FCC Test Report

Report No.:	RWAQ202400241E
Applicant:	Shenzhen Neutop Optoelectronics Co., Ltd
Address:	502, BLDG 4, Pingshan minQi Technology Park, No. 65 Lishan Road, Pingshan Community,Taoyuan Street, Nanshan District, Shenzhen,Guangdong, China
Product Name:	Projector
Product Model:	D001
Multiple Models:	EAZZE D1, D002, D003,D004,D005
Trade Mark:	N/A
FCC ID:	2BEGB-YX02
Standards:	FCC CFR Title 47 Part 15E (§15.407)
Test Date:	2024-03-19 to 2024-04-19
Test Result:	Complied
Issue Date:	2024-04-19

Reviewed by: Abel Chen

Approved by: Jacob Kong

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

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Announcement

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2. The results in this report apply only to the sample tested.

3. This sample tested is in compliance with the limits of the above regulation.

4. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

5. The information marked "#" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

Revision History

Version No.	Issued Date	Description
00	*2024-04-19*	*Original*

Contents

1 General Information

1.1 Client Information

Applicant:	Shenzhen Neutop Optoelectronics Co., Ltd
Address:	502, BLDG 4, Pingshan minQi Technology Park, No. 65 Lishan Road, Pingshan Community,Taoyuan Street, Nanshan District, Shenzhen,Guangdong, China
Manufacturer:	Shenzhen Neutop Optoelectronics Co., Ltd
Address:	502, BLDG 4, Pingshan minQi Technology Park, No. 65 Lishan Road, Pingshan Community,Taoyuan Street, Nanshan District, Shenzhen,Guangdong, China

1.2 Product Description of EUT

The EUT is Projector that contains BT, 2.4G and 5G WLAN radios; this report covers the full testing of the 5G WLAN radio.

Sample Serial number	6S-1 for CE Test, 6S-2 for RE test, 6S-3 for RF test conducted test (assigned by WATC)
Sample Received Date	2024-03-19
Sample Status	Good Condition
Frequency Range	5150 MHz - 5250MHz 5725 MHz - 5850MHz
Maximum Conducted Output Power	5150 MHz - 5250MHz: 13.13dBm 5725 MHz - 5850MHz: 20.83dBm
Modulation Technology	OFDM
Spatial Streams	MIMO (2TX, 2RX)
Antenna Gain#	ANT1:5.10dBi; ANT2:4.89dBi
Power Supply	DC 21V from adapter
Operating temperature#	0 deg.C to +35 deg.C
Adapter 1 Information	Model: JDA2102850WUS Input: AC100-240V, 50/60Hz, 1.25A Output: DC 21V/2.85A
Adapter 2 Information	Model: Z72A210285US00 Input: AC100-240V, 50/60Hz, 1.5A Output: DC 21V/2.85A
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: DTS, FCC ID: 2BEGB-YX02

FCC Part 15, Subpart C, Equipment Class: DSS, FCC ID: 2BEGB-YX02

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			
Mode	**Data rate**	**Power Level Setting#**		
		Low Channel	**Middle Channel**	**High Channel**
5150-5250MHz				
802.11a	6Mbps	20	20	20
802.11n-HT20	MCS0	20	20	20
802.11n-HT40	MCS0	17	17	17
802.11ac-VHT80	MCS0	15	15	15
5725-5850MHz				
802.11a	6Mbps	20	20	20
802.11n-HT20	MCS0	20	20	20
802.11n-HT40	MCS0	20	20	20
802.11ac-VHT80	MCS0	20	20	20
The exercise software and the maximum power setting that provided by manufacturer.				

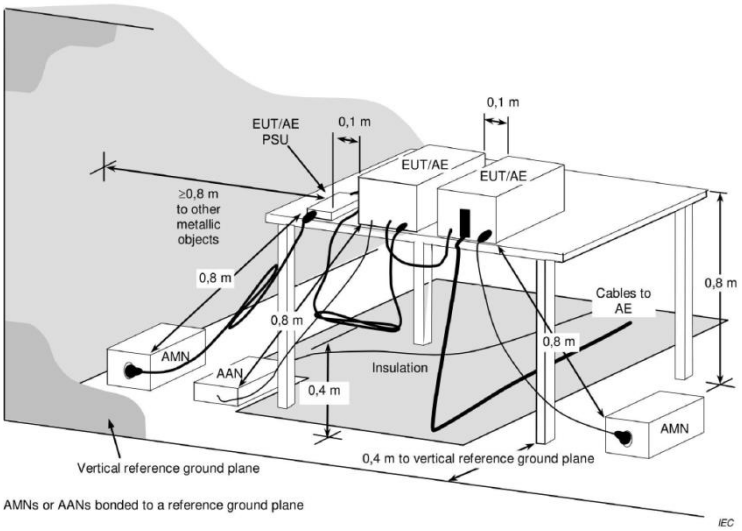
Worst-Case Configuration:
For AC power line conducted emission and radiated emission 9kHz-1GHz and above 18GHz were performed with the EUT transmits at the channel with highest output power as worst-case scenario. According to manufacturer, the device support MIMO mode, all modes share the same power 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*2	unknown	unknown
unknown	Earphone	unknown	unknown
TMALL	magicbox	unknown	unknown
unknown	HDMI cable	unknown	unknown
unknown	Audio cable	unknown	unknown
DELL	laptop	unknown	unknown

2.3 Test Setup

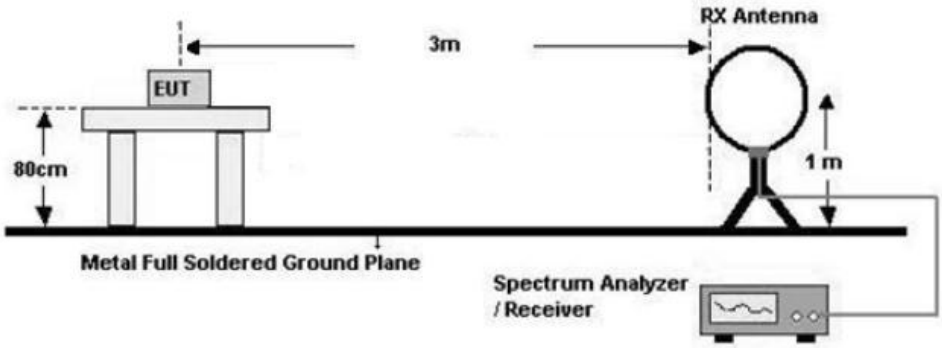
1) Conducted emission measurement:



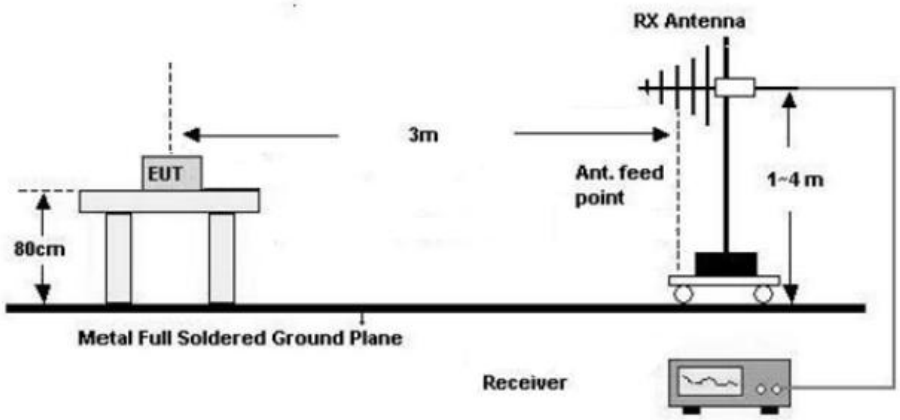
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

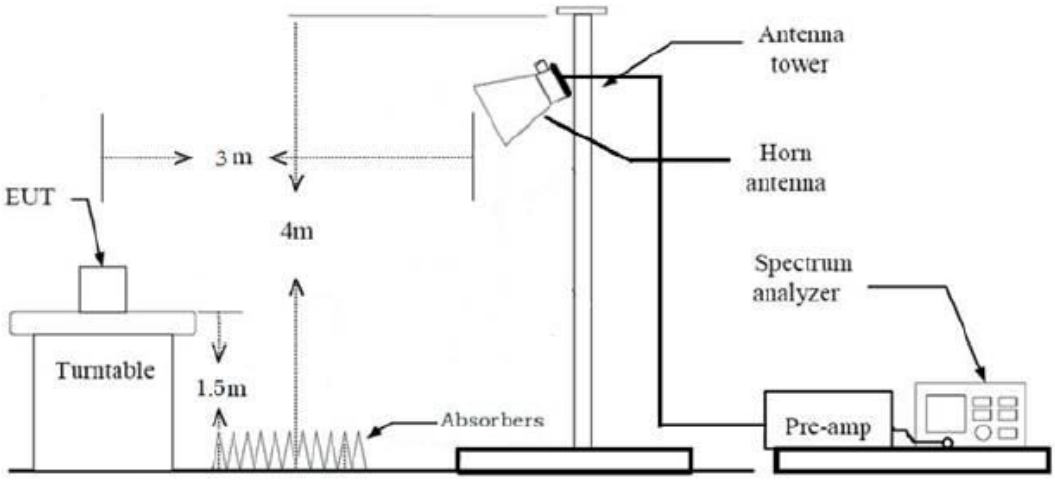
Below 30MHz (3m SAC)



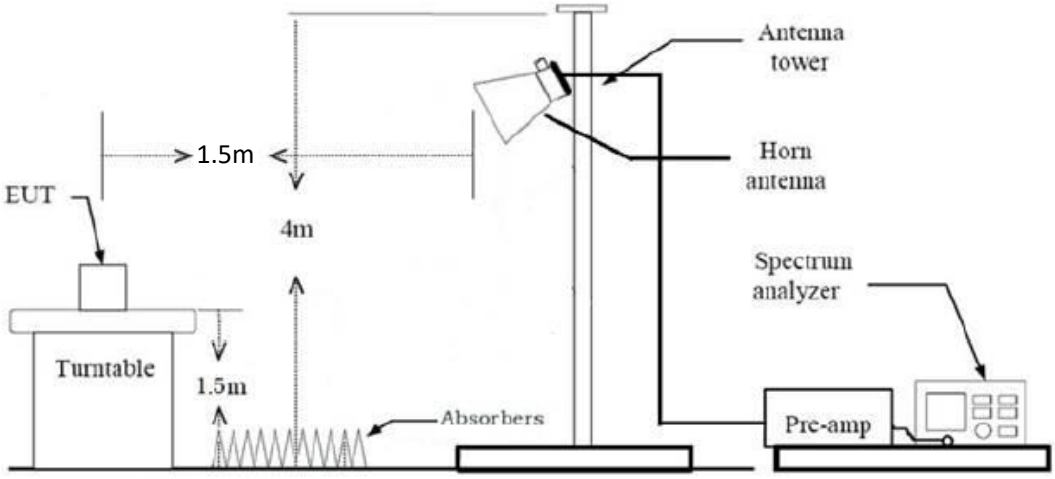
0MHz-1GHz (3m SAC)



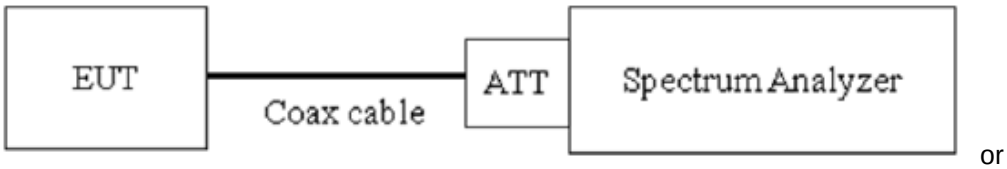
1GHz-18GHz(3m FAC)



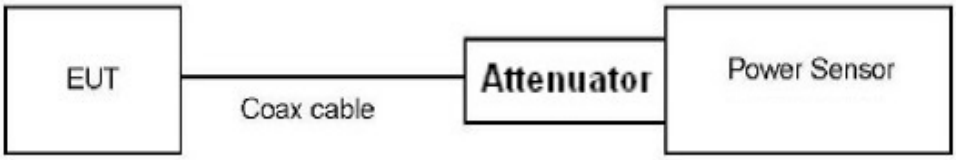
Above 18GHz (3m FAC)



3) RF Conducted Test



or



2.4 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 6.5dB (including 6.0dB Attenuator and 0.5dB 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 0.5dB 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.

2.5 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.

2.6 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					
R&S	EMI test receiver	ESR3	102758	2023/7/3	2024/7/2
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2023/7/3	2024/7/2
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2023/7/12	2024/7/11
COM-POWER	preamplifier	PAM-118A	18040152	2023/8/21	2024/8/20
COM-POWER	Amplifier	PAM-840A	461306	2023/8/8	2024/8/7
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2027/2/6

SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2024/7/6
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	/	/
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

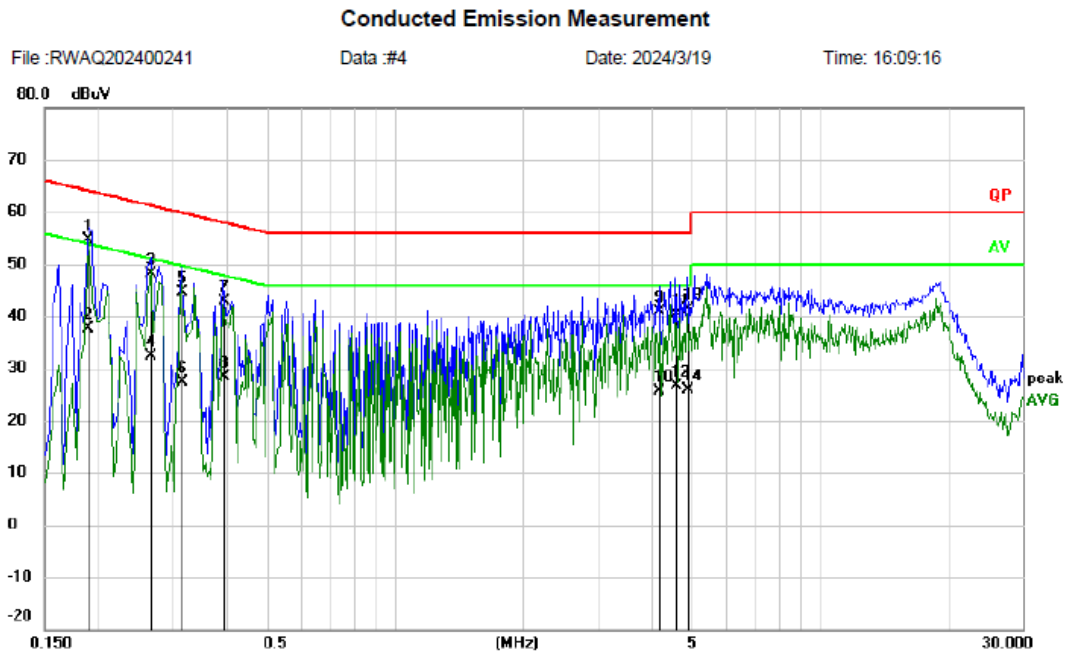
Test items	Limit
AC Power Line Conducted Emission	See details §15.207 (a)
Conducted Peak Output Power Power Spectral Density	**For the band 5.150-5.250 GHz Band:** For client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 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 Band:** 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:	2024-03-19	Test By:	Lirou Li
Environment condition:	Temperature: 25.6°C; Relative Humidity:51%; ATM Pressure: 101.1kPa		

