

FCC MPE REPORT

Certification

Applicant Name:
KAONMEDIA Co., Ltd.

Date of Issue:
May 17, 2018

Location:
HCT CO., LTD.,

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Report No.: HCT-RF-1805-FC030-R1

FCC ID: WQTAR4520

APPLICANT: KAONMEDIA Co., Ltd.


Model(s): AR4520

EUT Type: AP Router

Frequency Range:	DTS 2.4 GHz:	2412 MHz - 2462 MHz	
	UNII:	TX/ RX _20 MHz BW:	5180 MHz - 5240 MHz (UNII 1) / 5260 MHz - 5320 MHz (UNII 2A) / 5500 MHz - 5720 MHz (UNII 2C) / 5745 MHz - 5825 MHz (UNII 3)
		TX/ RX _40 MHz BW:	5190 MHz - 5230 MHz (UNII 1) / 5270 MHz - 5310 MHz (UNII 2A) / 5510 MHz - 5710 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
		TX/ RX _80 MHz BW:	5210 MHz (UNII 1) / 5290 MHz (UNII 2A) / 5530 - 5690 MHz (UNII 2C) / 5775 MHz (UNII 3)
		TX/ RX _160 MHz BW:	5210MHz + 5290MHz / 5530MHz + 5610MHz

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C.853(a)

Report prepared by : Se Wook Park
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Report approved by : Kwon Jeong
Manager of Telecommunication Testing Center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1805-FC030	May 15, 2018	- First Approval Report
HCT-RF-1805-FC030-R1	May 17, 2018	- Revised the antenna gain

Result of Test

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RF Exposure Statement

1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm ²)	Averaging time (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

F = frequency in MHz

* = Plane-wave equivalent power density

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

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

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

3. RESULTS

WLAN 2.4 MIMO		
Max. Average output Power at antenna input terminal	25.00	dBm
Max. Average output Power at antenna input terminal	316.23	mW
Prediction distance	20.00	cm
Prediction frequency	2412 – 2462	MHz
Antenna Gain(typical)	5.49	dBi
Antenna Gain(numeric)	3.54	–
EIRP	1.12	W
Power density at prediction frequency (S)	0.222705	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

WLAN 5G MIMO (UNII1)		
Max. Average output Power at antenna input terminal	22.00	dBm
Max. Average output Power at antenna input terminal	158.49	mW
Prediction distance	20.00	cm
Prediction frequency	5180 – 5240	MHz
Antenna Gain(typical)	12.51	dBi
Antenna Gain(numeric)	17.82	–
EIRP	2.82	W
Power density at prediction frequency (S)	0.561992	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

WLAN 5G MIMO (UNII 2A)		
Max. Average output Power at antenna input terminal	18.00	dBm
Max. Average output Power at antenna input terminal	63.10	mW
Prediction distance	20.00	cm
Prediction frequency	5260 – 5320	MHz
Antenna Gain(typical)	12.82	dBi
Antenna Gain(numeric)	19.14	–
EIRP	1.21	W
Power density at prediction frequency (S)	0.240287	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

WLAN 5G MIMO (UNII 2C)		
Max. Average output Power at antenna input terminal	16.00	dBm
Max. Average output Power at antenna input terminal	39.81	mW
Prediction distance	20.00	cm
Prediction frequency	5500 – 5720	MHz
Antenna Gain(typical)	12.50	dBi
Antenna Gain(numeric)	17.78	–
EIRP	0.71	W
Power density at prediction frequency (S)	0.140841	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

WLAN 5G MIMO (UNII 3)		
Max. Average output Power at antenna input terminal	22.00	dBm
Max. Average output Power at antenna input terminal	158.49	mW
Prediction distance	20.00	cm
Prediction frequency	5745 – 5825	MHz
Antenna Gain(typical)	12.50	dBi
Antenna Gain(numeric)	17.78	–
EIRP	2.82	W
Power density at prediction frequency (S)	0.560699	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

Simultaneous transmission operations

1. The power density level at 20 cm is **0.222705 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **WLAN(2.4 GHz)**.
2. The power density level at 20 cm is **0.561992 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **WLAN(5 GHz)**.

->Simultaneous MPE 20cm is WLAN(2.4 GHz) (0.222705/1.0) + WLAN(5 GHz) (0.561992/1.0) = 0.784697 < 1