.00	-23.01	peak
6 *	14209.000	29.87	10.49	40.36	54.00	-13.64	AVG

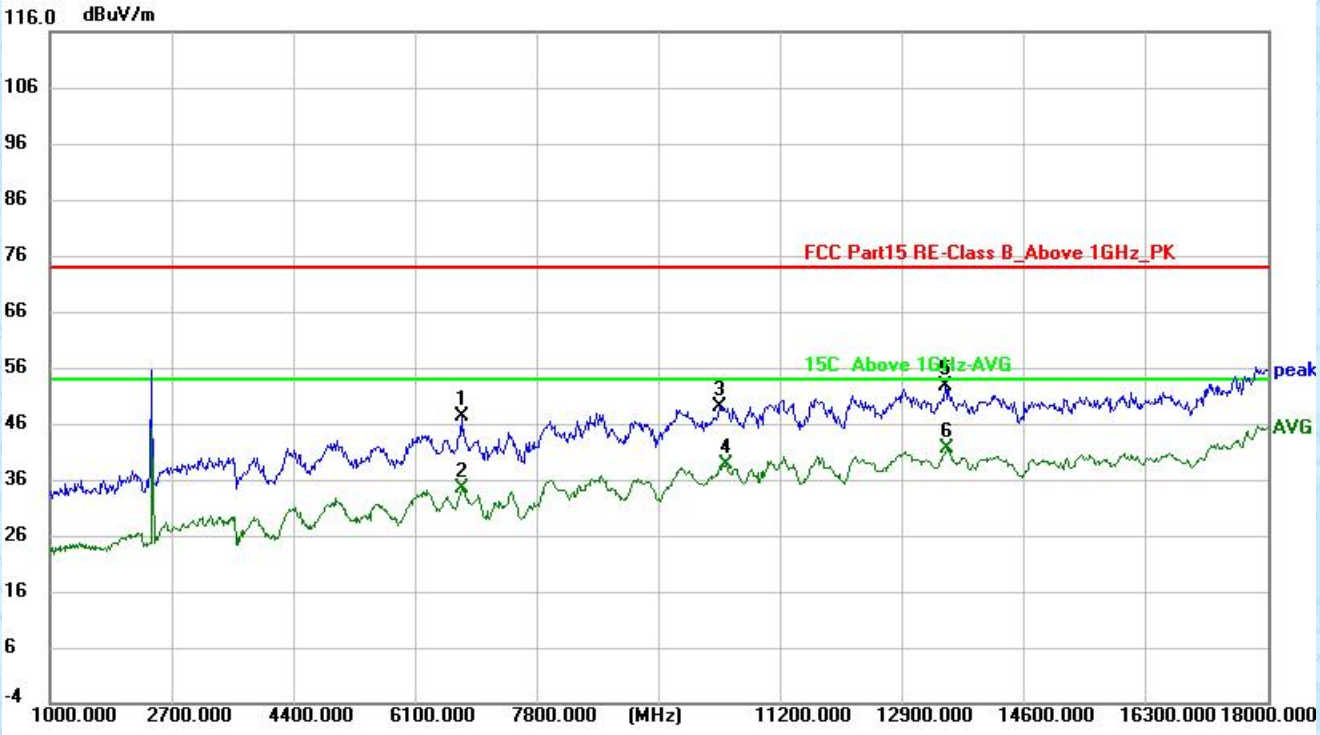
802.11g_ANT0

Polarization	Horizontal	Mode	TX Channel 1



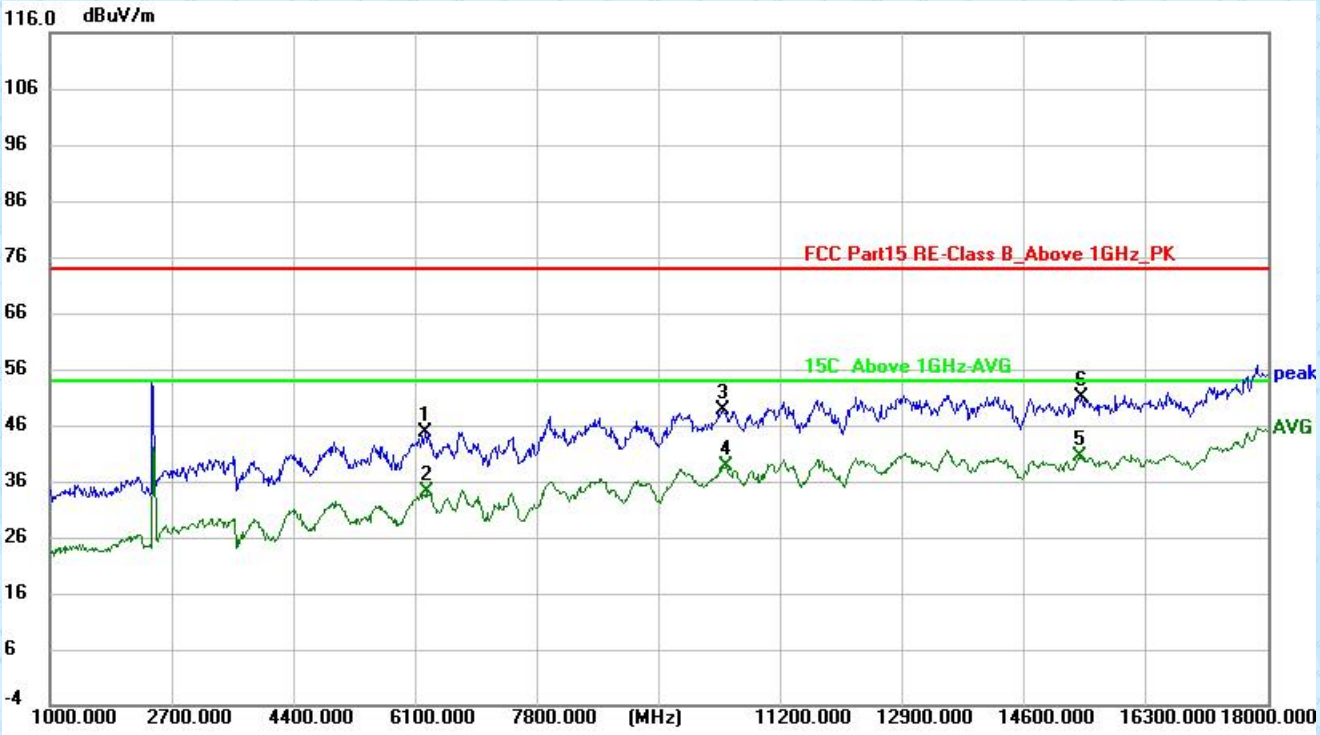
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5573.000	48.43	-4.49	43.94	74.00	-30.06	peak
2	5590.000	36.13	-4.50	31.63	54.00	-22.37	AVG
3	9823.000	33.37	4.78	38.15	54.00	-15.85	AVG
4	9925.000	43.80	4.97	48.77	74.00	-25.23	peak
5 *	12254.000	31.76	8.48	40.24	54.00	-13.76	AVG
6	12339.000	41.95	8.54	50.49	74.00	-23.51	peak

Polarization	Vertical	Mode	TX Channel 1



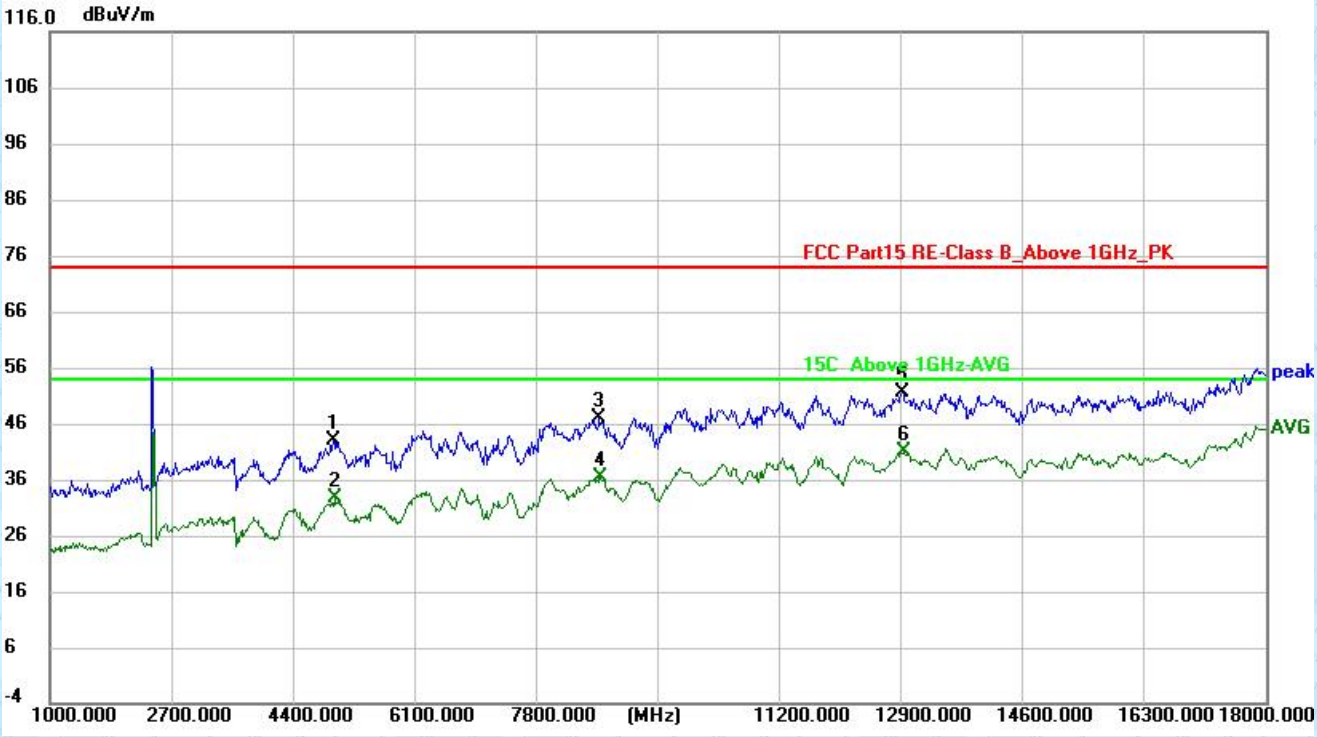
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6746.000	47.98	-0.65	47.33	74.00	-26.67	peak
2	6763.000	35.15	-0.62	34.53	54.00	-19.47	AVG
3	10350.000	43.36	5.73	49.09	74.00	-24.91	peak
4	10435.000	32.76	5.87	38.63	54.00	-15.37	AVG
5	13495.000	42.64	10.14	52.78	74.00	-21.22	peak
6 *	13529.000	31.32	10.18	41.50	54.00	-12.50	AVG

Polarization	Horizontal	Mode	TX Channel 6



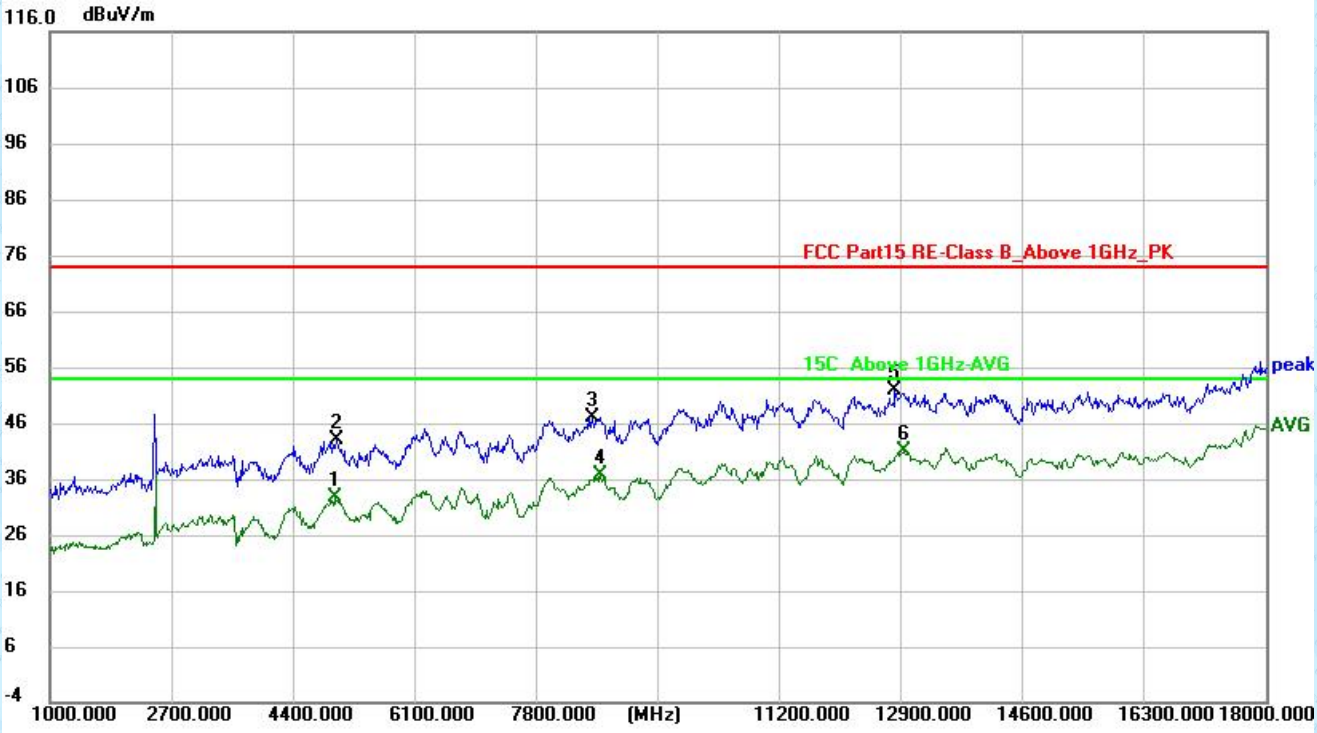
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6236.000	46.44	-1.84	44.60	74.00	-29.40	peak
2	6253.000	35.81	-1.79	34.02	54.00	-19.98	AVG
3	10401.000	42.90	5.82	48.72	74.00	-25.28	peak
4	10435.000	32.71	5.87	38.58	54.00	-15.42	AVG
5 *	15365.000	28.99	11.48	40.47	54.00	-13.53	AVG
6	15399.000	39.33	11.58	50.91	74.00	-23.09	peak

Polarization	Vertical	Mode	TX Channel 6



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	48.37	-5.34	43.03	74.00	-30.97	peak
2	4978.000	37.92	-5.28	32.64	54.00	-21.36	AVG
3	8684.000	44.22	2.78	47.00	74.00	-27.00	peak
4	8701.000	33.71	2.82	36.53	54.00	-17.47	AVG
5	12917.000	42.02	9.61	51.63	74.00	-22.37	peak
6 *	12934.000	31.41	9.65	41.06	54.00	-12.94	AVG

Polarization	Horizontal	Mode	TX Channel 11



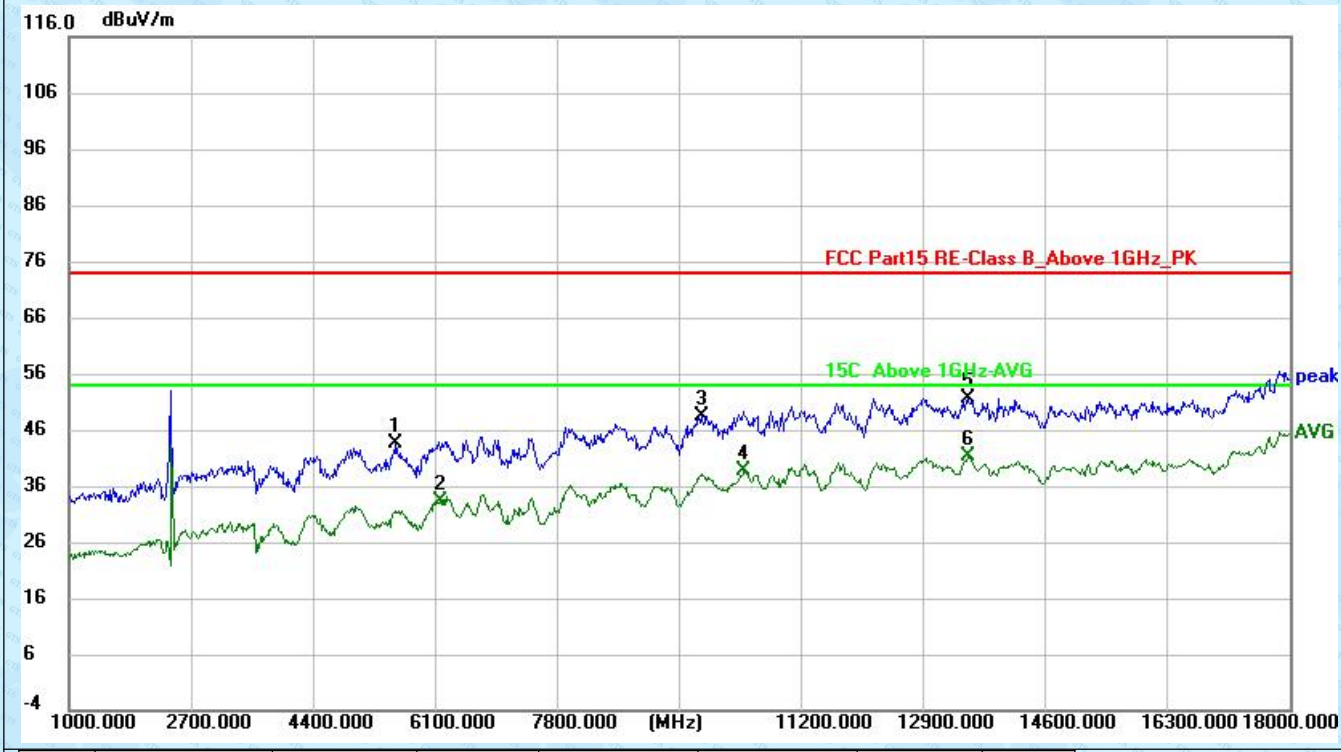
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4978.000	37.94	-5.28	32.66	54.00	-21.34	AVG
2	5012.000	48.13	-5.17	42.96	74.00	-31.04	peak
3	8582.000	44.59	2.52	47.11	74.00	-26.89	peak
4	8701.000	33.89	2.82	36.71	54.00	-17.29	AVG
5	12815.000	42.44	9.38	51.82	74.00	-22.18	peak
6 *	12951.000	31.30	9.69	40.99	54.00	-13.01	AVG

Polarization	Vertical	Mode	TX Channel 11

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	48.95	-5.34	43.61	74.00	-30.39	peak
2	4978.000	37.87	-5.28	32.59	54.00	-21.41	AVG
3	8684.000	33.67	2.78	36.45	54.00	-17.55	AVG
4	8718.000	43.92	2.86	46.78	74.00	-27.22	peak
5	12883.000	42.42	9.53	51.95	74.00	-22.05	peak
6 *	12934.000	31.33	9.65	40.98	54.00	-13.02	AVG

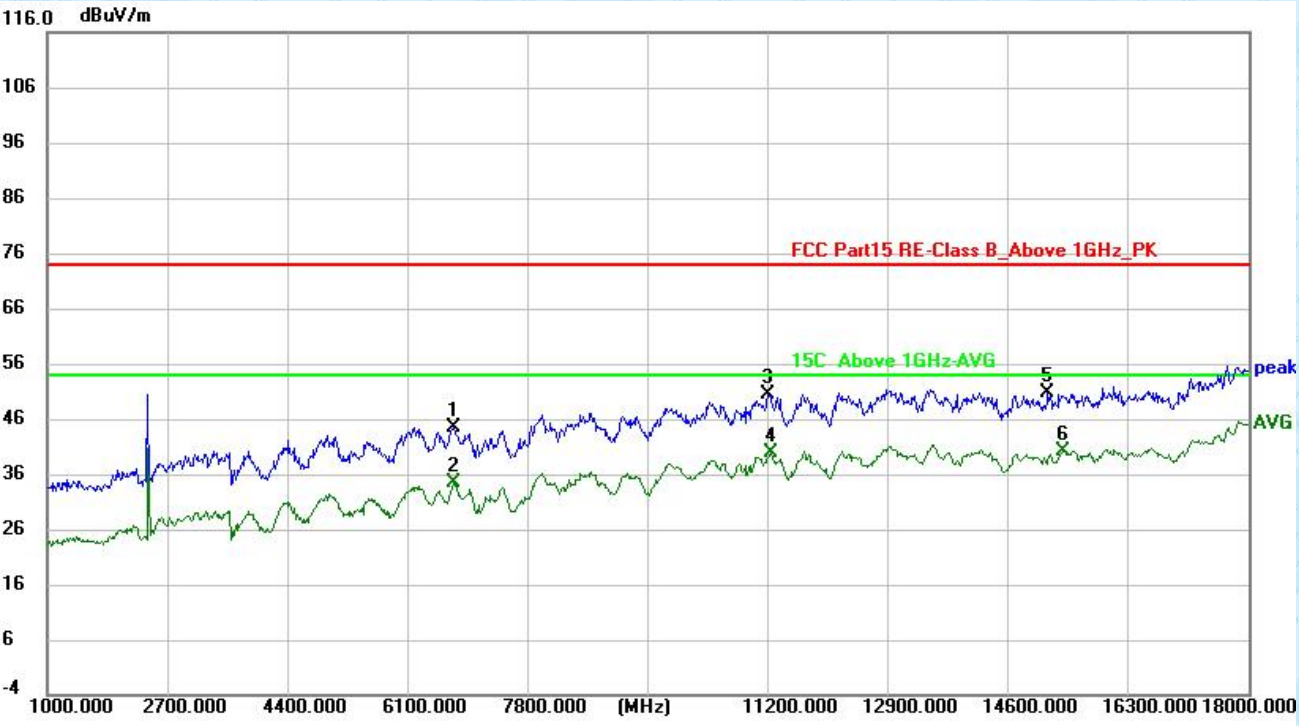
802.11n(20MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 1



