FCC Test Report

Report No: WD-RF-R-240171-B0

Product Name / Trade Name / Model Name	:	OnCollab / AVA / AT-C OnCollab / AVA / AT-C Lite SynCast Streamer / Centron / CT1292 SynCast Streamer / Centron / CT12xx (x=0~9,A~Z or Space)
FCC ID	:	2AP48CT1292
Applicant	:	Centron Design Co., Ltd.
Received Date	:	May 30, 2024
Tested Date	:	Jul. 24, 2024 ~ Sep. 03, 2024
Applicable Standard	:	47 CFR FCC Part 15, Subpart E (Section 15.407) 789033 D02 General U-NII Test Procedures New Rules v02r01 ANSI C63.10 : 2013

Wendell Industrial Co., Ltd

Wendell EMC & RF Laboratory

Test Report

Issued Date: September 04, 2024

Project No.: 24Q011501

Product Name / Trade Name / Model Name	OnCollab / AVA / AT-C OnCollab / AVA / AT-C Lite SynCast Streamer / Centron / CT1292 SynCast Streamer / Centron / CT12xx (x=0~9,A~Z or Space)
FCC ID	2AP48CT1292
Applicant	Centron Design Co., Ltd.
Manufacturer	Centron Design Co., Ltd.
EUT Rated Voltage	USB 5V
EUT Test Voltage	AC 120V / 60Hz
EUT Supports Radios Application	WLAN 802.11a/b/g WLAN 802.11n(HT20/40) WLAN 802.11ac(VHT20/40/80) and ax(HE20/40/80)
Applicable Standard	47 CFR FCC Part 15, Subpart E (Section 15.407) 789033 D02 General U-NII Test Procedures New Rules v02r01 ANSI C63.10 : 2013
Output Power	5.18 ~ 5.24 GHz: 18.16 dBm
Test Result	Complied

Documented : Emma Lu

(Specialist / Emma Lu)

Technical Engineer : Jason Hsieh

(Assistant Section Manager / Jason Hsieh)

Approved : Gary Wu

(Project Manager / Gary Wu)

Table of Contents

Document Revision History

Report No.	Issue date	Description
WD-RF-R-240171-B0	September 04, 2024	Initial report

Summary of Test Result

Ref. Std. Clause	Test Items	Result
15.407(a)	26dB Bandwidth	Pass
15.407(e)	6dB Bandwidth	Pass
--	99% Occupied Bandwidth	Pass
15.407(a)	Maximum Conducted Output Power	Pass
15.407(a)	Power Spectral Density	Pass
15.407(b) 15.209	Unwanted Emissions	Pass
15.407(g)	Frequency Stability	Pass
15.207	AC Conducted Emission	Pass
15.203 15.407(a)	Antenna Requirement	Pass

1 Generation Information

1.1 Applicant

Centron Design Co., Ltd.
2F-3, No. 15, Ln 360, Sec. 1, Neihu Rd., Neihu Dist., Taipei City 114, Taiwan

1.2 Manufacturer

Centron Design Co., Ltd.
2F-3, No. 15, Ln 360, Sec. 1, Neihu Rd., Neihu Dist., Taipei City 114, Taiwan

1.3 Description of Equipment under Test

Product Name / Trade Name / Model Name	OnCollab / AVA / AT-C OnCollab / AVA / AT-C Lite SynCast Streamer / Centron / CT1292 SynCast Streamer / Centron / CT12xx (x=0~9,A~Z or Space)
FCC ID	2AP48CT1292
Frequency Range	802.11a/n-HT20/ac-VHT20/ax-HE20:5180~5240MH 802.11n-HT40/ac-VHT40/ax-HE40:5190~5230MHz 802.11ac-VHT80/ax-HE80:5210MHz
Number of Channels	802.11a/n/ac/ax-20MHz: 4 802.11n/ac/ax-40MHz: 2 802.11ac/ax-80MHz: 1
Data Rate	802.11a：6M - 54Mbps 802.11n：up to 300bps 802.11ac：up to 866.7Mbps 802.11ax：up to 1201Mbps
Type of Modulation	802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM 802.11ax: OFDMA
Antenna Information	Refer to the table “Antenna List”
EUT Supports Radios Application	WLAN 802.11a/b/g WLAN 802.11n(HT20/40) WLAN 802.11ac(VHT20/40/80) and ax(HE20/40/80)
EUT Rated Voltage	USB 5V
EUT Test Voltage	AC 120V / 60Hz

Series Differences：

Model / Evaluation items	AT-C	AT-C Lite	CT1292	CT12xx (x=0~9,A~Z or Space)
Brand	AVA	AVA	Centron	Centron
Circuit design, Printed circuit board	O	O	O	O
Antenna specifications, RF module	O	O	O	O
Use components, Wires, Materials	O	O	O	O
Use component location, Routing, Structure	O	O	O	O
Buttons, Appearance, Color	White	White	Black	Black
Remark	--	Printed label on the bottom.	--	Market Segmentation
Note: (1) Please mark "O" if they are identical. (2) If they are not exactly the same, please mark "X", and explain the difference in the other description column.				

Note：The project is judged based on the series differences. There is no need to evaluate the output power/electric field strength +/-2dB support requirements. The AT-C model is used as the main test.

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	Shenzhen Lejin radio frequency technology Co., LTD	040303020601	FPC Antenna	2.15 dBi for 5.15 ~ 5.25 GHz
2	Shenzhen Lejin radio frequency technology Co., LTD	040303020601	FPC Antenna	2.15 dBi for 5.15 ~ 5.25 GHz

Remark: The antenna of EUT is conforming to FCC 15.203

Test Frequencies in each operating band

Frequency range over which the device operates in each operating band (Note 1)	Number of test frequencies required	Location of test frequencies inside the operating frequency range (Note 1,2)
≤ 1 MHz	1	near center
> 1 MHz and ≤ 10 MHz	2	1 near high end, 1 near low end
> 10 MHz	3	1 near high end, 1 near center, and 1 near low end

Note 1: The frequency range over which the device operates in a given operating band is the difference between the highest and lowest frequencies on which the device can be tuned within that given operating band. The frequency range can be smaller than or equal to the operating band, but cannot be greater than the operating band.

Note 2: In the third column of table 1, “near” means as close as possible to or at the center / low end / high end of the frequency range over which the device operates.

Channel List

802.11a/n/ac/ax HT20/VHT20/HE20		802.11n/ac/ax HT40/VHT40/HE40		802.11ac/ax VHT80/HE80	
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
36	5180	38	5190	42	5210
40	5200	46	5230	--	--
44	5220	--	--	--	--
48	5240	--	--	--	--

Firmware / Software Version

1	**Product Name / Model Name / Trade Name**	OnCollab / AVA / AT-C
2	**Test SW Version**	Putty Ver 0.63.0.0
3	**RF power setting in TEST SW**	☐ RF power setting was not able to alter during testing. ☒ RF power setting was able to alter during testing. (See the following table)

Parameters of test software setting

Type of Modulation	Channel	Frequency (MHz)	Set Value	
			Chain A	**Chain B**
802.11a	36	5180	15	15
	40	5200	15	15
	48	5240	15	15
802.11ac(VHT20)	36	5180	15	15
	40	5200	15	15
	48	5240	15	15
802.11ac(VHT40)	38	5190	10	10
	46	5230	10	10
802.11ac(VHT80)	42	5210	9	9
802.11ax(HE20)	36	5180	14	14
	40	5200	14	14
	48	5240	14	14
802.11ax(HE40)	38	5190	8	8
	46	5230	8	8
802.11ax(HE80)	42	5210	8	8

1.4 Test Mode Applicability And Tested Channel Detail

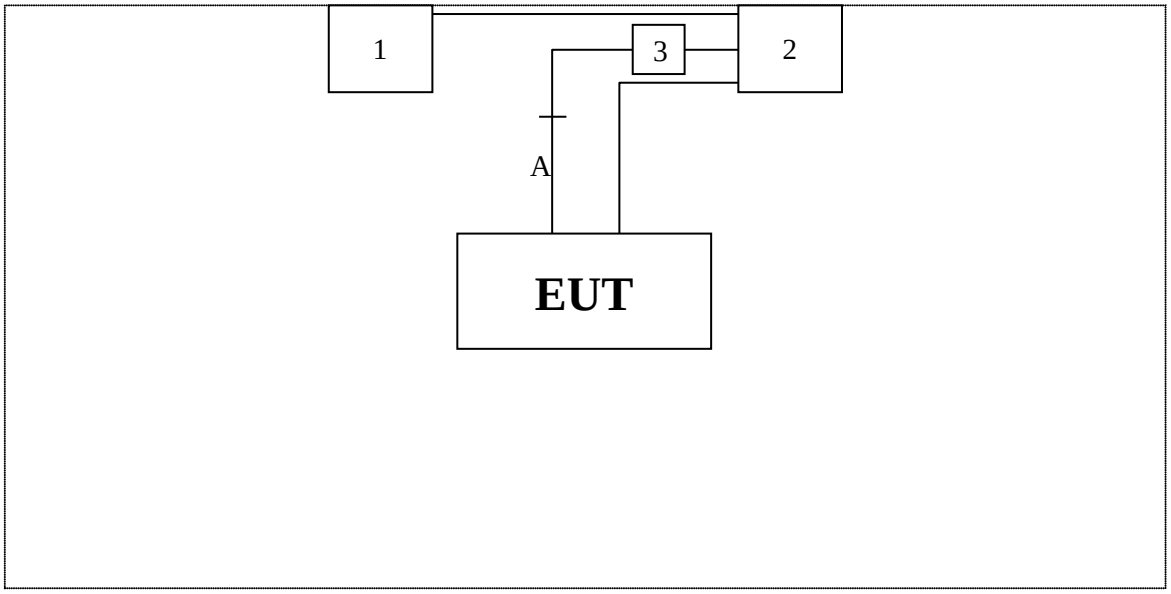
1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
2. The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is recorded in the report:
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps、802.11ac/ax-20BW/40BW/80BW is MCS0)
5. The spectrum plot against conducted item only shows the worst case.
6. 802.11ac VHT20 and VHT40 mode are different from 802.11n HT20 and HT40 only in control messages, so for these 4 modes, only 802.11ac VHT20 and VHT40 worst case power modes radiated emission test data are recorded in the report.

EUT Configure Mode	RE < 1G	RE ≥ 1G	ACM	ACP
Mode 1：Transmit (802.11a 6Mbps)	☒	☒	☒	☒
Mode 2：Transmit (802.11ac VHT20 MCS0)	☐	☒	☒	☐
Mode 3：Transmit (802.11ac VHT40 MCS0)	☐	☒	☒	☐
Mode 4：Transmit (802.11ac VHT80 MCS0)	☐	☒	☒	☐
Mode 5：Transmit (802.11ax HE20M MCS0)	☐	☒	☒	☐
Mode 6：Transmit (802.11ax HE40M MCS0)	☐	☒	☒	☐
Mode 7：Transmit (802.11ax HE80M MCS0)	☐	☒	☒	☐

Note : RE<1G: Radiated Emission below 1GHz RE≥1G: Radiated Emission above 1GHz
ACM: Antenna Port Conducted Measurement ACP: AC Power Line Conducted Emission

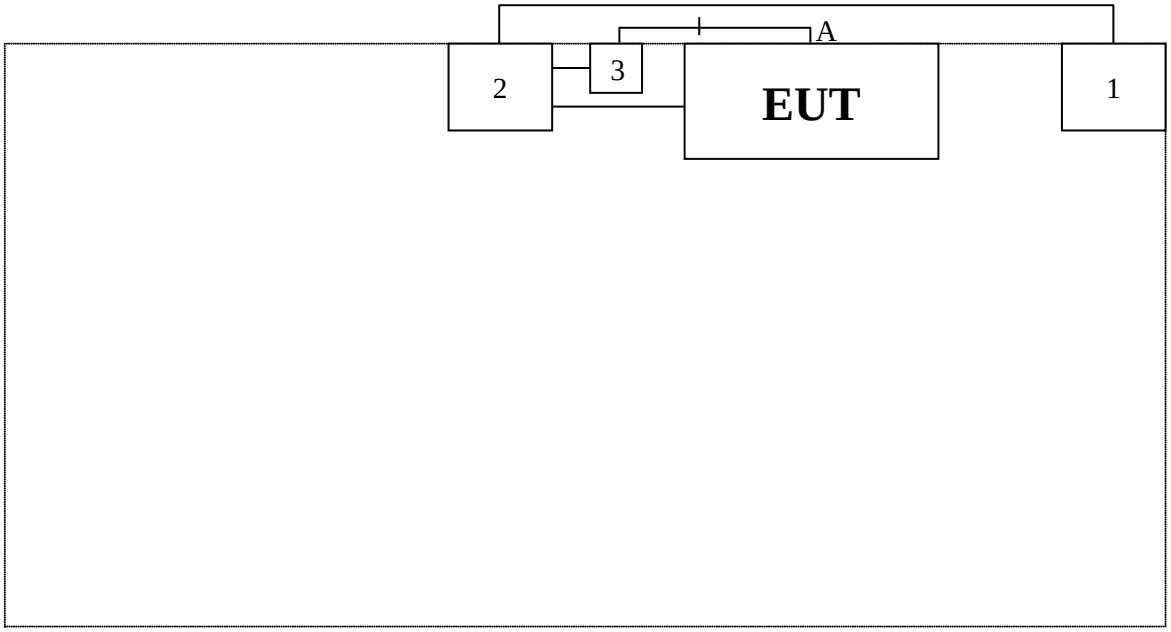
1.5 Configuration of Tested System

Radiation



Test Table

AC Conduction



Test Table

1.6 EUT Exercise Software

1. Setup the EUT as shown in Section 1.5
2. Execute software “Putty Ver 0.63.0.0”.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous transmit.
5. Verify that the EUT works properly.

1.7 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Adapter	Acer	W15-045N4A	KP045H00694601969PH05	Non-shielded, 1 Core, 1.6m
2	Notebook PC	acer	N17W3	NXVJ7TA00302301D496600	N/A
3	Fixture	Centron	DB100	N/A	N/A
A	Dupont Line	WD	DL-MM-3P	N/A	Non-shielded, Non-Core, 0.22m

1.8 Test Facility

Items	Required (IEC 60068-1)
Temperature (°C)	15-35
Humidity (% RH)	25-75
Barometric pressure (mbar)	860-1060

Description: Accredited by TAF
Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

Company Address: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Lab: Wendell EMC & RF Laboratory

Lab Address: 5F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Location: No. 119, Wugong 3rd Rd., Wugu Dist.,
New Taipei City 248, Taiwan (R.O.C.)

Designation Number: TW0025

Test Firm Registration Number: 665221

1.9 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence (level based on a coverage factor K=2)

Measurement Project	Condition	Expended Uncertainty
AC Conducted Emission	0.150 ~ 30 MHz	± 2.64 dB
Radiated Emission	0.009 ~ 30 MHz	± 3.7 dB
	30 ~ 1000 MHz	± 3.9 dB
	1000 ~ 18000 MHz	± 4.5 dB
	18000 ~ 40000 MHz	± 4.3 dB
RF Power, Conducted	Conducted Measuring	± 0.75 dB
Occupied Bandwidth	Conducted Measuring	± 2.4 %
Power Density	Conducted Measuring	± 1.2 dB
Duty Cycle	Conducted Measuring	± 0.9 %
Frequency Stability	Conducted Measuring	± 0.062 ppm
DC Power Supply	--	± 2.0 %
Temperature	--	± 0.55 °C
Humidity	--	± 3.1 %

Note: Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

1.10 List of Test Equipment

For Conducted measurements / W08-Conducted Measurement

Equipment		Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	Spectrum analyzer	Keysight	N9010A	SG50420005	2024/08/09	2025/08/08
✓	Wideband Peak Power Meter	Anritsu	ML2495A	1733007	2023/09/07	2024/09/06
✓	Pulse Power Sensor + Precision Adaptor	Anritsu	MA2411B	1726022	2023/09/07	2024/09/06
	Temperature Chamber	TAICHY	MHK-225LK	1061121	2024/04/19	2025/04/18
	Wireless Connectivity Tester	R&S	CMW270	101307	2024/06/04	2025/06/03
✓	Attenuator	MVE	MVE2211-10	CT-9-056	2024/08/08	2026/08/07
	Attenuator	MVE	MVE2211-20	CT-9-057	2024/08/08	2026/08/07
	Attenuator	MVE	MVE2211-30	CT-9-058	2024/08/08	2026/08/07
	Power Divider	MVE	MVE8546	170826003	2024/08/08	2026/08/07
	Power Splitter	MVE	MVE8547	170302047	2024/08/10	2026/08/09
	DC Power Supply	GW INSTEK	GPC-3060D	GER817636	2024/08/05	2025/08/04

Remark:

1. The equipments are calibrated every one year.
2. The Attenuator/ Divider/ Splitter are calibrated every two year.
3. The test instruments marked with "✓" are used to measure the final test results.

For AC Conduction measurements / W08-CE

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Test Receiver	R&S	ESR3	102309	2024/06/21	2025/06/20
✓	2-Line V-Network LISN	R&S	ENV216	101185	2024/06/20	2025/06/19
✓	LISN	SCHWARZBECK	NSLK 8127RC	05028	2024/06/20	2025/06/19
✓	Transient Limiter	EM Electronics Corporation	EM-7600	857	2024/06/24	2025/06/23
✓	50ohm Cable	EMCI	EMCCFD300-BM-BM-5000	170612	2024/06/24	2025/06/23
✓	50 ohm terminal impedance	HUBER+SUHNER	50 ohm terminal impedance	CT-1-109-1	2024/06/20	2025/06/19

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with "✓" are used to measure the final test results.
3. Test Software version: FARAD EZ-EMC Ver.EMC-CON 3A1

For Radiated measurements / W08-996-2

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Receiver	Keysight	N9038A	MY51210173	2024/08/21	2025/08/20
✓	Spectrum Analyzer	Keysight	N9010A	MY52220228	2024/08/19	2025/08/18
✓	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	00033	2024/05/02	2025/05/01
✓	TRILOG super broad Antenna	Schwarzbeck	VULB 9168	VULB 9168-700 & 20E03	2024/07/23	2025/07/22
✓	Horn Antenna	Schwarzbeck	BBHA 9120D	01767	2024/08/15	2025/08/14
✓	Horn Antenna	Schwarzbeck	BBHA 9170	703	2024/08/15	2025/08/14
✓	Pre-Amplifier	EM	EMC330	060774	2024/08/16	2025/08/15
✓	Pre-Amplifier	EMEC	EM01G18G	060648	2024/08/16	2025/08/15
✓	Pre-Amplifier	JPT	JPA0118-55-303K	1910001800055003	2024/08/20	2025/08/19
✓	Pre-Amplifier	EMCI	EMC184045SE	980515	2024/08/16	2025/08/15
✓	Cable	EMEC	EM-CB400	105060103	2024/08/21	2025/08/20
✓	Cable	EMEC	EM-CB400	105060102	2024/08/21	2025/08/20
✓	Cable	EMEC	EM-CB400	105060101	2024/08/21	2025/08/20
✓	RF Cable	HUBER+SUHNER	SF102	MY2752/2	2024/08/21	2025/08/20
✓	RF Cable	MVE	280280.LL266.1200	B60028C	2024/08/21	2025/08/20
✓	RF Cable	EMCI	EMC102-KM-KM-600	190646	2024/08/21	2025/08/20
✓	RF Cable	MVE	140140.LL404.700	B90014C	2024/08/21	2025/08/20
✓	RF Cable	MVE	140140.LL404.300	B90006C	2024/08/21	2025/08/20
	RF Filter	EMEC	BRF-2400-2500	002	2024/08/26	2026/08/25
✓	RF Filter	EMEC	BRF-5150-5350	104	2024/08/26	2026/08/25
✓	RF Filter	EMEC	BRF-5470-5725	092	2024/08/26	2026/08/25
✓	RF Filter	EMEC	BRF-5725-5875	091	2024/08/26	2026/08/25
	RF Filter	EMEC	HPF-2800	002	2024/08/26	2026/08/25
✓	RF Filter	EMEC	HPF-5850	059	2024/08/26	2026/08/25
	SMA Notch Filter	MVE	MFN-902.928.S1	190604001	2024/08/21	2026/08/20

Remark:

1. The equipments are calibrated every one year.
2. The Filter calibrated every two year.
3. The test instruments marked with "✓" are used to measure the final test results.
4. Test Software version: FARAD EZ-EMC Ver.WD-03A1-1

2 Test Result

2.1.1 Applicable Standard

For the band 5.15-5.25 GHz

(1) For an outdoor access point operating:

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 an indoor access point operating:

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 fixed point-to-point access points operating:

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.

(4) For client devices:

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

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

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.

2.1.2 Antenna Connected Construction

Non-standard antenna connector is used.

2.1.3 Test Result

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	Shenzhen Lejin radio frequency technology Co., LTD	040303020601	FPC Antenna	2.15 dBi for 5.15~5.25GHz
2	Shenzhen Lejin radio frequency technology Co., LTD	040303020601	FPC Antenna	2.15 dBi for 5.15~5.25GHz

Description of the operating transmit modes：

＊ 802.11a：CDD mode, this port is MIMO

＊ 802.11ac_VHT20：MIMO mode, this port is MIMO

＊ 802.11ac_VHT40：MIMO mode, this port is MIMO

＊ 802.11ac_VHT80：MIMO mode, this port is MIMO

＊ 802.11ax_HE20：MIMO mode, this port is MIMO

＊ 802.11ax_HE40：MIMO mode, this port is MIMO

＊ 802.11ax_HE80：MIMO mode, this port is MIMO

Directional gain calculation：

＊ B1_802.11a：Directional Gain = GANT + Array Gain = 2.15 dBi ≤ 6dBi

＊ B1_802.11ac_VHT20：Directional Gain = 10*log{[10^(G1/20)+10^(G2/20)+…+10^(Gn/20)]^2/NANT} = 5.16 dBi ≤ 6dBi

＊ B1_802.11ac_VHT40：Directional Gain = 10*log{[10^(G1/20)+10^(G2/20)+…+10^(Gn/20)]^2/NANT} = 5.16 dBi ≤ 6dBi

＊ B1_802.11ac_VHT80：Directional Gain = 10*log{[10^(G1/20)+10^(G2/20)+…+10^(Gn/20)]^2/NANT} = 5.16 dBi ≤ 6dBi

＊ B1_802.11ax_HE20：Directional Gain = 10*log{[10^(G1/20)+10^(G2/20)+…+10^(Gn/20)]^2/NANT} = 5.16 dBi ≤ 6dBi

＊ B1_802.11ax_HE40：Directional Gain = 10*log{[10^(G1/20)+10^(G2/20)+…+10^(Gn/20)]^2/NANT} = 5.16 dBi ≤ 6dBi

＊ B1_802.11ax_HE80：Directional Gain = 10*log{[10^(G1/20)+10^(G2/20)+…+10^(Gn/20)]^2/NANT} = 5.16 dBi ≤ 6dBi

2.2 Output Power Measurement and Transmit Power Control

2.2.1 Limit

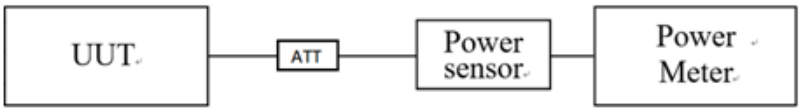
1. For frequency Band 5150~5250MHz:
   (1) Outdoor access point : 1W (30 dBm)
   (2) Indoor access point : 1W (30 dBm)
   (3) Fixed point-to-point access point : 1W (30 dBm)
   (4) Client device : 250mW (24 dBm)
   (5) If transmitting antennas of directional gain greater than 6 dBi are used, both the 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 frequency Band 5250~5350MHz and 5470~5725MHz:
   (1) 250mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth (MHz), whichever is lesser.
   (2) 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 frequency Band 5725~5850MHz:
   (1) The maximum conducted output power over the frequency band of operation shall not exceed 1 W(30 dBm).
   (2) 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.

Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

2.2.2 Test Setup



2.2.3 Test Procedure

1. Enable the EUT transmit continuously.
2. Let EUT be connected to the power meter, and record the max. reading.
3. Measurement using a gated RF average power meter, since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

2.2.4 Test Result

Mode	Frequency (MHz)	Average power (dBm)			Limit (dBm)	Result
		Chain A	Chain B	Total		
802.11a	5180	15.42	14.02	17.79	≤ 24	Pass
	5200	15.55	14.06	17.88	≤ 24	Pass
	5240	16.02	14.05	18.16	≤ 24	Pass
802.11ac VHT20	5180	15.41	13.72	17.66	≤ 24	Pass
	5200	15.56	13.70	17.74	≤ 24	Pass
	5240	15.72	13.69	17.83	≤ 24	Pass
802.11ac VHT40	5190	10.04	8.45	12.33	≤ 24	Pass
	5230	10.25	8.53	12.48	≤ 24	Pass
802.11ac VHT80	5210	9.24	7.64	11.52	≤ 24	Pass
802.11ax HE20	5180	15.03	14.51	17.79	≤ 24	Pass
	5200	14.76	14.60	17.69	≤ 24	Pass
	5240	15.01	14.81	17.92	≤ 24	Pass
802.11ax HE40	5190	8.04	7.72	10.89	≤ 24	Pass
	5230	8.12	7.86	11.00	≤ 24	Pass
802.11ax HE80	5210	8.20	8.13	11.18	≤ 24	Pass

Remark:

1. Average Power = Reading value on power meter + cable loss
2. 10 Log(X/mW) = dBm, X=1 watt (Limit)
   1 watt = 30 dBm
3. Section E) method 1) of power measurement of KDB 662911 is used for calculating total power.

2.2.5 Transmit Power Control

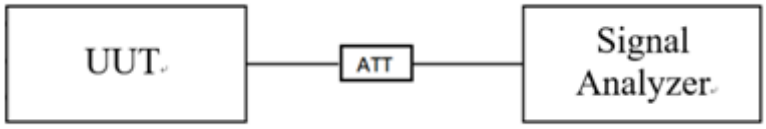
EUT doesn’t support TPC function.

2.3 26dB Bandwidth, 6dB Bandwidth and 99% Occupied Bandwidth Measurement

2.3.1 Limit

Within 5725~5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

2.3.2 Test Setup



2.3.3 Test Procedure

1. The following procedure shall be used for measuring 6dB bandwidth:
   (1) Enable the EUT transmit continuously.
   (2) Set RBW = 100 kHz, VBW ≥ 3 RBW, Sweep = auto couple.
   (3) Detector = Peak, Trace mode = max hold.
   (4) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
2. The following procedure shall be used for measuring 26 dB bandwidth:
   (1) Set RBW = approximately 1% of the emission bandwidth.
   (2) Set the VBW > RBW, Detector = Peak, Trace mode = max hold
   (3) Measure the maximum width of the emission that is 26 dB down from the peak 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%.
3. 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 the 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 .

(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.

