

FCC MPE REPORT

FCC Certification

Applicant Name:
KAONMEDIA Co., Ltd.**Date of Issue:**

May 11, 2018

Location:

HCT CO., LTD.,

KAONMEDIA Building, 884-3, Seongnam-daero,
Bundang-gu, Seongnam-si, Gyeonggi-do, South
Korea74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA**Report No.:** HCT-RF-1804-FC055-R1**FCC ID:** WQTVM3000G**APPLICANT:** KAONMEDIA Co., Ltd.**Model(s):** VM3000G**EUT Type:** Layer3 TV**Frequency Range:** BT/ BT LE: 2402 MHz - 2480 MHz (Bluetooth)

DTS 2.4 GHz: 2412 MHz - 2462 MHz

Zigbee: 2405 MHz -2475 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**
Engineer of Telecommunication Testing Center**Report approved by : Jong Seok Lee**
Manager of Telecommunication Testing Center

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1804-FC055	April 25, 2018	- First Approval Report
HCT-RF-1804-FC055-R1	May 11, 2018	- Max. Average output power and max. antenna gain in UNII bands was changed because of correcting array gain.

Result of Test

CONTENTS

RF Exposure Statement	4
1. LIMITS	4
2. MAXIMUM PERMISSIBLE EXPOSURE Prediction.....	4
3. RESULTS	5

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	24.00	dBm
Max. Average output Power at antenna input terminal	251.19	mW
Prediction distance	20.00	cm
Prediction frequency	2412 – 2462	MHz
Antenna Gain(typical)	2.00	dBi
Antenna Gain(numeric)	1.58	–
EIRP	0.40	W
Power density at prediction frequency (S)	0.079201	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	24.00	dBm
Max. Average output Power at antenna input terminal	251.19	mW
Prediction distance	20.00	cm
Prediction frequency	5180–5240	MHz
Antenna Gain(typical)	8.02	dBi
Antenna Gain(numeric)	6.34	–
EIRP	1.59	W
Power density at prediction frequency (S)	0.316760	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	23.00	dBm
Max. Average output Power at antenna input terminal	199.53	mW
Prediction distance	20.00	cm
Prediction frequency	5260–5320	MHz
Antenna Gain(typical)	8.02	dBi
Antenna Gain(numeric)	6.34	–
EIRP	1.26	W
Power density at prediction frequency (S)	0.251611	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	22.00	dBm
Max. Average output Power at antenna input terminal	158.49	mW
Prediction distance	20.00	cm
Prediction frequency	5500–5720	MHz
Antenna Gain(typical)	8.02	dBi
Antenna Gain(numeric)	6.34	–
EIRP	1.00	W
Power density at prediction frequency (S)	0.199862	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	23.00	dBm
Max. Average output Power at antenna input terminal	199.53	mW
Prediction distance	20.00	cm
Prediction frequency	5745–5825	MHz
Antenna Gain(typical)	8.02	dBi
Antenna Gain(numeric)	6.34	–
EIRP	1.26	W
Power density at prediction frequency (S)	0.251611	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

Zigbee		
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	2405 – 2475	MHz
Antenna Gain(typical)	2.00	dBi
Antenna Gain(numeric)	1.58	–
EIRP	0.10	W
Power density at prediction frequency (S)	0.019894	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

Bluetooth		
Max. Average output Power at antenna input terminal	10.00	dBm
Max. Average output Power at antenna input terminal	10.00	mW
Prediction distance	20.00	cm
Prediction frequency	2402 – 2480	MHz
Antenna Gain(typical)	2.00	dBi
Antenna Gain(numeric)	1.58	–
EIRP	0.02	W
Power density at prediction frequency (S)	0.003153	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

Bluetooth LE		
Max. Average output Power at antenna input terminal	10.00	dBm
Max. Average output Power at antenna input terminal	10.00	mW
Prediction distance	20.00	cm
Prediction frequency	2402 – 2480	MHz
Antenna Gain(typical)	2.00	dBi
Antenna Gain(numeric)	1.58	–
EIRP	0.02	W
Power density at prediction frequency (S)	0.003153	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 **0.079201 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 **0.316760 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **WLAN(5 GHz)**.
3. The power density level at 20 cm is **0.019894 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **Zigbee**.
4. The power density level at 20 cm is **0.003153 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **Bluetooth**.
5. The power density level at 20 cm is **0.003153 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **Bluetooth LE**.

->Simultaneous MPE 20cm is WLAN(2.4 GHz) (0.079201/1.0) + WLAN(5 GHz) (0.316760/1.0) + Zigbee (0.019894/1.0) + Bluetooth (0.003153/1.0) + Bluetooth LE (0.003153/1.0) = 0.42216 < 1