TEST REPORT

Product Name	**:**	**Mini PC**
Model Number	**:**	**NPB6, N**********(* = “0-9”, ” A-Z”, “-”, ” blank”)**
FCC ID	**:**	**2A49R-NABX**

Prepared for	:	MICRO COMPUTER (HK) TECH LIMITED
Address	:	RM 18, 28/F, Shui On Centre · 6-8 Harbour Road · WaterfRont · Wan Chai · HK
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
Address	:	Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China Tel: (0755) 26954280 Fax: (0755) 26954282

Report Number	:	ENS2410310189W00204R
Date(s) of Tests	:	November 12, 2024 to November 30, 2024
Date of issue	:	December 2, 2024

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Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2410310189W00204R	/	Original Report

1 TEST RESULT CERTIFICATION

Applicant	:	MICRO COMPUTER (HK) TECH LIMITED
Address：		RM 18, 28/F, Shui On Centre · 6-8 Harbour Road · WaterfRont · Wan Chai · HK
Manufacturer	:	MICRO COMPUTER (HK) TECH LIMITED
Address：		RM 18, 28/F, Shui On Centre · 6-8 Harbour Road · WaterfRont · Wan Chai · HK
EUT	:	Mini PC
Model Name	:	NPB6, N**********(* = "0-9" , " A-Z" , "-" , " blank")
Trademark	:	N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	**PASS**

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the above table standards requirement.
The test results of this report relate only to the tested sample identified in this report.

Date of Test	:	November 12, 2024 to November 30, 2024
Prepared by	:	Una Yu/Editor
Reviewer	:	Joe Xia/Supervisor
Approved & Authorized Signer	:	Lisa Wang/Manager

2 EUT TECHNICAL DESCRIPTION

Product Name:	Mini PC
Model Number:	NPB6, N**********(* = "0-9" , " A-Z", "-" , " blank")
Wifi Type:	UNII-1: 5150MHz-5250MHz Band UNII-2A: with 5250MHz-5350MHz Band UNII-2C: with 5470MHz-5725MHz Band UNII-3: with 5725MHz-5850MHz Band
WLAN Supported:	802.11a 802.11n(20MHz channel bandwidth) 802.11n(40MHz channel bandwidth) 802.11ac(20MHz channel bandwidth) 802.11ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)
Modulation:	OFDM, OFDMA
Frequency Range:	5150MHz-5250MHz Band
	5180-5240MHz for 802.11a 5180-5240MHz for 802.11n(HT20) 5190-5230MHz for 802.11n(HT40) 5180-5240MHz for 802.11ac(HT20) 5190-5230MHz for 802.11ac(HT40) 5210MHz for 802.11ac(HT80)
	5250MHz-5350MHz Band
	5260-5320MHz for 802.11a 5260-5320MHz for 802.11n(HT20) 5270-5310MHz for 802.11n(HT40) 5260-5320MHz for 802.11ac(HT20) 5270-5310MHz for 802.11ac(HT40) 5290MHz for 802.11ac(HT80)
	5470MHz-5725MHz Band
	5500-5700MHz for 802.11a 5500-5700MHz for 802.11n(HT20) 5510-5670MHz for 802.11n(HT40) 5500-5700MHz for 802.11ac(HT20) 5510-5670MHz for 802.11ac(HT40) 5530-5610MHz for 802.11ac(HT80)
	5725MHz-5850MHz Band
	5745-5825MHz for 802.11a 5745-5825MHz for 802.11n(HT20) 5755-5795MHz for 802.11n(HT40) 5745-5825MHz for 802.11ac(HT20) 5755-5795MHz for 802.11ac(HT40) 5775MHz for 802.11ac(HT80)
TPC Function:	Not Support

Beamforming:	Not Support
Antenna Type:	FPC Antenna
Antenna Gain:	Ant1：1.05 dBi Ant2：2.68 dBi (Note: The antenna information is provided by the customers, which will have a certain impact on the test results.)
Power Supply:	DC 19V from adapter Adapter1: Model :HKA12019063-0D6 Input:100-240V~50/60Hz,1.6A Output:19.0V,6.32A,120.08W Adapter2: Model SOY-1900630-410-B Input:100-240V~50/60Hz,2.5A Max Output:19.0V,6.32A,119.7W
Temperature Range:	0℃~ 35℃

Note: *for more details, please refer to the user's manual of the EUT.*

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407 (a)	Peak Power Spectral Density	PASS	
15.407 (b)	Radiated Spurious Emission	PASS	
15.407 (b)(6) 15.207	Power Line Conducted Emission	PASS	
15.407(a) 15.203	Antenna Application	PASS	
NOTE1: The results of this report do not take into account the uncertainty. NOTE2: According to FCC OET KDB 789033 D2 General UNII Test Procedures New Rules v02r01, In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is filing to comply with the above table standards requirement.

4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:
FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart E
FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

4.2 MEASUREMENT EQUIPMENT USED

For Conducted Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2024/5/11	1Year
AMN	Rohde & Schwarz	ENV216	101161	2024/5/10	1Year

For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	Bonn	BLMA 011001N	2213967A	2023/10/23	1Year
EMI Test Receiver	Rohde & Schwarz	ESR7	102551	2023/10/23	1Year
Bilog Antenna	Schwarzbeck	VULB9163	9163142	2022/7/9 2024/7/8	2Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1198	2023/6/2	2Year
Pre-Amplifier	Bonn	BLMA 0118-5G	2213967B-01	2023/10/23	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101290	2023/10/23	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2023/5/12	2Year
Pre-Amplifier	Lunar EM	LNA18G26-40	J1012131010001	2024/5/11	1Year
Pre-Amplifier	Lunar EM	LNA26G40-40	J1013131028001	2024/5/11	1Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2023/5/12	2Year
Wideband Radio Communication Tester	R&S	CMW500	147366	2024/5/10	1Year

For Other Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Wideband Radio Communication Tester	R&S	CMW500	171168	2023/9/19 2024/9/18	1Year
Frequency Extender	R&S	CMW-Z800A	100430	2023/9/19 2024/9/18	1Year
Spectrum Analyzer	R&S	FSV3044	101289	2023/9/19 2024/9/18	1Year
Analog Signal Generator	R&S	SMB100A	183237	2023/9/19 2024/9/18	1Year
Vector Signal Generator	R&S	SMM100A	101808	2023/9/19 2024/9/18	1Year
RF Control Unit(Power Meter)	Tonscend	JS0806-2	22C8060567	2023/9/19 2024/9/18	1Year
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2024/5/10	1 Year
DC Power Supply	KEYSIGHT	E3642A	MY53030016	2023/9/19 2024/9/18	1 Year

4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.
The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.
The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.
Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.
Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

WIFI 5G with 5150-5250MHz

Frequency and Channels list for 802.11a/n(20)/ac(20)/ax(20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220		
40	5200	48	5240		

Frequency and Channels list for 802.11n (40)/ac(40)/ax(40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190				
46	5230				

Frequency and Channel list for 802.11ac(80)/ax(80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210				

Test Frequency and Channels for 802.11a/n(20)/ac(20)/ax(20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	48	5240

Test Frequency and channels for 802.11n (40)/ac(40)/ax(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	N/A	N/A	46	5230

Test Frequency and channels for 802.11ac(80)/ax(80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	N/A	N/A	N/A	N/A

WIFI 5G with 5250-5350MHz

Frequency and Channels list for 802.11a/n(20)/ac(20)/ax(20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300		
56	5280	64	5320		

Frequency and Channels list for 802.11n (40)/ac(40)/ax(40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270				
62	5310				

Frequency and Channels list for 802.11ac(80)/ax(80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
58	5290				

Frequency and Channels list for 802.11ax(160):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
50	5250				

Test Frequency and Channels for 802.11a/n(20)/ac(20)/ax(20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	56	5280	64	5320

Test Frequency and channels for 802.11n (40)/ac(40)/ax(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	N/A	N/A	62	5310

Test Frequency and channels for 802.11ac(80)/ax(80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
58	5290				

Test Frequency and channels for 802.11ac(160)/ax(160):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
50	5250				

WIFI 5G with 5470-5725MHz

Frequency and Channels list for 802.11a/n(20)/ac(20)/ax(20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	132	5660
104	5520	120	5600	136	5680
108	5540	124	5620	140	5700
112	5560	128	5640		

Frequency and Channels list for 802.11n (40)/ac(40)/ax(40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	118	5590	134	5670
110	5550	126	5630		

Frequency and Channels list for 802.11ac(80)/ax(80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610		

Frequency and channels for 802.11ac(160)/ax(160):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
114	5570				

Test Frequency and Channels for 802.11a/n(20)/ac(20)/ax(20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	140	5700

Test Frequency and channels for 802.11n (40)/ac(40)/ax(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510			134	5670

Test Frequency and channels for 802.11ac(80)/ax(80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610		

Test Frequency and channels for 802.11ac(160)/ax(160):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
114	5570				

WIFI 5G with 5725MHz-5850MHz

Frequency and Channels list for 802.11a/n(20)/ac(20)/ax(20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805		

Frequency and Channels list for 802.11n(40)/ac(40)/ax(40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755				
159	5795				

Frequency and Channels list for 802.11ac(80)/ax(80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Test Frequency and Channels for 802.11a/n(20)/ac(20)/ax(20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

Test Frequency and channels for 802.11n(40)/ac(40)/ax(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755			159	5795

Test Frequency and channels for 8802.11ac(80)/ax(80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Multi-antenna correlation:

☐	Transmit Signals are Correlated
	Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + … + $10^{GN/20}$)2 /N_{ANT}] dBi
☐	All Transmit Signals are Completely Uncorrelated
	Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + … + $10^{GN/10}$))/NANT] dBi

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

Site Description

Name of Firm : EMTEK (SHENZHEN) CO., LTD.

Site Location : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

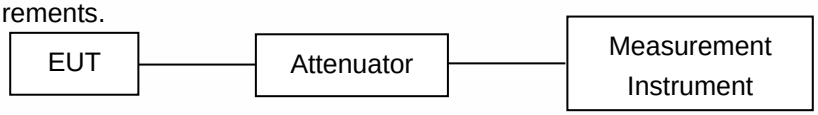
Parameter	Uncertainty
Radio Frequency	±1x10^-5
Maximum Peak Output Power Test	±1.0dB
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Power Density	±2.0dB
Occupied Bandwidth Test	±1.0dB
Band Edge Test	±3dB
All emission, radiated	±3dB
Antenna Port Emission	±3dB
Temperature	±0.5℃
Humidity	±3%

Measurement Uncertainty for a level of Confidence of 95%.

7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP

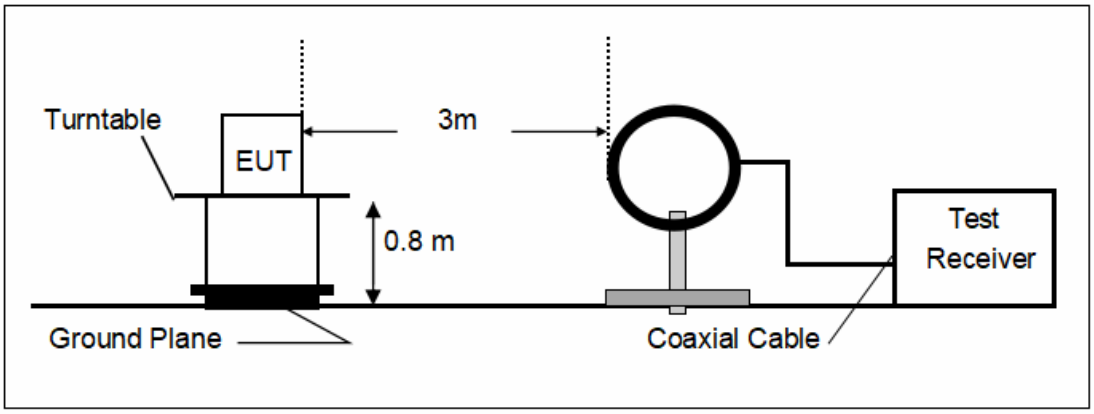
The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