Adapter 1



Limit: QP
Mode:transmitting
Note: 5.8G WiFi -a- low channel

Phase: L1
Power: AC 120V/60Hz

Temperature: 25.6
Humidity: 51 %
Air Pressure: 1011 hpa

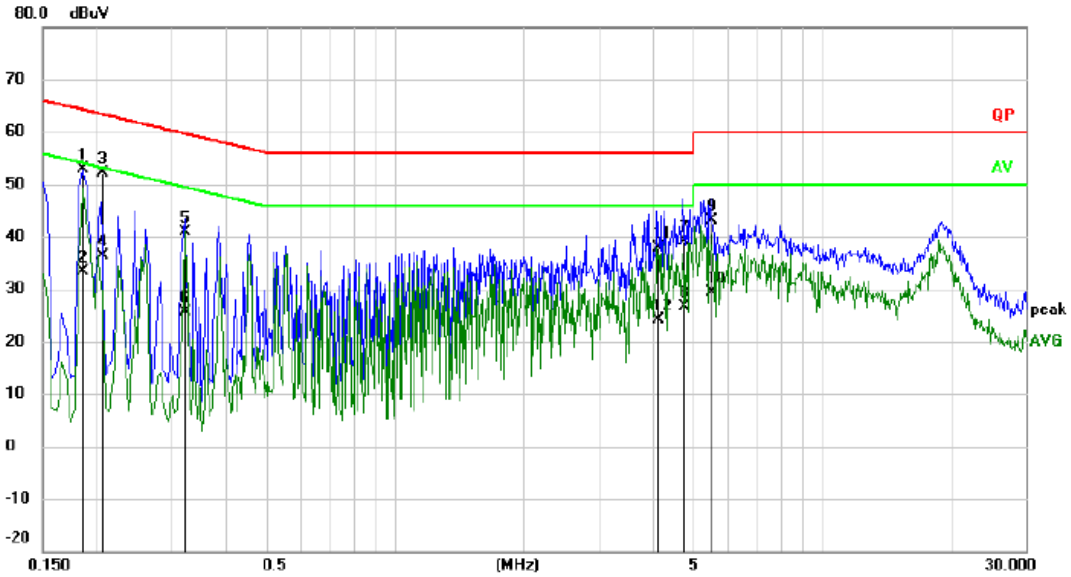
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1900	44.01	10.65	54.66	64.04	-9.38	QP	
2		0.1900	26.94	10.65	37.59	54.04	-16.45	AVG	
3		0.2660	37.50	10.67	48.17	61.24	-13.07	QP	
4		0.2660	21.77	10.67	32.44	51.24	-18.80	AVG	
5		0.3140	33.80	10.72	44.52	59.86	-15.34	QP	
6		0.3140	16.60	10.72	27.32	49.86	-22.54	AVG	
7		0.3940	32.15	10.78	42.93	57.98	-15.05	QP	
8		0.3940	17.59	10.78	28.37	47.98	-19.61	AVG	
9		4.1940	29.67	11.12	40.79	56.00	-15.21	QP	
10		4.1940	14.42	11.12	25.54	46.00	-20.46	AVG	
11		4.5860	29.36	11.13	40.49	56.00	-15.51	QP	
12		4.5860	15.38	11.13	26.51	46.00	-19.49	AVG	
13		4.8740	30.19	11.14	41.33	56.00	-14.67	QP	
14		4.8740	14.70	11.14	25.84	46.00	-20.16	AVG	

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

Engineer Signature: Lirou

Conducted Emission Measurement

File :RWAQ202400241 Data :#3 Date: 2024/3/19 Time: 16:02:41



Limit: QP
Mode:transmitting
Note: 5.8G WiFi -a- low channel

Phase: N
Power: AC 120V/60Hz

Temperature: 25.6
Humidity: 51 %
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		0.1860	42.31	10.47	52.78	64.21	-11.43	QP	
2		0.1860	22.93	10.47	33.40	54.21	-20.81	AVG	
3	*	0.2060	41.68	10.42	52.10	63.37	-11.27	QP	
4		0.2060	26.04	10.42	36.46	53.37	-16.91	AVG	
5		0.3220	30.36	10.56	40.92	59.66	-18.74	QP	
6		0.3220	15.08	10.56	25.64	49.66	-24.02	AVG	
7		4.7460	28.74	10.50	39.24	56.00	-16.76	QP	
8		4.7460	16.01	10.50	26.51	46.00	-19.49	AVG	
9		5.4780	32.51	10.59	43.10	60.00	-16.90	QP	
10		5.4780	18.85	10.59	29.44	50.00	-20.56	AVG	
11		4.1140	27.55	10.42	37.97	56.00	-18.03	QP	
12		4.1140	13.80	10.42	24.22	46.00	-21.78	AVG	

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

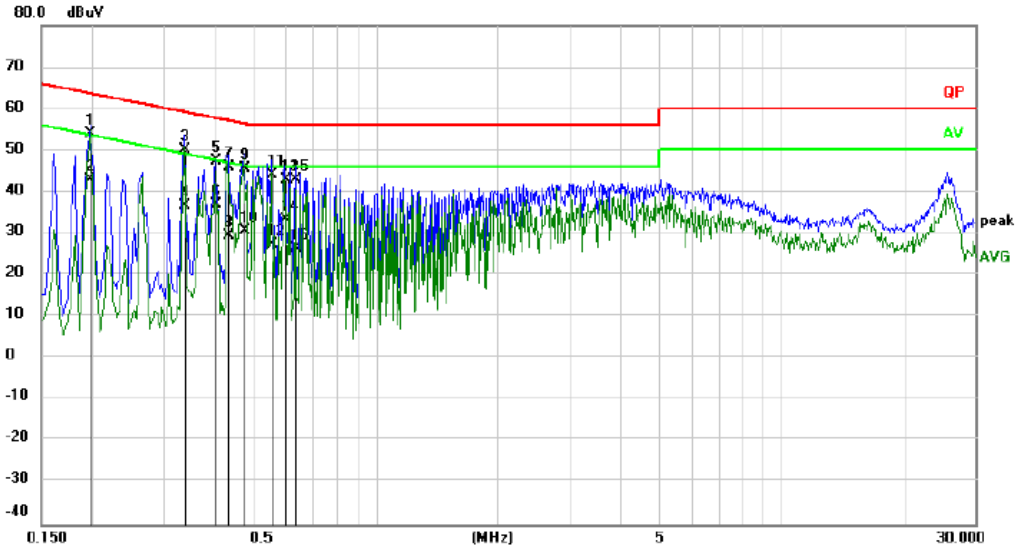
Engineer Signature: Lirou

Test Date:	2024-04-09	Test By:	Lirou Li
Environment condition:	Temperature: 23.1°C; Relative Humidity:56%; ATM Pressure: 101.4kPa		

Adapter 2

Conducted Emission Measurement

File :RWAQ202400241 Data :#8 Date: 2024/4/9 Time: 17:35:20



Limit: QP
Mode:transmitting
Note: 5.8G WIFI--a-Low channel

Phase: L1
Power: AC 120V/60Hz

Temperature: 23.1
Humidity: 56 %
Air Pressure: 1014 hpa

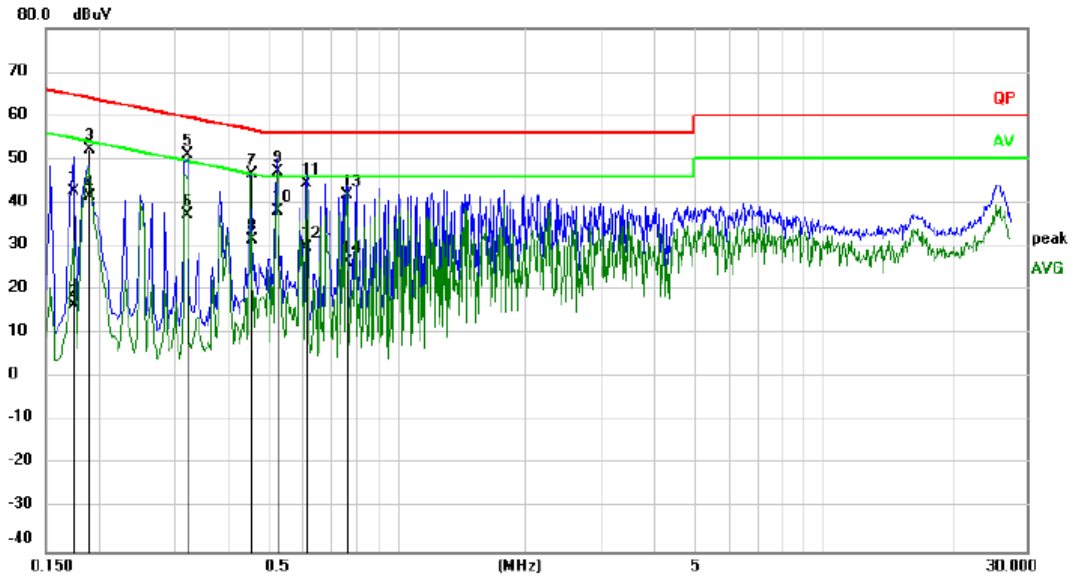
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1980	43.35	10.62	53.97	63.69	-9.72	QP	
2		0.1980	32.39	10.62	43.01	53.69	-10.68	AVG	
3	*	0.3379	39.44	10.73	50.17	59.25	-9.08	QP	
4		0.3379	26.01	10.73	36.74	49.25	-12.51	AVG	
5		0.4020	36.80	10.78	47.58	57.81	-10.23	QP	
6		0.4020	26.11	10.78	36.89	47.81	-10.92	AVG	
7		0.4340	35.28	10.80	46.08	57.18	-11.10	QP	
8		0.4340	18.61	10.80	29.41	47.18	-17.77	AVG	
9		0.4740	34.97	10.80	45.77	56.44	-10.67	QP	
10		0.4740	19.84	10.80	30.64	46.44	-15.80	AVG	
11		0.5540	33.24	10.83	44.07	56.00	-11.93	QP	
12		0.5540	16.60	10.83	27.43	46.00	-18.57	AVG	
13		0.5980	32.11	10.84	42.95	56.00	-13.05	QP	
14		0.5980	22.64	10.84	33.48	46.00	-12.52	AVG	

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

15		0.6340	32.11	10.85	42.96	56.00	-13.04	QP
16		0.6340	15.61	10.85	26.46	46.00	-19.54	AVG

Conducted Emission Measurement

File :RWAQ202400241 Data :#7 Date: 2024/4/9 Time: 17:32:53



Limit: QP
Mode:transmitting
Note: 5.8G WIFI--a-Low channel

Phase: *N*
Power: AC 120V/60Hz

Temperature: 23.1
Humidity: 56 %
Air Pressure: 1014 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1740	32.11	10.51	42.62	64.77	-22.15	QP	
2		0.1740	5.99	10.51	16.50	54.77	-38.27	AVG	
3		0.1900	41.76	10.45	52.21	64.04	-11.83	QP	
4		0.1900	31.12	10.45	41.57	54.04	-12.47	AVG	
5		0.3220	40.43	10.56	50.99	59.66	-8.67	QP	
6		0.3220	26.78	10.56	37.34	49.66	-12.32	AVG	
7		0.4540	35.89	10.68	46.57	56.80	-10.23	QP	
8		0.4540	20.91	10.68	31.59	46.80	-15.21	AVG	
9		0.5220	36.35	10.70	47.05	56.00	-8.95	QP	
10	*	0.5220	27.53	10.70	38.23	46.00	-7.77	AVG	
11		0.6140	33.95	10.63	44.58	56.00	-11.42	QP	
12		0.6140	19.09	10.63	29.72	46.00	-16.28	AVG	
13		0.7620	31.18	10.58	41.76	56.00	-14.24	QP	
14		0.7620	15.94	10.58	26.52	46.00	-19.48	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:

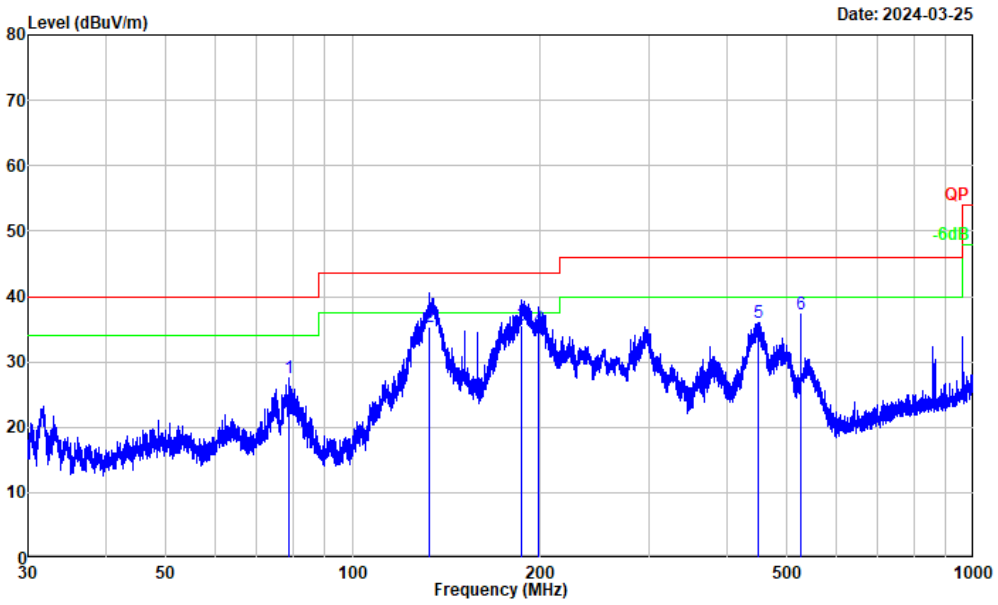
Test Date:	2024-03-25	**Test By:**	Luke Li
Environment condition:	Temperature: 23.8°C; Relative Humidity:69%; ATM Pressure: 100.8kPa		

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

30MHz-1GHz:

Test Date:	2024-03-25	Test By:	Luke Li
Environment condition:	Temperature: 23.8°C; Relative Humidity:69%; ATM Pressure: 100.8kPa		

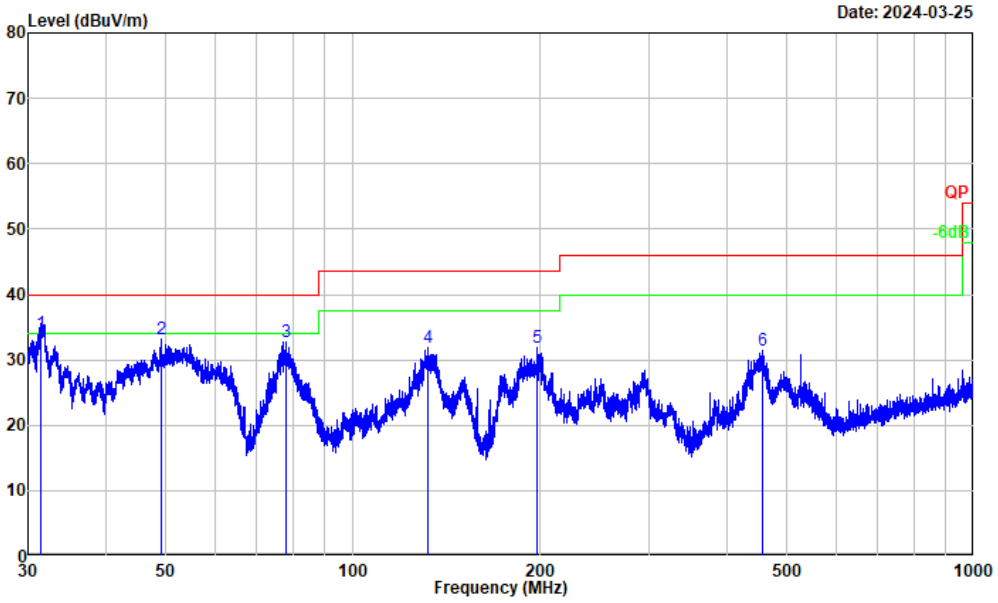
Adapter 1



Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.8℃/69%R.H./100.8kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5.8G WiFi a-Mode Low Channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	79.079	46.26	-18.83	27.43	40.00	-12.57	Peak
2	132.652	53.71	-18.26	35.45	43.50	-8.05	QP
3	187.221	51.50	-15.92	35.58	43.50	-7.92	QP
4	199.595	50.00	-14.81	35.19	43.50	-8.31	QP
5	449.314	45.92	-9.88	36.04	46.00	-9.96	Peak
6	526.585	45.71	-8.53	37.18	46.00	-8.82	Peak

