ISEDC Test Report

Report No.:	RWAZ202300122I
Applicant:	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China
Product Name:	Three Anti-Tablet
Product Model:	MT15
Multiple Models:	N/A
Trade Mark:	UMIDIGI
IC:	26074-ACTIVET1PRO
Standards:	RSS-247 Issue 3, August 2023
Test Data:	2024/01/18~2024/01/25
Test Result:	Complied
Issue Date:	2024/01/29

Reviewed by: Frank Yin — FrankYin, Project Engineer

Approved by: Jacob Gong — Jacob Kong, Manager

Prepared by:

World Alliance Testing and 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

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	*29,Jan,2024*	*Original*

Contents

1 General Information

1.1 Client Information

Applicant:	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China
Manufacturer:	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China

1.2 Product Description of EUT

The EUT is Three Anti-Tablet that contains classic Bluetooth (BDR/EDR), BLE, 2.4G/5G WLAN and GSM/GPRS/EGPRS/WCDMA/LTE radios, this report covers the full testing of the 5G WLAN radio.

HVIN	T2316D-G99-MT6789-(UM-VTR)
Sample Serial number	35-2 for CE&RE test, 35-1 for RF test conducted test (assigned by WATC)
Sample Received Date	2024-01-15
Sample Status	Good Condition
Frequency Range	5150 MHz - 5250MHz 5725 MHz - 5850MHz
Maximum Conducted Output Power	5150 MHz - 5250MHz: 11.12dBm 5725 MHz - 5850MHz: 10.46dBm
Modulation Technology	OFDM
Spatial Streams	SISO (1TX, 1RX)
Antenna Gain#	Band1:2.79dBi; Band4:4.41dBi
Power Supply	DC 3.87V from Battery or DC 5/9/11/12/15/20V from Adapter
Operating temperature#	-10 deg.C to +45deg.C
Adapter Information	Model: HJ-PD66W-US Input: AC100-240V, 50/60Hz, 1.5A Output: DC 5.0V, 3.0A, 15.0W or 9.0V, 3.0A, 27.0W or 12.0V, 3.0A, 36.0W or 15.0V, 3.0A, 45.0W or 20.0V, 3.25A, 65W or 11.0V, 6.0A, 66.0W MAX
Modification	Sample No Modification by the test lab

1.3 Antenna information

RSS-GEN Clause 6.8 requirement:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided

in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer. The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Device Antenna information:	

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

Antenna type	Antenna gain	Frequency Range	Input impedance
FPC	2.79dBi	5150 MHz - 5250MHz	50ohm
FPC	4.41dBi	5725 MHz - 5850MHz	50ohm

1.4 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 1: 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.

Note 2: The Decision Rule is based on simple acceptance with ISO Guide 98-4:2012 Clause 8.2 (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

1.5 Laboratory Location

World Alliance Testing and 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.

1.6 Test Methodology

RSS-247 Issue 3, August 2023

RSS-Gen, Issue 5, Amendment 2 (February 2021)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

ANSI C63.10-2020

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 C63.10-2020 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 C63.10-2020 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#:	Engineering model

Band1

Mode	Data rate	Powel Level Setting#		
		Low Channel	Middle Channel	High Channel
802.11a	6Mbps	16	16	16
802.11ac-HT20	MCS0	16	16	16
802.11ac-HT40	MCS0	16	/	16
802.11ac-VHT80	MCS0	/	15	/

Band4

Mode	Data rate	Powel Level Setting#		
		Low Channel	Middle Channel	High Channel
802.11a	6Mbps	16	16	16
802.11ac-HT20	MCS0	16	16	16
802.11ac-HT40	MCS0	16	/	16
802.11ac-VHT80	MCS0	/	16	/

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

Worst-Case Configuration:

For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report

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.

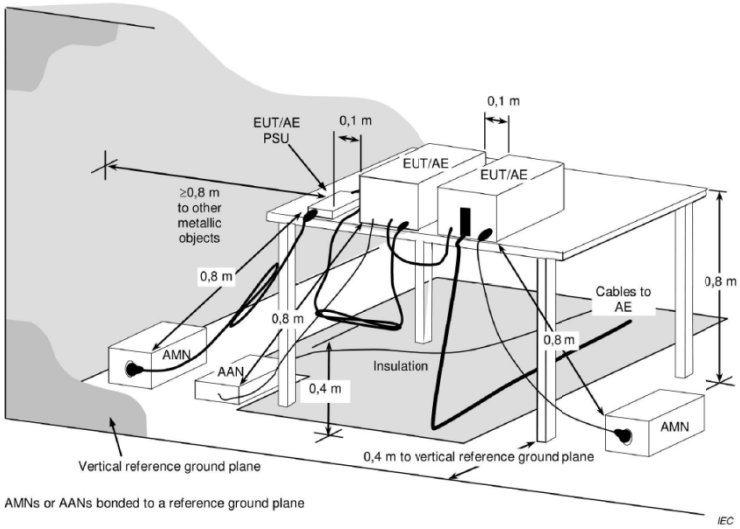
The n-ht20/n-ht40 was reduced test since the identical parameters with ac vht20/ac vht40.

2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
Unknown	Socket	Unknown	Unknown
Unknown	Earphone	Unknown	Unknown

2.3 Test Setup

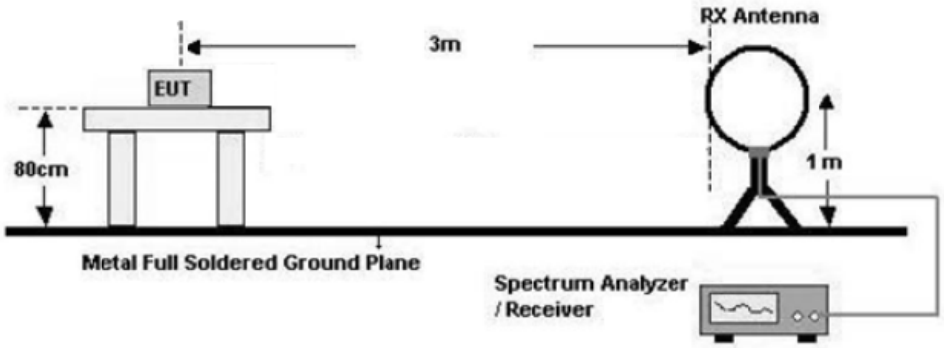
1) Conducted emission measurement:



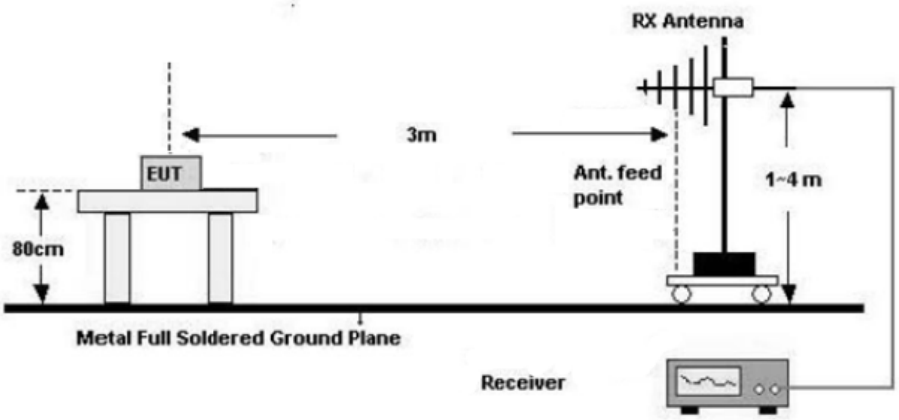
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

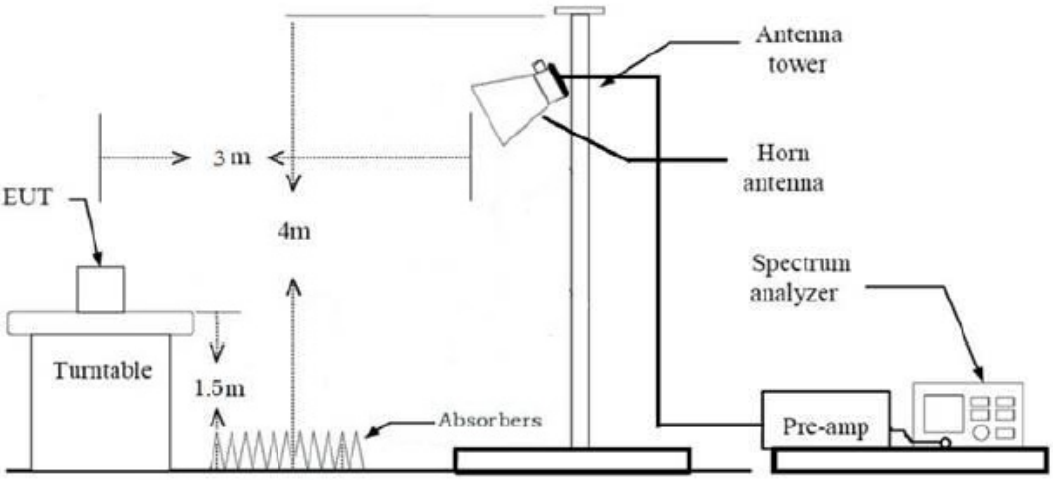
Below 30MHz (3m SAC)



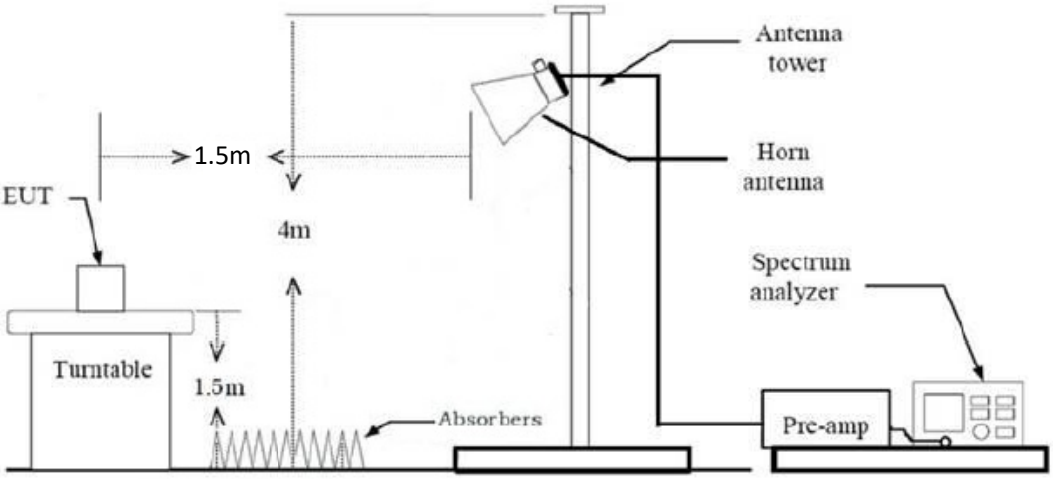
0MHz-1GHz (3m SAC)



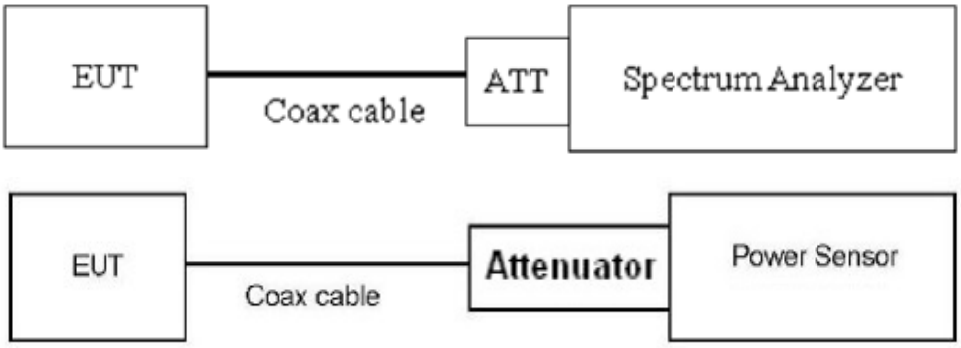
1GHz-18GHz(3m FAC)



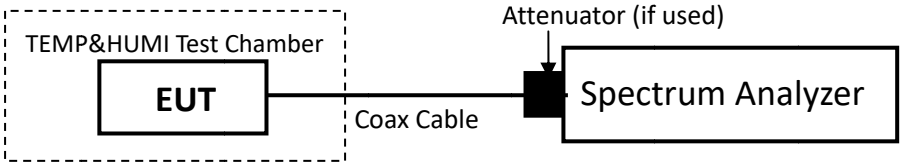
Above 18GHz (3m FAC)



3) RF Conducted Test



For Frequency Stability test



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 11dB (including 10 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.

