RF Test Report

Applicant	:	ADLINK TECHNOLOGY INC.
Product Name	:	Arm-based IoT Gateway
Trade Name	:	ADLINK
Model Number	:	EMU-200-W, EMU-200L-W
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Received Date	:	Jul. 03, 2023
Test Period	:	Jul. 27 ~ Aug. 14, 2023
Issued Date	:	Oct. 06, 2023

Issued by

Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 334025, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190

Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range: 9 kHz to 325 GHz
Test Firm Registration Number: 226252 (Bade test site)
Test Firm Registration Number: 191812 (Wugu test site)

Note:
1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
2.This report shall not be reproduced except in full, without the written approval of Eurofins E&E Wireless Taiwan Co., Ltd.
3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Version	Issued Date	Revisions	Revised By
00	Sep. 26, 2023	Initial Issue	Emma Chao
01	Oct. 06, 2023	Update chapter 2 (P.7) Update chapter 4 (P.22)	Emma Chao

Verification of Compliance

Applicant	:	ADLINK TECHNOLOGY INC.
Product Name	:	Arm-based IoT Gateway
Trade Name	:	ADLINK
Model Number	:	EMU-200-W, EMU-200L-W
FCC ID	:	X4D-EMU-200
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Test Result	:	Complied
Performing Lab.	:	Eurofins E&E Wireless Taiwan Co., Ltd. No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330

Testing Laboratory 1330

Eurofins E&E Wireless Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Eurofins E&E Wireless Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Kai Yu Yang

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1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	-----
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	Max. Output Power	PASS	-----
15.247(a)(2)	6 dB RF Bandwidth	PASS	-----
15.247(e)	Maximum Power Spectral Density	PASS	-----
15.247(d)	Out of Band Conducted Spurious Emission	PASS	-----
15.203	Antenna Requirement	PASS	-----

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 15.247 Meas Guidance v05r02	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES
KDB 662911 D01 v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)

1.2. Testing Location

Lab Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ■ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☐ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

1.3. Measurement Uncertainty

Test Item	Frequency	Uncertainty	
		BD	WG
Conducted Emission	150 kHz ~ 30 MHz	2.7 dB	2.6 dB
Conducted Output Power		1.1 dB	1.1 dB
RF Bandwidth		4.5 %	4.5 %
Power Spectral Density		1.1 dB	1.1 dB
Duty Cycle		1.1 %	1.0 %

Test Item	Frequency	Uncertainty			
		96601-BD	96603-BD	96602-WG	96603-WG
Radiated Emission	9 kHz ~ 30 MHz	1.9 dB	1.9 dB	1.6 dB	1.6 dB
	30 MHz ~ 1000 MHz	4.9 dB	4.9 dB	4.8 dB	4.8 dB
	1000 MHz ~ 18000 MHz	4.9 dB	5.0 dB	5.0 dB	5.2 dB
	18000 MHz ~ 26500 MHz	4.3 dB	4.4 dB	4.4 dB	4.5 dB
	26500 MHz ~ 40000 MHz	4.5 dB	4.5 dB	4.6 dB	4.5 dB

1.4. Test Site Environment

Items	Required (IEC 60068-1)	Interval(*)
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75

(*)The measurement ambient temperature is within this range.

2 EUT Description

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity(except Max. RF Output Power).

Applicant	ADLINK TECHNOLOGY INC. No 66 Huaya 1st Rd Guishan District Taoyuan City, 333 Taiwan			
Product Name	Arm-based IoT Gateway			
Trade Name	ADLINK			
Model Number	EMU-200-W, EMU-200L-W			
Models different description	EMU-200-W: w/ Web Console; w/ WIFI EMU-200L-W: w/o Web Console; w/ WIFI			
FCC ID	X4D-EMU-200			
Operate Freq. Band	Frequency Range (MHz)	Modulation	Channel Bandwidth	Data Rate (ns)
802.11b	2412 ~ 2462	DSSS	20 MHz	Up to 11 Mbps
802.11g	2412 ~ 2462	OFDM	20 MHz	Up to 54 Mbps
802.11n HT20	2412 ~ 2462	OFDM	20 MHz	MCS7
802.11n HT40	2422 ~ 2452	OFDM	40 MHz	MCS7
Antenna information	ANT	Model Number	Type	Max. Gain (dBi)
	ANT-0	JR2Q00498-X0	Dipole Antenna	2.04
	ANT-1	JR2Q00498-X0	Dipole Antenna	1.74
Antenna Delivery	See section 3.1			
Operate Temp. Range	-40 ~ +50 ℃			
EUT Power Rating	DC 9~30 V, 1.68 A-0.51 A, DC 24 V, 0.63 A			

Frequency Band	Max. RF Output Power (W)
802.11b	0.054
802.11g	0.055
802.11n HT20	0.040
802.11n HT40	0.032

BW 20M	CH	1	2	3	4	5	6	7	8	9	10	11	-	-
	Freq. (MHz)	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	-	-
BW 40M	CH	NA		3	4	5	6	7	8	9	-	-	NA	
	Freq. (MHz)			2422	2427	2432	2437	2442	2447	2452	-	-		

3 Test Methodology

3.1. Mode of Operation

Decision of Test Eurofins has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	Final-Test Mode
Transmit Mode	V
802.11b	V
802.11g	V
802.11n HT20	V
802.11n HT40	V

Note 1: ANT-1 is the worst case in 802.11b、802.11g、802.11n HT40.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Y axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Test Mode	ANT-0	ANT-1	ANT-0+1
802.11b	V	V	---
802.11g	V	V	---
802.11n HT20	V	V	V
802.11n HT40	V	V	---

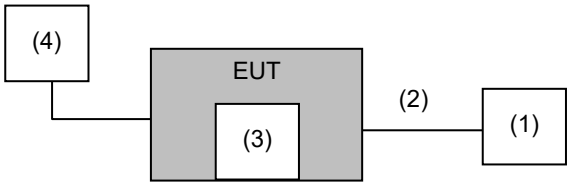
Test Mode	Antenna Delivery	Data Rate (Mbps)	Test Channel
802.11b	1TX / 1RX (Diversity)	1	1, 6, 11
802.11g	1TX / 1RX (Diversity)	6	1, 6, 11
802.11n HT20	2TX / 2RX (MIMO)	13	1, 6, 11
802.11n HT40	1TX / 1RX (Diversity)	13.5	3, 6, 9

3.2. EUT Test Step

1.	Setup the EUT shown on “Configuration of Test System Details”.
2.	Turn on the power of all equipment.
3.	Turn on TX function.
4.	EUT run test program.

3.3. Configuration of Test System Details

Conduction Emission & Radiated Emission



Devices Description				
Product		Manufacturer	Model Number	Remark
(1)	NB	ASUS	P1448U	-
(2)	LAN Cable	TATUNG	CAT5E	-
(3)	SD Card	Transcend	9153BA 8G 07DS1	-
(4)	Switching Power Adaper	MEANWELL	GST40A24	-

3.4. Test Instruments

For Conducted Emission
Test Period: Aug. 10, 2023
Testing Engineer: Jayson Hsieh

Test Site		Conduction01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Test Receiver	R&S	ESCI	100367	May 22, 2023	1 year
☐	Test Receiver	R&S	ESCI	100722	Nov. 02, 2022	1 year
☒	LISN	R&S	ENV216	101040	Mar. 21, 2023	1 year
☒	LISN	R&S	ENV216	101140	Jan. 12, 2023	1 year
☒	RF Cable	Woken	00100D1380194M	TE-02-03	Jun. 01, 2023	1 year
☒	Software	EZ EMC	1.1.4.3	N/A	N.C.R.	---

For Conducted
Test Period: Jul. 27 ~ Aug. 11, 2023
Testing Engineer: Andy Lu

Test Site		RF01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Power Sensor	Agilent	N1921A	MY45241957	Nov. 30, 2022	1 year
☒	Power Meter	Agilent	N1911A	MY45101619	Nov. 30, 2022	1 year
☒	Spectrum Analyzer (10 Hz~26.5 GHz)	Keysight	N9010B	MY59071418	Mar. 20, 2023	1 year
☐	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 01, 2022	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Dec. 29, 2022	1 year
☐	Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	Mar. 29, 2023	1 year
☐	Signal Generator	Keysight	N5182B	MY53052569	Apr. 17, 2023	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 20, 2023	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	Jun. 05, 2023	1 year
☐	Power Supply	KEITHLEY	2303	4045290	Jan. 06, 2023	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Aug. 11 ~ Aug. 14, 2023
Testing Engineer: Kerry Xu, Marc Yeh

Test Site		96603-BD				
Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	Jan. 07, 2023	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Dec. 29, 2022	1 year
☒	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9020B	MY60112363	Jan. 13, 2023	1 year
☒	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	Jan. 07, 2023	1 year
☐	Broadband Amplifier (100 kHz~1 GHz)	Titan	T0910E00014330 A1F	001	Jul. 24, 2023	1 year
☐	Amplifier (1 GHz~26.5 GHz)	Agilent	8449B	3008A02237	Oct. 19, 2022	1 year
☒	Broadband Amplifier (1 GHz~26.5 GHz)	Titan	T0912E01263025 A1F	002	Jul. 24, 2023	1 year
☒	Preamplifier (26.5 GHz~40 GHz)	EMCI	EMC2654045	980028	Sep. 02, 2022	1 year
☒	Loop Antenna (9 kHz~30 MHz)	COM-POWER CORPORATION	AL-130	121014	Mar. 23, 2023	1 year
☐	Active Loop Antenna (9 kHz~30 MHz)	Schwarzbeck Mess-Elektronik	FMZB 1513-60	1513-60-031	Feb. 21, 2023	1 year
☒	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	01146	Jun. 26, 2023	1 year
☐	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	416	Jun.13, 2023	1 year
☒	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	02207	Jul. 07, 2023	1 year
☐	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	9120D-550	Aug. 25, 2022	1 year
☒	Broadband Horn Antenna (18 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	9170	9170-320	Aug. 25, 2022	1 year
☐	Horn Antenna (18 GHz~40 GHz)	ETS	3116	00086467	Dec. 05, 2022	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Aug. 11 ~ Aug. 14, 2023
Testing Engineer: Kerry Xu, Marc Yeh

Test Site		96603-BD				
Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Coaxial Cable	Titan	T0710AT327A10A 100	J11005	Aug. 10, 2023	1 year
☒	Coaxial Cable	Titan	T0710AT327A10A 900	J11004	Aug. 10, 2023	1 year
☒	Coaxial Cable	Titan	CFD400NL-LW	001	Aug. 10, 2023	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 20, 2023	2 years
☐	Power Supply	KEITHLEY	2303	4045290	Jan. 06, 2023	1 year
☒	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request.

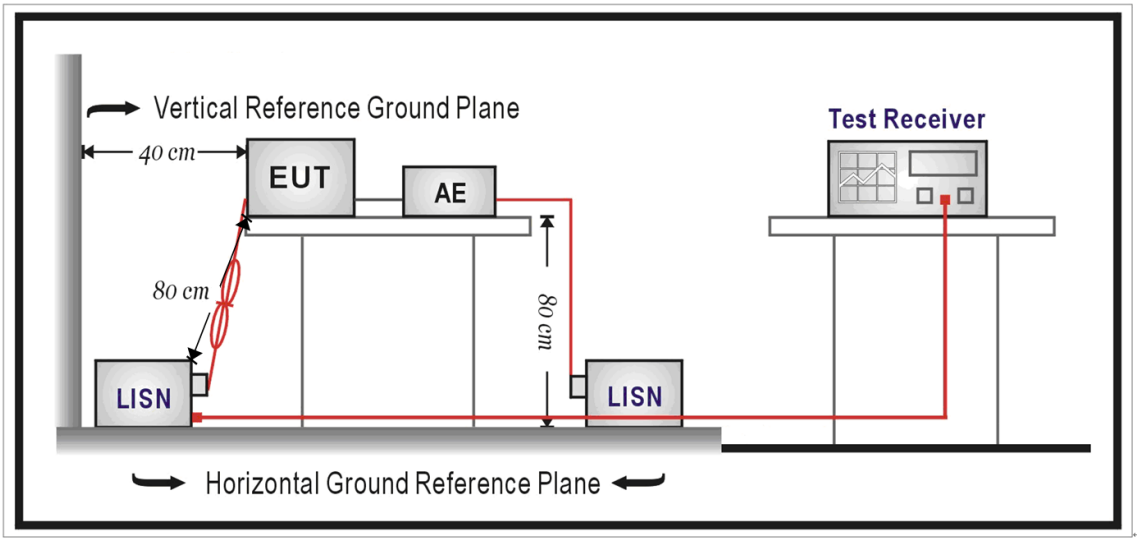
4 Measurement Procedure

4.1. AC Power Line Conducted Emission Measurement

■ **Limit**

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ **Test Setup**



■ **Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 Ω// 50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 Ω// 50 uH coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

4.2. Radiated Emission Measurement

■ **Limit**

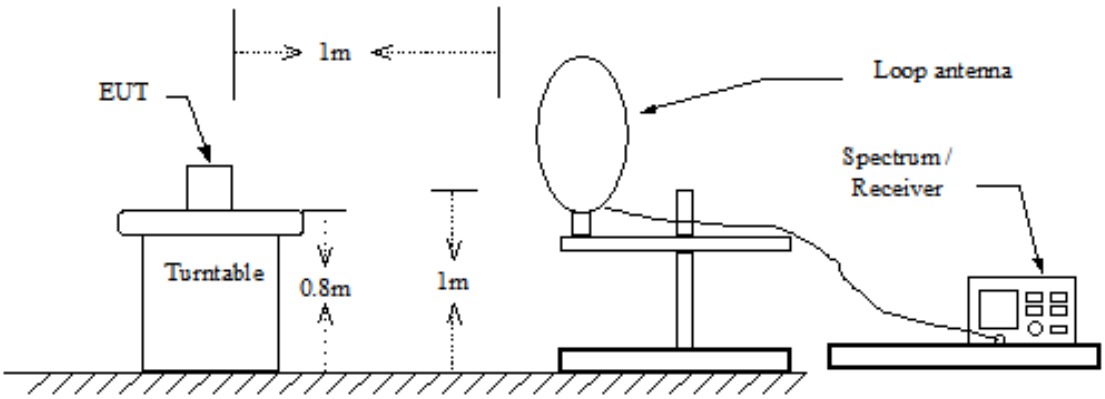
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m at 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

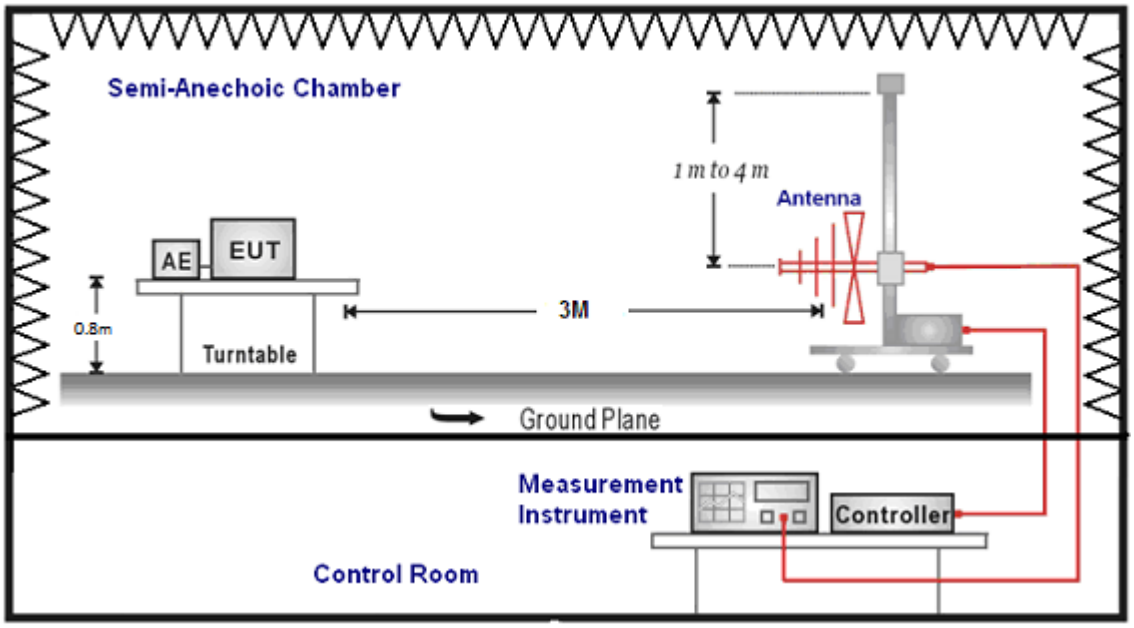
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

■ **Setup**

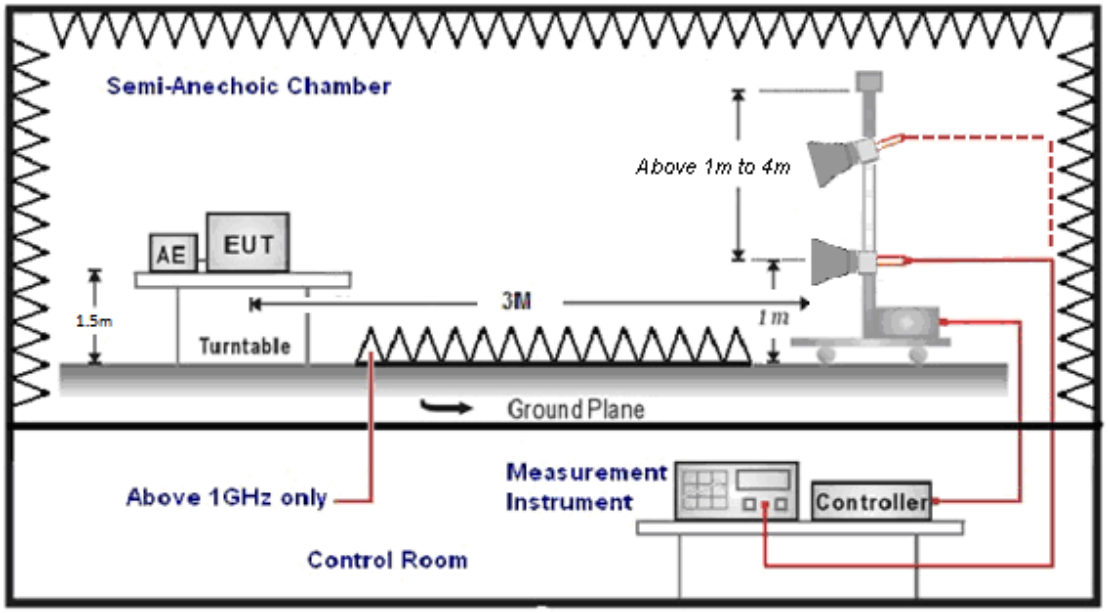
9 kHz ~ 30 MHz



Below 1 GHz



Above 1 GHz



■ **Test Procedure**

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 30 MHz the resolution bandwidth is set to 10 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements. The video bandwidth is 3 times of the resolution bandwidth.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle >0.98 / 1/T for average measurements when Duty cycle <0.98. A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 –26.5 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).
The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.
(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)
The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:
(a) For fundamental frequency : Transmitter Output < +30 dBm
(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

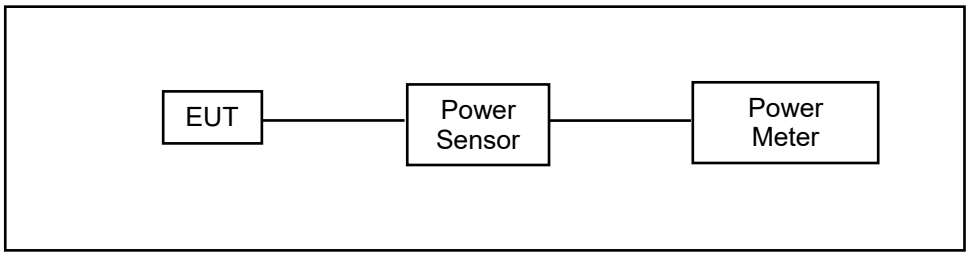
4.3. Maximum Conducted Output Power Measurement

■ **Limit**

For systems using digital modulation in the 2400-2483.5 MHz, the limit for maximum output power is 30 dBm.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ **Test Setup**



■ **Test Procedure**

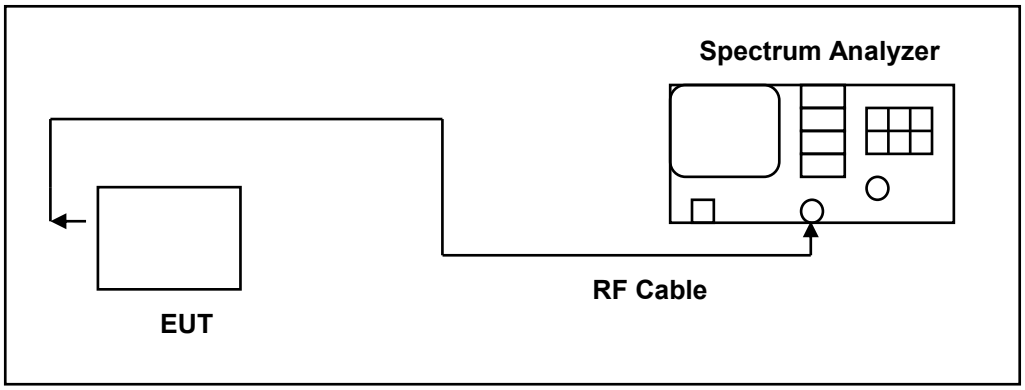
The testing follows the Measurement Procedure of ANSI C63.10:2013 section 11.9.2.3.2 Method AVGPM.
The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor.

4.4. 6 dB RF Bandwidth Measurement

■ **Limit**

6 dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

■ **Test Setup**



■ **Test Procedure**

The EUT tested to DTS test procedure of ANSI C63.10:2013 section 11.8.2 option2 for compliance to FCC 47CFR 15.247 requirements.

6 dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

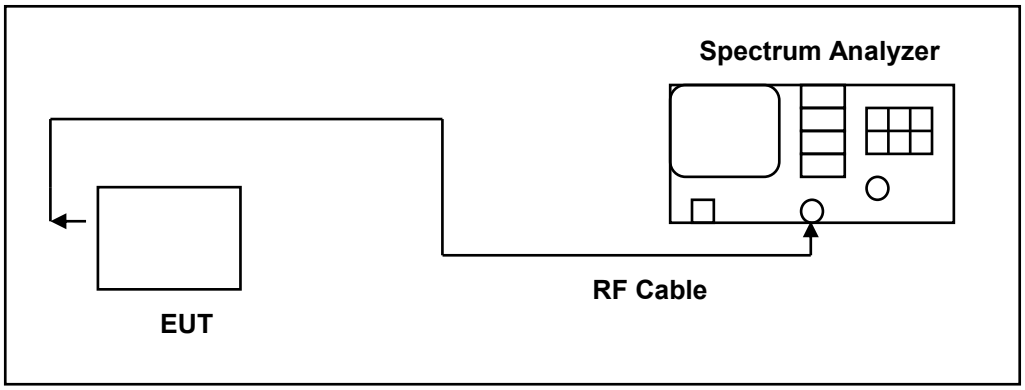
The test was performed at 3 channels (Channel low, middle, high)

4.5. Maximum Power Spectral Density Measurement

■ **Limit**

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.

■ **Test Setup**



■ **Test Procedure**

The EUT tested to DTS test procedure of ANSI C63.10:2013 section 11.10.2 Method PKPSD for compliance to FCC 47CFR 15.247 requirements.

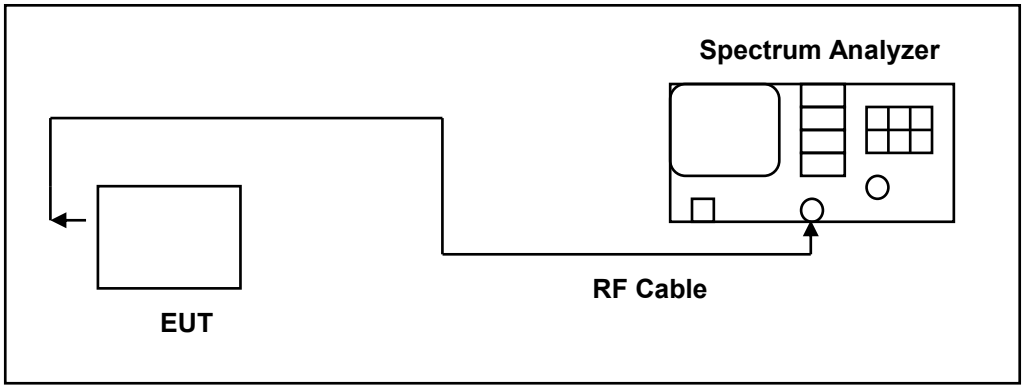
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 × RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.6. Out of Band Conducted Emissions Measurement

■ **Limit**

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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

■ **Test Setup**



■ **Test Procedure**

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 30 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band.

The test was performed at 3 channels.

4.7. Antenna Measurement

■ **Limit**

For intentional device, according to 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.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ **Antenna Description**

See section 2 – antenna information.

