FCC Test Report

Report No.:	2405T77560ED
Applicant:	Shenzhen Junge Yunchuang Technology Co., Ltd.
Address:	1204, Unit 3, Building C, Fu Gui Yuan, Fu Gui Road, Fu Hua Community, Xixiang Street, Baoan District, Shenzhen, China
Product Name:	Projector
Product Model:	V800P
Multiple Models:	F505, V700, J801, J802, J701, J702
Trade Mark:	N/A
FCC ID:	2A3FP-P15
Standards:	FCC CFR Title 47 Part 15E (§15.407)
Test Date:	2024-05-31 to 2024-07-09
Test Result:	Complied
Issue Date:	2024-07-10

Reviewed by: Abel Chen

Approved by: Jacob Gong

Abel Chen
Project Engineer

Jacob Kong
Manager

Prepared by:

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

NVLAP TESTING NVLAP LAB CODE 600335-0

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Revision History

Version No.	Issued Date	Description
00	*2024-07-10*	*Original*

Contents

1 General Information

1.1 Client Information

Applicant:	Shenzhen Junge Yunchuang Technology Co., Ltd.
Address:	1204, Unit 3, Building C, Fu Gui Yuan, Fu Gui Road, Fu Hua Community, Xixiang Street, Baoan District, Shenzhen, China
Manufacturer:	Shenzhen Junge Yunchuang Technology Co., Ltd.
Address:	1204, Unit 3, Building C, Fu Gui Yuan, Fu Gui Road, Fu Hua Community, Xixiang Street, Baoan District, Shenzhen, China

1.2 Product Description of EUT

The EUT is Projector that contains Classic Bluetooth, 2.4GHz and 5.8GHz WLAN radios, this report covers the full testing of the 5GHz WLAN radios.

Sample Serial number	2LUU-1 for CE test, 2LUU-3 for RE test, 2LUU-2 for RF conducted test (assigned by WATC)
Sample Received Date	2024-05-27
Sample Status	Good Condition
Frequency Range	5.2G WLAN: 5150 MHz - 5250MHz 5.8G WLAN: 5725 MHz - 5850MHz
Maximum Conducted Output Power	5150 MHz - 5250MHz: 16.28dBm 5725 MHz - 5850MHz: 16.84dBm
Modulation Technology	OFDM
Spatial Streams	MIMO (2TX, 2RX)
Antenna Gain#	ANT1:4.27dBi ANT2:3.84dBi
Power Supply	DC 35V from adapter
Adapter Information	Model: SOY-3500428-454 Input: AC100-240V, 50/60Hz, 2.5A Max Output: DC 35.0V/4.28A ,149.8W
Modification	Sample No Modification by the test lab

1.3 Antenna information

15.203 requirement:

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, 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.

Device Antenna information:	

The Wi-Fi antenna is an internal antenna which cannot replace by end-user. Please see the product internal photos for details.

1.4 Related Submittal(s)/Grant(s)

FCC Part 15, Subpart C, Equipment Class: DSS, FCC ID: 2A3FP-P15

FCC Part 15, Subpart C, Equipment Class: DTS, FCC ID: 2A3FP-P15

1.5 Measurement Uncertainty

Parameter		Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
AC Power Lines Conducted Emissions		±3.14dB
Emissions, Radiated	Below 30MHz	±2.78dB
	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB
Emissions, Conducted		1.75dB
Conducted Power		0.74dB
Frequency Error		150Hz
Bandwidth		0.34%
Power Spectral Density		0.74dB

Note: *The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

1.6 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

2 Description of Measurement

2.1 Test Configuration

Operating channels: (5150-5250MHz)					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
36	5180	42	5210	48	5240
38	5190	44	5220	/	/
40	5200	46	5230	/	/
According to ANSI C63.10-2013 chapter 5.6.1 Table 11 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:					
802.11a, 802.11n-HT20, 802.11ac-VHT20					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
36	5180	40	5200	48	5240
802.11n-HT40, 802.11ac-VHT40					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
38	5190	/	/	46	5230
802.11ac-VHT80					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
/	/	42	5210	/	/

Operating channels: (5725-5850MHz)					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
149	5745	155	5775	161	5805
151	5755	157	5785	165	5825
153	5765	159	5795	/	/
According to ANSI C63.10-2013 chapter 5.6.1 Table 11 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:					
802.11a, 802.11n-HT20, 802.11ac-VHT20					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)

149	5745	157	5785	165	5825
802.11n-HT40, 802.11ac-VHT40					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
151	5755	/	/	159	5795
802.11ac-VHT80					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
/	/	155	5775	/	/

Test Mode:	
Transmitting mode:	Keep the EUT in continuous transmitting with modulation
Exercise software[#]:	SecureCRT

5150-5250MHz

Mode	Data rate	Power Level Setting[#]		
		Low Channel	Middle Channel	High Channel
802.11a	6Mbps	15	15	15
802.11n-HT20	MCS0	15	15	15
802.11n-HT40	MCS0	15	/	15
802.11ac-VHT80	MCS0	/	10	/

5725-5850MHz

Mode	Data rate	Power Level Setting[#]		
		Low Channel	Middle Channel	High Channel
802.11a	6Mbps	15	15	15
802.11n-HT20	MCS0	15	15	15
802.11n-HT40	MCS0	15	/	15
802.11ac-VHT80	MCS0	/	10	/

The exercise software and the maximum power setting that provided by manufacturer.

Worst-Case Configuration:

For AC power line conducted emission and radiated emission 9kHz-1GHz and above 18GHz were performed with the EUT transmits at the channel with highest output power as worst-case scenario.

According to manufacturer, the device support MIMO mode, all modes share the same power level setting under the same modulation. So the worst mode MIMO was selected to test

The ac vht20/ac vht40 were reduced test since the identical parameters with n-ht20/n-ht40.

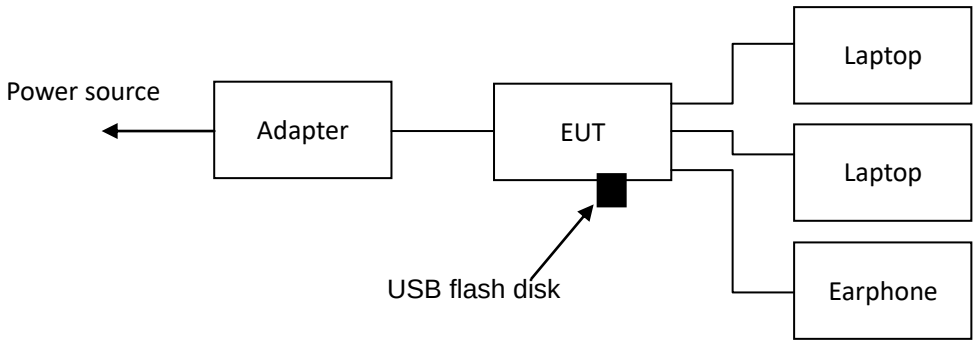
2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
aigo	USB flash disk	unknown	unknown
unknown	Earphone	unknown	unknown
DELL	Laptop*2	unknown	unknown

2.3 Interconnecting Cables

Manufacturer	Description	Length(m)	From	To
SOY	AC Power Cable	2.0	Power Source	Adapter
SOY	DC Power Cable	1.2	Adapter	EUT
Unknown	Shielding HDMI cable*2	1.5	EUT	Laptop

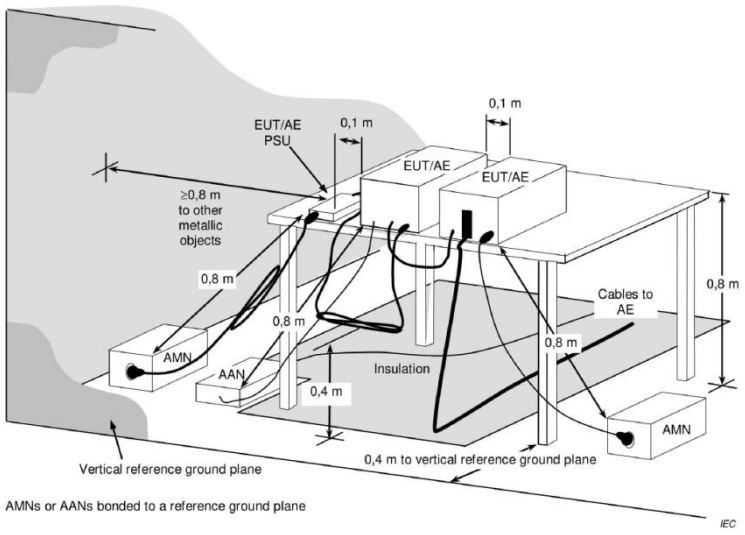
2.4 Block Diagram of Connection between EUT and AE



Note: for reference only, the actual connection setup used for testing please refer to the test photos.

2.5 Test Setup

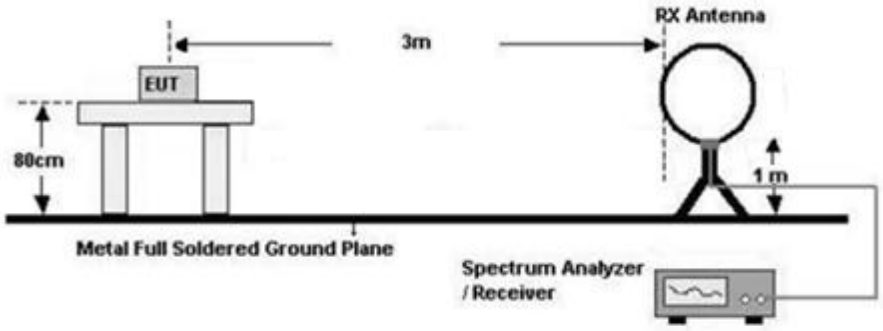
1) Conducted emission measurement:



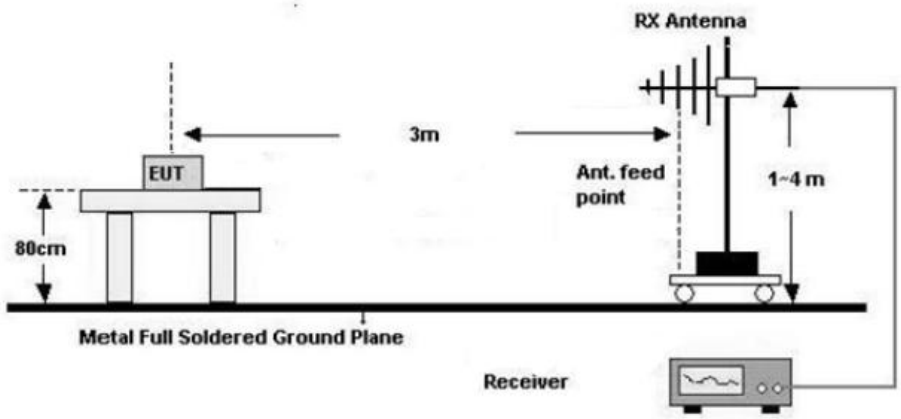
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

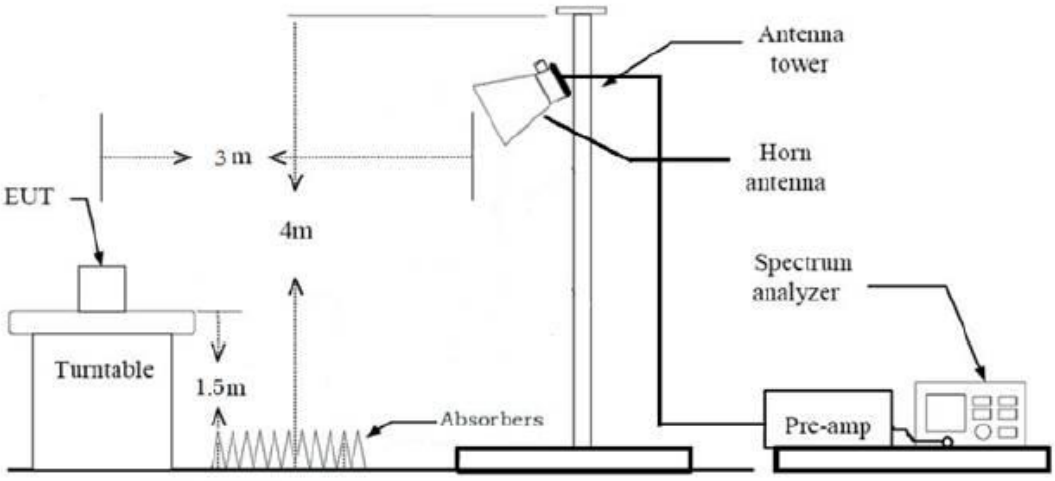
Below 30MHz (3m SAC)



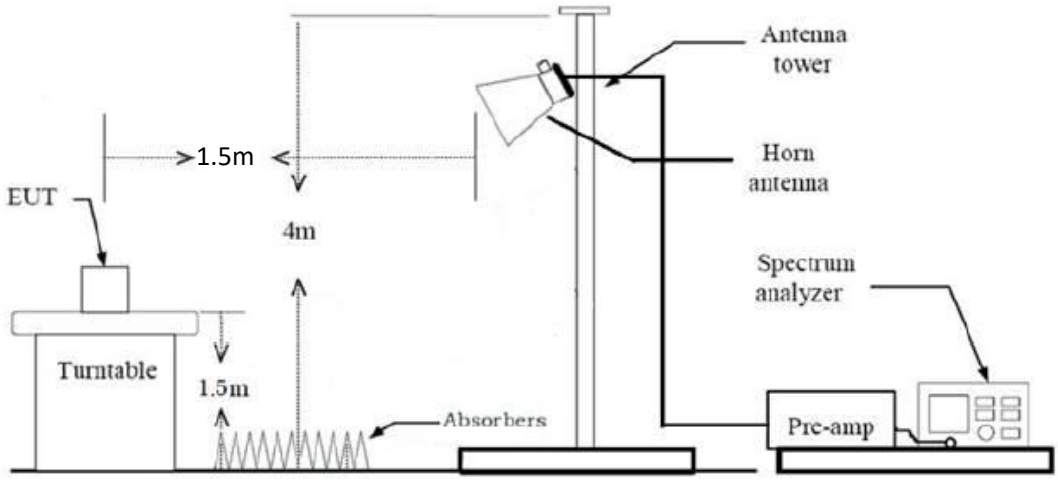
30MHz-1GHz (3m SAC)



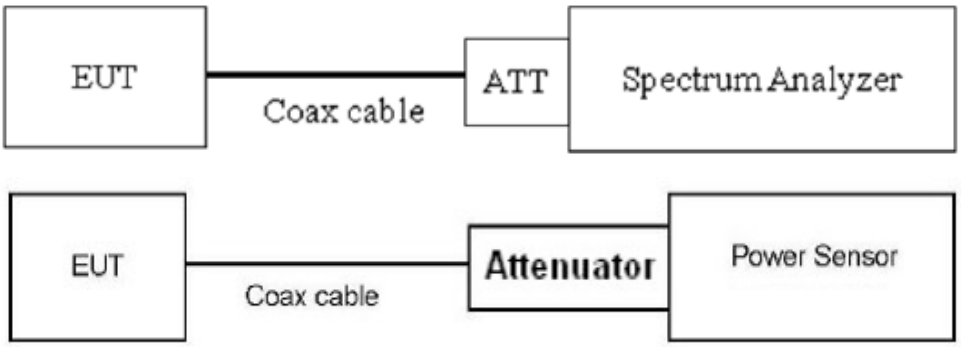
1GHz-18GHz(3m FAC)



Above 18GHz (3m FAC)



3) RF Conducted Test



2.6 Test Procedure

Conducted emission:

1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
2. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
3. Line conducted data is recorded for both Line and Neutral

Radiated Emission Procedure:

a) For below 30MHz

1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the

intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).

2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel)

b) For 30MHz-1GHz:

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

c) For above 1GHz:

1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m (1-18GHz) and 1.5 m (above 18GHz).
2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
4. Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

RF Conducted Test:

1. The antenna port of EUT was connected to the RF port of the test equipment (Power Meter or Spectrum analyzer) through Attenuator and RF cable.
2. The cable assembly insertion loss of 7.0dB (including 6.0 dB Attenuator and 1.0 dB cable) was entered as an offset in the power meter. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 1.0dB was assumed as worst case. This was later verified to be true by laboratory. (if the RF cable provided by client, the cable loss declared by client)
3. The EUT is keeping in continuous transmission mode and tested in all modulation modes.

2.7 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2013 Section 6.2
Maximum Conducted Output Power	KDB 789033 D02 v02r01 section E.3. b)
Power Spectral Density	KDB 789033 D02 v02r01 section F
26 dB Emission Bandwidth	KDB 789033 D02 v02r01 section C.1
6 dB Emission Bandwidth	KDB 789033 D02 v02r01 section C.2
99% Occupied Bandwidth	KDB 789033 D02 v02r01 section D.
Unwanted Emissions	KDB 789033 D02 v02r01 section G.
Duty Cycle	KDB 789033 D02 v02r01 section B.

2.8 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
ROHDE& SCHWARZ	EMI TEST RECEIVER	ESR	101817	2023/7/3	2024/7/2
R&S	LISN	ENV216	101748	2023/8/1	2024/7/31
N/A	Coaxial Cable	NO.12	N/A	2023/7/3	2024/7/2
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/
Radiated Emission Test(above 1GHz)					
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2023/7/3	2024/7/2
COM-POWER	preamplifier	PAM-118A	18040152	2023/8/21	2024/8/20
COM-POWER	Amplifier	PAM-840A	461306	2023/8/8	2024/8/7
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2024/7/5
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2023/7/10	2024/7/9
Ducommun technologies	Horn Antenna	ARH-2823-02	1007726-03	2023/7/10	2024/7/9
Oulitong	Band Reject Filter	OBSF-5150-5850-S	OE02104371	2023/9/15	2024/9/14
N/A	Coaxial Cable	N/A	NO.9	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.10	2023/8/8	2024/8/7

N/A	Coaxial Cable	N/A	NO.11	2023/8/8	2024/8/7
Audix	Test Software	E3	191218 V9	/	/
Radiated Emission Test(below 1GHz)					
R&S	EMI test receiver	ESR3	102758	2024/6/4	2025/6/3
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2024/6/4	2025/6/3
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2027/2/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2026/7/6
N/A	Coaxial Cable	NO.14	N/A	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.16	N/A	2024/6/4	2025/6/3
Audix	Test Software	E3	191218 V9	/	/
RF Conducted Test					
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSU-26	200680/026	2023/7/12	2024/7/11
ANRITSU	USB Power Sensor	MA24418A	12620	2023/7/12	2024/7/11
narda	6dB attenuator	603-06-1	N/A	2023/7/26	2024/7/25

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.

3 Test Results

3.1 Test Summary

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207 (a) §15.407 (b)(9)	AC Line Conducted Emissions	Compliance
§15.407 (a)(1)(iv),(3)(i)	Conducted Peak Output Power Power Spectral Density	Compliance
§15.407 (a)(12)	99% Occupied Bandwidth	Compliance
§15.407 (a)	26 dB Emission Bandwidth	Compliance
§15.407 (e)	6 dB Emission Bandwidth	Compliance
§15.205, §15.209, §15.407 (b)(1), (4), (9), (10)	Unwanted Emissions	Compliance
/	Duty Cycle	Report only

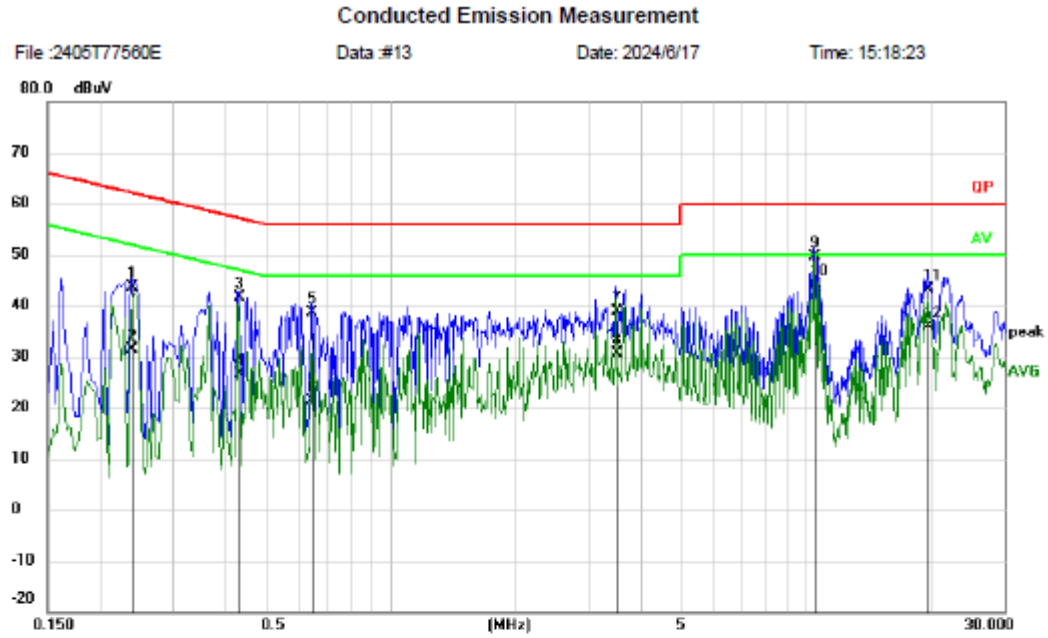
3.2 Limit

Test items	Limit
AC Power Line Conducted Emission	See details §15.207 (a)
Conducted Peak Output Power Power Spectral Density	**For the band 5.150-5.250 GHz:** For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. **For the band 5.725-5.895 GHz:** For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas ofdirectional 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 withoutany corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipointsystems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. Theoperator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
26dB Emission Bandwidth 99% Occupied Bandwidth	N/A
6dB Emission Bandwidth	Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Unwanted Emissions	For transmitters operating in the 5.15–5.25 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating solely in the 5.725–5.850 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. The provisions of § 15.205 apply to intentional radiators operating under this section.

