

RF EXPOSURE REPORT

CERTIFICATE OF CONFORMITY

FCC Rule Part: FCC Part 2 (Section 2.1091)

Report No.: MFBCMA-WTW-P25030861A

FCC ID: RAXTMOG5AR

Product: 5G Gateway

Brand: T-Mobile

Model No.: TMO-G5AR

Received Date: 2025/3/24

Test Date: 2025/5/16

Issued Date: 2025/6/11

Applicant: Arcadyan Technology Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 788550 / TW0003

Designation Number:

Approved by:

Jeremy Lin

Date:

2025/6/11

Jeremy Lin / Project Engineer

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Prepared by : Celine Chou / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
MFBCMA-WTW-P25030861A	Original release.	2025/6/11

1 Certificate

Product: 5G Gateway

Brand: T-Mobile

Test Model: TMO-G5AR

Sample Status: Engineering sample

Applicant: Arcadyan Technology Corporation

Test Date: 2025/5/16

FCC Rule Part: FCC Part 2 (Section 2.1091)

Standard: KDB 447498 D04 Interim General RF Exposure Guidance v01

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 RF characteristics under the conditions specified in this report.

2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT.

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Exposure	500 MHz ~ 800 MHz	1.46 dB
	800 MHz ~ 1 GHz	1.2 dB
	1 GHz ~ 2.5 GHz	1.2 dB
	2.5 GHz ~ 8 GHz	1.3 dB

3 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

Routine Evaluation

Routine Evaluation Procedure - Single and/or Multiple RF Sources

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
E-Field Probe Wavecontrol	WPF60	22WP230188	2024/6/14	2025/6/13
EM Field Meter Wavecontrol	SMP2 Dual	22SN1914	2024/6/14	2025/6/13

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/5/16

4 Applicable RF Exposure Limit

§ 1.1310 Radiofrequency radiation exposure limits.

(a) Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b) of this part within the frequency range of 100 kHz to 6 GHz (inclusive).

(b) The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.

(c) The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

(e) Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields

➤ Limits for General Population/Uncontrolled Exposure

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
300-1,500	...	...	f/1500	<30
1,500-100,000	...	...	1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

➤ Limits for Occupational/Controlled Exposure

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				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6

f = frequency in MHz. * = Plane-wave equivalent power density.

MPE-based Exemption – §1.1307(b)(3)(i)(B)

- For mobile devices that are not exempt per Table 1 of §1.1307(b)(1)(i)(C) and device at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power.

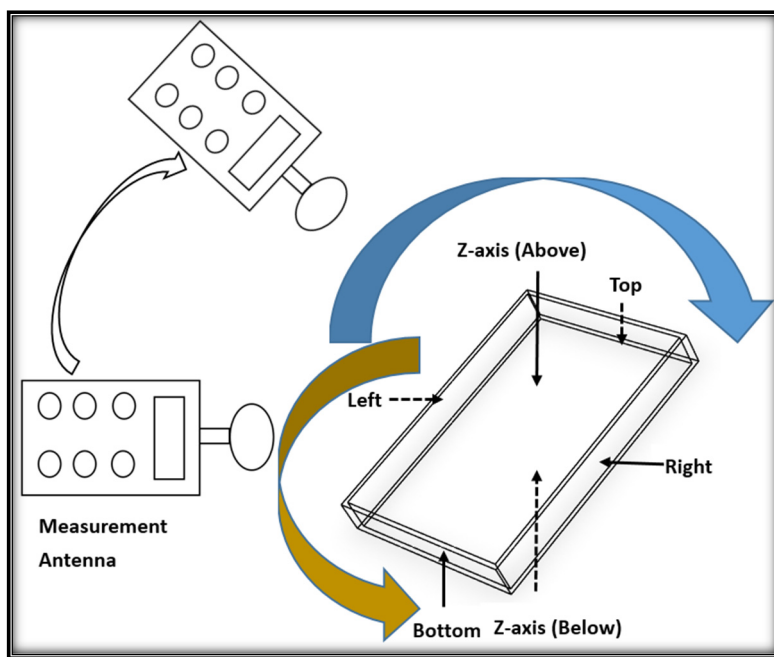
$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

Routine Evaluation

Routine Evaluation Procedure - Single and/or Multiple RF Sources

- MPE compliance are measurement in all directions surrounding the antenna and radiating structures of the device.

Test Setup



Note: The measurement antenna are moving and surrounding the EUT when performed the test, the test results recorded the highest values for each sides of the EUT (left/right/top/bottom/z-axis (Above)/z-axis (Below))

Fixed RF sources operating in the same time-averaging period – §1.1307(b)(3)(ii)(B)

- Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluated_k term) should be used to determine exemption for simultaneous transmission according to Formula below,

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

The sum of the ratios of the applicable terms for SAR-based, MPE-based and measured SAR or MPE should be less than 1, to determine simultaneous transmission exposure compliance.

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using [paragraph \(b\)\(3\)\(i\)\(B\)](#) of this section for P_{th} , including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

$P_{th,i}$ = the exemption threshold power (P_{th}) according to [paragraph \(b\)\(3\)\(i\)\(B\)](#) of this section for fixed, mobile, or portable RF source i .

