

# RF EXPOSURE REPORT

## CERTIFICATE OF CONFORMITY

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

**Report No.:** MFBCIC-WTW-P24080238 R2

**FCC ID:** U8G-P1AX203

**Product:** Peplink Pepwave Wireless Product

**Brand:**  **PEPWAVE**

**Model No.:** MAX BR2 Pro

**Series Model:** MAX-BR2-PRO-5GK-T-PRM

**Received Date:** 2024/8/13

**Test Date:** 2024/12/11

**Issued Date:** 2025/1/14

**Applicant:** PISMO LABS TECHNOLOGY LIMITED

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**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

**Approved by:**



, **Date:**

2025/1/14

Jeremy Lin / Project Engineer

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Prepared by : Pettie Chen / Senior Specialist

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## Release Control Record

Issue No.	Description	Date Issued
MFBCIC-WTW-P24080238	Original release.	2025/1/2
MFBCIC-WTW-P24080238 R1	Revise all test results	2025/1/10
MFBCIC-WTW-P24080238 R2	Revise 5GNR Band 48 & LTE Band 48 gain & Maximum ERP	2025/1/14

## 1 Certificate

**Product:** Peplink Pepwave Wireless Product

**Brand:**  **PEPWAVE**

**Test Model:** MAX BR2 Pro

**Series Model:** MAX-BR2-PRO-5GK-T-PRM

**Sample Status:** Prototype

**Applicant:** PISMO LABS TECHNOLOGY LIMITED

**Test Date:** 2024/12/11

**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 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 <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
300-1,500	...	...	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 <sup>2</sup> )	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 <sup>2</sup> )	<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.

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

### 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<sub>k</sub> 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<sub>th</sub>*, 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<sub>th,i</sub>* = the exemption threshold power (*P<sub>th</sub>*) according to [paragraph \(b\)\(3\)\(i\)\(B\)](#) of this section for fixed, mobile, or portable RF source *i*.

*ERP<sub>th,j</sub>* = 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<sub>k</sub>* = 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<sub>i</sub>* = 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<sub>j</sub>* = the ERP of fixed, mobile, or portable RF source *j*.

*Evaluated<sub>k</sub>* = 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.

### 3 Test Results

Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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#### 5GNR

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
5GNR Band 2	1852.5-1907.5	281.838	2.12	279.898	20	3060	Pass
5GNR Band 5	826.5-846.5	281.838	1.62	249.459	20	1686.06	Pass
5GNR Band 7	2502.5-2567.5	281.838	3.12	352.371	20	3060	Pass
5GNR Band 12	701.5-713.5	251.189	0.65	177.828	20	1431.06	Pass
5GNR Band 13	779.5-784.5	251.189	0.11	157.037	20	1590.18	Pass
5GNR Band 14	790.5-795.5	251.189	0.64	177.419	20	1612.62	Pass
5GNR Band 25	1852.5-1912.5	281.838	2.12	279.898	20	3060	Pass
5GNR Band 26_Part 22	826.5-846.5	251.189	1.62	222.331	20	1686.06	Pass
5GNR Band 26_Part 90	816.5-821.5	251.189	1.62	222.331	20	1665.66	Pass
5GNR Band 30	2307.5-2312.5	199.526	-3.02	60.674	20	3060	Pass
5GNR Band 38	2575-2615	316.228	1.5	272.27	20	3060	Pass
5GNR Band 41	2501.01-2685	794.328	1.5	683.911	20	3060	Pass
5GNR Band 48	3555-3694.98	177.828	-5.02	34.119	20	3060	Pass
5GNR Band 66	1712.5-1777.5	281.838	1.84	262.422	20	3060	Pass
5GNR Band 71	665.5-695.5	281.838	1.49	242.103	20	1357.62	Pass
5GNR Band 77_Part 27O	3705-3975	794.328	-1.5	342.768	20	3060	Pass
5GNR Band 77_Part 27Q	3455.01-3544.98	794.328	-5.02	152.405	20	3060	Pass
5GNR Band 78_Part 27Q	3455.01-3544.98	794.328	-5.02	152.405	20	3060	Pass

#### Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The WWAN average power refer to WWAN module (Brand: Telit, Model: FN990A40-HP, FCC ID: RI7FN990A40HP) certified report.
3. After technical evaluation, the verification data results of LTE B43 are covered by LTE B48. After technical evaluation, the verification data results of 5G NR n78 (Part 27O, 3700 ~ 3800MHz) are covered by 5G NR n77.

