MEASUREMENT REPORT

FCC PART 15 Subpart C WLAN 802.11b/g/n/ax

FCC ID:	TE7AX50
APPLICANT:	TP-Link Technologies Co., Ltd.
Application Type:	CLASS II PERMISSIVE CHANGE
Product:	AX3000 Gigabit Wi-Fi 6 Router
Model No.:	Archer AX50, Archer AX3000
Brand Name:	tp-link
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part15 Subpart C (Section 15.247)
Test Procedure(s):	ANSI C63.10-2013, KDB 558074 D01v05r02 KDB 662911 D01v02r01
Test Date:	April 25 ~ December 20, 2019

Reviewed By: Paddy Chen
(Paddy Chen)

Approved By: Chenz Ker
(Chenz Ker)

Testing Laboratory
3261

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
1912TW0111-U1	Rev. 01	Initial Report	12-20-2019	Valid

Note: This report is prepared for FCC Class II permissive change supplement to MRT original "1905TW0114-U1" report adding beamforming function by software control and adding related data.

CONTENTS

§2.1033 General Information

Applicant:	TP-Link Technologies Co., Ltd.
Applicant Address:	Building 24 (floors 1,3,4,5) and 28 (floors1-4), Central Science and Technology Park,Nanshan Shenzhen, 518057 China
Manufacturer:	TP-Link Technologies Co., Ltd.
Manufacturer Address:	Building 24 (floors 1,3,4,5) and 28 (floors1-4), Central Science and Technology Park,Nanshan Shenzhen, 518057 China
Test Site:	MRT Technology (Taiwan) Co., Ltd
Test Site Address:	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Fuxing Rd., Taoyuan, Taiwan (R.O.C)

- **MRT facility is a FCC registered (Reg. No. 153292 and 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.**
- **MRT facility is an IC registered (MRT Reg. No. 21723-1) test laboratory with the site description on file at Industry Canada.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (TAF) under the American Association for Laboratory Accreditation Program (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC, Industry Taiwan, EU and TELEC Rules.**

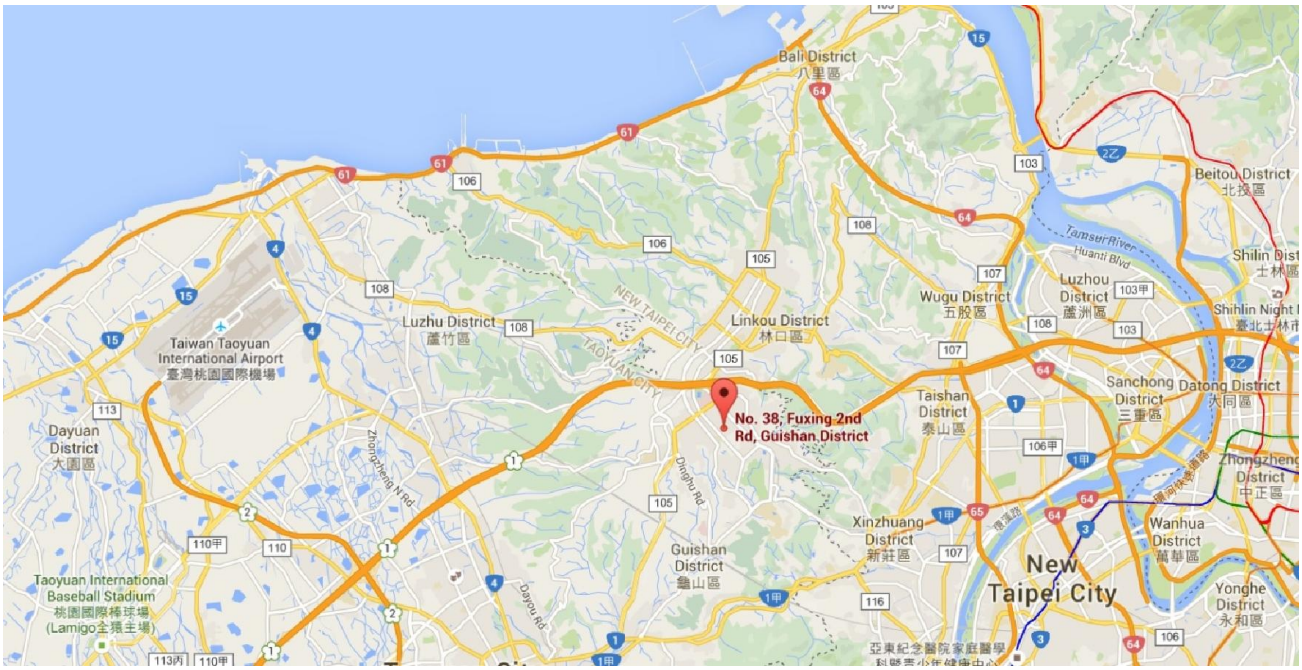
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



2. PRODUCT INFORMATION

2.1. Feature of Equipment under Test

Product Name:	AX3000 Gigabit Wi-Fi 6 Router
Model No.:	Archer AX50, Archer AX3000
Brand Name:	tp-link
Wi-Fi Specification:	802.11a/b/g/n/ax

Note: These models are different in the USB interface, “Archer AX50” supports USB 3.0, “Archer AX3000” supports USB2.0. Other circuits are the same. So Archer AX50 is chosen for the tests.

2.2. Product Specification Subjective to this Report

Frequency Range:	802.11b/g/n-HT20/ax-HE20: 2412 ~ 2462MHz 802.11n-HT40/ax-HE40: 2422 ~ 2452MHz
Channel Number:	802.11b/g/n-HT20/ax-HE20: 11 802.11n-HT40/ax-HE40: 7
Type of Modulation:	802.11b: DSSS 802.11g/n: OFDM 802.11ax:OFDMA
Data Rate:	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ax: up to 574Mbps

Note: For other features of this EUT, test report will be issued separately.

2.3. Working Frequencies for this report

802.11b/g/ax-HE20

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

802.11n-HT40/ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz
06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	--	--	--	--

2.4. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	TX Paths	Max Antenna Gain (dBi)	BF Directional Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
Dipole Antenna	2400 ~ 2500	2	2.0	5.01	2.0	5.01
	5150 ~ 5850	2	3.0	6.01	3.0	6.01

Note:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

   For CDD transmissions, directional gain is calculated as follows, N_{ANT} = 2, N_{SS} = 1.

   If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

   - For power spectral density (PSD) measurements on all devices,

   Array Gain = 10 log (N_{ANT}/ N_{SS}) dB = 3.01;

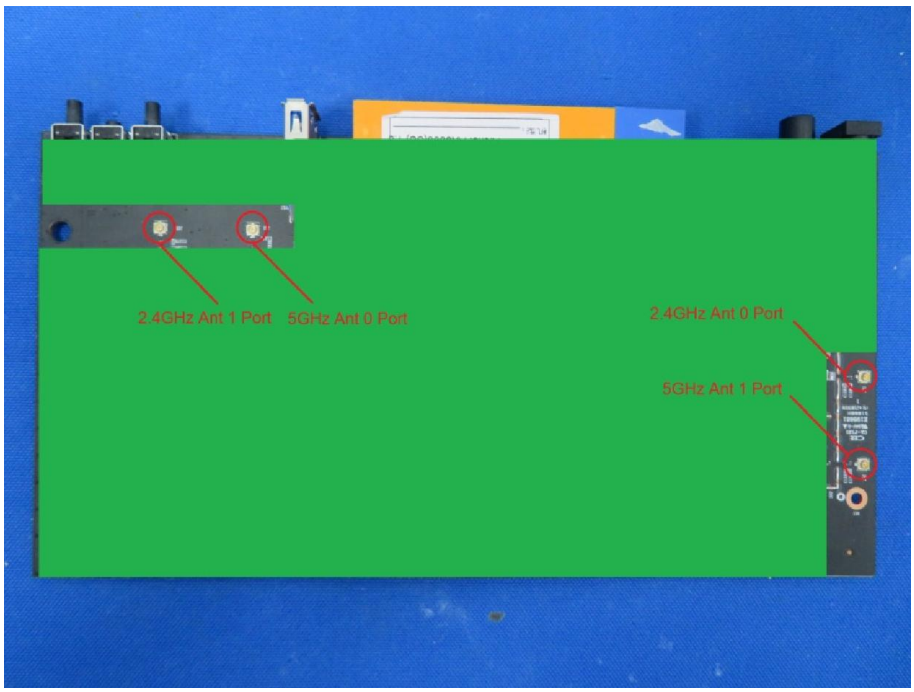
   - For power measurements on IEEE 802.11 devices,

   Array Gain = 0 dB for $N_{ANT} \leq 4$;

2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11ac/ax, not include 802.11a/b/g/n. BF Directional gain = G_{ANT} + 10 log (N_{ANT}).

2.5. Description of Antenna RF Port

Antenna RF Port				
Software Control Port	2.4GHz RF Port		5GHz RF Port	
	Ant 0	Ant 1	Ant 0	Ant 1



2.6. Test Mode

Test Mode	Mode 1: Transmit by 802.11ax-HE20 (MCS0) (BF Mode)
	Mode 2: Transmit by 802.11ax-HE40 (MCS0) (BF Mode)

2.7. Description of Test Software

The test utility software used during testing was “DUT_GUI.exe”.

Power Parameter Value for Beam-Forming Mode

Test Mode	Test Frequency (MHz)	Power Parameter Value	Test Mode	Test Frequency (MHz)	Power Parameter Value
11ax-HE20	2412	10.5	11ax-HE40	2422	16.0
	2417	18.0		2427	16.0
	2422	20.5		2437	18.5
	2437	22.0		2447	17.5
	2452	22.5		2452	17.5
	2457	21.0	--		
	2462	12.0			

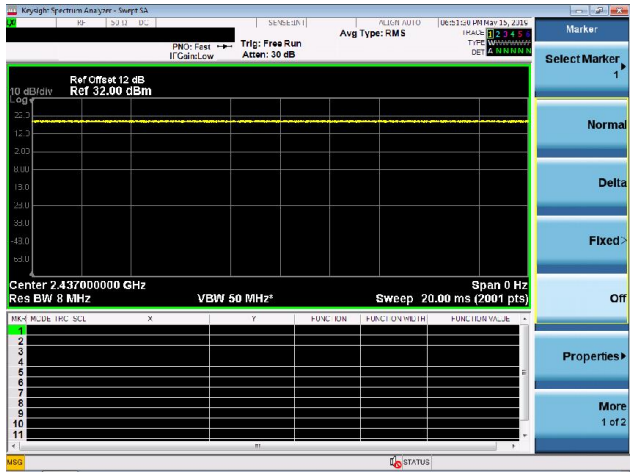
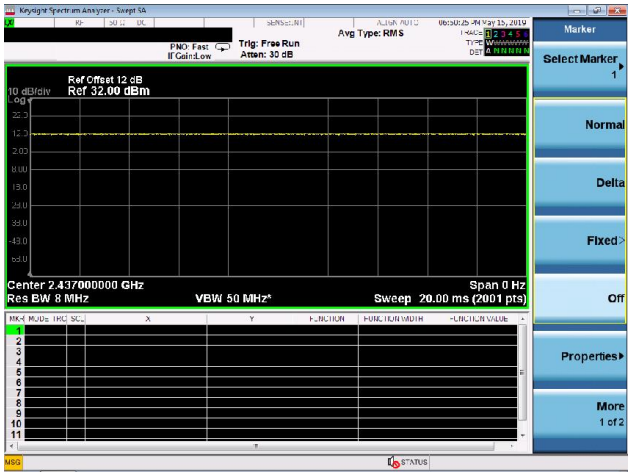
2.8. Device Capabilities

This device contains the following capabilities:

2.4GHz WLAN (DTS), 5GHz WLAN (NII)

Note: 2.4GHz WLAN (DTS) operation is possible in 20MHz and 40MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Model No.	Test Mode	Duty Cycle
Archer AX50	802.11ax-HE20	100.00%
	802.11ax-HE40	100.00%

Duty Cycle	
802.11ax-HE20	802.11ax-HE40
	

2.9. Test Configuration

The device was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.10. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.11. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3. DESCRIPTION of TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance was used in the measurement.
Deviation from measurement procedure…….....None

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.
The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.
Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.
An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.
For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.
Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

4. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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."

- The antenna of the device is **permanently attached.**
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2020/03/25
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2020/04/25
8-Wire ISN (T8)	R&S	ENY81	MRTTWA00018	1 year	2020/04/23
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/03/25
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/05/20

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Acitve Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2020/04/29
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/05/22
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2020/04/22
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2020/04/23
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2020/04/24
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2020/04/24
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2020/03/26
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/03/25
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/07/30
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2020/06/18
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00032	1 year	2020/05/20

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2020/04/22
Wideband Radio Communication Taster	R&S	CMW 500	MRTTWA00041	1 year	2020/01/28
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/07/30
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTSUE06457	1 year	2020/07/19
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2020/03/26
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/05/20

Software	**Version**	**Function**
e3	9.160520a	EMI Test Software

6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement - SR2
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 150kHz~30MHz: 2.53dB
Radiated Emission Measurement - AC1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz ~ 1GHz: 4.25dB 1GHz ~ 25GHz: 4.45dB

7. TEST RESULT

7.1. Summary

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(b)(3)	Output Power	≤ 30dBm	Conducted	Pass	Section 7.2
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.3 & 7.4

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.
3) Due to the power setting of Beam-Forming mode is less than the CDD mode, so we only verify RF output power under CDD mode and assess RF output power and Radiated Emission testing under Beam-Forming mode.

7.2. Output Power Measurement

7.2.1.Test Limit

The maximum output power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2.2.Test Procedure Used

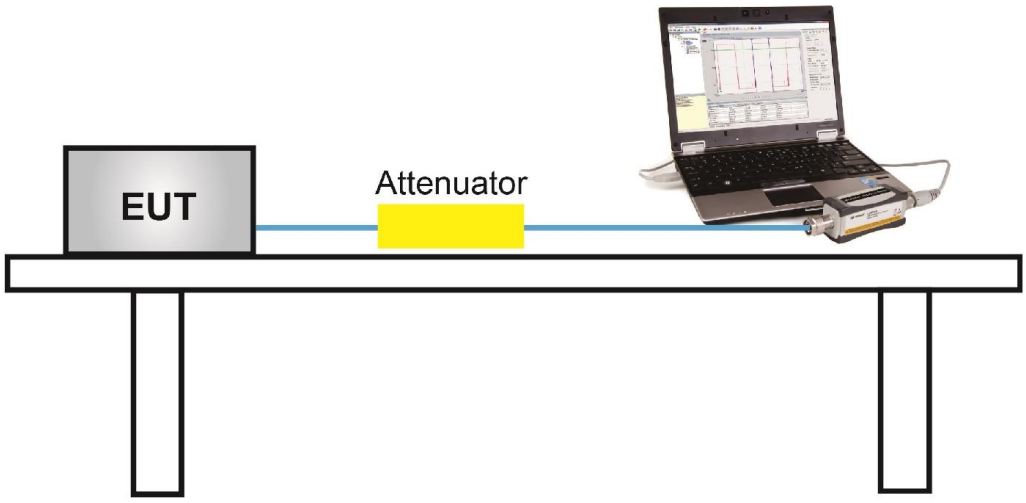
ANSI C63.10 Section 11.9.2.3.2

7.2.3.Test Setting

Average Power Measurement

Average power measurements were perform only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

7.2.4.Test Setup



7.2.5.Test Result

Power output test was verified over all data rates of each mode shown as below table, and then choose the maximum power output (gray marker) for final test of each channel.

Pre-Test RF Output Power at various data rates for Ant 0.

Ant 0 / Ant 0+1 - 802.11ax-HE20 - Channel 06 (2437MHz)												
Date Rate	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9	MCS 10	MCS 11
Power (dBm)	21.95	21.88	21.80	21.74	21.72	21.68	21.61	21.55	21.50	21.43	21.35	21.29

Ant 0 / Ant 0+1 - 802.11ax-HE40 - Channel 06 (2437MHz)												
Date Rate	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9	MCS 10	MCS 11
Power (dBm)	18.87	18.85	18.80	18.76	18.67	18.62	18.54	18.47	18.33	18.32	18.26	18.21

Note: All modes of operation and data rates were investigated, so all RF test requirements shall be executed at low data rates.

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	22 ~ 25°C
Test Engineer	Kevin Ker	Relative Humidity	46 ~ 56%
Test Site	SR1	Test Date	2019/12/18

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
Beam-Forming Mode								
802.11ax-HE20	MCS0	01	2412	9.01	8.76	11.90	≤ 30.00	Pass
802.11ax-HE20	MCS0	02	2417	18.06	17.94	21.01	≤ 30.00	Pass
802.11ax-HE20	MCS0	03	2422	20.27	18.41	22.45	≤ 30.00	Pass
802.11ax-HE20	MCS0	06	2437	21.95	22.56	25.28	≤ 30.00	Pass
802.11ax-HE20	MCS0	09	2452	22.52	21.58	25.09	≤ 30.00	Pass
802.11ax-HE20	MCS0	10	2457	21.06	21.09	24.09	≤ 30.00	Pass
802.11ax-HE20	MCS0	11	2462	10.65	11.00	13.84	≤ 30.00	Pass
802.11ax-HE40	MCS0	03	2422	16.09	15.65	18.89	≤ 30.00	Pass
802.11ax-HE40	MCS0	04	2427	16.10	15.78	18.95	≤ 30.00	Pass
802.11ax-HE40	MCS0	06	2437	18.87	18.46	21.68	≤ 30.00	Pass
802.11ax-HE40	MCS0	08	2447	18.02	15.73	20.03	≤ 30.00	Pass
802.11ax-HE40	MCS0	09	2452	17.59	16.27	19.99	≤ 30.00	Pass

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}$

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	22 ~ 25°C
Test Engineer	Kevin Ker	Relative Humidity	46 ~ 56%
Test Site	SR1	Test Date	2019/12/18

Verify CDD Mode Conducted Power

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
802.11b	1Mbps	01	2412	25.32	--	25.32	≤ 30.00	Pass
802.11b	1Mbps	06	2437	25.00	--	25.00	≤ 30.00	Pass
802.11b	1Mbps	11	2462	25.82	--	25.82	≤ 30.00	Pass
802.11g	6Mbps	01	2412	20.11	20.44	23.29	≤ 30.00	Pass
802.11g	6Mbps	02	2417	21.38	21.53	24.47	≤ 30.00	Pass
802.11g	6Mbps	03	2422	23.88	22.45	26.23	≤ 30.00	Pass
802.11g	6Mbps	06	2437	25.42	25.16	28.30	≤ 30.00	Pass
802.11g	6Mbps	09	2452	23.89	23.55	26.73	≤ 30.00	Pass
802.11g	6Mbps	10	2457	22.07	21.88	24.99	≤ 30.00	Pass
802.11g	6Mbps	11	2462	20.27	20.34	23.32	≤ 30.00	Pass
802.11n-HT20	MCS0	01	2412	20.04	21.05	23.58	≤ 30.00	Pass
802.11n-HT20	MCS0	02	2417	21.39	21.32	24.37	≤ 30.00	Pass
802.11n-HT20	MCS0	03	2422	22.76	21.72	25.28	≤ 30.00	Pass
802.11n-HT20	MCS0	06	2437	25.79	24.72	28.30	≤ 30.00	Pass
802.11n-HT20	MCS0	09	2452	24.60	24.30	27.46	≤ 30.00	Pass
802.11n-HT20	MCS0	10	2457	22.61	22.51	25.57	≤ 30.00	Pass
802.11n-HT20	MCS0	11	2462	19.92	19.89	22.92	≤ 30.00	Pass
802.11n-HT40	MCS0	03	2422	16.95	17.90	20.46	≤ 30.00	Pass
802.11n-HT40	MCS0	04	2427	19.80	19.30	22.57	≤ 30.00	Pass
802.11n-HT40	MCS0	06	2437	18.95	20.51	22.81	≤ 30.00	Pass
802.11n-HT40	MCS0	08	2447	21.05	20.69	23.88	≤ 30.00	Pass
802.11n-HT40	MCS0	09	2452	18.71	17.77	21.28	≤ 30.00	Pass
802.11ax-HE20	MCS0	01	2412	17.09	16.85	19.98	≤ 30.00	Pass
802.11ax-HE20	MCS0	02	2417	19.88	19.37	22.64	≤ 30.00	Pass
802.11ax-HE20	MCS0	03	2422	22.93	22.87	25.91	≤ 30.00	Pass
802.11ax-HE20	MCS0	06	2437	25.22	26.28	28.79	≤ 30.00	Pass
802.11ax-HE20	MCS0	09	2452	24.13	23.20	26.70	≤ 30.00	Pass
802.11ax-HE20	MCS0	10	2457	21.64	21.30	24.48	≤ 30.00	Pass
802.11ax-HE20	MCS0	11	2462	19.44	19.69	22.58	≤ 30.00	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
802.11ax-HE40	MCS0	03	2422	16.93	16.47	19.72	≤ 30.00	Pass
802.11ax-HE40	MCS0	04	2427	17.05	17.63	20.36	≤ 30.00	Pass
802.11ax-HE40	MCS0	06	2437	19.41	18.97	22.21	≤ 30.00	Pass
802.11ax-HE40	MCS0	08	2447	18.11	18.69	21.42	≤ 30.00	Pass
802.11ax-HE40	MCS0	09	2452	17.14	17.12	20.14	≤ 30.00	Pass

Note: For 802.11b

Total Average Power (dBm) = Ant 0 Average Power (dBm)

For 802.11g/n-HT20/n-HT40/ax-HE20/ax-HE40

Total Average Power (dBm) = $10*\log \{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}$

7.3. Radiated Spurious Emission Measurement

7.3.1.Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.3.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.3.3.Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000MHz	1MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. Span was set greater than 1MHz

