RF Exposure Report

Report No.: MFBCUN-WTW-P23110013

FCC ID: H8NNCM1120

Model No.: NCM1120D2-D323

Received Date: Nov. 01, 2023

Issued Date: Jan. 29, 2024

Applicant: ASKEY COMPUTER CORP.

Address: 10F, No. 119, Jiankang Rd., Zhonghe Dist., New Taipei City, Taiwan

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

FCC Registration / Designation Number: 788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
MFBCUN-WTW-P23110013	Original release	Jan. 29, 2024

1   Certificate of Conformity

Product: AT&T Internet Air™ for Business 5G Gateway

Brand: AT&T

Test Model: NCM1120D2-D323

Sample Status: Engineering sample

Applicant: ASKEY COMPUTER CORP.

FCC Rule Part: FCC Part 2 (Section 2.1091)

Standards: KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** _____Jan. 29, 2024_____
Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** _____Jan. 29, 2024_____
Jeremy Lin / Project Engineer

2   General Information

2.1   General Description of EUT

Product	AT&T Internet Air™ for Business 5G Gateway	
Brand	AT&T	
Test Model	NCM1120D2-D323	
Status of EUT	Engineering sample	
Power Supply Rating	12Vdc from adapter	
Modulation Type	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode 1024QAM for OFDMA in 11ax mode
	WWAN	QPSK, 16QAM, 64QAM, 256QAM
Operating Frequency	WLAN	2.412 GHz ~ 2.462 GHz 5.18 GHz ~ 5.24 GHz 5.26 GHz ~ 5.32 GHz 5.745 GHz ~ 5.825 GHz
	WWAN	LTE Band 2 — 1850-1910 MHz
		LTE Band 5 — 824-849 MHz
		LTE Band 12 — 698-716 MHz
		LTE Band 14 — 788-798 MHz
		LTE Band 29 — 717-728 MHz
		LTE Band 30 — 2305-2315 MHz
		LTE Band 66 — 1710-1780 MHz
		NR Band 2 — 1850-1910 MHz
		NR Band 5 — 824-849 MHz
		NR Band 14 — 788-798 MHz
		NR Band 30 — 2305-2310 MHz
		NR Band 66 — 1710-1780 MHz
		NR Band 77 — 3300-4200 MHz

Note:

1. The EUT uses following accessory.

Adapter	
Brand	MASS POWER
Model	S030-1C120250VU
Input Power	100-240Vac~ 50/60Hz 0.8A
Output Power	12.0Vdc, 2.5A

3 RF Exposure

3.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	$(180/f^2)$*	30
30-300	27.5	0.073	0.2	30
300-1500	…	…	f/1500	30
1500-100,000	…	…	1.0	30

f = Frequency in MHz; * = Plane-wave equivalent power density

3.2 MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$
where
Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
pi = 3.1416
r = distance between observation point and center of the radiator in cm

3.3 Classification

The antenna of this product, under normal use condition, is at least 24cm away from the body of the user. So, this device is classified as **Mobile Device**.

4 Calculation Result of Maximum Conducted Power

Operation Mode	Frequency Band (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
Internal Antenna							
LTE Band 2	1850-1910	25	1	26	24	0.055	1.00
LTE Band 4	1710-1755	25	1	26	24	0.055	1.00
LTE Band 5	824-849	25	0.9	25.9	24	0.054	0.549
LTE Band 12	698-716	25.5	0.9	26.4	24	0.060	0.465
LTE Band 14	788-798	25.5	0.9	26.4	24	0.060	0.525
LTE Band 30	2305-2315	25	1	26	24	0.055	1.00
LTE Band 66	1710-1780	25	1	26	24	0.055	1.00
NR Band 2	1850-1910	25	1	26	24	0.055	1.00
NR Band 5	824-849	25.1	0.9	26	24	0.055	0.549
NR Band 14	788-798	25.1	0.9	26	24	0.055	0.525
NR Band 30	2305-2310	-	-	23.9	24	0.034	1.00
NR Band 66	1710-1780	24.6	1	25.6	24	0.050	1.00
NR Band 77	3450-3550	-	-	27.5	24	0.078	1.00
NR Band 77	3700-3980	-	-	29.2	24	0.115	1.00
External Antenna							
LTE B2	1850 ~ 1910	22.5	3.5	26	24	0.055	1.00
LTE B4	1710 ~ 1755	23	3.5	26.5	24	0.062	1.00
LTE B30	2305 ~ 2315	22.5	4	26.5	24	0.062	1.00
LTE B66	1710 ~ 1780	22.6	3.5	26.1	24	0.056	1.00
NR Band 2	1850 ~ 1910	22.5	3.5	26	24	0.055	1.00
NR Band 30	2305 ~ 2315	-	-	23.1	24	0.028	1.00
NR Band 66	1710 ~ 1780	22.5	3.5	26	24	0.055	1.00
NR Band 77	3450-3550	-	-	27	24	0.069	1.00
NR Band 77	3700-3980	-	-	27	24	0.069	1.00

Operation Mode	Frequency Band (MHz)	Conducted Power (dBm)	Peak Gain (dBi)	Directional gain (dBi)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4 GHz	2412-2462	29.7	5.19	7.68	37.38	24	0.756	1.00
WLAN 5 GHz	5180-5250	28.5	4.98	7.42	35.92	24	0.540	1.00
	5260-5320	24	4.81	7.18	31.18	24	0.181	1.00
	5500-5720	24	4.23	7.45	31.45	24	0.193	1.00
	5745-5825	29.8	5.16	7.83	37.63	24	0.801	1.00

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

WLAN 2412-2462 MHz: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.68$
WLAN 5180-5250 MHz: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.42$
WLAN 5260-5320 MHz: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.18$
WLAN 5500-5720 MHz: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.45$
WLAN 5745-5825 MHz: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.83$

Conclusion:
The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

Max.: WWAN + WLAN 2.4G = 0.060/0.465 + 0.756/1 = 0.885 < 1
Max.: WWAN + WLAN 5.0G = 0.060/0.465 + 0.801/1 = 0.930 < 1

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