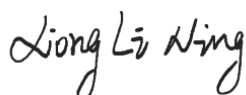


TEST REPORT

Applicant: EDGEAI LABS INC
Address: 185-115 9040 BLUNDELL ROAD RICHMOND BC
V6Y 1K3 CANADA
Equipment Type: Edge AI Gateway
Model Name: XR7
Brand Name: EdgeX
FCC ID: 2BNLK-XR7
Test Standard: 47 CFR Part 2.1091
KDB 447498 D04 v01
Sample Arrival Date: Apr. 02, 2024
Test Date: Apr. 29, 2024 - May 19, 2025
Date of Issue: Jun. 17, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xiong Lining**Checked by:** Xu Rui**Approved by:** Tolan Tu

(Testing Director)



Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jun. 17, 2025</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☒ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	EDGEAI LABS INC
Address	185-115 9040 BLUNDELL ROAD RICHMOND BC V6Y 1K3 CANADA

2.2 Manufacturer Information

Manufacturer	Shenzhen HashDog Technology Co., Ltd
Address	Room 319, Building No.8, Yungu Phase 2, Xili Street, Nanshan District Shenzhen, Guangdong Province, China

2.3 General Description for Equipment under Test (EUT)

EUT Name	Edge AI Gateway
Model Name Under Test	XR7
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	1.2
Software Version	1.1
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac, 802.11ax and 802.11be
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	WIFI, Bluetooth	
Frequency Range	802.11b/g	2412 ~ 2462 MHz
	802.11n(HT20/HT40)	2412 ~ 2462 MHz
	802.11ax(HE20/HE40)	2412 ~ 2462 MHz
	802.11be(EHT20/EHT40)	2412 ~ 2462 MHz
	802.11a	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
	802.11n(HT20/HT40)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
	802.11ac (VHT20/VHT40/VHT80)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
	802.11ax (HE20/HE40/HE80)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
	802.11be (EHT20/EHT40/EHT80)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
	802.11ax(HE160)/ 802.11be(EHT160)	5150 ~ 5250 MHz
		5470 ~ 5725 MHz
	802.11ax (HE20/HE40/HE80/HE160)	5925 ~ 6425 MHz
		6425 ~ 6525 MHz
		6525 ~ 6875 MHz
		6875 ~ 7125 MHz
	802.11be (EHT20/EHT40/EHT80/ EHT160)	5925 ~ 6425 MHz
		6425 ~ 6525 MHz
		6525 ~ 6875 MHz
		6875 ~ 7125 MHz
	802.11be(EHT320)	5925 ~ 6425 MHz

		6525 ~ 6875 MHz
		6875 ~ 7125 MHz
	Bluetooth	2402 ~ 2480 MHz
Antenna Type	WIFI	PCB Antenna
	Bluetooth	PCB Antenna
Exposure Category	General Population/Uncontrolled Exposure	
Product Type	Mobile Device	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01

3.2 Limit Standards

No.	Identity	Document Title
1	47 CFR Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices

4 DEVICE CATEGORY AND LEVELS LIMITS

Mobile Devices:

CFR Title 47 §2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

FCC KDB 447498 D04 General RF Exposure Guidance v01 Limit

Evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i. e., without consideration of ERP only 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.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

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

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

For 6000MHz to 10000Mhz

Frequencies above 300 kHz but at distances $R > \lambda/2\pi$, R is the antenna-person separation distance.
 λ =wavelength of transmitted signal.

Can calculate from the frequency of operation using $v=f*\lambda$

v =speed of light= $3*10^8$ m/s

f =frequency(Hz)

Primarily an MPE-based exclusion but also SAR-based where $\lambda/2\pi$ is $< 20\text{cm}$.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES
SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency		Minimum Distance		Threshold ERP
f_L MHz	f_H MHz	$\lambda_L / 2\pi$	$\lambda_H / 2\pi$	W
0.3	1.34	159 m	35.6 m	$1,920 R^2$
1.34	30	35.6 m	1.6 m	$3,450 R^2/f^2$
30	300	1.6 m	159 mm	$3.83 R^2$
300	1,500	159 mm	31.8 mm	$0.0128 R^2 f$
1,500	100,000	31.8 mm	0.5 mm	$19.2 R^2$

Subscripts L and H are low and high; λ is wavelength.
 From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.

5 ASSESSMENT RESULT

5.1 Output Power

Mode	Bluetooth	2.4G WIFI- Main Antenna	2.4G WIFI- Aux. Antenna	2.4G WIFI- MIMO	/	/
Conducted Power (dBm)	6.66	12.98	12.84	11.97	/	/
Antenna Gain (dBi)	2.18	3.66	4.89	4.89	/	/
EIRP (dBm)	8.84	16.64	17.73	16.86	/	/
Mode	5G WIFI- Main Antenna	5G WIFI- Aux. Antenna	5G WIFI- MIMO	6G WIFI- Main Antenna	6G WIFI- Aux. Antenna	6G WIFI- MIMO
Conducted Power (dBm)	12.86	12.63	12.55	10.98	7.95	7.74
Antenna Gain (dBi)	3.99	4.86	4.86	3.14	5.95	5.95
EIRP (dBm)	16.85	17.49	17.41	14.12	13.90	13.69

Note: This report listed the worst case conducted power value, please refer to BL-SZ2440360-601, BL-SZ2510665-601, BL-SZ2510665-602, BL-SZ2510665-603 report for more details.