3. RBW = as specified in Table 1

4. Detector = CISPR quasi-peak

5. Sweep time = auto couple

6. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW = 3MHz

4. Detector = peak

5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

4. Detector = Peak

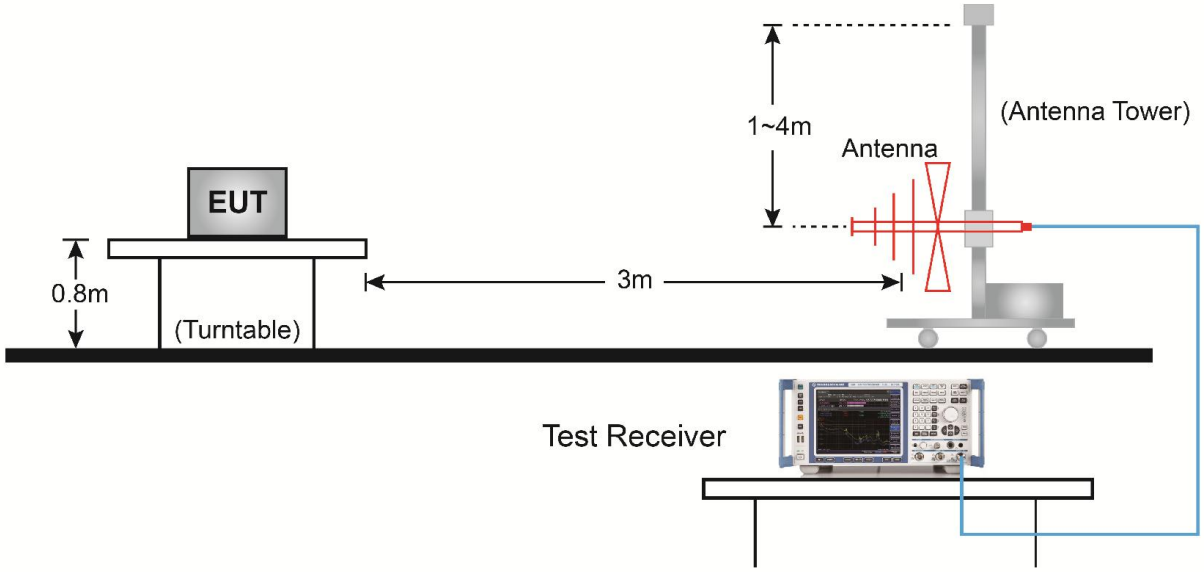
5. Sweep time = auto

6. Trace mode = max hold

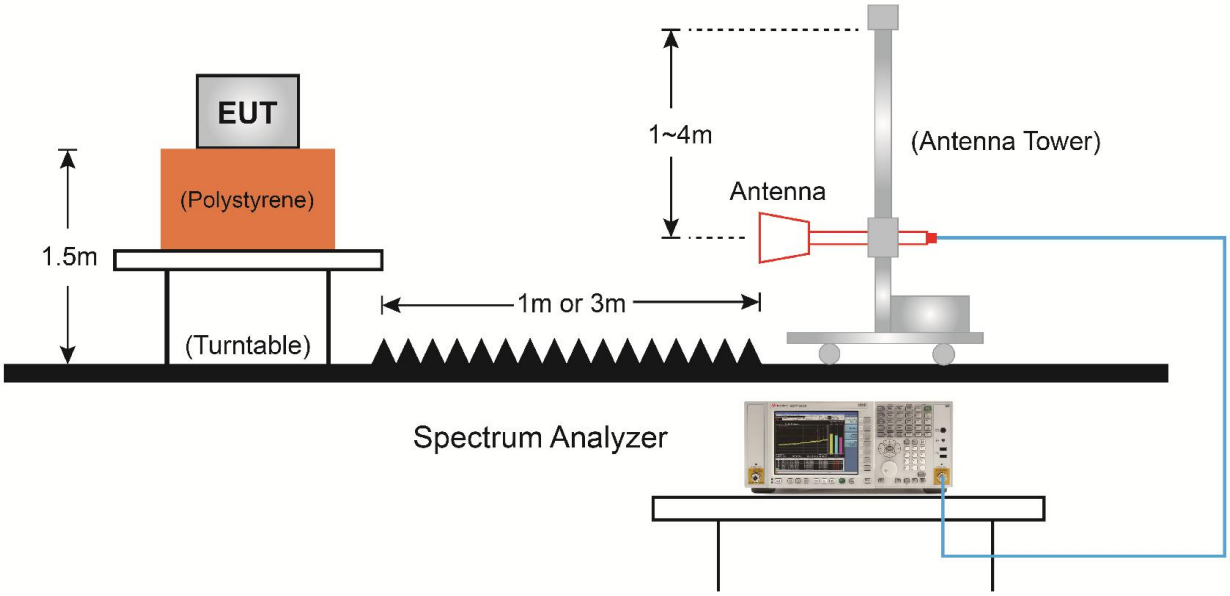
7. Trace was allowed to stabilize

7.3.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



7.3.5.Test Result

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	52%
Test Site	AC1	Test Date	2019/11/08
Test Mode	802.11ax-HE20 - Ant 0+1 (Beam-Forming Mode)	Test Channel	01
Note	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3839.0	43.5	-0.3	43.2	74.0	-30.8	Peak	Horizontal
	4825.0	40.4	3.2	43.6	74.0	-30.4	Peak	Horizontal
*	6431.5	38.0	7.4	45.4	82.2	-36.8	Peak	Horizontal
*	8871.0	35.9	13.4	49.3	82.2	-32.9	Peak	Horizontal
	3839.0	45.9	-0.3	45.6	74.0	-28.4	Peak	Vertical
	4825.0	47.5	3.2	50.7	74.0	-23.3	Peak	Vertical
*	6627.0	38.0	8.4	46.4	82.2	-35.8	Peak	Vertical
*	10086.5	35.7	15.5	51.2	82.2	-31.0	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 30dBc of the fundamental emission level (112.2dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	52%
Test Site	AC1	Test Date	2019/11/08
Test Mode	802.11ax-HE20 - Ant 0+1 (Beam-Forming Mode)	Test Channel	06
Note	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4289.5	40.1	1.5	41.6	74.0	-32.4	Peak	Horizontal
	4825.0	39.7	3.2	42.9	74.0	-31.1	Peak	Horizontal
*	6491.0	37.8	7.7	45.5	84.5	-39.0	Peak	Horizontal
*	8709.5	37.0	13.0	50.0	84.5	-34.5	Peak	Horizontal
	3839.0	46.0	-0.3	45.7	74.0	-28.3	Peak	Vertical
	4876.0	44.1	3.3	47.4	74.0	-26.6	Peak	Vertical
*	5913.0	38.7	5.5	44.2	84.5	-40.3	Peak	Vertical
*	6763.0	36.4	9.2	45.6	84.5	-38.9	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 30dBc of the fundamental emission level (114.5dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	52%
Test Site	AC1	Test Date	2019/11/08
Test Mode	802.11ax-HE20 - Ant 0+1 (Beam-Forming Mode)	Test Channel	11
Note	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3839.0	42.6	-0.3	42.3	74.0	-31.7	Peak	Horizontal
	4774.0	40.1	3.1	43.2	74.0	-30.8	Peak	Horizontal
*	5802.5	38.9	5.0	43.9	86.0	-42.1	Peak	Horizontal
*	6593.0	37.4	8.2	45.6	86.0	-40.4	Peak	Horizontal
	3839.0	46.1	-0.3	45.8	74.0	-28.2	Peak	Vertical
	4927.0	43.9	3.4	47.3	74.0	-26.7	Peak	Vertical
*	7230.5	37.2	11.1	48.3	86.0	-37.7	Peak	Vertical
*	8548.0	37.3	12.6	49.9	86.0	-36.1	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 30dBc of the fundamental emission level (116.0dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	52%
Test Site	AC1	Test Date	2019/11/08
Test Mode	802.11ax-HE40 - Ant 0+1 (Beam-Forming Mode)	Test Channel	03
Note	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3839.0	41.9	-0.3	41.6	74.0	-32.4	Peak	Horizontal
	4893.0	39.1	3.3	42.4	74.0	-31.6	Peak	Horizontal
*	6652.5	37.1	8.6	45.7	76.9	-31.2	Peak	Horizontal
*	8658.5	35.9	12.9	48.8	76.9	-28.1	Peak	Horizontal
	3839.0	45.4	-0.3	45.1	74.0	-28.9	Peak	Vertical
	4995.0	39.3	3.5	42.8	74.0	-31.2	Peak	Vertical
*	6261.5	37.5	6.8	44.3	76.9	-32.6	Peak	Vertical
*	6567.5	37.7	8.1	45.8	76.9	-31.1	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 30dBc of the fundamental emission level (106.9dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	52%
Test Site	AC1	Test Date	2019/11/08
Test Mode	802.11ax-HE40 - Ant 0+1 (Beam-Forming Mode)	Test Channel	06
Note	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3839.0	42.4	-0.3	42.1	74.0	-31.9	Peak	Horizontal
	5080.0	40.9	3.6	44.5	74.0	-29.5	Peak	Horizontal
*	6457.0	38.2	7.5	45.7	78.3	-32.6	Peak	Horizontal
*	6703.5	37.8	8.9	46.7	78.3	-31.6	Peak	Horizontal
	3839.0	44.8	-0.3	44.5	74.0	-29.5	Peak	Vertical
	5054.5	40.1	3.6	43.7	74.0	-30.3	Peak	Vertical
*	6414.5	38.4	7.4	45.8	78.3	-32.5	Peak	Vertical
*	7001.0	36.9	10.6	47.5	78.3	-30.8	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 30dBc of the fundamental emission level (108.3dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	AX3000 Gigabit Wi-Fi 6 Router	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	52%
Test Site	AC1	Test Date	2019/11/08
Test Mode	802.11ax-HE40 - Ant 0+1 (Beam-Forming Mode)	Test Channel	09
Note	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3873.0	41.7	-0.3	41.4	74.0	-32.6	Peak	Horizontal
	4918.5	40.1	3.4	43.5	74.0	-30.5	Peak	Horizontal
*	6465.5	38.4	7.6	46.0	78.2	-32.2	Peak	Horizontal
*	7103.0	37.5	10.8	48.3	78.2	-29.9	Peak	Horizontal
	3839.0	44.9	-0.3	44.6	74.0	-29.4	Peak	Vertical
	5122.5	40.4	3.6	44.0	74.0	-30.0	Peak	Vertical
*	6312.5	38.5	7.0	45.5	78.2	-32.7	Peak	Vertical
*	7179.5	37.4	11.0	48.4	78.2	-29.8	Peak	Vertical

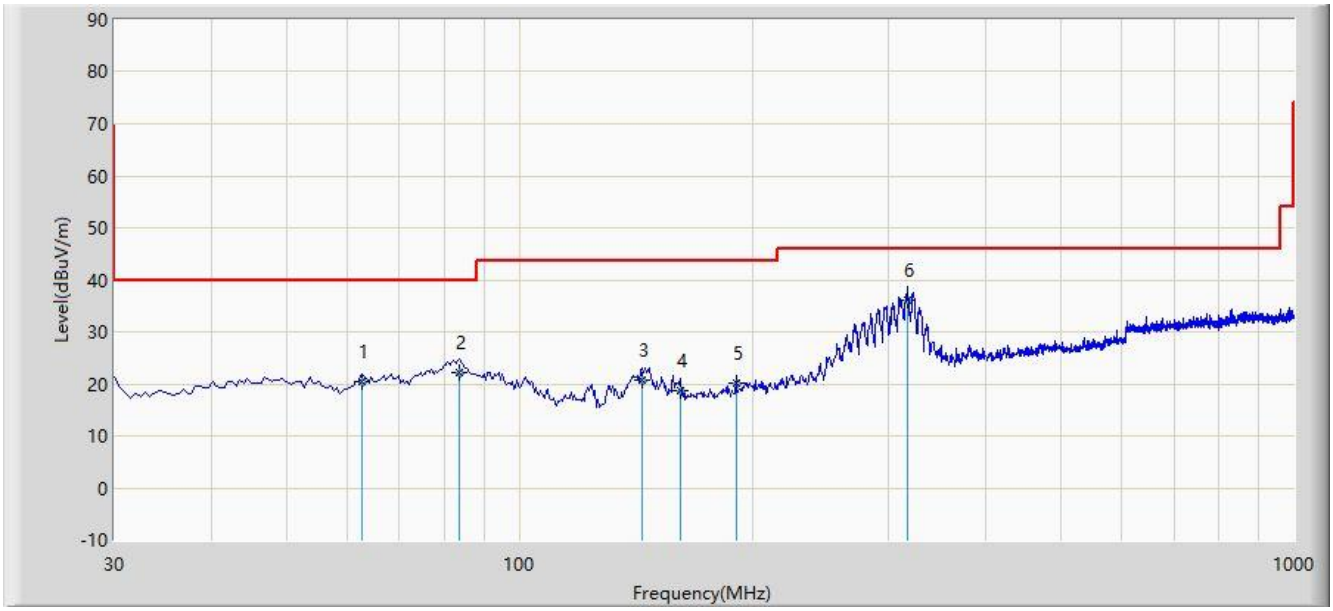
Note 1: “*” is not in restricted band, its limit is 30dBc of the fundamental emission level (108.2dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2019/12/16 - 17:44
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Worst Case Mode: There is the worst case within frequency range 30MHz~1GHz.	



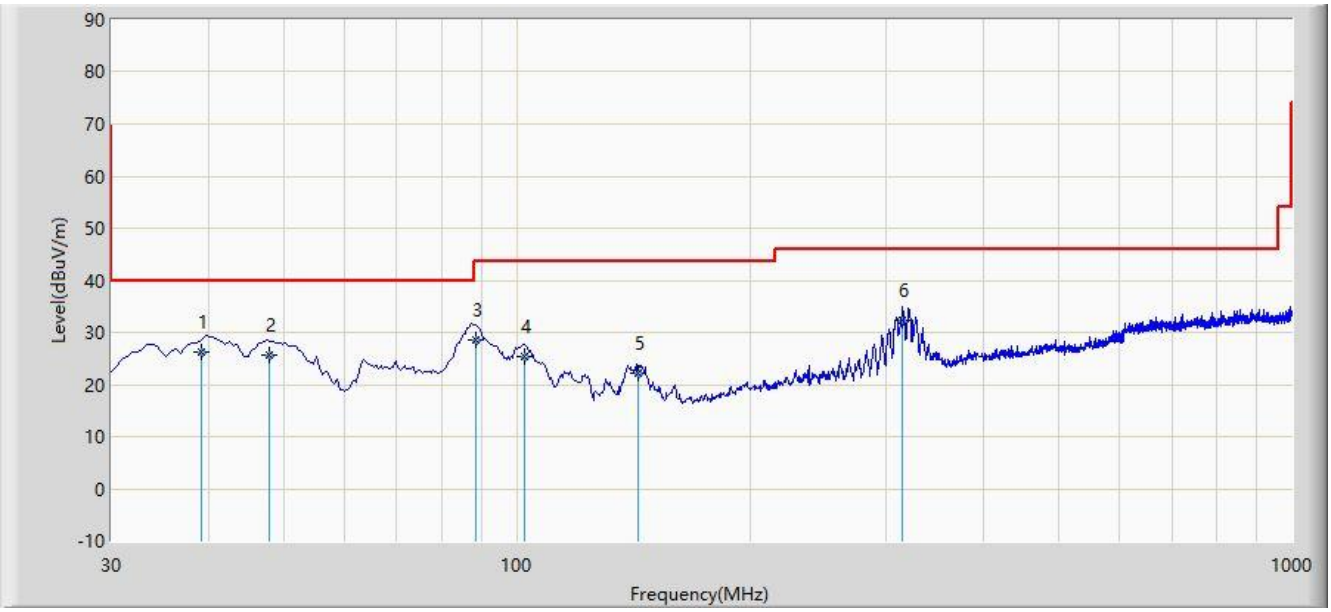
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			62.626	20.416	1.260	-19.584	40.000	19.156	QP
2			83.626	22.054	6.950	-17.946	40.000	15.104	QP
3			143.959	20.597	5.030	-22.903	43.500	15.567	QP
4			161.669	18.778	2.620	-24.722	43.500	16.158	QP
5			190.362	20.043	1.320	-23.457	43.500	18.723	QP
6		*	317.610	36.145	14.030	-9.855	46.000	22.115	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Site: AC1	Time: 2019/12/16 - 17:44
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Worst Case Mode: There is the worst case within frequency range 30MHz~1GHz.	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			39.158	26.234	5.850	-13.766	40.000	20.385	QP
2			47.946	25.772	4.230	-14.228	40.000	21.543	QP
3			88.656	28.682	12.090	-14.818	43.500	16.592	QP
4			102.265	25.331	5.890	-18.169	43.500	19.441	QP
5			143.624	22.145	6.590	-21.355	43.500	15.555	QP
6		*	314.626	32.254	10.260	-13.746	46.000	21.994	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

7.4. Radiated Restricted Band Edge Measurement

7.4.1.Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1] 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.4.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.4.3.Test Setting

Peak Field Strength Measurements

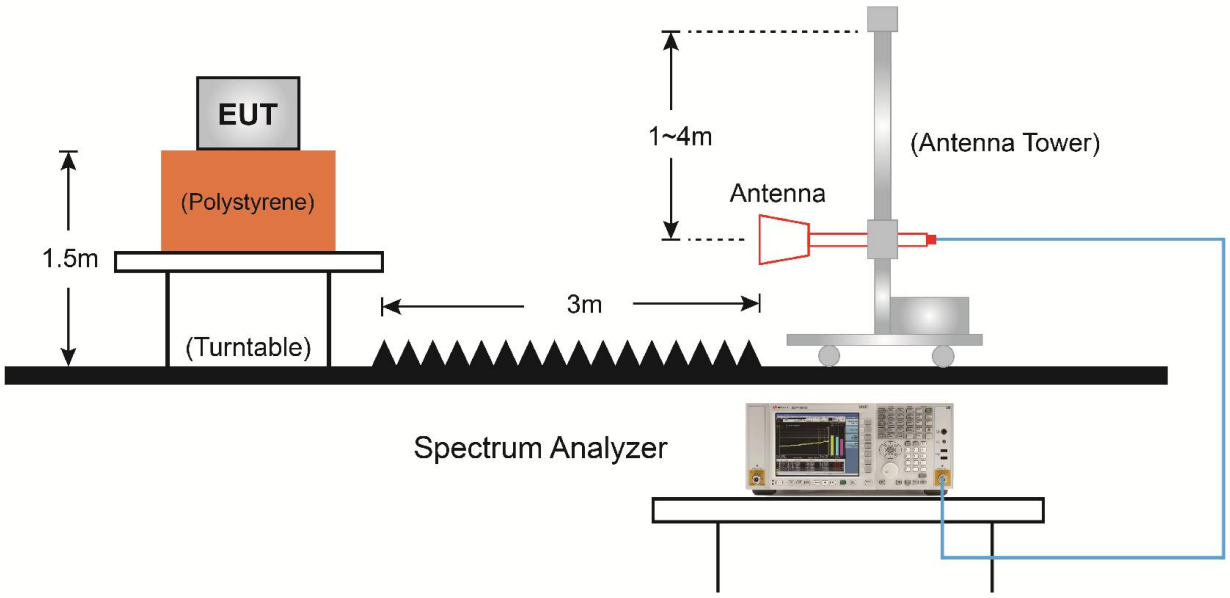
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

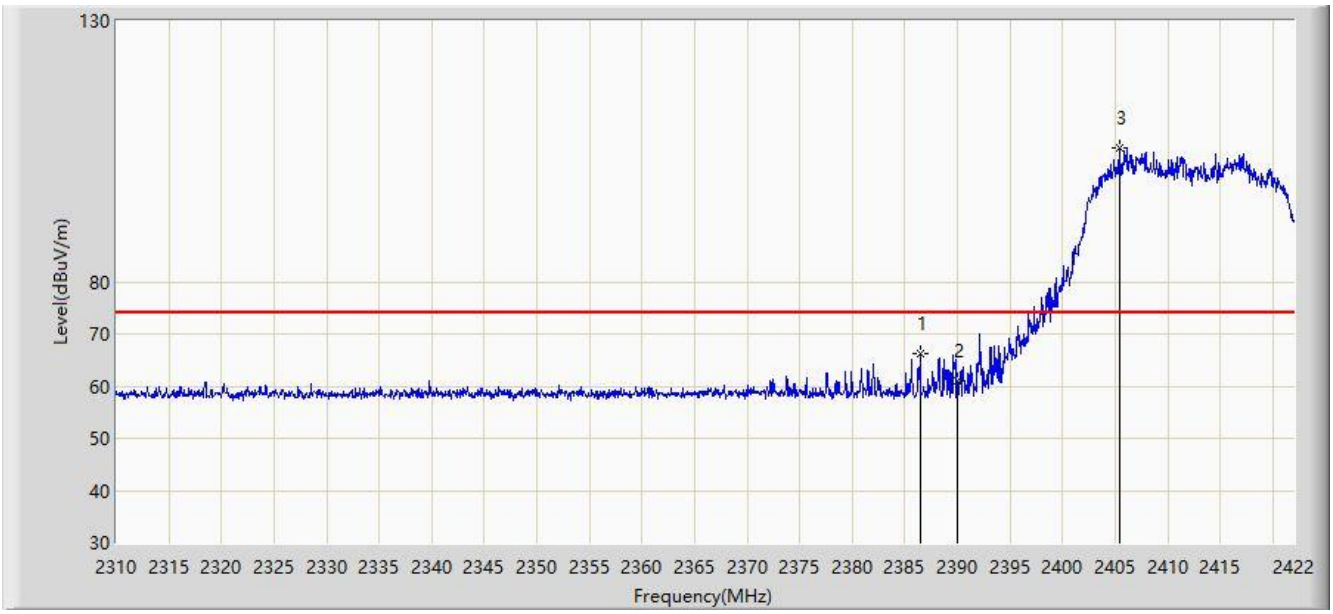
   If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

7.4.4.Test Setup



7.4.5.Test Result

Site: AC1	Time: 2019/11/08 - 19:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2412MHz (Beam-Forming Mode)	