■ **Directional Gain Calculated**

Test mode	Transmission Type	Antenna		Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
		ANT-0 (dBi)	ANT-1 (dBi)				
802.11b	ANT-1	2.04	1.74	1.74	1.74	0.00	0.00
802.11g	ANT-1	2.04	1.74	1.74	1.74	0.00	0.00
802.11n HT20	MIMO	2.04	1.74	4.90	4.90	0.00	0.00
802.11n HT40	ANT-1	2.04	1.74	1.74	1.74	0.00	0.00

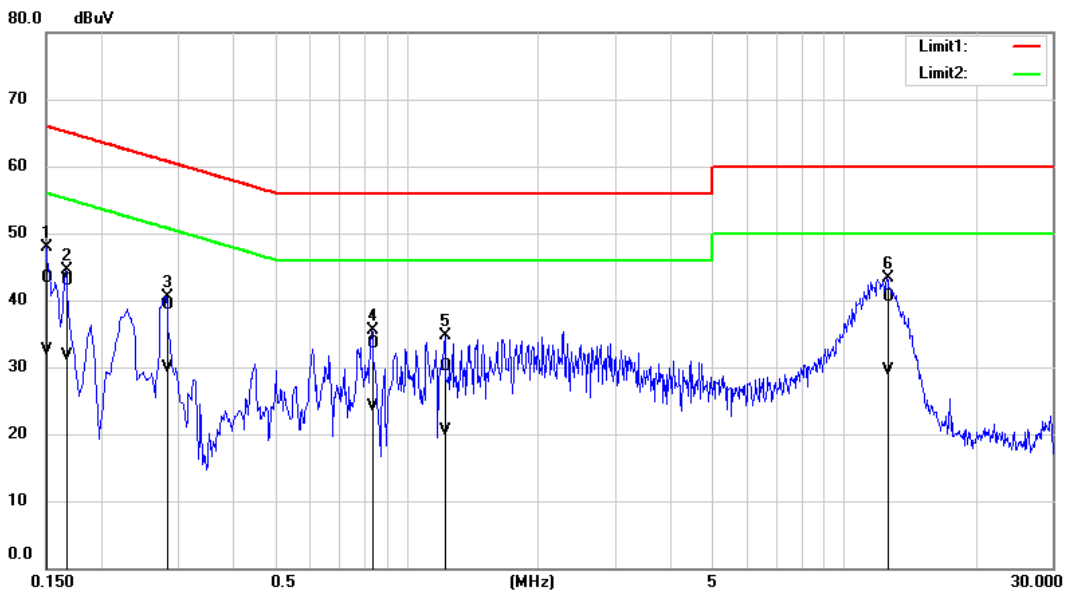
If transmit signals are correlated, thend Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + … + $10^{GN/20}$) 2 /NANT]

If all transmit signals are completely uncorrelated, then Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + … + $10^{GN/10}$)/NANT]

5 Test Results

5.1. Conducted Emission

Standard:	Part 15.247	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Transmit Mode		
Description:			

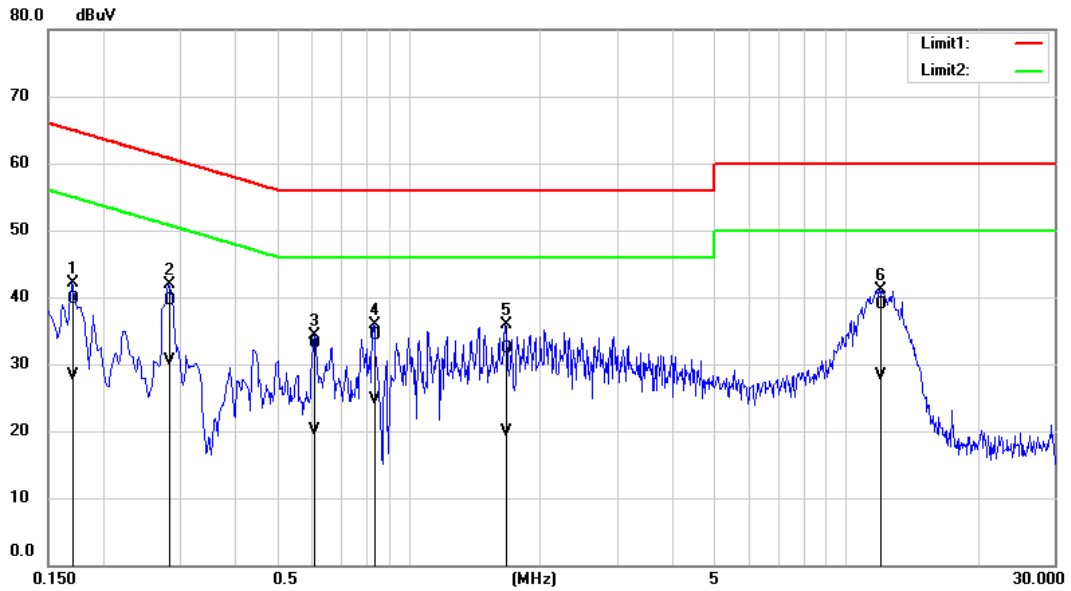


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	33.74	22.85	9.61	43.35	32.46	66.00	56.00	-22.65	-23.54	Pass
2	0.1660	33.29	22.12	9.61	42.90	31.73	65.16	55.16	-22.26	-23.43	Pass
3	0.2820	29.71	20.24	9.61	39.32	29.85	60.76	50.76	-21.44	-20.91	Pass
4	0.8340	23.86	14.42	9.65	33.51	24.07	56.00	46.00	-22.49	-21.93	Pass
5	1.2260	20.35	10.87	9.67	30.02	20.54	56.00	46.00	-25.98	-25.46	Pass
6	12.5620	30.64	19.54	9.92	40.56	29.46	60.00	50.00	-19.44	-20.54	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	Part 15.247	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Transmit Mode		
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1700	30.06	18.69	9.60	39.66	28.29	64.96	54.96	-25.30	-26.67	Pass
2	0.2820	29.88	20.86	9.61	39.49	30.47	60.76	50.76	-21.27	-20.29	Pass
3	0.6100	23.43	10.47	9.62	33.05	20.09	56.00	46.00	-22.95	-25.91	Pass
4	0.8340	24.67	15.07	9.64	34.31	24.71	56.00	46.00	-21.69	-21.29	Pass
5	1.6660	22.64	10.26	9.68	32.32	19.94	56.00	46.00	-23.68	-26.06	Pass
6	11.9460	28.88	18.25	9.96	38.84	28.21	60.00	50.00	-21.16	-21.79	Pass

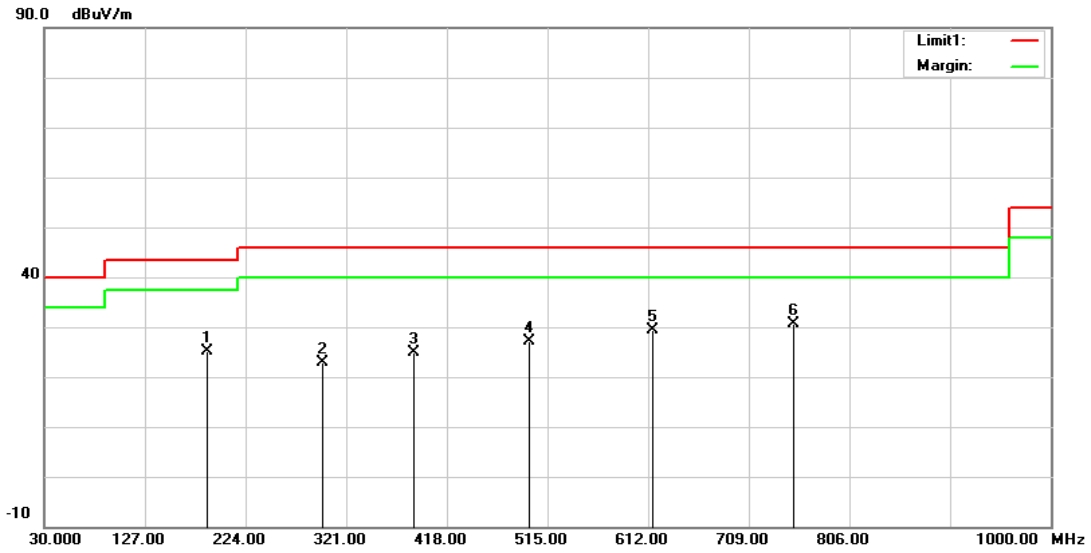
Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

5.2. Radiated Emission Measurement

Below 1 GHz

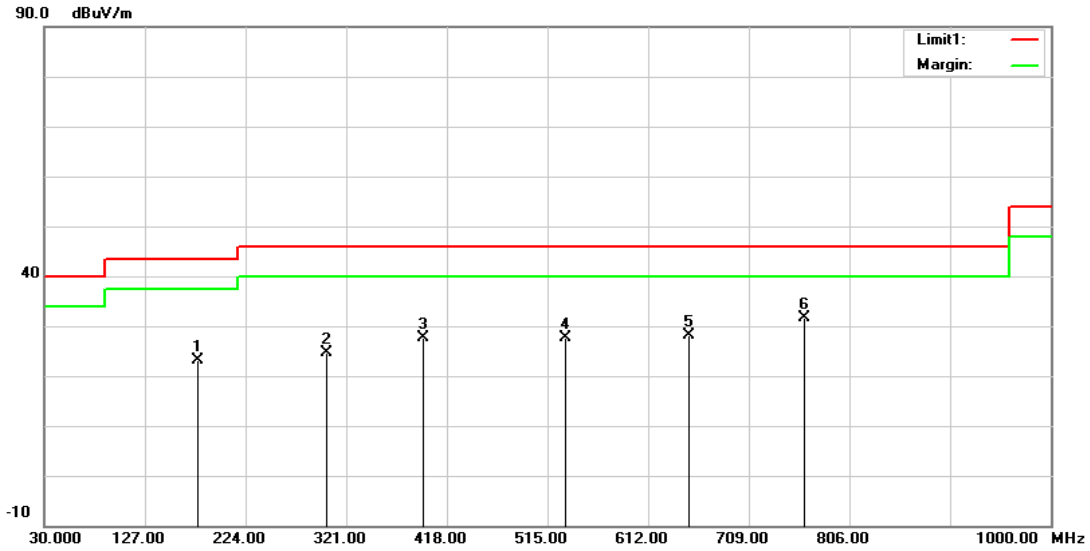
Standard:	Part 15.247	Test Distance:	3 m
Mode:	Transmit Mode		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	187.1400	33.94	-8.87	25.07	43.50	-18.43	QP
2	297.7200	28.99	-6.04	22.95	46.00	-23.05	QP
3	385.9900	29.11	-4.24	24.87	46.00	-21.13	QP
4	497.5400	29.40	-2.27	27.13	46.00	-18.87	QP
5	615.8800	29.19	0.08	29.27	46.00	-16.73	QP
6*	752.6500	27.76	2.76	30.52	46.00	-15.48	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	Part 15.247	Test Distance:	3 m
Mode:	Transmit Mode		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	178.4100	31.24	-8.03	23.21	43.50	-20.29	QP
2	302.5700	30.59	-5.95	24.64	46.00	-21.36	QP
3	394.7200	31.65	-4.07	27.58	46.00	-18.42	QP
4	532.4600	29.25	-1.53	27.72	46.00	-18.28	QP
5	651.7700	27.80	0.26	28.06	46.00	-17.94	QP
6*	762.3500	28.55	2.97	31.52	46.00	-14.48	QP

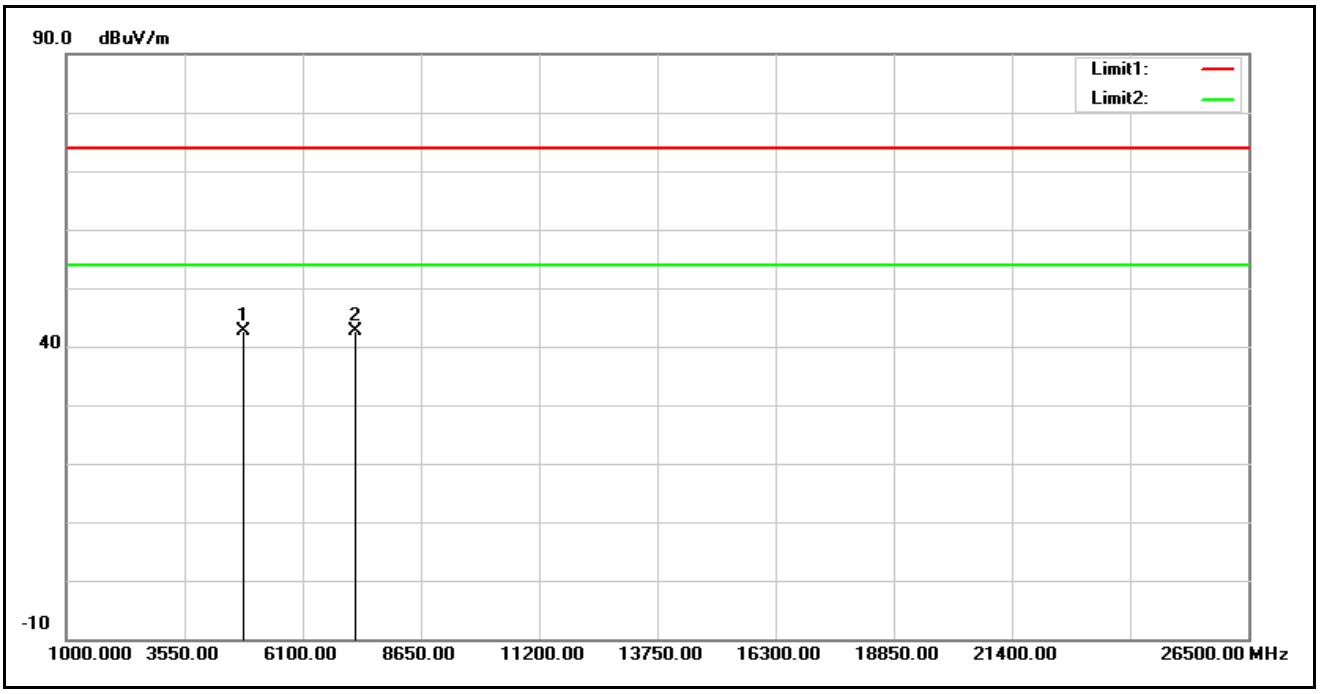
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

Harmonic

Above 1 GHz

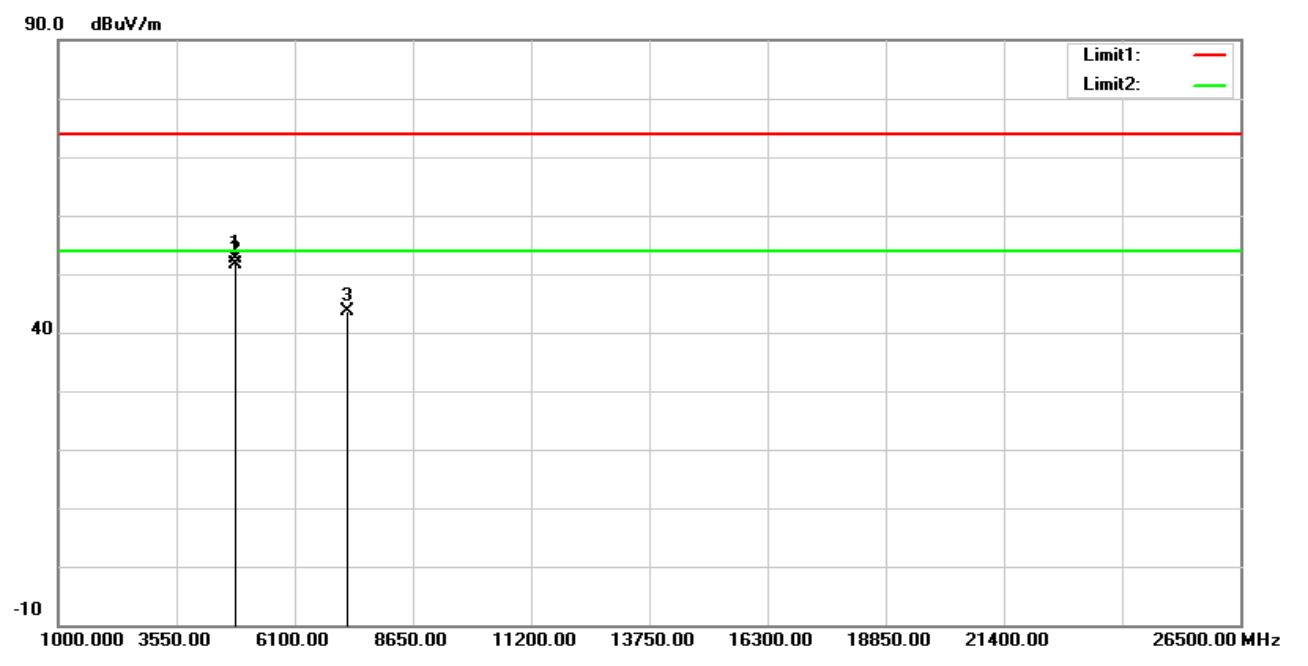
SISO

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2412 MHz		
Remark:			



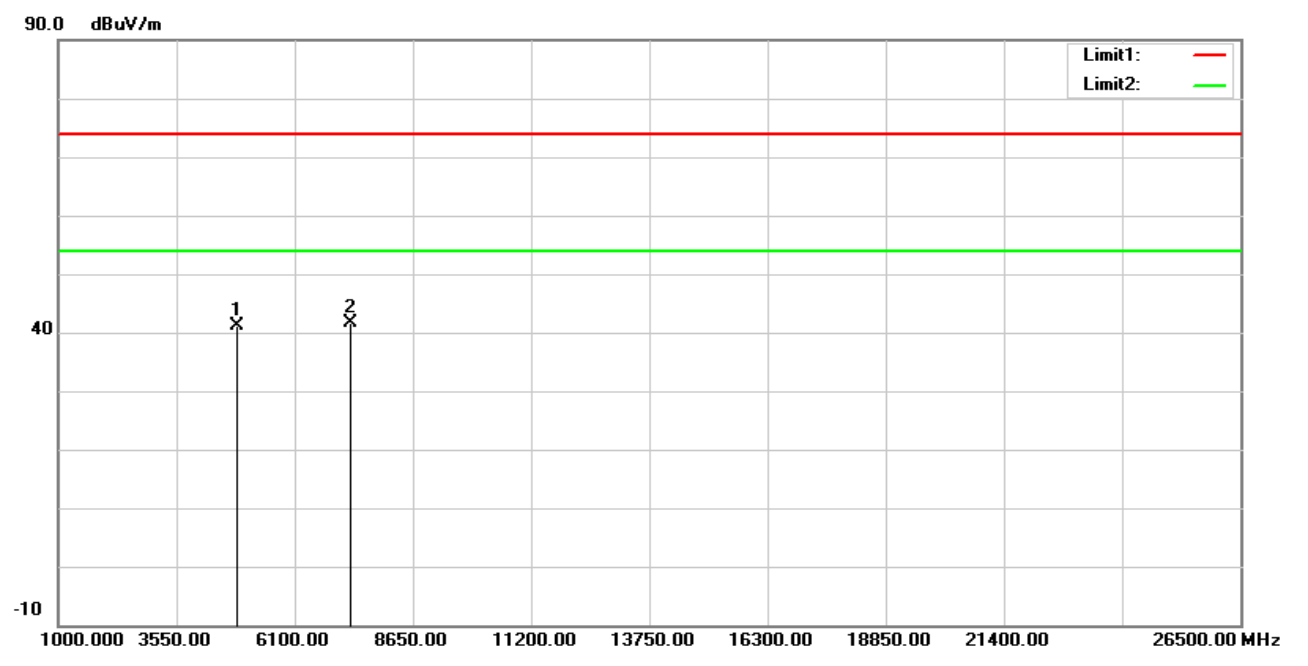
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4824.000	42.90	-0.23	42.67	74.00	-31.33	peak
2	7236.000	36.05	6.52	42.57	74.00	-31.43	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2412 MHz		
Remark:			



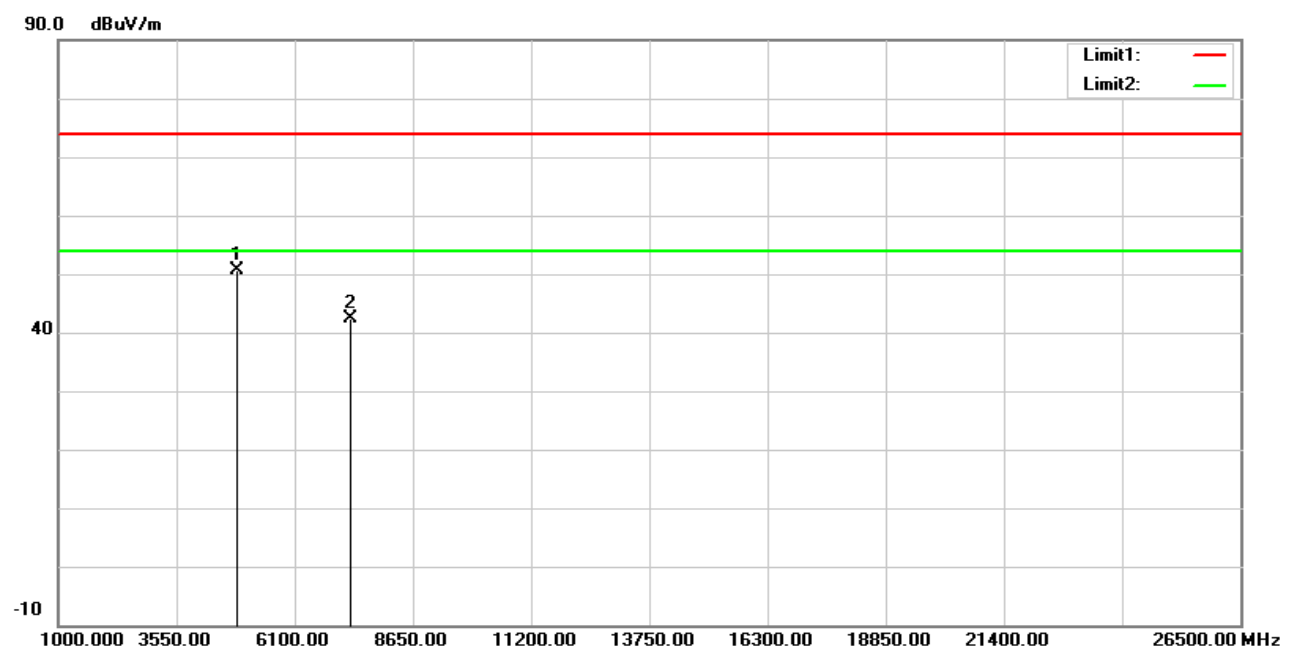
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	52.79	-0.23	52.56	74.00	-21.44	peak
2*	4824.000	51.94	-0.23	51.71	54.00	-2.29	AVG
3	7236.000	37.12	6.52	43.64	74.00	-30.36	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2437 MHz		
Remark:			



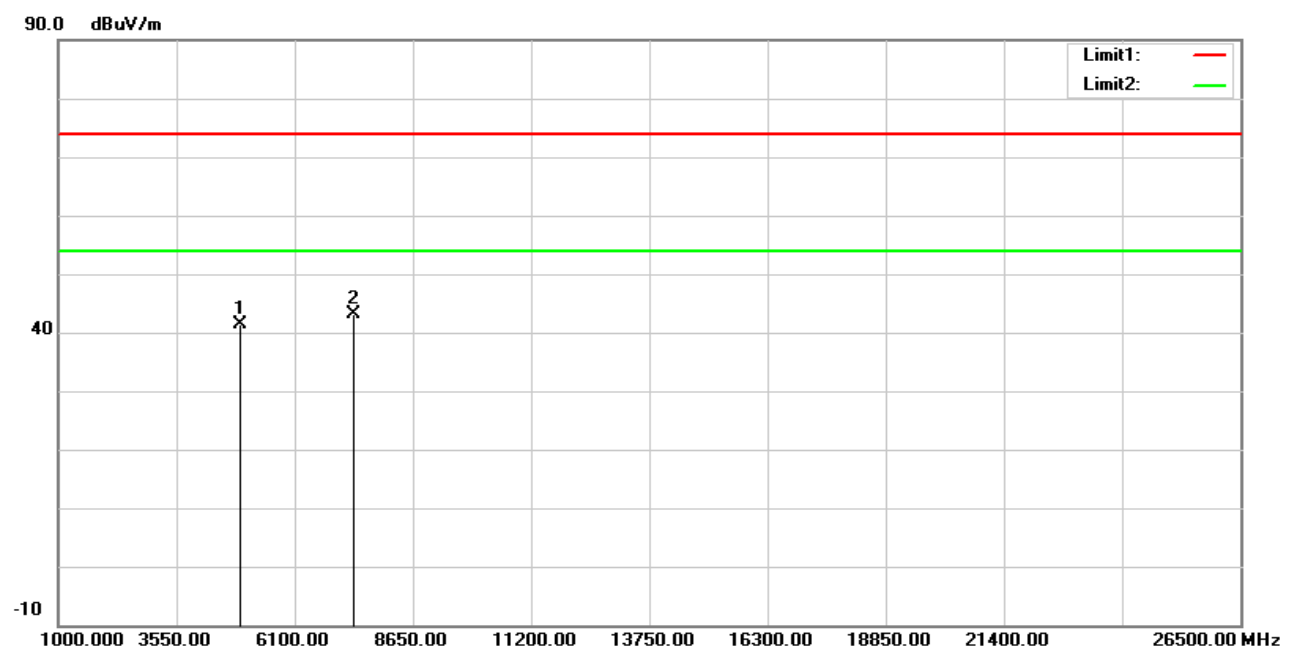
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	41.24	-0.13	41.11	74.00	-32.89	peak
2*	7311.000	35.37	6.23	41.60	74.00	-32.40	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2437 MHz		
Remark:			



