

FCC Test Report

Report No.: AGC12060240301FR04

FCC ID : 2AY4C-GAX01

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : Mini PC

BRAND NAME : GEEKOM, geeknuc

MODEL NAME : AX8 Max, XT***Pro, XT***Max, A***, A***Pro, A***Max, AX***, AX***Pro, AX***Max, AE***, AE***Pro, AE***Max, GT***, GT***Max, GT***Pro, XU***, XU***Pro, XU***Max, AG***Pro, AG***Max, GT***Ultra, GT***Mega, U***Ultra, U*** Mega, XT***Ultra, XT***Mega, IT***Ultra, IT***Mega(*= 0-9,A-Z,a-z,""-"or blank)

APPLICANT : Shenzhen Jiteng Network Technology Co., Ltd

DATE OF ISSUE : Jul. 11, 2024

STANDARD(S) : FCC Part 15 Subpart E §15.407

REPORT VERSION : V1.0



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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jul. 11, 2024	Valid	Initial Release

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1. General Information

Applicant	Shenzhen Jiteng Network Technology Co., Ltd
Address	Floor 7, Building B, Boton Science and Technology Park, Chaguang Road, Xili Street, Nanshan District, Shenzhen, China
Manufacturer	Shenzhen Jiteng Network Technology Co., Ltd
Address	Floor 7, Building B, Boton Science and Technology Park, Chaguang Road, Xili Street, Nanshan District, Shenzhen, China
Factory	China Greatwall Technology Group Co., Ltd. Shiyuan Branch
Address	Great-Wall Computer Industry Park, Baoshi East Rd. Shiyuan County, Baoan, Shenzhen, P.R. China
Product Designation	Mini PC
Brand Name	GEEKOM, geeknuc
Test Model	AX8 Max
Series Model(s)	XT***Pro, XT***Max, A***, A***Pro, A***Max, AX***, AX***Pro, AX***Max, AE***, AE***Pro, AE***Max, GT***, GT***Max, GT***Pro, XU***, XU***Pro, XU***Max, AG***Pro, AG***Max, GT***Ultra, GT***Mega, U***Ultra, U***Mega, XT***Ultra, XT***Mega, IT***Ultra, IT***Mega(*= 0-9,A-Z,a-z,""- or blank)
Difference Description	Please review the manufacturer's model difference statement
Date of receipt of test item	Mar. 14, 2024
Date of Test	Mar. 14, 2024~Jul. 11, 2024
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-5G WLAN-V1

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By



Alan Duan
(Project Engineer)

Jul. 11, 2024

Reviewed By



Calvin Liu
(Reviewer)

Jul. 11, 2024

Approved By



Max Zhang
Authorized Officer

Jul. 11, 2024

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2. Product Information

2.1 Product Technical Description

Equipment Type	<input type="checkbox"/> Outdoor access points <input type="checkbox"/> Indoor access points <input type="checkbox"/> Fixed P2P access points <input checked="" type="checkbox"/> Client devices
Operation Frequency	<input checked="" type="checkbox"/> U-NII 1:5150MHz~5250MHz <input checked="" type="checkbox"/> U-NII 2A: 5250MHz~5350MHz <input checked="" type="checkbox"/> U-NII 2C:5470MHz~5725MHz <input checked="" type="checkbox"/> U-NII 3: 5725MHz~5850MHz
DFS Design Type	<input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> Slave without radar detection
TPC Function	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hardware Version	NUCPN01_MB_V20
Software Version	Windows 11
Test Frequency Range	For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5260~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac/ax-VHT40: 5190~5230MHz, 5270~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac/ax-VHT80: 5210MHz, 5290MHz, 5530~5690MHz, 5775MHz For 802.11ac/ax-VHT160:5250MHz, 5570MHz
RF Output Power	IEEE 802.11a(HT20):12.50dBm; IEEE 802.11n(HT20):12.07dBm; IEEE802.11n(HT40):12.04dBm; IEEE 802.11ac(VHT20):12.32dBm; IEEE802.11ac(VHT40):12.41dBm; IEEE802.11ac(VHT80):12.74dBm; IEEE802.11ac(HE160):10.21dBm;IEEE802.11ax(HE20):12.65dBm; IEEE802.11ax(HE40):12.67dBm;IEEE802.11ax(HE80):12.64dBm; IEEE802.11ax(HE160):9.77dBm;
RF Output Power_MIMO	IEEE 802.11nHT(20):14.14dBm;IEEE802.11n(HT40):14.19dBm IEEE 802.11ac(VHT20):14.29dBm; IEEE802.11ac(VHT40):14.40dBm; IEEE802.11ac(VHT80):14.56dBm; IEEE802.11ac(HE160):12.83dBm IEEE802.11ax(HE20):14.56dBm;IEEE802.11ax(HE40):14.44dBm; IEEE802.11ax(HE80):14.43dBm; IEEE802.11ax(HE160):12.47dBm;
Modulation	802.11a/n:(64-QAM, 16-QAM, QPSK, BPSK) OFDM 802.11ac :(256-QAM, 64-QAM, 16-QAM, QPSK, BPSK) OFDM 802.11ax :(1024-QAM,256-QAM, 64-QAM, 16-QAM, QPSK, BPSK) OFDMA
Data Rate	802.11a:6/9/12/18/24/36/48/54Mbps; 802.11n:up to 300Mbps; 802.11ac:up to 866.6Mbps; 802.11ax:up to 1201Mbps
Number of channels	7 channels of U-NII-1 Band 7 channels of U- NII-2A Band 19 channels of U-NII-2C Band 8 channels of U- NII 3 Band 1 channels of U- NII 1+2A Band

