

FCC RF EXPOSURE REPORT

For

KAON AP GATEWAY

MODEL NUMBER: AR1840, EVO1840AP

REPORT NUMBER: 4790724057-RF-5

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Prepared for

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Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	March 30, 2023	Initial Issue	



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. REQUIREMENT	7



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Kaonbroadband CO., LTD.
Address: 884-3, Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

Manufacturer Information

Company Name: Kaonbroadband CO., LTD.
Address: 884-3, Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

EUT Information

EUT Name: KAON AP GATEWAY
Model: AR1840
Serial Model: EVO1840AP
Model Difference: The PCB is for common use, and 2 types of Tact keys (removed WPS, Reset Button) and 1 LED SILK device (replacing WPS LED with BT LED) are different.
1. AR1840(Basic) – There are WPS, Reset Button / There is WPS LED
2. EVO1840AP(Derivative) – There are no WPS, Reset Button / There is BT LED.
All RF circuits and parameter are the same, we selected AR1840 for RF tested, the differences above were evaluated in FCC Part 15B.

Sample Received Date: February 7, 2023
Sample Status: Normal
Sample ID: 5739139
Date of Tested: February 13, 2023 to March 29, 2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47CFR§2.1091	PASS
KDB447498 D01 V06	PASS



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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 and KDB 447498 D01 General RF Exposure Guidance v06.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p>ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



4. REQUIREMENT

LIMIT AND CALCULATION METHOD

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

RF EXPOSURE LIMIT

Frequency Range (MHz)	E-field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (Minutes)
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

CALCULATION METHOD

$$S = PG / 4\pi R^2$$

Where:

S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna



CALCULATED RESULTS

Radio Frequency Radiation Exposure Evaluation

2.4 GHz WiFi (Worst case)				
Operating Mode	Max. Tune up Power	Max. Directional Antenna Gain	Power density	Limit
	(dBm)	(dBi)	(mW/ cm ²)	
802.11ax	21	4.91	0.078	1

5 GHz WiFi (Worst case)				
Operating Mode	Max. Tune up Power	Max. Directional Antenna Gain	Power density	Limit
	(dBm)	(dBi)	(mW/ cm ²)	
802.11ac	27	8.02	0.632	1

6 GHz WiFi (Worst case)				
Operating Mode	Max. Tune up Power	Max. Directional Antenna Gain	Power density	Limit
	(dBm)	(dBi)	(mW/ cm ²)	
802.11ax	20	5.51	0.071	1

BLE (Worst case)				
Operating Mode	Max. Tune up Power	Max. Antenna Gain	Power density	Limit
	(dBm)	(dBi)	(mW/ cm ²)	
GFSK	9	1.50	0.002	1

Note:

1. The calculated distance is 20 cm.
2. The power comes from operation description.
3. 6 GHz WiFi + 5 GHz WiFi + 2.4 GHz WiFi + BLE= 0.078 + 0.632 + 0.071 + 0.002= 0.783 (mW/cm²)
Therefor the maximum calculations of above situations are less than the “1” limit.

END OF REPORT