

FCC MPE REPORT

Certification

Applicant Name:
LG Electronics Inc.

Date of Issue:
November 24, 2017

Address:
222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do,
Korea

Test Site/Location:
HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-
myeo, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-R-1711-E006

FCC ID	: BEJ-WC1NP8
APPLICANT	: LG Electronics Inc.

Model(s): WC1NP8

EUT Type: RF Module

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)



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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1711-E006	November 24, 2017	- First Approval Report

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

Bluetooth

Max Peak output Power at antenna input terminal	9.074	dBm
Max Peak output Power at antenna input terminal	8.080	mW
Prediction distance	20.000	cm
Prediction frequency	2480.000	MHz
Antenna Gain(typical)	-3.880	dBi
Antenna Gain(numeric)	0.409	-
Power density at prediction frequency(S)	0.000658	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

2.4 GHz Band (DTS)

MIMO

Max Peak output Power at antenna input terminal	25.820	dBm
Max Peak output Power at antenna input terminal	381.944	mW
Prediction distance	20.000	cm
Prediction frequency	2437.000	MHz
Antenna Gain(typical)	0.740	dBi
Antenna Gain(numeric)	1.186	-
Power density at prediction frequency(S)	0.090101	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

5 GHz Band (UNII 1)

MIMO

Max Peak output Power at antenna input terminal	18.290	dBm
Max Peak output Power at antenna input terminal	67.453	mW
Prediction distance	20.000	cm
Prediction frequency	5200.000	MHz
Antenna Gain(typical)	1.720	dBi
Antenna Gain(numeric)	1.486	-
Power density at prediction frequency(S)	0.019940	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

5 GHz Band (UNII 3)

MIMO

Max Peak output Power at antenna input terminal	19.120	dBm
Max Peak output Power at antenna input terminal	81.658	mW
Prediction distance	20.000	cm
Prediction frequency	5785.000	MHz
Antenna Gain(typical)	2.540	dBi
Antenna Gain(numeric)	1.795	-
Power density at prediction frequency(S)	0.029156	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

Simultaneous transmission operations

1. The power density level at 20 cm is **0.000658 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **Bluetooth**.
2. The power density level at 20 cm is **0.090101 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **WLAN(2.4 GHz)**.
3. The power density level at 20 cm is **0.029156 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **WLAN(5 GHz)**.

->Simultaneous MPE 20cm is $(0.000658/1.0) + (0.090101/1.0) + (0.029156/1.0) = 0.119915 < 1$

* The Worst case Bluetooth : 9.074 dBm, WLAN(2.4 GHz): 25.820 dBm, WLAN(5 GHz): 19.120 dBm is Highest Power.