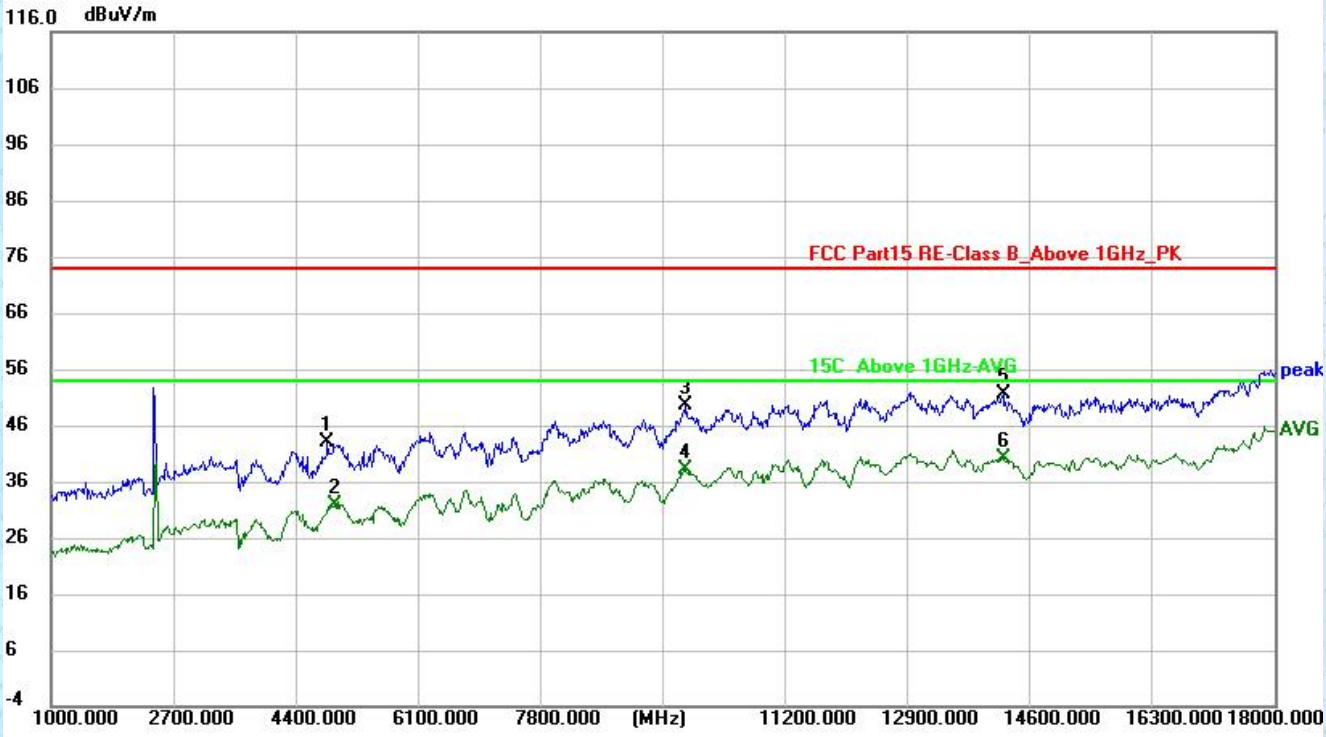
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5556.000	48.09	-4.50	43.59	74.00	-30.41	peak
2	6168.000	35.39	-2.03	33.36	54.00	-20.64	AVG
3	9806.000	43.80	4.76	48.56	74.00	-25.44	peak
4	10401.000	32.78	5.82	38.60	54.00	-15.40	AVG
5	13512.000	41.48	10.16	51.64	74.00	-22.36	peak
6 *	13512.000	31.18	10.16	41.34	54.00	-12.66	AVG

Polarization	Vertical	Mode	TX Channel 1



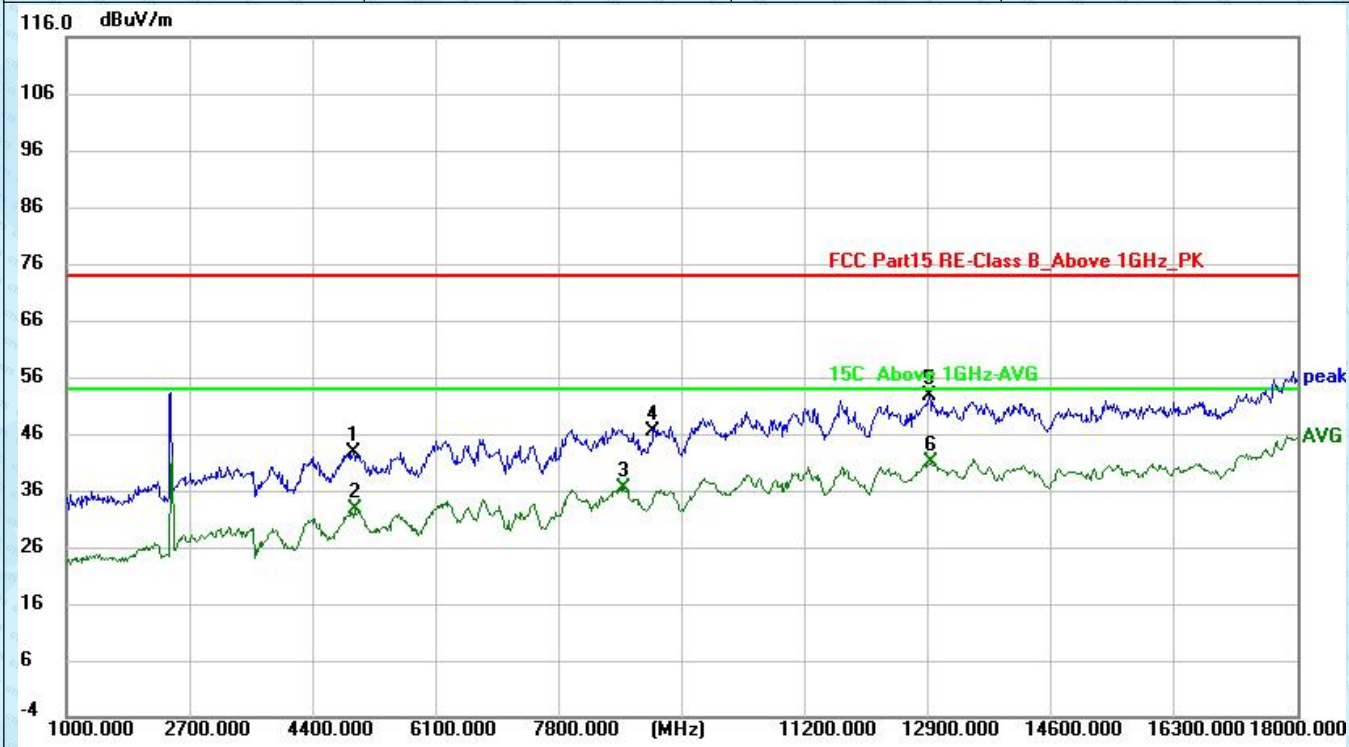
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6763.000	45.05	-0.62	44.43	74.00	-29.57	peak
2	6763.000	35.14	-0.62	34.52	54.00	-19.48	AVG
3	11200.000	43.05	7.34	50.39	74.00	-23.61	peak
4	11251.000	32.45	7.45	39.90	54.00	-14.10	AVG
5	15161.000	39.92	10.93	50.85	74.00	-23.15	peak
6 *	15382.000	28.74	11.53	40.27	54.00	-13.73	AVG

Polarization	Horizontal	Mode	TX Channel 6



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4842.000	48.79	-5.75	43.04	74.00	-30.96	peak
2	4944.000	37.26	-5.39	31.87	54.00	-22.13	AVG
3	9823.000	44.75	4.78	49.53	74.00	-24.47	peak
4	9823.000	33.23	4.78	38.01	54.00	-15.99	AVG
5	14226.000	41.14	10.49	51.63	74.00	-22.37	peak
6 *	14226.000	29.75	10.49	40.24	54.00	-13.76	AVG

Polarization	Vertical	Mode	TX Channel 6

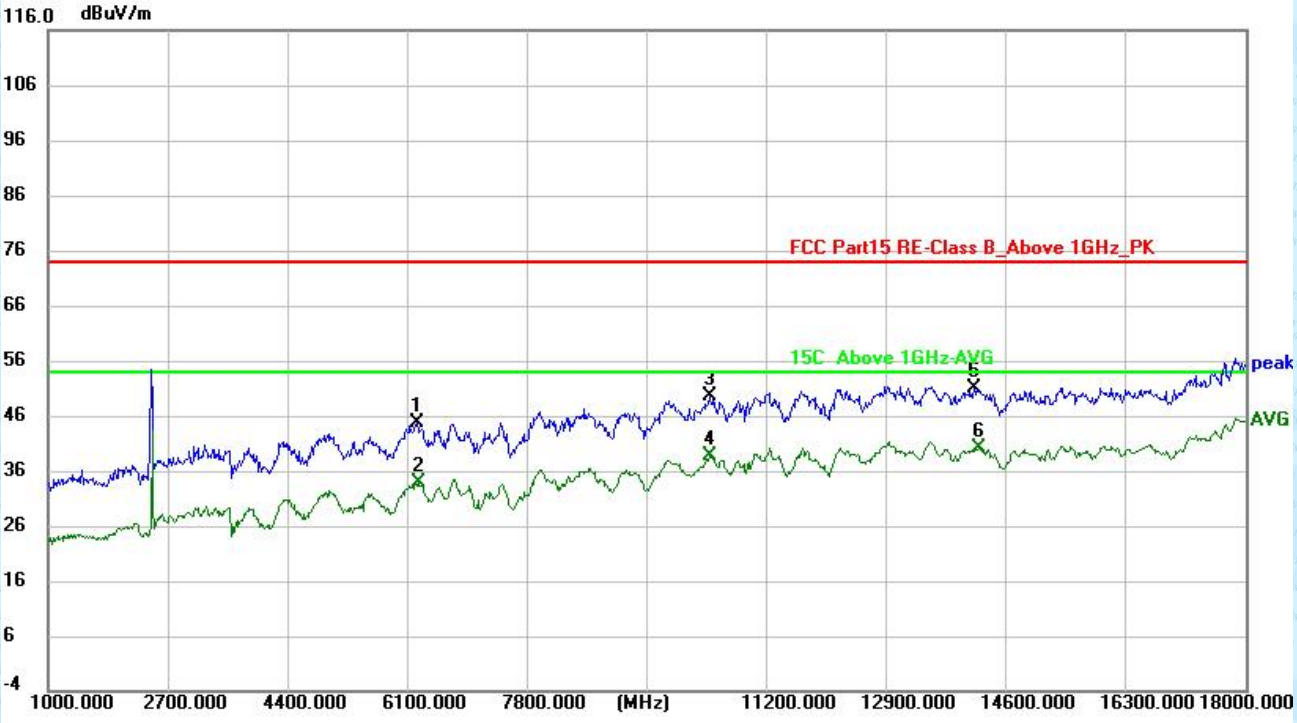


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	48.12	-5.34	42.78	74.00	-31.22	peak
2	4978.000	37.86	-5.28	32.58	54.00	-21.42	AVG
3	8701.000	33.61	2.82	36.43	54.00	-17.57	AVG
4	9109.000	42.56	3.74	46.30	74.00	-27.70	peak
5	12917.000	42.97	9.61	52.58	74.00	-21.42	peak
6 *	12934.000	31.39	9.65	41.04	54.00	-12.96	AVG

Polarization	Horizontal	Mode	TX Channel 11

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6219.000	35.76	-1.89	33.87	54.00	-20.13	AVG
2	6236.000	47.68	-1.84	45.84	74.00	-28.16	peak
3	10401.000	32.89	5.82	38.71	54.00	-15.29	AVG
4	10418.000	43.47	5.86	49.33	74.00	-24.67	peak
5	14192.000	41.97	10.51	52.48	74.00	-21.52	peak
6 *	14209.000	29.79	10.49	40.28	54.00	-13.72	AVG

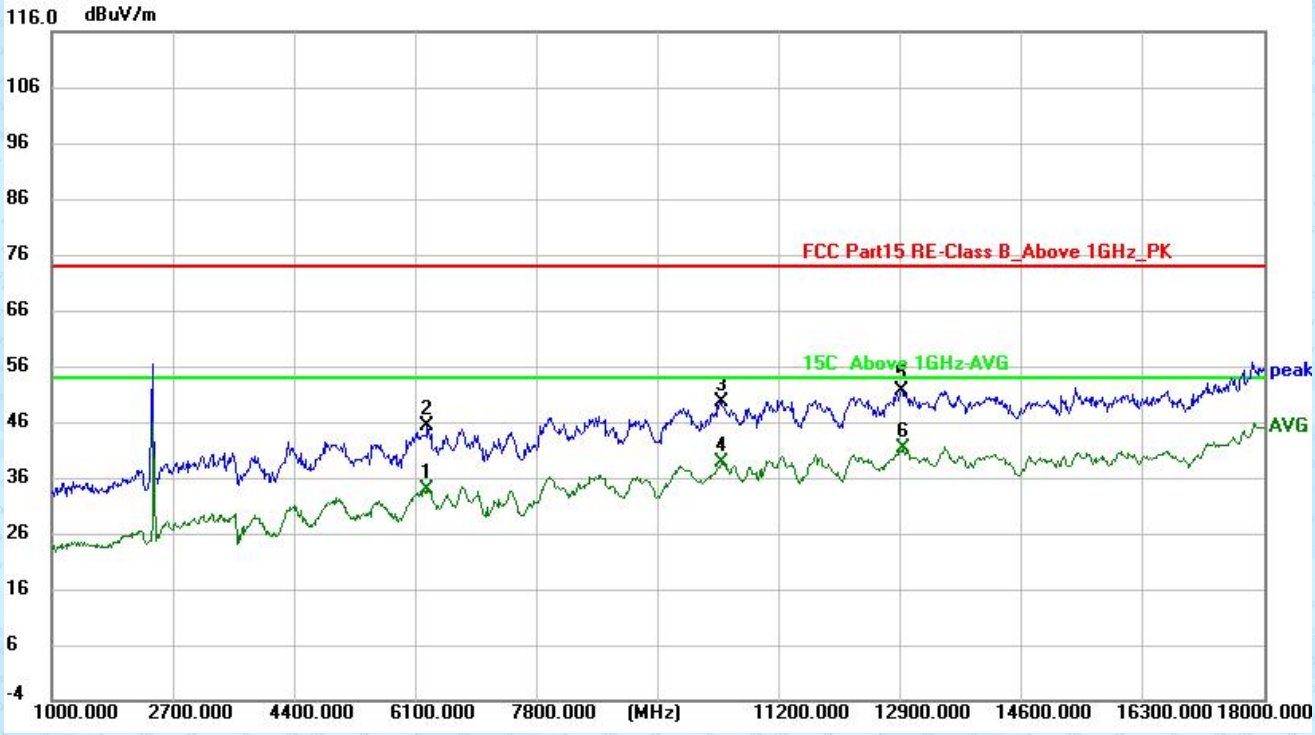
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6236.000	46.61	-1.84	44.77	74.00	-29.23	peak
2	6253.000	35.78	-1.79	33.99	54.00	-20.01	AVG
3	10384.000	43.92	5.78	49.70	74.00	-24.30	peak
4	10401.000	33.02	5.82	38.84	54.00	-15.16	AVG
5	14141.000	40.38	10.53	50.91	74.00	-23.09	peak
6 *	14209.000	29.76	10.49	40.25	54.00	-13.75	AVG

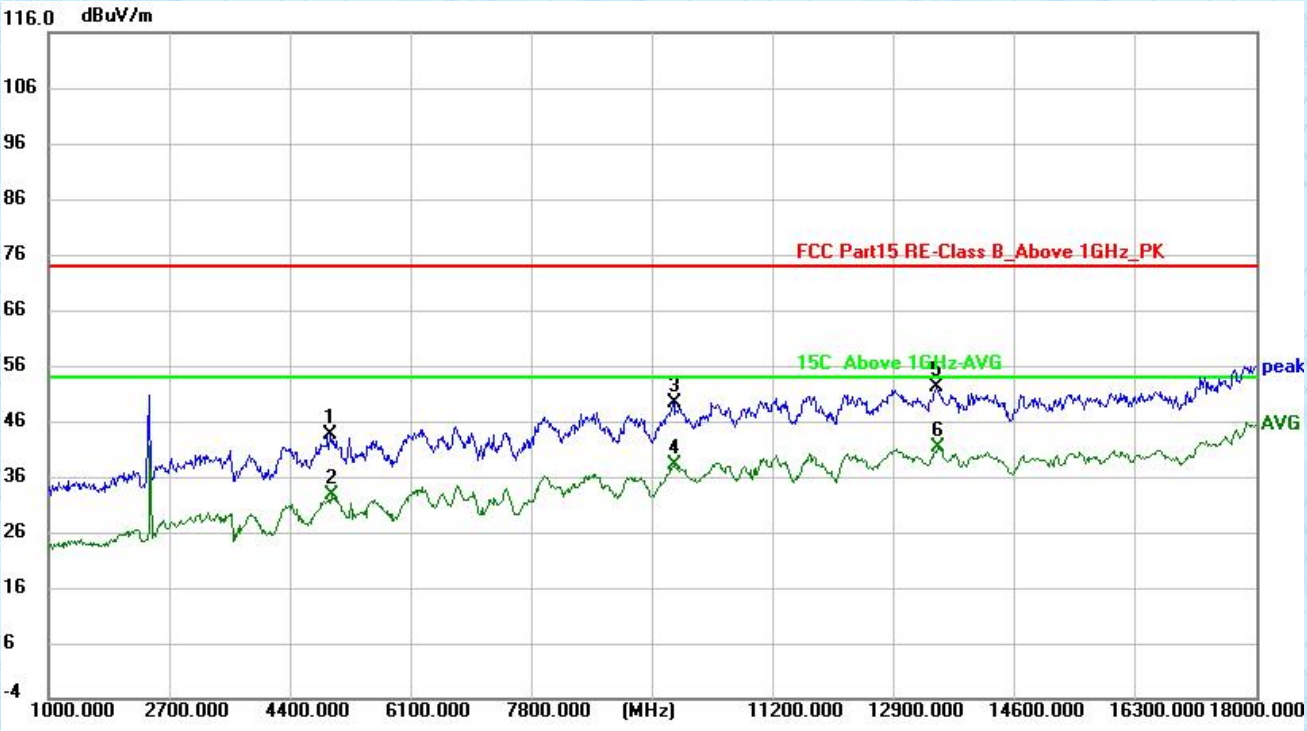
802.11n(40MHz_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 3



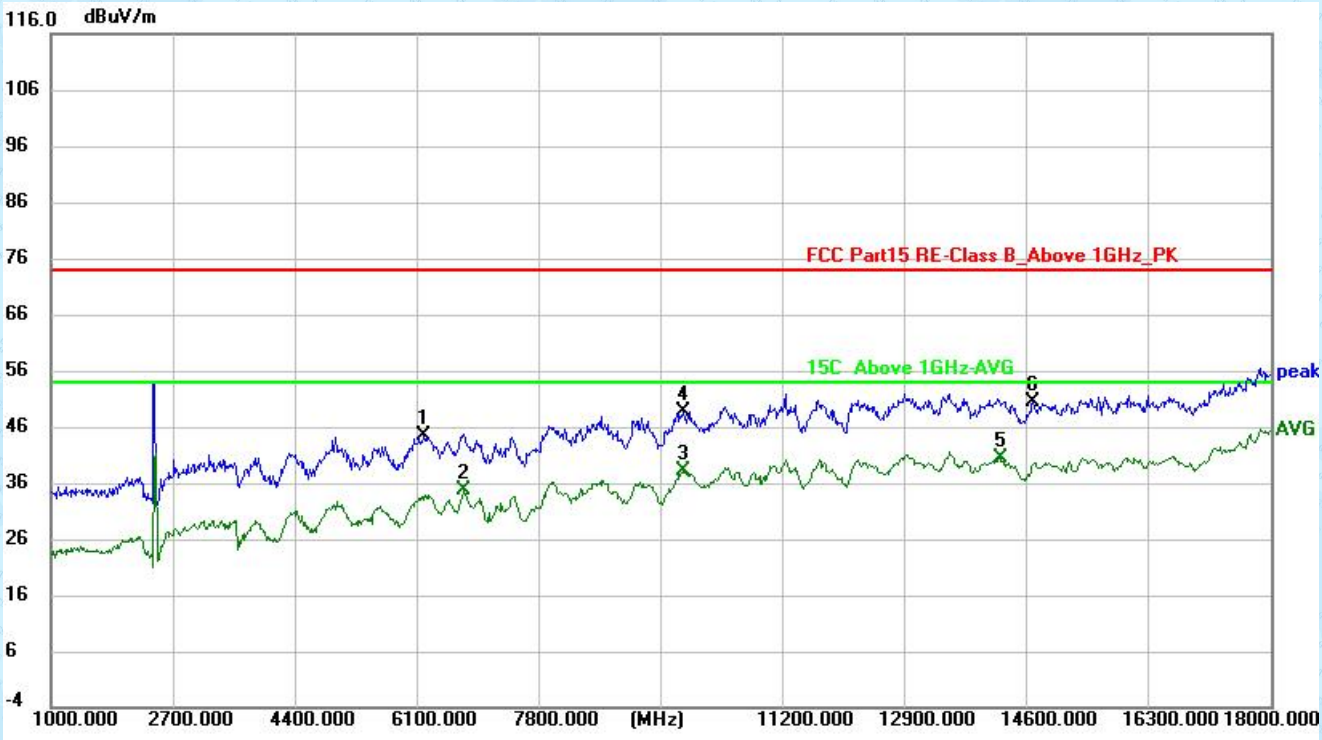
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6253.000	35.74	-1.79	33.95	54.00	-20.05	AVG
2	6270.000	47.10	-1.75	45.35	74.00	-28.65	peak
3	10384.000	43.91	5.78	49.69	74.00	-24.31	peak
4	10401.000	32.78	5.82	38.60	54.00	-15.40	AVG
5	12917.000	42.08	9.61	51.69	74.00	-22.31	peak
6 *	12934.000	31.50	9.65	41.15	54.00	-12.85	AVG