2.5 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2020 Section 6.2
Maximum Conducted Output Power	KDB 789033 D02 v02r01 section E.3. b)
Power Spectral Density	KDB 789033 D02 v02r01 section F
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.
Frequency Stability	RSS-GEN Issue 5 section 6.11

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	2024/7/30
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
ETS	Passive Loop Antenna	6512	29604	2023/7/7	2024/7/6
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					
R&S	Spectrum Analyzer	FSU	200982	2023/10/25	2024/10/24
ANRITSU	USB Power Sensor	MA24418A	12620	2023/7/12	2024/7/11
MARCONI	10dB Attenuator	1692595	2942	2023/10/25	2024/10/24

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

ISEDC Rules	Description of Test	Result
RSS-GEN §6.8	Antenna Requirement	Compliance
RSS-GEN §8.8	AC Line Conducted Emissions	Compliance
RSS-247 §6.2	Conducted Peak Output Power Power Spectral Density	Compliance
RSS-247 §6.2 RSS-GEN §6.7	99% Occupied Bandwidth	Compliance
RSS-247 §6.2.4.1	6 dB Emission Bandwidth	Compliance
RSS-247 §6.2	Unwanted Emissions	Compliance
RSS-247 §6.4	Additional requirements	Compliance
RSS-GEN §8.11	Frequency Stability	Compliance
/	Duty Cycle	Compliance

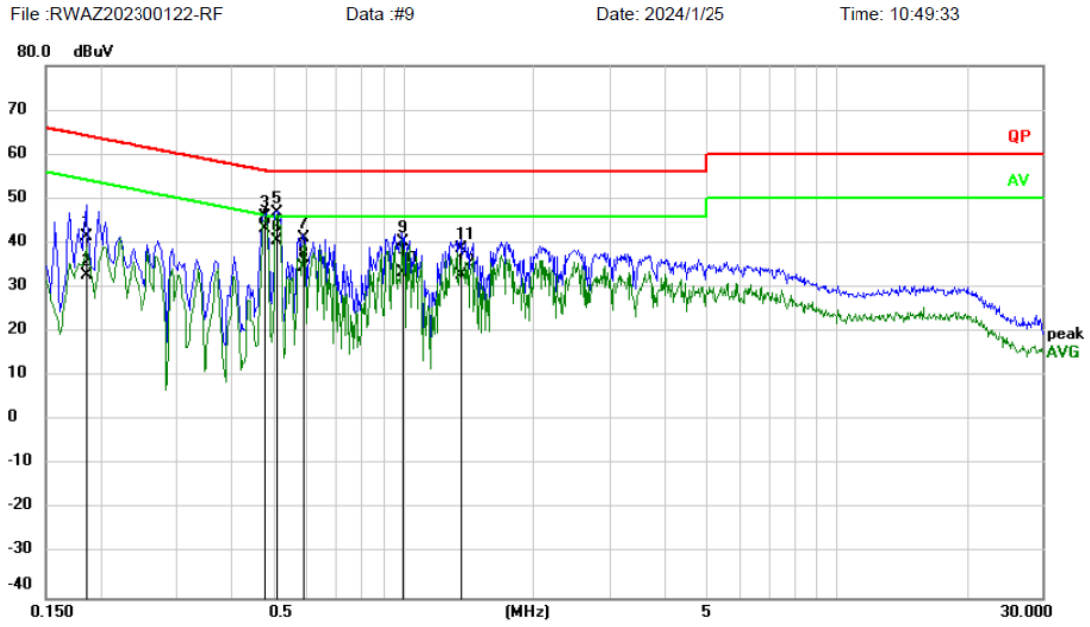
3.2 Limit

Test items	Limit
AC Power Line Conducted Emission	See details RSS-GEN §8.8
Conducted Peak Output Power Power Spectral Density	**For the band 5.15-5.25 GHz:** The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band. **For the band 5.25-5.35 GHz:** The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W. **For the band 5.47-5.6GHz & 5.65~5.725 GHz:** The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W. **For the band 5.725-5.895 GHz:** The maximum conducted output power shall not exceed 1 W. The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
99% Occupied Bandwidth	N/A
6dB Emission Bandwidth	For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.
Frequency Stability	If the frequency stability of the licence-exempt radio apparatus is not specified in the applicable RSS, the fundamental emissions of the radio apparatus should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation. In addition, its occupied bandwidth shall be entirely outside the restricted bands and the prohibited TV bands of 54-72 MHz, 76-88 MHz, 174-216 MHz, and 470-602 MHz, unless otherwise indicated.

Unwanted Emissions	**For the band 5.15-5.25 GHz:** For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band. **For the band 5.25-5.35 GHz:** a) All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.; or b) All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and its power shall comply with the spectral power density for operation within the band 5150-5250MHz. The device, except devices installed in vehicles, shall be labelled or include in the user manual the following text “for indoor use only.” **For the band 5.47-5.6GHz & 5.65~5.725 GHz:** Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p. at 5850 MHz instead of 5725 MHz. **For the band 5.725-5.895 GHz:** Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following: a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges; b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges; c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

3.3 AC Line Conducted Emissions Test Data

Test Date:	2024-1-25	Test By:	Lirou Li
Environment condition:	Temperature: 21.5 C; Relative Humidity:32%; ATM Pressure: 101.2kPa		

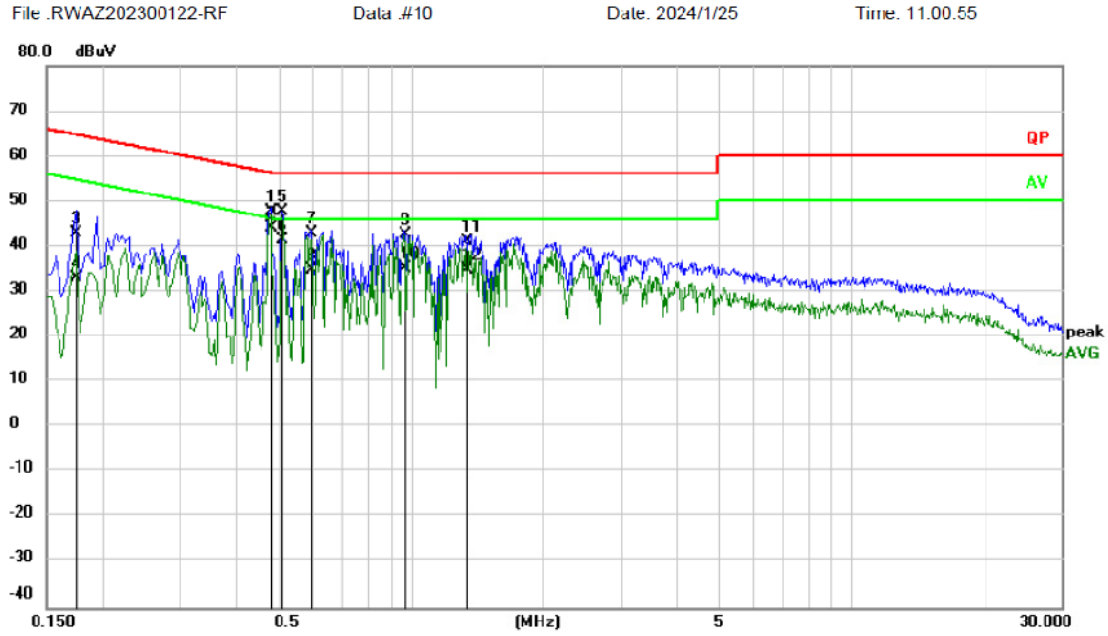


Limit: QP
Mode:transmitting
Note: 5G-WIFI

Phase: L1
Power: AC 120V/60Hz

Temperature: 21.5
Humidity: 32 %
Air Pressure: 1012 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1860	30.76	10.67	41.43	64.21	-22.78	QP	
2		0.1860	22.13	10.67	32.80	54.21	-21.41	AVG	
3		0.4786	35.10	10.81	45.91	56.36	-10.45	QP	
4	*	0.4786	32.58	10.81	43.39	46.36	-2.97	AVG	
5		0.5100	35.92	10.81	46.73	56.00	-9.27	QP	
6		0.5100	29.82	10.81	40.63	46.00	-5.37	AVG	
7		0.5899	30.25	10.84	41.09	56.00	-14.91	QP	
8		0.5899	23.69	10.84	34.53	46.00	-11.47	AVG	
9		0.9980	29.33	11.06	40.39	56.00	-15.61	QP	
10		0.9980	22.33	11.06	33.39	46.00	-12.61	AVG	
11		1.3619	27.98	10.85	38.83	56.00	-17.17	QP	
12		1.3619	21.89	10.85	32.74	46.00	-13.26	AVG	



Limit: QP
Mode:transmitting
Note: 5G-WIFI

Phase: N
Power: AC 120V/60Hz

Temperature: 21.5
Humidity: 32 %
Air Pressure: 1012 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4820	37.20	10.70	47.90	56.30	-8.40	QP	
2	*	0.4820	33.34	10.70	44.04	46.30	-2.26	AVG	
3		0.1740	32.34	10.51	42.85	64.77	-21.92	QP	
4		0.1740	22.54	10.51	33.05	54.77	-21.72	AVG	
5		0.5100	36.98	10.70	47.68	56.00	-8.32	QP	
6		0.5100	30.64	10.70	41.34	46.00	-4.66	AVG	
7		0.5940	32.44	10.65	43.09	56.00	-12.91	QP	
8		0.5940	24.27	10.65	34.92	46.00	-11.08	AVG	
9		0.9660	31.89	10.65	42.54	56.00	-13.46	QP	
10		0.9660	24.40	10.65	35.05	46.00	-10.95	AVG	
11		1.3380	30.54	10.67	41.21	56.00	-14.79	QP	
12		1.3380	24.09	10.67	34.76	46.00	-11.24	AVG	

Remark:

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

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

Over = Measurement – Limit

3.4 Radiated emission Test Data

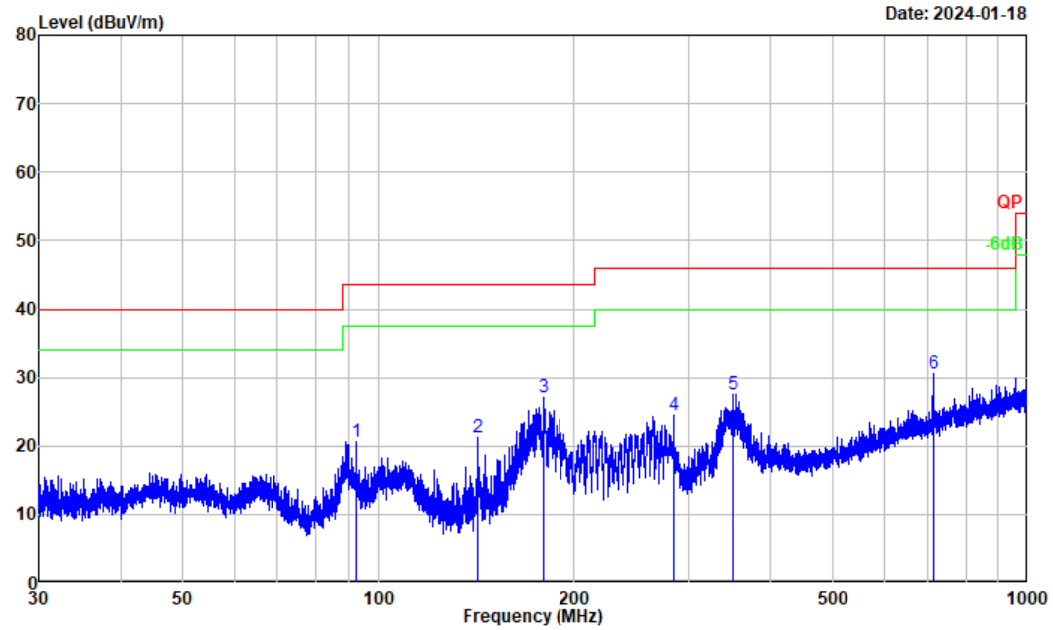
9 kHz-30MHz:

Test Date:	2024-01-18	**Test By:**	Bard Huang
Environment condition:	Temperature: 23.5°C; Relative Humidity:57%; ATM Pressure: 101.2kPa		

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

30MHz-1GHz:

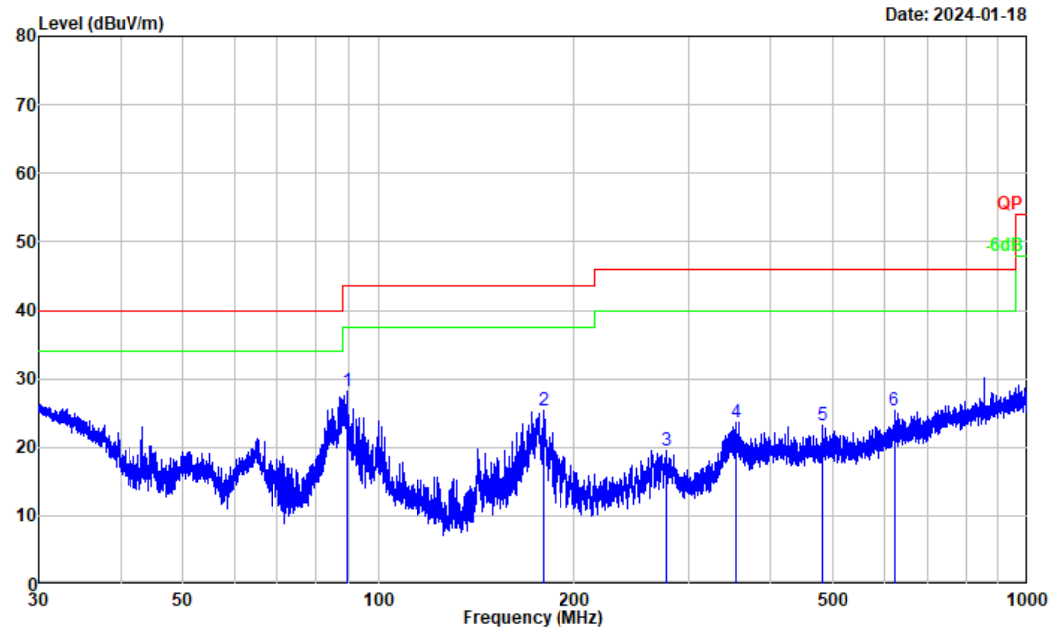
Test Date:	2024-01-18	Test By:	Bard Huang
Environment condition:	Temperature: 23.5°C; Relative Humidity:57%; ATM Pressure: 101.2kPa		



Project No. : RWAZ202300122-RF
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.5℃/57%R.H./101.2kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 5G

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	92.381	35.87	-15.21	20.66	43.50	-22.84	Peak
2	142.387	38.87	-17.61	21.26	43.50	-22.24	Peak
3	178.994	42.89	-15.71	27.18	43.50	-16.32	Peak
4	284.977	36.29	-11.72	24.57	46.00	-21.43	Peak
5	351.092	37.15	-9.66	27.49	46.00	-18.51	Peak
6	712.610	33.97	-3.47	30.50	46.00	-15.50	Peak

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



Project No. : RWAZ202300122-RF
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.5℃/57%R.H./101.2kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 5G

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	89.394	44.12	-15.87	28.25	43.50	-15.25	Peak
2	179.072	41.14	-15.71	25.43	43.50	-18.07	Peak
3	276.729	31.36	-11.90	19.46	46.00	-26.54	Peak
4	355.272	33.32	-9.62	23.70	46.00	-22.30	Peak
5	480.528	30.90	-7.78	23.12	46.00	-22.88	Peak
6	621.526	30.02	-4.56	25.46	46.00	-20.54	Peak

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

Remark:

Level = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Level – Limit

Above 1GHz:

Test Date:	2024-01-18	Test By:	Bard Huang
Environment condition:	Temperature: 23.5°C; Relative Humidity: 57%; ATM Pressure: 101.2kPa		

5150- 5250MHz:

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	50.02	Horizontal	11.57	61.59	74	-12.41	Peak
5150	39.69	Horizontal	11.57	51.26	54	-2.74	Average
5150	47.35	Vertical	11.57	58.92	74	-15.08	Peak
5150	39.51	Vertical	11.57	51.08	54	-2.92	Average
10360	53.28	Horizontal	5.5	58.78	68.2	-9.42	Peak
10360	52.97	Vertical	5.5	58.47	68.2	-9.73	Peak
Middle Channel							
10400	53.49	Horizontal	5.7	59.19	68.2	-9.01	Peak
10400	53.26	Vertical	5.7	58.96	68.2	-9.24	Peak
High Channel							
5350	48.06	Horizontal	11.57	59.63	74	-14.37	Peak
5350	39.36	Horizontal	11.57	50.93	54	-3.07	Average
5350	46.62	Vertical	11.57	58.19	74	-15.81	Peak
5350	39.12	Vertical	11.57	50.69	54	-3.31	Average
10480	54.05	Horizontal	5.74	59.79	68.2	-8.41	Peak
10480	53.76	Vertical	5.74	59.50	68.2	-8.70	Peak
802.11 ac20							
Low Channel							
5150	48.93	Horizontal	11.57	60.5	74	-13.50	Peak
5150	38.23	Horizontal	11.57	49.80	54	-4.20	Average
5150	48.50	Vertical	11.57	60.07	74	-13.93	Peak
5150	38.67	Vertical	11.57	50.24	54	-3.76	Average
10360	53.10	Horizontal	5.5	58.60	68.2	-9.60	Peak
10360	52.81	Vertical	5.5	58.31	68.2	-9.89	Peak
Middle Channel							
10400	53.32	Horizontal	5.7	59.02	68.2	-9.18	Peak
10400	53.09	Vertical	5.7	58.79	68.2	-9.41	Peak
High Channel							

5350	48.89	Horizontal	11.57	60.46	74	-13.54	Peak
5350	38.56	Horizontal	11.57	50.13	54	-3.87	Average
5350	48.34	Vertical	11.57	59.91	74	-14.09	Peak
5350	39.12	Vertical	11.57	50.69	54	-3.31	Average
10480	53.87	Horizontal	5.74	59.61	68.2	-8.59	Peak
10480	53.61	Vertical	5.74	59.35	68.2	-8.85	Peak
802.11ac40							
Low Channel							
5150	55.13	Horizontal	11.57	66.7	74	-7.30	Peak
5150	38.38	Horizontal	11.57	49.95	54	-4.05	Average
5150	50.35	Vertical	11.57	61.92	74	-12.08	Peak
5150	38.77	Vertical	11.57	50.34	54	-3.66	Average
10380	53.10	Horizontal	5.5	58.60	68.2	-9.60	Peak
10380	52.81	Vertical	5.5	58.31	68.2	-9.89	Peak
High Channel							
5350	48.46	Horizontal	11.57	60.03	74	-13.97	Peak
5350	38.93	Horizontal	11.57	50.50	54	-3.50	Average
5350	48.21	Vertical	11.57	59.78	74	-14.22	Peak
5350	38.84	Vertical	11.57	50.41	54	-3.59	Average
10460	53.69	Horizontal	5.73	59.42	68.2	-8.78	Peak
10460	53.44	Vertical	5.73	59.17	68.2	-9.03	Peak
802.11ac80							
5150	52.51	Horizontal	11.57	64.08	74	-9.92	Peak
5150	39.40	Horizontal	11.57	50.97	54	-3.03	Average
5150	50.10	Vertical	11.57	61.67	74	-12.33	Peak
5150	38.66	Vertical	11.57	50.23	54	-3.77	Average
5350	48.58	Horizontal	11.57	60.15	74	-13.85	Peak
5350	38.73	Horizontal	11.57	50.30	54	-3.70	Average
5350	48.76	Vertical	11.57	60.33	74	-13.67	Peak
5350	38.53	Vertical	11.57	50.10	54	-3.90	Average
10420	53.14	Horizontal	5.71	58.85	68.2	-9.35	Peak
10420	52.91	Vertical	5.71	58.62	68.2	-9.58	Peak

5725 - 5850MHz:

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							
5650	48.27	Horizontal	11.9	60.17	68.2	-8.03	Peak
5700	48.19	Horizontal	12	60.19	105.2	-45.01	Peak
5720	50.94	Horizontal	12.03	62.97	110.8	-47.83	Peak
5725	54.80	Horizontal	12.03	66.83	122.2	-55.37	Peak
5650	48.51	Vertical	11.9	60.41	68.2	-7.79	Peak
5700	48.84	Vertical	12	60.84	105.2	-44.36	Peak
5720	53.89	Vertical	12.03	65.92	110.8	-44.88	Peak
5725	59.90	Vertical	12.03	71.93	122.2	-50.27	Peak
11490	53.45	horizontal	6.46	59.91	74	-14.09	Peak
11490	38.69	horizontal	6.46	45.15	54	-8.85	Average
11490	53.22	vertical	6.46	59.68	74	-14.32	Peak
11490	38.48	vertical	6.46	44.94	54	-9.06	Average
Middle Channel							
11570	53.82	horizontal	6.52	60.34	74	-13.66	Peak
11570	39.15	horizontal	6.52	45.67	54	-8.33	Average
11570	53.59	vertical	6.52	60.11	74	-13.89	Peak
11570	38.93	vertical	6.52	45.45	54	-8.55	Average
High Channel							
5850	52.41	Horizontal	12.31	64.72	122.2	-57.48	Peak
5855	50.08	Horizontal	12.32	62.40	105.2	-42.80	Peak
5875	48.55	Horizontal	12.39	60.94	110.8	-49.86	Peak
5925	48.07	Horizontal	12.43	60.50	68.2	-7.70	Peak
5850	61.13	Vertical	12.31	73.44	122.2	-48.76	Peak
5855	57.37	Vertical	12.32	69.69	105.2	-35.51	Peak
5875	48.08	Vertical	12.39	60.47	110.8	-50.33	Peak
5925	48.19	Vertical	12.43	60.62	68.2	-7.58	Peak
11650	53.84	horizontal	6.55	60.39	74	-13.61	Peak
11650	39.21	horizontal	6.55	45.76	54	-8.24	Average
11650	53.65	vertical	6.55	60.20	74	-13.80	Peak
11650	39.03	vertical	6.55	45.58	54	-8.42	Average
802.11ac20							
Low Channel							

5650	48.59	Horizontal	11.9	60.49	68.2	-7.71	Peak
5700	48.03	Horizontal	12	60.03	105.2	-45.17	Peak
5720	55.38	Horizontal	12.03	67.41	110.8	-43.39	Peak
5725	59.90	Horizontal	12.03	71.93	122.2	-50.27	Peak
5650	51.15	Vertical	11.9	63.05	68.2	-5.15	Peak
5700	51.74	Vertical	12	63.74	105.2	-41.46	Peak
5720	48.03	Vertical	12.03	60.06	110.8	-50.74	Peak
5725	48.59	Vertical	12.03	60.62	122.2	-61.58	Peak
11490	53.26	horizontal	6.46	59.72	74	-14.28	Peak
11490	38.64	horizontal	6.46	45.10	54	-8.90	Average
11490	53.10	vertical	6.46	59.56	74	-14.44	Peak
11490	38.51	vertical	6.46	44.97	54	-9.03	Average
Middle Channel							
11570	53.65	horizontal	6.52	60.17	74	-13.83	Peak
11570	39.02	horizontal	6.52	45.54	54	-8.46	Average
11570	53.80	vertical	6.52	60.32	74	-13.68	Peak
11570	39.18	vertical	6.52	45.70	54	-8.30	Average
High Channel							
5850	58.63	Horizontal	12.31	70.94	122.2	-51.26	Peak
5855	56.49	Horizontal	12.32	68.81	105.2	-36.39	Peak
5875	48.85	Horizontal	12.39	61.24	110.8	-49.56	Peak
5925	48.26	Horizontal	12.43	60.69	68.2	-7.51	Peak
5850	48.45	Vertical	12.31	60.76	122.2	-61.44	Peak
5855	48.85	Vertical	12.32	61.17	105.2	-44.03	Peak
5875	54.71	Vertical	12.39	67.10	110.8	-43.70	Peak
5925	48.93	Vertical	12.43	61.36	68.2	-6.84	Peak
11650	53.60	horizontal	6.55	60.15	74	-13.85	Peak
11650	39.12	horizontal	6.55	45.67	54	-8.33	Average
11650	53.73	vertical	6.55	60.28	74	-13.72	Peak
11650	39.19	vertical	6.55	45.74	54	-8.26	Average
802.11ac40							
Low Channel							
5631.354	48.86	Horizontal	11.9	60.76	68.2	-7.44	Peak
5700	48.17	Horizontal	12	60.17	105.2	-45.03	Peak
5718.58	55.07	Horizontal	12.03	67.10	110.8	-43.70	Peak
5721.757	58.33	Horizontal	12.03	70.36	122.2	-51.84	Peak
5639.104	48.47	Vertical	11.9	60.37	68.2	-7.83	Peak
5696.861	49.67	Vertical	12	61.67	105.2	-43.53	Peak