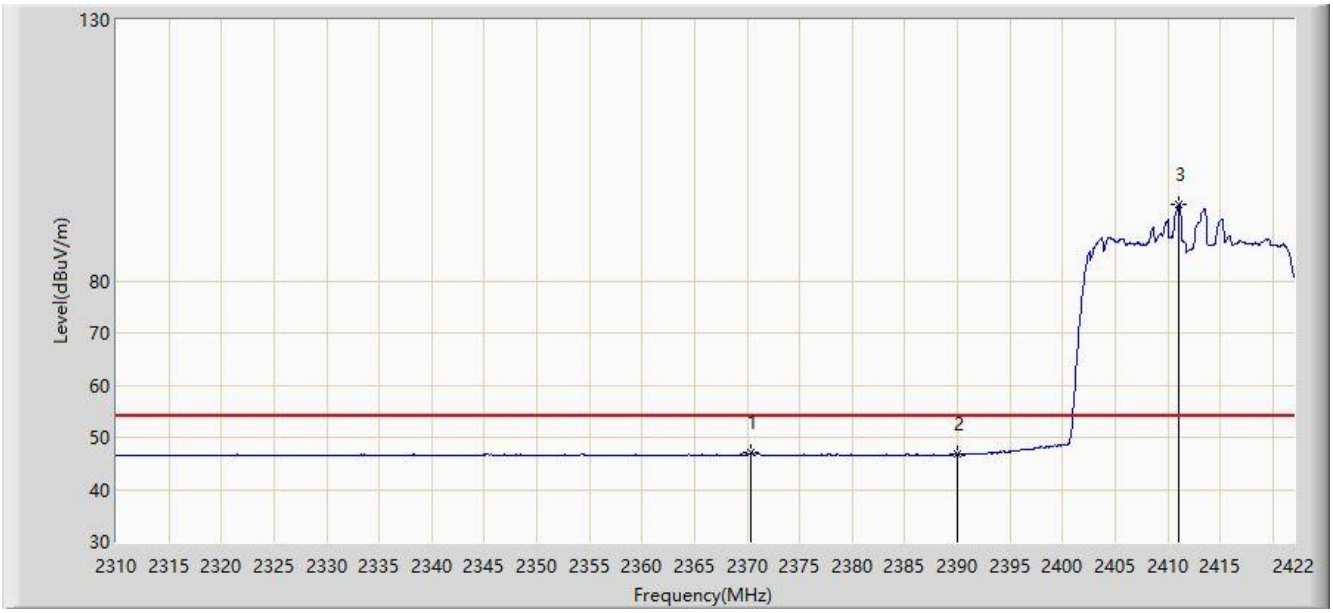


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2386.440	66.161	33.903	-7.839	74.000	32.258	PK
2			2390.000	60.947	28.673	-13.053	74.000	32.274	PK
3		*	2405.424	105.539	73.194	N/A	N/A	32.344	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2412MHz (Beam-Forming Mode)	

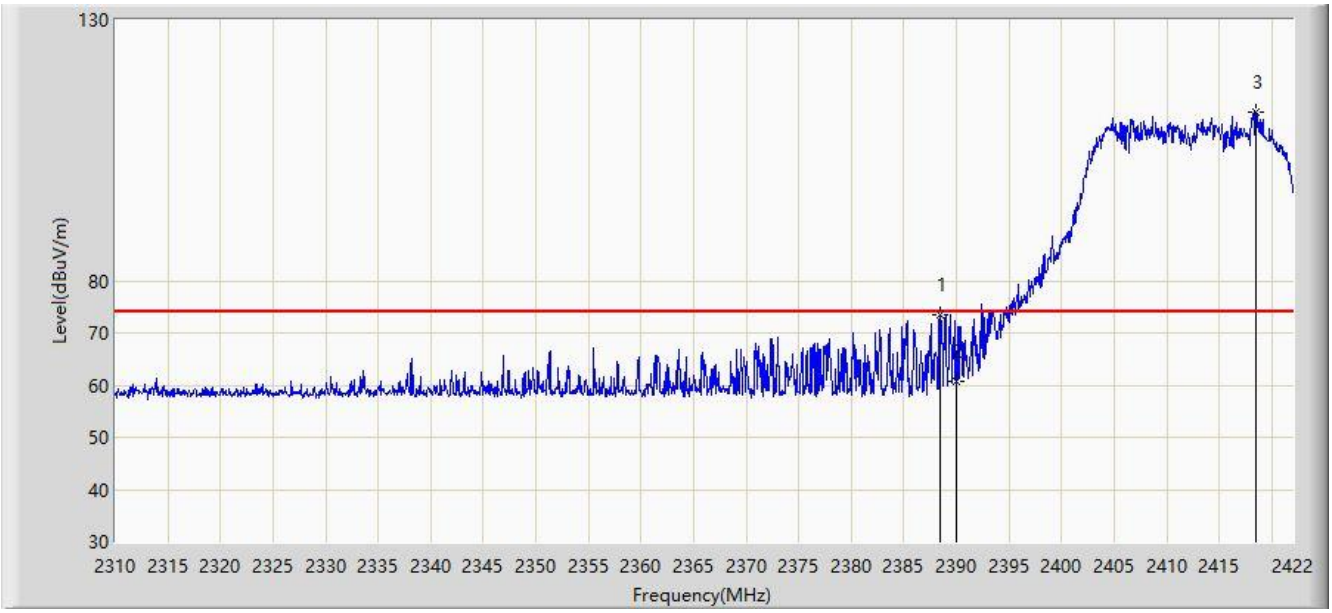


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2370.368	46.960	14.776	-7.040	54.000	32.183	AV
2			2390.000	46.799	14.525	-7.201	54.000	32.274	AV
3		*	2411.080	94.597	62.227	N/A	N/A	32.370	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2412MHz (Beam-Forming Mode)	

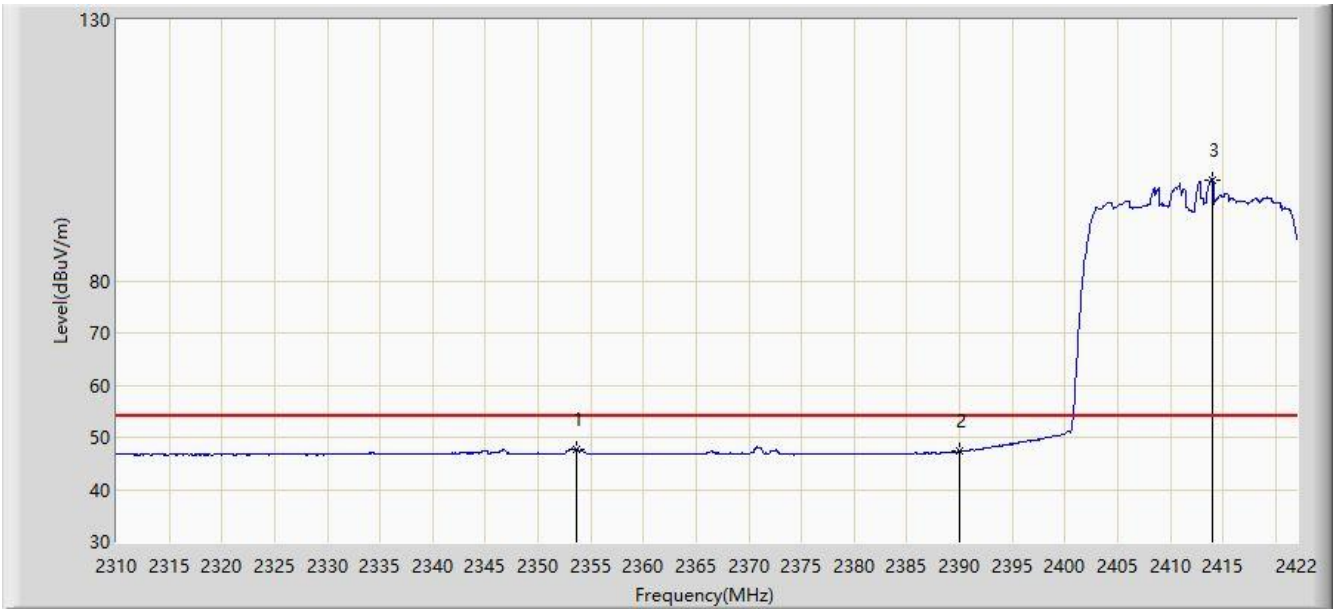


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.400	73.571	41.304	-0.429	74.000	32.267	PK
2			2390.000	60.589	28.315	-13.411	74.000	32.274	PK
3		*	2418.528	112.225	79.820	N/A	N/A	32.405	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2412MHz (Beam-Forming Mode)	

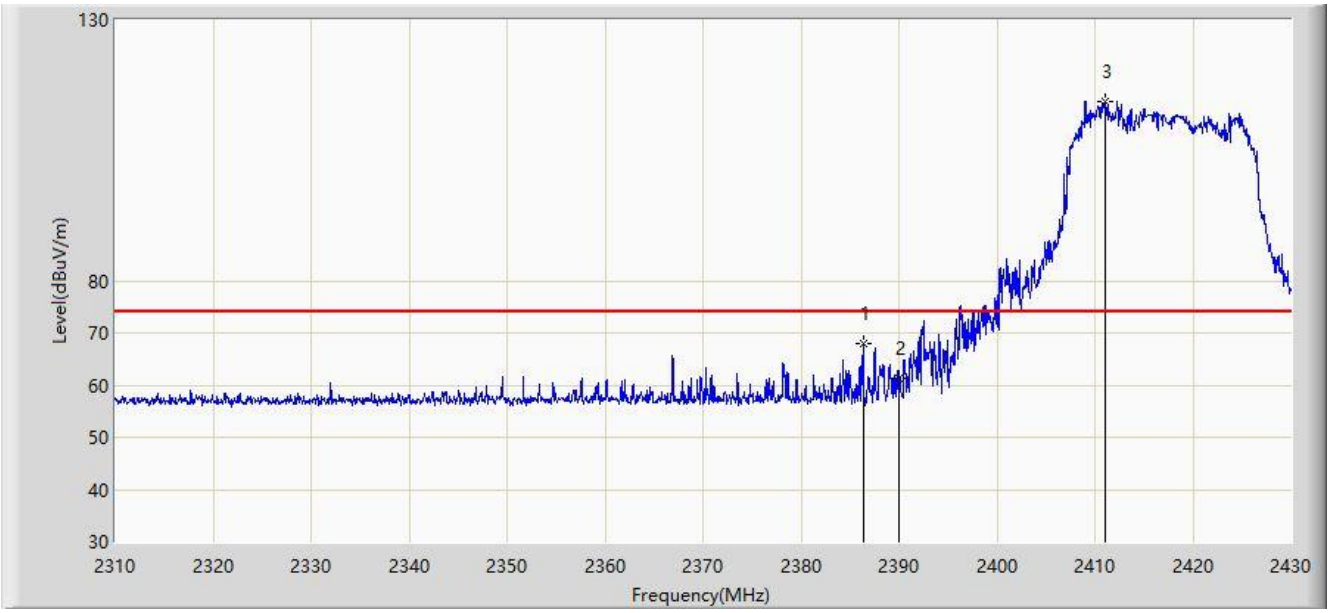


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2353.680	47.792	15.685	-6.208	54.000	32.107	AV
2			2390.000	47.368	15.094	-6.632	54.000	32.274	AV
3		*	2413.992	99.411	67.027	N/A	N/A	32.383	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:22
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2417MHz (Beam-Forming Mode)	

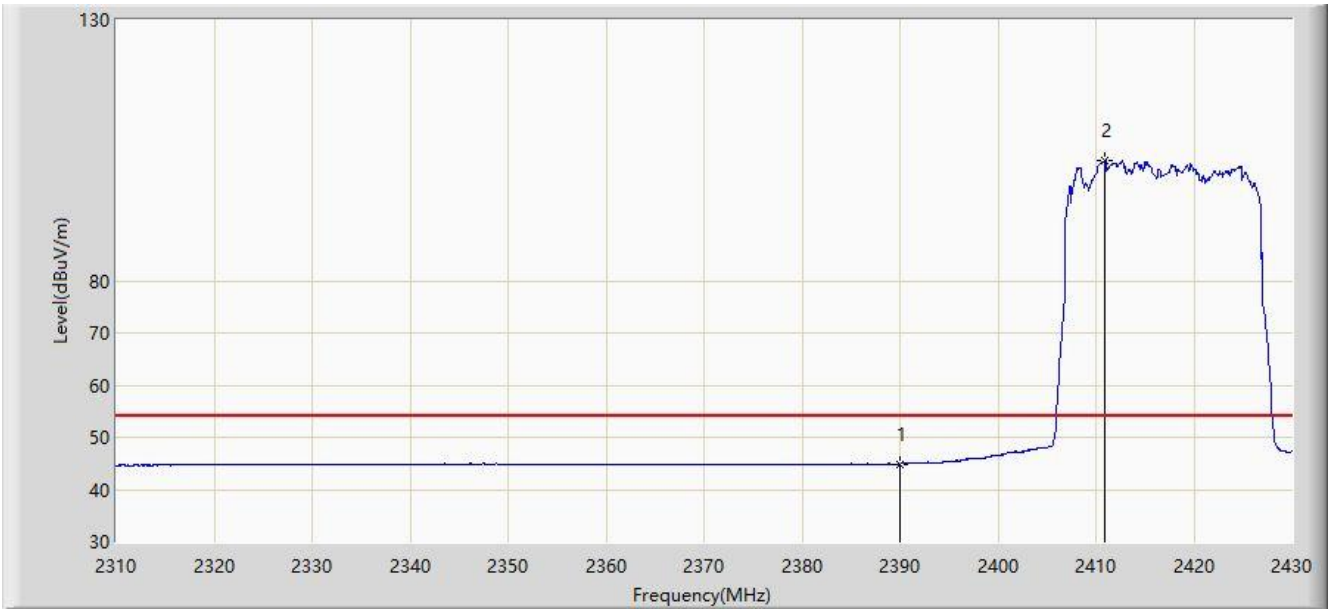


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2386.320	67.961	35.704	-6.039	74.000	32.258	PK
2			2390.000	61.247	28.973	-12.753	74.000	32.274	PK
3		*	2410.980	114.294	81.924	N/A	N/A	32.370	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:23
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2417MHz (Beam-Forming Mode)	

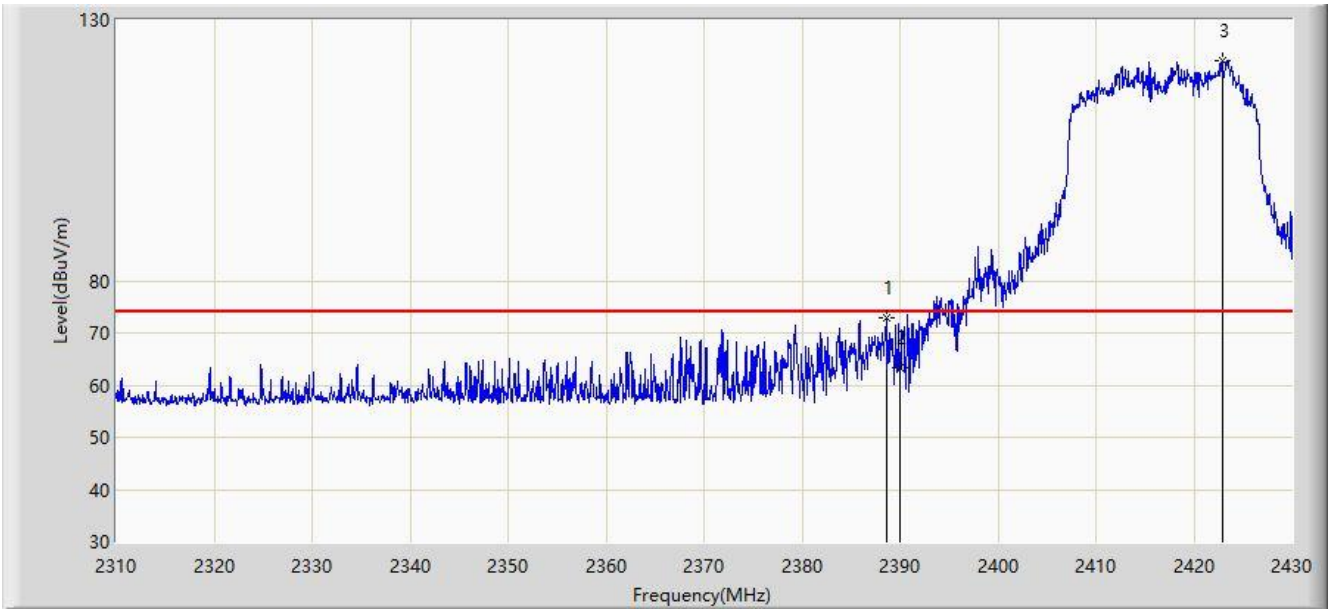


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	44.911	12.637	-9.089	54.000	32.274	AV
2		*	2410.920	102.923	70.554	N/A	N/A	32.370	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2417MHz (Beam-Forming Mode)	

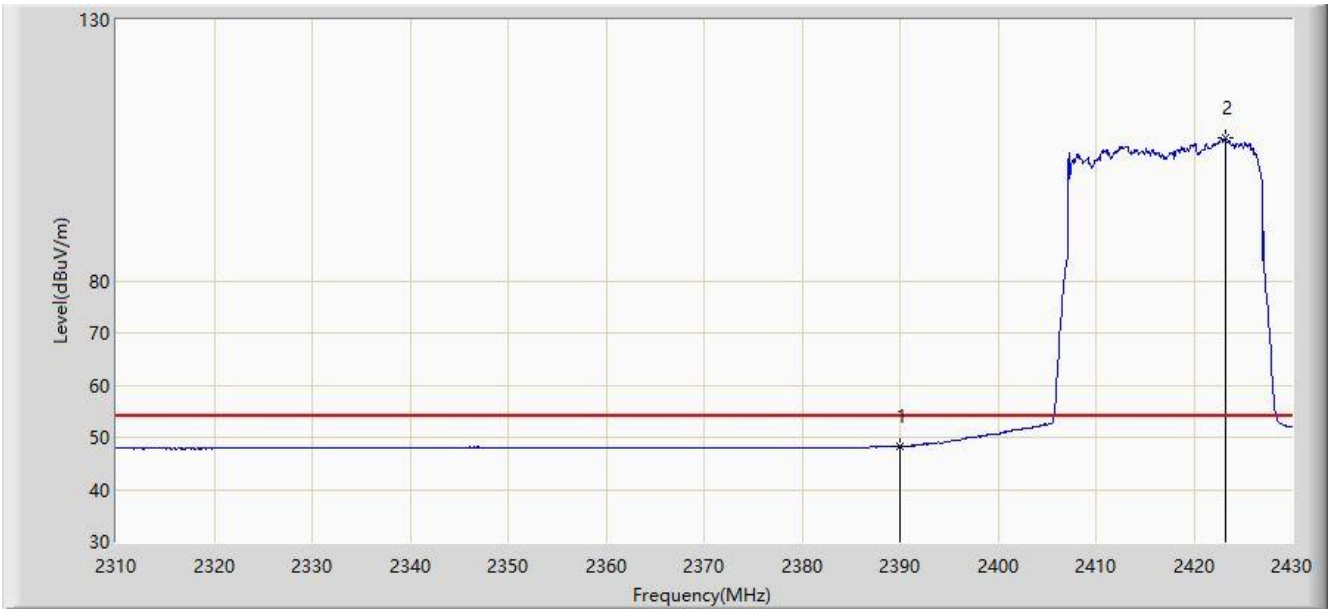


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.600	72.962	40.694	-1.038	74.000	32.268	PK
2			2390.000	63.412	31.138	-10.588	74.000	32.274	PK
3		*	2422.860	122.117	89.692	N/A	N/A	32.424	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:27
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2417MHz (Beam-Forming Mode)	

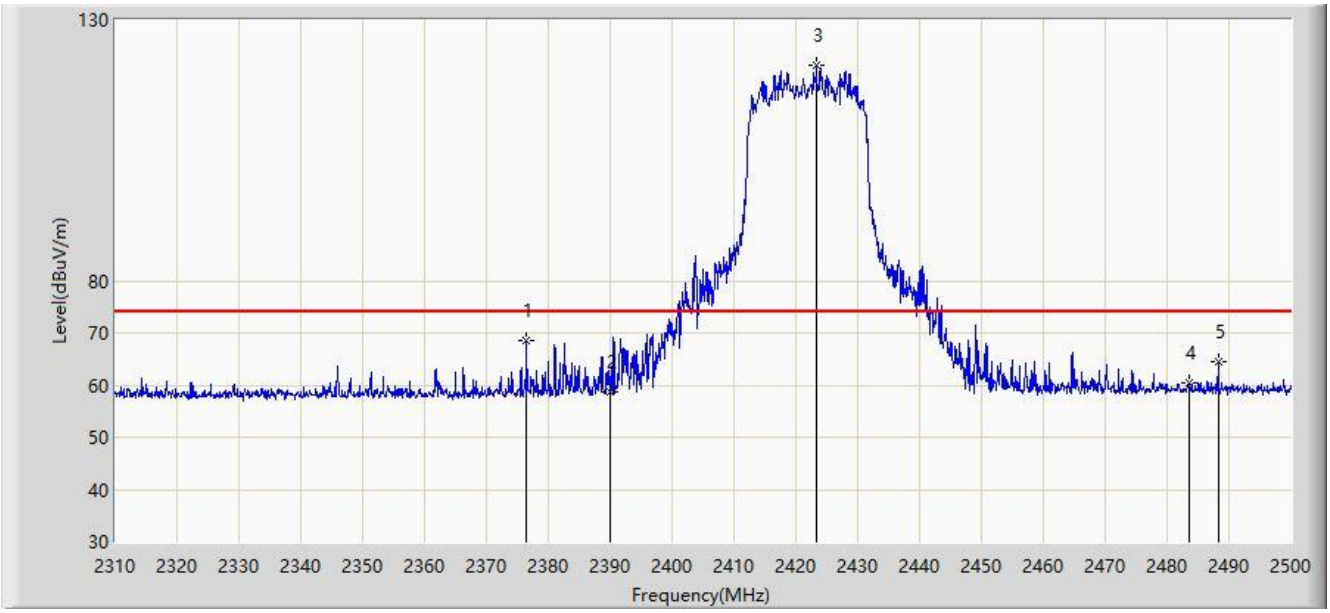


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	48.226	15.952	-5.774	54.000	32.274	AV
2		*	2423.220	107.286	74.860	N/A	N/A	32.427	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:29
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2422MHz (Beam-Forming Mode)	