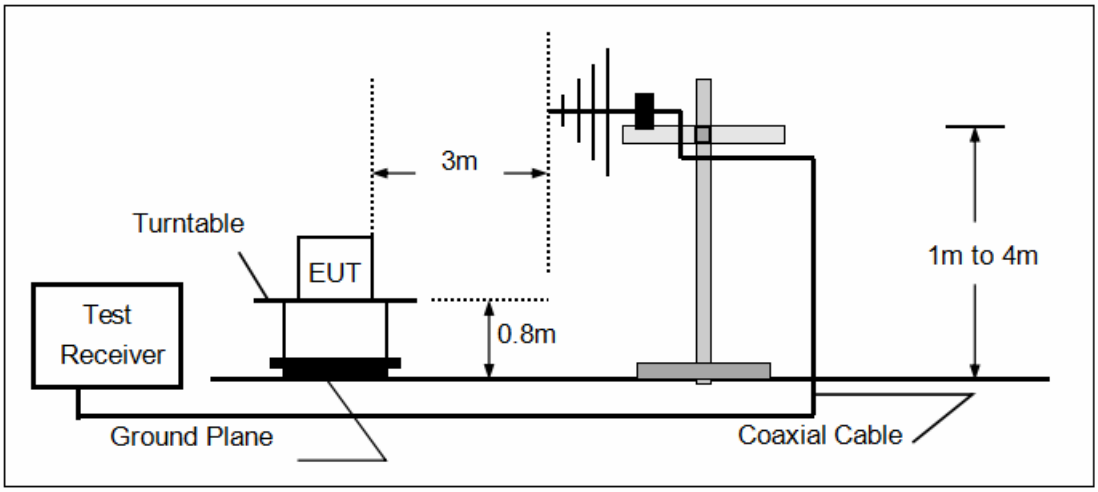
Above 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz：
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)
The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

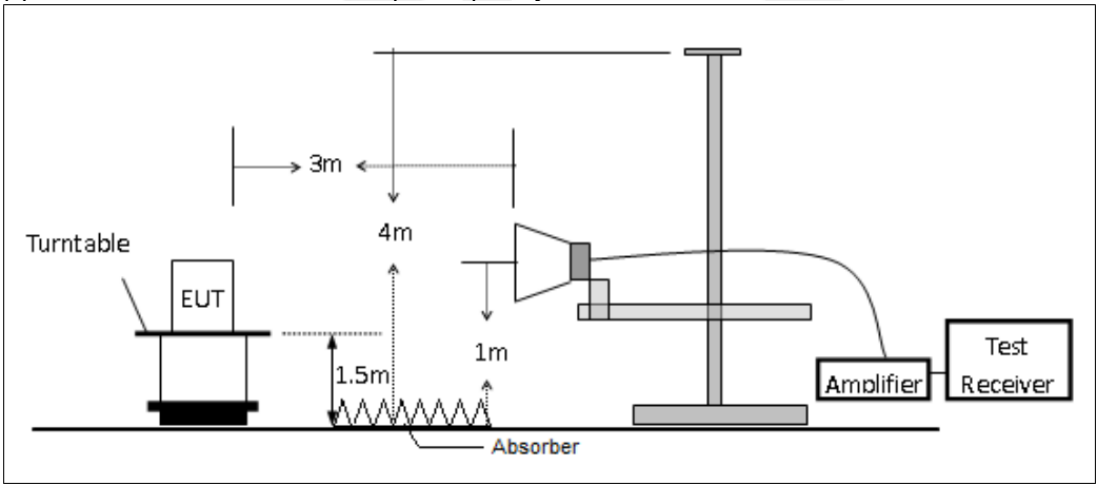
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

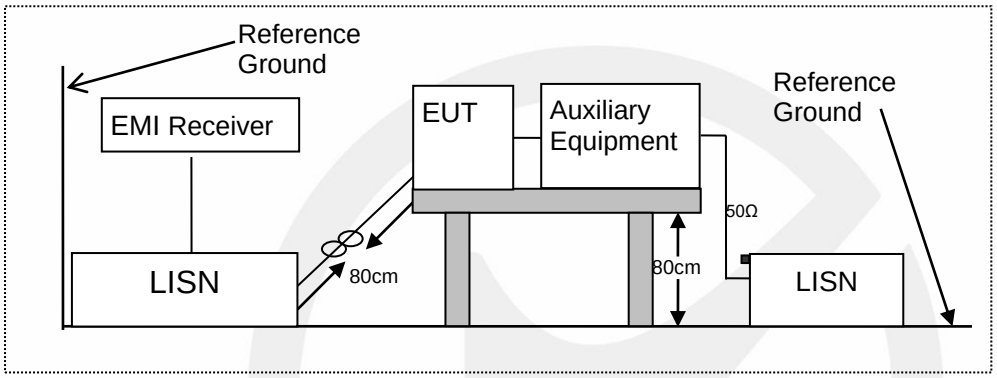


7.3 CONDUCTED EMISSION TEST SETUP

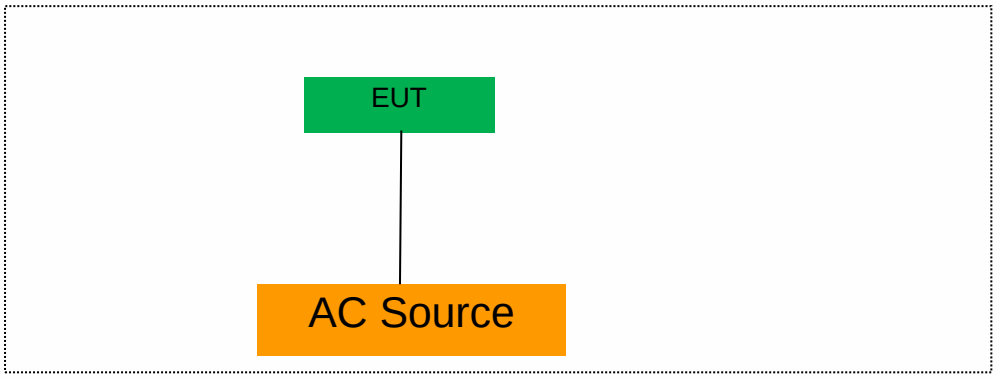
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



7.5 SUPPORT EQUIPMENT

N/A

Notes:

1.All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2.Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 BANDWIDTH MEASUREMENT

8.1.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to FCC Part 15.407(e) for UNII Band III
According to 789033 D02 Section II(C)
According to 789033 D02 Section II(D)

8.1.2 Conformance Limit

(1) For the band 5.15-5.25 GHz.
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm 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 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm 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 6 dBi.

(3) For the band 5.725-5.85 GHz, 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 30 dBm in any 500-kHz 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 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi 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 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 6.1 radio frequency test setup.

8.1.4 Test Procedure

According to 789033 D02 v02r01 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 26 dB 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 5.725-5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
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 v01r02 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.

8.1.5 Test Results

Note: The module of this prototype has been certified, and the data of the module refers to the original report: RF200317E01-1.

8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(E)

8.2.2 Conformance Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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 6 dBi.
(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.
(a) (1) (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. 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 6 dBi.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm 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 6 dBi.

■ For the band 5.725-5.85 GHz

(a) (3)For the band 5.725-5.85 GHz, 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 30 dBm in any 500-kHz 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 6 dBi.

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup 1.

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

a. The Transmitter output (antenna port) was connected to the power meter.
b. Turn on the EUT and power meter and then record the power value.
c. Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results

Temperature :	25℃	ATM Pressure:	1011 mbar
Humidity :	45 %	Test Engineer:	XXH

Note: The module of this prototype has been certified, and the data of the module refers to the original report: RF200317E01-1.

8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(F)

8.3.2 Conformance Limit

■ For the band 5.15-5.25 GHz

(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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 6 dBi.
(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.
(a) (1) (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. 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 6 dBi.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz

(b) (2) the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm 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 6 dBi.

■ For the band 5.725-5.85 GHz

(a) (3)For the band 5.725-5.85 GHz, 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 30 dBm in any 500-kHz 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 6 dBi.

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup 1.

8.3.4 Test Procedure

Methods refer to FCC KDB 789033.

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) 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 100 KHz for the sections.

5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

8.3.5 Test Results

Temperature :	25℃	ATM Pressure:	1011 mbar
Humidity :	45 %	Test Engineer:	XXH

Note: The module of this prototype has been certified, and the data of the module refers to the original report: RF200317E01-1.

8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION

8.4.1 Applicable Standard

According to FCC Part 15.407 (b)
According to 789033 D02 Section II(G)

8.4.2 Conformance Limit

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

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

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	2400/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The provisions of §15.205 apply to intentional radiators operating under this section,15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	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	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			

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

8.4.3 Test Configuration

Test according to clause 6.2 radio frequency test setup 2.

8.4.4 Test Procedure

■ Unwanted Emissions Measurements below 1000 MHz

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.
The EUT was placed on a turn table which is 0.8m above ground plane.
And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
Repeat above procedures until all frequency measured was complete.
We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes have been tested and the worst result was reported.
Use the following spectrum analyzer settings:
Set RBW=120kHz for f < 1 GHz(30MHz to 1GHz), 200Hz for f<150KHz(9KHz to 150KHz), 9KHz for <30MHz (150KHz to 30KHz).
Set the VBW > RBW.
Detector = Peak.
Trace mode = max hold.
Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.
Repeat above procedures until all frequency measured was complete.

■ Unwanted Maximum peak Emissions Measurements above 1000 MHz

Maximum emission levels are measured by setting the analyzer as follows:
RBW = 1 MHz.
VBW ≥ 3 MHz.
Detector = Peak.
Sweep time = auto.
Trace mode = max hold.
Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

■ Unwanted Average Emissions Measurements above 1000 MHz

Method VB (Averaging using reduced video bandwidth): Alternative method.
RBW = 1 MHz.
Video bandwidth. • If the EUT is configured to transmit with duty cycle ≥ 98 percent, set VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10 Hz.
• If the EUT duty cycle is < 98 percent, set VBW ≥ 1/T, where T is defined in section II.B.1.a).
Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).
• As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode.
Detector = Peak.

Sweep time = auto.
Trace mode = max hold.
Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of 1/x, where x is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged).

■ Band edge measurements.

Unwanted band-edge emissions may be measured using either of the special band-edge measurement techniques (the marker-delta or integration methods) described below. Note that the marker-delta method is primarily a radiated measurement technique that requires the 99% occupied bandwidth edge to be within 2 MHz of the authorized band edge, whereas the integration method can be used in either a radiated or conducted measurement without any special requirement with regards to the displacement of the unwanted emission(s) relative to the authorized bandwidth.
Marker-Delta Method.
The marker-delta method, as described in ANSI C63.10, can be used to perform measurements of the radiated unwanted emissions level of emissions provided that the 99% occupied bandwidth of the fundamental is within 2 MHz of the authorized band-edge.

8.4.5 Test Results

Pass

Temperature :	25℃	ATM Pressure:	1011 mbar
Humidity :	45 %	Test Engineer:	CZF

All of the configurations or modes are tested, the data of the worst case is recorded as below.