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



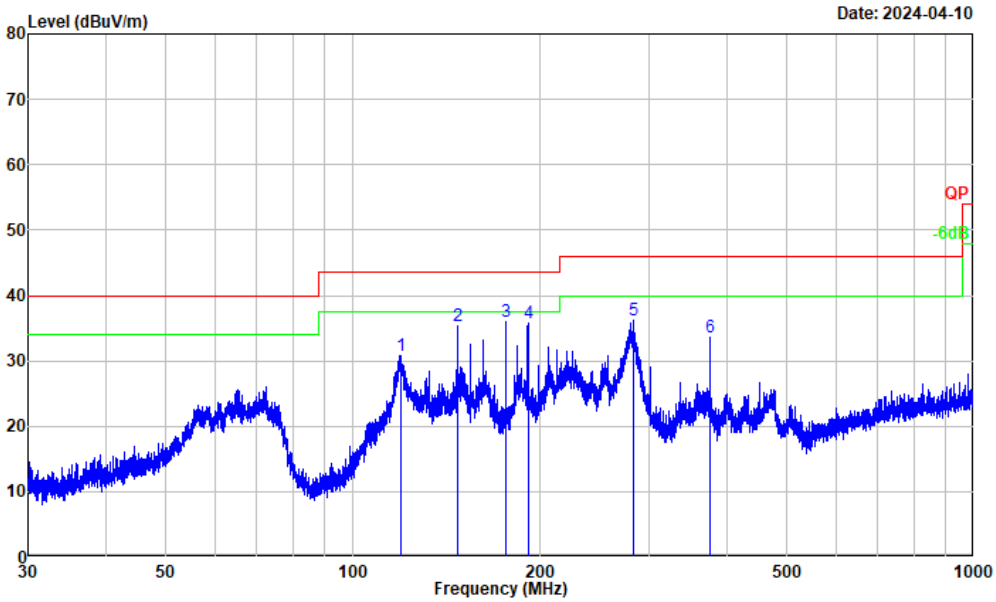
Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.8℃/69%R.H./100.8kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5.8G WiFi a-Mode Low Channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	31.524	49.70	-15.73	33.97	40.00	-6.03	QP
2	49.060	45.74	-12.67	33.07	40.00	-6.93	Peak
3	78.114	51.66	-18.85	32.81	40.00	-7.19	Peak
4	131.898	50.12	-18.18	31.94	43.50	-11.56	Peak
5	197.940	46.83	-14.91	31.92	43.50	-11.58	Peak
6	456.261	41.21	-9.85	31.36	46.00	-14.64	Peak

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

Test Date:	2024-04-10	Test By:	Luke Li
Environment condition:	Temperature: 22.2°C; Relative Humidity:64%; ATM Pressure: 101.2kPa		

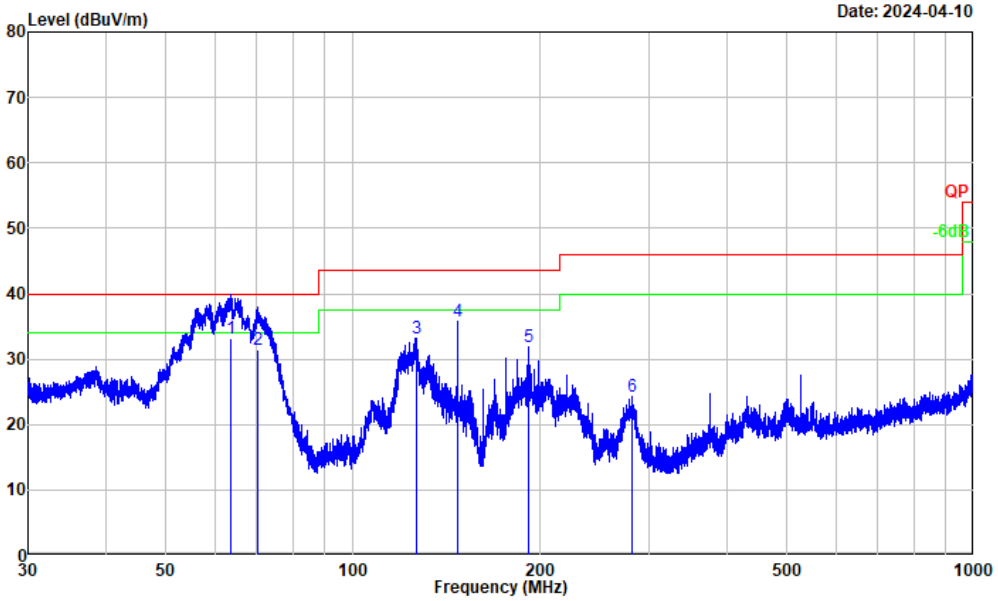
Adapter 2



Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.2℃/64%R.H./101.2kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5.8G WiFi a-Mode Low Channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	119.300	47.26	-16.49	30.77	43.50	-12.73	Peak
2	147.239	53.88	-18.44	35.44	43.50	-8.06	Peak
3	176.695	52.84	-16.90	35.94	43.50	-7.56	Peak
4	191.454	51.27	-15.48	35.79	43.50	-7.71	Peak
5	283.561	49.19	-12.96	36.23	46.00	-9.77	Peak
6	376.222	44.44	-10.77	33.67	46.00	-12.33	Peak

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



Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.2℃/64%R.H./101.2kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5.8G WiFi a-Mode Low Channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	63.737	47.91	-14.79	33.12	40.00	-6.88	QP
2	70.190	48.50	-17.04	31.46	40.00	-8.54	QP
3	126.573	50.97	-17.77	33.20	43.50	-10.30	Peak
4	147.304	54.23	-18.44	35.79	43.50	-7.71	Peak
5	191.454	47.26	-15.48	31.78	43.50	-11.72	Peak
6	281.703	37.35	-13.00	24.35	46.00	-21.65	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:	2024-03-26	Test By:	Bard Huang
Environment condition:	Temperature: 23.8°C; Relative Humidity:69%; ATM Pressure: 100.8kPa		

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
5150-5250MHz Band							
802.11a							
Low Channel							
5150.000	39.21	horizontal	11.57	50.78	54.00	-3.22	Average
5150.000	52.37	horizontal	11.57	63.94	68.20	-4.26	Peak
5150.000	39.03	vertical	11.57	50.60	54.00	-3.40	Average
5150.000	53.61	vertical	11.57	65.18	68.20	-3.02	Peak
10360.000	46.05	horizontal	5.50	51.55	68.20	-16.65	Peak
10360.000	46.03	vertical	5.50	51.53	68.20	-16.67	Peak
Middle Channel							
10400.000	46.89	horizontal	5.70	52.59	68.20	-15.61	Peak
10400.000	46.93	vertical	5.70	52.63	68.20	-15.57	Peak
High Channel							
5350.000	36.73	horizontal	11.44	48.17	54.00	-5.83	Average
5350.000	47.77	horizontal	11.44	59.21	68.20	-8.99	Peak
5350.000	36.35	vertical	11.44	47.79	54.00	-6.21	Average
5350.000	48.60	vertical	11.44	60.04	68.20	-8.16	Peak
10480.000	43.86	horizontal	5.74	49.60	68.20	-18.60	Peak
10480.000	44.52	vertical	5.74	50.26	68.20	-17.94	Peak
802.11n20							
Low Channel							
5150.000	36.31	horizontal	11.57	47.88	54.00	-6.12	Average
5150.000	48.92	horizontal	11.57	60.49	68.20	-7.71	Peak
5150.000	36.47	vertical	11.57	48.04	54.00	-5.96	Average
5150.000	48.95	vertical	11.57	60.52	68.20	-7.68	Peak
10360.000	45.56	horizontal	5.50	51.06	68.20	-17.14	Peak
10360.000	46.18	vertical	5.50	51.68	68.20	-16.52	Peak
Middle Channel							
10400.000	46.30	horizontal	5.70	52.00	68.20	-16.20	Peak
10400.000	47.27	vertical	5.70	52.97	68.20	-15.23	Peak

High Channel							
5350.000	36.53	horizontal	11.44	47.97	54.00	-6.03	Average
5350.000	48.56	horizontal	11.44	60.00	68.20	-8.20	Peak
5350.000	36.82	vertical	11.44	48.26	54.00	-5.74	Average
5350.000	47.59	vertical	11.44	59.03	68.20	-9.17	Peak
10480.000	43.99	horizontal	5.74	49.73	68.20	-18.47	Peak
10480.000	44.07	vertical	5.74	49.81	68.20	-18.39	Peak
802.11n40							
Low Channel							
5147.244	38.63	horizontal	11.56	50.19	54.00	-3.81	Average
5147.244	50.58	horizontal	11.56	62.14	74.00	-11.86	Peak
5150.000	38.03	vertical	11.57	49.60	54.00	-4.40	Average
5150.000	48.84	vertical	11.57	60.41	68.20	-7.79	Peak
10380.000	45.85	horizontal	5.60	51.45	68.20	-16.75	Peak
10380.000	46.95	vertical	5.60	52.55	68.20	-15.65	Peak
High Channel							
5350.000	36.16	horizontal	11.44	47.60	54.00	-6.40	Average
5350.000	48.38	horizontal	11.44	59.82	68.20	-8.38	Peak
5350.000	35.66	vertical	11.44	47.10	54.00	-6.90	Average
5350.000	48.00	vertical	11.44	59.44	68.20	-8.76	Peak
10460.000	43.54	horizontal	5.73	49.27	68.20	-18.93	Peak
10460.000	44.64	vertical	5.73	50.37	68.20	-17.83	Peak
802.11ac80							
5150.000	38.21	horizontal	11.57	49.78	54.00	-4.22	Average
5150.000	48.62	horizontal	11.57	60.19	68.20	-8.01	Peak
5150.000	38.99	vertical	11.57	50.56	54.00	-3.44	Average
5150.000	48.27	vertical	11.57	59.84	68.20	-8.36	Peak
5350.000	36.32	horizontal	11.44	47.76	54.00	-6.24	Average
5350.000	46.74	horizontal	11.44	58.18	68.20	-10.02	Peak
5350.000	36.12	vertical	11.44	47.56	54.00	-6.44	Average
5350.000	47.45	vertical	11.44	58.89	68.20	-9.31	Peak
10420.000	48.41	horizontal	5.71	54.12	68.20	-14.08	Peak
10420.000	47.45	vertical	5.71	53.16	68.20	-15.04	Peak
5725-5850MHz Band							
802.11a							
Low Channel							
5631.516	49.49	horizontal	11.91	61.40	68.20	-6.80	Peak
5650.650	48.55	horizontal	11.90	60.45	68.68	-8.23	Peak

5705.553	50.92	horizontal	12.01	62.93	106.76	-43.83	Peak
5722.812	58.93	horizontal	12.03	70.96	117.21	-46.25	Peak
5603.752	49.36	vertical	11.91	61.27	68.20	-6.93	Peak
5650.525	48.30	vertical	11.90	60.20	68.59	-8.39	Peak
5700.675	47.59	vertical	12.00	59.59	105.39	-45.80	Peak
5722.562	59.33	vertical	12.03	71.36	116.64	-45.28	Peak
11490.000	42.72	horizontal	6.46	49.18	74.00	-24.82	Peak
11490.000	42.88	vertical	6.46	49.34	74.00	-24.66	Peak
Middle Channel							
11570.000	45.63	horizontal	6.52	52.15	74.00	-21.85	Peak
11570.000	46.19	vertical	6.52	52.71	74.00	-21.29	Peak
High Channel							
5854.215	53.03	horizontal	12.31	65.34	112.59	-47.25	Peak
5873.199	48.31	horizontal	12.37	60.68	105.70	-45.02	Peak
5923.824	48.58	horizontal	12.44	61.02	69.07	-8.05	Peak
5946.110	48.92	horizontal	12.41	61.33	68.20	-6.87	Peak
5854.077	53.00	vertical	12.31	65.31	112.90	-47.59	Peak
5873.474	47.48	vertical	12.38	59.86	105.63	-45.77	Peak
5923.549	49.03	vertical	12.44	61.47	69.27	-7.80	Peak
5939.507	49.12	vertical	12.42	61.54	68.20	-6.66	Peak
11650.000	47.00	horizontal	6.55	53.55	74.00	-20.45	Peak
11650.000	47.38	vertical	6.55	53.93	74.00	-20.07	Peak
802.11n20							
Low Channel							
5640.145	49.92	horizontal	11.91	61.83	68.20	-6.37	Peak
5651.276	48.47	horizontal	11.90	60.37	69.15	-8.78	Peak
5702.176	48.40	horizontal	12.00	60.40	105.81	-45.41	Peak
5722.311	55.17	horizontal	12.03	67.20	116.07	-48.87	Peak
5620.635	49.36	vertical	11.91	61.27	68.20	-6.93	Peak
5650.650	46.89	vertical	11.90	58.79	68.68	-9.89	Peak
5700.425	47.19	vertical	12.00	59.19	105.32	-46.13	Peak
5723.687	54.77	vertical	12.03	66.80	119.21	-52.41	Peak
11490.000	44.06	horizontal	6.46	50.52	74.00	-23.48	Peak
11490.000	43.46	vertical	6.46	49.92	74.00	-24.08	Peak
Middle Channel							
11570.000	46.17	horizontal	6.52	52.69	74.00	-21.31	Peak
11570.000	45.66	vertical	6.52	52.18	74.00	-21.82	Peak
High Channel							

5854.490	49.13	horizontal	12.31	61.44	111.96	-50.52	Peak
5874.162	47.86	horizontal	12.38	60.24	105.43	-45.19	Peak
5923.824	48.72	horizontal	12.44	61.16	69.07	-7.91	Peak
5943.634	49.10	horizontal	12.41	61.51	68.20	-6.69	Peak
5854.490	49.04	vertical	12.31	61.35	111.96	-50.61	Peak
5874.162	47.14	vertical	12.38	59.52	105.43	-45.91	Peak
5923.962	47.62	vertical	12.43	60.05	68.97	-8.92	Peak
5952.576	49.22	vertical	12.39	61.61	68.20	-6.59	Peak
11650.000	47.00	horizontal	6.55	53.55	74.00	-20.45	Peak
11650.000	36.61	vertical	6.55	43.16	54.00	-10.84	Average
11650.000	47.77	vertical	6.55	54.32	74.00	-19.68	Peak
802.11n40							
Low Channel							
5639.645	49.74	horizontal	11.91	61.65	68.20	-6.55	Peak
5652.401	49.15	horizontal	11.90	61.05	69.98	-8.93	Peak
5701.676	49.98	horizontal	12.00	61.98	105.67	-43.69	Peak
5721.186	61.75	horizontal	12.03	73.78	113.50	-39.72	Peak
5632.641	49.56	vertical	11.90	61.46	68.20	-6.74	Peak
5650.525	48.54	vertical	11.90	60.44	68.59	-8.15	Peak
5700.550	49.13	vertical	12.00	61.13	105.35	-44.22	Peak
5721.311	59.89	vertical	12.03	71.92	113.79	-41.87	Peak
11510.000	44.97	horizontal	6.48	51.45	74.00	-22.55	Peak
11510.000	43.66	vertical	6.48	50.14	74.00	-23.86	Peak
High Channel							
5854.627	48.02	horizontal	12.31	60.33	111.65	-51.32	Peak
5874.162	47.63	horizontal	12.38	60.01	105.43	-45.42	Peak
5923.962	47.88	horizontal	12.43	60.31	68.97	-8.66	Peak
5939.507	49.17	horizontal	12.42	61.59	68.20	-6.61	Peak
5854.490	47.50	vertical	12.31	59.81	111.96	-52.15	Peak
5874.162	47.29	vertical	12.38	59.67	105.43	-45.76	Peak
5924.100	47.21	vertical	12.43	59.64	68.86	-9.22	Peak
5926.576	49.57	vertical	12.44	62.01	68.20	-6.19	Peak
11590.000	46.20	horizontal	6.53	52.73	74.00	-21.27	Peak
11590.000	46.87	vertical	6.53	53.40	74.00	-20.60	Peak
802.11ac80							
5637.331	49.17	horizontal	11.91	61.08	68.20	-7.12	Peak
5681.041	60.40	horizontal	11.96	72.36	91.21	-18.85	Peak
5700.925	58.88	horizontal	12.00	70.88	105.46	-34.58	Peak