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Antenna Designation	Chain A: Iron Antenna(MAIN ANT) Chain B: Iron Antenna(AUX ANT)
Antenna Gain	Refer to Chapter 2.9 of the report.
Power Supply	DC 19V for by adapter

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2.2 Table of Carrier Frequency

For 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
42	5210 MHz	--	--

For 5260~5320MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
58	5290 MHz	--	--

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For 5500~5700MHz:

11 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

5 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

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

2 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

For 5180~5240MHz+5260~5320MHz (U-NII 1+U-NII 2A)

1 channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
50	5250 MHz

For 5500~5700MHz (U-NII 2C)

1 channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
114	5570 MHz

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For 5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
155	5775 MHz	--	--

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2.3 IEEE 802.11n Modulation Scheme

MCS Index	N _{ss}	Modulation	R	N _{BPSC}	N _{CBPS}		N _{DBPS}		Data rate (Mbps)	
					20MHz	40MHz	20MHz	40MHz	800nsGI	
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

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2.4 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for **FCC ID: 2AY4C-GAX01** filing to comply with the FCC Part 15 requirements.

2.5 Test Methodology

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
4	KDB 662911	662911 D01 Multiple Transmitter Output v02r01
5	KDB 789033	789033 D02 General U-NII Test Procedures New Rules v02r01

2.6 Special Accessories

Refer to section 4.4.

2.7 Equipment Modifications

Not available for this EUT intended for grant.

2.8 Antenna Requirement

Standard Requirement
<p>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.</p>
<p>EUT Antenna: The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna refer to Section 2.9 of the report</p>

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2.9 Description of Available Antennas

Antenna Type	Frequency Band (MHz)	TX Paths	Bandwidth (MHz)	Max Peak Gain (dBi)		Max Directional Gain (dBi)
				Ant 1	Ant 2	
5G WIFI Iron Antenna List (5GHz 2*2 MIMO)						
Iron Antenna	5150 ~ 5250	2	20,40,80	2.53	2.16	5.54
	5250 ~ 5350	2	20,40,80	2.53	2.16	5.54
	5470 ~ 5725	2	20,40,80	2.53	2.16	5.54
	5725 ~ 5850	2	20,40,80	2.53	2.16	5.54
Antenna Type	Frequency Band (MHz)	TX Paths	Bandwidth (MHz)	Max Peak Gain (dBi)		Max Directional Gain (dBi)
				Ant 1	Ant 2	
5G WIFI Iron Antenna List (5GHz 2*2 MIMO)						
Iron Antenna	5150 ~ 5350	2	160	2.53	2.16	5.54
	5470 ~ 5725	2	160	2.53	2.16	5.54

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11n/ac/ax mode.