☒**For Undesirable radiated Spurious Emission in U-NII – 1**
☒**Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)**
All of the configurations or modes are tested, the data of the worst case is recorded in the report.
Highest gain of each antenna and highest output power is ANT1 as below:

Test mode: 802.11a Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8687.84	V	56.50	-38.73	-27	11.73
11103.0	V	60.28	-34.95	-27	7.95
17855.4	V	61.50	-33.73	-27	6.73
8696.34	H	56.34	-38.89	-27	11.89
12608.3	H	61.81	-33.42	-27	6.42
17940.4	H	62.36	-32.87	-27	5.87

Test mode: 802.11a Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
9886.94	V	60.33	-34.9	-27	7.9
12599.7	V	62.59	-32.64	-27	5.64
17540.7	V	62.64	-32.59	-27	5.59
8687.84	H	56.78	-38.45	-27	11.45
11060.5	H	60.95	-34.28	-27	7.28
17217.6	H	62.30	-32.93	-27	5.93

Test mode: 802.11a Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8687.84	V	56.27	-38.96	-27	11.96
10720.3	V	60.96	-34.27	-27	7.27
17438.7	V	62.22	-33.01	-27	6.01
8619.80	H	56.38	-38.85	-27	11.85
11077.5	H	60.47	-34.76	-27	7.76
17676.8	H	61.94	-33.29	-27	6.29

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11a	Frequency(MHz):	5180		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8687.84	V	56.50	74.00	17.50	peak
11103.0	V	60.28	74.00	13.72	peak
17855.4	V	61.50	74.00	12.50	peak
8687.84	V	42.96	54.00	11.04	AVG
11103.0	V	44.36	54.00	9.64	AVG
17855.4	V	46.23	54.00	7.77	AVG
8696.34	H	56.34	74.00	17.66	peak
12608.3	H	61.81	74.00	12.19	peak
17940.4	H	62.36	74.00	11.64	peak
8696.34	H	42.88	54.00	11.12	AVG
12608.3	H	46.32	54.00	7.68	AVG
17940.4	H	45.26	54.00	8.74	AVG

Test mode:	802.11a	Frequency(MHz):	5200		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
9886.94	V	60.33	74.00	13.67	peak
12599.7	V	62.59	74.00	11.41	peak
17540.7	V	62.64	74.00	11.36	peak
9886.94	V	46.39	54.00	7.61	AVG
12599.7	V	46.09	54.00	7.91	AVG
17540.7	V	45.90	54.00	8.10	AVG
8687.84	H	56.78	74.00	17.22	peak
11060.5	H	60.95	74.00	13.05	peak
17217.6	H	62.30	74.00	11.70	peak
8687.84	H	42.96	54.00	11.04	AVG
11060.5	H	44.05	54.00	9.95	AVG
17217.6	H	46.58	54.00	7.42	AVG

Test mode:	802.11a	Frequency(MHz):	5240		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8687.84	V	56.27	74.00	17.73	peak
10720.3	V	60.96	74.00	13.04	peak
17438.7	V	62.22	74.00	11.78	peak
8687.84	V	42.79	54.00	11.21	AVG
10720.3	V	45.33	54.00	8.67	AVG
17438.7	V	45.05	54.00	8.95	AVG
8619.80	H	56.38	74.00	17.62	peak
11077.5	H	60.47	74.00	13.53	peak
17676.8	H	61.94	74.00	12.06	peak
8619.80	H	41.59	54.00	12.41	AVG
11077.5	H	43.95	54.00	10.05	AVG
17676.8	H	47.23	54.00	6.77	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

☒Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode:	802.11ax(20)	Frequency(MHz):	5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5141.22	H	61.19	-34.04	-27	Pass
5149.26	V	62.21	-33.02	-27	Pass

Test mode:	802.11ax(20)	Frequency(MHz):	5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5357.46	H	56.92	-38.31	-27	Pass
5356.47	V	56.40	-38.83	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11ax(20)	Frequency(MHz):	5180

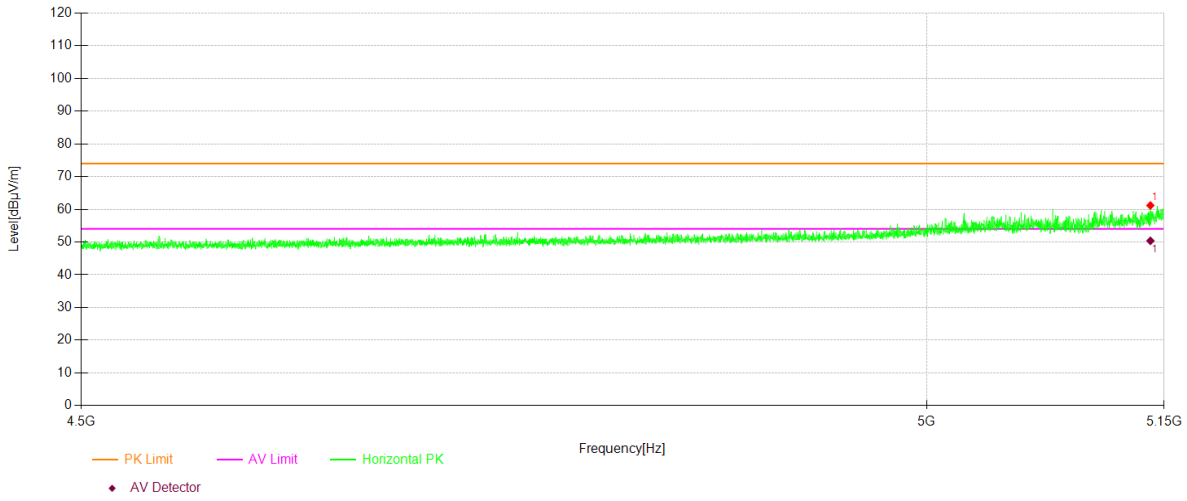
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5149.26	V	62.21	74.00	11.79	peak
5149.28	V	50.80	54.00	3.20	AVG
5141.22	H	61.19	74.00	12.81	peak
5141.22	H	50.38	54.00	3.62	AVG

Test mode:	802.11ax(20)	Frequency(MHz):	5240

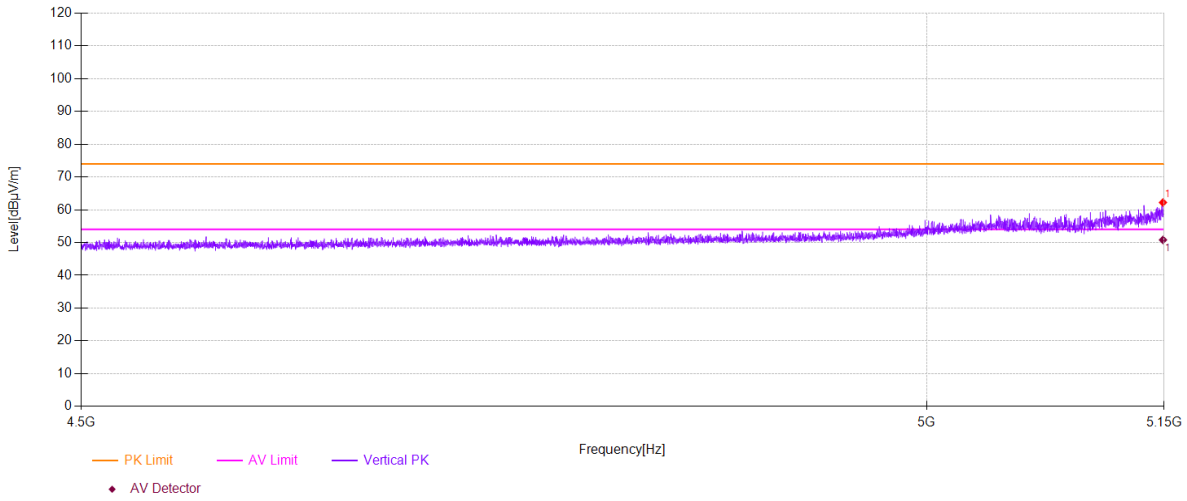
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5356.47	V	56.40	74.00	17.60	peak
5356.49	V	44.37	54.00	9.63	AVG
5357.46	H	56.92	74.00	17.08	peak
5357.44	H	45.42	54.00	8.58	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

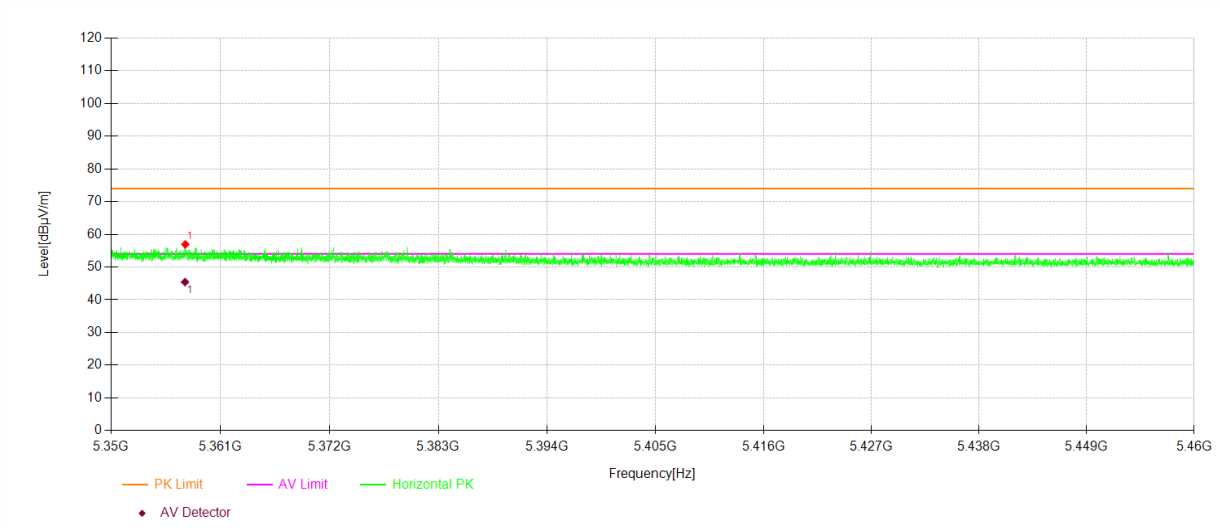
Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐802.11a ☒802.11ax(HT20) ☐802.11n(HT40) ☒5180 ☐5200 ☐5240 Ant.Pol H



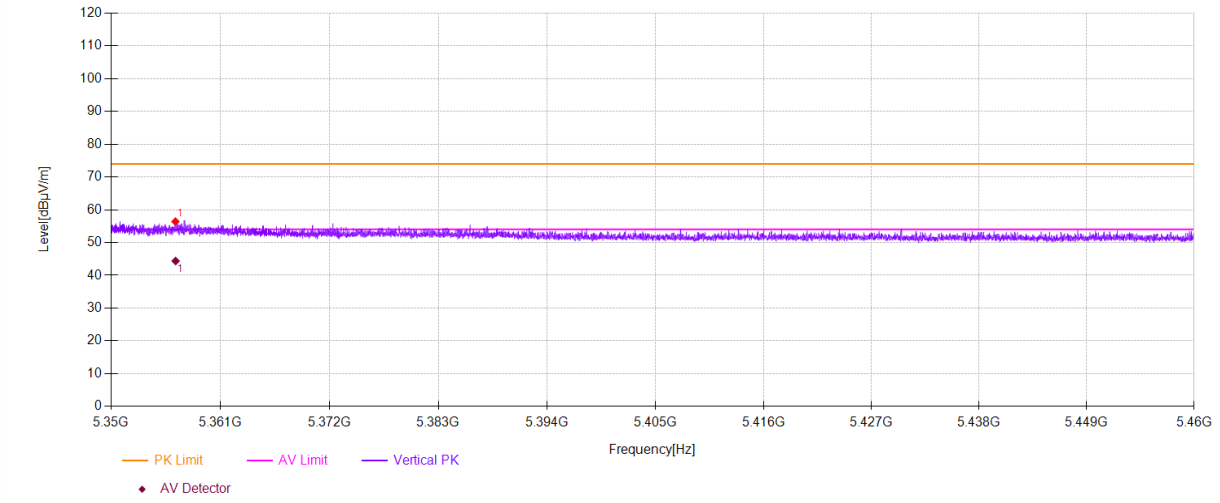
Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐802.11a ☒802.11ax(HT20) ☐802.11n(HT40) ☒5180 ☐5200 ☐5240 Ant.Pol V



Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☒802.11ax(HT20) ☐802.11n(HT40) ☐5180 ☐5200 ☒5240 Ant.Pol H



Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☒802.11ax(HT20) ☐802.11n(HT40) ☐5180 ☐5200 ☒5240 Ant.Pol V



☒**For Undesirable radiated Spurious Emission in U-NII -2A**
☒**Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)**
All of the configurations or modes are tested, the data of the worst case is recorded in the report.
Highest gain of each antenna and highest output power is ANT1 as below:

Test mode: 802.11a Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8696.34	V	57.23	-38	-27	11
11604.8	V	60.58	-34.65	-27	7.65
16732.8	V	62.90	-32.33	-27	5.33
8645.32	H	56.95	-38.28	-27	11.28
11052.0	H	60.28	-34.95	-27	7.95
17889.4	H	62.11	-33.12	-27	6.12

Test mode: 802.11a Frequency(MHz): 5280

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8704.85	V	56.35	-38.88	-27	11.88
10754.3	V	61.00	-34.23	-27	7.23
16460.7	V	62.08	-33.15	-27	6.15
7990.49	H	55.79	-39.44	-27	12.44
11069.0	H	60.45	-34.78	-27	7.78
17489.7	H	61.63	-33.6	-27	6.6

Test mode: 802.11a Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8696.34	V	56.44	-38.79	-27	11.79
10677.8	V	60.58	-34.65	-27	7.65
16715.8	V	62.13	-33.1	-27	6.1
8628.31	H	56.36	-38.87	-27	11.87
10040.02	H	60.55	-34.68	-27	7.68
17345.1	H	62.11	-33.12	-27	6.12

