



## SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

EMC-TRF-03 Rev 1.1

Report No.: GZCR241100131303

Page: 1 of 9

FCC ID: OWWPS2385B14

# RF EXPOSURE EVALUATION REPORT

Application No.:	GZCR2411001313AT
Applicant:	Shenzhen Huaptec Co., Ltd
Address of Applicant:	3FL, E BLDG, Sogood Science Park, SanWei Community, Hangcheng Street, Bao'an, District, Shenzhen, China
Manufacturer:	Shenzhen Huaptec Co., Ltd
Address of Manufacturer:	3FL, E BLDG, Sogood Science Park, SanWei Community, Hangcheng Street, Bao'an, District, Shenzhen, China
Factory:	Shenzhen Huaptec Co., Ltd
Address of Factory:	3FL, E BLDG, Sogood Science Park, SanWei Community, Hangcheng Street, Bao'an, District, Shenzhen, China
Product Name:	Repeater
Model No.:	PS23-B14-IoT
Trade Mark:	HiBoost
Standard(s) :	47 CFR Part 2.1091 47 CFR Part 1.1310, Part 1.1307
Date of Receipt:	2024-11-15
Date of Evaluation:	2024-12-23
Date of Issue:	2024-12-24
Test Result:	Pass*

\* In the configuration tested, the EUT complied with the standards specified above.

Ricky Liu  
Manager



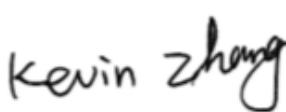
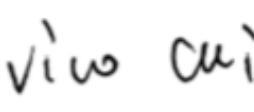
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Revision Record			
Version	Report No.	Date	Remark
01	GZCR241100131303	2024-12-24	Original

Authorized for issue by:			
	 _____ <b>Kevin Zhang/Project Engineer</b>		
	 _____ <b>Vico Cui/Reviewer</b>		

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## 2 Evaluation Summary

Item	Standard	Requirement	Method	Result
RF Exposure	47 CFR Part 2.1091 47 CFR Part 1.1310 47 CFR Part 1.1307	47 CFR Part 1.1310	47 CFR Part 1.1310	PASS

**Note:**

E.U.T./ EUT means Equipment Under Test

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

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## 4 General Information

### 4.1 Details of E.U.T.

Power Supply:	AC 100-240V, 50/60Hz by AC/DC adapter	
Model:	J482-1203000DI	
Input:	100-240V, 50/60Hz 1.5A	
Output:	12V--3.0A	
Cable:	AC mains (2m, unshielded)	
Operating Temperature:	-10 to +55 °C	
Operating Humidity:	5% to 95%	
Frequency Range:	FirstNet	Uplink: 788-798MHz Downlink: 758-768MHz
Support Technology:	LTE, NR	
Support Channel BW:	LTE	5MHz/10MHz
	5G NR	5MHz/10MHz
Interface:	Antenna Port	2 (N-F)
	Power Jack	1
Max. Output Power: (conducted)	Uplink	20dBm
	Downlink	23dBm
Max. Gain:	Uplink	80dB
	Downlink	85dB
Antenna Type:	External Dedicated Antenna	
Antenna Gain:	Donor antenna	7.5dBi
	Service antenna	6.5dBi
Firmware Version:	PS23_V1.0.1.1	
Bluetooth & WiFi:	Refer to Bluetooth FCC ID: 2AC7Z-ESP32WROVERB	
Remark:	The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

### 4.2 Evaluation Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,  
Guangdong, China 510663

Tel: +86 20 82155555

No tests were sub-contracted.



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#### 4.3 Facility

The facility is recognized, certified, or accredited by the following organizations:

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

#### 4.4 Deviation from Standards

None

#### 4.5 Abnormalities from Standard Conditions

None



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## 5 RF Exposure

### 5.1 Requirement

In accordance with 47 CFR FCC Part 2.1091, this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

According to 47 CFR FCC Part 1310, the criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in Part 1.1307(b).

**TABLE 1 TO §1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(i) Limits for Occupational/Controlled Exposure</b>				
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
<b>(ii) Limits for General Population/Uncontrolled Exposure</b>				
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

### 5.2 Method

According to IEEE C95.3:2002 section 5.5.1.1, the power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula:

$$S = \frac{PG}{4\pi d^2}$$

$S$  = power density (mW/cm<sup>2</sup>)  
 $P$  = the net power delivered to the antenna (mW)  
 $G$  = gain of the antenna in linear scale  
 $d$  = distance between observation point and center of the radiator (cm)

From the maximum EUT RF output power, as well as the gain of the used antenna, according to the RF power density limit stated in above table, the minimum distance between the antenna and human body will be calculated.

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**5.3 Conclusion**

Antenna Gain:

the service antenna gain is 6.5dBi and the donor antenna gain is 7.5dBi declared by the manufacturer.

Power delivered to the antenna:

The max. tune up tolerance power declared by the manufacturer.

RF exposure evaluation for Uplink and Downlink simultaneous emission

The cable length for donor antenna to booster is 15m as per the manufacturer request and The donor antenna and service antenna must maintain sufficient distance to ensure isolation, otherwise the EUT will be shut down due to oscillation. So the exposure evaluation only concerned the Uplink and Downlink single transmission in this report even if the product Uplink and Downlink simultaneous emission during operation.

**For PLMRS**

Band	Path	Antenna Gain (Numeric)	Max. tune up tolerance power (dBm)	Limit of Power Density(mW/cm <sup>2</sup> )	Power Density (mW/cm <sup>2</sup> )	Minimum distance (cm)
FirsNet	Downlink	5.623	24	0.5053	0.28101	20
	Uplink	5.623	21	0.5253	0.14084	20

Remark:  
For downlink, the limit is  $f/1500 = 758/1500 = 0.5053 \text{ mW/cm}^2$  for the stringent limit.  
For uplink, the limit is  $f/1500 = 788/1500 = 0.5253 \text{ mW/cm}^2$  for the stringent limit.

**So the permitted use distance away from EUT external antenna is larger than 20cm and the****For Bluetooth**

Band	Antenna Gain (Numeric)	Max. tune up tolerance power (dBm)	Power Density (mW/cm <sup>2</sup> )	Limit of Power Density (mW/cm <sup>2</sup> )	Result
2402-2480MHz	1.41	4.77	0.00084	1	Complies

Remark:  
Above detailed information of Bluetooth Module of the EUT please refer to FCC ID: 2AC7Z-ESP32WROVERB

**For Wi-Fi**

Band	Antenna Gain (Numeric)	Max. tune up tolerance power (dBm)	Power Density (mW/cm <sup>2</sup> )	Limit of Power Density (mW/cm <sup>2</sup> )	Result
2412-2462MHz	1.41	23.73	0.06621	1	Complies

Remark:  
Above detailed information of Bluetooth Module of the EUT please refer to FCC ID: 2AC7Z-ESP32WROVERB

The PLMRS, Bluetooth and 2.4GHz Wi-Fi function can be transmitted simultaneously, so the result is  $0.28101/0.5053+0.00084/1+0.06621/1=0.623175<1$  and SAR report is not required.

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## 6 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZCR2411001313AT.

--Report End--



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