3.3 AC Line Conducted Emissions Test Data

Test Date:	2024-06-17	Test By:	Lirou Li
Environment condition:	Temperature: 23.1°C; Relative Humidity:65%; ATM Pressure: 101.1kPa		



Limit: QP
Mode:transmitting
Note: WIFI5.8G 802.11a M Channel

Phase: L1
Power: AC 120V/60Hz

Temperature: 23.1 ℃
Humidity: 65 %
Air Pressure: 1011 hpa

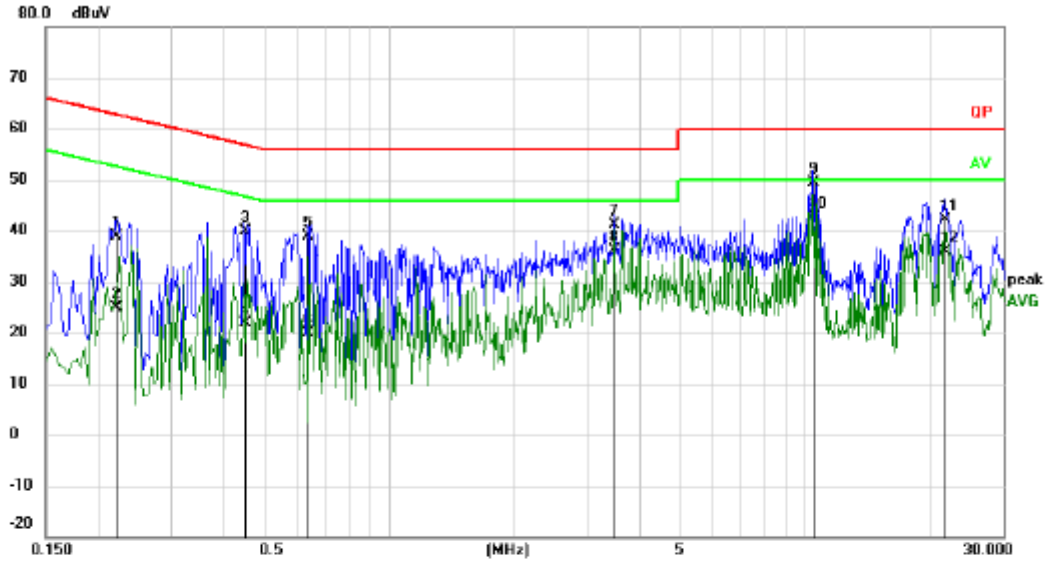
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2380	33.00	10.65	43.65	62.17	-18.52	QP	
2		0.2380	20.62	10.65	31.27	52.17	-20.90	AVG	
3		0.4340	30.81	10.80	41.61	57.18	-15.57	QP	
4		0.4340	15.90	10.80	26.70	47.18	-20.48	AVG	
5		0.6460	27.89	10.85	38.74	56.00	-17.26	QP	
6		0.6460	10.56	10.85	21.41	46.00	-24.59	AVG	
7		3.4940	27.84	10.95	38.79	56.00	-17.21	QP	
8		3.4940	19.78	10.95	30.73	46.00	-15.27	AVG	
9		10.4620	39.19	10.43	49.62	60.00	-10.38	QP	
10	*	10.4620	33.82	10.43	44.25	50.00	-5.75	AVG	
11		19.5380	32.66	10.54	43.20	60.00	-16.80	QP	
12		19.5380	25.26	10.54	35.80	50.00	-14.20	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Conducted Emission Measurement

File :2405T77560E Data :#14 Date: 2024/6/17 Time: 15:20:42



Limit: QP Phase: N Temperature: 23.1 ℃

Mode:transmitting Power: AC 120V/60Hz Humidity: 65 %

Note: WIFI 5.8G 802.11a M Channel Air Pressure: 1011 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2220	28.32	10.44	38.76	62.74	-23.98	QP	
2		0.2220	14.39	10.44	24.83	52.74	-27.91	AVG	
3		0.4500	29.28	10.68	39.96	56.88	-16.92	QP	
4		0.4500	11.25	10.68	21.93	46.88	-24.95	AVG	
5		0.6380	28.15	10.61	38.76	56.00	-17.24	QP	
6		0.6380	9.21	10.61	19.82	46.00	-26.18	AVG	
7		3.4900	30.63	10.48	41.11	56.00	-14.89	QP	
8		3.4900	25.59	10.48	36.07	46.00	-9.93	AVG	
9		10.4580	38.54	10.73	49.27	60.00	-10.73	QP	
10	*	10.4580	31.84	10.73	42.57	50.00	-7.43	AVG	
11		21.6140	31.57	10.67	42.24	60.00	-17.76	QP	
12		21.6140	25.20	10.67	35.87	50.00	-14.13	AVG	

*:Maximum data x:Over limit !:over margin Engineer Signature: Lirou

Remark:

Measurement (dBuV) = Reading Level (dBuV) + Correct Factor(dB)

Correct Factor(dB) = LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over Limit = Measurement – Limit

3.4 Radiated emission Test Data

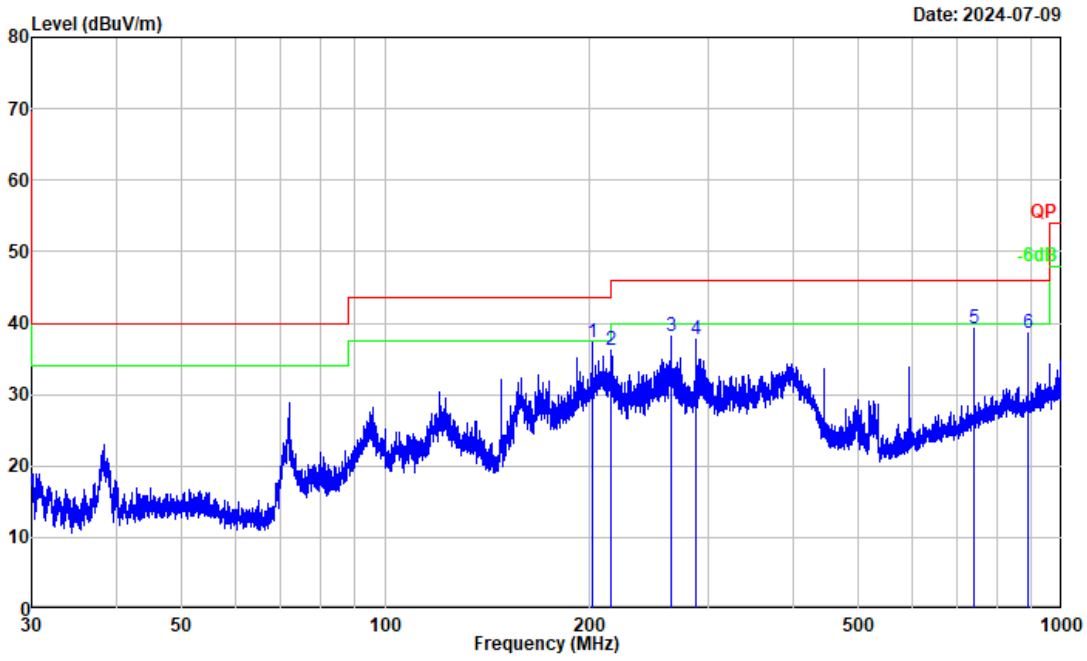
9 kHz-30MHz:

Test Date:	2024-07-09	**Test By:**	Luke Li
Environment condition:	Temperature: 22.8°C; Relative Humidity:64%; ATM Pressure: 100.1kPa		

For radiated emissions below 30MHz, there were no emissions found within 20dB of limit.

30MHz-1GHz:

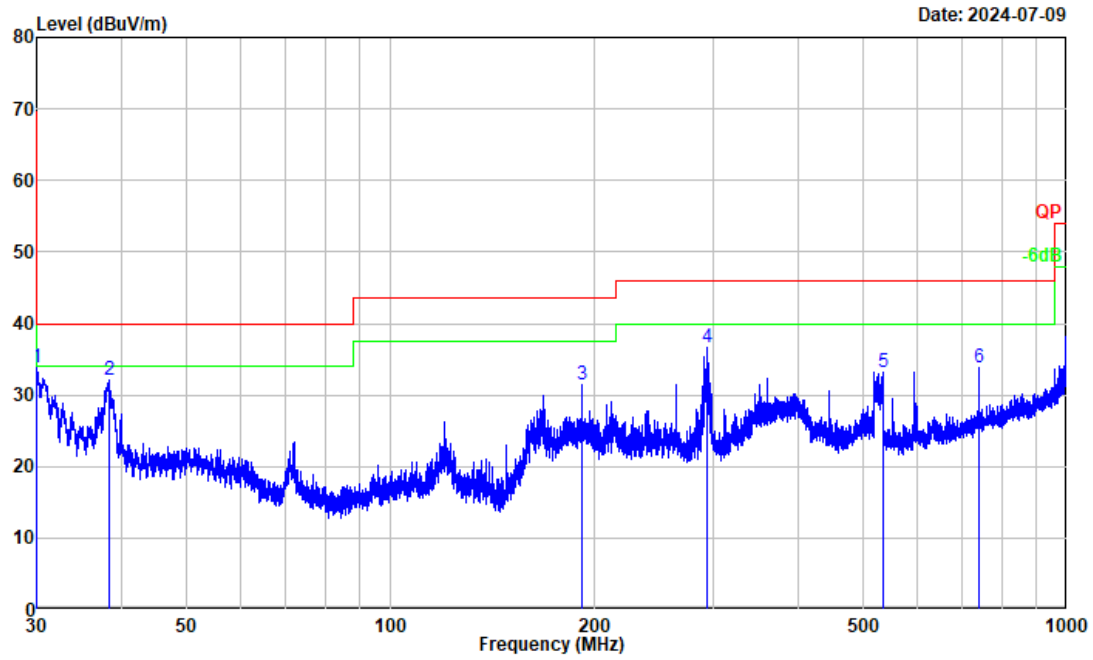
Test Date:	2024-07-09	Test By:	Luke Li
Environment condition:	Temperature: 22.8°C; Relative Humidity:64%; ATM Pressure: 100.1kPa		



Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5G-WiFi Band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	201.883	50.35	-13.15	37.20	43.50	-6.30	Peak
2	215.983	49.22	-13.04	36.18	43.50	-7.32	Peak
3	264.006	49.43	-11.29	38.14	46.00	-7.86	Peak
4	288.072	48.53	-10.72	37.81	46.00	-8.19	Peak
5	741.906	39.94	-0.80	39.14	46.00	-6.86	Peak
6	890.325	37.21	1.30	38.51	46.00	-7.49	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain



Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5G-WiFi Band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	30.013	49.05	-15.17	33.88	40.00	-6.12	Peak
2	38.432	45.98	-13.89	32.09	40.00	-7.91	Peak
3	192.042	45.17	-13.81	31.36	43.50	-12.14	Peak
4	293.425	47.21	-10.58	36.63	46.00	-9.37	Peak
5	533.790	38.41	-5.18	33.23	46.00	-12.77	Peak
6	741.906	34.61	-0.80	33.81	46.00	-12.19	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Remark:

Result = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Result – Limit

Above 1GHz:

Test Date:	2024-05-31	Test By:	Bard Huang
Environment condition:	Temperature: 23.1°C; Relative Humidity:63%; ATM Pressure: 99.9kPa		

5150-5250MHz Band:

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
802.11a							
Low Channel							
5150.000	36.63	horizontal	10.81	47.44	54.00	-6.56	Average
5150.000	48.34	horizontal	10.81	59.15	68.20	-9.05	Peak
5150.000	36.52	vertical	10.81	47.33	54.00	-6.67	Average
5150.000	47.96	vertical	10.81	58.77	74.00	-15.23	Peak
15540.000	35.82	horizontal	8.99	44.81	54.00	-9.19	Average
15540.000	46.12	horizontal	8.99	55.11	74.00	-18.89	Peak
15540.000	35.71	vertical	8.99	44.70	54.00	-9.30	Average
15540.000	45.86	vertical	8.99	54.85	74.00	-19.15	Peak
Middle Channel							
15600.000	36.23	horizontal	8.81	45.04	54.00	-8.96	Average
15600.000	46.07	horizontal	8.81	54.88	74.00	-19.12	Peak
15600.000	36.03	vertical	8.81	44.84	54.00	-9.16	Average
15600.000	45.39	vertical	8.81	54.20	74.00	-19.80	Peak
High Channel							
5350.000	35.36	horizontal	10.66	46.02	54.00	-7.98	Average
5350.000	47.22	horizontal	10.66	57.88	74.00	-16.12	Peak
5350.000	35.24	vertical	10.66	45.90	54.00	-8.10	Average
5350.000	47.20	vertical	10.66	57.86	74.00	-16.14	Peak
15720.000	43.19	horizontal	8.07	51.26	74.00	-22.74	Peak
15720.000	42.77	vertical	8.07	50.84	74.00	-23.16	Peak
802.11n20							
Low Channel							
5150.000	36.12	horizontal	10.81	46.93	54.00	-7.07	Average
5150.000	47.97	horizontal	10.81	58.78	74.00	-15.22	Peak
5150.000	36.06	vertical	10.81	46.87	54.00	-7.13	Average
5150.000	47.70	vertical	10.81	58.51	74.00	-15.49	Peak
15540.000	44.77	horizontal	8.99	53.76	74.00	-20.24	Peak

15540.000	44.89	vertical	8.99	53.88	74.00	-20.12	Peak
Middle Channel							
15600.000	36.19	horizontal	8.81	45.00	54.00	-9.00	Average
15600.000	47.30	horizontal	8.81	56.11	74.00	-17.89	Peak
15600.000	35.74	vertical	8.81	44.55	54.00	-9.45	Average
15600.000	45.80	vertical	8.81	54.61	74.00	-19.39	Peak
High Channel							
5350.000	35.30	horizontal	10.66	45.96	54.00	-8.04	Average
5350.000	47.42	horizontal	10.66	58.08	68.20	-10.12	Peak
5350.000	35.38	vertical	10.66	46.04	54.00	-7.96	Average
5350.000	47.09	vertical	10.66	57.75	68.20	-10.45	Peak
15720.000	42.85	horizontal	8.07	50.92	74.00	-23.08	Peak
15720.000	42.92	vertical	8.07	50.99	74.00	-23.01	Peak
802.11n40							
Low Channel							
5150.000	37.75	horizontal	10.81	48.56	54.00	-5.44	Average
5150.000	49.50	horizontal	10.81	60.31	74.00	-13.69	Peak
5150.000	38.17	vertical	10.81	48.98	54.00	-5.02	Average
5150.000	49.15	vertical	10.81	59.96	74.00	-14.04	Peak
15570.000	44.86	horizontal	8.90	53.76	74.00	-20.24	Peak
15570.000	35.98	vertical	8.90	44.88	54.00	-9.12	Average
15570.000	45.20	vertical	8.90	54.10	74.00	-19.90	Peak
High Channel							
5350.000	35.88	horizontal	10.66	46.54	54.00	-7.46	Average
5350.000	46.89	horizontal	10.66	57.55	68.20	-10.65	Peak
5350.000	35.61	vertical	10.66	46.27	54.00	-7.73	Average
5350.000	46.97	vertical	10.66	57.63	68.20	-10.57	Peak
15690.000	43.43	horizontal	8.14	51.57	74.00	-22.43	Peak
15690.000	43.68	vertical	8.14	51.82	74.00	-22.18	Peak
802.11ac80							
5150.000	38.31	horizontal	10.81	49.12	54.00	-4.88	Average
5150.000	49.19	horizontal	10.81	60.00	74.00	-14.00	Peak
5150.000	37.88	vertical	10.81	48.69	54.00	-5.31	Average
5150.000	48.51	vertical	10.81	59.32	68.20	-8.88	Peak
5350.000	36.14	horizontal	10.66	46.80	54.00	-7.20	Average
5350.000	47.21	horizontal	10.66	57.87	74.00	-16.13	Peak
5350.000	36.08	vertical	10.66	46.74	54.00	-7.26	Average
5350.000	47.62	vertical	10.66	58.28	68.20	-9.92	Peak

15630.000	36.47	horizontal	8.59	45.06	54.00	-8.94	Average
15630.000	46.46	horizontal	8.59	55.05	74.00	-18.95	Peak
15630.000	36.22	vertical	8.59	44.81	54.00	-9.19	Average
15630.000	45.59	vertical	8.59	54.18	74.00	-19.82	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

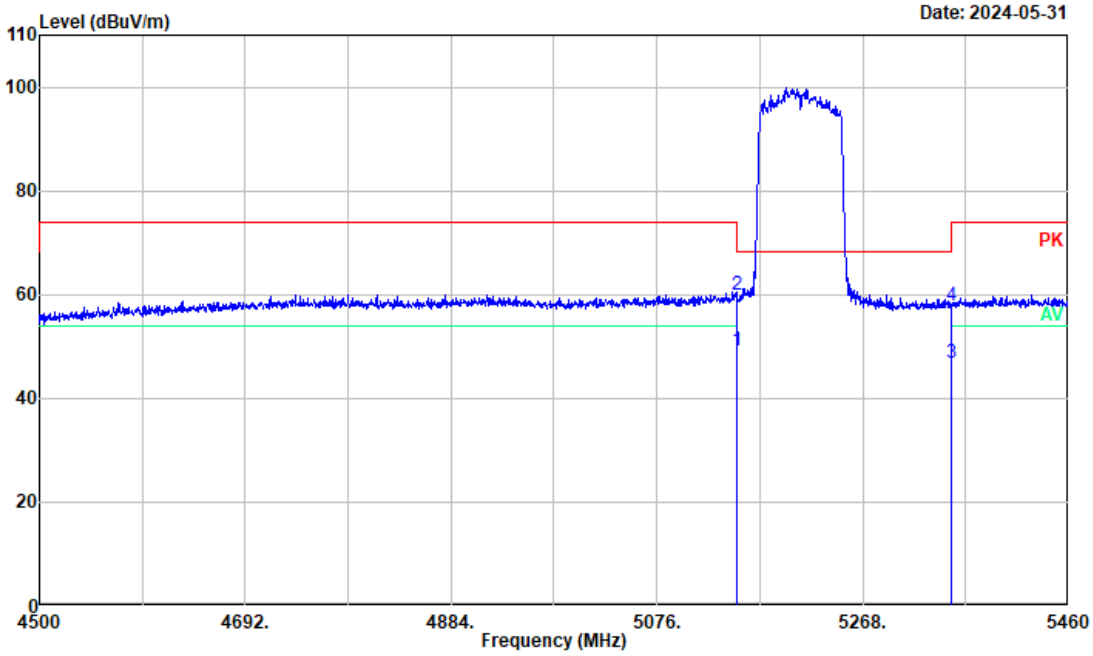
Margin = Corrected Amplitude – Limit

The emission levels of other frequencies that were lower than the limit 20dB, not show in test report.

For emissions in 18GHz-40GHz range, all emissions were investigated and in the noise floor level.

Test plot for example as below:

Mode:	802.11ac80	Channel:	5210MHz

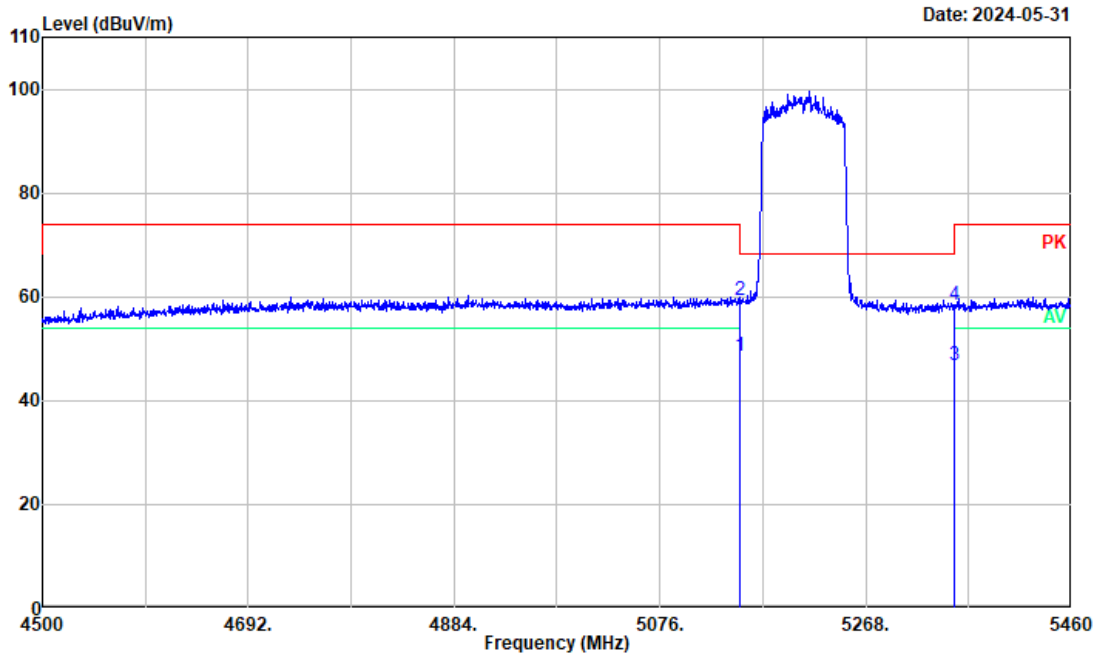


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band1 802.11ac80 channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	5150.000	38.31	10.81	49.12	54.00	-4.88	Average
2	5150.000	49.19	10.81	60.00	74.00	-14.00	Peak
3	5350.000	36.14	10.66	46.80	54.00	-7.20	Average
4	5350.000	47.21	10.66	57.87	74.00	-16.13	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5210MHz

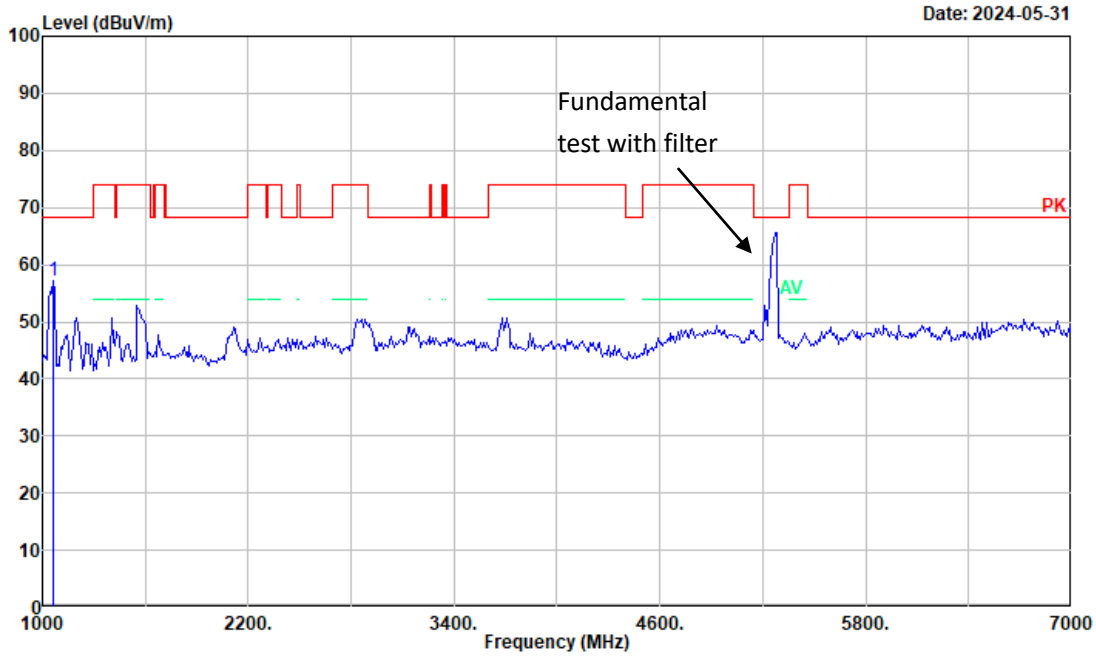


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band1 802.11ac80 channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5150.000	37.88	10.81	48.69	54.00	-5.31	Average
2	5150.000	48.51	10.81	59.32	68.20	-8.88	Peak
3	5350.000	36.08	10.66	46.74	54.00	-7.26	Average
4	5350.000	47.62	10.66	58.28	68.20	-9.92	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5210MHz