2.3.4 Test Result

26dB Bandwidth & 99% Occupied Bandwidth

802.11a

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5180	20.930	20.790	--	--	--	--
5200	21.120	21.560	--	--	--	--
5240	26.260	21.140	--	--	--	--

802.11ac VHT20

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5180	26.140	23.970	--	--	--	--
5200	22.300	22.940	--	--	--	--
5240	24.130	21.800	--	--	--	--

802.11ac VHT40

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5190	39.760	40.040	--	--	--	--
5230	39.720	39.760	--	--	--	--

802.11ac VHT80

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5210	81.410	81.660	--	--	--	--

802.11ax HE20

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5180	21.270	21.630	--	--	--	--
5200	21.140	22.410	--	--	--	--
5240	21.370	21.080	--	--	--	--

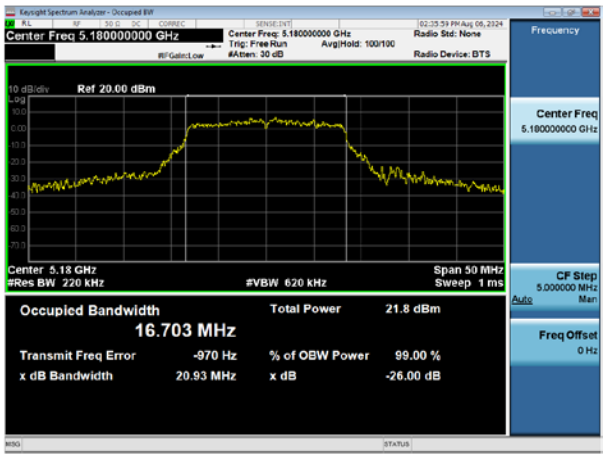
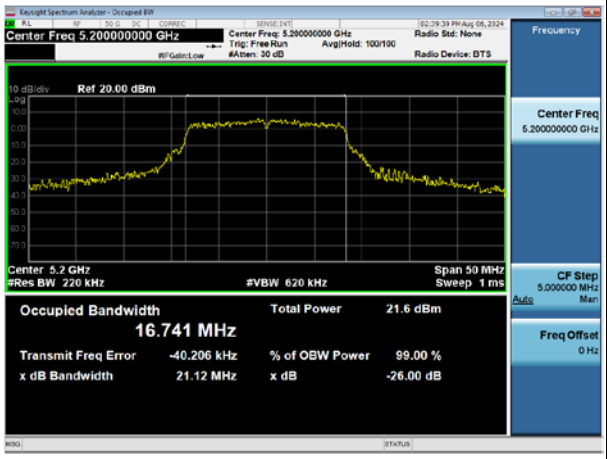
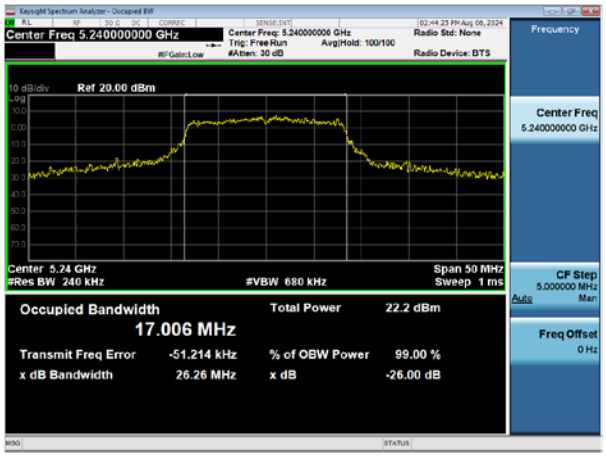
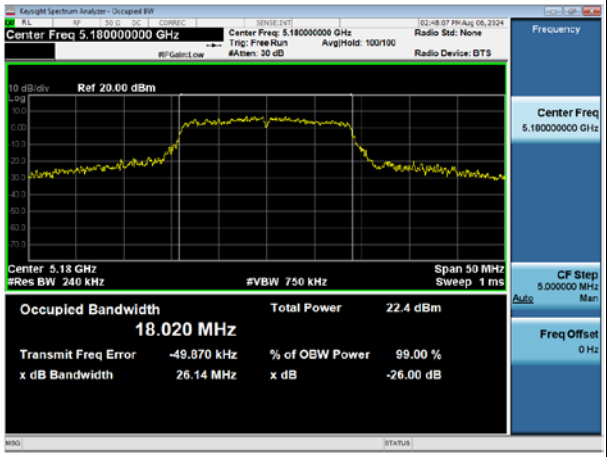
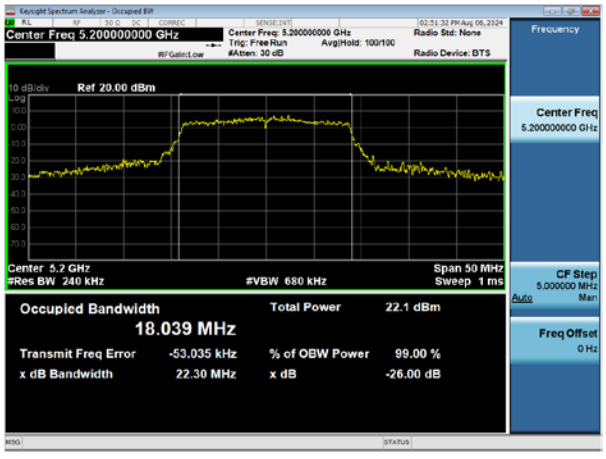
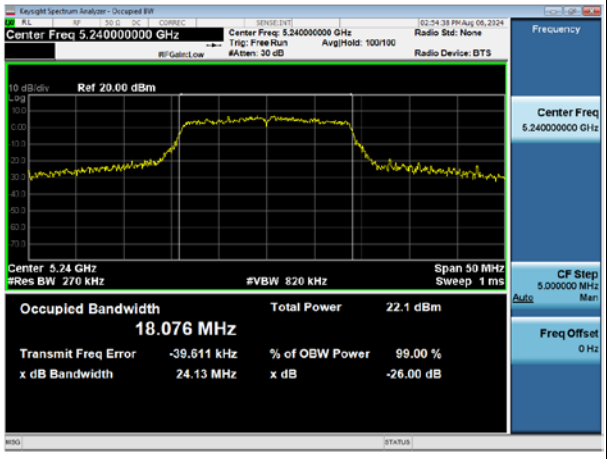
802.11ax HE40

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5190	39.700	39.830	--	--	--	--
5230	39.630	39.660	--	--	--	--

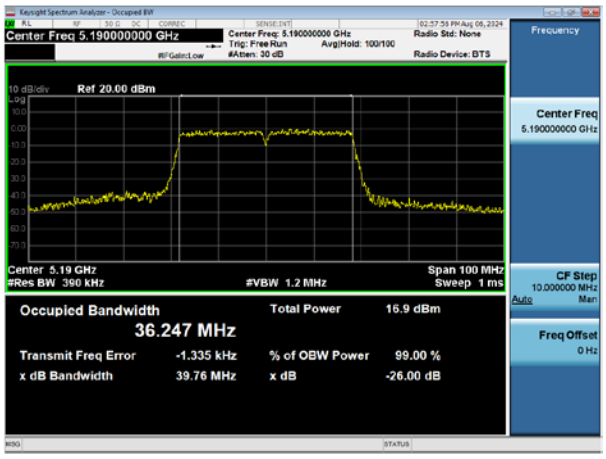
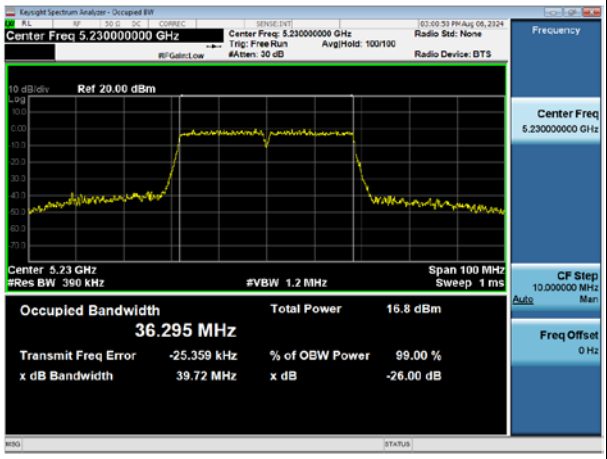
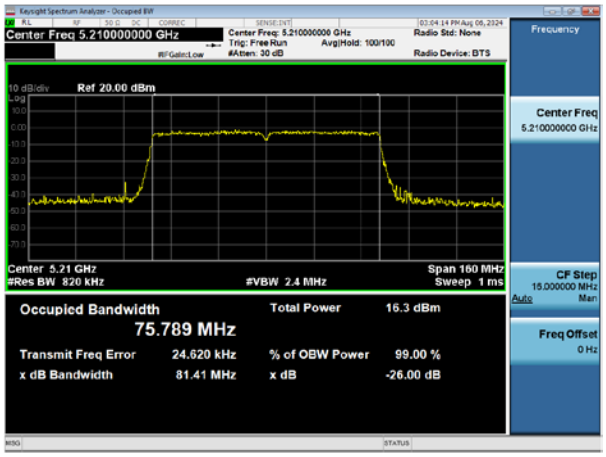
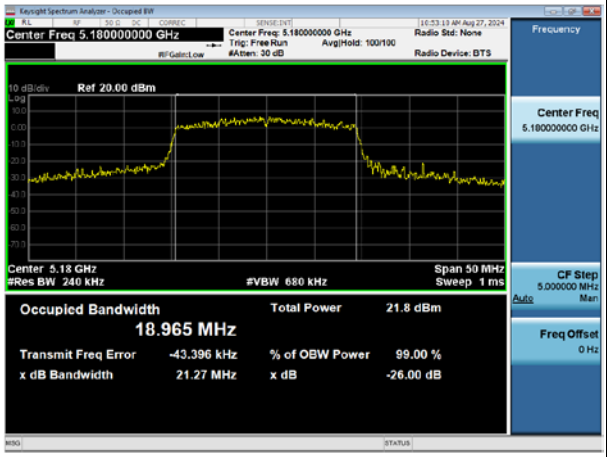
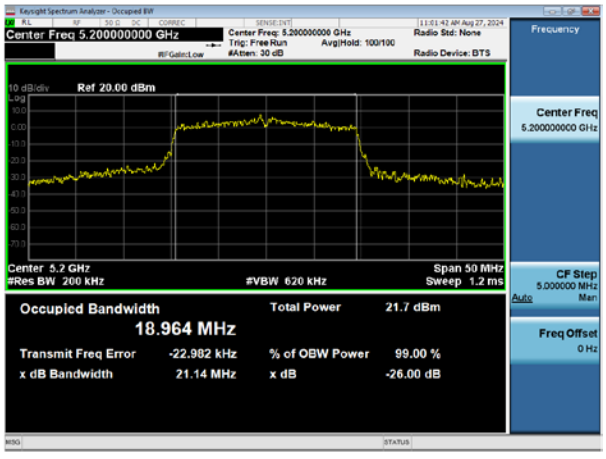
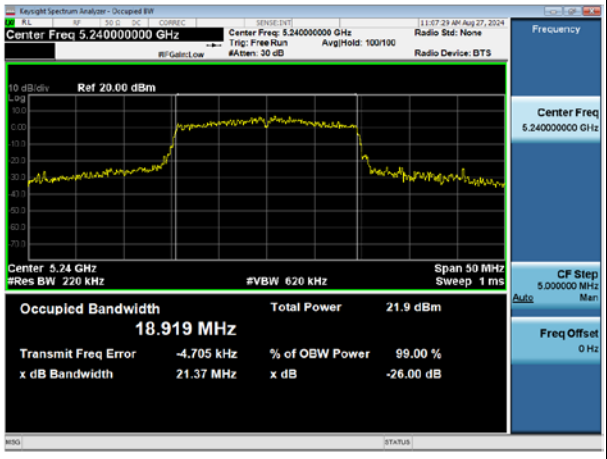
802.11ax HE80

Frequency (MHz)	26dB BW (MHz)		99% OBW (MHz)		Limit (kHz)	Result
	Chain A	Chain B	Chain A	Chain B		
5210	81.760	81.130	--	--	--	--

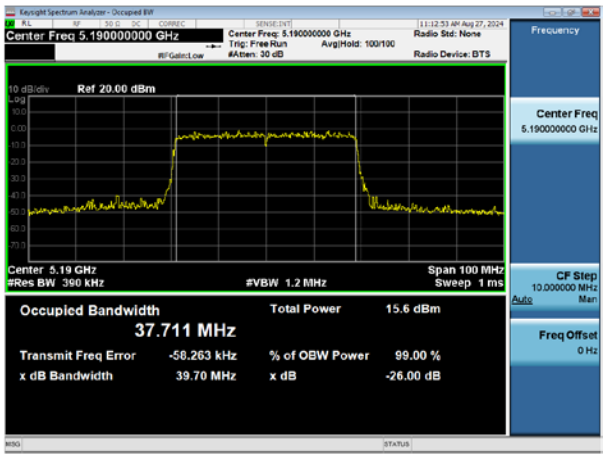
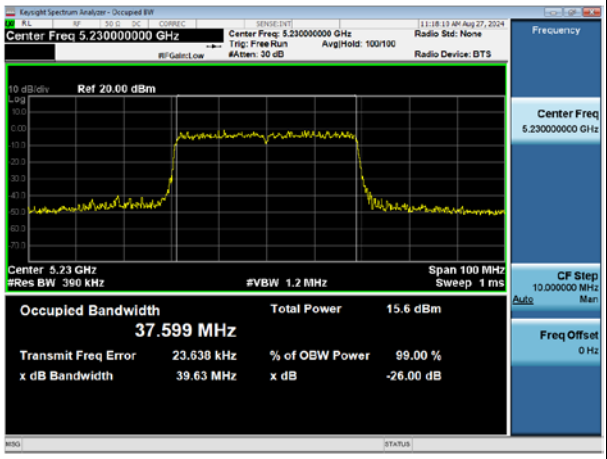
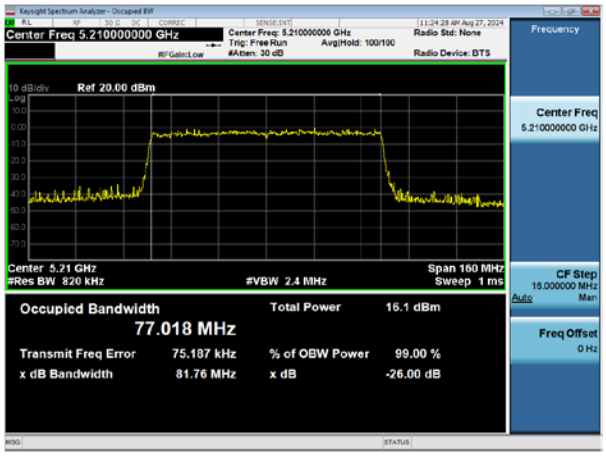
26dB Occupied Bandwidth spectrum plot of Chain A value:

802.11a 5180MHz	802.11a 5200MHz
	
802.11a 5240MHz	**802.11ac VHT20 5180MHz**
	
802.11ac VHT20 5200MHz	**802.11ac VHT20 5240MHz**
	

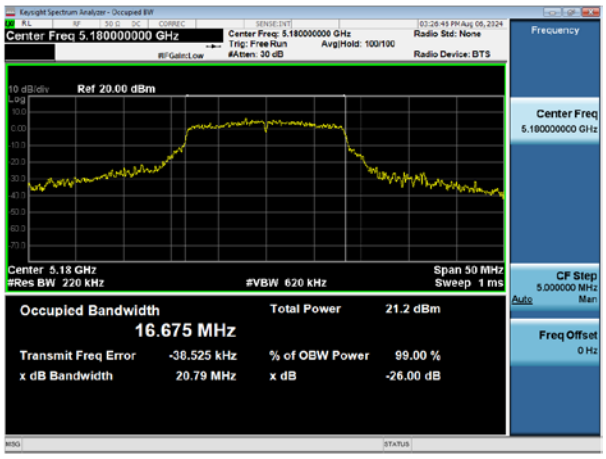
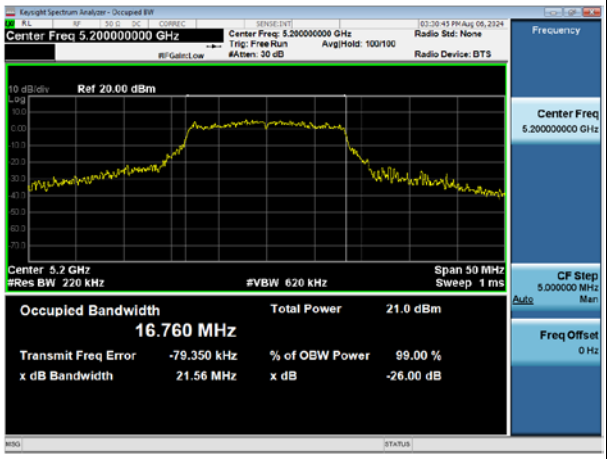
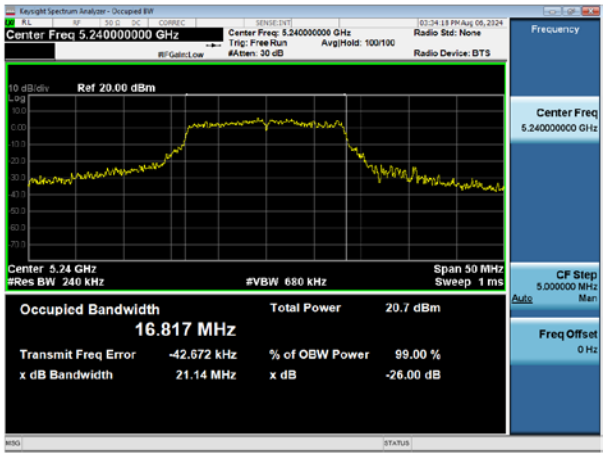
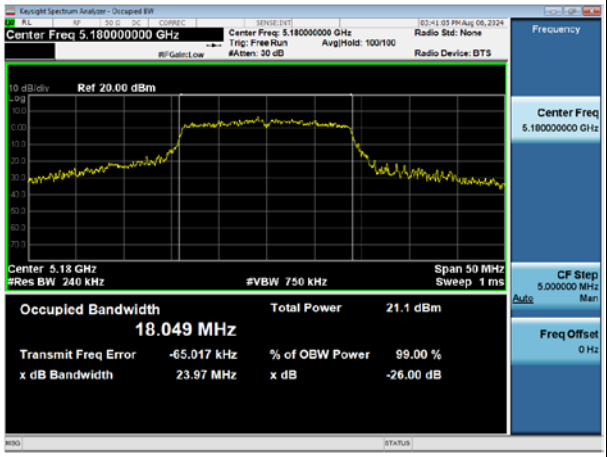
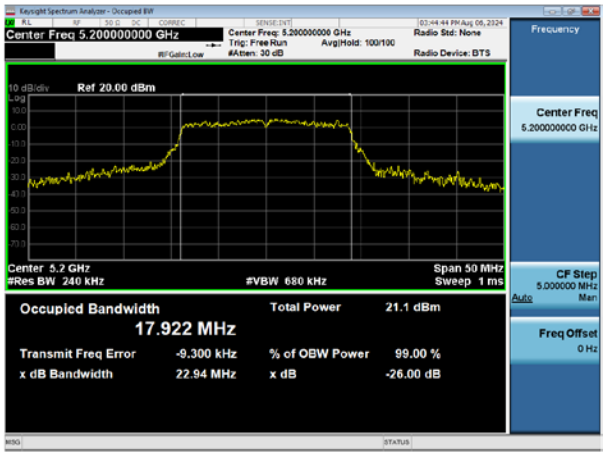
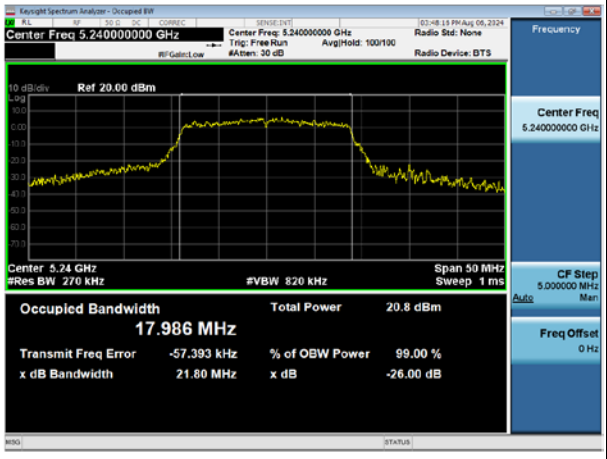
26dB Occupied Bandwidth spectrum plot of Chain A value:

802.11ac VHT40 5190MHz	802.11ac VHT40 5230MHz
	
802.11ac VHT80 5210MHz	**802.11ax HE20 5180MHz**
	
802.11ax HE20 5200MHz	**802.11ax HE20 5240MHz**
	

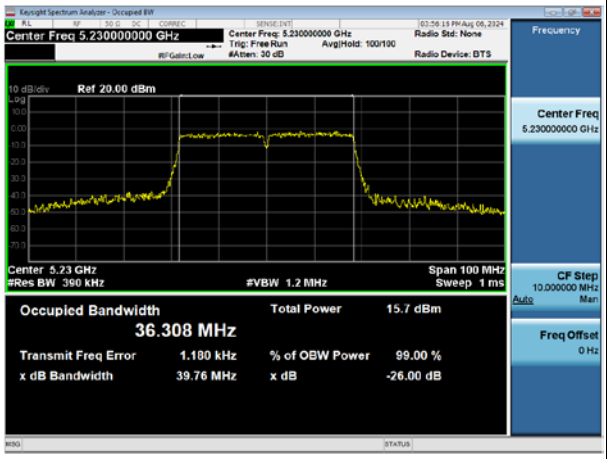
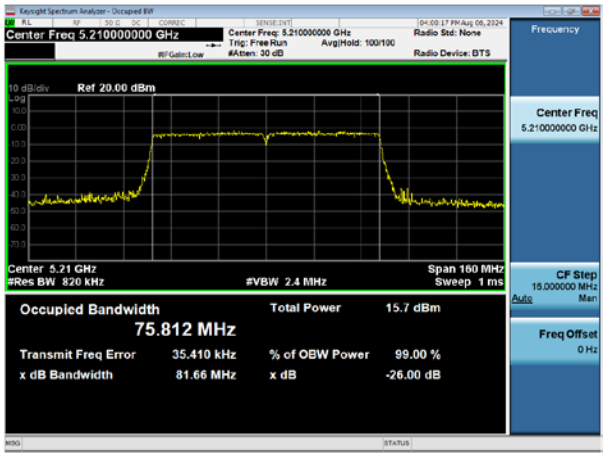
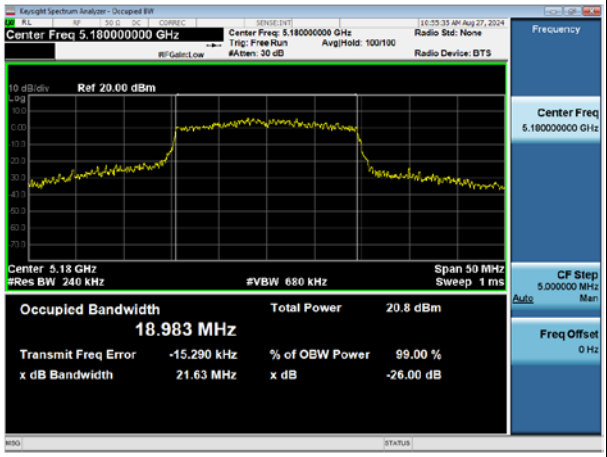
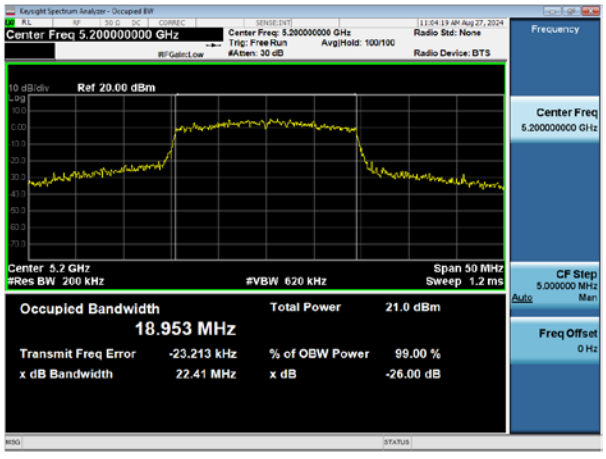
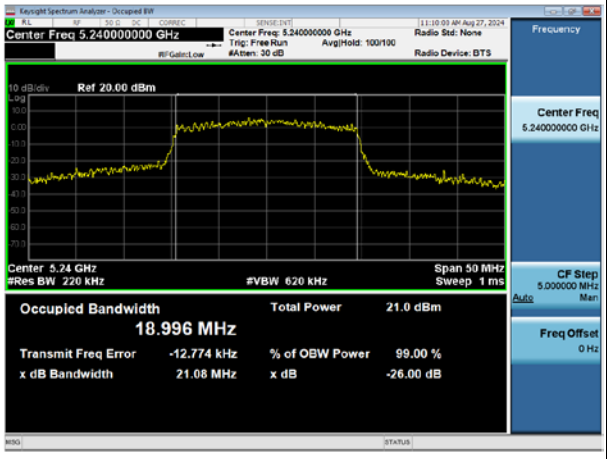
26dB Occupied Bandwidth spectrum plot of Chain A value:

802.11ax HE40 5190MHz	802.11ax HE40 5230MHz
	
802.11ax HE80 5210MHz	**--**
	--

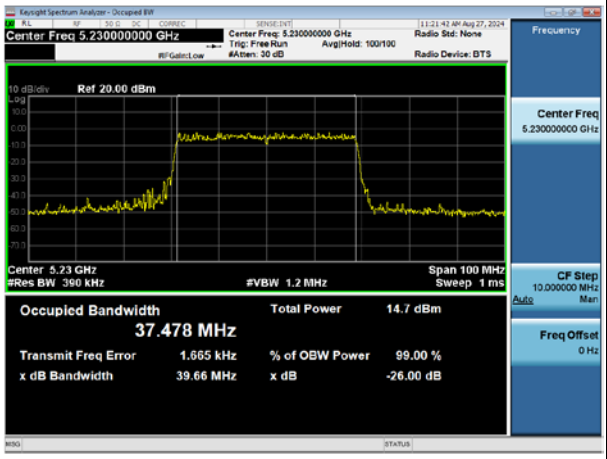
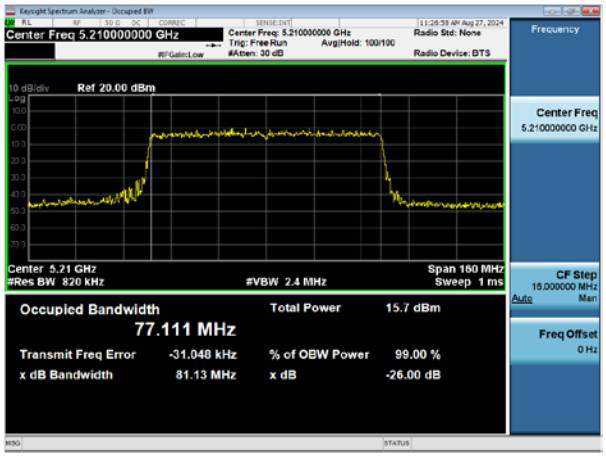
26dB Occupied Bandwidth spectrum plot of Chain B value:

802.11a 5180MHz	802.11a 5200MHz
	
802.11a 5240MHz	**802.11ac VHT20 5180MHz**
	
802.11ac VHT20 5200MHz	**802.11ac VHT20 5240MHz**
	

26dB Occupied Bandwidth spectrum plot of Chain B value:

802.11ac VHT40 5190MHz	802.11ac VHT40 5230MHz
	
802.11ac VHT80 5210MHz	**802.11ax HE20 5180MHz**
	
802.11ax HE20 5200MHz	**802.11ax HE20 5240MHz**
	

26dB Occupied Bandwidth spectrum plot of Chain B value:

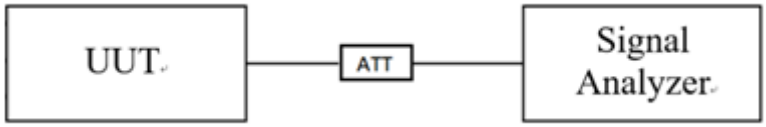
802.11ax HE40 5190MHz	802.11ax HE40 5230MHz
	
802.11ax HE80 5210MHz	**--**
	--

2.4 Power Spectral Density Measurement

2.4.1 Limit

1. For frequency Band 5150~5250MHz:
   (1) Outdoor access point : 17 dBm / MHz
   (2) Indoor access point : 17 dBm / MHz
   (3) Fixed point-to-point access point : 17 dBm / MHz
   (4) Client device : 11 dBm / MHz
2. For frequency Band 5250~5350MHz:
   11 dBm / MHz
3. For frequency Band 5470~5725MHz:
   11 dBm / MHz
4. For frequency Band 5725~5850MHz:
   30 dBm / 500kHz
5. 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.