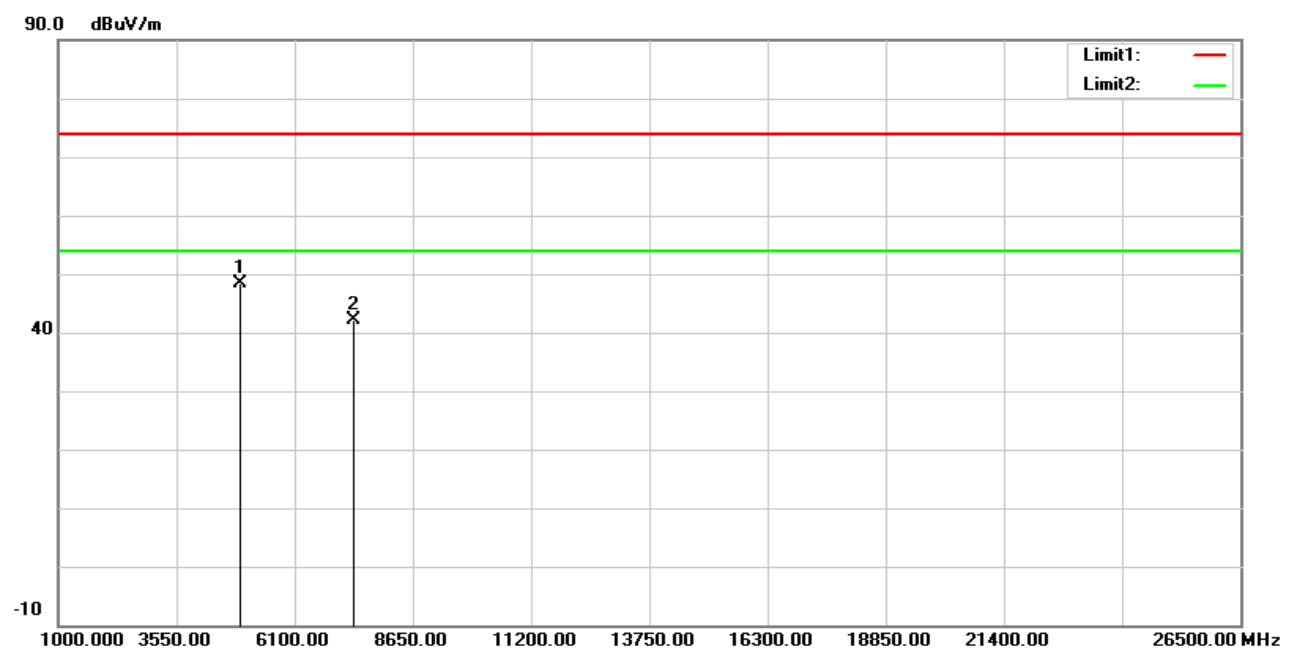
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4874.000	50.72	-0.13	50.59	74.00	-23.41	peak
2	7311.000	36.27	6.23	42.50	74.00	-31.50	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2462 MHz		
Remark:			



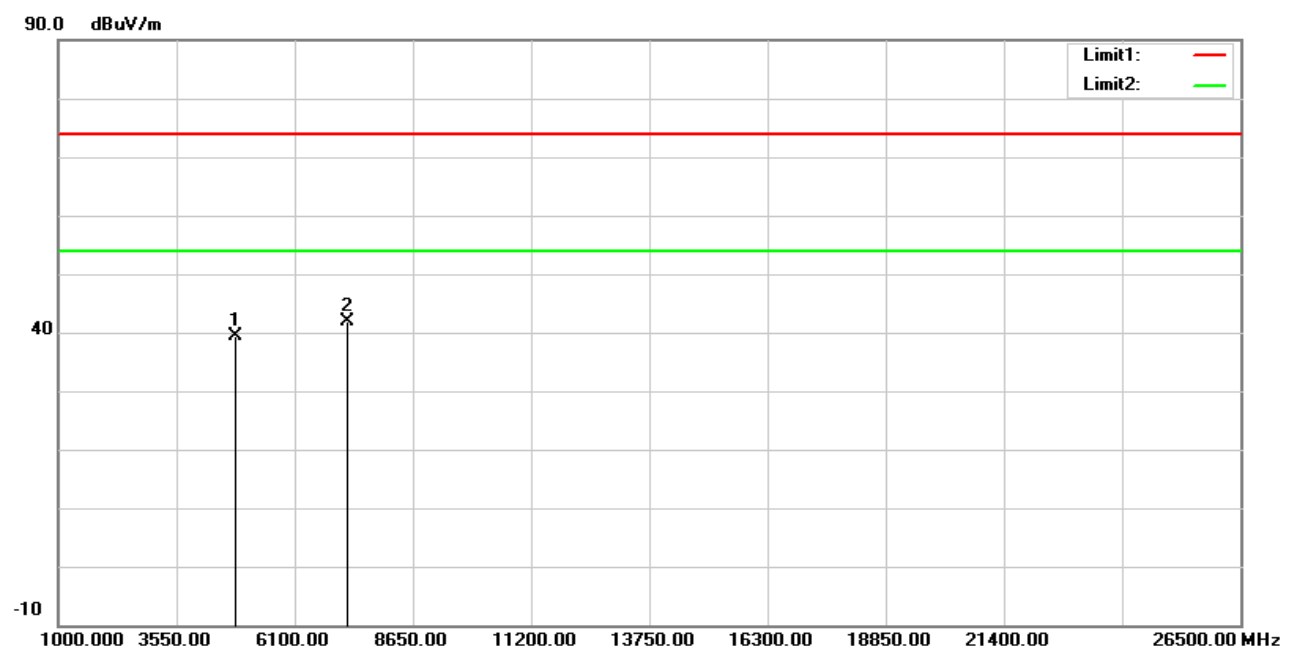
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	41.33	0.01	41.34	74.00	-32.66	peak
2*	7386.000	36.80	6.33	43.13	74.00	-30.87	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2462 MHz		
Remark:			



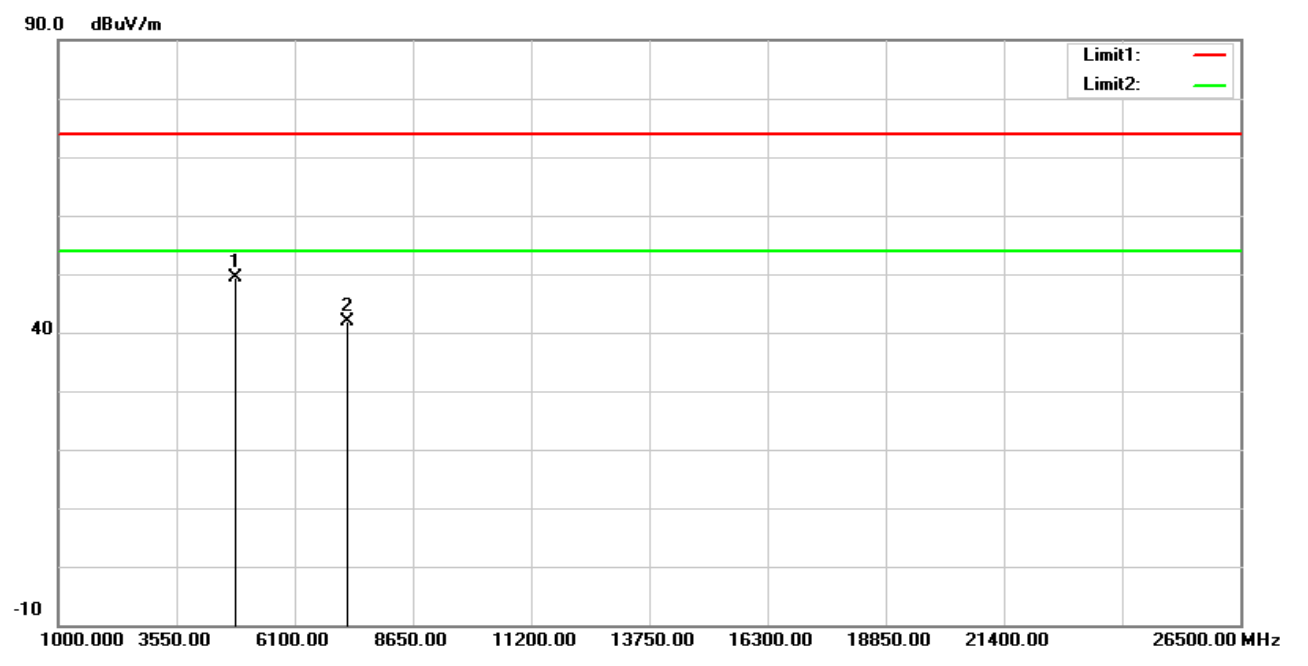
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4924.000	48.44	0.01	48.45	74.00	-25.55	peak
2	7386.000	35.68	6.33	42.01	74.00	-31.99	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2412 MHz		
Remark:			



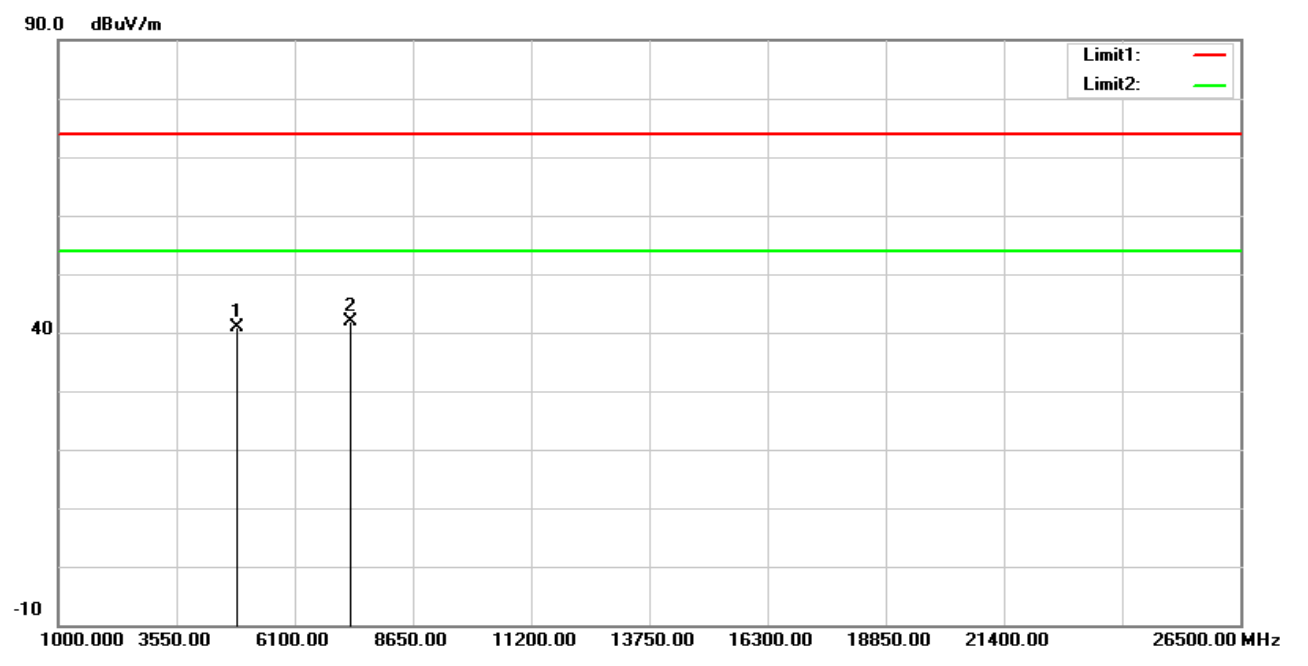
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	39.60	-0.23	39.37	74.00	-34.63	peak
2*	7236.000	35.44	6.52	41.96	74.00	-32.04	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2412 MHz		
Remark:			



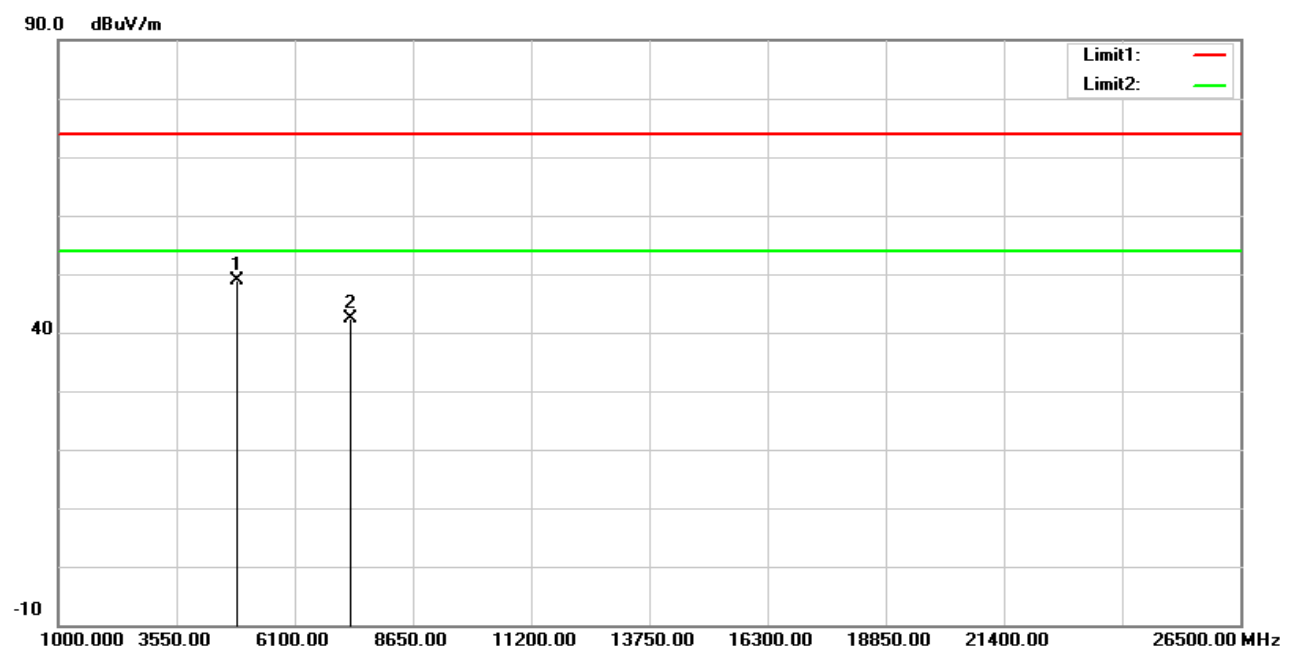
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4824.000	49.69	-0.23	49.46	74.00	-24.54	peak
2	7236.000	35.41	6.52	41.93	74.00	-32.07	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2437 MHz		
Remark:			



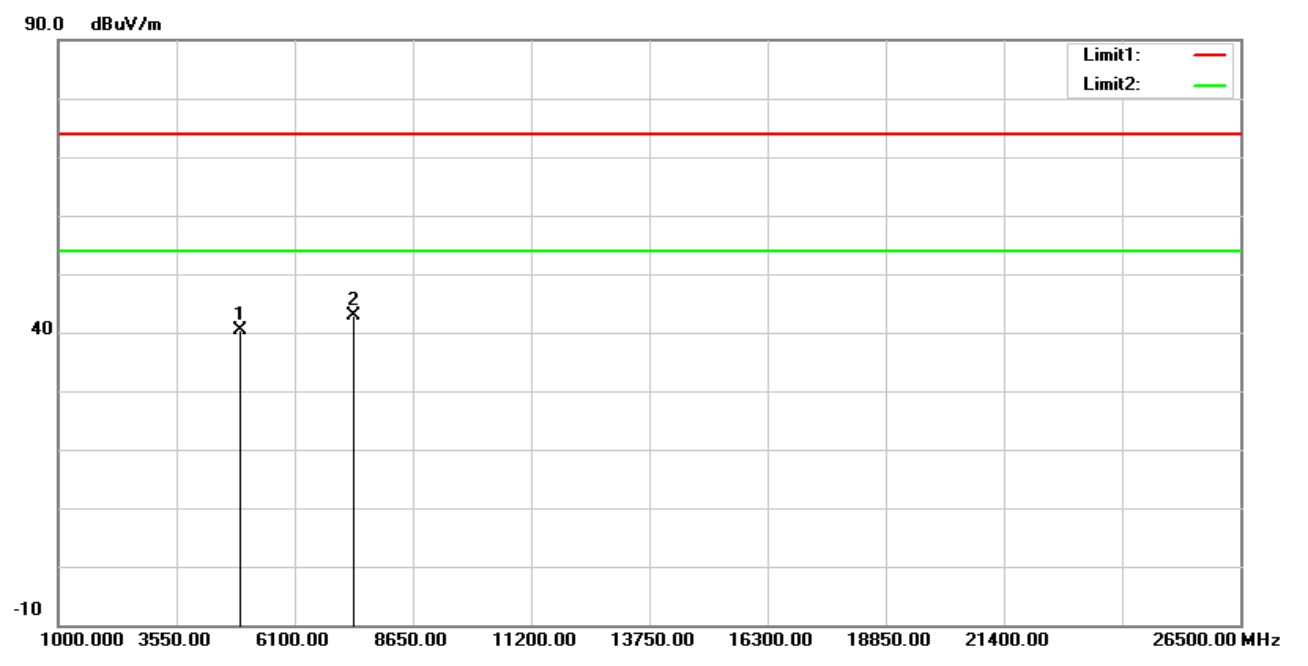
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	40.97	-0.13	40.84	74.00	-33.16	peak
2*	7311.000	35.75	6.23	41.98	74.00	-32.02	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2437 MHz		
Remark:			



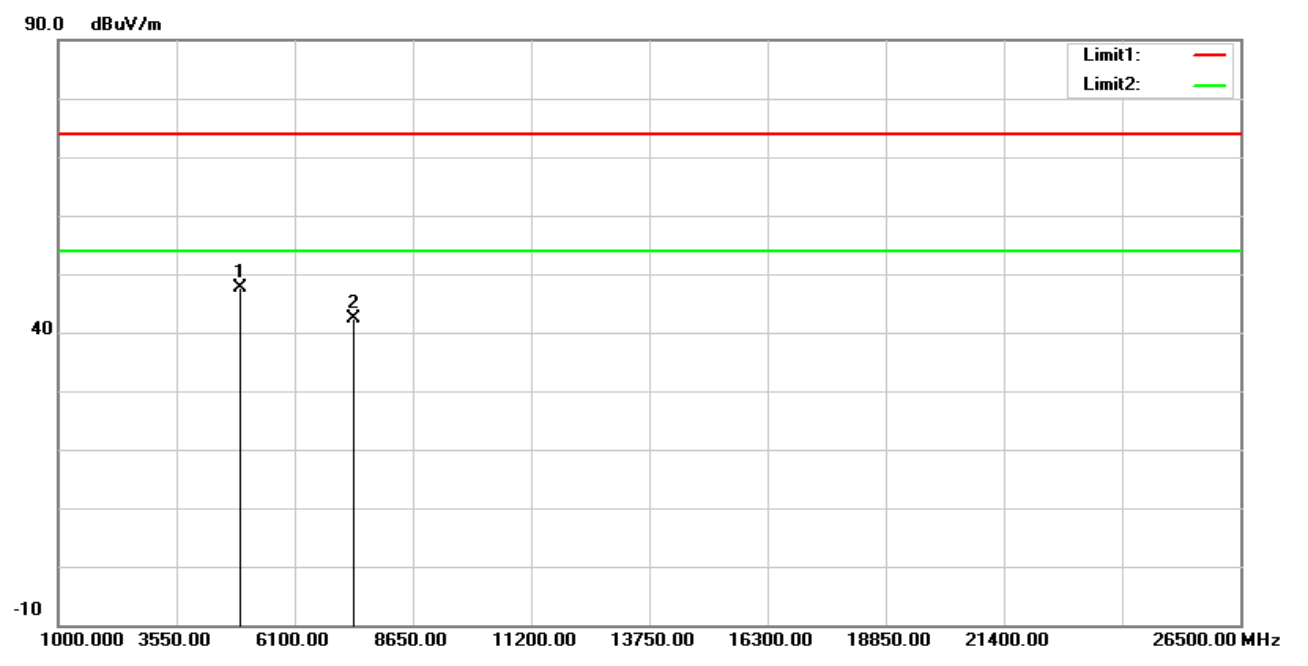
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4874.000	48.94	-0.13	48.81	74.00	-25.19	peak
2	7311.000	36.08	6.23	42.31	74.00	-31.69	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2462 MHz		
Remark:			



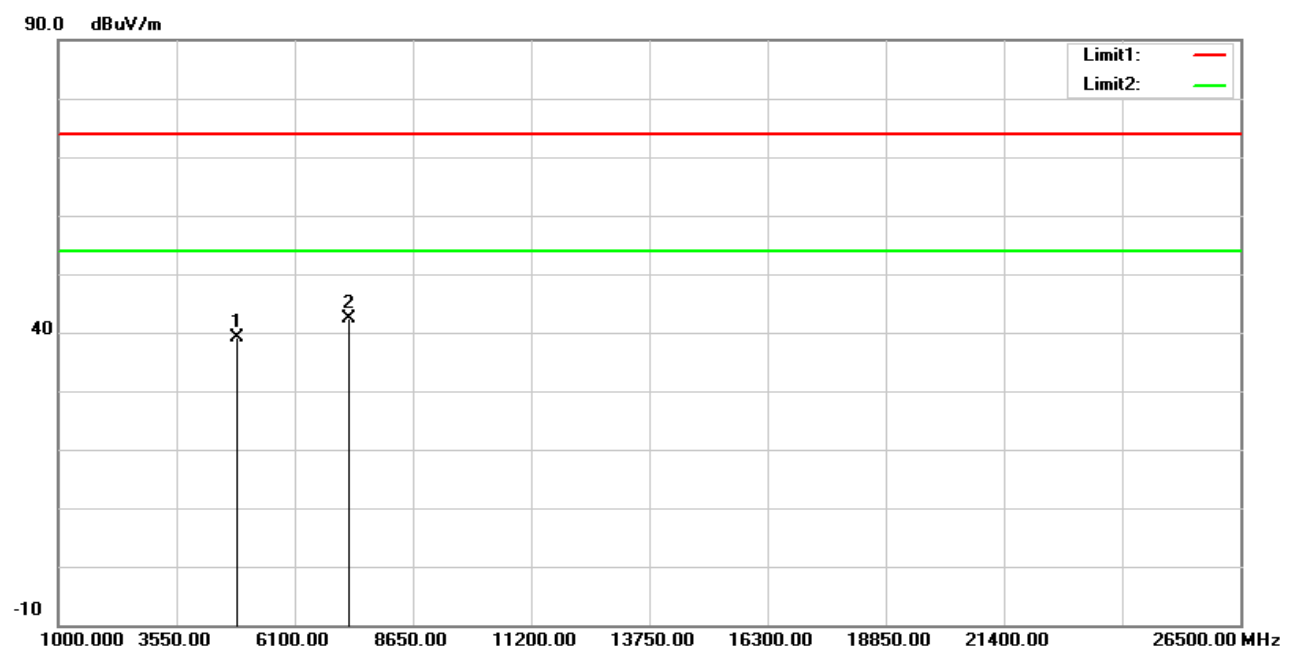
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	40.25	0.01	40.26	74.00	-33.74	peak
2*	7386.000	36.47	6.33	42.80	74.00	-31.20	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2462 MHz		
Remark:			



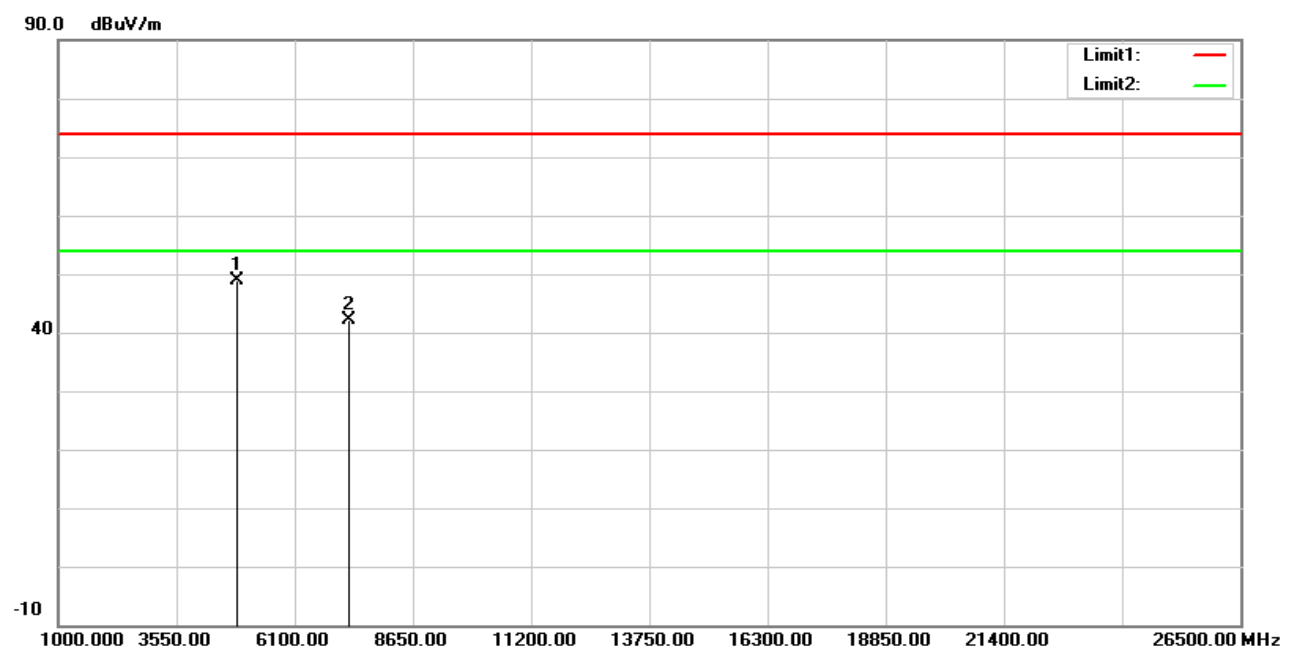
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4924.000	47.71	0.01	47.72	74.00	-26.28	peak
2	7386.000	36.05	6.33	42.38	74.00	-31.62	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2422 MHz		
Remark:			