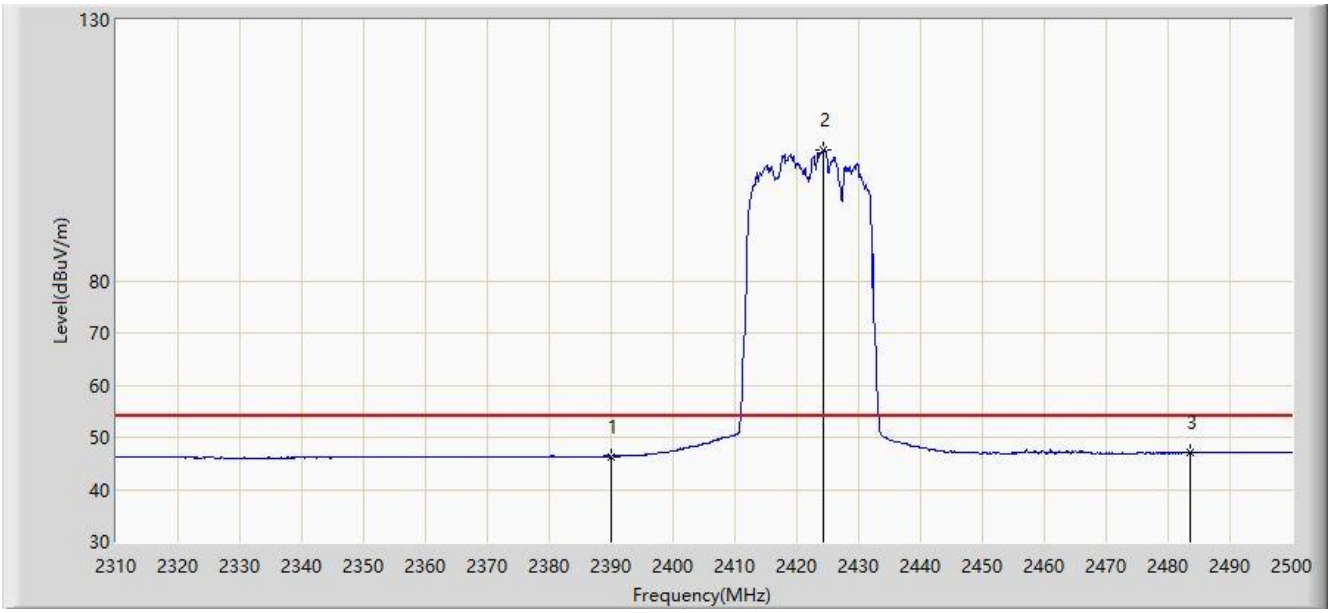


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2376.405	68.415	36.204	-5.585	74.000	32.211	PK
2			2390.000	58.661	26.387	-15.339	74.000	32.274	PK
3		*	2423.335	121.223	88.796	N/A	N/A	32.427	PK
4			2483.500	60.293	27.589	-13.707	74.000	32.704	PK
5			2488.220	64.590	31.864	-9.410	74.000	32.726	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:31
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2422MHz (Beam-Forming Mode)	

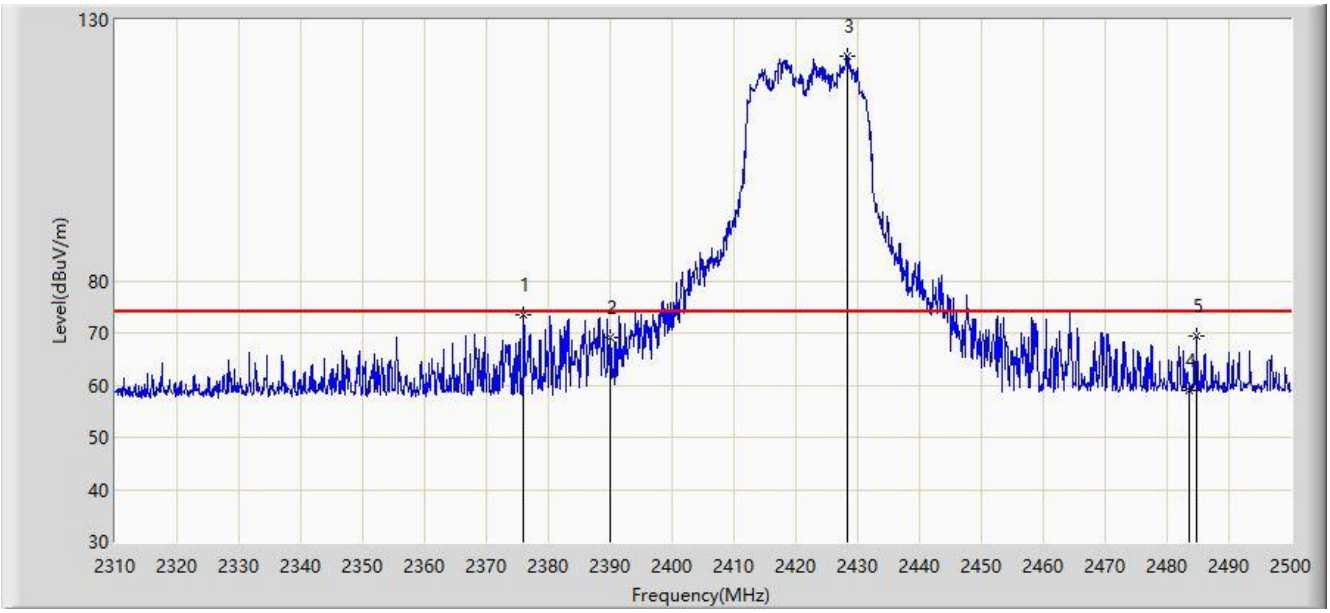


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.373	14.099	-7.627	54.000	32.274	AV
2		*	2424.380	105.028	72.596	N/A	N/A	32.432	AV
3			2483.500	46.997	14.293	-7.003	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:33
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2422MHz (Beam-Forming Mode)	

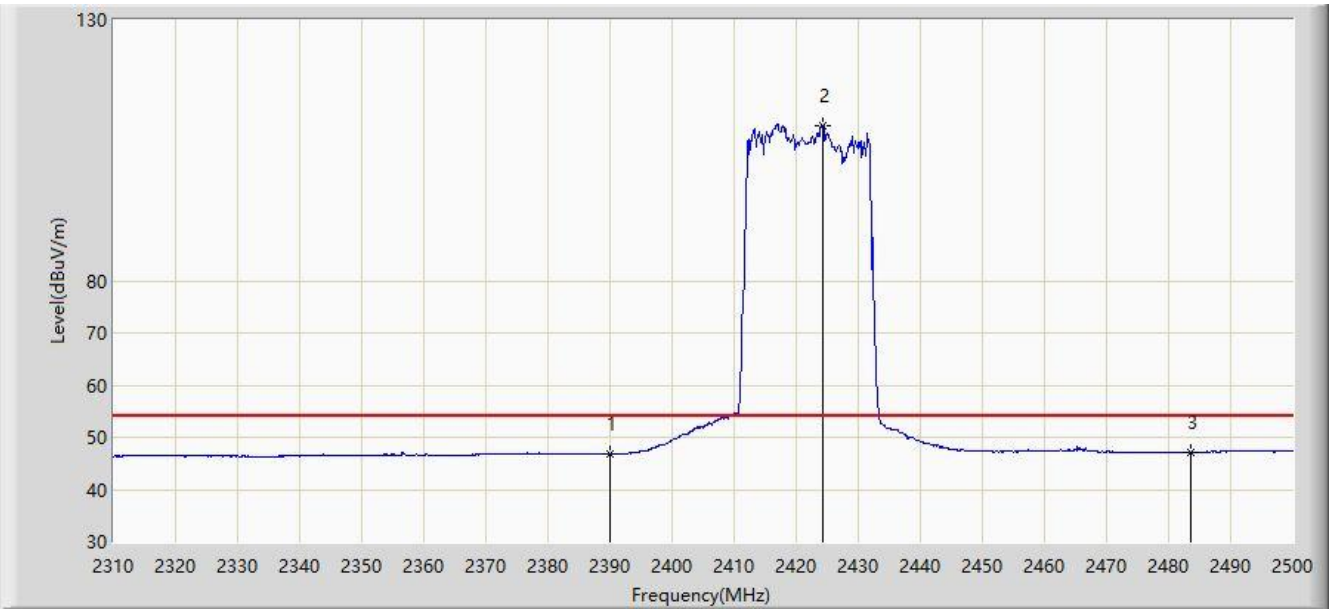


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2376.025	73.438	41.228	-0.562	74.000	32.210	PK
2			2390.000	69.015	36.741	-4.985	74.000	32.274	PK
3		*	2428.275	123.133	90.683	N/A	N/A	32.450	PK
4			2483.500	59.124	26.420	-14.876	74.000	32.704	PK
5			2484.800	69.300	36.590	-4.700	74.000	32.710	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:40
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2422MHz (Beam-Forming Mode)	

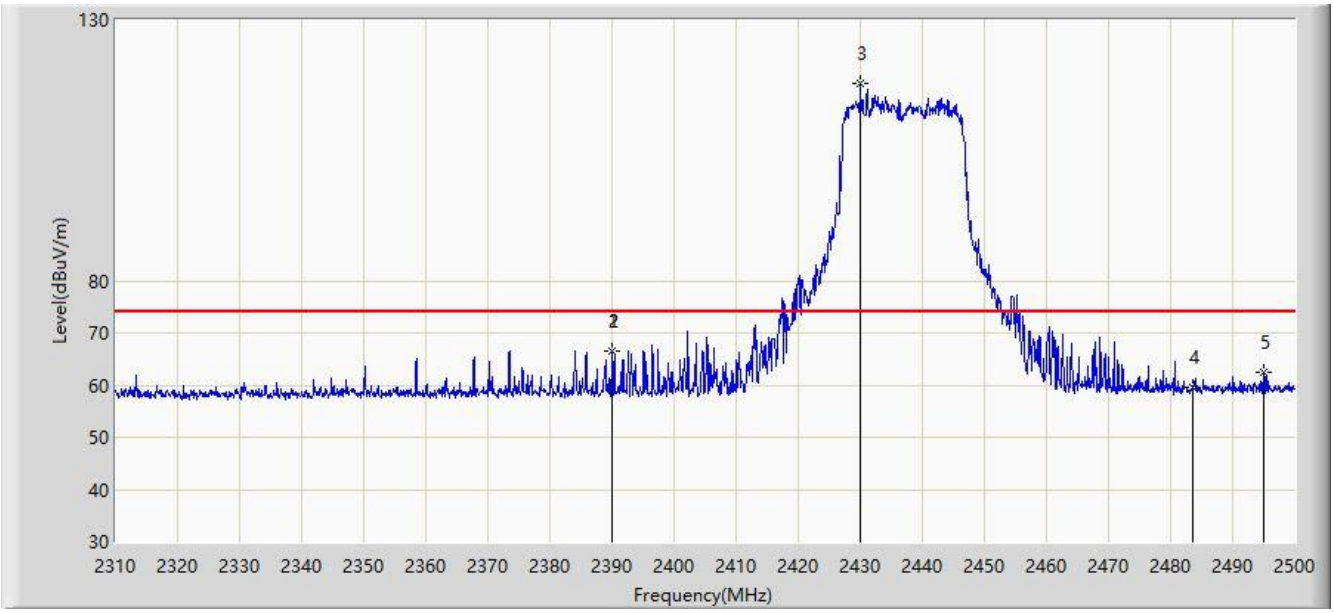


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.760	14.486	-7.240	54.000	32.274	AV
2	X	*	2424.285	109.759	77.328	N/A	N/A	32.431	AV
3			2483.500	47.193	14.489	-6.807	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:42
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2437MHz (Beam-Forming Mode)	

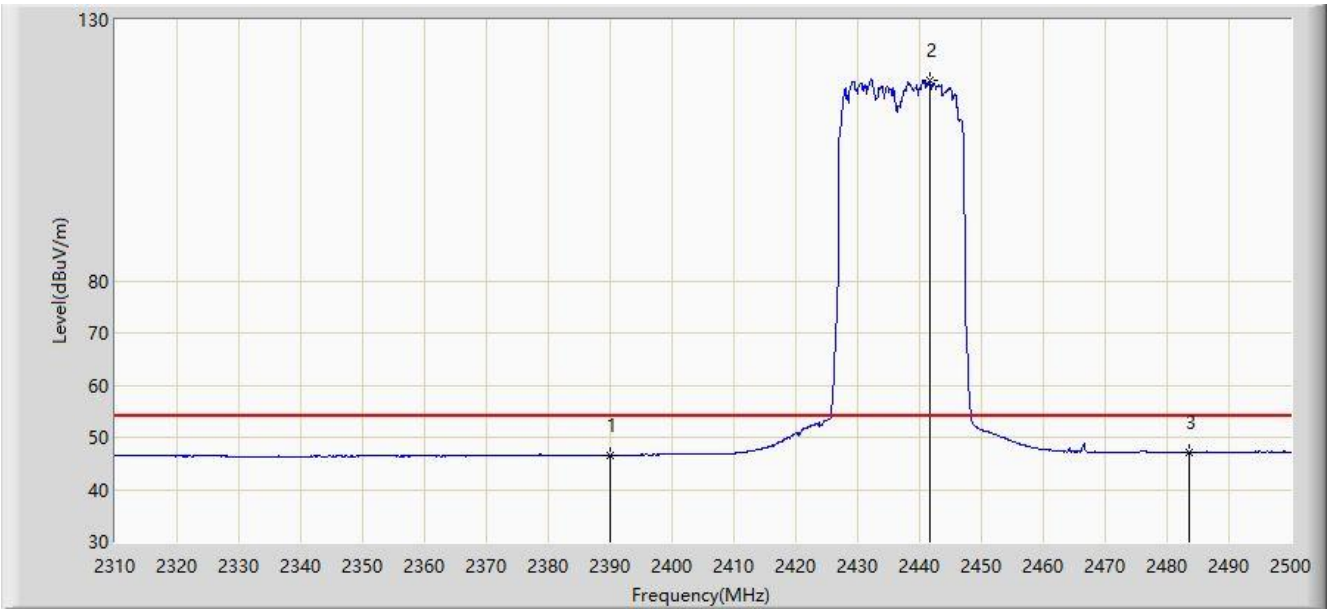


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2389.990	66.584	34.310	-7.416	74.000	32.274	PK
2			2390.000	66.575	34.301	-7.425	74.000	32.274	PK
3		*	2429.985	117.845	85.387	N/A	N/A	32.458	PK
4			2483.500	59.508	26.804	-14.492	74.000	32.704	PK
5			2494.965	62.370	29.614	-11.630	74.000	32.757	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:43
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2437MHz (Beam-Forming Mode)	

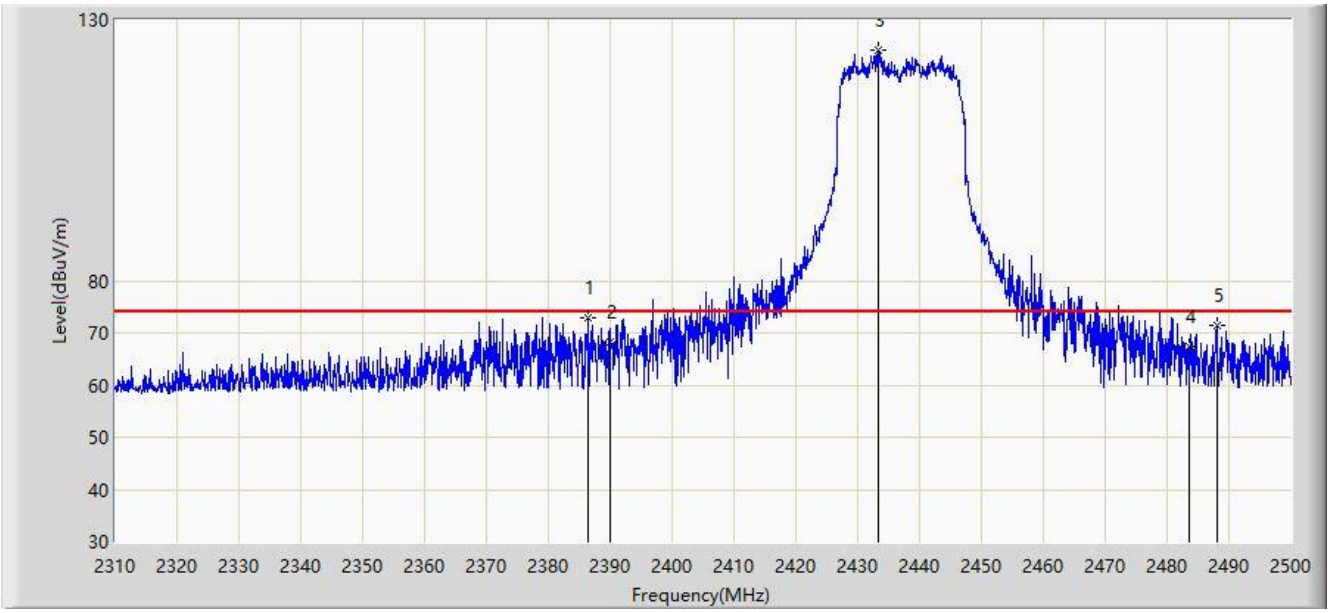


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.553	14.279	-7.447	54.000	32.274	AV
2	X	*	2441.670	118.376	85.864	N/A	N/A	32.512	AV
3			2483.500	47.162	14.458	-6.838	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 13:59
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2437MHz (Beam-Forming Mode)	

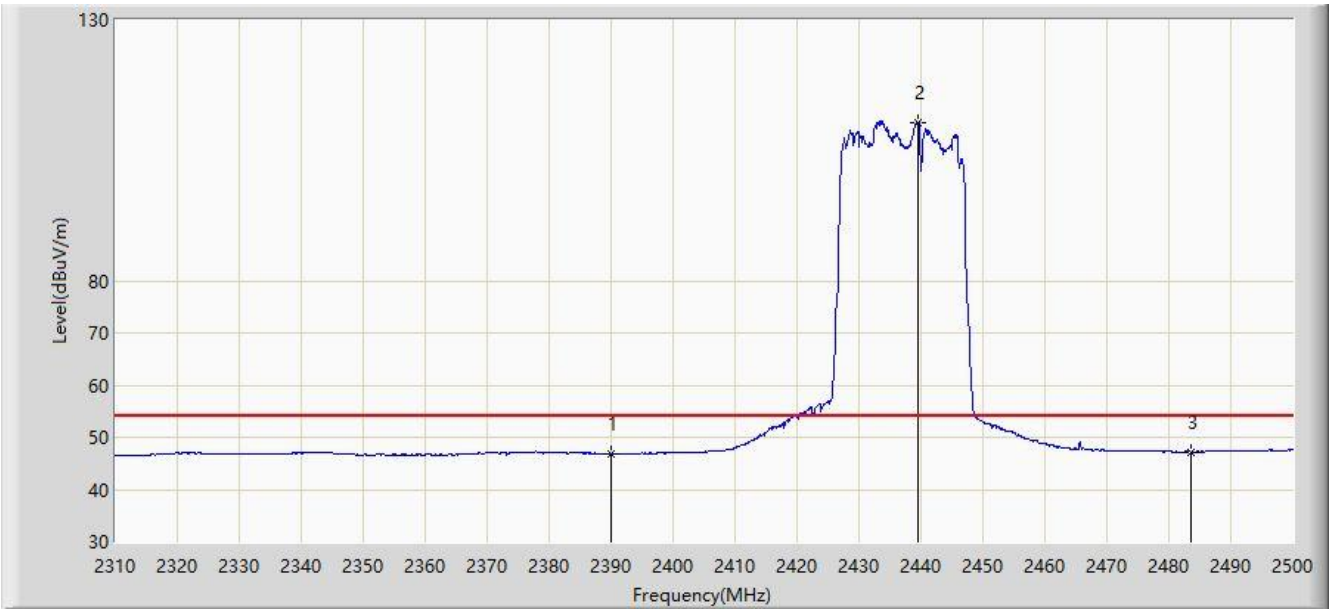


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2386.380	72.765	40.507	-1.235	74.000	32.258	PK
2			2390.000	68.158	35.884	-5.842	74.000	32.274	PK
3		*	2433.310	124.101	91.628	N/A	N/A	32.473	PK
4			2483.500	67.299	34.595	-6.701	74.000	32.704	PK
5			2488.030	71.526	38.801	-2.474	74.000	32.725	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:04
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2437MHz (Beam-Forming Mode)	

