



FCC RADIO TEST REPORT

FCC ID : QYLAX211NG
Equipment : Wireless Module
Brand Name : Getac
Model Name : AX211NGW
Applicant : Getac Technology Corporation.
5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang
Dist., Taipei City 115018, Taiwan, R.O.C.
Standard : FCC Part 15 Subpart E §15.407

The product was received on Aug. 10, 2023 and testing was performed from Aug. 30, 2023 to Sep. 18, 2023. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR381701-02F	01	Initial issue of report	Nov. 03, 2023
FR381701-02F	02	Revise Antenna information and Appendix A This report is an updated version, replacing the report issued on Nov. 03, 2023.	Nov. 09, 2023



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.407(e)	6dB & 26dB Bandwidth	-	See Note
-	2.1049	99% Occupied Bandwidth	-	See Note
3.1	15.407(a)	Maximum E.I.R.P Output Power	Pass	-
-	15.407(a)	Power Spectral Density	-	See Note
-	15.407(b)	Unwanted Emissions	-	See Note
-	15.207	AC Conducted Emission	-	See Note
-	15.203	Antenna Requirement	-	See Note

Note: For host device, the Conducted Output Power is no difference after compared to module (Model: AX211NGW)

Conformity Assessment Condition: The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
Disclaimer: The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Yun Huang

Report Producer: Rachel Hsieh



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs	Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ax, Wi-Fi 5GHz 802.11a/n/ac/ax and Wi-Fi 6GHz 802.11ax
Sample 1	EUT with Host 1
Sample 2	EUT with Host 2
Sample 3	EUT with Host 3
Antenna Type	WLAN: <Main>: PIFA Antenna <Aux.>: PIFA Antenna Bluetooth: PIFA Antenna

The product was installed into Tablet PC (Brand Name: Getac, Model Name: F110, F110G7, F110-701, F110-711, F110-721, F110-Exc, F110Y (Y= 10 characters, Y can be 0-9, a-z, A-Z, “-“, “_” or blank for marketing purpose and no impact safety related critical components and constructions.)) during test, and the host information was recorded in the following table.

Host Information	
Host 1	Host with SKU A
Host 2	Host with SKU B
Host 3	Host with SKU C

Antenna Information for Host			
Antenna	Manufacturer	PULSE	
	Antenna Type	PIFA Antenna	PIFA Antenna
	Part number	422GA4500004	422GA4500009
	Peak gain (dBi)	Main Antenna: WLAN (5G UNII-4): 0.56	Aux. Antenna: WLAN (5G UNII-4): 2.92



Sample Information for Host			
	SKU A	SKU B	SKU C
CPU	i5-1335U	i5-1335U	I7-1365U
DDR	Kingston 8GB	Kingston 16GB	Kingston 32GB
SSD	256GB	512GB	1TB
PANEL	Full FHD AUO	Full FHD AUO	Full FHD AUO
DIGITIZER	Not Support	EMRright Digitizer	EMRright Digitizer
OPTION BAY	MicroSD Card	Barcode Reader	LAN
Expansion Bay	N/A	HID RFID	SMART CARD
Right side option	RFID (SN-NSVG7-C01)	Not Support	Finger Print
WLAN/BT	Intel AX211	Intel AX211	Intel AX211
WWAN(4G)	NA	LN920A12-WW	LN920A12-WW
GNSS	GPS/GNSS (MC-1010-V2B)	LN920A12-WW	LN920A12-WW
Rear 8M Camera	Support	Support	Support
Webcam FHD	Support	Not Support	Support
IR Webcam	Not Support	Support	Support
USB3.2 Gen2 x 1 Type-A	Support	Support	Support
Type-C (thunder bolt)	Support	Support	Support
Audio/MIC	Support	Support	Support
Fischer	Not Support	Not Support	Not Support

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.1.1 Antenna Directional Gain

<For CDD Mode>

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)ii)

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

G_{ANT} is set equal to the gain of the antenna having the highest gain.

For PSD measurements, the directional gain calculation.

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.

As minimum $N_{SS}=1$ is supported by EUT, the formula can be simplified as:

Directional gain = $10 \cdot \log[(10^{G_1 / 20} + 10^{G_2 / 20} + \dots + 10^{G_N / 20})^2 / N_{ANT}]$ dBi

Where G_1, G_2, \dots, G_N denote single antenna gain.

