

RF Exposure Report

Report No.: SABDTL-WTW-P21060469-1

FCC ID: VUI-TANG

Test Model: 84945296C

Received Date: Feb. 15, 2022

Test Date: Mar. 15 ~ Apr. 13, 2022

Issued Date: May 18, 2022

Applicant: PEGATRON CORPORATION

Address: 5F, NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 112, TAIWAN

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan

**FCC Registration /
Designation Number:** 788550 / TW0003



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits for Maximum Permissible Exposure (MPE).....	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
3 Calculation Result of Maximum Conducted Power	6

Release Control Record

Issue No.	Description	Date Issued
SABDTL-WTW-P21060469-1	Original release	May 18, 2022

1 Certificate of Conformity

Product: Telematics & Network Gateway (TANG)

Brand: 

Test Model: 84945296C

Sample Status: DV


Applicant: PEGATRON CORPORATION


Test Date: Mar. 15 ~ Apr. 13, 2022

Standards: FCC Part 2 (Section 2.1091)

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 RF characteristics under the conditions specified in this report.

Prepared by : , **Date:** May 18, 2022
Pettie Chen / Senior Specialist

Approved by : , **Date:** May 18, 2022
Jeremy Lin / Project Engineer

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				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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**.

3 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Average Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN					
2412-2462	16.29	4.71	20	0.025	1
5180-5240	14.49	4.81	20	0.017	1
5260-5320	14.21	5.71	20	0.020	1
5500-5720	14.65	5.41	20	0.020	1
5745-5825	14.07	4.51	20	0.014	1

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

For WWAN module (Brand: Quectel, Model: AG521R-NA, FCC ID: VUI-DAV001)

Band	ERP Power (dBm)	EIRP Power (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
Module 1					
LTE B2	-	23.24	20	0.042	1.00
LTE B4	-	23.18	20	0.041	1.00
LTE B5	22.2	24.35	20	0.054	0.54
LTE B7	-	23.28	20	0.042	1.00
LTE B12	20.41	22.56	20	0.036	0.46
LTE B13	20.25	22.40	20	0.035	0.52
LTE B14	21.21	23.36	20	0.043	0.53
LTE B25	-	23.28	20	0.042	1.00
LTE B26 (Part 22)	22.31	24.46	20	0.056	0.54
LTE B26 (Part 90)	22.38	24.53	20	0.056	0.54
LTE B66	-	23.23	20	0.042	1.00
LTE B71	20.91	23.06	20	0.040	0.44

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- EIRP = ERP + 2.15dB

Band	ERP Power (dBm)	EIRP Power (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
Module 2					
LTE B2	-	23.23	20	0.042	1.00
LTE B4	-	23.44	20	0.044	1.00
LTE B5	22.33	24.48	20	0.056	0.54
LTE B7	-	23.20	20	0.042	1.00
LTE B12	20.29	22.44	20	0.035	0.46
LTE B13	20.35	22.50	20	0.035	0.52
LTE B14	21.48	23.63	20	0.046	0.53
LTE B25	-	23.17	20	0.041	1.00
LTE B26 (Part 22)	22.64	24.79	20	0.060	0.54
LTE B26 (Part 90)	22.41	24.56	20	0.057	0.54
LTE B66	-	23.27	20	0.042	1.00
LTE B71	20.87	23.02	20	0.040	0.44
Module 3					
LTE B2	-	23.22	20	0.042	1.00
LTE B4	-	23.29	20	0.042	1.00
LTE B5	22.10	24.25	20	0.053	0.54
LTE B7	-	23.18	20	0.041	1.00
LTE B12	20.38	22.53	20	0.036	0.46
LTE B13	19.62	21.77	20	0.030	0.52
LTE B14	20.90	23.05	20	0.040	0.53
LTE B25	-	23.21	20	0.042	1.00
LTE B26 (Part 22)	22.00	24.15	20	0.052	0.54
LTE B26 (Part 90)	21.72	23.87	20	0.048	0.54
LTE B66	-	23.44	20	0.044	1.00
LTE B71	20.67	22.82	20	0.038	0.44

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. EIRP = ERP + 2.15dB

Note:

1. Directional gain:

2412-2462MHz: Directional Gain = 1.7dBi + 10log(2) = 4.71dBi

5180-5240MHz: Directional Gain = 1.8dBi + 10log(2) = 4.81dBi

5260-5320MHz: Directional Gain = 2.7dBi + 10log(2) = 5.71dBi

5500-5720MHz: Directional Gain = 2.4dBi + 10log(2) = 5.41dBi

5745-5825MHz: Directional Gain = 1.5dBi + 10log(2) = 4.51dBi

2. 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.

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

The simultaneous operation mode was determined by client.

WLAN 2.4GHz + WWAN (module 1) + WWAN (module 2) + WWAN (module 3)

= 0.025/1 + 0.056/0.54 + 0.060/0.54 + 0.053/0.54 = 0.3380

WLAN 5GHz + WWAN (module 1) + WWAN (module 2) + WWAN (module 3)

= 0.020/1 + 0.056/0.54 + 0.060/0.54 + 0.056/0.54 = 0.3385

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

---END---