

RF Exposure Evaluation Report

Report No.: RWAZ202300076B

Applicant: Shenzhen Shi Zhixinliankong Keji Youxian Gongsi

Address: Shenzhen Shi Longgangqu Pinghujiedao Hehuashequ Pingxin
Beilu 164hao 1hao lou 411 Shenzhen Guangdong China

Product Name: F5-433R

Product Model: F5

Multiple Models: N/A

Trade Mark: CoralBoxer

FCC ID: 2BEYE-F5

Standards: 47 CFR §1.1307

KDB 447498 D04 Interim General RF Exposure Guidance v01

Test Date: 2024-01-03

Test Result: Complied

Report Date: 2024-01-30

Reviewed by:

Abel Chen

Approved by:

Jacob Kong

Abel Chen
Project Engineer

Jacob Kong
Manager

Prepared by:

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen,
Guangdong, People's Republic of China



This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk “★”

Announcement

1. This test report shall not be reproduced in full or partial, without the written approval of World Alliance Testing and Certification (Shenzhen) Co., Ltd
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.
5. The information marked “#” is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

Revision History

Version No.	Issued Date	Description
00	2024-01-30	<i>Original</i>

Contents

1	General Information	4
1.1	Client Information	4
1.2	Product Description of EUT	4
1.3	Laboratory Location.....	4
2	RF Exposure Evaluation.....	5
2.1	Standard	5
2.2	Result.....	7

1 General Information

1.1 Client Information

Applicant:	Shenzhen Shixinxianlankong Keji Youxian Gongsi
Address:	Guangdong Shenzhen Shixinxianlankong Keji Youxian Gongsi 164hao1
Manufacturer:	Shenzhen Shixinxianlankong Keji Youxian Gongsi
Address:	Guangdong Shenzhen Shixinxianlankong Keji Youxian Gongsi 164hao1

1.2 Product Description of EUT

The EUT is a F5-433R that contains a 433.95MHz transmitter.

Sample Serial Number	1F-2 & 25-1 (assigned by WATC)
Sample Received Date	2023-12-15
Sample Status	Good Condition
Frequency Range	433.95MHz
Maximum E-field Strength:	78.93dBuV/m@3m
Modulation Technology	OOK
Power Supply	DC 3V from battery
Operating temperature [#]	-10 deg.C to +40 deg.C
Adapter Information	N/A
Modification	Sample No Modification by the test lab

1.3 Laboratory Location

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@wutc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

2 RF Exposure Evaluation

2.1 Standard

According to §1.1307(b)(3)(i), For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

- (A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);
- (B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

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

d = the separation distance (cm);

- (C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C)—Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3–1.34	1,920 R ² .
1.34–30	3,450 R ² /f ² .
30–300	3.83 R ² .
300–1,500	0.0128 R ² f.
1,500–100,000	19.2R ² .

According to §1.1307(b)(3)(ii), For multiple RF sources: Multiple RF sources are exempt if:

- (A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).
- (B) (B) in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

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

2.2 Result

Single RF source:

Option A:

Radio	Frequency (MHz)	Exemption limit (mW)	Maximum EIRP		Result Option A
			(dBm)	(mW)	
SRD	433.95	1	-16.27	0.024	exempt

Note: The Maximum E-field strength is 78.93dBuV/m@3m was used for evaluation

EIRP(dBm) = E(dBuV/m)-95.2 for distance=3meters

So maximum EIRP = 78.93-95.2=-16.27dBm

Multiple RF sources transmission simultaneously consider:

N/A

Result: Complied

---End of Report---