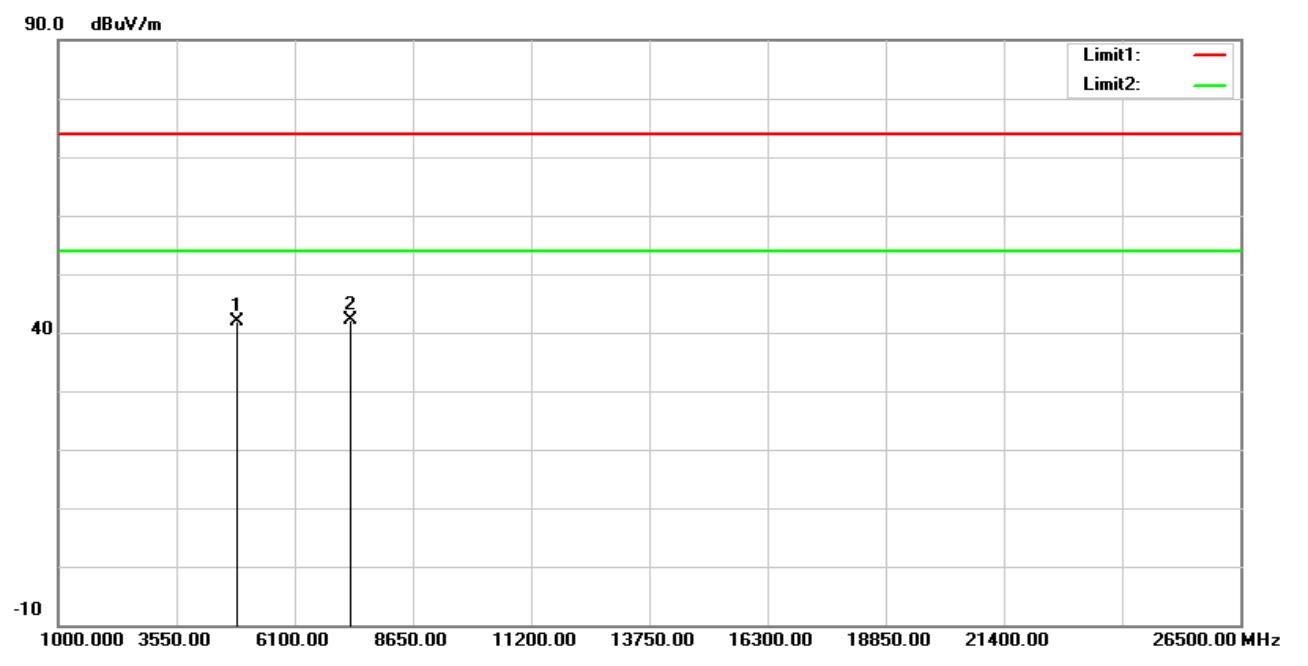
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	39.21	-0.15	39.06	74.00	-34.94	peak
2*	7266.000	35.87	6.45	42.32	74.00	-31.68	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2422 MHz		
Remark:			



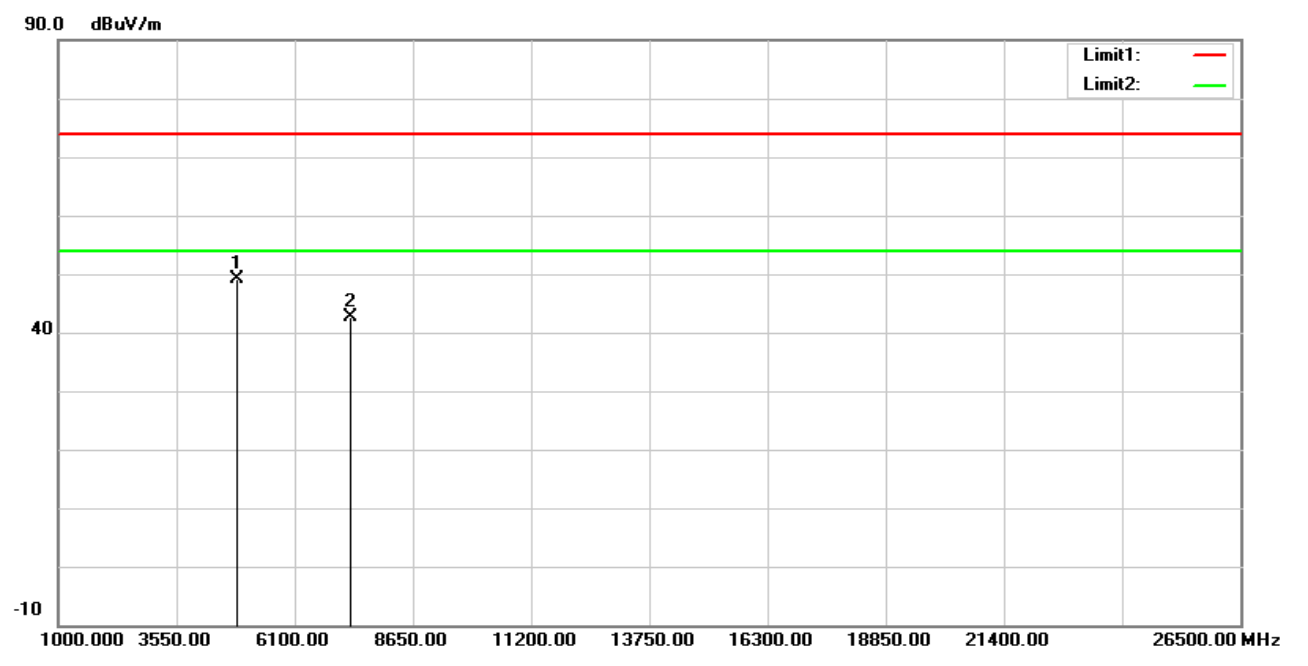
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4844.000	49.10	-0.15	48.95	74.00	-25.05	peak
2	7266.000	35.65	6.45	42.10	74.00	-31.90	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2437 MHz		
Remark:			



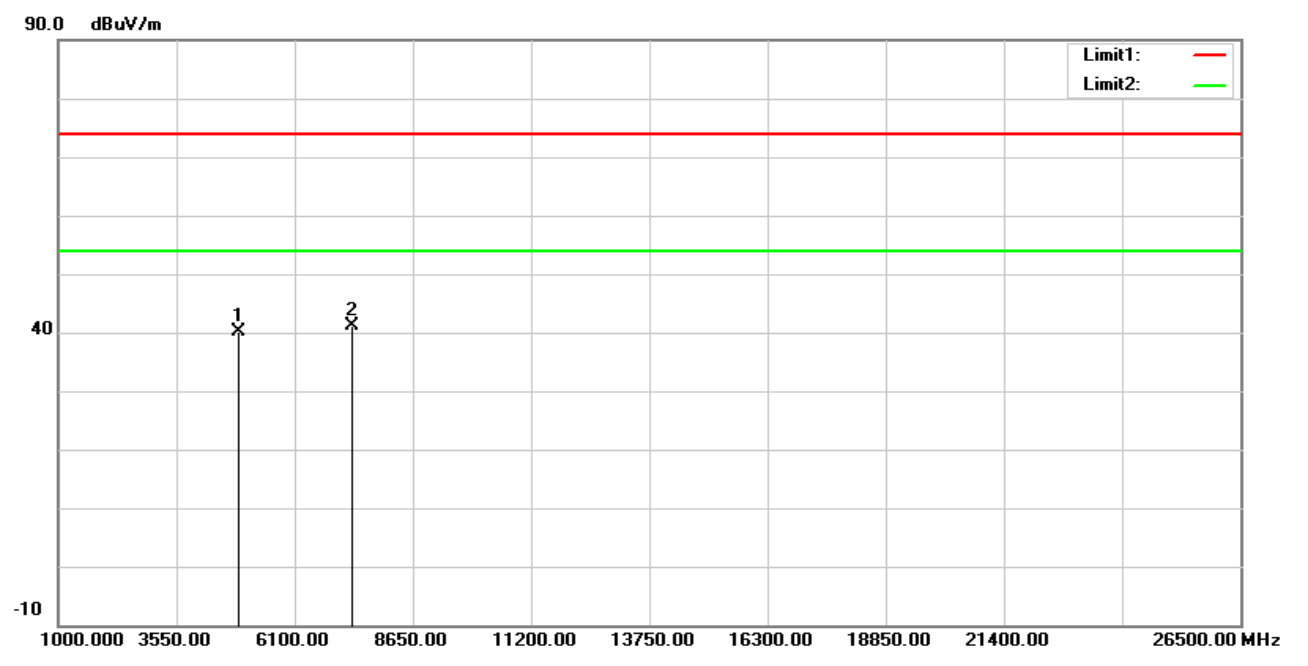
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	42.13	-0.13	42.00	74.00	-32.00	peak
2*	7311.000	35.84	6.23	42.07	74.00	-31.93	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2437 MHz		
Remark:			



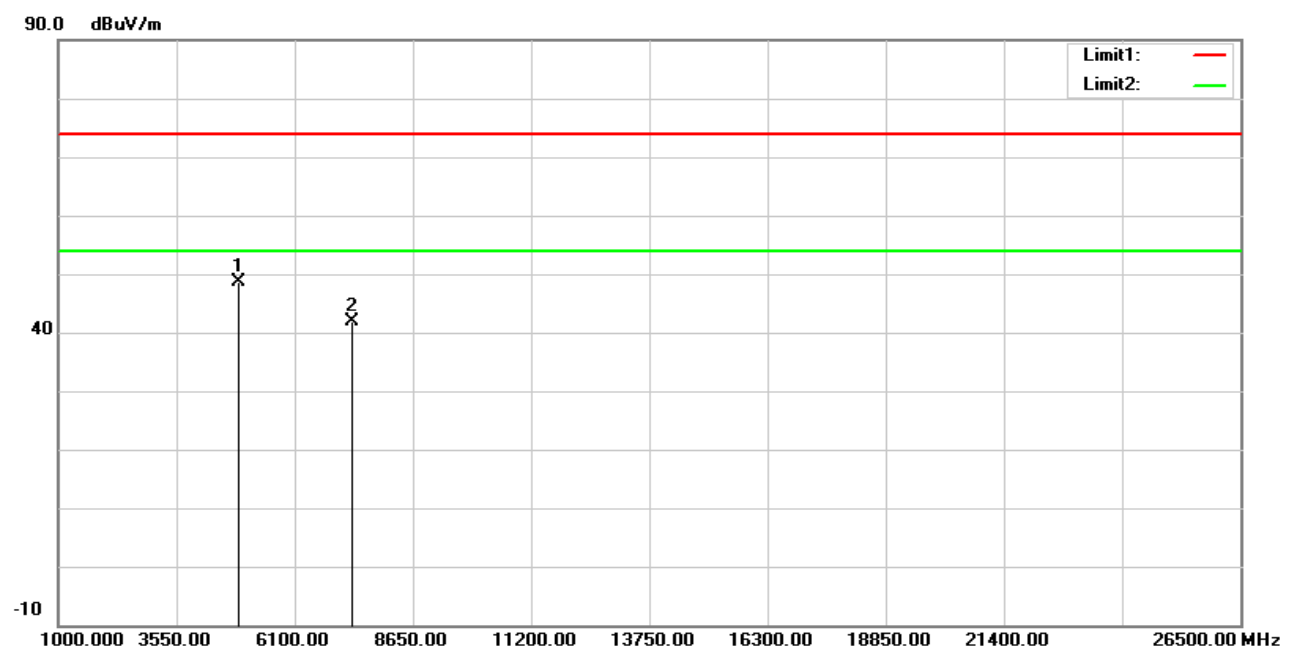
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4874.000	49.22	-0.13	49.09	74.00	-24.91	peak
2	7311.000	36.31	6.23	42.54	74.00	-31.46	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2452 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4904.000	40.13	-0.11	40.02	74.00	-33.98	peak
2*	7356.000	34.94	6.19	41.13	74.00	-32.87	peak

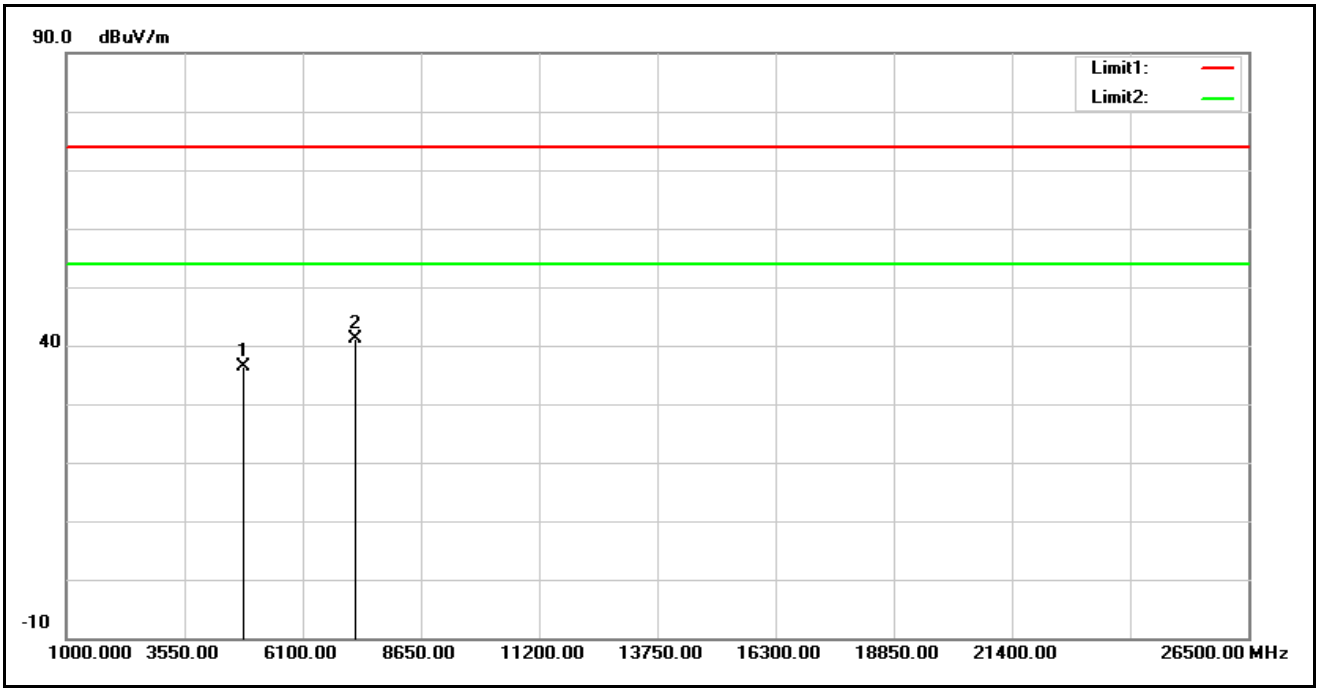
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2452 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4904.000	48.70	-0.11	48.59	74.00	-25.41	peak
2	7356.000	35.61	6.19	41.80	74.00	-32.20	peak

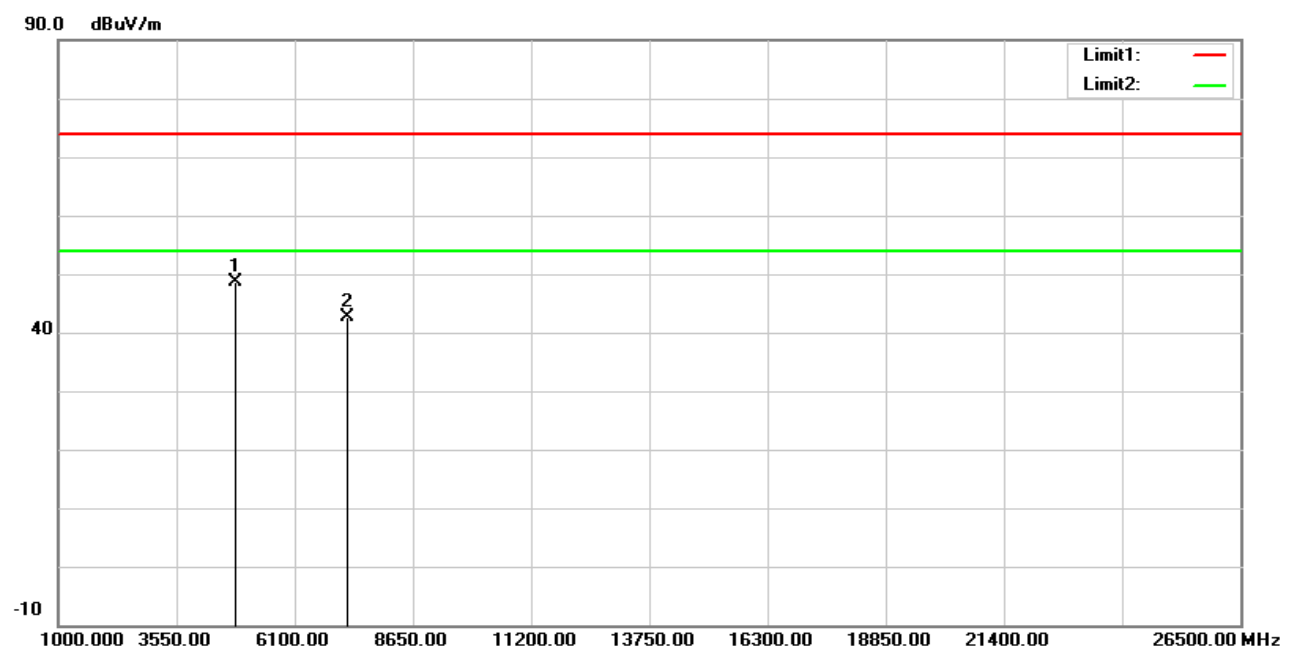
MIMO

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2412 MHz		
Remark:			



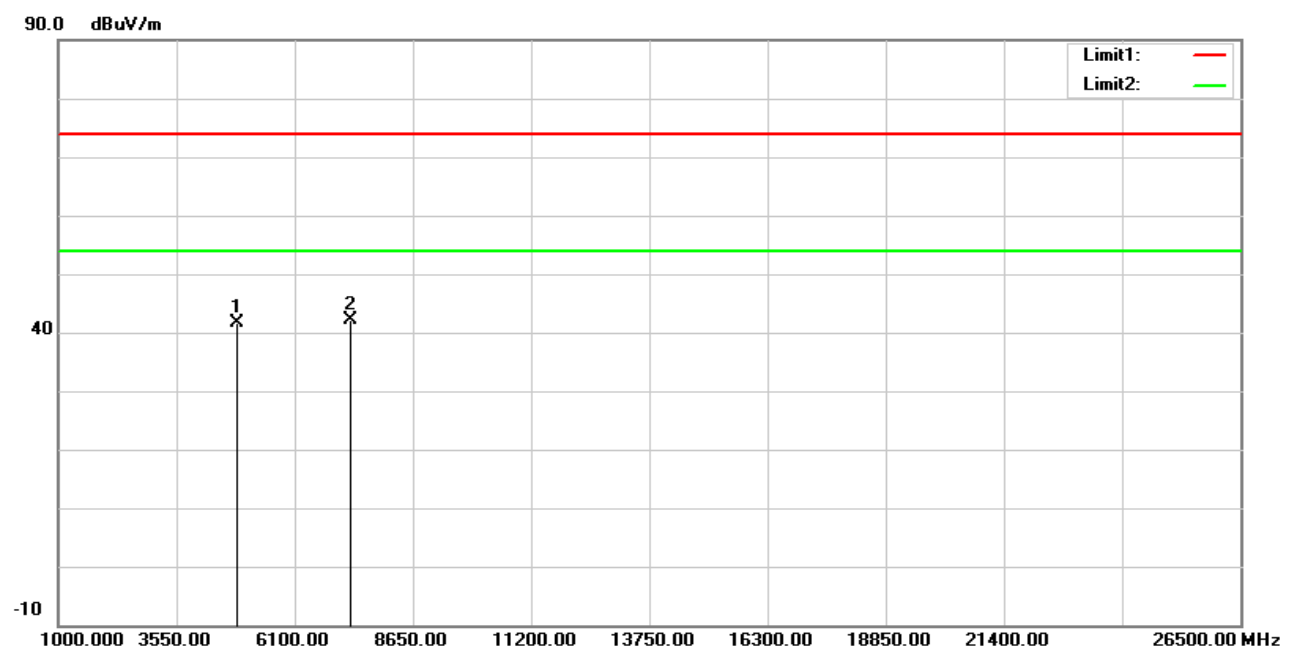
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	36.53	-0.23	36.30	74.00	-37.70	peak
2*	7236.000	34.66	6.52	41.18	74.00	-32.82	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2412 MHz		
Remark:			



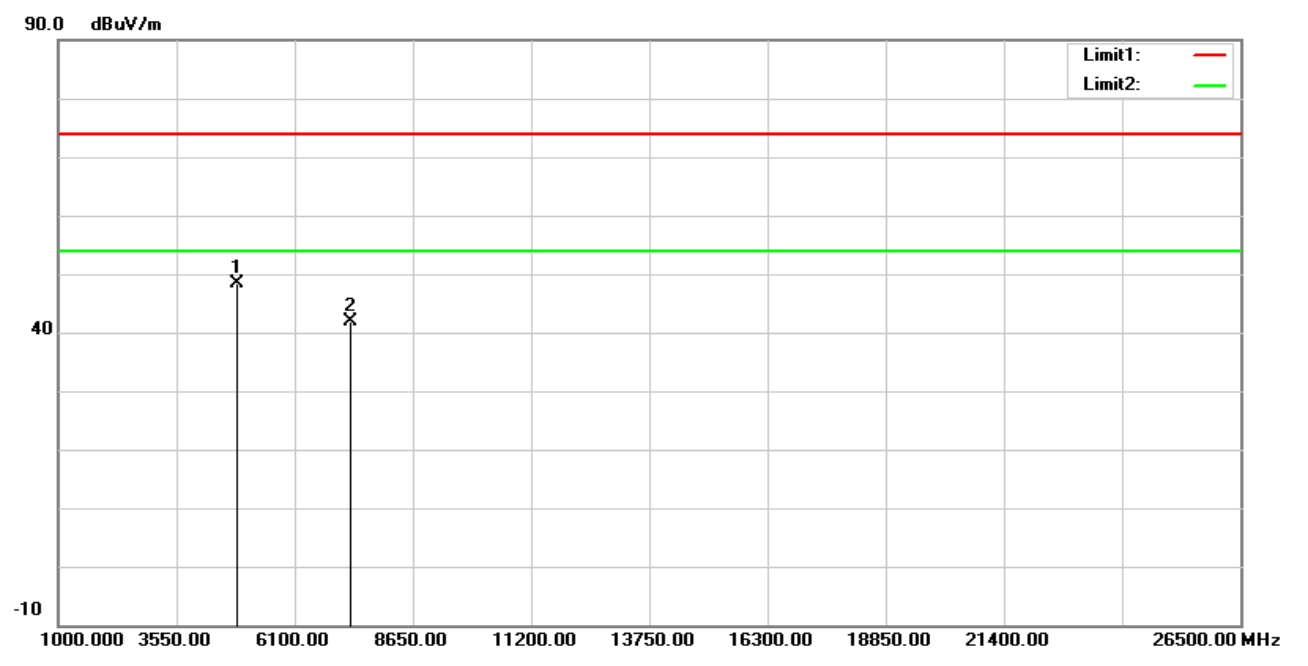
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4824.000	48.93	-0.23	48.70	74.00	-25.30	peak
2	7236.000	36.13	6.52	42.65	74.00	-31.35	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2437 MHz		
Remark:			



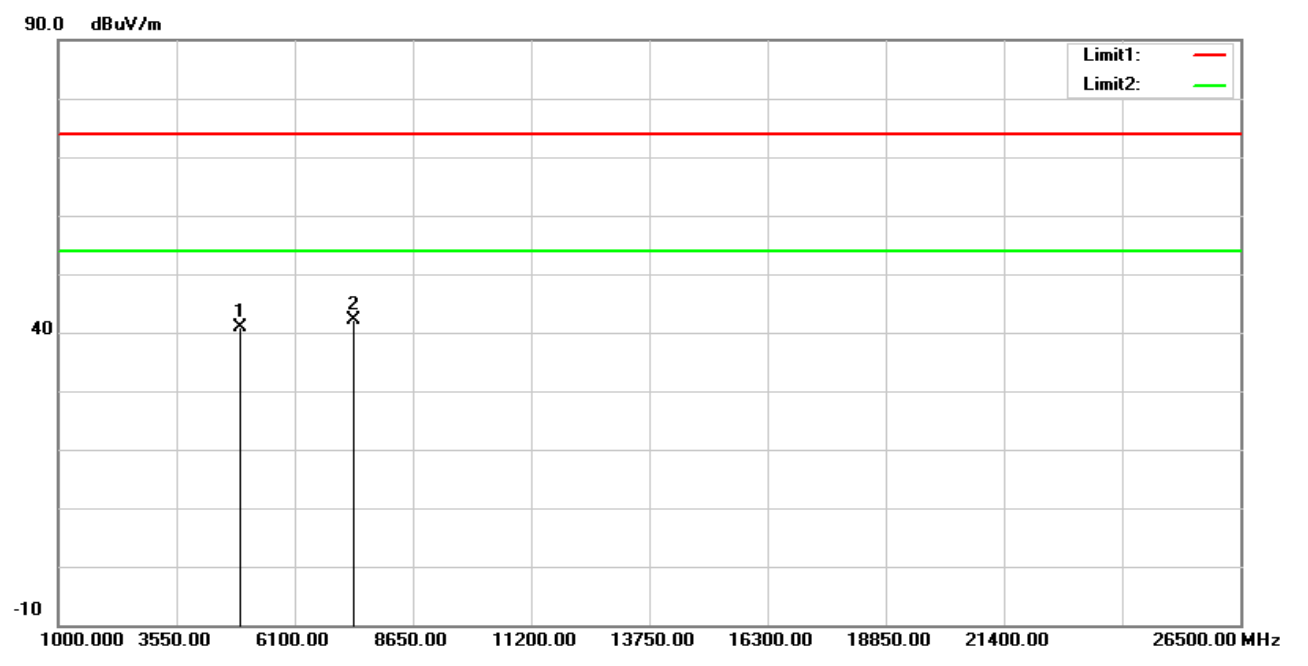
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	41.73	-0.13	41.60	74.00	-32.40	peak
2*	7311.000	35.98	6.23	42.21	74.00	-31.79	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2437 MHz		
Remark:			



