TEST REPORT

Reference No......	:	WTX24X06150939W001
FCC ID.....	:	2BHEF-VR2
Applicant.....	:	SHENZHEN VIEWPT-INNOVATIONS TECHNOLOGY CO., LTD
Address.....	:	A1, 4th Floor, Block A, Building 13, Lehui Science and Technology Innovation Center, No. 489 Jihua Road, Bantian Street, Longgang District, Shenzhen, Guangdong, China
Manufacturer.....	:	The same as Applicant
Address.....	:	The same as Applicant
Product Name.....	:	Realia
Model No......	:	VR2
Standards.....	:	FCC Part 15.407
Date of Receipt sample.....	:	2024-06-27
Date of Test.....	:	2024-06-27 to 2024-09-04
Date of Issue.....	:	2024-09-04
Test Report Form No......	:	WTX_Part 15_407W
Test Result.....	:	**Pass**

Remarks:
The 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 approver.

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Report version

Version No.	Date of issue	Description
Rev.00	2024-09-04	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Realia
Trade Name:	/
Model No.:	VR2
Adding Model(s):	/
Rated Voltage:	Battery DC7.4V
Battery Capacity:	1900mAh
Power Adapter:	Power PD 30W Input:AC100-240V 50/60Hz 1A Output:DC5V5A;9V2A;12V2.5A 30W
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Support Standards:	802.11a, 802.11n(HT20) , 802.11n-HT40, 802.11ac-VHT20/40/80, 802.11ax-HE20/40/80
Frequency Range:	5180-5240MHz, 5745-5825MHz
Max. RF Output Power:	Antenna 1: 15.96dBm (Conducted) Antenna 2: 15.77dBm (Conducted)
Type of Modulation:	QPSK, 16QAM, 64QAM;256QAM; 1024QAM
Type of Antenna:	FPC antenna
Antenna Gain:	5180-5240MHz Antenna 1: 2.18dBi; Antenna 2: 3.53dBi 5745-5825MHz Antenna 1: 3.16dBi; Antenna 2: 4.21dBi
Note The Antenna Gain is provided by the customer and can affect the validity of results.	

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.407: General technical requirements.
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
KDB789033 D02 v02r01: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-Nii) Devices Part 15, Subparte.
KDB662911 D01 Multiple Transmitter Output v02r01: Emissions Testing of Transmitters with Multiple Outputs in the Same Band.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, KDB789033 D02 v02r01 The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Table for parameters of Test Software setting

Run commands in the “SecureCRT” serial port tool and follow the instructions given by the manufacturer, you can start to test. During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. Test use the customer default power level, and to measure its highest possible emissions level, more detailed description as follows:

Antenna 1 and Antenna 2

Mode	Test Frequency (MHz)												
	NCB: 20MHz												
	5180	5200	5240	5260	5300	5320	5500	5580	5700	5720	5745	5785	5825
802.11a 6Mbps	15	15	15	/	/	/	/	/	/	/	15	15	15
802.11n-HT20 MCS0	14	14	14	/	/	/	/	/	/	/	14	14	14
802.11ac-VHT20 MCS0	14	14	14	/	/	/	/	/	/	/	14	14	14
802.11ax-HE20 MCS0	14	14	14	/	/	/	/	/	/	/	14	14	14

Mode	NCB: 40MHz									
	5190	5230	5270	5310	5510	5550	5670	5710	5755	5795
802.11n-HT40 MCS0	13	13	/	/	/	/	/	/	13	13
802.11ac-VHT40 MCS0	13	13	/	/	/	/	/	/	13	13
802.11ax-HE40 MCS0	13	13	/	/	/	/	/	/	13	13

Mode	NCB: 80MHz					
	5210	5290	5530	5610	5690	5775
802.11ac-VHT80 MCS0/Nss2	13	/	/	/	/	13
802.11ax-HE80 MCS0/Nss2	13	/	/	/	/	13

1.5 EUT Operating during test

EUT was programmed to be in continuously transmitting mode. During the test, EUT operation to normal function and programs under Android were executed.

1.6 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101）

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. 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 mai ntained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

1.7 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11a	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM2	802.11n-HT20	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM3	802.11ac-VHT20	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM4	802.11ax-HE20	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM5	802.11n-HT40	5190MHz,5230MHz,5755MHz,5795MHz
TM6	802.11ac-VHT40	5190MHz,5230MHz,5755MHz,5795MHz
TM7	802.11ax-HE40	5190MHz,5230MHz,5755MHz,5795MHz
TM8	802.11ac-VHT80	5210MHz,5775MHz
TM9	802.11ax-HE80	5210MHz,5775MHz
Note1 : All test modes (different data rate and different modulation) are performed, but only the worst case is recorded in this report; 802.11ac-VHT20, 802.11ac-VHT40 covered by 802.11n-HT20 and 802.11n-HT40. Note 2: The 5GHz WIFI has two antennas and support Multiple Outputs for 802.11n/ac/ax mode for this report; For 5150-5250MHz: Antenna 1 Gain is 2.18dBi; Antenna 2 Gain is 3.53dBi; For 5725-5850MHz: Antenna 1 Gain is 3.16dBi; Antenna 2 Gain is 4.21dBi; According to KDB 662911, for same directional gain: For 5150-5250MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi=5.89dBi For 5725-5850MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi=6.71dBi		

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	45-75 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Type-C Cable	1.0	Shielded	With Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	HONOR	Nbl-WAQ9HNRP	/

1.8 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Power Spectral Density	Conducted	±1.8dB
Conducted Spurious Emission	Conducted	±2.17dB
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB
Transmitter Spurious Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-18GHz ±3.92dB

1.9 Test Equipment List and Details

Fixed asset Number	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
WTXE1041A 1001	Communication Tester	Rohde & Schwarz	CMW500	148650	2024-02-24	2025-02-23
WTXE1005A 1005	Spectrum Analyzer	Agilent	N9020A	US47140102	2024-03-19	2025-03-18
WTXE1084A 1001	Spectrum Analyzer	Agilent	N9020A	MY54320548	2024-02-24	2025-02-23
WTXE1004A 1-001	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2024-02-27	2025-02-26
☐ Chamber A: Below 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
WTXE1007A 1001	Amplifier	HP	8447F	2805A03475	2024-02-24	2025-02-23
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
WTXE1010A 1006	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2024-02-24	2025-02-23
☐ Chamber A: Above 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
WTXE1065A 1001	Amplifier	C&D	PAP-1G18	2002	2024-02-27	2025-02-26
WTXE1010A 1005	Horn Antenna	ETS	3117	00086197	2024-02-26	2025-02-25
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
☐ Chamber B:Below 1GHz						
WTXE1010A 1006	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
WTXE1038A 1001	Amplifier	Agilent	8447D	2944A10457	2024-02-24	2025-02-23

WTXE1001A 1002	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2024-02-24	2025-02-23
☒ Chamber C:Below 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
WTXE1010A 1013-1	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
WTXE1007A 1002	Amplifier	HP	8447F	2944A038 69	2024-02-24	2025-02-23
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
☒ Chamber C: Above 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
WTXE1103A 1005	Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
WTXE1103A 1006	Amplifier	Tonscend	TAP01018050	AP22E806 235	2024-02-27	2025-02-26
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
☒ Conducted Room 1#						
WTXE1104A 1029	EMI Test Receiver	Rohde & Schwarz	ESCI	100525	2023-12-12	2024-12-11
WTXE1002A 1001	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2024-02-24	2025-02-23
WTXE1003A 1001	AC LISN	Schwarz beck	NSLK8126	8126-279	2024-02-24	2025-02-23
☒ Conducted Room 2#						
WTXE1001A 1004	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2024-02-24	2025-02-23
WTXE1003A 1003	LISN	Rohde & Schwarz	ENV 216	100097	2024-02-24	2025-02-23

Software List			
Description	**Manufacturer**	**Model**	**Version**
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 1#)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 2#)*	SKET	EMC-I	V2.0

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§15.203; §15.405	Antenna Requirement	Compliant
15.407 (c)	Automatically Discontinue Transmission	Compliant
§15.207; §15.407(b)(6)	Conducted Emission	Compliant
§15.407(a)(1),(2)	Power Spectral Density	Compliant
§15.407(e)	Emission Bandwidth and Occupied Bandwidth	Compliant
§15.407(a)(1),(2)	Maximum Conducted Output Power	Compliant
§15.407(b)(1),(2),(3),(4)	Undesirable emission	Compliant
§15.205; §15.407(b)(1),(2),(3)	Radiated Emission	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.407(h)	Dynamic Frequency Selection (DFS)	Compliant

N/A: Not applicable.

3. Antenna Requirement

3.1 Standard Applicable

According to FCC Part 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Evaluation Information

This product has two FPC antennas, fulfill the requirement of this section.

4. Automatically Discontinue Transmission

4.1 Standard Applicable

According to FCC Part 15.407(c), the device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

4.2 Summary of Test Results

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

5. Power Spectral Density

5.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25GHz.
(iv) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10 log B, where B is the 26dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(3) For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.2 Test Procedure

According to 789033 D02 v02r01 General UNII Test Procedures New Rules v02, the following is the measurement procedure.
For devices operating in the bands 5.15-5.25GHz, 5.25-5.35GHz, and 5.47-5.725GHz, the above procedures make use of 1MHz RBW to satisfy directly the 1MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85GHz, the rules specify a measurement bandwidth of 500kHz. Many spectrum analyzers do not have 500kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1MHz, or 500kHz, “provided that the measured power is integrated over the full

reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1MHz, or 500kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500kHz) and integrated over 1 MHz, or 500kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100kHz for the sections 5.c) and 5.d) above, since RBW=100kHZ is available on nearly all spectrum analyzers.

5.3 Summary of Test Results/Plots

Please refer to Appendix E

6. Emission Bandwidth and Occupied Bandwidth

6.1 Standard Applicable

According to 15.407(a) and (e):

(1) For the band 5.15-5.25GHz.
(iv) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10 log B, where B is the 26dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(3) For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(e) Within the 5.725-5.85GHz band, the minimum 6dB bandwidth of U-NII devices shall be at least 500kHz.

6.2 Test Procedure

According to 789033 D02 v02r0r section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.

c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. Minimum Emission Bandwidth for the band 5.725-5.85GHz
Section 15.407(e) specifies the minimum 6dB emission bandwidth of at least 500KHz for the band 5.715-5.85GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) 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.
Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth
The 99-percent 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. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v02r01 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:
1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 * RBW
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).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. 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% occupied bandwidth is the difference between these two frequencies.

6.3 Summary of Test Results/Plots

Emission Bandwidth Please refer to Appendix A
Occupied Bandwidth Please refer to Appendix B

7. Maximum Conducted Output Power

7.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25GHz.
(iv) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10 log B, where B is the 26dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(3) For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

7.2 Test Procedure

According to KDB789033 D02 v02r01 section E, the following is the measurement procedure.

(i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1MHz.

(iii) Set VBW ≥ 3MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that

narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

7.3 Summary of Test Results/Plots

Please refer to Appendix D

8. Radiated Spurious Emissions

8.1 Standard Applicable

According to §15.407(b), undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25GHz band: All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of −27dBm/MHz.

(2) For transmitters operating in the 5.25-5.35GHz band: All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of −27dBm/MHz.

(3) For transmitters operating in the 5.47-5.725GHz band: All emissions outside of the 5.47-5.725GHz band shall not exceed an e.i.r.p. of −27dBm/MHz.

(4) For transmitters operating in the 5.725-5.85GHz band:

(i) All emissions shall be limited to a level of −27dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10dBm/MHz at 25MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6dBm/MHz at 5MHz above or below the band edge, and from 5MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

According to §15.407(b)(6), Unwanted emissions below 1GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

According to §15.407(b)(7), The provisions of §15.205 apply to intentional radiators operating under this section.

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If radiated measurements are performed, field strength is then converted to EIRP as follows:

EIRP = ((E*d)^2) / 30

where:

• E is the field strength in V/m;

• d is the measurement distance in meters;

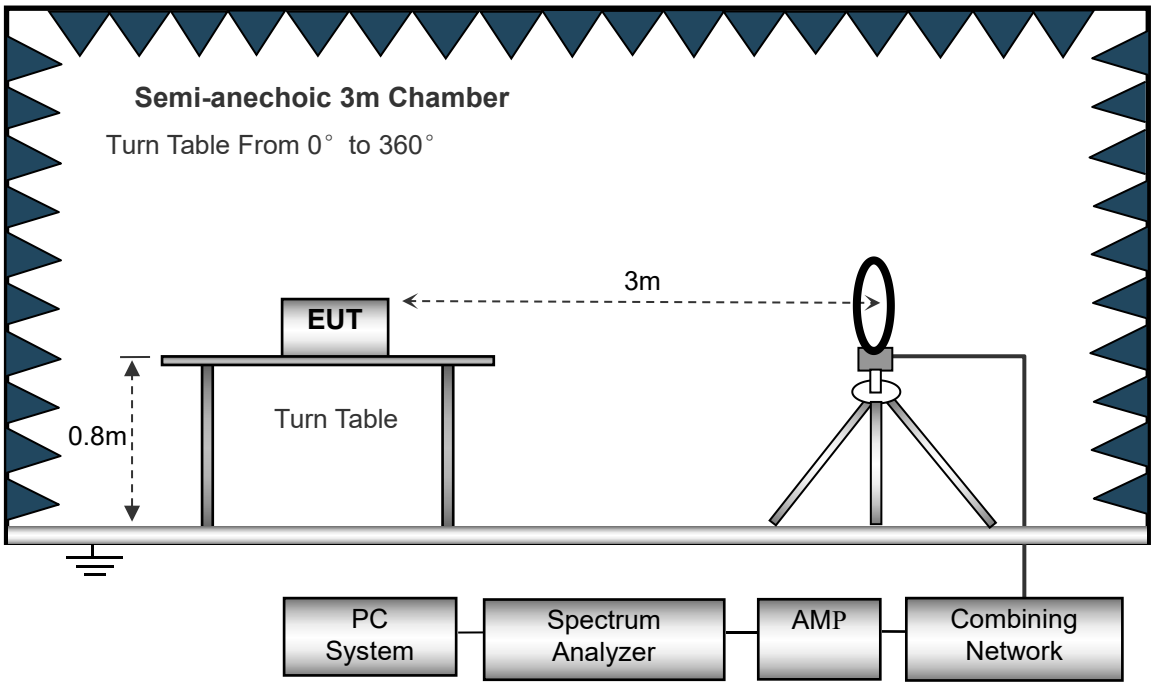
• EIRP is the equivalent isotropically radiated power in watts.

8.2 Test Procedure

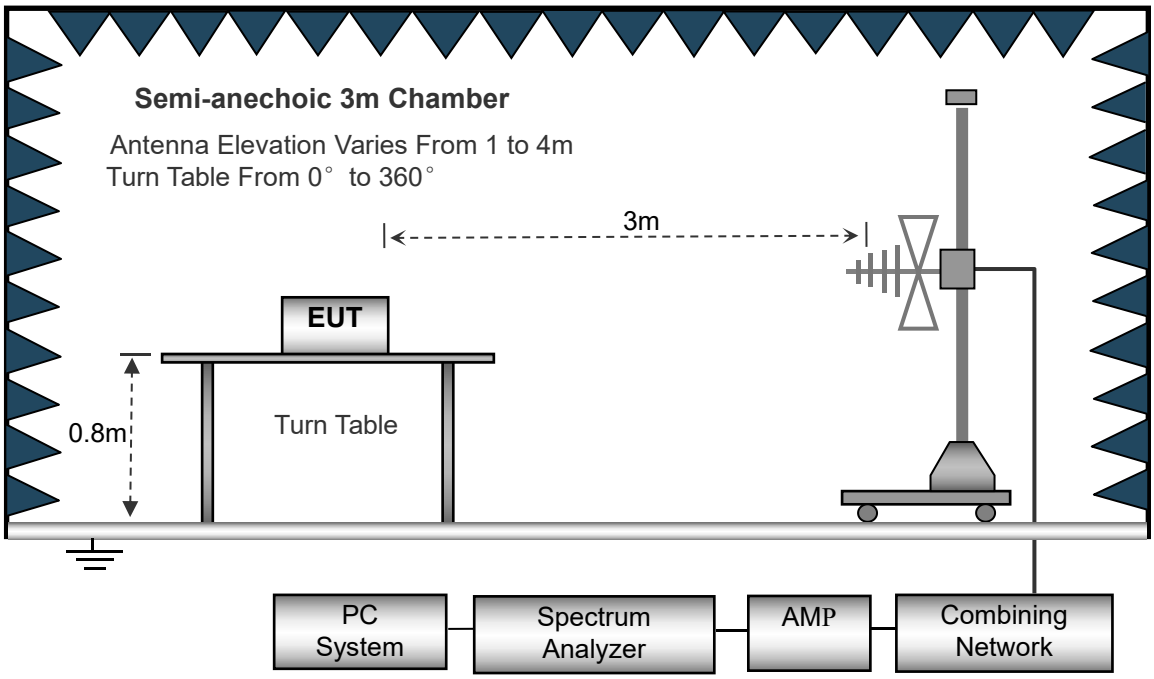
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.407(b)(6) and FCC Part 15.209 Limit..

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle. The spacing between the peripherals was 10cm.

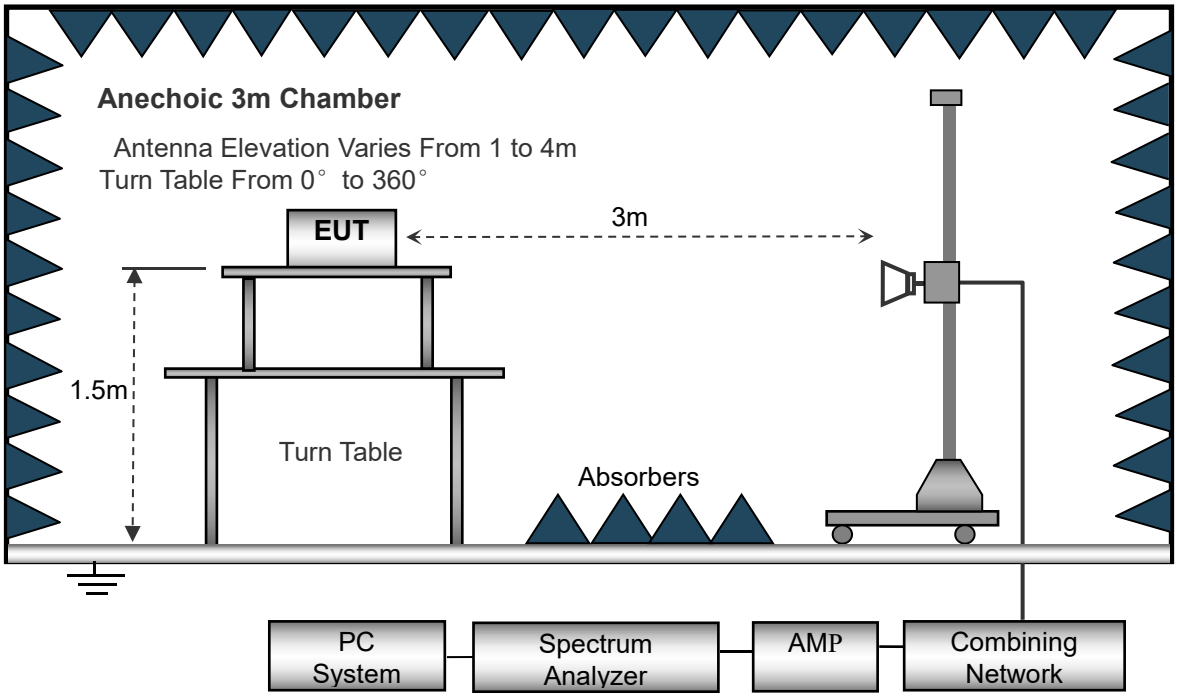
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1GHz.



8.3 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:
RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:
RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

8.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15 Limit

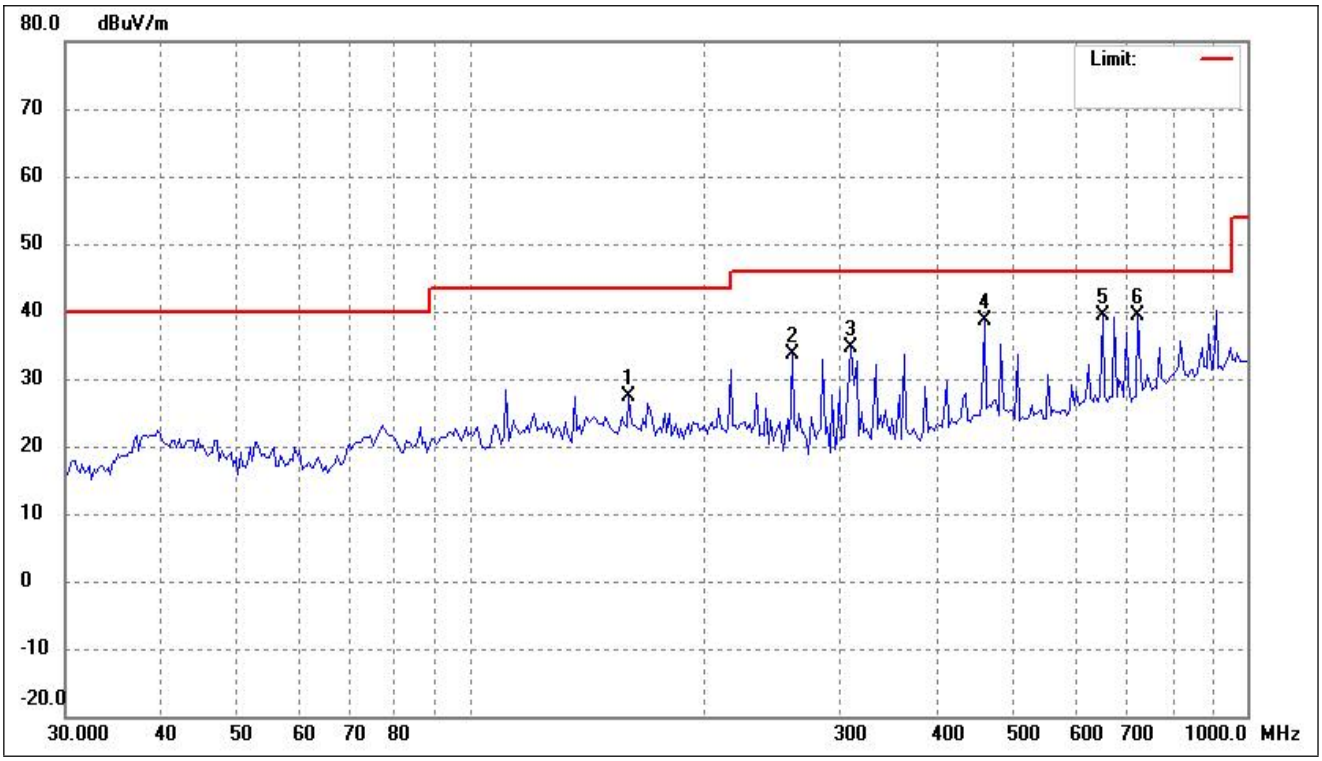
8.5 Summary of Test Results/Plots

Note: *this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

- Spurious Emission From 30MHz to 1GHz

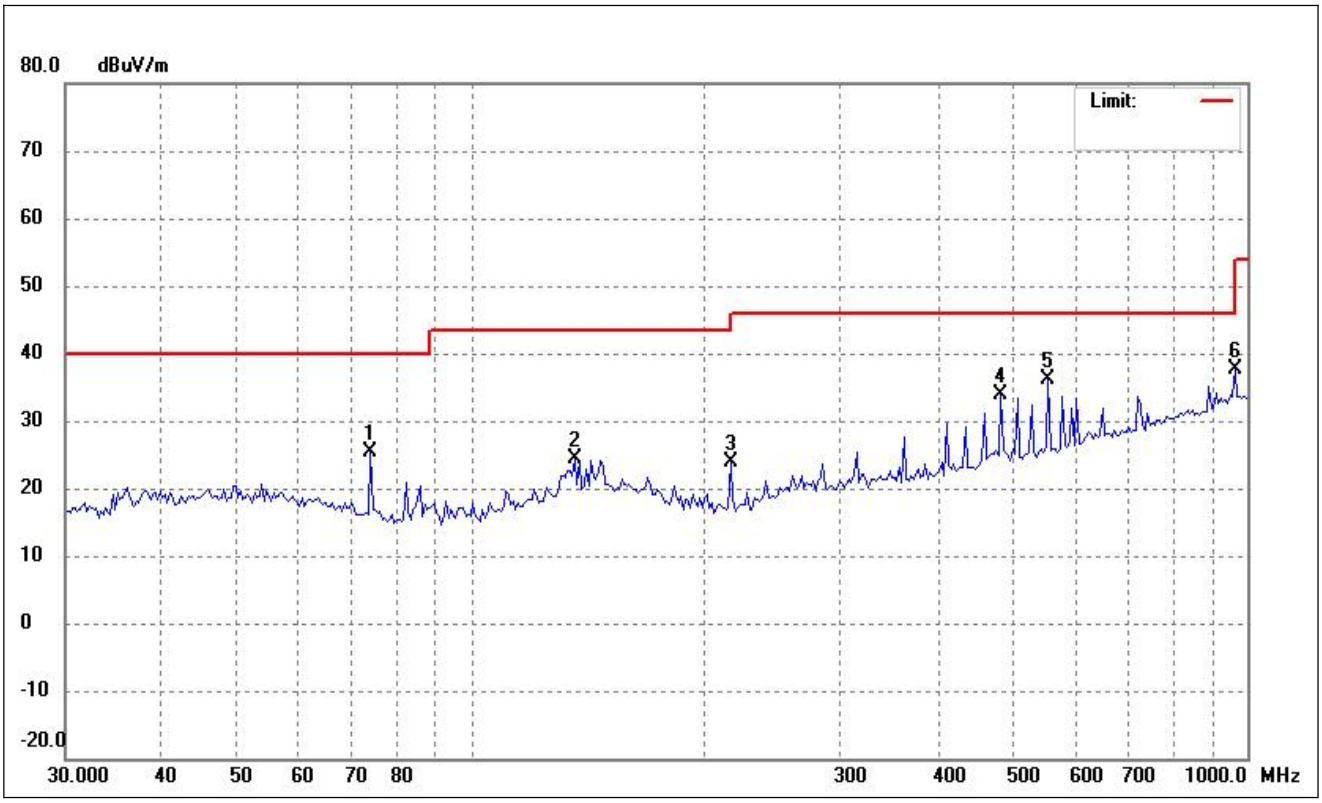
- Antenna 1
- 5150-5250MHz

802.11a			
Test Channel	5180MHz(Worst case)	Polarity:	Horizontal



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	159.7584	35.33	-8.05	27.28	43.50	-16.22	-	-	peak
2	259.4433	42.91	-9.31	33.60	46.00	-12.40	-	-	peak
3	309.2708	42.40	-7.66	34.74	46.00	-11.26	-	-	peak
4	458.3987	43.64	-5.12	38.52	46.00	-7.48	-	-	peak
5	651.3830	40.94	-1.54	39.40	46.00	-6.60	-	-	peak
6	723.7930	39.93	-0.49	39.44	46.00	-6.56	-	-	peak

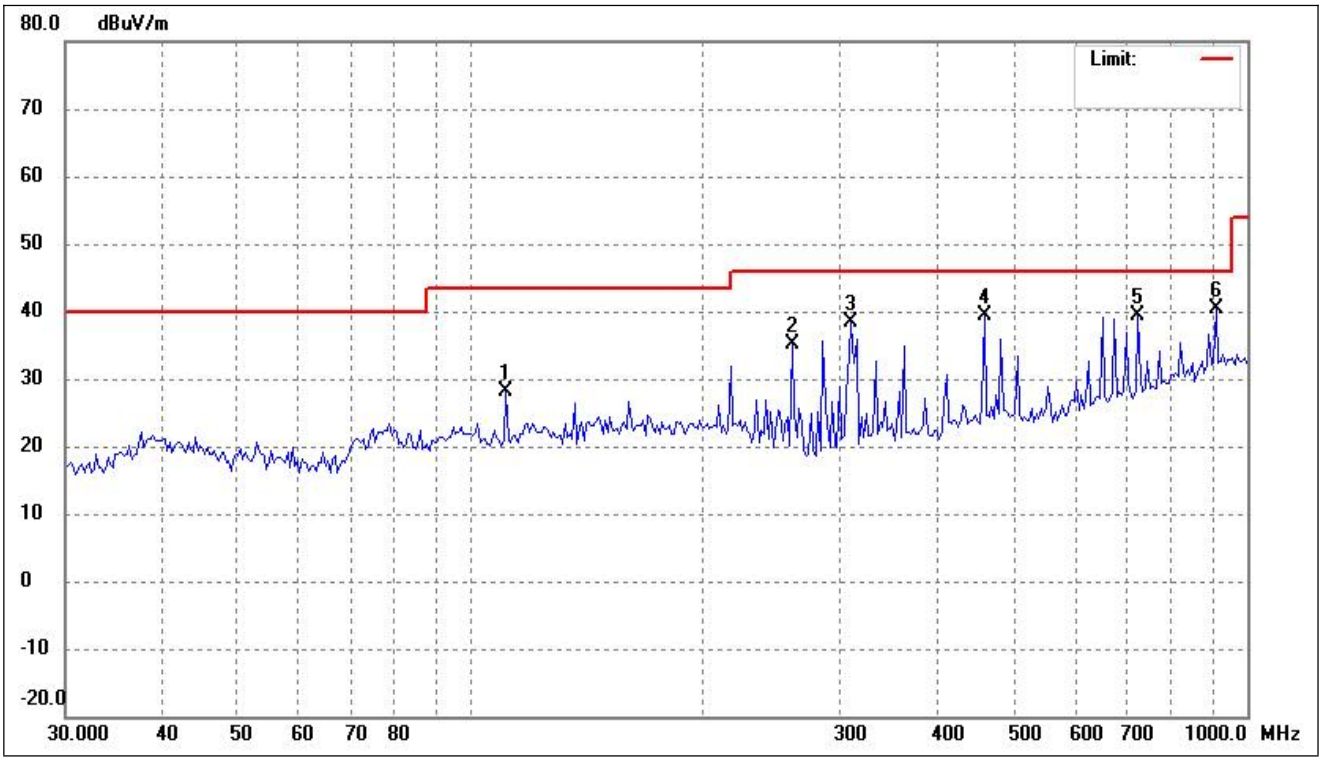
802.11a			
Test Channel	5180MHz(Worst case)	Polarity:	Vertical