Note 2: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on devices:

$$\text{Array Gain} = 10 \log (N_{ANT} / N_{SS}) \text{ dB} = 3.01;$$

- For power measurements on IEEE 802.1 devices:

$$\text{Array Gain} = 0 \text{ dB for } N_{ANT} \leq 4;$$

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for channel widths } \geq 40 \text{ MHz for any } N_{ANT};$$

$$\text{Array Gain} = 5 \log(N_{ANT}/N_{SS}) \text{ dB or } 3 \text{ dB, whichever is less, for } 20 \text{ MHz channel widths with } N_{ANT} \geq 5.$$

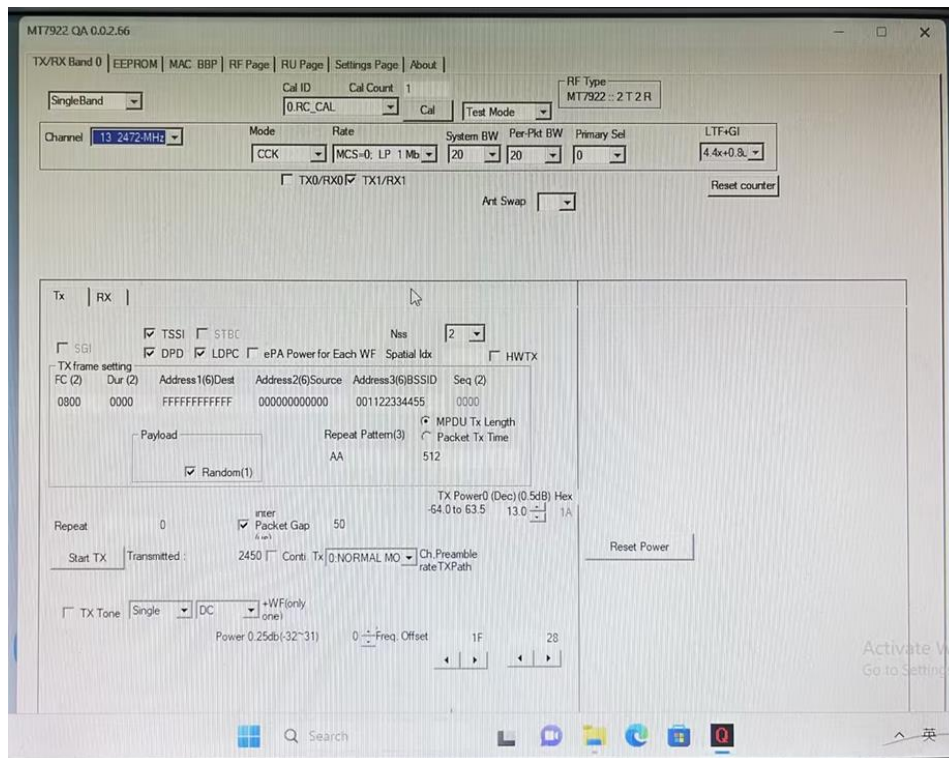
If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

2.11 Description of Test Software

For IEEE 802.11 mode:

The test utility software used during testing was “MT7922.OA”, and the version was “0.0.2.66”.

Software Setting Diagram



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Test Mode 5150MHz~5250MHz	Channel	Power Index	
		Chain A	Chain B
802.11a	L/M/H	12.5	12.5
802.11n(HT20)	L/M/H	12.5	12.5
802.11n(HT40)	L/M/H	12.5	12.5
802.11ac(VHT20)	L/M/H	12.5	12.5
802.11ac(VHT40)	L/M/H	12.5	12.5
802.11ac(VHT80)	L/M/H	12.5	12.5
802.11ax(HE20)	L/M/H	12	12
802.11ax(HE40)	L/M/H	12	12
802.11ax(HE80)	L/M/H	12	12
Test Mode 5250MHz~5350MHz	Channel	Power Index	
		Chain A	Chain B
802.11a	L/M/H	10	10
802.11n(HT20)	L/M/H	10	10
802.11n(HT40)	L/M/H	10	10
802.11ac(VHT20)	L/M/H	10	10
802.11ac(VHT40)	L/M/H	10	10
802.11ac(VHT80)	L/M/H	10	10
802.11ax(HE20)	L/M/H	9.5	9.5
802.11ax(HE40)	L/M/H	9.5	9.5
802.11ax(HE80)	L/M/H	9.5	9.5
Test Mode 5470MHz~5725MHz	Channel	Power Index	
		Chain A	Chain B
802.11a	L/M/H	10	10
802.11n(HT20)	L/M/H	10	10
802.11n(HT40)	L/M/H	10	10
802.11ac(VHT20)	L/M/H	10	10
802.11ac(VHT40)	L/M/H	10	10
802.11ac(VHT80)	L/M/H	10	10
802.11ax(HE20)	L/M/H	9.5	9.5
802.11ax(HE40)	L/M/H	9.5	9.5
802.11ax(HE80)	L/M/H	9.5	9.5
Test Mode 5725MHz~5850MHz	Channel	Power Index	
		Chain A	Chain B
802.11a	L/M/H	12	12
802.11n(HT20)	L/M/H	12	12
802.11n(HT40)	L/M/H	12	12
802.11ac(VHT20)	L/M/H	12	12
802.11ac(VHT40)	L/M/H	12	12
802.11ac(VHT80)	L/M/H	12	12
802.11ax(HE20)	L/M/H	11.5	11.5