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11a	Frequency(MHz):	5260		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8696.34	V	57.23	74.00	16.77	peak
11604.8	V	60.58	74.00	13.42	peak
16732.8	V	62.90	74.00	11.10	peak
8696.34	V	42.88	54.00	11.12	AVG
11604.8	V	43.17	54.00	10.83	AVG
16732.8	V	44.79	54.00	9.21	AVG
8645.3	H	56.95	74.00	17.05	peak
11052.0	H	60.28	74.00	13.72	peak
17889.4	H	62.11	74.00	11.89	peak
8645.32	H	42.00	54.00	12.00	AVG
11052.0	H	44.55	54.00	9.45	AVG
17889.4	H	45.98	54.00	8.02	AVG

Test mode:	802.11a	Frequency(MHz):	5280		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8704.85	V	56.35	74.00	17.65	peak
10754.3	V	61.00	74.00	13.00	peak
16460.7	V	62.08	74.00	11.92	peak
8704.85	V	42.96	54.00	11.04	AVG
10754.3	V	44.24	54.00	9.76	AVG
16460.7	V	45.79	54.00	8.21	AVG
7990.49	H	55.79	74.00	18.21	peak
11069.0	H	60.45	74.00	13.55	peak
17489.7	H	61.63	74.00	12.37	peak
7990.49	H	39.88	54.00	14.12	AVG
11069.0	H	44.05	54.00	9.95	AVG
17489.7	H	45.18	54.00	8.82	AVG

Test mode:	802.11a	Frequency(MHz):	5320		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8696.34	V	56.44	74.00	17.56	peak
10677.8	V	60.58	74.00	13.42	peak
16715.8	V	62.13	74.00	11.87	peak
8696.34	V	42.66	54.00	11.34	AVG
10677.8	V	44.42	54.00	9.58	AVG
16715.8	V	45.67	54.00	8.33	AVG
8628.31	H	56.36	74.00	17.64	peak
10040.0	H	60.55	74.00	13.45	peak
17345.1	H	62.11	74.00	11.89	peak
8628.31	H	41.68	54.00	12.32	AVG
10040.0	H	41.79	54.00	12.21	AVG
17345.1	H	45.26	54.00	8.74	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

- ☒Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode:	802.11ax(20)	Frequency(MHz):	5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5142.68	H	54.34	-40.89	-27	Pass
5146.01	V	53.97	-41.26	-27	Pass

Test mode:	802.11ax(20)	Frequency(MHz):	5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5352.66	H	59.02	-36.21	-27	Pass
5354.74	V	59.96	-35.27	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11ax(20)	Frequency(MHz):	5260

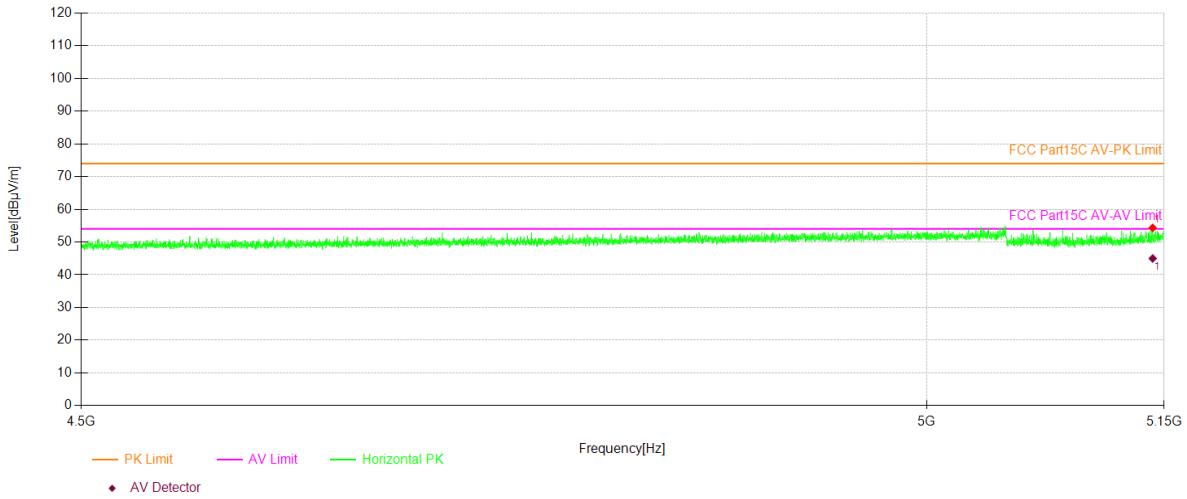
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5146.01	V	53.97	74.00	20.03	peak
5146.01	V	44.71	54.00	9.29	AVG
5142.68	H	54.34	74.00	19.66	peak
5142.68	H	44.99	54.00	9.01	AVG

Test mode:	802.11ax(20)	Frequency(MHz):	5320

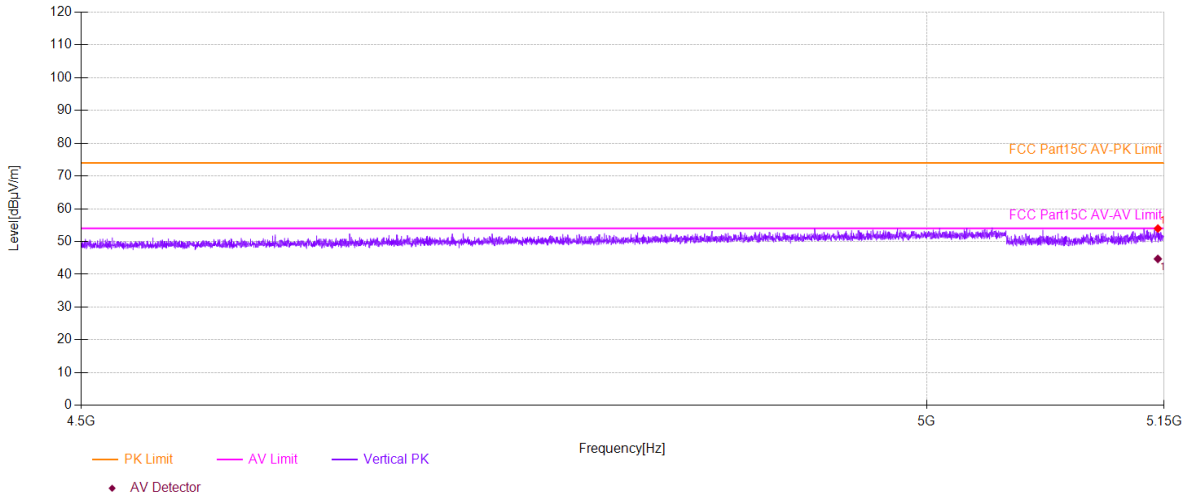
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5354.74	V	59.96	74.00	14.04	peak
5354.74	V	49.70	54.00	4.30	AVG
5352.66	H	59.02	74.00	14.98	peak
5352.66	H	48.56	54.00	5.44	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4)The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

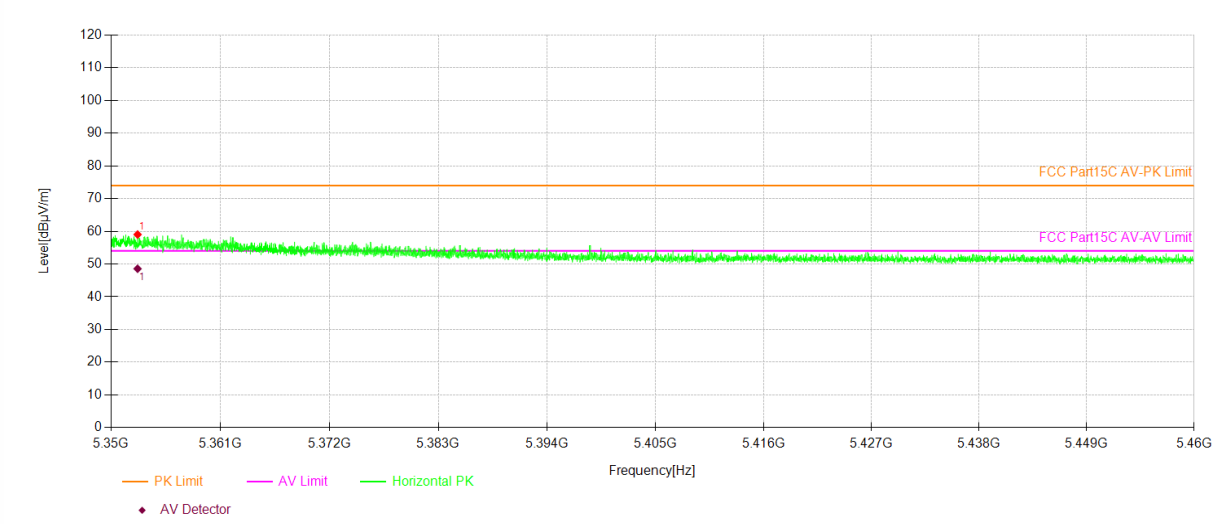
Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ax (VHT20) ☒5260 ☐5300 ☐5320 Ant.Pol H



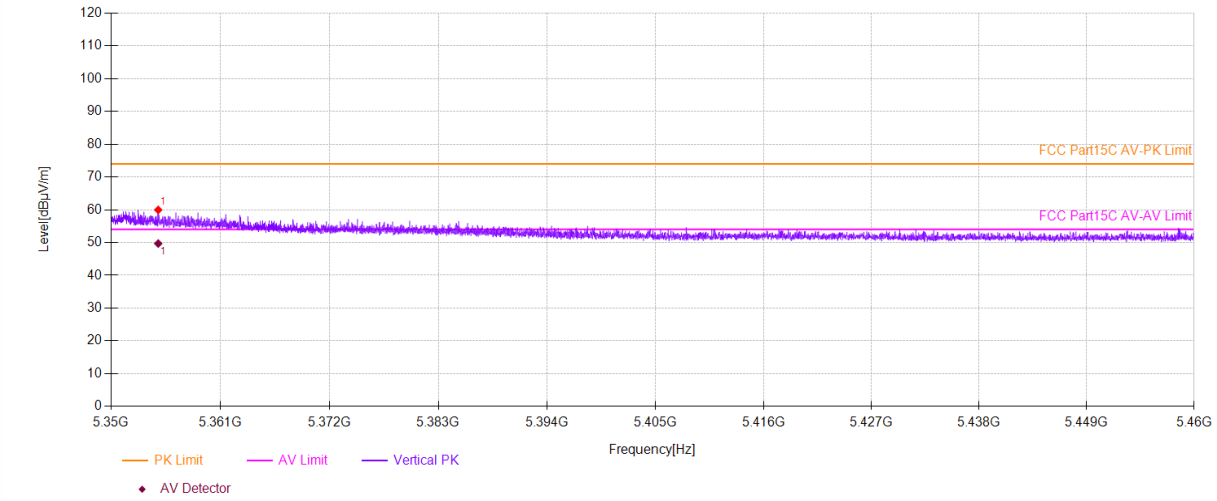
Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ax(VHT20) ☒5260 ☐5300 ☐5320 Ant.Pol V



Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ax (VHT20) ☐5260 ☐5300 ☒5320 Ant.Pol H



Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ax (VHT20) ☐5260 ☐5300 ☒5320 Ant.Pol V



☒**For Undesirable radiated Spurious Emission in U-NII -2C**
☒**Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)**
All of the configurations or modes are tested, the data of the worst case is recorded in the report.
Highest gain of each antenna and highest output power is ANT1 as below:

Test mode: 802.11a Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7837.41	V	55.93	-39.3	-27	12.3
11001.0	V	60.72	-34.51	-27	7.51
17294.1	V	62.37	-32.86	-27	5.86
8696.34	H	57.35	-37.88	-27	10.88
10711.8	H	60.36	-34.87	-27	7.87
17557.7	H	61.56	-33.67	-27	6.67

Test mode: 802.11a Frequency(MHz): 5580

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8679.33	V	56.22	-39.01	-27	12.01
11001.0	V	61.03	-34.2	-27	7.2
17098.5	V	62.02	-33.21	-27	6.21
8653.82	H	**56.03**	-39.2	-27	12.2
10737.3	H	59.79	-35.44	-27	8.44
17523.7	H	61.57	-33.66	-27	6.66