Polarization	Vertical	Mode	TX Channel 3



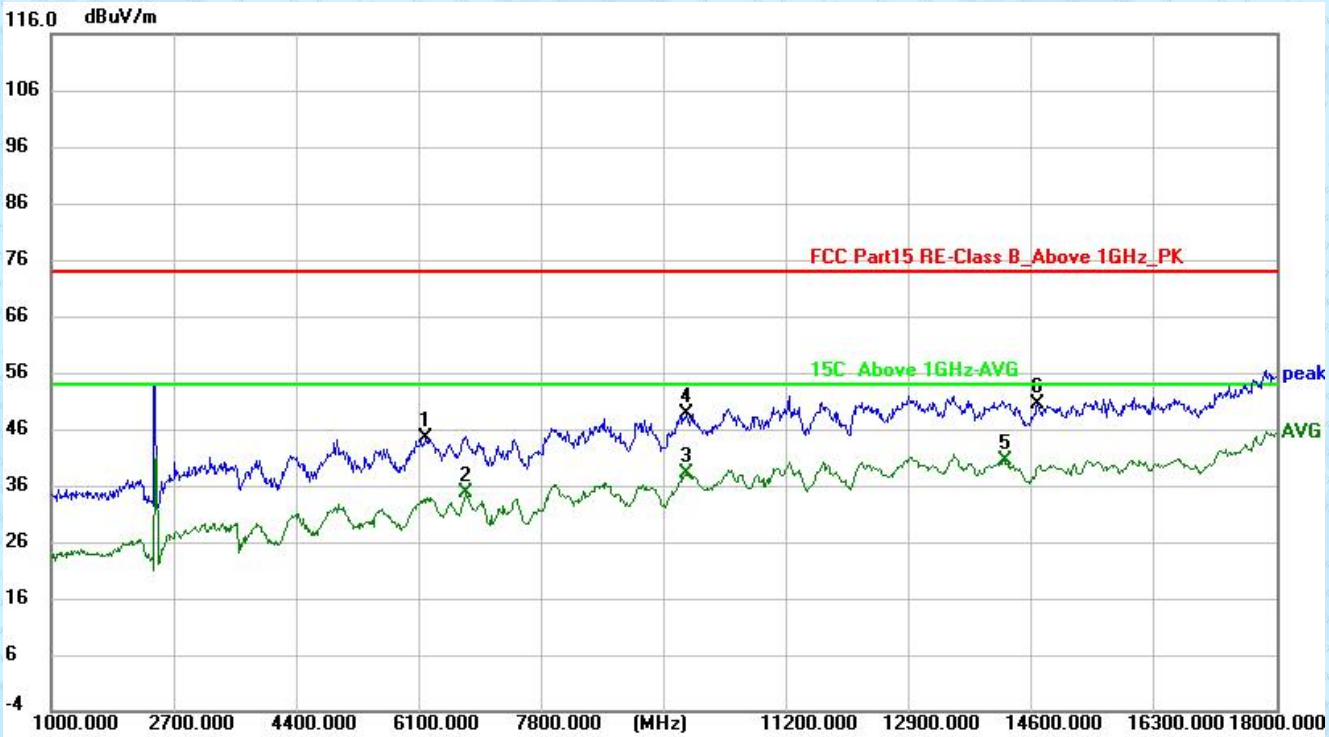
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	48.83	-5.34	43.49	74.00	-30.51	peak
2	4978.000	37.90	-5.28	32.62	54.00	-21.38	AVG
3	9806.000	44.54	4.76	49.30	74.00	-24.70	peak
4	9806.000	33.39	4.76	38.15	54.00	-15.85	AVG
5	13495.000	41.99	10.14	52.13	74.00	-21.87	peak
6 *	13529.000	31.23	10.18	41.41	54.00	-12.59	AVG

Polarization	Horizontal	Mode	TX Channel 6



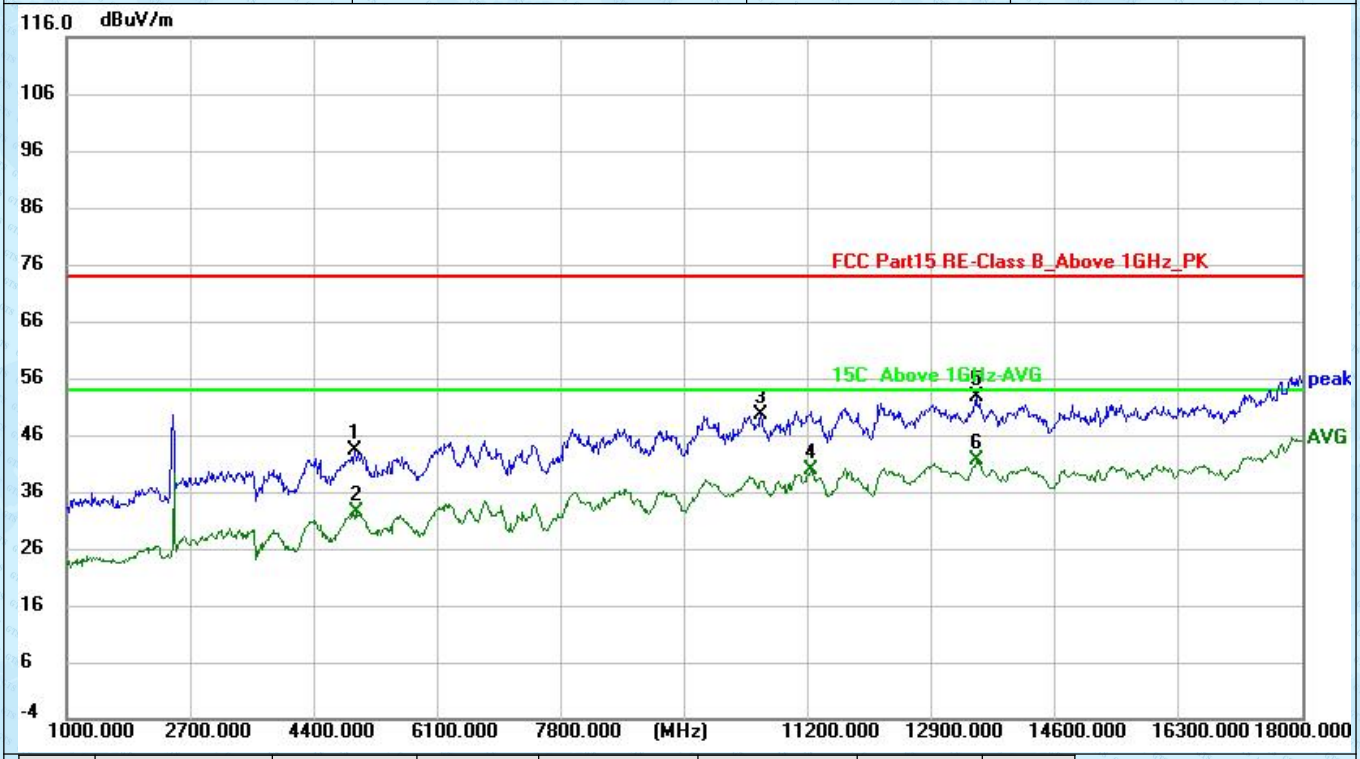
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6202.000	46.35	-1.94	44.41	74.00	-29.59	peak
2	6763.000	35.21	-0.62	34.59	54.00	-19.41	AVG
3	9806.000	33.35	4.76	38.11	54.00	-15.89	AVG
4	9823.000	43.88	4.78	48.66	74.00	-25.34	peak
5 *	14226.000	29.95	10.49	40.44	54.00	-13.56	AVG
6	14685.000	40.13	10.40	50.53	74.00	-23.47	peak

Polarization	Vertical	Mode	TX Channel 6



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6202.000	46.35	-1.94	44.41	74.00	-29.59	peak
2	6763.000	35.21	-0.62	34.59	54.00	-19.41	AVG
3	9806.000	33.35	4.76	38.11	54.00	-15.89	AVG
4	9823.000	43.88	4.78	48.66	74.00	-25.34	peak
5 *	14226.000	29.95	10.49	40.44	54.00	-13.56	AVG
6	14685.000	40.13	10.40	50.53	74.00	-23.47	peak

Polarization	Horizontal	Mode	TX Channel 9



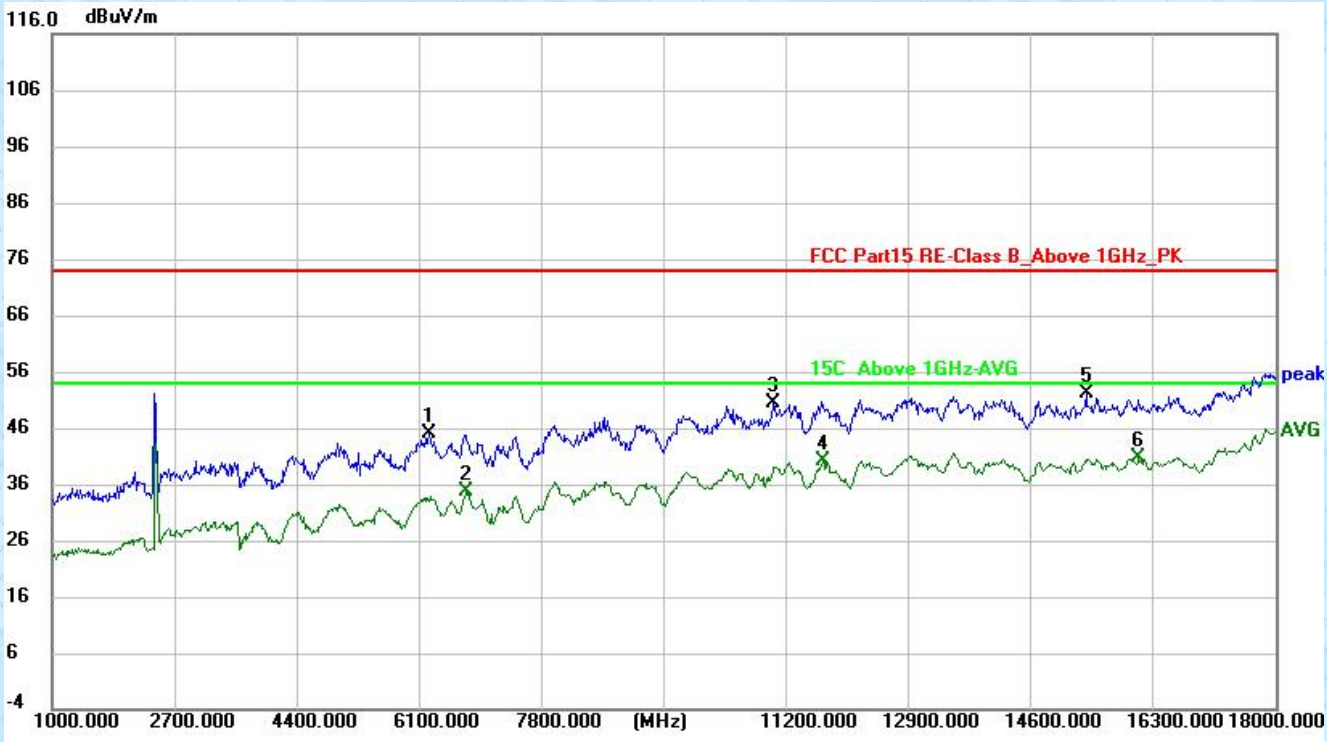
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	48.74	-5.34	43.40	74.00	-30.60	peak
2	4978.000	37.77	-5.28	32.49	54.00	-21.51	AVG
3	10554.000	43.41	6.09	49.50	74.00	-24.50	peak
4	11251.000	32.38	7.45	39.83	54.00	-14.17	AVG
5	13512.000	42.50	10.16	52.66	74.00	-21.34	peak
6 *	13529.000	31.35	10.18	41.53	54.00	-12.47	AVG

Polarization	Vertical	Mode	TX Channel 9

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6236.000	46.96	-1.84	45.12	74.00	-28.88	peak
2	6763.000	35.12	-0.62	34.50	54.00	-19.50	AVG
3	10384.000	43.28	5.78	49.06	74.00	-24.94	peak
4	11251.000	32.58	7.45	40.03	54.00	-13.97	AVG
5	16623.000	39.95	12.50	52.45	74.00	-21.55	peak
6 *	17524.000	26.22	16.41	42.63	54.00	-11.37	AVG

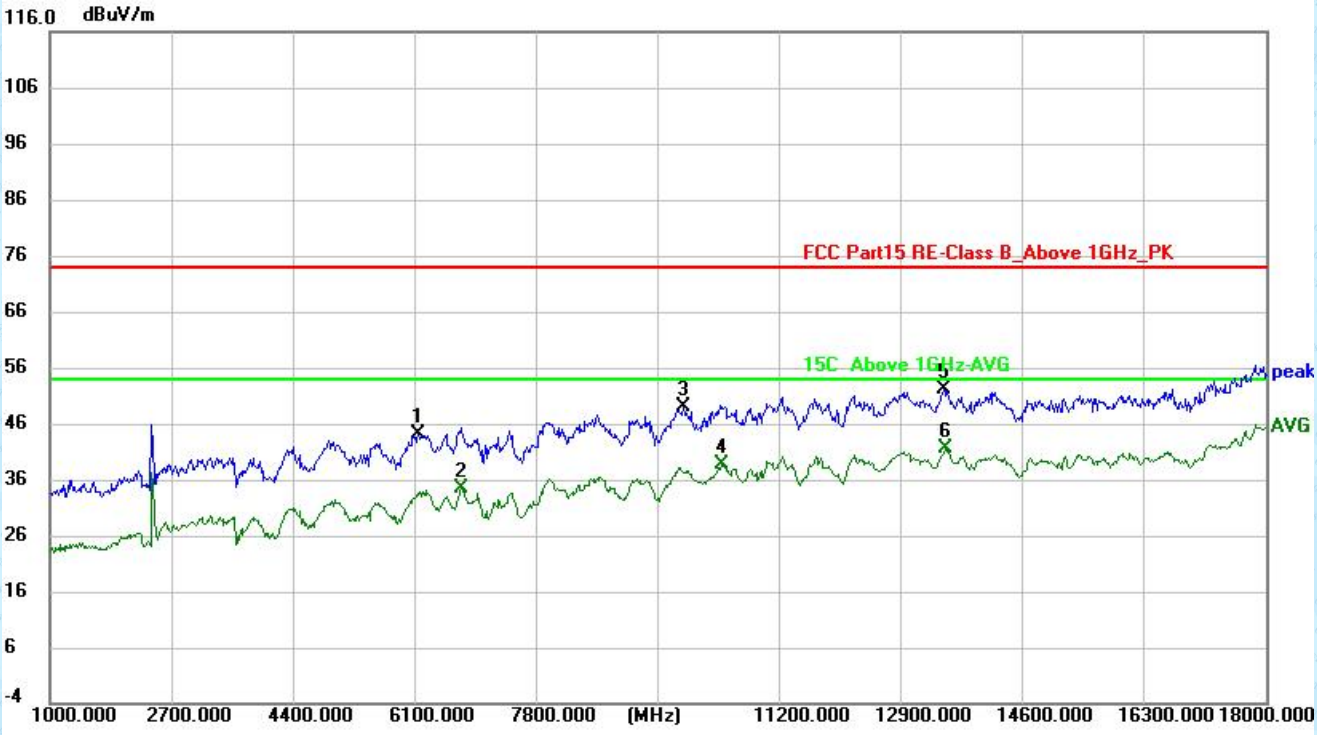
802.11ax(20MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 1



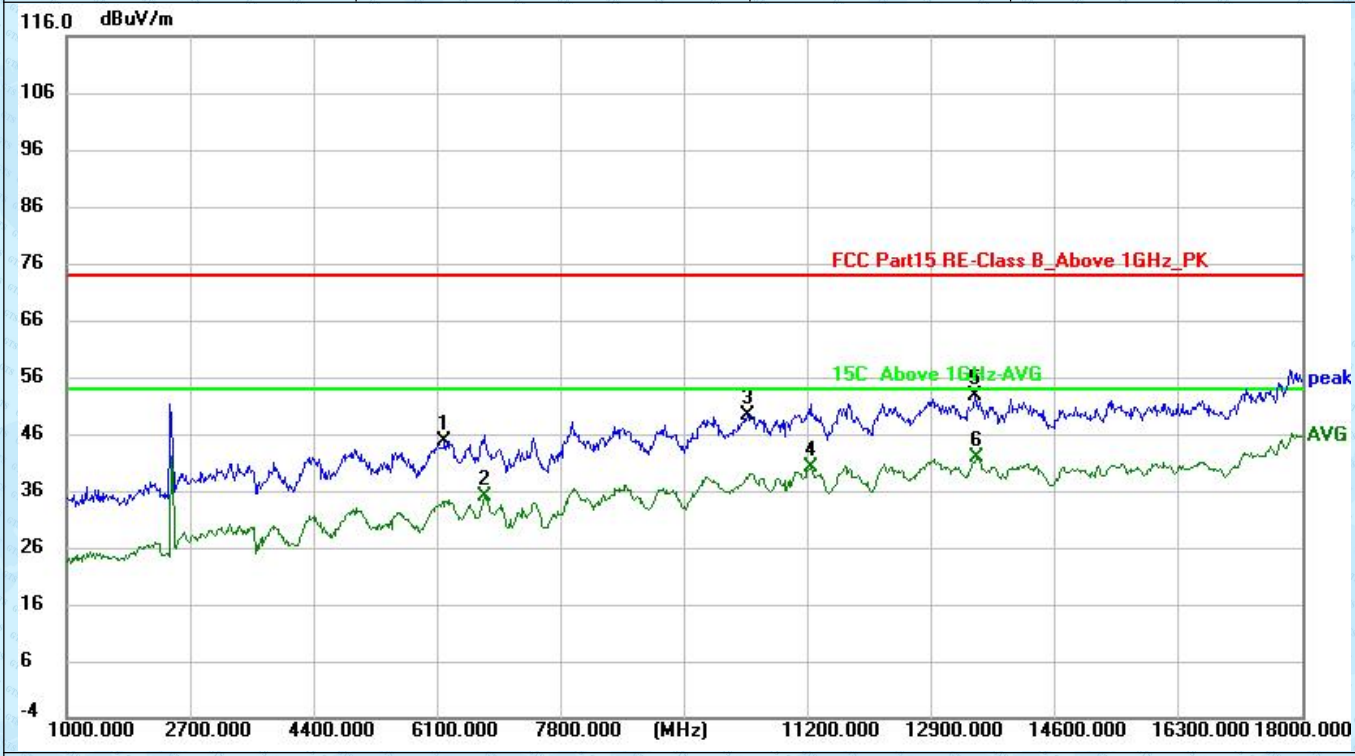
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6236.000	46.82	-1.84	44.98	74.00	-29.02	peak
2	6763.000	35.25	-0.62	34.63	54.00	-19.37	AVG
3	11013.000	43.42	6.93	50.35	74.00	-23.65	peak
4	11710.000	32.05	8.13	40.18	54.00	-13.82	AVG
5	15365.000	40.63	11.48	52.11	74.00	-21.89	peak
6 *	16096.000	28.58	12.00	40.58	54.00	-13.42	AVG

Polarization	Vertical	Mode	TX Channel 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6151.000	46.35	-2.08	44.27	74.00	-29.73	peak
2	6763.000	35.14	-0.62	34.52	54.00	-19.48	AVG
3	9857.000	44.10	4.84	48.94	74.00	-25.06	peak
4	10401.000	32.86	5.82	38.68	54.00	-15.32	AVG
5	13495.000	42.01	10.14	52.15	74.00	-21.85	peak
6 *	13529.000	31.27	10.18	41.45	54.00	-12.55	AVG

Polarization	Horizontal	Mode	TX Channel 6



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6202.000	46.54	-1.94	44.60	74.00	-29.40	peak
2	6763.000	35.49	-0.62	34.87	54.00	-19.13	AVG
3	10367.000	43.48	5.77	49.25	74.00	-24.75	peak
4	11251.000	32.74	7.45	40.19	54.00	-13.81	AVG
5	13495.000	42.56	10.14	52.70	74.00	-21.30	peak
6 *	13529.000	31.55	10.18	41.73	54.00	-12.27	AVG

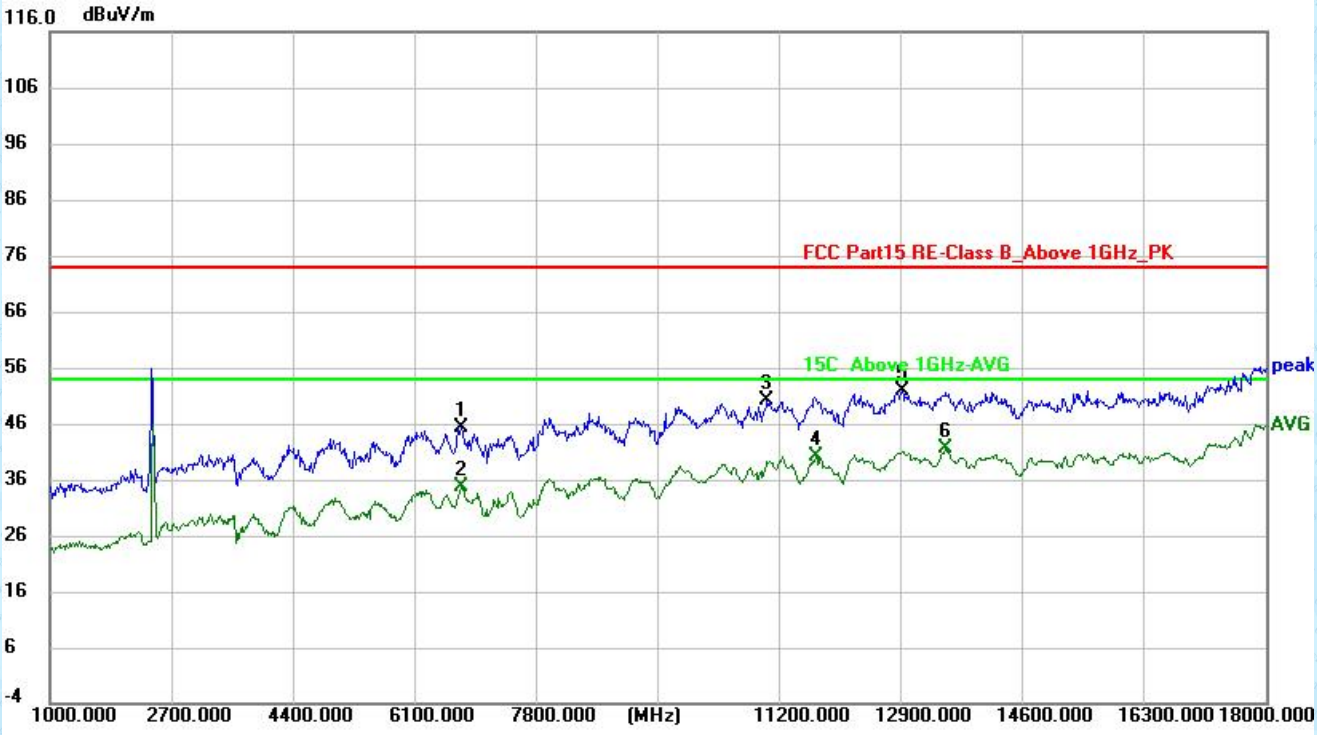
Polarization	Vertical	Mode	TX Channel 6

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6185.000	46.59	-1.98	44.61	74.00	-29.39	peak
2	6763.000	35.22	-0.62	34.60	54.00	-19.40	AVG
3	11234.000	42.85	7.42	50.27	74.00	-23.73	peak
4	11710.000	32.10	8.13	40.23	54.00	-13.77	AVG
5 *	13529.000	31.36	10.18	41.54	54.00	-12.46	AVG
6	14158.000	41.73	10.52	52.25	74.00	-21.75	peak