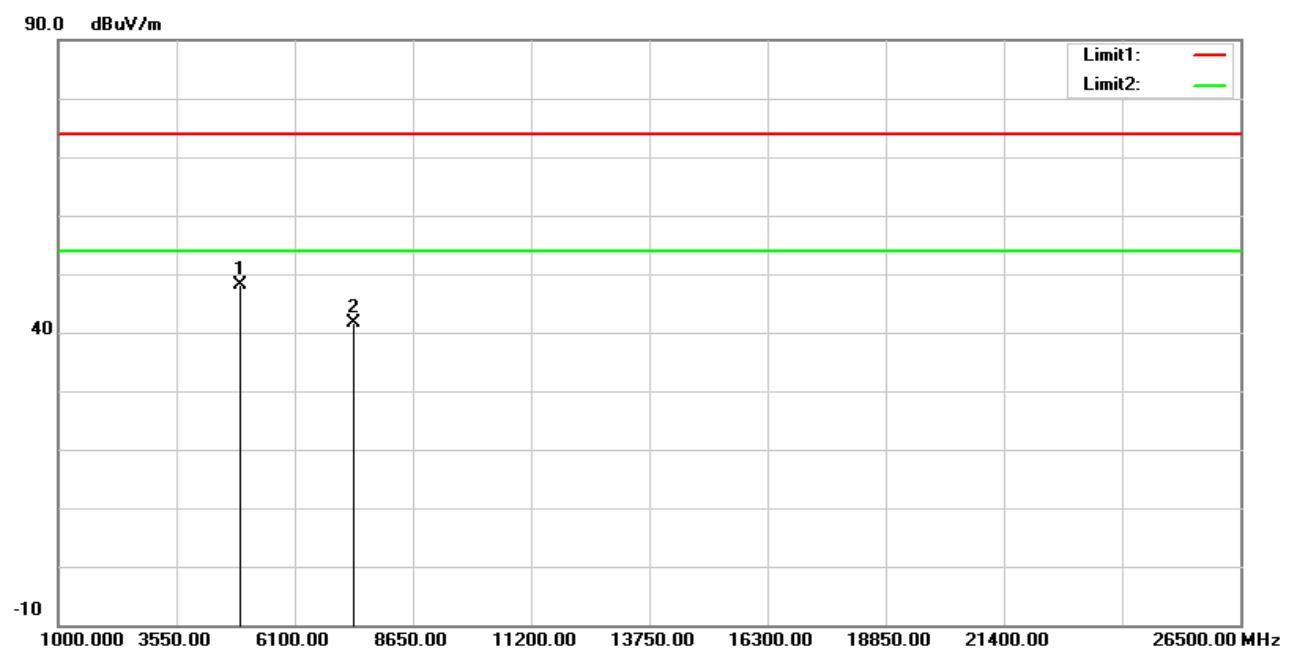
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4874.000	48.61	-0.13	48.48	74.00	-25.52	peak
2	7311.000	35.75	6.23	41.98	74.00	-32.02	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2462 MHz		
Remark:			



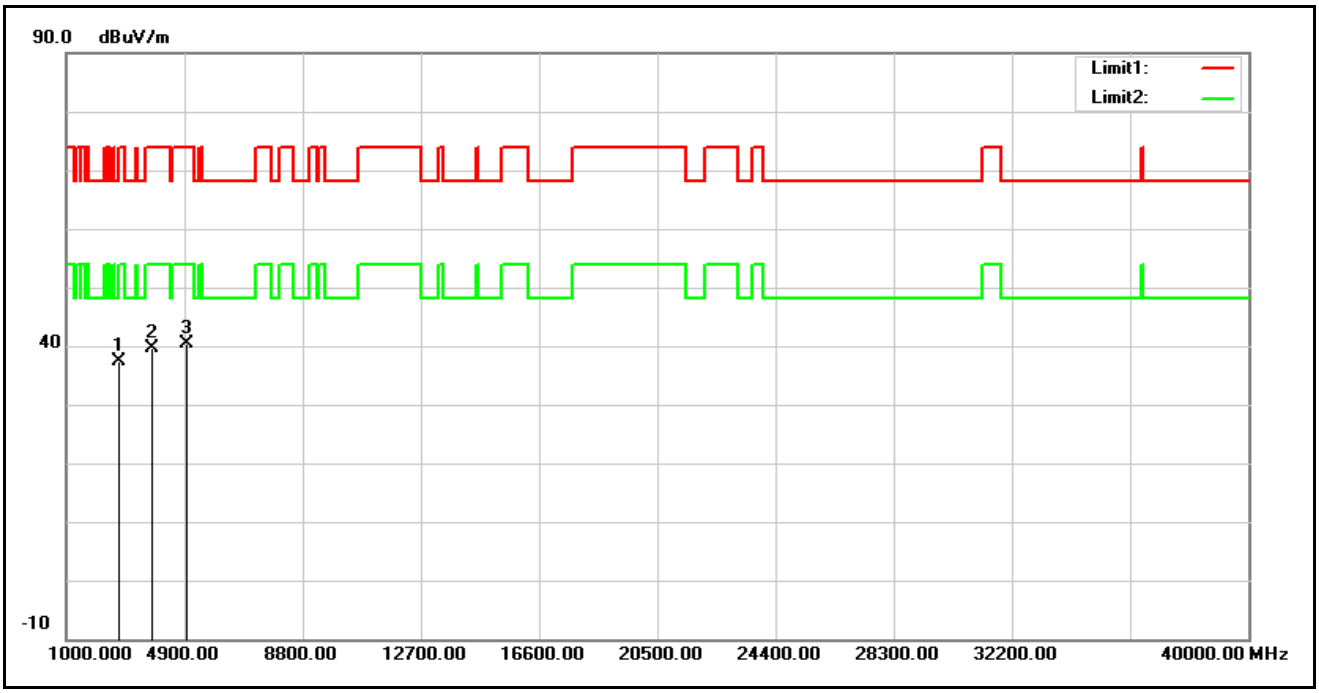
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	40.82	0.01	40.83	74.00	-33.17	peak
2*	7386.000	35.92	6.33	42.25	74.00	-31.75	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2462 MHz		
Remark:			



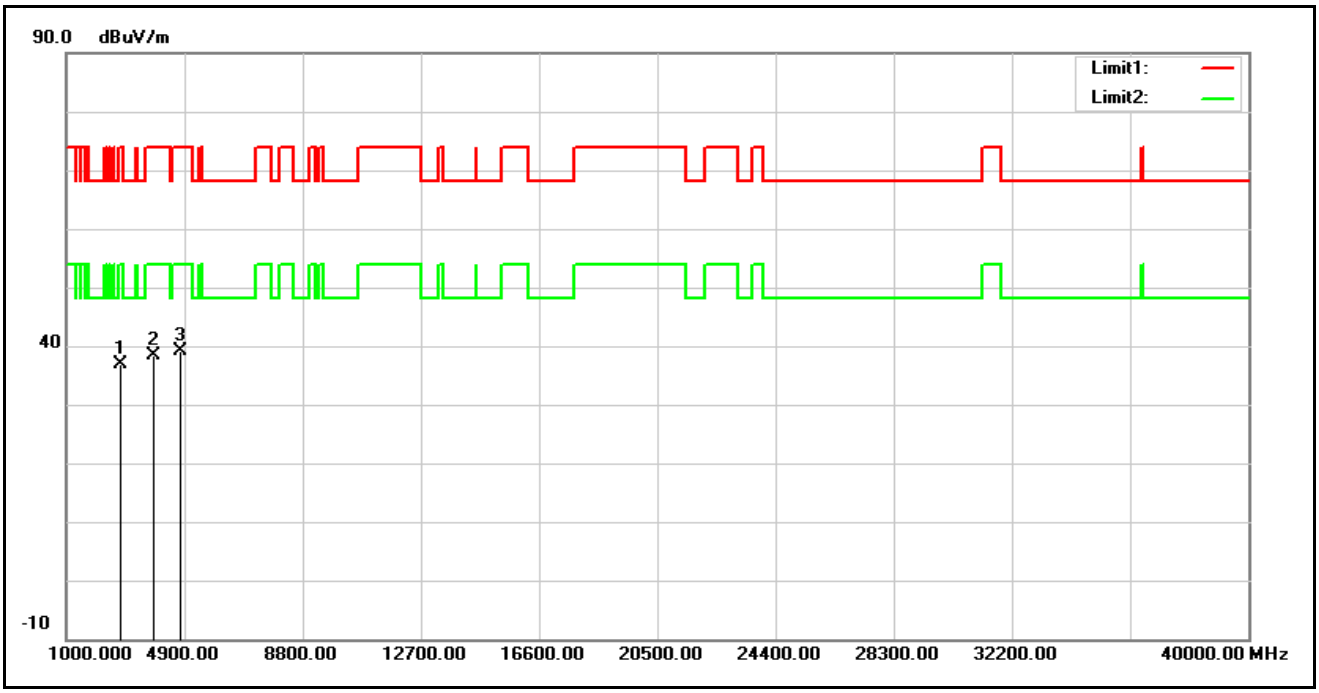
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	4924.000	48.08	0.01	48.09	74.00	-25.91	peak
2	7386.000	35.39	6.33	41.72	74.00	-32.28	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Simultaneous Transmitting WLAN 2.4 GHz + 5 GHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2751.000	42.90	-5.56	37.34	74.00	-36.66	peak
2	3839.000	42.63	-2.95	39.68	74.00	-34.32	peak
3*	4961.000	39.86	0.45	40.31	74.00	-33.69	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Simultaneous Transmitting WLAN 2.4 GHz + 5 GHz		
Remark:			

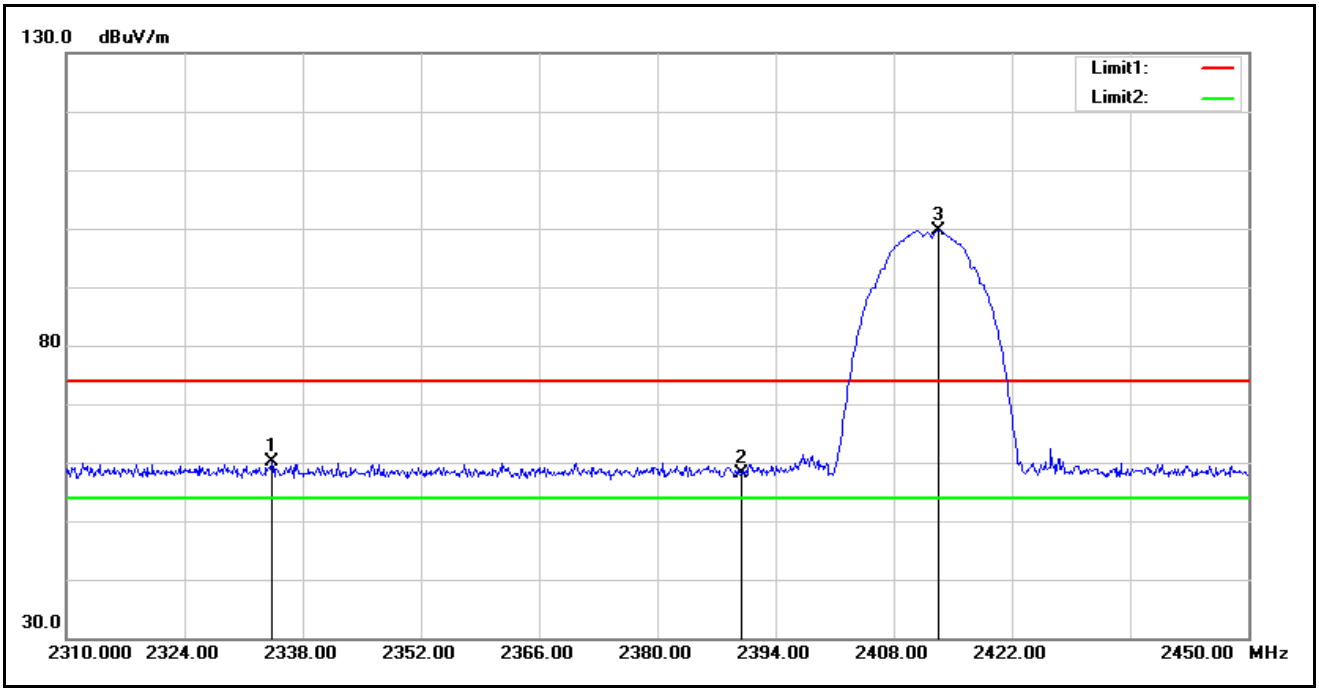


No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2802.000	42.43	-5.51	36.92	74.00	-37.08	peak
2	3907.000	41.06	-2.71	38.35	74.00	-35.65	peak
3*	4791.000	39.25	-0.02	39.23	74.00	-34.77	peak

Band Edge

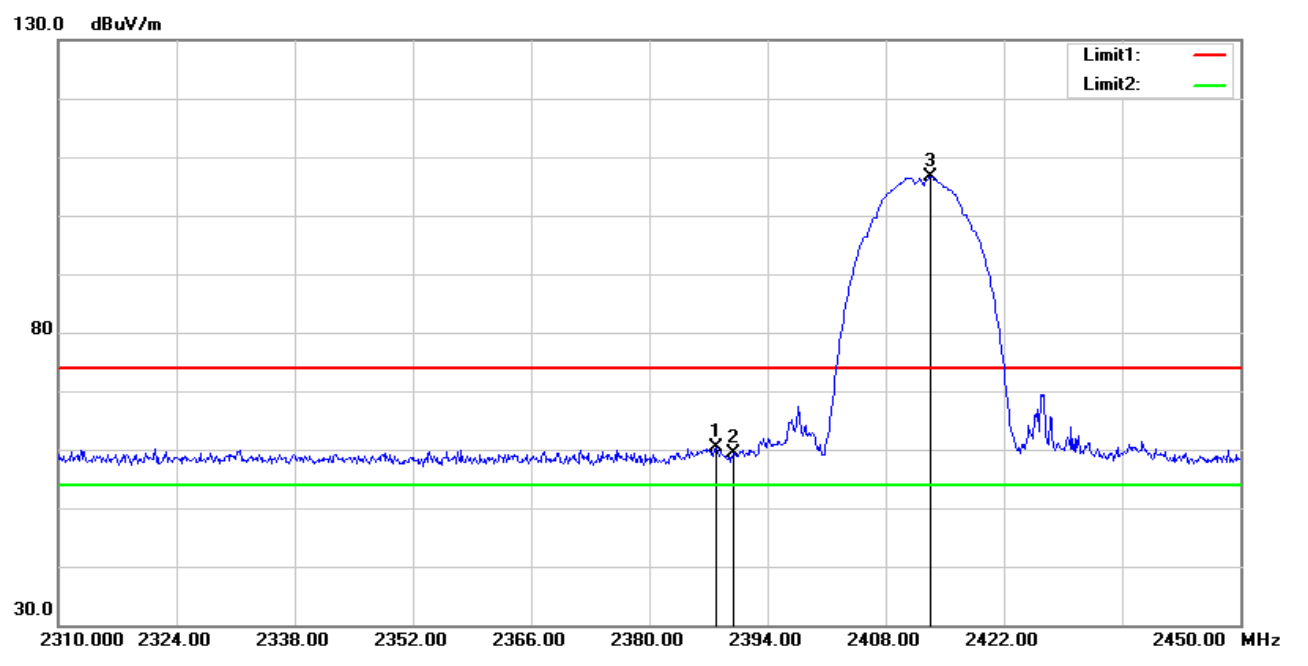
SISO-Peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2412 MHz		
Remark:			



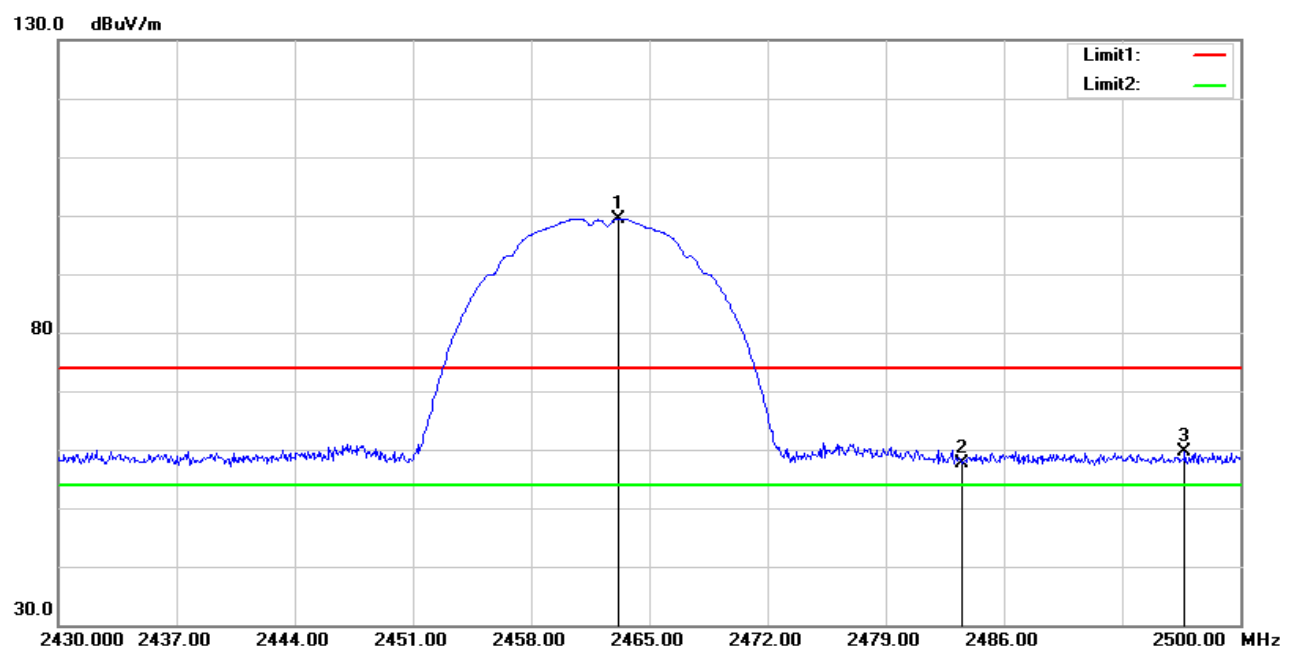
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2334.360	66.47	-6.42	60.05	74.00	-13.95	peak
2	2390.000	64.64	-6.50	58.14	74.00	-15.86	peak
3*	2413.320	106.21	-6.52	99.69	74.00	25.69	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2412 MHz		
Remark:			



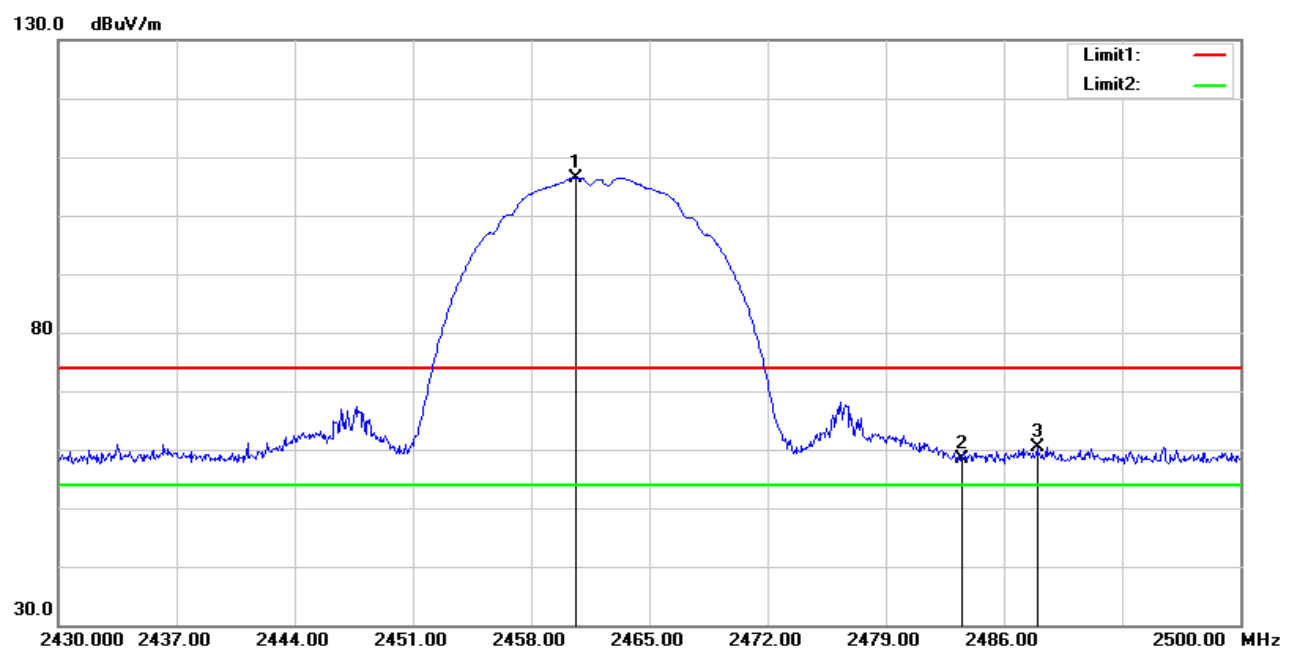
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.840	66.95	-6.50	60.45	74.00	-13.55	peak
2	2390.000	65.95	-6.50	59.45	74.00	-14.55	peak
3*	2413.320	113.06	-6.52	106.54	74.00	32.54	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2462 MHz		
Remark:			



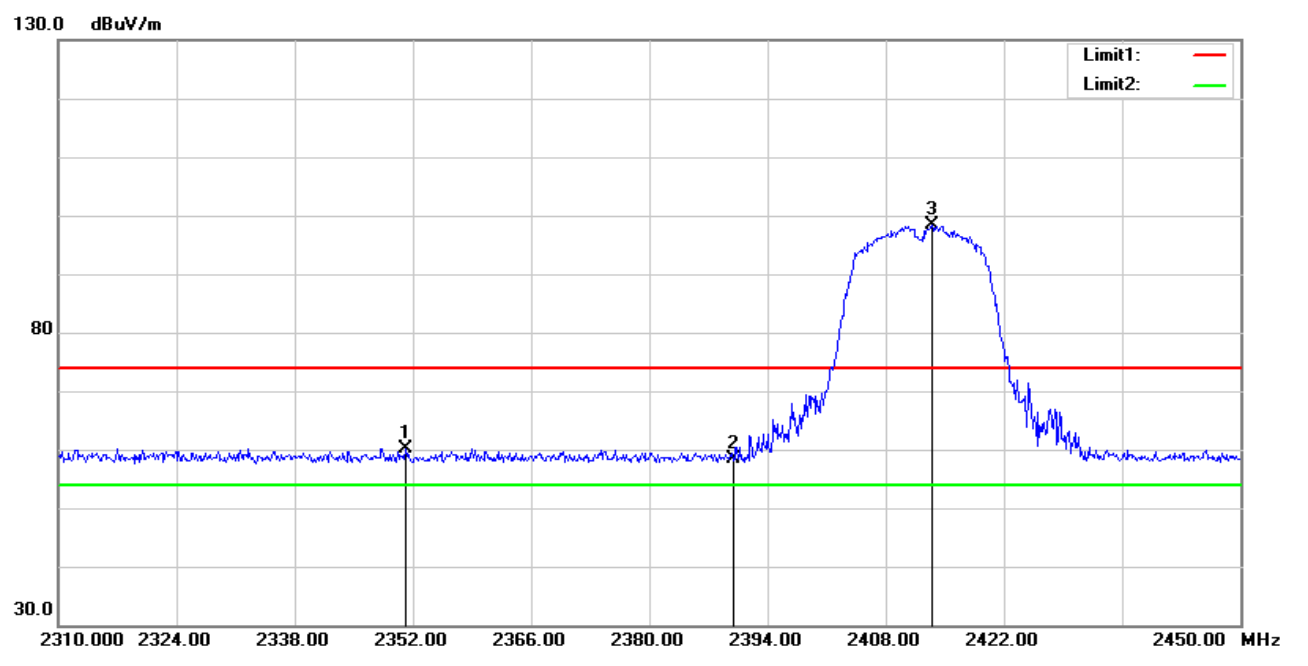
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2463.180	106.06	-6.56	99.50	74.00	25.50	peak
2	2483.500	64.26	-6.57	57.69	74.00	-16.31	peak
3	2496.710	66.30	-6.58	59.72	74.00	-14.28	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2462 MHz		
Remark:			



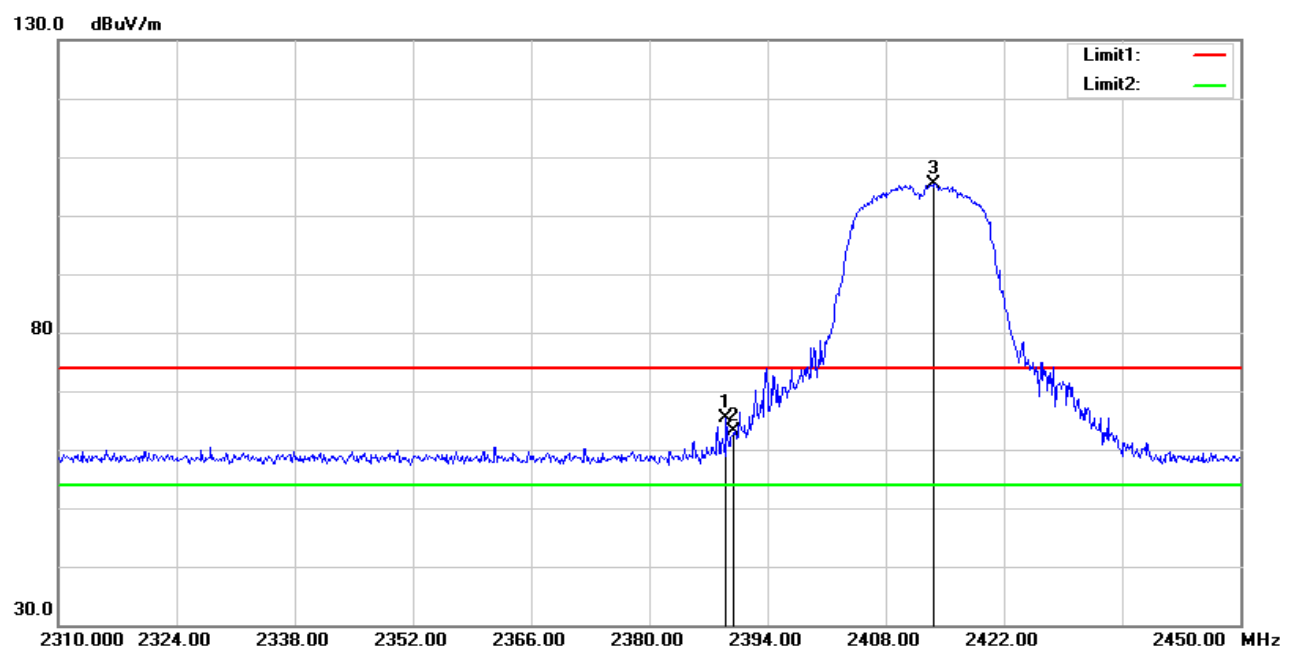
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2460.660	112.99	-6.55	106.44	74.00	32.44	peak
2	2483.500	65.00	-6.57	58.43	74.00	-15.57	peak
3	2487.960	67.02	-6.58	60.44	74.00	-13.56	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2412 MHz		
Remark:			