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	36.63	-11.18	25.45	40.00	-14.55	-	-	peak
2	135.9163	33.46	-9.07	24.39	43.50	-19.11	-	-	peak
3	216.1197	35.55	-11.55	24.00	46.00	-22.00	-	-	peak
4	481.5112	38.71	-4.94	33.77	46.00	-12.23	-	-	peak
5	554.1708	39.65	-3.43	36.22	46.00	-9.78	-	-	peak
6	965.4742	34.30	3.37	37.67	54.00	-16.33	-	-	peak

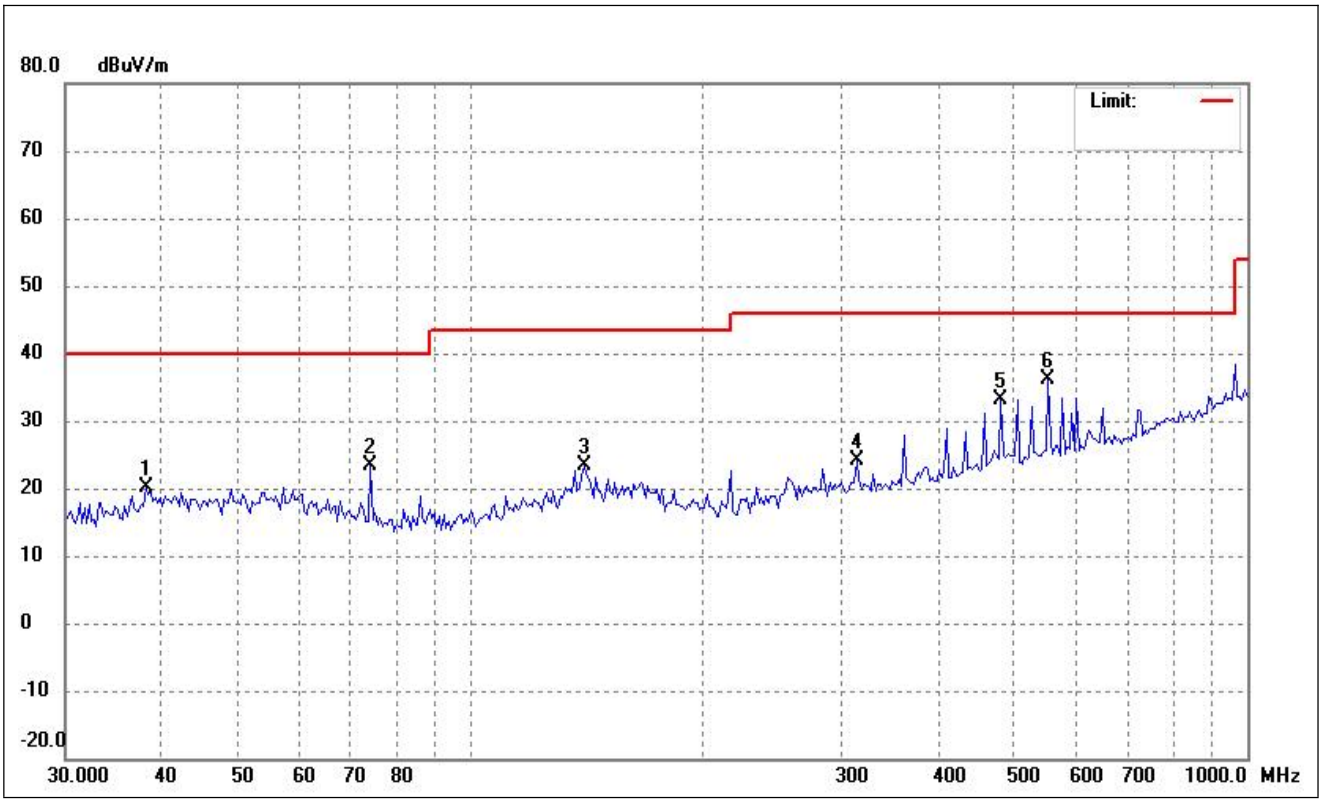
➢ 5150-5250MHz

802.11a			
Test Channel	5745MHz(Worst case)	Polarity:	Horizontal



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	110.8581	39.22	-10.98	28.24	43.50	-15.26	-	-	peak
2	259.4434	44.36	-9.31	35.05	46.00	-10.95	-	-	peak
3	309.2709	45.97	-7.66	38.31	46.00	-7.69	-	-	peak
4	458.3987	44.53	-5.12	39.41	46.00	-6.59	-	-	peak
5	723.7930	39.83	-0.49	39.34	46.00	-6.66	-	-	peak
6	912.6952	37.99	2.40	40.39	46.00	-5.61	-	-	peak

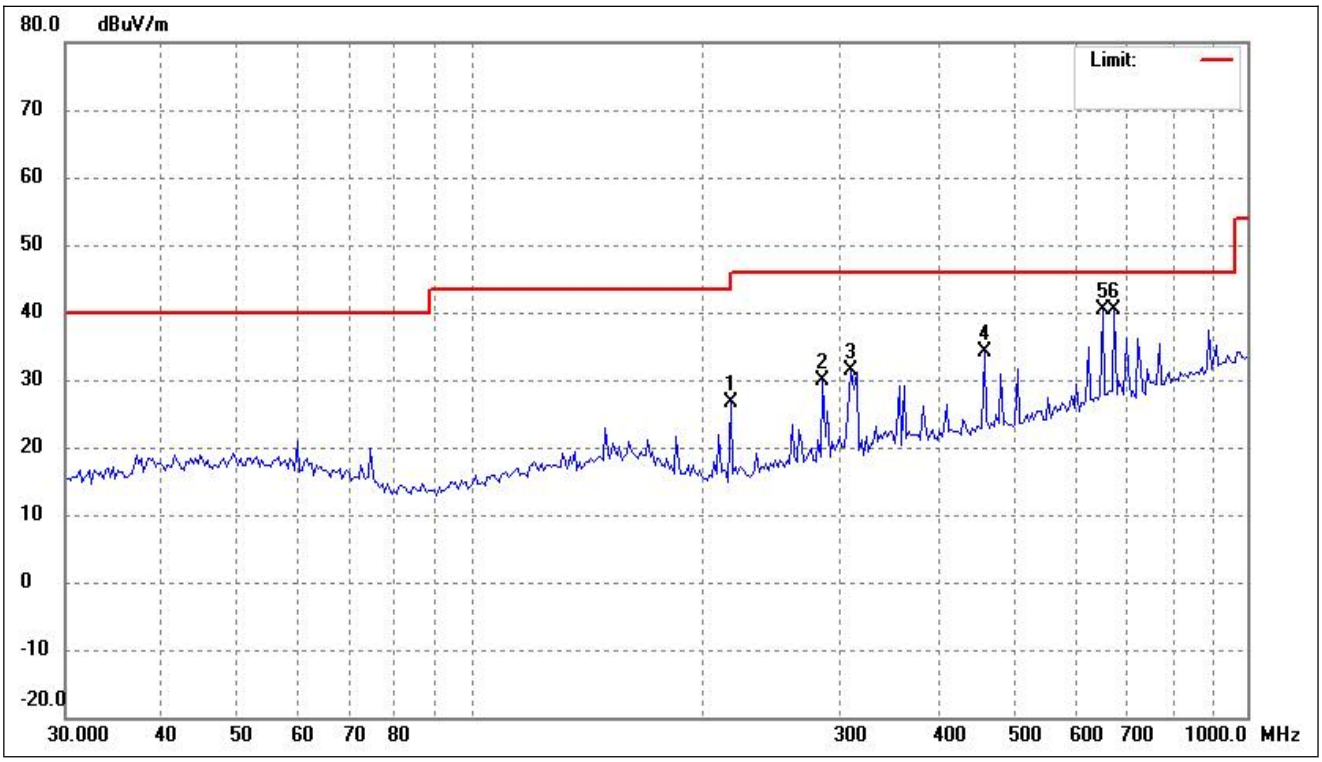
802.11a			
Test Channel	5745MHz(Worst case)	Polarity:	Vertical



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	38.0965	28.42	-8.36	20.06	40.00	-19.94	-	-	peak
2	74.2696	34.62	-11.18	23.44	40.00	-16.56	-	-	peak
3	139.7909	32.33	-8.90	23.43	43.50	-20.07	-	-	peak
4	313.6483	31.67	-7.57	24.10	46.00	-21.90	-	-	peak
5	481.5112	38.00	-4.94	33.06	46.00	-12.94	-	-	peak
6	554.1708	39.57	-3.43	36.14	46.00	-9.86	-	-	peak

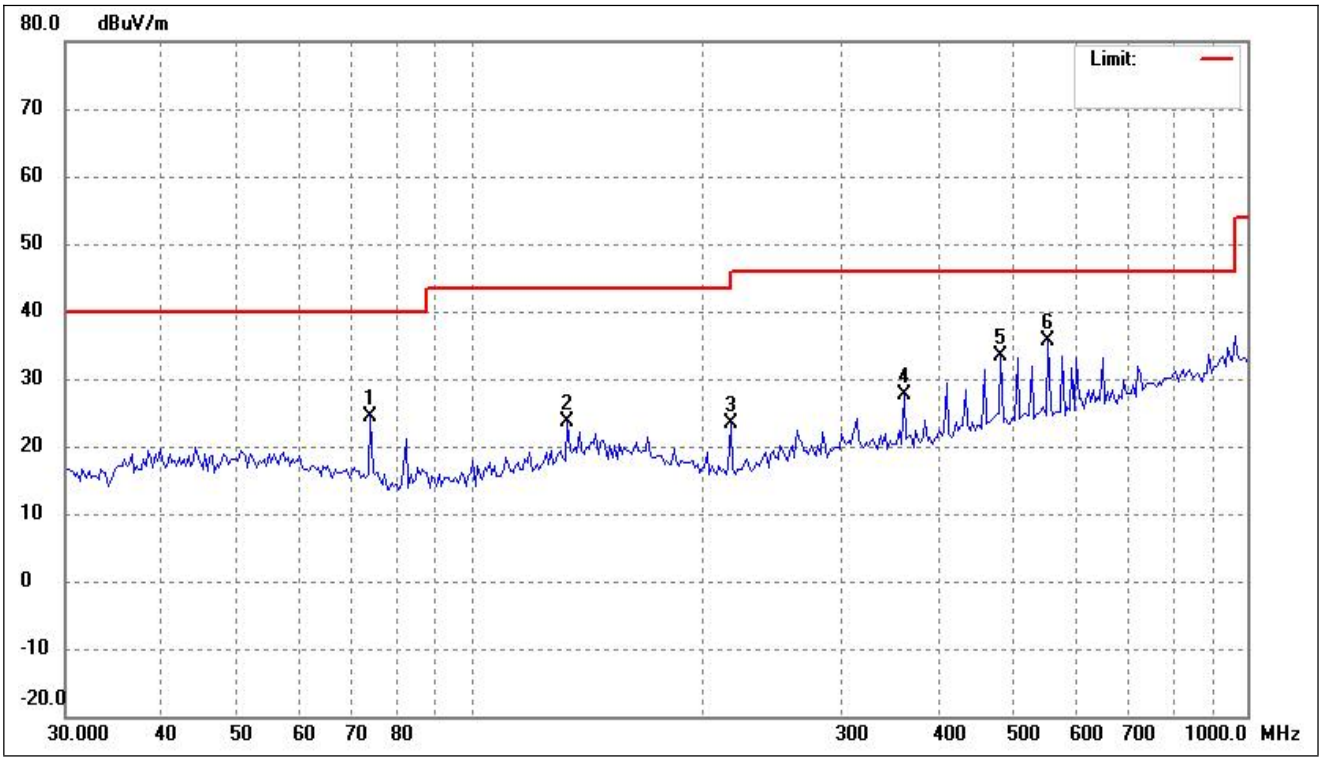
- Antenna 1 & Antenna 2
- 5150-5250MHz

802.11n-HT20			
Test Channel	5180MHz(worst case)	Polarity:	Horizontal



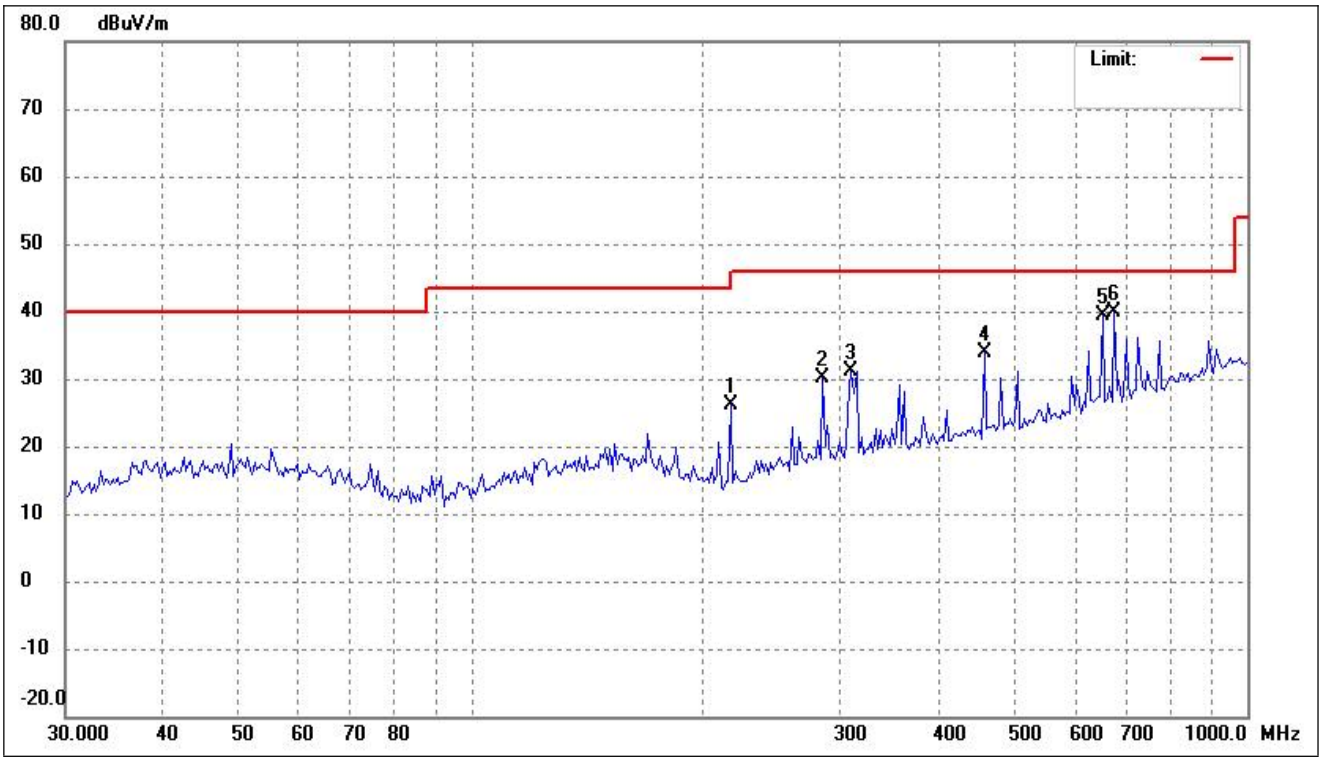
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	38.13	-11.55	26.58	46.00	-19.42	-	-	peak
2	284.2607	38.16	-8.36	29.80	46.00	-16.20	-	-	peak
3	309.2710	39.16	-7.66	31.50	46.00	-14.50	-	-	peak
4	458.3987	39.37	-5.12	34.25	46.00	-11.75	-	-	peak
5	651.3831	42.02	-1.54	40.48	46.00	-5.52	-	-	peak
6	674.6768	41.76	-1.37	40.39	46.00	-5.61	-	-	peak

802.11n-HT20			
Test Channel	5180MHz(worst case)	Polarity:	Vertical



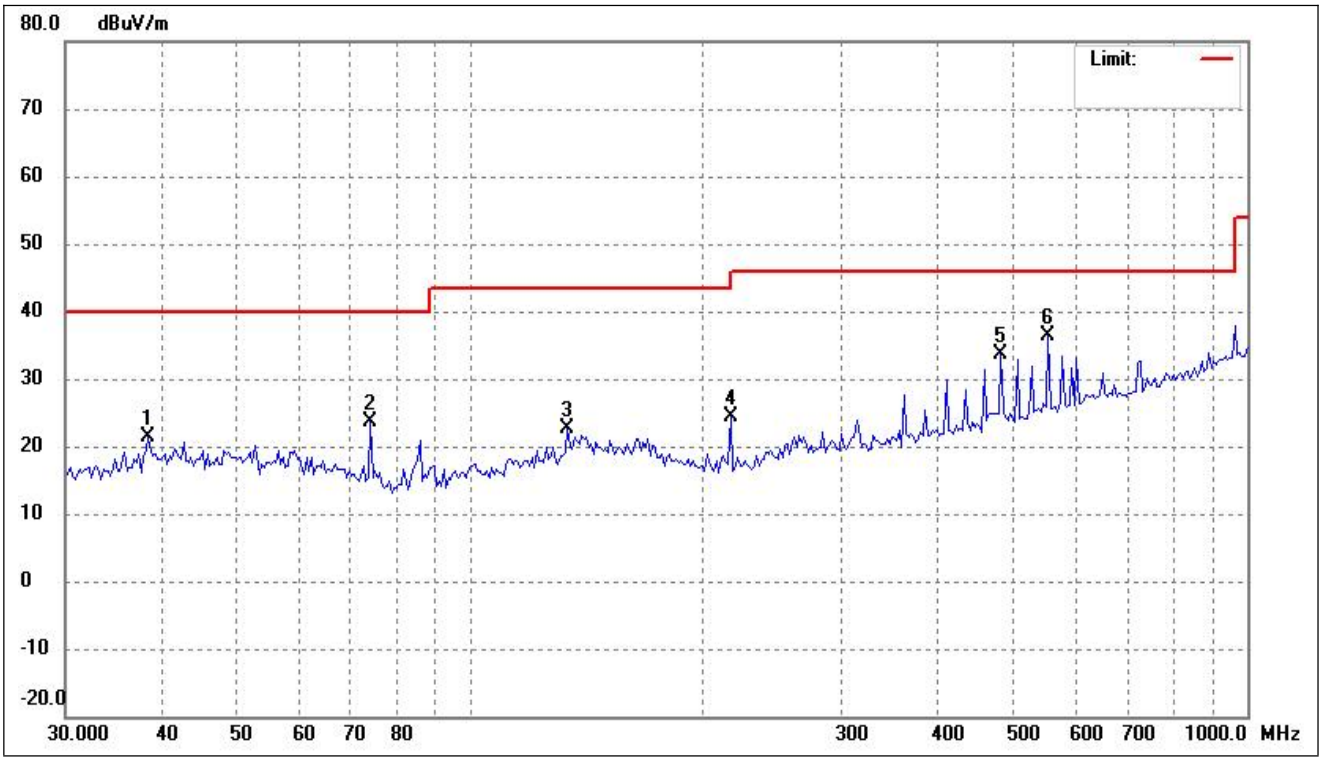
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	35.62	-11.18	24.44	40.00	-15.56	-	-	peak
2	133.0809	32.83	-9.18	23.65	43.50	-19.85	-	-	peak
3	216.1197	34.99	-11.55	23.44	46.00	-22.56	-	-	peak
4	360.9775	34.50	-6.86	27.64	46.00	-18.36	-	-	peak
5	481.5112	38.31	-4.94	33.37	46.00	-12.63	-	-	peak
6	554.1708	39.14	-3.43	35.71	46.00	-10.29	-	-	peak

802.11ac-VHT20			
Test Channel	5180MHz(worst case)	Polarity:	Horizontal



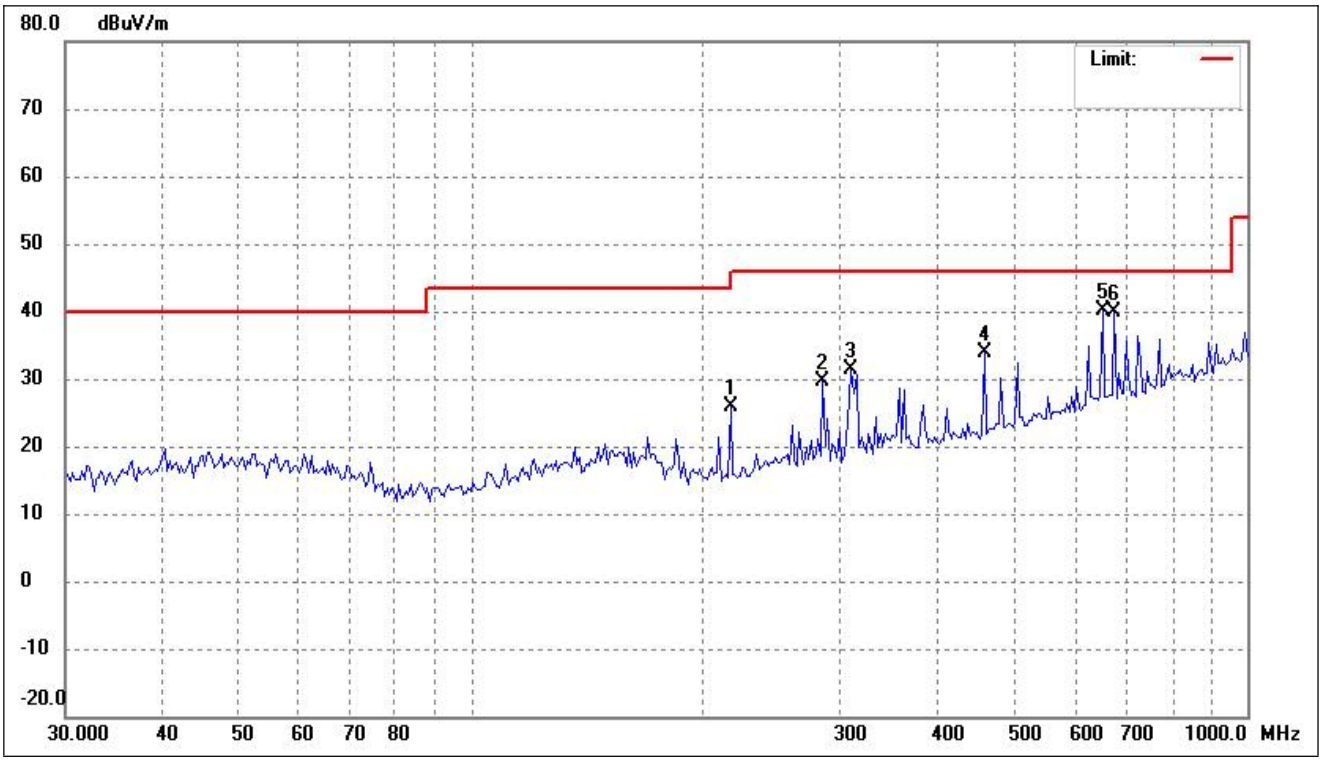
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.76	-11.55	26.21	46.00	-19.79	-	-	peak
2	284.2606	38.60	-8.36	30.24	46.00	-15.76	-	-	peak
3	309.2710	38.86	-7.66	31.20	46.00	-14.80	-	-	peak
4	458.3987	38.88	-5.12	33.76	46.00	-12.24	-	-	peak
5	651.3831	40.95	-1.54	39.41	46.00	-6.59	-	-	peak
6	674.6768	41.23	-1.37	39.86	46.00	-6.14	-	-	peak

802.11ac-VHT20			
Test Channel	5180MHz(worst case)	Polarity:	Vertical



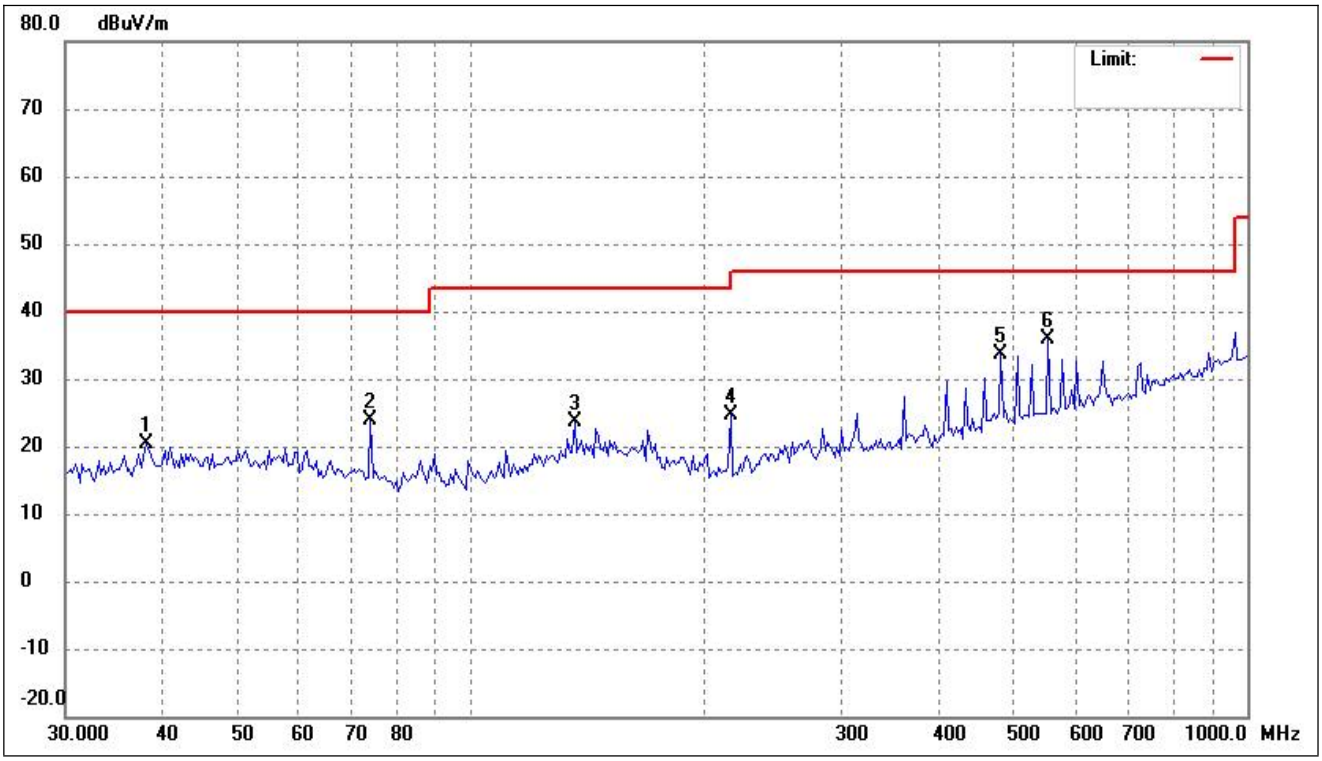
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	38.3651	29.64	-8.30	21.34	40.00	-18.66	-	-	peak
2	74.2696	34.87	-11.18	23.69	40.00	-16.31	-	-	peak
3	133.0809	31.76	-9.18	22.58	43.50	-20.92	-	-	peak
4	216.1197	36.05	-11.55	24.50	46.00	-21.50	-	-	peak
5	481.5112	38.66	-4.94	33.72	46.00	-12.28	-	-	peak
6	554.1708	39.82	-3.43	36.39	46.00	-9.61	-	-	peak