Polarization	Horizontal	Mode	TX Channel 11

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6202.000	47.15	-1.94	45.21	74.00	-28.79	peak
2	6763.000	35.46	-0.62	34.84	54.00	-19.16	AVG
3	10435.000	43.58	5.87	49.45	74.00	-24.55	peak
4	11251.000	32.68	7.45	40.13	54.00	-13.87	AVG
5 *	13529.000	31.35	10.18	41.53	54.00	-12.47	AVG
6	14192.000	40.60	10.51	51.11	74.00	-22.89	peak

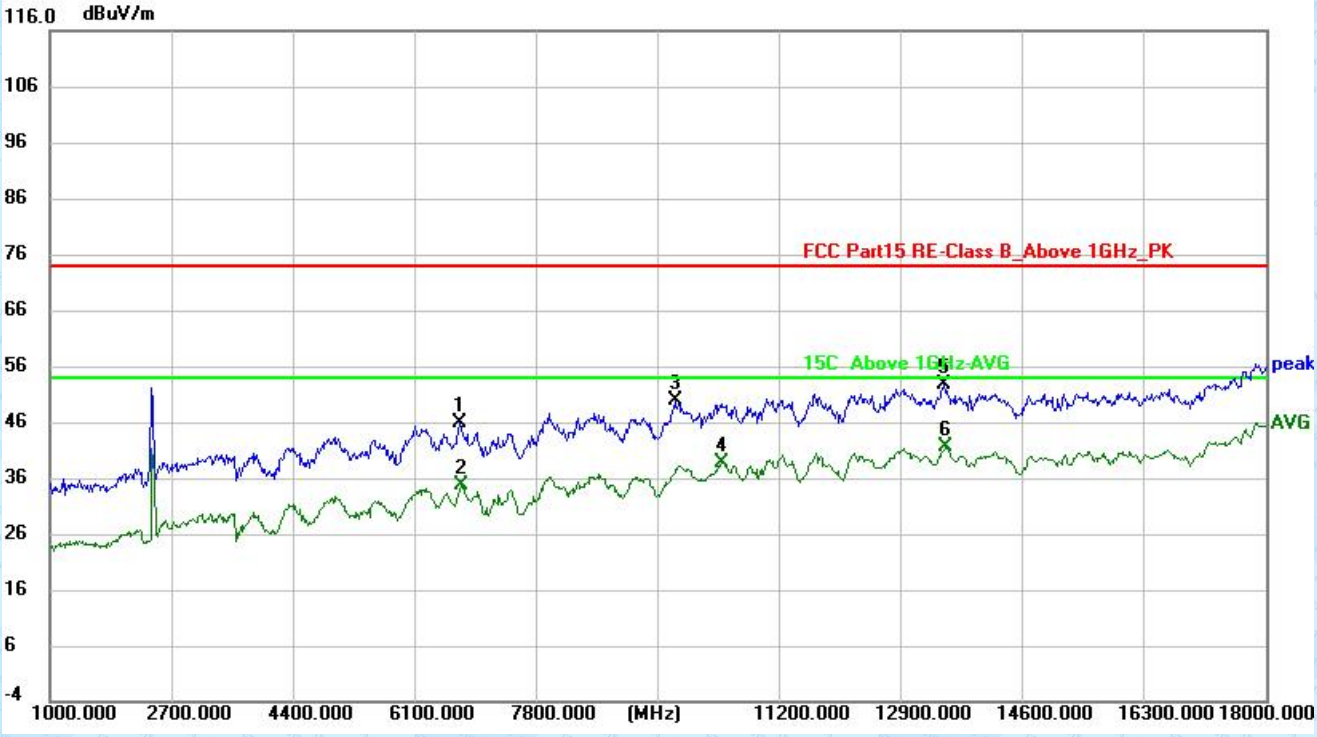
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6746.000	45.92	-0.65	45.27	74.00	-28.73	peak
2	6763.000	35.29	-0.62	34.67	54.00	-19.33	AVG
3	11030.000	43.25	6.96	50.21	74.00	-23.79	peak
4	11710.000	32.12	8.13	40.25	54.00	-13.75	AVG
5	12917.000	42.23	9.61	51.84	74.00	-22.16	peak
6 *	13529.000	31.36	10.18	41.54	54.00	-12.46	AVG

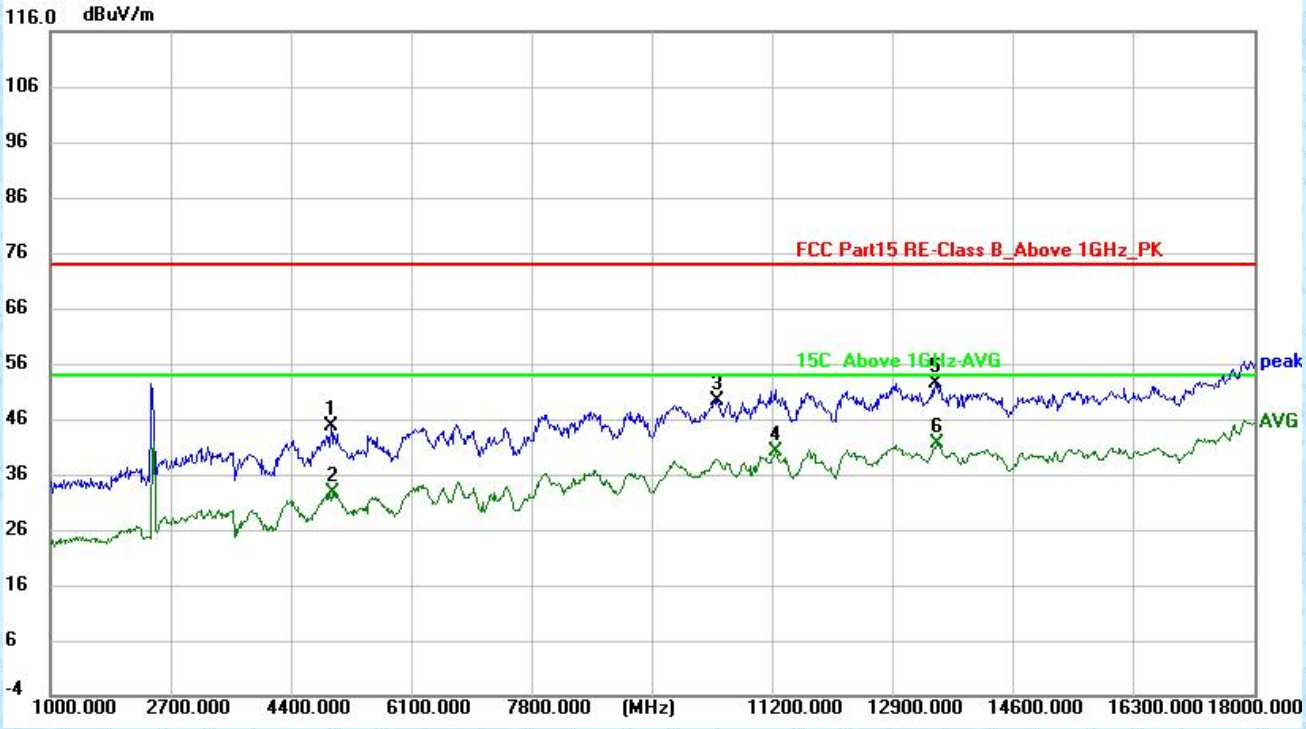
802.11ax(40MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 3



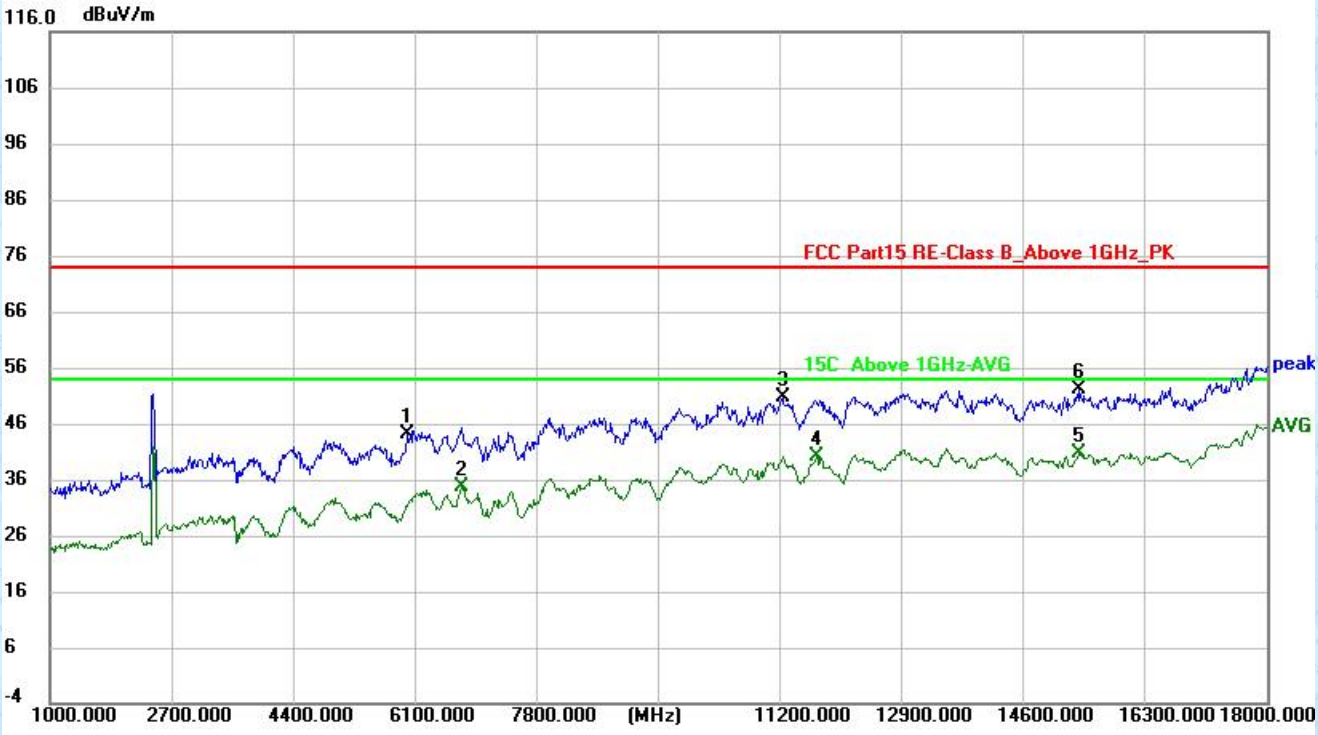
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6729.000	46.61	-0.69	45.92	74.00	-28.08	peak
2	6763.000	35.38	-0.62	34.76	54.00	-19.24	AVG
3	9738.000	45.22	4.63	49.85	74.00	-24.15	peak
4	10401.000	33.01	5.82	38.83	54.00	-15.17	AVG
5	13495.000	42.70	10.14	52.84	74.00	-21.16	peak
6 *	13529.000	31.34	10.18	41.52	54.00	-12.48	AVG

Polarization	Vertical	Mode	TX Channel 3



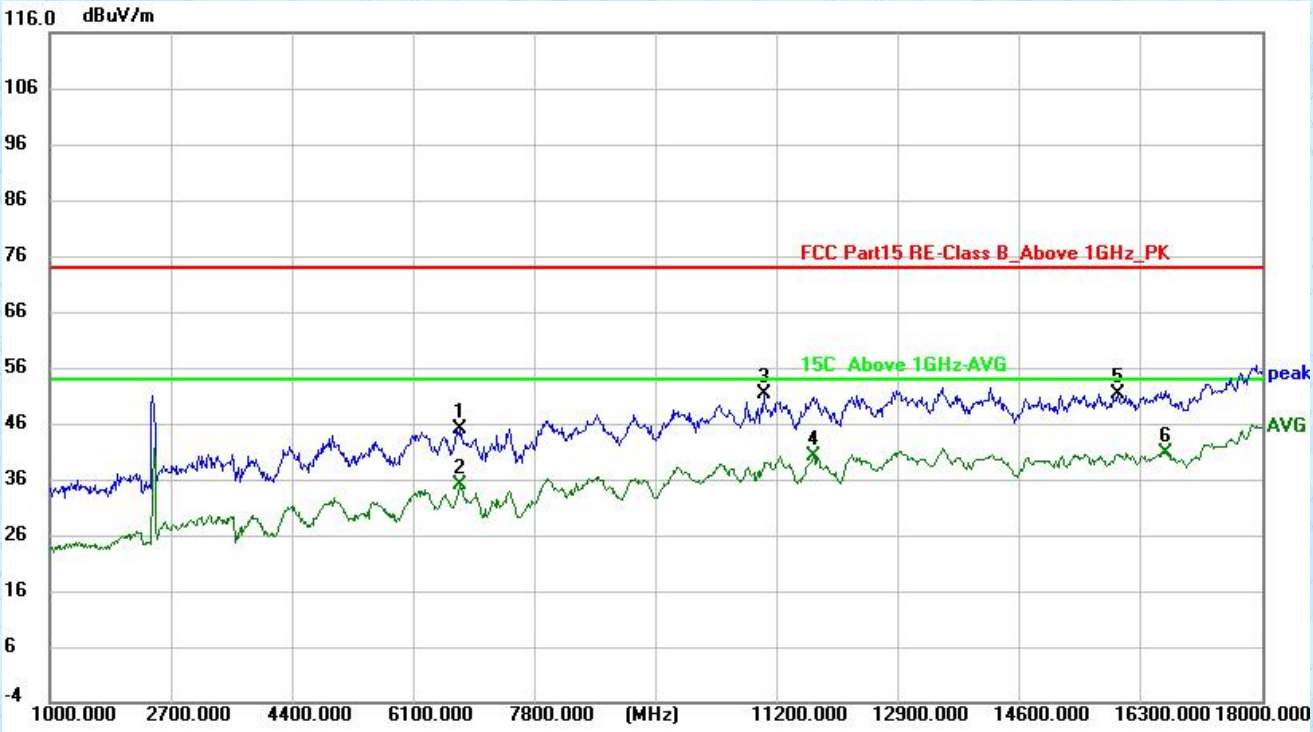
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4961.000	50.07	-5.34	44.73	74.00	-29.27	peak
2	4978.000	38.03	-5.28	32.75	54.00	-21.25	AVG
3	10418.000	43.51	5.86	49.37	74.00	-24.63	peak
4	11251.000	32.77	7.45	40.22	54.00	-13.78	AVG
5	13495.000	42.31	10.14	52.45	74.00	-21.55	peak
6 *	13529.000	31.26	10.18	41.44	54.00	-12.56	AVG

Polarization	Horizontal	Mode	TX Channel 6



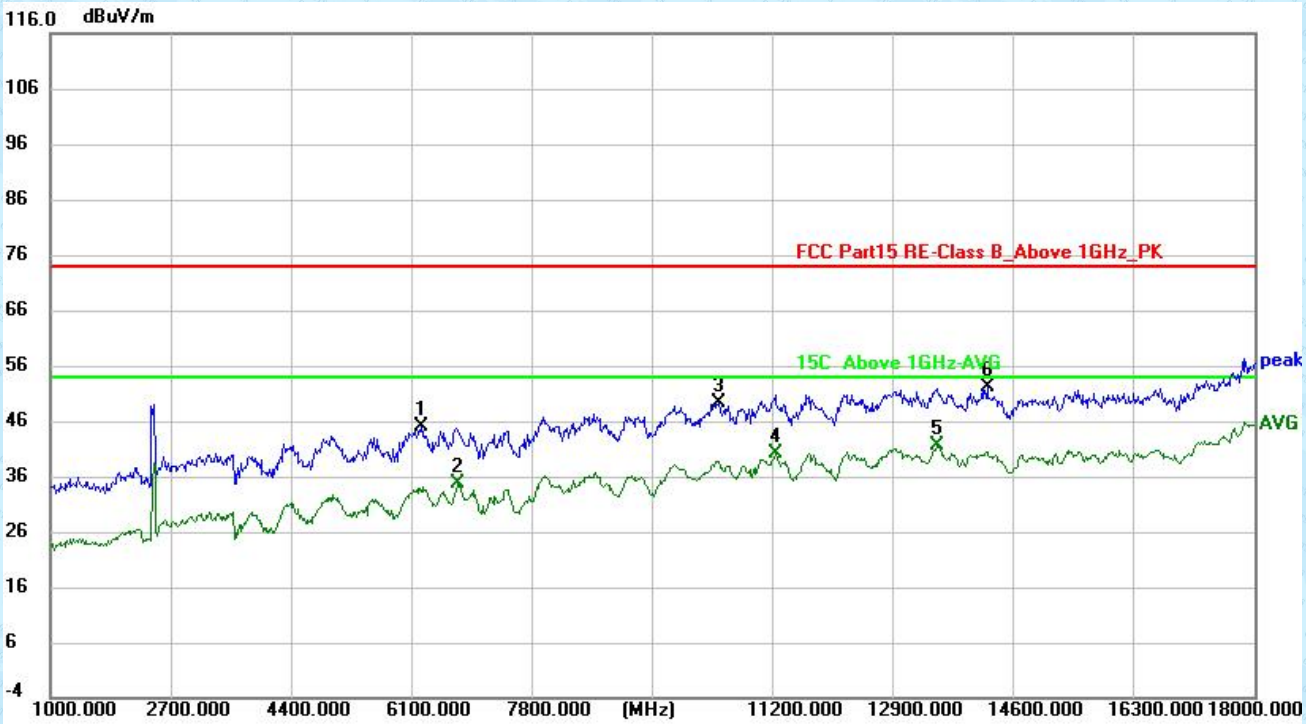
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5998.000	46.76	-2.50	44.26	74.00	-29.74	peak
2	6746.000	35.25	-0.65	34.60	54.00	-19.40	AVG
3	11234.000	43.40	7.42	50.82	74.00	-23.18	peak
4	11710.000	31.98	8.13	40.11	54.00	-13.89	AVG
5 *	15365.000	29.13	11.48	40.61	54.00	-13.39	AVG
6	15382.000	40.51	11.53	52.04	74.00	-21.96	peak

Polarization	Vertical	Mode	TX Channel 6



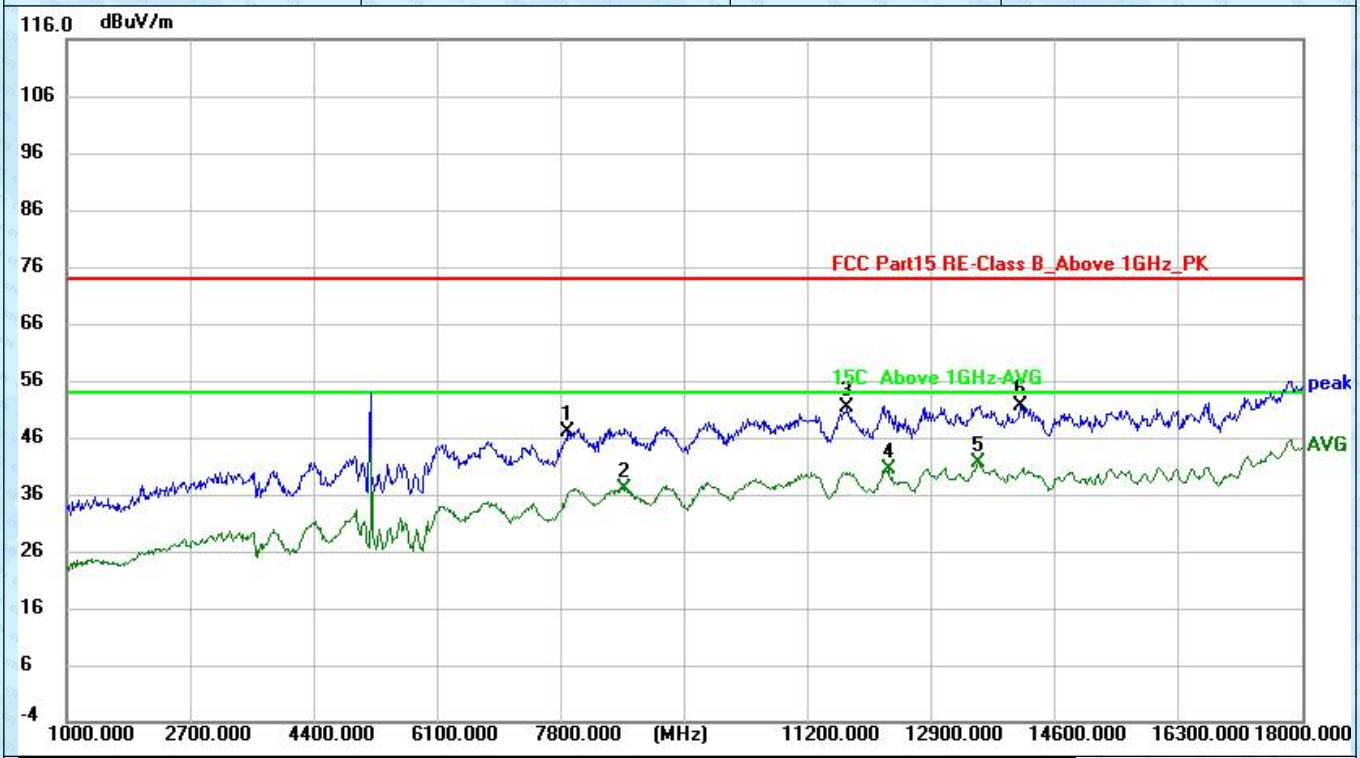
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6746.000	45.58	-0.65	44.93	74.00	-29.07	peak
2	6763.000	35.61	-0.62	34.99	54.00	-19.01	AVG
3	11013.000	44.37	6.93	51.30	74.00	-22.70	peak
4	11710.000	32.10	8.13	40.23	54.00	-13.77	AVG
5	15977.000	39.52	11.89	51.41	74.00	-22.59	peak
6 *	16640.000	28.24	12.51	40.75	54.00	-13.25	AVG