Test mode: 802.11a Frequency(MHz): 5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
9317.15	V	56.76	-38.47	-27	11.47
11001.0	V	60.85	-34.38	-27	7.38
16894.4	V	62.16	-33.07	-27	6.07
8755.87	H	57.45	-37.78	-27	10.78
11111.5	H	60.26	-34.97	-27	7.97
17183.5	H	61.41	-33.82	-27	6.82

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11a	Frequency(MHz):	5500		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7837.41	V	55.93	74.00	18.07	peak
11001.0	V	60.72	74.00	13.28	peak
17294.1	V	62.37	74.00	11.63	peak
7837.41	V	39.59	54.00	14.41	AVG
11001.0	V	44.01	54.00	9.99	AVG
17294.1	V	44.76	54.00	9.24	AVG
8696.34	H	57.35	74.00	16.65	peak
10711.8	H	60.36	74.00	13.64	peak
17557.7	H	61.56	74.00	12.44	peak
8696.34	H	42.73	54.00	11.27	AVG
10711.8	H	45.47	54.00	8.53	AVG
17557.7	H	46.10	54.00	7.90	AVG

Test mode:	802.11a	Frequency(MHz):	5580		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8679.33	V	56.22	74.00	17.78	peak
11001.0	V	61.03	74.00	12.97	peak
17098.5	V	62.02	74.00	11.98	peak
8679.33	V	42.60	54.00	11.40	AVG
11001.0	V	44.21	54.00	9.79	AVG
17098.5	V	45.85	54.00	8.15	AVG
8653.82	H	56.03	74.00	17.97	peak
10737.3	H	59.79	74.00	14.21	peak
17523.7	H	61.57	74.00	12.43	peak
8653.82	H	41.45	54.00	12.55	AVG
10737.3	H	45.03	54.00	8.97	AVG
17523.7	H	45.68	54.00	8.32	AVG

Test mode:	802.11a	Frequency(MHz):	5700		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
9317.15	V	56.76	74.00	17.24	peak
11001.0	V	60.85	74.00	13.15	peak
16894.4	V	62.16	74.00	11.84	peak
9317.15	V	43.80	54.00	10.20	AVG
11001.0	V	44.20	54.00	9.80	AVG
16894.4	V	44.48	54.00	9.52	AVG
8755.87	H	57.45	74.00	16.55	peak
11111.5	H	60.26	74.00	13.74	peak
17183.5	H	61.41	74.00	12.59	peak
8755.87	H	42.24	54.00	11.76	AVG
11111.5	H	43.75	54.00	10.25	AVG
17183.5	H	46.48	54.00	7.52	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

☒Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode:	802.11ac(20)	Frequency(MHz):	5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5469.11	H	59.74	-35.49	-27	Pass
5468.36	V	59.77	-35.46	-27	Pass

Test mode:	802.11ac(20)	Frequency(MHz):	5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5725.91	H	63.10	-32.13	-27	Pass
5725.52	V	64.76	-30.47	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11ac(20)	Frequency(MHz):	5500

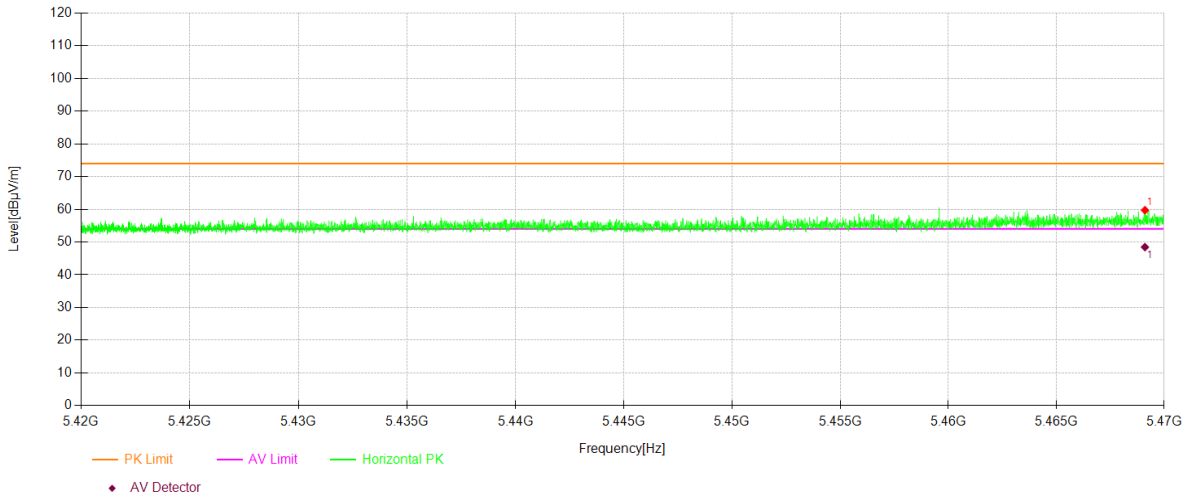
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5468.36	V	59.77	74.00	14.23	peak
5468.36	V	48.96	54.00	5.04	AVG
5469.11	H	59.74	74.00	14.26	peak
5469.11	H	48.45	54.00	5.55	AVG

Test mode:	802.11ac(20)	Frequency(MHz):	5700

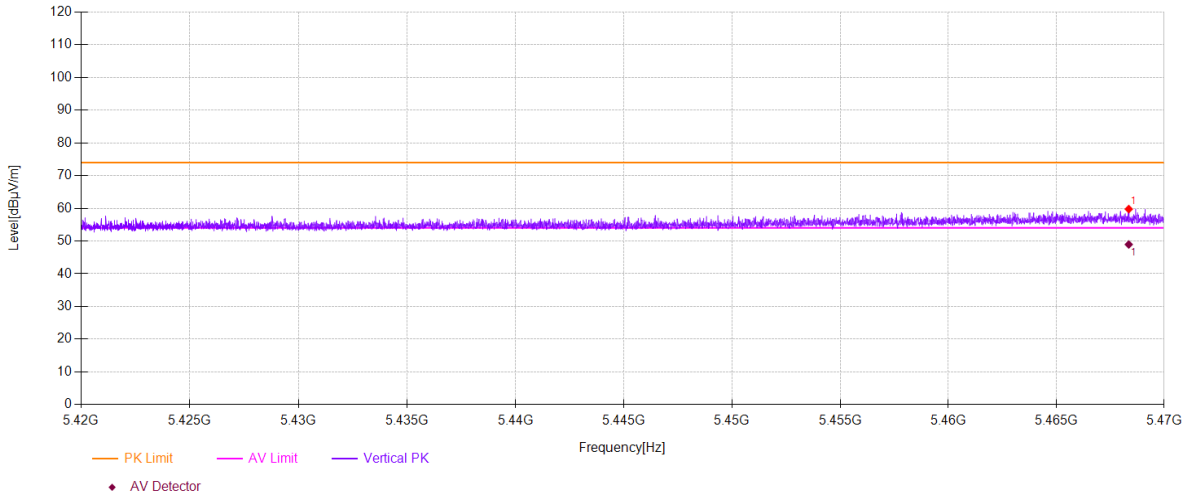
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5725.52	V	64.76	74.00	9.24	peak
5725.35	V	50.04	54.00	3.96	AVG
5725.91	H	63.10	74.00	10.90	peak
5725.76	H	47.64	54.00	6.36	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

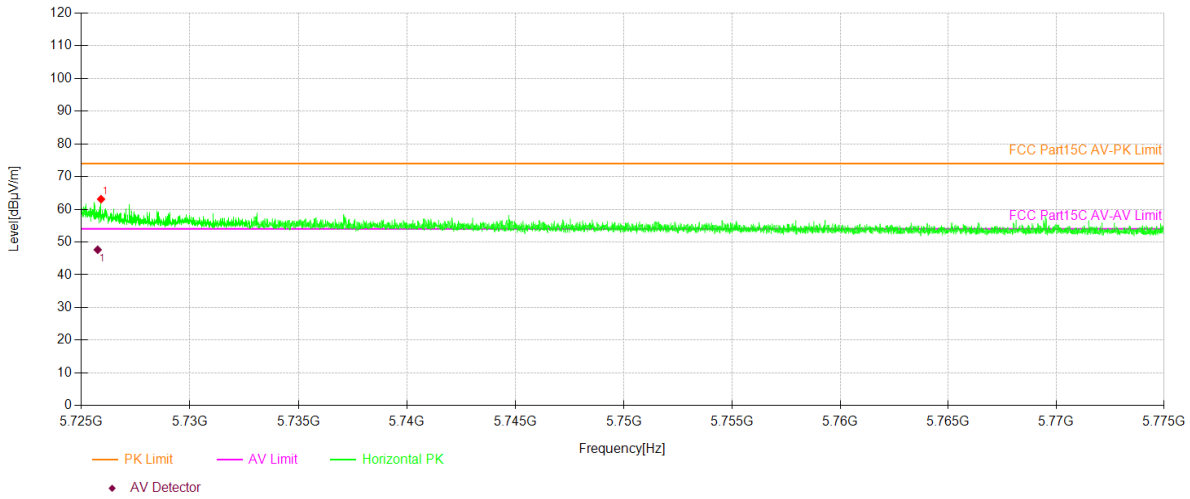
Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ac(VHT20) ☒5500 ☐5580 ☐5700 Ant.Pol H



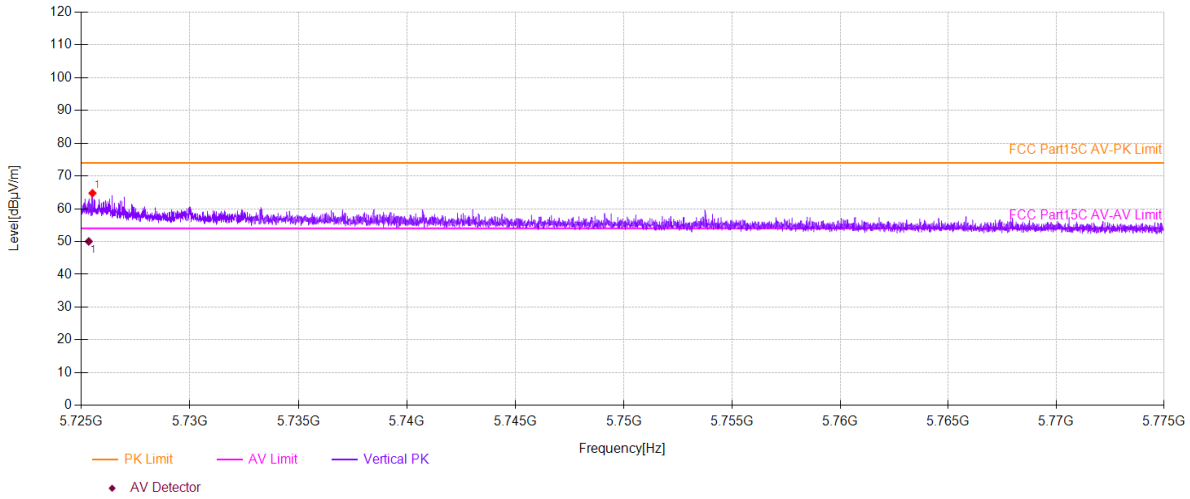
Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ac(VHT20) ☒5500 ☐5580 ☐5700 Ant.Pol V



Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ac(VHT20) ☐5500 ☐5580 ☒5700 Ant.Pol H



Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ac (VHT20) ☐5500 ☐5580 ☒5700 Ant.Pol V



☒**For Undesirable radiated Spurious Emission in U-NII -3**
☒**Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)**
All of the configurations or modes are tested, the data of the worst case is recorded in the report.
Highest gain of each antenna and highest output power is ant1as below:

Test mode: 802.11a Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8687.84	V	56.51	-38.72	-27	11.72
10728.8	V	60.24	-34.99	-27	7.99
16188.5	V	61.36	-33.87	-27	6.87
8679.33	H	55.76	-39.47	-27	12.47
11375.1	H	60.08	-35.15	-27	8.15
16732.8	H	61.14	-34.09	-27	7.09

Test mode: 802.11a Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8687.84	V	56.14	-39.09	-27	12.09
10703.3	V	60.92	-34.31	-27	7.31
15958.9	V	61.85	-33.38	-27	6.38
9249.12	H	56.32	-38.91	-27	11.91
11111.5	H	60.43	-34.8	-27	7.8
16919.9	H	62.36	-32.87	-27	5.87