802.11ax-HE20			
Test Channel	5180MHz(worst case)	Polarity:	Horizontal



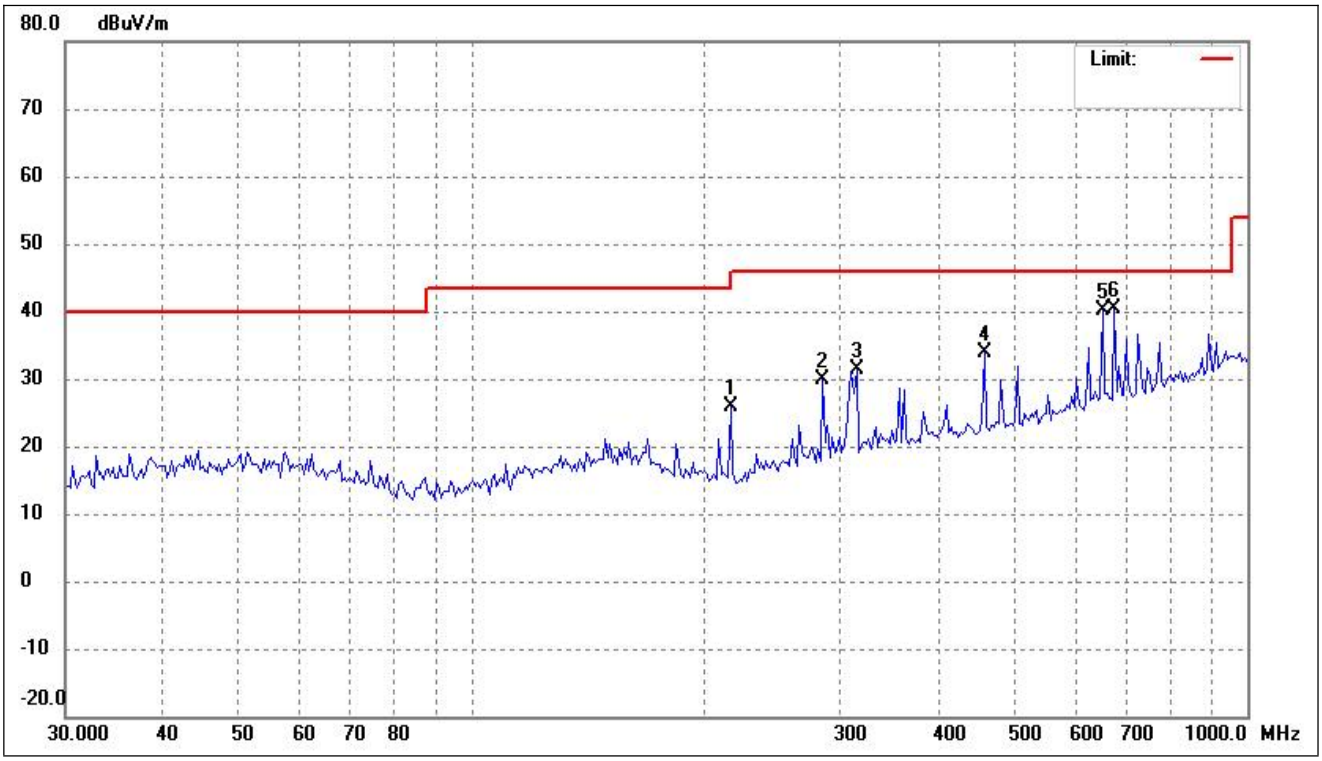
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.50	-11.55	25.95	46.00	-20.05	-	-	peak
2	284.2607	37.99	-8.36	29.63	46.00	-16.37	-	-	peak
3	309.2710	39.11	-7.66	31.45	46.00	-14.55	-	-	peak
4	458.3987	38.98	-5.12	33.86	46.00	-12.14	-	-	peak
5	651.3831	41.72	-1.54	40.18	46.00	-5.82	-	-	peak
6	674.6768	41.29	-1.37	39.92	46.00	-6.08	-	-	peak

802.11ax-HE20			
Test Channel	5180MHz(worst case)	Polarity:	Vertical



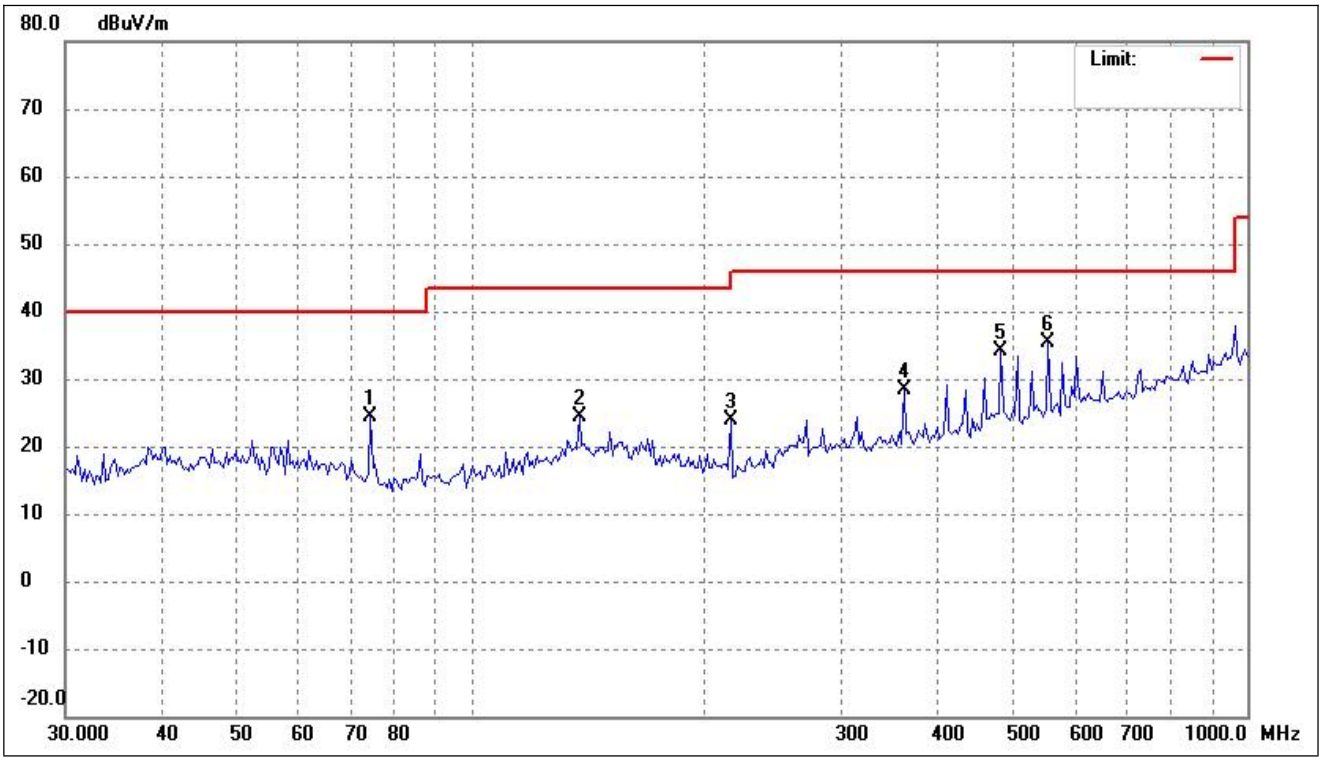
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	38.0965	28.79	-8.36	20.43	40.00	-19.57	-	-	peak
2	74.2696	35.09	-11.18	23.91	40.00	-16.09	-	-	peak
3	135.9163	32.82	-9.07	23.75	43.50	-19.75	-	-	peak
4	216.1197	36.17	-11.55	24.62	46.00	-21.38	-	-	peak
5	481.5112	38.65	-4.94	33.71	46.00	-12.29	-	-	peak
6	554.1708	39.33	-3.43	35.90	46.00	-10.10	-	-	peak

802.11n-HT40			
Test Channel	5190MHz(worst case)	Polarity:	Horizontal



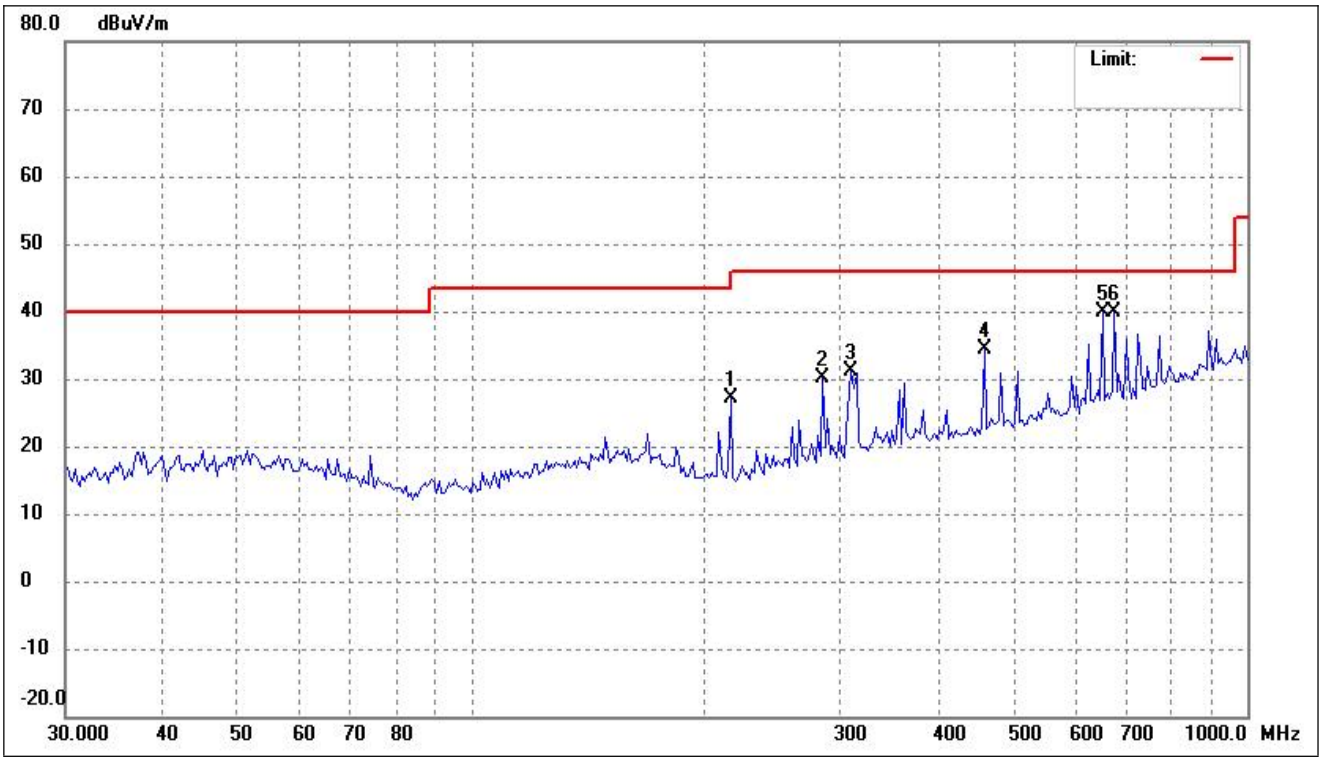
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.50	-11.55	25.95	46.00	-20.05	-	-	peak
2	284.2607	38.13	-8.36	29.77	46.00	-16.23	-	-	peak
3	313.6483	38.88	-7.57	31.31	46.00	-14.69	-	-	peak
4	458.3987	38.92	-5.12	33.80	46.00	-12.20	-	-	peak
5	651.3831	41.64	-1.54	40.10	46.00	-5.90	-	-	peak
6	674.6768	41.73	-1.37	40.36	46.00	-5.64	-	-	peak

802.11n-HT40			
Test Channel	5190MHz(worst case)	Polarity:	Vertical



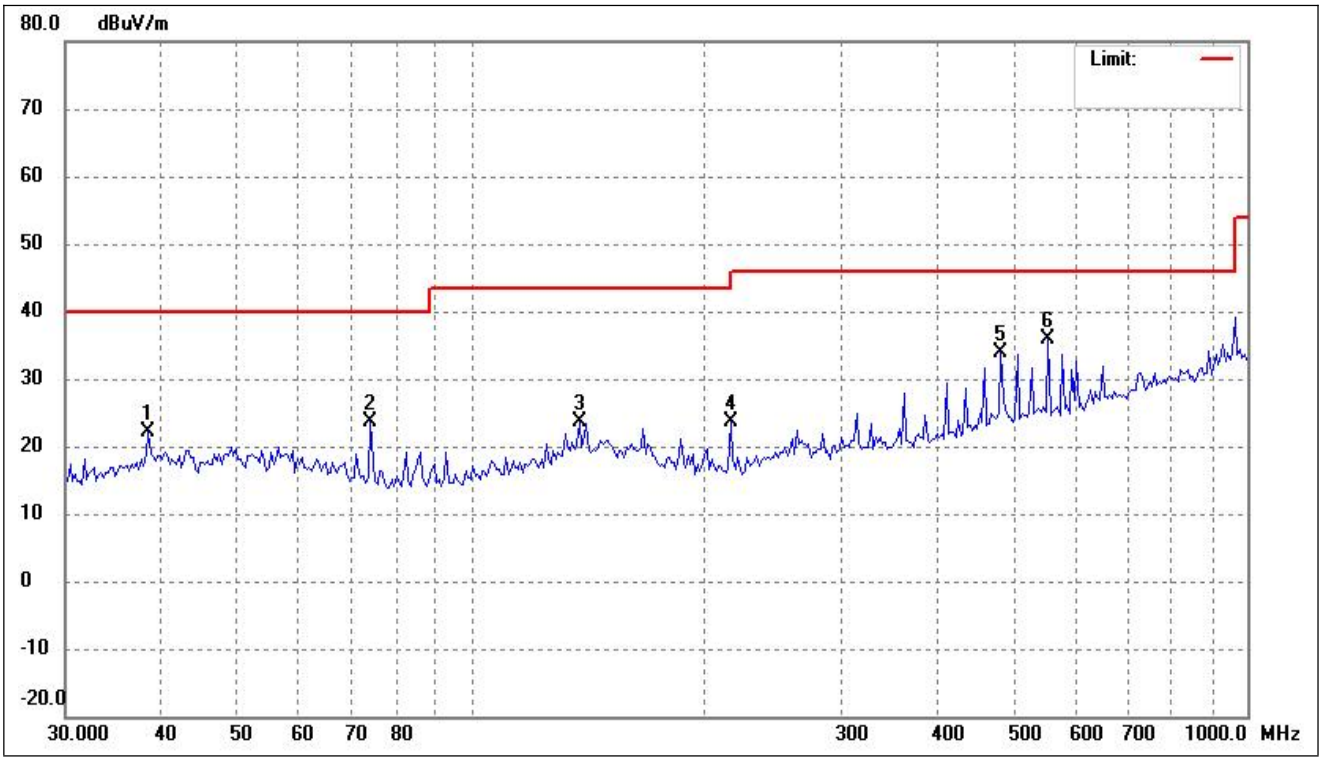
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	35.68	-11.18	24.50	40.00	-15.50	-	-	peak
2	137.8400	33.29	-8.98	24.31	43.50	-19.19	-	-	peak
3	216.1197	35.49	-11.55	23.94	46.00	-22.06	-	-	peak
4	360.9775	35.25	-6.86	28.39	46.00	-17.61	-	-	peak
5	481.5112	39.15	-4.94	34.21	46.00	-11.79	-	-	peak
6	554.1708	38.80	-3.43	35.37	46.00	-10.63	-	-	peak

802.11ac-VHT40			
Test Channel	5190MHz(worst case)	Polarity:	Horizontal



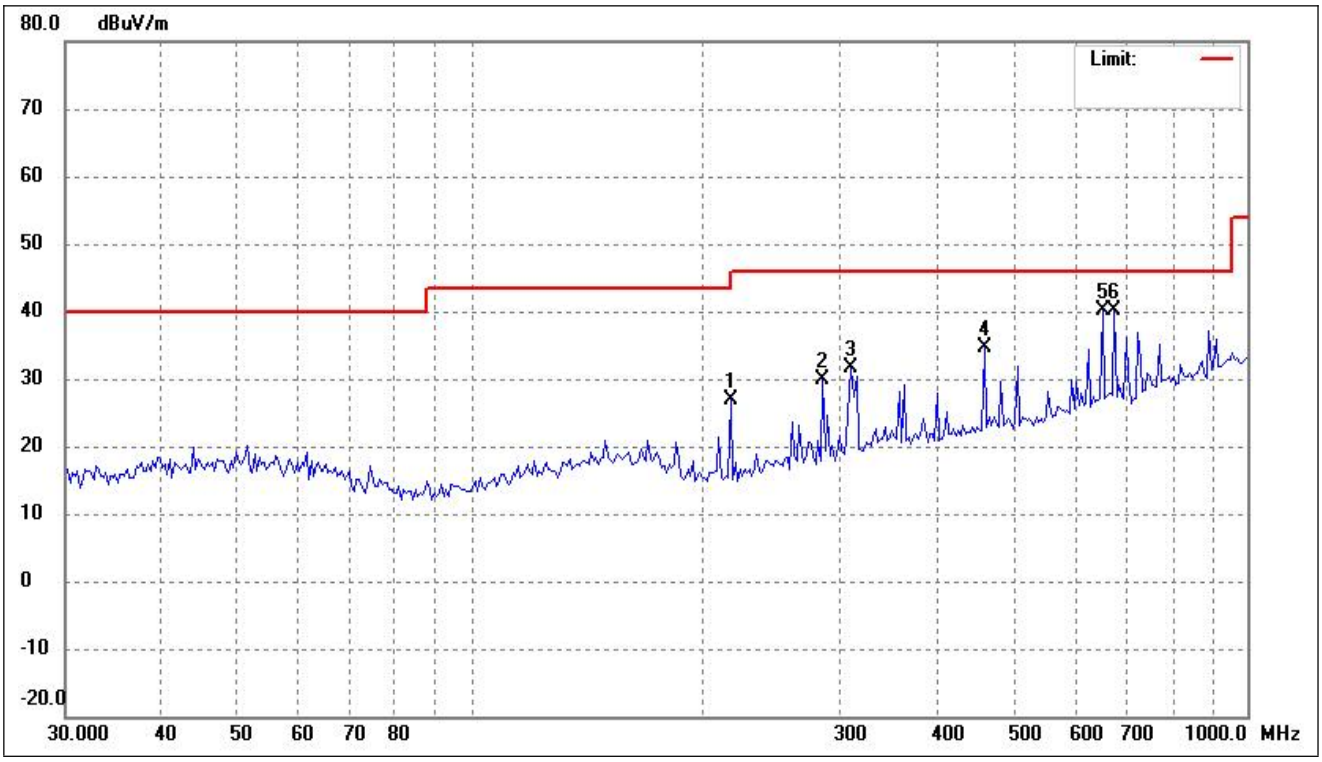
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	38.59	-11.55	27.04	46.00	-18.96	-	-	peak
2	284.2607	38.45	-8.36	30.09	46.00	-15.91	-	-	peak
3	309.2710	38.84	-7.66	31.18	46.00	-14.82	-	-	peak
4	458.3987	39.48	-5.12	34.36	46.00	-11.64	-	-	peak
5	651.3831	41.48	-1.54	39.94	46.00	-6.06	-	-	peak
6	674.6768	41.37	-1.37	40.00	46.00	-6.00	-	-	peak

802.11ac-VHT40			
Test Channel	5190MHz(worst case)	Polarity:	Vertical



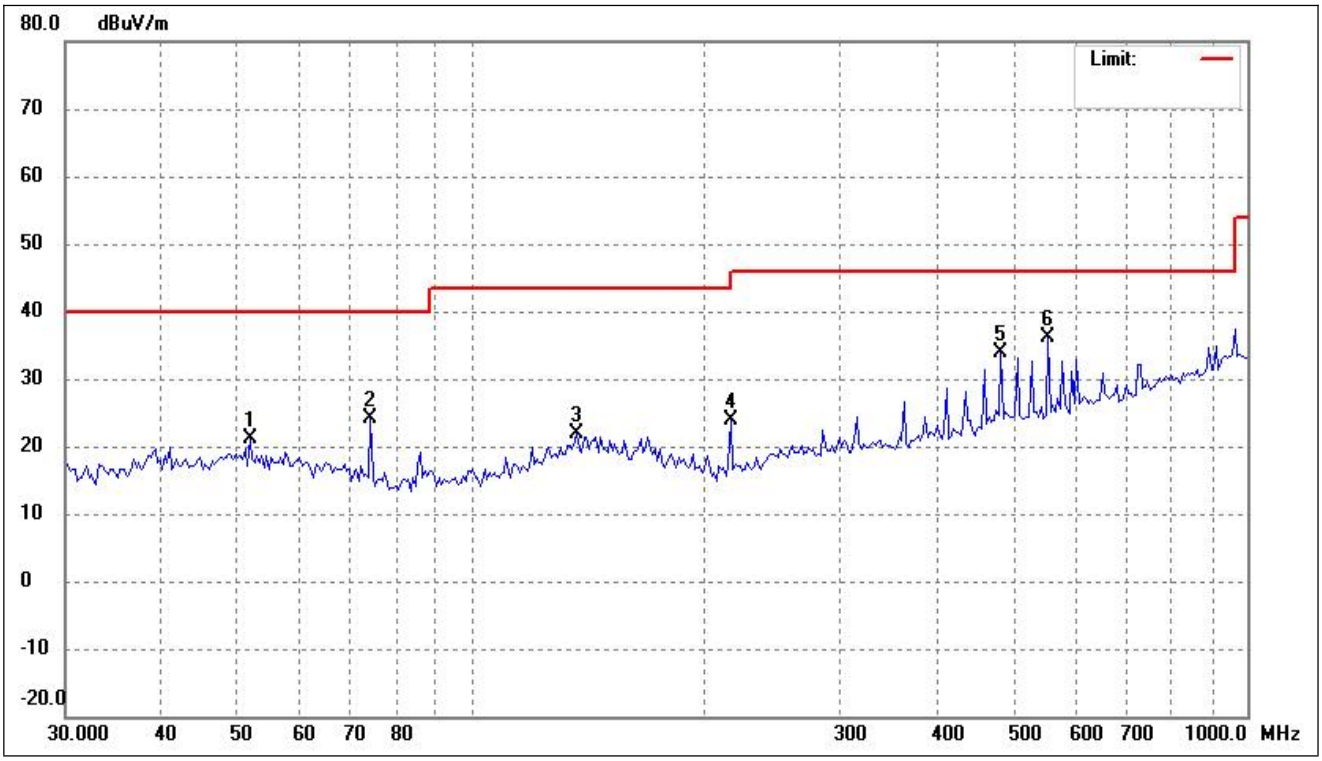
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	38.3651	30.52	-8.30	22.22	40.00	-17.78	-	-	peak
2	74.2696	34.78	-11.18	23.60	40.00	-16.40	-	-	peak
3	137.8400	32.54	-8.98	23.56	43.50	-19.94	-	-	peak
4	216.1197	35.20	-11.55	23.65	46.00	-22.35	-	-	peak
5	481.5112	38.75	-4.94	33.81	46.00	-12.19	-	-	peak
6	554.1708	39.26	-3.43	35.83	46.00	-10.17	-	-	peak

802.11ax-HE40			
Test Channel	5190MHz(worst case)	Polarity:	Horizontal



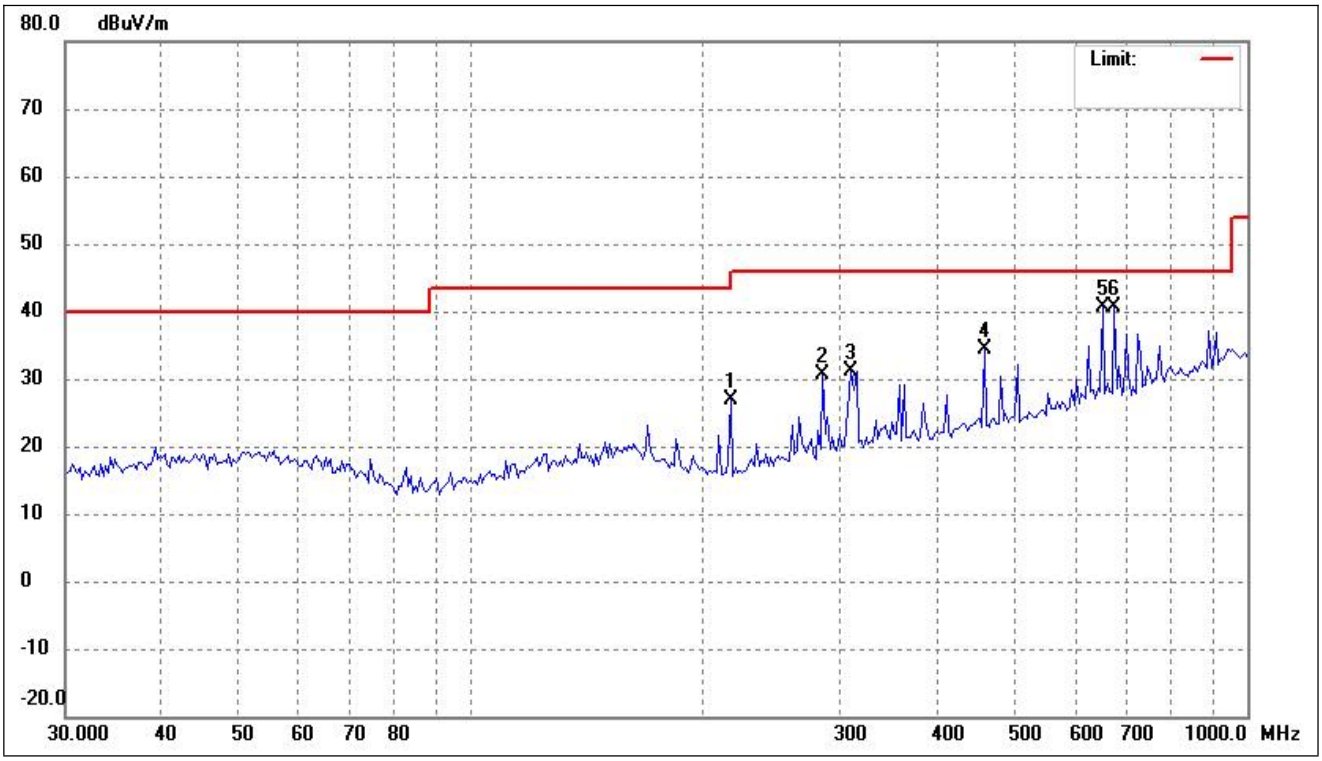
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	38.36	-11.55	26.81	46.00	-19.19	-	-	peak
2	284.2607	38.35	-8.36	29.99	46.00	-16.01	-	-	peak
3	309.2710	39.19	-7.66	31.53	46.00	-14.47	-	-	peak
4	458.3987	39.71	-5.12	34.59	46.00	-11.41	-	-	peak
5	651.3831	41.76	-1.54	40.22	46.00	-5.78	-	-	peak
6	674.6768	41.56	-1.37	40.19	46.00	-5.81	-	-	peak

802.11ax-HE40			
Test Channel	5190MHz(worst case)	Polarity:	Vertical



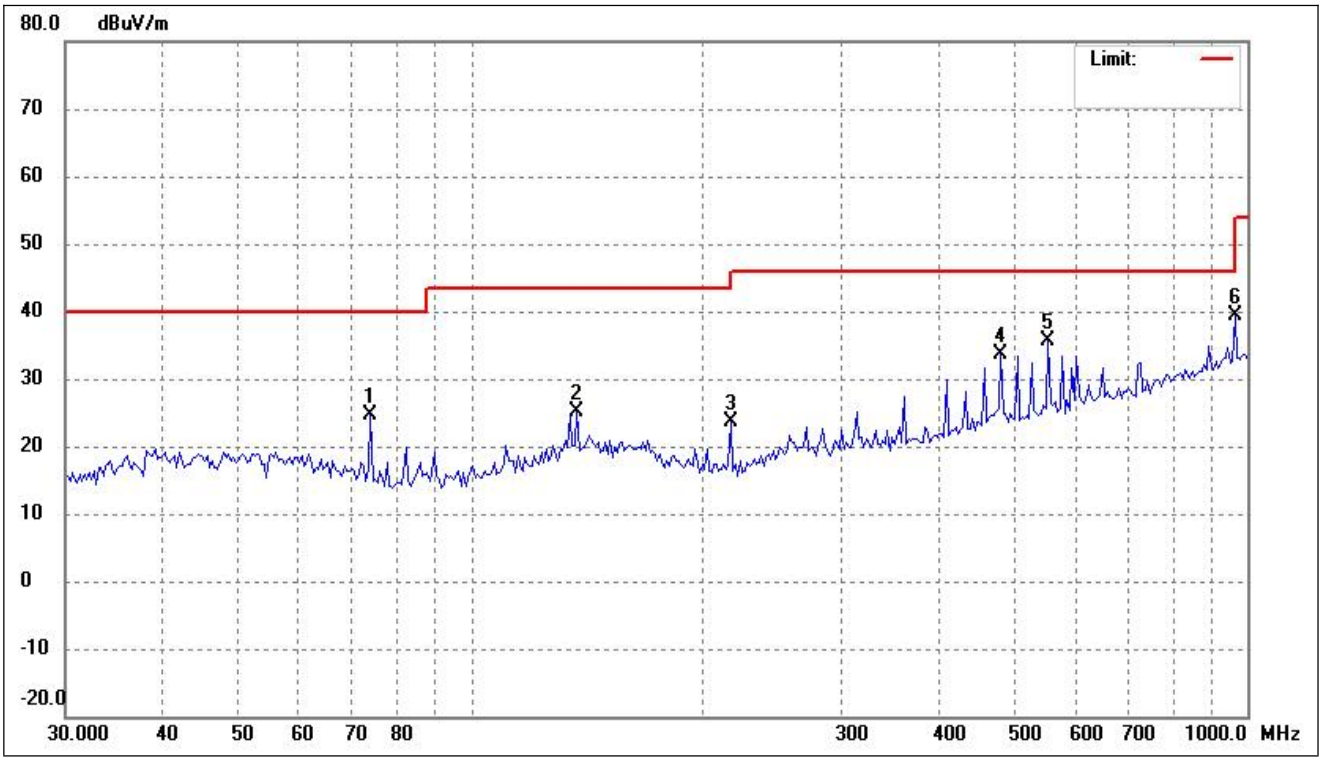
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	51.8999	28.87	-7.79	21.08	40.00	-18.92	-	-	peak
2	74.2696	35.25	-11.18	24.07	40.00	-15.93	-	-	peak
3	136.8747	30.93	-9.03	21.90	43.50	-21.60	-	-	peak
4	216.1197	35.45	-11.55	23.90	46.00	-22.10	-	-	peak
5	481.5112	38.73	-4.94	33.79	46.00	-12.21	-	-	peak
6	554.1708	39.62	-3.43	36.19	46.00	-9.81	-	-	peak