5716.178	58.98	Vertical	12.03	71.01	110.8	-39.79	Peak
5721.874	59.32	Vertical	12.03	71.35	122.2	-50.85	Peak
11510	53.53	horizontal	6.48	60.01	74	-13.99	Peak
11510	39.88	horizontal	6.48	46.36	54	-7.64	Average
11510	53.70	vertical	6.48	60.18	74	-13.82	Peak
11510	40.07	vertical	6.48	46.55	54	-7.45	Average
High Channel							
5850	48.87	Horizontal	12.31	61.18	122.2	-61.02	Peak
5855	48.51	Horizontal	12.32	60.83	105.2	-44.37	Peak
5875	49.73	Horizontal	12.39	62.12	110.8	-48.68	Peak
5925	48.47	Horizontal	12.43	60.90	68.2	-7.30	Peak
5850	51.81	Vertical	12.31	64.12	122.2	-58.08	Peak
5855	50.15	Vertical	12.32	62.47	105.2	-42.73	Peak
5875	49.76	Vertical	12.39	62.15	110.8	-48.65	Peak
5925	48.07	Vertical	12.43	60.50	68.2	-7.70	Peak
11590	54.07	horizontal	6.53	60.60	74	-13.40	Peak
11590	40.14	horizontal	6.53	46.67	54	-7.33	Average
11590	54.26	vertical	6.53	60.79	74	-13.21	Peak
11590	40.32	vertical	6.53	46.85	54	-7.15	Average
802.11ac80							
Low Channel							
5650	48.07	Horizontal	11.9	59.97	68.2	-8.23	Peak
5700	55.25	Horizontal	12	67.25	105.2	-37.95	Peak
5720	59.10	Horizontal	12.03	71.13	110.8	-39.67	Peak
5725	56.87	Horizontal	12.03	68.9	122.2	-53.30	Peak
5650	48.09	Vertical	11.9	59.99	68.2	-8.21	Peak
5700	59.72	Vertical	12	71.72	105.2	-33.48	Peak
5720	58.25	Vertical	12.03	70.28	110.8	-40.52	Peak
5725	60.51	Vertical	12.03	72.54	122.2	-49.66	Peak
5850	52.04	Horizontal	12.31	64.35	122.2	-57.85	Peak
5855	52.65	Horizontal	12.32	64.97	105.2	-40.23	Peak
5875	48.70	Horizontal	12.39	61.09	110.8	-49.71	Peak
5925	48.15	Horizontal	12.43	60.58	68.2	-7.62	Peak
5850	58.58	Vertical	12.31	70.89	122.2	-51.31	Peak
5855	57.47	Vertical	12.32	69.79	105.2	-35.41	Peak
5875	52.87	Vertical	12.39	65.26	110.8	-45.54	Peak
5925	48.80	Vertical	12.43	61.23	68.2	-6.97	Peak
11550	53.81	horizontal	6.5	60.31	74	-13.69	Peak

11550	40.95	horizontal	6.5	47.45	54	-6.55	Average
11550	53.64	vertical	6.5	60.14	74	-13.86	Peak
11550	40.75	vertical	6.5	47.25	54	-6.75	Average

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

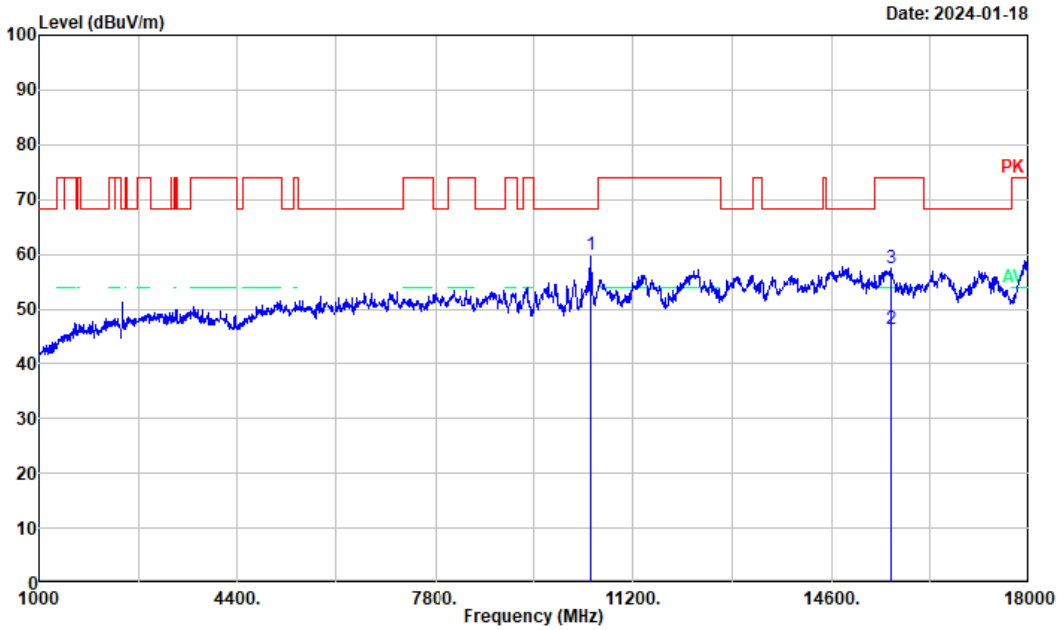
Margin = Corrected Amplitude – Limit

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:			
Mode:	802.11 a	**Channel:**	5240MHz

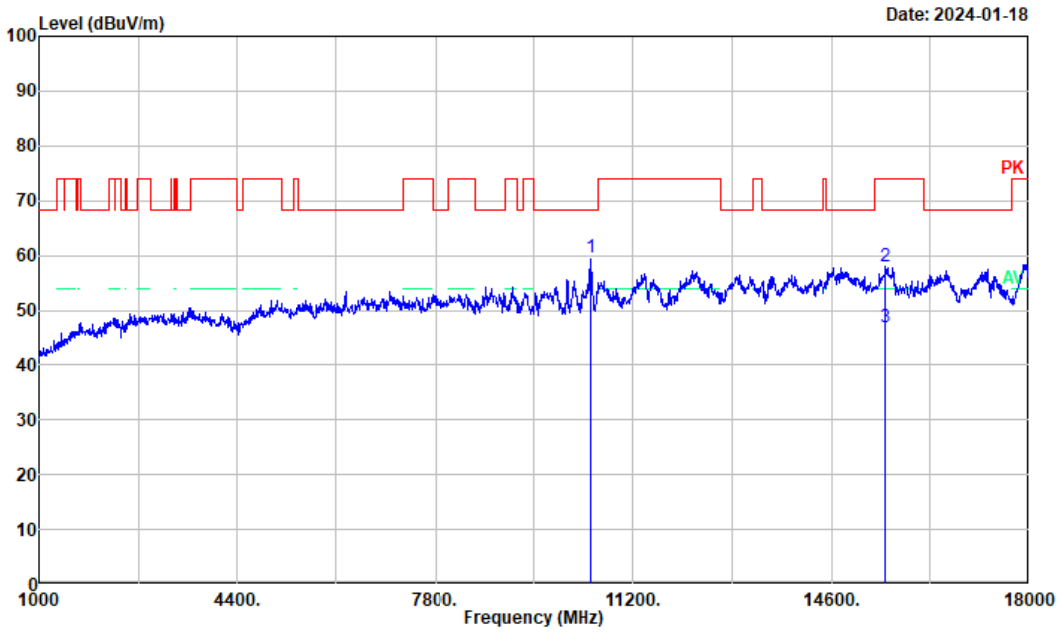


Project No. : RWAZ202300122-RF
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.5℃/57%R.H./101.2kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 802.11a high channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	10480.000	54.05	5.74	59.79	68.20	-8.41	Peak
2	15618.810	38.27	8.02	46.29	54.00	-7.71	Average
3	15618.810	49.37	8.02	57.39	74.00	-16.61	Peak

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

5150- 5250MHz:			
Mode:	802.11 a	**Channel:**	5240MHz

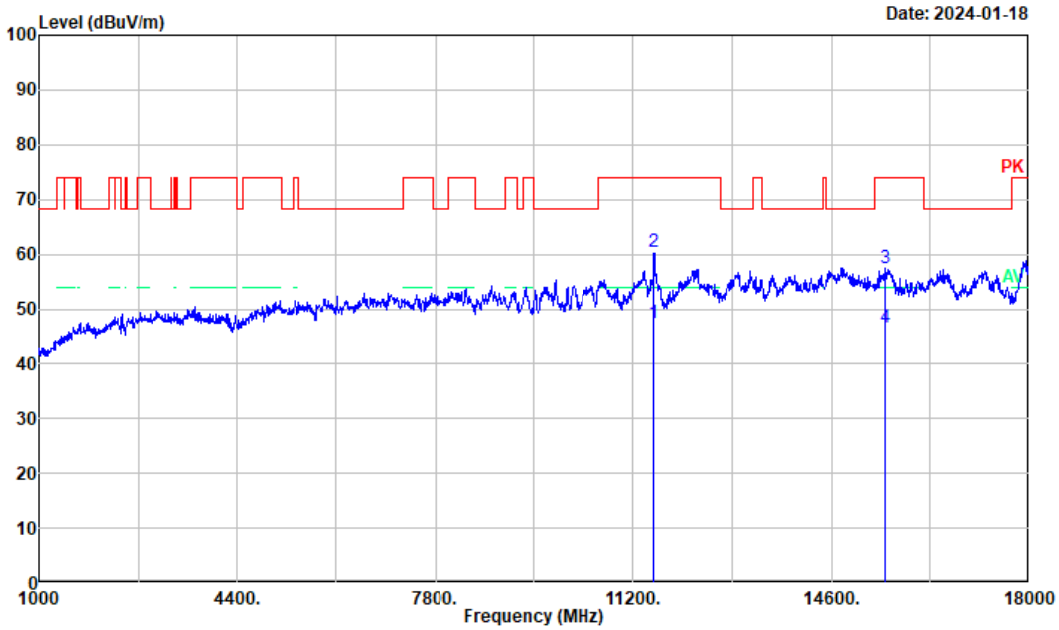


Project No. : RWAZ202300122-RF
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.5℃/57%R.H./101.2kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 802.11a high channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	10480.000	53.76	5.74	59.50	68.20	-8.70	Peak
2	15533.770	49.95	8.11	58.06	74.00	-15.94	Peak
3	15533.770	38.69	8.11	46.80	54.00	-7.20	Average

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

5725 - 5850MHz:			
Mode:	802.11 ac80	**Channel:**	5775MHz

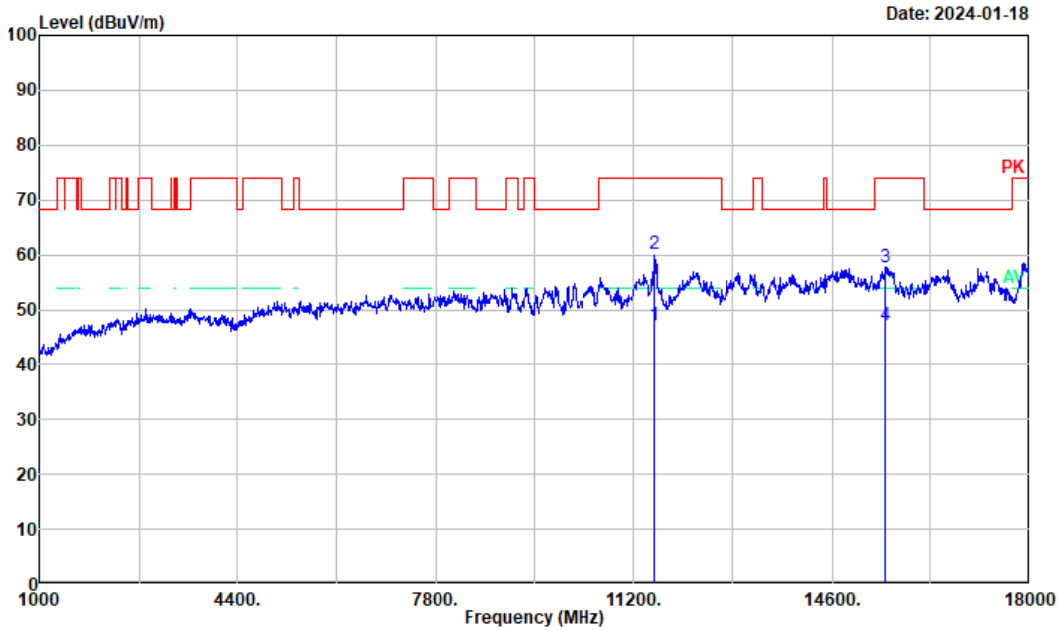


Project No. : RWAZ202300122-RF
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.5℃/57%R.H./101.2kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 802.11n40 high channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	11550.000	40.95	6.50	47.45	54.00	-6.55	Average
2	11550.000	53.81	6.50	60.31	74.00	-13.69	Peak
3	15533.770	49.24	8.11	57.35	74.00	-16.65	Peak
4	15533.770	38.59	8.11	46.70	54.00	-7.30	Average

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

5725 - 5850MHz:			
Mode:	802.11 ac80	**Channel:**	5775MHz



Project No. : RWAZ202300122-RF
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.5℃/57%R.H./101.2kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 802.11n40 high channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	11550.000	40.75	6.50	47.25	54.00	-6.75	Average
2	11550.000	53.64	6.50	60.14	74.00	-13.86	Peak
3	15533.770	49.62	8.11	57.73	74.00	-16.27	Peak
4	15533.770	38.94	8.11	47.05	54.00	-6.95	Average

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

3.5 RF Conducted Test Data

Test Date:	2024-01-21	Test By:	Ryan Zhang
Environment condition:	Temperature: 23.9~24.5°C; Relative Humidity:55~68%; ATM Pressure: 99~102.1kPa		

3.5.1 6dB Emission Bandwidth and 99% Occupied Bandwidth

5150- 5250MHz:

Test Mode	Antenna	Channel	26dB BW [MHz]	99% OBW [MHz]
802.11a	Ant1	5180	20.60	16.96
		5200	20.55	16.96
		5240	20.32	17.04
802.11 ac20	Ant1	5180	20.80	17.96
		5200	20.85	17.88
		5240	20.80	17.88
802.11 ac40	Ant1	5190	41.36	36.32
		5230	41.31	36.32
802.11 ac80	Ant1	5210	82.28	75.36

5725 - 5850MHz:

Test Mode	Antenna	Channel	6dB BW [MHz]	99% OBW [MHz]
802.11a	Ant1	5745	16.40	16.96
		5785	16.44	17.04
		5825	16.40	17.04
802.11 ac20	Ant1	5745	17.68	17.92
		5785	17.68	17.84
		5825	17.68	17.96
802.11 ac40	Ant1	5755	36.24	36.32
		5795	36.24	36.32
802.11 ac80	Ant1	5775	76.32	75.52

3.5.2 Maximum conducted output power

5150- 5250MHz:

Test Modes	Test Frequency (MHz)	Max. Conducted Average Output Power (dBm)	EIRP(dBm)	
		Result	Result	Limit
802.11a	5180	10.10	12.89	22.29
	5200	10.54	13.33	22.29
	5240	11.12	13.91	22.31
802.11 ac20	5180	10.18	12.97	22.54
	5200	10.46	13.25	22.52
	5240	10.95	13.74	22.52
802.11 ac40	5190	10.33	13.12	23.00
	5230	10.95	13.74	23.00
802.11 ac80	5210	8.78	11.57	23.00

5725 - 5850MHz:

Test Modes	Test Frequency (MHz)	Max. Conducted Average Output Power (dBm)	
		Result	Limit
802.11a	5745	10.46	30
	5785	9.89	30
	5825	9.28	30
802.11 ac20	5745	10.35	30
	5785	9.24	30
	5825	9.17	30
802.11 ac40	5755	10.23	30
	5795	9.15	30
802.11 ac80	5775	9.28	30

3.5.3 Power Spectral Density

5150- 5250MHz:

Test Modes	Test Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor (dB)	Maximum EIRP Power Spectral Density (dBm/MHz)	
				Result	Limit
802.11a	5745	-2.71	/	2.66	10
	5785	-3.25	/	3.06	10
	5825	-3.86	/	3.62	10
802.11 ac20	5745	-3.10	/	2.49	10
	5785	-4.05	/	2.84	10
	5825	-4.19	/	2.82	10
802.11 ac40	5755	-6.05	/	-0.13	10
	5795	-6.99	/	0.51	10
802.11 ac80	5775	-10.30	/	-4.96	10

5725 - 5850MHz:

Test Modes	Test Frequency (MHz)	Reading (dBm/500kHz)	Duty Cycle Factor (dB)	Maximum Power Spectral Density (dBm/500kHz)	
				Result	Limit
802.11a	5745	-2.71	/	-2.71	30
	5785	-3.25	/	-3.25	30
	5825	-3.86	/	-3.86	30
802.11 ac20	5745	-3.10	/	-3.10	30
	5785	-4.05	/	-4.05	30
	5825	-4.19	/	-4.19	30
802.11 ac40	5755	-6.05	/	-6.05	30
	5795	-6.99	/	-6.99	30
802.11 ac80	5775	-10.30	/	-10.30	30

3.5.4 Emissions 26dB attenuated below channel power

Test Mode	Antenna	Channel	Channel Power [dBm]	Result[dBm]	Limit [dBm]	Verdict
802.11a	Ant1	5240	11.12	-34.74	-14.88	pass
802.11 ac20	Ant1	5240	10.95	-32.32	-15.05	pass
802.11 ac40	Ant1	5230	10.95	-35.04	-15.05	pass
802.11 ac80	Ant1	5210	8.78	-35.13	-17.22	pass

Note: the requirement only for 5150-5250 MHz band.

The limit is channel power attenuated 26dB.

For the channel power please refer to the power test result.

3.5.5 Duty Cycle

Test Modes	Antenna	Ton (ms)	Ton+off (ms)	Duty cycle (%)	Duty Cycle Factor (dB)	1/T (KHz)	VBW Setting* (Hz)
802.11a	Ant1	100	100	100.00	/	/	10
802.11 ac20	Ant1	100	100	100.00	/	/	10
802.11 ac40	Ant1	100	100	100.00	/	/	10
802.11 ac80	Ant1	100	100	100.00	/	/	10

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

3.5.6 Frequency Stability

5150-5250MHz Band:

Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
A		Voltage (V_{DC})	pass		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5171.523	5150.000	5248.526	5250.000	pass
	20	3.87	5171.564	5150.000	5248.514	5250.000	pass
	50	4.45	5171.575	5150.000	5248.532	5250.000	pass
	-20	3.4	5171.547	5150.000	5248.571	5250.000	pass
	20	3.87	5171.562	5150.000	5248.565	5250.000	pass
	50	4.45	5171.593	5150.000	5248.591	5250.000	pass
	-20	3.4	5171.541	5150.000	5248.582	5250.000	pass
	20	3.87	5171.538	5150.000	5248.589	5250.000	pass
	50	4.45	5171.527	5150.000	5248.574	5250.000	pass

Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
AC20		Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5171.043	5150.000	5248.961	5250.000	pass
	20	3.87	5171.067	5150.000	5248.935	5250.000	pass
	50	4.45	5171.091	5150.000	5248.947	5250.000	pass
	-20	3.4	5171.037	5150.000	5248.964	5250.000	pass
	20	3.87	5171.051	5150.000	5248.958	5250.000	pass
	50	4.45	5171.062	5150.000	5248.927	5250.000	pass
	-20	3.4	5171.072	5150.000	5248.916	5250.000	pass
	20	3.87	5171.084	5150.000	5248.967	5250.000	pass
	50	4.45	5171.072	5150.000	5248.995	5250.000	pass

Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
AC40		Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5171.842	5150.000	5248.165	5250.000	pass
	20	3.87	5171.816	5150.000	5248.163	5250.000	pass
	50	4.45	5171.857	5150.000	5248.178	5250.000	pass
	-20	3.4	5171.861	5150.000	5248.191	5250.000	pass
	20	3.87	5171.827	5150.000	5248.143	5250.000	pass
	50	4.45	5171.837	5150.000	5248.172	5250.000	pass
	-20	3.4	5171.858	5150.000	5248.164	5250.000	pass
	20	3.87	5171.819	5150.000	5248.171	5250.000	pass
	50	4.45	5171.897	5150.000	5248.128	5250.000	pass

Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
AC80		Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5172.406	5150.000	5247.762	5250.000	pass
	20	3.87	5172.416	5150.000	5247.758	5250.000	pass
	50	4.45	5172.427	5150.000	5247.746	5250.000	pass
	-20	3.4	5172.432	5150.000	5247.738	5250.000	pass
	20	3.87	5172.418	5150.000	5247.767	5250.000	pass
	50	4.45	5172.409	5150.000	5247.782	5250.000	pass
	-20	3.4	5172.443	5150.000	5247.717	5250.000	pass
	20	3.87	5172.427	5150.000	5247.732	5250.000	pass
	50	4.45	5172.432	5150.000	5247.776	5250.000	pass

5725-5850MHz Band:

Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
A		Voltage (V_{DC})	pass		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5736.523	5725	5833.526	5850	pass
	20	3.87	5736.542	5725	5833.574	5850	pass
	50	4.45	5736.538	5725	5833.562	5850	pass
	-20	3.4	5736.518	5725	5833.558	5850	pass
	20	3.87	5736.572	5725	5833.576	5850	pass
	50	4.45	5736.564	5725	5833.549	5850	pass
	-20	3.4	5736.577	5725	5833.591	5850	pass
	20	3.87	5736.572	5725	5833.574	5850	pass
	50	4.45	5736.581	5725	5833.524	5850	pass

Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
AC20		Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5736.042	5725	5834.009	5850	pass
	20	3.87	5736.028	5725	5834.024	5850	pass
	50	4.45	5736.017	5725	5834.075	5850	pass
	-20	3.4	5736.062	5725	5834.002	5850	pass
	20	3.87	5736.051	5725	5834.036	5850	pass
	50	4.45	5736.049	5725	5834.052	5850	pass
	-20	3.4	5736.038	5725	5834.047	5850	pass
	20	3.87	5736.074	5725	5834.049	5850	pass
	50	4.45	5736.036	5725	5834.061	5850	pass

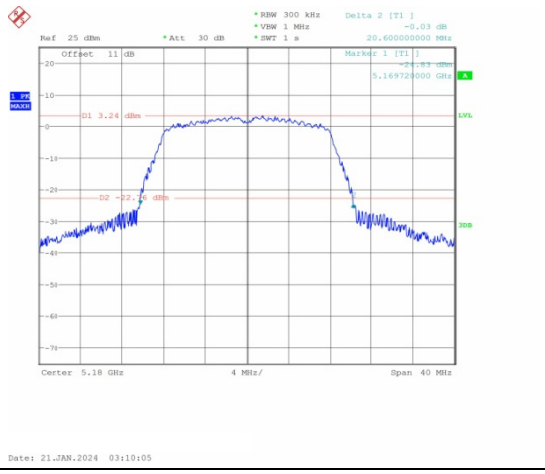
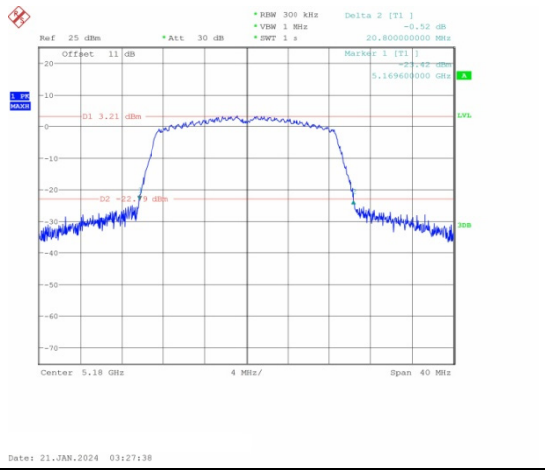
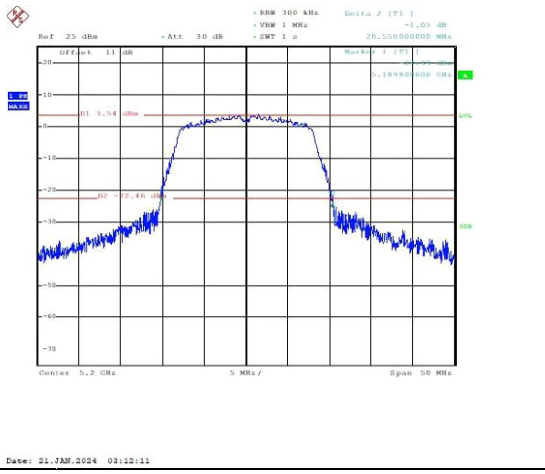
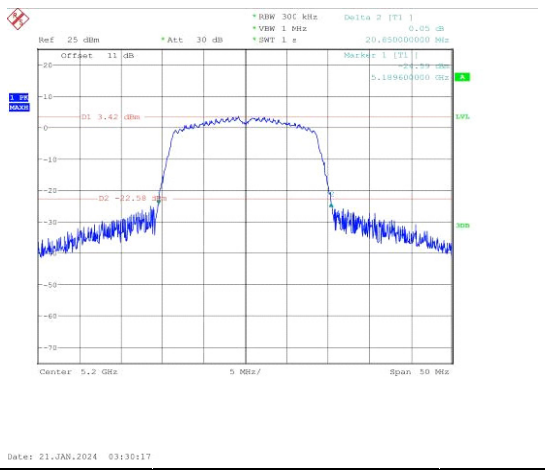
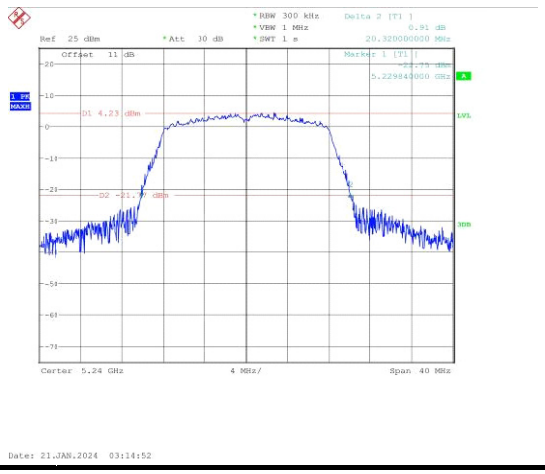
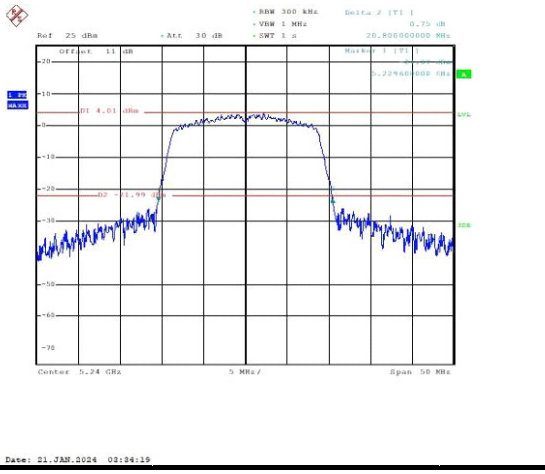
Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
AC40		Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5736.849	5725	5813.086	5850	pass
	20	3.87	5736.806	5725	5813.047	5850	pass
	50	4.45	5736.821	5725	5813.053	5850	pass
	-20	3.4	5736.831	5725	5813.049	5850	pass
	20	3.87	5736.857	5725	5813.017	5850	pass
	50	4.45	5736.864	5725	5813.039	5850	pass
	-20	3.4	5736.875	5725	5813.072	5850	pass
	20	3.87	5736.864	5725	5813.081	5850	pass
	50	4.45	5736.892	5725	5813.092	5850	pass