5720.998	62.17	horizontal	12.03	74.20	113.08	-38.88	Peak
5854.377	54.21	horizontal	12.31	66.52	112.22	-45.70	Peak
5872.199	53.35	horizontal	12.38	65.73	105.98	-40.25	Peak
5875.951	49.72	horizontal	12.40	62.12	104.49	-42.37	Peak
5940.107	49.34	horizontal	12.42	61.76	68.20	-6.44	Peak
5641.646	49.43	vertical	11.90	61.33	68.20	-6.87	Peak
5650.838	49.32	vertical	11.90	61.22	68.82	-7.60	Peak
5701.488	58.97	vertical	12.00	70.97	105.62	-34.65	Peak
5722.499	57.65	vertical	12.03	69.68	116.50	-46.82	Peak
5854.565	52.28	vertical	12.31	64.59	111.79	-47.20	Peak
5873.512	50.24	vertical	12.38	62.62	105.62	-43.00	Peak
5923.787	48.32	vertical	12.44	60.76	69.09	-8.33	Peak
5966.371	48.86	vertical	12.36	61.22	68.20	-6.98	Peak
11550.000	45.13	horizontal	6.50	51.63	74.00	-22.37	Peak
11550.000	45.78	vertical	6.50	52.28	74.00	-21.72	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Corrected Amplitude – Limit

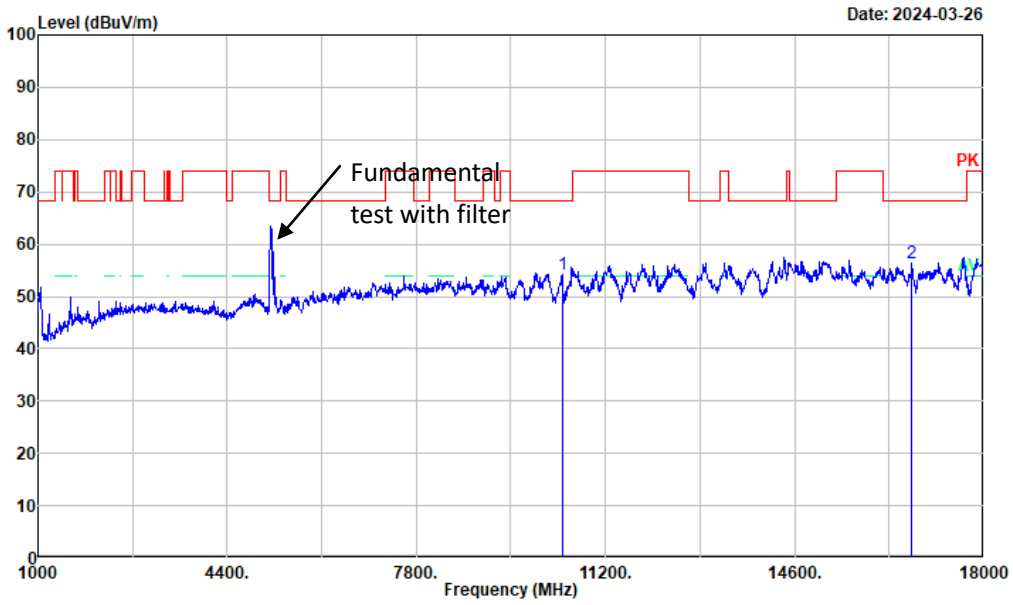
The emission levels of other frequencies that were lower than the limit 20dB, not show in test report.

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

Test plot for example as below:

5150-5250MHz Band:

Mode:	802.11ac80	Channel:	5210MHz

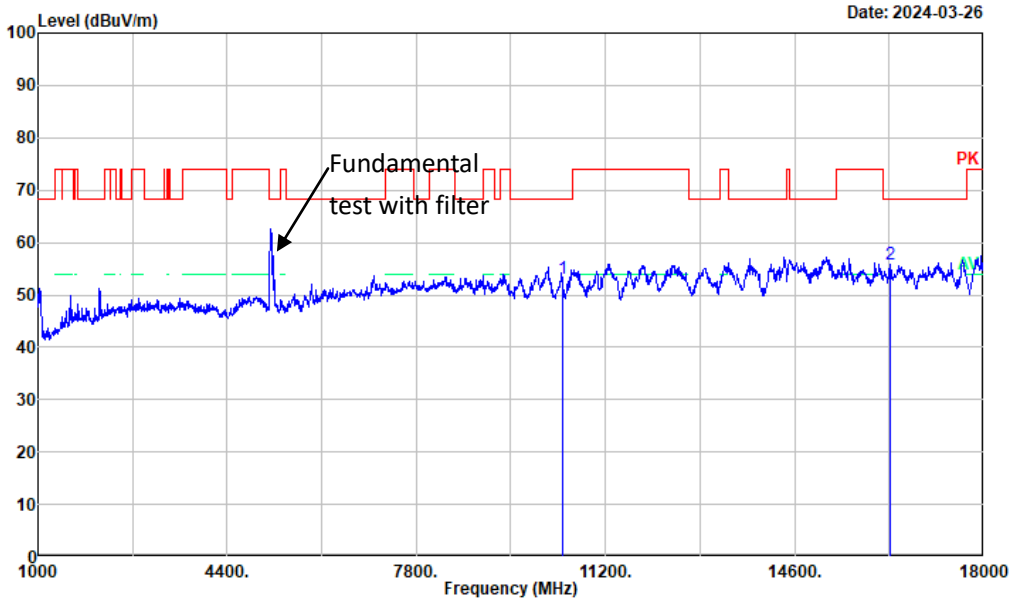


Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.8℃/69%R.H./100.8kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	10420.000	48.41	5.71	54.12	68.20	-14.08	Peak
2	16707.350	49.57	6.72	56.29	68.20	-11.91	Peak

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

Mode:	802.11ac80	Channel:	5210MHz



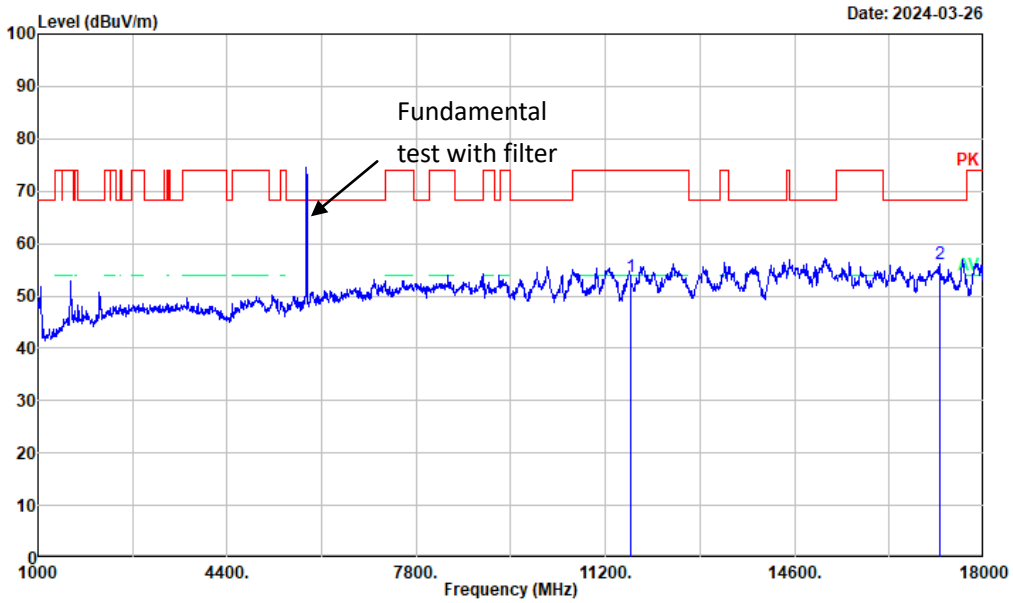
Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.8℃/69%R.H./100.8kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 802.11ac80 middle channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	10420.000	47.45	5.71	53.16	68.20	-15.04	Peak
2	16316.160	48.65	7.27	55.92	68.20	-12.28	Peak

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

5725-5850MHz Band:

Mode:	802.11n-HT20	Channel:	5825MHz

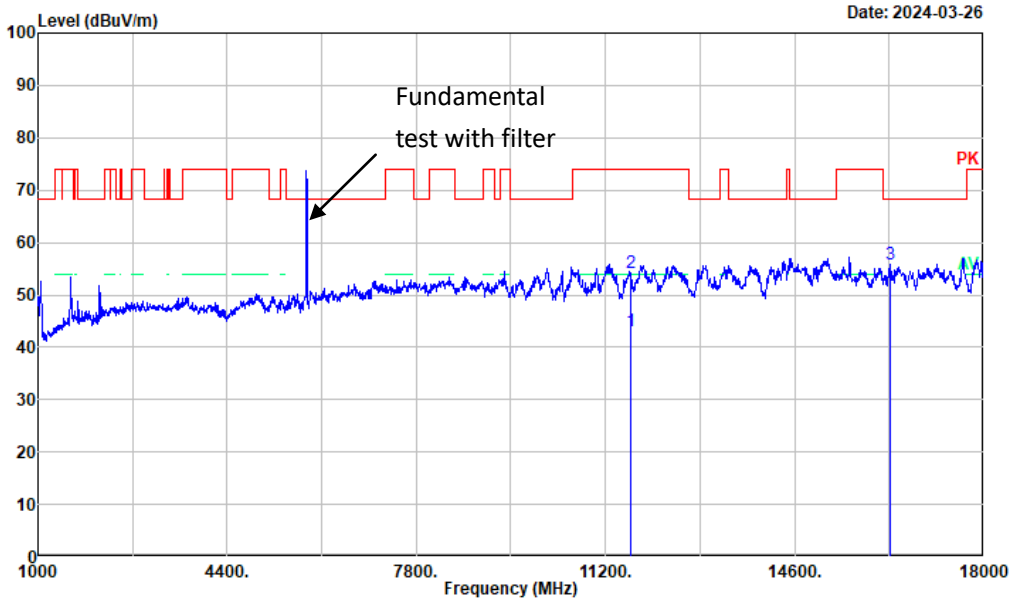


Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.8℃/69%R.H./100.8kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 802.11n20 high channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	11650.000	47.00	6.55	53.55	74.00	-20.45	Peak
2	17200.600	48.62	7.42	56.04	68.20	-12.16	Peak

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

Mode:	802.11n-HT20	Channel:	5825MHz



Project No. : RWAQ202400241
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.8℃/69%R.H./100.8kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 802.11n20 high channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	11650.000	36.61	6.55	43.16	54.00	-10.84	Average
2	11650.000	47.77	6.55	54.32	74.00	-19.68	Peak
3	16316.160	48.61	7.27	55.88	68.20	-12.32	Peak

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

3.5 RF Conducted Test Data

Test Date:	2024-03-27~2024-04-19	Test By:	Ryan Zhang
Environment condition:	Temperature: 25.6~25.8°C;RelativeHumidity:54~68%; ATM Pressure: 101.4~101.7kPa		

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

5150-5250MHz:

Test Mode	Antenna	Channel	26dB BW [MHz]	99% OBW [MHz]
802.11a	Ant1	5180	20.32	16.880
		5200	20.24	16.880
		5240	20.32	16.880
802.11n HT20	Ant1	5180	20.64	17.760
		5200	20.56	17.680
		5240	20.64	17.760
802.11n HT40	Ant1	5190	41.179	36.320
		5230	40.872	36.320
802.11ac VHT80	Ant1	5210	82.240	75.520

5725-5850MHz:

Test Mode	Antenna	Channel	6dB BW [MHz]	99% OBW [MHz]	6dB BW Limit [MHz]	Verdict
802.11a	Ant1	5745	15.200	17.520	0.5	pass
		5785	15.200	17.520	0.5	pass
		5825	15.200	17.440	0.5	pass
802.11n HT20	Ant1	5745	15.200	17.920	0.5	pass
		5785	15.200	17.920	0.5	pass
		5825	15.200	17.840	0.5	pass
802.11n HT40	Ant1	5755	35.200	36.480	0.5	pass
		5795	35.200	36.480	0.5	pass
802.11ac VHT80	Ant1	5775	75.520	75.840	0.5	pass

Note: test only performed on antenna 1.

3.5.2 Maximum conducted output power

5150-5250MHz:

Test Mode	Antenna	Channel [MHz]	Result [dBm]	Limit [dBm]	Verdict
802.11a	Ant1	5180	8.39	24	Pass
		5200	8.22	24	Pass
		5240	8.16	24	Pass
	Ant2	5180	8.20	24	Pass
		5200	8.38	24	Pass
		5240	8.20	24	Pass
	Total	5180	11.31	24	Pass
		5200	11.31	24	Pass
		5240	11.19	24	Pass
802.11n HT20	Ant1	5180	7.76	24	Pass
		5200	7.60	24	Pass
		5240	7.50	24	Pass
	Ant2	5180	12.29	24	Pass
		5200	12.37	24	Pass
		5240	12.50	24	Pass
	Total	5180	13.60	24	Pass
		5200	13.62	24	Pass
		5240	13.69	24	Pass
802.11n HT40	Ant1	5190	9.94	24	Pass
		5230	10.43	24	Pass
	Ant2	5190	9.62	24	Pass
		5230	9.79	24	Pass
	Total	5190	12.79	24	Pass
		5230	13.13	24	Pass
802.11ac VHT80	Ant1	5210	7.24	24	Pass
	Ant2	5210	6.77	24	Pass
	Total	5210	10.02	24	Pass

Note:

The device employ 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, for $N_{ANT} \leqslant 4$;

$G_{ANT\,1}$*=5.10dBi,* $G_{ANT\,2}$*=4.89dBi, use the higher antenna gain for calculate*

Directional gain=5.10+0=5.10dBi<6dBi

5725-5850MHz:

Test Mode	Antenna	Channel [MHz]	Result [dBm]	Limit [dBm]	Verdict
802.11a	Ant1	5745	17.88	30	Pass
		5785	17.77	30	Pass
		5825	17.44	30	Pass
	Ant2	5745	17.75	30	Pass
		5785	17.79	30	Pass
		5825	17.25	30	Pass
	Total	5745	20.83	30	Pass
		5785	20.79	30	Pass
		5825	20.36	30	Pass
802.11n HT20	Ant1	5745	15.55	30	Pass
		5785	15.45	30	Pass
		5825	15.06	30	Pass
	Ant2	5745	15.54	30	Pass
		5785	15.60	30	Pass
		5825	15.00	30	Pass
	Total	5745	18.56	30	Pass
		5785	18.54	30	Pass
		5825	18.04	30	Pass
802.11n HT40	Ant1	5755	15.78	30	Pass
		5795	15.56	30	Pass
	Ant2	5755	15.72	30	Pass
		5795	15.51	30	Pass
	Total	5755	18.76	30	Pass
		5795	18.55	30	Pass
802.11ac VHT80	Ant1	5775	14.55	30	Pass
	Ant2	5775	16.32	30	Pass
	Total	5775	18.53	30	Pass

Note:

The device employ 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, for $N_{ANT} \leqslant 4$*;*

$G_{ANT\,1}$*=5.10dBi,* $G_{ANT\,2}$*=4.89dBi, use the higher antenna gain for calculate*

Directional gain=5.10+0=5.10dBi<6dBi

3.5.3 Power Spectral Density

5150-5250MHz:

Test Mode	Antenna	Channel [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
802.11a	Ant1	5180	-1.90	8.9	Pass
		5200	-2.01	8.9	Pass
		5240	-2.16	8.9	Pass
	Ant2	5180	-2.01	8.9	Pass
		5200	-1.85	8.9	Pass
		5240	-1.92	8.9	Pass
	Total	5180	1.06	8.9	Pass
		5200	1.08	8.9	Pass
		5240	0.97	8.9	Pass
802.11n HT20	Ant1	5180	-2.67	8.9	Pass
		5200	-2.85	8.9	Pass
		5240	-2.99	8.9	Pass
	Ant2	5180	-2.70	8.9	Pass
		5200	-2.37	8.9	Pass
		5240	-2.50	8.9	Pass
	Total	5180	0.33	8.9	Pass
		5200	0.41	8.9	Pass
		5240	0.27	8.9	Pass
802.11n HT40	Ant1	5190	-3.82	8.9	Pass
		5230	-3.44	8.9	Pass
	Ant2	5190	-3.47	8.9	Pass
		5230	-3.26	8.9	Pass
	Total	5190	-0.63	8.9	Pass
		5230	-0.34	8.9	Pass
802.11ac VHT80	Ant1	5210	-10.69	8.9	Pass
	Ant2	5210	-8.53	8.9	Pass
	Total	5210	-6.47	8.9	Pass

Note:

The device employ 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;

$G_{ANT\,1}$=5.10dBi, $G_{ANT\,2}$=4.89dBi, use the higher antenna gain for calculate

Directional gain=5.10+10*log(2)=8.10dBi>6dBi

So the limit need reduce 2.10dB

5725-5850MHz:

Test Mode	Antenna	Channel [MHz]	Result [dBm/500kHz]	Limit [dBm/500kHz]	Verdict
802.11a	Ant1	5745	4.65	27.9	Pass
		5785	4.68	27.9	Pass
		5825	4.43	27.9	Pass
	Ant2	5745	4.47	27.9	Pass
		5785	4.33	27.9	Pass
		5825	4.09	27.9	Pass
	Total	5745	7.57	27.9	Pass
		5785	7.52	27.9	Pass
		5825	7.27	27.9	Pass
802.11n HT20	Ant1	5745	2.14	27.9	Pass
		5785	2.13	27.9	Pass
		5825	1.72	27.9	Pass
	Ant2	5745	2.07	27.9	Pass
		5785	1.91	27.9	Pass
		5825	1.70	27.9	Pass
	Total	5745	5.12	27.9	Pass
		5785	5.03	27.9	Pass
		5825	4.72	27.9	Pass
802.11n HT40	Ant1	5755	-0.52	27.9	Pass
		5795	-0.72	27.9	Pass
	Ant2	5755	-0.90	27.9	Pass
		5795	-1.11	27.9	Pass
	Total	5755	2.30	27.9	Pass
		5795	2.10	27.9	Pass
802.11ac VHT80	Ant1	5775	-2.86	27.9	Pass
	Ant2	5775	-3.33	27.9	Pass
	Total	5775	-0.08	27.9	Pass

Note:

The device employ 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;

$G_{ANT\,1}$=5.19dBi, $G_{ANT\,2}$=5.10dBi, use the higher antenna gain for calculate

Directional gain=5.10+10*log(2)=8.10dBi>6dBi

So the limit need reduce 2.10dB

3.5.4 Duty Cycle

5150-5250MHz:

Test Mode	Antenna	Channel (MHz)	Ton (ms)	Ton+off (ms)	Duty Cycle [%]	1/T [kHz]	Duty Cycle Factor[%]	VBW setting* [Hz]
802.11a	Ant1	5200	1.433	1.452	98.69	/	/	10
802.11n HT20	Ant1	5200	1.337	1.356	98.60	/	/	10
802.11n HT40	Ant1	5190	0.661	0.691	95.66	1.513	0.19	2000
802.11ac VHT80	Ant1	5210	0.334	0.371	90.03	2.994	0.46	3000

5725-5850MHz:

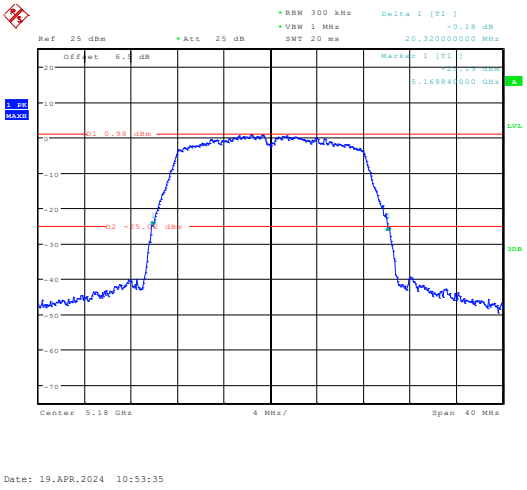
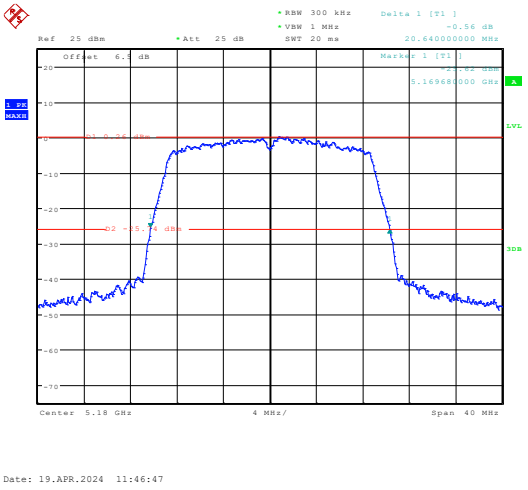
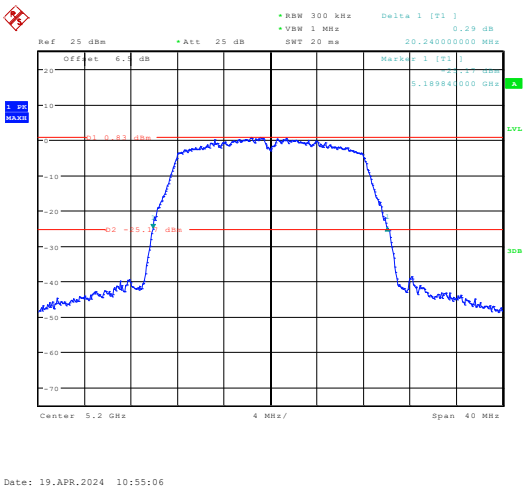
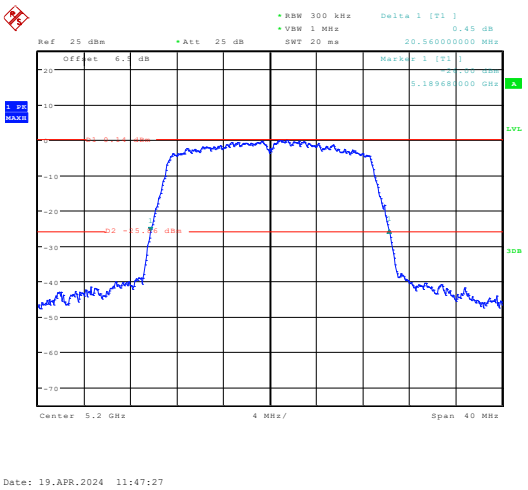
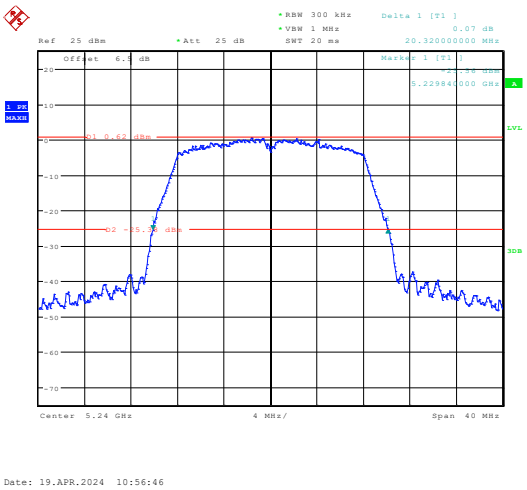
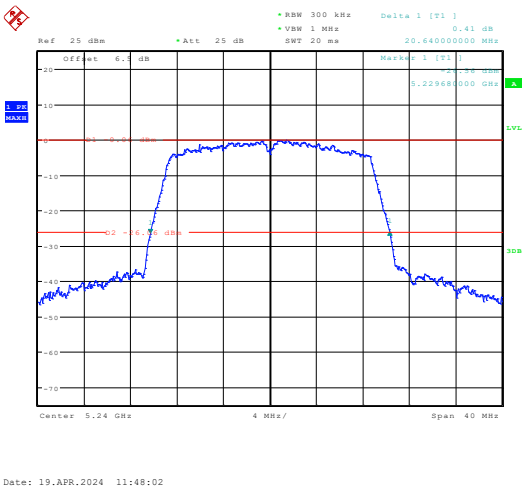
Test Mode	Antenna	Channel (MHz)	Ton (ms)	Ton+off (ms)	Duty Cycle [%]	1/T [kHz]	Duty Cycle Factor[%]	VBW setting* [Hz]
802.11a	Ant1	5785	1.409	1.444	97.58	0.710	0.11	1000
802.11n HT20	Ant1	5785	1.338	1.357	98.60	/	/	10
802.11n HT40	Ant1	5755	0.663	0.696	95.26	1.508	0.21	2000
802.11ac VHT80	Ant1	5775	0.330	0.368	89.67	3.030	0.47	5000

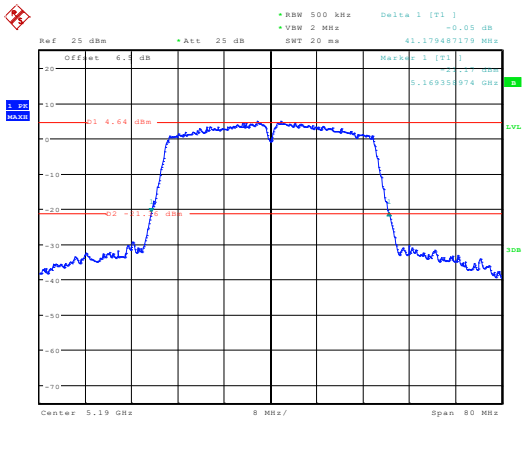
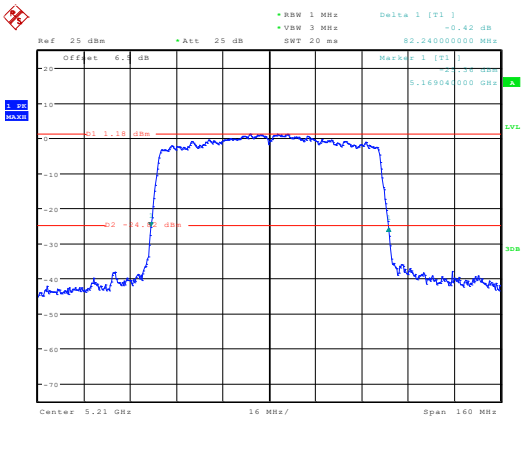
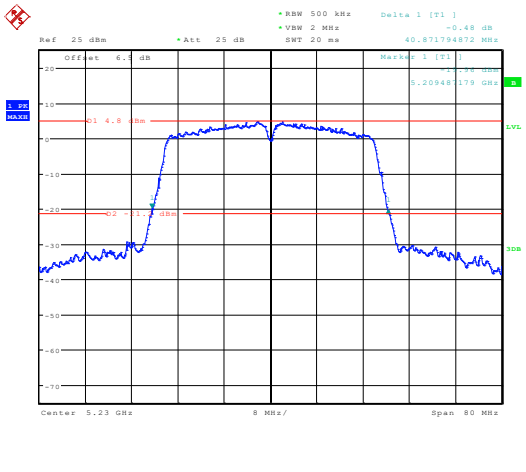
Note: test only performed on antenna 1.

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

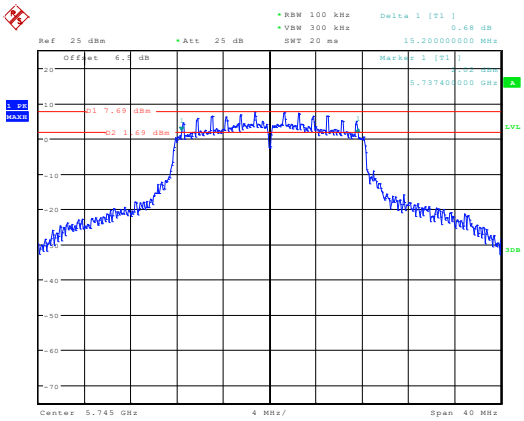
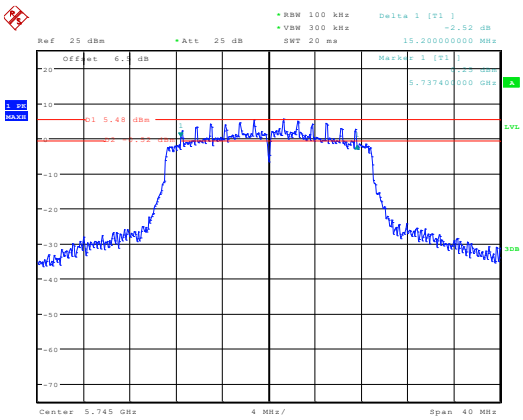
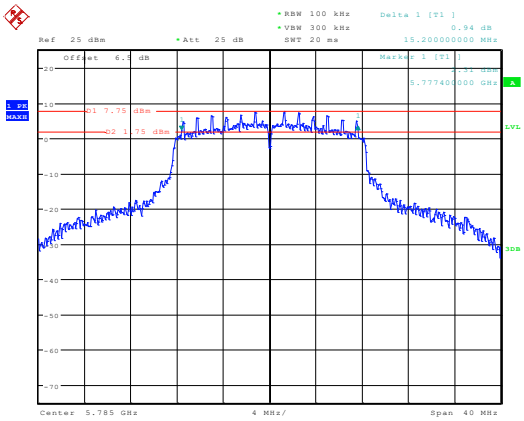
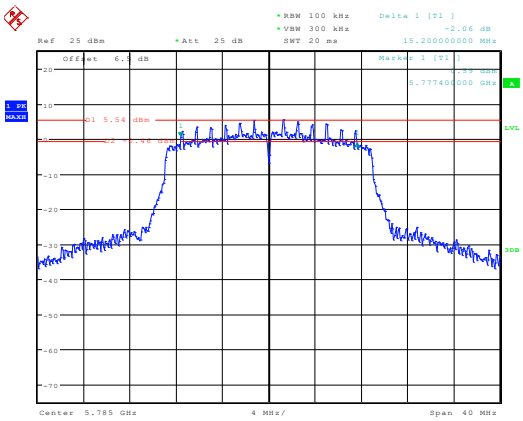
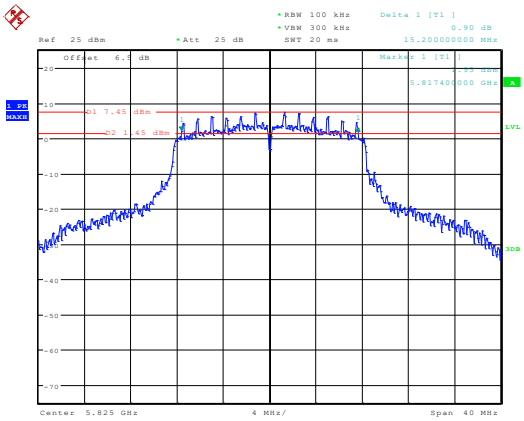
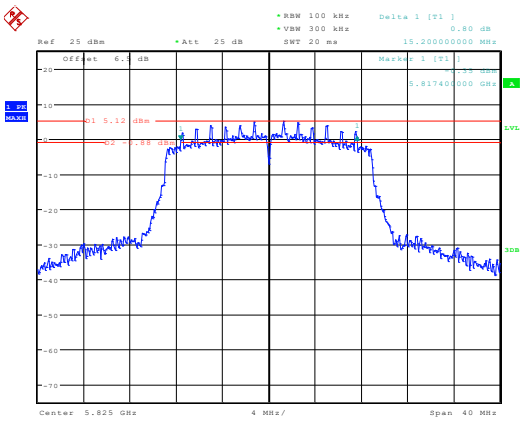
Test Plots:

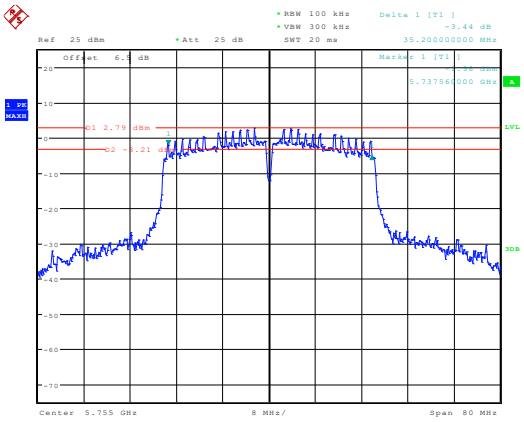
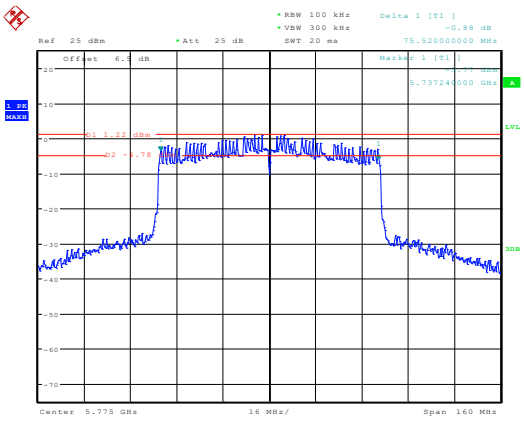
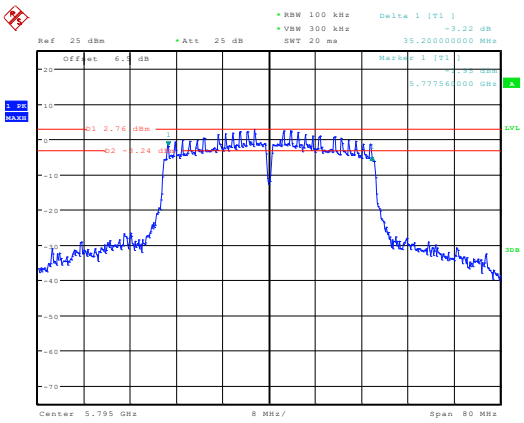
26dB Emission Bandwidth