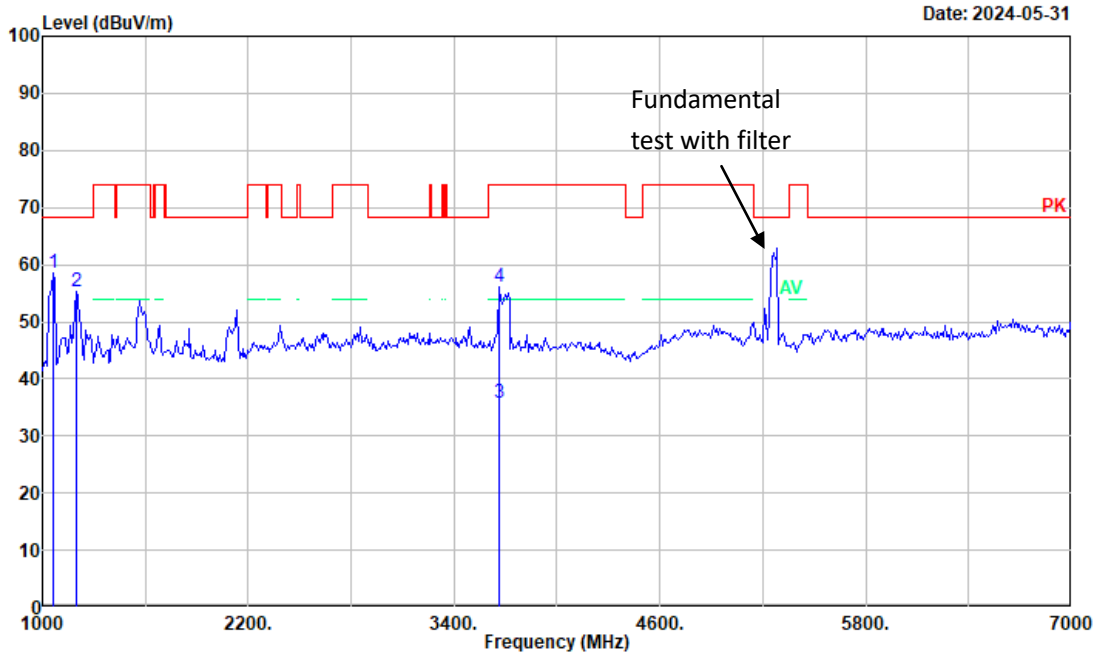


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	1059.530	63.41	-6.28	57.13	68.20	-11.07	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5210MHz

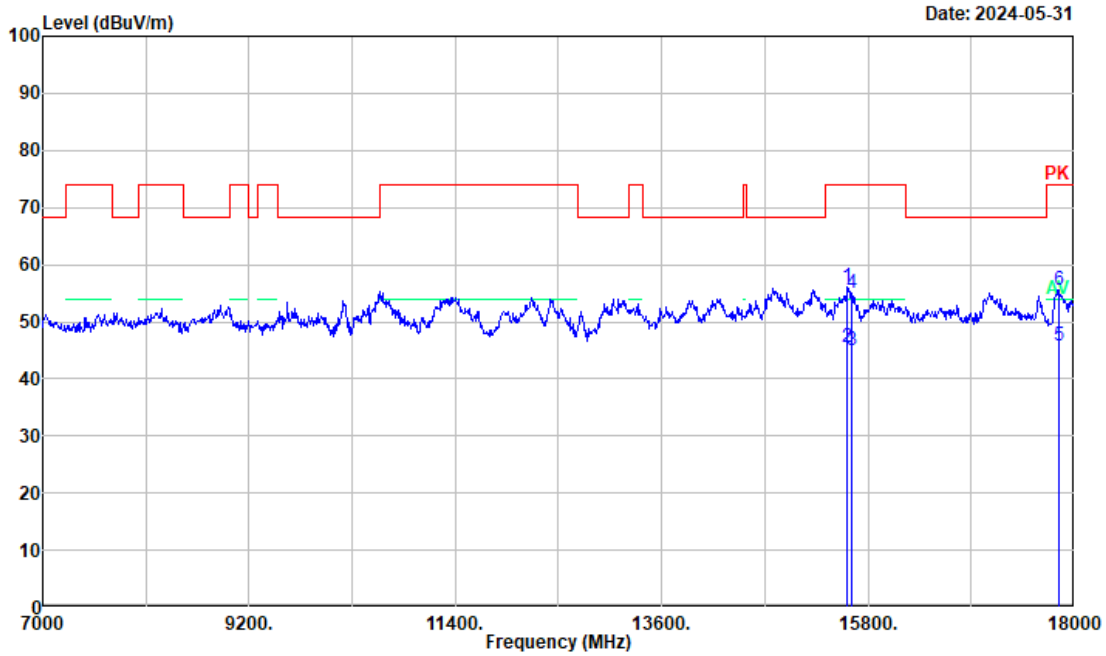


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	1059.530	64.84	-6.28	58.56	68.20	-9.64	Peak
2	1195.598	60.98	-5.82	55.16	68.20	-13.04	Peak
3	3661.831	38.51	-2.62	35.89	54.00	-18.11	Average
4	3661.831	58.81	-2.62	56.19	74.00	-17.81	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5210MHz

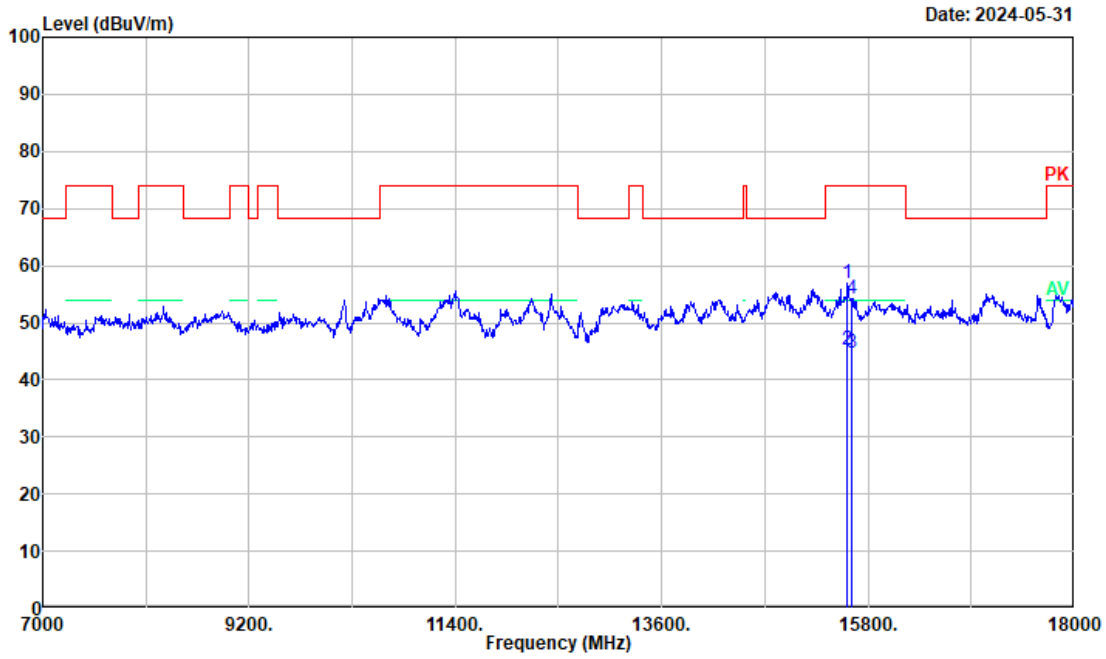


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	15576.290	47.34	8.87	56.21	74.00	-17.79	Peak
2	15576.290	36.54	8.87	45.41	54.00	-8.59	Average
3	15630.000	36.47	8.59	45.06	54.00	-8.94	Average
4	15630.000	46.46	8.59	55.05	74.00	-18.95	Peak
5	17838.420	37.35	8.34	45.69	54.00	-8.31	Average
6	17838.420	47.34	8.34	55.68	74.00	-18.32	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5210MHz

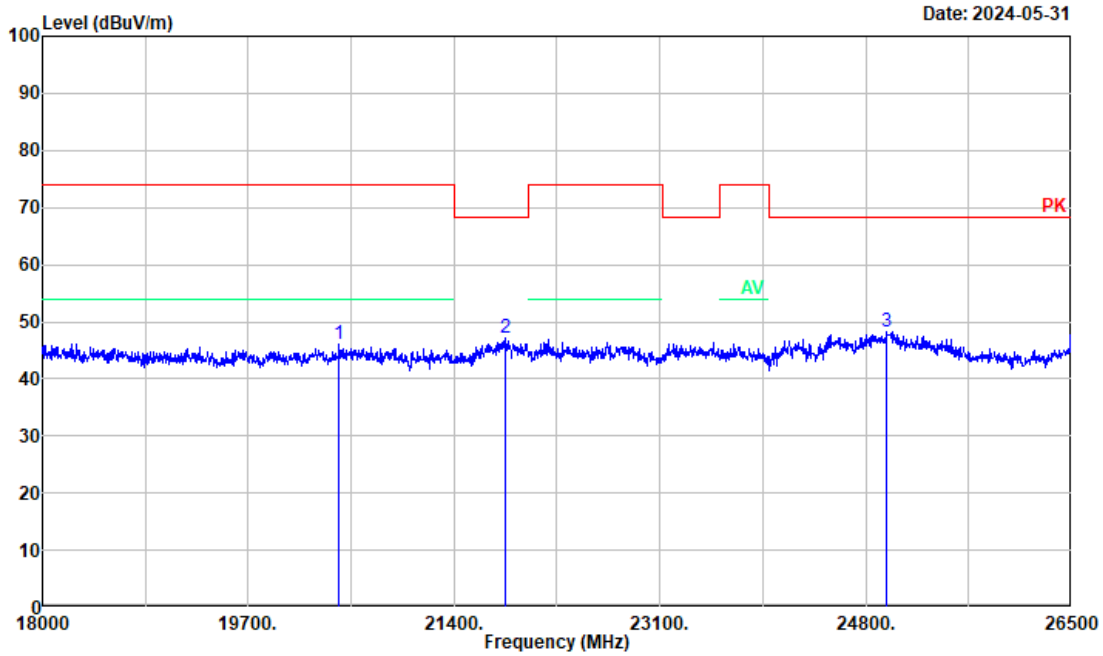


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	15576.290	48.01	8.87	56.88	74.00	-17.12	Peak
2	15576.290	36.41	8.87	45.28	54.00	-8.72	Average
3	15630.000	36.22	8.59	44.81	54.00	-9.19	Average
4	15630.000	45.59	8.59	54.18	74.00	-19.82	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5210MHz

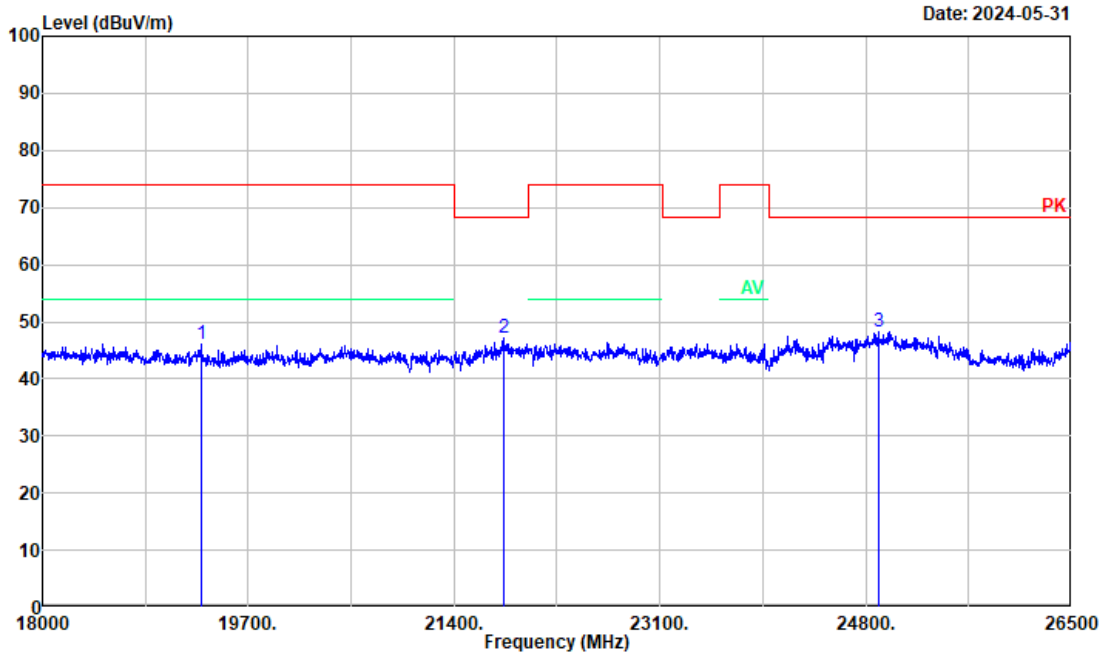


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	20449.220	53.65	-7.54	46.11	74.00	-27.89	Peak
2	21826.910	54.12	-6.95	47.17	68.20	-21.03	Peak
3	24973.490	51.29	-3.05	48.24	68.20	-19.96	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11ac80	Channel:	5210MHz

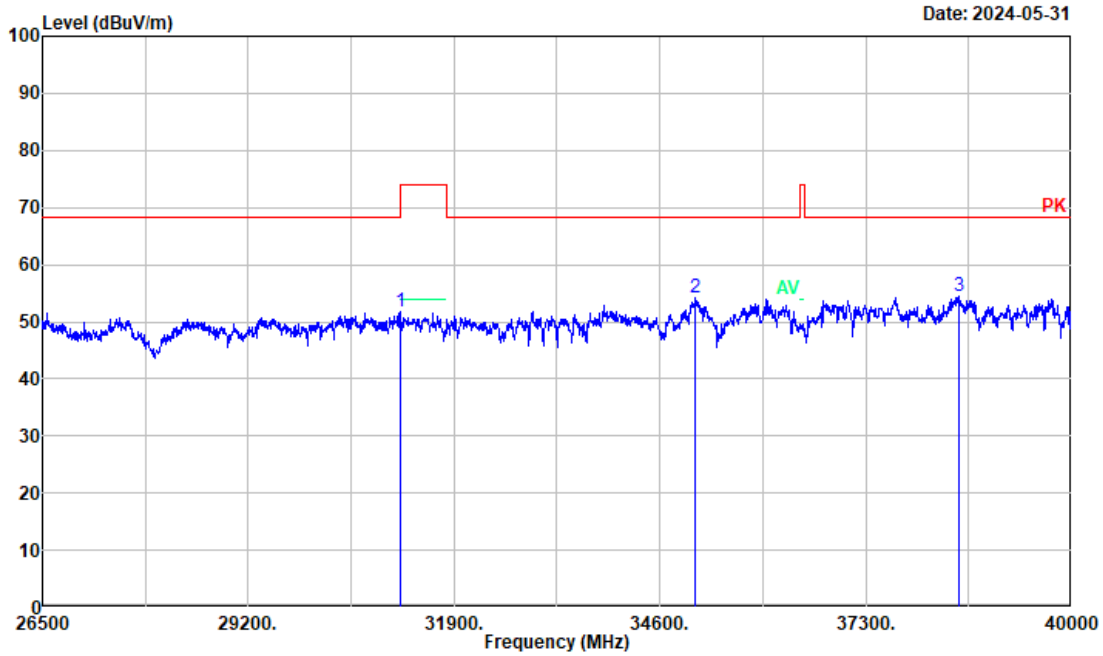


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	19309.650	53.21	-7.11	46.10	74.00	-27.90	Peak
2	21814.160	54.04	-6.96	47.08	68.20	-21.12	Peak
3	24905.450	51.82	-3.46	48.36	68.20	-19.84	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11ac80	Channel:	5210MHz

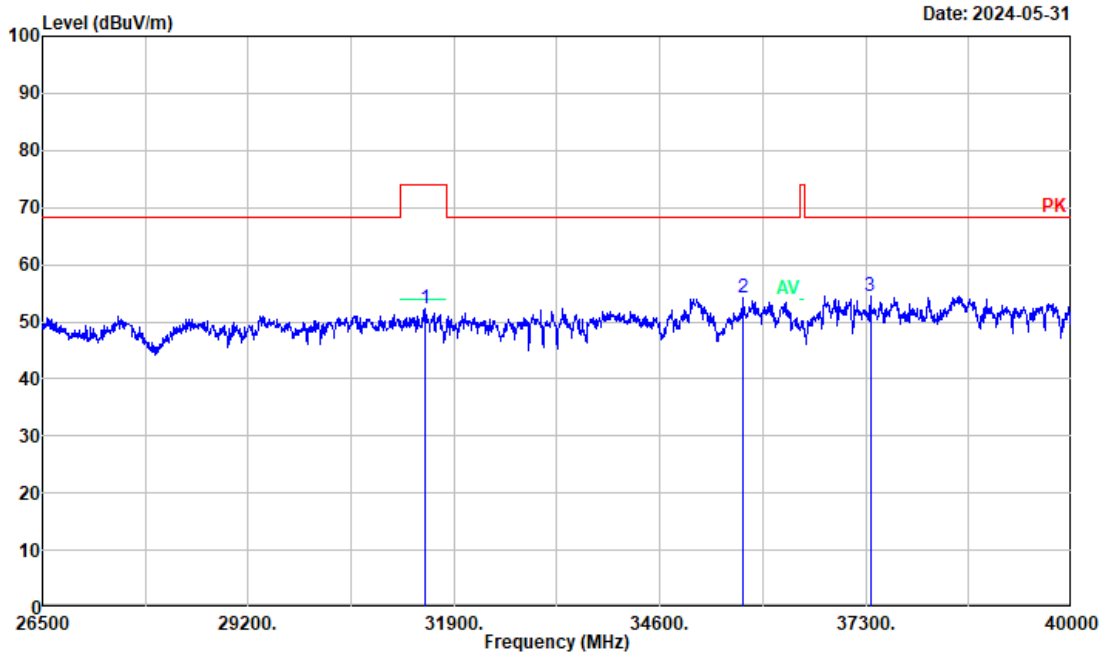


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	31193.600	49.44	2.40	51.84	68.20	-16.36	Peak
2	35070.040	49.68	4.59	54.27	68.20	-13.93	Peak
3	38527.770	47.60	6.75	54.35	68.20	-13.85	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11ac80	Channel:	5210MHz



Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band1 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	31524.510	49.78	2.43	52.21	74.00	-21.79	Peak
2	35698.100	49.79	4.54	54.33	68.20	-13.87	Peak
3	37359.430	46.51	7.99	54.50	68.20	-13.70	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

5725-5850MHz Band:

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
802.11a							
Low Channel							
5637.269	49.39	horizontal	11.27	60.66	68.20	-7.54	Peak
5650.900	47.55	horizontal	11.32	58.87	68.87	-10.00	Peak
5700.925	46.91	horizontal	11.61	58.52	105.46	-46.94	Peak
5721.061	51.87	horizontal	11.64	63.51	113.22	-49.71	Peak
5640.145	49.20	vertical	11.28	60.48	68.20	-7.72	Peak
5650.525	47.84	vertical	11.32	59.16	68.59	-9.43	Peak
5700.675	47.36	vertical	11.61	58.97	105.39	-46.42	Peak
5721.061	51.75	vertical	11.64	63.39	113.22	-49.83	Peak
11490.000	45.56	horizontal	6.10	51.66	74.00	-22.34	Peak
11490.000	44.81	vertical	6.10	50.91	74.00	-23.09	Peak
Middle Channel							
11570.000	47.81	horizontal	5.58	53.39	74.00	-20.61	Peak
11570.000	46.74	vertical	5.58	52.32	74.00	-21.68	Peak
High Channel							
5852.926	51.37	horizontal	11.49	62.86	115.53	-52.67	Peak
5873.437	47.87	horizontal	11.38	59.25	105.64	-46.39	Peak
5922.961	48.23	horizontal	11.27	59.50	69.70	-10.20	Peak
5930.215	48.89	horizontal	11.28	60.17	68.20	-8.03	Peak
5853.552	49.62	vertical	11.49	61.11	114.10	-52.99	Peak
5872.436	48.74	vertical	11.40	60.14	105.92	-45.78	Peak
5923.086	49.23	vertical	11.27	60.50	69.61	-9.11	Peak
5954.603	49.02	vertical	11.28	60.30	68.20	-7.90	Peak
11650.000	46.43	horizontal	5.46	51.89	74.00	-22.11	Peak
11650.000	46.92	vertical	5.46	52.38	74.00	-21.62	Peak
802.11n20							
Low Channel							
5639.520	48.86	horizontal	11.27	60.13	68.20	-8.07	Peak
5651.651	48.17	horizontal	11.32	59.49	69.43	-9.94	Peak
5701.050	47.45	horizontal	11.61	59.06	105.49	-46.43	Peak
5720.936	48.22	horizontal	11.64	59.86	112.93	-53.07	Peak
5640.771	49.23	vertical	11.28	60.51	68.20	-7.69	Peak
5650.650	47.67	vertical	11.32	58.99	68.68	-9.69	Peak
5700.675	47.32	vertical	11.61	58.93	105.39	-46.46	Peak

5720.936	46.99	vertical	11.64	58.63	112.93	-54.30	Peak
11490.000	45.60	horizontal	6.10	51.70	74.00	-22.30	Peak
11490.000	45.89	vertical	6.10	51.99	74.00	-22.01	Peak
Middle Channel							
11570.000	46.51	horizontal	5.58	52.09	74.00	-21.91	Peak
11570.000	46.10	vertical	5.58	51.68	74.00	-22.32	Peak
High Channel							
5854.552	47.29	horizontal	11.49	58.78	111.82	-53.04	Peak
5874.187	46.96	horizontal	11.38	58.34	105.43	-47.09	Peak
5923.962	47.31	horizontal	11.27	58.58	68.97	-10.39	Peak
5953.602	49.20	horizontal	11.28	60.48	68.20	-7.72	Peak
5854.802	47.27	vertical	11.48	58.75	111.25	-52.50	Peak
5874.312	46.38	vertical	11.38	57.76	105.39	-47.63	Peak
5922.086	49.19	vertical	11.27	60.46	70.35	-9.89	Peak
5960.105	48.83	vertical	11.28	60.11	68.20	-8.09	Peak
11650.000	46.56	horizontal	5.46	52.02	74.00	-21.98	Peak
11650.000	47.54	vertical	5.46	53.00	74.00	-21.00	Peak
802.11n40							
Low Channel							
5637.269	48.72	horizontal	11.27	59.99	68.20	-8.21	Peak
5650.525	47.31	horizontal	11.32	58.63	68.59	-9.96	Peak
5700.550	46.73	horizontal	11.61	58.34	105.35	-47.01	Peak
5720.686	51.30	horizontal	11.64	62.94	112.36	-49.42	Peak
5630.640	49.54	vertical	11.24	60.78	68.20	-7.42	Peak
5650.650	48.87	vertical	11.32	60.19	68.68	-8.49	Peak
5700.675	47.14	vertical	11.61	58.75	105.39	-46.64	Peak
5720.686	50.07	vertical	11.64	61.71	112.36	-50.65	Peak
11510.000	47.10	horizontal	6.04	53.14	74.00	-20.86	Peak
11510.000	47.31	vertical	6.04	53.35	74.00	-20.65	Peak
High Channel							
5854.302	46.75	horizontal	11.49	58.24	112.39	-54.15	Peak
5874.187	47.70	horizontal	11.38	59.08	105.43	-46.35	Peak
5924.462	48.22	horizontal	11.27	59.49	68.60	-9.11	Peak
5931.341	48.51	horizontal	11.28	59.79	68.20	-8.41	Peak
5854.427	48.30	vertical	11.49	59.79	112.11	-52.32	Peak
5874.312	47.72	vertical	11.38	59.10	105.39	-46.29	Peak
5924.462	48.07	vertical	11.27	59.34	68.60	-9.26	Peak
5948.975	49.49	vertical	11.30	60.79	68.20	-7.41	Peak