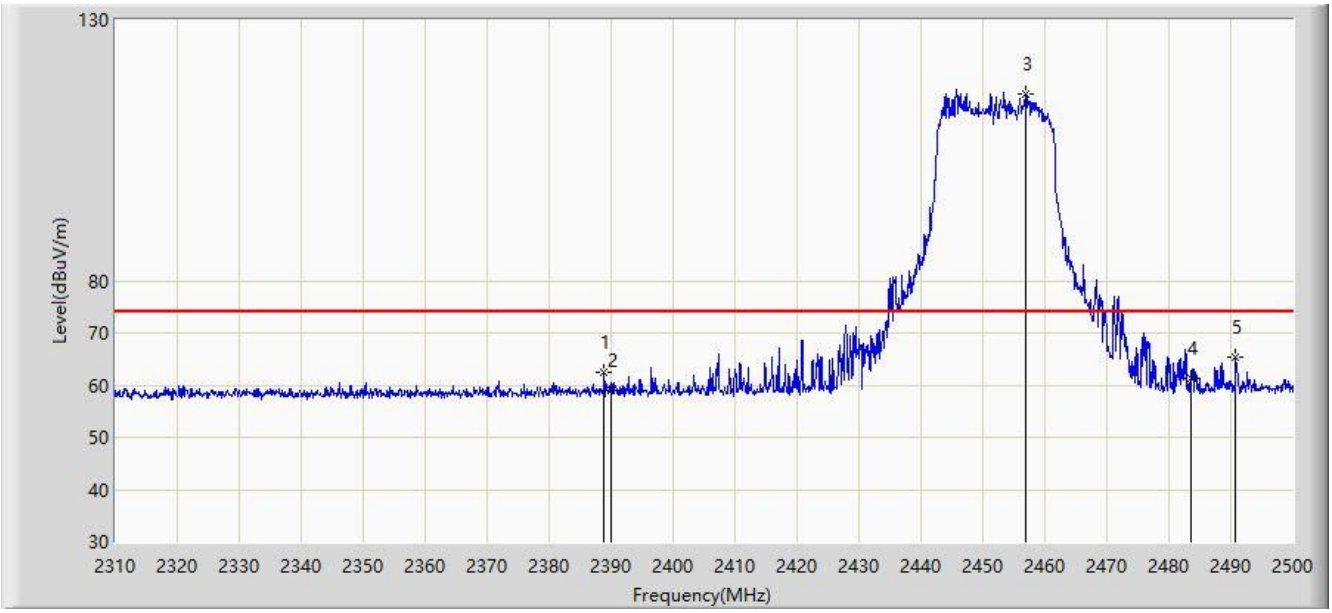


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.859	14.585	-7.141	54.000	32.274	AV
2	X	*	2439.485	110.377	77.875	N/A	N/A	32.502	AV
3			2483.500	47.225	14.521	-6.775	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:06
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2452MHz (Beam-Forming Mode)	

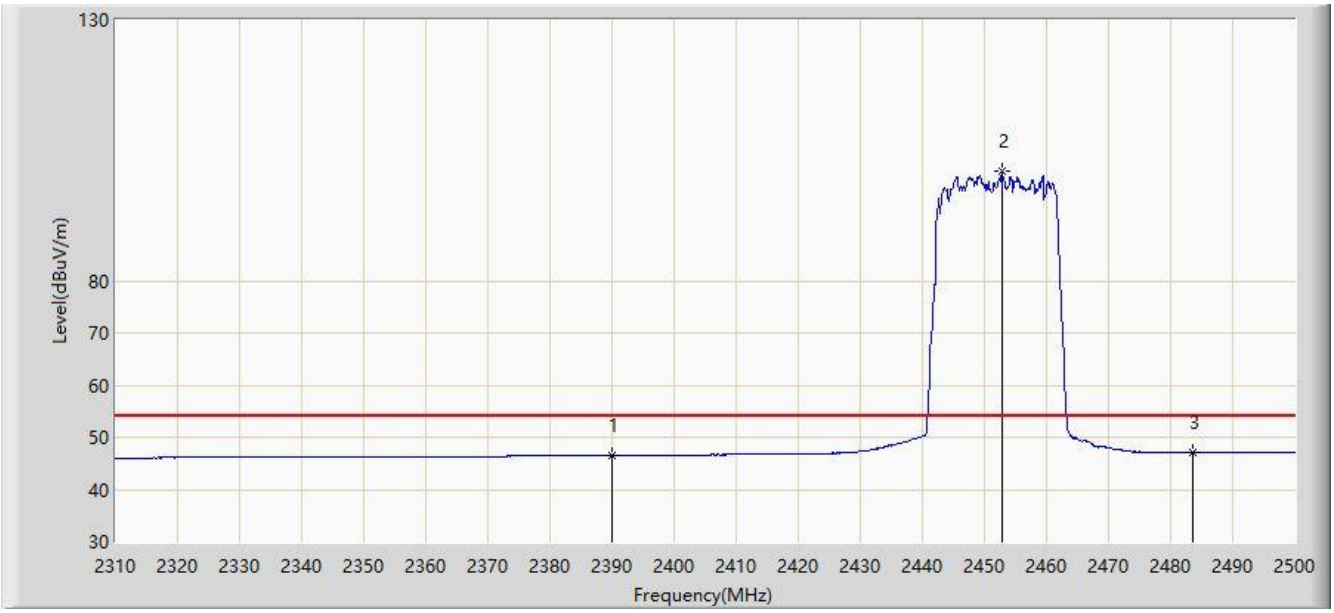


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.850	62.404	30.135	-11.596	74.000	32.269	PK
2			2390.000	58.959	26.685	-15.041	74.000	32.274	PK
3		*	2456.965	115.917	83.335	N/A	N/A	32.582	PK
4			2483.500	61.245	28.541	-12.755	74.000	32.704	PK
5			2490.785	65.473	32.736	-8.527	74.000	32.738	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:06
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2452MHz (Beam-Forming Mode)	

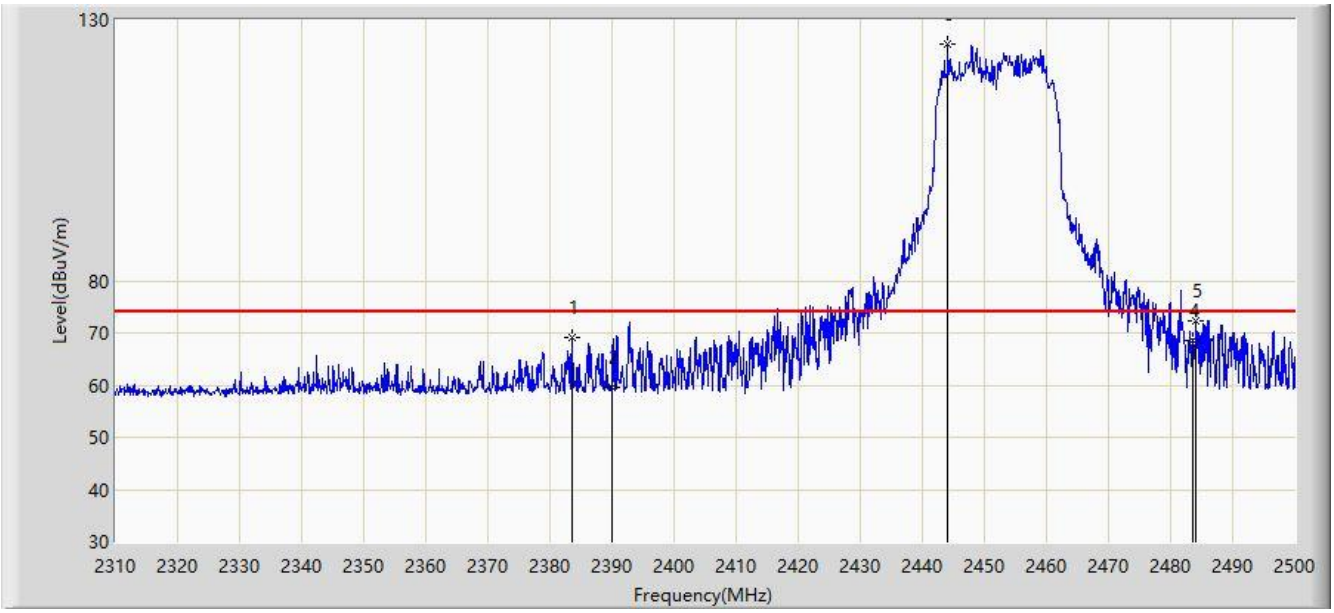


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.489	14.215	-7.511	54.000	32.274	AV
2		*	2452.785	101.143	68.580	N/A	N/A	32.564	AV
3			2483.500	47.061	14.357	-6.939	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:07
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2452MHz (Beam-Forming Mode)	

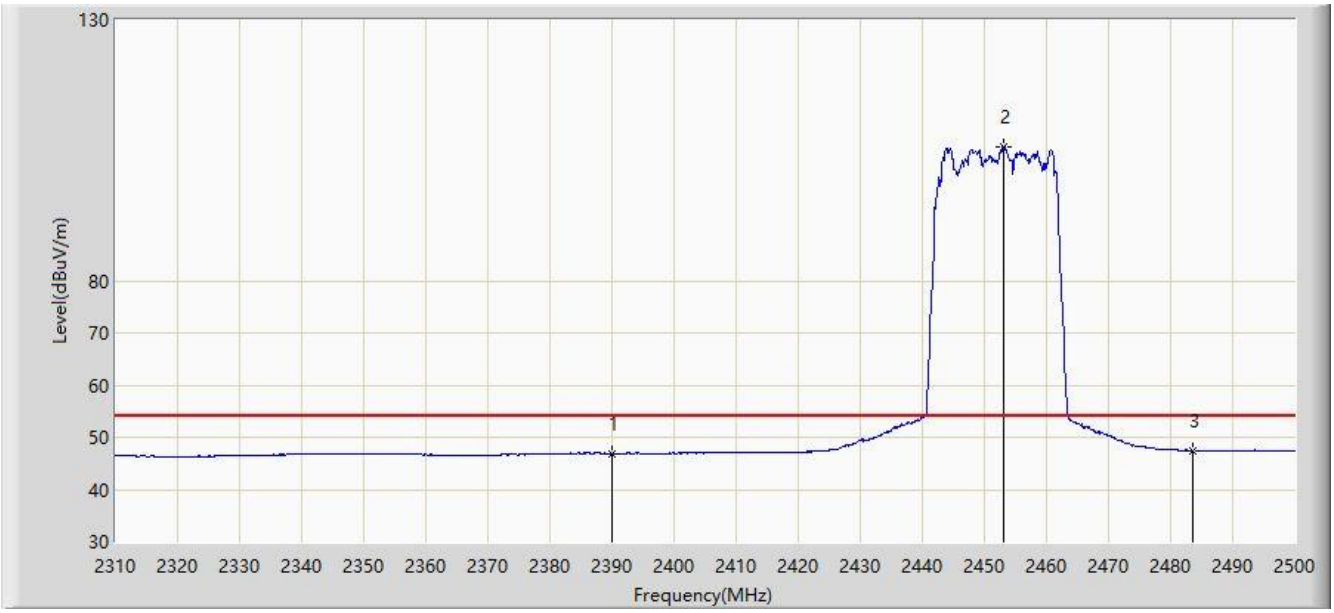


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2383.530	69.240	36.996	-4.760	74.000	32.244	PK
2			2390.000	59.682	27.408	-14.318	74.000	32.274	PK
3		*	2444.140	125.299	92.776	N/A	N/A	32.523	PK
4			2483.500	68.628	35.924	-5.372	74.000	32.704	PK
5			2484.040	72.287	39.580	-1.713	74.000	32.707	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:07
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2452MHz (Beam-Forming Mode)	

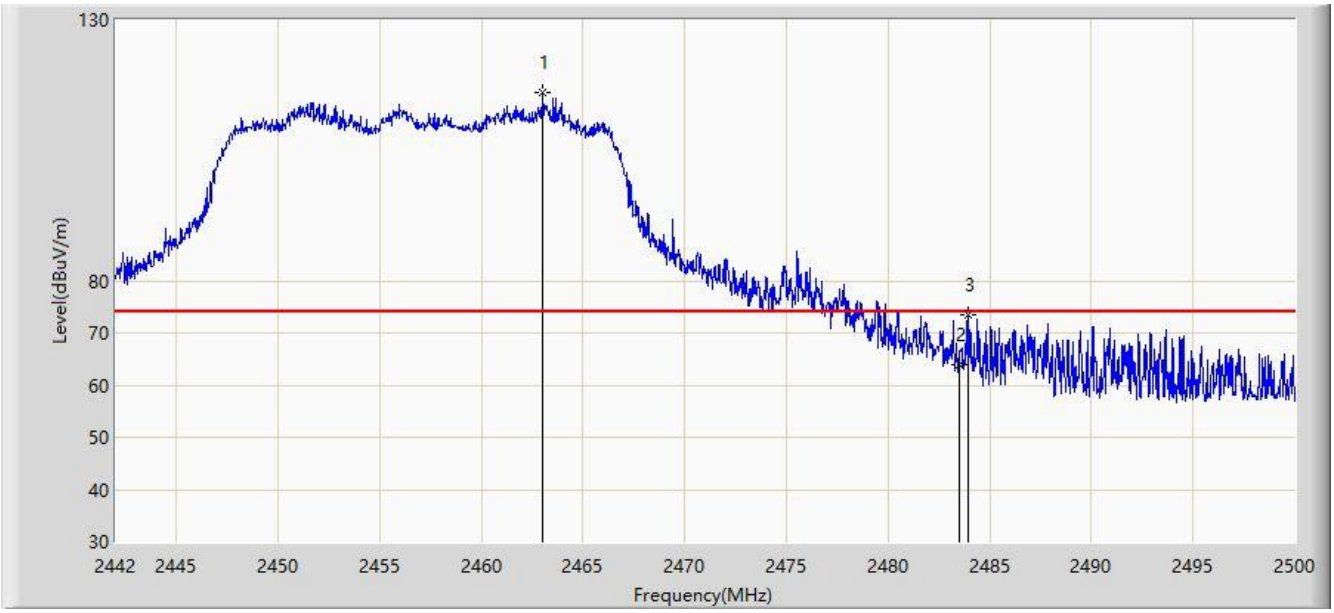


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.901	14.627	-7.099	54.000	32.274	AV
2		*	2453.165	105.640	73.075	N/A	N/A	32.565	AV
3			2483.500	47.476	14.772	-6.524	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:09
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2457MHz (Beam-Forming Mode)	

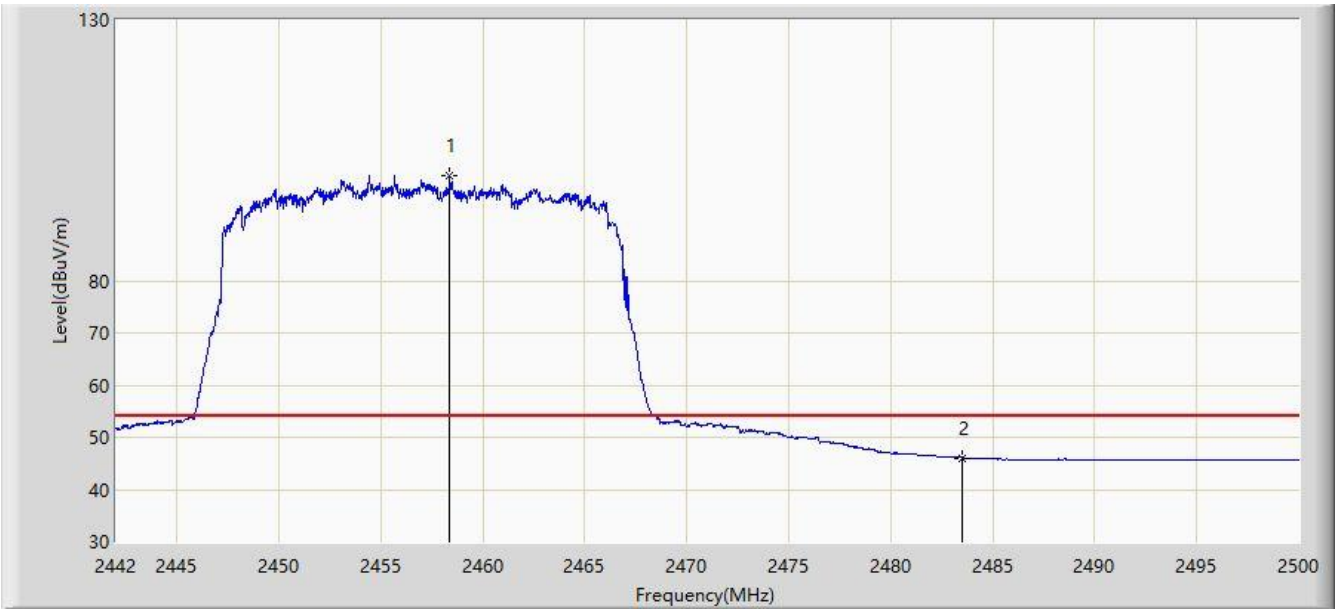


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2463.025	115.996	83.386	N/A	N/A	32.610	PK
2			2483.500	63.993	31.289	-10.007	74.000	32.704	PK
3			2483.905	73.408	40.702	-0.592	74.000	32.706	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:11
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2457MHz (Beam-Forming Mode)	

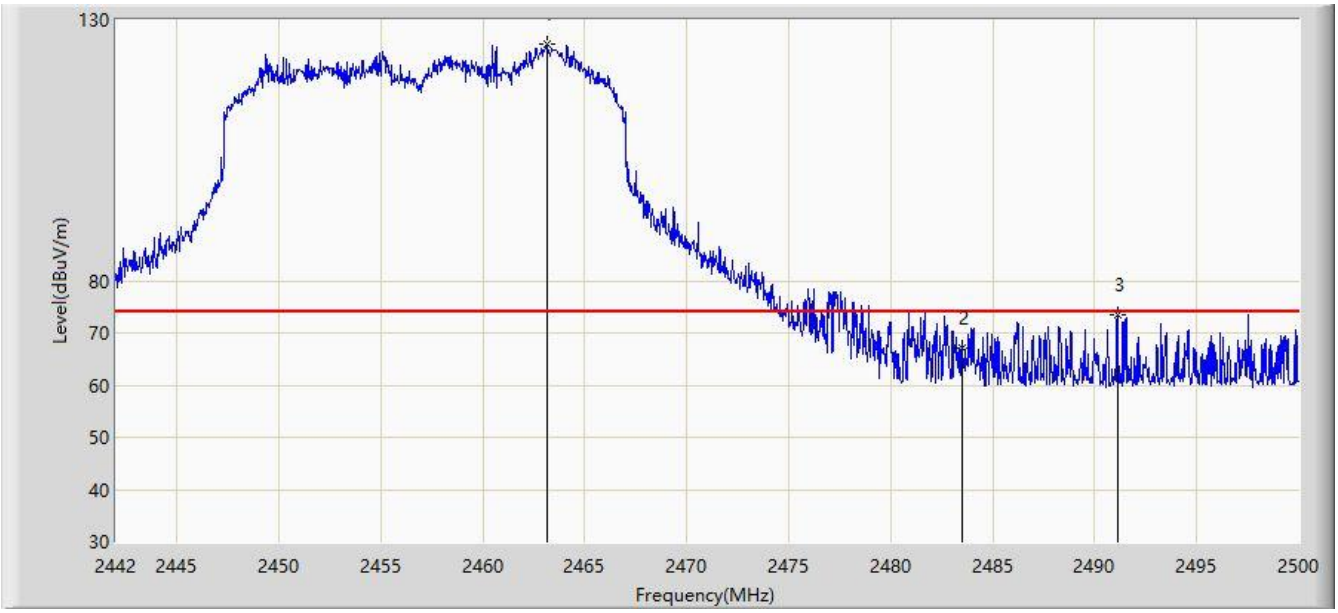


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2458.385	100.097	67.508	N/A	N/A	32.589	AV
2			2483.500	46.052	13.348	-7.948	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:12
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2457MHz (Beam-Forming Mode)	

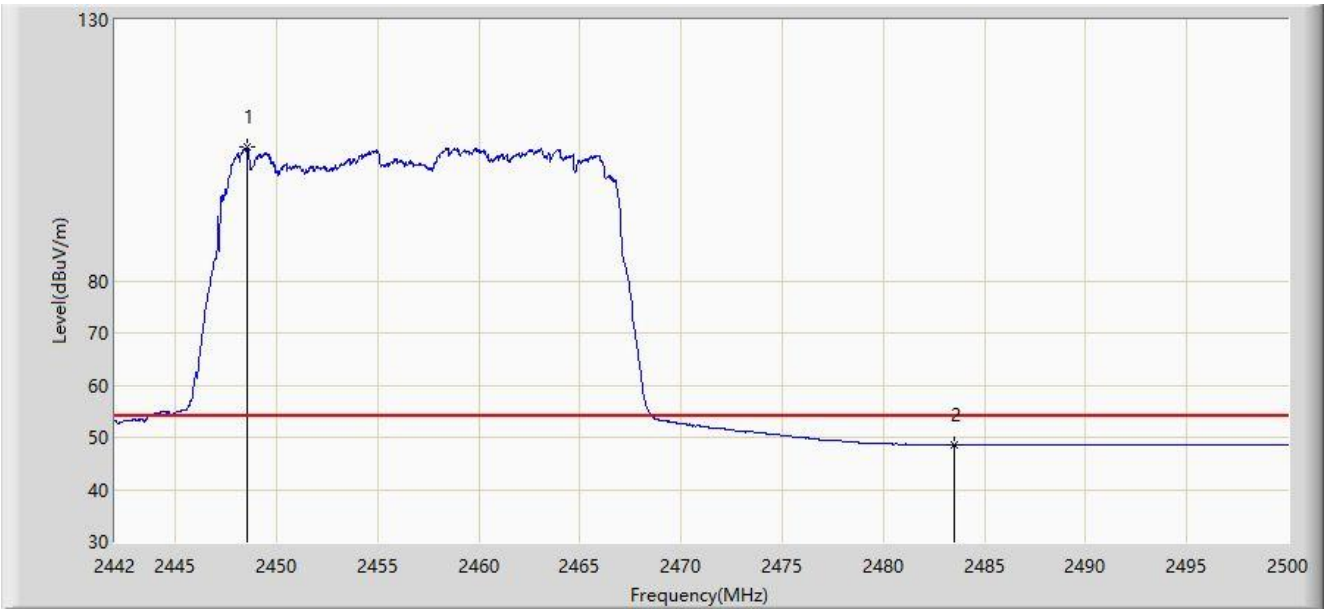


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2463.141	125.251	92.640	N/A	N/A	32.611	PK
2			2483.500	67.065	34.361	-6.935	74.000	32.704	PK
3			2491.126	73.500	40.761	-0.500	74.000	32.739	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:13
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2457MHz (Beam-Forming Mode)	