802.11ac-VHT80			
Test Channel	5210MHz(worst case)	Polarity:	Horizontal



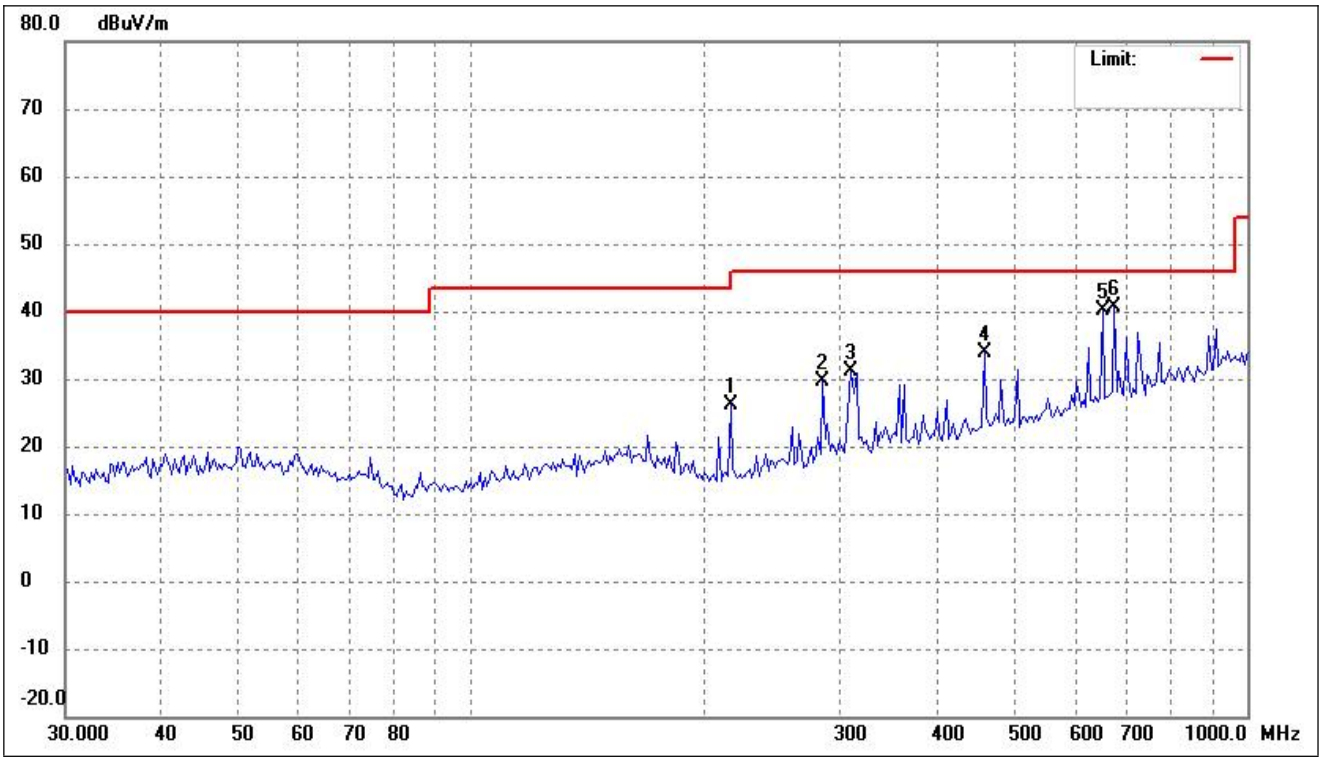
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	38.33	-11.55	26.78	46.00	-19.22	-	-	peak
2	284.2607	39.00	-8.36	30.64	46.00	-15.36	-	-	peak
3	309.2710	38.85	-7.66	31.19	46.00	-14.81	-	-	peak
4	458.3987	39.40	-5.12	34.28	46.00	-11.72	-	-	peak
5	651.3831	42.17	-1.54	40.63	46.00	-5.37	-	-	peak
6	674.6768	42.05	-1.37	40.68	46.00	-5.32	-	-	peak

802.11ac-VHT80			
Test Channel	5210MHz(worst case)	Polarity:	Vertical



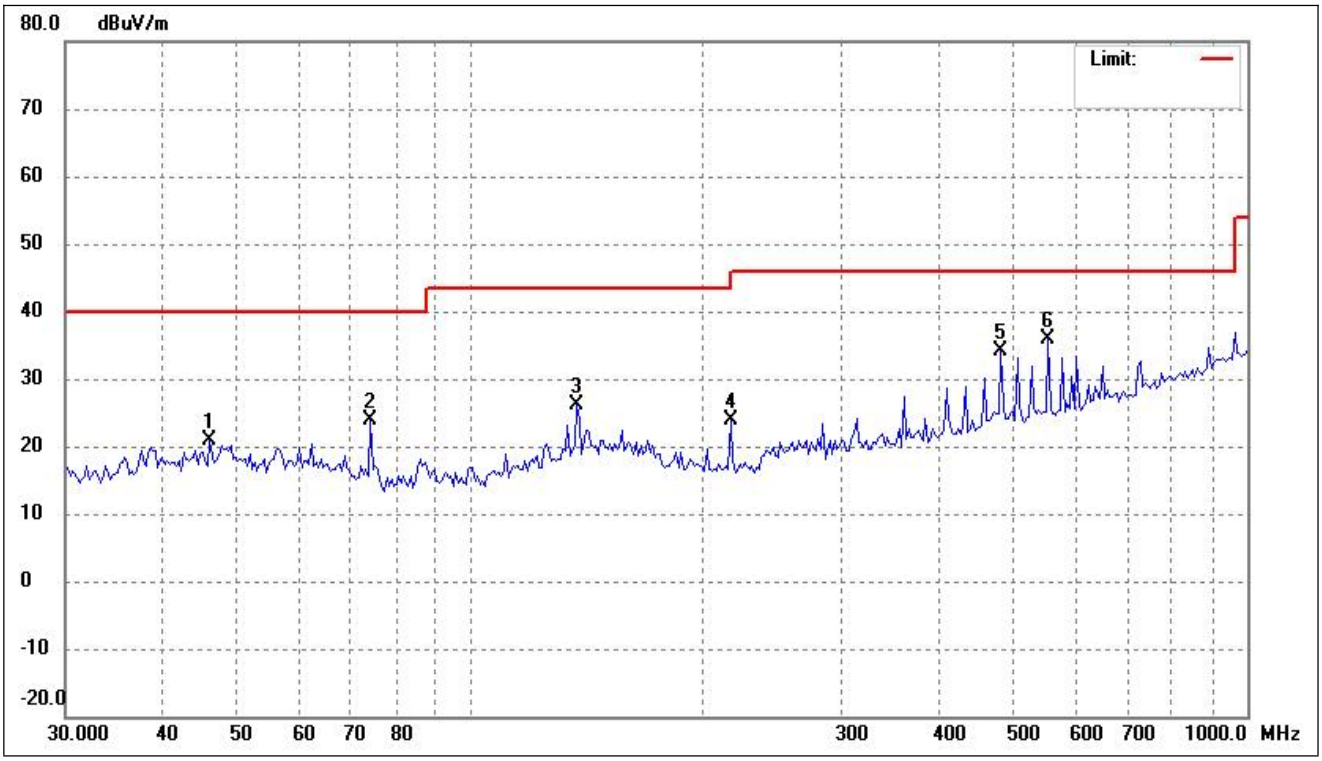
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	35.93	-11.18	24.75	40.00	-15.25	-	-	peak
2	136.8747	34.20	-9.03	25.17	43.50	-18.33	-	-	peak
3	216.1197	35.08	-11.55	23.53	46.00	-22.47	-	-	peak
4	481.5112	38.63	-4.94	33.69	46.00	-12.31	-	-	peak
5	554.1708	39.06	-3.43	35.63	46.00	-10.37	-	-	peak
6	965.4742	36.08	3.37	39.45	54.00	-14.55	-	-	peak

802.11ax-HE80			
Test Channel	5210MHz(worst case)	Polarity:	Horizontal



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.70	-11.55	26.15	46.00	-19.85	-	-	peak
2	284.2607	37.90	-8.36	29.54	46.00	-16.46	-	-	peak
3	309.2710	38.72	-7.66	31.06	46.00	-14.94	-	-	peak
4	458.3987	39.04	-5.12	33.92	46.00	-12.08	-	-	peak
5	651.3831	41.74	-1.54	40.20	46.00	-5.80	-	-	peak
6	674.6768	41.88	-1.37	40.51	46.00	-5.49	-	-	peak

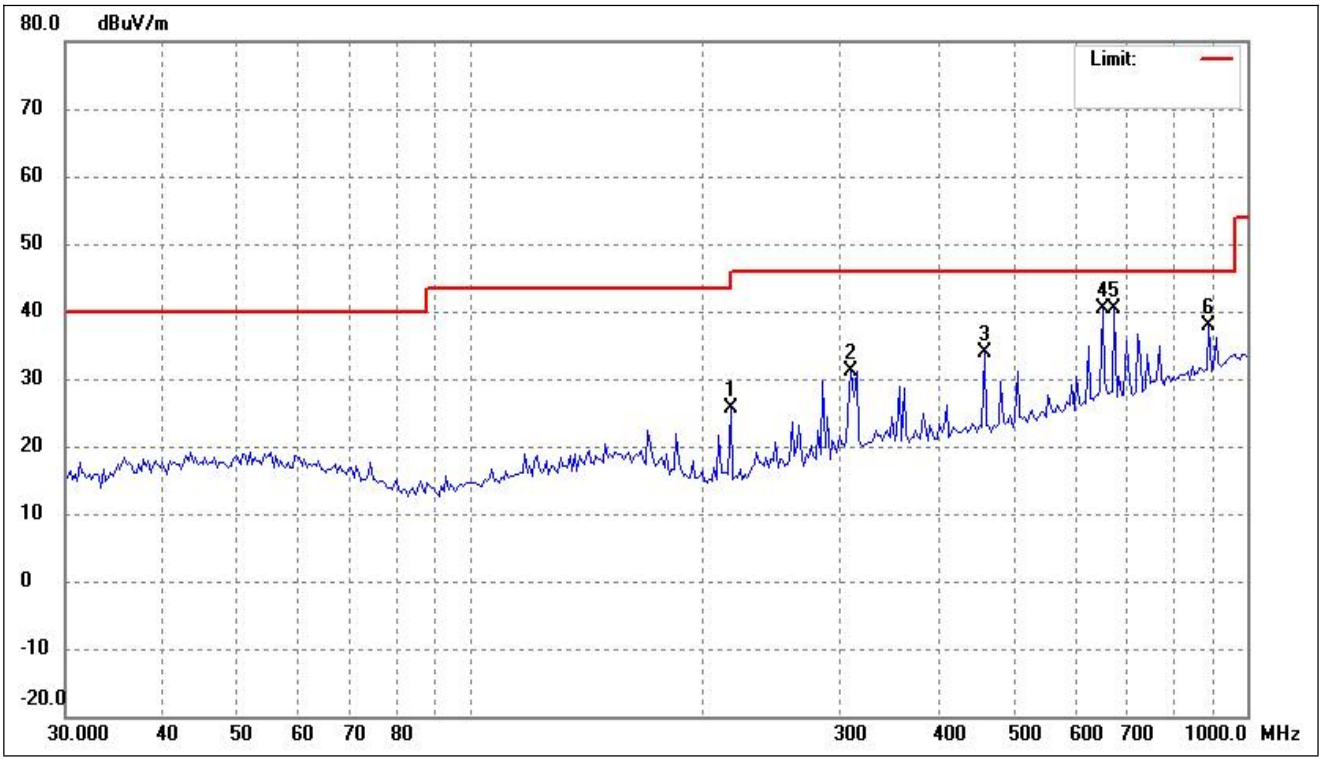
802.11ax-HE80			
Test Channel	5210MHz(worst case)	Polarity:	Vertical



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	46.0558	28.63	-7.87	20.76	40.00	-19.24	-	-	peak
2	74.2696	35.17	-11.18	23.99	40.00	-16.01	-	-	peak
3	136.8747	35.06	-9.03	26.03	43.50	-17.47	-	-	peak
4	216.1197	35.32	-11.55	23.77	46.00	-22.23	-	-	peak
5	481.5112	38.99	-4.94	34.05	46.00	-11.95	-	-	peak
6	554.1708	39.38	-3.43	35.95	46.00	-10.05	-	-	peak

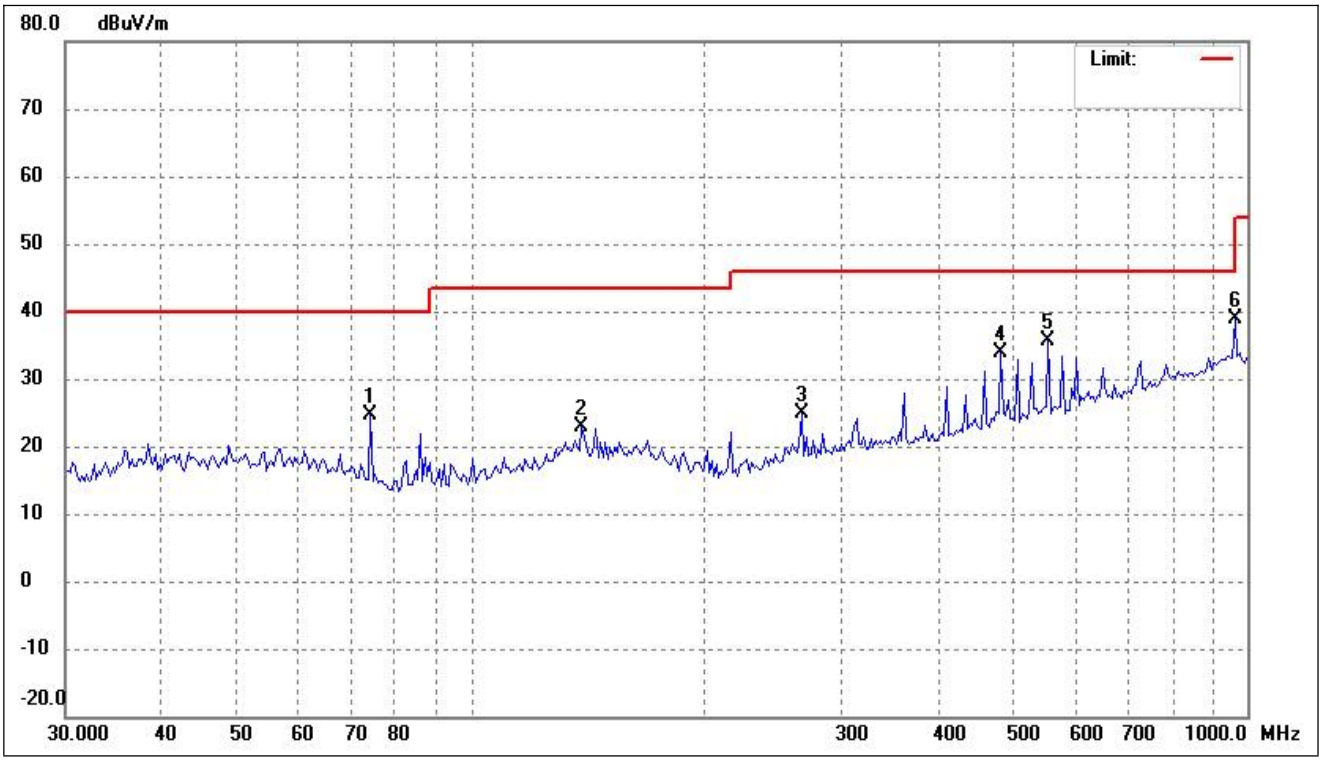
➢ 5745-5825MHz

802.11n-HT20			
Test Channel	5745MHz(worst case)	Polarity:	Horizontal



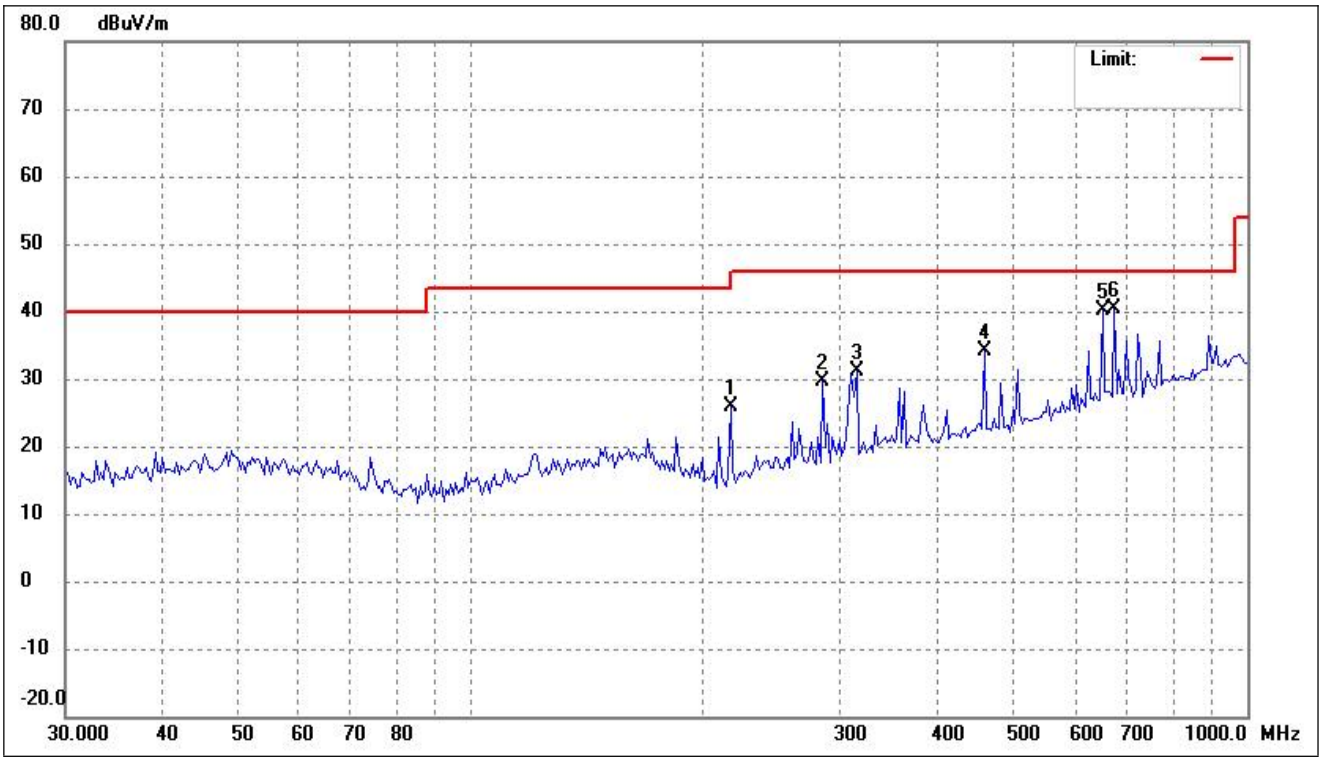
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.20	-11.55	25.65	46.00	-20.35	-	-	peak
2	309.2710	38.79	-7.66	31.13	46.00	-14.87	-	-	peak
3	458.3987	39.04	-5.12	33.92	46.00	-12.08	-	-	peak
4	651.3831	41.89	-1.54	40.35	46.00	-5.65	-	-	peak
5	674.6768	41.68	-1.37	40.31	46.00	-5.69	-	-	peak
6	893.6557	35.75	2.02	37.77	46.00	-8.23	-	-	peak

802.11n-HT20			
Test Channel	5745MHz(worst case)	Polarity:	Vertical



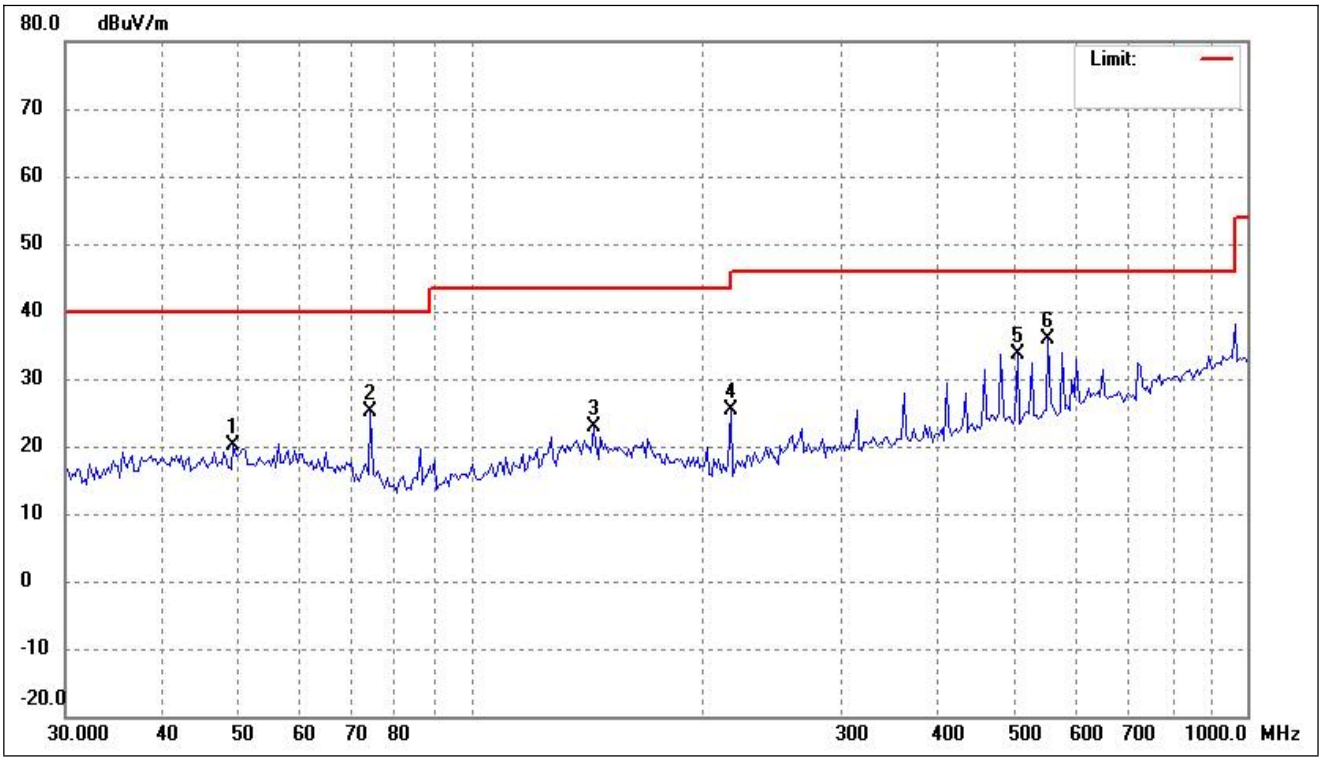
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	35.87	-11.18	24.69	40.00	-15.31	-	-	peak
2	138.8120	31.88	-8.95	22.93	43.50	-20.57	-	-	peak
3	266.8395	33.99	-9.00	24.99	46.00	-21.01	-	-	peak
4	481.5112	38.92	-4.94	33.98	46.00	-12.02	-	-	peak
5	554.1708	39.18	-3.43	35.75	46.00	-10.25	-	-	peak
6	965.4742	35.53	3.37	38.90	54.00	-15.10	-	-	peak

802.11ac-VHT20			
Test Channel	5745MHz(worst case)	Polarity:	Horizontal



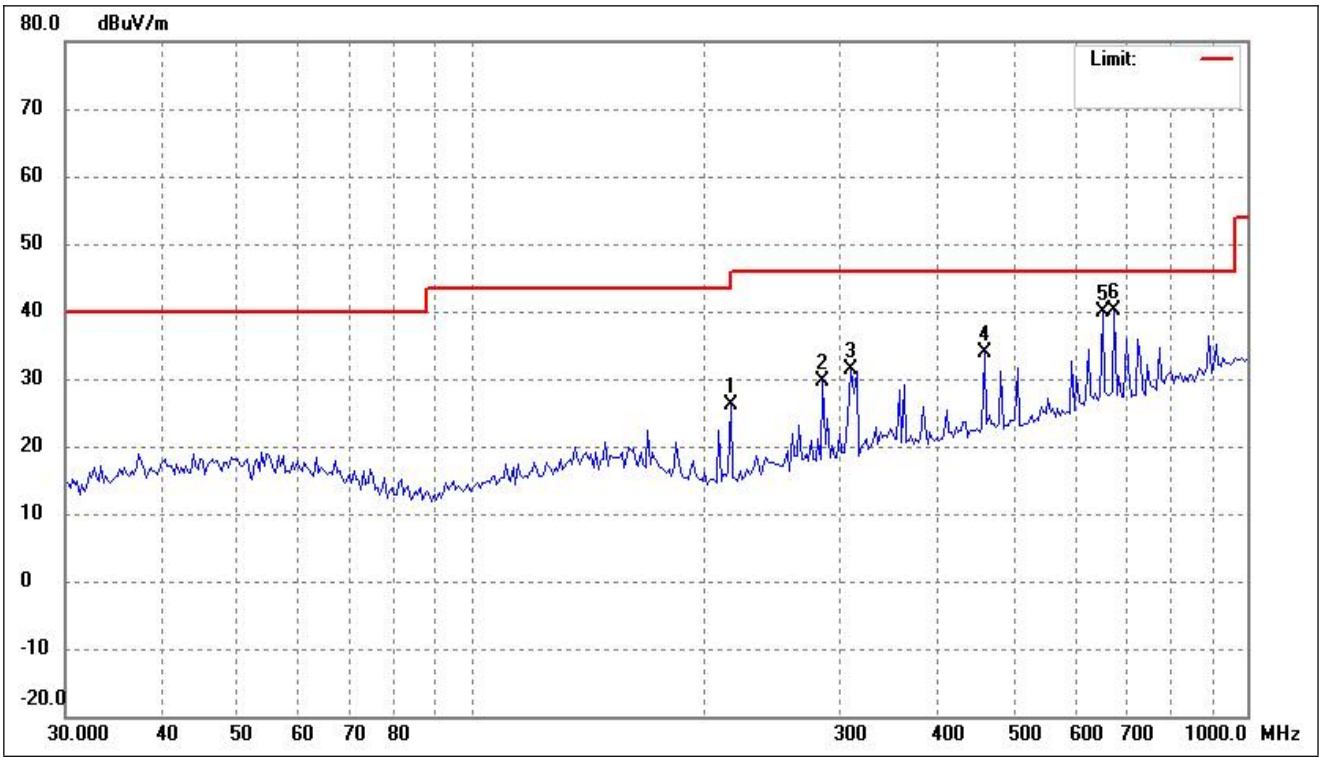
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.32	-11.55	25.77	46.00	-20.23	-	-	peak
2	284.2607	38.01	-8.36	29.65	46.00	-16.35	-	-	peak
3	313.6483	38.59	-7.57	31.02	46.00	-14.98	-	-	peak
4	458.3987	39.13	-5.12	34.01	46.00	-11.99	-	-	peak
5	651.3831	41.67	-1.54	40.13	46.00	-5.87	-	-	peak
6	674.6768	41.69	-1.37	40.32	46.00	-5.68	-	-	peak