2.4.2 Test Setup



2.4.3 Test Procedure

1. For frequency band 5150~5250, 5250~5350, 5470~5725MHz
   Method SA-2
   (1) Measure the duty cycle D of the transmitter output signal.
   (2) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal
   (3) Spectrum analyzer set:
      a) RBW = 1 MHz
      b) VBW = 3 MHz
      c) Sweep time = auto
      d) Detector = RMS
      e) Number of points in sweep ≥ [2 span / RBW].
      (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
      f) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
2. For frequency band 5725~5850 MHz
   Method SA-2
   (1) Measure the duty cycle D of the transmitter output signal.
   (2) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal
   (3) Spectrum analyzer set:
      a) RBW = 100 kHz
      b) VBW = 300 kHz
      c) Sweep time = auto
      d) Detector = RMS
      e) Number of points in sweep ≥ [2 span / RBW].
      (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
      f) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.

2.4.4 Test Result

For 5150 MHz ~ 5250 MHz

802.11a

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5180	5.09	4.64	7.88	< 11	Pass
5200	5.33	4.63	8.00	< 11	Pass
5240	6.04	4.74	8.45	< 11	Pass

Remark: PSD = Reading value on spectrum analyzer + cable loss + duty factor

802.11ac VHT20

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5180	5.51	4.06	7.86	< 11	Pass
5200	5.31	4.53	7.95	< 11	Pass
5240	5.60	4.56	8.12	< 11	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

802.11ac VHT40

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5190	-3.68	-4.50	-1.06	< 11	Pass
5230	-3.84	-4.73	-1.25	< 11	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

802.11ac VHT80

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5210	-7.82	-8.26	-5.02	< 11	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

802.11ax HE20

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5180	4.63	3.70	7.20	< 11	Pass
5200	4.62	4.06	7.36	< 11	Pass
5240	4.68	3.48	7.13	< 11	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

802.11ax HE40

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5190	-5.90	-6.55	-3.20	< 11	Pass
5230	-6.06	-6.83	-3.42	< 11	Pass

Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

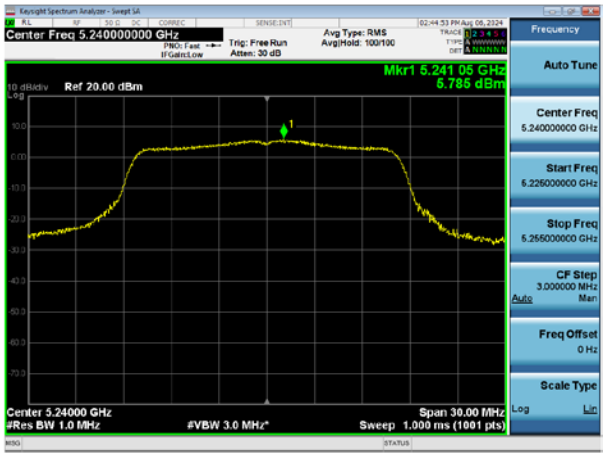
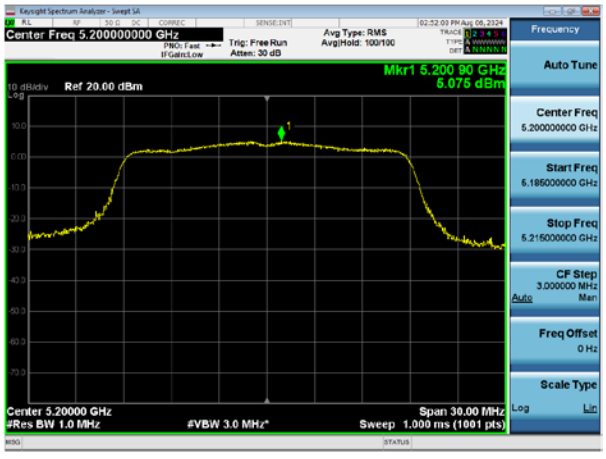
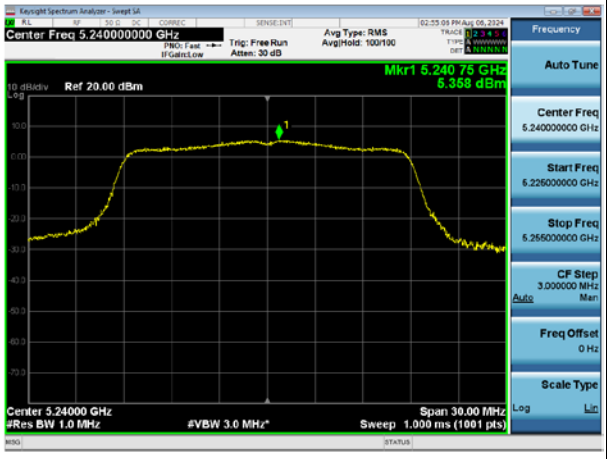
802.11ax HE80

Frequency (MHz)	PSD (dBm)		Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
	Chain A	Chain B			
5210	-8.60	-9.33	-5.94	< 11	Pass

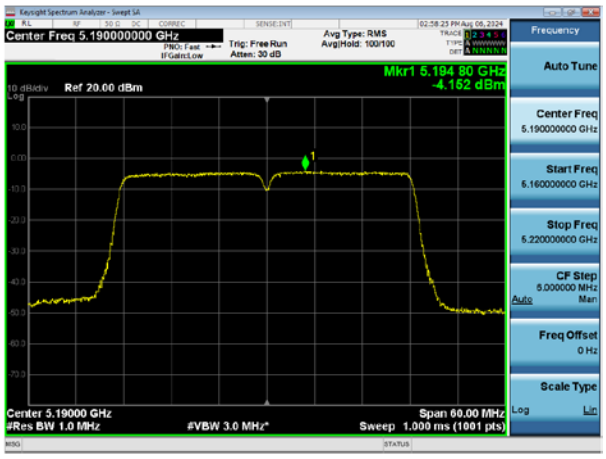
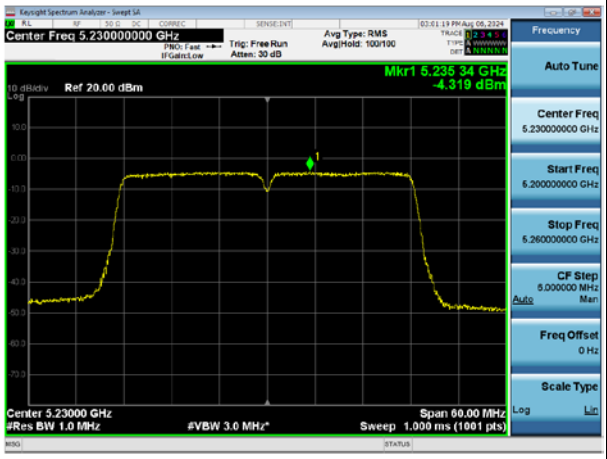
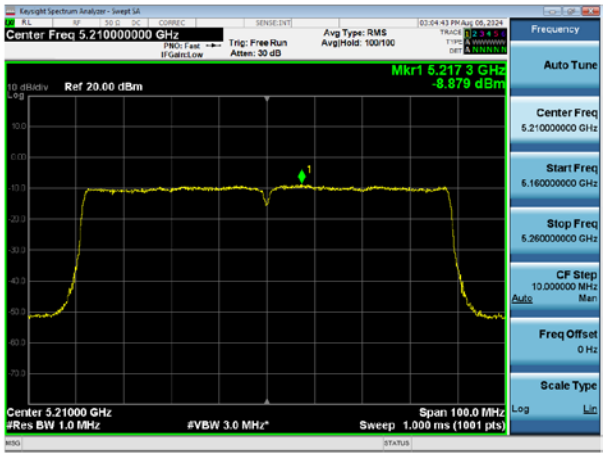
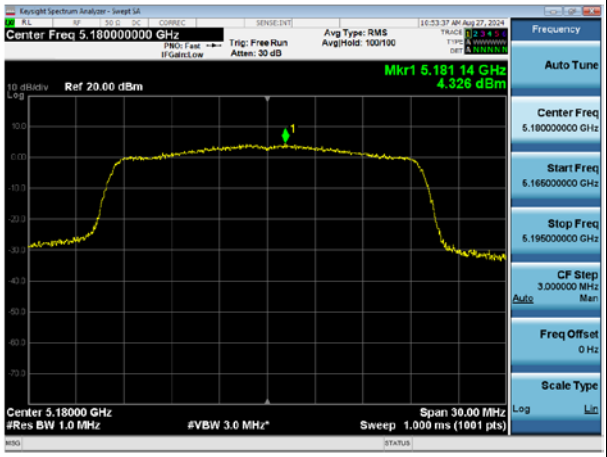
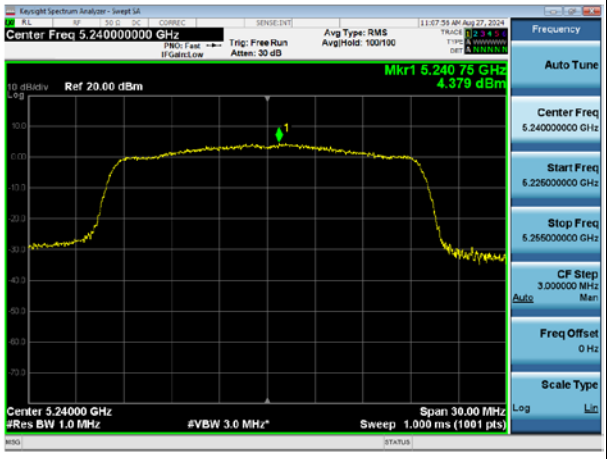
Remark:

1. PSD = Reading value on spectrum analyzer + cable loss + duty factor
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

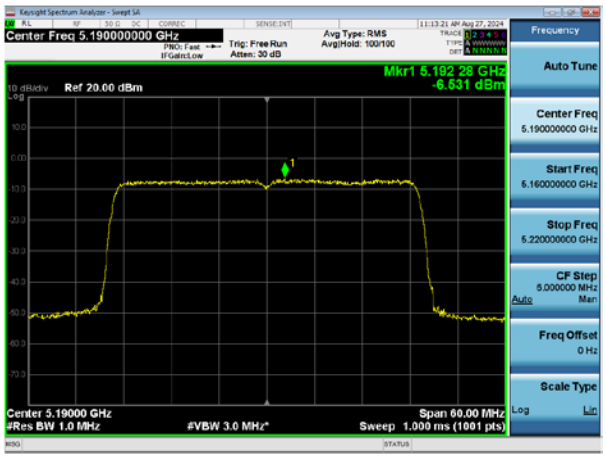
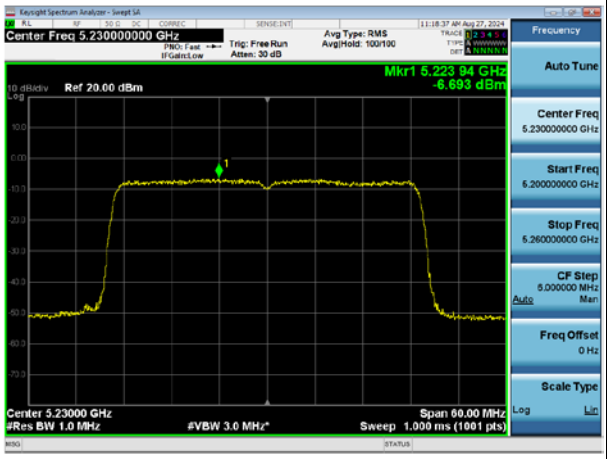
Power Spectral Density spectrum plot of Chain A value:

802.11a 5180MHz	802.11a 5200MHz
	
802.11a 5240MHz	**802.11ac VHT20 5180MHz**
	
802.11ac VHT20 5200MHz	**802.11ac VHT20 5240MHz**
	

Power Spectral Density spectrum plot of Chain A value:

802.11ac VHT40 5190MHz	802.11ac VHT40 5230MHz
	
802.11ac VHT80 5210MHz	**802.11ax HE20 5180MHz**
	
802.11ax HE20 5200MHz	**802.11ax HE20 5240MHz**
	

Power Spectral Density spectrum plot of Chain A value:

802.11ax HE40 5190MHz	802.11ax HE40 5230MHz
	
802.11ax HE80 5210MHz	**--**
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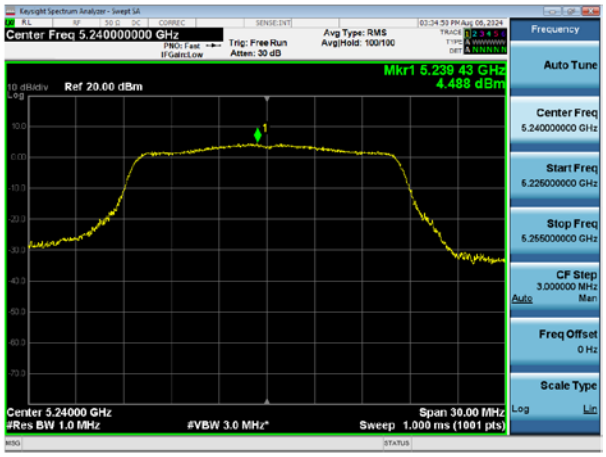
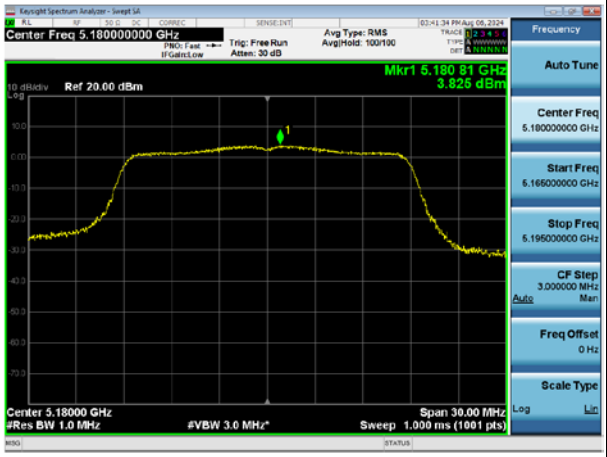
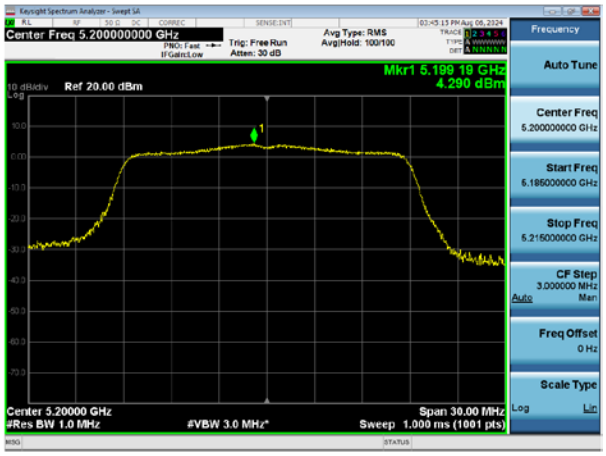
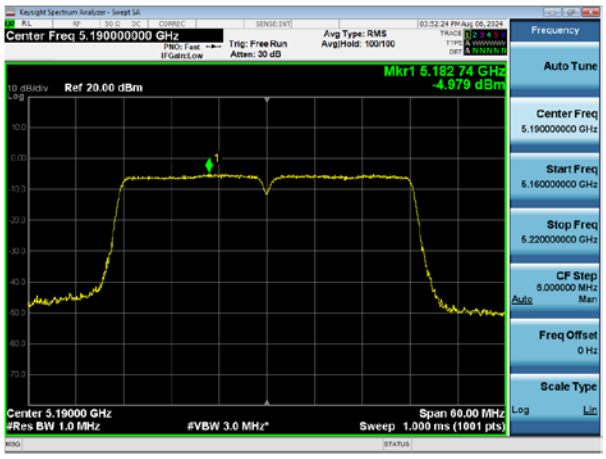
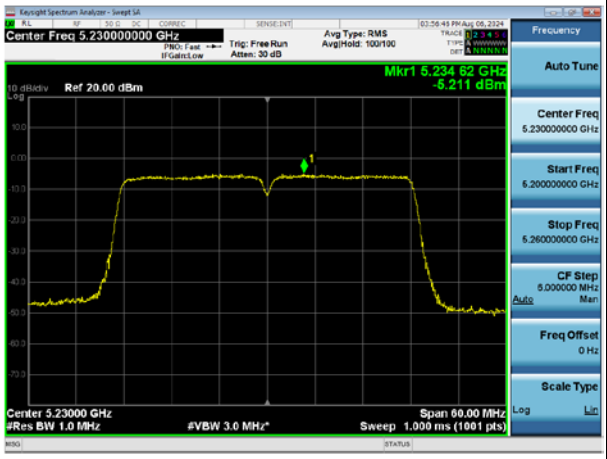
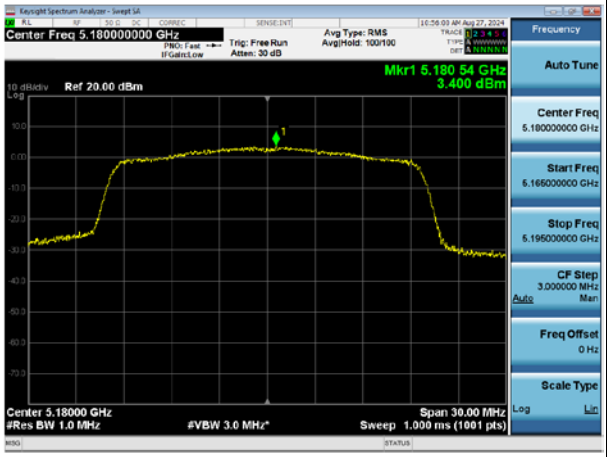
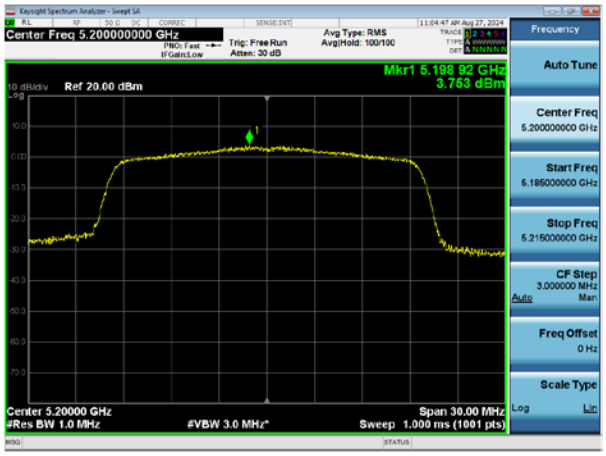
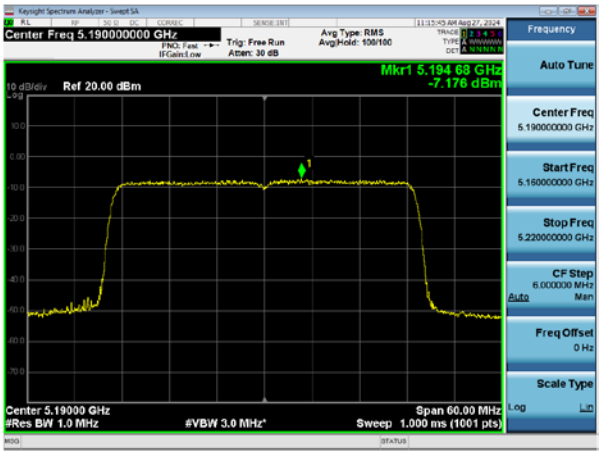
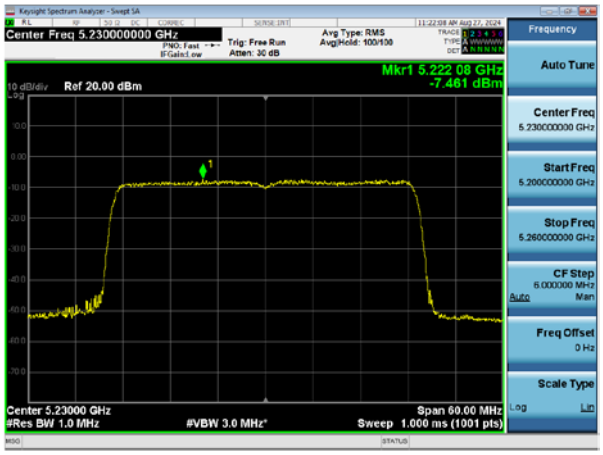
Power Spectral Density spectrum plot of Chain B value:

802.11a 5180MHz	802.11a 5200MHz
	
802.11a 5240MHz	**802.11ac VHT20 5180MHz**
	
802.11ac VHT20 5200MHz	**802.11ac VHT20 5240MHz**
	

Power Spectral Density spectrum plot of Chain B value:

802.11ac VHT40 5190MHz	802.11ac VHT40 5230MHz
	
802.11ac VHT80 5210MHz	**802.11ax HE20 5180MHz**
	
802.11ax HE20 5200MHz	**802.11ax HE20 5240MHz**
	

Power Spectral Density spectrum plot of Chain B value:

802.11ax HE40 5190MHz	802.11ax HE40 5230MHz
	
802.11ax HE80 5210MHz	**--**
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2.5 Unwanted Emission Measurement

2.5.1 Limit

1. Un- restricted bands unwanted emission limit :

Operating Band (MHz)	Limit of all emissions outside of the operating band
5150 ~ 5250	–27dBm/MHz, EIRP
5250 ~ 5350	–27dBm/MHz, EIRP
5470 ~ 5725	–27dBm/MHz, EIRP
5725 ~ 5850	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.

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.2

2. Restricted bands unwanted emission limit :

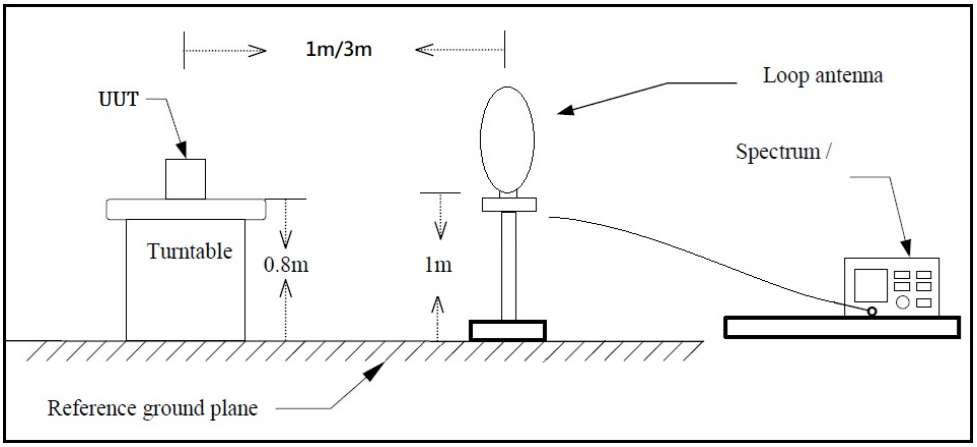
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Remarks:

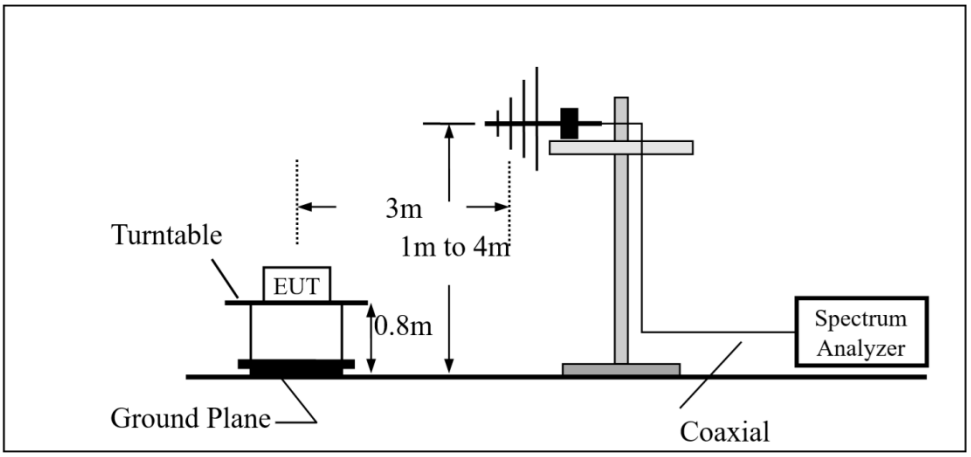
1. RF Voltage (dBuV) = 20 log RF Voltage(uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

2.5.2 Test Setup

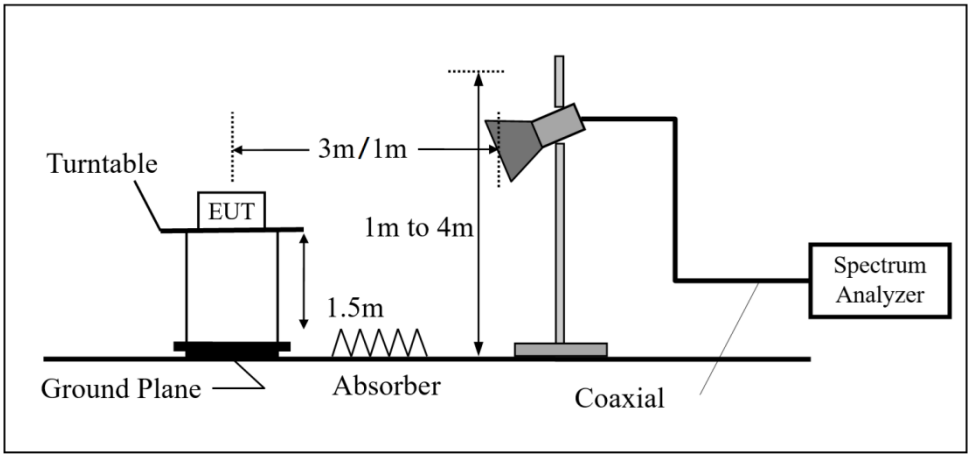
Below 30MHz



30MHz~1GHz



Above 1GHz



2.5.3 Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according test procedure of KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

The following bandwidths were used during emissions testing.