Polarization	Horizontal	Mode	TX Channel 9



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	6236.000	46.79	-1.84	44.95	74.00	-29.05	peak
2	6763.000	35.20	-0.62	34.58	54.00	-19.42	AVG
3	10435.000	43.51	5.87	49.38	74.00	-24.62	peak
4	11251.000	32.76	7.45	40.21	54.00	-13.79	AVG
5 *	13529.000	31.42	10.18	41.60	54.00	-12.40	AVG
6	14226.000	41.58	10.49	52.07	74.00	-21.93	peak

Polarization	Vertical	Mode	TX Channel 9

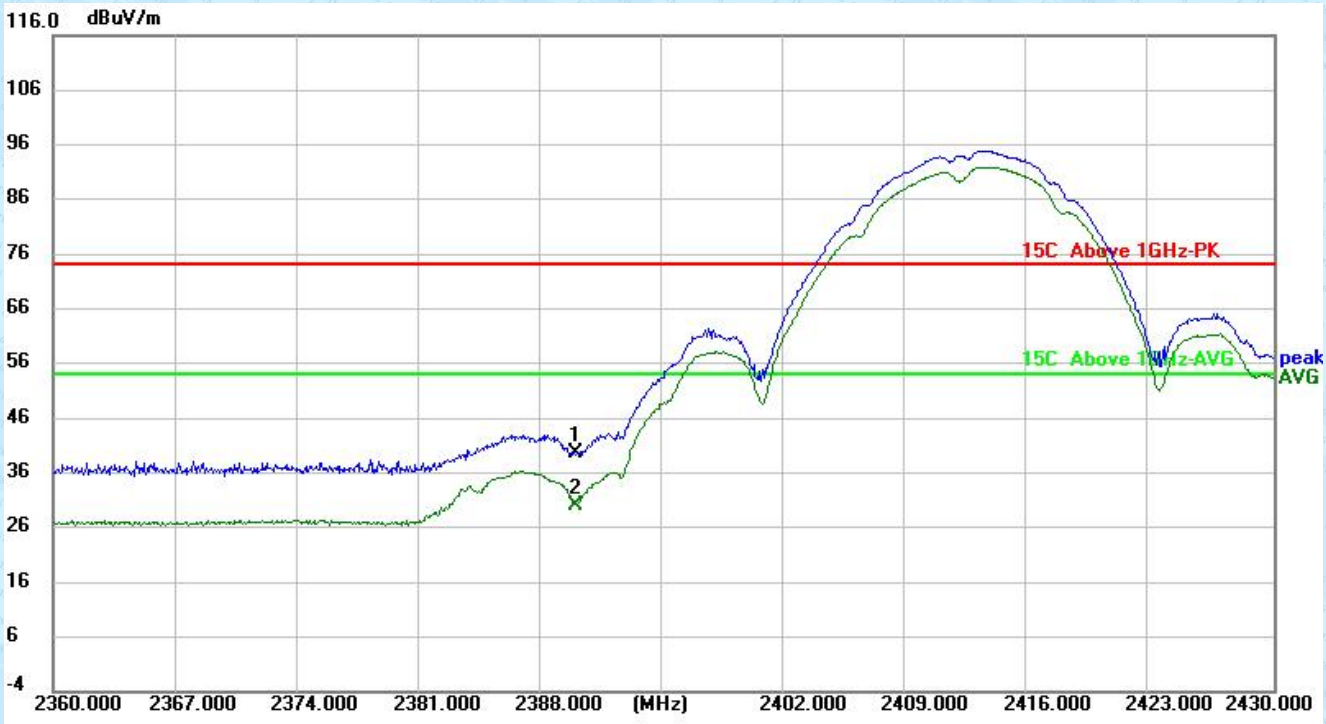


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	7902.000	45.68	1.37	47.05	74.00	-26.95	peak
2	8684.000	34.35	2.78	37.13	54.00	-16.87	AVG
3	11744.000	43.16	8.15	51.31	74.00	-22.69	peak
4	12305.000	31.85	8.51	40.36	54.00	-13.64	AVG
5 *	13546.000	31.27	10.20	41.47	54.00	-12.53	AVG
6	14124.000	41.01	10.53	51.54	74.00	-22.46	peak

3.7.5. Test Result of Restricted Band

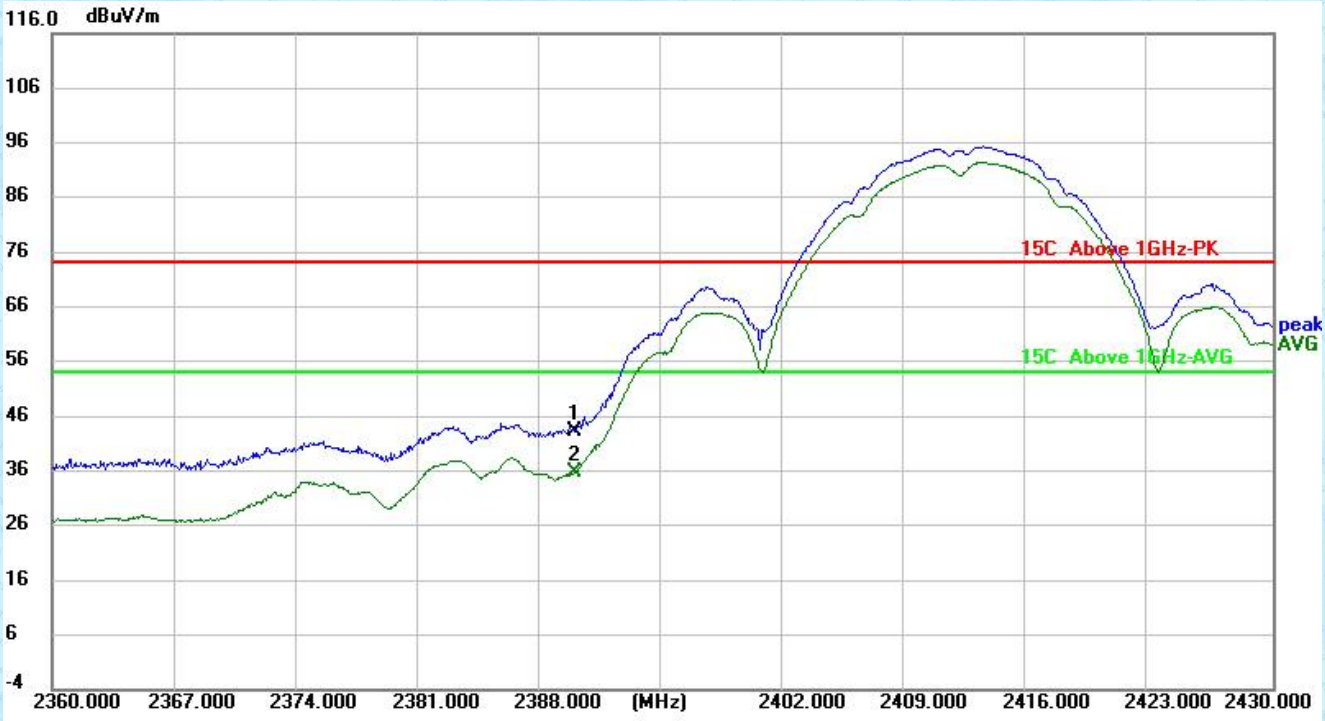
802.11b_ANT0

Polarization	Horizontal	Mode	TX Channel 1



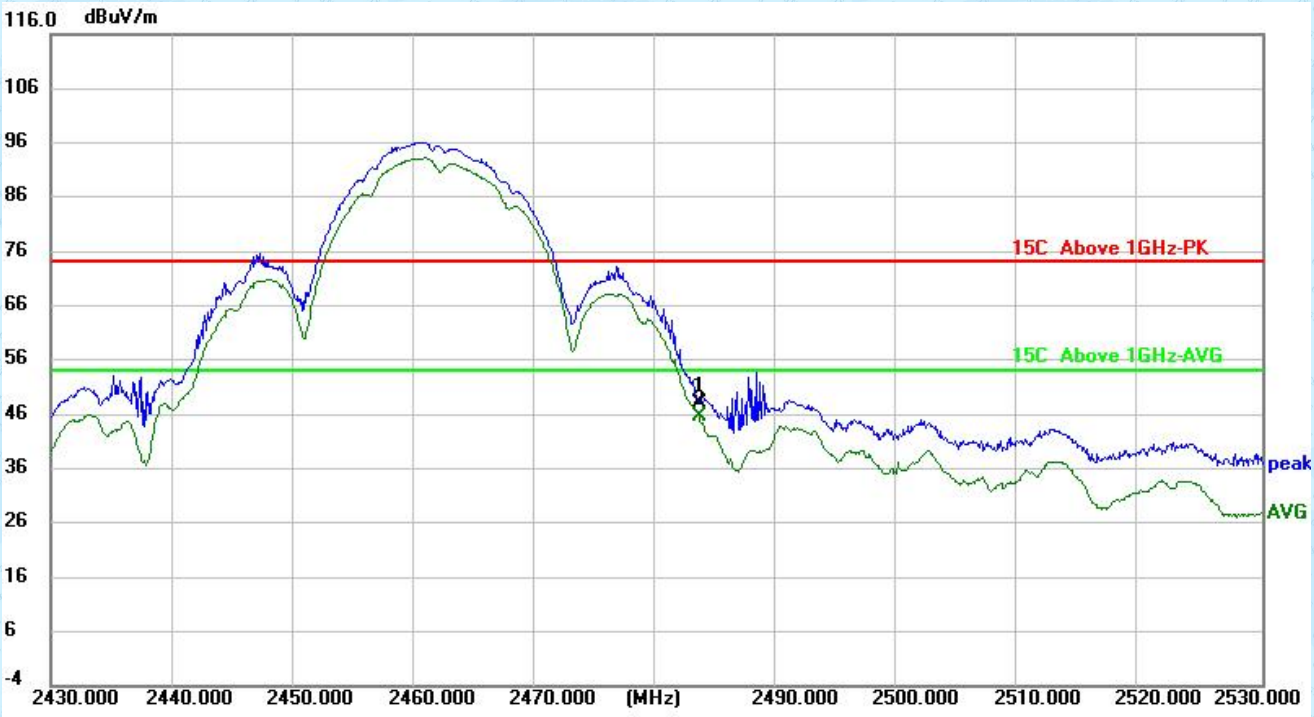
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	55.62	-15.88	39.74	74.00	-34.26	peak
2 *	2390.000	46.04	-15.88	30.16	54.00	-23.84	AVG

Polarization	Vertical	Mode	TX Channel 1



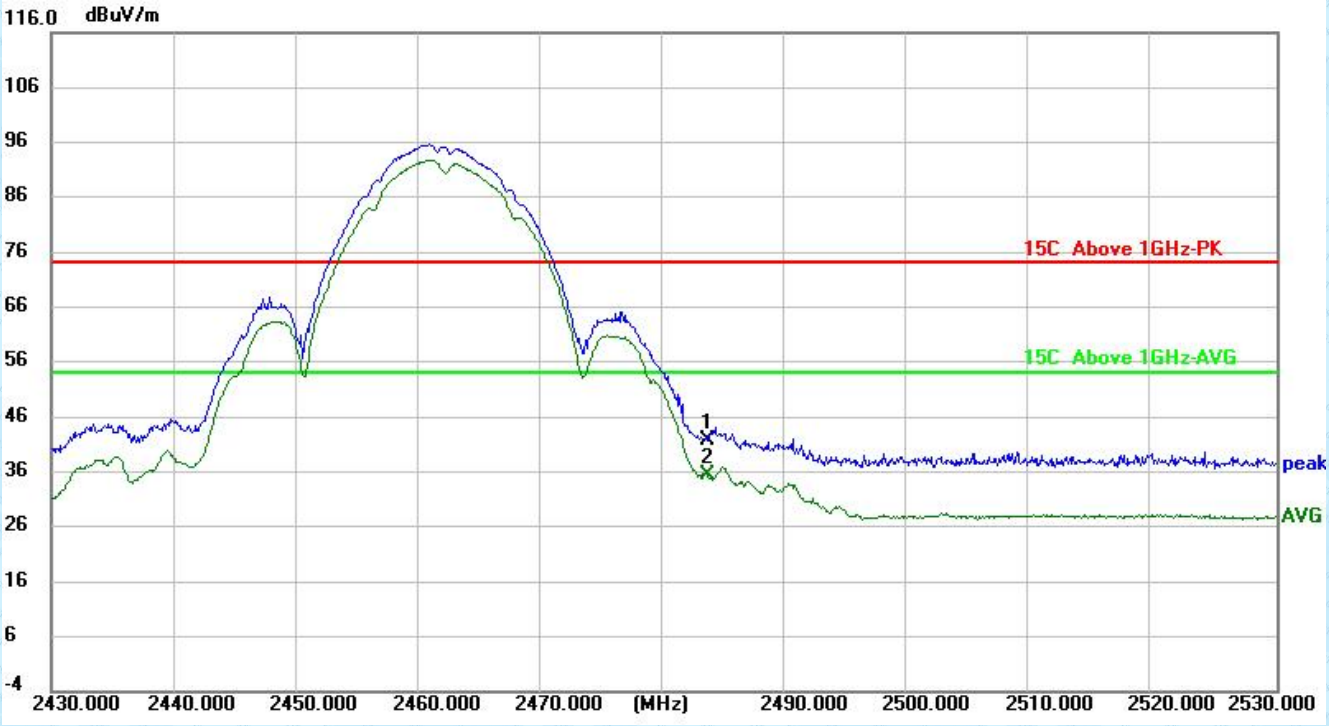
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	2390.000	59.28	-15.88	43.40	74.00	-30.60	peak
2	2390.000	51.70	-15.88	35.82	54.00	-18.18	AVG

Polarization	Horizontal	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	63.49	-15.30	48.19	74.00	-25.81	peak
2 *	2483.500	60.95	-15.30	45.65	54.00	-8.35	AVG

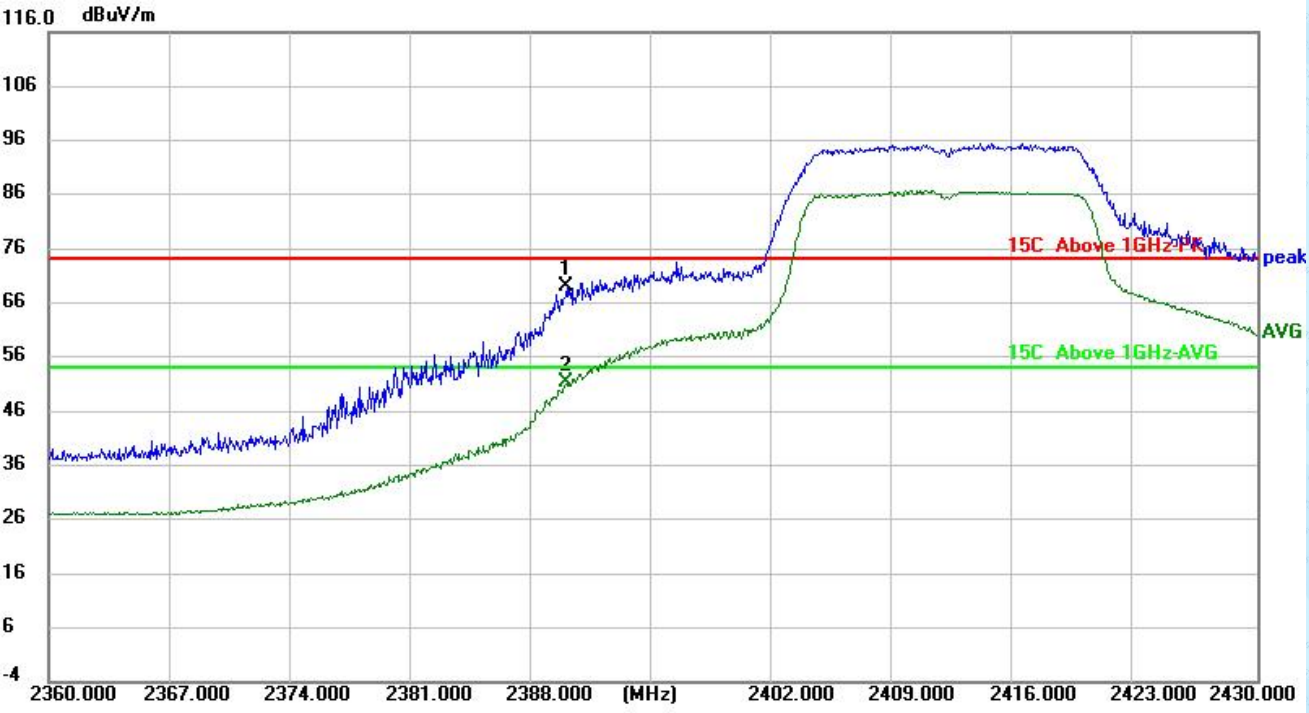
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	56.95	-15.30	41.65	74.00	-32.35	peak
2 *	2483.500	50.74	-15.30	35.44	54.00	-18.56	AVG

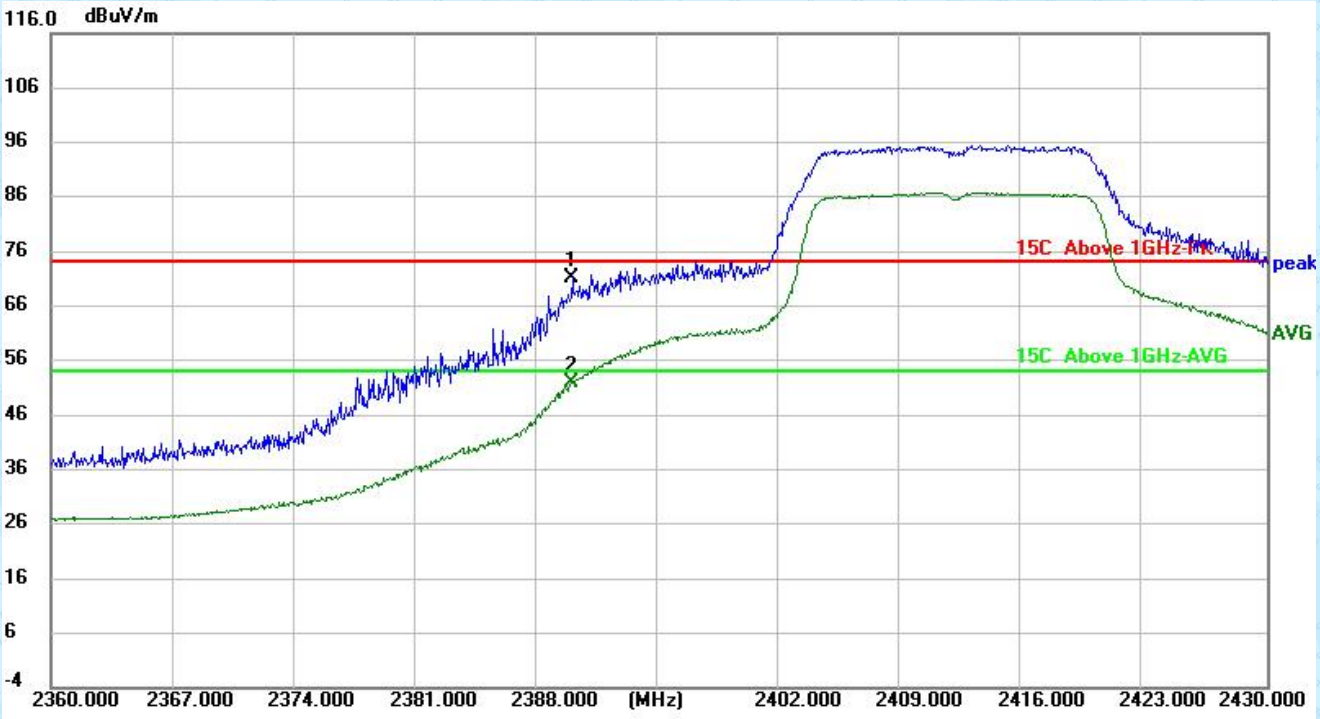
802.11g_ANT0

Polarization	Horizontal	Mode	TX Channel 1



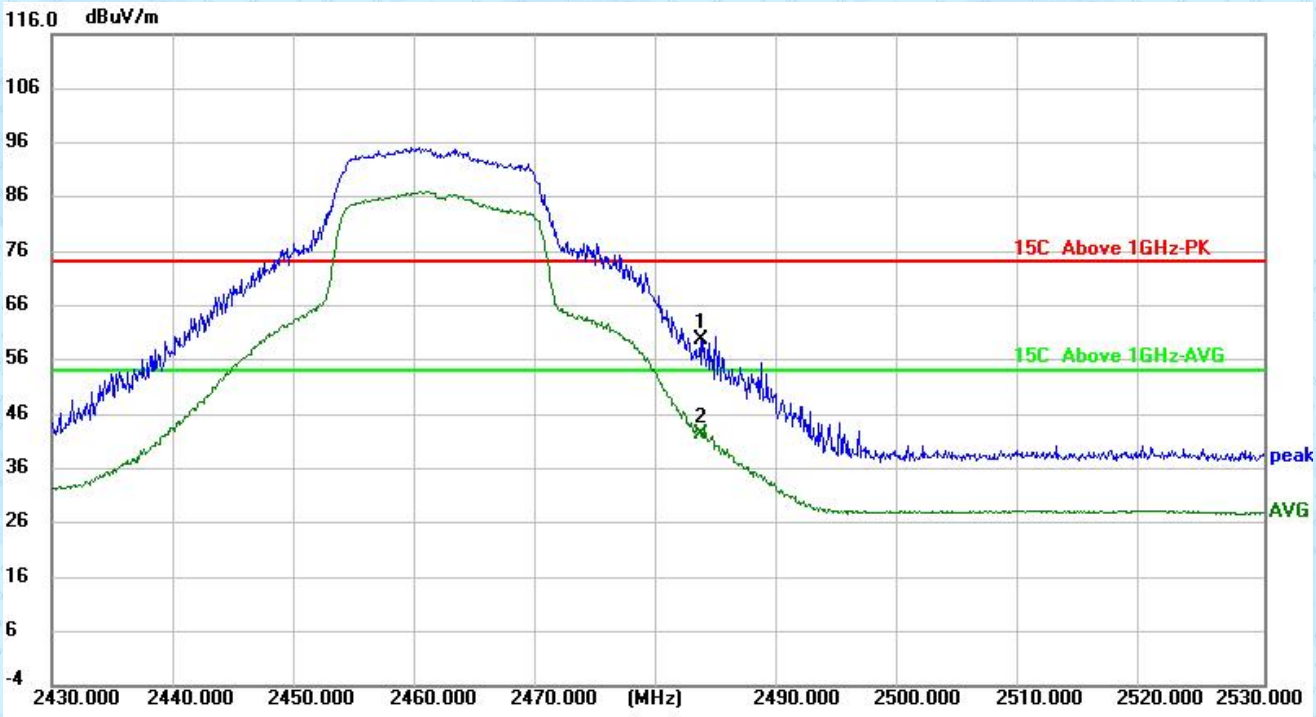
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	84.84	-15.88	68.96	74.00	-5.04	peak
2 *	2390.000	67.14	-15.88	51.26	54.00	-2.74	AVG