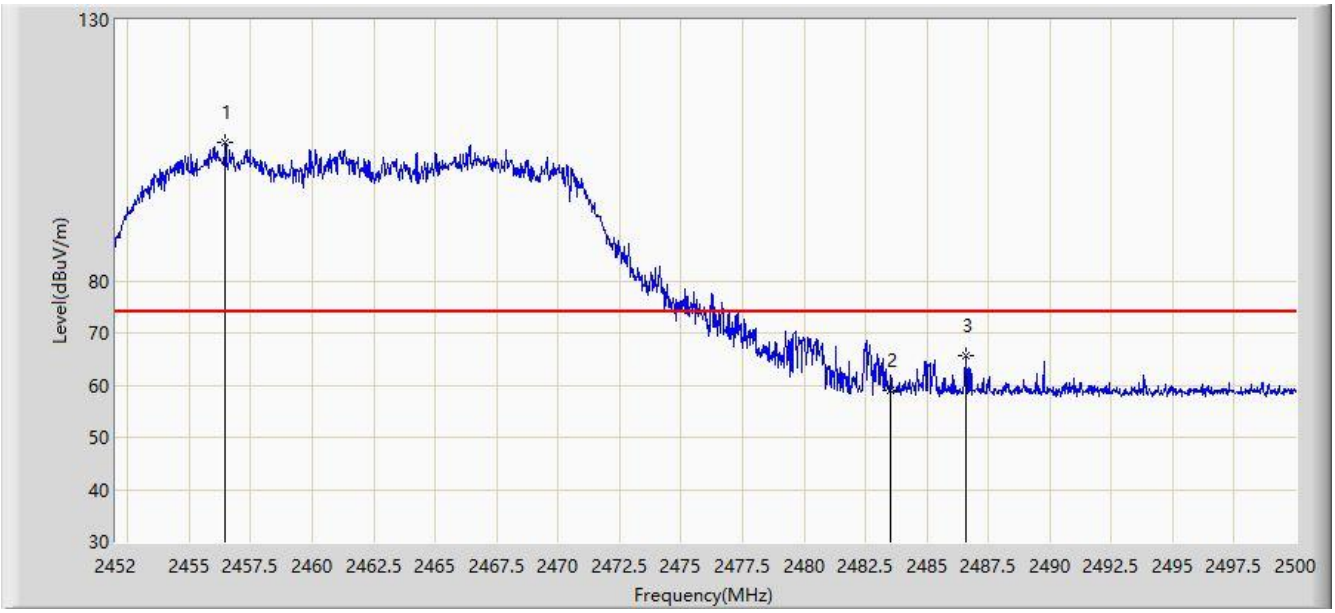


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2448.525	105.635	73.091	N/A	N/A	32.544	AV
2			2483.500	48.566	15.862	-5.434	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2462MHz (Beam-Forming Mode)	

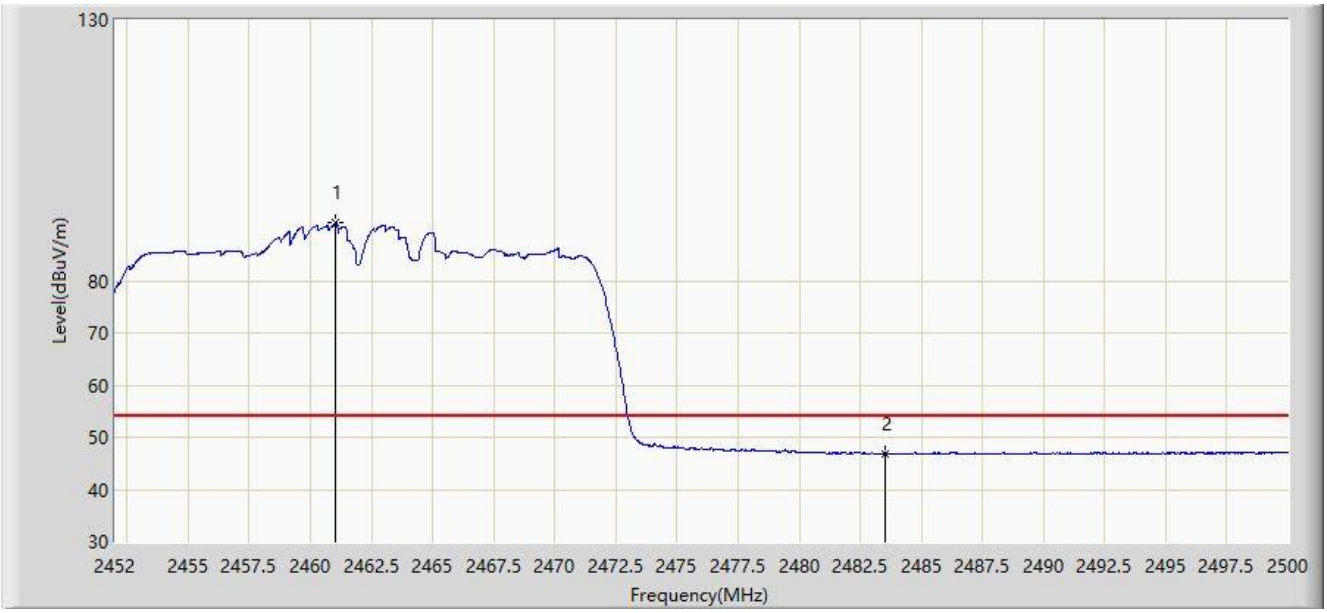


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2456.464	106.654	74.074	N/A	N/A	32.580	PK
2			2483.500	58.956	26.252	-15.044	74.000	32.704	PK
3			2486.560	65.672	32.954	-8.328	74.000	32.718	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2462MHz (Beam-Forming Mode)	

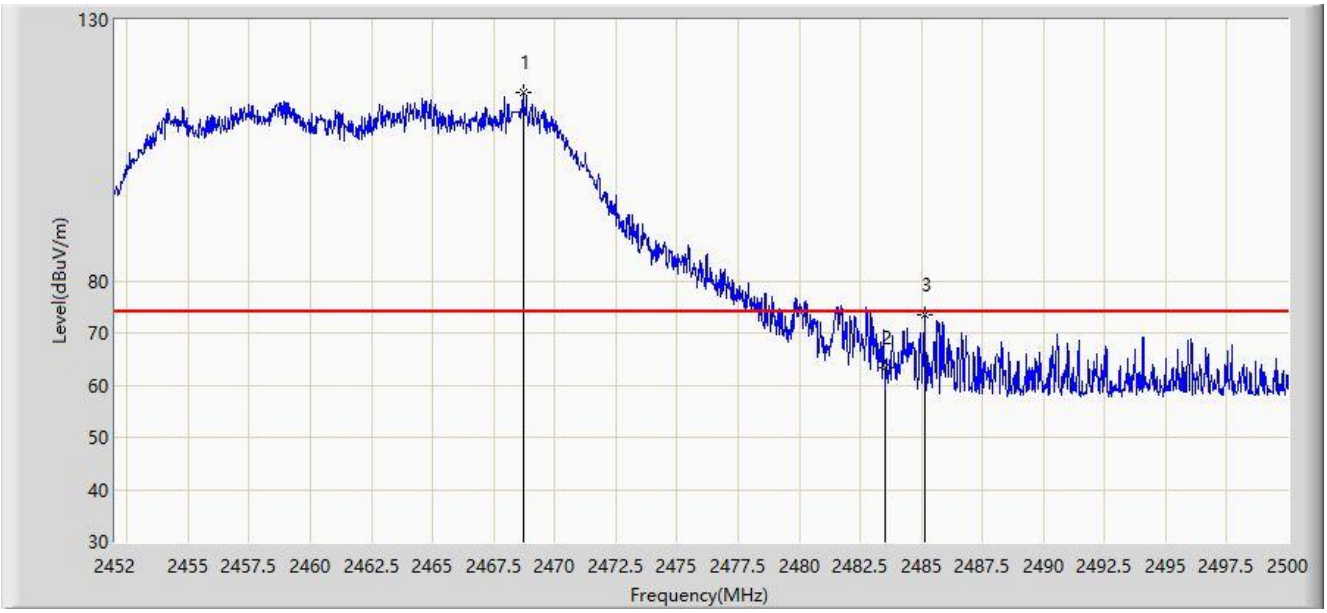


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2461.048	91.057	58.456	N/A	N/A	32.601	AV
2			2483.500	46.871	14.167	-7.129	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2462MHz (Beam-Forming Mode)	

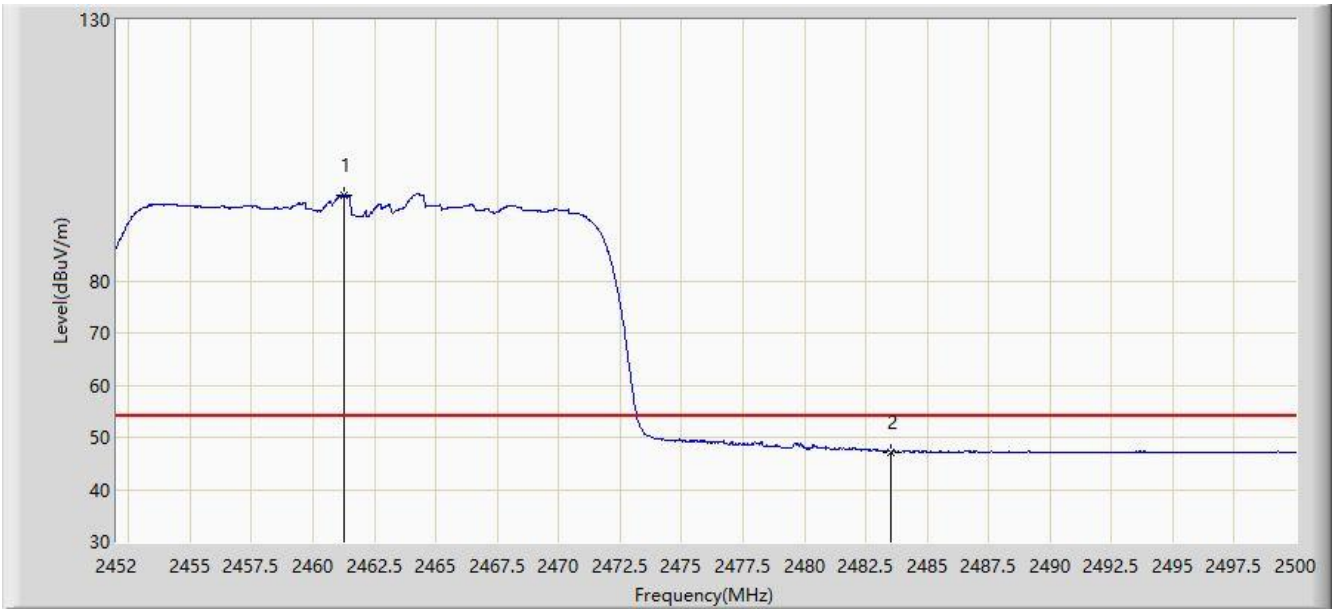


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2468.704	116.032	83.396	N/A	N/A	32.636	PK
2			2483.500	63.429	30.725	-10.571	74.000	32.704	PK
3			2485.120	73.606	40.894	-0.394	74.000	32.712	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE20 at channel 2462MHz (Beam-Forming Mode)	

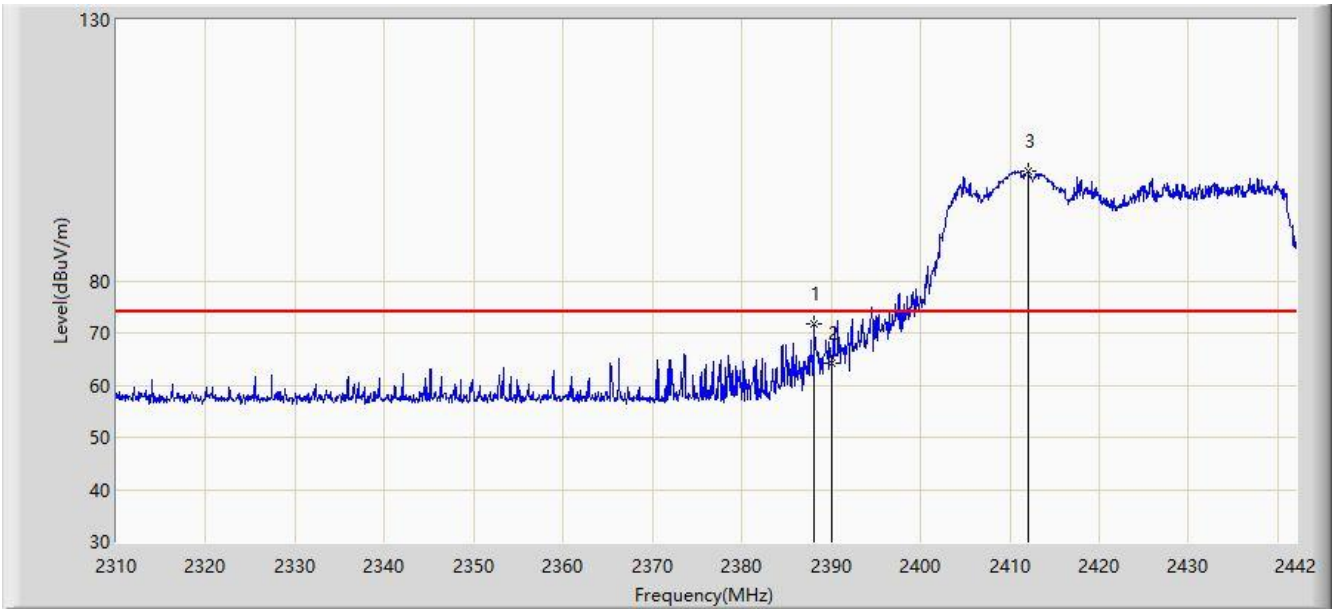


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2461.240	96.365	63.763	N/A	N/A	32.601	AV
2			2483.500	47.229	14.525	-6.771	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2422MHz (Beam-Forming Mode)	

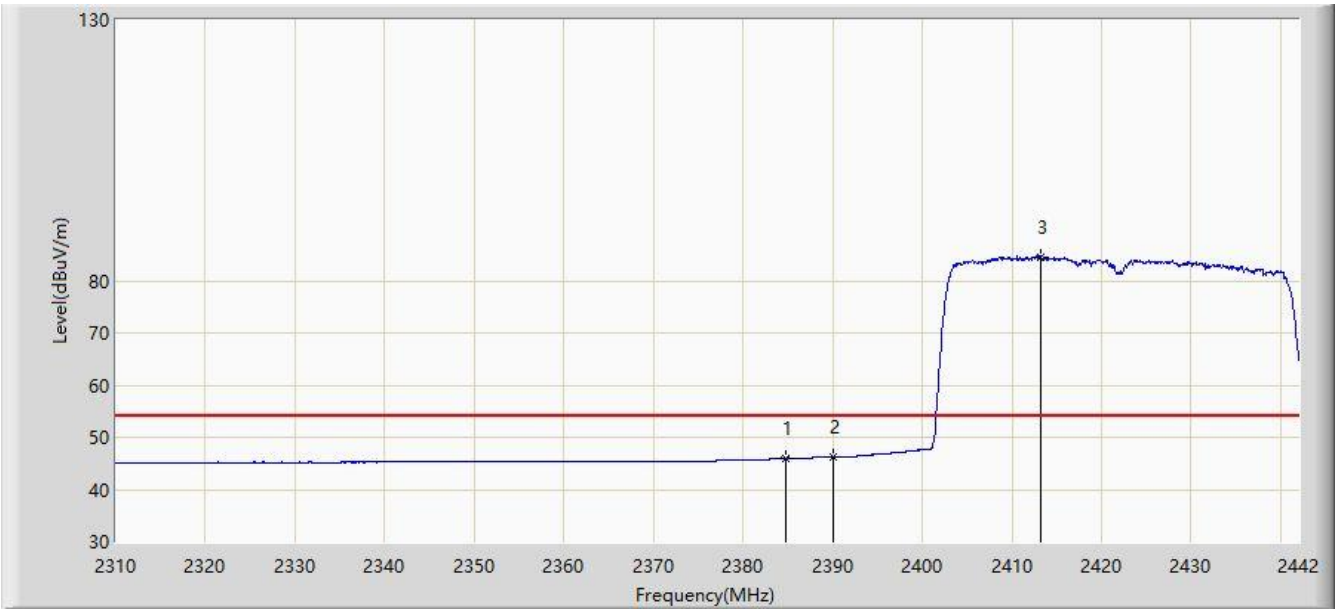


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.144	71.797	39.531	-2.203	74.000	32.266	PK
2			2390.000	64.251	31.977	-9.749	74.000	32.274	PK
3		*	2412.036	100.888	68.513	N/A	N/A	32.375	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:19
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2422MHz (Beam-Forming Mode)	

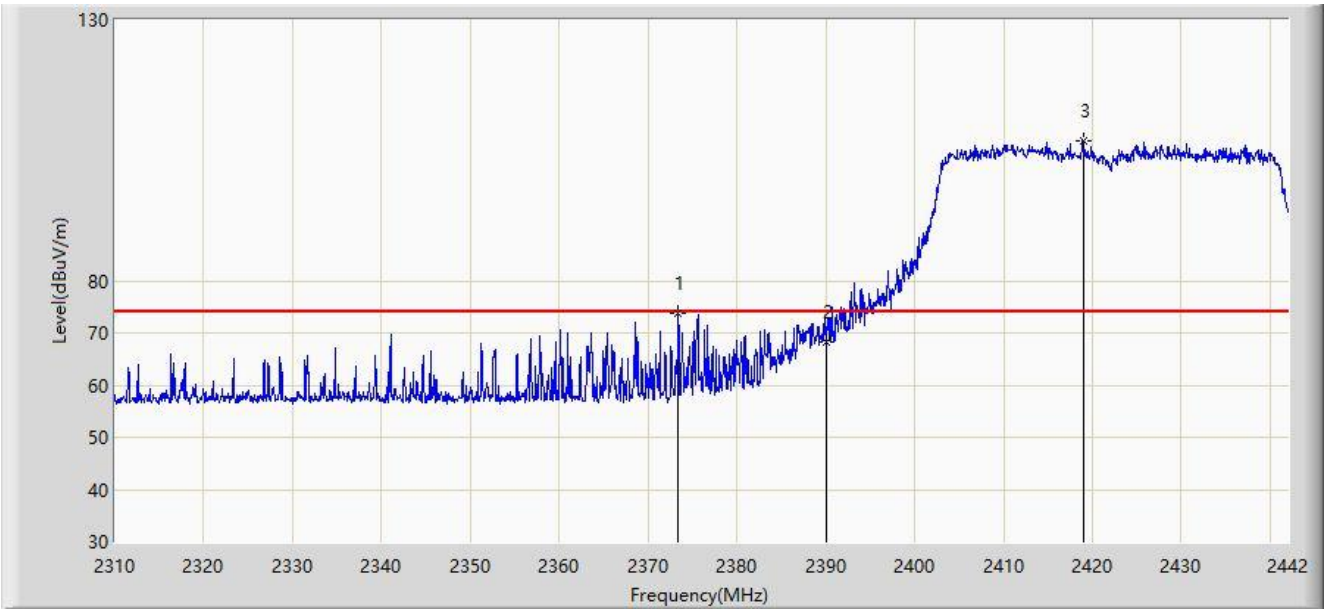


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2384.844	46.014	13.763	-7.986	54.000	32.251	AV
2			2390.000	46.218	13.944	-7.782	54.000	32.274	AV
3		*	2413.158	84.608	52.228	N/A	N/A	32.379	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:39
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2422MHz (Beam-Forming Mode)	

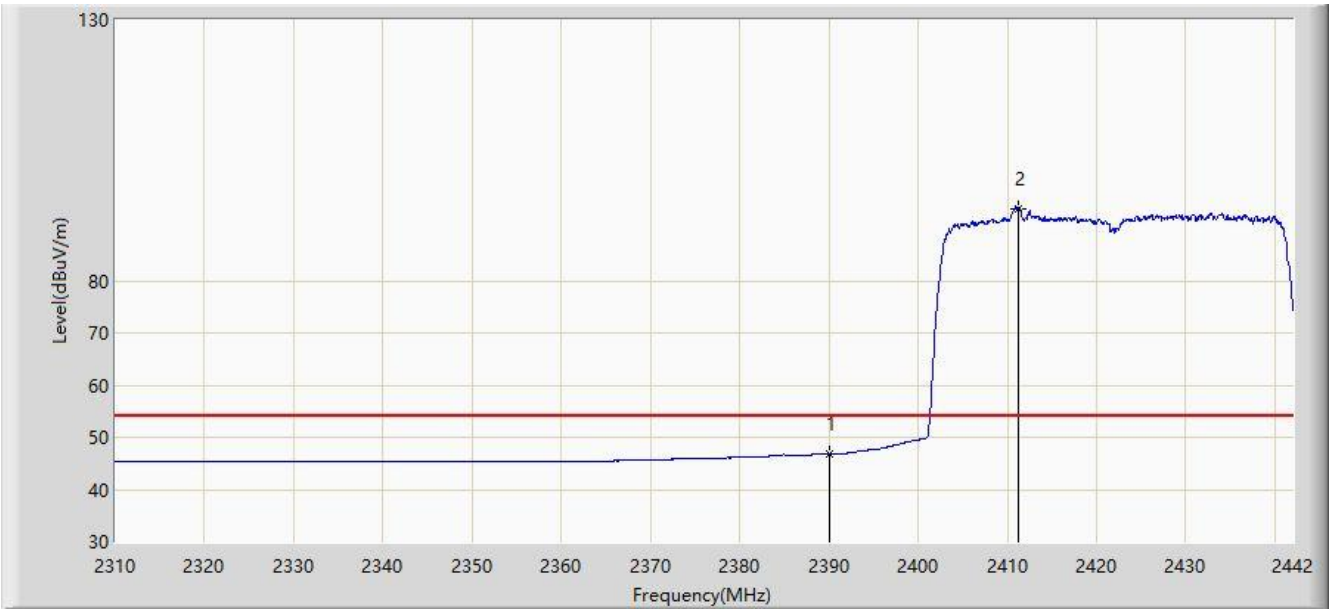


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2373.426	73.832	41.634	-0.168	74.000	32.198	PK
2			2390.000	68.261	35.987	-5.739	74.000	32.274	PK
3		*	2419.032	106.942	74.535	N/A	N/A	32.407	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:40
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2422MHz (Beam-Forming Mode)	

