

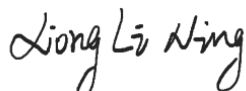
# TEST REPORT

**Applicant:** Arashi Vision Inc.  
**Address:** 11th Floor, Building 2, Jinlitong Financial Center,  
Bao'an District, Shenzhen, Guangdong, China  
**Equipment Type:** Insta360 Connect  
**Model Name:** CINSAABA  
**Brand Name:** Insta360  
**FCC ID:** 2AWWH-CINSAABA  
**Test Standard:** 47 CFR Part 2.1091  
KDB 447498 D04 v01  
**Sample Arrival Date:** Aug. 01, 2024  
**Test Date:** Aug. 17, 2024 - Aug. 24, 2024  
**Date of Issue:** Nov. 06, 2024

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Xiong Lining



**Checked by:** Xu Rui



**Approved by:** Tolan Tu  
(Testing Director)



<b>Revision History</b>		
Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Nov. 06, 2024</u>	<u>Initial Issue</u>

## TABLE OF CONTENTS

1	GENERAL INFORMATION .....	3
1.1	Test Laboratory .....	3
1.2	Test Location .....	3
2	PRODUCT INFORMATION .....	4
2.1	Applicant Information .....	4
2.2	Manufacturer Information .....	4
2.3	General Description for Equipment under Test (EUT) .....	4
2.4	Technical Information .....	5
3	SUMMARY OF TEST RESULT .....	6
3.1	Test Standards .....	6
3.2	Limit Standards .....	6
4	DEVICE CATEGORY AND LEVELS LIMITS .....	7
5	ASSESSMENT RESULT .....	9
5.1	Output Power .....	9
5.2	Tune-up power .....	10
5.3	RF Exposure Evaluation Result .....	11
5.4	Collocated Power Calculation .....	12
5.5	Conclusion .....	12

# 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	<input type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input checked="" type="checkbox"/> 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	Arashi Vision Inc.
Address	11th Floor, Building 2, Jinlitong Financial Center, Bao'an District, Shenzhen, Guangdong, China

### 2.2 Manufacturer Information

Manufacturer	Arashi Vision Inc.
Address	11th Floor, Building 2, Jinlitong Financial Center, Bao'an District, Shenzhen, Guangdong, China

### 2.3 General Description for Equipment under Test (EUT)

EUT Name	Insta360 Connect
Model Name Under Test	CINSAABA
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V08
Software Version	20240729
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

## 2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac and 802.11ax
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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
	802.11a	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	
Bluetooth	2402 ~ 2480 MHz	
Antenna Type	WIFI	FPC Antenna
	Bluetooth	FPC 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<sub>20cm</sub> 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



## 5 ASSESSMENT RESULT

### 5.1 Output Power

Mode	Bluetooth	2.4G WIFI- Antenna 0	2.4G WIFI- Antenna 1	2.4G WIFI- MIMO		
Conducted Power (dBm)	16.42	15.79	15.91	18.78		
Antenna Gain (dBi)	3.44	3.44	3.87	3.87		
EIRP (dBm)	19.86	19.23	19.78	22.65		
Mode	5.2G WIFI- Antenna 0	5.2G WIFI- Antenna 1	5.2G WIFI- MIMO	5.3G WIFI- Antenna 0	5.3G WIFI- Antenna 1	5.3G WIFI- MIMO
Conducted Power (dBm)	15.03	15.53	18.30	16.91	17.65	20.31
Antenna Gain (dBi)	3.78	4.54	4.54	3.78	4.54	4.54
EIRP (dBm)	18.81	20.07	22.84	20.69	22.19	24.85
Mode	5.6G WIFI- Antenna 0	5.6G WIFI- Antenna 1	5.6G WIFI- MIMO	5.8G WIFI- Antenna 0	5.8G WIFI- Antenna 1	5.8G WIFI- MIMO
Conducted Power (dBm)	16.65	17.28	19.99	16.31	16.77	19.56
Antenna Gain (dBi)	3.57	4.67	4.67	3.68	4.52	4.52
EIRP (dBm)	20.22	21.95	24.66	19.99	21.29	24.08
Note: This report listed the maximal case power value, please refer to No. BL-SZ2480124-601, BL-SZ2480124-602, BL-SZ2480124-603, BL-SZ2480124-604 report for more details.						