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802.11ax(HE40)	L/M/H	11.5	11.5
802.11ax(HE80)	L/M/H	11.5	11.5

Test Mode 5150MHz~5350MHz	Channel	Power Index	
		Chain A	Chain B
802.11ac(VHT160)	L/M/H	9.5	9.5
802.11ax(HE160)	L/M/H	9.5	9.5
Test Mode 5500MHz~5700MHz	Channel	Power Index	
		Chain A	Chain B
802.11ac(VHT160)	L/M/H	9.5	9.5
802.11ax(HE160)	L/M/H	9.5	9.5

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3. Test Environment

3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

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3.3 Environmental Conditions

	Normal Conditions
Temperature range (°C)	15 - 35
Relative humidity range	20% - 75%
Pressure range (kPa)	86 - 106
Power supply	DC 19V

3.4 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_c = \pm 2 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2.7 \%$

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3.5 List of Equipment Used

● RF Conducted Test System							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
<input checked="" type="checkbox"/>	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023-06-01	2024-05-31
<input checked="" type="checkbox"/>	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-05-24	2025-05-23
<input checked="" type="checkbox"/>	AGC-ER-E061	Spectrum Analyzer	Agilent	N9020A	MY52090123	2023-06-03	2024-06-02
<input checked="" type="checkbox"/>	AGC-ER-E061	Spectrum Analyzer	Agilent	N9020A	MY52090123	2024-05-28	2025-05-27
<input type="checkbox"/>	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2024-02-01	2025-01-31
<input type="checkbox"/>	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2024-02-01	2025-01-31
<input checked="" type="checkbox"/>	AGC-EM-A152	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08
<input type="checkbox"/>	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2023-06-01	2024-05-31
<input type="checkbox"/>	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2024-05-23	2025-05-22
<input checked="" type="checkbox"/>	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A
<input checked="" type="checkbox"/>	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A

● Radiated Spurious Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
<input type="checkbox"/>	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2024-02-01	2025-01-31
<input checked="" type="checkbox"/>	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2023-06-03	2024-06-02
<input checked="" type="checkbox"/>	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2024-05-24	2025-05-23
<input checked="" type="checkbox"/>	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2023-06-01	2024-05-31
<input checked="" type="checkbox"/>	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2024-05-28	2025-05-27
<input checked="" type="checkbox"/>	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2024-03-05	2026-03-04
<input checked="" type="checkbox"/>	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10
<input checked="" type="checkbox"/>	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2023-04-02	2024-04-01
<input checked="" type="checkbox"/>	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2024-03-31	2025-03-30
<input checked="" type="checkbox"/>	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23
<input checked="" type="checkbox"/>	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03
<input checked="" type="checkbox"/>	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2023-06-01	2024-05-31
<input checked="" type="checkbox"/>	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2024-05-23	2025-05-22
<input checked="" type="checkbox"/>	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08
<input type="checkbox"/>	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08

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● AC Power Line Conducted Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
<input checked="" type="checkbox"/>	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2023-06-03	2024-06-02
<input checked="" type="checkbox"/>	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2024-05-28	2025-05-27
<input checked="" type="checkbox"/>	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2025-06-08
<input checked="" type="checkbox"/>	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2023-06-03	2024-06-02
<input checked="" type="checkbox"/>	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2024-05-28	2025-05-27

● Test Software					
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information
<input checked="" type="checkbox"/>	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71
<input checked="" type="checkbox"/>	AGC-EM-S003	RE Test System	FARA	EZ-EMC	VRA-03A
<input checked="" type="checkbox"/>	AGC-ER-S012	BT/WIFI Test System	Tonscend	JS1120-2	2.6
<input checked="" type="checkbox"/>	AGC-EM-S011	RSE Test System	Tonscend	TS+-Ver2.1(JS36-RSE)	4.0.0.0