Frequency	RBW	VBW
9 kHz to 150 kHz	200 Hz to 300 Hz	3 × RBW
0.15 MHz to 30 MHz	9 kHz to 10 kHz	3 × RBW
30 MHz to 1000 MHz	100 kHz to 120 kHz	3 × RBW
>1000 MHz	1 MHz	3 × RBW

For Radiated emission below 30MHz

(1) The EUT was placed on the top of a rotating table 0.8 meters above the ground in a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

(3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

(4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

(5) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

For Radiated emission Above 30MHz

(1) The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for the test. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The EUT was set 3 meters away from the interference-receiving antenna, the height of the antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength.

(3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

(4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

(5) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

(6) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets the average limit, measurement with the average detector is unnecessary.

2.5.4 Duty Cycle

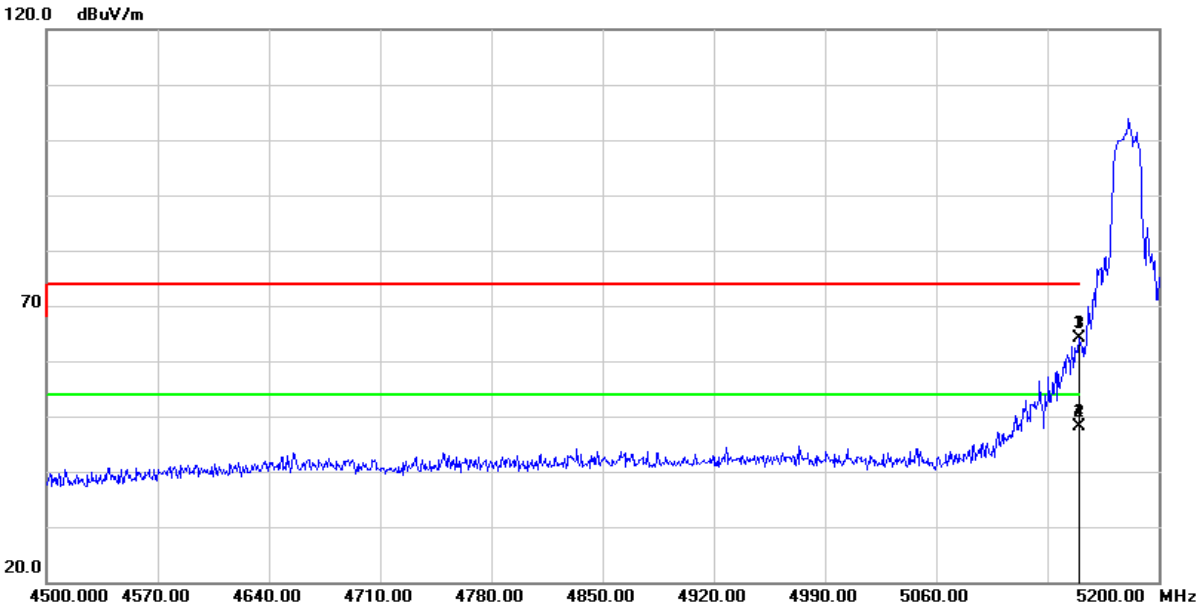
Type of Modulation	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	5180	1.415	1.500	0.943	0.253	0.707
802.11ac VHT20	5180	1.335	1.410	0.947	0.237	0.749
802.11ac VHT40	5190	0.672	0.750	0.896	0.477	1.488
802.11ac VHT80	5210	0.332	0.424	0.783	1.062	3.012
802.11ax HE20	5180	1.040	1.115	0.933	0.302	0.962
802.11ax HE40	5190	0.558	0.645	0.865	0.629	1.792
802.11ax HE80	5210	0.300	0.389	0.771	1.128	3.333

2.5.5 Test Result of Radiated Band Edge Measurement

The following tables for radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X axis) were recorded in this report.

Test Frequency			
RF	**802.11a / 802.11ac VHT20 802.11ax HE20**	**802.11ac VHT40 802.11ax HE40**	**802.11ac VHT80 802.11ax HE80**
Tx	CH36 (5180MHz)	CH38 (5190MHz)	CH42 (5210MHz)

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	**Test Date :**	2024/08/01
Test Channel :	CH36(5180MHz)	**Temperature :**	24.9 °C
Polarization :	Horizontal	**Relative Humidity :**	56 %

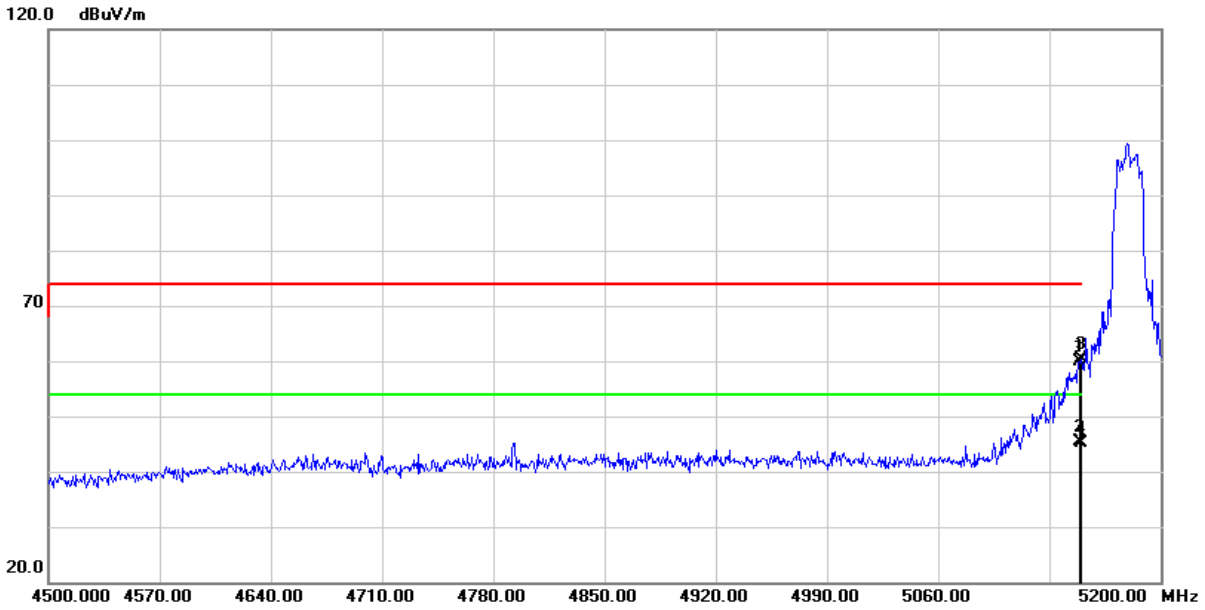


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5149.600	60.94	3.14	64.08	74.00	-9.92	peak
2	5149.600	44.96	3.14	48.10	54.00	-5.90	AVG
3	5150.000	60.92	3.14	64.06	74.00	-9.94	peak
4	5150.000	44.98	3.14	48.12	54.00	-5.88	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/01
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

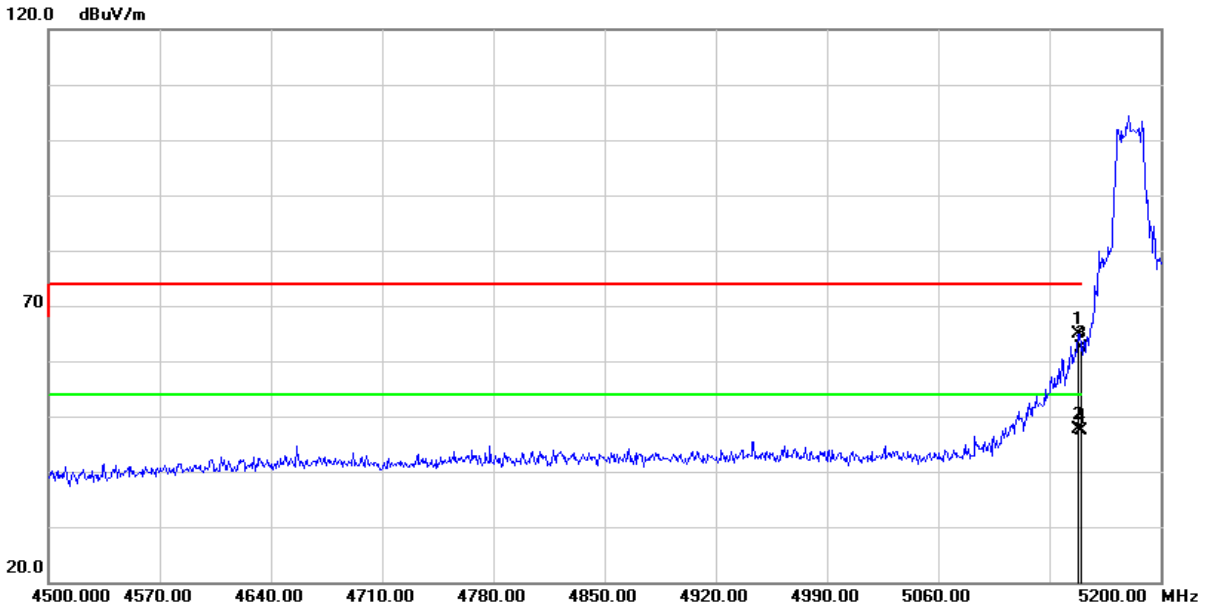


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5148.900	56.76	3.14	59.90	74.00	-14.10	peak
2	5148.900	42.20	3.14	45.34	54.00	-8.66	AVG
3	5150.000	57.16	3.14	60.30	74.00	-13.70	peak
4	5150.000	42.08	3.14	45.22	54.00	-8.78	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/01
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

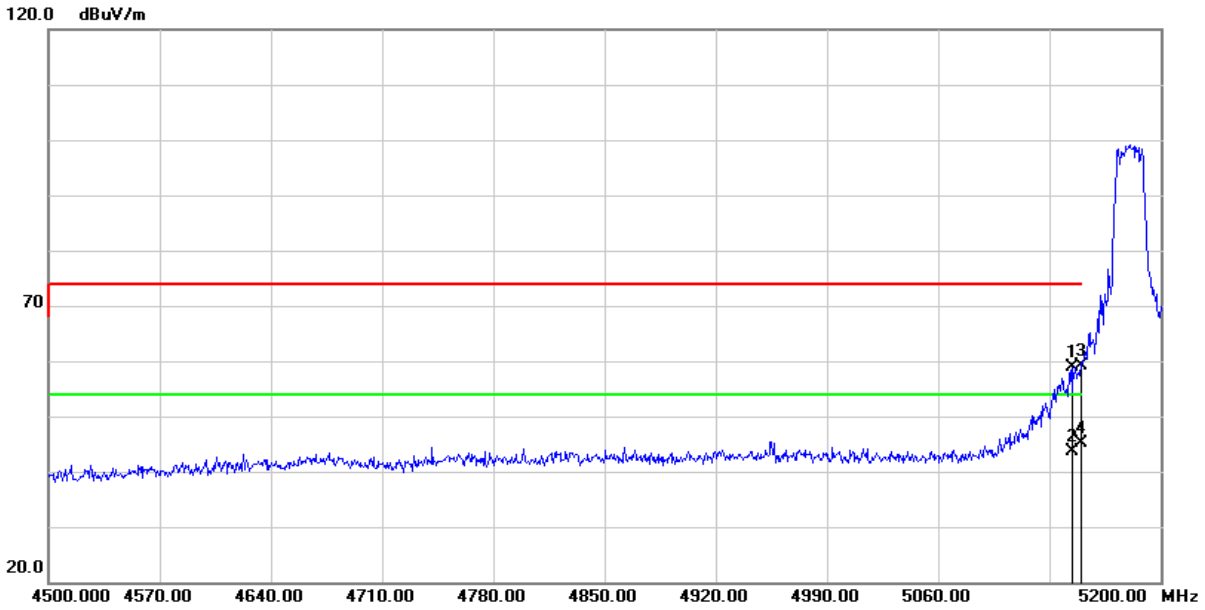


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5148.200	61.79	3.15	64.94	74.00	-9.06	peak
2	5148.200	44.49	3.15	47.64	54.00	-6.36	AVG
3	5150.000	59.31	3.14	62.45	74.00	-11.55	peak
4	5150.000	44.12	3.14	47.26	54.00	-6.74	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/01
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

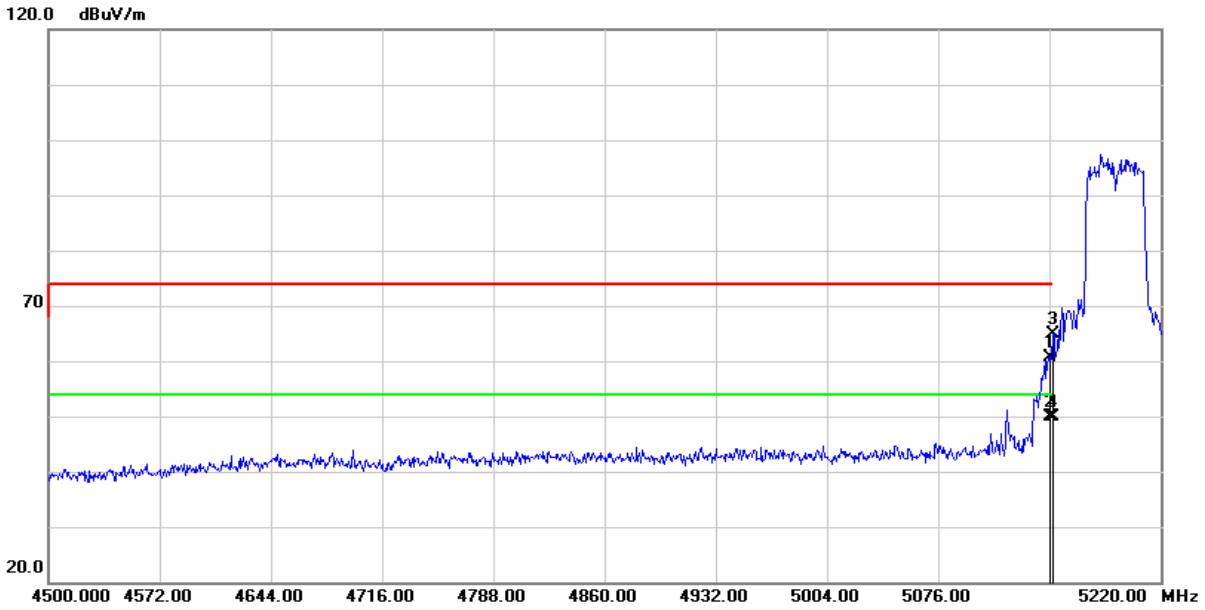


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5144.700	55.63	3.14	58.77	74.00	-15.23	peak
2	5144.700	40.50	3.14	43.64	54.00	-10.36	AVG
3	5150.000	55.87	3.14	59.01	74.00	-14.99	peak
4	5150.000	42.09	3.14	45.23	54.00	-8.77	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 3：Transmit (802.11ac VHT40 MCS0)	Test Date :	2024/08/01
Test Channel :	CH38(5190MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

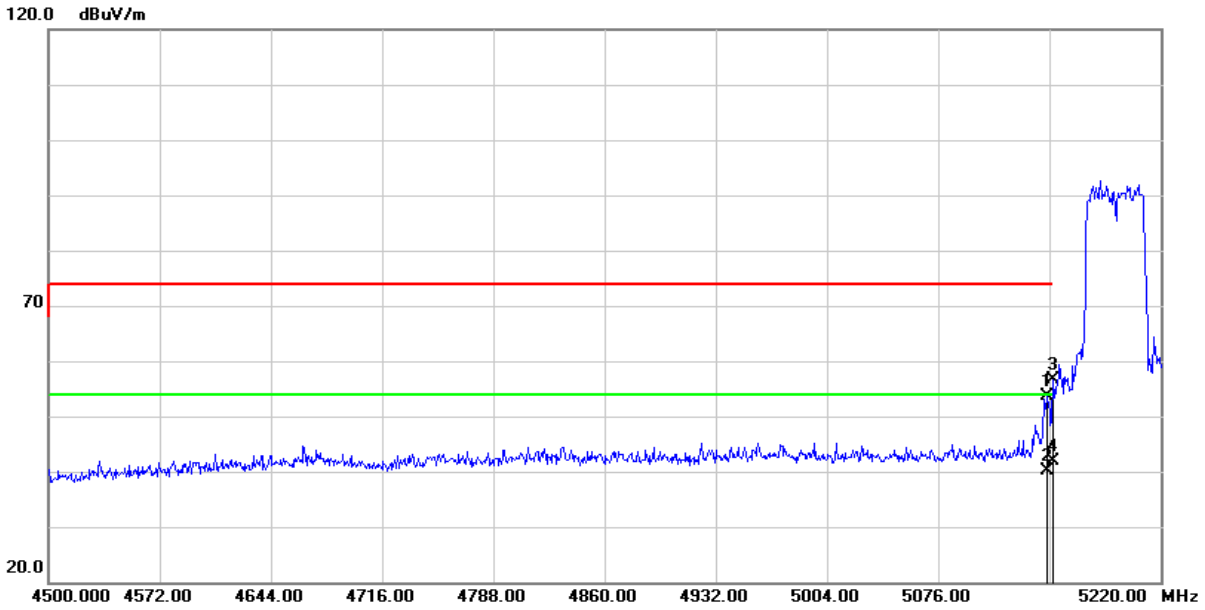


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5148.720	57.58	3.15	60.73	74.00	-13.27	peak
2	5148.720	46.70	3.15	49.85	54.00	-4.15	AVG
3	5150.000	61.72	3.14	64.86	74.00	-9.14	peak
4	5150.000	46.69	3.14	49.83	54.00	-4.17	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 3：Transmit (802.11ac VHT40 MCS0)	Test Date :	2024/08/01
Test Channel :	CH38(5190MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

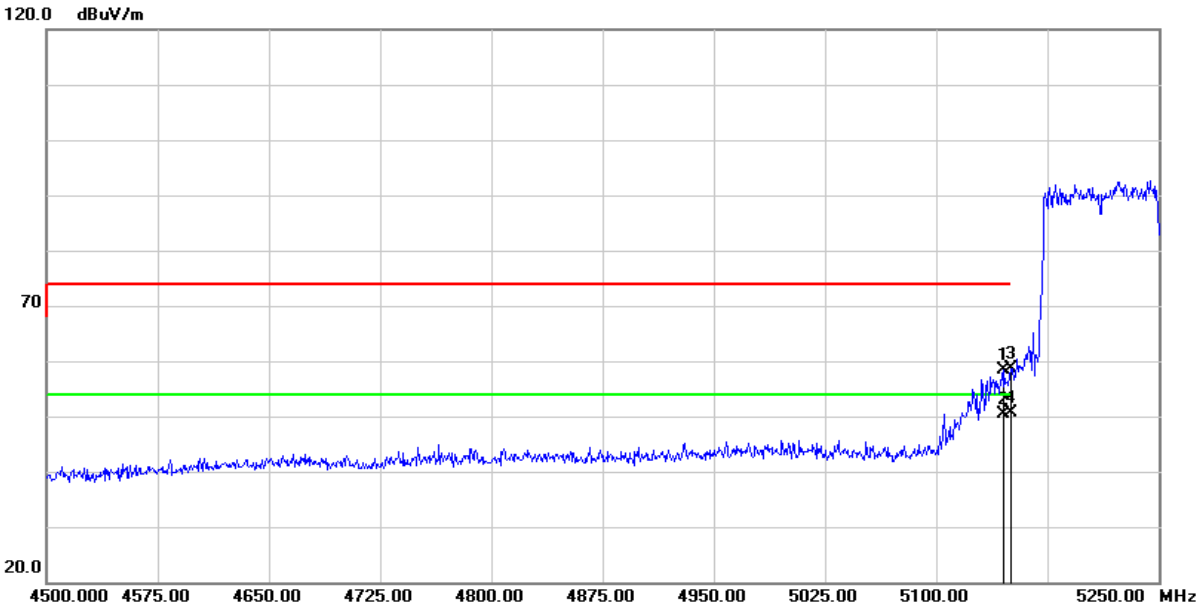


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5146.560	50.56	3.14	53.70	74.00	-20.30	peak
2	5146.560	36.87	3.14	40.01	54.00	-13.99	AVG
3	5150.000	53.59	3.14	56.73	74.00	-17.27	peak
4	5150.000	38.85	3.14	41.99	54.00	-12.01	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 4：Transmit (802.11ac VHT80 MCS0)	Test Date :	2024/08/01
Test Channel :	CH42(5210MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

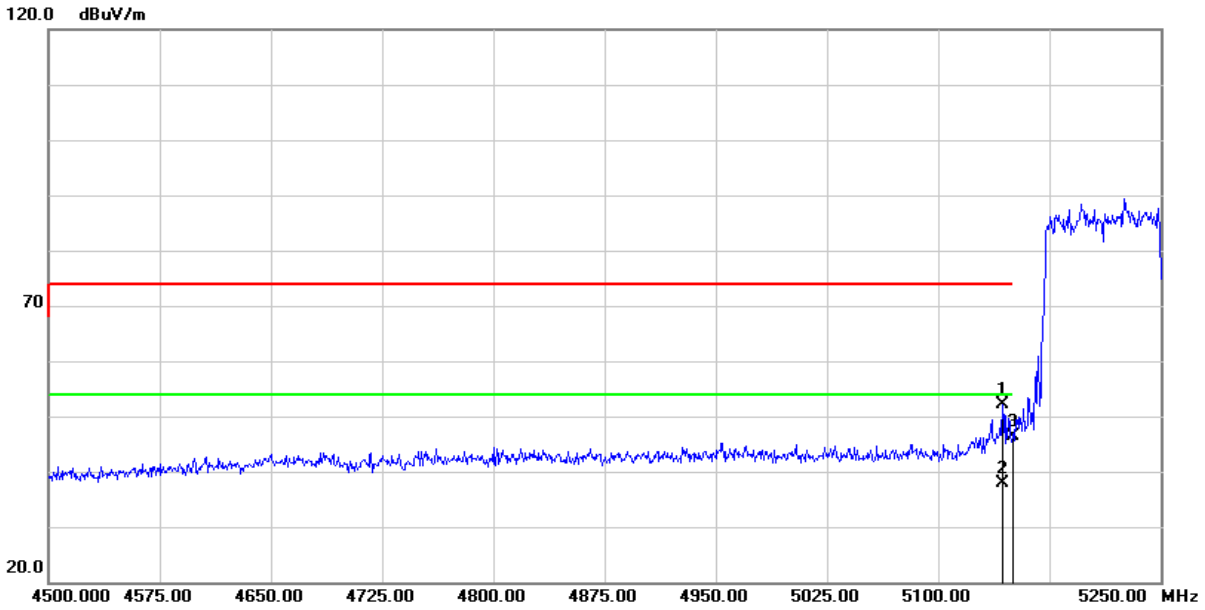


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5145.750	55.34	3.14	58.48	74.00	-15.52	peak
2	5145.750	47.33	3.14	50.47	54.00	-3.53	AVG
3	5150.000	55.50	3.14	58.64	74.00	-15.36	peak
4	5150.000	47.49	3.14	50.63	54.00	-3.37	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 4：Transmit (802.11ac VHT80 MCS0)	Test Date :	2024/08/01
Test Channel :	CH42(5210MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

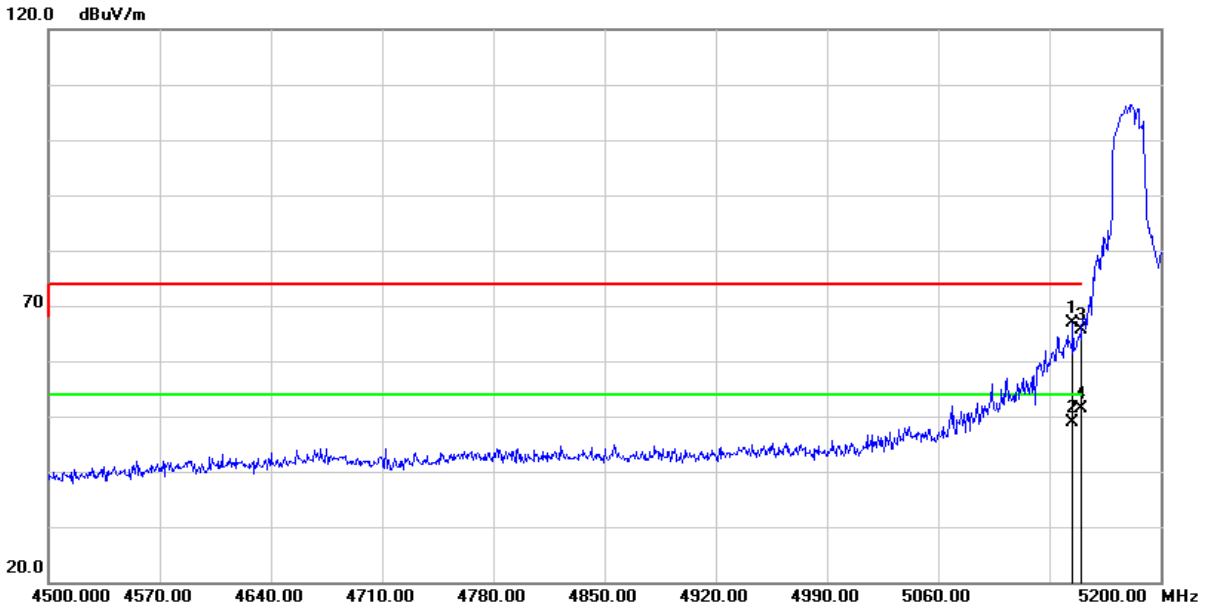


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5143.500	49.01	3.14	52.15	74.00	-21.85	peak
2	5143.500	34.66	3.14	37.80	54.00	-16.20	AVG
3	5150.000	43.21	3.14	46.35	74.00	-27.65	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/24
Test Channel :	CH36(5180MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51 %

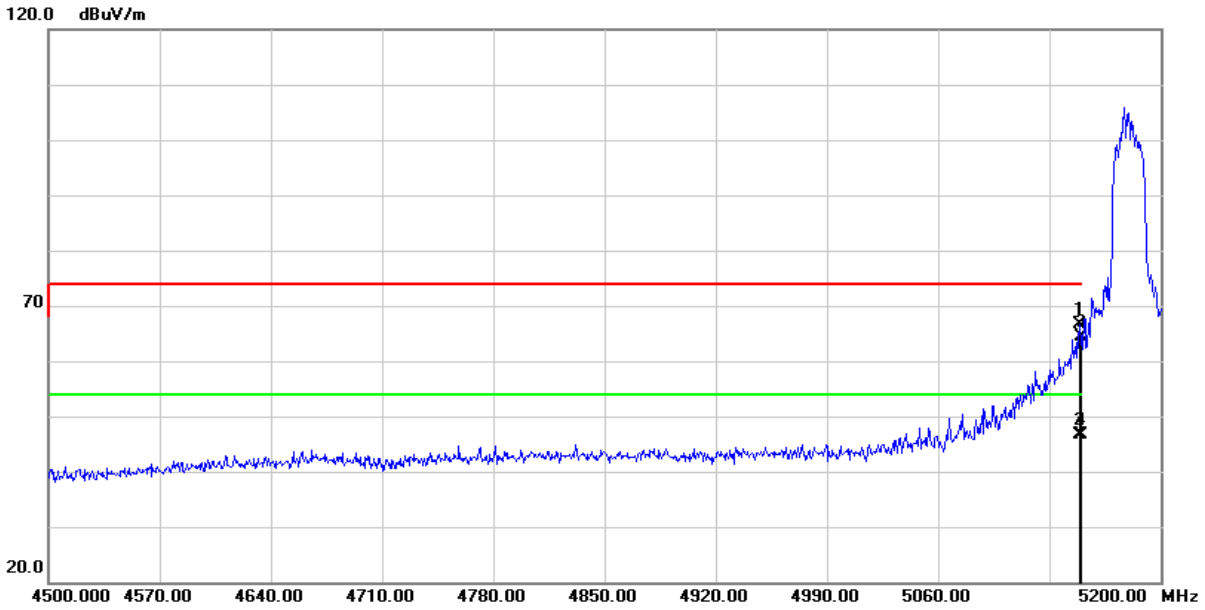


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5144.700	64.37	2.50	66.87	74.00	-7.13	peak
2	5144.700	46.45	2.50	48.95	54.00	-5.05	AVG
3	5150.000	63.02	2.50	65.52	74.00	-8.48	peak
4	5150.000	48.85	2.50	51.35	54.00	-2.65	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/24
Test Channel :	CH36(5180MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51 %