## 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	251.189	2.12	249.46	20	3060	Pass
LTE_Band 4	1710.7-1754.3	251.189	1.84	233.884	20	3060	Pass
LTE_Band 5	824.7-848.3	251.189	1.62	222.331	20	1682.388	Pass
LTE_Band 7	2502.5-2567.5	251.189	3.12	314.051	20	3060	Pass
LTE_Band 12	699.7-715.3	251.189	0.65	177.828	20	1427.388	Pass
LTE_Band 13	779.5-784.5	251.189	0.11	157.037	20	1590.18	Pass
LTE_Band 14	790.5-795.5	251.189	0.64	177.419	20	1612.62	Pass
LTE_Band 17	706.5-713.5	251.189	0.32	164.816	20	1441.26	Pass
LTE_Band 25	1850.7-1914.3	251.189	2.12	249.46	20	3060	Pass
LTE_Band 26_Part 22	824.7-848.3	251.189	1.62	222.331	20	1682.388	Pass
LTE_Band 26_Part 90	814.7-823.3	251.189	1.62	222.331	20	1661.988	Pass
LTE_Band 30	2307.5-2312.5	199.526	-3.02	60.674	20	3060	Pass
LTE_Band 38	2572.5-2617.5	251.189	1.5	216.272	20	3060	Pass
LTE_Band 41	2502.5-2687.5	446.684	1.5	384.592	20	3060	Pass
LTE_Band 42_Part 27Q	3452.5-3547.5	177.828	-5.02	34.119	20	3060	Pass
LTE_Band 42_Part 96	3552.5-3597.5	177.828	-5.02	34.119	20	3060	Pass
LTE_Band 48	3552.5-3697.5	177.828	-5.02	34.119	20	3060	Pass
LTE_Band 66	1710.7-1779.3	251.189	1.84	233.884	20	3060	Pass
LTE_Band 71	1710.7-1779.3	251.189	1.49	215.775	20	1357.62	Pass

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The WWAN average power refer to WWAN module (Brand: Telit, Model: FN990A40-HP, FCC ID: RI7FN990A40HP) certified report.
3. After technical evaluation, the verification data results of LTE B43 are covered by LTE B48. After technical evaluation, the verification data results of 5G NR n78 (Part 27O, 3700 ~ 3800MHz) are covered by 5G NR n77.

## WCDMA

### 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
WCDMA II	1852.4-1907.6	281.838	2.12	279.898	20	3060	Pass
WCDMA IV	1712.4-1752.6	281.838	1.84	262.422	20	3060	Pass
WCDMA V	826.4-846.6	281.838	1.62	249.459	20	1685.856	Pass

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The WWAN average power refer to WWAN module (Brand: Telit, Model: FN990A40-HP, FCC ID: RI7FN990A40HP) certified report.

## Co-location

### For Single RF Source

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	2412-2462	319.154	2.44	341.193	20	3060	Pass
WLAN 5 GHz	5180-5240 5745-5825	141.906	4.73	257.04	20	3060	Pass
5GNR Band 41	2501.01-2685	794.328	1.5	683.911	20	3060	Pass

Note:

1. After evaluation, the WiFi/WWAN antennas was used with the highest gain as the representative antenna for testing.
2. Regarding the evaluation of the maximum exposure, the above operation mode is a representative mode selected after evaluation and based on the Maximum ratio.

### For Multiple RF Sources (Simultaneous Operations)

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			
WLAN 2.4 GHz	2412-2462	341.193	3060	0.112	0.42	1	Pass
WLAN 5 GHz	5180-5240 5745-5825	257.04	3060	0.084			
5GNR Band 41	2501.01-2685	683.911	3060	0.224			

Note:

1. After evaluation, the WiFi/WWAN antennas was used with the highest gain as the representative antenna for testing.
2. Regarding the evaluation of the maximum exposure, the above operation mode is a representative mode selected after evaluation and based on the Maximum ratio.

## 4 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.

## 5 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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