Polarization	Vertical	Mode	TX Channel 1



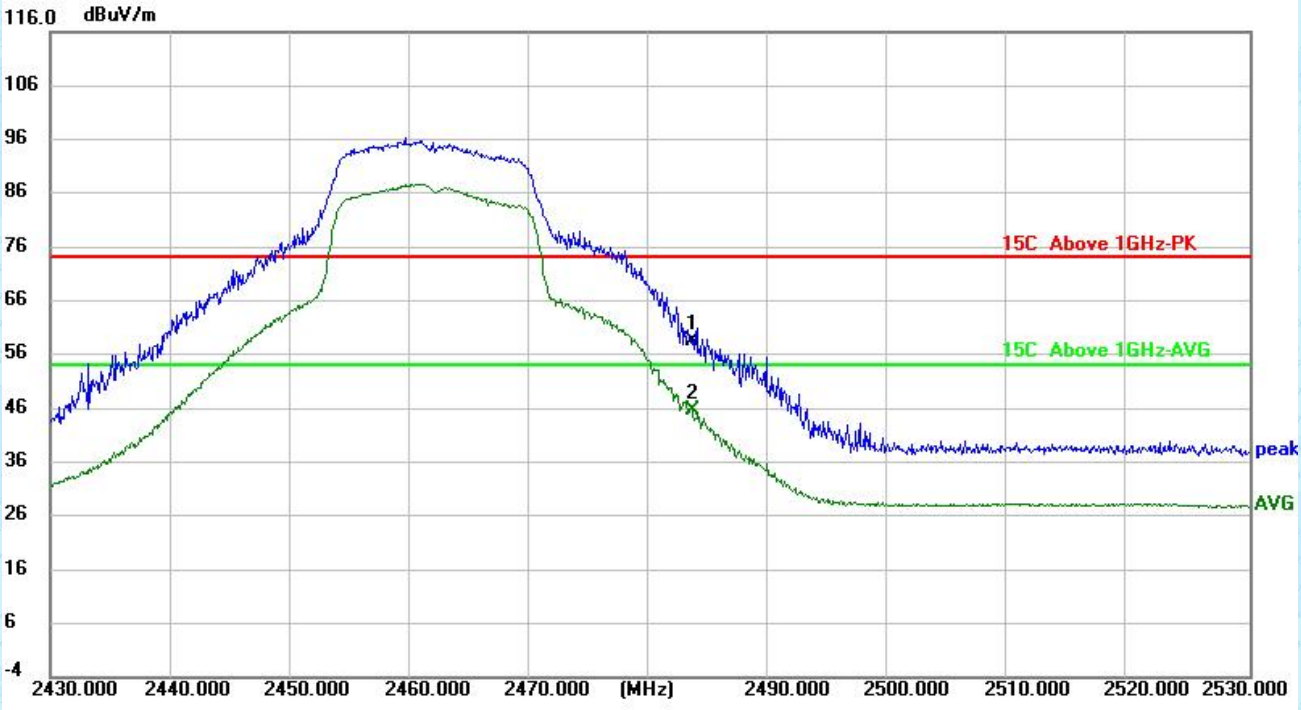
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	87.18	-15.88	71.30	74.00	-2.70	peak
2 *	2390.000	67.72	-15.88	51.84	54.00	-2.16	AVG

Polarization	Horizontal	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	74.95	-15.30	59.65	74.00	-14.35	peak
2 *	2483.500	57.54	-15.30	42.24	54.00	-11.76	AVG

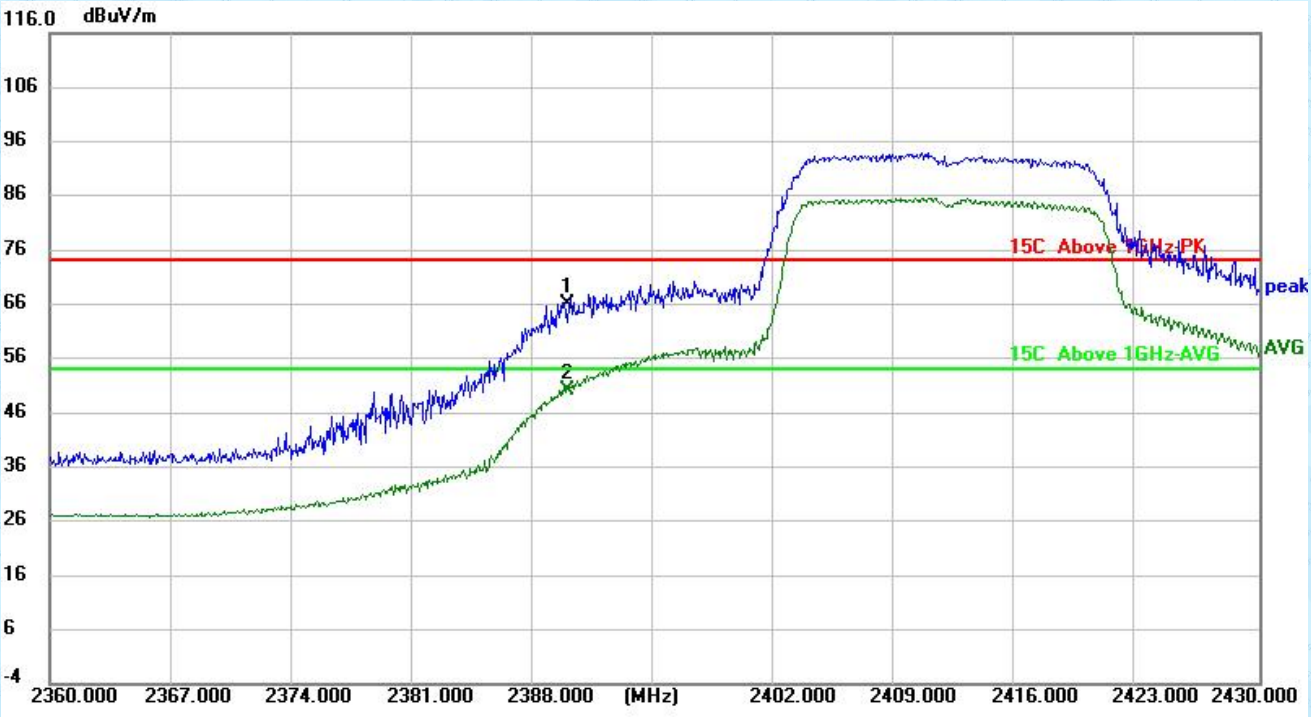
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	73.85	-15.30	58.55	74.00	-15.45	peak
2 *	2483.500	60.91	-15.30	45.61	54.00	-8.39	AVG

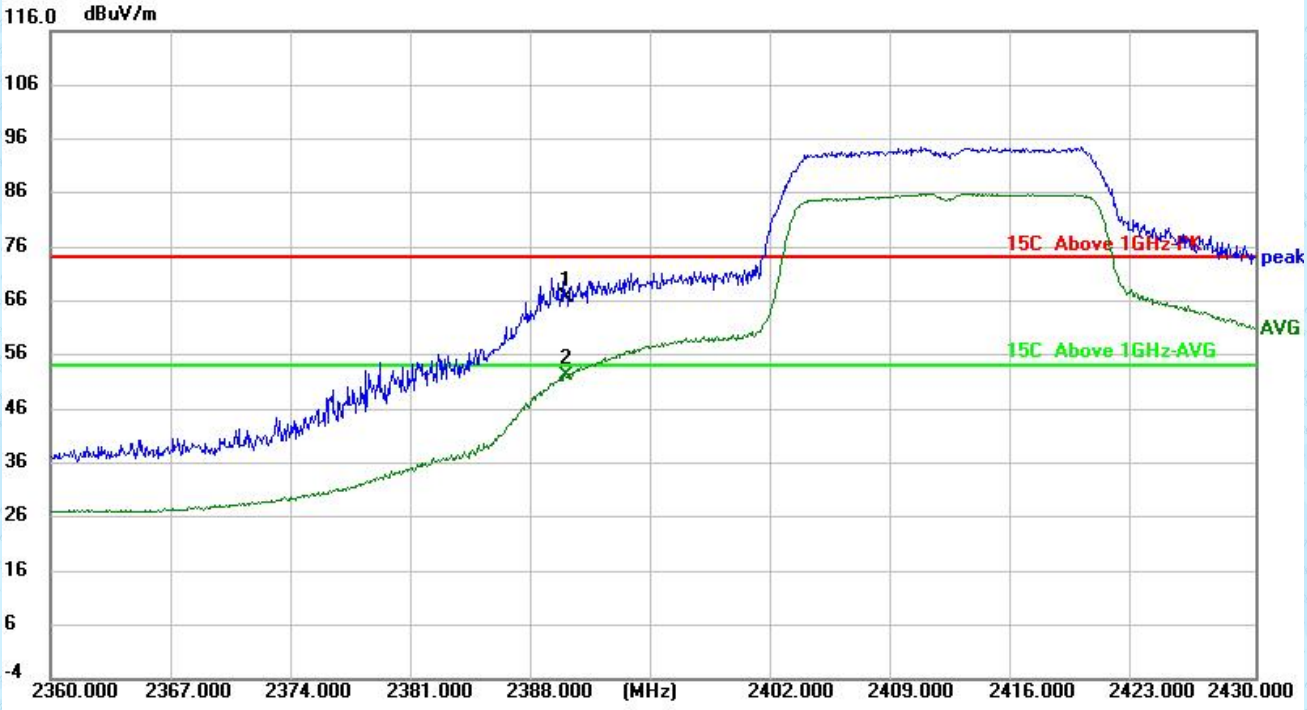
802.11n(20MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 1



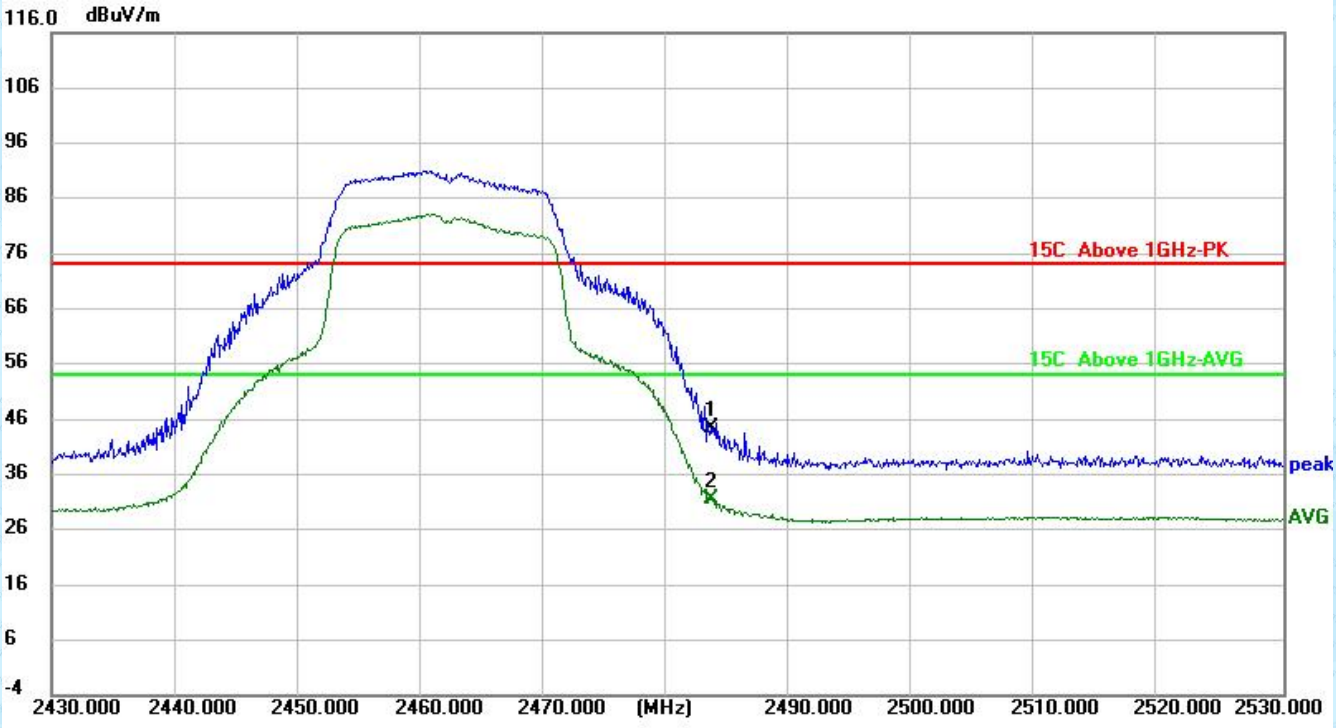
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	81.90	-15.88	66.02	74.00	-7.98	peak
2 *	2390.000	65.96	-15.88	50.08	54.00	-3.92	AVG

Polarization	Vertical	Mode	TX Channel 1



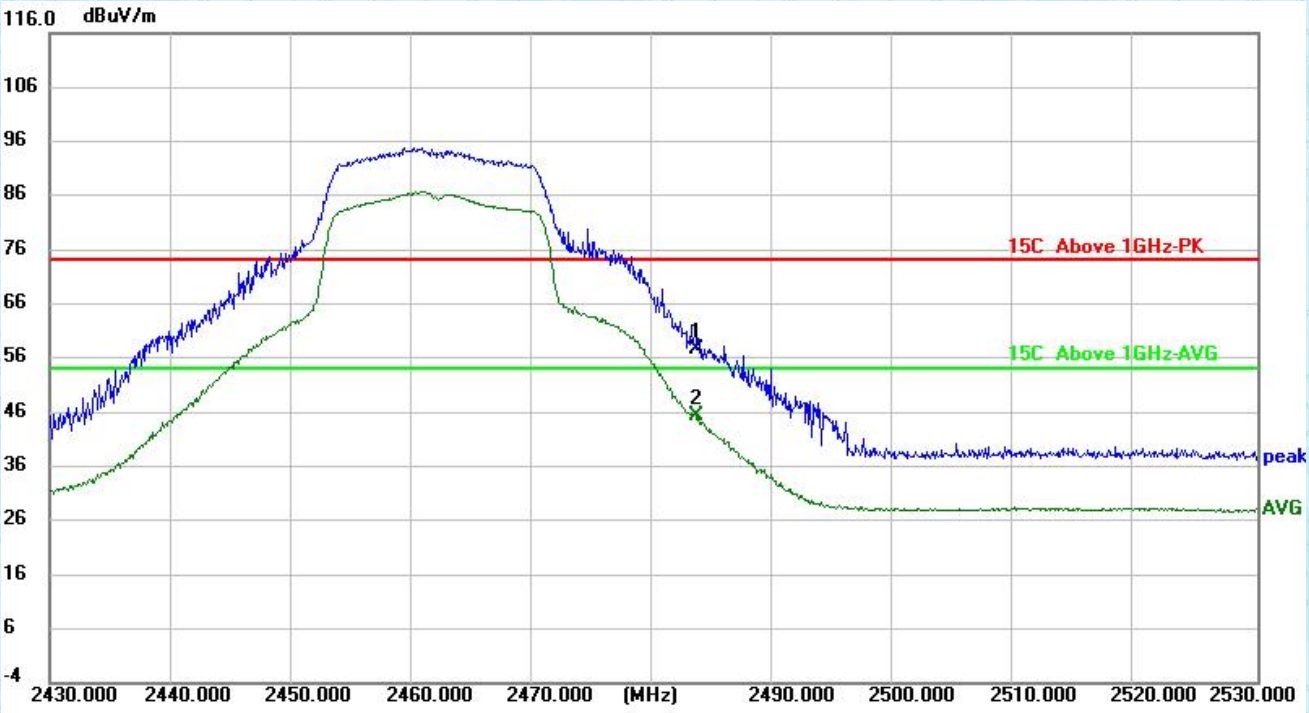
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	82.57	-15.88	66.69	74.00	-7.31	peak
2 *	2390.000	68.03	-15.88	52.15	54.00	-1.85	AVG

Polarization	Horizontal	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	59.66	-15.30	44.36	74.00	-29.64	peak
2 *	2483.500	46.86	-15.30	31.56	54.00	-22.44	AVG

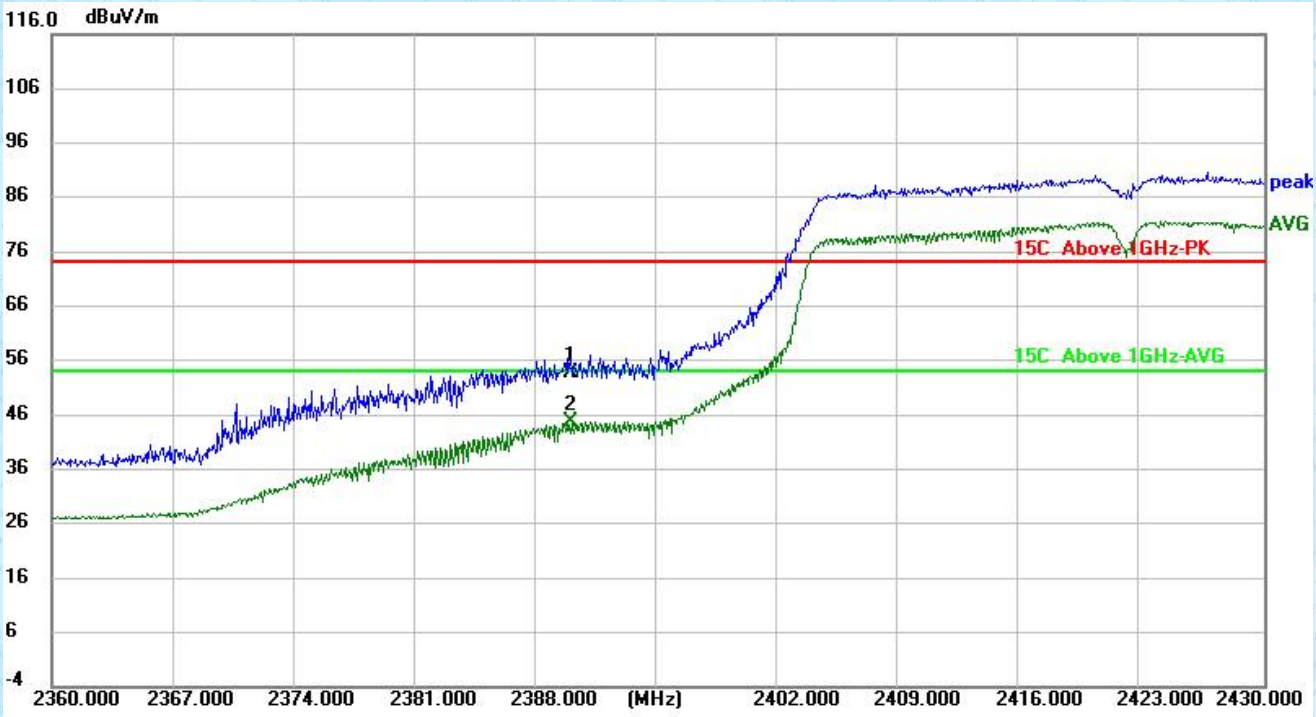
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	72.97	-15.30	57.67	74.00	-16.33	peak
2 *	2483.500	60.61	-15.30	45.31	54.00	-8.69	AVG