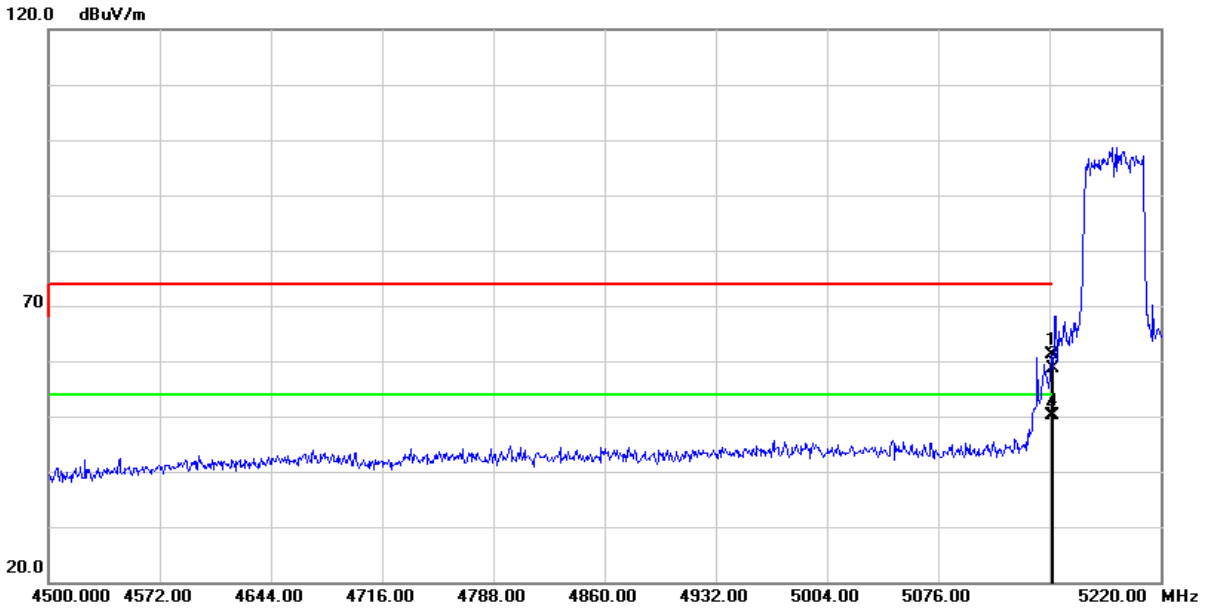


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5148.900	64.19	2.50	66.69	74.00	-7.31	peak
2	5148.900	44.18	2.50	46.68	54.00	-7.32	AVG
3	5150.000	61.77	2.50	64.27	74.00	-9.73	peak
4	5150.000	44.03	2.50	46.53	54.00	-7.47	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 6：Transmit (802.11ax HE40M MCS0)	Test Date :	2024/08/24
Test Channel :	CH38(5190MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51 %

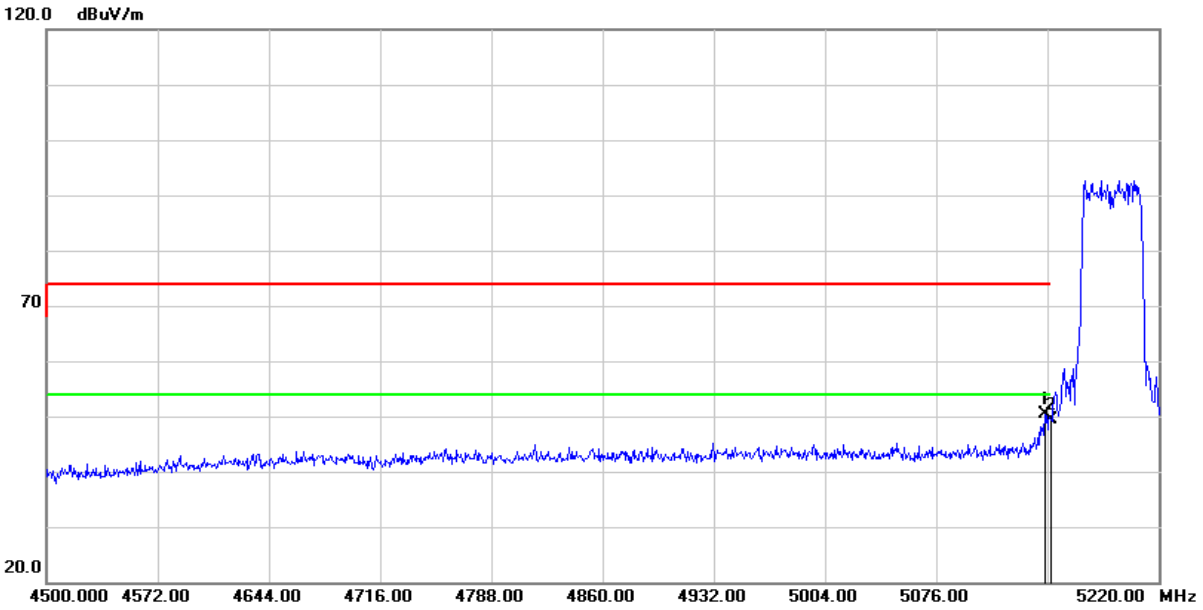


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5149.440	58.62	2.50	61.12	74.00	-12.88	peak
2	5149.440	47.59	2.50	50.09	54.00	-3.91	AVG
3	5150.000	56.19	2.50	58.69	74.00	-15.31	peak
4	5150.000	47.65	2.50	50.15	54.00	-3.85	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 6：Transmit (802.11ax HE40M MCS0)	Test Date :	2024/08/24
Test Channel :	CH38(5190MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51 %

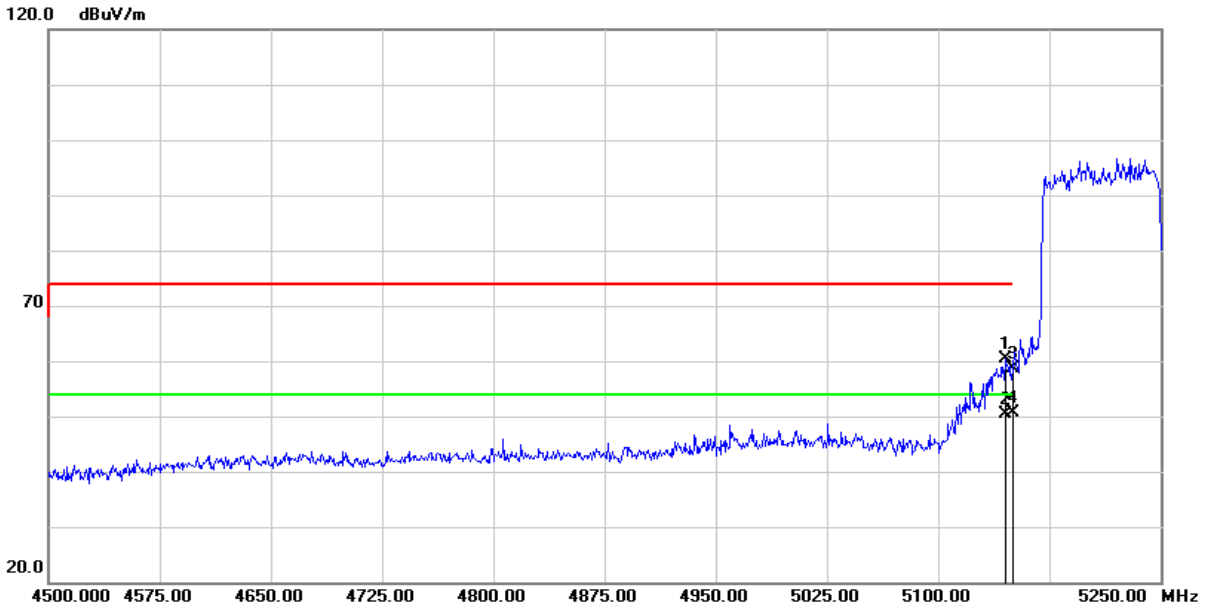


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5146.560	47.99	2.50	50.49	74.00	-23.51	peak
2	5150.000	46.92	2.50	49.42	74.00	-24.58	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 7：Transmit (802.11ax HE80M MCS0)	Test Date :	2024/08/24
Test Channel :	CH42(5210MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51 %

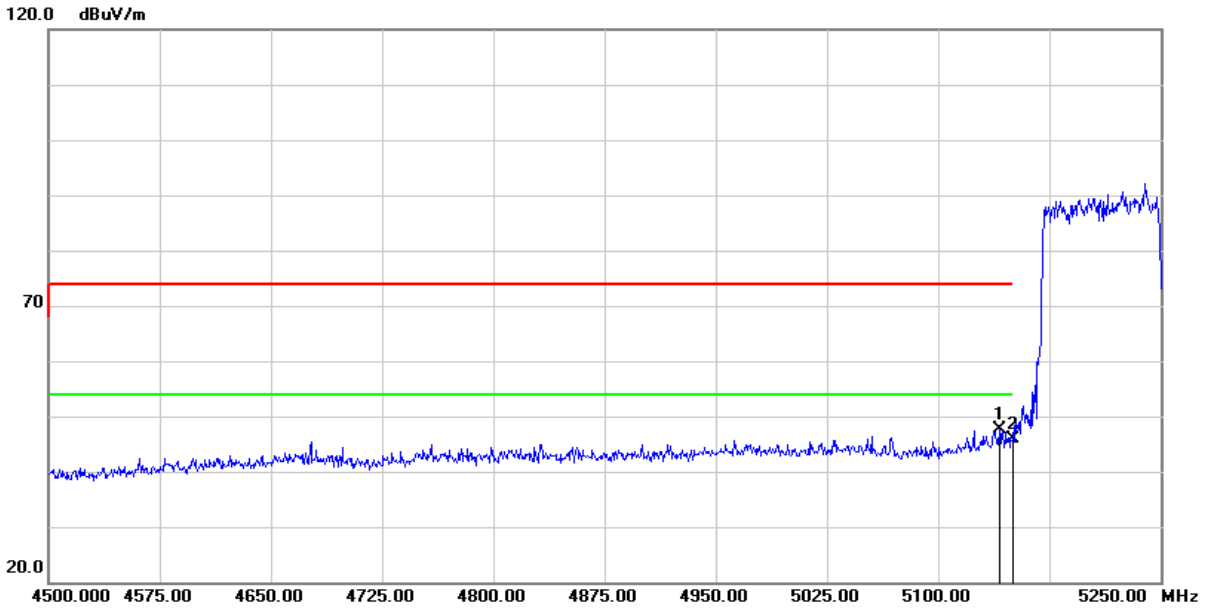


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5145.000	57.89	2.50	60.39	74.00	-13.61	peak
2	5145.000	47.95	2.50	50.45	54.00	-3.55	AVG
3	5150.000	56.15	2.50	58.65	74.00	-15.35	peak
4	5150.000	48.23	2.50	50.73	54.00	-3.27	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 7：Transmit (802.11ax HE80M MCS0)	Test Date :	2024/08/24
Test Channel :	CH42(5210MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5141.250	45.22	2.48	47.70	74.00	-26.30	peak
2	5150.000	43.41	2.50	45.91	74.00	-28.09	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

2.5.6Test Result of Radiated Spurious Emission Measurement

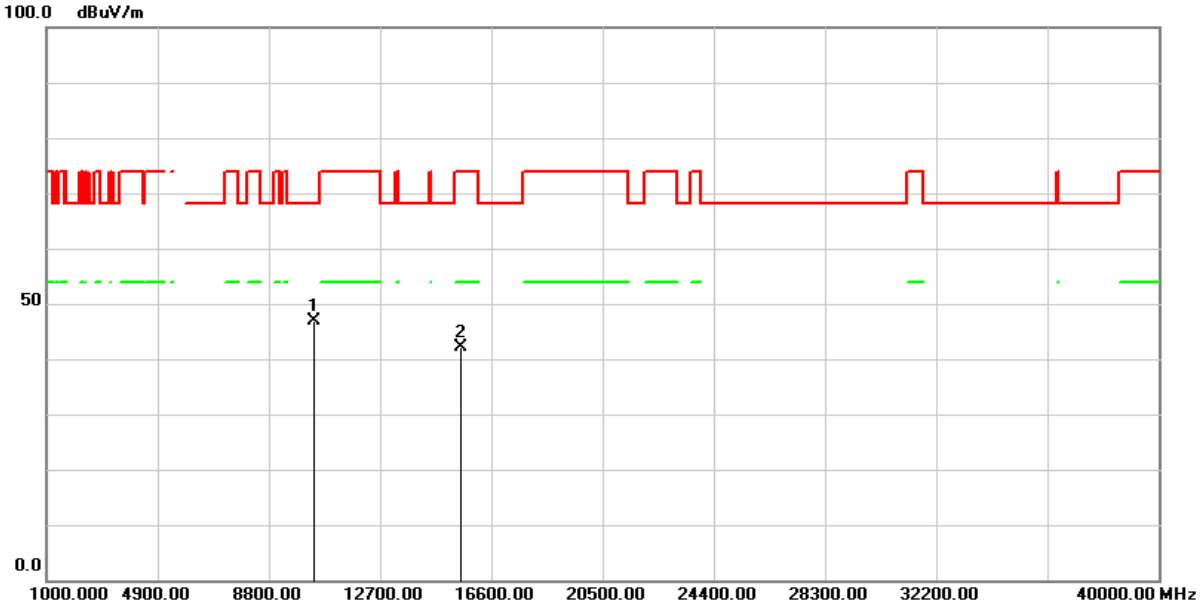
(1) The radiation measurement frequency is 9kHz ~ 30MHz. The interference value of this frequency range is less than the limit value of 20 dB. It is considered that the background noise value is not recorded.

(2) The following table shows the radiation measurement frequency from 30MHz to 40GHz, pre-scanning in the X, Y and Z axes. The worst case (X-axis) is documented in this report.

Test Frequency			
RF	**802.11a / 802.11ac VHT20 802.11ax HT20**	**802.11ac VHT40 802.11ax HT40**	**802.11ac VHT80 802.11ax HT80**
Tx	CH36 (5180MHz) CH40 (5200MHz) CH48 (5240MHz)	CH38 (5190MHz) CH46 (5230MHz)	CH42 (5210MHz)

Above 1GHz Data

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/02
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

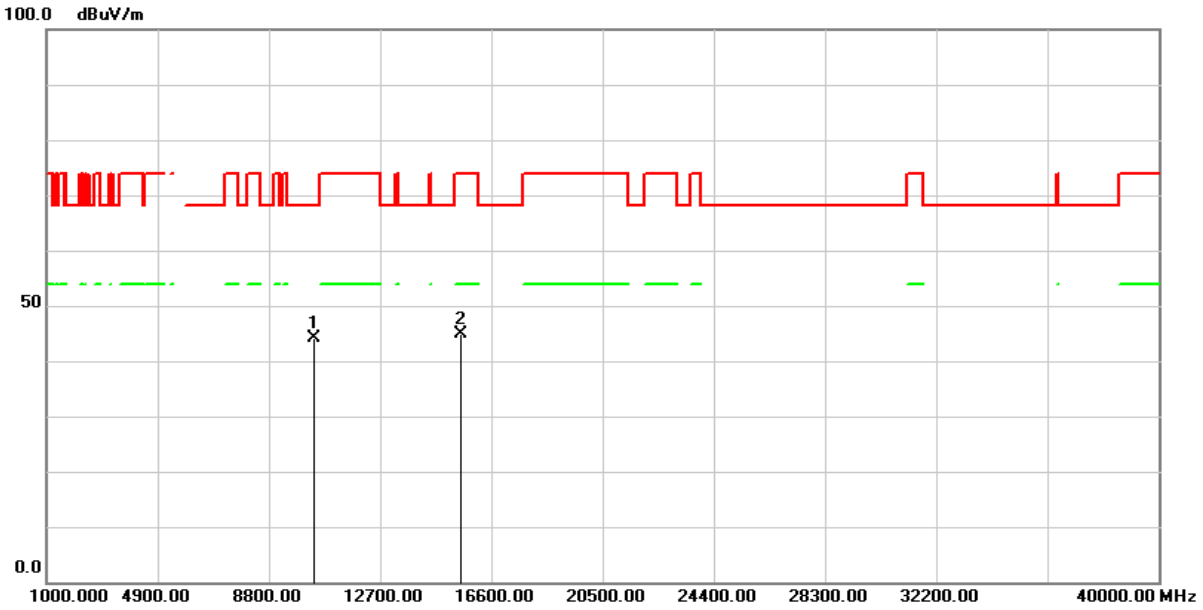


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10360.000	57.02	-10.05	46.97	68.20	-21.23	peak
2	15540.000	50.01	-7.80	42.21	74.00	-31.79	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/02
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

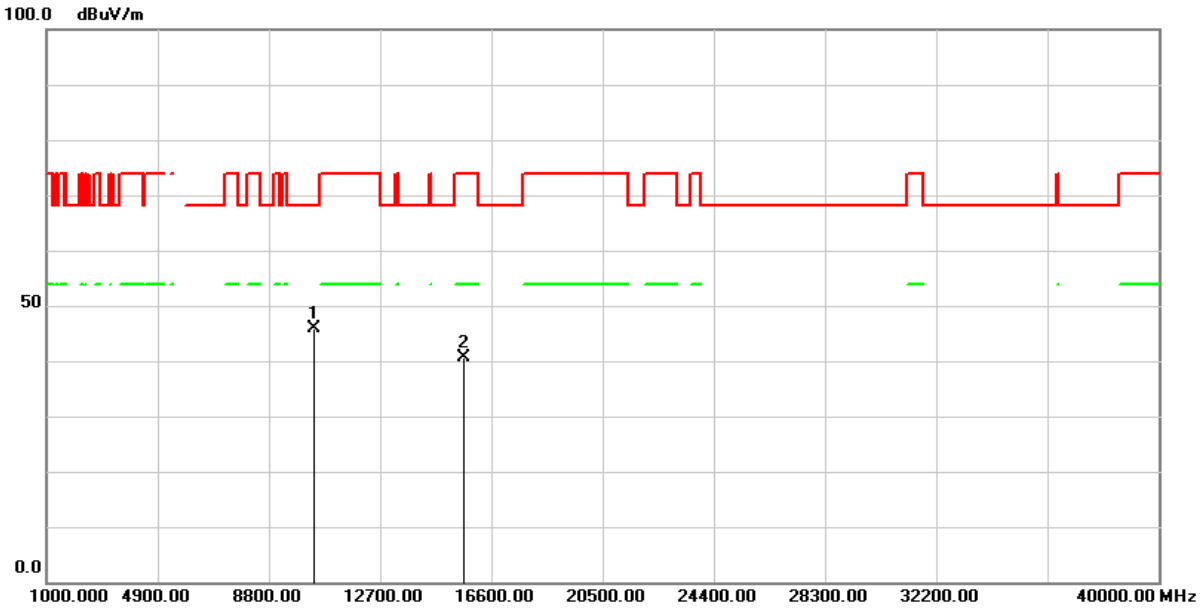


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10360.000	54.20	-10.05	44.15	68.20	-24.05	peak
2	15540.000	52.58	-7.80	44.78	74.00	-29.22	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	**Test Date :**	2024/08/02
Test Channel :	CH40(5200MHz)	**Temperature :**	24.9 °C
Polarization :	Horizontal	**Relative Humidity :**	56 %

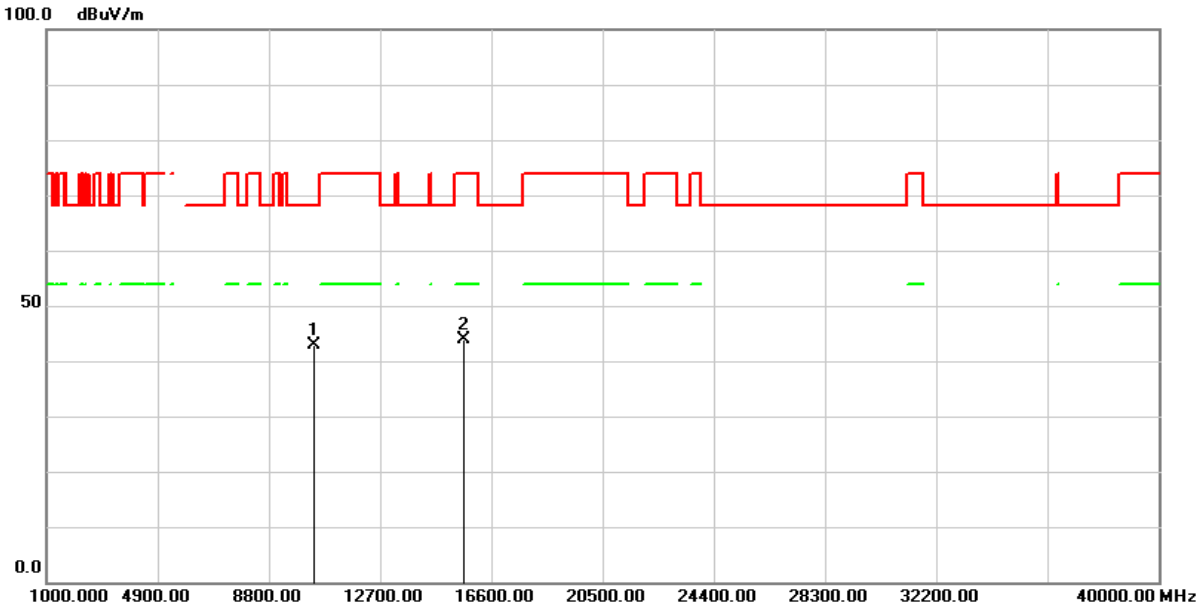


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.000	55.95	-9.95	46.00	68.20	-22.20	peak
2	15600.000	48.32	-7.79	40.53	74.00	-33.47	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/02
Test Channel :	CH40(5200MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

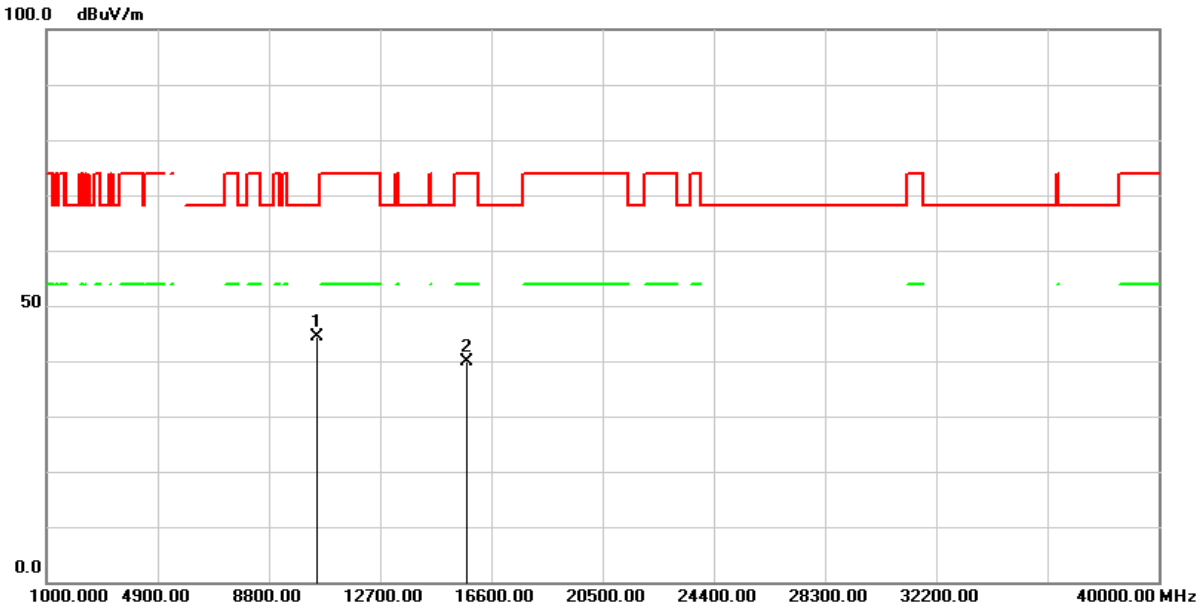


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.000	52.73	-9.95	42.78	68.20	-25.42	peak
2	15600.000	51.58	-7.79	43.79	74.00	-30.21	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/02
Test Channel :	CH48(5240MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

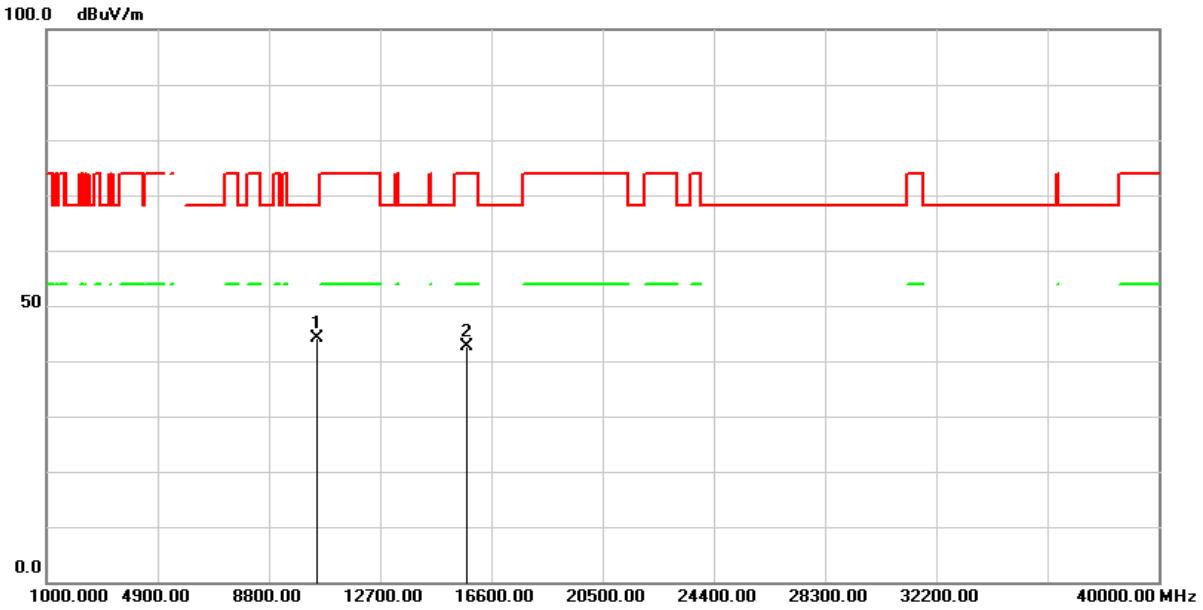


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.000	54.34	-9.97	44.37	68.20	-23.83	peak
2	15720.000	47.53	-7.62	39.91	74.00	-34.09	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/02
Test Channel :	CH48(5240MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