11590.000	45.97	horizontal	5.42	51.39	74.00	-22.61	Peak
11590.000	46.88	vertical	5.42	52.30	74.00	-21.70	Peak
802.11ac80							
Low Channel							
5649.225	47.72	horizontal	11.31	59.03	68.20	-9.17	Peak
5653.627	46.96	horizontal	11.34	58.30	70.89	-12.59	Peak
5701.250	51.31	horizontal	11.61	62.92	105.55	-42.63	Peak
5721.261	52.30	horizontal	11.64	63.94	113.68	-49.74	Peak
5853.727	46.97	horizontal	11.49	58.46	113.70	-55.24	Peak
5873.737	46.80	horizontal	11.38	58.18	105.55	-47.37	Peak
5922.562	47.33	horizontal	11.27	58.60	70.00	-11.40	Peak
5960.180	48.72	horizontal	11.28	60.00	68.20	-8.20	Peak
5610.205	49.82	vertical	11.16	60.98	68.20	-7.22	Peak
5653.627	49.26	vertical	11.34	60.60	70.89	-10.29	Peak
5709.655	53.09	vertical	11.63	64.72	107.91	-43.19	Peak
5722.661	51.05	vertical	11.65	62.70	116.87	-54.17	Peak
5852.926	47.84	vertical	11.49	59.33	115.53	-56.20	Peak
5871.536	47.72	vertical	11.40	59.12	106.17	-47.05	Peak
5924.362	48.58	vertical	11.27	59.85	68.67	-8.82	Peak
5947.974	49.49	vertical	11.30	60.79	68.20	-7.41	Peak
11550.000	45.67	horizontal	5.72	51.39	74.00	-22.61	Peak
11550.000	45.39	vertical	5.72	51.11	74.00	-22.89	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

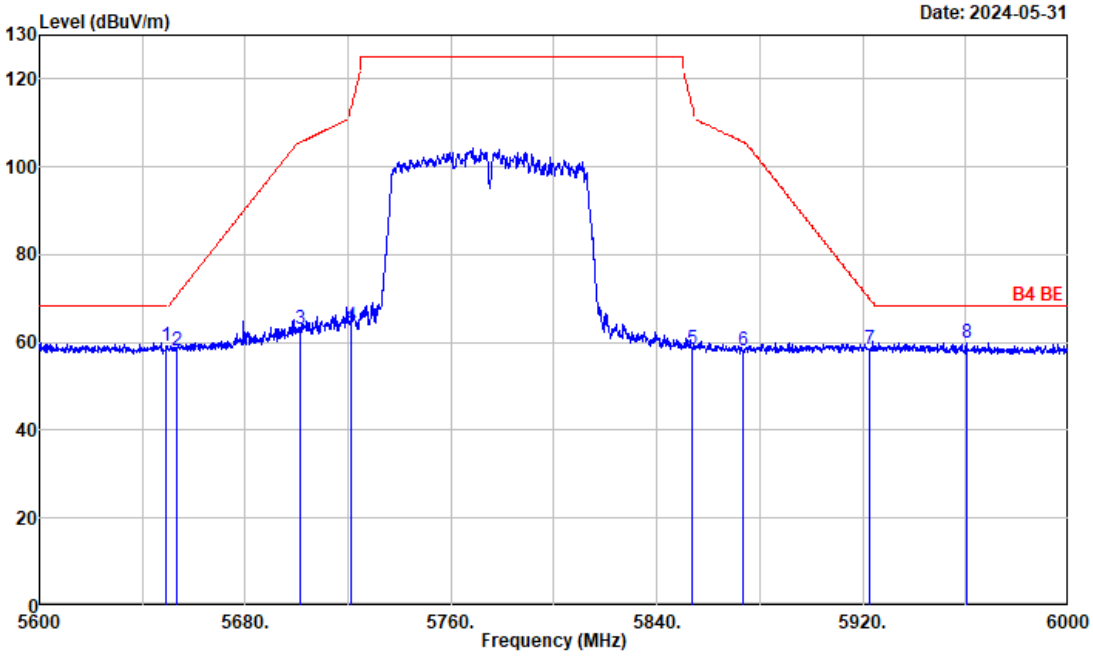
Margin = Corrected Amplitude – Limit

The emission levels of other frequencies that were lower than the limit 20dB, not show in test report.

For emissions in 18GHz-40GHz range, all emissions were investigated and in the noise floor level.

Test plot for example as below:

Mode:	802.11ac80	Channel:	5775MHz

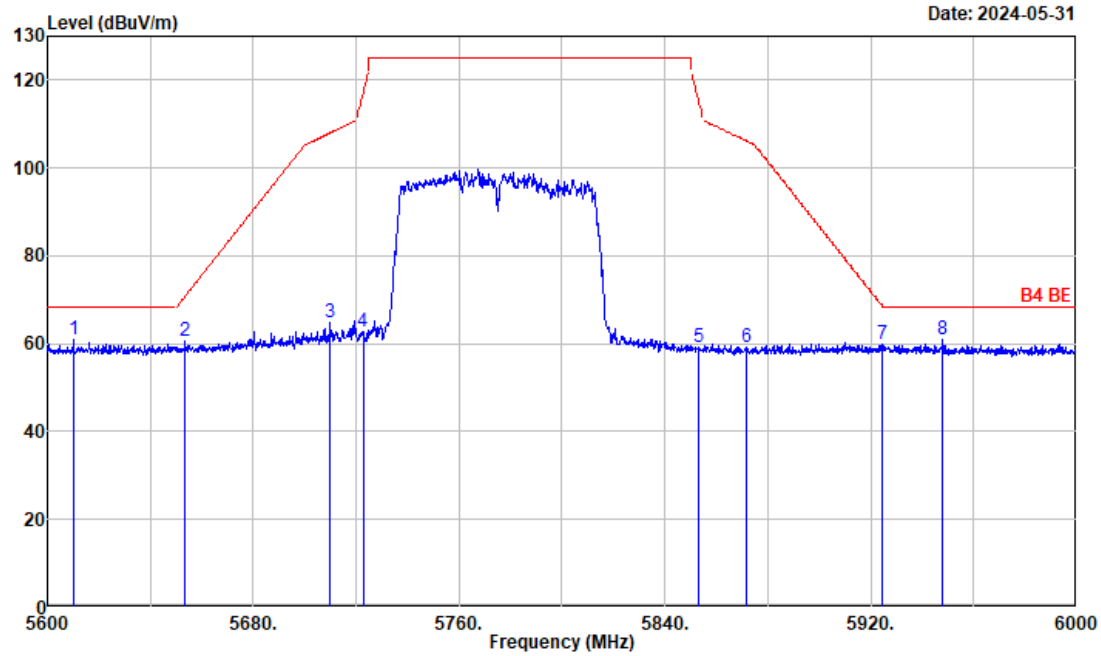


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band4 802.11ac80 channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5649.225	47.72	11.31	59.03	68.20	-9.17	Peak
2	5653.627	46.96	11.34	58.30	70.89	-12.59	Peak
3	5701.250	51.31	11.61	62.92	105.55	-42.63	Peak
4	5721.261	52.30	11.64	63.94	113.68	-49.74	Peak
5	5853.727	46.97	11.49	58.46	113.70	-55.24	Peak
6	5873.737	46.80	11.38	58.18	105.55	-47.37	Peak
7	5922.562	47.33	11.27	58.60	70.00	-11.40	Peak
8	5960.180	48.72	11.28	60.00	68.20	-8.20	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11ac80	Channel:	5775MHz

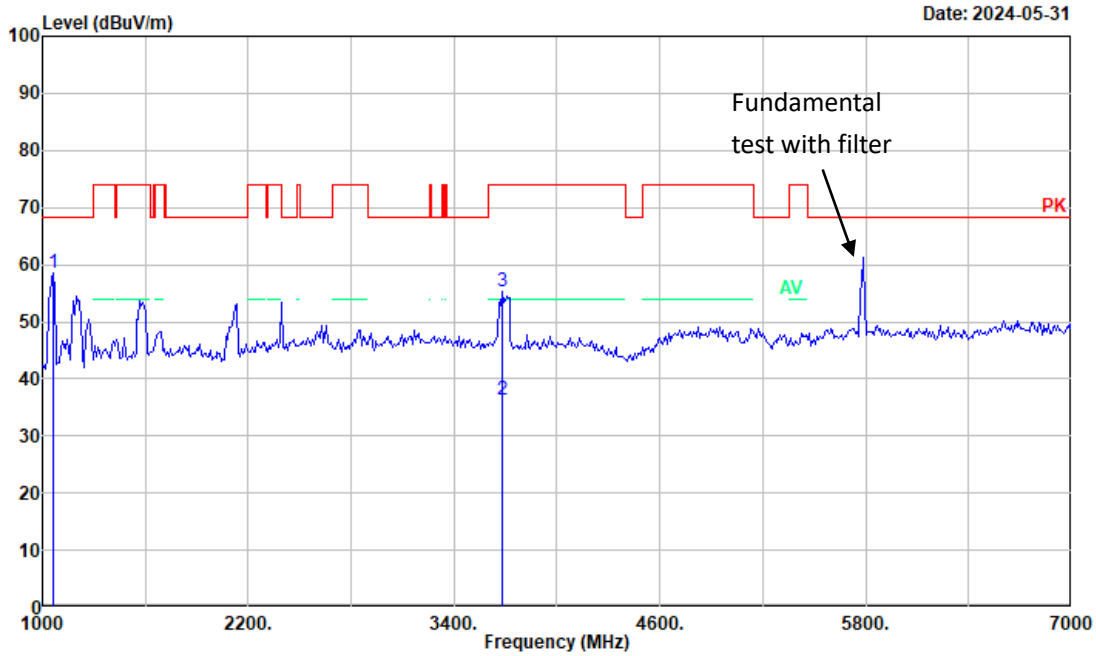


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band4 802.11ac80 channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	5610.205	49.82	11.16	60.98	68.20	-7.22	Peak
2	5653.627	49.26	11.34	60.60	70.89	-10.29	Peak
3	5709.655	53.09	11.63	64.72	107.91	-43.19	Peak
4	5722.661	51.05	11.65	62.70	116.87	-54.17	Peak
5	5852.926	47.84	11.49	59.33	115.53	-56.20	Peak
6	5871.536	47.72	11.40	59.12	106.17	-47.05	Peak
7	5924.362	48.58	11.27	59.85	68.67	-8.82	Peak
8	5947.974	49.49	11.30	60.79	68.20	-7.41	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

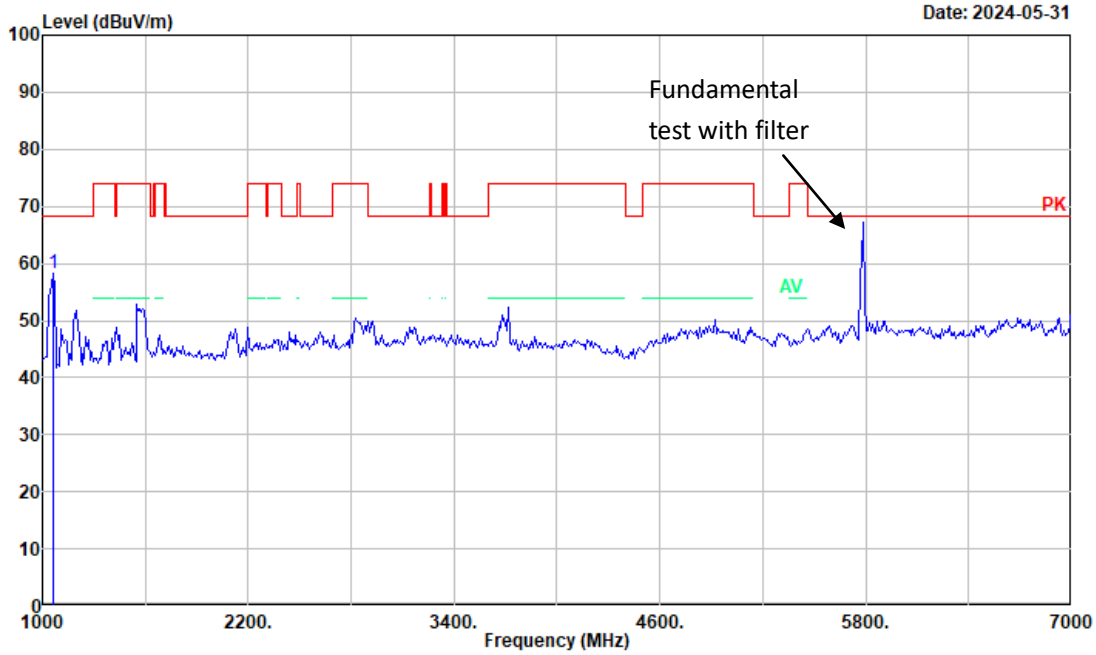
Mode:	802.11a	Channel:	5785MHz



Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	1059.530	64.83	-6.28	58.55	68.20	-9.65	Peak
2	3678.839	38.96	-2.60	36.36	54.00	-17.64	Average
3	3678.839	57.79	-2.60	55.19	74.00	-18.81	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

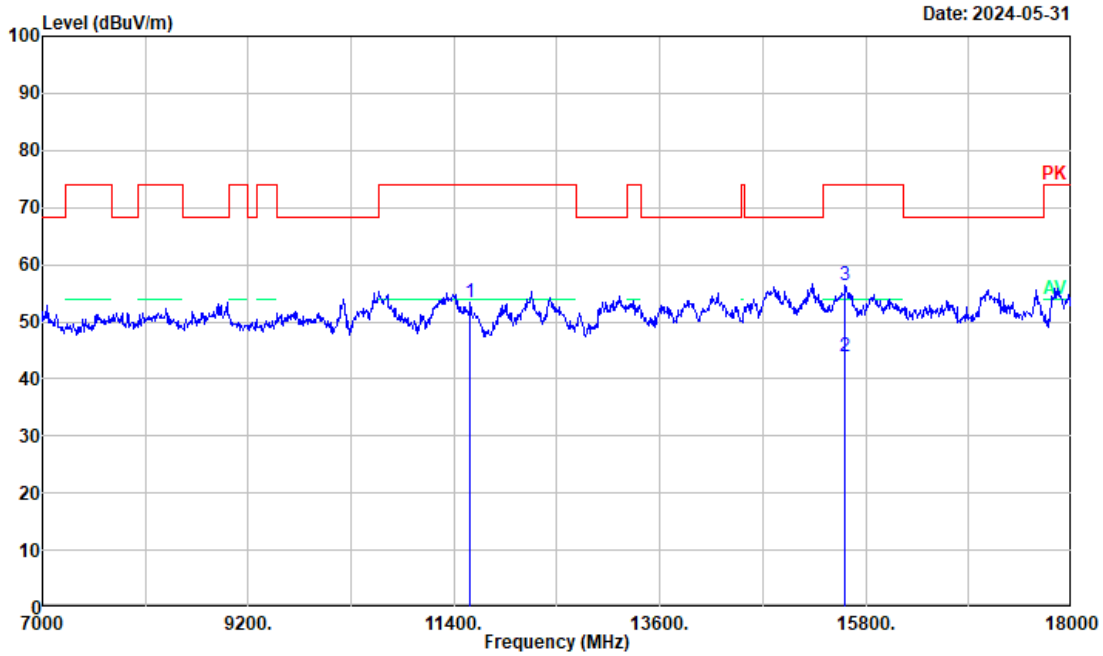


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	1059.530	64.42	-6.28	58.14	68.20	-10.06	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11a	Channel:	5785MHz

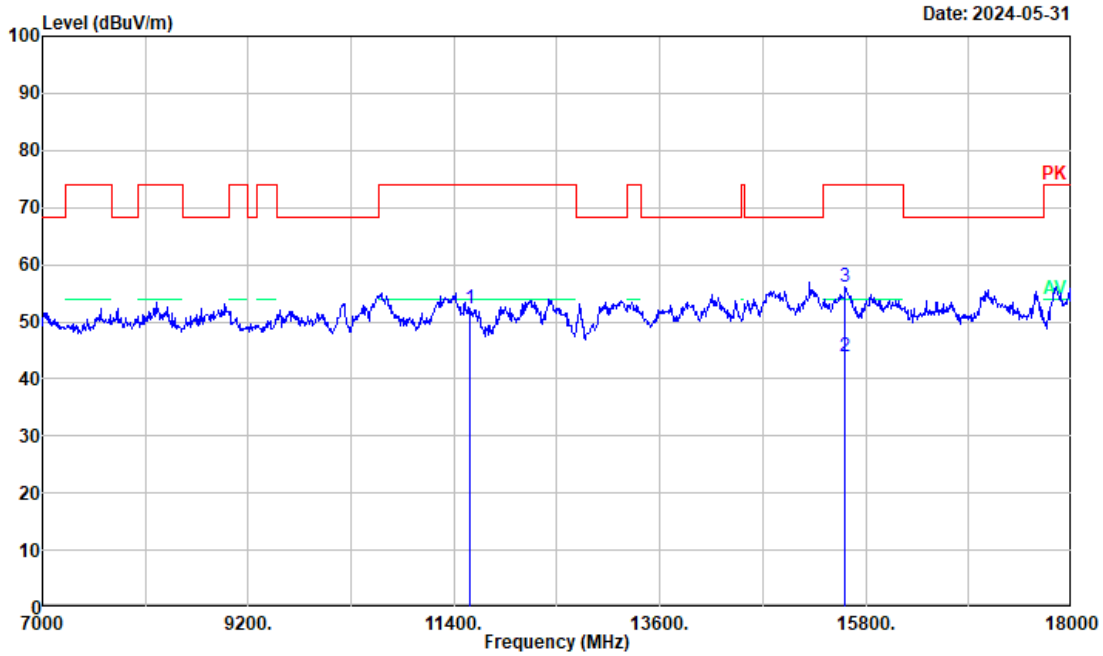


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	11570.000	47.81	5.58	53.39	74.00	-20.61	Peak
2	15576.290	35.11	8.87	43.98	54.00	-10.02	Average
3	15576.290	47.47	8.87	56.34	74.00	-17.66	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11a	Channel:	5785MHz

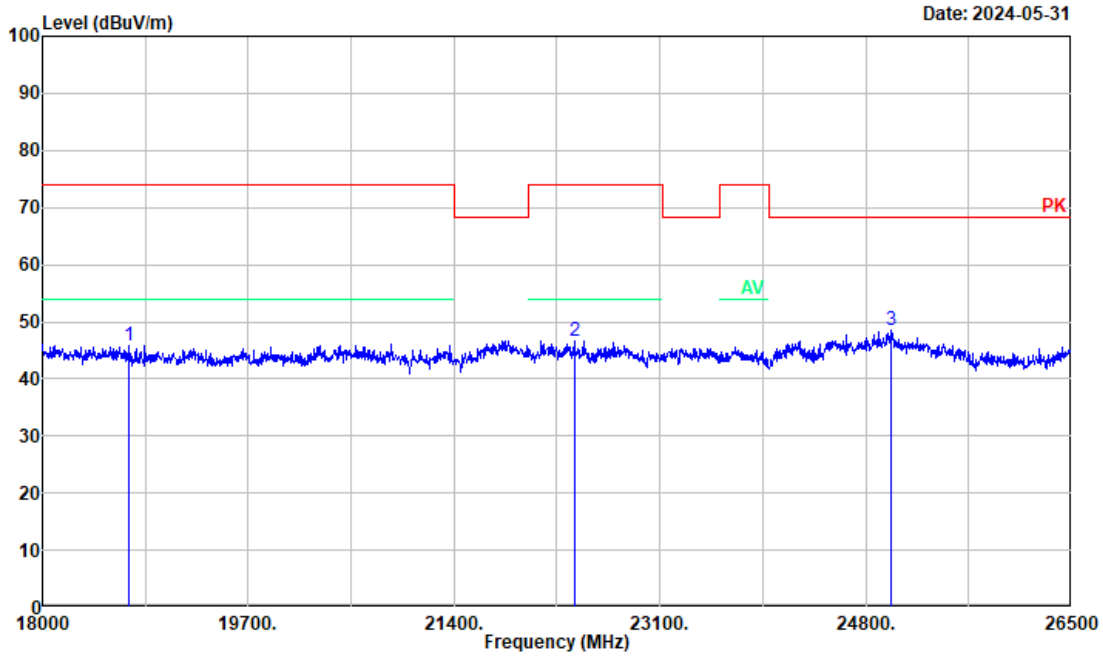


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	11570.000	46.74	5.58	52.32	74.00	-21.68	Peak
2	15576.290	35.06	8.87	43.93	54.00	-10.07	Average
3	15576.290	47.16	8.87	56.03	74.00	-17.97	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit

Mode:	802.11a	Channel:	5785MHz

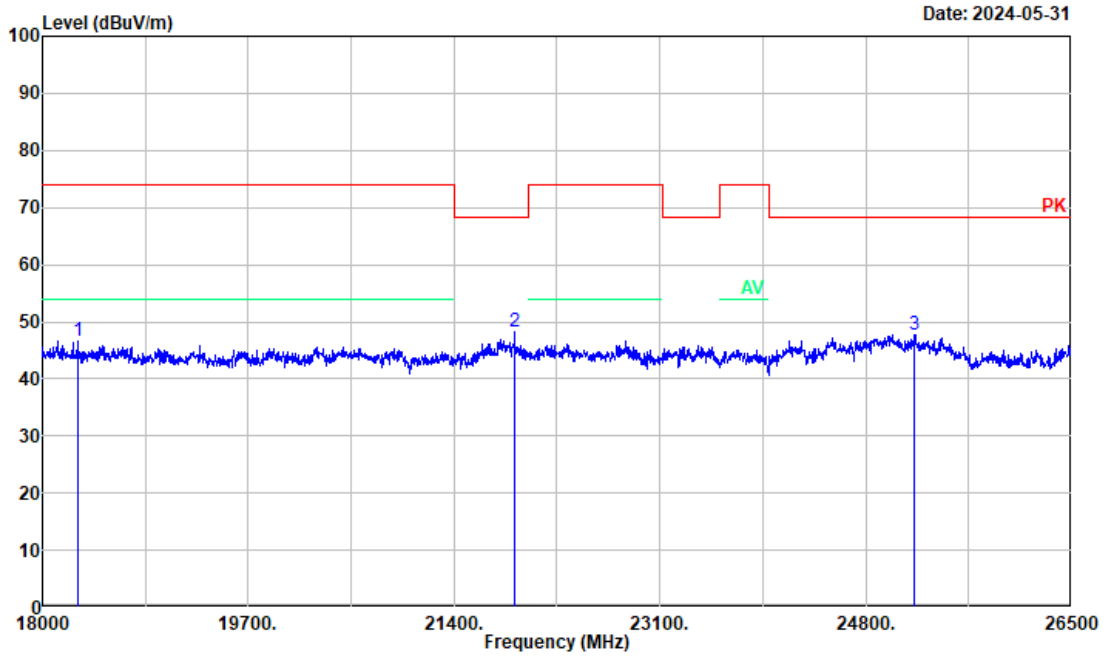


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	18714.360	52.23	-6.39	45.84	74.00	-28.16	Peak
2	22392.450	53.80	-7.11	46.69	74.00	-27.31	Peak
3	25007.500	51.42	-2.93	48.49	68.20	-19.71	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11a	Channel:	5785MHz