The directional gain "DG" is calculated as following table.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Chain A	Chain B	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	2.92	0.56	2.92	4.83	0.00	0.00

Calculation example:

If a device has two antenna, $G_{ANT1} = 2.92$ dBi; $G_{ANT2} = 0.56$ dBi

Directional gain of power measurement = $\max(2.92, 0.56) + 0 = 2.92$ dBi

Directional gain of PSD derived from formula which is

$$10 \times \log \left\{ \left[\left(10^{(2.92 \text{ dBi} / 20)} + 10^{(0.56 \text{ dBi} / 20)} \right)^2 \right] / 2 \right\}$$

= 4.83 dBi

Power and PSD limit reduction = Composite gain – 6dBi, (min = 0)



1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. TH05-HY

FCC designation No.: TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ FCC KDB 291074 D02 EMC Measurement v01 (Draft)
- ♦ ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

2.1 Carrier Frequency and Channel

Frequency Band	Bandwidth	Channel	Frequency (MHz)	Note
5850-5895 MHz (U-NII-4)	20 MHz	169	5845	Straddle
		173	5865	
		177	5885	
	40 MHz	167	5835	Straddle
		175	5875	
	80 MHz	171	5855	Straddle
160 MHz	163	5815	Straddle	

Note: The channel noted with "straddle" spans 5.725-5.850 GHz and 5.850-5.895 GHz.

2.2 Test Mode

The final test modes include the worst data rates for each modulation shown in the table below.

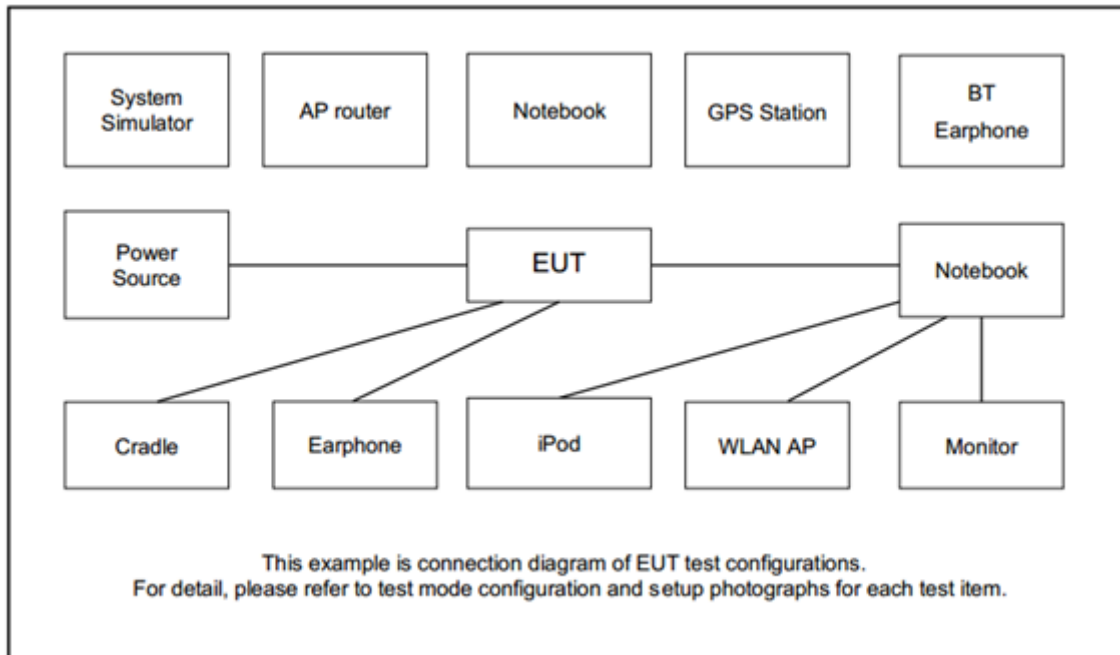
Single Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0
802.11ax HE160	MCS0

MIMO Mode

Modulation	Data Rate
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0
802.11ax HE160	MCS0

2.3 Connection Diagram of Test System



2.4 EUT Operation Test Setup

The RF test items, utility "DRTU.03544.22.200.0" was installed in Host which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

3 Test Result

3.1 Maximum E.I.R.P Output Power Measurement

3.1.1 Limit of Maximum E.I.R.P Output Power

For client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.