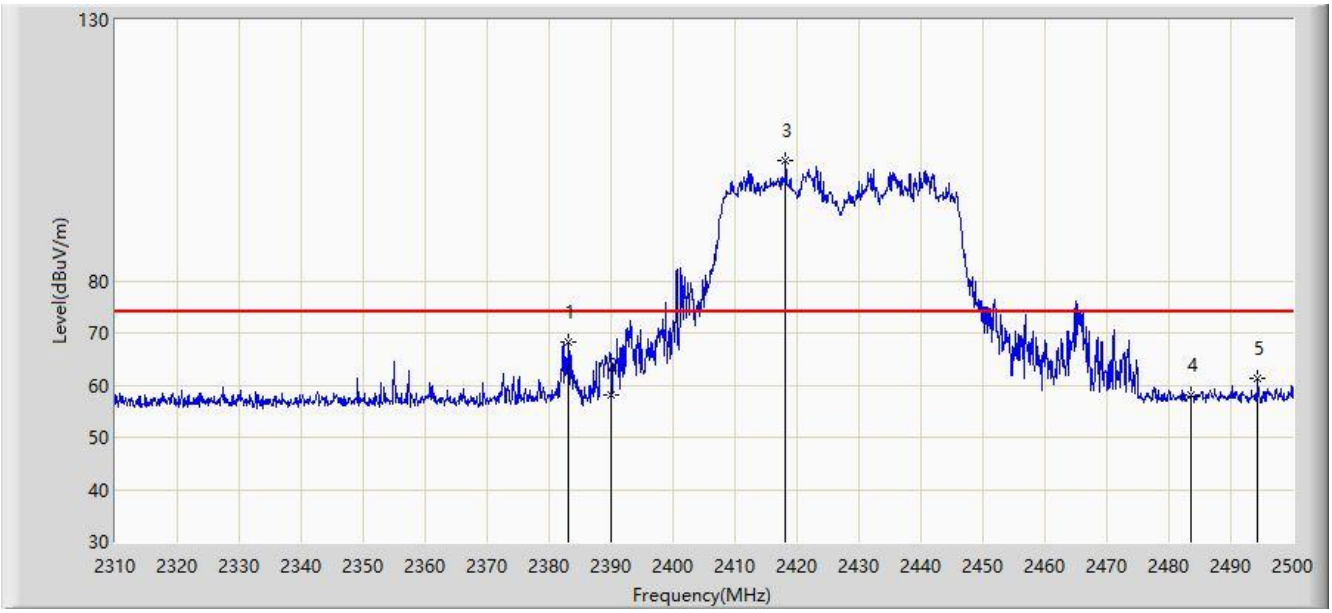


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.757	14.483	-7.243	54.000	32.274	AV
2		*	2411.178	93.873	61.502	N/A	N/A	32.371	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2427MHz (Beam-Forming Mode)	

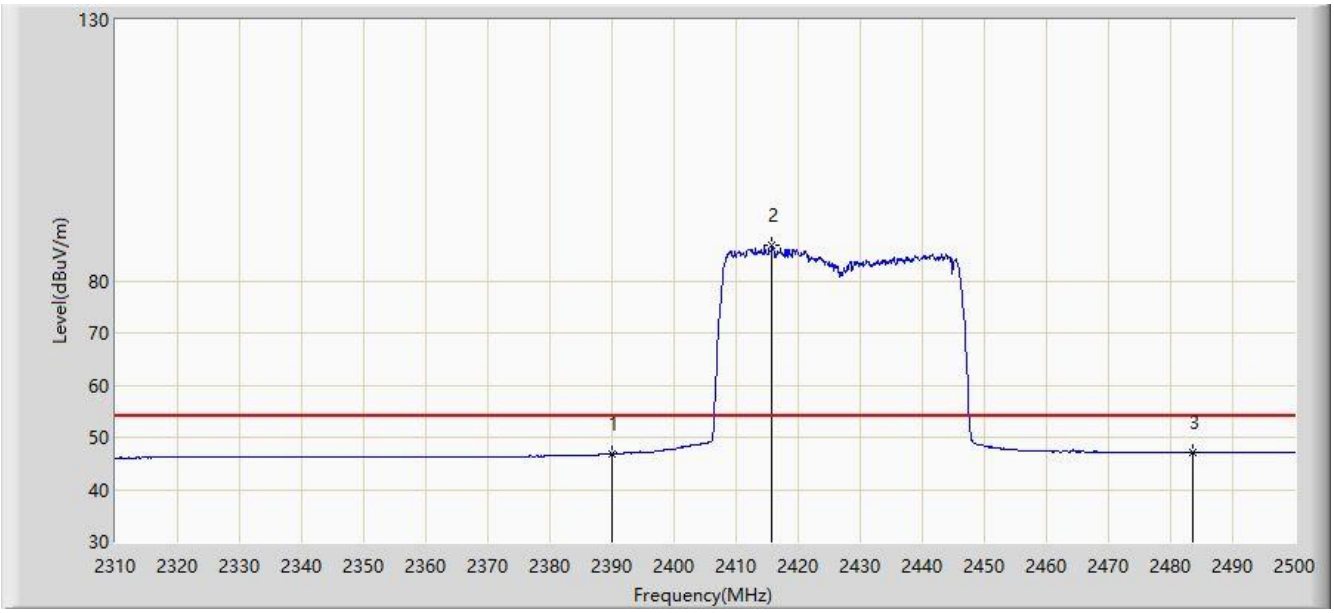


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2383.055	68.138	35.896	-5.862	74.000	32.243	PK
2			2390.000	58.246	25.972	-15.754	74.000	32.274	PK
3		*	2418.205	103.011	70.608	N/A	N/A	32.404	PK
4			2483.500	58.094	25.390	-15.906	74.000	32.704	PK
5			2494.395	61.293	28.539	-12.707	74.000	32.754	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:18
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2427MHz (Beam-Forming Mode)	

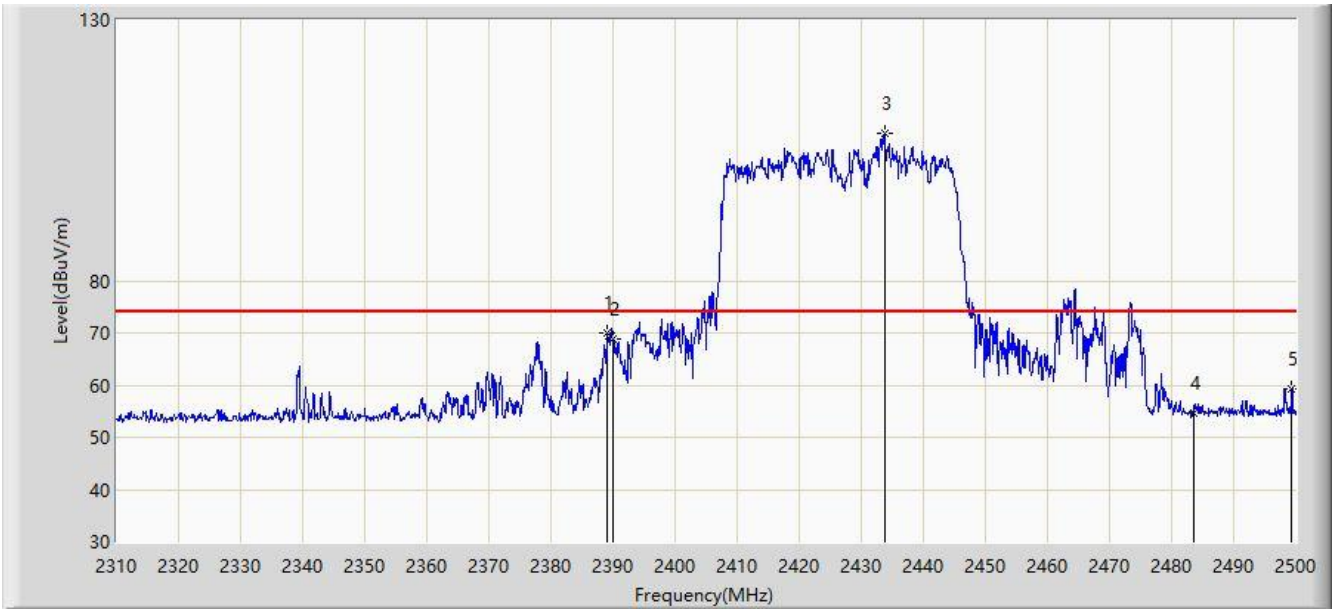


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.919	14.645	-7.081	54.000	32.274	AV
2		*	2415.830	86.742	54.350	N/A	N/A	32.392	AV
3			2483.500	47.041	14.337	-6.959	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:27
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2427MHz (Beam-Forming Mode)	

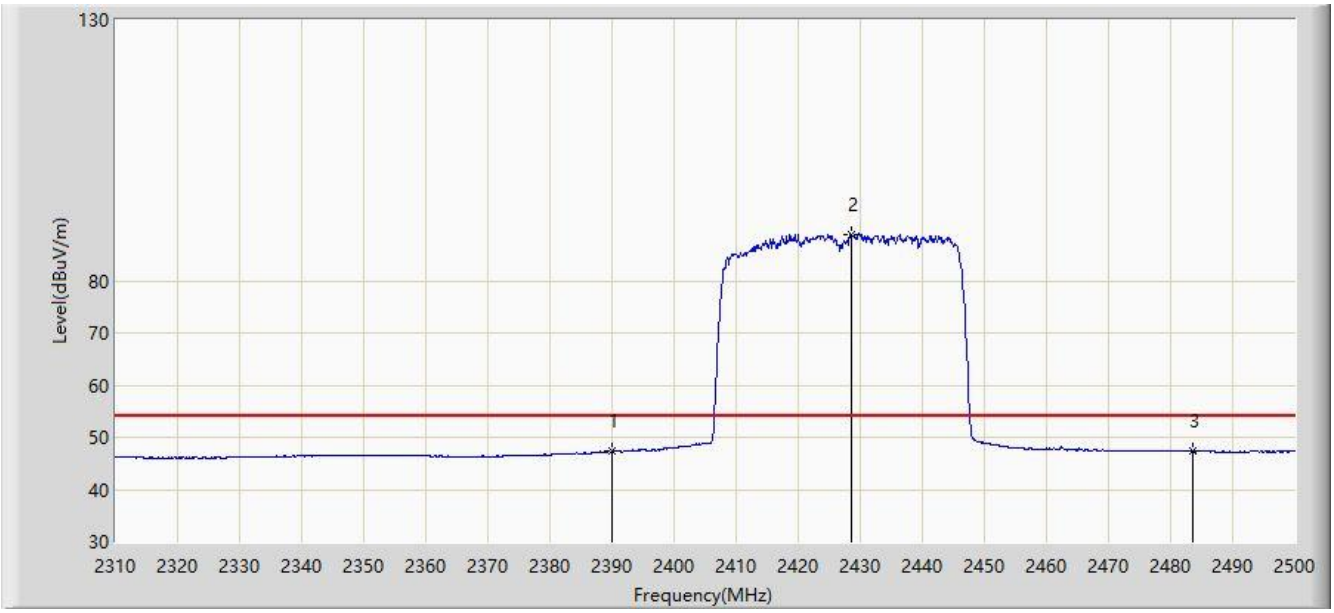


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2389.040	70.132	37.862	-3.868	74.000	32.270	PK
2			2390.000	68.836	36.562	-5.164	74.000	32.274	PK
3		*	2433.785	108.138	75.663	N/A	N/A	32.476	PK
4			2483.500	54.593	21.889	-19.407	74.000	32.704	PK
5			2499.335	59.396	26.622	-14.604	74.000	32.774	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:27
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2427MHz (Beam-Forming Mode)	

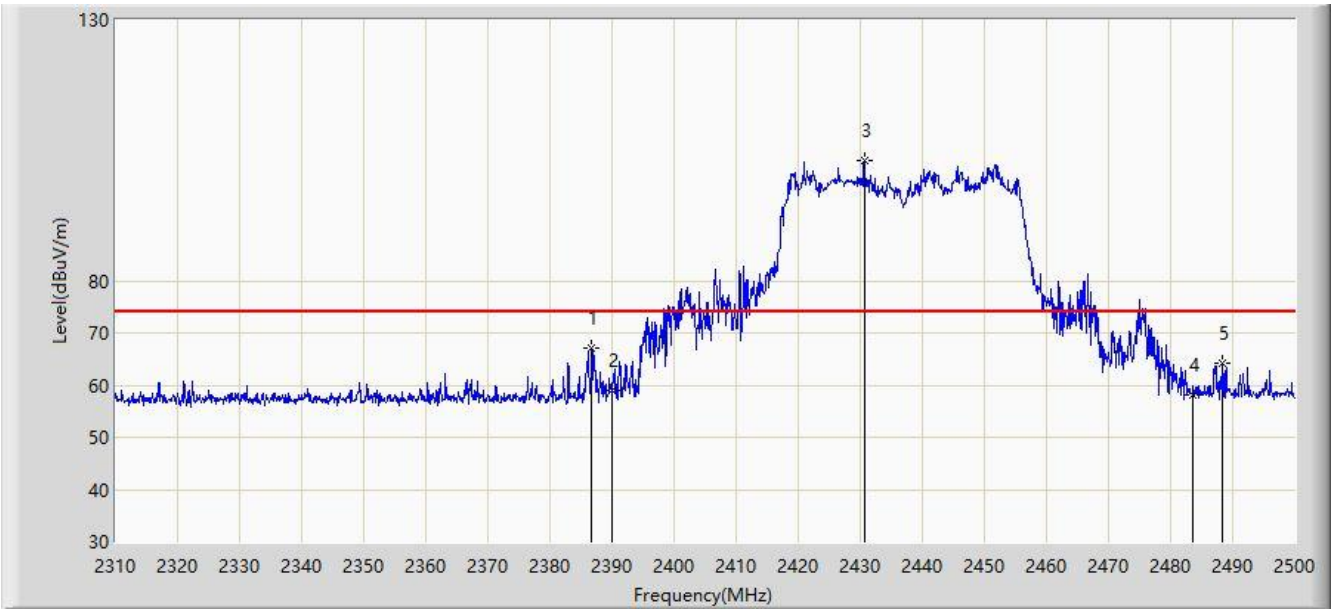


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	47.302	15.028	-6.698	54.000	32.274	AV
2		*	2428.655	88.949	56.497	N/A	N/A	32.451	AV
3			2483.500	47.284	14.580	-6.716	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:29
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2437MHz (Beam-Forming Mode)	

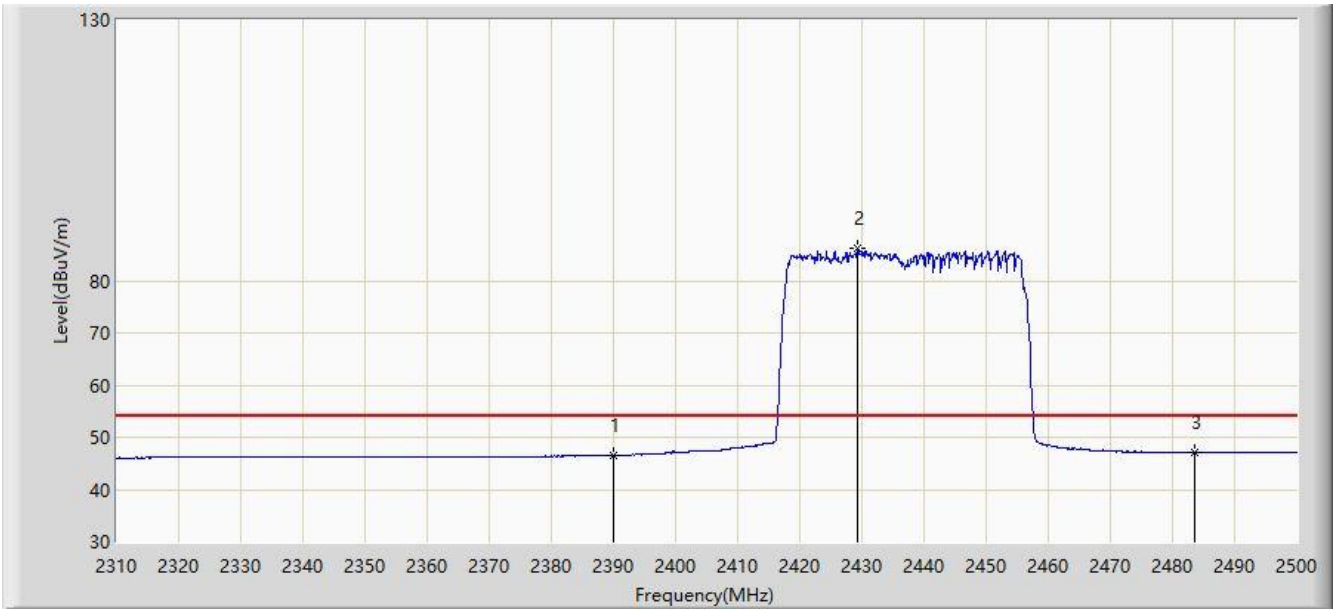


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2386.760	67.194	34.935	-6.806	74.000	32.259	PK
2			2390.000	58.980	26.706	-15.020	74.000	32.274	PK
3		*	2430.650	102.906	70.445	N/A	N/A	32.461	PK
4			2483.500	58.060	25.356	-15.940	74.000	32.704	PK
5			2488.410	64.171	31.444	-9.829	74.000	32.727	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:29
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2437MHz (Beam-Forming Mode)	

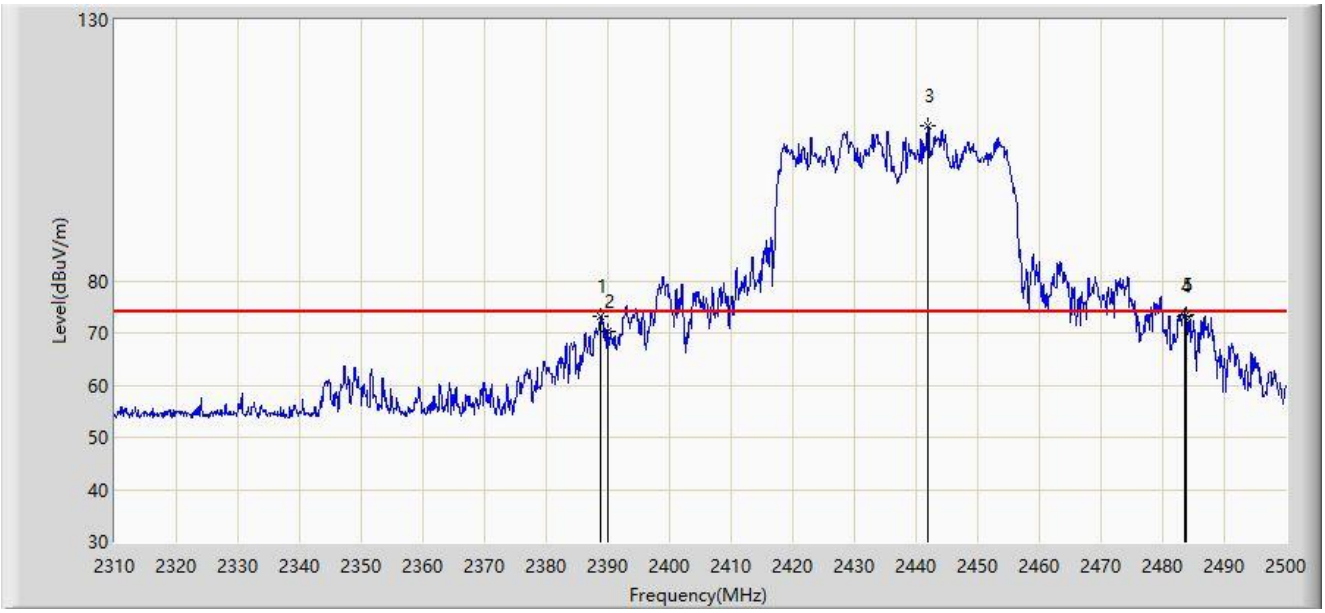


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.544	14.270	-7.456	54.000	32.274	AV
2		*	2429.225	86.135	53.681	N/A	N/A	32.454	AV
3			2483.500	47.099	14.395	-6.901	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:55
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2437MHz (Beam-Forming Mode)	

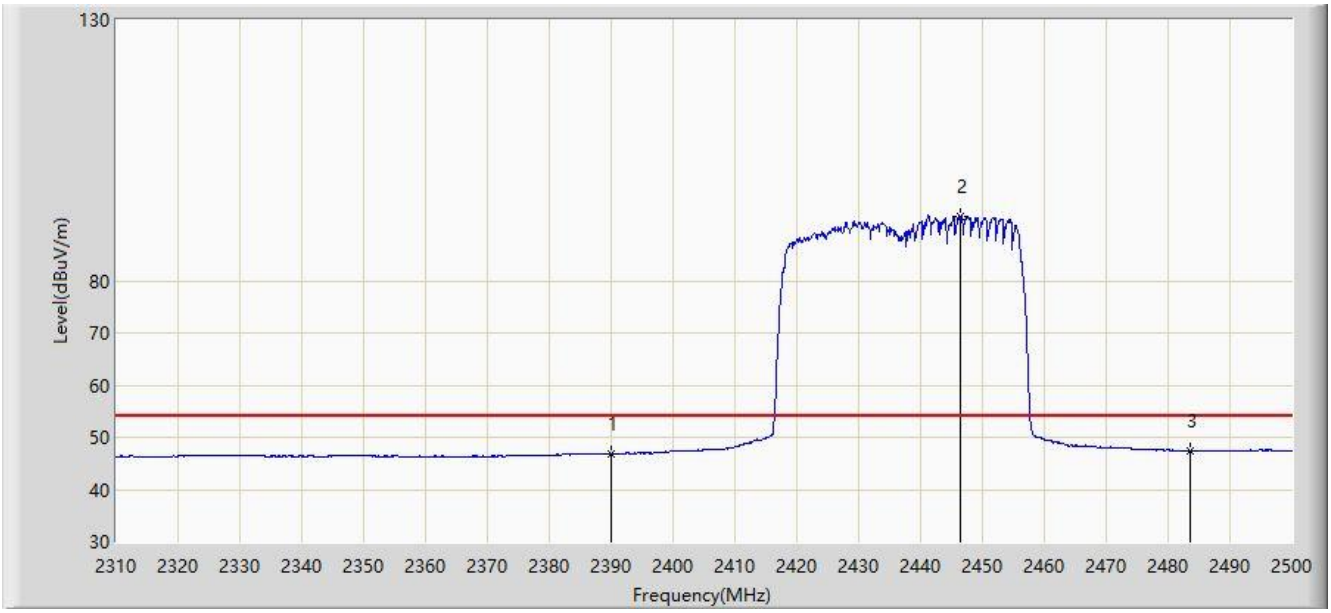


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.850	73.058	40.789	-0.942	74.000	32.269	PK
2			2390.000	70.316	38.042	-3.684	74.000	32.274	PK
3		*	2441.955	109.637	77.123	N/A	N/A	32.514	PK
4			2483.500	73.109	40.405	-0.891	74.000	32.704	PK
5			2483.755	73.475	40.769	-0.525	74.000	32.706	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:57
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2437MHz (Beam-Forming Mode)	