802.11ac-VHT20			
Test Channel	5745MHz(worst case)	Polarity:	Vertical



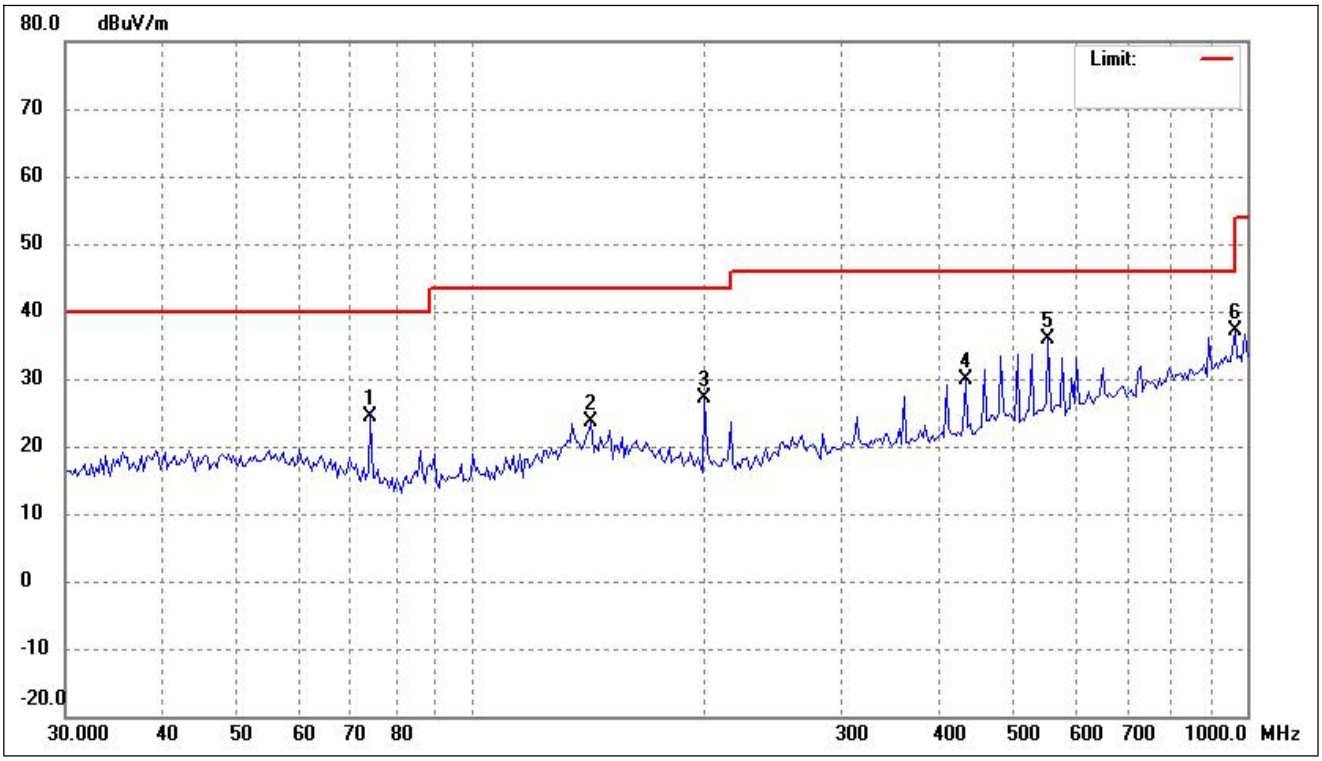
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	49.4087	27.86	-7.63	20.23	40.00	-19.77	-	-	peak
2	74.2696	36.38	-11.18	25.20	40.00	-14.80	-	-	peak
3	143.7760	31.50	-8.57	22.93	43.50	-20.57	-	-	peak
4	216.1197	36.82	-11.55	25.27	46.00	-20.73	-	-	peak
5	505.7891	38.32	-4.68	33.64	46.00	-12.36	-	-	peak
6	554.1708	39.43	-3.43	36.00	46.00	-10.00	-	-	peak

802.11ax-HE20			
Test Channel	5745MHz(worst case)	Polarity:	Horizontal



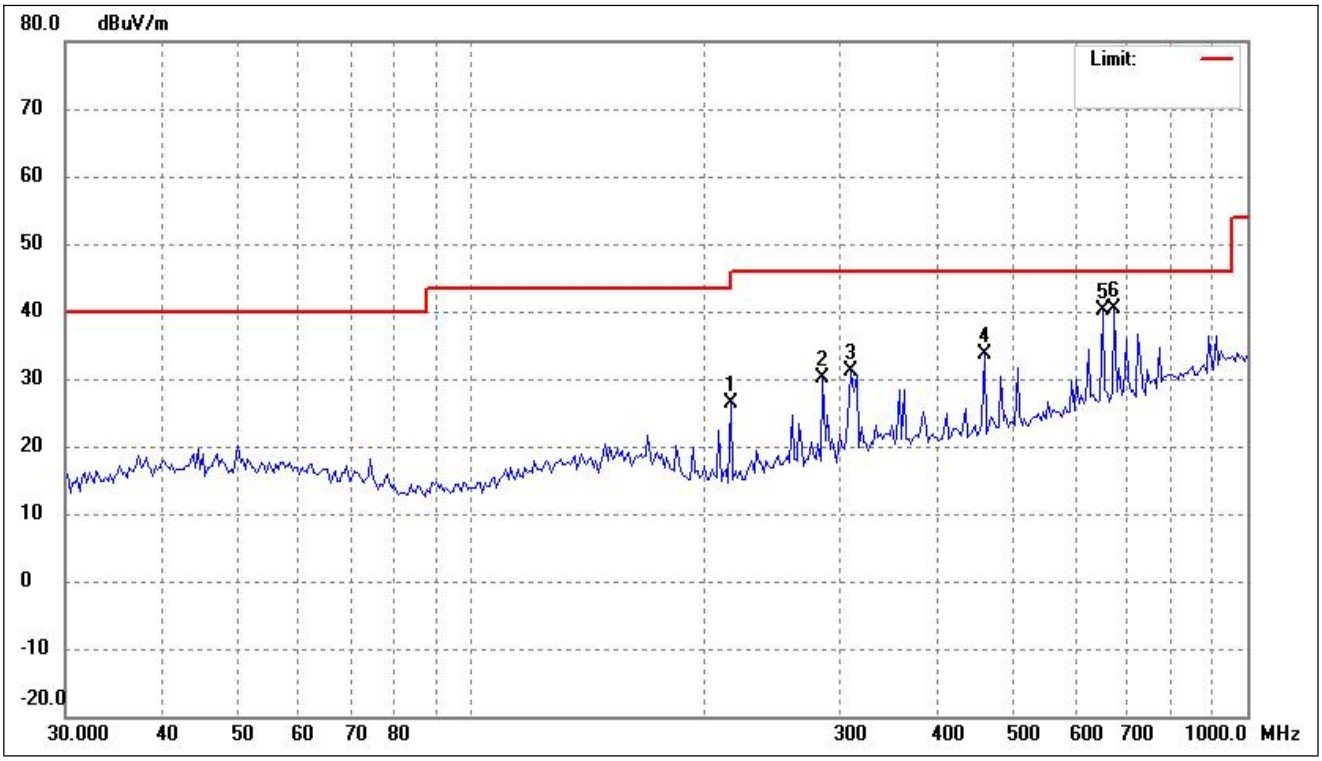
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.72	-11.55	26.17	46.00	-19.83	-	-	peak
2	284.2607	38.02	-8.36	29.66	46.00	-16.34	-	-	peak
3	309.2710	39.10	-7.66	31.44	46.00	-14.56	-	-	peak
4	458.3987	38.91	-5.12	33.79	46.00	-12.21	-	-	peak
5	651.3831	41.49	-1.54	39.95	46.00	-6.05	-	-	peak
6	674.6768	41.59	-1.37	40.22	46.00	-5.78	-	-	peak

802.11ax-HE20			
Test Channel	5745MHz(worst case)	Polarity:	Vertical



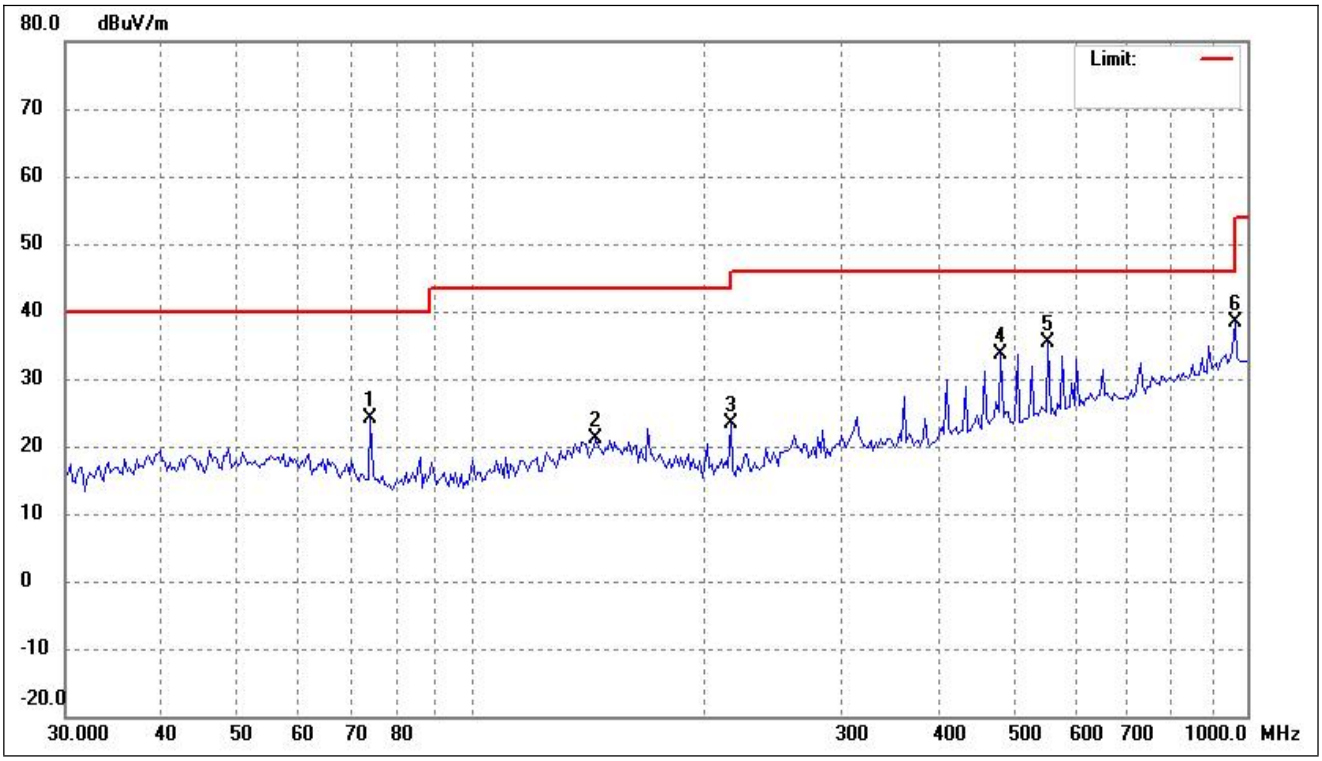
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	35.60	-11.18	24.42	40.00	-15.58	-	-	peak
2	142.7692	32.38	-8.66	23.72	43.50	-19.78	-	-	peak
3	200.0432	38.56	-11.38	27.18	43.50	-16.32	-	-	peak
4	433.3397	35.32	-5.55	29.77	46.00	-16.23	-	-	peak
5	554.1708	39.27	-3.43	35.84	46.00	-10.16	-	-	peak
6	965.4742	33.76	3.37	37.13	54.00	-16.87	-	-	peak

802.11n-HT40			
Test Channel	5755MHz(worst case)	Polarity:	Horizontal



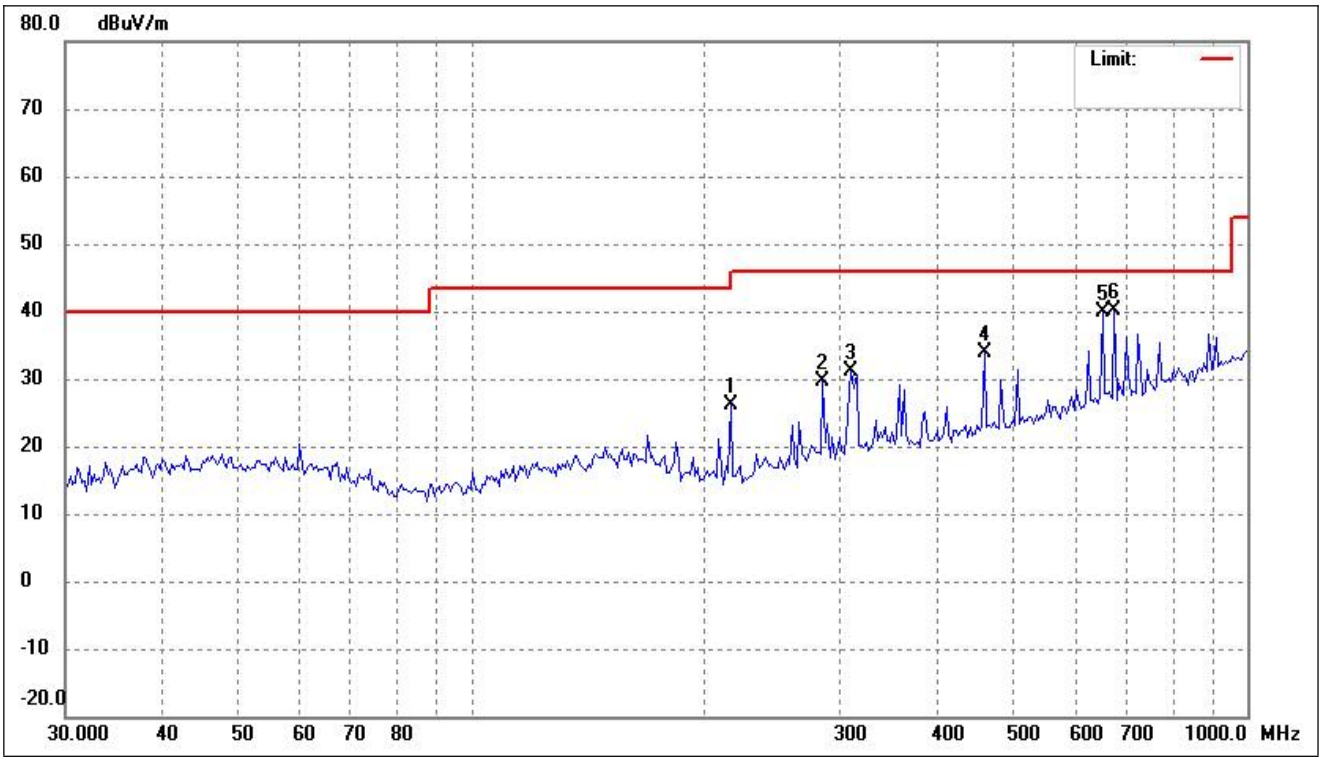
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.84	-11.55	26.29	46.00	-19.71	-	-	peak
2	284.2607	38.48	-8.36	30.12	46.00	-15.88	-	-	peak
3	309.2710	38.77	-7.66	31.11	46.00	-14.89	-	-	peak
4	458.3987	38.69	-5.12	33.57	46.00	-12.43	-	-	peak
5	651.3831	41.74	-1.54	40.20	46.00	-5.80	-	-	peak
6	674.6768	41.87	-1.37	40.50	46.00	-5.50	-	-	peak

802.11n-HT40			
Test Channel	5755MHz(worst case)	Polarity:	Vertical



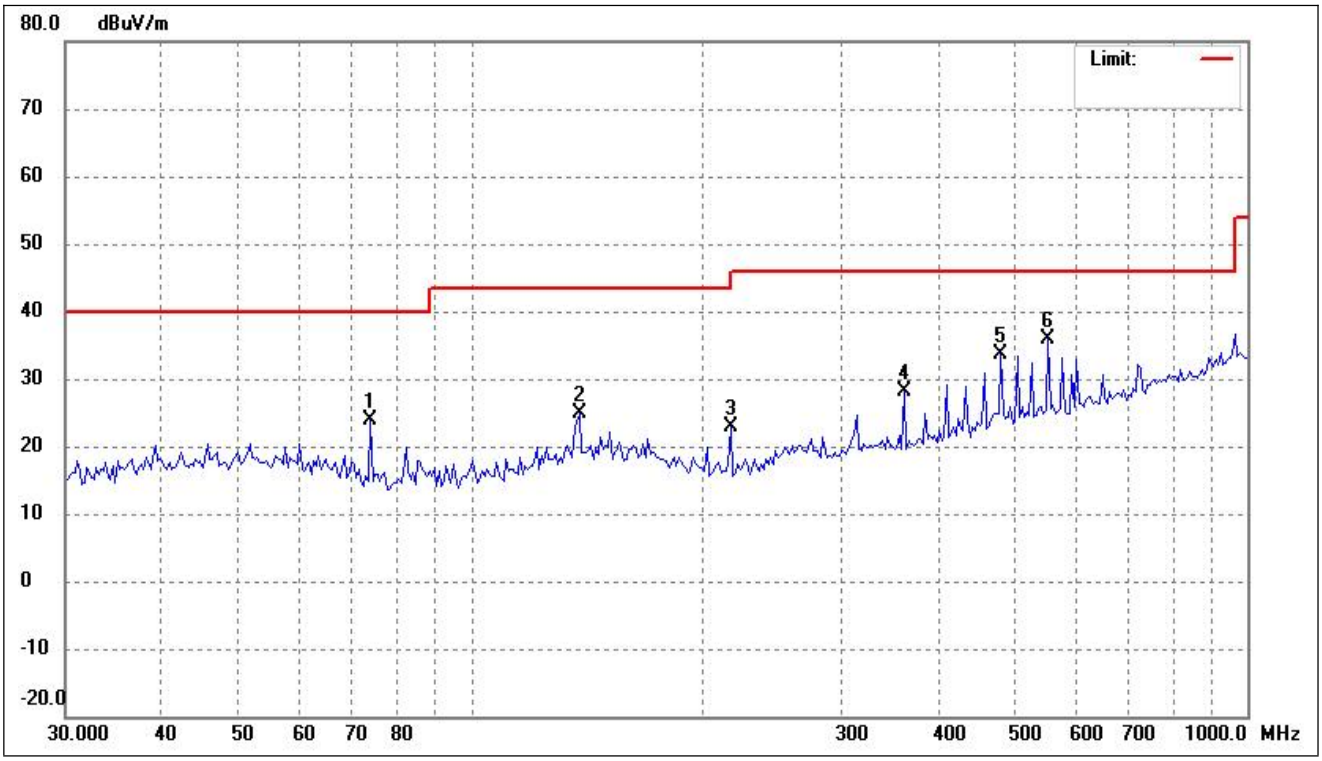
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	35.41	-11.18	24.23	40.00	-15.77	-	-	peak
2	144.7899	29.61	-8.49	21.12	43.50	-22.38	-	-	peak
3	216.1197	34.99	-11.55	23.44	46.00	-22.56	-	-	peak
4	481.5112	38.48	-4.94	33.54	46.00	-12.46	-	-	peak
5	554.1708	38.87	-3.43	35.44	46.00	-10.56	-	-	peak
6	965.4742	35.09	3.37	38.46	54.00	-15.54	-	-	peak

802.11ac-VHT40			
Test Channel	5755MHz(worst case)	Polarity:	Horizontal



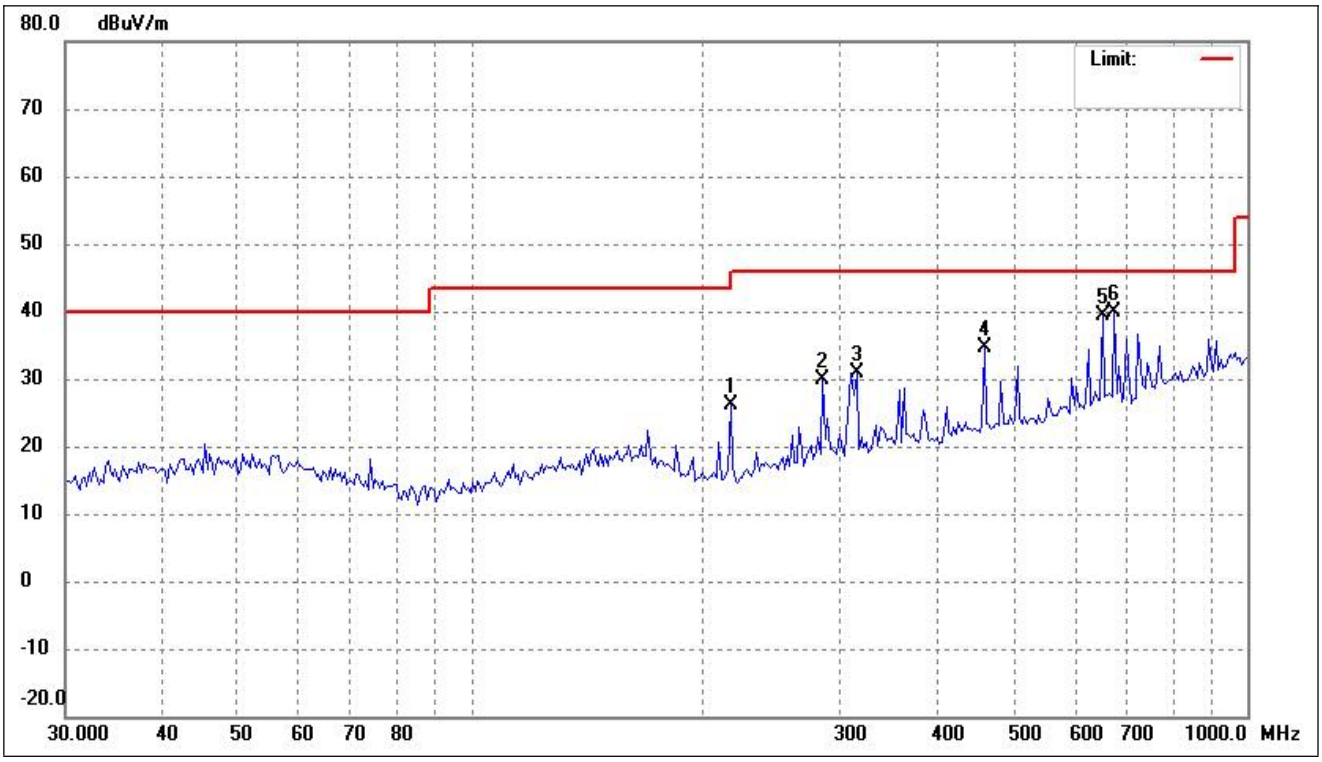
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.77	-11.55	26.22	46.00	-19.78	-	-	peak
2	284.2607	37.91	-8.36	29.55	46.00	-16.45	-	-	peak
3	309.2710	38.76	-7.66	31.10	46.00	-14.90	-	-	peak
4	458.3987	39.08	-5.12	33.96	46.00	-12.04	-	-	peak
5	651.3831	41.35	-1.54	39.81	46.00	-6.19	-	-	peak
6	674.6768	41.60	-1.37	40.23	46.00	-5.77	-	-	peak

802.11ac-VHT40			
Test Channel	5755MHz(worst case)	Polarity:	Vertical



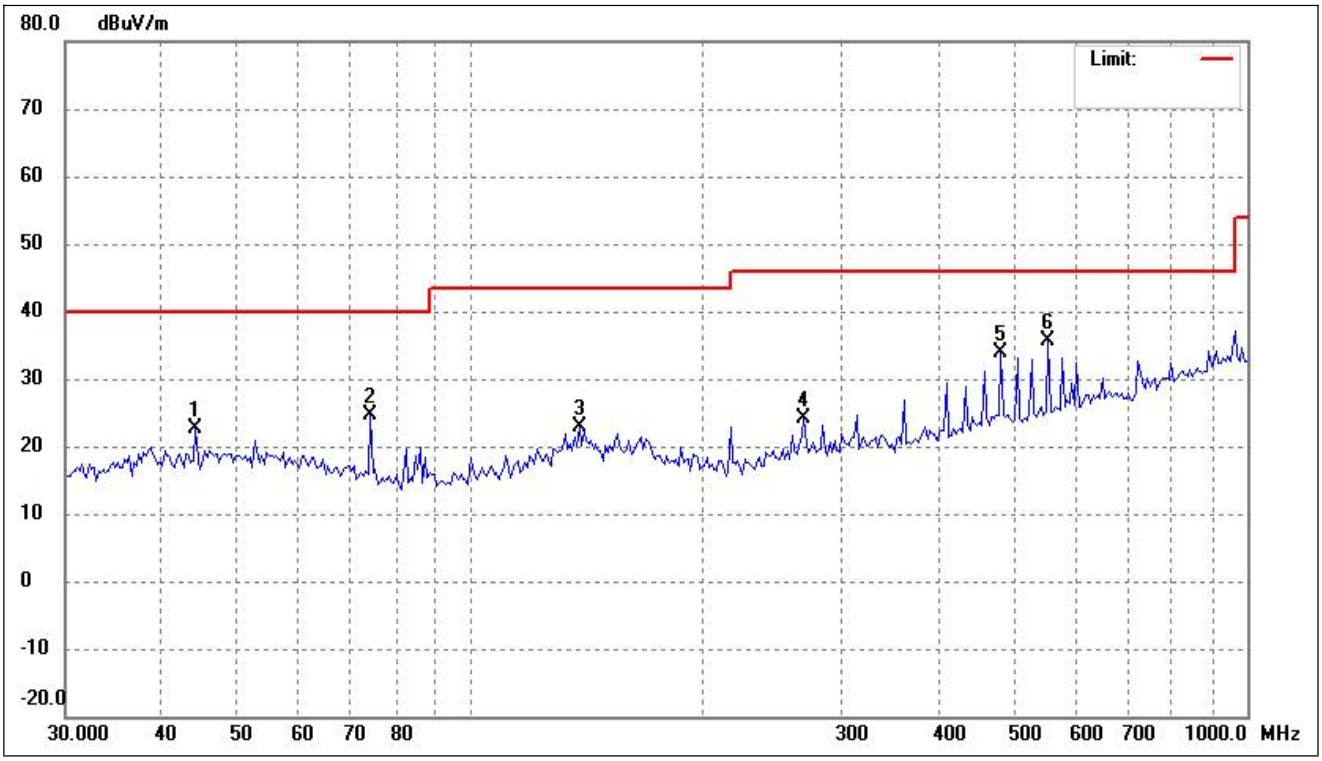
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	34.94	-11.18	23.76	40.00	-16.24	-	-	peak
2	137.8400	33.95	-8.98	24.97	43.50	-18.53	-	-	peak
3	216.1197	34.33	-11.55	22.78	46.00	-23.22	-	-	peak
4	360.9775	34.89	-6.86	28.03	46.00	-17.97	-	-	peak
5	481.5112	38.58	-4.94	33.64	46.00	-12.36	-	-	peak
6	554.1708	39.22	-3.43	35.79	46.00	-10.21	-	-	peak

802.11ax-HE40			
Test Channel	5755MHz(worst case)	Polarity:	Horizontal



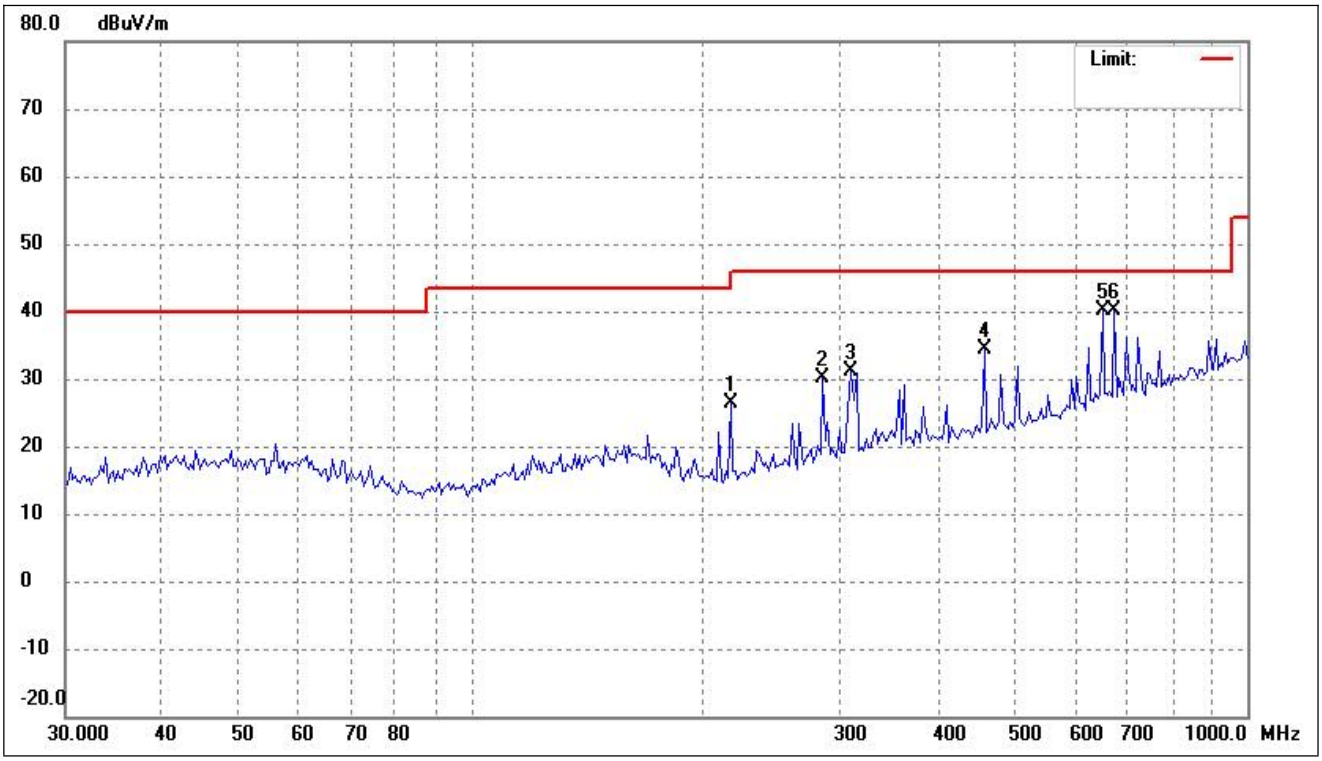
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.79	-11.55	26.24	46.00	-19.76	-	-	peak
2	284.2607	38.13	-8.36	29.77	46.00	-16.23	-	-	peak
3	313.6483	38.53	-7.57	30.96	46.00	-15.04	-	-	peak
4	458.3987	39.85	-5.12	34.73	46.00	-11.27	-	-	peak
5	651.3831	40.96	-1.54	39.42	46.00	-6.58	-	-	peak
6	674.6768	41.22	-1.37	39.85	46.00	-6.15	-	-	peak