3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

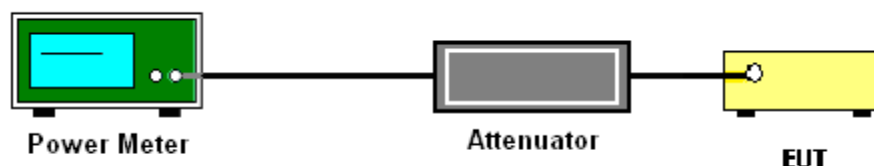
3.1.3 Test Procedures

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter.
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17. 2022	Aug. 30, 2023~ Sep. 18, 2023	Nov. 16. 2023	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054SNO 12 (NO:113)	10MHz~6GHz	Dec. 13, 2022	Aug. 30, 2023~ Sep. 18, 2023	Dec. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101564	10Hz ~ 40GHz	Sep. 13, 2022	Aug. 30, 2023~ Sep. 01, 2023	Sep. 12, 2023	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101565	10Hz ~ 40GHz	Dec. 26, 2022	Sep. 02, 2023~ Sep. 18, 2023	Dec. 25, 2023	Conducted (TH05-HY)

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Ching Chen	Temperature:	21~25	°C
Test Date:	2023/8/30-2023/9/18	Relative Humidity:	51~54	%
Remark: For Conducted Test Items, Ant. 1 means Chain A (Aux.) and Ant. 2 means Chain B (Main).				

TEST RESULTS DATA
Average Power Table

UNII-4 single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			DG (dBi)		E.I.R.P Power (dBm)		E.I.R.P Limit (dBm)	
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
11a	6Mbps	1	169	5845	19.00	19.00		2.92	0.56	21.92	19.56	30	30
11a	6Mbps	1	173	5865	19.10	19.00		2.92	0.56	22.02	19.56	30	30
11a	6Mbps	1	177	5885	19.00	19.00		2.92	0.56	21.92	19.56	30	30

TEST RESULTS DATA
Average Power Table

UNII-4 single antenna														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config	Average Conducted Power (dBm)			DG (dBi)		E.I.R.P Power (dBm)		E.I.R.P Limit (dBm)	
						Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
HE20	MCS0	1	169	5845	Full	19.40	19.40		2.92	0.56	22.32	19.96	30	30
HE20	MCS0	1	173	5865	Full	19.40	19.30		2.92	0.56	22.32	19.86	30	30
HE20	MCS0	1	177	5885	Full	19.50	19.10		2.92	0.56	22.42	19.66	30	30
HE40	MCS0	1	167	5835	Full	20.90	20.60		2.92	0.56	23.82	21.16	30	30
HE40	MCS0	1	175	5875	Full	21.00	20.50		2.92	0.56	23.92	21.06	30	30
HE80	MCS0	1	171	5855	Full	20.40	20.40		2.92	0.56	23.32	20.96	30	30
HE160	MCS0	1	163	5815	Full	17.20	17.70		2.92	0.56	20.12	18.26	30	30

UNII-4 MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config	Average Conducted Power (dBm)			DG (dBi)	E.I.R.P Power (dBm)	E.I.R.P Limit (dBm)			
						Ant 1	Ant 2	SUM	Ant 1 + Ant 2	Ant 1 + Ant 2	Ant 1 + Ant 2			
HE20	MCS0	2	169	5845	Full	16.20	16.20	19.21	2.92	22.13	30			
HE20	MCS0	2	173	5865	Full	16.20	16.20	19.21	2.92	22.13	30			
HE20	MCS0	2	177	5885	Full	16.20	16.30	19.26	2.92	22.18	30			
HE40	MCS0	2	167	5835	Full	19.50	19.50	22.51	2.92	25.43	30			
HE40	MCS0	2	175	5875	Full	20.00	19.90	22.96	2.92	25.88	30			
HE80	MCS0	2	171	5855	Full	20.30	20.20	23.26	2.92	26.18	30			
HE160	MCS0	2	163	5815	Full	16.00	16.10	19.06	2.92	21.98	30			

————THE END————