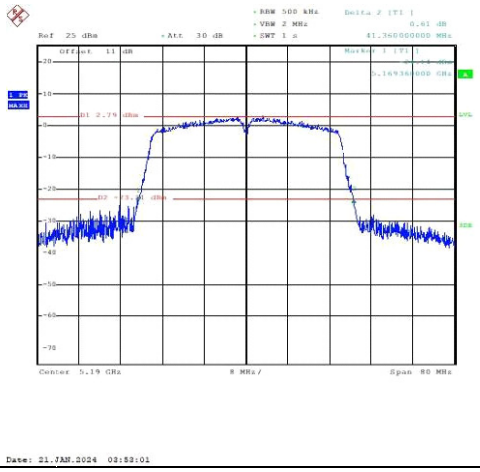
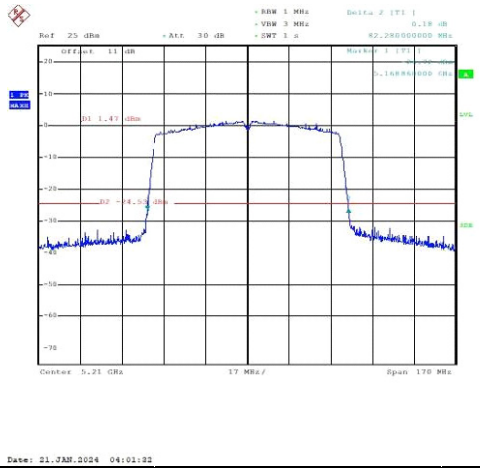
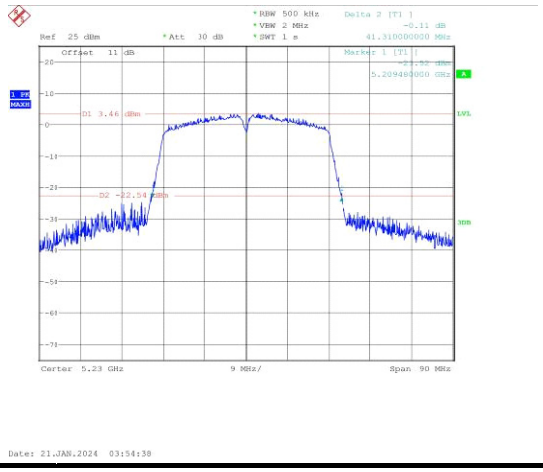
Test Mode:	Temperature (℃)	Test Channel: Lowest for Lower Edge, Highest for Upper Edge					Verdict
AC80		Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)		
			Result	Limit	Result	Limit	
Frequency Stability vs. Temperature& Voltage	-20	3.4	5737.082	5725	5812.624	5850	pass
	20	3.87	5737.067	5725	5812.671	5850	pass
	50	4.45	5737.053	5725	5812.656	5850	pass
	-20	3.4	5737.061	5725	5812.629	5850	pass
	20	3.87	5737.074	5725	5812.632	5850	pass
	50	4.45	5737.038	5725	5812.674	5850	pass
	-20	3.4	5737.049	5725	5812.649	5850	pass
	20	3.87	5737.054	5725	5812.637	5850	pass
	50	4.45	5737.069	5725	5812.672	5850	pass

Test Plots:

26dB Emission Bandwidth

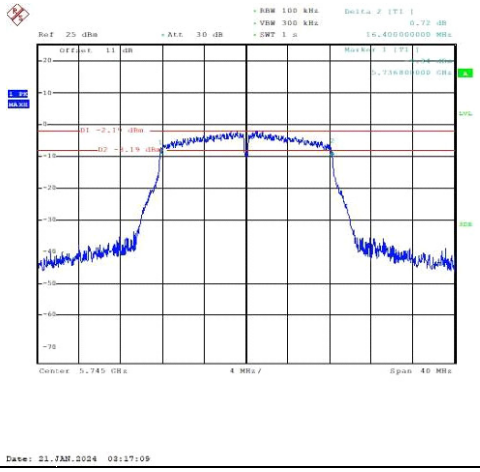
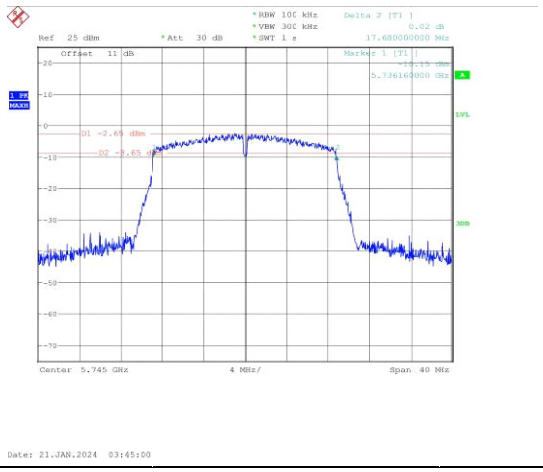
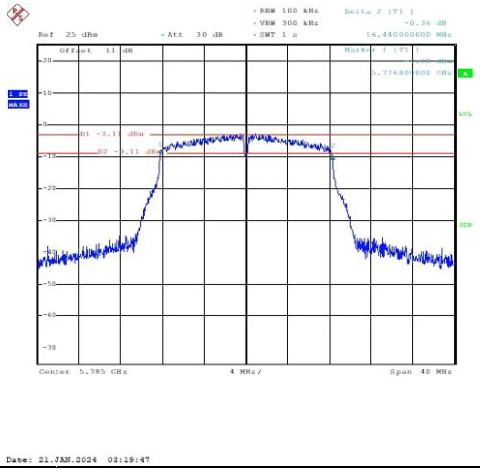
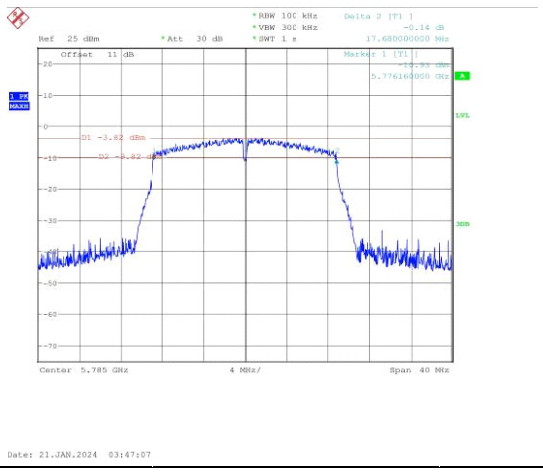
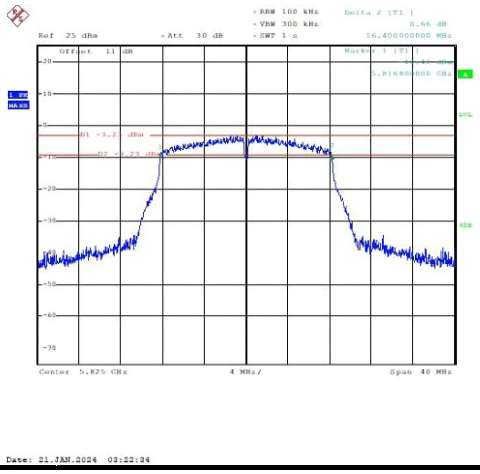
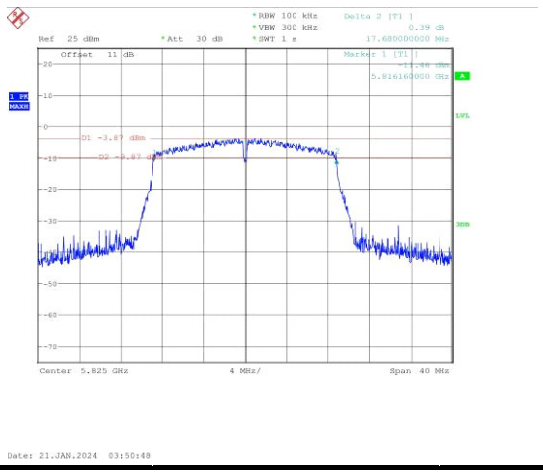
5150 MHz -5250 MHz

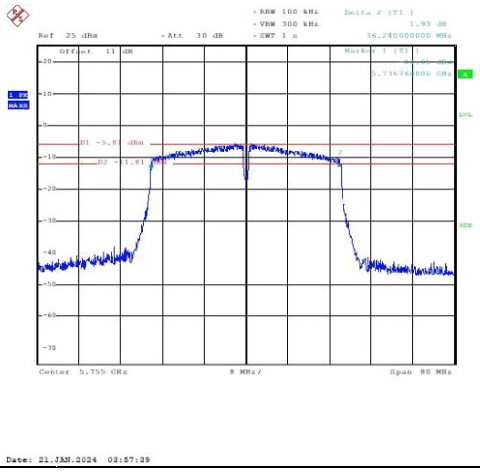
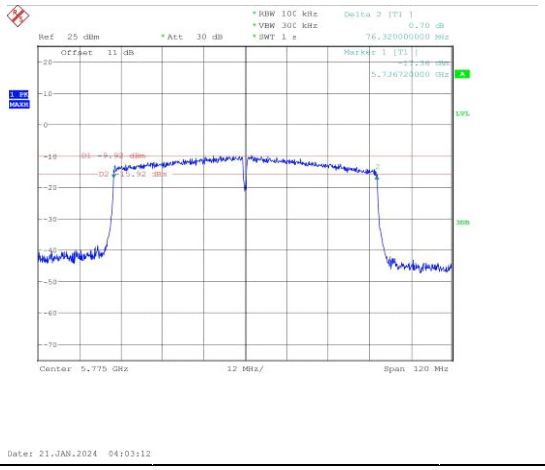
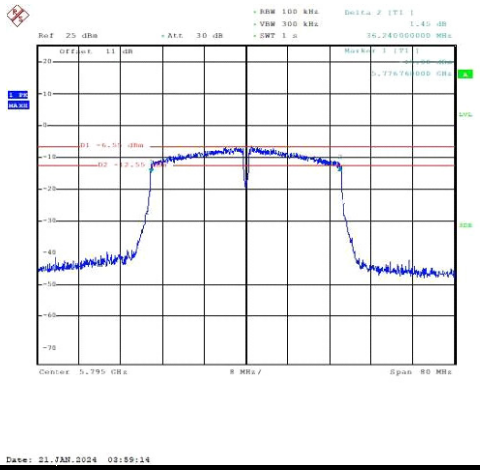
802.11a	802.11 ac20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11 ac40	802.11 ac80
Lowest channel	Middle channel
	