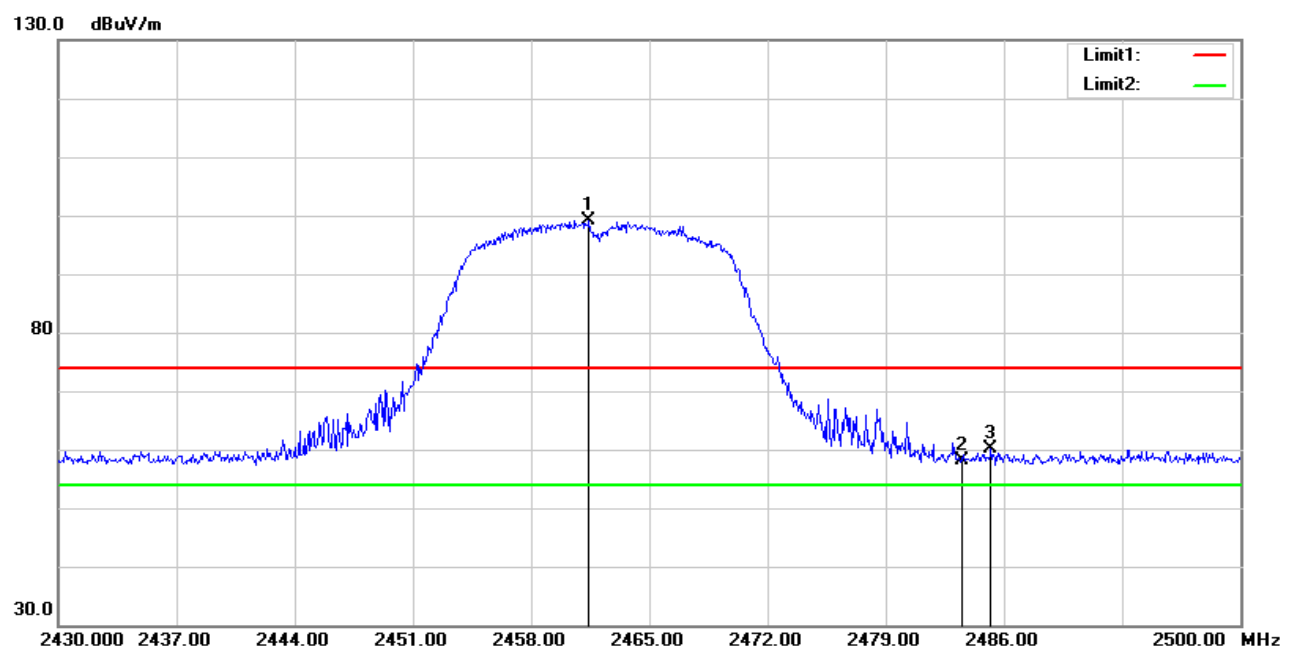
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2351.160	66.69	-6.46	60.23	74.00	-13.77	peak
2	2390.000	64.99	-6.50	58.49	74.00	-15.51	peak
3*	2413.460	105.01	-6.52	98.49	74.00	24.49	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2412 MHz		
Remark:			



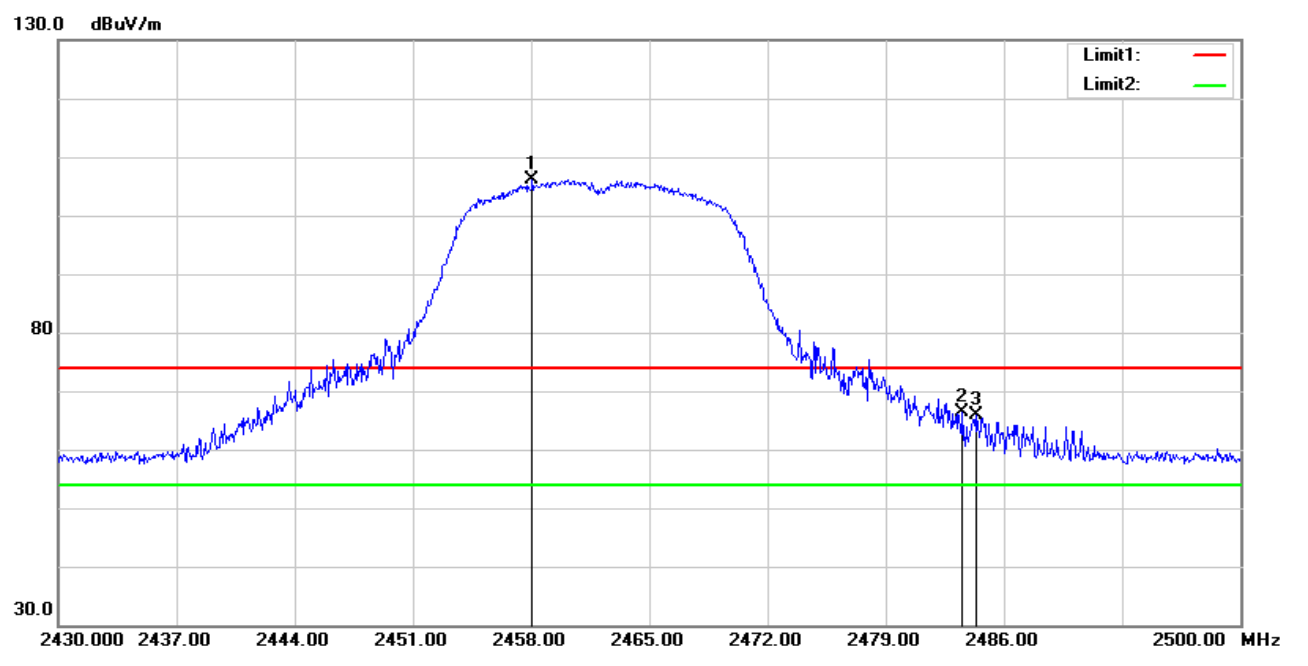
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.100	71.78	-6.50	65.28	74.00	-8.72	peak
2	2390.000	69.73	-6.50	63.23	74.00	-10.77	peak
3*	2413.740	111.86	-6.52	105.34	74.00	31.34	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2462 MHz		
Remark:			



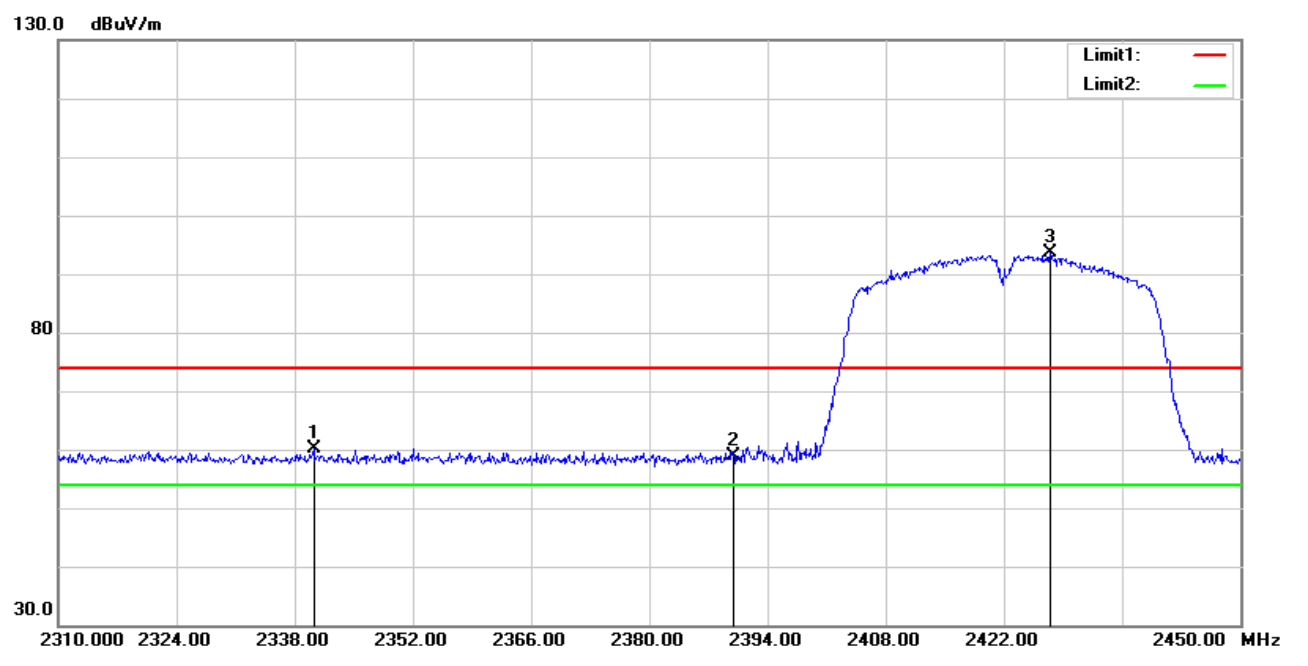
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2461.430	105.69	-6.55	99.14	74.00	25.14	peak
2	2483.500	64.82	-6.57	58.25	74.00	-15.75	peak
3	2485.230	66.82	-6.57	60.25	74.00	-13.75	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2462 MHz		
Remark:			



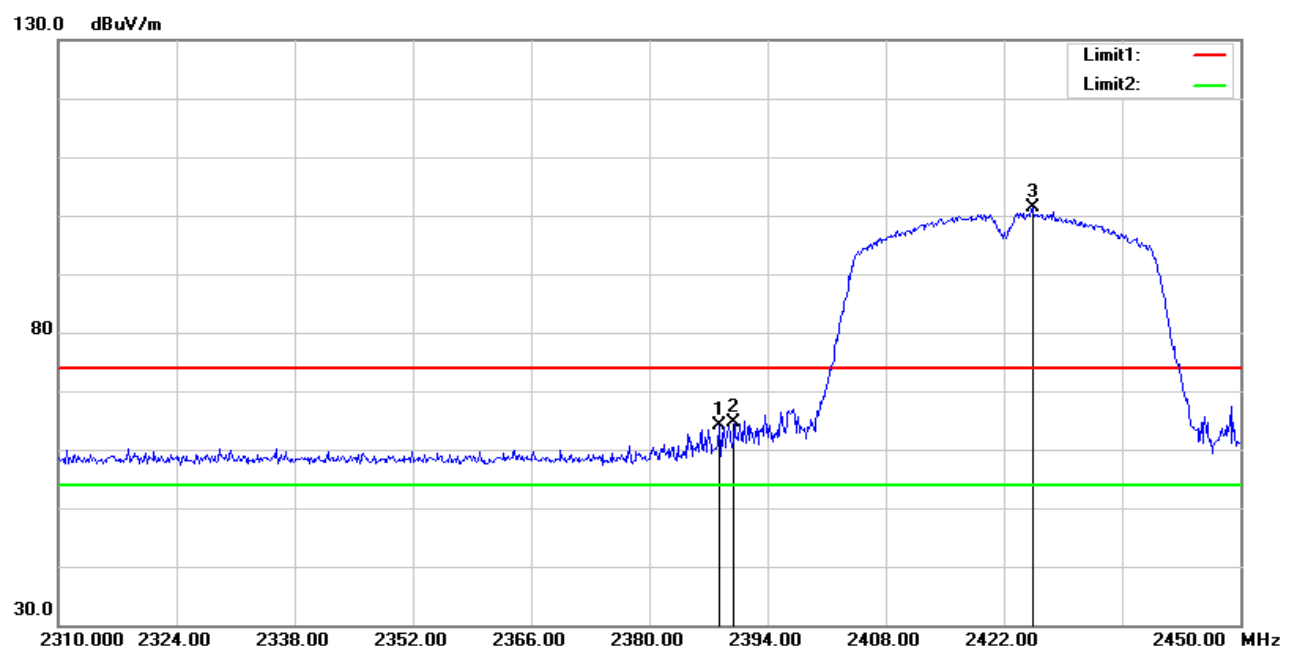
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2458.070	112.67	-6.56	106.11	74.00	32.11	peak
2	2483.500	72.87	-6.57	66.30	74.00	-7.70	peak
3	2484.390	72.41	-6.57	65.84	74.00	-8.16	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2422 MHz		
Remark:			



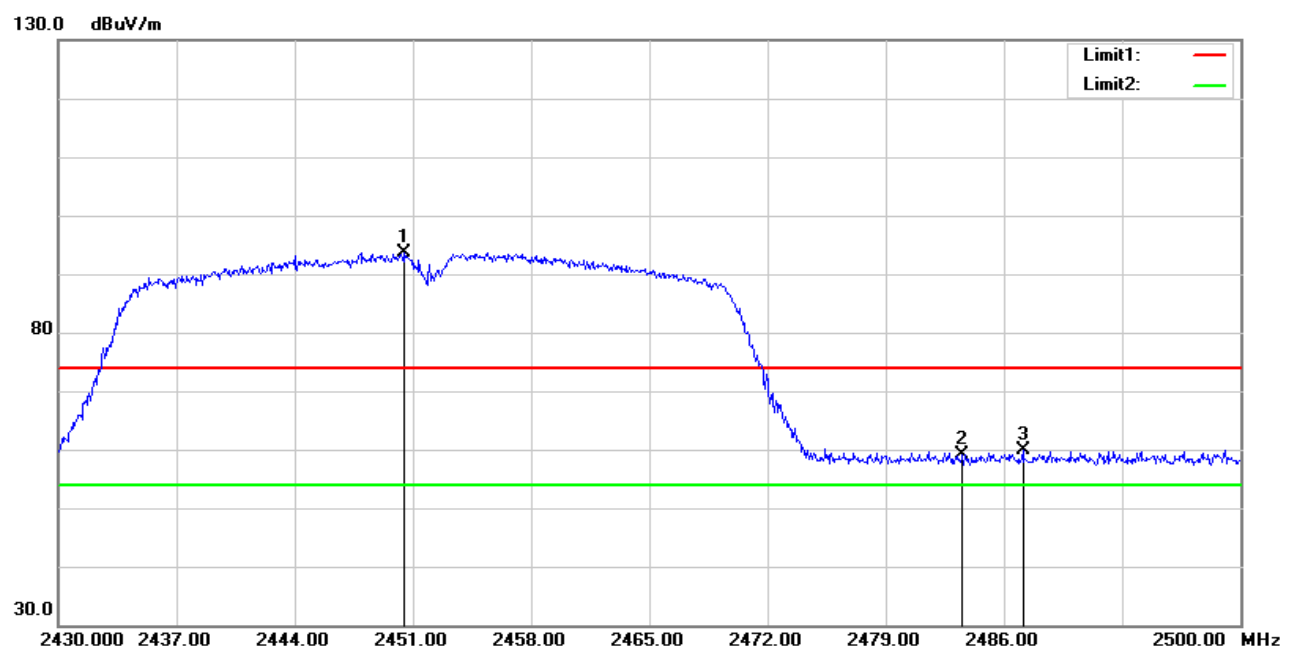
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2340.240	66.48	-6.43	60.05	74.00	-13.95	peak
2	2390.000	65.33	-6.50	58.83	74.00	-15.17	peak
3*	2427.460	100.04	-6.52	93.52	74.00	19.52	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2422 MHz		
Remark:			



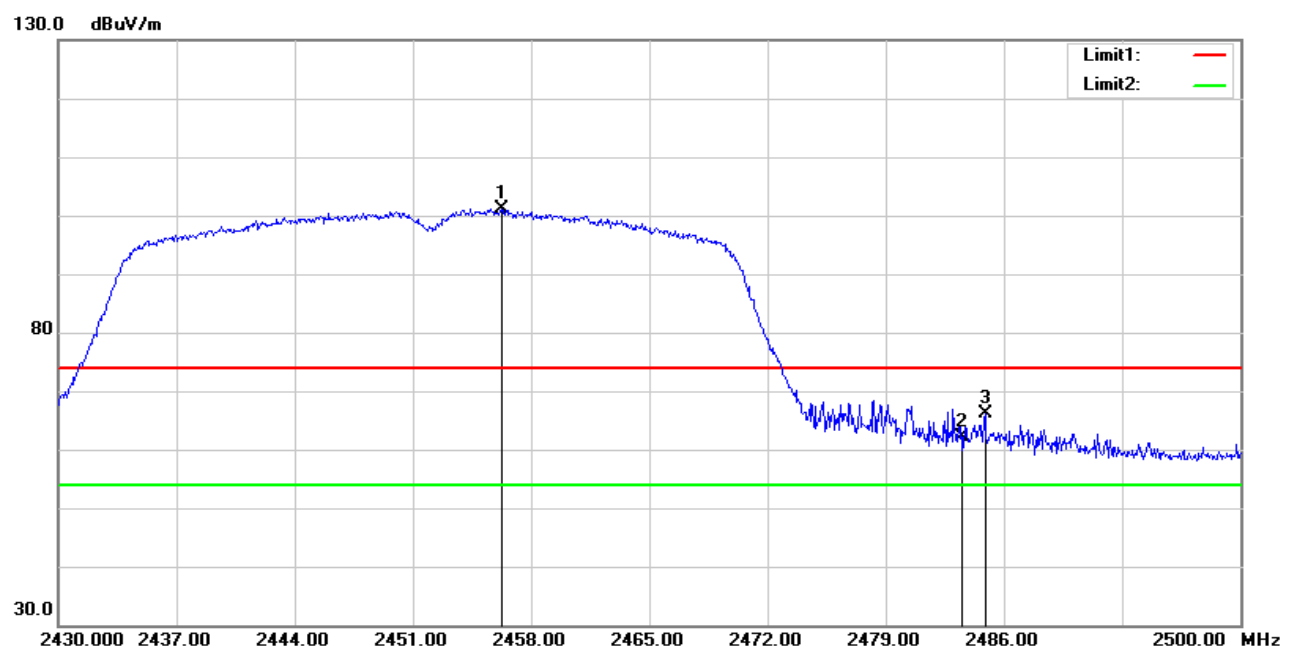
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.260	70.62	-6.50	64.12	74.00	-9.88	peak
2	2390.000	71.25	-6.50	64.75	74.00	-9.25	peak
3*	2425.360	107.92	-6.53	101.39	74.00	27.39	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2452 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2450.510	100.20	-6.54	93.66	74.00	19.66	peak
2	2483.500	65.66	-6.57	59.09	74.00	-14.91	peak
3	2487.120	66.54	-6.57	59.97	74.00	-14.03	peak

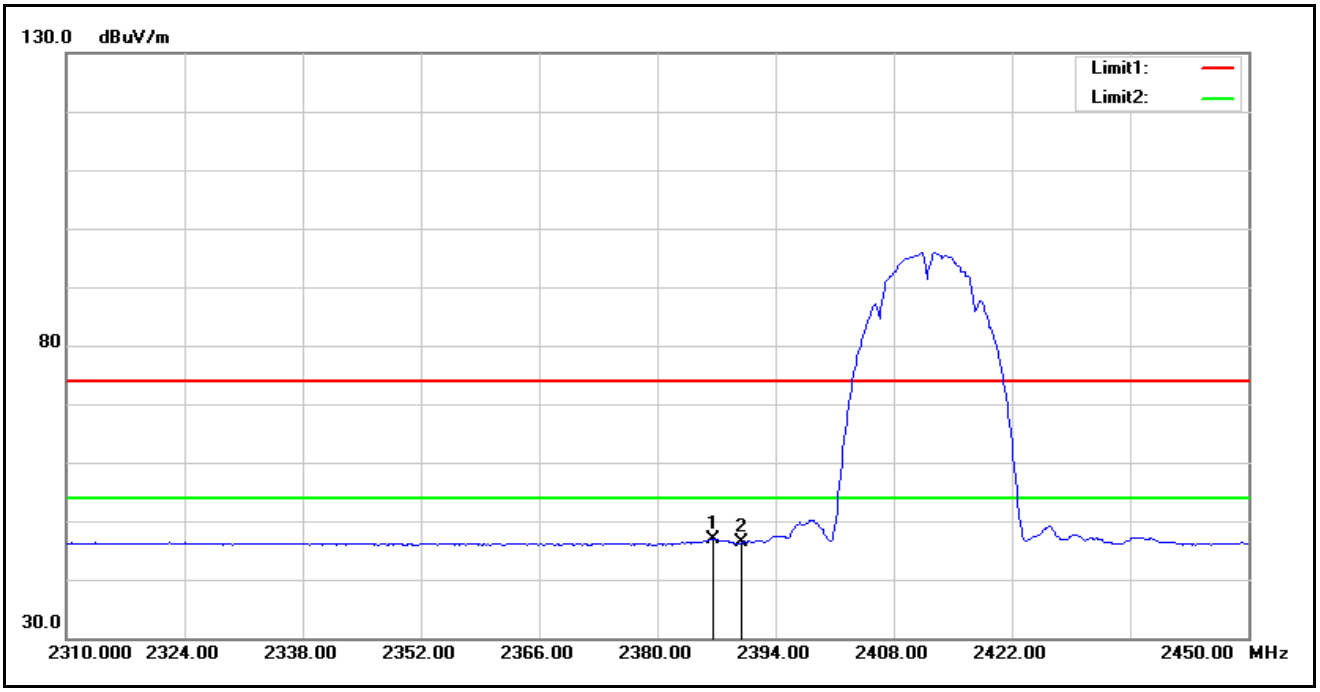
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2452 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2456.250	107.78	-6.55	101.23	74.00	27.23	peak
2	2483.500	68.64	-6.57	62.07	74.00	-11.93	peak
3	2484.880	72.59	-6.57	66.02	74.00	-7.98	peak

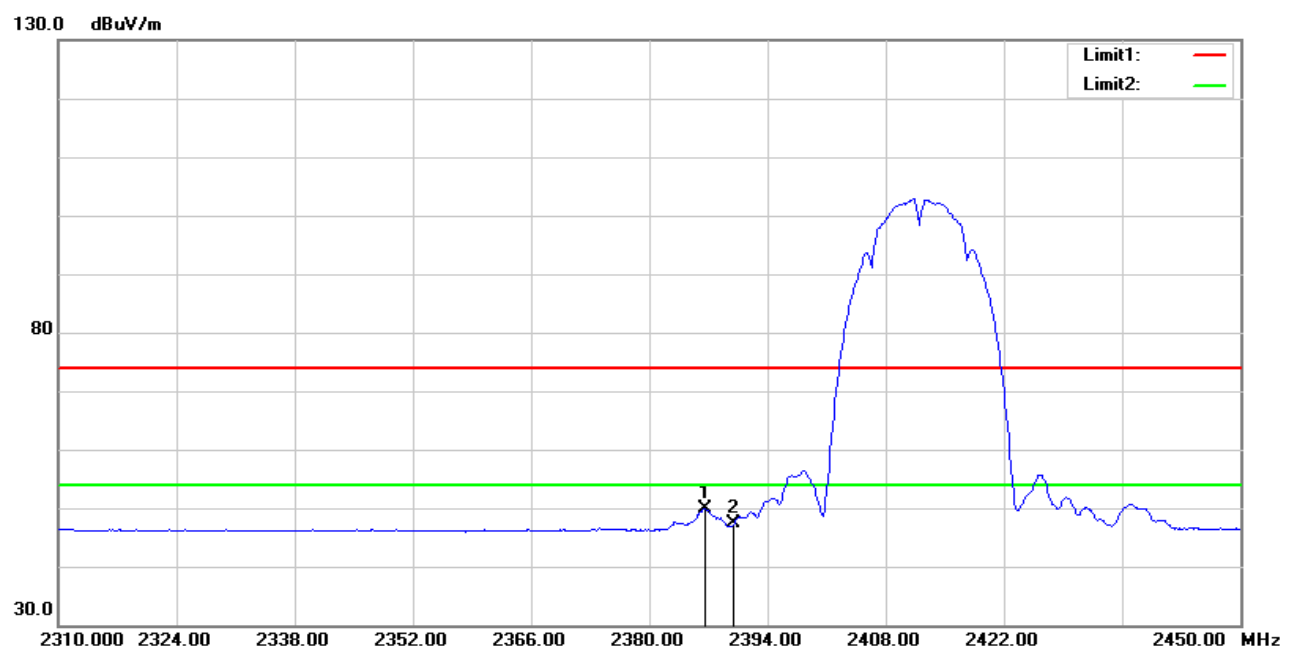
SISO-AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2412 MHz		
Remark:			



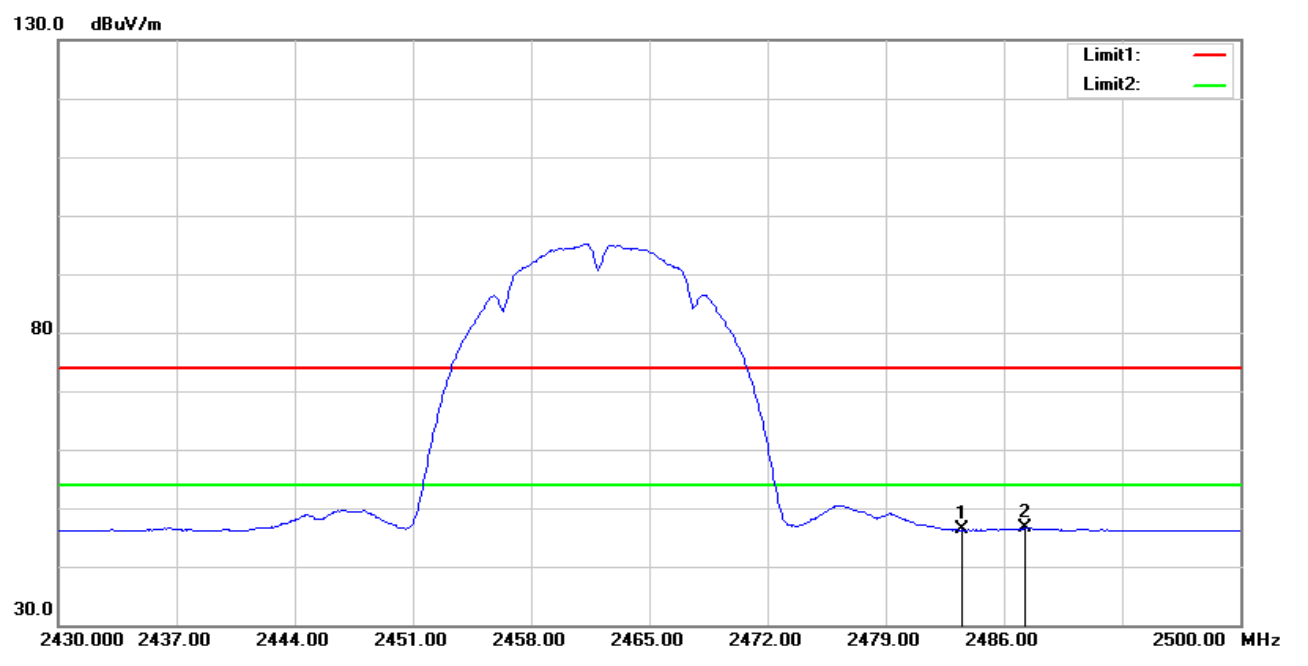
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2386.580	53.40	-6.49	46.91	54.00	-7.09	AVG
2	2390.000	52.77	-6.50	46.27	54.00	-7.73	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2412 MHz		
Remark:			



