RF Exposure Report

Report No.:	SA190628E01J
FCC ID:	RAS-MT7663
Test Model:	MT7663
Received Date:	July 06, 2020
Test Date:	July 28, 2020
Issued Date:	Aug. 21, 2020
Applicant:	MediaTek Inc.
Address:	No. 1, Dusing Rd. 1 Hsinchu Science Park, Hsinchu, Taiwan 300, R.O.C.
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, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA190628E01J	Original release.	Aug. 21, 2020

1 Certificate of Conformity

Product:	2TX 11ac + BLE Combo Card
Brand:	MTK
Test Model:	MT7663
Sample Status:	ENGINEERING SAMPLE
Applicant:	MediaTek Inc.
Test Date:	July 28, 2020
Standards:	FCC Part 2 (Section 2.1091) IEEE C95.3 -2002
References Test Guidance:	KDB 447498 D01 General RF Exposure Guidance v06

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 : Phoenix Huang , **Date:** Aug. 21, 2020

Phoenix Huang / Specialist

Approved by : , **Date:** Aug. 21, 2020

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^2)	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	($180/f^2$)*	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

2.2 MPE Calculation Formula

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

where

Pd = power density in mW/cm^2

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 20 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

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

Note: The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.5 Calculation Result of Maximum Conducted Power

All test data was copied from the original test report (Report No.: SA190628E01)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN (2.4GHz)	2412~2472	195.924	6.51	20	0.17451	1
WLAN (U-NII-1)	5180~5240	160.801	8.01	20	0.20231	1
WLAN (U-NII-2A)	5260~5320	157.614	8.01	20	0.19830	1
WLAN (U-NII-2C)	5500~5720	157.067	8.01	20	0.19761	1
WLAN (U-NII-3)	5745~5825	186.71	8.01	20	0.23491	1
Bluetooth (BT-EDR)	2402~2480	12.912	3.50	20	0.00575	1
Bluetooth (BT-LE)	2402~2480	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: The directional gain = 3.5dBi + 10log(2) = 6.51dBi
   5GHz: The 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 + ……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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