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4. System Test Configuration

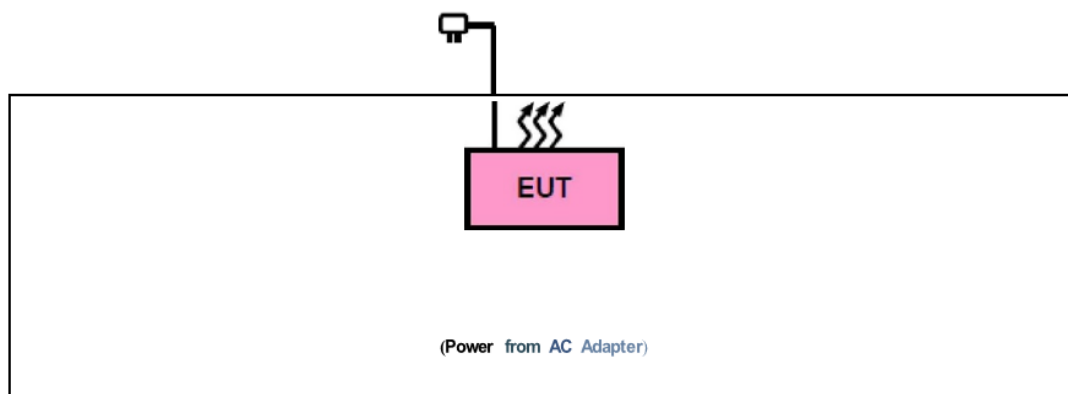
4.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

4.3 Configuration of Tested System



4.4 Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

☒ Test Accessories Come From The Laboratory

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Earphone	CXT	N/A	N/A	1.2m unshielded
2	Keyboard	Dell	SK-8120	N/A	1.8m,unshielded
3	Mouse	Dell	EMS-537A	N/A	1.7m,unshielded
4	U Disc	Kingston	DT100G3	32G	N/A

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☒ Test Accessories Come From The Manufacturer

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Adapter 1#	Shenzhen Hyleton Technology Co., Ltd.	Hyleton-120W-19063 20	Input: AC 100-240V 50/60Hz, 2A Output: DC 19V 6.32A	3.5m
2	Adapter 2#	SHENZHEN BSY TECHNOLOGY CO.,LTD.	BSY120S1906323D	Input: AC 100-240V 50/60Hz, 2.5A Output: DC 19V 6.32A	3.5m
3	Adapter 3#	FSP Group Inc.	FSP120-ABBU3	Input: AC 100-240V 50/60Hz, 1.4A Output: DC 19V 6.32A	3.5m

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4.5 Summary of Test Results

Item	FCC Rules	Description Of Test	Result
1	§15.203	Antenna Equipment	Pass
2	§15.407(a/1/2/3)	RF Output Power	Pass
3	§15.407(e)	6dB Bandwidth Measurement	Pass
4	§15.403(i)	26dB bandwidth Measurement	Pass
5	§15.407(g)	Frequency Stability	Pass (See Note 1)
6	§15.407(C)	Transmission Discontinuation Requirement	Pass (See Note 2)
7	§15.407(a/1/2/3)	Power Spectral Density	Pass
8	§15.407(b)(1/2/3/4/5)	Conducted Band Edge and Out-of-Band Emissions	Pass
9	§15.209, §15.407(b) (1/2/3/4/5)	Radiated Spurious Emission	Pass
10	§15.207	AC Power Line Conducted Emission	Pass

Note:

1. The manufacturer has corresponding claims in the operating description and user manual that it meets the specified frequency range requirements.
2. The device will automatically discontinue transmission in cases of absence of information to transmit, or operational failure.

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5. Description of Test Modes

EUT Configure Mode	Applicable To				Description
	RE > 1G	RE < 1G	PLC	APCM	
A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	Powered by Adapter with WIFI(5G) Link
B	--	--	--	<input type="checkbox"/>	Powered by Battery with WIFI(5G) Link
C	--	--	--	--	Powered by USB with WIFI(5G) Link

Where, **RE > 1G: Radiated Emission above 1GHz** **PLC: Power Line Conducted Emission**

RE < 1G: Radiated Emission below 1GHz **APCM: Antenna Port Conducted Measurement**

NOTE 1: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on X-plane.

NOTE 2: "--" means no effect.

NOTE 3: The radiation part tests the dual-antenna MIMO as the worst combination.