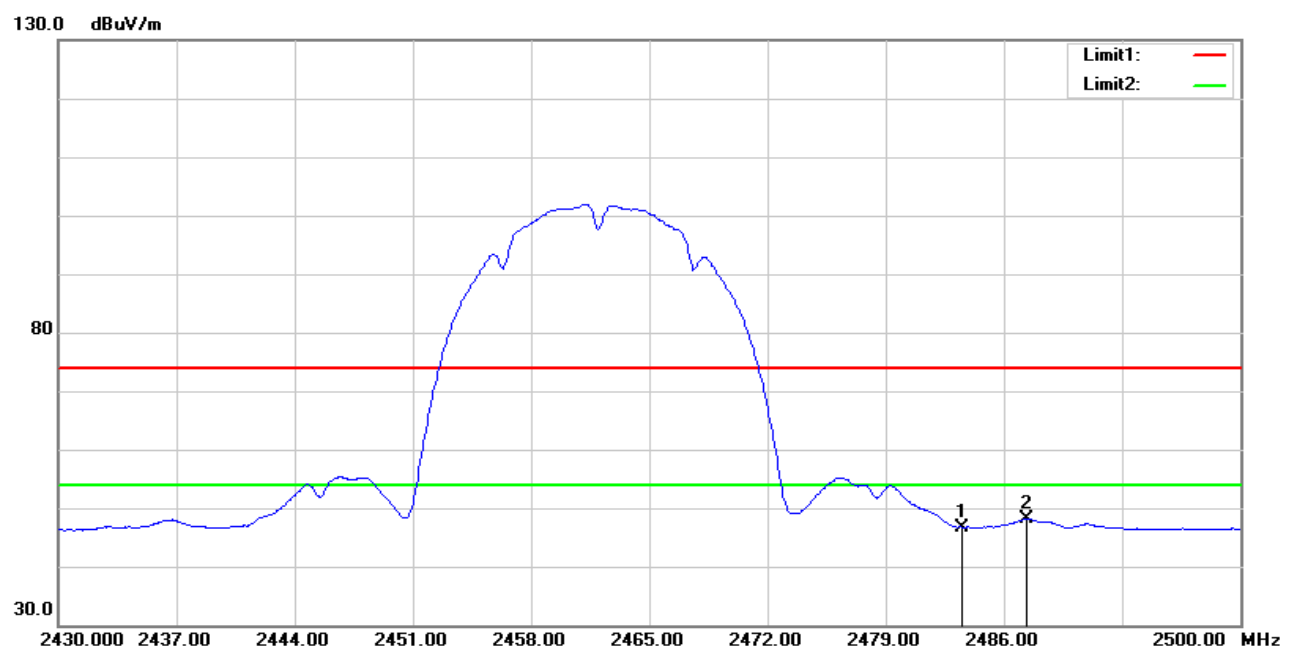
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2386.580	56.27	-6.49	49.78	54.00	-4.22	AVG
2	2390.000	53.97	-6.50	47.47	54.00	-6.53	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11b 2462 MHz		
Remark:			



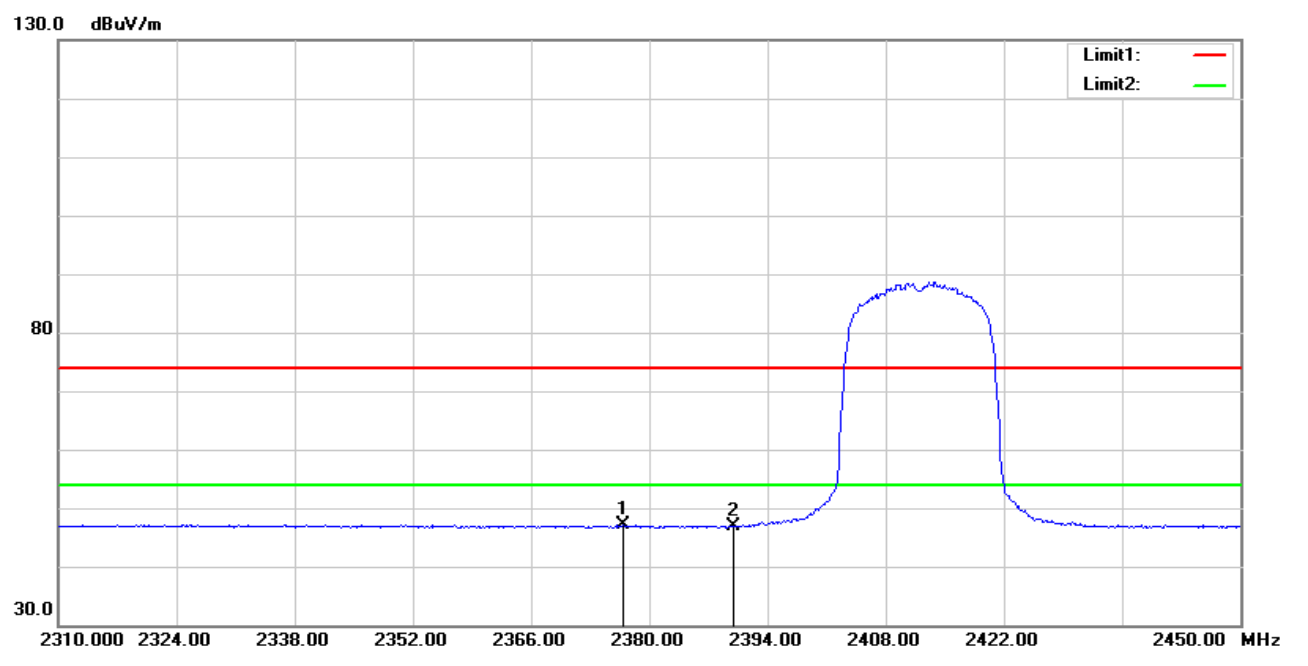
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	52.85	-6.57	46.28	54.00	-7.72	AVG
2*	2487.260	53.15	-6.57	46.58	54.00	-7.42	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11b 2462 MHz		
Remark:			



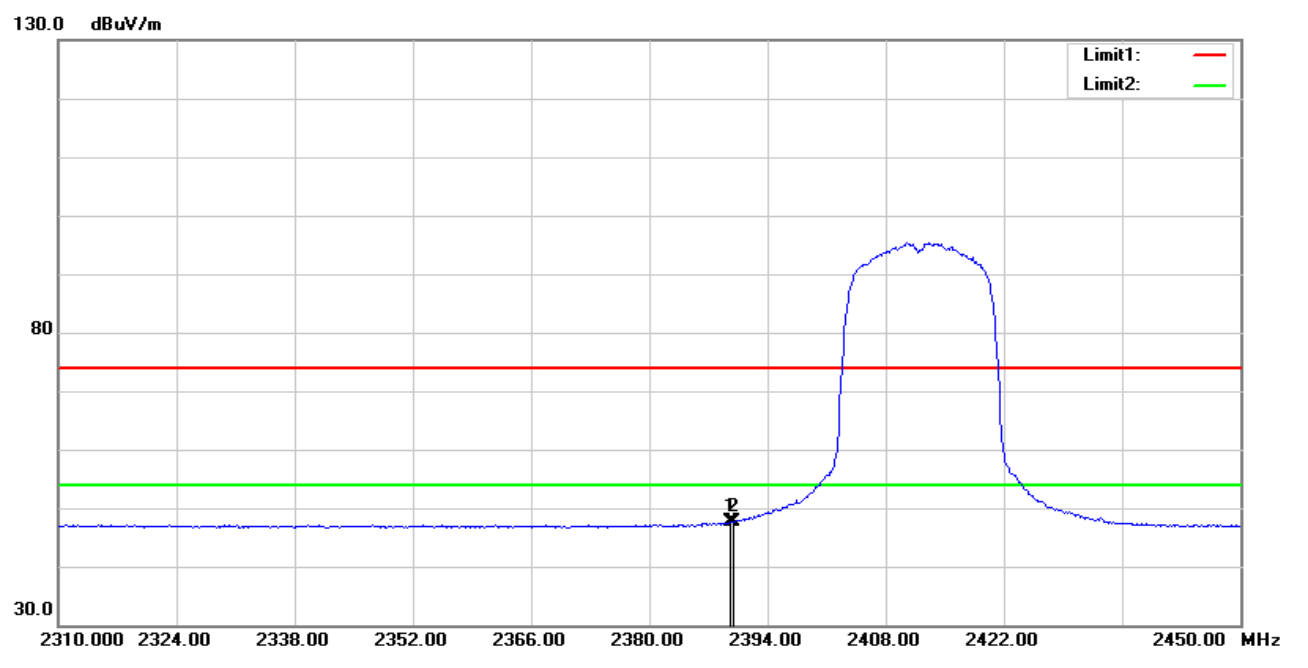
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	53.31	-6.57	46.74	54.00	-7.26	AVG
2*	2487.330	54.78	-6.57	48.21	54.00	-5.79	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2412 MHz		
Remark:			



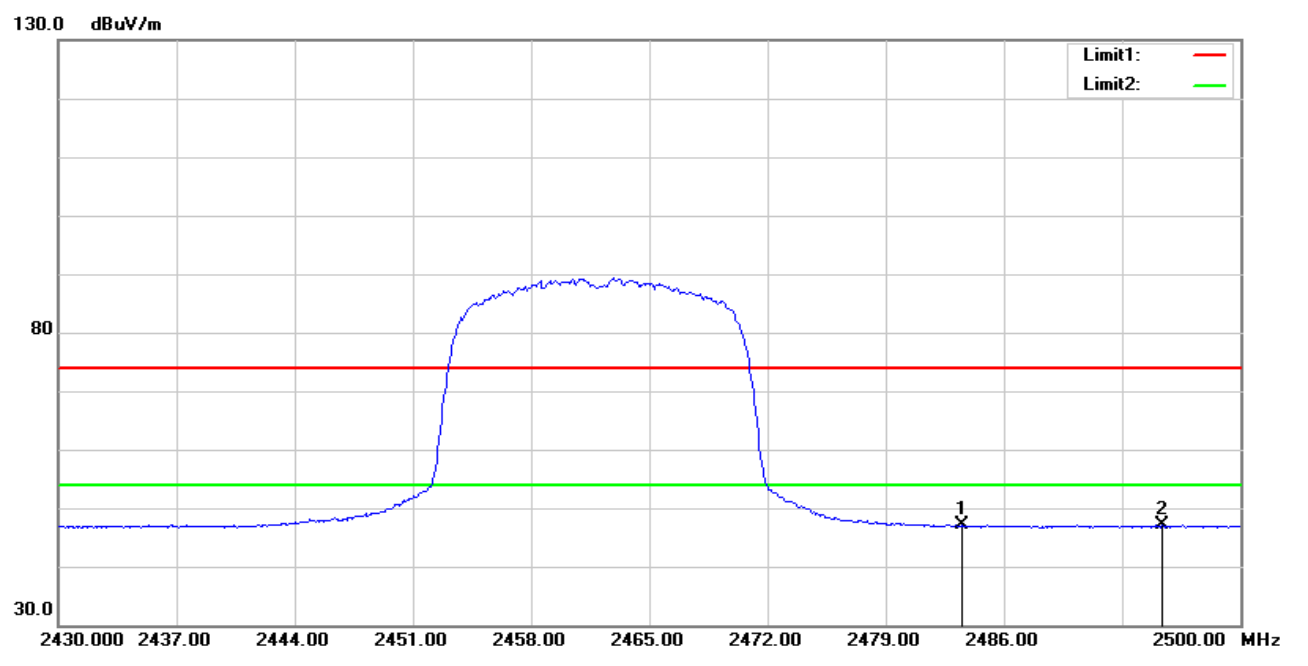
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2376.920	53.65	-6.48	47.17	54.00	-6.83	AVG
2	2390.000	53.39	-6.50	46.89	54.00	-7.11	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2412 MHz		
Remark:			



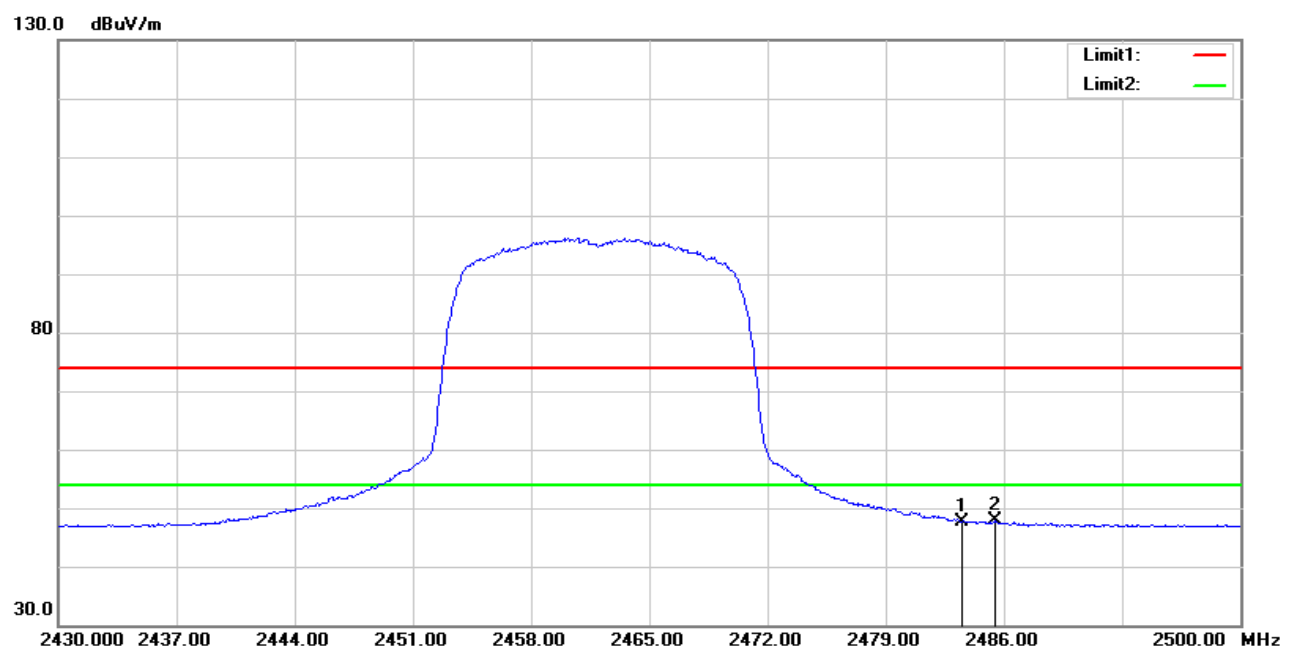
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.660	54.12	-6.50	47.62	54.00	-6.38	AVG
2*	2390.000	54.20	-6.50	47.70	54.00	-6.30	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11g 2462 MHz		
Remark:			



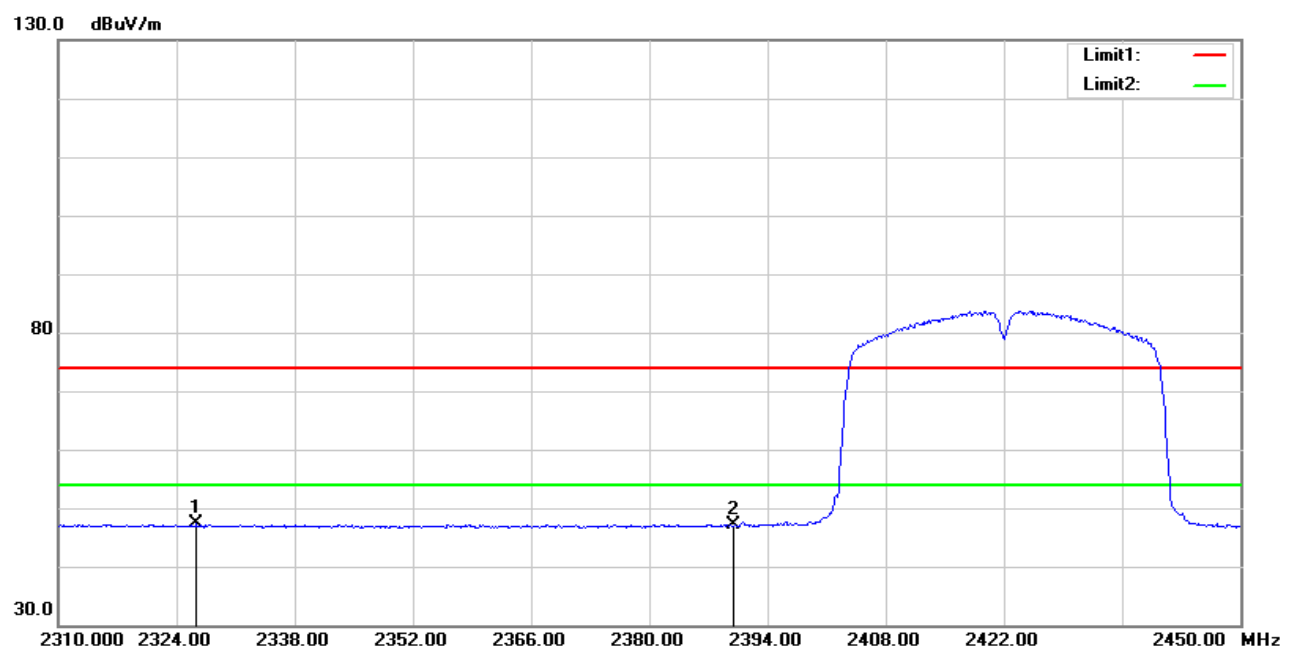
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2483.500	53.64	-6.57	47.07	54.00	-6.93	AVG
2	2495.380	53.61	-6.58	47.03	54.00	-6.97	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11g 2462 MHz		
Remark:			



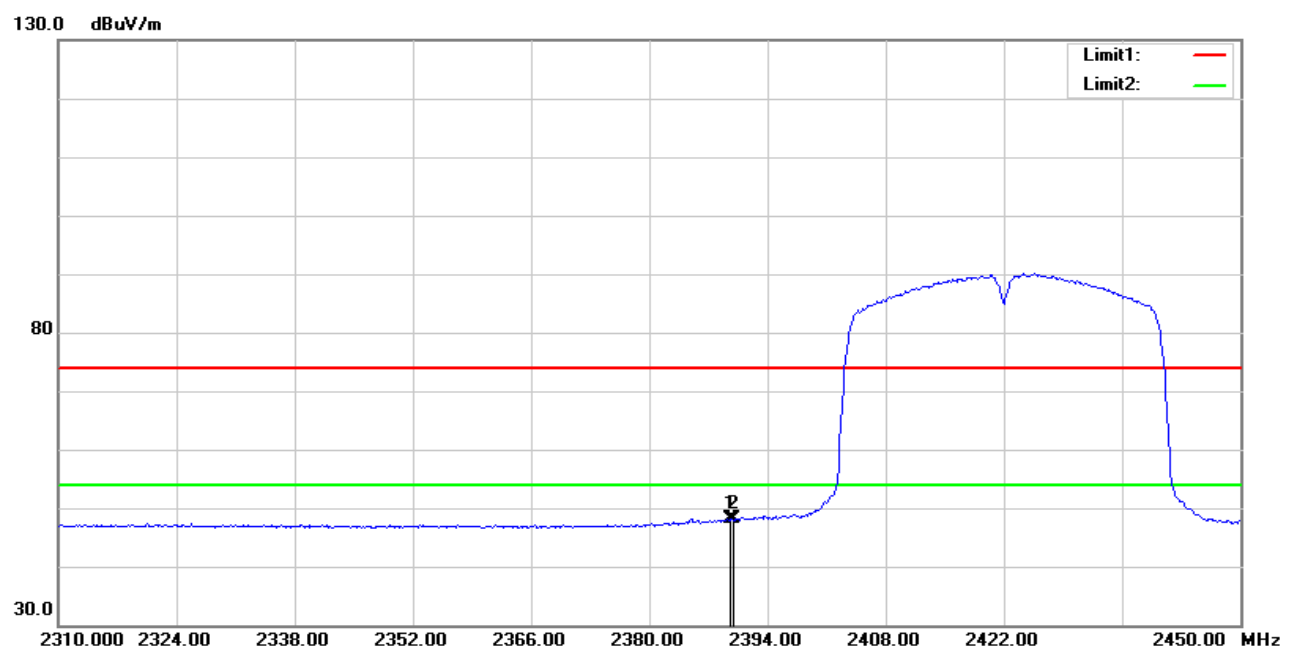
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.32	-6.57	47.75	54.00	-6.25	AVG
2*	2485.510	54.33	-6.57	47.76	54.00	-6.24	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2422 MHz		
Remark:			



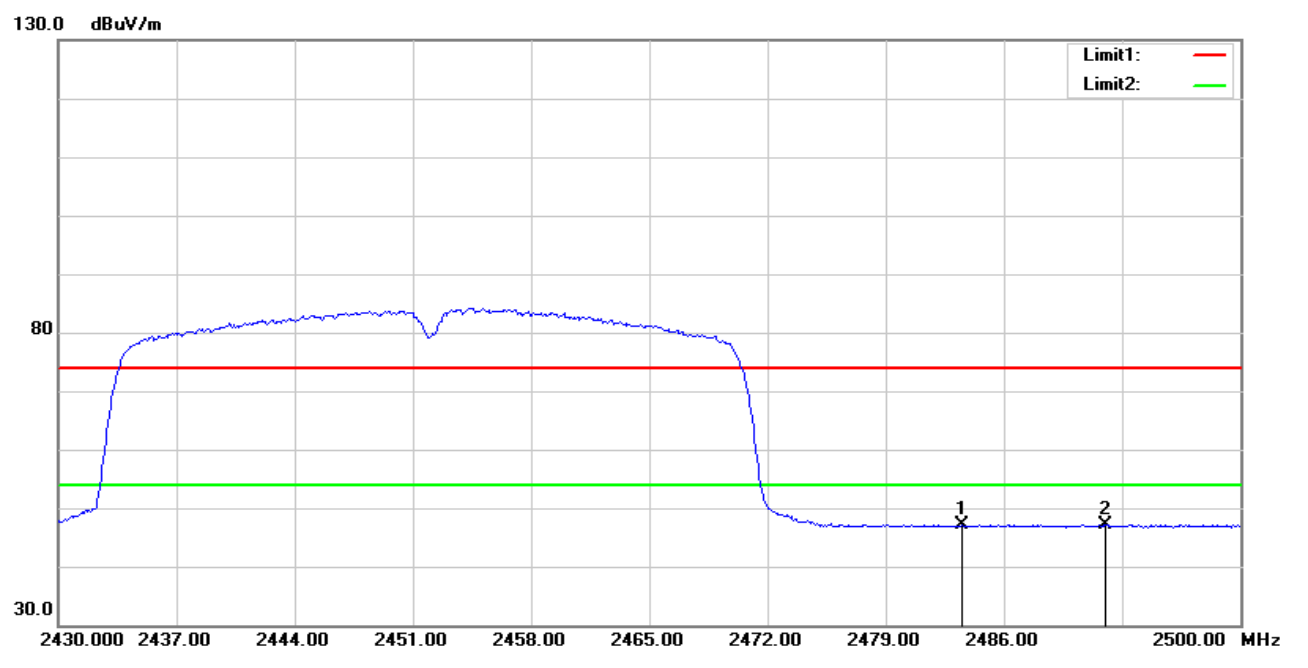
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2326.380	53.68	-6.40	47.28	54.00	-6.72	AVG
2	2390.000	53.61	-6.50	47.11	54.00	-6.89	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2422 MHz		
Remark:			



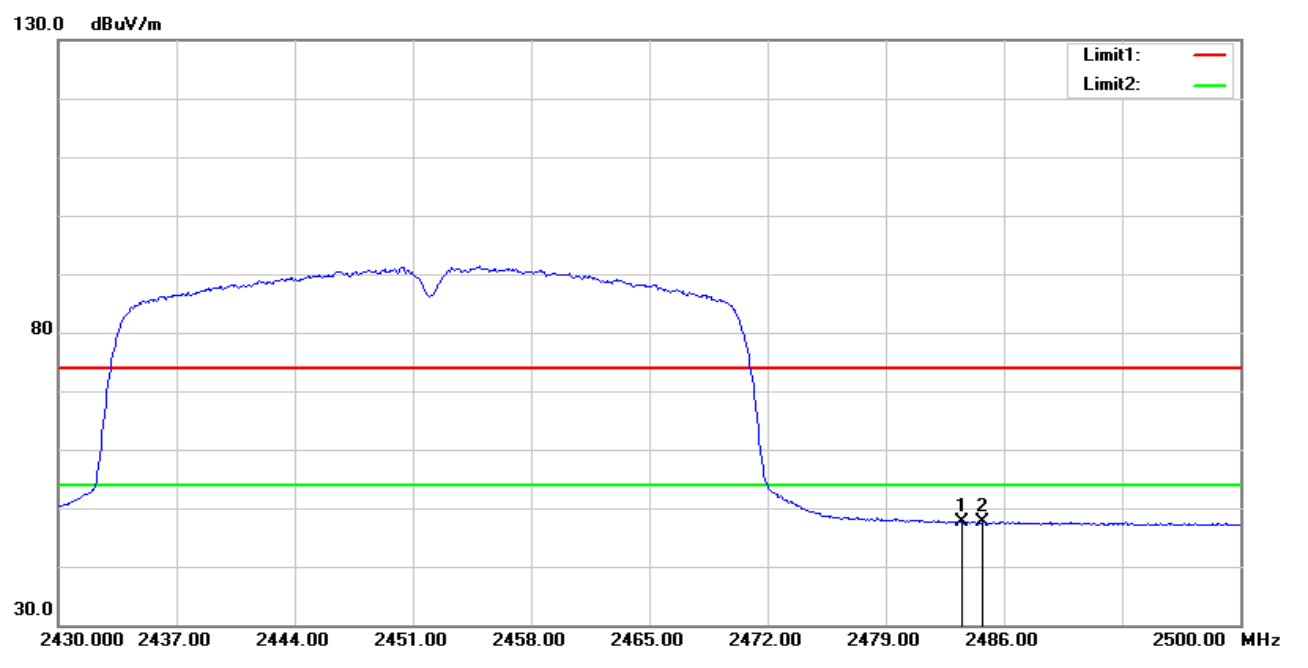
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2389.520	54.74	-6.50	48.24	54.00	-5.76	AVG
2	2390.000	54.60	-6.50	48.10	54.00	-5.90	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT40 2452 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	53.65	-6.57	47.08	54.00	-6.92	AVG
2*	2492.020	53.78	-6.58	47.20	54.00	-6.80	AVG