High channel	/
	/

6dB Emission Bandwidth

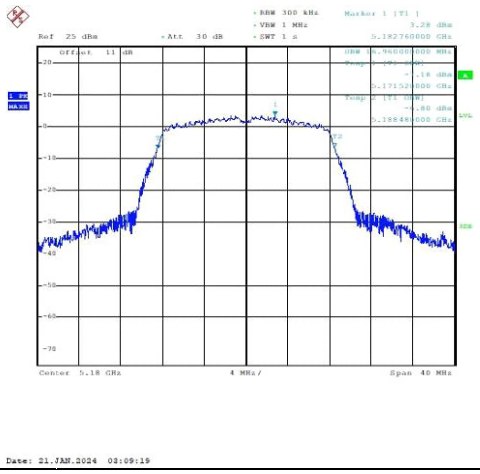
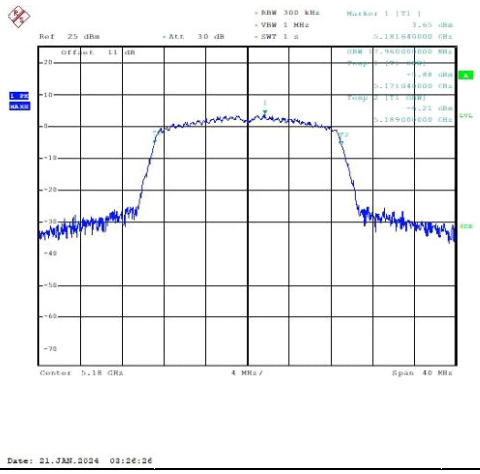
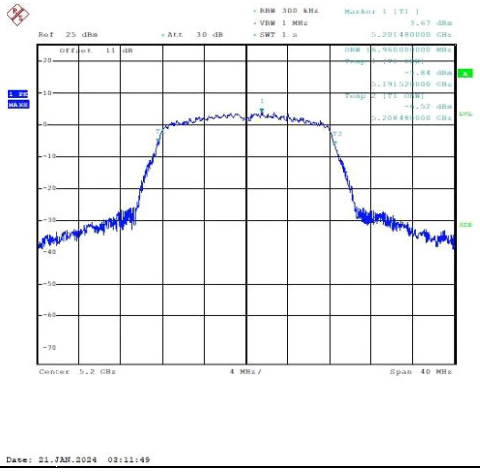
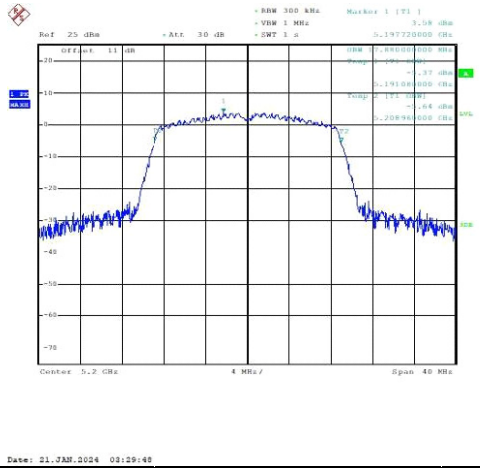
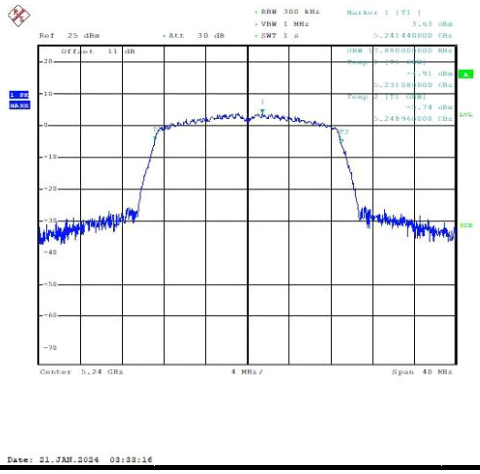
5725 MHz - 5850MHz

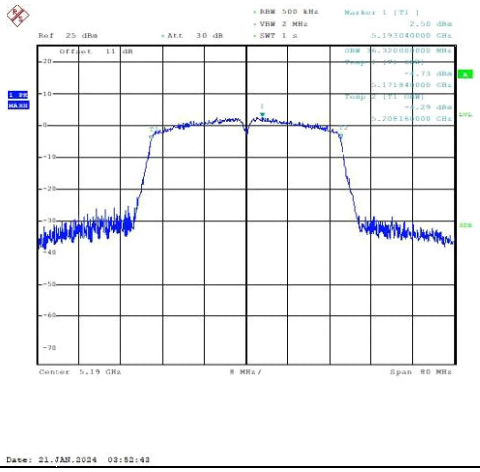
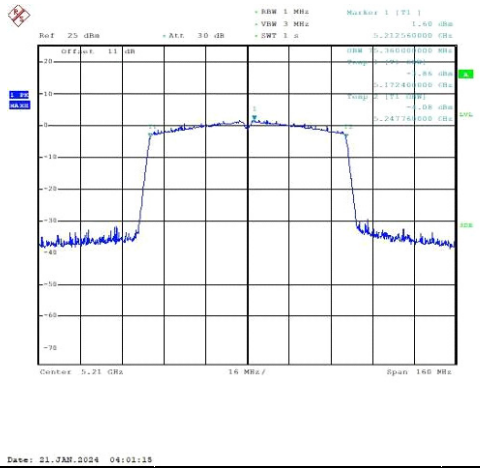
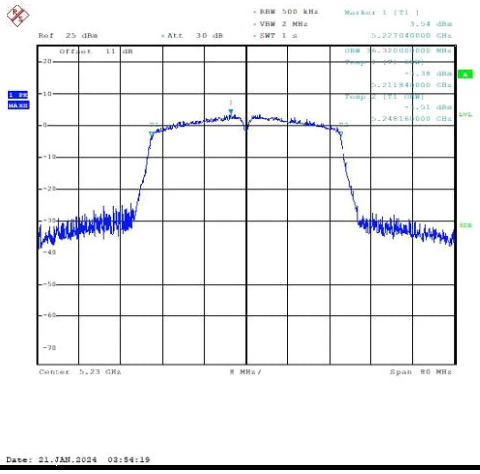
802.11a	802.11 ac20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11 ac40	802.11 ac80
Lowest channel	Middle channel
	
High channel	/
	/

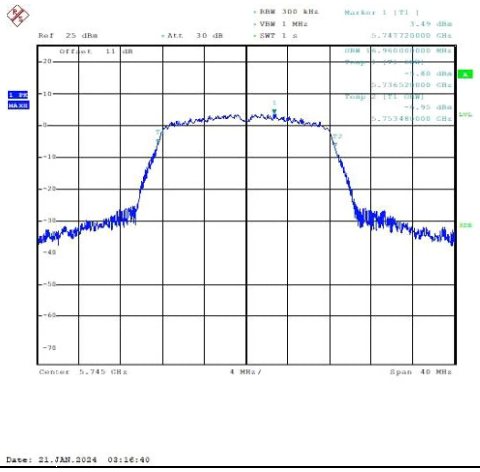
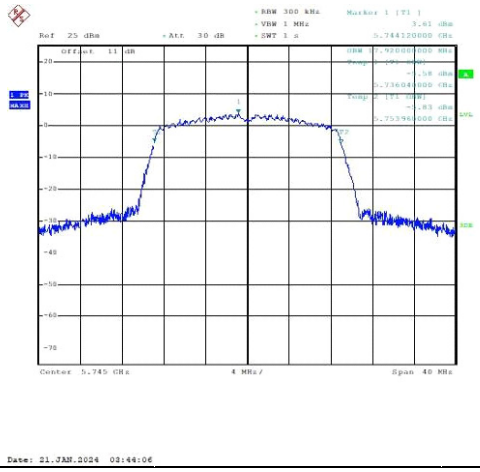
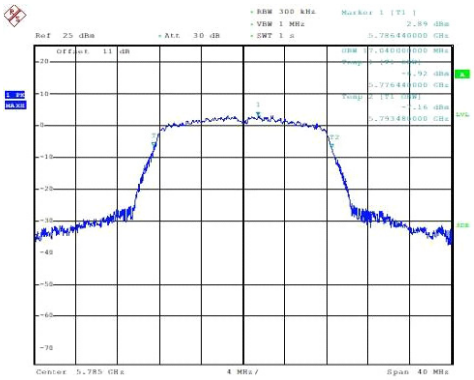
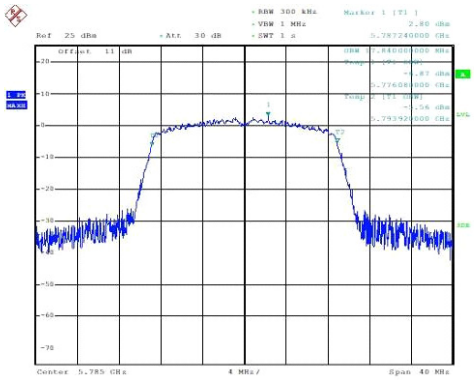
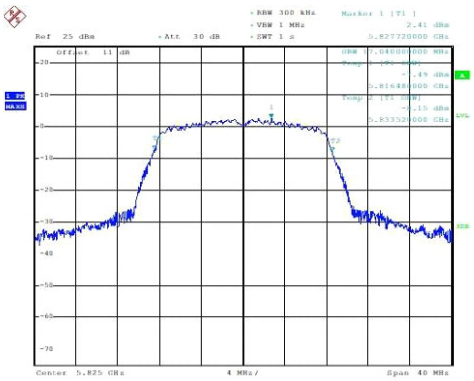
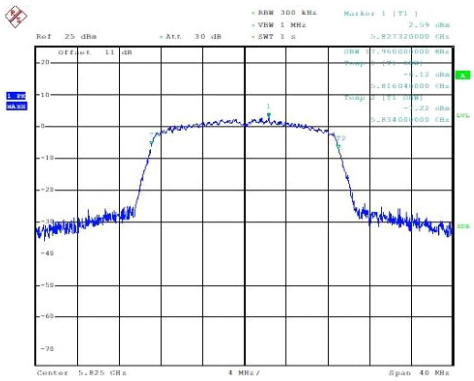
99% Occupied Bandwidth

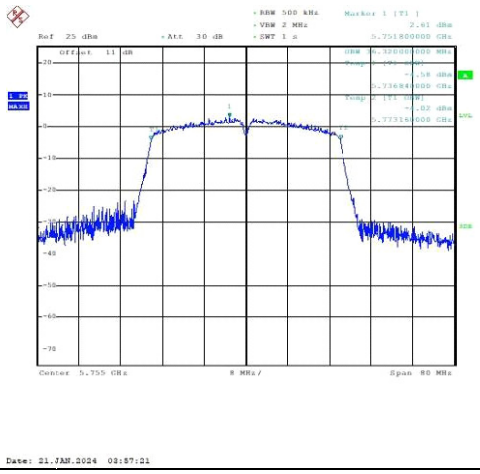
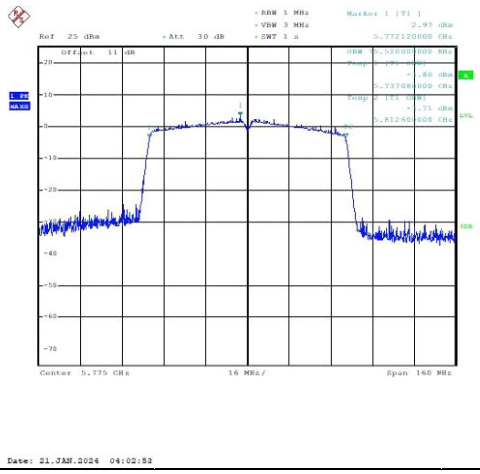
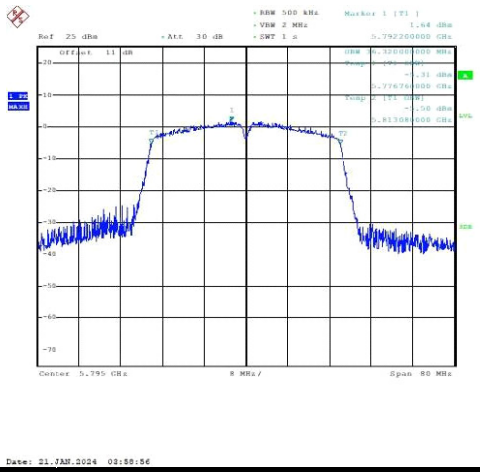
5150 MHz -5250 MHz

