

RF EXPOSURE EVALUATION REPORT

FCC ID : H8N-ASK-NCQ1338
Equipment : Verizon Internet Gateway
Brand Name : Verizon Internet Gateway
Model Name : ASK-NCQ1338
Applicant : Askey Computer Corporation
10F, NO.119, JIANKANG RD.,
ZHONGHE DIST., NEW TAIPEI CITY 23585,
TAIWAN, R.O.C.
Manufacturer : Askey Computer Corporation
10F, NO.119, JIANKANG RD.,
ZHONGHE DIST., NEW TAIPEI CITY 23585,
TAIWAN, R.O.C.
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full


Approved by: Cona Huang / Deputy Manager



SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

1. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)	4
2. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS	4
3. RF EXPOSURE LIMIT INTRODUCTION	6
4. RADIO FREQUENCY RADIATION EXPOSURE EVALUATION	7
4.1. Standalone Power Density Calculation	7
4.2. Collocated Power Density Calculation.....	8



History of this test report

Report No.	Version	Description	Issued Date
FA110616	Rev. 01	Initial issue of report	Apr. 12, 2021



1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Verizon Internet Gateway
Brand Name	Verizon Internet Gateway
Model Name	ASK-NCQ1338
FCC ID	H8N-ASK-NCQ1338
Wireless Technology and Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n77 : 3700 MHz ~ 3980 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/HE20/HE40/HE80 Bluetooth LE
HW Version	REV 1.0
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Reviewed by: Jason Wang

Report Producer: Daisy Peng

2. Maximum RF average output power among production units

<WWAN>

Mode		Maximum Average power(dBm)
LTE	Band 2	25.70
	Band 4	25.70
	Band 5	25.00
	Band 13	24.00
	Band 48	21.00
	Band 66	25.70
5G NR	n2	25.70
	n5	25.50
	n66	25.70
	n77	26.50

<WLAN Non-Beamforming>

Mode		4Tx Maximum Average Power (dBm)
2.4GHz WLAN	802.11b	29.00
	802.11g	29.00
	802.11n-HT20	28.90
	802.11n-HT40	24.50
	802.11ac-VHT20	28.80
	802.11ac-VHT40	24.40
	802.11ax-HE20	29.00
	802.11ax-HE40	24.67
5GHz WLAN	802.11a	28.80
	802.11n-HT20	28.88
	802.11n-HT40	28.81
	802.11ac-VHT20	28.78
	802.11ac-VHT40	28.81
	802.11ac-VHT80	27.18
	802.11ax-HE20	28.98
	802.11ax-HE40	28.91
	802.11ax-HE80	27.28
Bluetooth LE		3.8

<WLAN Beamforming>

Mode		Maximum Average Power (dBm)
2.4GHz WLAN	802.11n-HE20	24.63
	802.11n-HE40	25.90
5GHz WLAN	802.11ac-VHT20	25.05
	802.11ac-VHT40	24.24
	802.11ac-VHT80	24.56
	802.11ax-HE20	25.15
	802.11ax-HE40	24.34
	802.11ax-HE80	24.66

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) 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

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

<WWAN>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
LTE Band 2	3.40	25.70	29.1	0.81	812.83	0.162	1.000	0.162
LTE Band 4	3.60	25.70	29.3	0.85	851.14	0.169	1.000	0.169
LTE Band 5	0.40	25.00	25.4	0.35	346.74	0.069	0.549	0.126
LTE Band 13	-0.20	24.00	23.8	0.24	239.88	0.048	0.518	0.092
LTE Band 48	2.70	21.00	23.7	0.23	234.42	0.047	1.000	0.047
LTE Band 66	3.80	25.70	29.5	0.89	891.25	0.177	1.000	0.177
5G NR n2	3.40	25.70	29.1	0.81	812.83	0.162	1.000	0.162
5G NR n5	0.40	25.50	25.9	0.39	389.05	0.077	0.549	0.141
5G NR n66	3.80	25.70	29.5	0.89	891.25	0.177	1.000	0.177
5G NR n77	3.40	26.50	29.9	0.98	977.24	0.195	1.000	0.195

<WLAN Non-Beamforming>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
WLAN2.4GHz Band	3.40	29.00	32.4	1.74	1737.80	0.346	1.000	0.346
WLAN5GHz Band	3.70	28.98	32.7	1.85	1853.53	0.369	1.000	0.369
Bluetooth	3.54	3.80	7.3	0.01	5.42	0.001	1.000	0.001

<WLAN Beamforming>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
WLAN2.4GHz Band	8.60	25.90	34.5	2.82	2818.38	0.561	1.000	0.561
WLAN5GHz Band	9.37	25.15	34.5	2.83	2831.39	0.564	1.000	0.564

Note:

1. For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.
2. This device supports Beamforming for WLAN 2.4GHz HE20/HE40 and WLAN 5GHz VHT20/VHT40/VHT80/HE20/HE40/HE80 only; therefore, in the table above which consider maximum directional Gain 8.60dBi for WLAN 2.4GHz Beamforming mode and 9.37dBi for WLAN 5GHz Beamforming mode.

**4.2. Collocated Power Density Calculation**

Maximum WLAN Power Density / Limit	Maximum Bluetooth Power Density / Limit	Maximum WWAN(LTE) Power Density / Limit	Maximum WWAN(5G NR) Power Density / Limit	Σ (Power Density / Limit) of WWAN(LTE) + WWAN(5G NR) + WLAN + Bluetooth
0.564	0.001	0.177	0.195	0.937

Note:

1. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for LTE + 5G NR + WLAN + Bluetooth.
2. Considering the WWAN collocation with the WLAN and Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 4 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.