Test mode: 802.11a Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8738.86	V	56.01	-39.22	-27	12.22
11086.0	V	60.55	-34.68	-27	7.68
17481.2	V	62.59	-32.64	-27	5.64
8679.33	H	56.04	-39.19	-27	12.19
11018.0	H	59.89	-35.34	-27	8.34
16970.9	H	62.43	-32.8	-27	5.8

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode:	802.11a	Frequency(MHz):	5745		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8687.84	V	56.51	74.00	17.49	peak
10728.8	V	60.24	74.00	13.76	peak
16188.5	V	61.36	74.00	12.64	peak
8687.84	V	42.73	54.00	11.27	AVG
10728.8	V	44.80	54.00	9.20	AVG
16188.5	V	43.91	54.00	10.09	AVG
8679.33	H	55.76	74.00	18.24	peak
11375.1	H	60.08	74.00	13.92	peak
16732.8	H	61.14	74.00	12.86	peak
8679.33	H	42.79	54.00	11.21	AVG
11375.1	H	42.71	54.00	11.29	AVG
16732.8	H	44.86	54.00	9.14	AVG

Test mode:	802.11a	Frequency(MHz):	5785		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8687.84	V	56.14	74.00	17.86	peak
10703.3	V	60.92	74.00	13.08	peak
15958.9	V	61.85	74.00	12.15	peak
8687.84	V	**42.56**	54.00	11.44	AVG
10703.3	V	45.04	54.00	8.96	AVG
15958.9	V	44.41	54.00	9.59	AVG
9249.12	H	56.32	74.00	17.68	peak
11111.5	H	60.43	74.00	13.57	peak
16919.9	H	62.36	74.00	11.64	peak
9249.12	H	43.37	54.00	10.63	AVG
11111.5	H	44.29	54.00	9.71	AVG
16919.9	H	44.62	54.00	9.38	AVG

Test mode:	802.11a	Frequency(MHz):	5825		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8738.86	V	56.01	74.00	17.99	peak
11086.0	V	60.55	74.00	13.45	peak
17481.2	V	62.59	74.00	11.41	peak
8738.86	V	41.99	54.00	12.01	AVG
11086.0	V	44.35	54.00	9.65	AVG
17481.2	V	45.16	54.00	8.84	AVG
8679.33	H	56.04	74.00	17.96	peak
11018.0	H	59.89	74.00	14.11	peak
16970.9	H	62.43	74.00	11.57	peak
8679.33	H	42.69	54.00	11.31	AVG
11018.0	H	44.11	54.00	9.89	AVG
16970.9	H	46.30	54.00	7.70	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

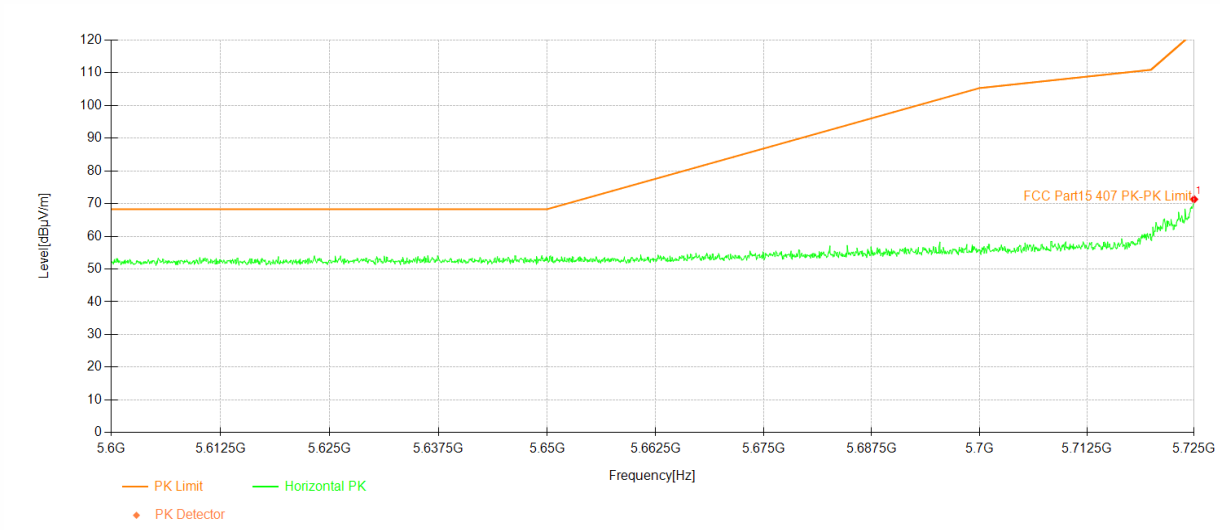
☒Undesirable radiated Spurious Emission in band edge

Test mode:	802.11ac(20)	Frequency:	5745		
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5725	H	71.31	-23.92	-27	PASS
5724.9	V	73.99	-21.24	-27	PASS

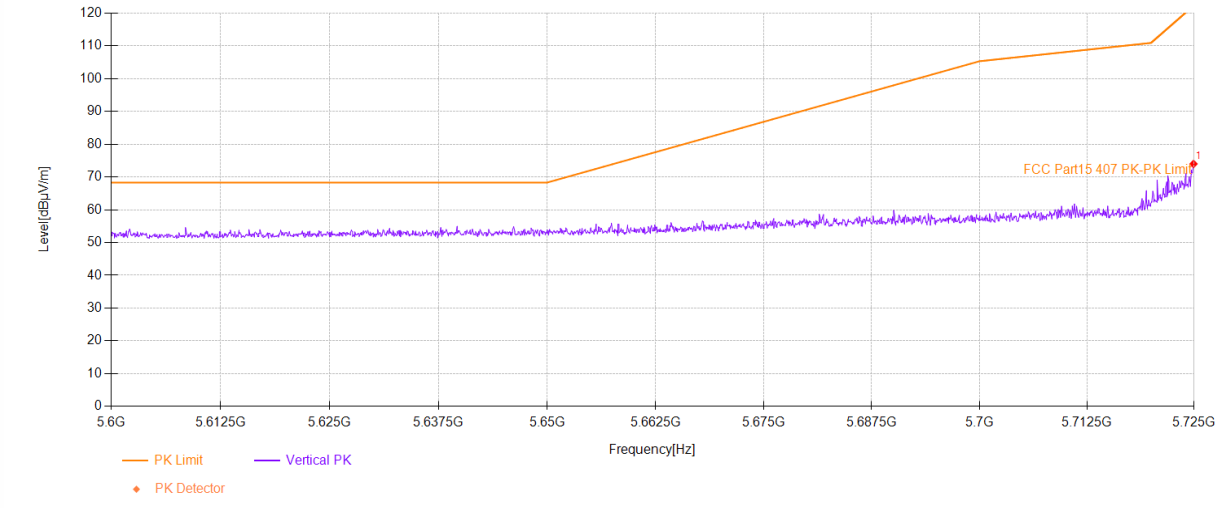
Test mode:	802.11ac(20)	Frequency:	5825		
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5850.56	H	61.42	-33.81	-27	PASS
5850.18	V	62.29	-32.94	-27	PASS

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

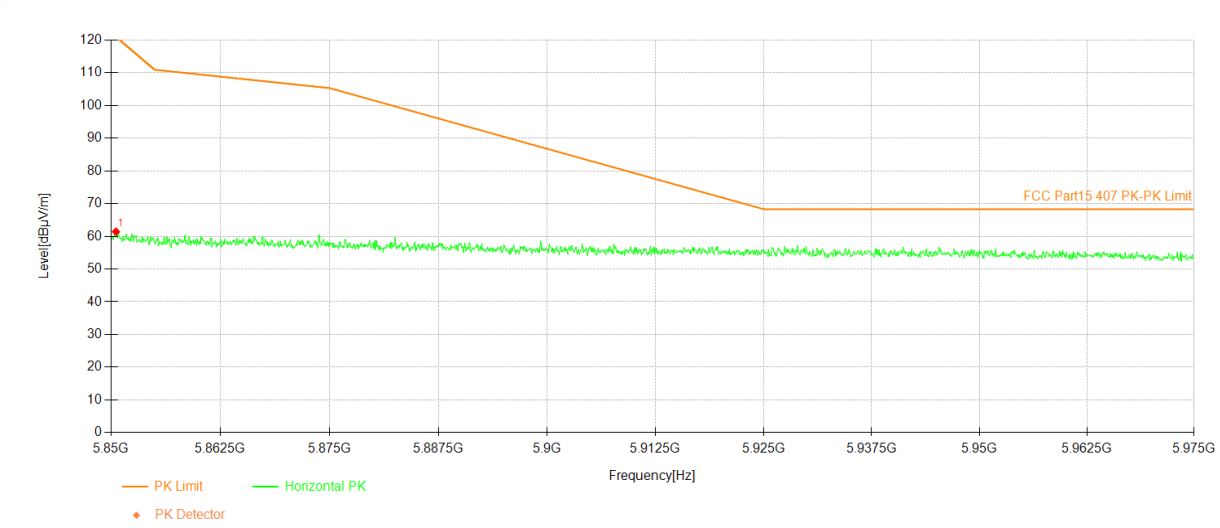
Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐802.11a ☐802.11n(HT20) ☒802.11 ac (VHT20) ☒5745 Ant.Pol H



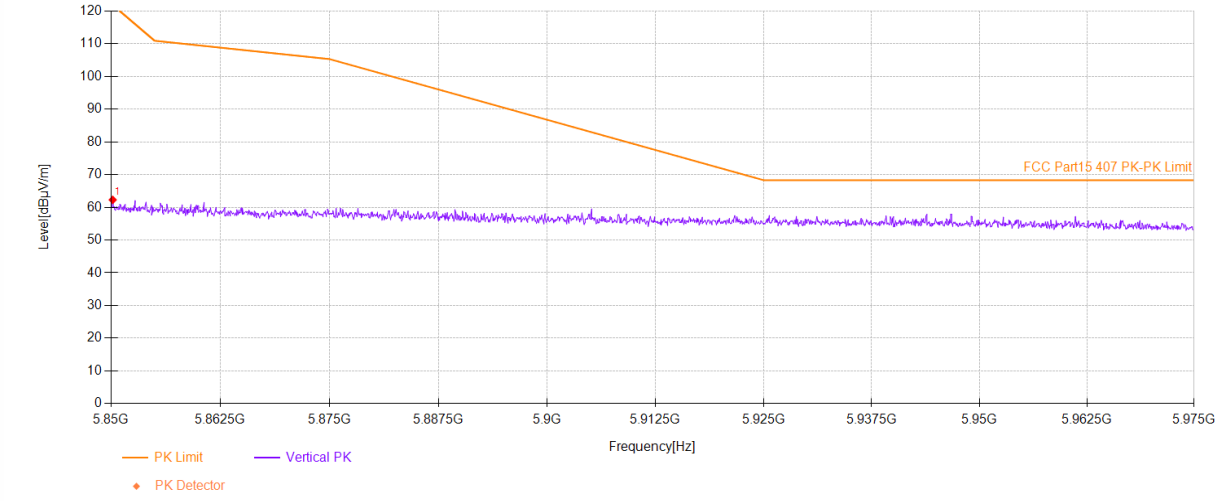
Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐802.11a ☐802.11n(HT20) ☒802.11 ac (VHT20) ☒5745 Ant.Pol V



Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐802.11a ☐802.11n(HT20) ☒802.11 ac (VHT20) ☒5825 Ant.Pol H



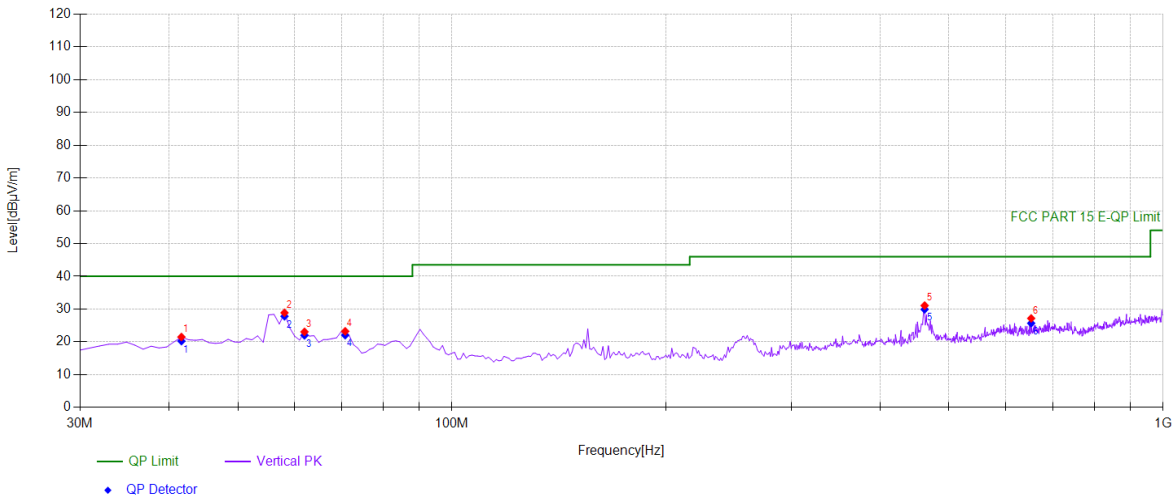
Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐802.11a ☐802.11n(HT20) ☒802.11 ac (VHT20) ☒5825 Ant.Pol V



Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)

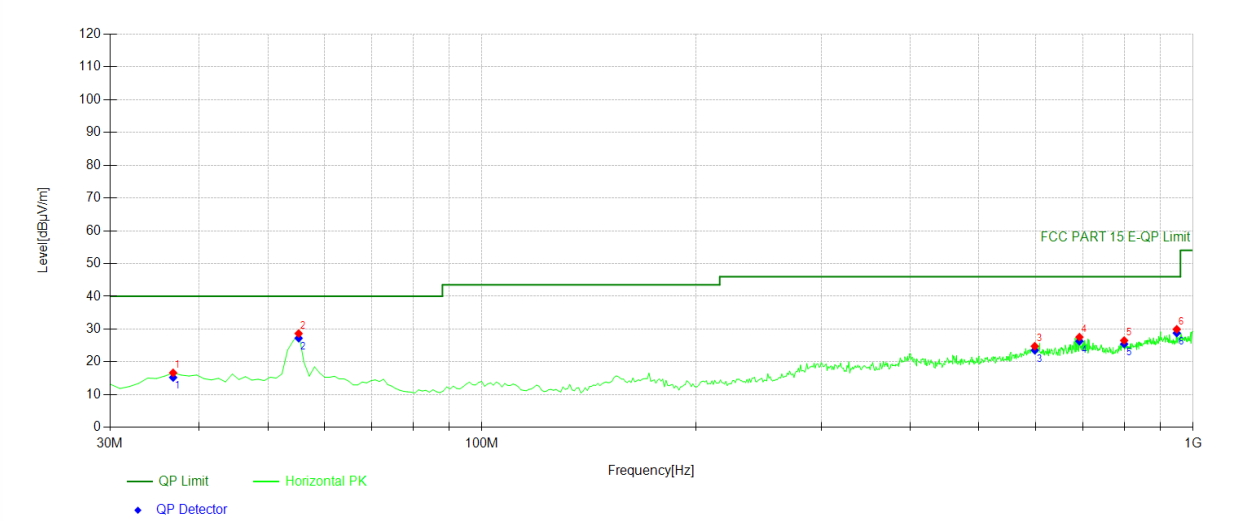
All of the configurations or modes are tested, the data of the worst case is recorded as below.

Test mode:	802.11a	Frequency(MHz):	5180



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	41.6517	38.76	-17.26	21.50	PK	40.00	18.50	Vertical
2	58.1582	46.08	-17.20	28.88	PK	40.00	11.12	Vertical
3	62.042	40.79	-17.72	23.07	PK	40.00	16.93	Vertical
4	70.7808	42.13	-18.90	23.23	PK	40.00	16.77	Vertical
5	462.082	41.45	-10.36	31.09	PK	46.00	14.91	Vertical
6	652.392	34.36	-7.19	27.17	PK	46.00	18.83	Vertical

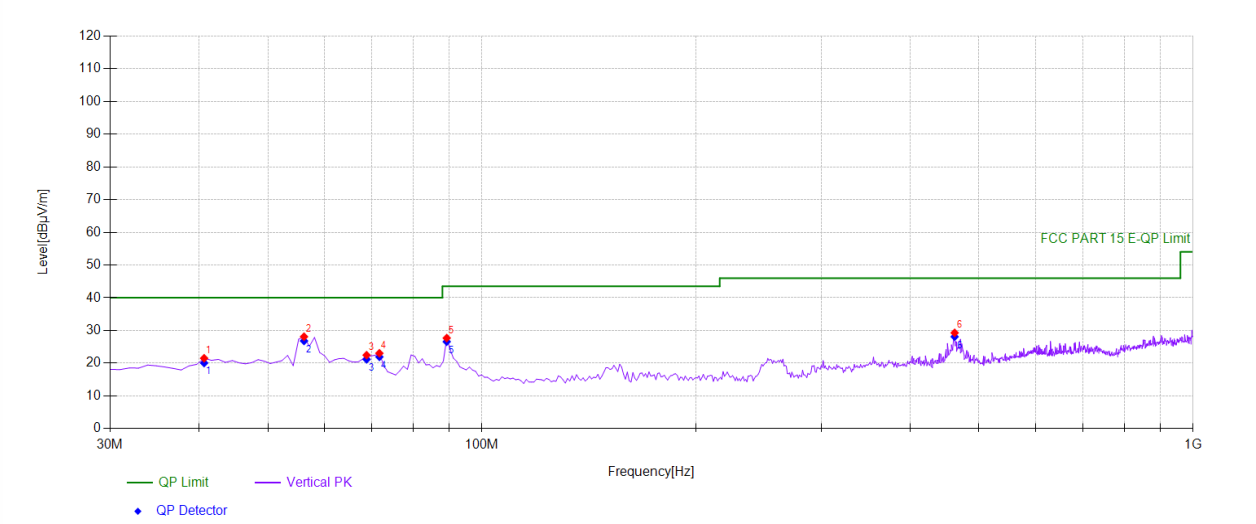
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	41.6517	-17.26	20.25	40.00	19.75
2	58.1582	-17.20	27.81	40.00	12.19
3	62.042	-17.72	22.00	40.00	18.00
4	70.7808	-18.90	22.07	40.00	17.93
5	462.0821	-10.36	29.93	46.00	16.07
6	652.3924	-7.19	25.69	46.00	20.31



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	36.7968	34.58	-17.91	16.67	PK	40.00	23.33	Horizontal
2	55.2452	45.46	-16.80	28.66	PK	40.00	11.34	Horizontal
3	598.989	31.27	-6.48	24.79	PK	46.00	21.21	Horizontal
4	692.202	34.04	-6.47	27.57	PK	46.00	18.43	Horizontal
5	799.98	32.02	-5.49	26.53	PK	46.00	19.47	Horizontal
6	948.538	33.02	-3.07	29.95	PK	46.00	16.05	Horizontal

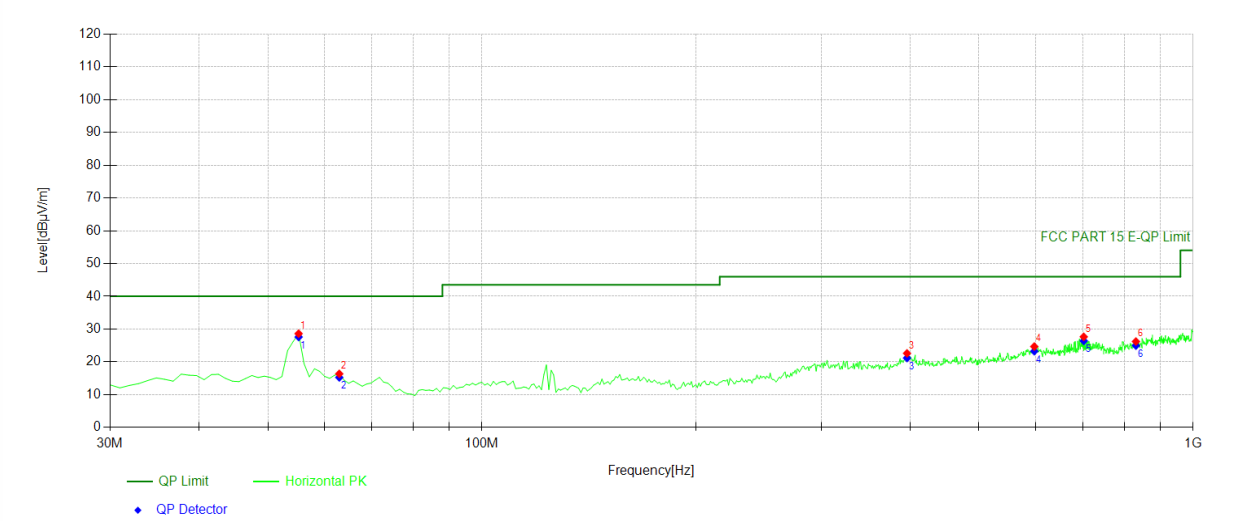
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	36.7968	-17.91	15.24	40.00	24.76
2	55.2452	-16.80	27.23	40.00	12.77
3	598.989	-6.48	23.53	46.00	22.47
4	692.2022	-6.47	26.31	46.00	19.69
5	799.98	-5.49	25.45	46.00	20.55
6	948.5385	-3.07	28.79	46.00	17.21

Test mode:	802.11a	Frequency(MHz):	5200



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	40.6807	38.92	-17.39	21.53	PK	40.00	18.47	Vertical
2	56.2162	45.03	-16.92	28.11	PK	40.00	11.89	Vertical
3	68.8388	41.11	-18.63	22.48	PK	40.00	17.52	Vertical
4	71.7518	42.10	-19.05	23.05	PK	40.00	16.95	Vertical
5	89.2292	46.64	-18.95	27.69	PK	43.50	15.81	Vertical
6	462.082	39.65	-10.36	29.29	PK	46.00	16.71	Vertical

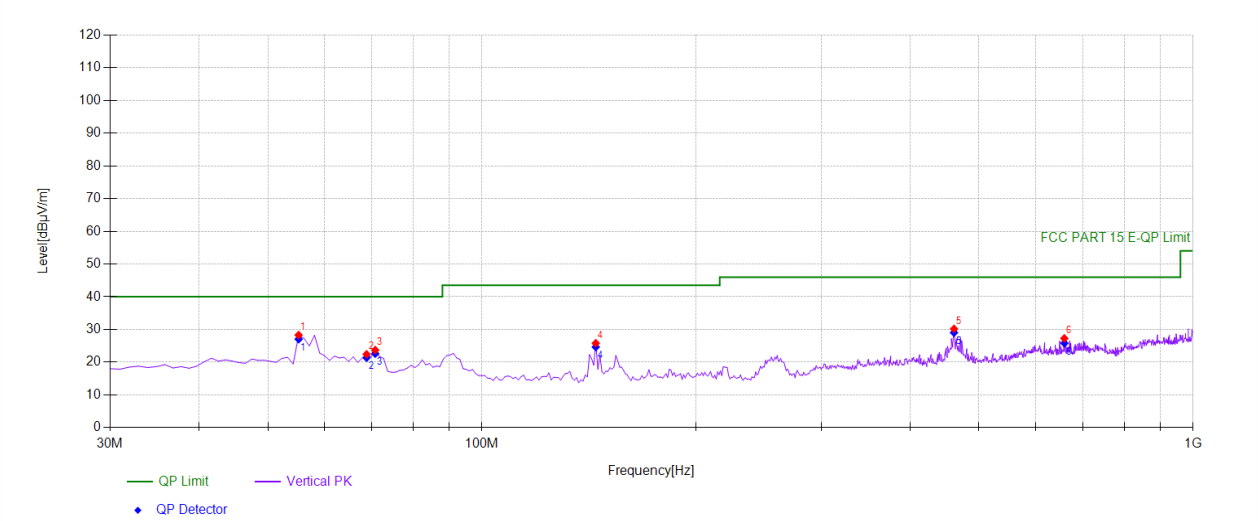
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	40.6807	-17.39	20.06	40.00	19.94
2	56.2162	-16.92	26.82	40.00	13.18
3	68.8388	-18.63	21.19	40.00	18.81
4	71.7518	-19.05	21.94	40.00	18.06
5	89.2292	-18.95	26.58	43.50	16.92
6	462.0821	-10.36	28.10	46.00	17.90