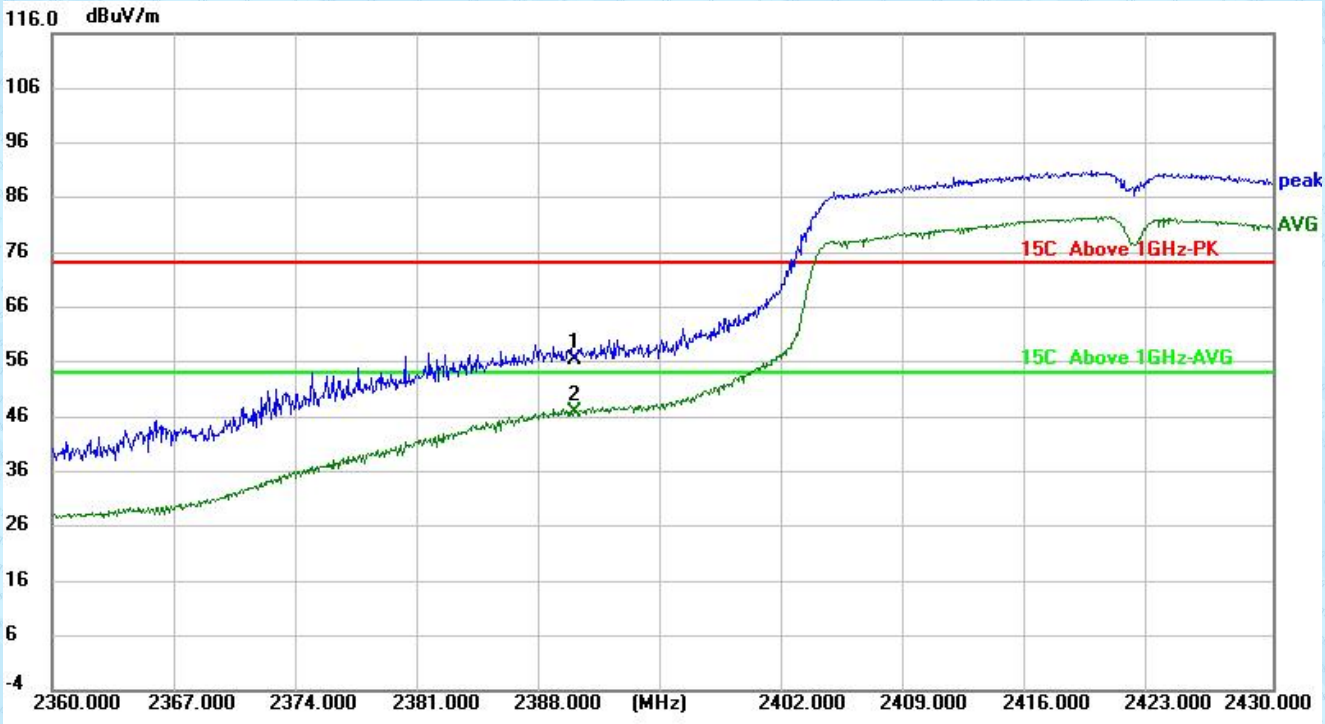
802.11n(40MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 3



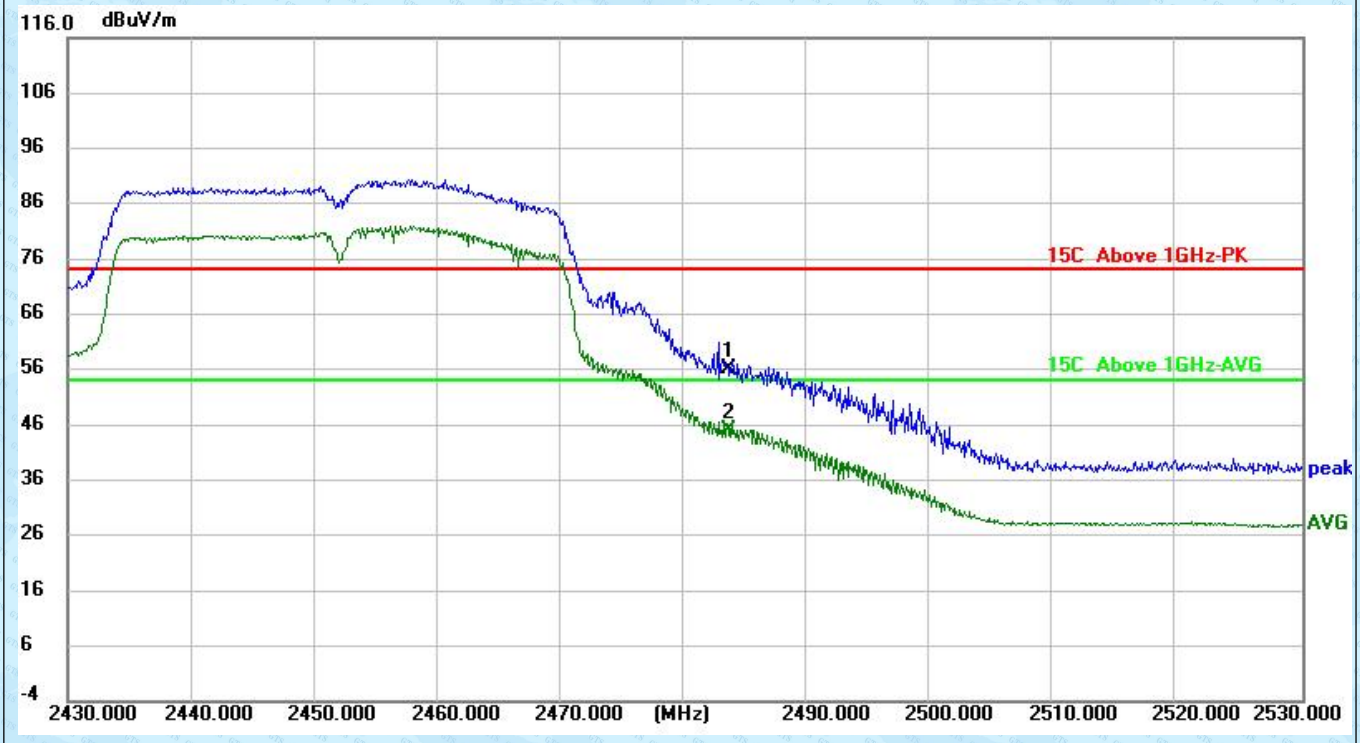
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	69.68	-15.88	53.80	74.00	-20.20	peak
2 *	2390.000	60.58	-15.88	44.70	54.00	-9.30	AVG

Polarization	Vertical	Mode	TX Channel 3



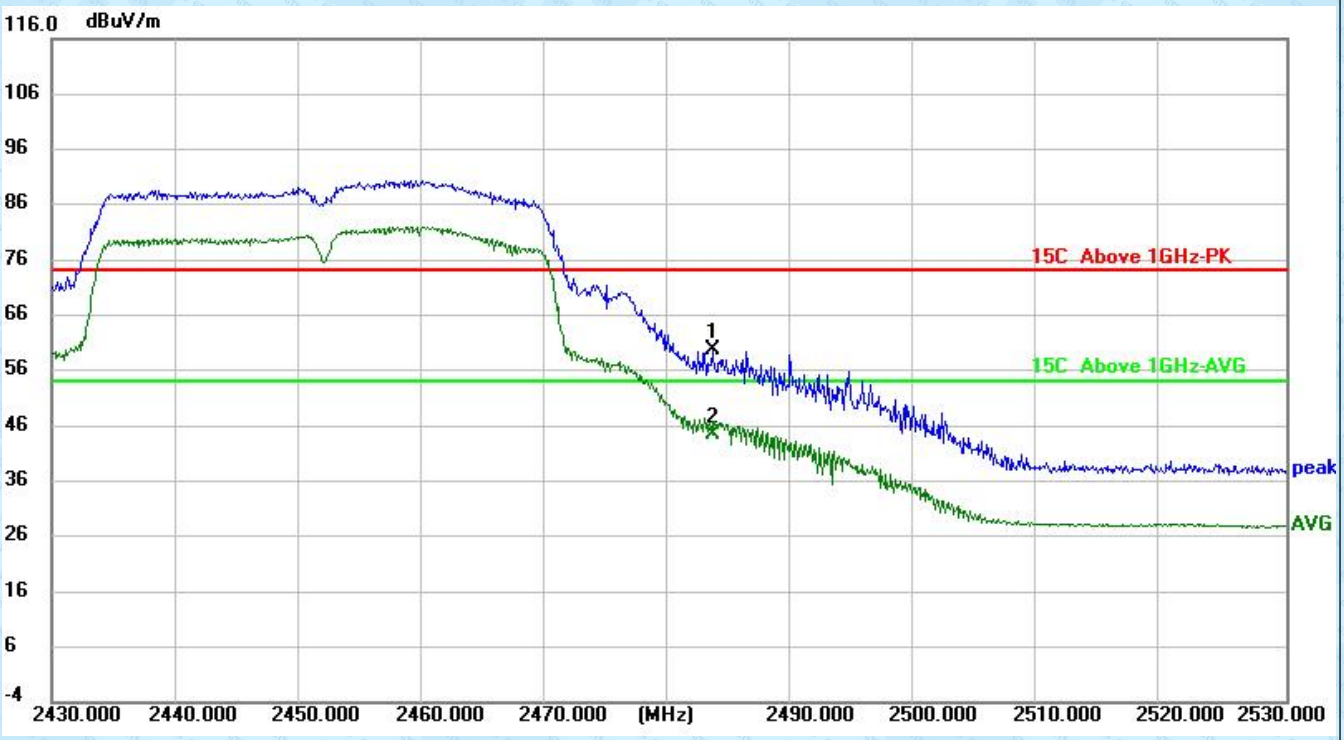
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	72.47	-15.88	56.59	74.00	-17.41	peak
2 *	2390.000	62.83	-15.88	46.95	54.00	-7.05	AVG

Polarization	Horizontal	Mode	TX Channel 9



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	71.39	-15.30	56.09	74.00	-17.91	peak
2 *	2483.500	60.34	-15.30	45.04	54.00	-8.96	AVG

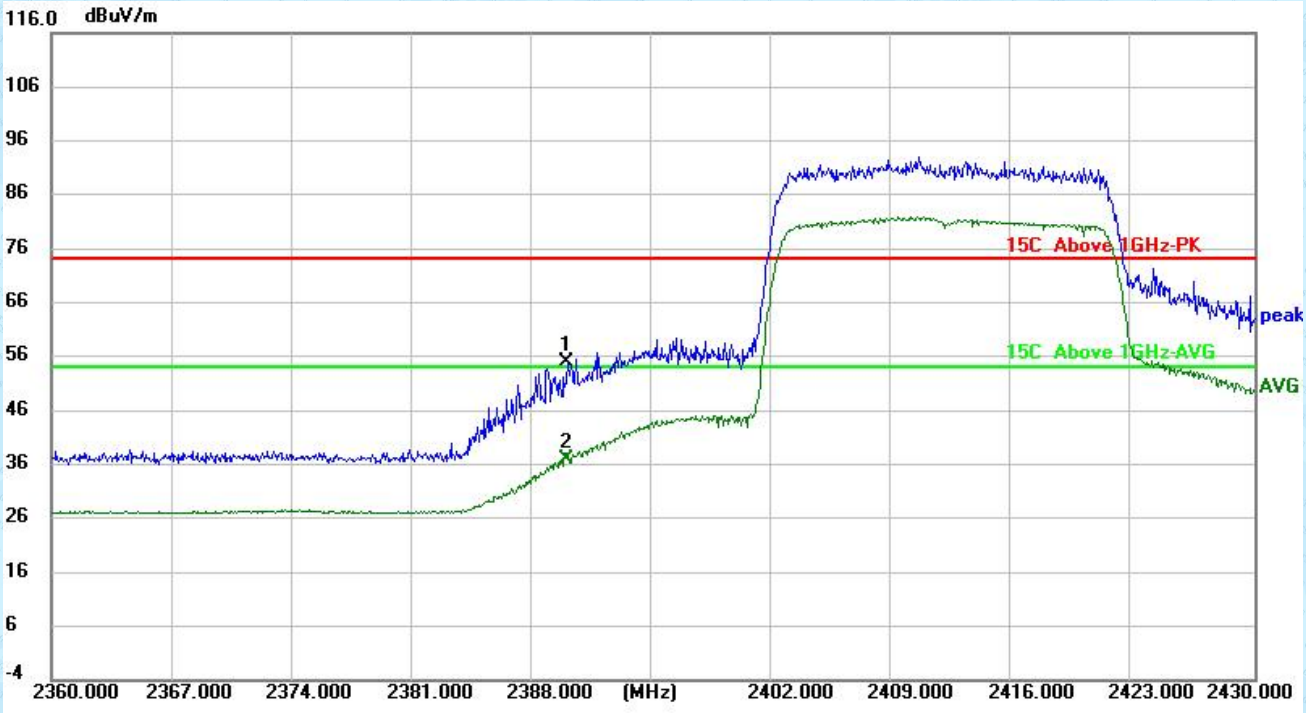
Polarization	Vertical	Mode	TX Channel 9



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	74.96	-15.30	59.66	74.00	-14.34	peak
2 *	2483.500	59.76	-15.30	44.46	54.00	-9.54	AVG

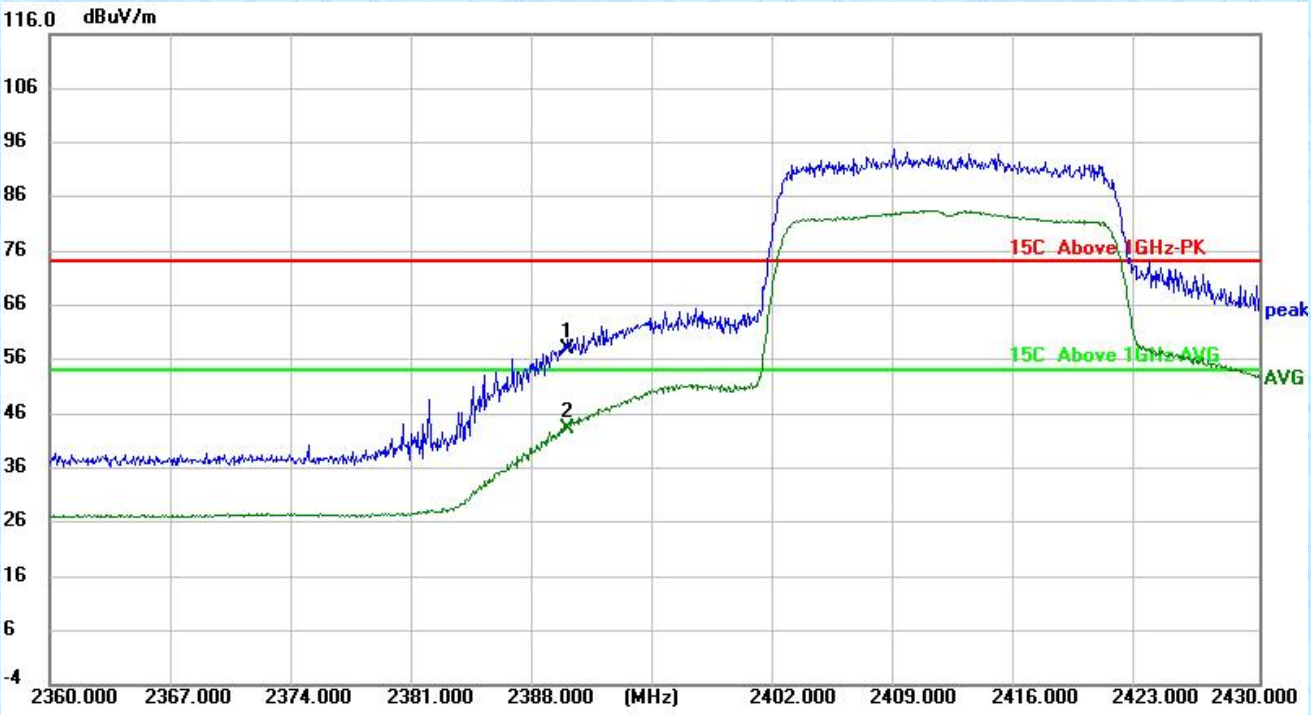
802.11ax(20MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 1



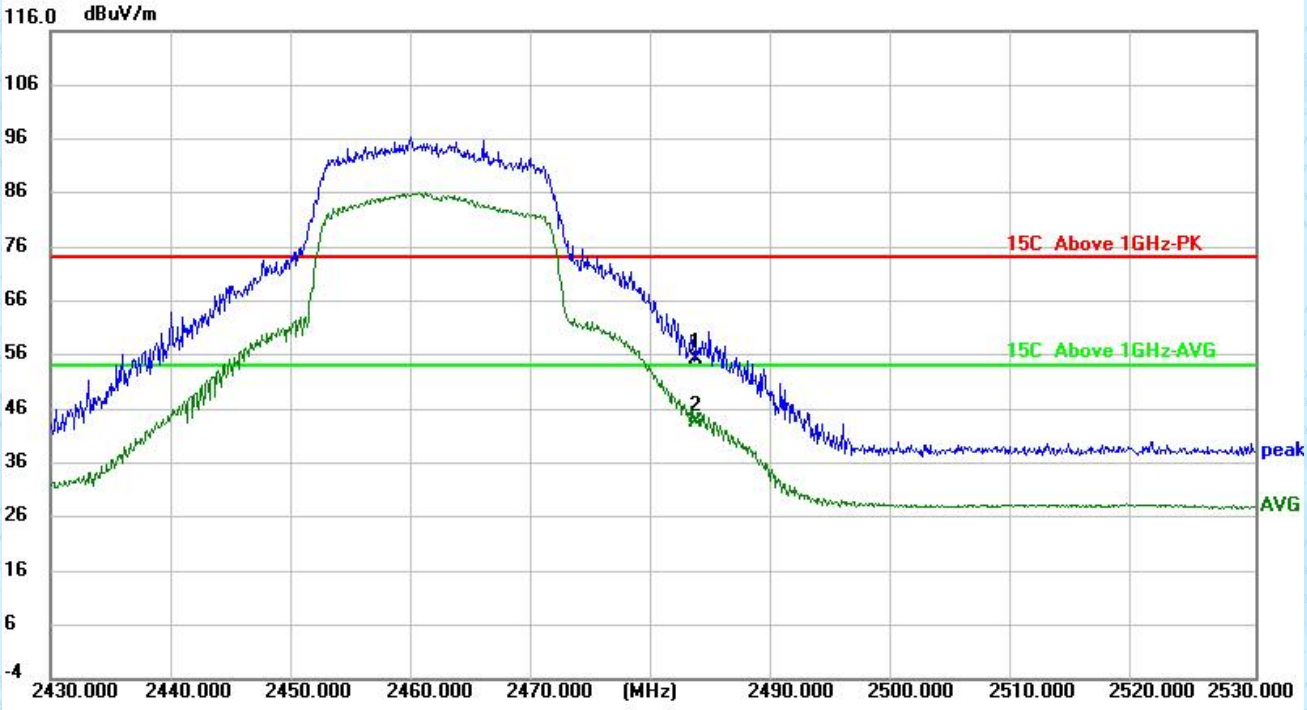
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	70.73	-15.88	54.85	74.00	-19.15	peak
2 *	2390.000	52.97	-15.88	37.09	54.00	-16.91	AVG

Polarization	Vertical	Mode	TX Channel 1



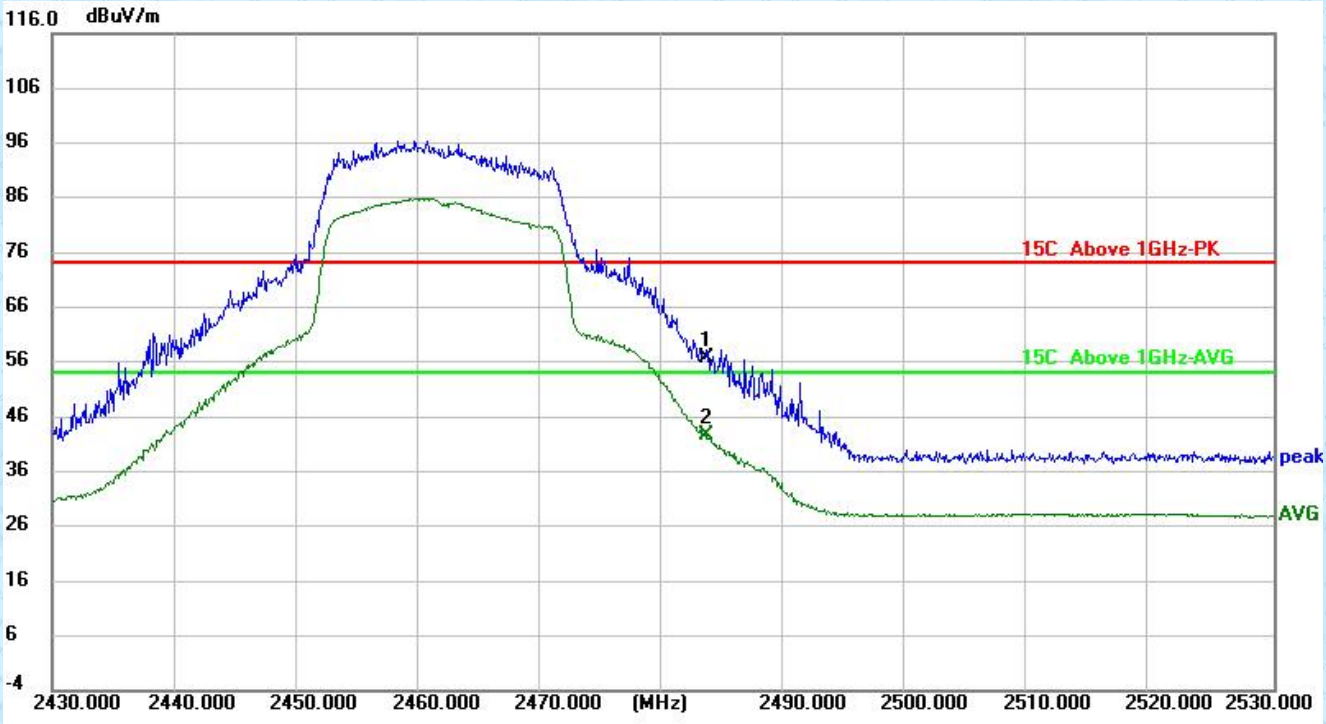
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	73.87	-15.88	57.99	74.00	-16.01	peak
2 *	2390.000	59.22	-15.88	43.34	54.00	-10.66	AVG

Polarization	Horizontal	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	70.61	-15.30	55.31	74.00	-18.69	peak
2 *	2483.500	58.81	-15.30	43.51	54.00	-10.49	AVG