## 5.2 Tune-up power

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
Bluetooth	[14.50, 16.50]	[17.94, 19.94]	[15.79, 17.79]
2.4G WIFI-Antenna 0	[14.00, 16.00]	[17.44, 19.44]	[15.29, 17.29]
2.4G WIFI-Antenna 1	[14.00, 16.00]	[17.87, 19.87]	[15.72, 17.72]
2.4G WIFI-MIMO	[17.00, 19.00]	[20.87, 22.87]	[18.72, 20.72]
5.2G WIFI-Antenna 0	[13.50, 15.50]	[17.28, 19.28]	[15.13, 17.13]
5.2G WIFI-Antenna 1	[14.00, 16.00]	[18.54, 20.54]	[16.39, 18.39]
5.2G WIFI-MIMO	[16.50, 18.50]	[21.04, 23.04]	[18.89, 20.89]
5.3G WIFI-Antenna 0	[15.00, 17.00]	[18.78, 20.78]	[16.63, 18.63]
5.3G WIFI-Antenna 1	[16.00, 18.00]	[20.54, 22.54]	[18.39, 20.39]
5.3G WIFI-MIMO	[18.50, 20.50]	[23.04, 25.04]	[20.89, 22.89]
5.6G WIFI-Antenna 0	[15.00, 17.00]	[18.57, 20.57]	[16.42, 18.42]
5.6G WIFI-Antenna 1	[15.50, 17.50]	[20.17, 22.17]	[18.02, 20.02]
5.6G WIFI-MIMO	[18.00, 20.00]	[22.67, 24.67]	[20.52, 22.52]
5.8G WIFI-Antenna 0	[14.50, 16.50]	[18.18, 20.18]	[16.03, 18.03]
5.8G WIFI-Antenna 1	[15.00, 17.00]	[19.52, 21.52]	[17.37, 19.37]
5.8G WIFI-MIMO	[18.00, 20.00]	[22.52, 24.52]	[20.37, 22.37]

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

Evolution mode	Frequency (MHz)	Maximum power (dBm)	Maximum power (mw)	Distance (mm)	Threshold Power (mW)	Power / Limit	Verdict
Bluetooth	2402	17.79	60.12	200	3060.00	0.020	Pass
2.4G WIFI-Antenna 0	2412	17.29	53.58	200	3060.00	0.018	Pass
2.4G WIFI-Antenna 1	2412	17.72	59.16	200	3060.00	0.019	Pass
2.4G WIFI-MIMO	2412	20.72	118.03	200	3060.00	0.039	Pass
5.2G WIFI-Antenna 0	5150	17.13	51.64	200	3060.00	0.017	Pass
5.2G WIFI-Antenna 1	5150	18.39	69.02	200	3060.00	0.023	Pass
5.2G WIFI-MIMO	5150	20.89	122.74	200	3060.00	0.040	Pass
5.3G WIFI-Antenna 0	5250	18.63	72.95	200	3060.00	0.024	Pass
5.3G WIFI-Antenna 1	5250	20.39	109.40	200	3060.00	0.036	Pass
5.3G WIFI-MIMO	5250	22.89	194.54	200	3060.00	0.064	Pass
5.6G WIFI-Antenna 0	5470	18.42	69.50	200	3060.00	0.023	Pass
5.6G WIFI-Antenna 1	5470	20.02	100.46	200	3060.00	0.033	Pass
5.6G WIFI-MIMO	5470	22.52	178.65	200	3060.00	0.058	Pass
5.8G WIFI-Antenna 0	5725	18.03	63.53	200	3060.00	0.021	Pass
5.8G WIFI-Antenna 1	5725	19.37	86.50	200	3060.00	0.028	Pass
5.8G WIFI-MIMO	5725	22.37	172.58	200	3060.00	0.056	Pass

## 5.4 Collocated Power Calculation

Evolution mode	Frequency (MHz)	Power /Limit	$\Sigma(\text{Power} / \text{Limit})$ of Bluetooth + 2.4G WIFI-Antenna 1	Verdict
Bluetooth	2402	0.020	0.039	Pass
2.4G WIFI-Antenna 1	2412	0.019		
Evolution mode	Frequency (MHz)	Power /Limit	$\Sigma(\text{Power} / \text{Limit})$ of 2.4G WIFI-MIMO + 5.3G WIFI-MIMO	Verdict
2.4G WIFI-MIMO	2412	0.039	<b>0.103</b>	Pass
5.3G WIFI-MIMO	5250	0.064		
Evolution mode	Frequency (MHz)	Power /Limit	$\Sigma(\text{Power} / \text{Limit})$ of Bluetooth + 5.3G WIFI-MIMO	Verdict
Bluetooth	2402	0.020	0.084	Pass
5.3G WIFI-MIMO	5250	0.064		

### Note:

- $\Sigma(\text{Power} / \text{Limit})$ : This is a summation of [(power for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding Power limit)], for 2.4G WIFI-MIMO + 5.3G WIFI-MIMO.
- Both of the 2.4GHz/5GHz 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
- The worst-case situation is 0.103, which is less than "1". This confirmed that the device comply with FCC KDB 447498 D04 Power limit.
- The DUT work frequency range used is 2412 MHz ~ 2462 MHz and 5250 MHz ~ 5350 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--