802.11ax-HE40			
Test Channel	5755MHz(worst case)	Polarity:	Vertical



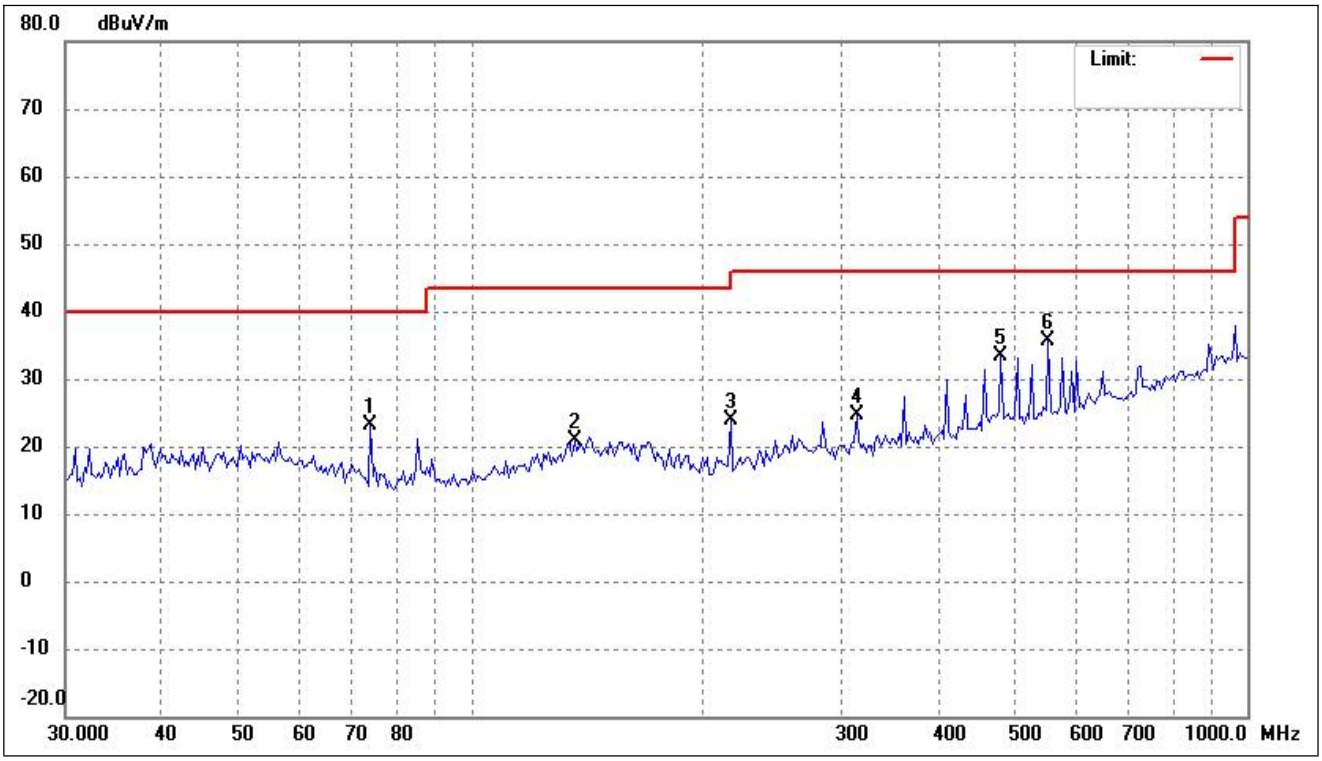
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	44.1544	30.58	-7.96	22.62	40.00	-17.38	-	-	peak
2	74.2696	35.85	-11.18	24.67	40.00	-15.33	-	-	peak
3	137.8400	31.81	-8.98	22.83	43.50	-20.67	-	-	peak
4	268.7212	33.00	-8.92	24.08	46.00	-21.92	-	-	peak
5	481.5112	38.82	-4.94	33.88	46.00	-12.12	-	-	peak
6	554.1708	39.18	-3.43	35.75	46.00	-10.25	-	-	peak

802.11ac-VHT80			
Test Channel	5775MHz(worst case)	Polarity:	Horizontal



No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	216.1197	37.93	-11.55	26.38	46.00	-19.62	-	-	peak
2	284.2607	38.41	-8.36	30.05	46.00	-15.95	-	-	peak
3	309.2710	38.84	-7.66	31.18	46.00	-14.82	-	-	peak
4	458.3987	39.50	-5.12	34.38	46.00	-11.62	-	-	peak
5	651.3831	41.57	-1.54	40.03	46.00	-5.97	-	-	peak
6	674.6768	41.59	-1.37	40.22	46.00	-5.78	-	-	peak

802.11ac-VHT80			
Test Channel	5775MHz(worst case)	Polarity:	Vertical



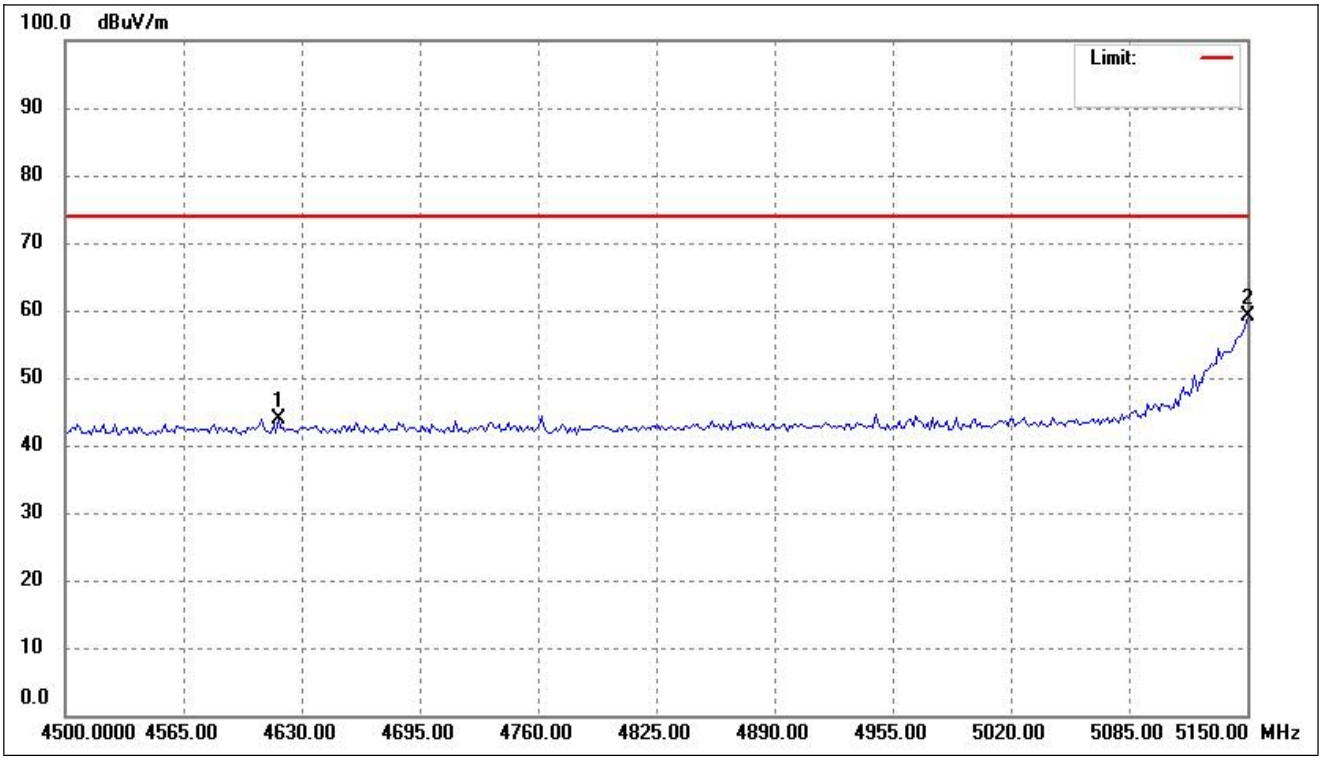
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	74.2696	34.37	-11.18	23.19	40.00	-16.81	-	-	peak
2	135.9163	29.97	-9.07	20.90	43.50	-22.60	-	-	peak
3	216.1197	35.33	-11.55	23.78	46.00	-22.22	-	-	peak
4	313.6483	32.29	-7.57	24.72	46.00	-21.28	-	-	peak
5	481.5112	38.42	-4.94	33.48	46.00	-12.52	-	-	peak
6	554.1708	39.18	-3.43	35.75	46.00	-10.25	-	-	peak

Remark: '-'Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emission above 1GHz

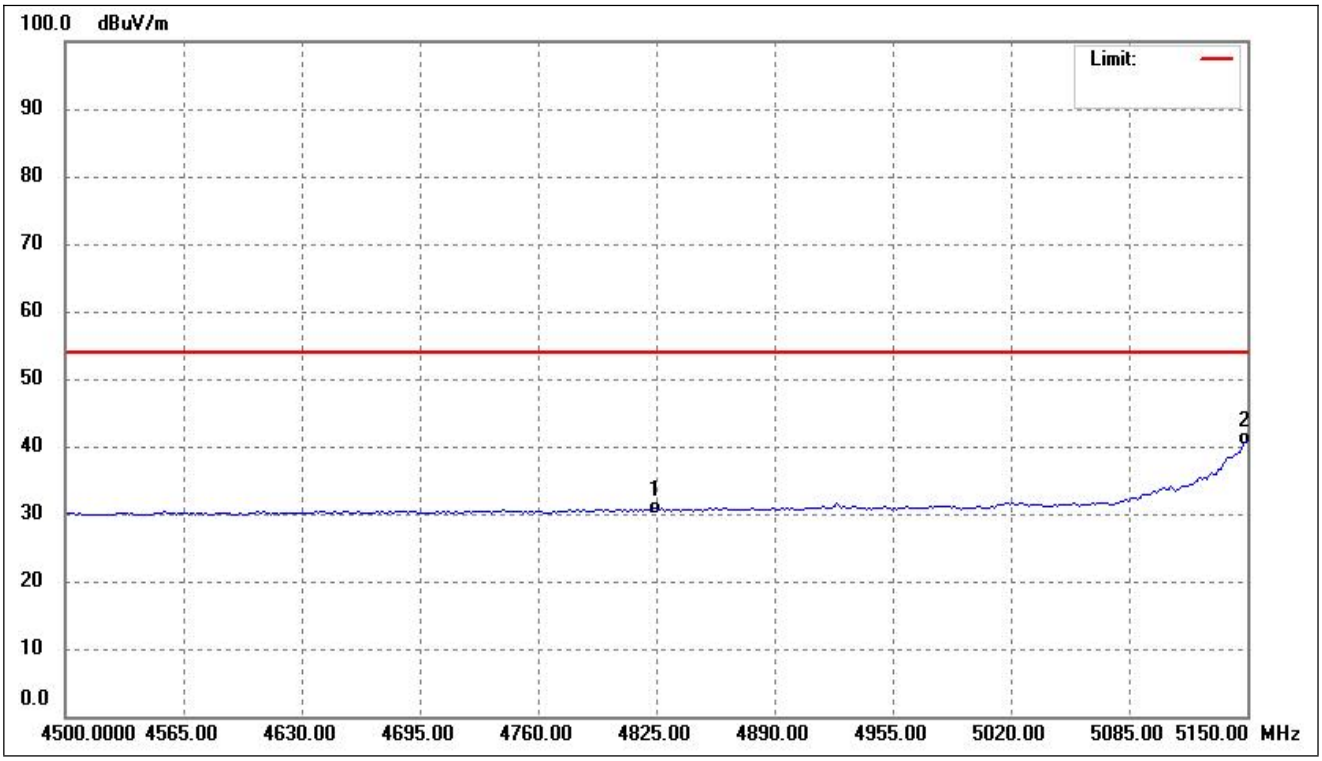
- Antenna 1(worst case)

802.11a- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



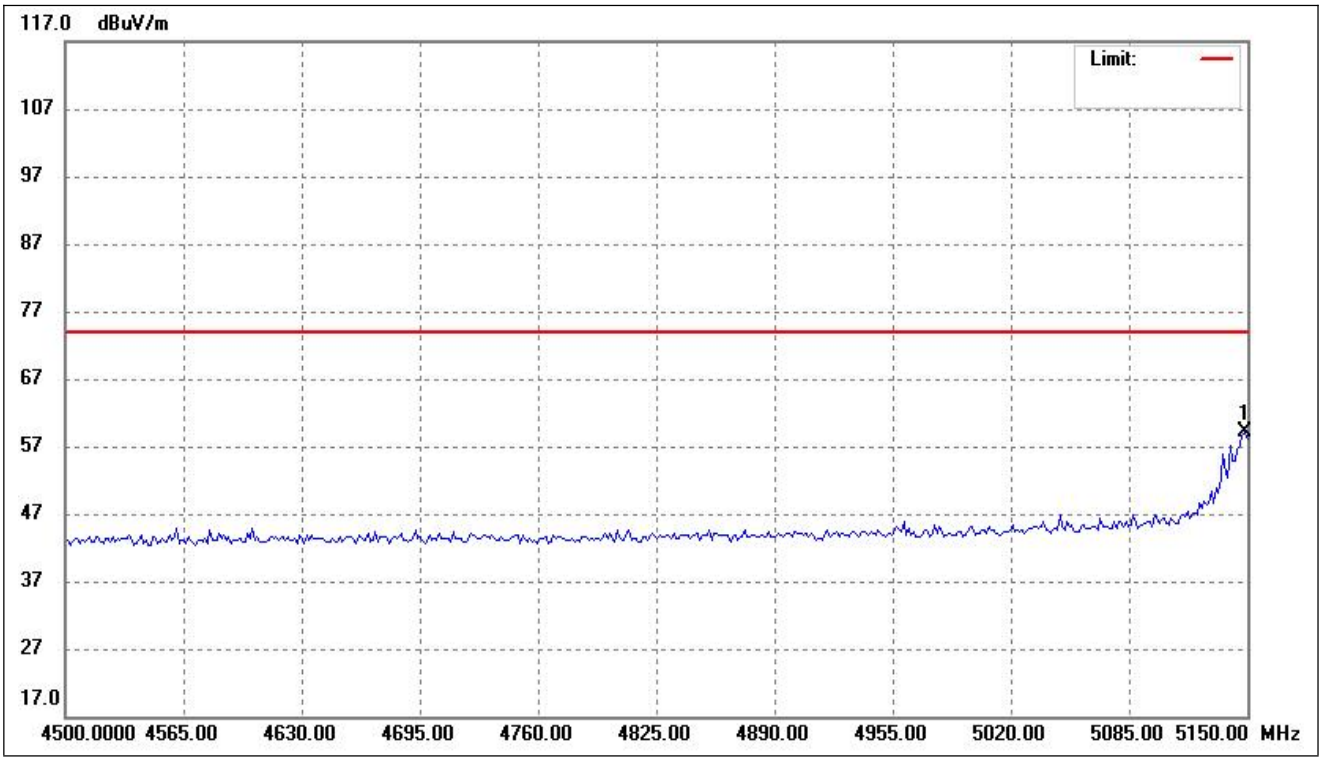
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	4617.234	57.62	-13.73	43.89	74.00	-30.11	-	-	peak
2	5150.000	71.73	-12.53	59.20	74.00	-14.80	-	-	peak

802.11a- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



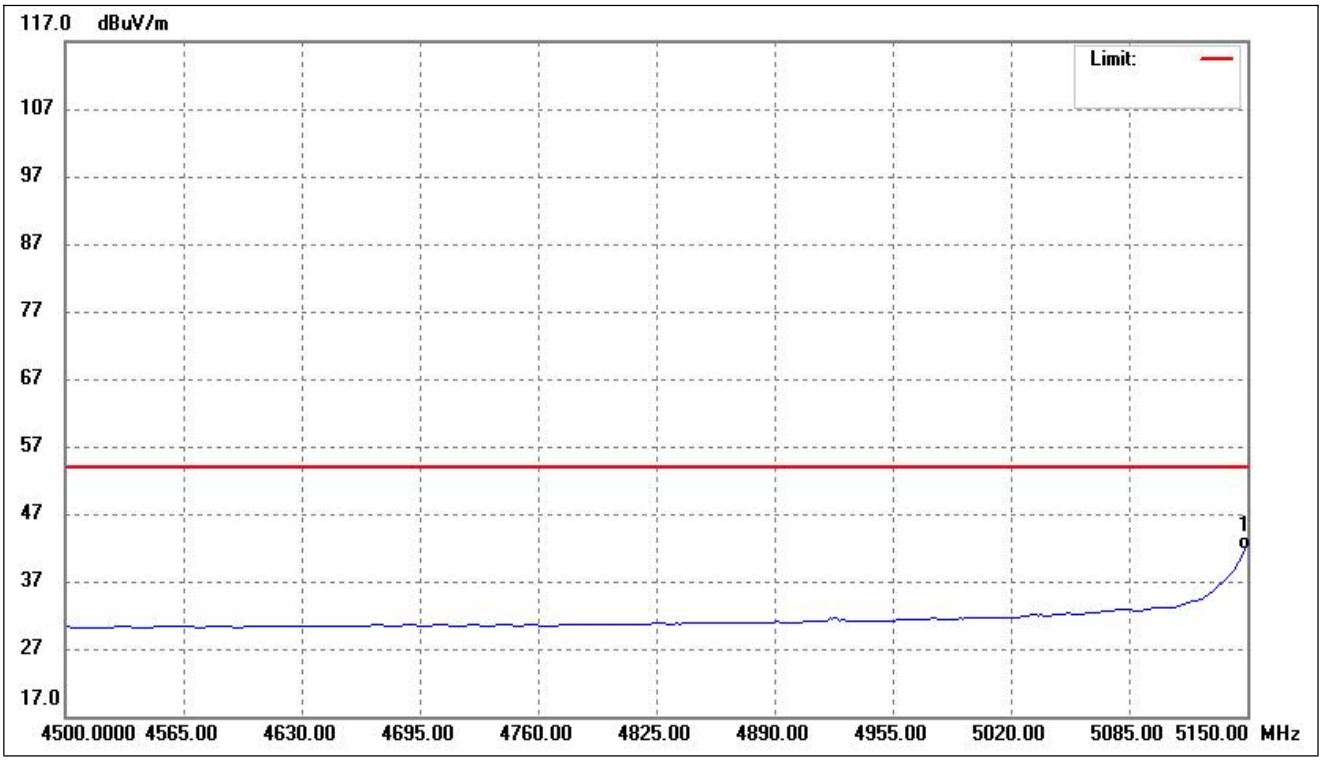
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	4824.349	44.39	-13.49	30.90	54.00	-23.10	-	-	AVG
2	5150.000	53.60	-12.53	41.07	54.00	-12.93	-	-	AVG

802.11n-HT20- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



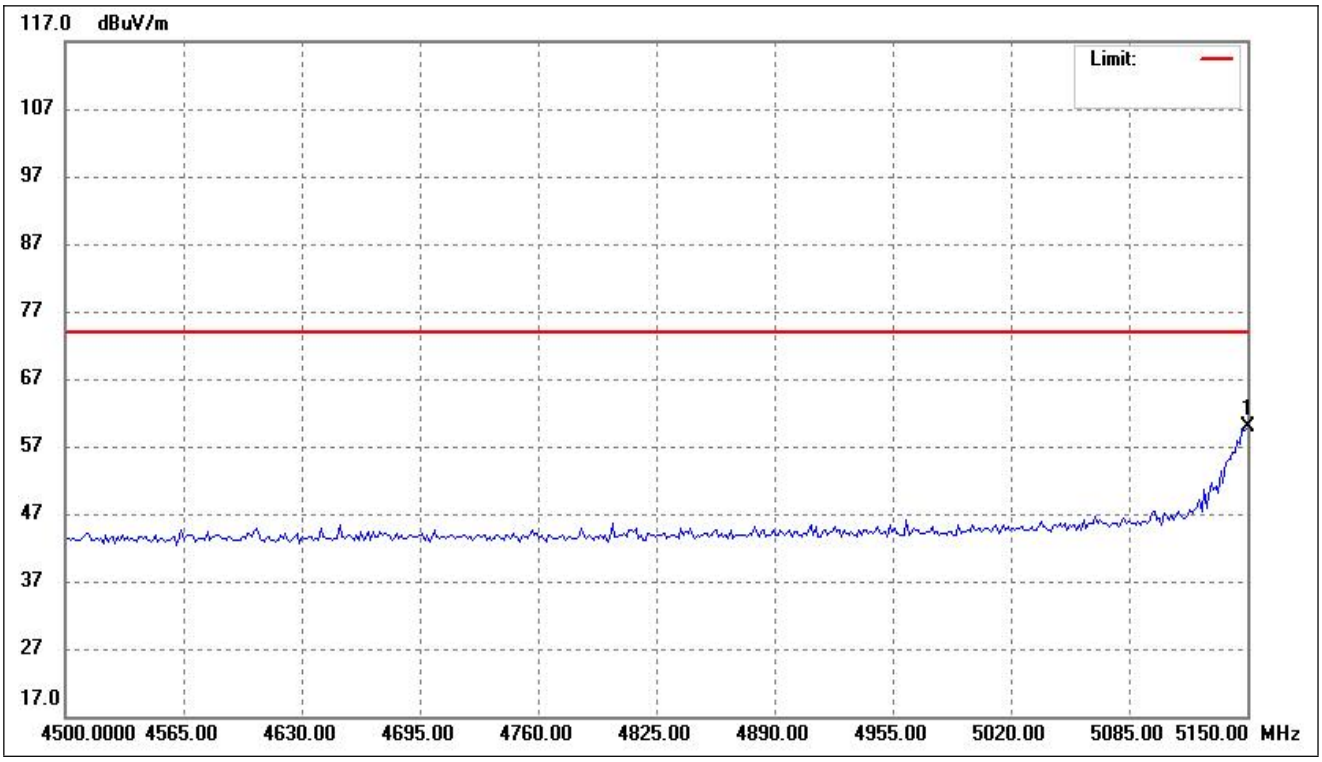
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5148.697	70.83	-11.66	59.17	74.00	-14.83	-	-	peak

802.11n-HT20- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



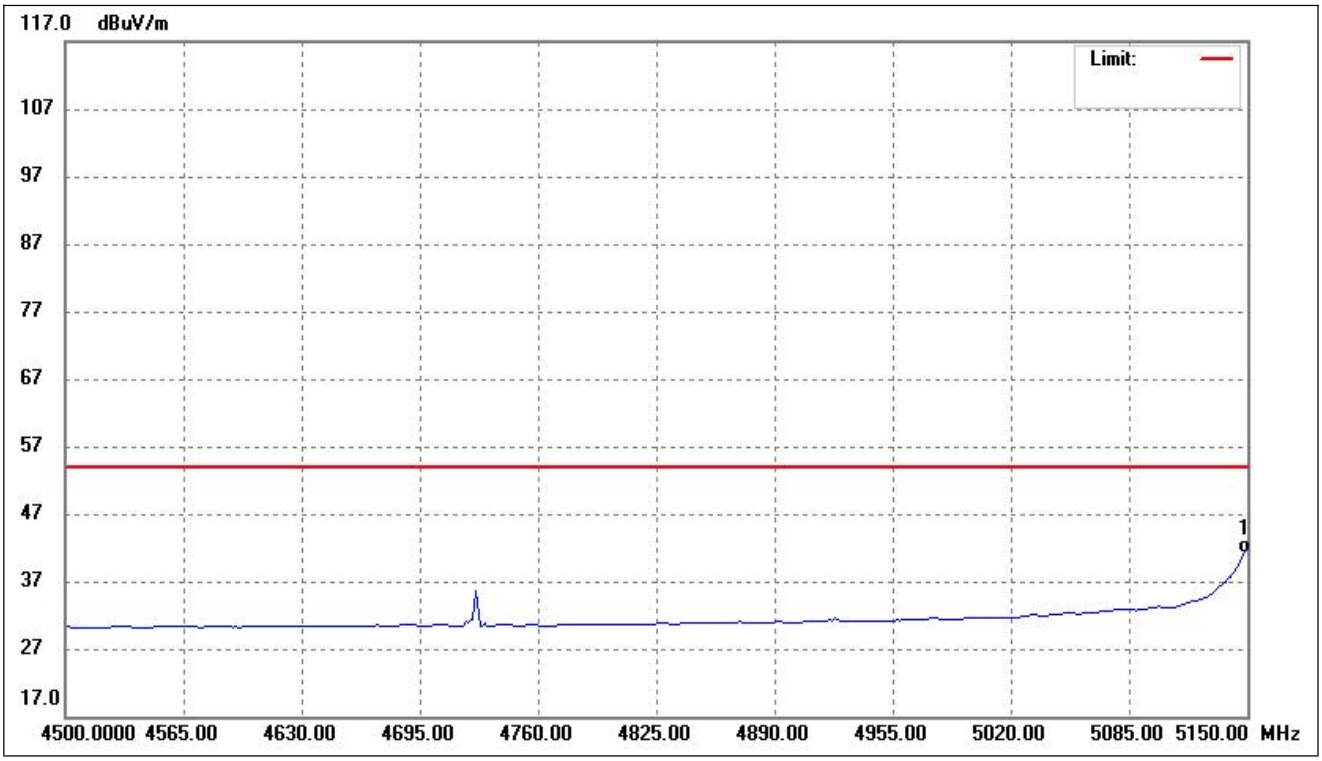
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	54.26	-11.66	42.60	54.00	-11.40	-	-	AVG

802.11ac-VHT20- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



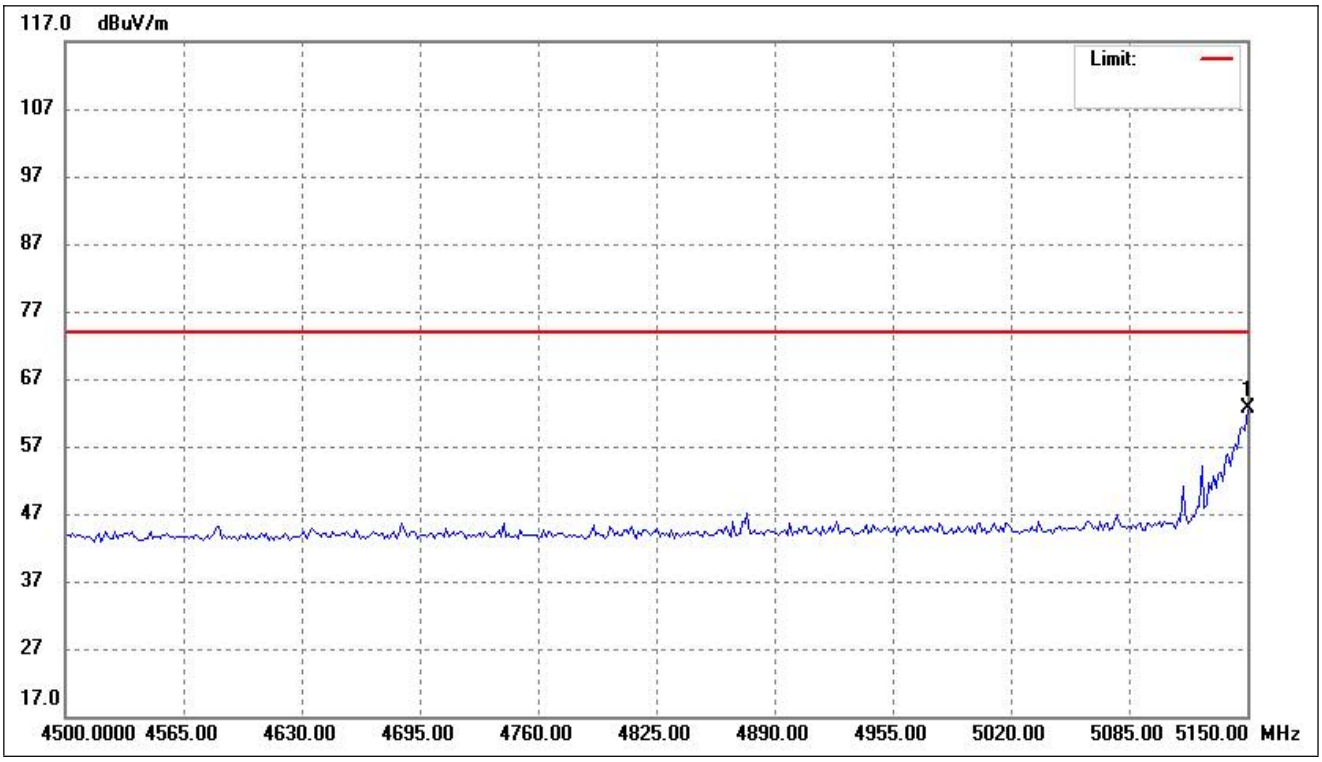
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	71.72	-11.66	60.06	74.00	-13.94	-	-	peak

