

## RF Exposure Report

**Report No.:** SA190628E01

**FCC ID:** RAS-MT7663

**Test Model:** MT7663

**Received Date:** June 28, 2019

**Test Date:** Sep. 09, 2019

**Issued Date:** Dec. 31, 2019

**Applicant:** MediaTek Inc.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwa.

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan.

**FCC Registration /  
Designation Number:** 723255 / TW2022

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## Table of Contents

<b>Release Control Record</b> .....	<b>3</b>
<b>1 Certificate of Conformity</b> .....	<b>4</b>
<b>2 RF Exposure</b> .....	<b>5</b>
2.1 Limits for Maximum Permissible Exposure (MPE) .....	5
2.2 MPE Calculation Formula .....	5
2.3 Classification .....	5
2.4 Antenna Gain .....	6
2.5 Calculation Result of Maximum Conducted Power .....	7

### Release Control Record

Issue No.	Description	Date Issued
SA190628E01	Original release.	Dec. 31, 2019

## 1 Certificate of Conformity

**Product:** 2TX 11ac + BLE Combo Card

**Brand:** MTK

**Test Model:** MT7663

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** MediaTek Inc.

**Test Date:** Sep. 09, 2019

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.3-2002

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Joyce Kuo , **Date:** Dec. 31, 2019  
Joyce Kuo / Specialist

**Approved by :** Clark Lin , **Date:** Dec. 31, 2019  
Clark Lin / Technical Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
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 <sup>2</sup> )*	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

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

Antenna Set	RF Chain No.	Brand	Model	Ant. Net Gain (dBi)	Frequency range (GHz)	Antenna Type	Connector Type	Cable Length
1	Chain 0	LYNwave	ALA110-222050-300011	3.5	2.4~2.4835	PIFA	i-pex(MHF)	55mm
				5	5.15~5.85			
	Chain 1	LYNwave	ALA110-222050-300011	3.5	2.4~2.4835	PIFA	i-pex(MHF)	55mm
				5	5.15~5.85			
2	Chain 0	Cortec	AN2450-4902BRS	2.42	2.4~2.4835	Dipole	R-SMA	150mm
				3.87	5.15~5.85			
	Chain 1	Cortec	AN2450-4902BRS	2.42	2.4~2.4835	Dipole	R-SMA	150mm
				3.87	5.15~5.85			
3	Chain 0	PSA	RFMTA340718EMLB301	2.92	2.4~2.4835	PIFA	i-pex(MHF)	199.4mm
				4.94	5.15~5.85			
	Chain 1	PSA	RFMTA340718EMLB301	2.92	2.4~2.4835	PIFA	i-pex(MHF)	199.4mm
				4.94	5.15~5.85			

Note: The Max. gain was selected for Radiated Emission Measurement test.

## 2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN 2.4GHz	2437	195.924	6.51	20	0.17451	1
WLAN U-NII-1	5180	160.801	8.01	20	0.20231	1
WLAN U-NII-2A	5260	157.614	8.01	20	0.19830	1
WLAN U-NII-2C	5580	157.067	8.01	20	0.19761	1
WLAN U-NII-3	5825	186.71	8.01	20	0.23491	1
Bluetooth (BT-EDR)	2402	12.912	3.50	20	0.00575	1
Bluetooth (BT-LE)	2404	7.311	3.50	20	0.00326	1

### NOTE:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: Directional gain = 3.5dBi + 10log(2) = 6.51dBi  
5GHz: Directional gain = 5dBi + 10log(2) = 8.01dBi
3. 2.4GHz & 5GHz technology can't transmit at same time.

### Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + Bluetooth =  $0.17451 / 1 + 0.00575 / 1 = 0.18026$

WLAN 5GHz + Bluetooth =  $0.23491 / 1 + 0.00575 / 1 = 0.24066$

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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