802.11a	802.11 ac20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

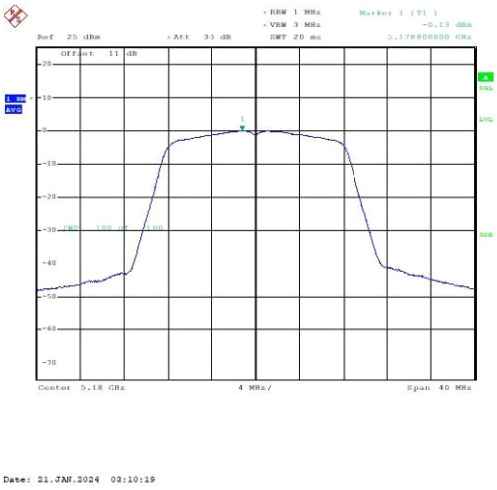
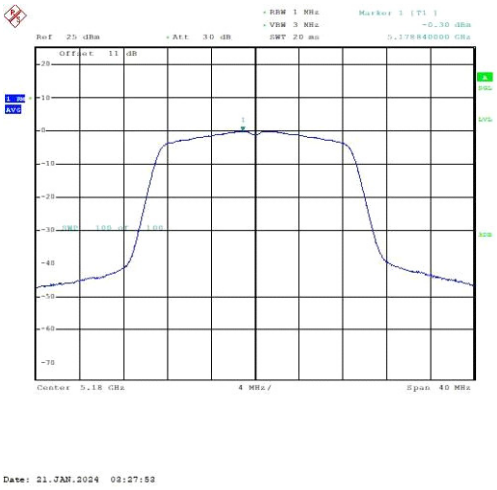
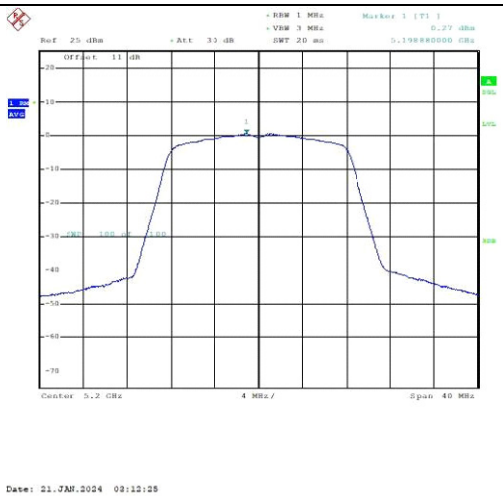
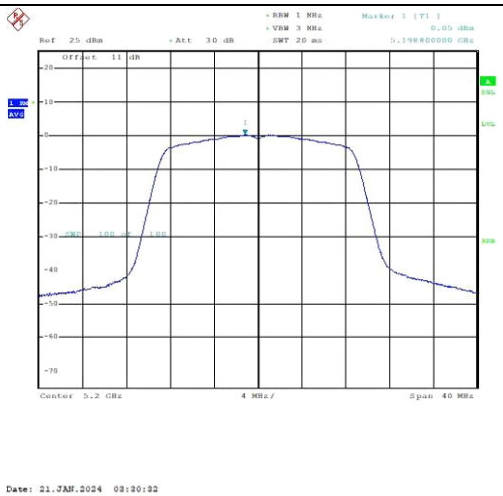
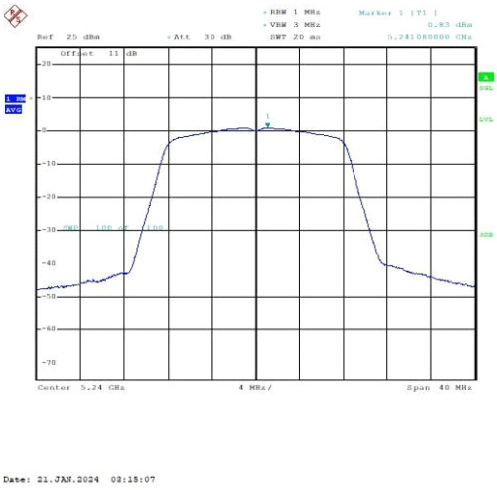
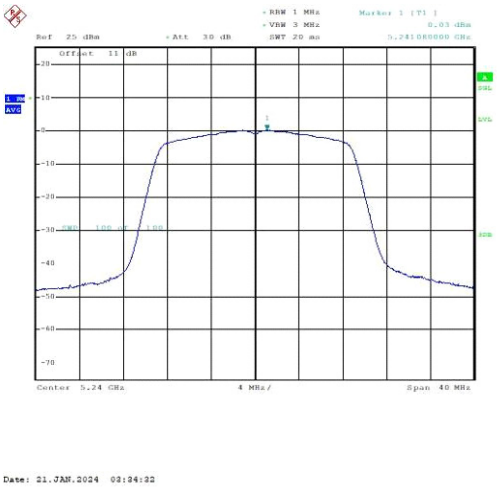
802.11 ac40	802.11 ac80
Lowest channel	Middle channel
	
High channel	/
	/

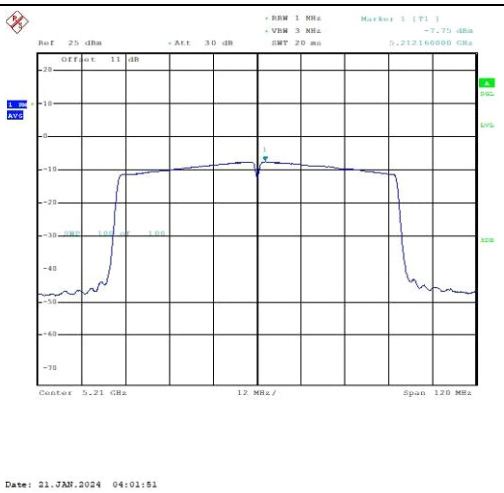
5725 MHz - 5850MHz

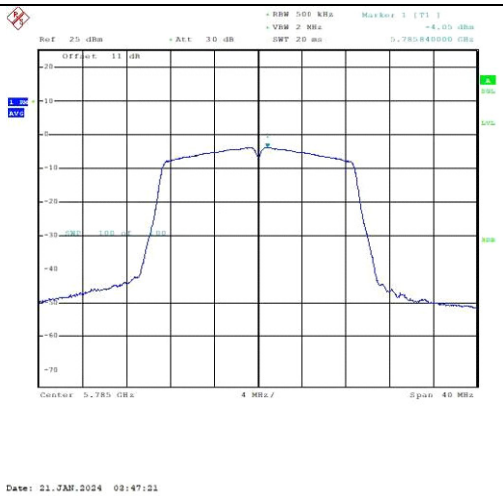
802.11a	802.11 ac20
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11 ac40	802.11 ac80
Lowest channel	Middle channel
	
High channel	/
	/

Power Spectral Density

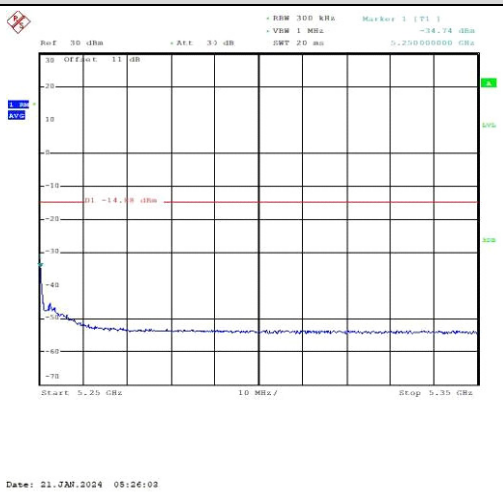
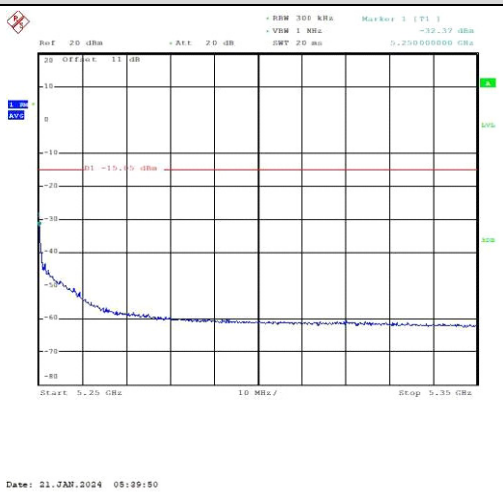
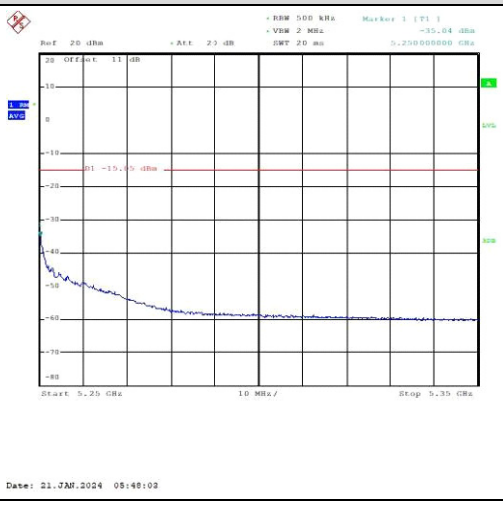
5150 MHz -5250 MHz	
802.11a	**802.11 ac20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11 ac40	802.11 ac80
Lowest channel	/
	
High channel	/
	/

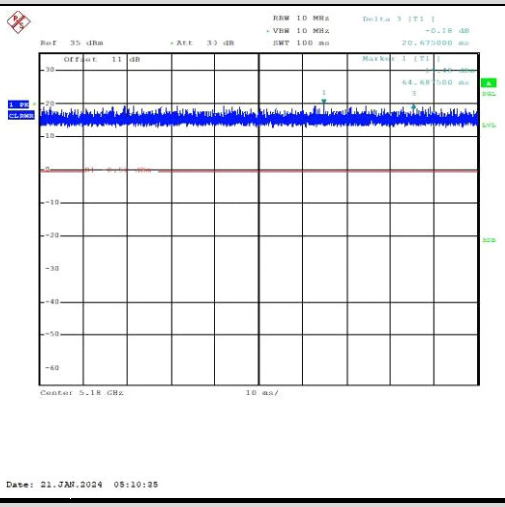
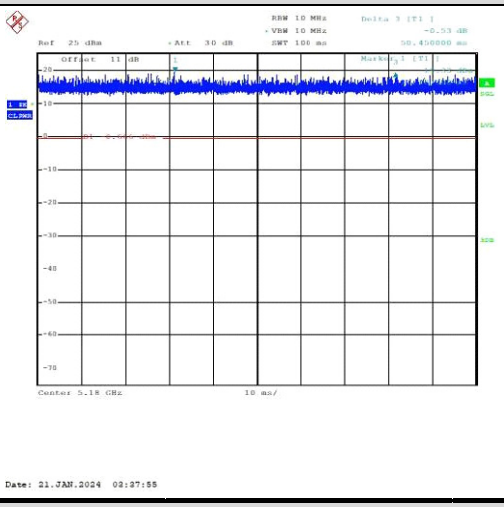
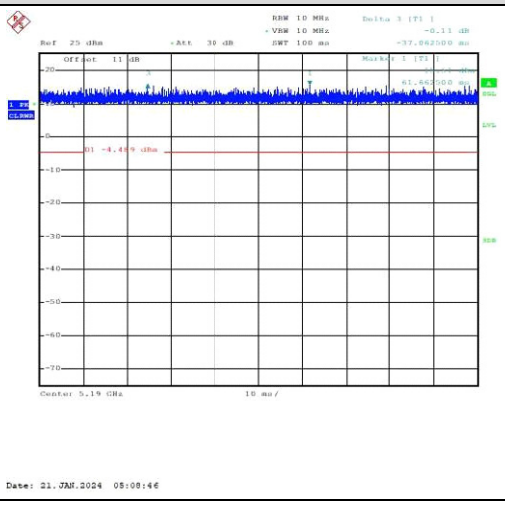
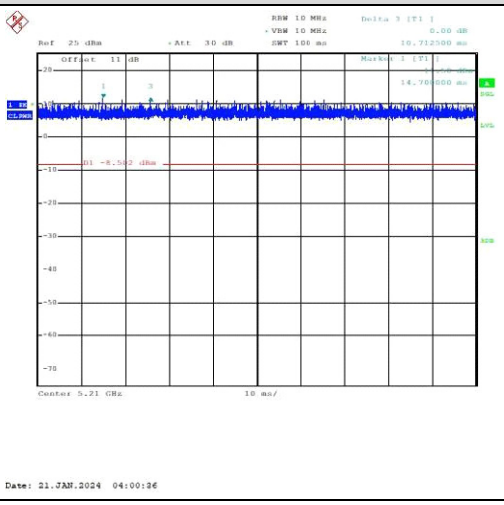
5725 MHz - 5850MHz	
802.11a	**802.11 ac20**
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
High channel	High channel
	

802.11 ac40	802.11 ac80
Lowest channel	/
	
High channel	/
	/

Emissions 26dB attenuated below channel power

802.11a	802.11 ac20
	
802.11 ac40	**802.11 ac80**
	

Duty Cycle

802.11a	802.11 ac20
	
802.11 ac40	**802.11 ac80**
	

4 RSS-247 §6.4 Additional requirements

a) The device shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure. A description on how this is done shall accompany the application for equipment certification. Note that this is not intended to prohibit transmission of control or signalling information or the use of repetitive codes where required by the technology.

Judgment: The manufacturer declared the device shall automatically discontinue transmission in cases of absence of information to transmit or operational failure.

b) All LE-LAN devices must contain security features to protect against modification of software by unauthorized parties.

Manufacturers must implement security features in any digitally modulated devices capable of operating in any of the frequency ranges within the 5 GHz band, so that third parties are not able to reprogram the device to operate outside the parameters for which the device was certified. The software must prevent the user from operating the transmitter with operating frequencies, output power, modulation types or other radio frequency parameters outside those that were approved for the device. Manufacturers may use various means, including the use of a private network that allows only authenticated users to download software, electronic signatures in software or coding in hardware that is decoded by software to verify that new software can be legally loaded into a device to meet these requirements and must describe the methods in their application for equipment certification.

Manufacturers must take steps to ensure that DFS functionality cannot be disabled by the operator of the LE-LAN device.

Judgment: The devices contain security features to protect against modification of software by unauthorized parties, please refer to the declaration.

c) The user manual for LE-LAN devices shall contain instructions related to the restrictions mentioned in the above sections, namely that:

i. the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

Judgment: The devices operate in 5150-5250MHz band only for indoor use.

ii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

Judgment: The devices not operate in 5250-5350 MHz and 5470-5725 MHz band.

iii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate; and

Judgment: The antenna of the device was permanently attached to unit, the EIRP complies with the e.i.r.p. limits.

iv. where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Judgment: The devices not operate in 5250-5350 MHz

5 Test Setup Photo

Please refer to the attachment RWAZ202300122 Test Setup photo.

6 E.U.T Photo

Please refer to the attachment RWAZ202300122 External photo and RWAZ202300122 Internal photo.

---End of Report---