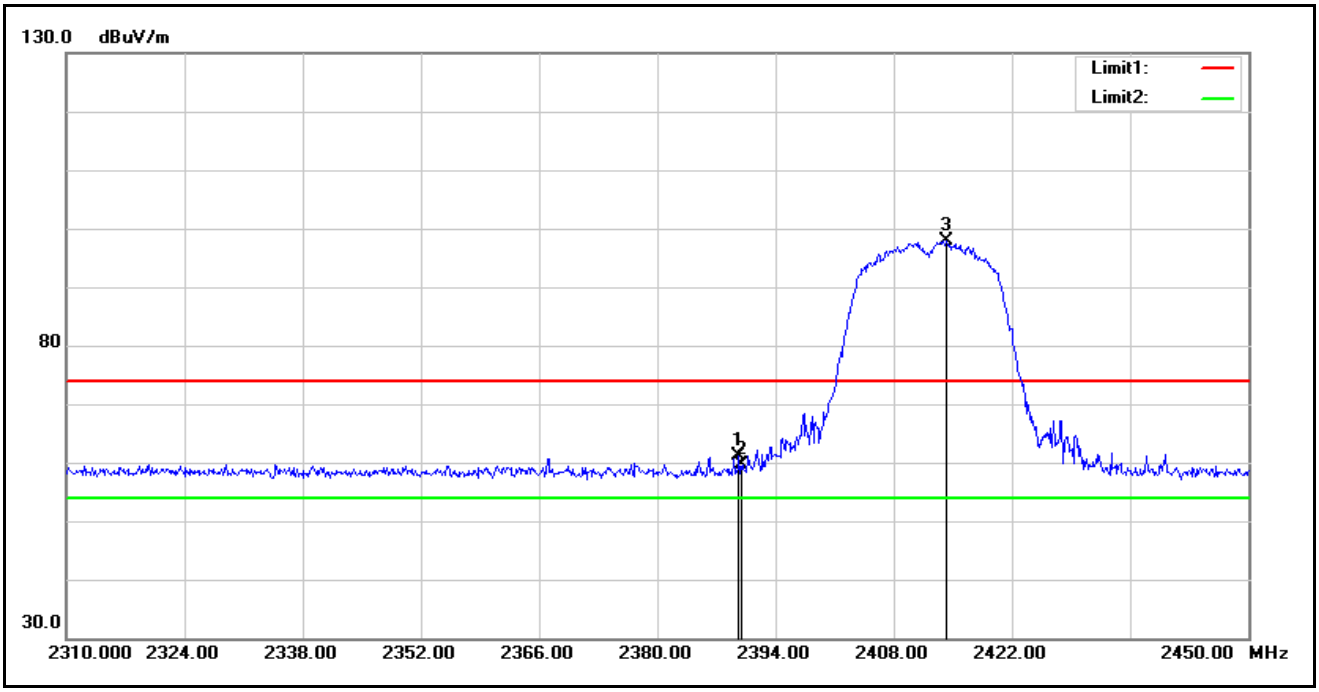
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT40 2452 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.17	-6.57	47.60	54.00	-6.40	AVG
2*	2484.740	54.30	-6.57	47.73	54.00	-6.27	AVG

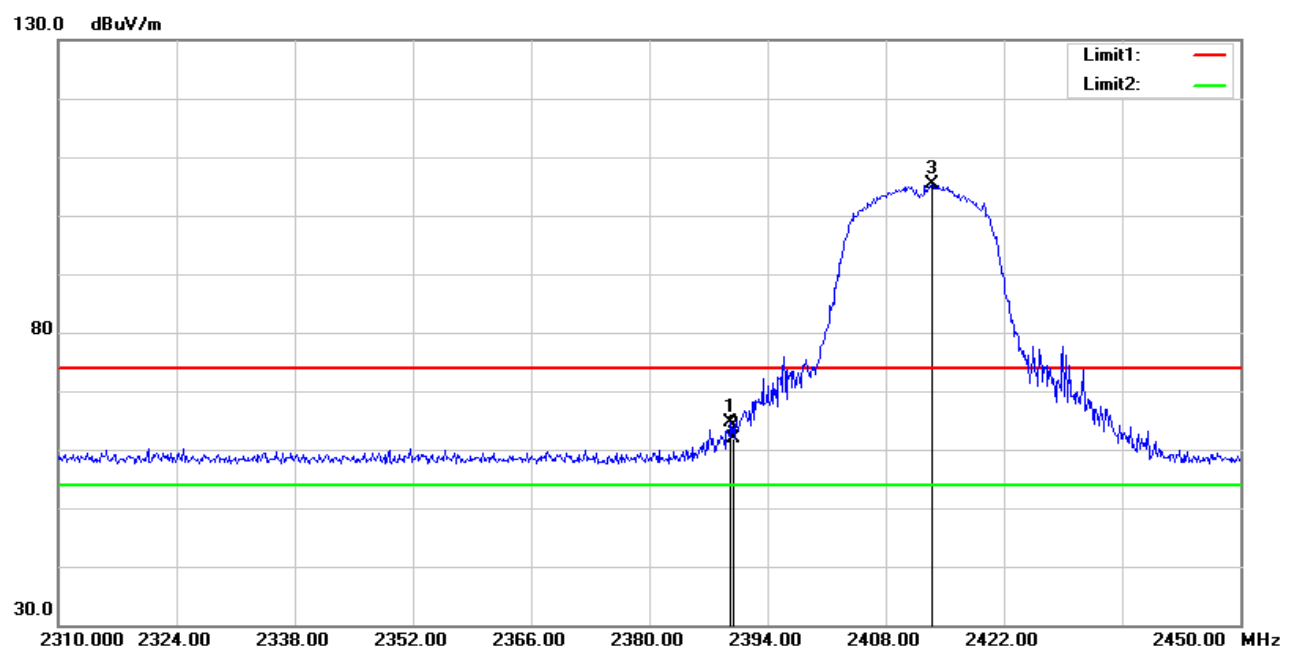
MIMO-Peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2412 MHz		
Remark:			



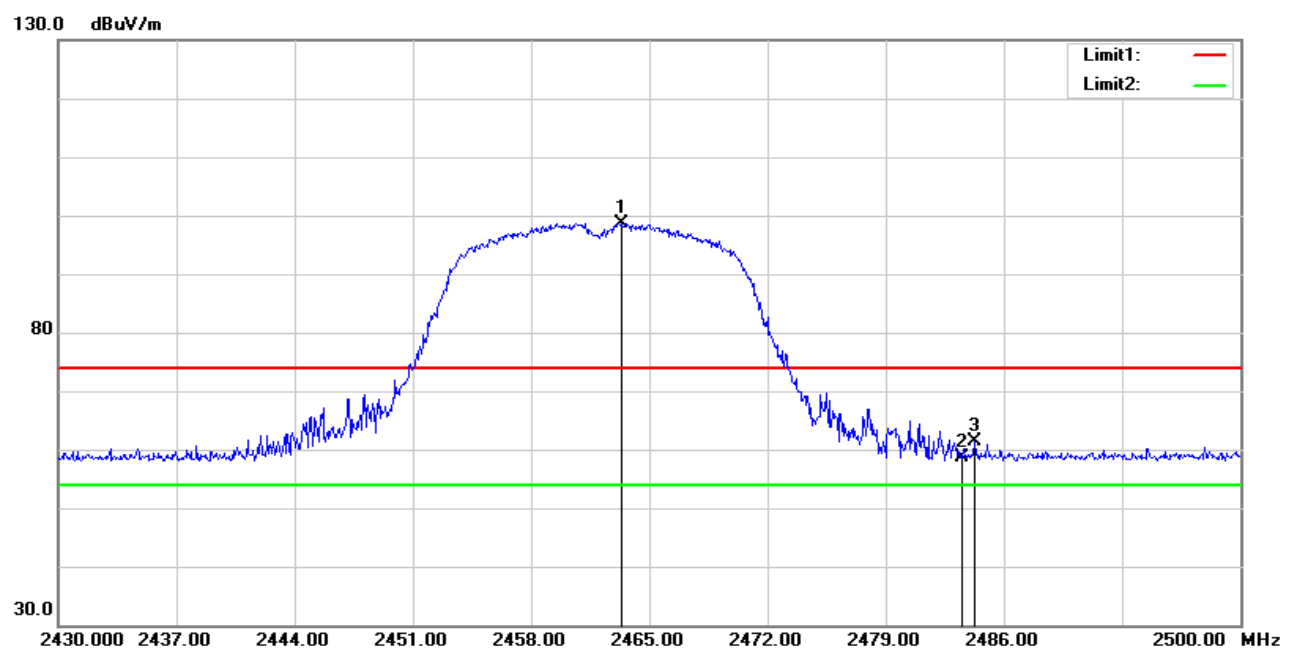
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.660	67.70	-6.50	61.20	74.00	-12.80	peak
2	2390.000	66.09	-6.50	59.59	74.00	-14.41	peak
3*	2414.160	104.36	-6.52	97.84	74.00	23.84	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2412 MHz		
Remark:			



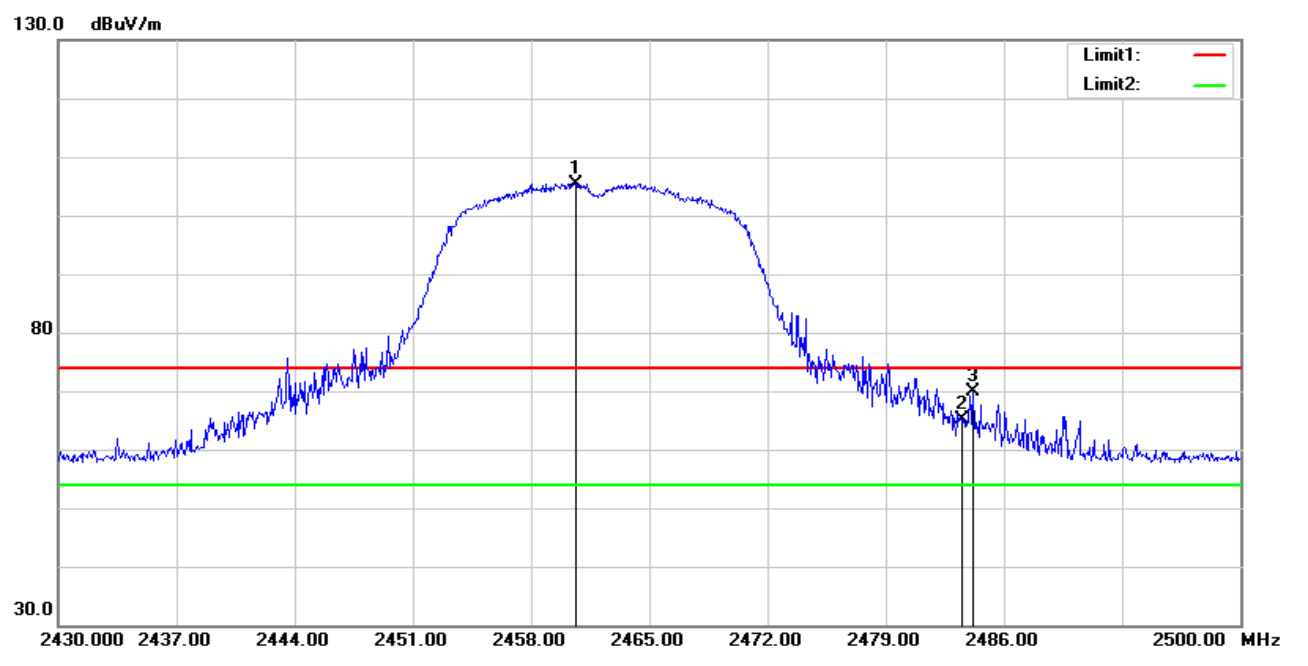
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.660	71.20	-6.50	64.70	74.00	-9.30	peak
2	2390.000	68.46	-6.50	61.96	74.00	-12.04	peak
3*	2413.460	111.81	-6.52	105.29	74.00	31.29	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2462 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2463.390	105.20	-6.56	98.64	74.00	24.64	peak
2	2483.500	65.27	-6.57	58.70	74.00	-15.30	peak
3	2484.250	68.01	-6.57	61.44	74.00	-12.56	peak

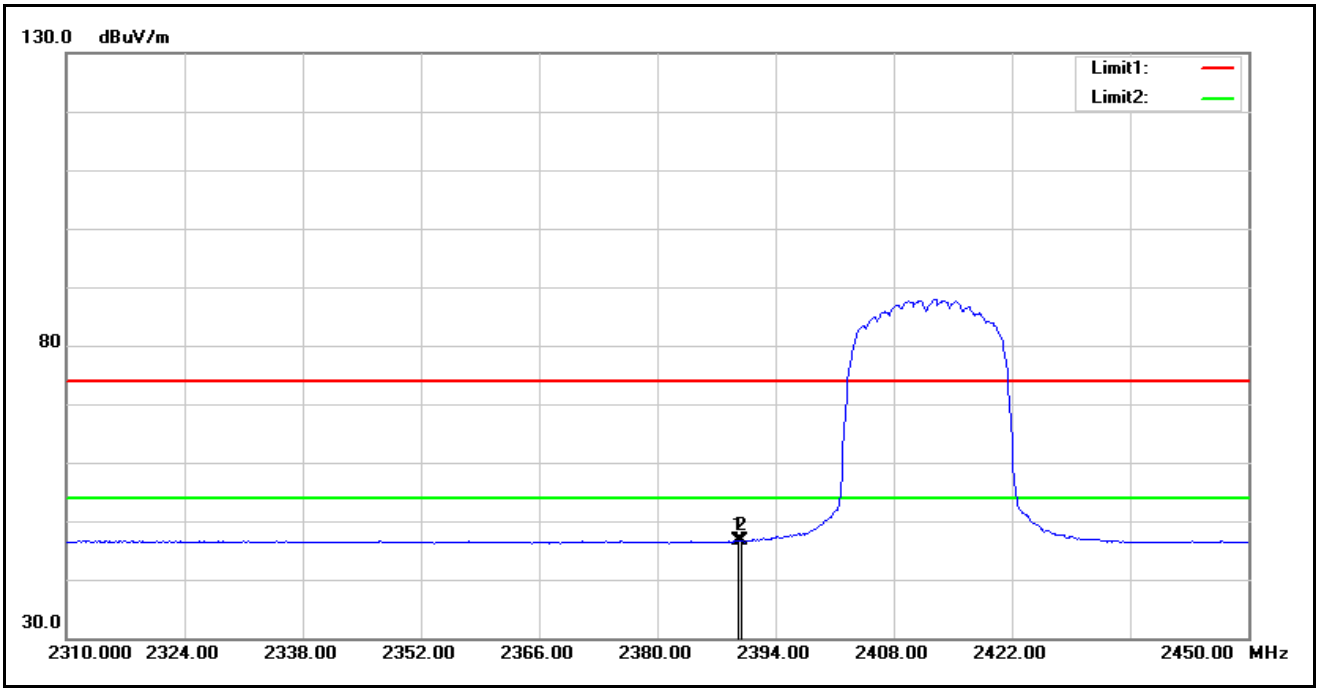
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2462 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2460.660	112.04	-6.55	105.49	74.00	31.49	peak
2	2483.500	71.81	-6.57	65.24	74.00	-8.76	peak
3	2484.180	76.35	-6.57	69.78	74.00	-4.22	peak

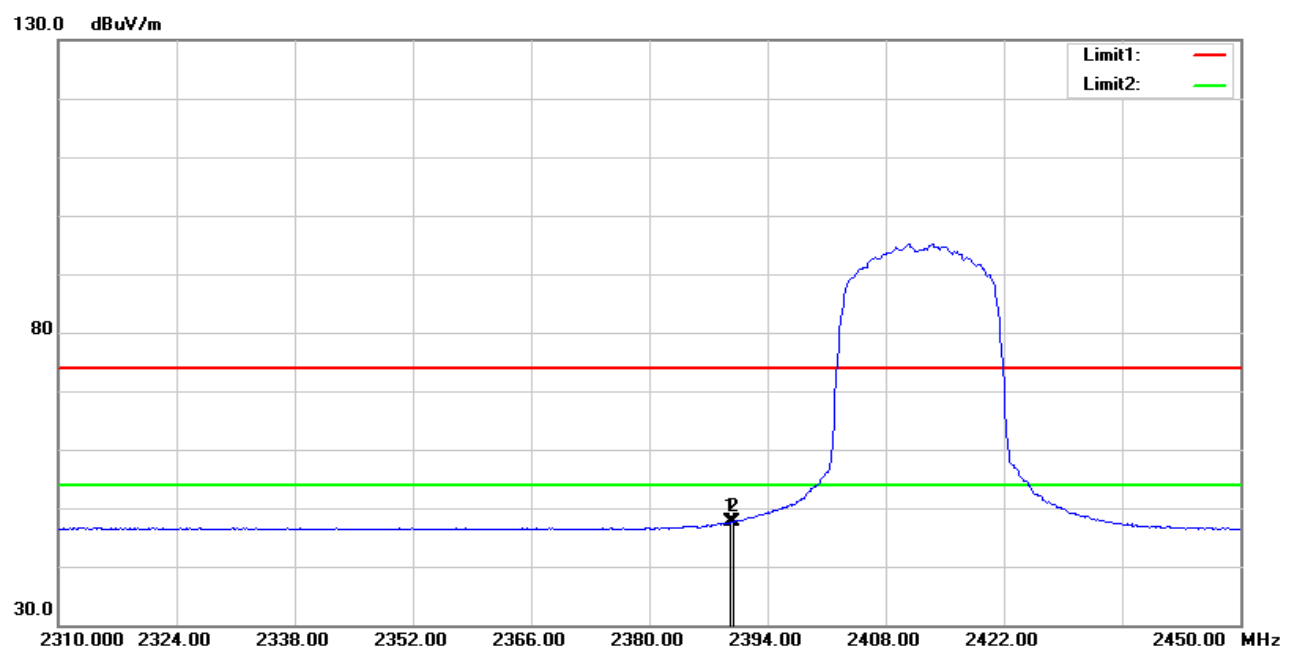
MIMO-AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2412 MHz		
Remark:			



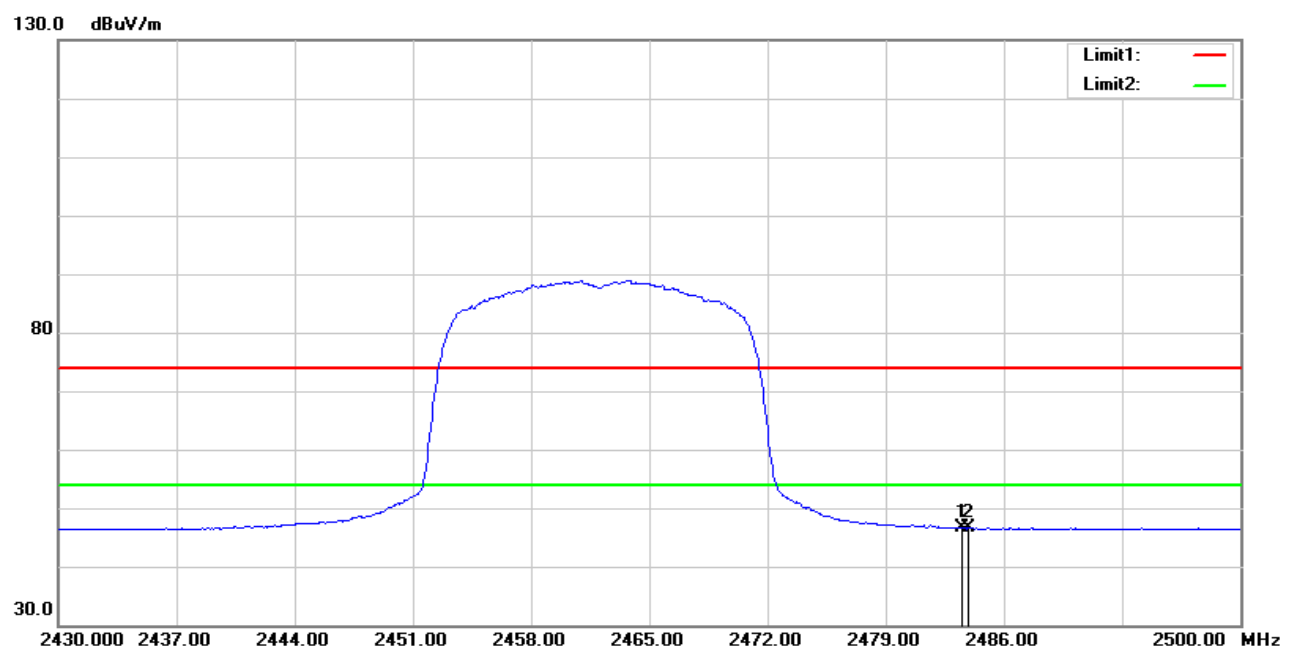
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2389.660	53.22	-6.50	46.72	54.00	-7.28	AVG
2	2390.000	53.07	-6.50	46.57	54.00	-7.43	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2412 MHz		
Remark:			



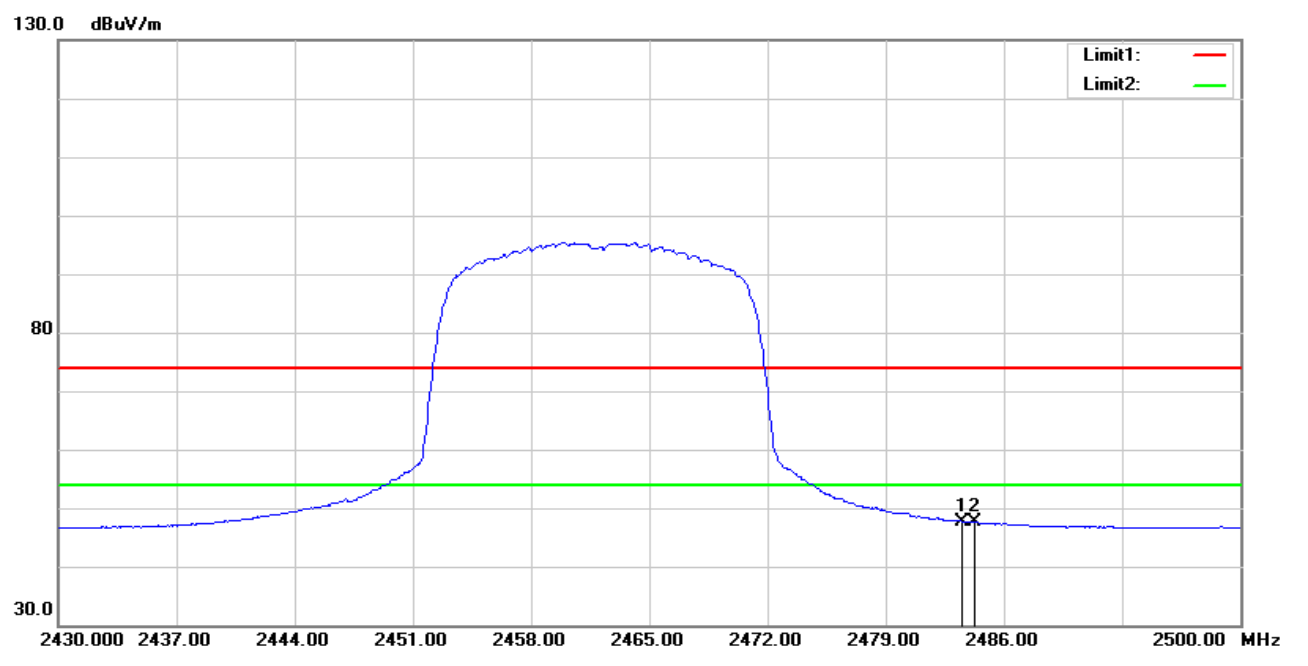
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.520	54.08	-6.50	47.58	54.00	-6.42	AVG
2*	2390.000	54.22	-6.50	47.72	54.00	-6.28	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	802.11n HT20 2462 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	53.14	-6.57	46.57	54.00	-7.43	AVG
2*	2483.900	53.19	-6.57	46.62	54.00	-7.38	AVG

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	802.11n HT20 2462 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	2483.500	54.26	-6.57	47.69	54.00	-6.31	AVG
2	2484.250	54.23	-6.57	47.66	54.00	-6.34	AVG

5.3. Conducted Test Results

Duty cycle
Reference Appendix A / Appendix B

Maximum Conducted Output Power Measurement
Reference Appendix A

Maximum Power Spectral Density Measurement
Reference Appendix A / Appendix B

6 dB RF Bandwidth Measurement
Reference Appendix A / Appendix B

Out of Band Conducted Emissions
Reference Appendix B

Out of Band Conducted Emissions Measurement
Reference level
Reference Appendix B

Conducted Band Edge
Reference Appendix B

---END---