NOTE 4: Radiation test evaluation: The main test model and series models are pre-tested with 3 adapters, and the appearance of the main test model (model: AX8 Max) and the 3 adapters is recorded as the worst result; the difference in the shell of the power supply end interference part is ignored and only the appearance of the main test model (model: AX8 Max) and the 3 adapters is recorded as the worst result.

NOTE5: Regarding Radiated Band Edge, as the worst result, only the main test appearance (model: AX8 Max) is reflected with adapter 1#.

Radiated Emission Test (Above 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (IF EUT with antenna diversity architecture).
- ☒ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11n (20MHz)	5180-5240	36 to 48	36, 40, 48	OFDM	MCS0
A	802.11n (20MHz)	5260-5320	52 to 64	52, 60, 64	OFDM	MCS0
A	802.11n (20MHz)	5500-5700	100 to 140	100, 120, 140	OFDM	MCS0
A	802.11n (20MHz)	5745-5825	149 to 165	149, 157, 165	OFDM	MCS0

● Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☒ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

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EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11n(20MHz)	5180-5240	36 to 48	36	OFDM	MCS0

● **Power Line Conducted Emission Test:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☒ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11n(20MHz)	5180-5240	36 to 48	36	OFDM	MCS0

● **Band edge Measurement:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☒ The device under test has multiple antennas. The mode that supports MIMO technology records the worst data, and the mode that does not support MIMO technology records antenna 1 as the worst data.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36	OFDM	MCS0
A	802.11n (40MHz)		38 to 46	38	OFDM	MCS0
A	802.11ac (80MHz)		42	42	OFDM	MCS0
A	802.11ax (80MHz)		42	42	OFDMA	MCS0
A	802.11a	5260-5320	52 to 64	64	OFDM	MCS0
A	802.11n (40MHz)		54 to 62	62	OFDM	MCS0
A	802.11ac (80MHz)		58	58	OFDM	MCS0
A	802.11ax (80MHz)		58	58	OFDMA	MCS0
A	802.11a	5500-5700	100 to 140	100	OFDM	MCS0
A	802.11n (40MHz)		102 to 134	102	OFDM	MCS0
A	802.11ac (80MHz)		106,122	106	OFDM	MCS0
A	802.11ax (80MHz)		106,122	106	OFDMA	MCS0

Note: Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz and 5.35GHz-5.46GHz record in the report. Other restricted band 7.25GHz-7.77GHz were considered as ambient noise. No recording in the test report.

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● **Antenna Port Conducted Measurement:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
- ☒ The 802.11ax only supports the Full RU test configuration.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	MCS0
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	MCS0
A	802.11ac (20MHz)		36 to 48	36, 40, 48	OFDM	MCS0
A	802.11ac (40MHz)		38 to 46	38, 46	OFDM	MCS0
A	802.11ac (80MHz)		42	42	OFDM	MCS0
A	802.11ax (20MHz)		36 to 48	36, 40, 48	OFDMA	MCS0
A	802.11ax (40MHz)		38 to 46	38, 46	OFDMA	MCS0
A	802.11ax (80MHz)		42	42	OFDMA	MCS0
A	802.11ac (160MHz)	5180-5320	50	50	OFDM	MCS0
A	802.11ax (160MHz)				OFDMA	MCS0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	MCS0
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	MCS0
A	802.11ac (20MHz)		52 to 64	52, 60, 64	OFDM	MCS0
A	802.11ac (40MHz)		54 to 62	54, 62	OFDM	MCS0
A	802.11ac (80MHz)		58	58	OFDM	MCS0
A	802.11ax (20MHz)		52 to 64	52, 60, 64	OFDMA	MCS0
A	802.11ax (40MHz)		54 to 62	54, 62	OFDMA	MCS0
A	802.11ax (80MHz)		58	58	OFDMA	MCS0
A	802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	6.0
A	802.11n (20MHz)		100 to 140	100, 120, 140	OFDM	MCS0
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	MCS0
A	802.11ac (20MHz)		100 to 140	100, 120, 140	OFDM	MCS0
A	802.11ac (40MHz)		102 to 134	102, 110, 134	OFDM	MCS0
A	802.11ac (80MHz)		106,122	106, 122	OFDM	MCS0
A	802.11ac (160MHz)		114	114	OFDM	MCS0
A	802.11ax (20MHz)		100 to 140	100, 120, 140	OFDMA	MCS0
A	802.11ax (40MHz)		102 to 134	102, 110, 134	OFDMA	MCS0
A	802.11ax (80MHz)		106,122	106, 122	OFDMA	MCS0
A	802.11ax (160MHz)		114	114	OFDMA	MCS0
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
A	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	MCS0
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	MCS0
A	802.11ac (20MHz)		149 to 165	149, 157, 165	OFDM	MCS0
A	802.11ac (40MHz)		151 to 159	151, 159	OFDM	MCS0
A	802.11ac (80MHz)		155	155	OFDM	MCS0
A	802.11ax (20MHz)		149 to 165	149, 157, 165	OFDMA	MCS0
A	802.11ax (40MHz)		151 to 159	151, 159	OFDMA	MCS0
A	802.11ax (80MHz)		155	155	OFDMA	MCS0
A	802.11ax (160MHz)		155	155	OFDMA	MCS0

