

RF Exposure Report

Report No.: MFBCUN-WTW-P23080475

FCC ID: H8NNCM2000B2

Model No.: NCM2000B2-D299

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Applicant: ASKEY COMPUTER CORP.

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
MFBCUN-WTW-P23080475	Original release	2023/10/25

1 Certificate of Conformity

Product: 5G Home Router

Brand: ASKEY

Test Model: NCM2000B2-D299

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.

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2023/10/25

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Date:

2023/10/25

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2 General Information

2.1 General Description of EUT

Product	5G Home Router		
Brand	ASKEY		
Test Model	NCM2000B2-D299		
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	WCDMA Band II	1850-1910 MHz
		WCDMA Band IV	1710-1755 MHz
		WCDMA Band V	824-849 MHz
		LTE Band 2	1850-1910 MHz
		LTE Band 4	1710-1755 MHz
		LTE Band 5	824-849 MHz
		LTE Band 7	2500-2570 MHz
		LTE Band 42	3450-3550 MHz
		LTE Band 66	1710-1780 MHz
		NR Band 2	1850-1910 MHz
		NR Band 5	824-849 MHz
		NR Band 7	2500-2570 MHz
		NR Band 66	1710-1780 MHz
		NR Band 78	3450-3700 MHz
Antenna Type	Refer to Note		
Antenna Connector	IpeX		

Note:

1. The EUT uses following accessories.

RJ45 Cable		
Brand	Model	Specification
TLE TUNG-LI	M20483	Signal Line: 1.5m

2. The EUT consumes power from the following adapter.

Adapter	
Brand	MASS POWER
Model	S024-1E120200VU-H
Input Power	100-240Vac~50/60Hz, 0.6A
Output Power	12.0Vdc, 2.0A
Power Line	1.5m cable without core attached on adapter

3. The antenna information is listed as below.

Antenna No.	Frequency Range	Gain (dBi)	Antenna Type	Connector Type
11	2400 ~ 2483.5 MHz	5.6	PCB	lpex
	5180 ~ 5240 MHz	5.1	PCB	lpex
	5260 ~ 5320 MHz	5.6	PCB	lpex
	5745 ~ 5825 MHz	4.3	PCB	lpex
12	2400 ~ 2483.5 MHz	4.1	PCB	lpex
	5180 ~ 5240 MHz	5.3	PCB	lpex
	5260 ~ 5320 MHz	6	PCB	lpex
	5745 ~ 5825 MHz	6.1	PCB	lpex
1	703 ~ 960 MHz	3.2	FPC	lpex
	1710 ~ 2690 MHz	4.0	FPC	lpex
7	703 ~ 960 MHz	2.2	FPC	lpex
	1710 ~ 2690 MHz	3.3	FPC	lpex
0	3300 ~ 4200 MHz	6.5	PCB	lpex
6	3300 ~ 4200 MHz	4.4	PCB	lpex

* Ant 1 supports LTE Band 2, 7, 66, NR Band 2, 7, 66

* Ant 7 supports WCDMA Bnad II, IV, V, LTE Band 2, 4, 5, 7, 66, NR Band 5

* Ant 0 supports LTE Band 42, NR Band 78.

* Ant 6 supports NR Band 78.

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

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

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 20cm 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)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WCDMA Band II	1852.4-1907.6	25	3.3	20	0.135	1.00
WCDMA Band IV	1712.4-1752.6	25	3.3	20	0.135	1.00
WCDMA Band V	826.4-846.6	25	2.2	20	0.104	0.551
LTE Band 2	1850.7-1909.3	25	4.0	20	0.158	1.00
LTE Band 4	1710.7-1754.3	25	3.3	20	0.135	1.00
LTE Band 5	824.7-848.3	25	2.2	20	0.104	0.551
LTE Band 5_ENDC	824.7-848.3	22	2.2	20	0.052	0.551
LTE Band 7	2502.5-2567.5	25	4.0	20	0.158	1.00
LTE Band 42	3452.5-3547.5	23	6.5	20	0.177	1.00
LTE Band 66	1710.7-1779.3	25	4.0	20	0.158	1.00
NR Band 2	1852.5-1907.5	25	4.0	20	0.158	1.00
NR Band 5	826.5-846.5	25	2.2	20	0.104	0.551
NR Band 5_NSA	826.5-846.5	22	2.2	20	0.052	0.551
NR Band 7	2502.5-2567.5	25	4.0	20	0.158	1.00
NR Band 66	1712.5-1777.5	25	4.0	20	0.158	1.00
NR Band 78 (Part 27Q)	3450-3550	22.5	6.5	20	0.158	1.00
NR Band 78 (Part 96)	3550-3700	16.5	6.5	20	0.040	1.00
WLAN 2.4 GHz_CDD	2412-2462	29.52	5.6	20	0.647	1.00
WLAN 5 GHz_CDD	5180-5240	28.39	5.3	20	0.465	1.00
	5260-5320	23.90	6.0	20	0.194	1.00
	5745-5825	29.53	6.1	20	0.727	1.00
WLAN 2.4 GHz_BF	2412-2462	28.09	7.89	20	0.788	1.00
WLAN 5 GHz_BF	5180-5240	27.70	8.21	20	0.776	1.00
	5260-5320	21.14	8.81	20	0.197	1.00
	5745-5825	27.66	8.26	20	0.778	1.00

Note:

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

WLAN 2.4 GHz: The directional gain is 7.89 dBi

WLAN 5180-5240MHz: The directional gain is 8.21 dBi

WLAN 5260-5320MHz: The directional gain is 8.81 dBi

WLAN 5745-5825MHz: The directional gain is 8.26 dBi

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Max.: WWAN + WLAN 2.4G = $0.104/0.551 + 0.788/1 = 0.977 < 1$

Max.: WWAN + WLAN 5.0G = $0.104/0.551 + 0.778/1 = 0.967 < 1$

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