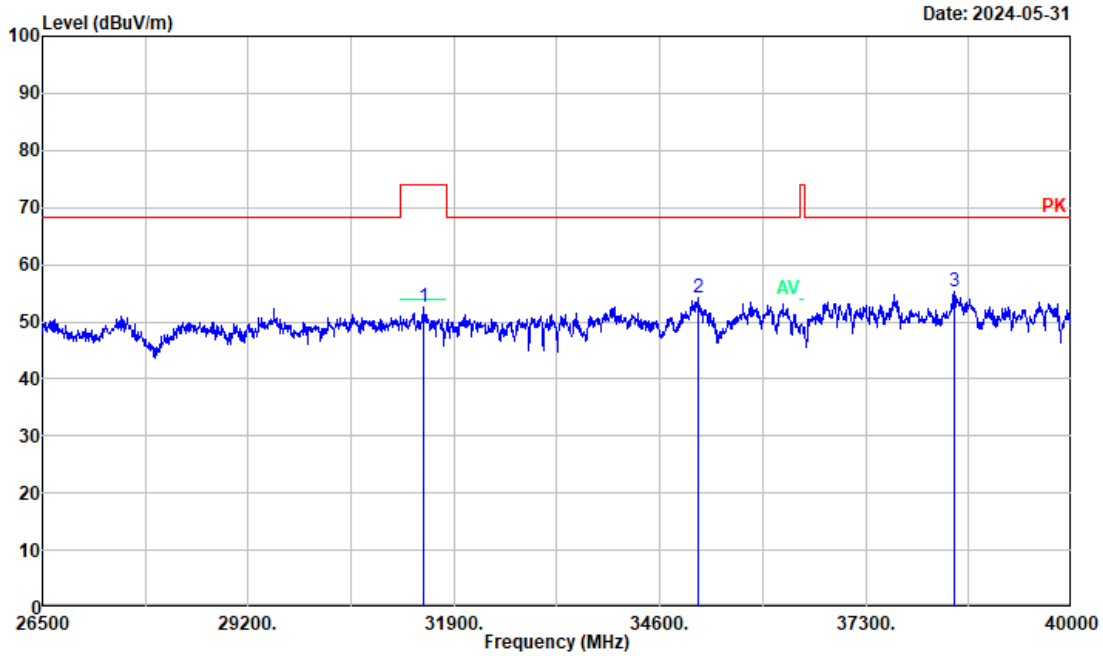


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	18289.140	52.43	-5.86	46.57	74.00	-27.43	Peak
2	21899.200	55.02	-6.83	48.19	68.20	-20.01	Peak
3	25198.850	51.60	-3.84	47.76	68.20	-20.44	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11a	Channel:	5785MHz

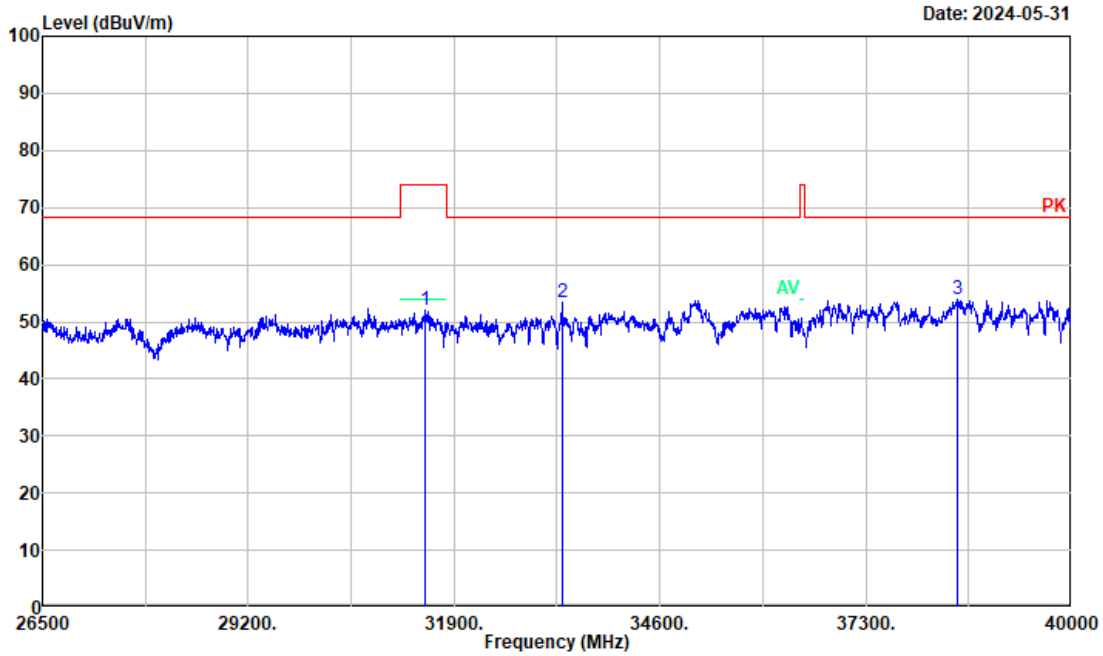


Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	31504.250	50.10	2.44	52.54	74.00	-21.46	Peak
2	35103.800	49.52	4.60	54.12	68.20	-14.08	Peak
3	38453.480	48.28	6.92	55.20	68.20	-13.00	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11a	Channel:	5785MHz



Project No. : 2405T77560E
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.1℃/63%R.H./99.9kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5GWiFi band4 802.11a middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	31524.510	49.66	2.43	52.09	74.00	-21.91	Peak
2	33314.160	50.44	2.99	53.43	68.20	-14.77	Peak
3	38494.000	47.05	6.82	53.87	68.20	-14.33	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

3.5 RF Conducted Test Data

Test Date:	2024-06-06	Test By:	Ryan Zhang
Environment condition:	Temperature: 23.6°C; Relative Humidity:65%; ATM Pressure: 99.9kPa		

3.5.1 26dB/6dB Emission Bandwidth and 99% Occupied Bandwidth

5150-5250MHz Band:

Test Mode	Antenna	Channel	26dB BW [MHz]	99% OBW [MHz]
802.11a	Ant1	5180	20.320	16.960
		5200	20.480	16.960
		5240	20.560	16.960
802.11n HT20	Ant1	5180	20.640	17.840
		5200	20.560	17.760
		5240	20.720	17.760
802.11n HT40	Ant1	5190	40.480	36.160
		5230	40.320	36.160
802.11ac VHT80	Ant1	5210	82.240	75.520

5725-5850MHz Band:

Test Mode	Antenna	Channel	6dB BW [MHz]	99% OBW [MHz]	6dB BW Limit [MHz]	Verdict
802.11a	Ant1	5745	15.200	16.960	0.5	pass
		5785	15.280	16.960	0.5	pass
		5825	15.200	16.880	0.5	pass
802.11n HT20	Ant1	5745	16.240	17.680	0.5	pass
		5785	16.800	17.680	0.5	pass
		5825	16.560	17.680	0.5	pass
802.11n HT40	Ant1	5755	35.680	36.160	0.5	pass
		5795	35.680	36.160	0.5	pass
802.11ac VHT80	Ant1	5775	75.520	75.520	0.5	pass

Note: test only performed on antenna 1.

3.5.2 Maximum conducted output power

5150-5250MHz Band:

Test Mode	Antenna	Channel [MHz]	Result [dBm]	Limit [dBm]	Verdict
802.11a	Ant1	5180	13.41	24	Pass
		5200	13.13	24	Pass
		5240	13.25	24	Pass
	Ant2	5180	13.13	24	Pass
		5200	13.08	24	Pass
		5240	12.94	24	Pass
	Total	5180	16.28	24	Pass
		5200	16.12	24	Pass
		5240	16.11	24	Pass
802.11n HT20	Ant1	5180	10.65	24	Pass
		5200	10.49	24	Pass
		5240	10.54	24	Pass
	Ant2	5180	10.55	24	Pass
		5200	10.61	24	Pass
		5240	10.51	24	Pass
	Total	5180	13.61	24	Pass
		5200	13.56	24	Pass
		5240	13.54	24	Pass
802.11n HT40	Ant1	5190	10.82	24	Pass
		5230	10.95	24	Pass
	Ant2	5190	10.66	24	Pass
		5230	10.57	24	Pass
	Total	5190	13.75	24	Pass
		5230	13.77	24	Pass
802.11ac VHT80	Ant1	5210	9.48	24	Pass
	Ant2	5210	9.56	24	Pass
	Total	5210	12.53	24	Pass

5725-5850MHz Band:

Test Mode	Antenna	Channel [MHz]	Result [dBm]	Limit [dBm]	Verdict
802.11a	Ant1	5745	13.75	30	Pass
		5785	13.73	30	Pass
		5825	13.54	30	Pass
	Ant2	5745	13.88	30	Pass
		5785	13.92	30	Pass
		5825	13.79	30	Pass
	Total	5745	16.83	30	Pass
		5785	16.84	30	Pass
		5825	16.68	30	Pass
802.11n HT20	Ant1	5745	12.85	30	Pass
		5785	12.81	30	Pass
		5825	12.59	30	Pass
	Ant2	5745	12.94	30	Pass
		5785	13.07	30	Pass
		5825	12.80	30	Pass
	Total	5745	15.91	30	Pass
		5785	15.95	30	Pass
		5825	15.71	30	Pass
802.11n HT40	Ant1	5755	12.86	30	Pass
		5795	12.73	30	Pass
	Ant2	5755	13.06	30	Pass
		5795	12.97	30	Pass
	Total	5755	15.97	30	Pass
		5795	15.86	30	Pass
802.11ac VHT80	Ant1	5775	7.39	30	Pass
	Ant2	5775	7.32	30	Pass
	Total	5775	10.37	30	Pass

Note:

The device use CDD for MIMO mode, according to KDB 662911 D01 Multiple Transmitter Output v02r01,

Directional gain = G_{ANT} + Array Gain

for power measurements on IEEE 802.11 devices: *Array Gain = 0 dB* (i.e., no array gain) for $N_{ANT} \leq 4$

$G_{ANT\,1}$*=4.27dBi,* $G_{ANT\,2}$*=3.84dBi, use the higher gain for calculate.*

Directional gain=4.27+0=4.27dBi<6dBi

3.5.3 Power Spectral Density

5150-5250MHz Band:

Test Mode	Antenna	Channel [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
802.11a	Ant1	5180	3.38	11	Pass
		5200	3.08	11	Pass
		5240	3.37	11	Pass
	Ant2	5180	3.05	11	Pass
		5200	3.11	11	Pass
		5240	2.92	11	Pass
	Total	5180	6.23	9.72	Pass
		5200	6.11	9.72	Pass
		5240	6.16	9.72	Pass
802.11n HT20	Ant1	5180	0.52	11	Pass
		5200	0.30	11	Pass
		5240	0.40	11	Pass
	Ant2	5180	0.25	11	Pass
		5200	0.34	11	Pass
		5240	0.19	11	Pass
	Total	5180	3.40	9.72	Pass
		5200	3.33	9.72	Pass
		5240	3.31	9.72	Pass
802.11n HT40	Ant1	5190	-1.89	11	Pass
		5230	-2.33	11	Pass
	Ant2	5190	-2.30	11	Pass
		5230	-2.55	11	Pass
	Total	5190	0.92	9.72	Pass
		5230	0.57	9.72	Pass

Test Mode	Antenna	Channel [MHz]	Reading [dBm/MHz]	Duty cycle factor[dB]	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
802.11ac VHT80	Ant1	5210	-5.97	0.41	-5.56	11	Pass
	Ant2	5210	-6.69	0.41	-6.28	11	Pass
	Total	5210	-3.30	0.41	-2.89	9.72	Pass

Note: the device is client device.

5725-5850MHz Band:

Test Mode	Antenna	Channel [MHz]	Result [dBm/500kHz]	Limit [dBm/500kHz]	Verdict
802.11a	Ant1	5745	1.46	30	Pass
		5785	1.39	30	Pass
		5825	1.28	30	Pass
	Ant2	5745	0.85	30	Pass
		5785	0.88	30	Pass
		5825	0.69	30	Pass
	Total	5745	4.18	28.72	Pass
		5785	4.15	28.72	Pass
		5825	4.01	28.72	Pass
802.11n HT20	Ant1	5745	0.58	30	Pass
		5785	0.48	30	Pass
		5825	0.68	30	Pass
	Ant2	5745	0.30	30	Pass
		5785	0.82	30	Pass
		5825	0.33	30	Pass
	Total	5745	3.45	28.72	Pass
		5785	3.66	28.72	Pass
		5825	3.52	28.72	Pass
802.11n HT40	Ant1	5755	-2.36	30	Pass
		5795	-2.89	30	Pass
	Ant2	5755	-2.39	30	Pass
		5795	-2.77	30	Pass
	Total	5755	0.64	28.72	Pass
		5795	0.18	28.72	Pass

Test Mode	Antenna	Channel [MHz]	Reading [dBm/500kHz]	Duty cycle factor[dB]	Result [dBm/500kHz]	Limit [dBm/500kHz]	Verdict
802.11ac VHT80	Ant1	5775	-11.92	1.84	-10.08	30	Pass
	Ant2	5775	-10.08	1.84	-8.24	30	Pass
	Total	5775	-7.89	1.84	-6.05	28.72	Pass

Note 1: for 802.11a/n20/n40 mode, gated trigger was used to trace average pulses on period.

Note 2:

The device use CDD for MIMO mode, according to KDB 662911 D01 Multiple Transmitter Output v02r01,

Directional gain = G_{ANT} + Array Gain

for power spectral density (PSD) measurements: $Array\ Gain = 10\ log(N_{ANT}/N_{SS})\ dB$

$G_{ANT\ 1}$=4.27dBi, $G_{ANT\ 2}$=3.84dBi, use the higher gain for calculate.

Directional gain=4.27+$10log(2)$=7.28dBi>6dBi, so the limit should reduce 1.28dB

3.5.4 Duty Cycle

5150-5250MHz Band:

Test Mode	Antenna	Ton (ms)	Ton+off (ms)	Duty Cycle [%]	1/T[kHz]	Duty Cycle Factor[%]	VBW setting* [Hz]
802.11a	Ant1	1.404	1.436	97.77	0.712	0.10	1000
802.11n HT20	Ant1	1.318	1.345	97.99	0.759	0.09	1000
802.11n HT40	Ant1	0.655	0.691	94.79	1.527	0.23	2000
802.11ac VHT80	Ant1	0.330	0.363	90.91	3.030	0.41	5000

5725-5850MHz Band:

Test Mode	Antenna	Ton (ms)	Ton+off (ms)	Duty Cycle [%]	1/T[kHz]	Duty Cycle Factor[%]	VBW setting* [Hz]
802.11a	Ant1	1.410	1.434	98.33	/	/	10
802.11n HT20	Ant1	0.172	0.211	81.52	5.814	0.89	10000
802.11n HT40	Ant1	0.107	0.147	72.79	9.346	1.38	10000
802.11ac VHT80	Ant1	0.076	0.116	65.52	13.158	1.84	20000

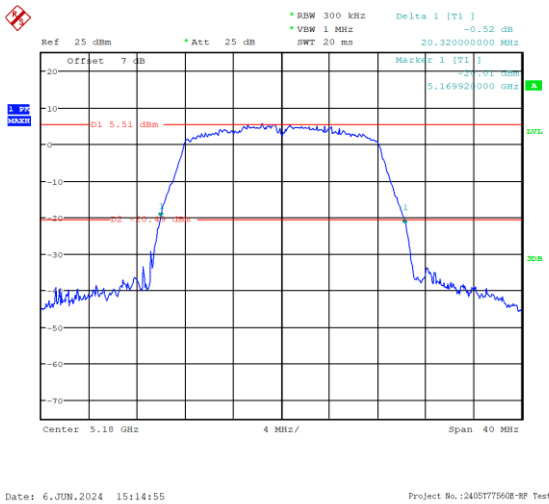
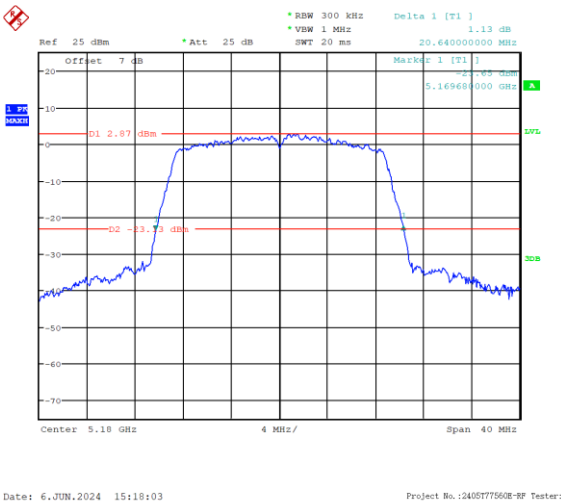
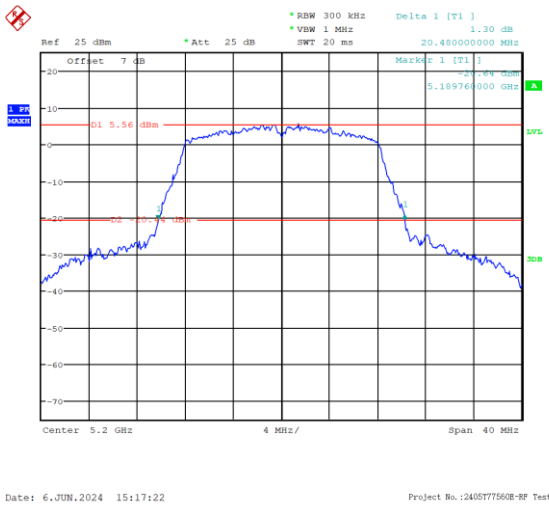
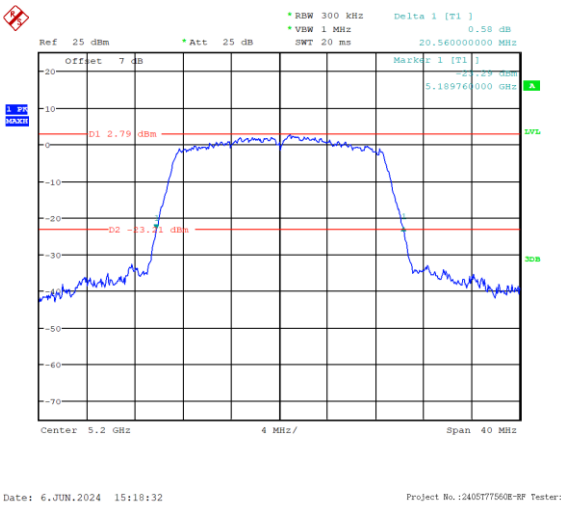
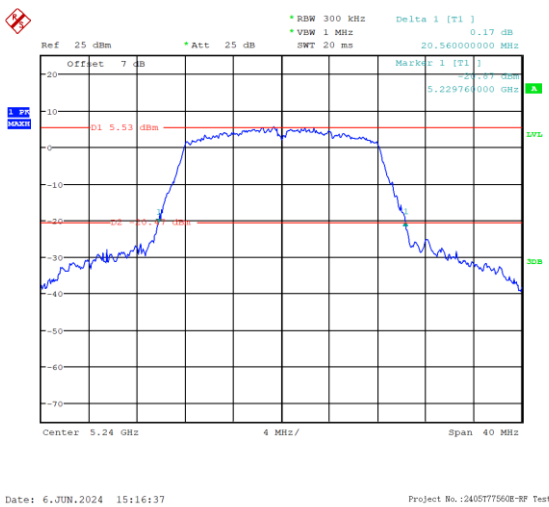
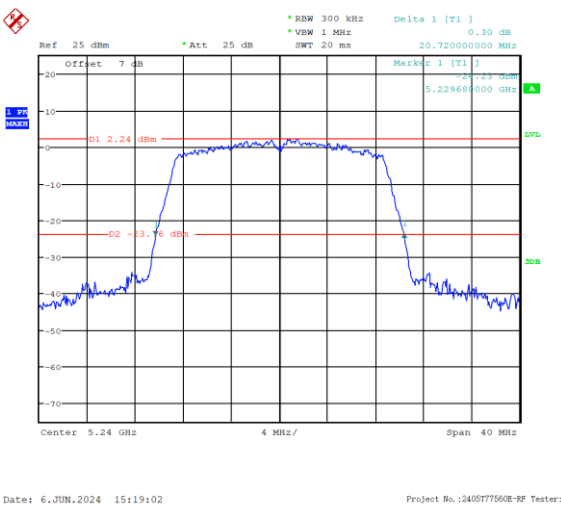
Note: test only performed on antenna 1.

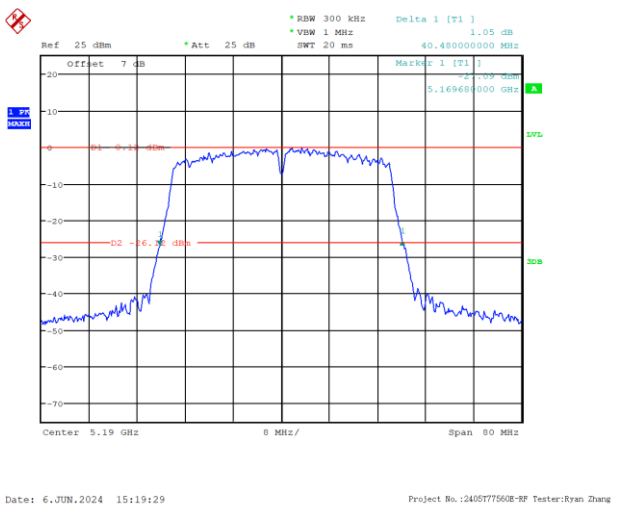
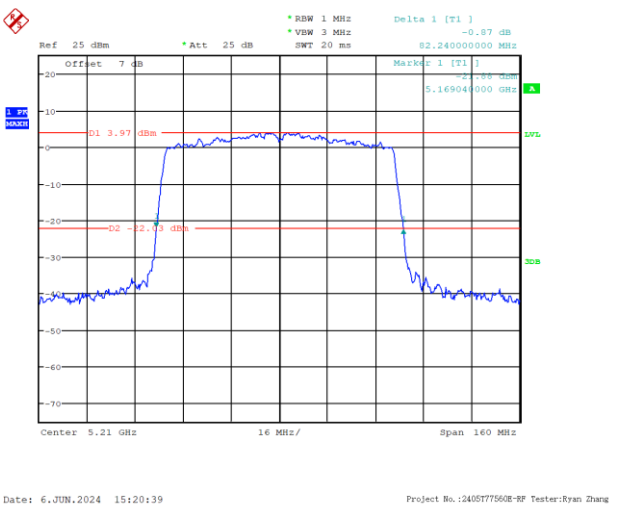
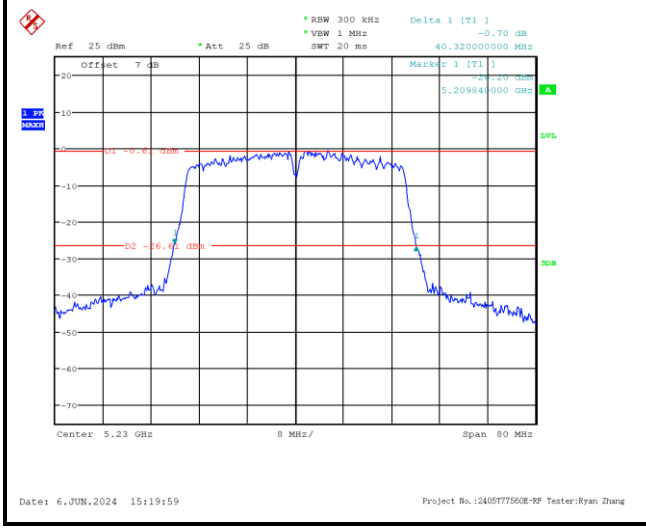
Note*: Radiated emission test with average value, the Spectrum analyzer VBW setting information.