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6. Duty Cycle Measurement

5GHz WLAN (NII) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = Peak. The RBW and VBW were both greater than $50/T$, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
Band U-NII1:5150MHz-5250MHz-Chain A					
802.11a	6	80	0.97	0.72	-1.94
802.11n_HT20	MCS0	79	1.02	0.77	-2.05
802.11n_HT40	MCS0	66	1.80	1.55	-3.61
802.11ac_VHT20	MCS0	64	1.94	1.55	-3.88
802.11ac_VHT40	MCS0	50	3.01	2.83	-6.02
802.11ac_VHT80	MCS0	36	4.44	5.29	-8.87
802.11ax_HE20	MCS0	39	4.09	4.89	-8.18
802.11ax_HE40	MCS0	0.40	3.98	4.87	-7.96
802.11ax_HE80	MCS0	0.37	4.32	5.13	-8.64
Band U-NII 2A:5250MHz-5350MHz-Chain A					
802.11a	6	80	0.97	0.72	-1.94
802.11n_HT20	MCS0	79	1.02	0.77	-2.05
802.11n_HT40	MCS0	66	1.80	1.55	-3.61
802.11ac_VHT20	MCS0	66	1.80	1.47	-3.61
802.11ac_VHT40	MCS0	50	3.01	2.83	-6.02
802.11ac_VHT80	MCS0	36	4.44	5.29	-8.87
802.11ax_HE20	MCS0	40	3.98	4.89	-7.96
802.11ax_HE40	MCS0	40	3.98	4.87	-7.96
802.11ax_HE80	MCS0	35	4.56	5.13	-9.12

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Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
Band U-NII 2C:5470MHz-5725MHz-Chain A					
802.11a	6	50	0.97	0.72	-1.94
802.11n_HT20	MCS0	79	1.02	0.77	-2.05
802.11n_HT40	MCS0	66	1.80	1.55	-3.61
802.11ac_VHT20	MCS0	66	1.80	1.47	-3.61
802.11ac_VHT40	MCS0	50	3.01	2.83	-6.02
802.11ac_VHT80	MCS0	36	4.44	5.29	-8.87
802.11ac_VHT160	MCS0	26	5.85	8.54	-11.70
802.11ax_HE20	MCS0	61	2.15	1.79	-4.29
802.11ax_HE40	MCS0	40	3.98	4.88	-7.96
802.11ax_HE80	MCS0	36	4.44	5.13	-8.87
802.11ax_HE160	MCS0	28	5.53	7.32	-11.06
Band U-NII 3:5725MHz-5850MHz-Chain A					
802.11a	6	80	0.97	0.72	-1.94
802.11n_HT20	MCS0	79	1.02	0.77	-2.05
802.11n_HT40	MCS0	66	1.80	1.55	-3.61
802.11ac_VHT20	MCS0	66	1.80	1.47	-3.61
802.11ac_VHT40	MCS0	50	3.01	2.83	-6.02
802.11ac_VHT80	MCS0	36	4.44	5.29	-8.87
802.11ax_HE20	MCS0	61	2.15	1.79	-4.29
802.11ax_HE40	MCS0	40	3.98	4.87	-7.96
802.11ax_HE80	MCS0	35	4.56	5.13	-9.12

Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
Band U-NII1+2:5150MHz-5350MHz-Chain A					
802.11ac_VHT160	MCS0	26	5.85	8.54	-11.70
802.11ax_HE160	MCS0	28	5.53	7.33	-11.06

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The test plots Chain A as follows:



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