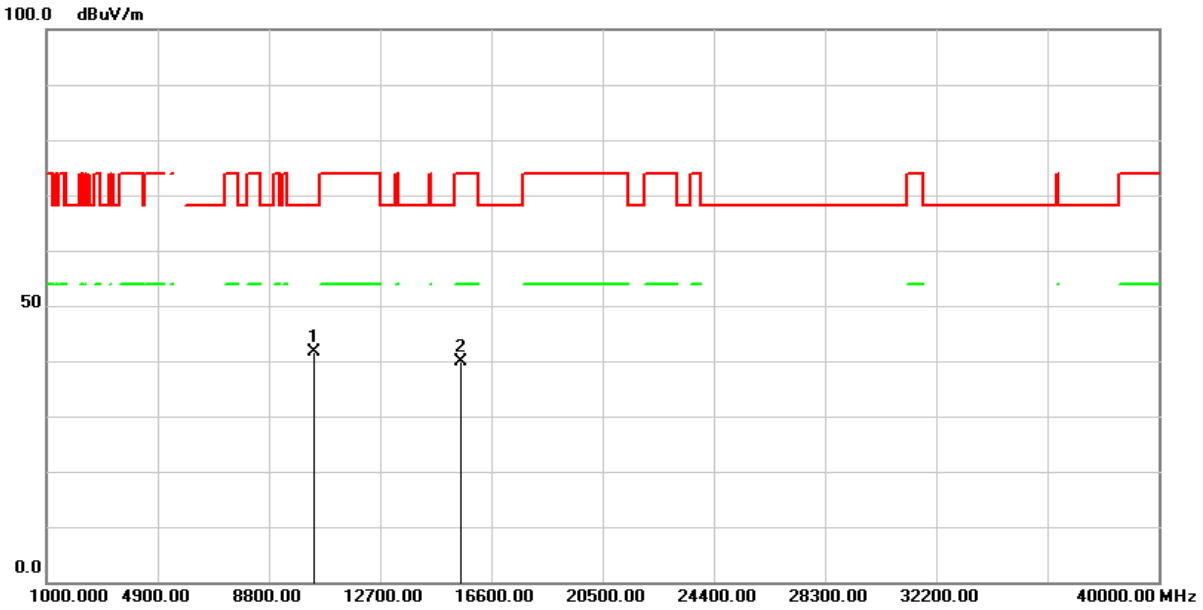


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.000	54.00	-9.97	44.03	68.20	-24.17	peak
2	15720.000	50.28	-7.62	42.66	74.00	-31.34	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/02
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

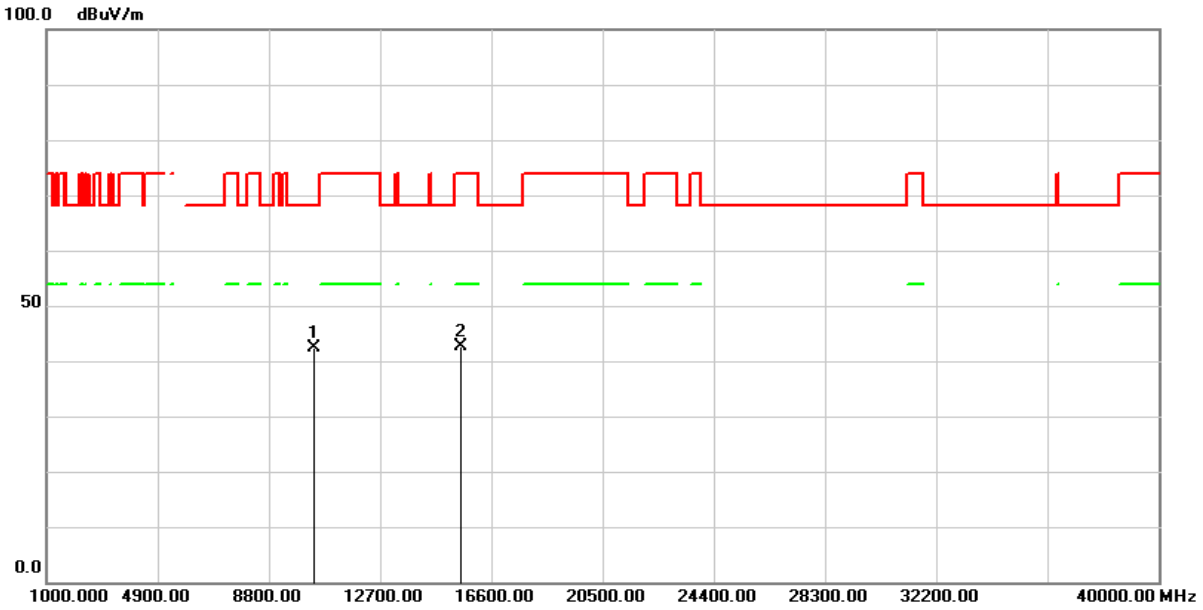


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10360.000	51.56	-10.05	41.51	68.20	-26.69	peak
2	15540.000	47.78	-7.80	39.98	74.00	-34.02	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/02
Test Channel :	CH36(5180MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

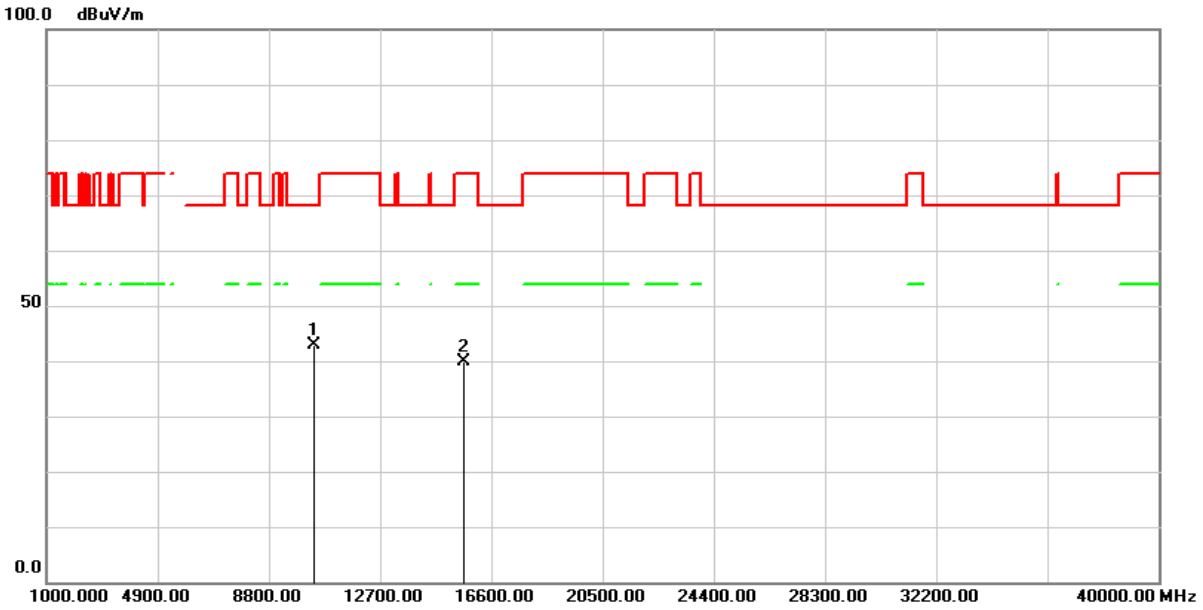


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10360.000	52.42	-10.05	42.37	68.20	-25.83	peak
2	15540.000	50.44	-7.80	42.64	74.00	-31.36	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/02
Test Channel :	CH44(5200MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

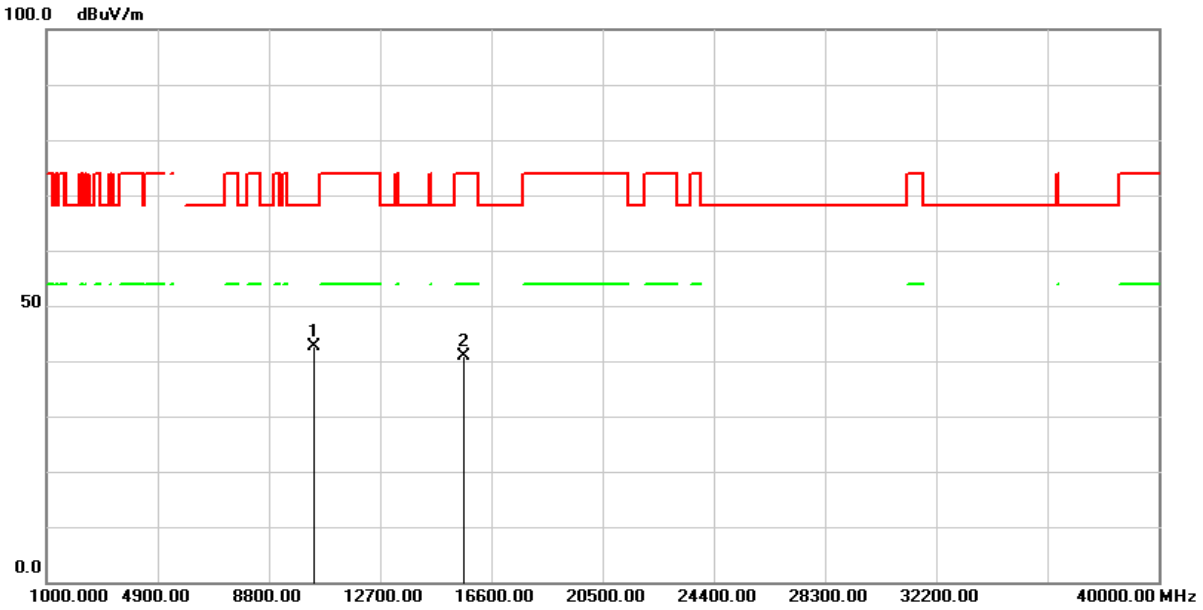


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.000	52.82	-9.95	42.87	68.20	-25.33	peak
2	15600.000	47.63	-7.79	39.84	74.00	-34.16	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/02
Test Channel :	CH44(5200MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

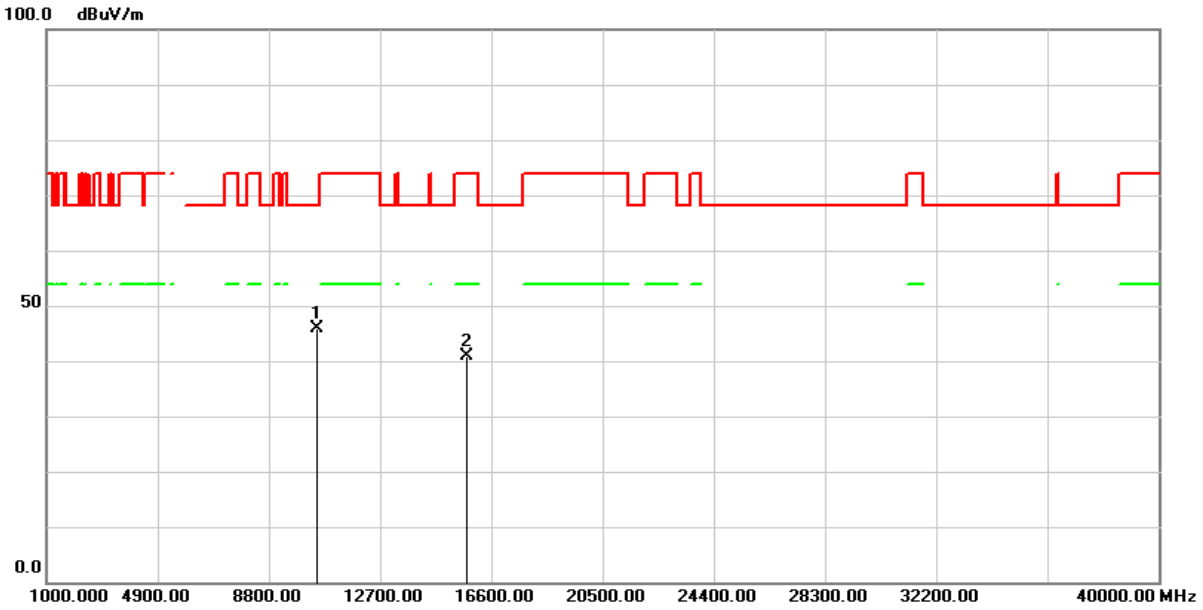


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.000	52.55	-9.95	42.60	68.20	-25.60	peak
2	15600.000	48.62	-7.79	40.83	74.00	-33.17	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/02
Test Channel :	CH48(5240MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

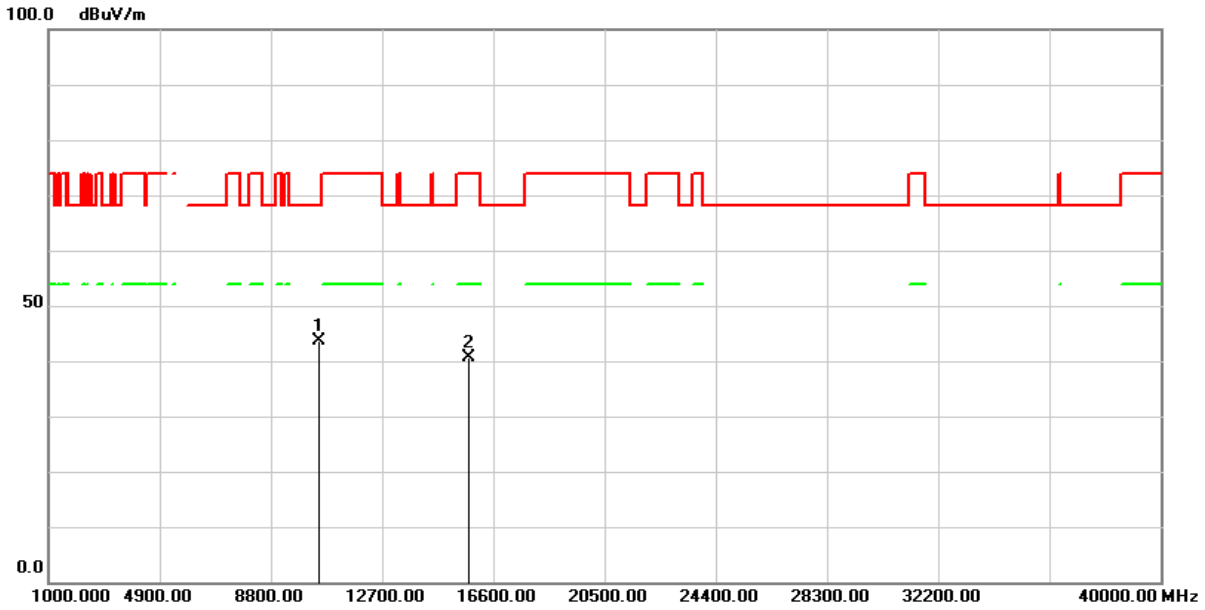


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.000	55.82	-9.97	45.85	68.20	-22.35	peak
2	15720.000	48.45	-7.62	40.83	74.00	-33.17	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 2：Transmit (802.11ac VHT20 MCS0)	Test Date :	2024/08/02
Test Channel :	CH48(5240MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

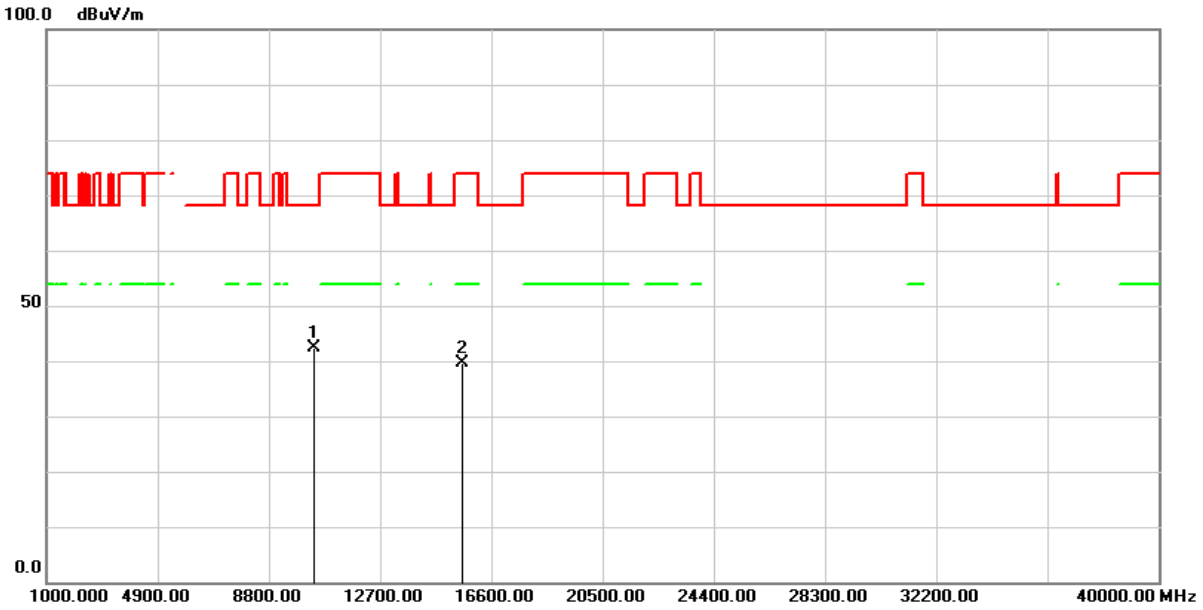


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.000	53.66	-9.97	43.69	68.20	-24.51	peak
2	15720.000	48.26	-7.62	40.64	74.00	-33.36	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 3：Transmit (802.11ac VHT40 MCS0)	Test Date :	2024/08/02
Test Channel :	CH38(5190MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

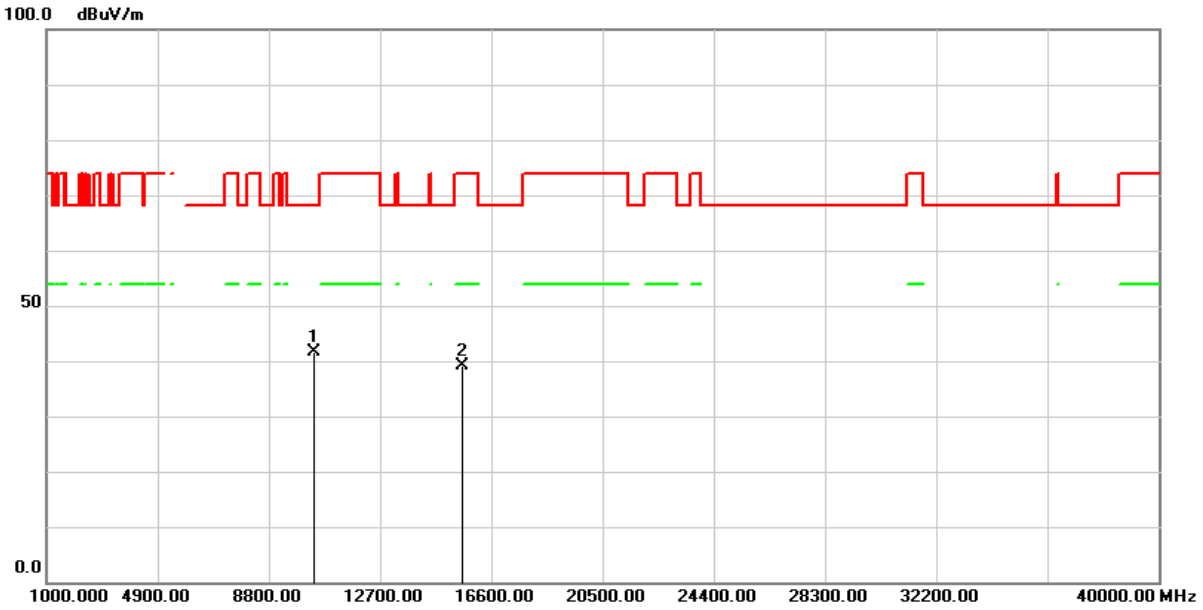


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10380.000	52.28	-10.00	42.28	68.20	-25.92	peak
2	15570.000	47.40	-7.79	39.61	74.00	-34.39	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 3：Transmit (802.11ac VHT40 MCS0)	Test Date :	2024/08/02
Test Channel :	CH38(5190MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

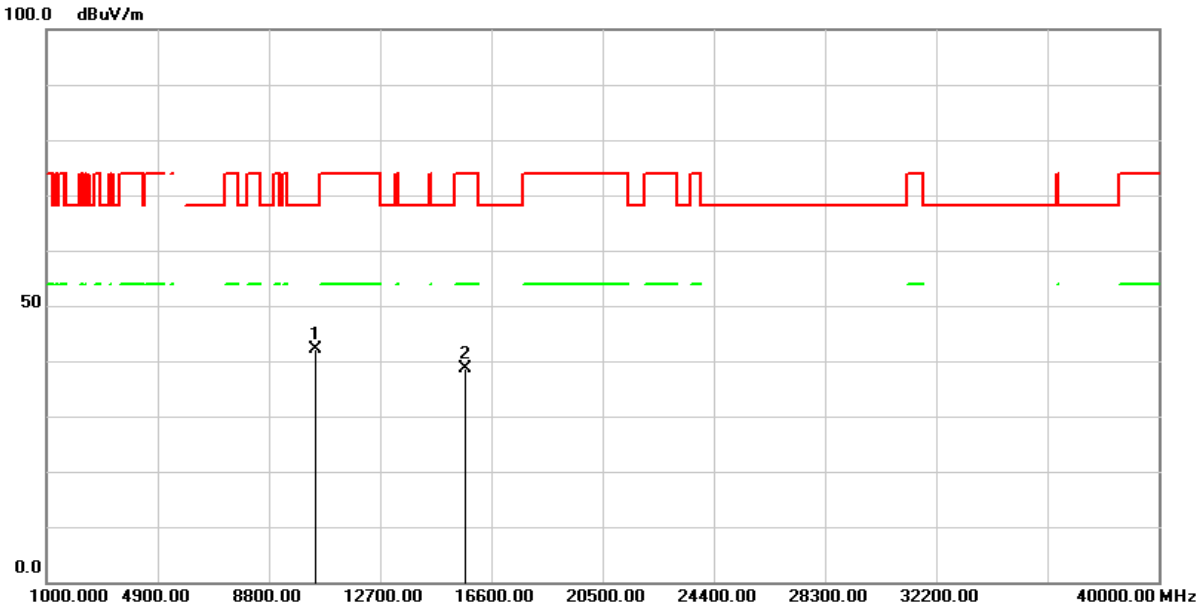


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10380.000	51.58	-10.00	41.58	68.20	-26.62	peak
2	15570.000	47.01	-7.79	39.22	74.00	-34.78	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 3：Transmit (802.11ac VHT40 MCS0)	Test Date :	2024/08/02
Test Channel :	CH46(5230MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

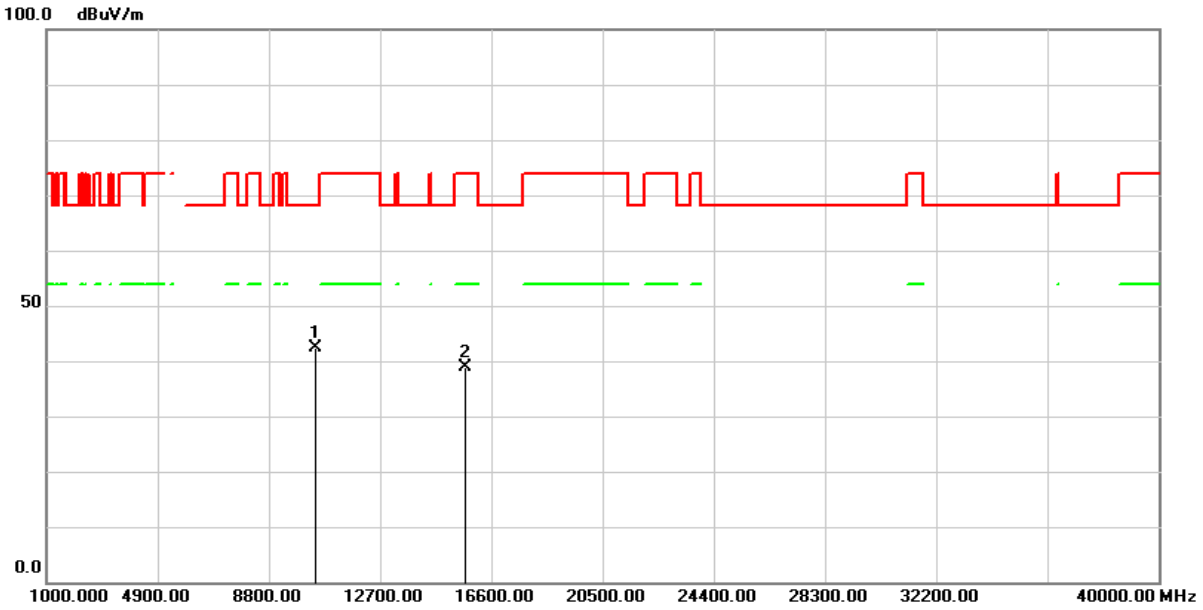


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10460.000	52.17	-9.94	42.23	68.20	-25.97	peak
2	15690.000	46.51	-7.81	38.70	74.00	-35.30	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 3：Transmit (802.11ac VHT40 MCS0)	Test Date :	2024/08/02
Test Channel :	CH46(5230MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

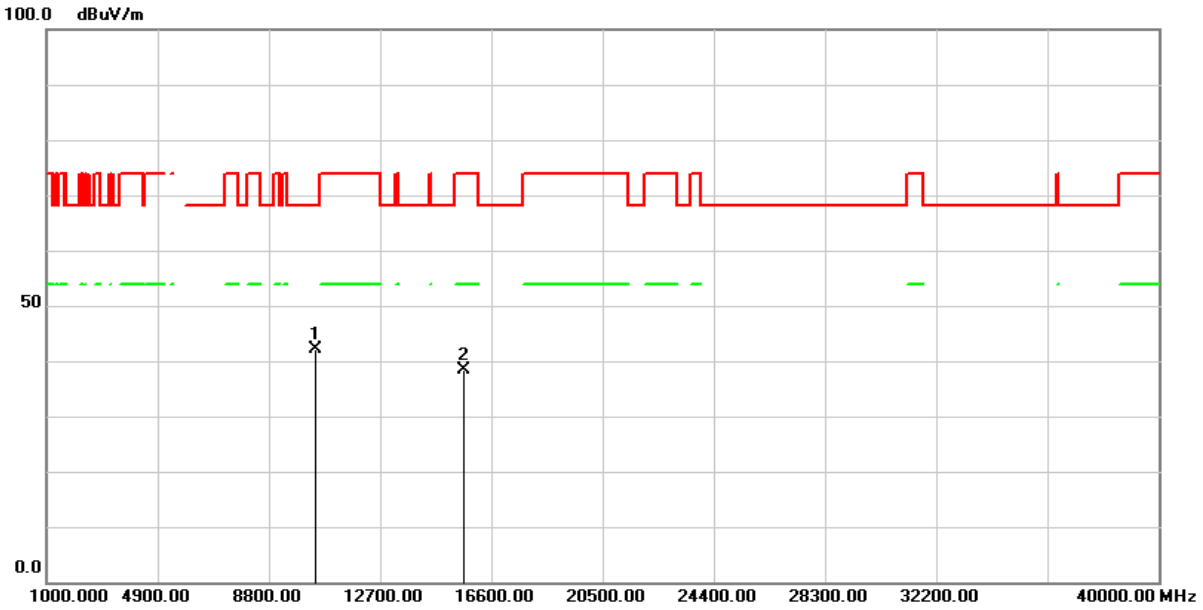


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10460.000	52.39	-9.94	42.45	68.20	-25.75	peak
2	15690.000	46.61	-7.81	38.80	74.00	-35.20	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 4：Transmit (802.11ac VHT80 MCS0)	Test Date :	2024/08/02
Test Channel :	CH42(5210MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

