RF Exposure Report

Report No.:	SABARR-WTW-P21030485A
FCC ID:	RAS-MT7922A22M
Test Model:	MT7922A22M
Received Date:	Mar. 12, 2021
Test Date:	Mar. 20, 2021
Issued Date:	July 29, 2021
Applicant:	MediaTek Inc.
Address:	No. 1, Dusing 1st Rd., Hsinchu Science Park Hsinchu City 30078 Taiwan
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

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Release Control Record

Issue No.	Description	Date Issued
SABARR-WTW-P21030485A	Original release.	July 29, 2021

1 Certificate of Conformity

Product:	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card
Brand:	MediaTek
Test Model:	MT7922A22M
Sample Status:	Engineering sample
Applicant:	MediaTek Inc.
Test Date:	Mar. 20, 2021
Standards:	FCC Part 2 (Section 2.1091) 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 : Vivian Huang , **Date:** July 29, 2021

Vivian Huang / Specialist

Approved by : , **Date:** July 29, 2021

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

Original								
Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
2	Chain1	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
3	Chain0	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
4	Chain1	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
Newly								
Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
5	Chain0	VSO	JR2Q00340-1	1.62 3.2 3.93 3.61 3.61 3.14	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Dipole	RP SMA PLUG	40
6	Chain1	VSO	JR2Q00340-1	1.62 3.2 3.93 3.61 3.61 3.14	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Dipole	RP SMA PLUG	40
7	Chain0	Cortec	AN2450-4902BRS	2.42 3.87	2.4~2.4835 5.15~5.85	Dipole	R-SMA	150
8	Chain1	Cortec	AN2450-4902BRS	2.42 3.87	2.4~2.4835 5.15~5.85	Dipole	R-SMA	150
Note: Max. gain was selected for the final test.								

* 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

2.4GHz & 5GHz & Bluetooth data was copied from the original test report (Report No.: SABARR-WTW-P21030485).

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
WLAN (2.4GHz)	2412~2472	305.167	6.19	20	0.2525	1	Pass
WLAN (U-NII-1)	5180~5250	197.711	7.93	20	0.24421	1	Pass
WLAN (U-NII-2A)	5250~5320	195.456	7.93	20	0.24142	1	Pass
WLAN (U-NII-2C)	5500~5720	208.264	7.93	20	0.25724	1	Pass
WLAN (U-NII-3)	5745~5825	250.93	7.93	20	0.30994	1	Pass
BT-EDR	2402~2480	22.029	3.18	20	0.00911	1	Pass
BT-LE	2402~2480	21.827	3.18	20	0.00903	1	Pass

Operation Mode	Evaluation Frequency (MHz)	Max EIRP (mW)	Distance (m)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
WLAN (U-NII-5)	5955-6415	54.576	20	0.02169	1	Pass
WLAN (U-NII-6)	6425-6525	53.088	20	0.0211	1	Pass
WLAN (U-NII-7)	6525-6875	51.523	20	0.02049	1	Pass
WLAN (U-NII-8)	6875-7115	52.24	20	0.02077	1	Pass

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 = 3.18 dBi + 10log(2) = 6.19 dBi
3. 5GHz: The directional gain = 4.92 dBi + 10log(2) = 7.93 dBi
4. 2.4GHz & 5GHz/6GHz technology cannot 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 (5GHz) + Bluetooth = 0.30994 / 1 + 0.00911 / 1 = 0.31905

WLAN (6GHz) + Bluetooth = 0.02169 / 1 + 0.00911 / 1 = 0.01997

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

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