Test Plots:

26dB Emission Bandwidth

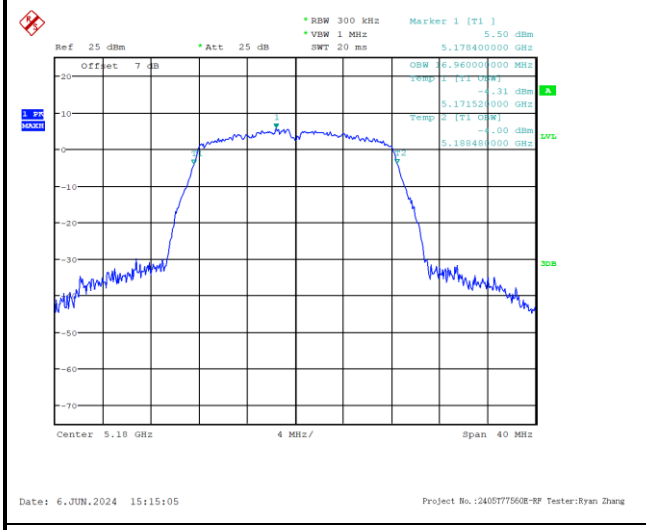
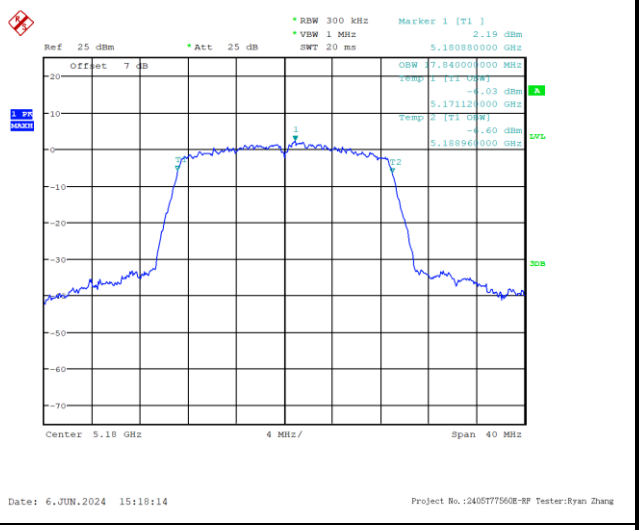
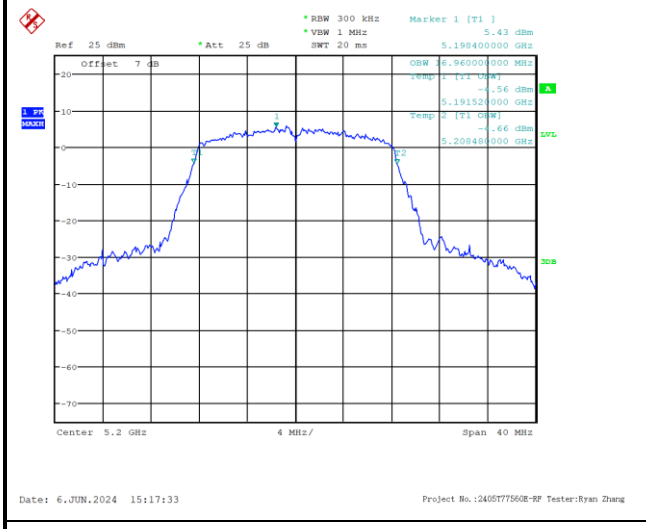
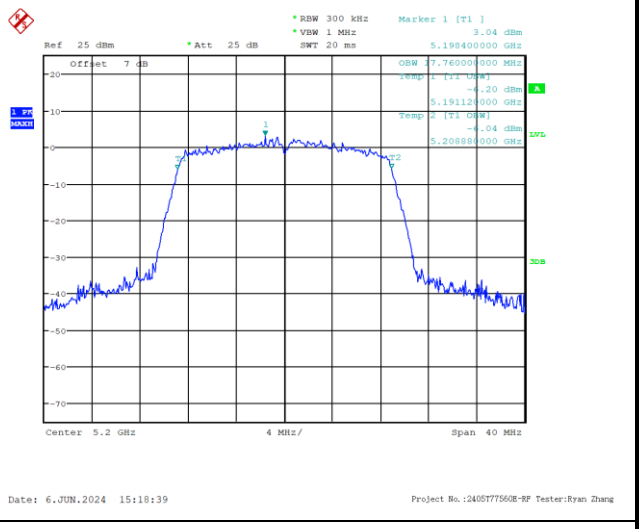
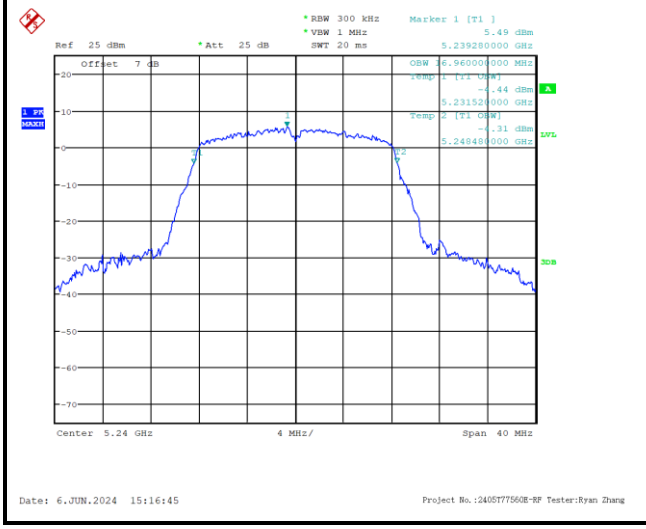
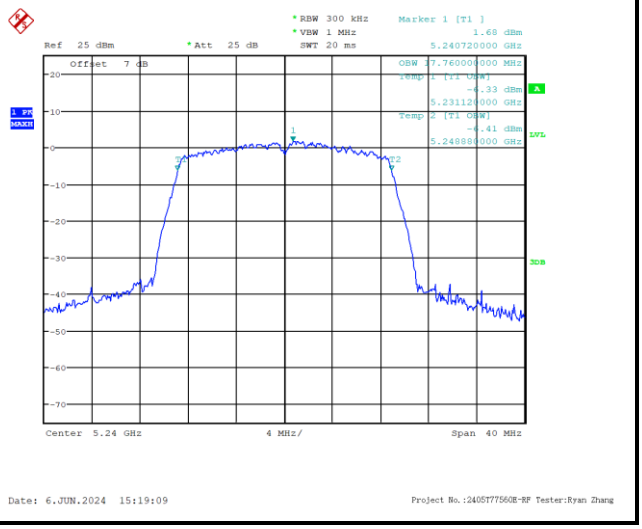
5150-5250MHz Band:

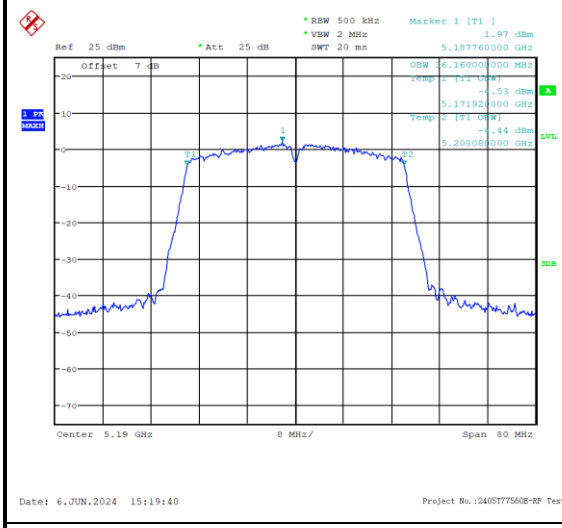
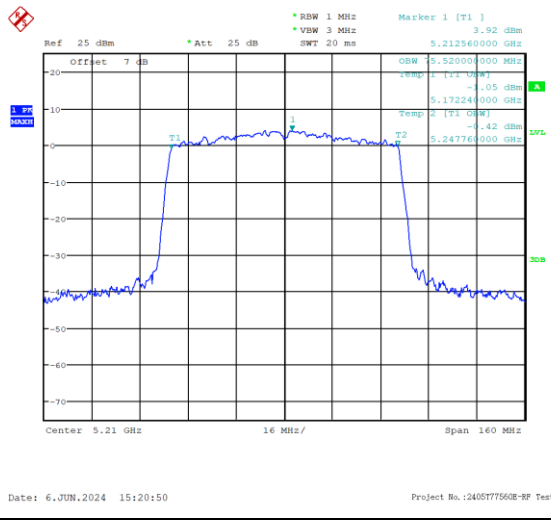
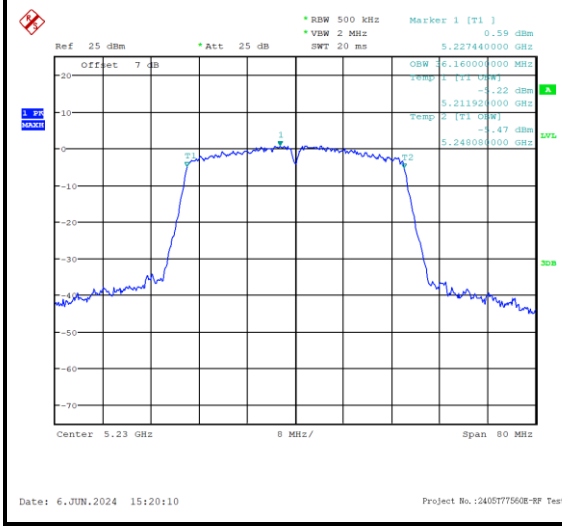
802.11a	802.11n-HT20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11n-HT40	802.11ac-VHT80
Lowest channel	Middle channel
	
High channel	/
	/

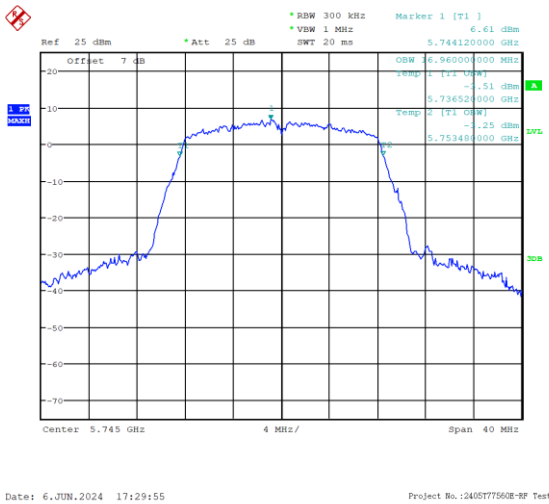
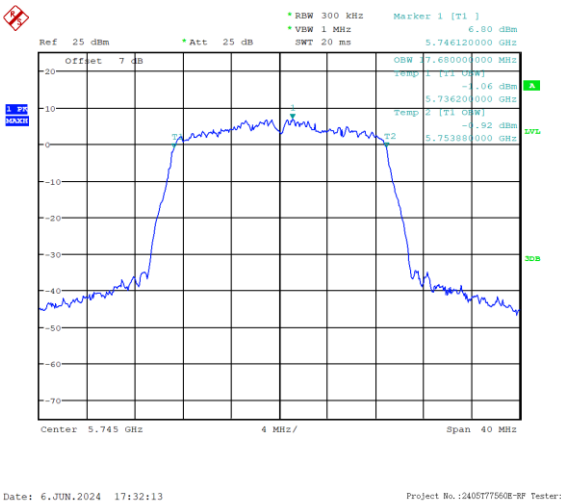
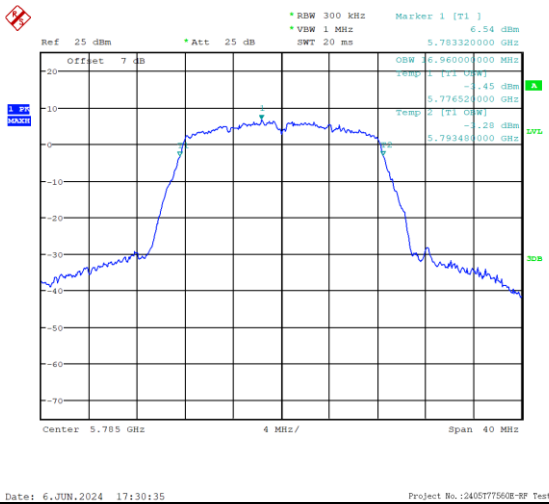
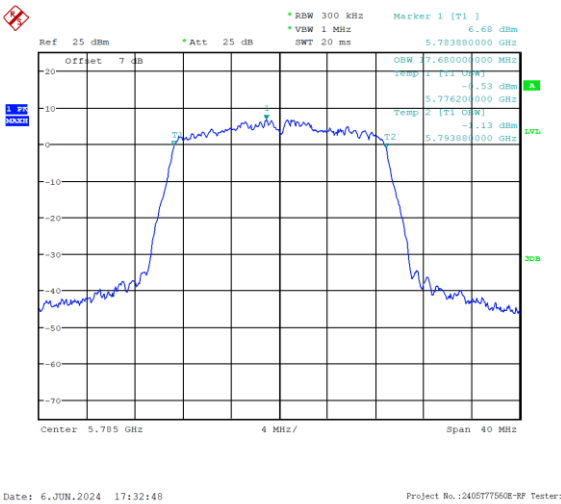
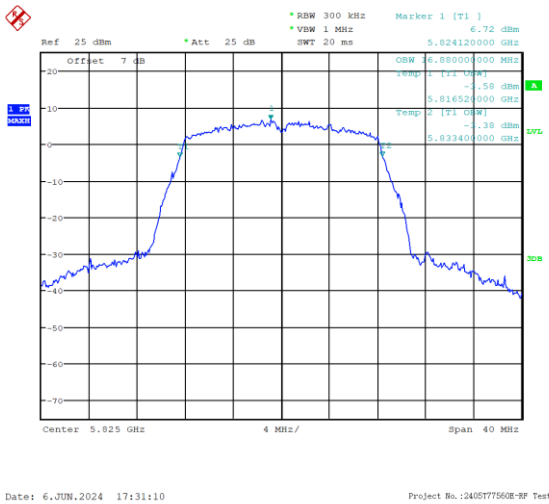
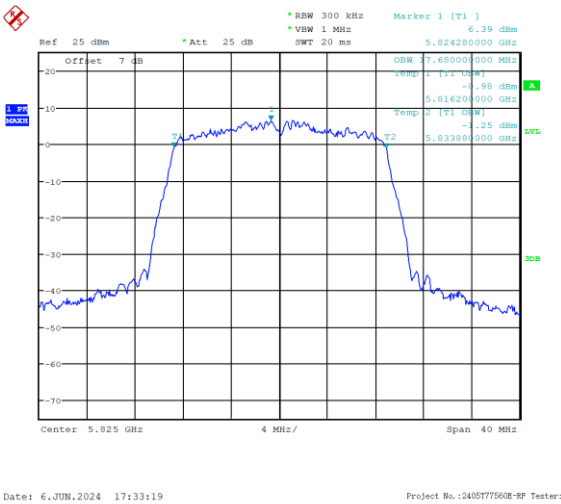
99% Occupied Bandwidth

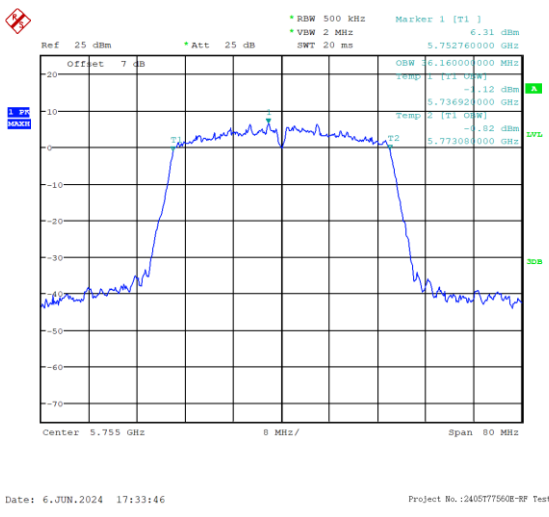
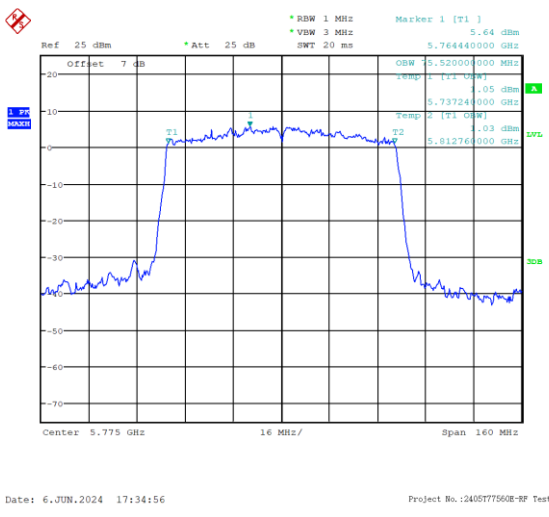
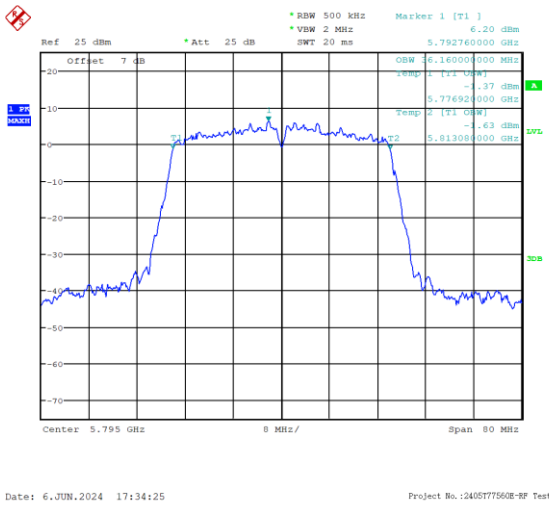
5150-5250MHz Band:

802.11a	802.11n-HT20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11n-HT40	802.11ac-VHT80
Lowest channel	Middle channel
	
High channel	/
	/

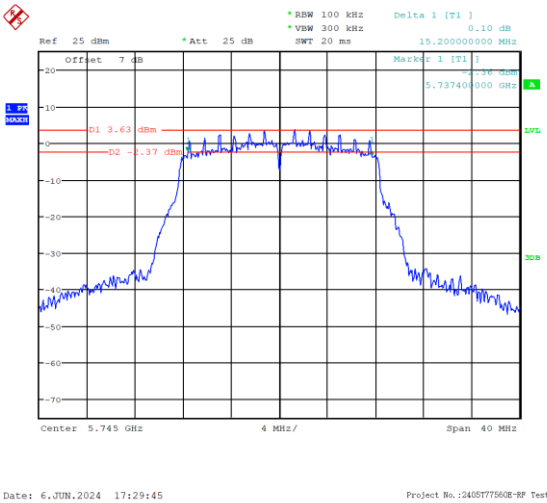
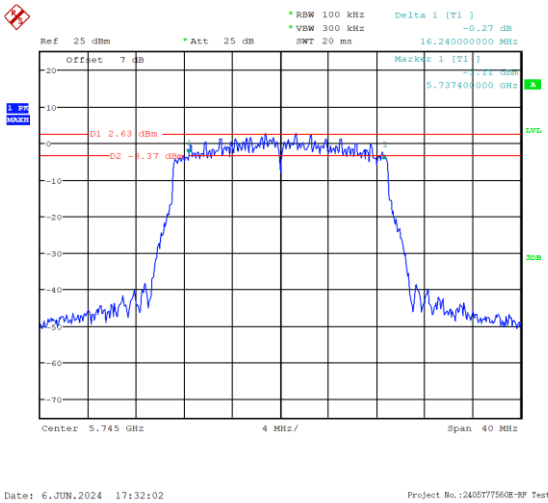
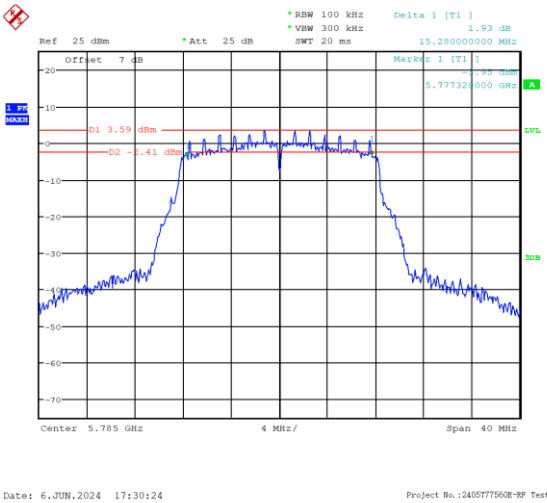
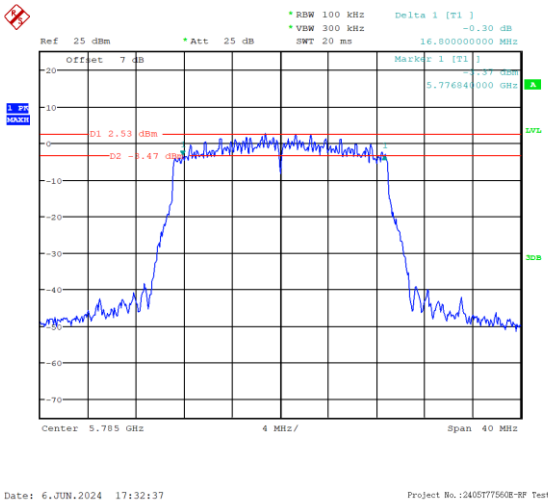
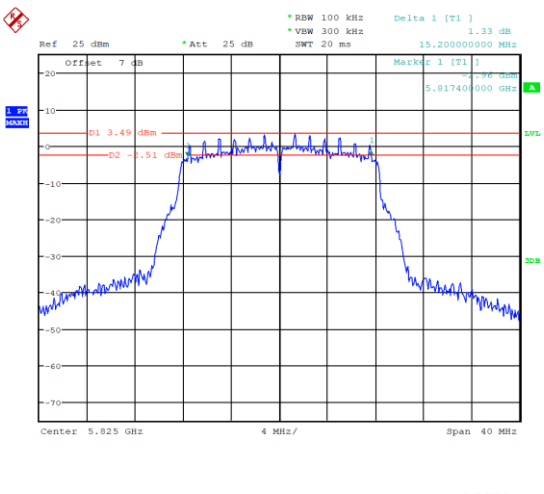
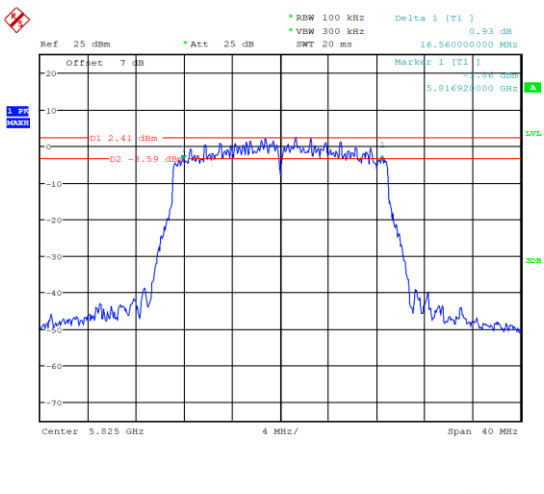
5725-5850MHz Band:

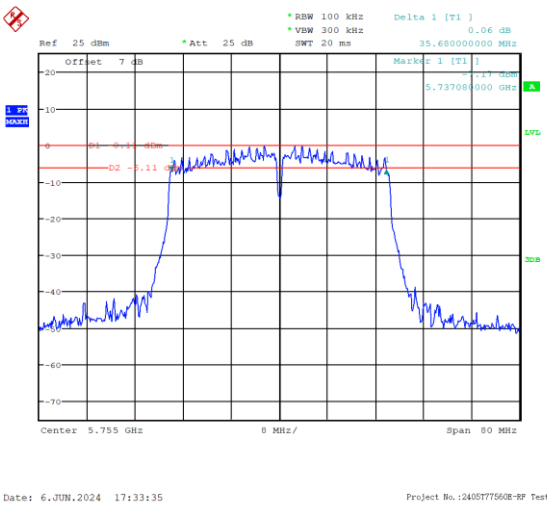
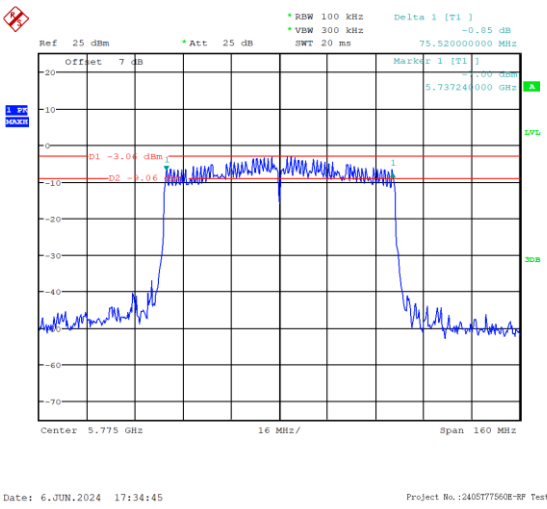
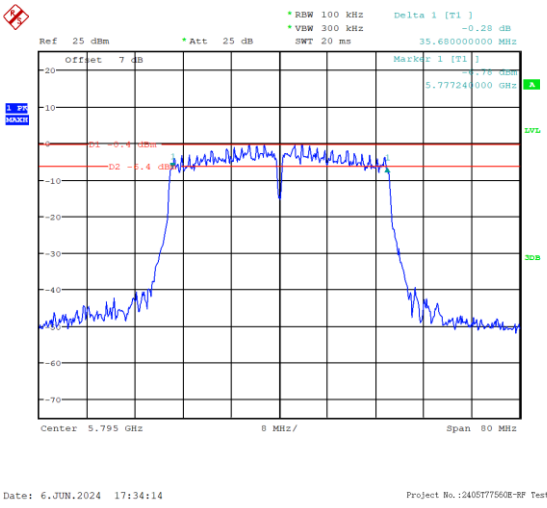
802.11a	802.11n-HT20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11n-HT40	802.11ac-VHT80
Lowest channel	Middle channel
	
High channel	/
	/

6dB Emission Bandwidth

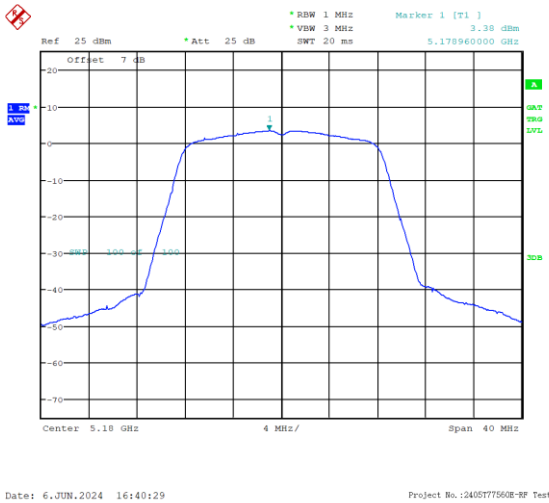
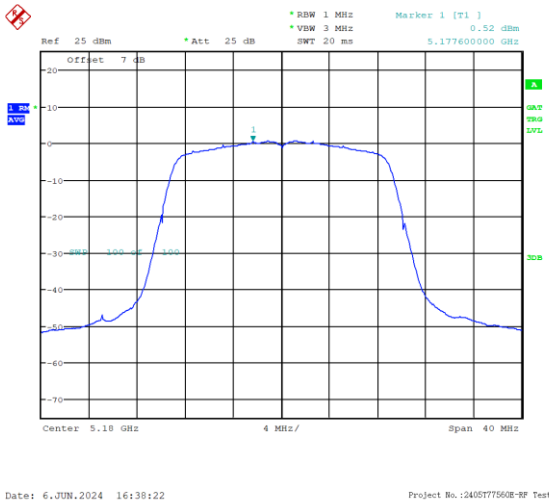
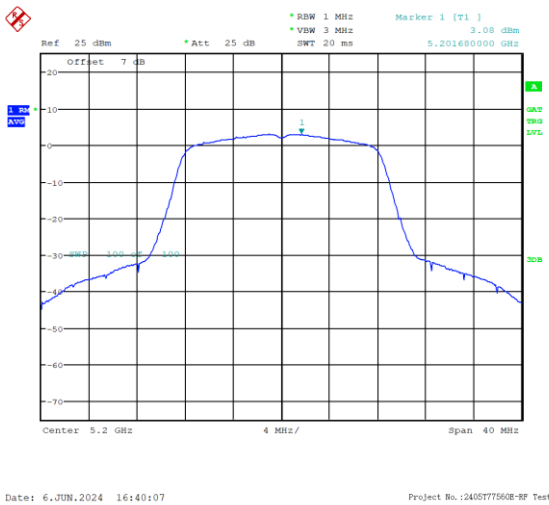
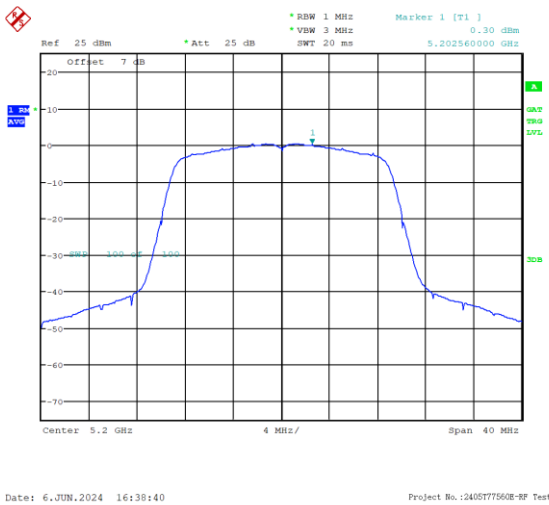
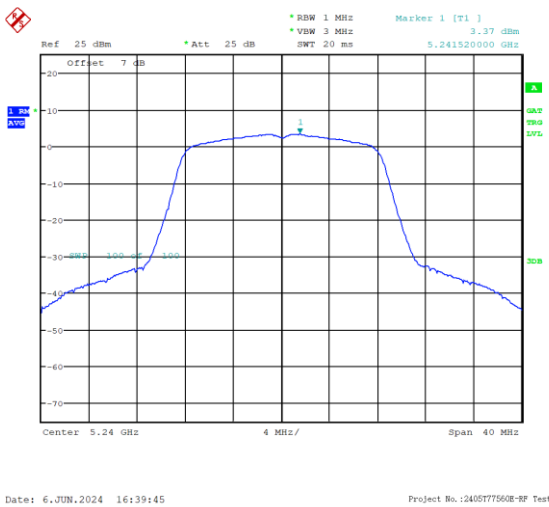
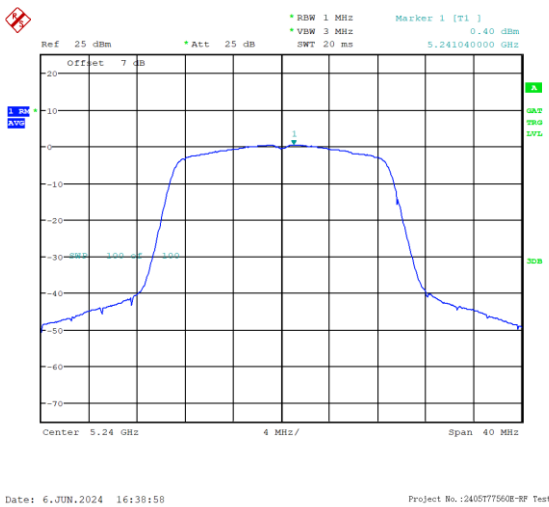
5725-5850MHz Band:

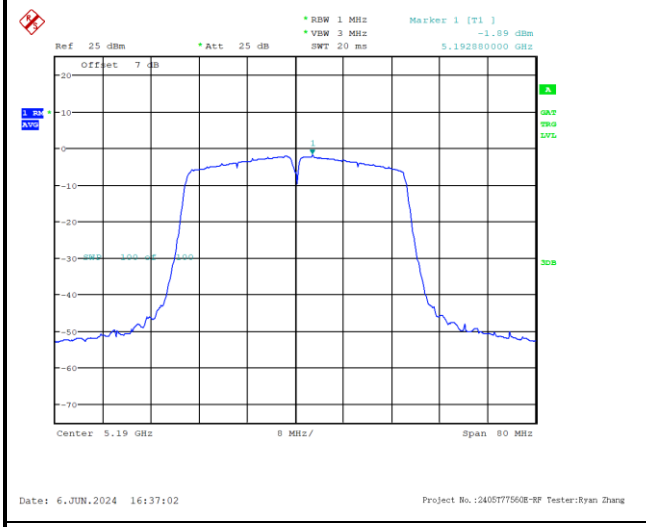
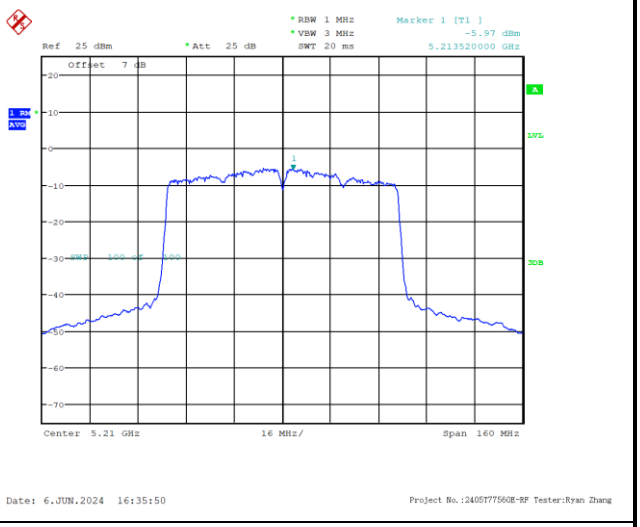
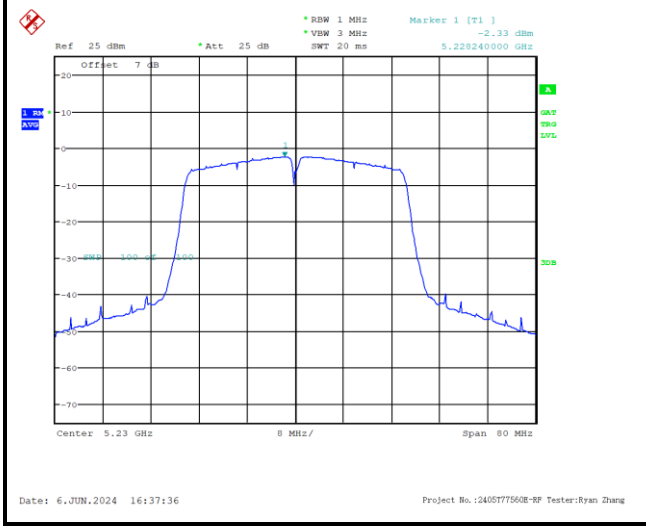
802.11a	802.11n-HT20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

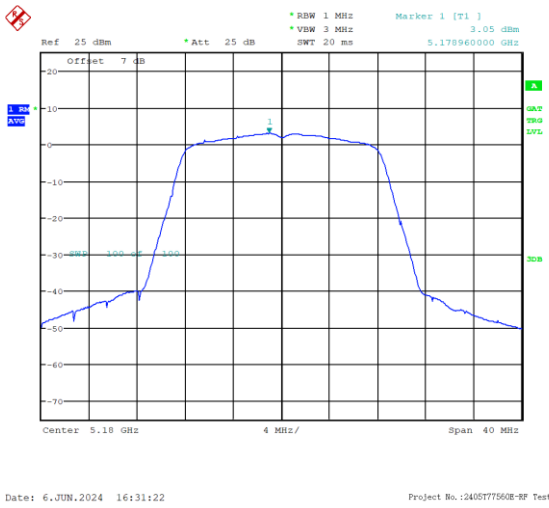
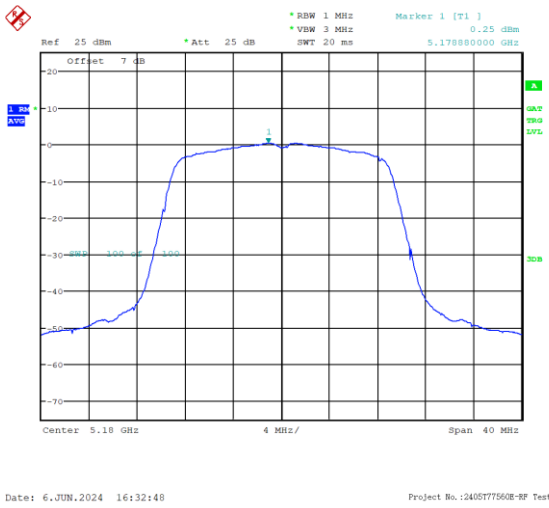
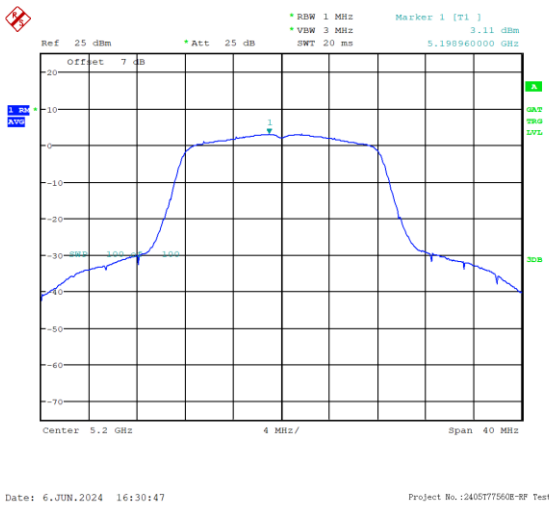
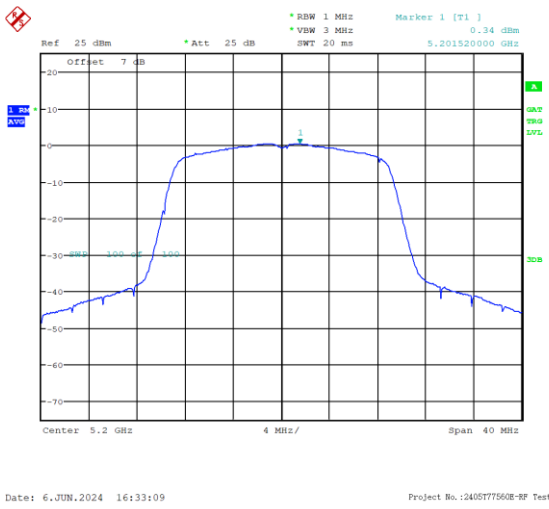
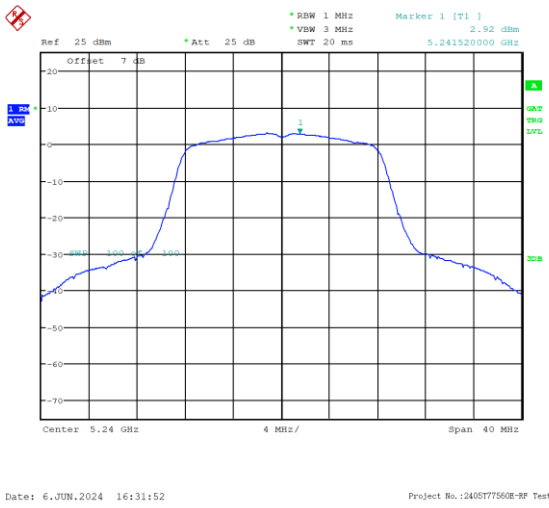
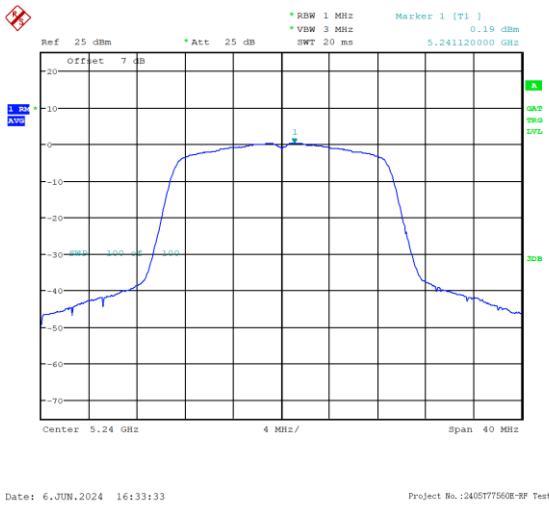
802.11n-HT40	802.11ac-VHT80
Lowest channel	Middle channel
	
High channel	/
	/

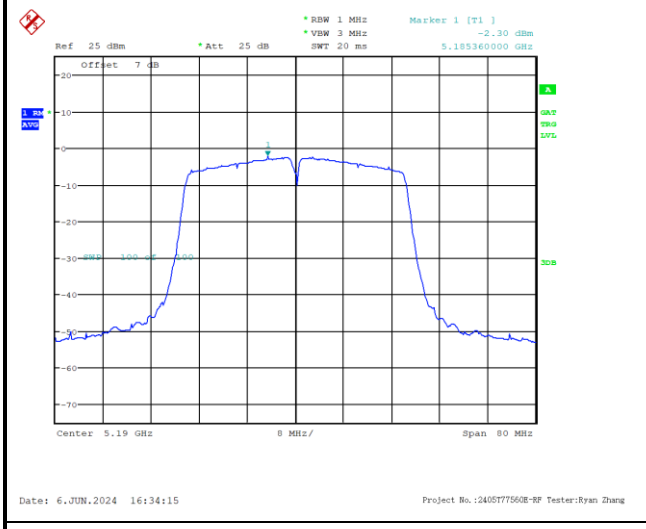
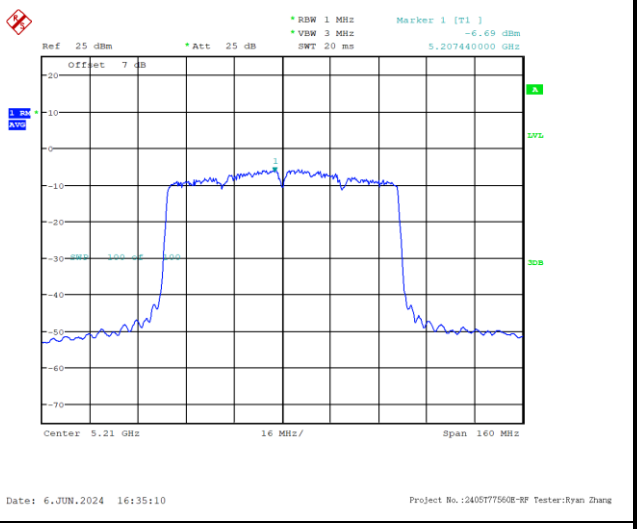
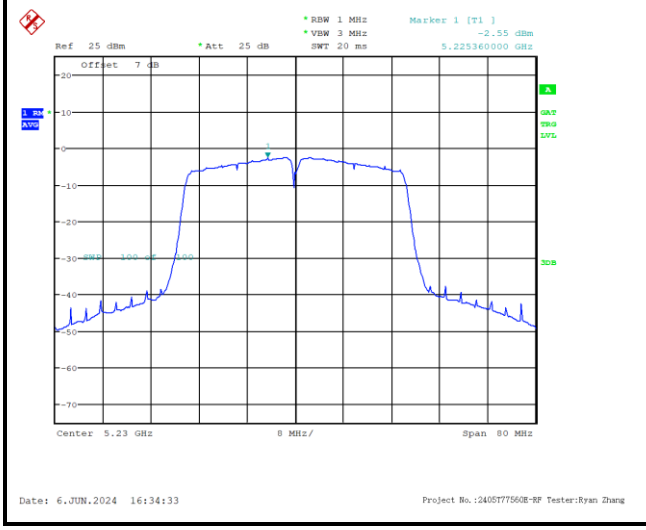
Power Spectral Density

5150-5250MHz Band:

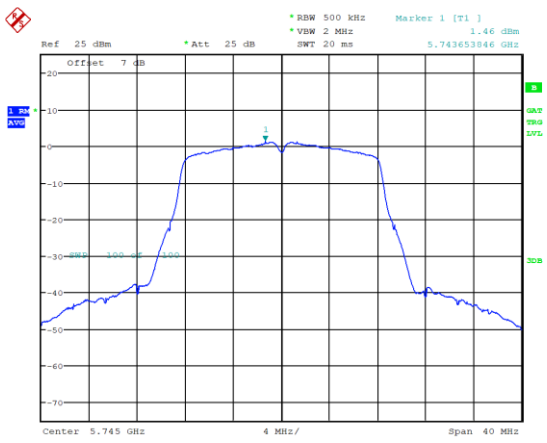
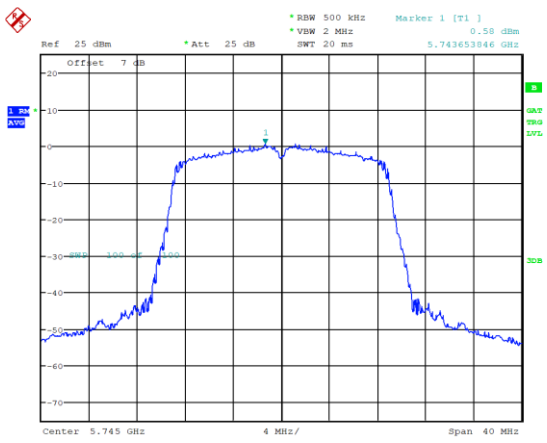
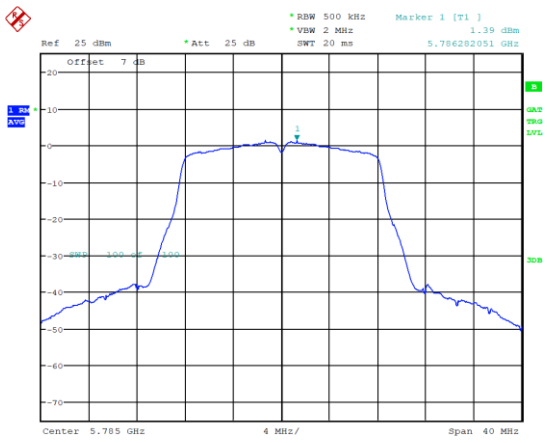
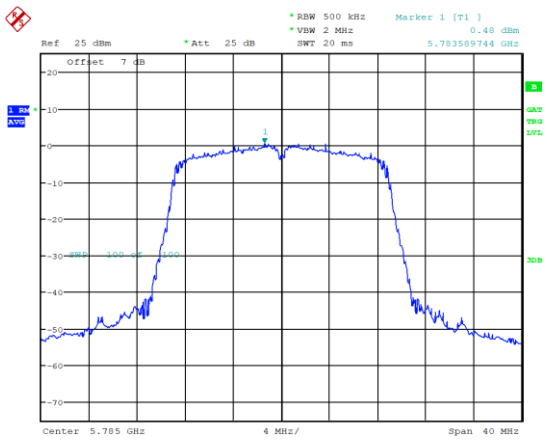
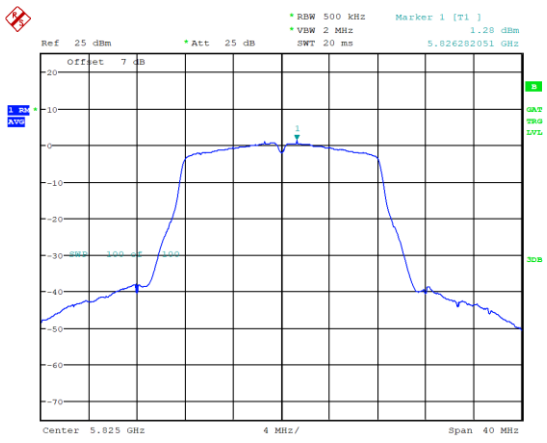
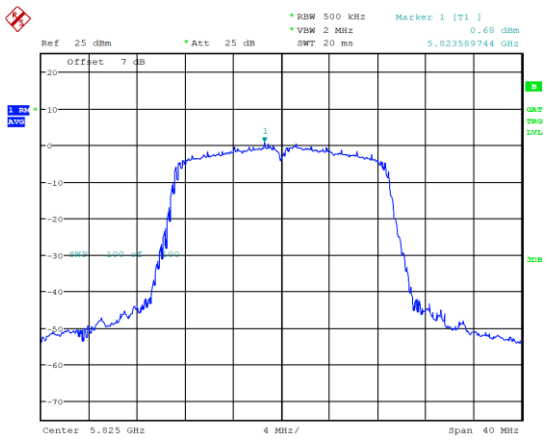
ANT1	
802.11a	**802.11n-HT20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

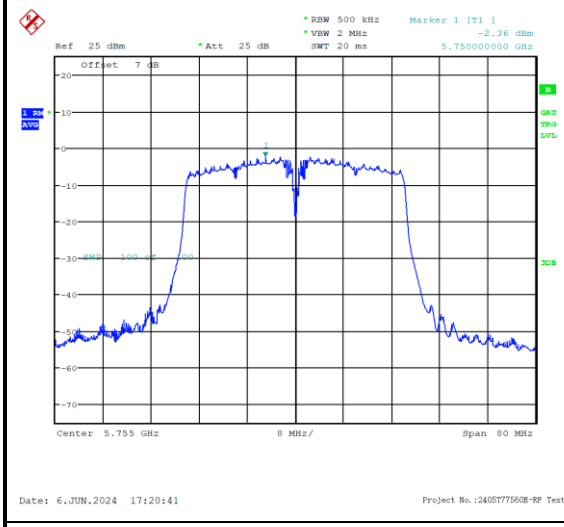
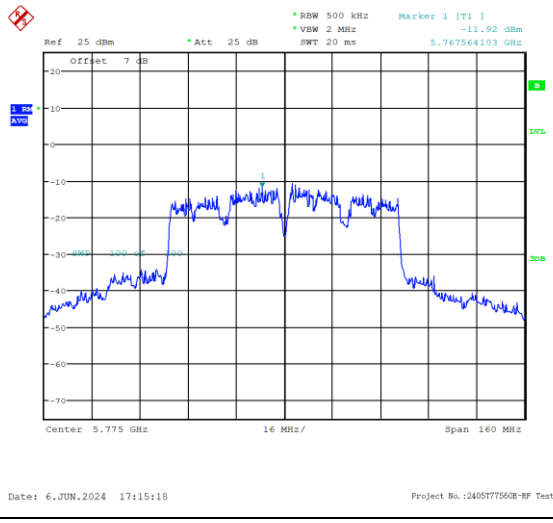
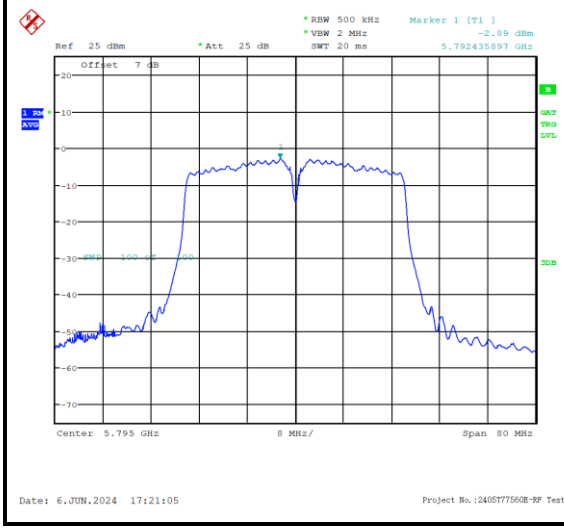
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
igh channel	/
	/

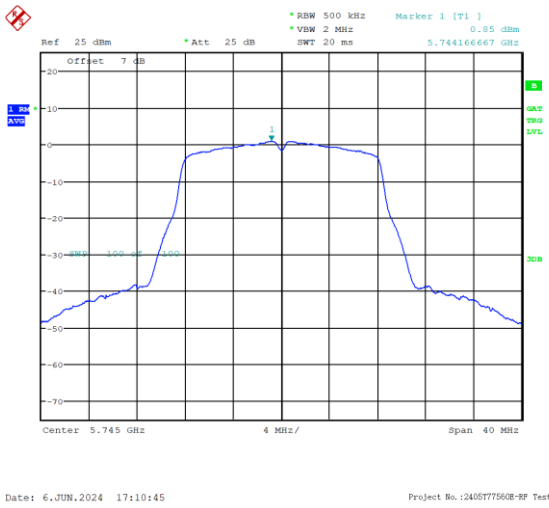
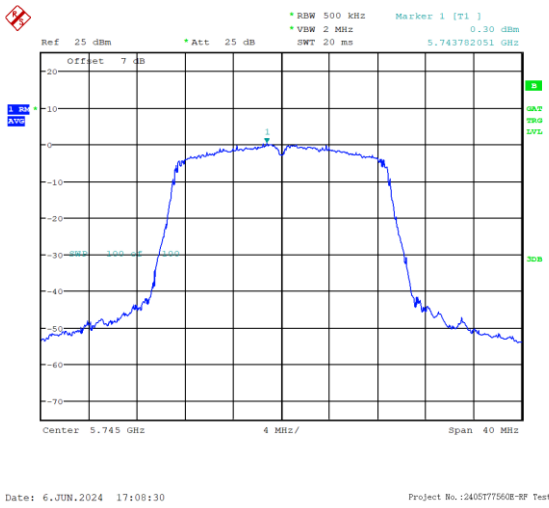
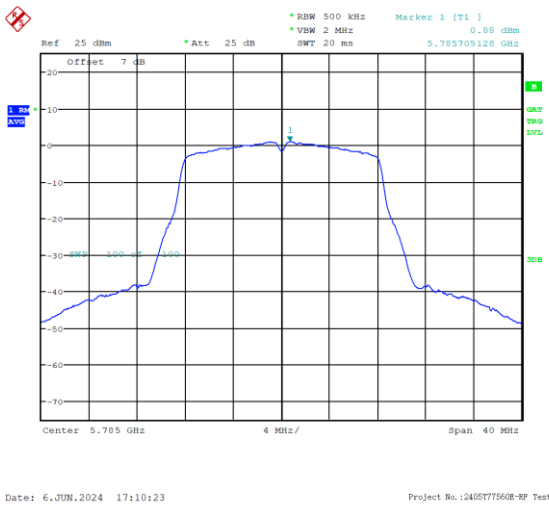
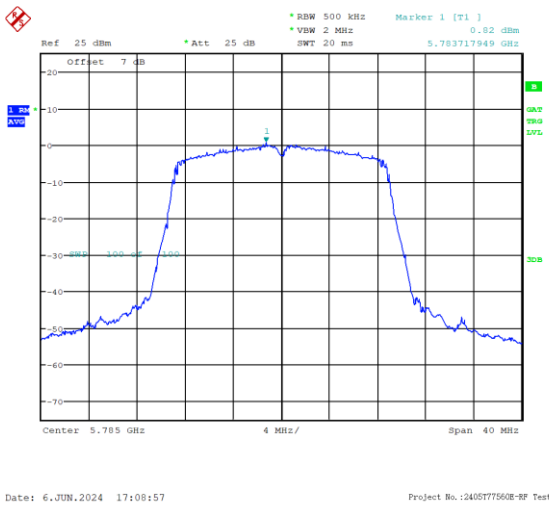
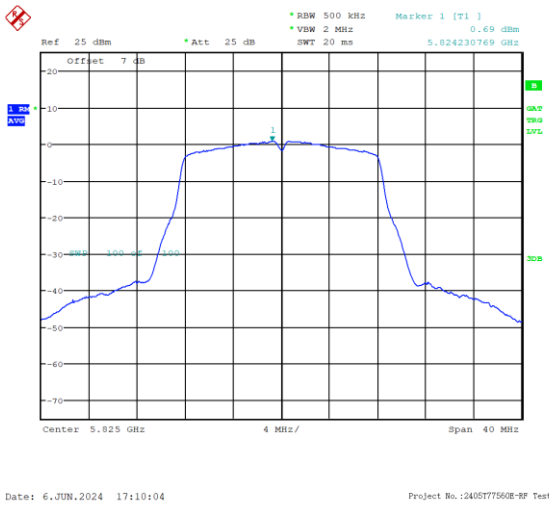
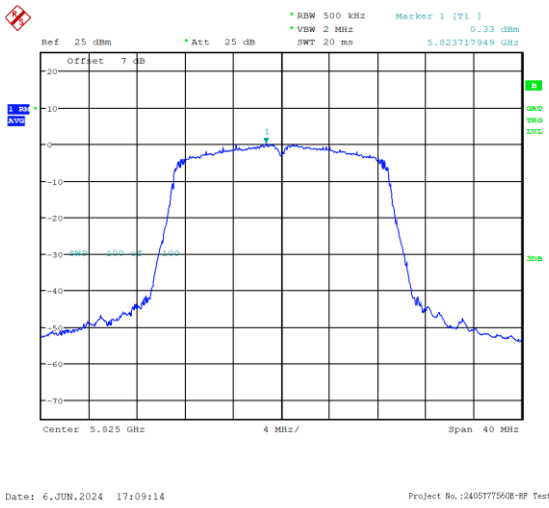
ANT2	
802.11a	**802.11n-HT20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

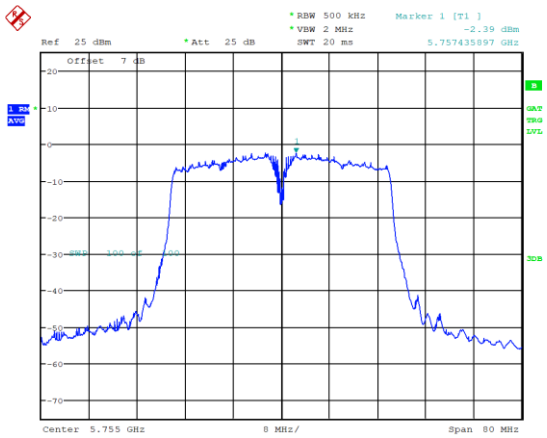
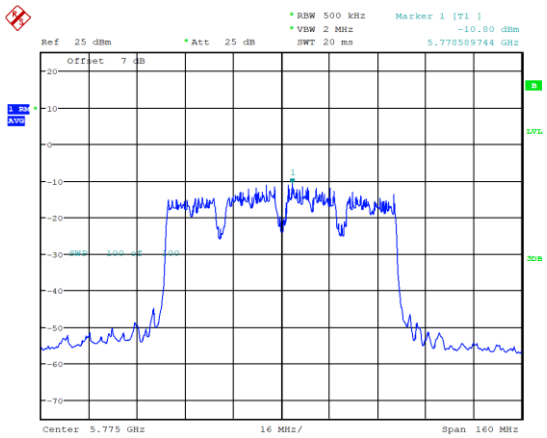
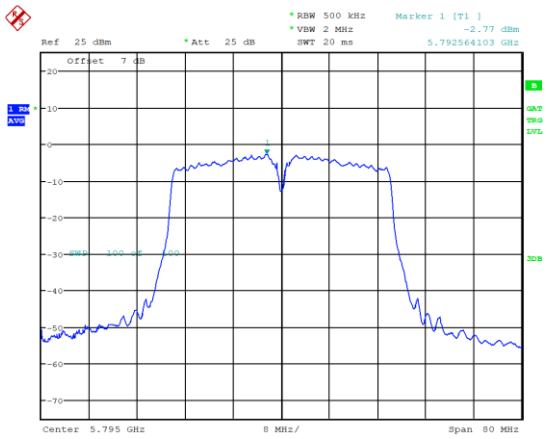
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
High channel	/
	/

5725-5850MHz Band:

ANT1	
802.11a	**802.11n-HT20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

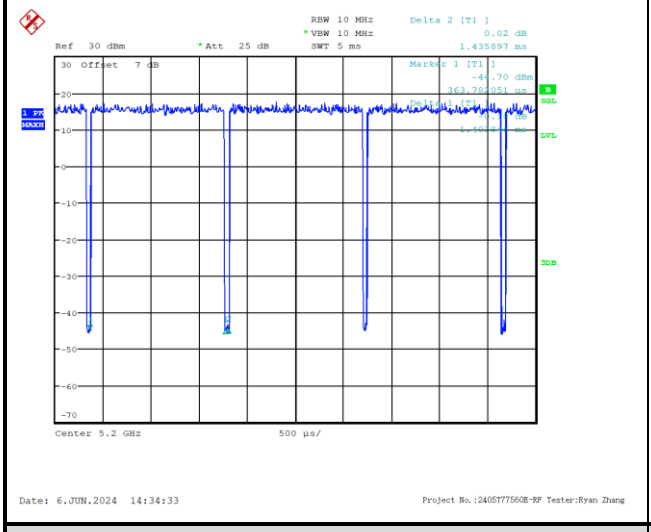
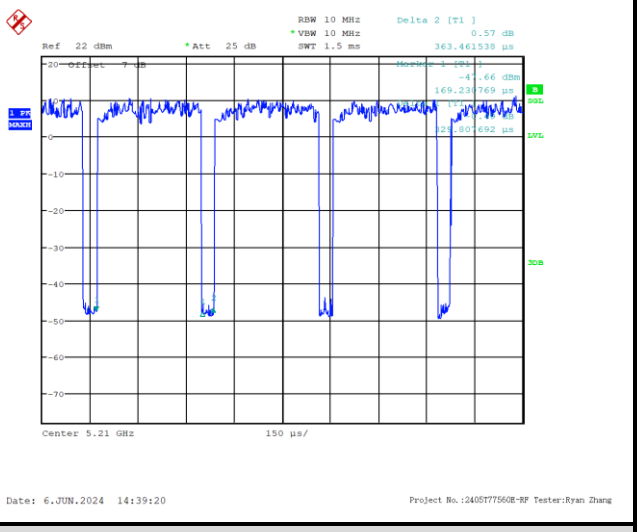
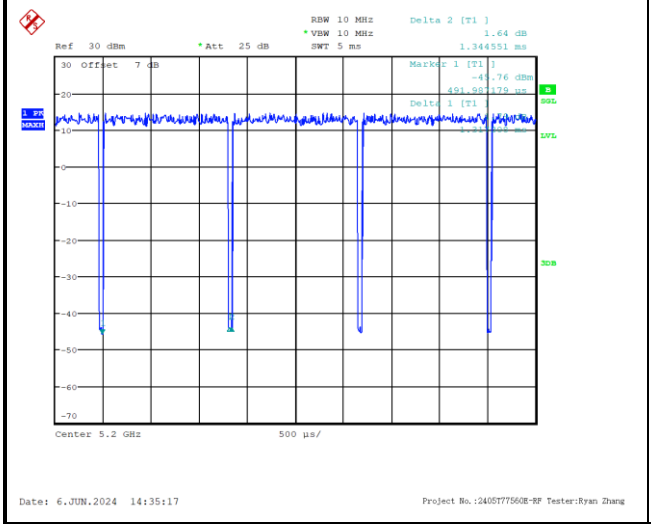
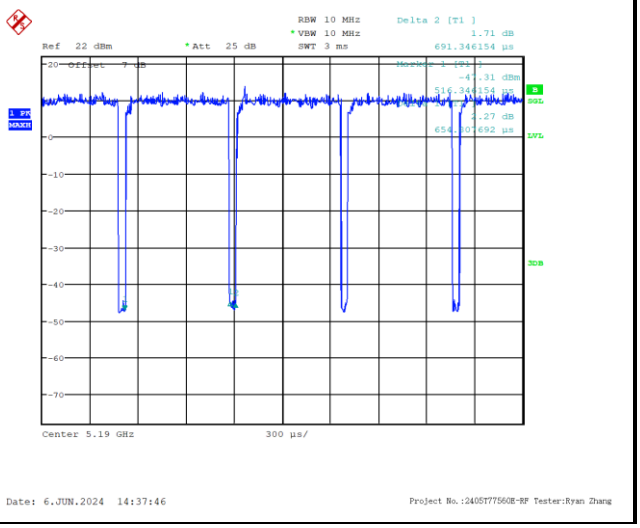
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
High channel	/
	/

ANT2	
802.11a	**802.11n-HT20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

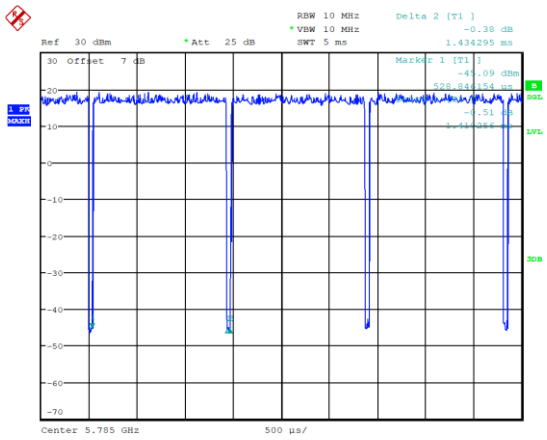
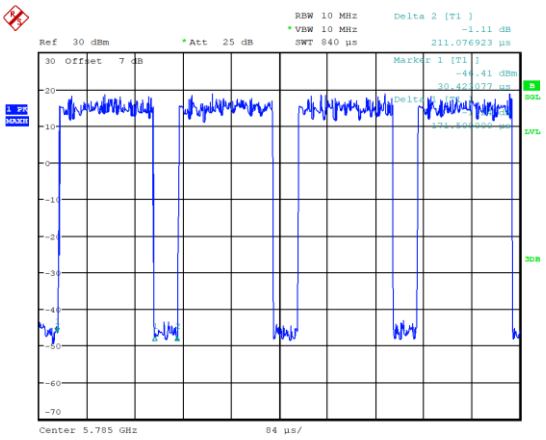
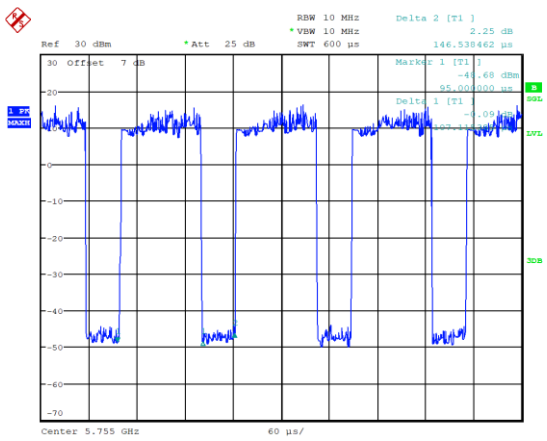
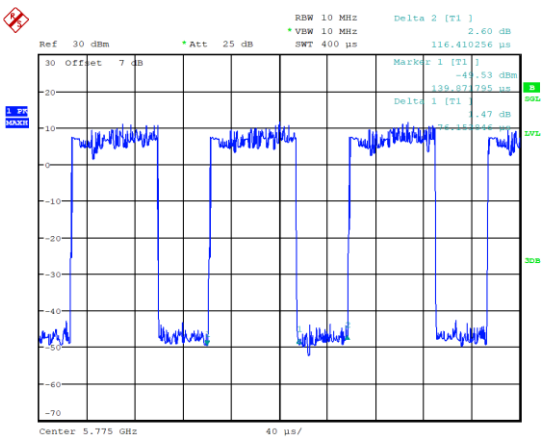
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
High channel	/
	/

Duty Cycle

5150-5250MHz Band:

802.11a	802.11n-HT20
	
802.11n-HT40	802.11ac-VHT80
	

5725-5850MHz Band:

802.11a	802.11n-HT20
	
802.11n-HT40	802.11ac-VHT80
	

4 Test Setup Photo

Please refer to the attachment 2405T77560E Test Setup photo.

5 E.U.T Photo

Please refer to the attachment 2405T77560E External photo and 2405T77560E Internal photo.

---End of Report---