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	/
	/

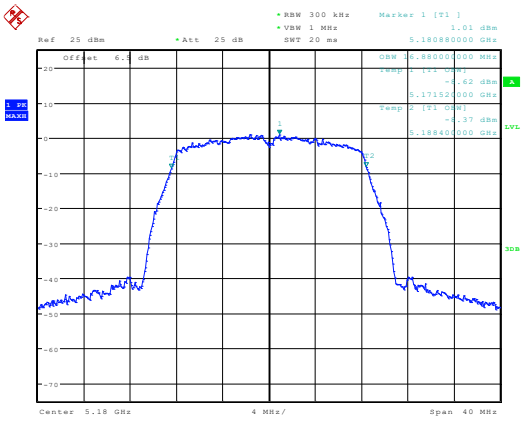
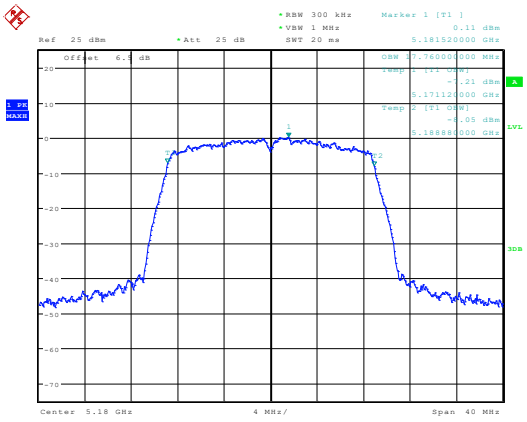
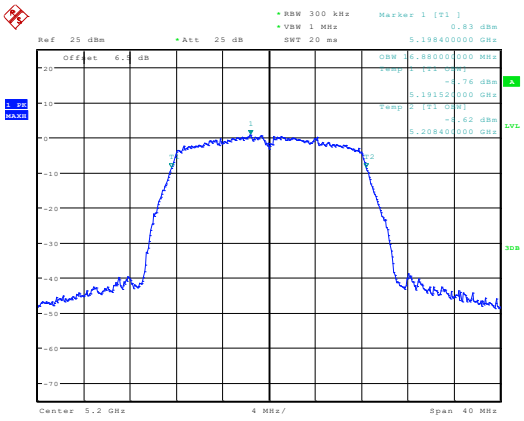
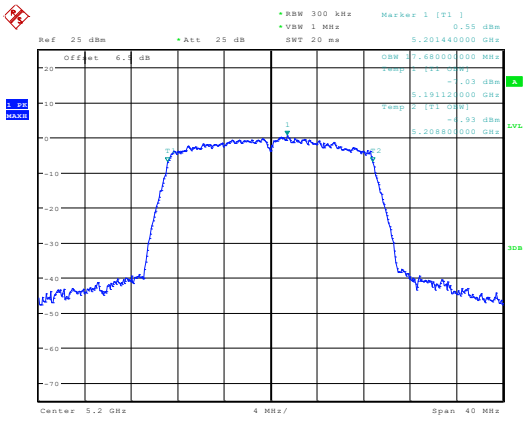
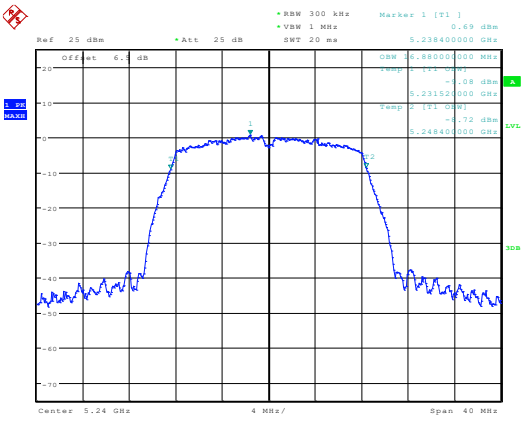
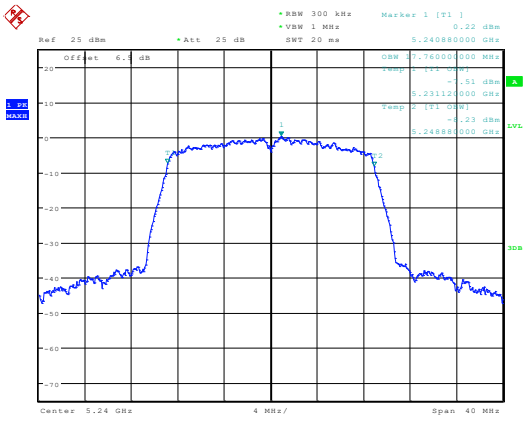
6dB Emission Bandwidth

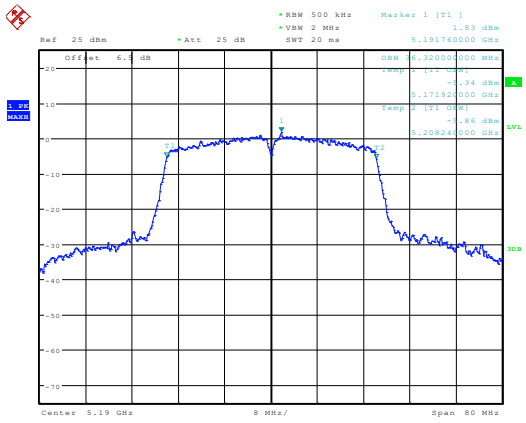
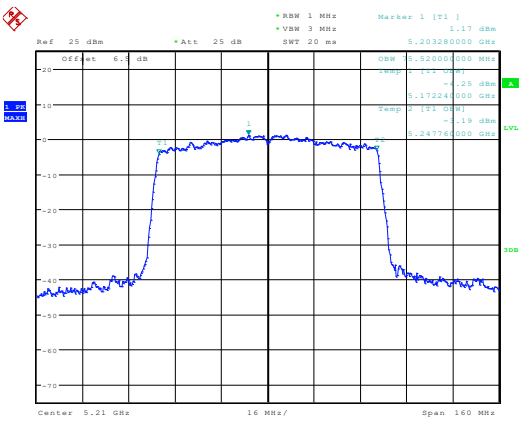
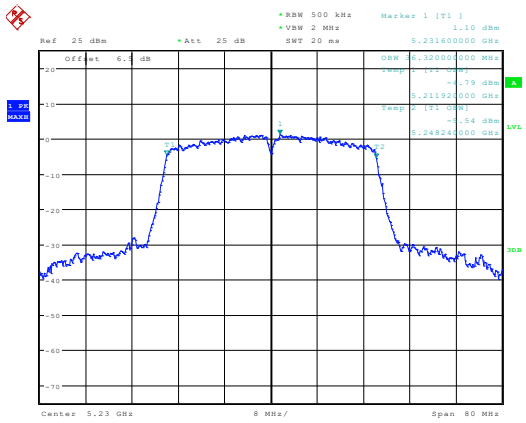
802.11a	802.11n-HT20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

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

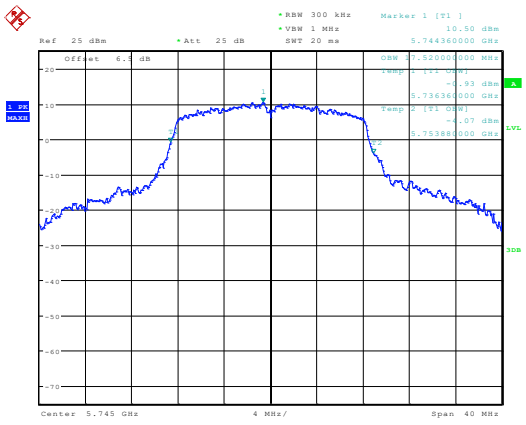
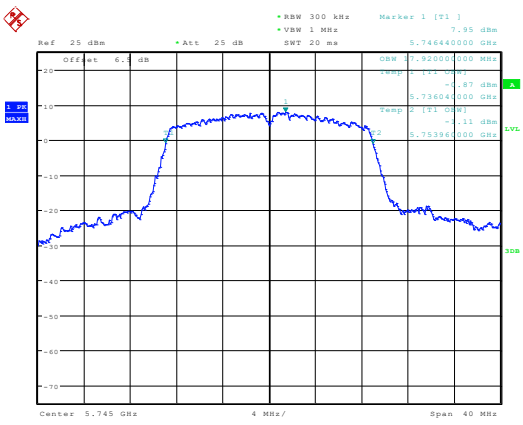
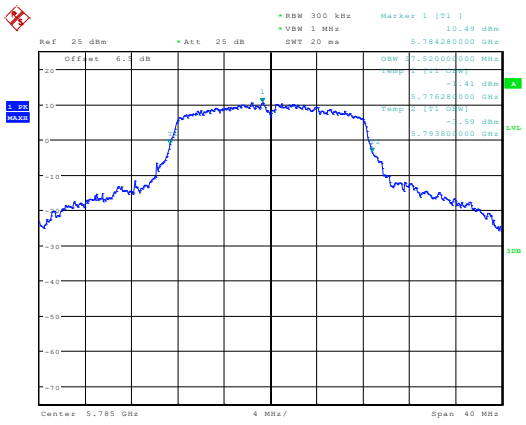
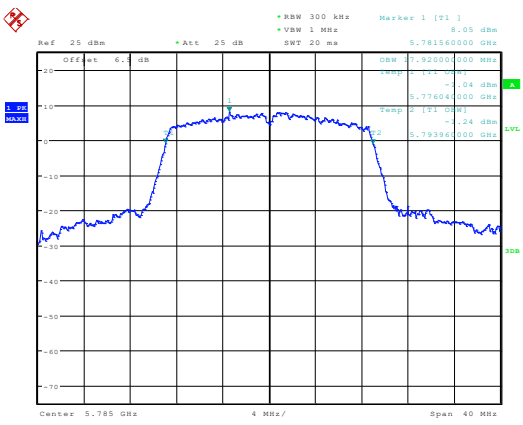
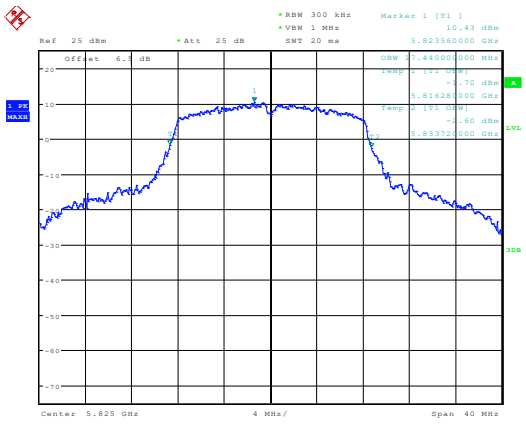
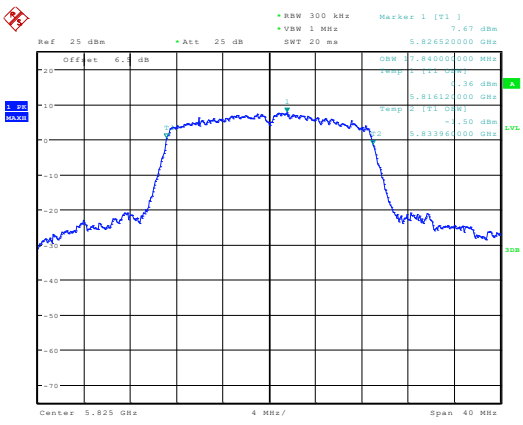
99% Occupied Bandwidth

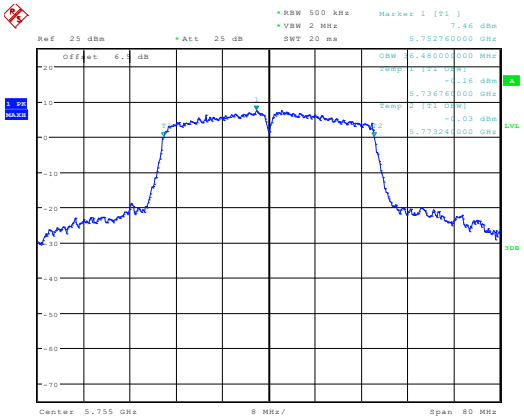
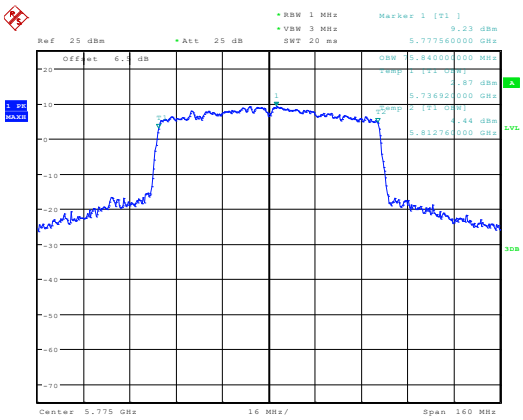
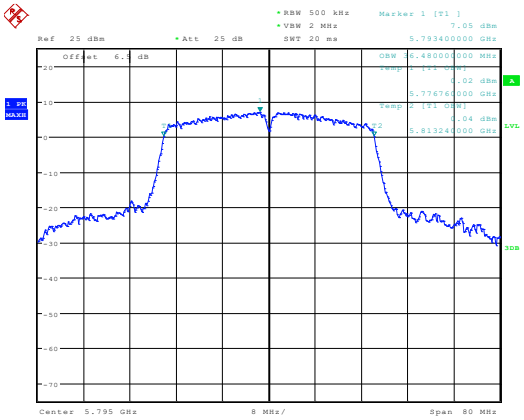
5150-5250MHz:

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	/
	/

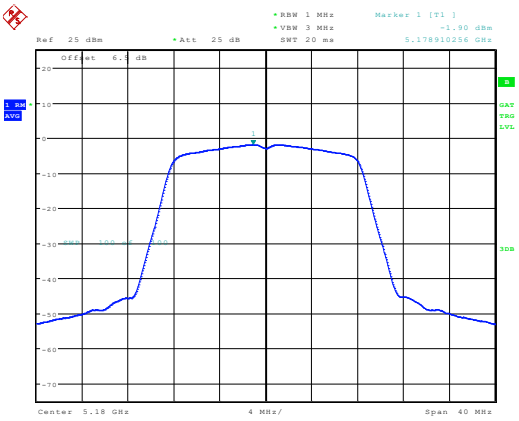
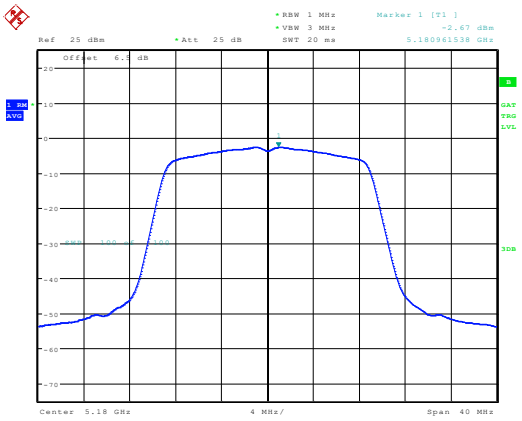
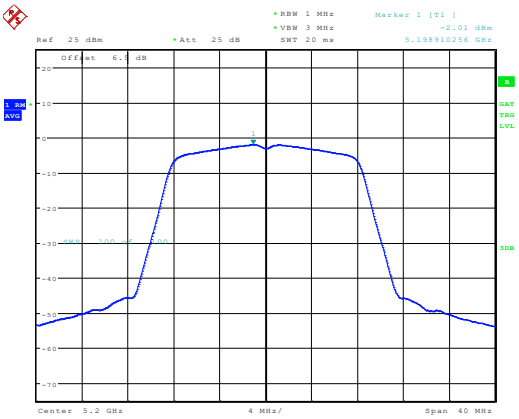
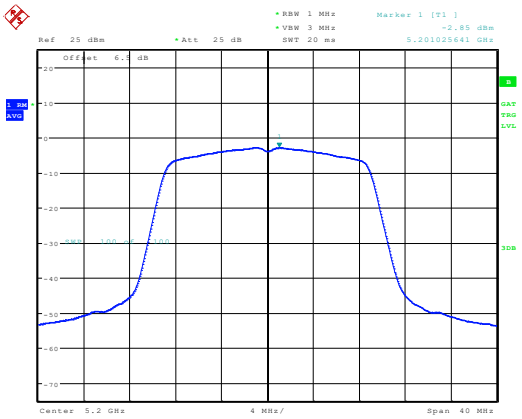
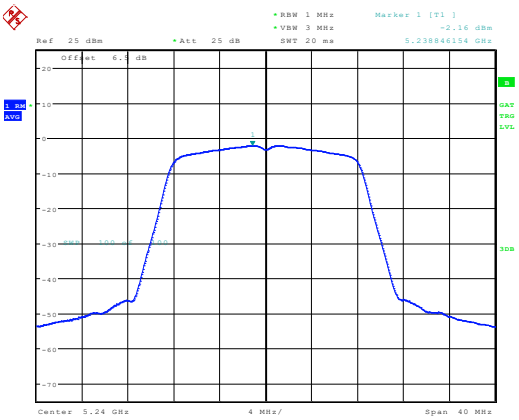
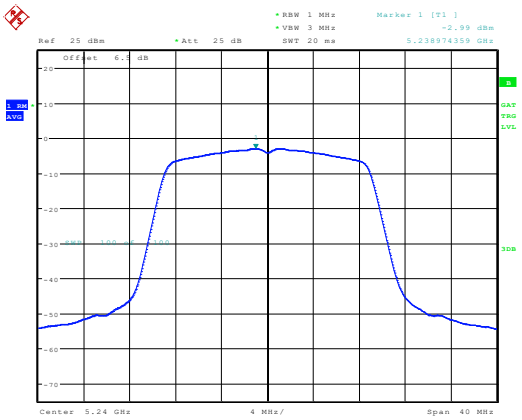
5725-5850MHz:

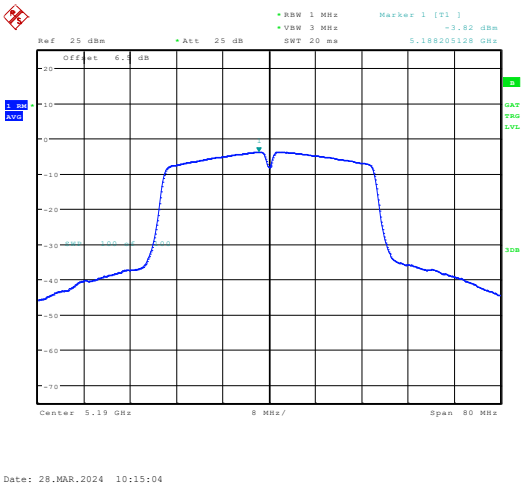
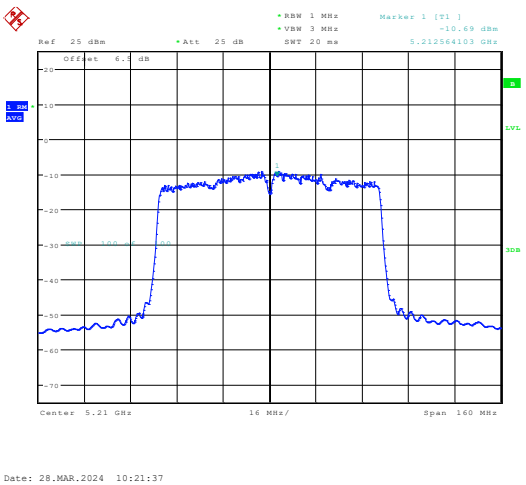
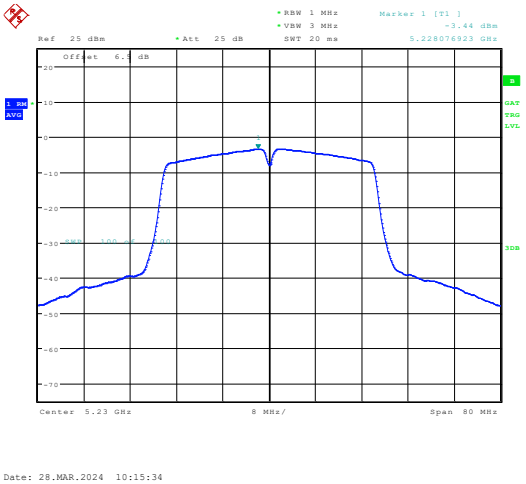
802.11a	802.11n-HT20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

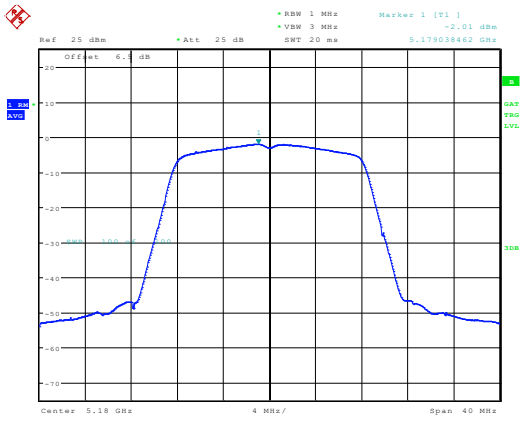
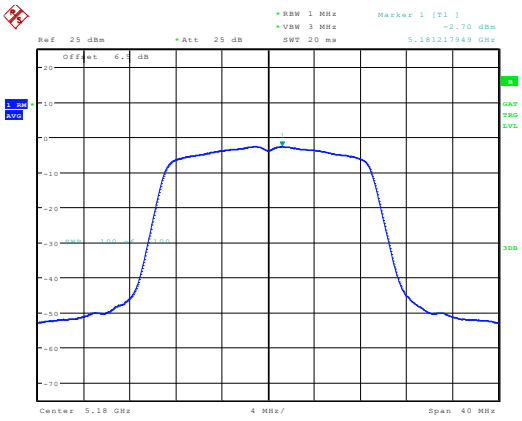
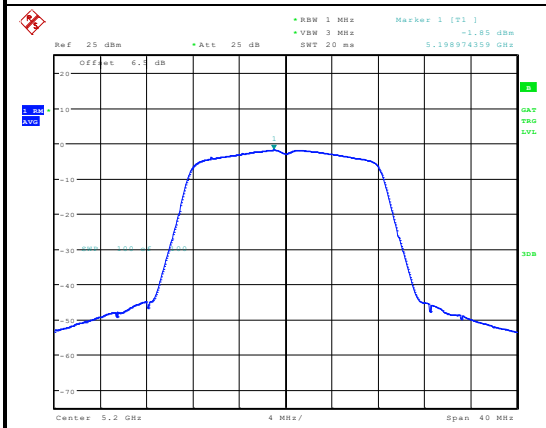
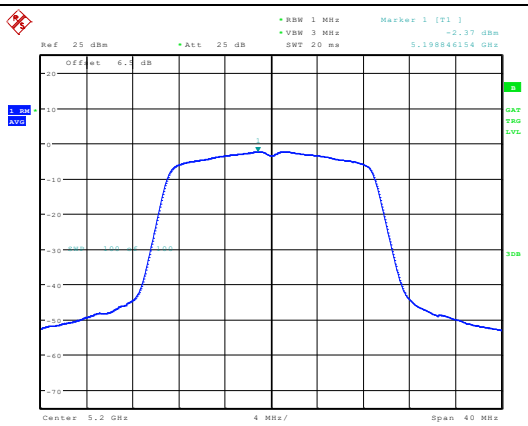
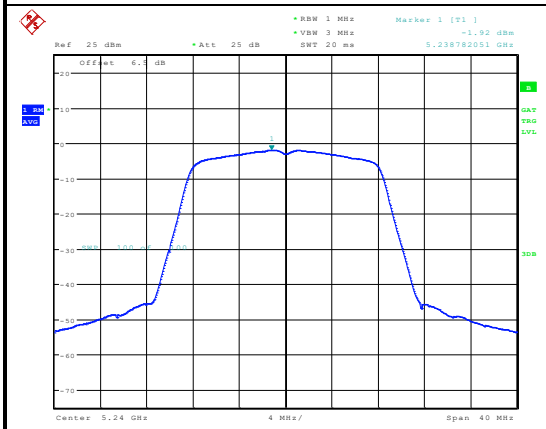
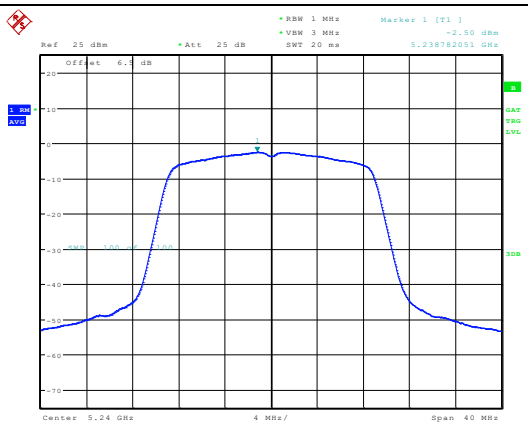
802.11n-HT40	802.11ac-VHT80
Lowest channel	Middle channel
	
High channel	/
	/

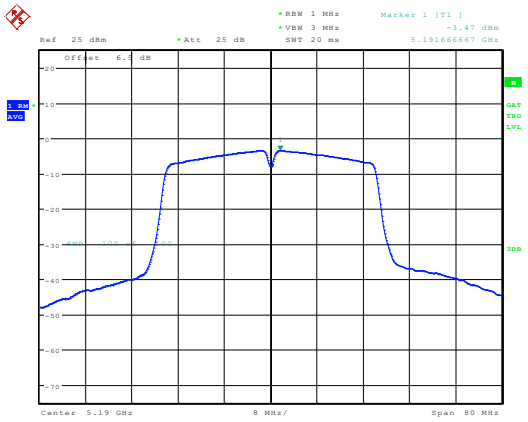
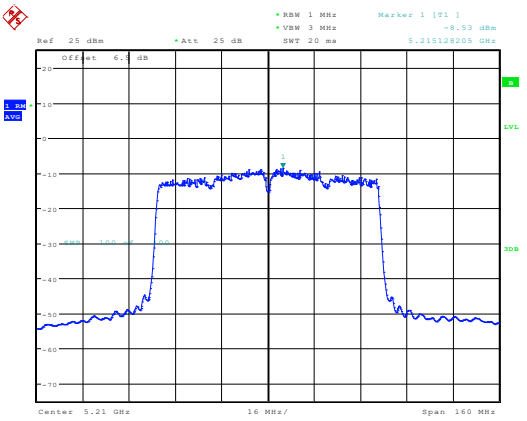
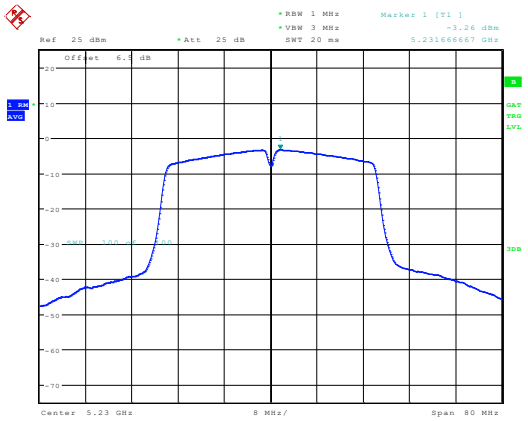
Power Spectral Density

5150-5250MHz:

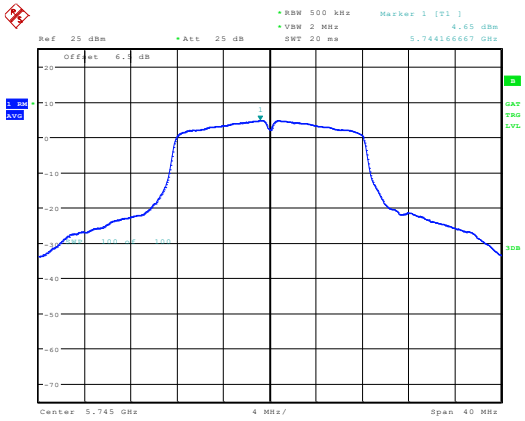
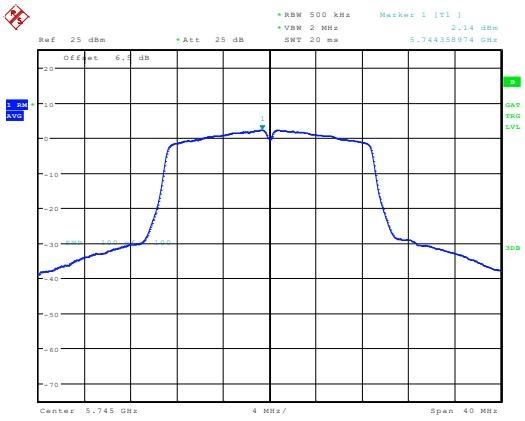
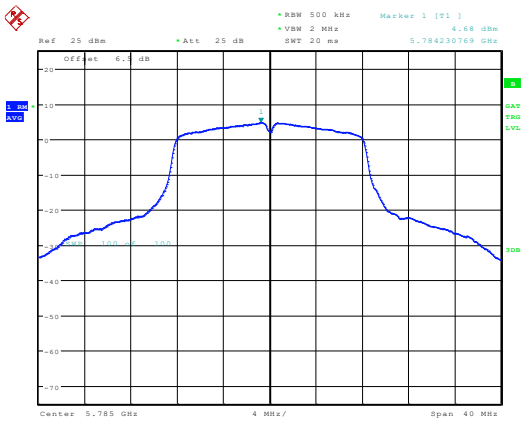
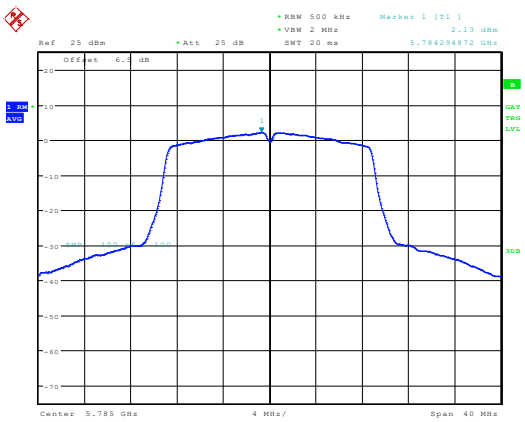
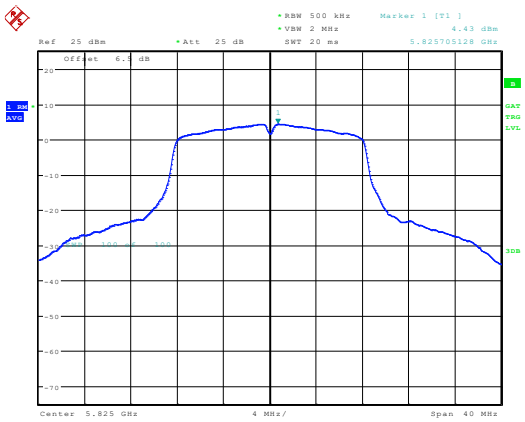
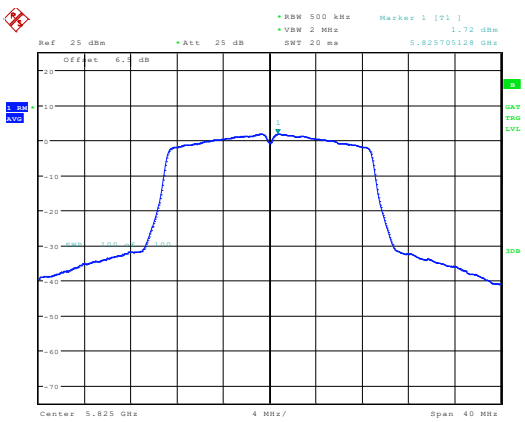
ANT1	
802.11a	**802.11n-HT20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