802.11ac-VHT20- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



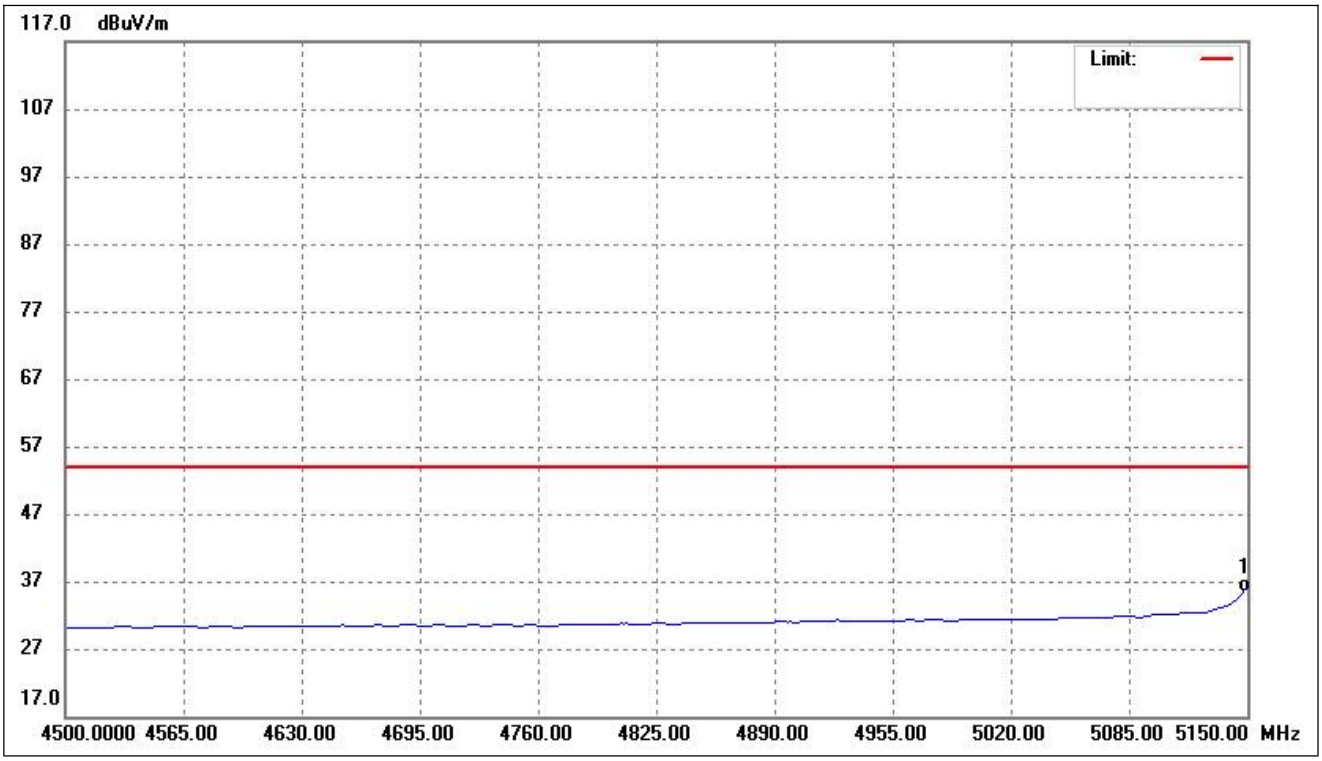
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	53.65	-11.66	42.99	54.00	-12.01	-	-	AVG

802.11ax-HE20- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



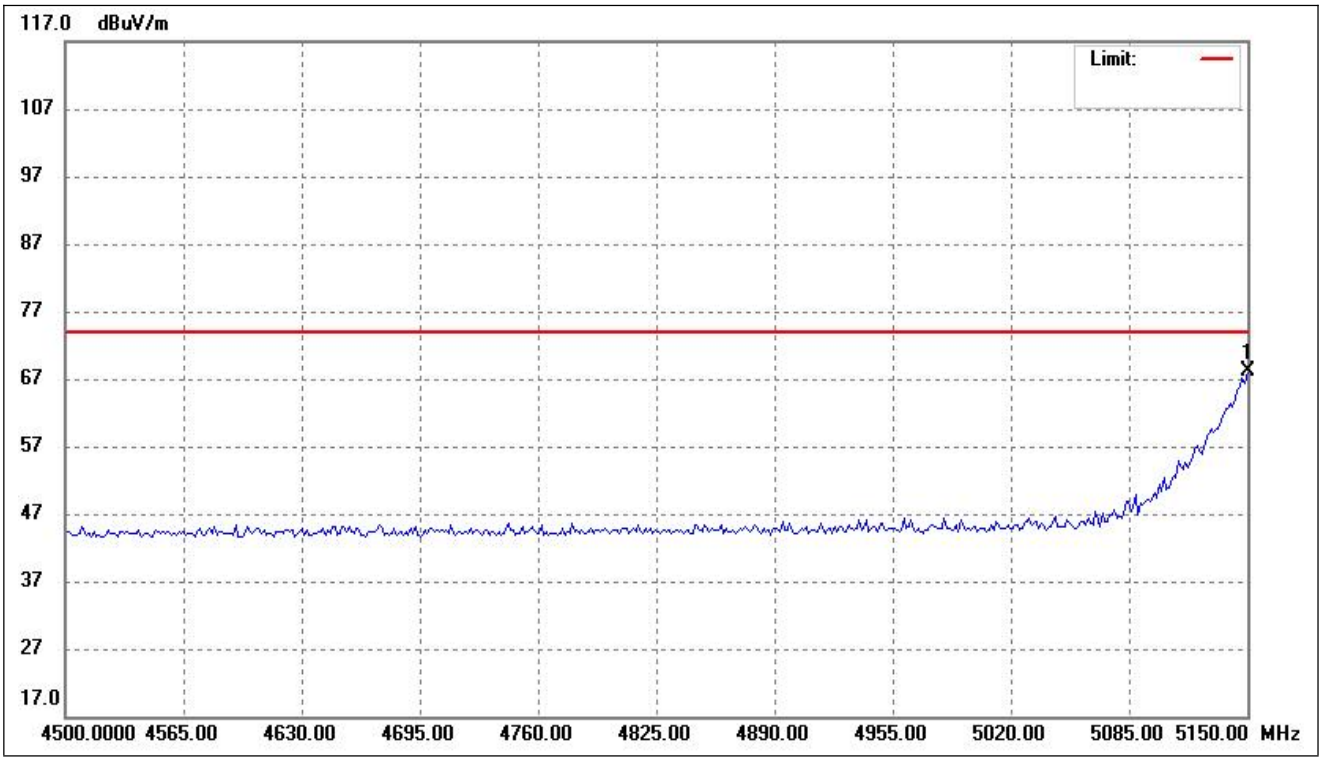
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	74.41	-11.66	62.75	74.00	-11.25	-	-	peak

802.11ax-HE20- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



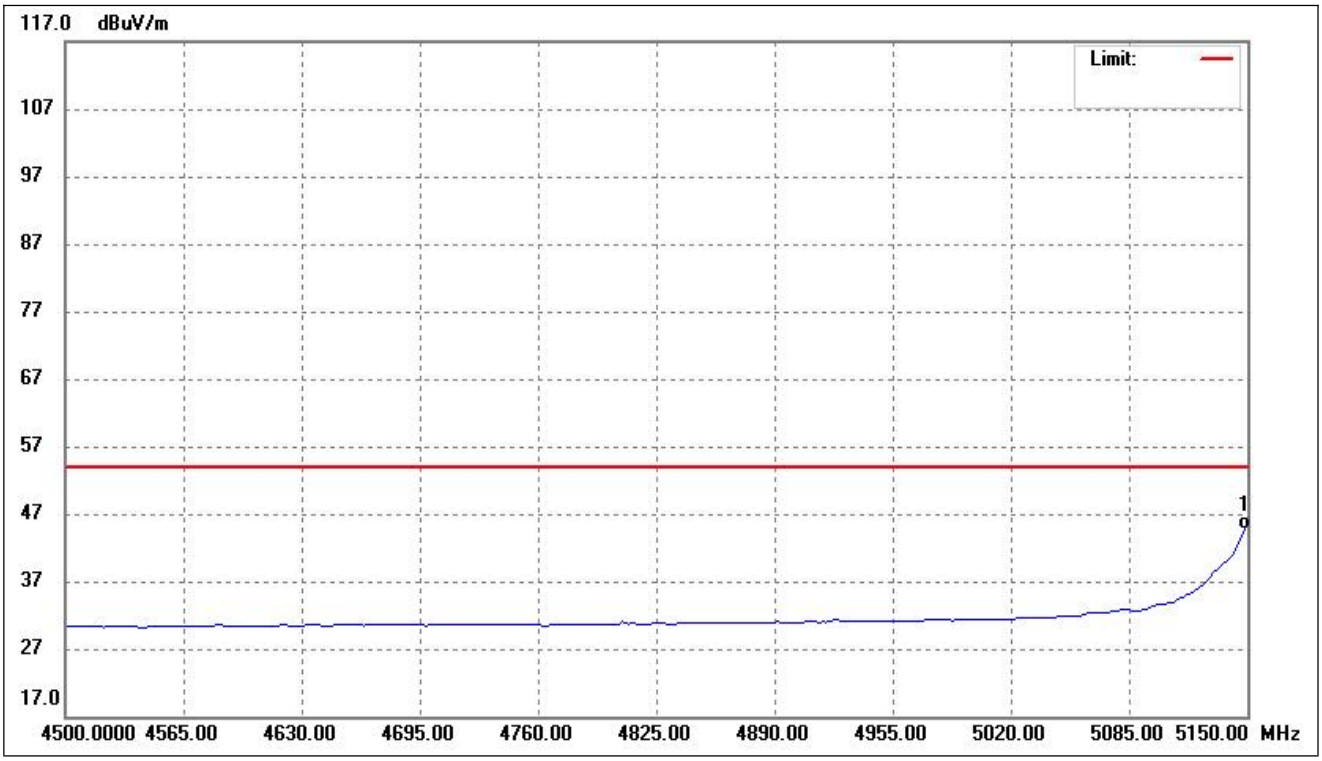
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	47.86	-11.66	36.20	54.00	-17.80	-	-	AVG

802.11n-HT40- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



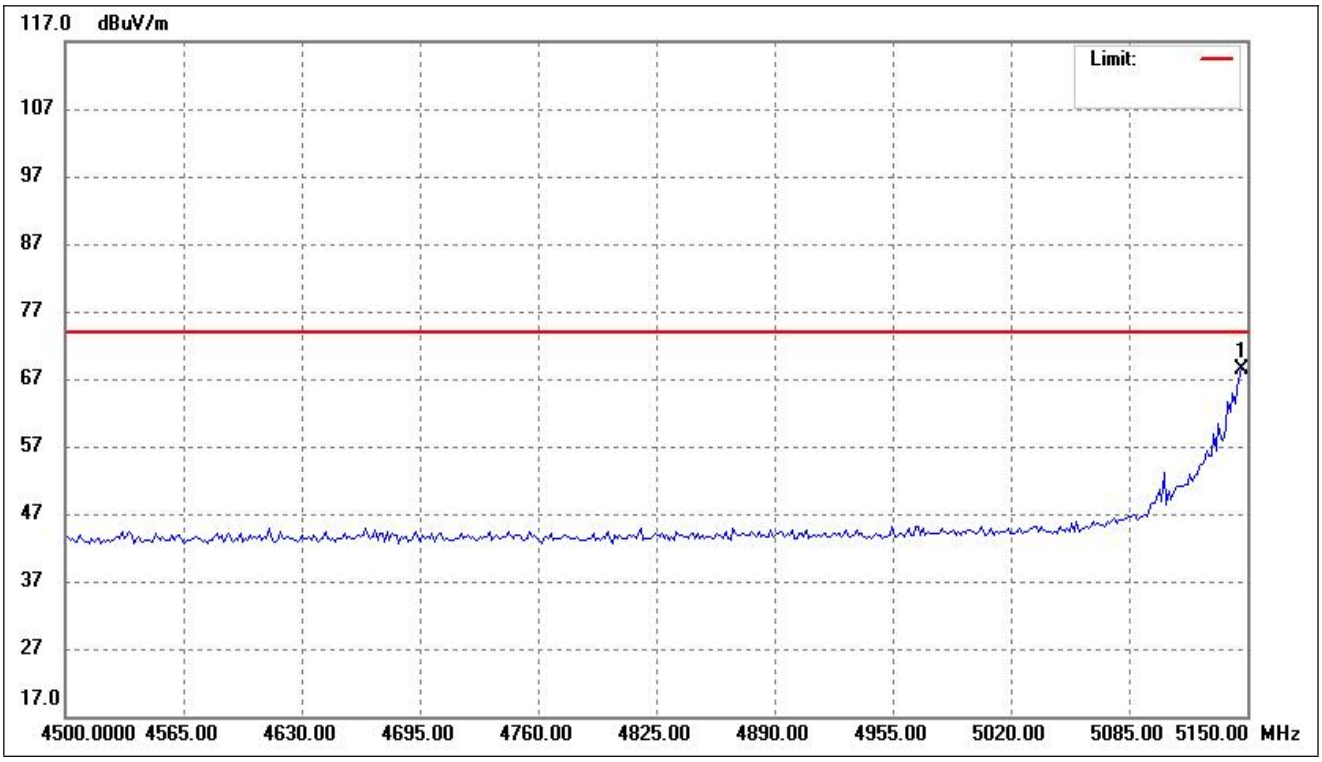
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	79.70	-11.66	68.04	74.00	-5.96	-	-	peak

802.11n-HT40- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



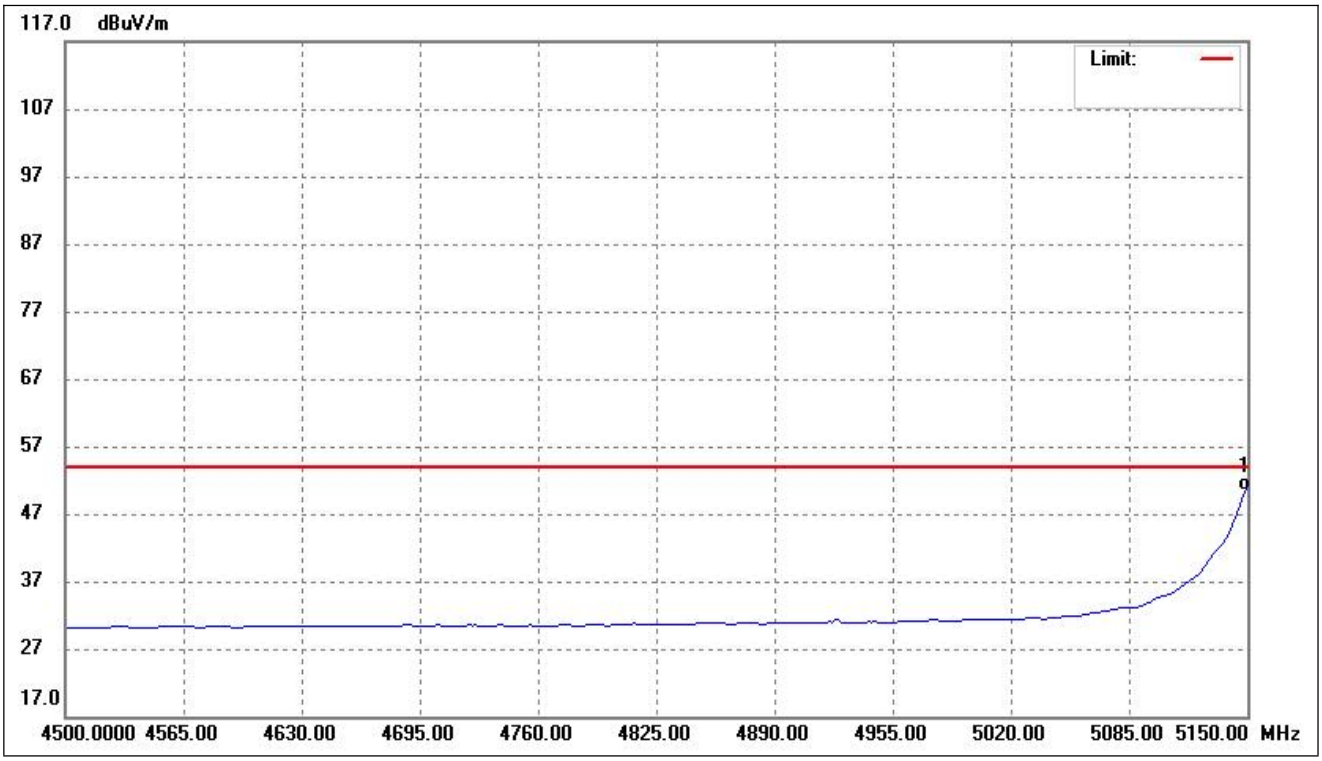
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	57.27	-11.66	45.61	54.00	-8.39	-	-	AVG

802.11ac-VHT40- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



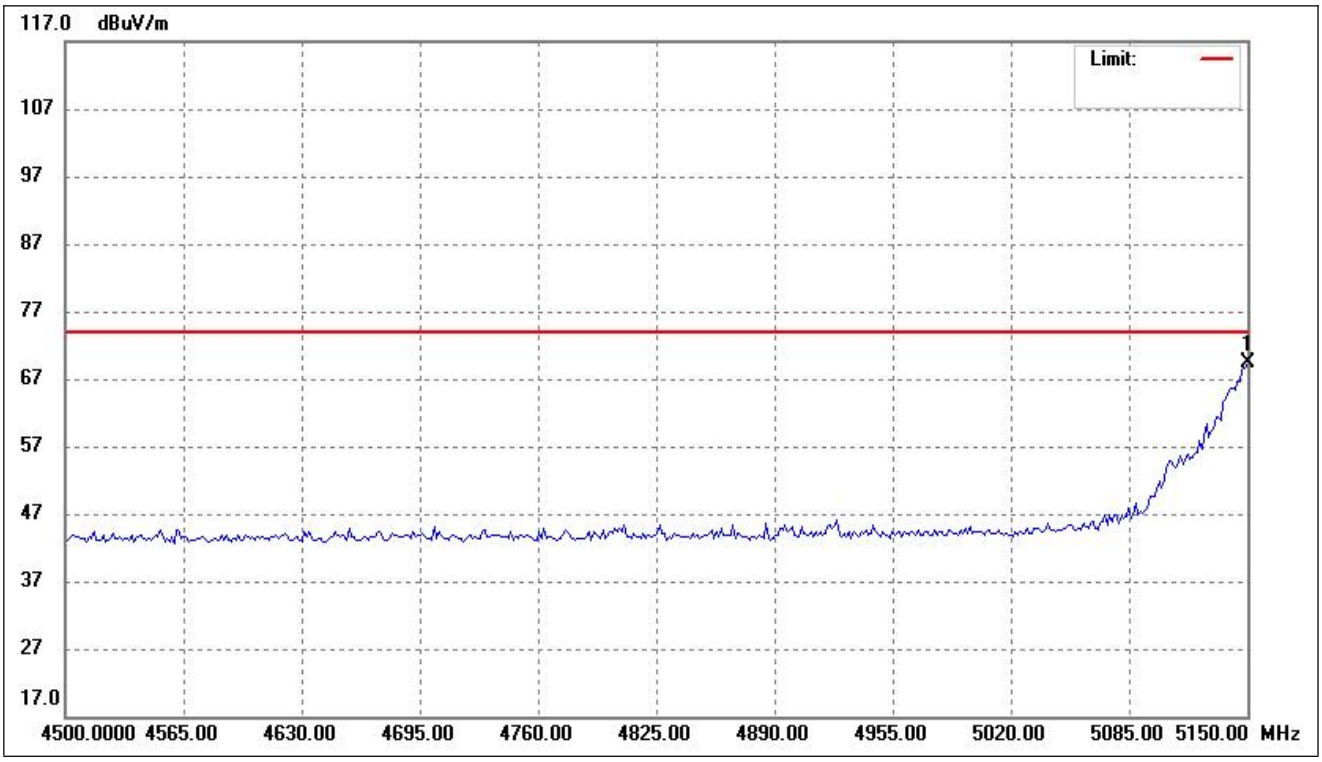
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5147.395	80.05	-11.67	68.38	74.00	-5.62	-	-	peak

802.11ac-VHT40- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



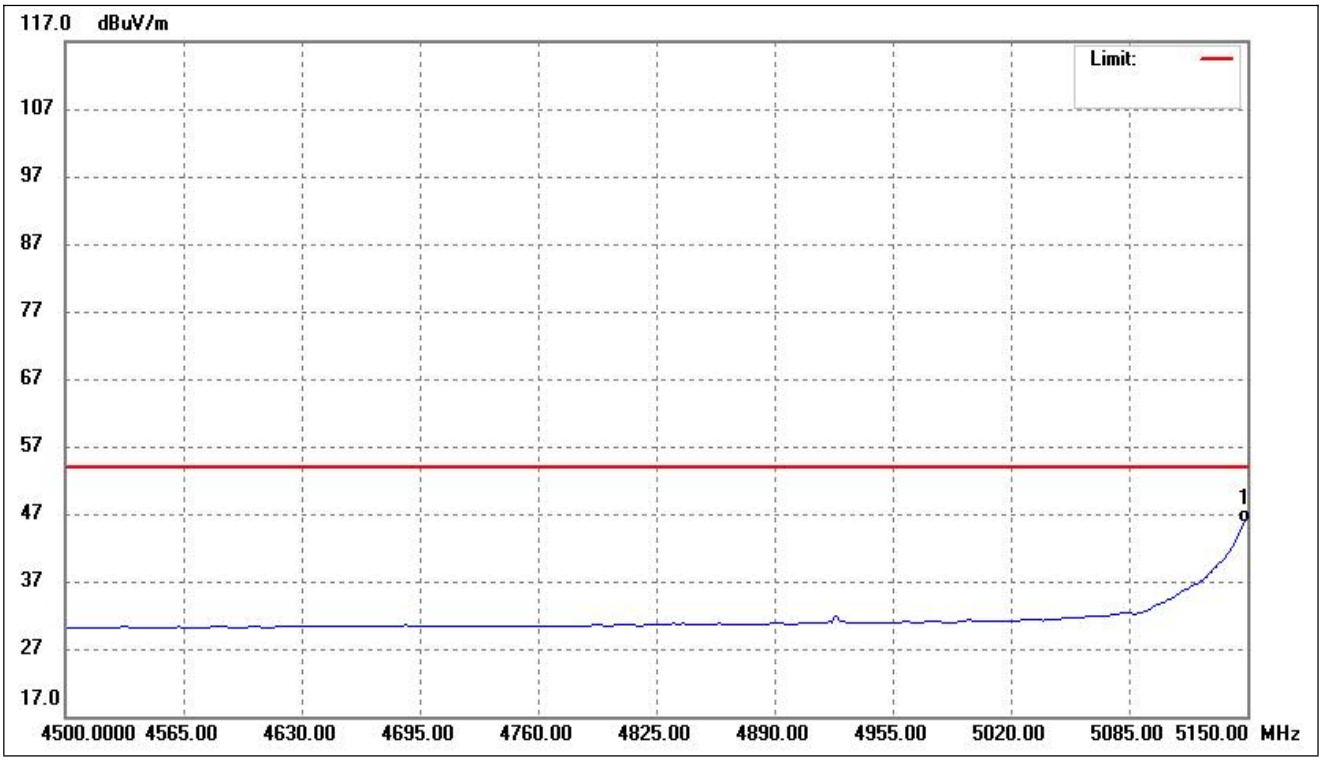
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	62.93	-11.66	51.27	54.00	-2.73	-	-	AVG

802.11ax-HE40- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



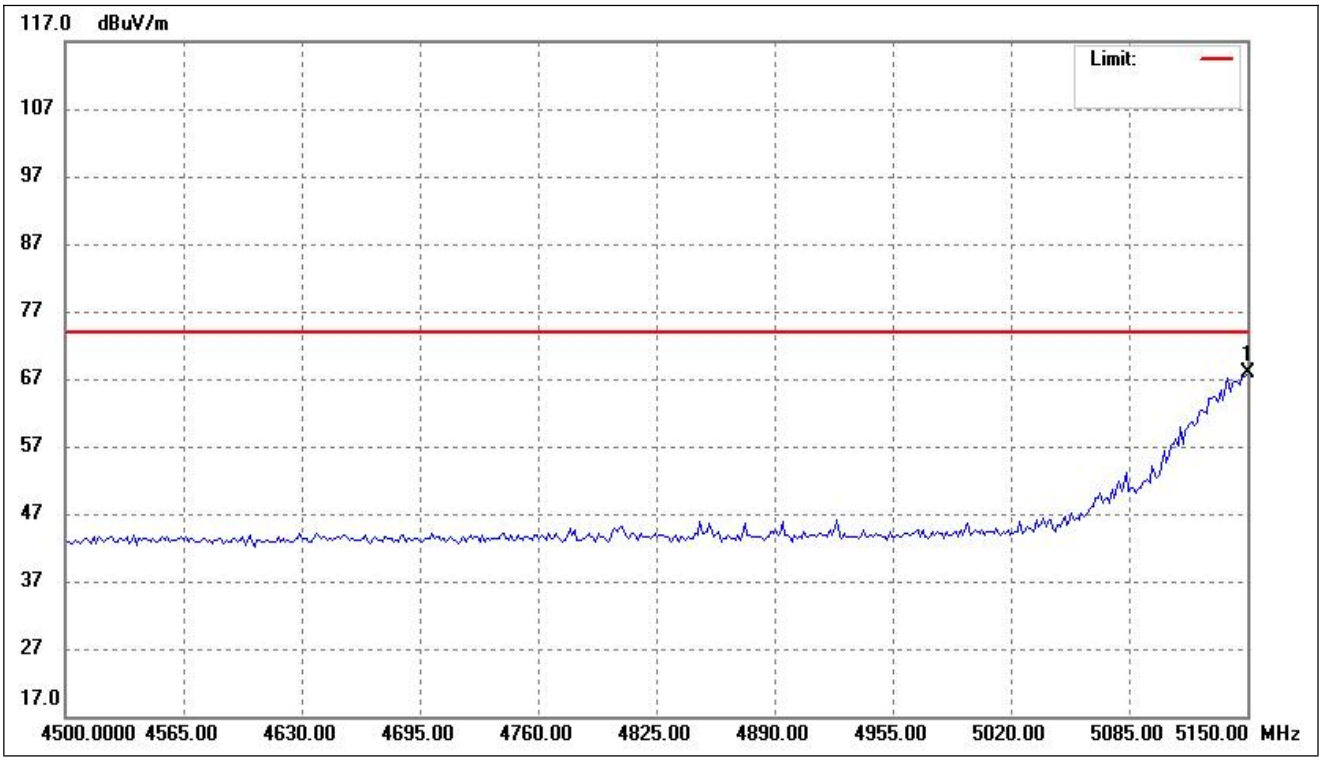
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	81.15	-11.66	69.49	74.00	-4.51	-	-	peak

802.11ax-HE40- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



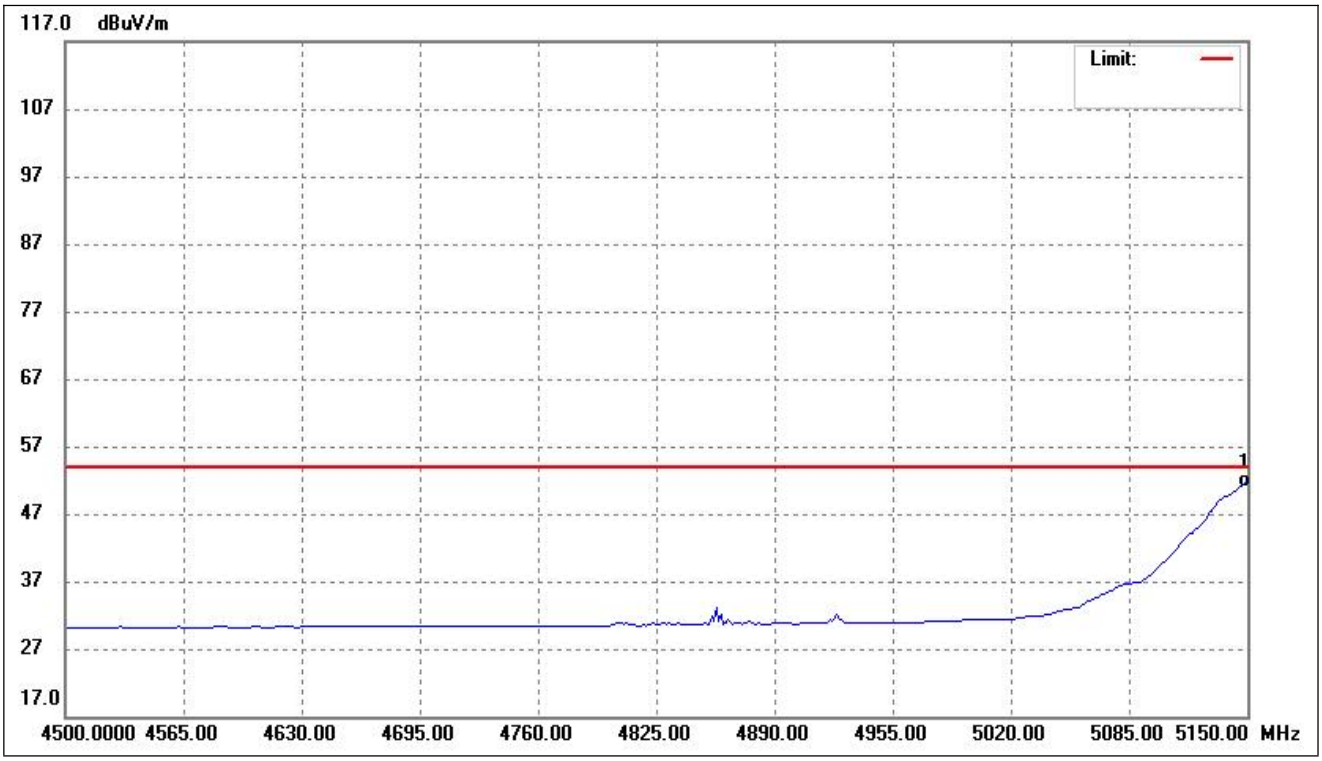
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	58.20	-11.66	46.54	54.00	-7.46	-	-	AVG