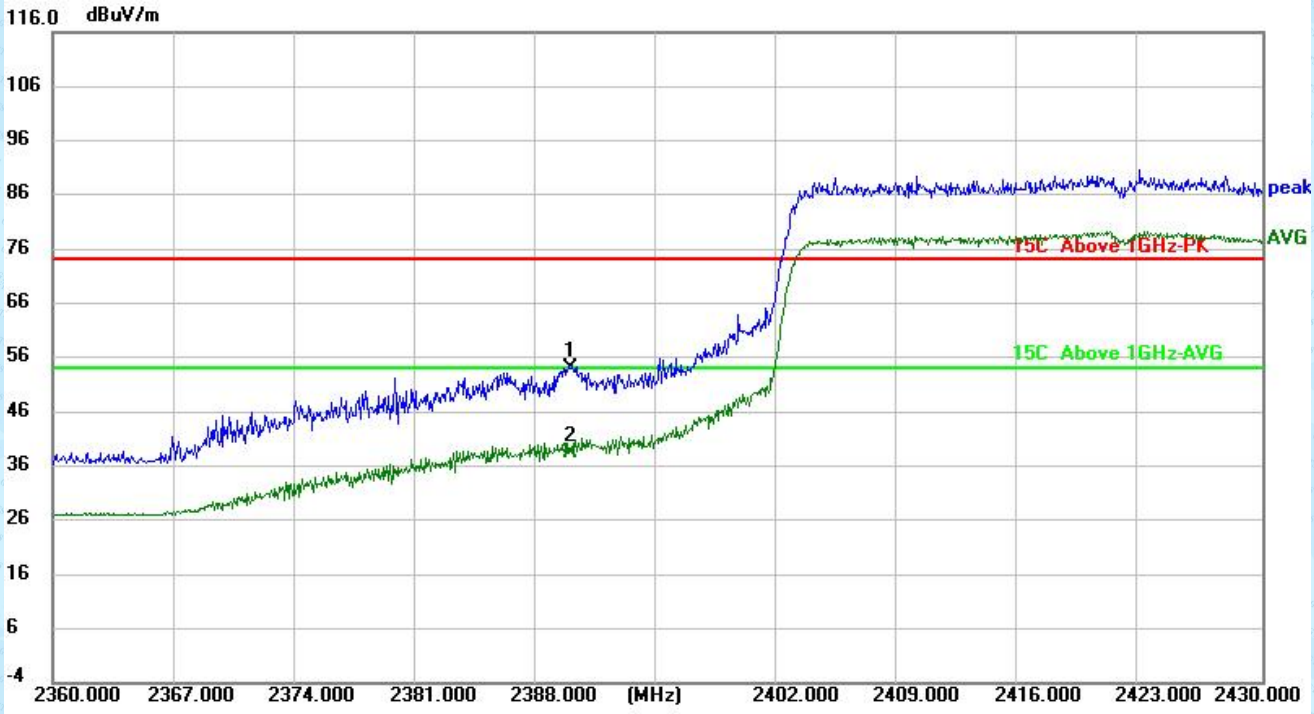
Polarization	Vertical	Mode	TX Channel 11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	72.20	-15.30	56.90	74.00	-17.10	peak
2 *	2483.500	57.82	-15.30	42.52	54.00	-11.48	AVG

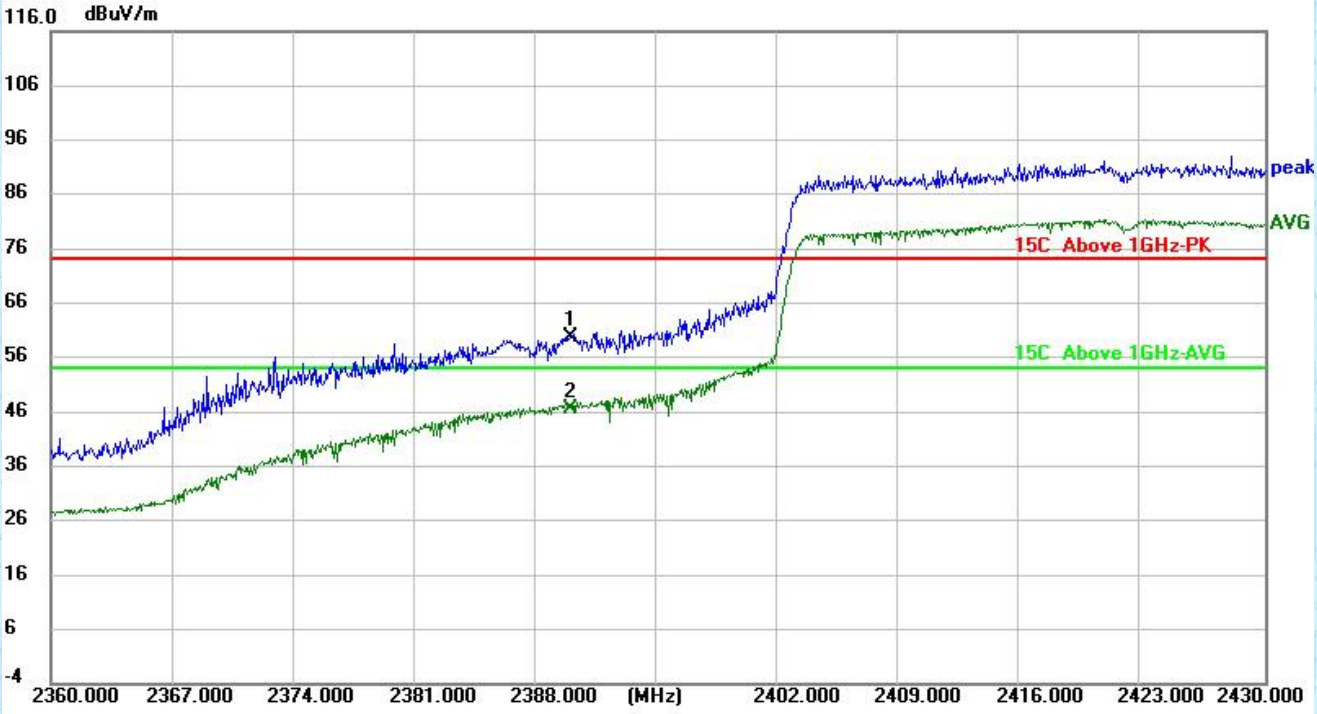
802.11ax(40MHz)_MIMO Mode

Polarization	Horizontal	Mode	TX Channel 3



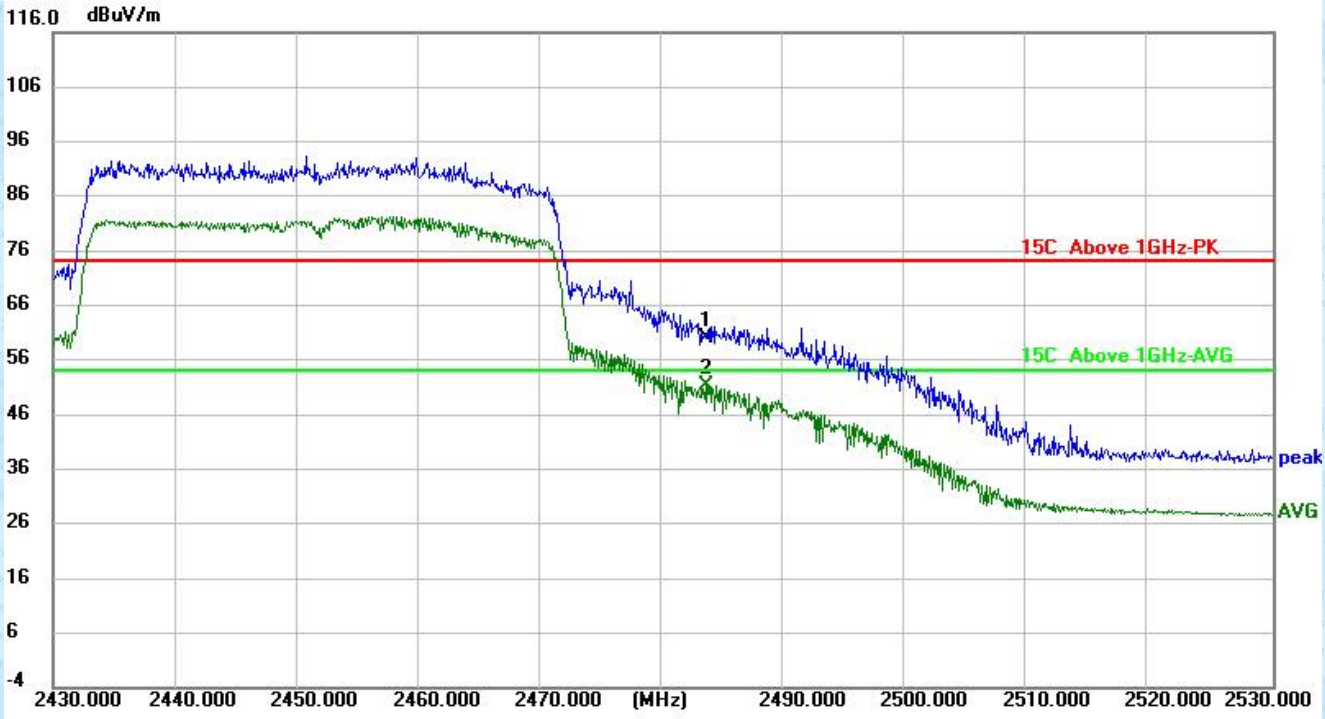
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	69.97	-15.88	54.09	74.00	-19.91	peak
2 *	2390.000	54.46	-15.88	38.58	54.00	-15.42	AVG

Polarization	Vertical	Mode	TX Channel 3



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	75.70	-15.88	59.82	74.00	-14.18	peak
2 *	2390.000	62.49	-15.88	46.61	54.00	-7.39	AVG

Polarization	Horizontal	Mode	TX Channel 9



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	75.31	-15.30	60.01	74.00	-13.99	peak
2 *	2483.500	66.75	-15.30	51.45	54.00	-2.55	AVG

Polarization	Vertical	Mode	TX Channel 9

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2483.500	66.02	-15.30	50.72	74.00	-23.28	peak
2 *	2483.500	54.03	-15.30	38.73	54.00	-15.27	AVG

3.8. AC Power-Line Conducted Emission

3.8.1. Limit

47 CFR 15.207(a): For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table:

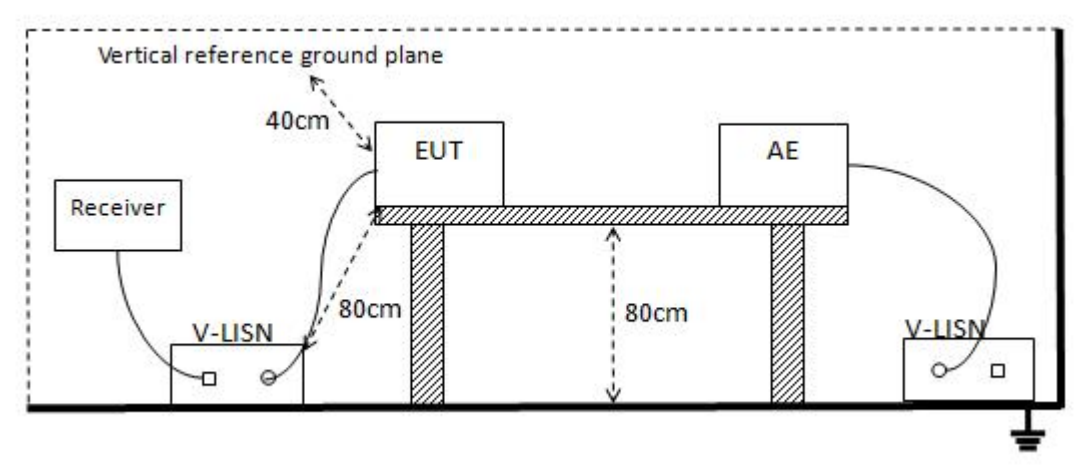
Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

3.8.2. Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.8.3. Test Setup



3.8.4. Test Result of AC Power-Line Conducted Emission

Note:

1.All modes have been tested, only worst case(802.11ax20)MIMO mode was recorded in the test report.

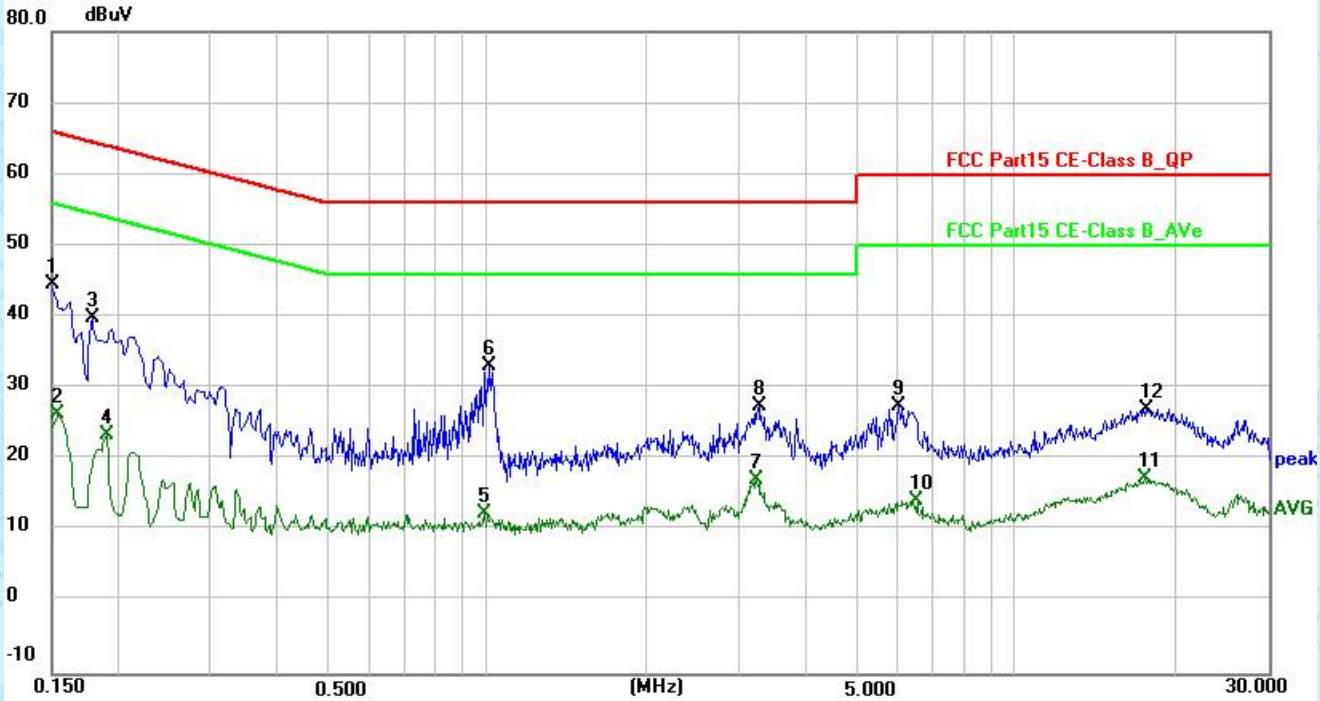
2.Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).

3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

4. The emission levels of other frequencies were less than 20dB margin against the limit.

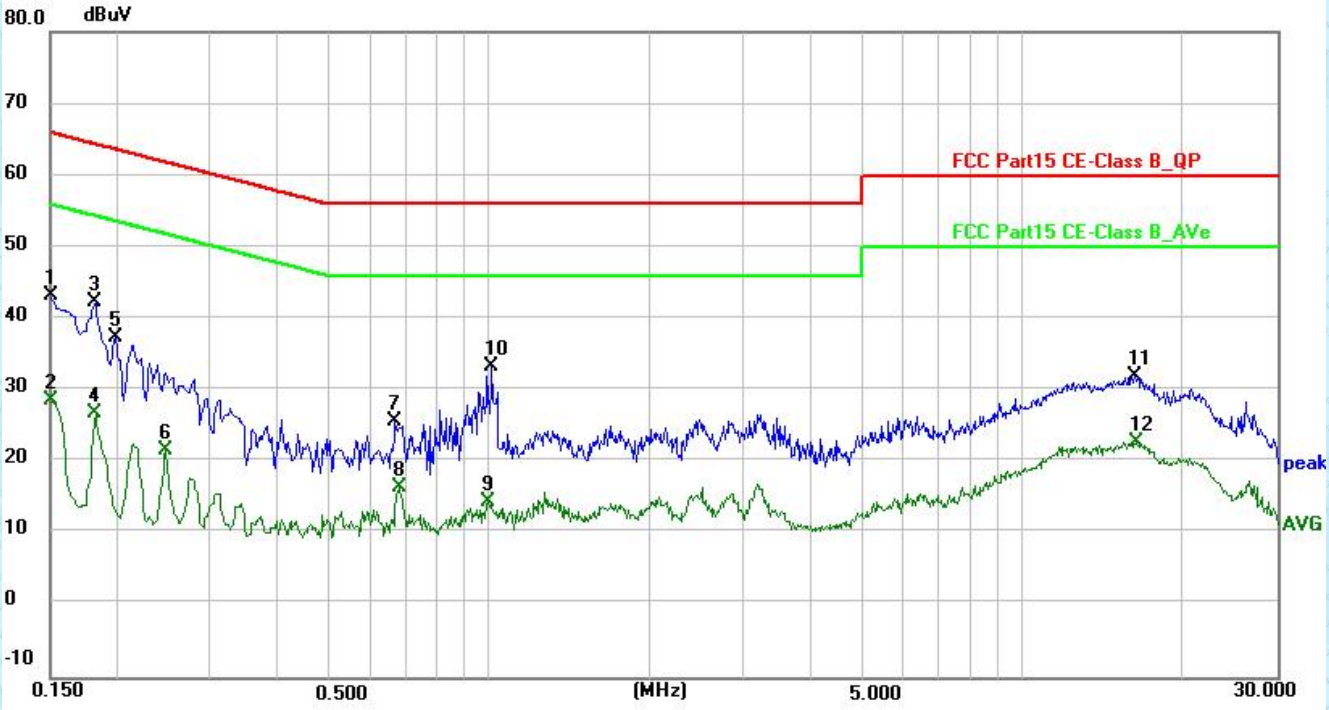
5. Margin value = Emission level-Limit value.

Polarization	N	Mode	TX Channel 1



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1 *	0.1500	25.30	19.42	44.72	66.00	-21.28	peak
2	0.1539	7.06	19.42	26.48	55.79	-29.31	AVG
3	0.1780	20.44	19.42	39.86	64.58	-24.72	peak
4	0.1900	4.20	19.42	23.62	54.04	-30.42	AVG
5	0.9860	-6.92	19.51	12.59	46.00	-33.41	AVG
6	1.0140	13.70	19.52	33.22	56.00	-22.78	peak
7	3.2380	-2.51	19.67	17.16	46.00	-28.84	AVG
8	3.2740	7.92	19.67	27.59	56.00	-28.41	peak
9	6.0180	7.61	19.92	27.53	60.00	-32.47	peak
10	6.4899	-5.65	19.97	14.32	50.00	-35.68	AVG
11	17.5380	-3.94	21.34	17.40	50.00	-32.60	AVG
12	17.5700	5.80	21.34	27.14	60.00	-32.86	peak

Polarization	L	Mode	TX Channel 1



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	23.91	19.44	43.35	66.00	-22.65	peak
2	0.1500	9.28	19.44	28.72	56.00	-27.28	AVG
3 *	0.1819	22.98	19.44	42.42	64.40	-21.98	peak
4	0.1819	7.48	19.44	26.92	54.40	-27.48	AVG
5	0.1980	17.94	19.43	37.37	63.69	-26.32	peak
6	0.2460	2.34	19.43	21.77	51.89	-30.12	AVG
7	0.6660	6.19	19.52	25.71	56.00	-30.29	peak
8	0.6780	-2.93	19.51	16.58	46.00	-29.42	AVG
9	0.9980	-4.90	19.53	14.63	46.00	-31.37	AVG
10	1.0140	13.81	19.53	33.34	56.00	-22.66	peak
11	16.2620	10.98	21.21	32.19	60.00	-27.81	peak
12	16.3420	1.74	21.23	22.97	50.00	-27.03	AVG

3.9. Antenna Requirement

3.9.1. Standard Requirement

According to *47 CFR 15.203*, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

3.9.2. EUT Antenna

The antenna used for the EUT is PIFA Antenna, which meets the antenna requirements.

4. Test Setup Photographs

Please refer to the Appendix F.

5. External And internal Photographs of The EUT

External Please refer to the Appendix G.

Internal Please refer to the Appendix H.

Appendix A of data

A1.Maximum conducted output power

Test Result

Peak power

Conducted Output Power						
Mode	**Channel**	**Ant. 0 (dBm)**	**Ant. 1 (dBm)**	**Total (dBm)**	**Limit (dBm)**	**Result**
IEEE 802.11b	1	17.62	17.09	N/A	30	PASS
	6	17.78	17.03	N/A	30	PASS
	11	17.12	16.91	N/A	30	PASS
IEEE 802.11g	1	21.96	20.94	N/A	30	PASS
	6	20.97	20.68	N/A	30	PASS
	11	20.56	19.19	N/A	30	PASS
IEEE 802.11n_20	1	21.11	21.00	24.066	30	PASS
	6	20.84	21.19	24.029	30	PASS
	11	20.12	19.55	22.855	30	PASS
IEEE 802.11n_40	3	21.38	20.24	23.858	30	PASS
	6	20.97	20.22	23.621	30	PASS
	9	20.92	20.31	23.636	30	PASS
IEEE 802.11ax_20	1	22.18	20.94	**24.614**	30	PASS
	6	21.53	21.28	24.417	30	PASS
	11	21.11	19.69	23.468	30	PASS
IEEE 802.11ax_40	3	21.89	20.03	24.069	30	PASS
	6	21.80	18.17	23.364	30	PASS
	9	21.57	19.95	23.845	30	PASS

Note: The duty cycle is 100%, and the corresponding duty cycle factor is 0.

A2.Duty Cycle

Note:

Only the worst data Antenna 0 is represented in the report.

Test Result

Mode	Data rates	Channel	Antenna	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
IEEE 802.11b	1	1	0	32.000	32.000	100	1	0.0
		6		32.000	32.000	100	1	0.0
		11		32.000	32.000	100	1	0.0
IEEE 802.11g		1		10.000	10.000	100	1	0.0
		6		10.000	10.000	100	1	0.0
		11		10.000	10.000	100	1	0.0
IEEE 802.11n_20	MCS 0	1		10.000	10.000	100	1	0.0
		6		10.000	10.000	100	1	0.0
		11		10.000	10.000	100	1	0.0
IEEE 802.11n_40		3		10.000	10.000	100	1	0.0
		6		10.000	10.000	100	1	0.0
		9		10.000	10.000	100	1	0.0
IEEE 802.11ax_20		1		10.000	10.000	100	1	0.0
		6		10.000	10.000	100	1	0.0
		11		10.000	10.000	100	1	0.0
IEEE 802.11ax_40		3		10.000	10.000	100	1	0.0
		6		10.000	10.000	100	1	0.0
		9		10.000	10.000	100	1	0.0