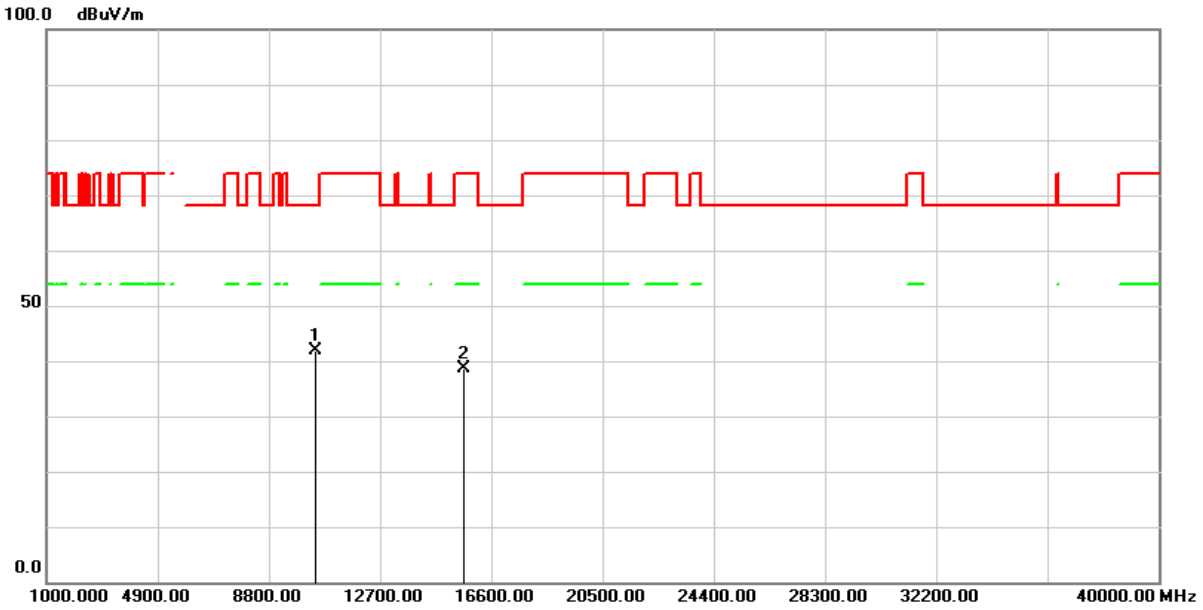


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10420.000	52.07	-9.94	42.13	68.20	-26.07	peak
2	15630.000	46.24	-7.98	38.26	74.00	-35.74	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 4：Transmit (802.11ac VHT80 MCS0)	Test Date :	2024/08/02
Test Channel :	CH42(5210MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %

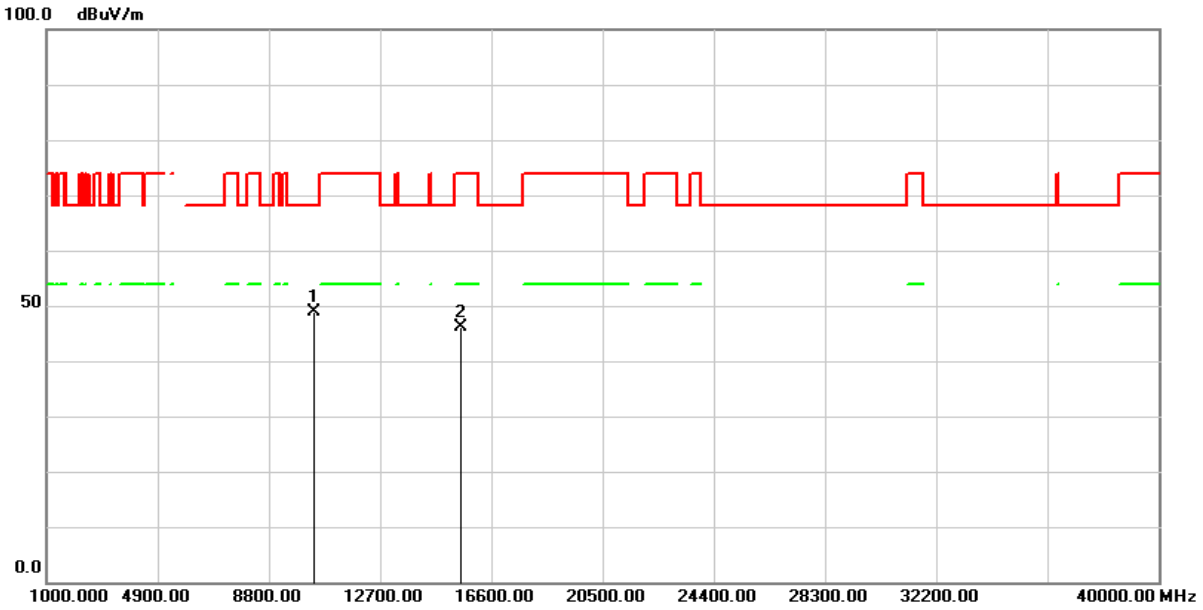


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10420.000	51.87	-9.94	41.93	68.20	-26.27	peak
2	15630.000	46.72	-7.98	38.74	74.00	-35.26	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/24
Test Channel :	CH36(5180MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51%

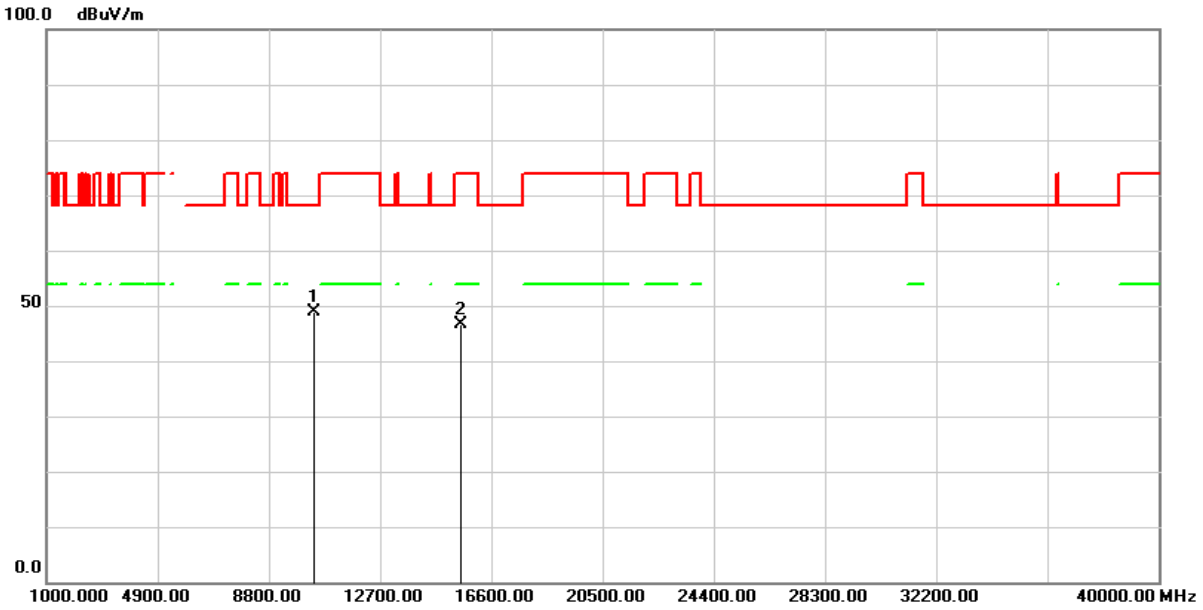


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10360.000	60.03	-11.08	48.95	68.20	-19.25	peak
2	15540.000	55.42	-9.24	46.18	74.00	-27.82	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/25
Test Channel :	CH36(5180MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51%

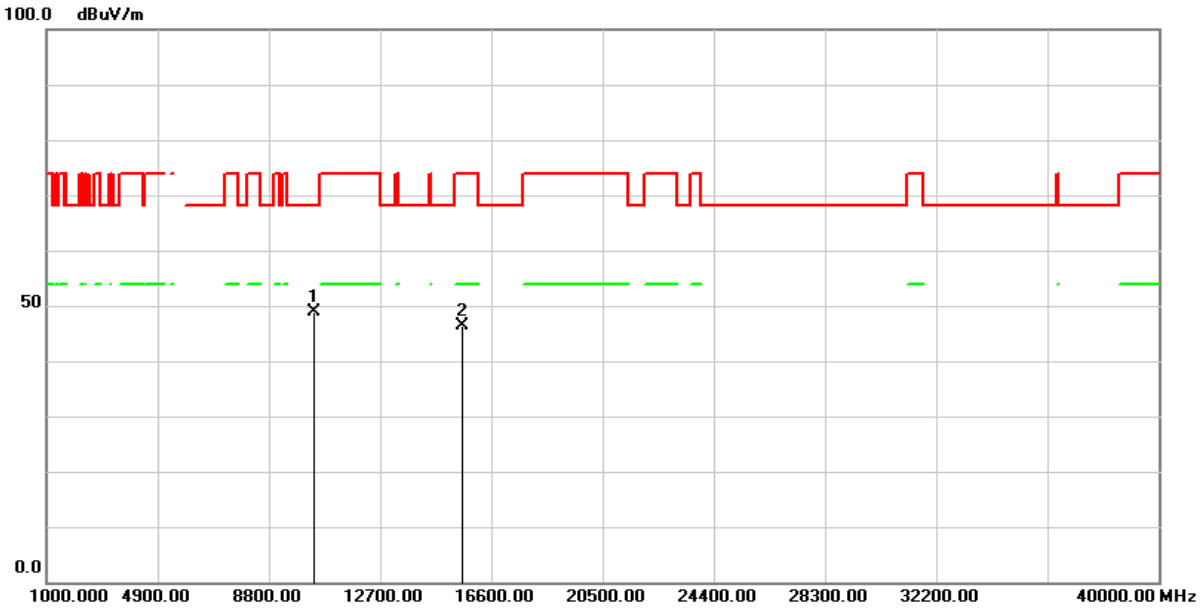


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10360.000	59.84	-11.08	48.76	68.20	-19.44	peak
2	15540.000	55.84	-9.24	46.60	74.00	-27.40	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/25
Test Channel :	CH44(5200MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51%

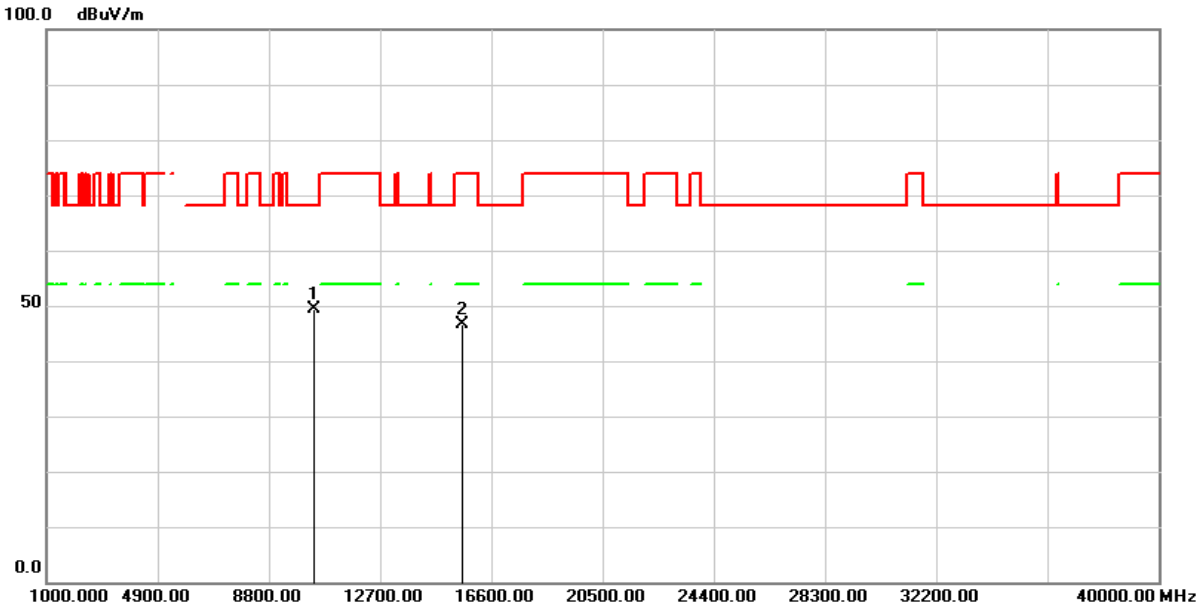


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.000	59.97	-10.99	48.98	68.20	-19.22	peak
2	15600.000	55.56	-9.26	46.30	74.00	-27.70	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/25
Test Channel :	CH44(5200MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51%

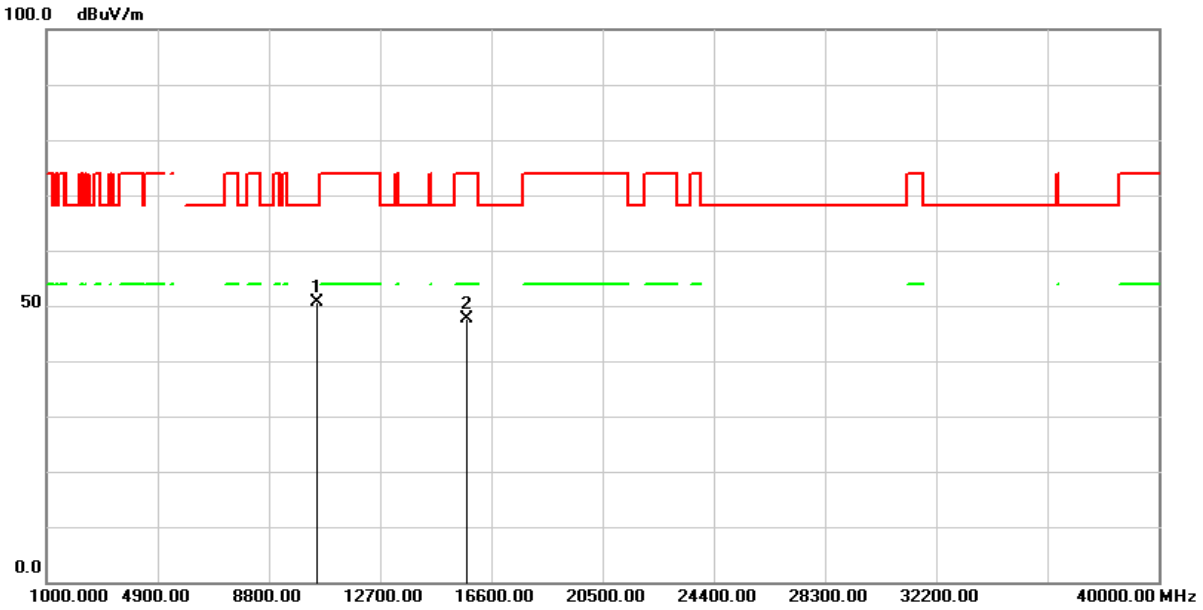


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.000	60.26	-10.99	49.27	68.20	-18.93	peak
2	15600.000	55.82	-9.26	46.56	74.00	-27.44	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/25
Test Channel :	CH48(5240MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51%

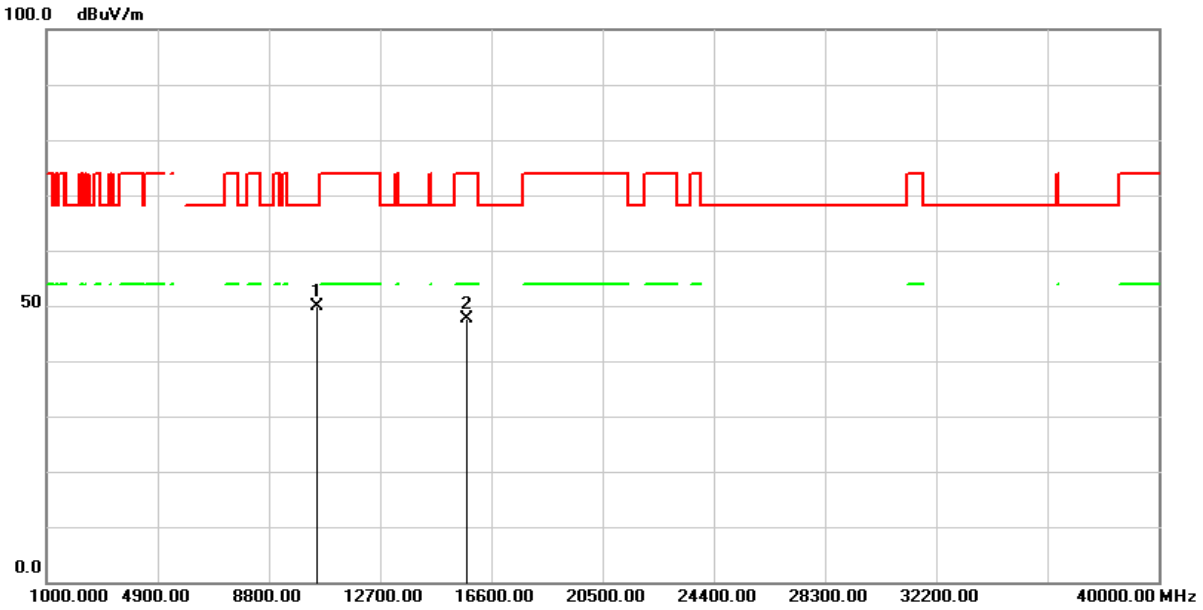


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.000	61.54	-11.01	50.53	68.20	-17.67	peak
2	15720.000	56.66	-9.12	47.54	74.00	-26.46	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 5：Transmit (802.11ax HE20M MCS0)	Test Date :	2024/08/25
Test Channel :	CH48(5240MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51%

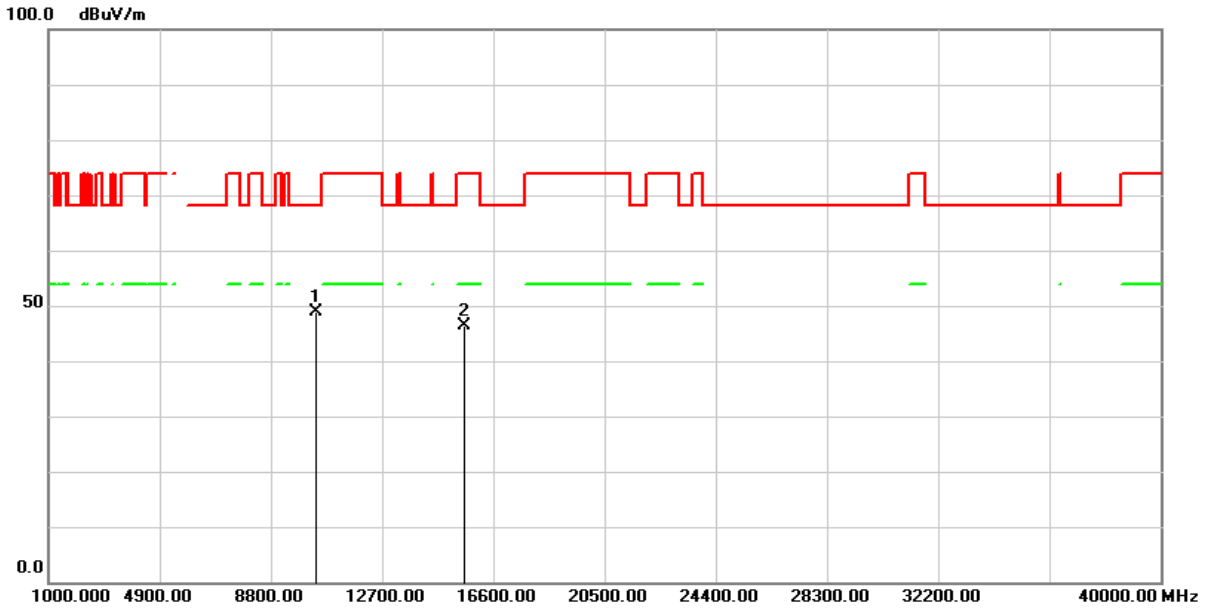


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.000	60.80	-11.01	49.79	68.20	-18.41	peak
2	15720.000	56.68	-9.12	47.56	74.00	-26.44	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 6：Transmit (802.11ax HE40M MCS0)	Test Date :	2024/08/25
Test Channel :	CH38(5190MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51%

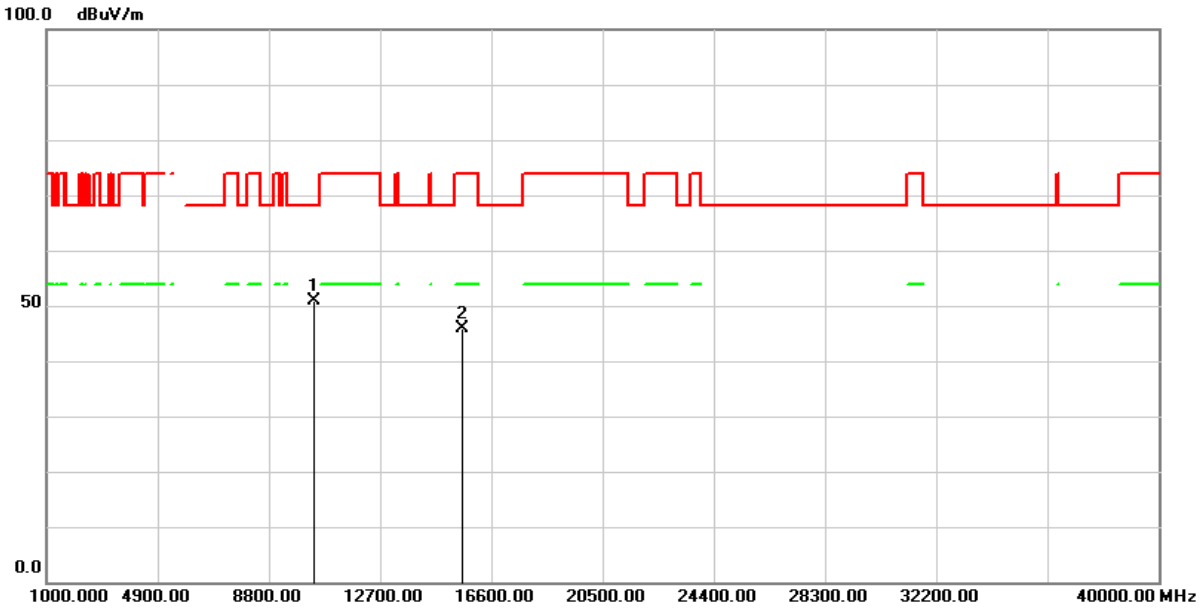


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10380.000	59.86	-11.04	48.82	68.20	-19.38	peak
2	15570.000	55.60	-9.24	46.36	74.00	-27.64	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 6：Transmit (802.11ax HE40M MCS0)	Test Date :	2024/08/25
Test Channel :	CH38(5190MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51%

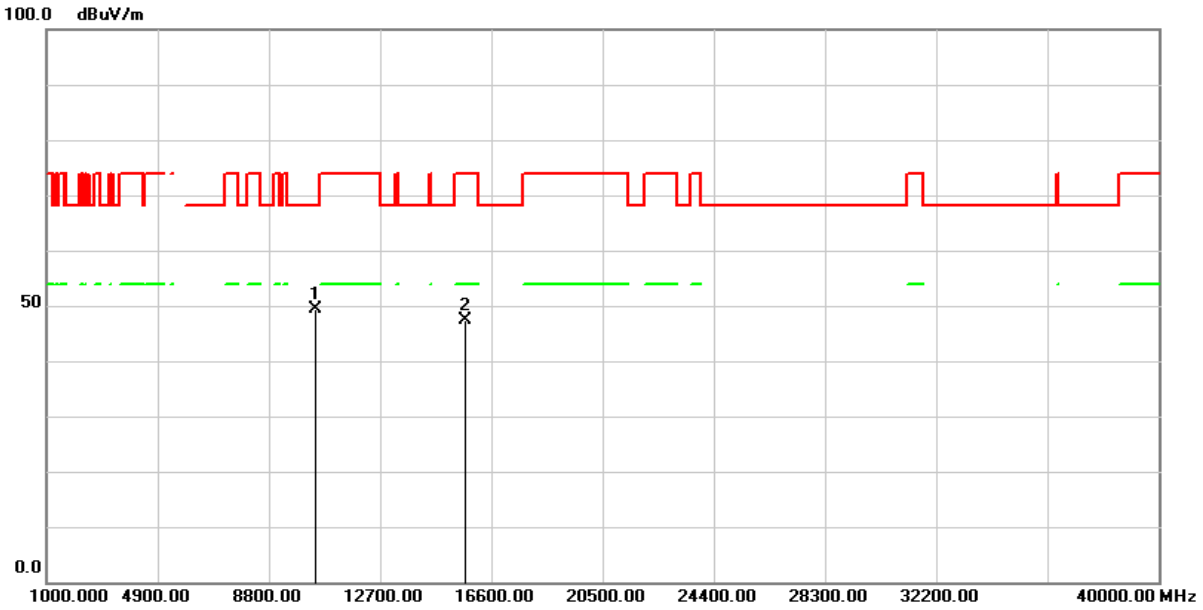


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10380.000	61.88	-11.04	50.84	68.20	-17.36	peak
2	15570.000	55.18	-9.24	45.94	74.00	-28.06	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 6：Transmit (802.11ax HE40M MCS0)	Test Date :	2024/08/25
Test Channel :	CH46(5230MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51%