802.11ac-VHT80- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



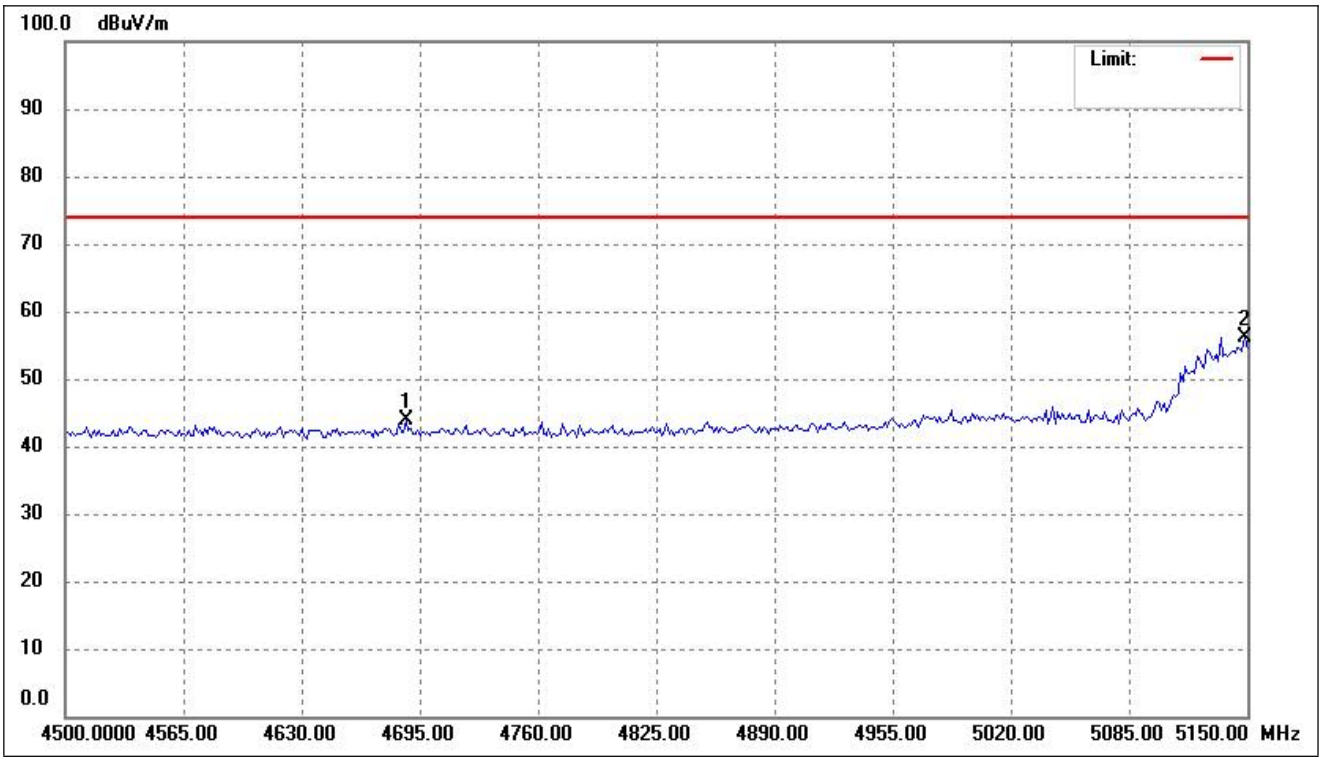
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	79.52	-11.66	67.86	74.00	-6.14	-	-	peak

802.11ac-VHT80- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



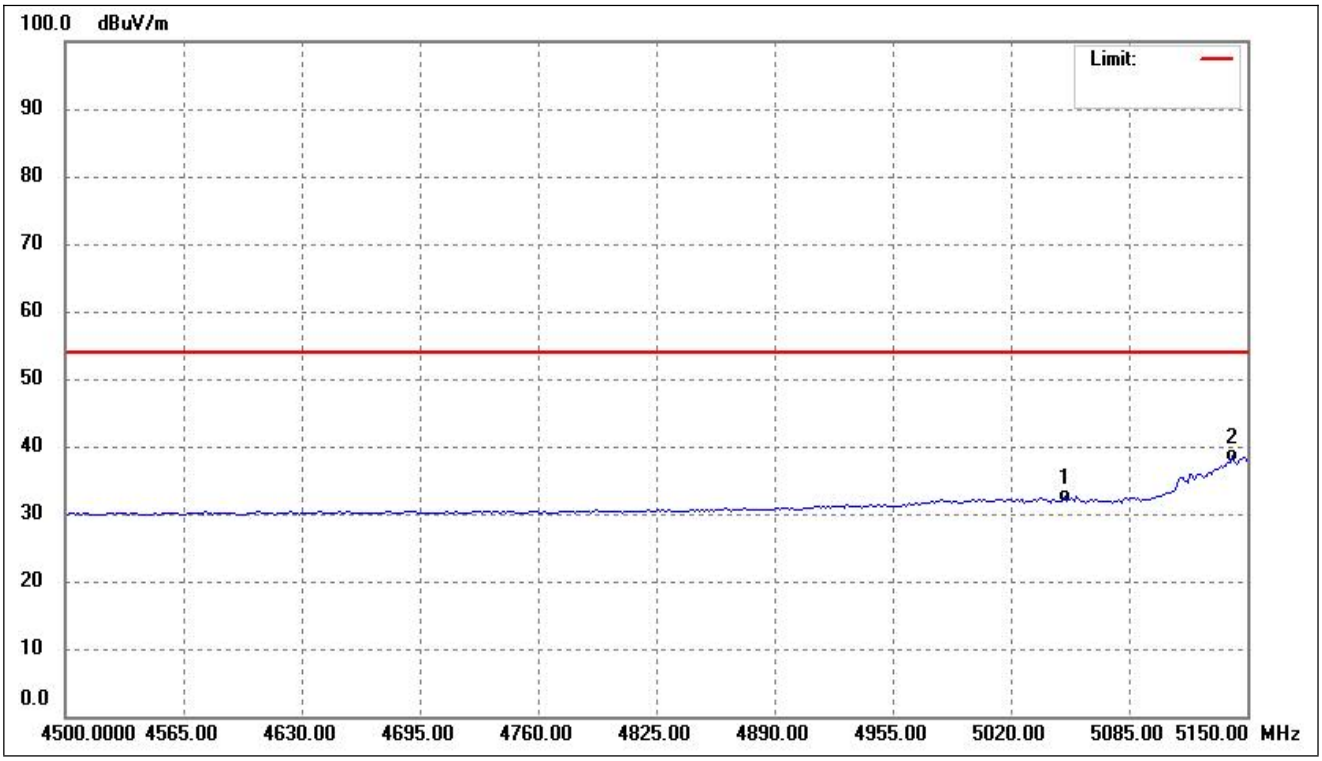
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5150.000	63.54	-11.66	51.88	54.00	-2.12	-	-	AVG

802.11ax-HE80- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	4687.575	57.59	-13.65	43.94	74.00	-30.06	-	-	peak
2	5148.697	68.74	-12.53	56.21	74.00	-17.79	-	-	peak

802.11ax-HE80- Restricted Bandedge			
Test Channel	band 5.15-5.25GHz	Polarity:	Horizontal(worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5049.699	45.64	-13.03	32.61	54.00	-21.39	-	-	AVG
2	5142.184	51.10	-12.58	38.52	54.00	-15.48	-	-	AVG

Note: The Restricted Bandedge was tested in Horizontal /Vertical and the worst case position data was reported.

Remark: '-'Means' the test Degree and Height is not recorded by the test software and only show the worst case in the test report.

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11a)
- Antenna 1
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	54.20	7.11	61.31	74	-12.69	H	PK
10360	40.05	7.11	47.16	54	-6.84	H	AV
10360	54.27	7.11	61.38	74	-12.62	V	PK
10360	38.11	7.11	45.22	54	-8.78	V	AV
High Channel (5240MHz)							
10480	55.93	7.22	63.15	74	-10.85	H	PK
10480	39.41	7.22	46.63	54	-7.37	H	AV
10480	57.40	7.22	64.62	74	-9.38	V	PK
10480	39.99	7.22	47.21	54	-6.79	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5745MHz)							
11490	56.50	9.02	65.52	74	-8.48	H	PK
11490	37.20	9.02	46.22	54	-7.78	H	AV
11490	54.95	9.02	63.97	74	-10.03	V	PK
11490	39.09	9.02	48.11	54	-5.89	V	AV
High Channel (5825MHz)							
11610	53.84	8.94	62.78	74	-11.22	H	PK
11610	38.08	8.94	47.02	54	-6.98	H	AV
11610	54.96	8.94	63.90	74	-10.10	V	PK
11610	39.51	8.94	48.45	54	-5.55	V	AV

➢ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-41.58	-27
Highest	Above 5350	-39.97	-27
Note: the data just list the worst cases			

➢ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-40.28	-27
	5715 to 5725	-31.24	-17
Highest	5850 to 5860	-28.48	-17
	Above 5860	-39.45	-27
Note: the data just list the worst cases			

- Antenna 2
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	54.33	7.11	61.44	74	-12.56	H	PK
10360	40.17	7.11	47.28	54	-6.72	H	AV
10360	54.63	7.11	61.74	74	-12.26	V	PK
10360	40.37	7.11	47.48	54	-6.52	V	AV
High Channel (5240MHz)							
10480	53.25	7.22	60.47	74	-13.53	H	PK
10480	40.15	7.22	47.37	54	-6.63	H	AV
10480	55.18	7.22	62.40	74	-11.60	V	PK
10480	39.52	7.22	46.74	54	-7.26	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5745MHz)							
11490	53.81	9.02	62.83	74	-11.17	H	PK
11490	36.75	9.02	45.77	54	-8.23	H	AV
11490	57.33	9.02	66.35	74	-7.65	V	PK
11490	38.31	9.02	47.33	54	-6.67	V	AV
High Channel (5825MHz)							
11610	54.98	8.94	63.92	74	-10.08	H	PK
11610	36.95	8.94	45.89	54	-8.11	H	AV
11610	54.03	8.94	62.97	74	-11.03	V	PK
11610	38.98	8.94	47.92	54	-6.08	V	AV

➢ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-42.28	-27
Highest	Above 5350	-38.41	-27
Note: the data just list the worst cases			

➢ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-39.41	-27
	5715 to 5725	-35.42	-17
Highest	5850 to 5860	-36.24	-17
	Above 5860	-37.36	-27
Note: the data just list the worst cases			

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11n HT20)
- Antenna 1 & Antenna 2
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	57.44	7.11	64.55	74	-9.45	57.44	PK
10360	39.12	7.11	46.23	54	-7.77	39.12	AV
10360	54.21	7.11	61.32	74	-12.68	54.21	PK
10360	39.47	7.11	46.58	54	-7.42	39.47	AV
High Channel (5240MHz)							
10480	55.36	7.22	62.58	74	-11.42	H	PK
10480	37.82	7.22	45.04	54	-8.96	H	AV
10480	57.39	7.22	64.61	74	-9.39	V	PK
10480	37.22	7.22	44.44	54	-9.56	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5745MHz)							
11490	57.06	9.02	66.08	74	-7.92	H	PK
11490	39.85	9.02	48.87	54	-5.13	H	AV
11490	54.49	9.02	63.51	74	-10.49	V	PK
11490	36.85	9.02	45.87	54	-8.13	V	AV
High Channel (5825MHz)							
11610	56.73	8.94	65.67	74	-8.33	H	PK
11610	39.89	8.94	48.83	54	-5.17	H	AV
11610	55.30	8.94	64.24	74	-9.76	V	PK
11610	36.97	8.94	45.91	54	-8.09	V	AV

➢ Out of Band edge 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-39.42	-27
Highest	Above 5350	-38.87	-27
Note: the data just list the worst cases			

➢ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-38.45	-27
	5715 to 5725	-37.12	-17
Highest	5850 to 5860	-35.52	-17
	Above 5860	-39.07	-27
Note: the data just list the worst cases			

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11ax HE20)
- Antenna 1 & Antenna 2
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	55.87	7.11	62.98	74	-11.02	H	PK
10360	40.31	7.11	47.42	54	-6.58	H	AV
10360	56.51	7.11	63.62	74	-10.38	V	PK
10360	38.04	7.11	45.15	54	-8.85	V	AV
High Channel (5240MHz)							
10480	56.47	7.22	63.69	74	-10.31	H	PK
10480	40.39	7.22	47.61	54	-6.39	H	AV
10480	56.81	7.22	64.03	74	-9.97	V	PK
10480	38.57	7.22	45.79	54	-8.21	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5745MHz)							
11490	56.36	9.02	65.38	74	-8.62	H	PK
11490	38.46	9.02	47.48	54	-6.52	H	AV
11490	54.44	9.02	63.46	74	-10.54	V	PK
11490	39.66	9.02	48.68	54	-5.32	V	AV
High Channel (5825MHz)							
11610	53.80	8.94	62.74	74	-11.26	H	PK
11610	37.54	8.94	46.48	54	-7.52	H	AV
11610	54.64	8.94	63.58	74	-10.42	V	PK
11610	37.79	8.94	46.73	54	-7.27	V	AV

➢ Out of Band edge 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-41.74	-27
Highest	Above 5350	-39.62	-27
Note: the data just list the worst cases			

➢ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-37.25	-27
	5715 to 5725	-28.63	-17
Highest	5850 to 5860	-30.71	-17
	Above 5860	-35.31	-27
Note: the data just list the worst cases			

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11n HT40)
- Antenna 1 & Antenna 2
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5190MHz)							
10380	55.95	7.89	63.84	74	-10.16	H	PK
10380	39.19	7.89	47.08	54	-6.92	H	AV
10380	53.94	7.89	61.83	74	-12.17	V	PK
10380	41.34	7.89	49.23	54	-4.77	V	AV
High Channel (5230MHz)							
10460	56.31	7.97	64.28	74	-9.72	H	PK
10460	41.84	7.97	49.81	54	-4.19	H	AV
10460	52.26	7.97	60.23	74	-13.77	V	PK
10460	38.40	7.97	46.37	54	-7.63	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5755MHz)							
11510	54.71	9.36	64.07	74	-9.93	H	PK
11510	38.06	9.36	47.42	54	-6.58	H	AV
11510	54.36	9.36	63.72	74	-10.28	V	PK
11510	38.23	9.36	47.59	54	-6.41	V	AV
High Channel (5795MHz)							
11590	56.32	8.57	64.89	74	-9.11	H	PK
11590	36.76	8.57	45.33	54	-8.67	H	AV
11590	54.05	8.57	62.62	74	-11.38	V	PK
11590	39.98	8.57	48.55	54	-5.45	V	AV

➢ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-37.18	-27
Highest	Above 5350	-41.36	-27
Note: the data just list the worst cases			

➢ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-35.58	-27
	5715 to 5725	-32.41	-17
Highest	5850 to 5860	-29.41	-17
	Above 5860	-38.92	-27
Note: the data just list the worst cases.			

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11ax HE40)
- Antenna 1 & Antenna 2
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5190MHz)							
10380	54.98	7.89	62.87	74	-11.13	H	PK
10380	42.34	7.89	50.23	54	-3.77	H	AV
10380	55.22	7.89	63.11	74	-10.89	V	PK
10380	39.25	7.89	47.14	54	-6.86	V	AV
High Channel (5230MHz)							
10460	53.77	7.97	61.74	74	-12.26	H	PK
10460	40.99	7.97	48.96	54	-5.04	H	AV
10460	55.24	7.97	63.21	74	-10.79	V	PK
10460	41.20	7.97	49.17	54	-4.83	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5755MHz)							
11510	55.97	9.36	65.33	74	-8.67	H	PK
11510	38.57	9.36	47.93	54	-6.07	H	AV
11510	52.06	9.36	61.42	74	-12.58	V	PK
11510	39.21	9.36	48.57	54	-5.43	V	AV
High Channel (5795MHz)							
11590	57.21	8.57	65.78	74	-8.22	H	PK
11590	39.19	8.57	47.76	54	-6.24	H	AV
11590	54.74	8.57	63.31	74	-10.69	V	PK
11590	38.00	8.57	46.57	54	-7.43	V	AV

➢ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-42.12	-27
Highest	Above 5350	-40.38	-27
Note: the data just list the worst cases			

➢ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-39.52	-27
	5715 to 5725	-29.35	-17
Highest	5850 to 5860	-27.16	-17
	Above 5860	-37.25	-27
Note: the data just list the worst cases.			

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11ac-VHT80)
- Antenna 1 & Antenna 2
- Harmonics And Spurious Emissions

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
5210MHz							
10420	56.95	7.52	64.47	74	-9.53	H	PK
10420	38.59	7.52	46.11	54	-7.89	H	AV
10420	53.55	7.52	61.07	74	-12.93	V	PK
10420	38.09	7.52	45.61	54	-8.39	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
5775MHz							
11550	57.06	9.01	66.07	74	-7.93	H	PK
11550	40.16	9.01	49.17	54	-4.83	H	AV
11550	54.95	9.01	63.96	74	-10.04	V	PK
11550	39.18	9.01	48.19	54	-5.81	V	AV

- Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-37.58	-27
Highest	Above 5350	-39.10	-27
Note: the data just list the worst cases			

- Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-40.28	-27
	5715 to 5725	-32.47	-17
Highest	5850 to 5860	-34.87	-17
	Above 5860	-38.74	-27
Note: the data just list the worst cases.			

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11ax HE80)
- Antenna 1 & Antenna 2
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
5210MHz							
10420	56.53	7.52	64.05	74	-9.95	H	PK
10420	37.58	7.52	45.10	54	-8.90	H	AV
10420	53.87	7.52	61.39	74	-12.61	V	PK
10420	36.68	7.52	44.20	54	-9.80	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
5775MHz							
11550	57.07	9.01	66.08	74	-7.92	H	PK
11550	40.26	9.01	49.27	54	-4.73	H	AV
11550	56.64	9.01	65.65	74	-8.35	V	PK
11550	38.92	9.01	47.93	54	-6.07	V	AV

- Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-39.39	-27
Highest	Above 5350	-37.11	-27
Note: the data just list the worst cases			

- Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-38.41	-27
	5715 to 5725	-29.32	-17
Highest	5850 to 5860	-30.47	-17
	Above 5860	-39.76	-27
Note: the data just list the worst cases.			

Note: Testing is carried out with frequency rang 9kHz to 40GHz, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

9. Frequency Stability

9.1 Standard Applicable

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

9.2 Test Procedure

According to §2.1055, the following test procedure was performed.
The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.
The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode.

9.3 Summary of Test Results/Plots

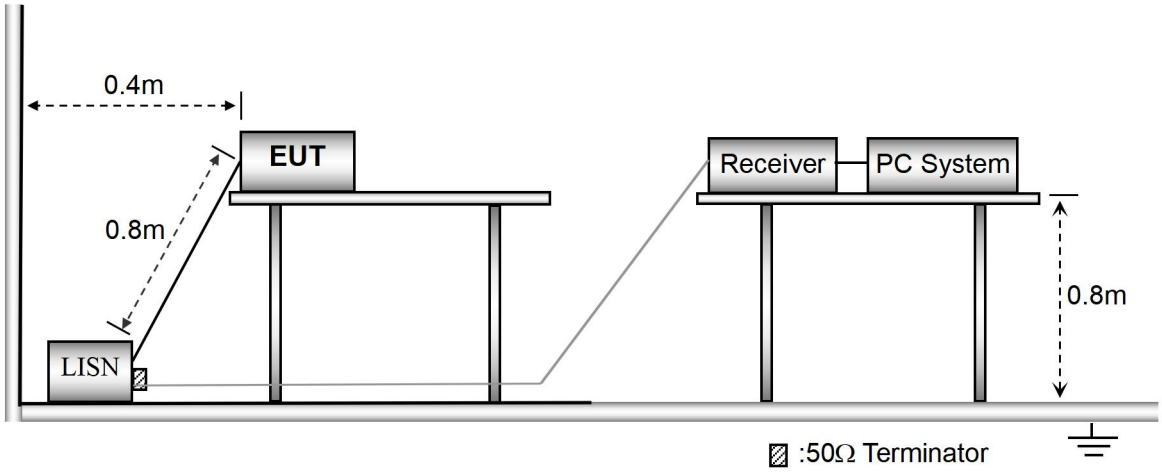
Please refer to Appendix F

10 Conducted Emissions

10.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle. The spacing between the peripherals was 10cm.

10.2 Basic Test Setup Block Diagram



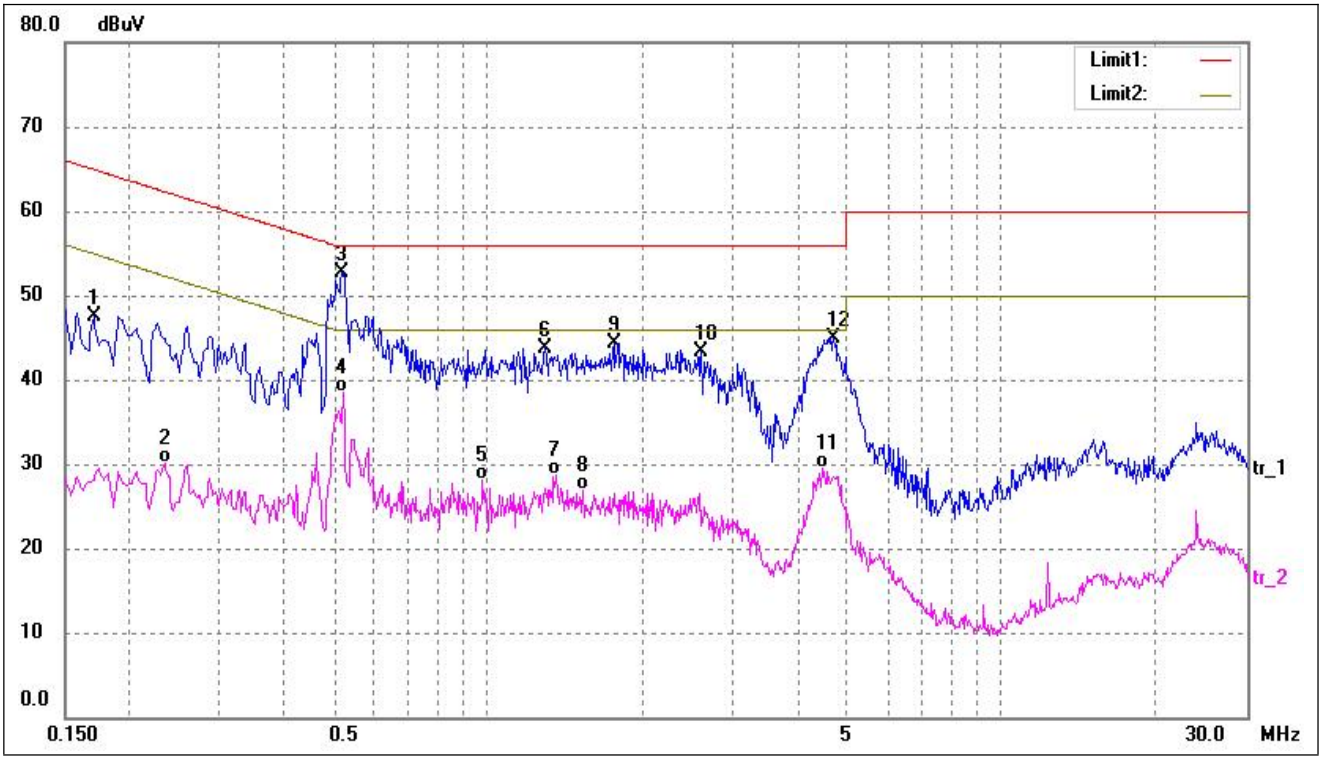
10.3 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency..... 150kHz
Stop Frequency..... 30MHz
Sweep Speed.....Auto
IF Bandwidth..... 10kHz
Quasi-Peak Adapter Bandwidth..... 9kHz
Quasi-Peak Adapter Mode.....Normal

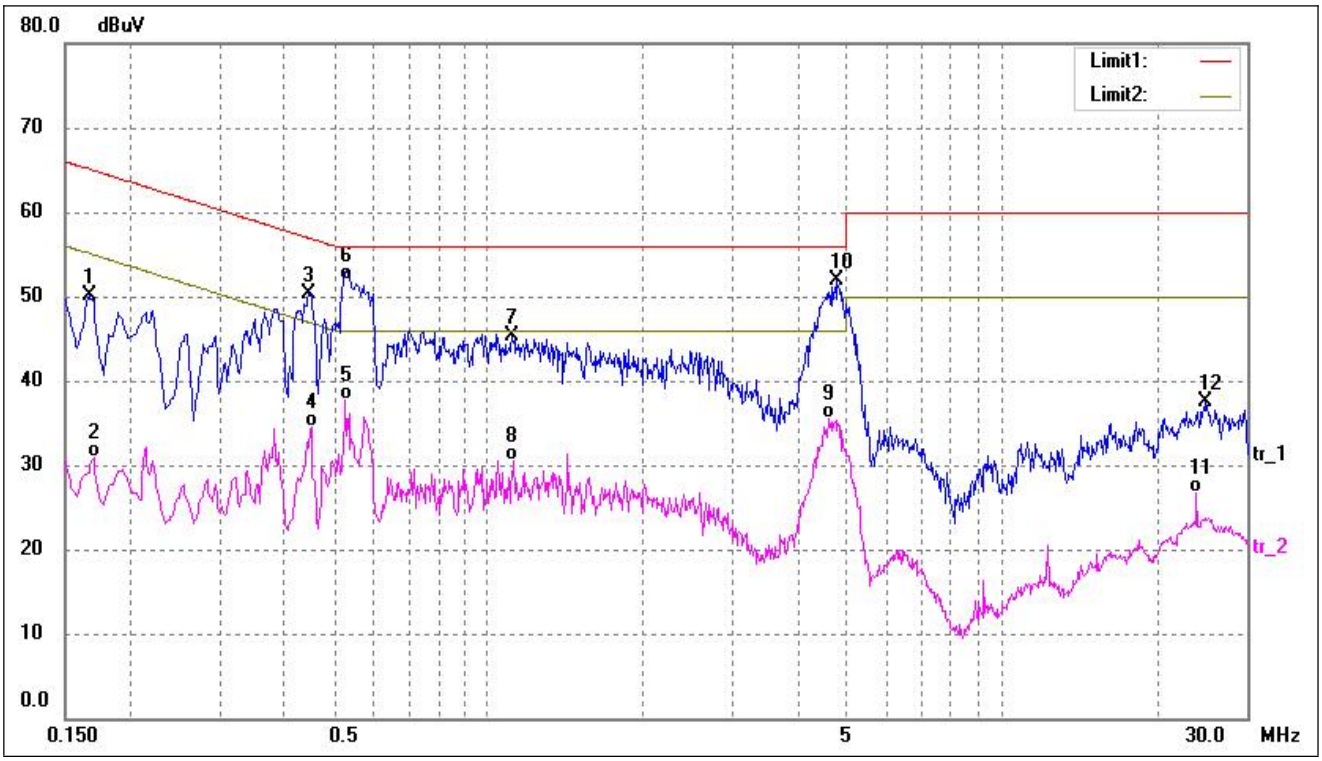
10.4 Summary of Test Results/Plots

Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1700	37.86	9.69	47.55	64.96	-17.41	QP
2	0.2340	20.50	9.59	30.09	52.30	-22.21	AVG
3*	0.5180	43.02	9.74	52.76	56.00	-3.24	QP
4	0.5220	28.80	9.74	38.54	46.00	-7.46	AVG
5	0.9740	18.40	9.67	28.07	46.00	-17.93	AVG
6	1.2940	34.14	9.66	43.80	56.00	-12.20	QP
7	1.3580	19.06	9.65	28.71	46.00	-17.29	AVG
8	1.5339	17.19	9.64	26.83	46.00	-19.17	AVG
9	1.7580	34.64	9.63	44.27	56.00	-11.73	QP
10	2.6060	33.60	9.62	43.22	56.00	-12.78	QP
11	4.4540	19.79	9.68	29.47	46.00	-16.53	AVG
12	4.7020	35.26	9.70	44.96	56.00	-11.04	QP

Test Mode	Communication	AC120V 60Hz	Polarity:	Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1660	40.33	9.70	50.03	65.15	-15.12	QP
2	0.1700	21.29	9.69	30.98	54.96	-23.98	AVG
3	0.4460	40.52	9.71	50.23	56.95	-6.72	QP
4	0.4500	24.79	9.71	34.50	46.87	-12.37	AVG
5	0.5260	28.02	9.73	37.75	46.00	-8.25	AVG
6*	0.5299	42.16	9.73	51.89	56.00	-4.11	QP
7	1.1140	35.64	9.66	45.30	56.00	-10.70	QP
8	1.1180	20.93	9.66	30.59	46.00	-15.41	AVG
9	4.6220	25.83	9.70	35.53	46.00	-10.47	AVG
10	4.7860	42.18	9.70	51.88	56.00	-4.12	QP
11	23.9980	16.52	10.11	26.63	50.00	-23.37	AVG
12	24.9060	27.47	10.08	37.55	60.00	-22.45	QP

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

******* END OF REPORT *******