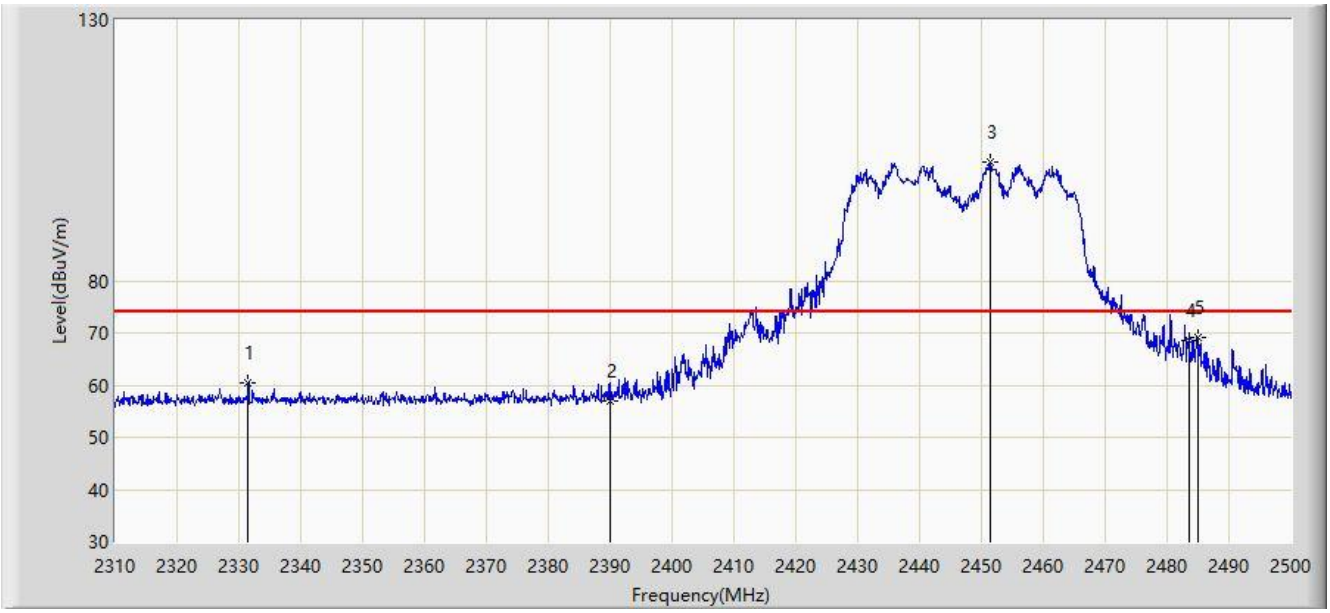


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.920	14.646	-7.080	54.000	32.274	AV
2		*	2446.325	92.313	59.780	N/A	N/A	32.534	AV
3			2483.500	47.439	14.735	-6.561	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:57
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2447MHz (Beam-Forming Mode)	

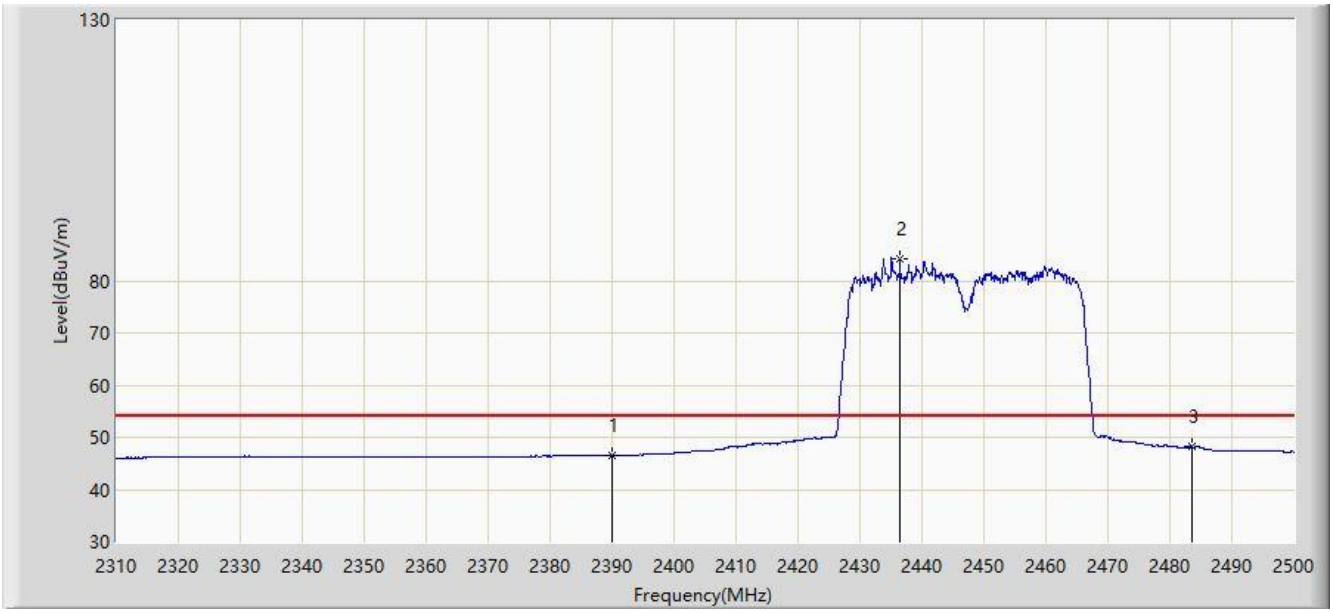


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2331.470	60.338	28.334	-13.662	74.000	32.005	PK
2			2390.000	56.865	24.591	-17.135	74.000	32.274	PK
3		*	2451.360	102.754	70.197	N/A	N/A	32.557	PK
4			2483.500	68.542	35.838	-5.458	74.000	32.704	PK
5			2484.895	69.088	36.377	-4.912	74.000	32.711	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:57
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2447MHz (Beam-Forming Mode)	

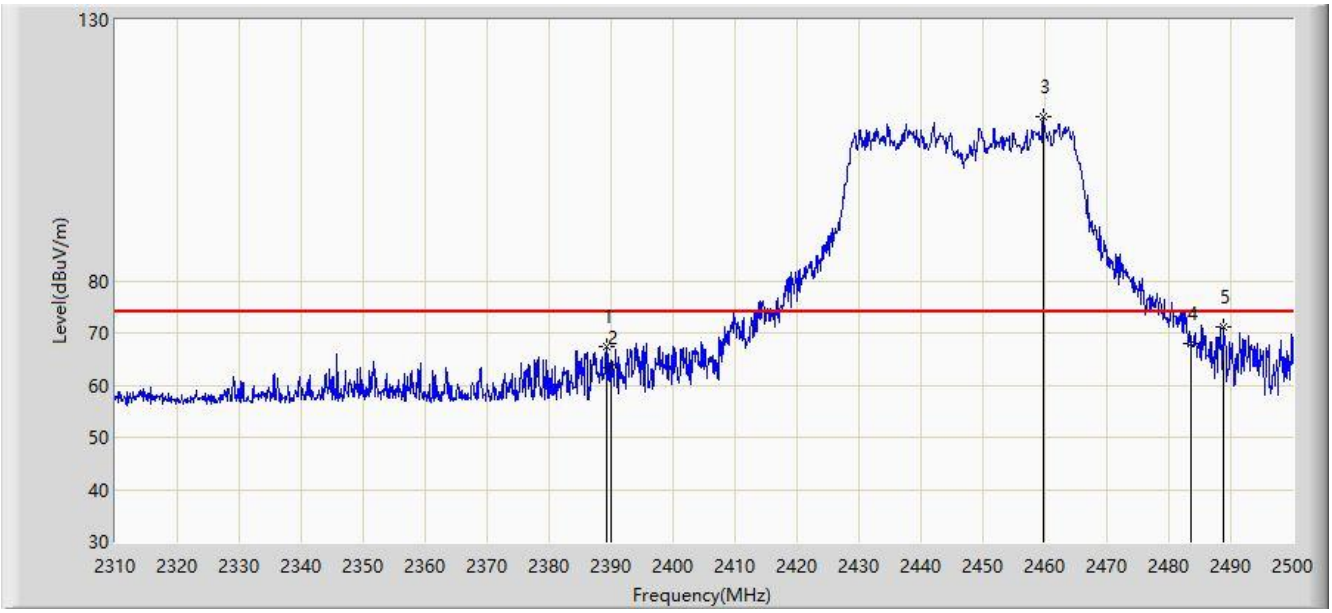


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.512	14.238	-7.488	54.000	32.274	AV
2		*	2436.445	84.203	51.715	N/A	N/A	32.488	AV
3			2483.500	48.133	15.429	-5.867	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/09 - 14:57
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2447MHz (Beam-Forming Mode)	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2389.230	67.274	35.003	-6.726	74.000	32.271	PK
2			2390.000	63.394	31.120	-10.606	74.000	32.274	PK
3		*	2459.720	111.575	78.980	N/A	N/A	32.595	PK
4			2483.500	67.898	35.194	-6.102	74.000	32.704	PK
5			2488.790	71.165	38.437	-2.835	74.000	32.729	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

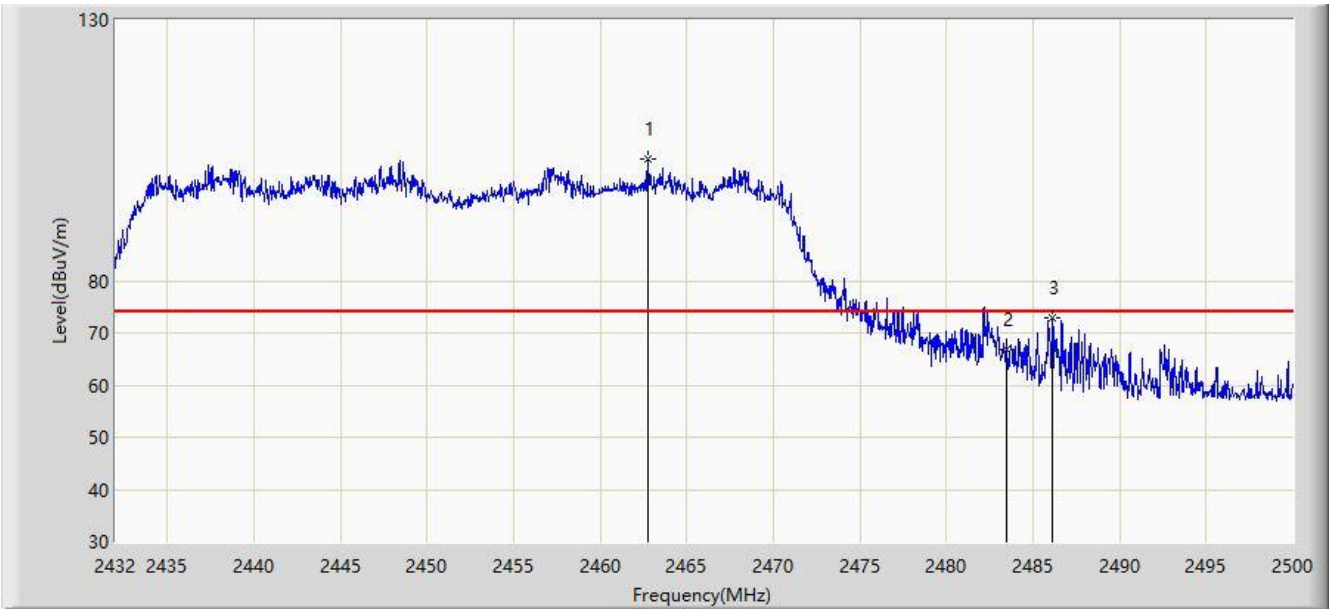
Site: AC1	Time: 2019/11/09 - 14:58
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2447MHz (Beam-Forming Mode)	

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.849	14.575	-7.151	54.000	32.274	AV
2		*	2431.030	89.964	57.501	N/A	N/A	32.462	AV
3			2483.500	48.026	15.322	-5.974	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:42
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2452MHz (Beam-Forming Mode)	

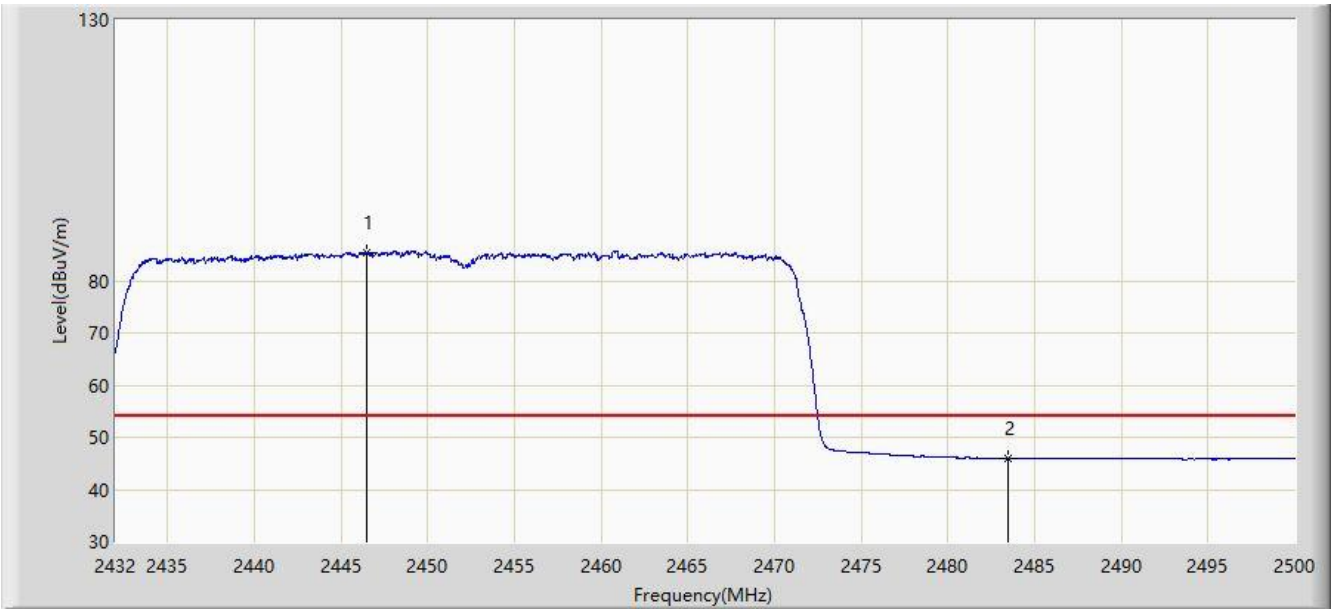


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2462.736	103.342	70.733	N/A	N/A	32.609	PK
2			2483.500	66.933	34.229	-7.067	74.000	32.704	PK
3			2486.128	72.842	40.126	-1.158	74.000	32.716	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:42
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Horizontal
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2452MHz (Beam-Forming Mode)	

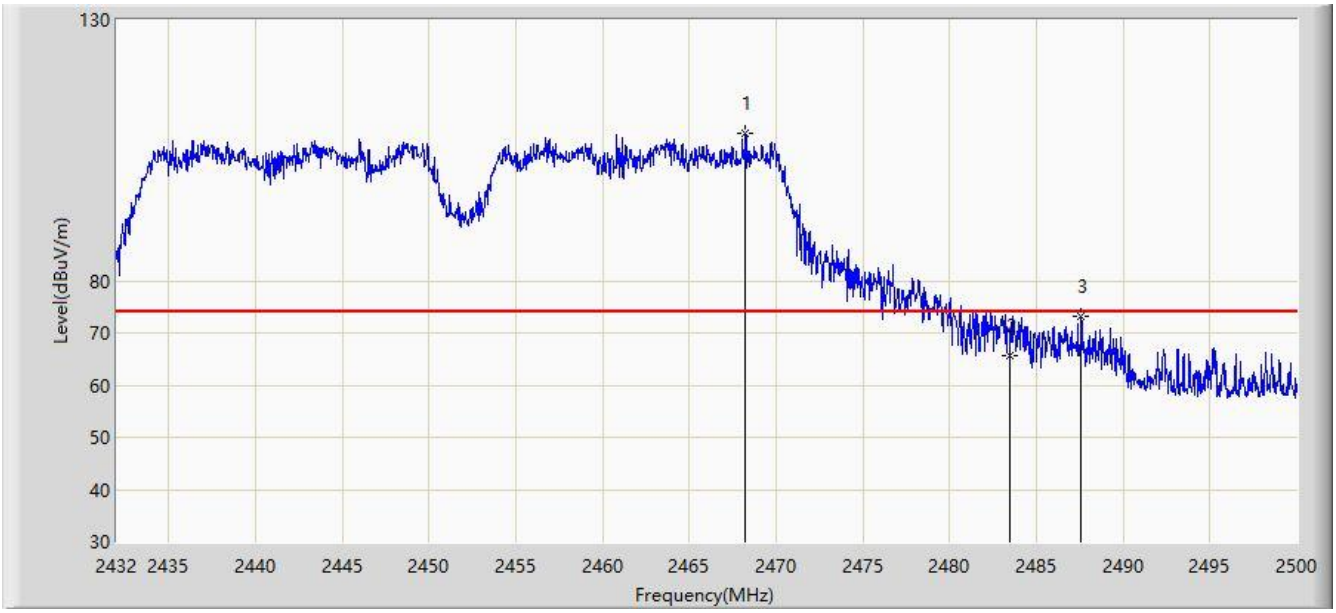


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2446.518	85.451	52.917	N/A	N/A	32.534	AV
2			2483.500	45.824	13.120	-8.176	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:42
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2452MHz (Beam-Forming Mode)	

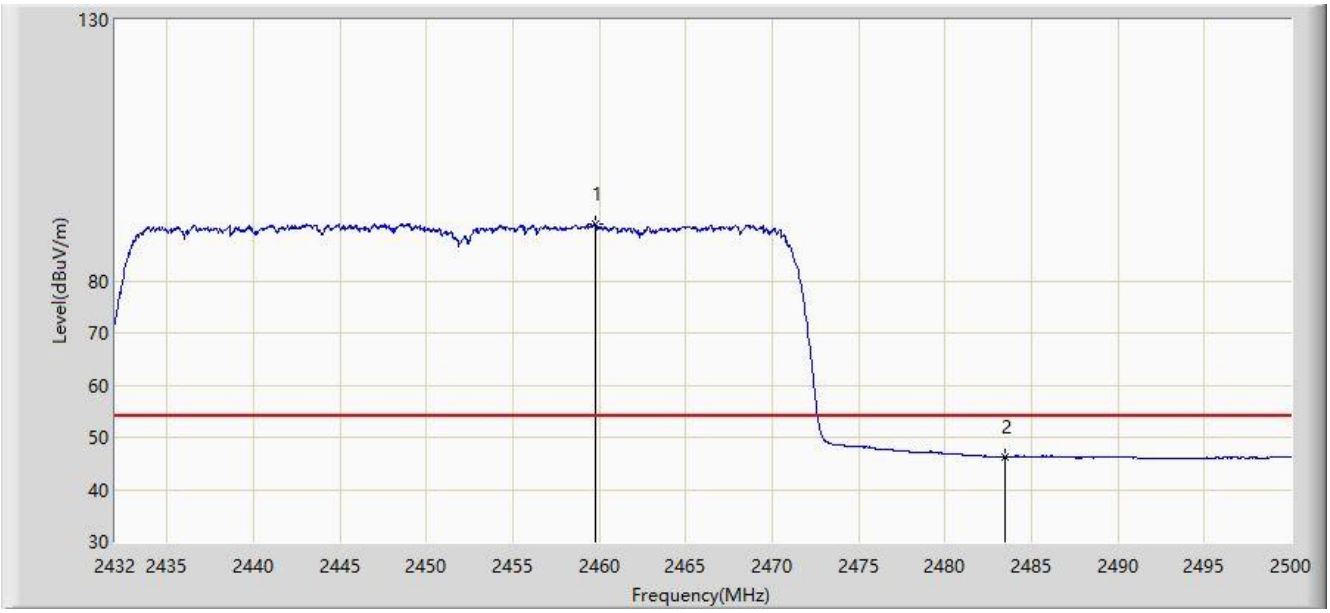


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2468.244	108.195	75.561	N/A	N/A	32.634	PK
2			2483.500	65.559	32.855	-8.441	74.000	32.704	PK
3			2487.590	73.054	40.331	-0.946	74.000	32.723	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2019/11/08 - 19:43
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: TW BBHA 9120D_1-18GHz_2019	Polarity: Vertical
EUT: AX3000 Gigabit Wi-Fi 6 Router	Power: AC 120V/60Hz
Test Mode: Transmit by 802.11ax-HE40 at channel 2452MHz (Beam-Forming Mode)	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2459.778	90.780	58.185	N/A	N/A	32.595	AV
2			2483.500	46.253	13.549	-7.747	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

8. CONCLUSION

The data collected relate only the item(s) tested and show that the device is in compliance with Part 15C of the FCC Rules.

The End

Appendix A - Test Setup Photograph

Refer to “1912W0111-UT” file.

Appendix B - EUT Photograph

Refer to “ 1912TW0111-UE” file.