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	55.2452	45.42	-16.80	28.62	PK	40.00	11.38	Horizontal
2	63.013	34.21	-17.84	16.37	PK	40.00	23.63	Horizontal
3	396.056	34.00	-11.39	22.61	PK	46.00	23.39	Horizontal
4	598.018	31.22	-6.53	24.69	PK	46.00	21.31	Horizontal
5	701.911	33.83	-6.17	27.66	PK	46.00	18.34	Horizontal
6	831.051	31.14	-4.91	26.23	PK	46.00	19.77	Horizontal

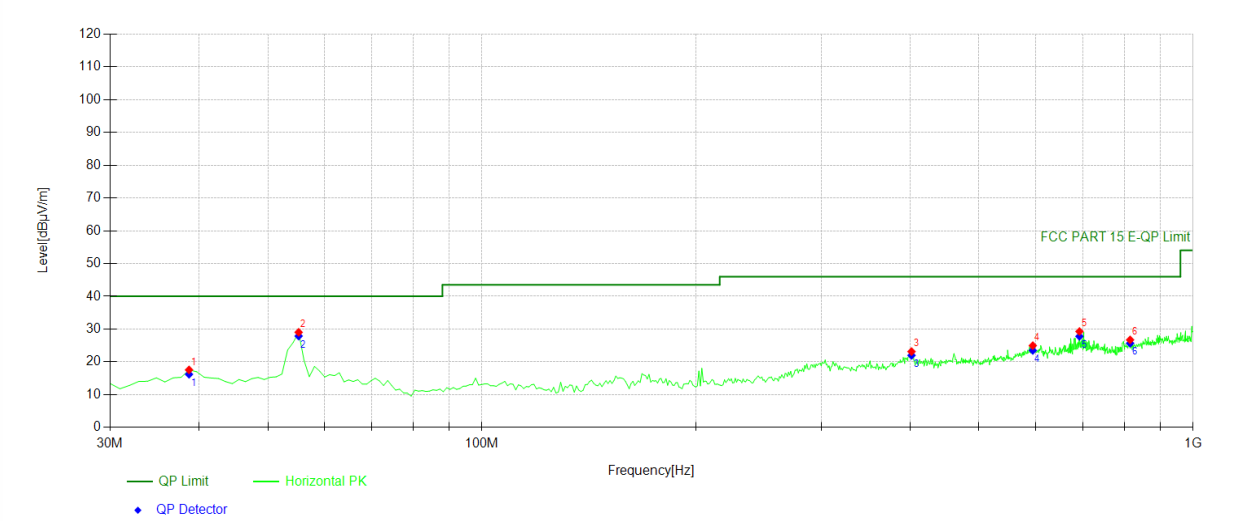
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	55.2452	-16.80	27.60	40.00	12.40
2	63.013	-17.84	15.26	40.00	24.74
3	396.0561	-11.39	21.18	46.00	24.82
4	598.018	-6.53	23.26	46.00	22.74
5	701.9119	-6.17	26.41	46.00	19.59
6	831.0511	-4.91	24.98	46.00	21.02

Test mode:	802.11a	Frequency(MHz):	5240



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	55.2452	45.10	-16.80	28.30	PK	40.00	11.70	Vertical
2	68.8388	41.08	-18.63	22.45	PK	40.00	17.55	Vertical
3	70.7808	42.61	-18.90	23.71	PK	40.00	16.29	Vertical
4	144.574	45.61	-19.80	25.81	PK	43.50	17.69	Vertical
5	461.111	40.58	-10.38	30.20	PK	46.00	15.80	Vertical
6	659.189	34.28	-6.99	27.29	PK	46.00	18.71	Vertical

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	55.2452	-16.80	27.04	40.00	12.96
2	68.8388	-18.63	21.37	40.00	18.63
3	70.7808	-18.90	22.63	40.00	17.37
4	144.5746	-19.80	24.65	43.50	18.85
5	461.1111	-10.38	29.04	46.00	16.96
6	659.1892	-6.99	25.81	46.00	20.19



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	38.7387	35.23	-17.66	17.57	PK	40.00	22.43	Horizontal
2	55.2452	45.84	-16.80	29.04	PK	40.00	10.96	Horizontal
3	401.881	34.52	-11.37	23.15	PK	46.00	22.85	Horizontal
4	595.105	31.66	-6.69	24.97	PK	46.00	21.03	Horizontal
5	692.202	35.75	-6.47	29.28	PK	46.00	16.72	Horizontal
6	815.515	31.99	-5.26	26.73	PK	46.00	19.27	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	38.7387	-17.66	16.23	40.00	23.77
2	55.2452	-16.80	27.88	40.00	12.12
3	401.8819	-11.37	21.99	46.00	24.01
4	595.1051	-6.69	23.49	46.00	22.51
5	692.2022	-6.47	27.80	46.00	18.20
6	815.5155	-5.26	25.67	46.00	20.33

8.5 POWER LINE CONDUCTED EMISSIONS

8.5.1 Applicable Standard

According to FCC Part 15.207(a)

8.5.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.5.3 Test Configuration

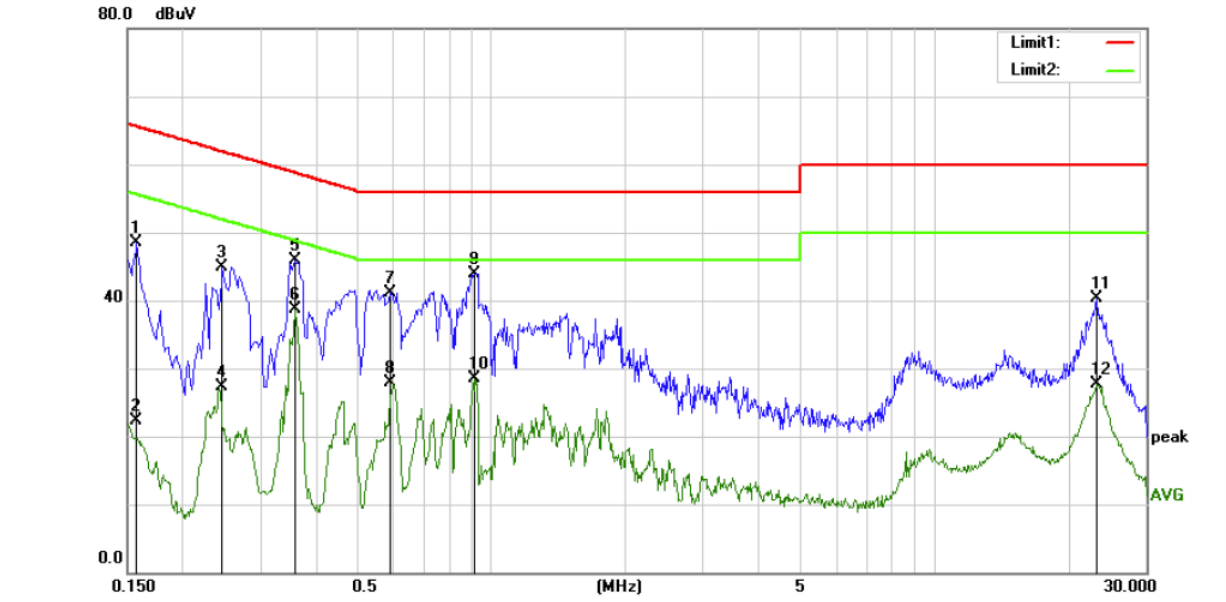
Test according to clause 6.3 conducted emission test setup

8.5.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

8.5.5 Test Results

Pass.



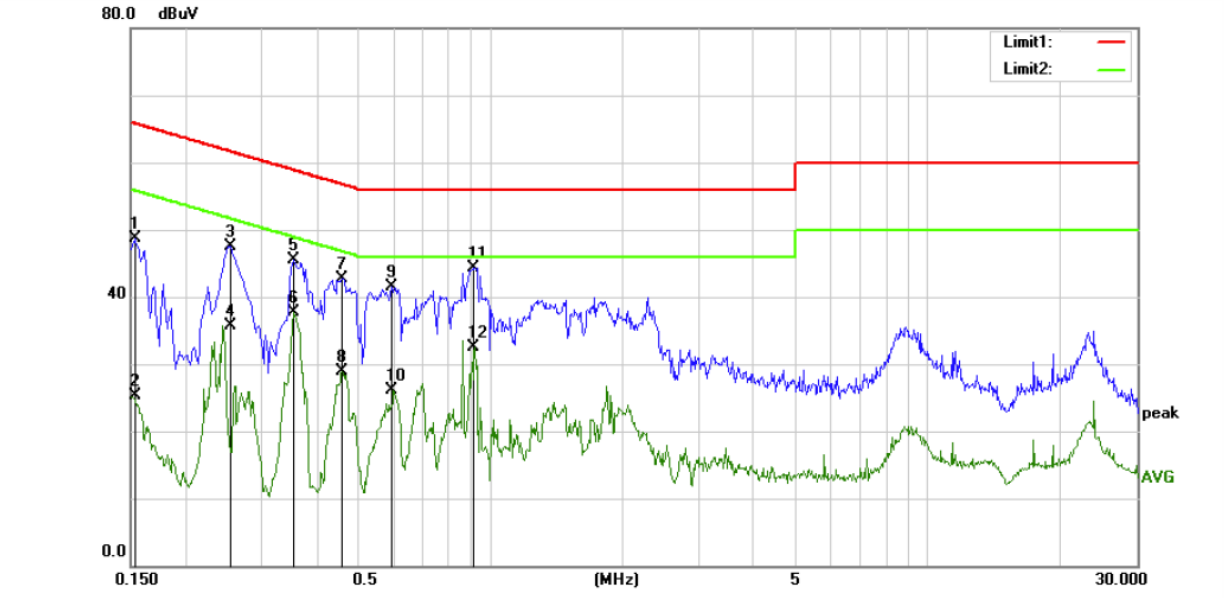
Site Conduction #1 Phase: *L1* Temperature: 20.7

Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 50 %

Mode: 5G WiFi mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	38.47	10.02	48.49	65.57	-17.08	QP	
2		0.1580	12.37	10.02	22.39	55.57	-33.18	AVG	
3		0.2460	34.81	10.02	44.83	61.89	-17.06	QP	
4		0.2460	17.30	10.02	27.32	51.89	-24.57	AVG	
5		0.3580	35.96	9.98	45.94	58.77	-12.83	QP	
6	*	0.3580	28.63	9.98	38.61	48.77	-10.16	AVG	
7		0.5900	31.11	9.97	41.08	56.00	-14.92	QP	
8		0.5900	17.86	9.97	27.83	46.00	-18.17	AVG	
9		0.9140	33.98	9.99	43.97	56.00	-12.03	QP	
10		0.9140	18.57	9.99	28.56	46.00	-17.44	AVG	
11		23.2060	29.86	10.52	40.38	60.00	-19.62	QP	
12		23.2060	17.11	10.52	27.63	50.00	-22.37	AVG	



Site Conduction #1 Phase: N Temperature: 20.7

Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 50 %

Mode: 5G WiFi mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1540	38.67	10.02	48.69	65.78	-17.09	QP	
2		0.1540	15.25	10.02	25.27	55.78	-30.51	AVG	
3		0.2540	37.47	10.02	47.49	61.63	-14.14	QP	
4		0.2540	25.63	10.02	35.65	51.63	-15.98	AVG	
5		0.3540	35.51	9.99	45.50	58.87	-13.37	QP	
6	*	0.3540	27.76	9.99	37.75	48.87	-11.12	AVG	
7		0.4580	32.68	9.95	42.63	56.73	-14.10	QP	
8		0.4580	18.86	9.95	28.81	46.73	-17.92	AVG	
9		0.5940	31.49	9.97	41.46	56.00	-14.54	QP	
10		0.5940	16.11	9.97	26.08	46.00	-19.92	AVG	
11		0.9180	34.32	9.99	44.31	56.00	-11.69	QP	
12		0.9180	22.47	9.99	32.46	46.00	-13.54	AVG	

8.6 ANTENNA APPLICATION

8.6.1 Antenna Requirement

Standard	Requirement
FCC CRF 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

8.6.2 Result

PASS

Temperature :	25℃	ATM Pressure:	1011 mbar
Humidity :	45 %	Test Engineer:	XXH

The EUT is integrated antenna, the antenna gain as below:

Ant: dBi

☒ Antennas use a permanently attached antenna which is not replaceable.
☐ Not using a standard antenna jack or electrical connector for antenna replacement
☐ The antenna has to be professionally installed (please provide method of installation)

Which in accordance to section 15.203, please refer to the internal photos.

Detail of factor for radiated emission:

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

--- End of Report ---

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