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j , at a distance of at least $\lambda/2\pi$ according to the applicable formula of [paragraph \(b\)\(3\)\(i\)\(C\)](#) of this section.

$Exposure Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k , as applicable from [§ 1.1310 of this chapter](#).

b = number of fixed, mobile, or portable RF sources claiming exemption using [paragraph \(b\)\(3\)\(i\)\(C\)](#) of this section for Threshold ERP, including existing exempt transmitters and those being added.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

ERP_j = the ERP of fixed, mobile, or portable RF source j .

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

5 Test Results

Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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For Single RF Source

WLAN, BT and Zigbee

MPE-based Exemption §1.1307(b)(3)(i)(B)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
WLAN 2.4 GHz_CDD	2412-2462	994.071	3.67	1410.644	20	3060	Pass
WLAN 5 GHz_CDD	5180-5320 5500-5825	965.747	4.23	1559.062	20	3060	Pass
Bluetooth	2402-2480	61.802	5.32	128.234	20	3060	Pass
Zigbee	2405-2480	53.580	3.56	74.131	20	3060	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

LTE

MPE-based Exemption §1.1307(b)(3)(i)(B)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
LTE Band 2	1850.7-1909.3	339.625	0.95	257.632	20	3060	Pass
LTE Band 4	1710.7-1754.3	363.915	1.02	280.543	20	3060	Pass
LTE Band 5	824.7-848.3	342.768	2.06	335.738	20	1682.388	Pass
LTE Band 66	1710.7-1779.3	330.37	1.02	254.683	20	3060	Pass
LTE Band 71	665.5-695.5	293.765	1.90	277.332	20	1357.62	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

5G NR

MPE-based Exemption §1.1307(b)(3)(i)(B)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
NR Band 25	1852.5-1912.5	321.366	1.08	251.189	20	3060	Pass
NR Band 41	2501.01-2685	1004.616	1.05	779.830	20	3060	Pass
NR Band 48	3555-3694.98	167.880	0.72	120.781	20	3060	Pass
NR Band 66	1712.5-1777.5	537.032	1.02	414.000	20	3060	Pass
NR Band 71	665.5-695.5	472.063	3.54	650.130	20	1357.62	Pass
NR Band 77(27O)	3455.01-3544.98	781.628	0.96	594.292	20	3060	Pass
NR Band 77(27Q)	3705-3975	767.361	0.96	583.445	20	3060	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Routine Evaluation (General Population)					
Operation Mode	Frequency Band (MHz)	Power Density (mW/cm ²)	Test Distance (cm)	Limit (mW/cm ²)	Test Result
WLAN 2.4 GHz_BF	2412-2462	0.102	20	1	Pass
WLAN 5 GHz_BF	5180-5320 5500-5825	0.175	20	1	Pass
WLAN 6 GHz_CDD	5955-7115	0.034	20	1	Pass
WLAN 6 GHz_BF	5955-7115	0.028	20	1	Pass
LTE Band 12	699.7-715.3	0.16	20	0.466	Pass

For Multiple RF Sources (Simultaneous Operations Condition 1)

Multiple RF Sources (Simultaneous Operations)							
Exemption Evaluation					Sum of Ratios	Limit of Ratios	Test Result
Operation Mode	Frequency Band (MHz)	Maximum ERP (mW)	Limit Threshold (mW)	Ratio			
Bluetooth	2402-2480	128.234	3060	0.042			
Zigbee	2405-2480	74.131	3060	0.024	0.72	1	Pass
Routine Evaluation (General Population)							
Operation Mode	Operation Mode	Power Density (mW/cm²)	Limit (mW/cm²)	Ratio			
WLAN 2.4 GHz_BF	2412-2462	0.102	1	0.102			
WLAN 5 GHz_BF	5180-5320 5500-5825	0.175	1	0.175			
WLAN 6 GHz_CDD	5955-7115	0.034	1	0.034			
LTE Band 12	699.7-715.3	0.16	0.466	0.343			

For Multiple RF Sources (Simultaneous Operations Condition 2)

Multiple RF Sources (Simultaneous Operations)							
Exemption Evaluation					Sum of Ratios	Limit of Ratios	Test Result
Operation Mode	Frequency Band (MHz)	Maximum ERP (mW)	Limit Threshold (mW)	Ratio			
Bluetooth	2402-2480	128.234	3060	0.042			
Zigbee	2405-2480	74.131	3060	0.024			
NR Band 71	665.5-695.5	650.130	1357.62	0.479			
Routine Evaluation (General Population)					0.856	1	Pass
Operation Mode	Operation Mode	Power Density (mW/cm ²)	Limit (mW/cm ²)	Ratio			
WLAN 2.4 GHz_BF	2412-2462	0.102	1	0.102			
WLAN 5 GHz_BF	5180-5320 5500-5825	0.175	1	0.175			
WLAN 6 GHz_CDD	5955-7115	0.034	1	0.034			

6 Conclusion

Source-base time average power is below Exemption Criteria and/or Routine Evaluation MPE thresholds, therefore the device is compliant FCC RF exposure requirement.

7 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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