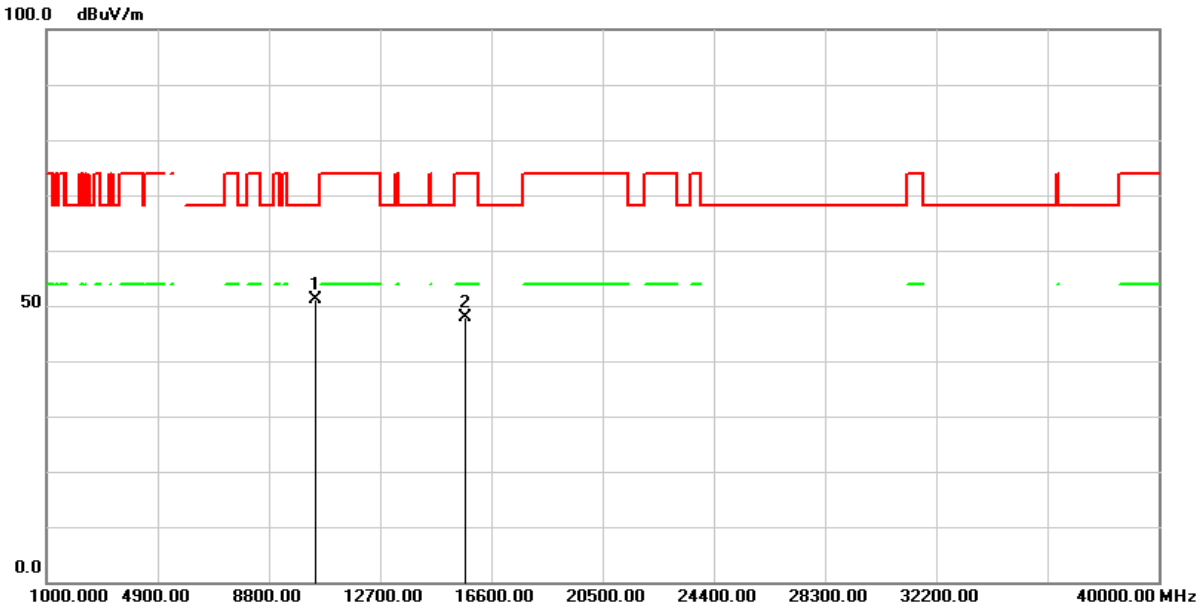


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10460.000	60.45	-10.98	49.47	68.20	-18.73	peak
2	15690.000	56.68	-9.30	47.38	74.00	-26.62	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 6：Transmit (802.11ax HE40M MCS0)	Test Date :	2024/08/25
Test Channel :	CH46(5230MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51%

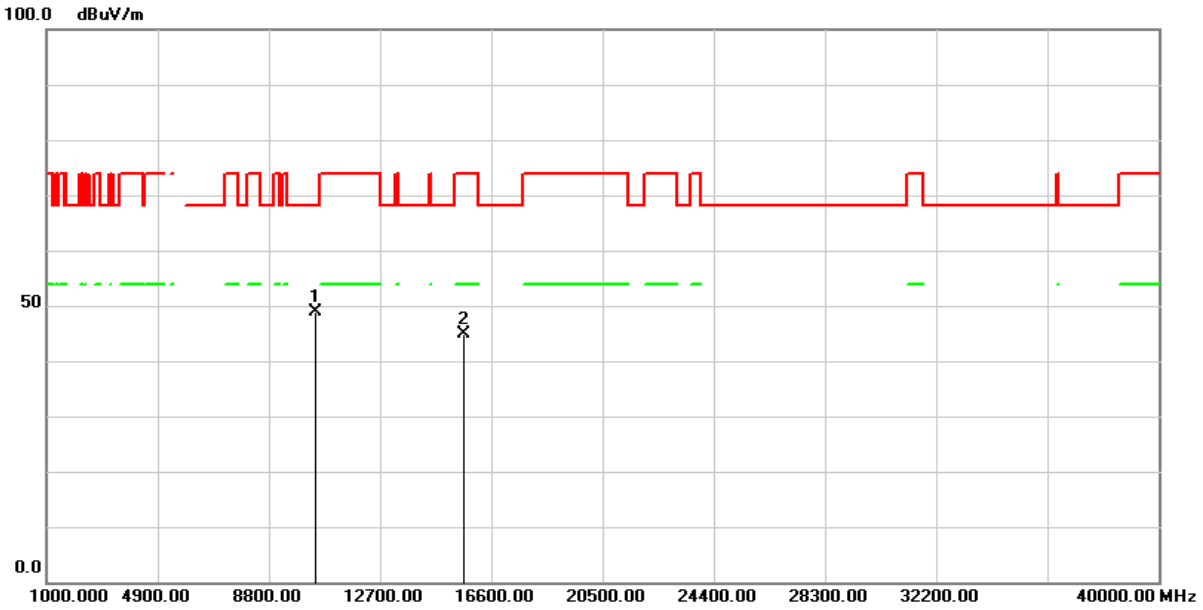


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10460.000	62.01	-10.98	51.03	68.20	-17.17	peak
2	15690.000	57.25	-9.30	47.95	74.00	-26.05	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 7：Transmit (802.11ax HE80M MCS0)	Test Date :	2024/08/24
Test Channel :	CH42(5210MHz)	Temperature :	25.1 °C
Polarization :	Horizontal	Relative Humidity :	51%

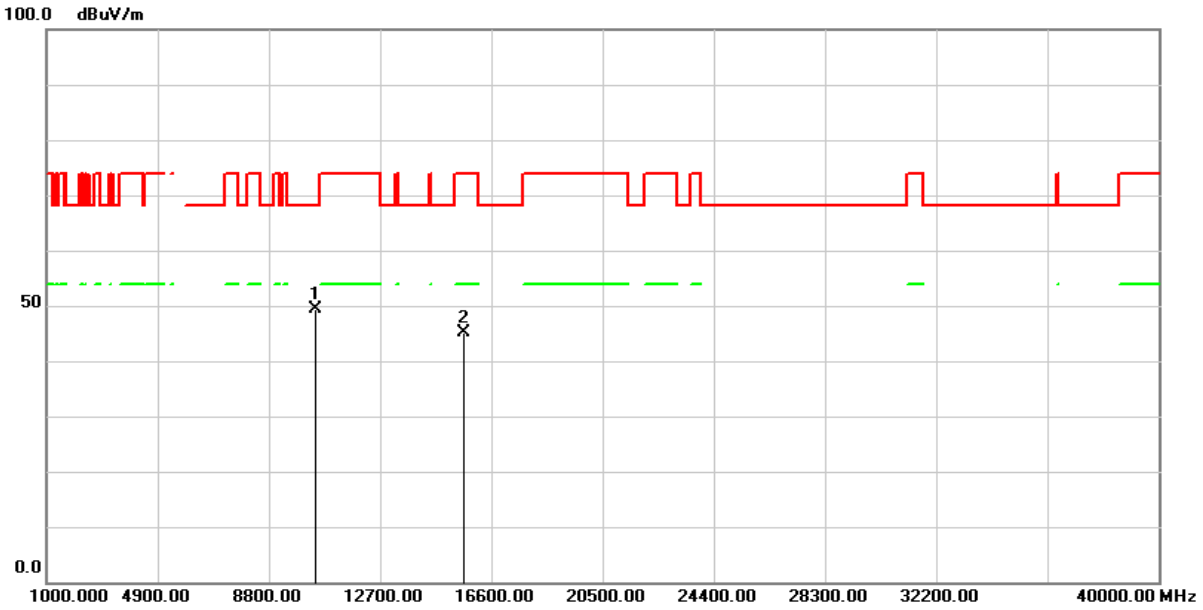


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10420.000	59.90	-10.98	48.92	68.20	-19.28	peak
2	15630.000	54.39	-9.46	44.93	74.00	-29.07	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 7：Transmit (802.11ax HE80M MCS0)	Test Date :	2024/08/24
Test Channel :	CH42(5210MHz)	Temperature :	25.1 °C
Polarization :	Vertical	Relative Humidity :	51%



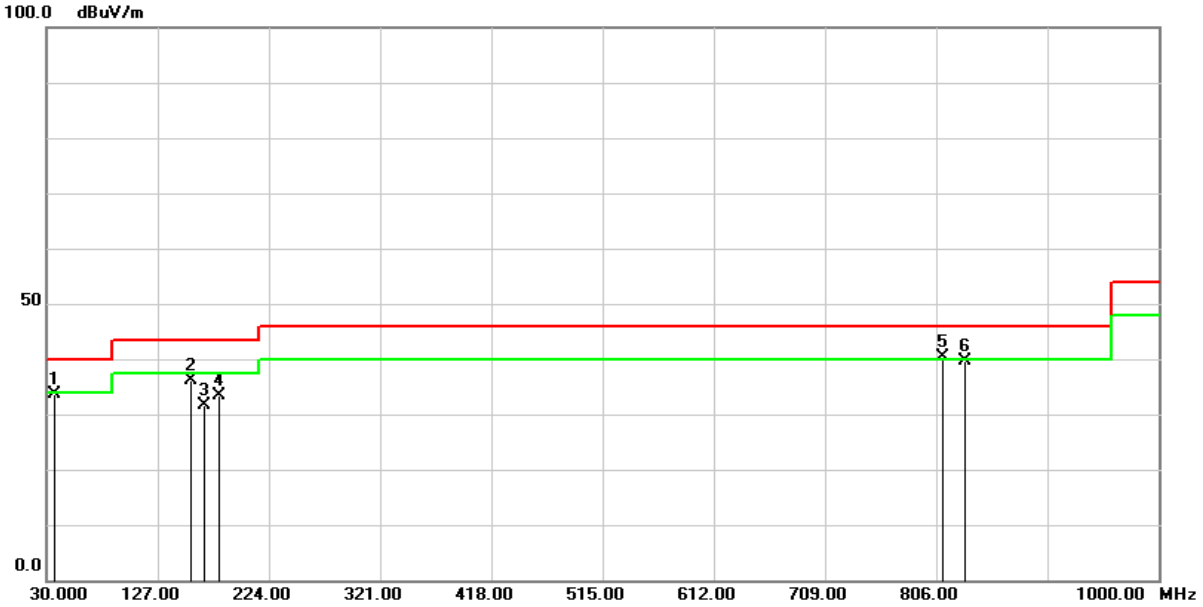
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10420.000	60.30	-10.98	49.32	68.20	-18.88	peak
2	15630.000	54.57	-9.46	45.11	74.00	-28.89	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Below 1GHz Data

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/01
Test Channel :	CH48(5240MHz)	Temperature :	24.9 °C
Polarization :	Horizontal	Relative Humidity :	56 %

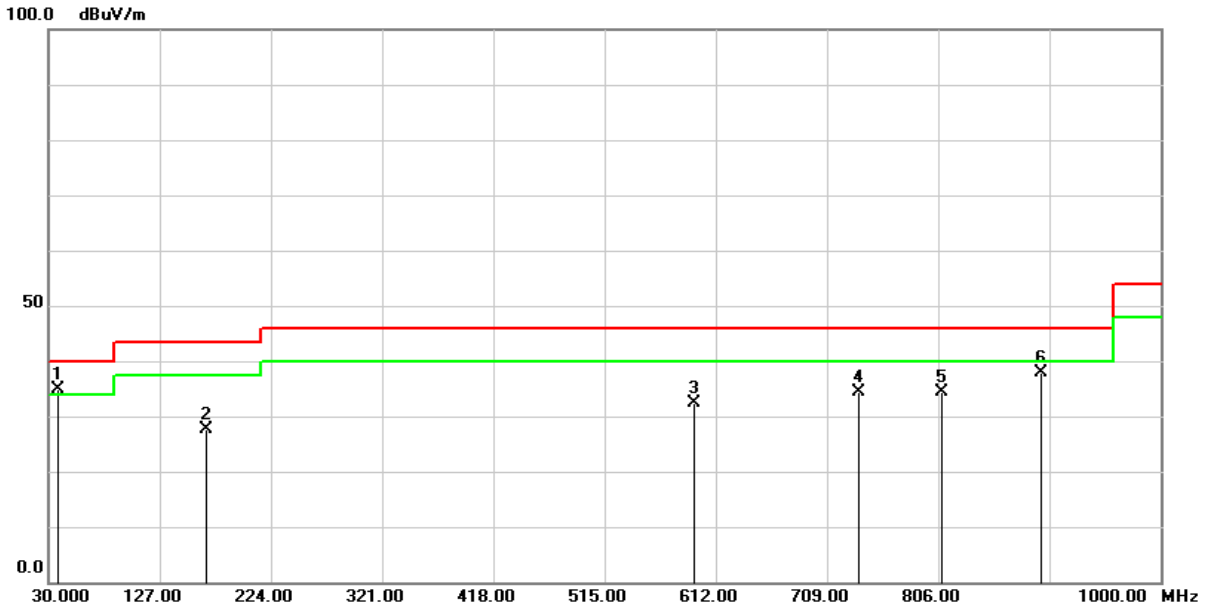


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.7900	46.15	-12.64	33.51	40.00	-6.49	QP
2	156.1000	47.05	-10.95	36.10	43.50	-7.40	QP
3	168.0130	42.90	-11.28	31.62	43.50	-11.88	QP
4	180.3500	45.90	-12.49	33.41	43.50	-10.09	QP
5	811.8200	38.60	1.88	40.48	46.00	-5.52	QP
6	831.2200	37.41	2.14	39.55	46.00	-6.45	QP

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	Test Date :	2024/08/01
Test Channel :	CH48(5240MHz)	Temperature :	24.9 °C
Polarization :	Vertical	Relative Humidity :	56 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	37.7600	47.29	-12.50	34.79	40.00	-5.21	QP
2	167.7400	38.87	-11.28	27.59	43.50	-15.91	QP
3	593.5700	34.62	-2.30	32.32	46.00	-13.68	QP
4	736.1600	33.82	0.58	34.40	46.00	-11.60	QP
5	808.9100	32.45	1.84	34.29	46.00	-11.71	QP
6	896.2100	34.83	3.12	37.95	46.00	-8.05	QP

Remark：

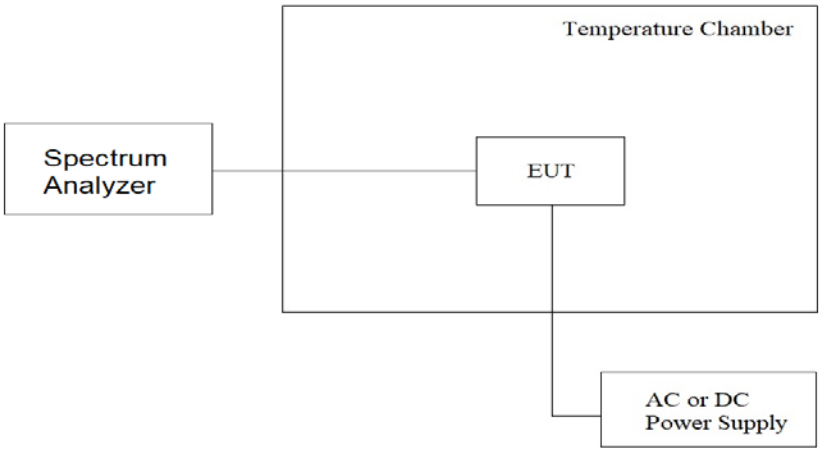
1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit, they do not need to be reported.

2.6 Frequency Stability

2.6.1 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

2.6.2 Test Setup



2.6.3 Test Procedure

1. The test shall be performed under 85% ~115% of the nominal voltage.
2. Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

2.6.4 Test Result

Band I selected frequency: 5180MHz

Temperature (℃)	Voltage (V)	Tolerance (ppm)				Limit (ppm)	Result
		Start	2 min	5 min	10 min		
20	4.75	-2.587	-10.463	-17.799	14.575	20	Pass
	5	-2.664	-13.958	-17.954	-18.919	20	Pass
	5.25	-2.432	-7.297	9.498	7.027	20	Pass

Temperature (℃)	Voltage (V)	Tolerance (ppm)				Limit (ppm)	Result
		Start	2 min	5 min	10 min		
-20	5	-9.266	-4.749	-0.019	18.166	20	Pass
-10		7.799	9.575	1.332	-6.834	20	Pass
0		0.598	-1.892	3.050	9.826	20	Pass
10		1.660	-0.714	-18.456	16.931	20	Pass
20		-2.510	-9.768	-14.807	1.680	20	Pass
30		-6.351	11.409	-13.707	-4.923	20	Pass
40		15.444	17.452	10.714	5.077	20	Pass
45		-2.625	1.062	-1.815	-18.764	20	Pass
50		-12.259	3.243	-2.432	-14.749	20	Pass

2.7 Antenna Requirement

2.7.1 Applicable Standard

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.

An intentional radiator shall be designed to ensure that no antenna other than as furnished by the responsible party shall be used with the device. If transmitting antennas of directional gain greater than 6dBi are using the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi, for compliance to FCC 47CFR 15.407 (a) requirements.

2.7.2 Antenna Connected Construction

Non-standard antenna connector is used.

2.7.3 Antenna Gain

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	Shenzhen Lejin radio frequency technology Co., LTD	040303020601	FPC Antenna	2.15 dBi for 5.15~5.25GHz
2	Shenzhen Lejin radio frequency technology Co., LTD	040303020601	FPC Antenna	2.15 dBi for 5.15~5.25GHz

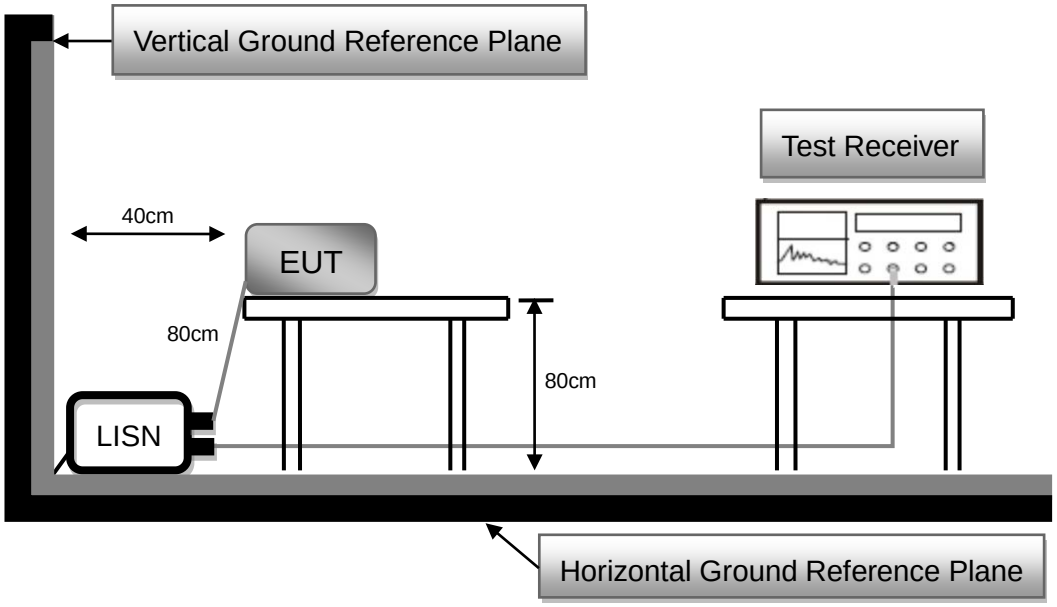
2.8 AC Conducted Emissions Measurement

2.8.1 Limit

Frequency (MHz)	FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50

*Decreases with the logarithm of the frequency

2.8.2 Test Setup

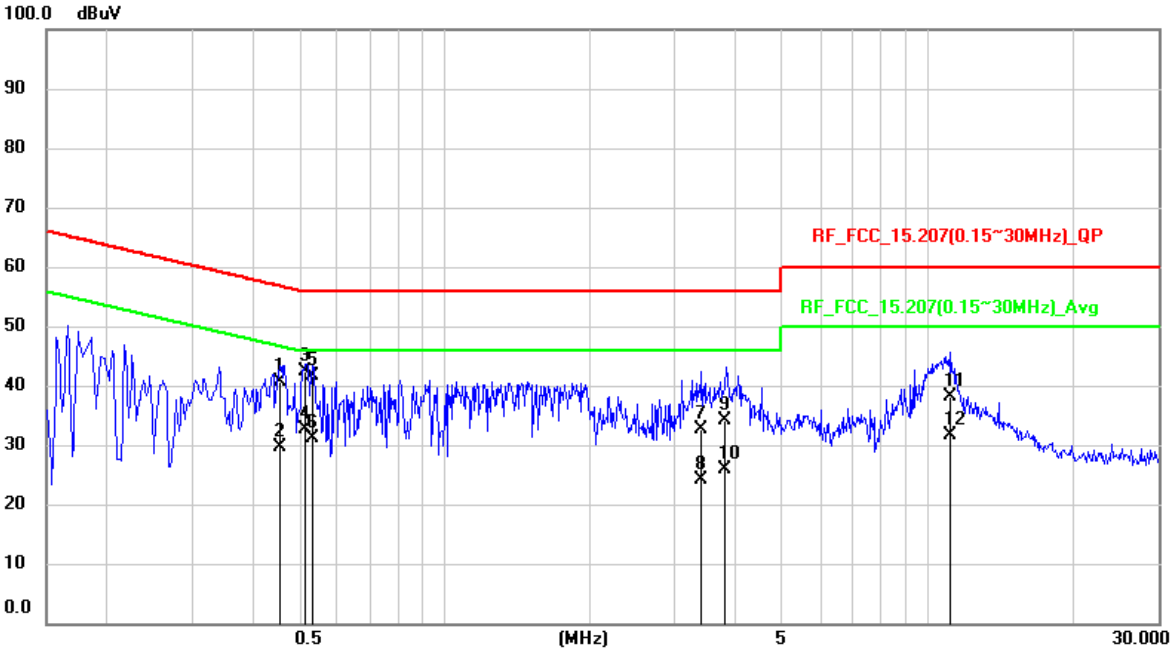


2.8.3 Test Procedure

1. The EUT was placed 0.8 meter height wooden table from the horizontal ground plane with EUT being connected to power source through a line impedance stabilization network (LISN). The LISN at least be 80 cm from nearest chassis of EUT.
2. The line impedance stabilization network (LISN) provides 50 ohm/50uH of coupling impedance for the measuring instrument. All other support equipments powered from additional LISN(s).
3. Interrelating cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle. All I/O cables were positioned to simulate typical usage.
4. All I/O cables that are not connected to a peripheral shall be bundle in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
5. The EMI test receiver connected to LISN powering the EUT. The actual test configuration, please refer to EUT test photos.
6. The receiver scanned from 150kHz to 30MHz for emissions in each of test modes. Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz. A scan was taken on both power lines, Line and Neutral, recording at least six highest emissions.
7. The EUT and cable configuration of the above highest emission levels were recorded. The Test Data of the worst case was recorded.

2.8.4 Test Result

Test Voltage :	120Vac, 60Hz	**Frequency Range:**	0.15-30 MHz
Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	**6dB Bandwidth :**	9 kHz
Test Date :	2024/07/29	**Phase :**	L
Temperature :	27.2℃	**Humidity :**	51 %

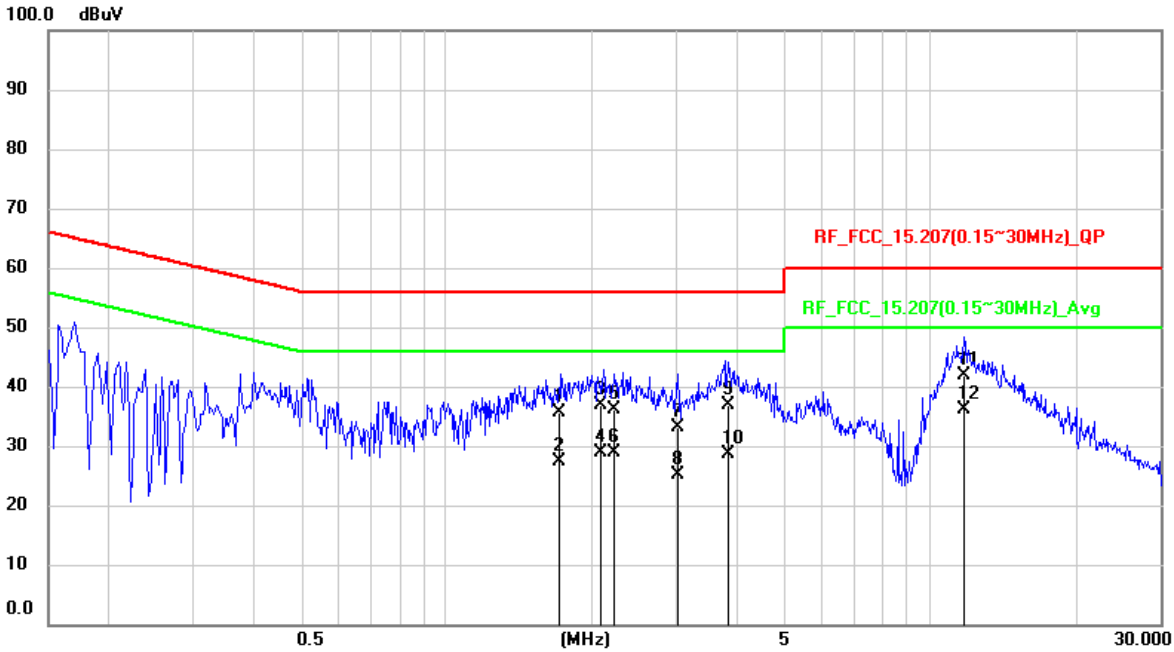


No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4572	30.82	9.83	40.65	56.74	-16.09	QP
2	0.4572	19.7	9.83	29.53	46.74	-17.21	AVG
3	0.5111	32.56	9.83	42.39	56	-13.61	QP
4	0.5111	22.82	9.83	32.65	46	-13.35	AVG
5	0.5305	31.73	9.83	41.56	56	-14.44	QP
6	0.5305	21.41	9.83	31.24	46	-14.76	AVG
7	3.4039	22.69	9.94	32.63	56	-23.37	QP
8	3.4039	14.11	9.94	24.05	46	-21.95	AVG
9	3.8096	24.26	9.97	34.23	56	-21.77	QP
10	3.8096	15.95	9.97	25.92	46	-20.08	AVG
11	11.1909	28.07	10.15	38.22	60	-21.78	QP
12	11.1909	21.54	10.15	31.69	50	-18.31	AVG

Remark:

1. QP = Quasi Peak, AVG = Average
2. Correction Factor = Insertion loss of LISN + Cable loss
3. Measurement Value = Reading Level + Correct Factor
4. Margin Level = Measurement Value –Limit Value

Test Voltage :	120Vac, 60Hz	Frequency Range:	0.15-30 MHz
Test Mode :	Mode 1：Transmit (802.11a 6Mbps)	6dB Bandwidth :	9 kHz
Test Date :	2024/07/29	Phase :	N
Temperature :	27.2℃	Humidity :	51 %



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	1.7192	25.8	9.87	35.67	56	-20.33	QP
2	1.7192	17.6	9.87	27.47	46	-18.53	AVG
3	2.0949	27.12	9.88	37	56	-19	QP
4	2.0949	18.97	9.88	28.85	46	-17.15	AVG
5	2.2278	26.21	9.88	36.09	56	-19.91	QP
6	2.2278	18.93	9.88	28.81	46	-17.19	AVG
7	3.0101	23.29	9.92	33.21	56	-22.79	QP
8	3.0101	15.22	9.92	25.14	46	-20.86	AVG
9	3.8479	26.86	9.96	36.82	56	-19.18	QP
10	3.8479	18.69	9.96	28.65	46	-17.35	AVG
11	11.8297	31.73	10.14	41.87	60	-18.13	QP
12	11.8297	26.03	10.14	36.17	50	-13.83	AVG

Remark:

1. QP = Quasi Peak, AVG = Average
2. Correction Factor = Insertion loss of LISN + Cable loss
3. Measurement Value = Reading Level + Correct Factor
4. Margin Level = Measurement Value –Limit Value

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