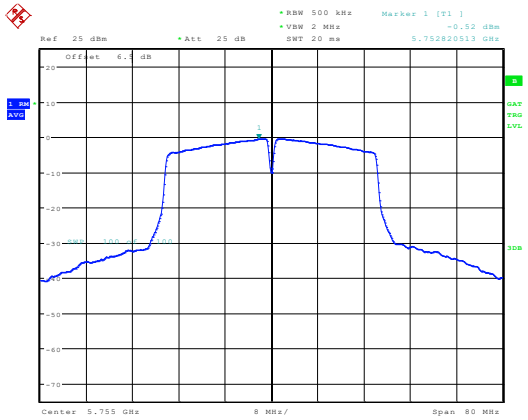
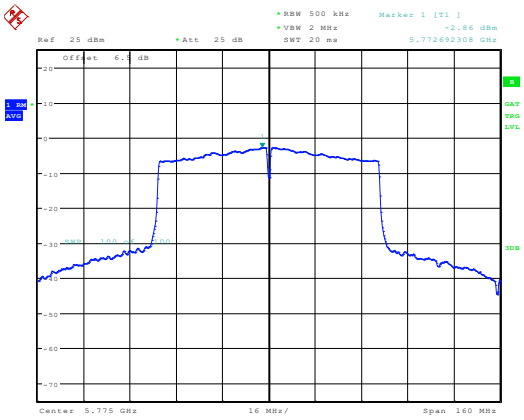
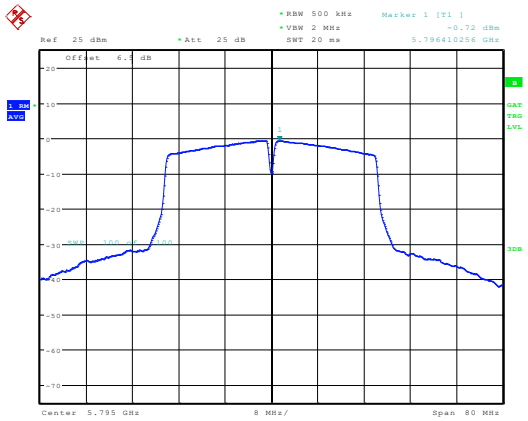
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
High channel	/
	/

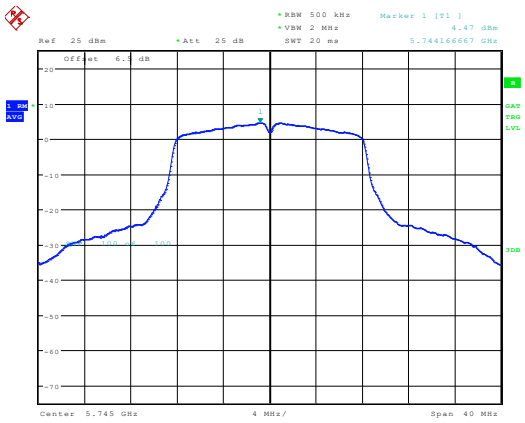
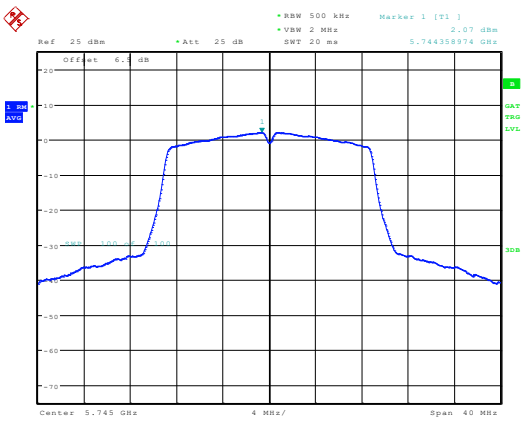
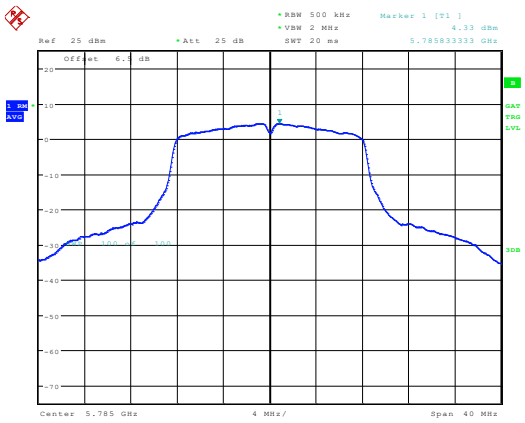
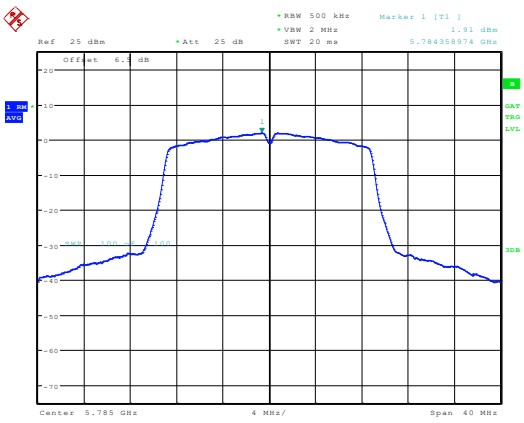
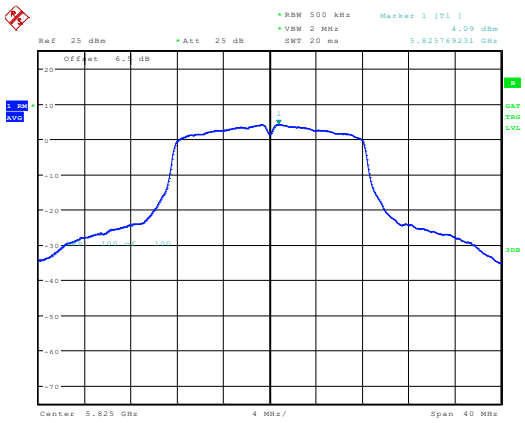
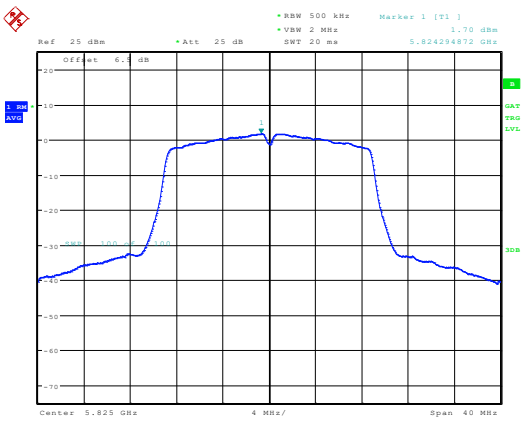
ANT2	
802.11a	**802.11n-HT20**
Lowest channel	Lowest channel
	
Date: 19.APR.2024 10:07:39	Date: 19.APR.2024 10:13:17
Middle channel	Middle channel
	
Date: 19.APR.2024 10:06:14	Date: 19.APR.2024 10:12:04
High channel	High channel
	
Date: 19.APR.2024 10:06:58	Date: 19.APR.2024 10:12:35

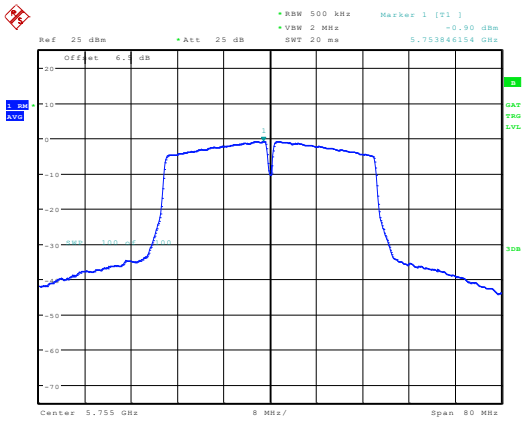
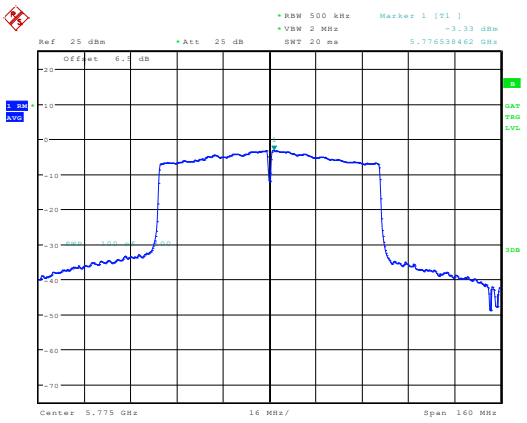
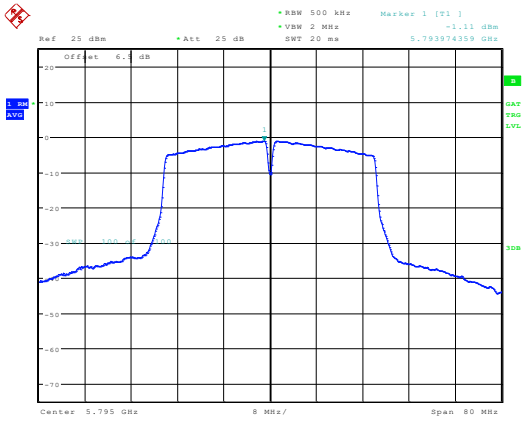
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
High channel	/
	/

5725-5850MHz:

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

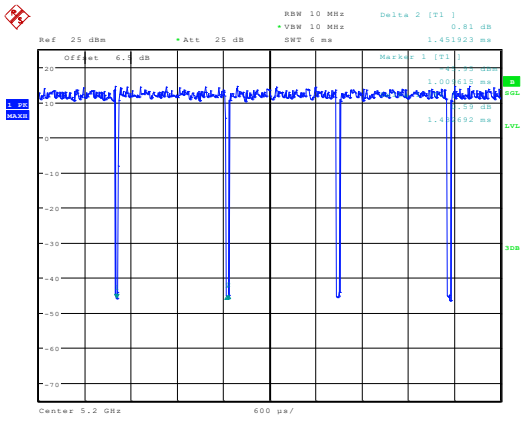
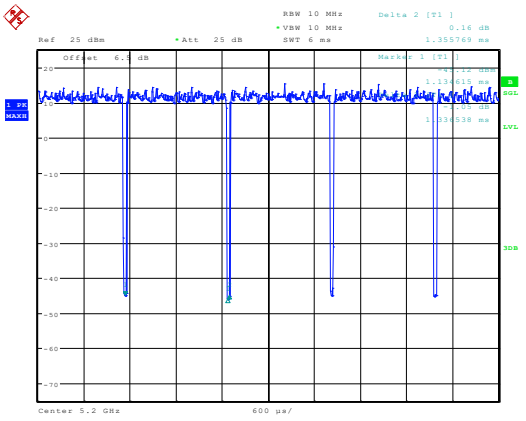
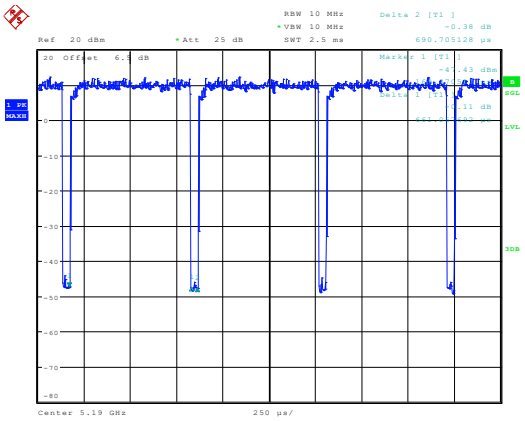
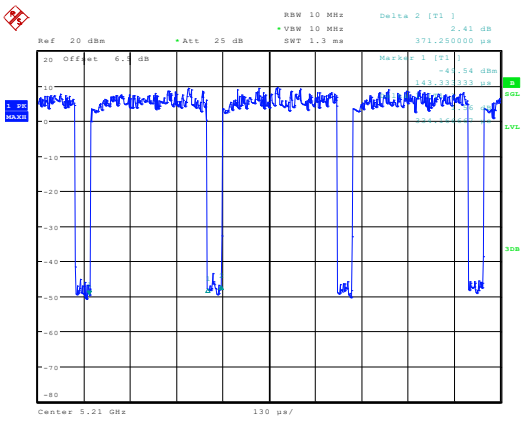
802.11n-HT40	802.11ac-VHT80
Lowest channel	/
	
High channel	/
	/

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	/
	/

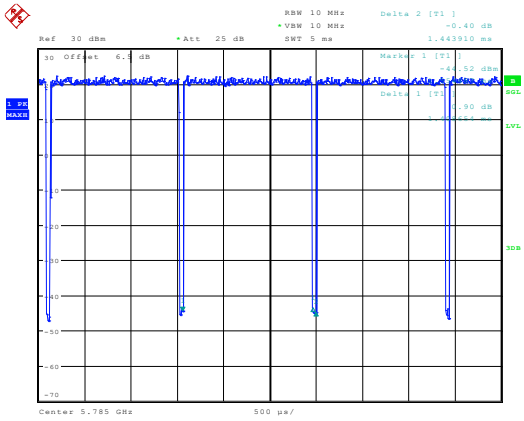
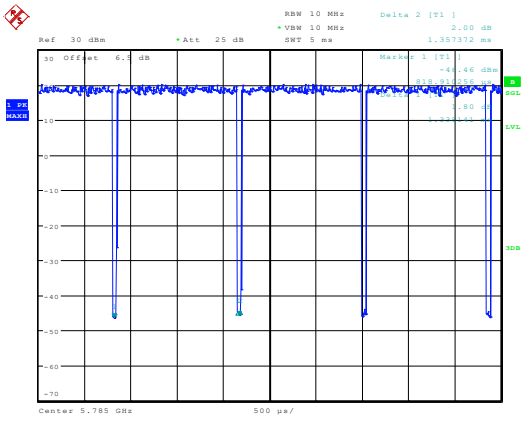
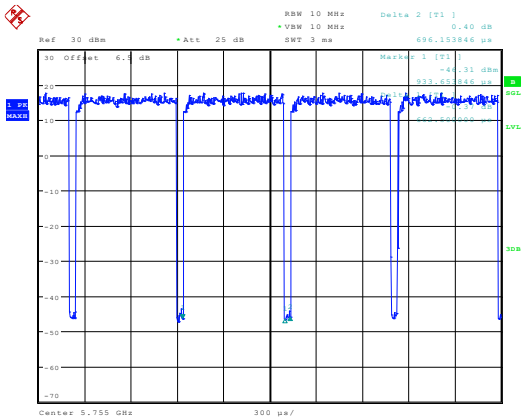
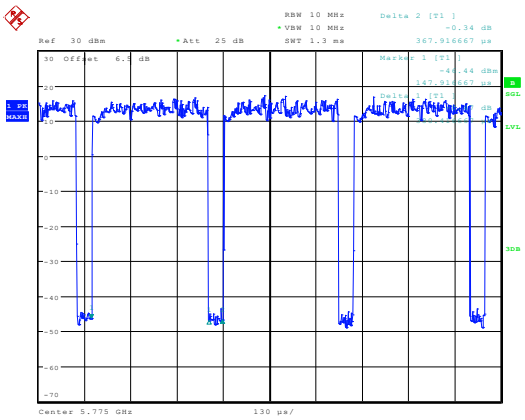
Duty Cycle

5150-5250MHz:

802.11a	802.11n-HT20
	
	

802.11n-HT40	802.11ac-VHT80

5725-5850MHz:

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

4 Test Setup Photo

Please refer to the attachment RWAQ202400241 Test Setup photo.

5 E.U.T Photo

Please refer to the attachment RWAQ202400241 External photo and RWAQ202400241 Internal photo.

---End of Report---