5.2 Tune-up power

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
Bluetooth	[5.00, 7.00]	[7.18, 9.18]	[5.03, 7.03]
2.4G WIFI-Main Antenna	[11.00, 13.00]	[14.66, 16.66]	[12.51, 14.51]
2.4G WIFI-Aux. Antenna	[11.00, 13.00]	[15.89, 17.89]	[13.74, 15.74]
2.4G WIFI-MIMO	[10.00, 12.00]	[14.89, 16.89]	[12.74, 14.74]
5G WIFI-Main Antenna	[11.00, 13.00]	[14.99, 16.99]	[12.84, 14.84]
5G WIFI-Aux. Antenna	[11.00, 13.00]	[15.86, 17.86]	[13.71, 15.71]
5G WIFI-MIMO	[11.00, 13.00]	[15.86, 17.86]	[13.71, 15.71]
6G WIFI-Main Antenna	[9.00, 11.00]	[12.14, 14.14]	[9.99, 11.99]
6G WIFI-Aux. Antenna	[6.00, 8.00]	[11.95, 13.95]	[9.80, 11.80]
6G WIFI-MIMO	[6.00, 8.00]	[11.95, 13.95]	[9.80, 11.80]

Note1: ERP= EIRP -2.15dB.

Note2: According KDB 447498 D04, used the greater of maximum conducted power and ERP to compare with the threshold value Pth.

5.3 RF Exposure Evaluation Result

For 300MHz to 6000MHz

Evolution Mode	Frequency (MHz)	Maximum Power (dBm)	Maximum Power (mw)	Distance (mm)	Threshold Power (mW)	Power / Limit	Verdict
Bluetooth	2402	7.03	5.05	200	3060.00	0.002	Pass
2.4G WIFI-Main Antenna	2412	14.51	28.25	200	3060.00	0.009	Pass
2.4G WIFI-Aux. Antenna	2412	15.74	37.50	200	3060.00	0.012	Pass
2.4G WIFI-MIMO	2412	14.74	29.79	200	3060.00	0.010	Pass
5G WIFI-Main Antenna	5470	14.84	30.48	200	3060.00	0.010	Pass
5G WIFI-Aux. Antenna	5470	15.71	37.24	200	3060.00	0.012	Pass
5G WIFI-MIMO	5470	15.71	37.24	200	3060.00	0.012	Pass

For 6000MHz to 10000MHz

Evolution Mode	Distance (mm)	$\lambda / 2 \pi$ (m)	$\lambda / 2 \pi$ (mm)	$R > \lambda / 2 \pi$
6G WIFI-Main Antenna	200	0.007	7.000	Yes
6G WIFI-Aux. Antenna	200	0.007	7.000	Yes
6G WIFI-MIMO	200	0.007	7.000	Yes

Evolution Mode	Frequency (MHz)	Maximum Power (dBm)	Maximum Power (W)	Distance (mm)	Threshold Power (W)	Power / Limit	Verdict
6G WIFI-Main Antenna	7125	11.99	0.016	200	76.800	0.0002	Pass
6G WIFI-Aux. Antenna	7125	11.80	0.015	200	76.800	0.0002	Pass
6G WIFI-MIMO	7125	11.80	0.015	200	76.800	0.0002	Pass

5.4 Collocated Power Calculation

Evolution Mode	Frequency (MHz)	Power / Limit	$\Sigma(\text{Power / Limit})$ of Bluetooth + 2.4G WIFI + 5G WIFI	Verdict
Bluetooth	2402	0.002	0.026	Pass
2.4G WIFI	2412	0.012		
5G WIFI	5470	0.012		
Evolution Mode	Frequency (MHz)	Power / Limit	$\Sigma(\text{Power / Limit})$ of Bluetooth + 2.4G WIFI + 6G WIFI	Verdict
Bluetooth	2402	0.002	0.0142	Pass
2.4G WIFI	2412	0.012		
6G WIFI	7125	0.0002		

Note:

1. Either SAR-based or MPE-based exemption may be considered for test exemption for mobile device exposure conditions, therefore, the contributions from each exemption in conjunction with the measured SAR shall be used to determine exemption for simultaneous transmission according to Formula in FCC KDB 447498 D04.

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

- a* number of fixed, mobile, or portable RF sources claiming exemption using the § 1.1307(b)(3)(i)(B) formula for P_{th} , including existing exempt transmitters and those being added.
- b* number of fixed, mobile, or portable RF sources claiming exemption using the applicable § 1.1307(b)(3)(i)(C) Table 1 formula for Threshold ERP, 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.

2. $\Sigma(\text{Power / Limit})$: This is a summation of [(power for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding Power limit)], for Bluetooth + 2.4G WIFI + 5G WIFI or Bluetooth + 2.4G WIFI + 6G WIFI.
3. Both of the 2.4GHz/5GHz/6GHz can transmit simultaneously, the formula of calculated the Power is $CP1 / LP1 + CP2 / LP2 + \dots \text{etc.} < 1$
 CP = Calculation power
 LP = Limit of power
4. The worst-case situation is 0.026, which is less than “1”. This confirmed that the device comply with FCC KDB 447498 D04 Power limit.
5. The DUT work frequency range used is 2402 MHz ~ 2480 MHz, 2412 MHz ~ 2462 MHz, 5470 MHz ~ 5725 MHz and 6875 MHz ~ 7125 MHz the result close to the limit by the above formula, so we select worst case power to calculate the exclusion power threshold.

5.5 Conclusion

This EUT is deemed to comply with the reference level limits, therefore the basic restrictions are compliant with human exposure limits.

Statement

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--END OF REPORT--