RF Test Report

Applicant:	Shanghai RetailEye Intelligence Co., Ltd
Address:	Room 1602, No. 200Wending Road, Xuhui District, Shanghai, China
Product:	Vertical Cooler Camera
Model No.:	REC-PH550I-W, REC-PH550I-B, REC-AI550I-W
Brand Name:	RETAIL EYE
FCC ID:	2BD9S-REC
Standards:	47 CFR Part 2.1091 FCC KDB 447498 D01 v06
Report No.:	PD20230232RF02
Issue Date:	2024/04/11
Test Result:	PASS *

* **The above equipment has been tested and compliance with the requirement of the relative standards by Hefei Panwin Technology Co., Ltd.**

Reviewed By: Jerry Zhang **Approved By:** Alec Yang

Hefei Panwin Technology Co., Ltd.

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Revision History

Report No.	Version	Description	Issue Date	Note
PD20230232RF02	1	Initial Report	2024/04/11	Valid

Remark:

• We, Hefei Panwin Technology Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Hefei Panwin Technology Co., Ltd., the test report shall not be reproduced except in full.

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1 Test Laboratory

1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with "Δ" are subcontracted projects.

1.2 Testing Laboratory

Company Name	Hefei Panwin Technology Co., Ltd.
Address	Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China
Telephone	+86-0551-63811775
Post Code	230031

2 General Description of Equipment under Test

2.1 Details of Application

Applicant	Shanghai RetailEye Intelligence Co., Ltd
Applicant Address	Room 1602, No. 200Wending Road, Xuhui District, Shanghai, China
Manufacturer	Shanghai RetailEye Intelligence Co., Ltd
Manufacturer Address	Room 1602, No. 200Wending Road, Xuhui District, Shanghai, China
Factory	FOOFEE intelligent manufacturing Technology (dongguan) Co., Ltd.
Factory Address	Room 401, Building 10, No.1 Pushi 1st Road, Qiaotou Town, Dongguan City, Guangdong Province, PRC.

2.2 Details of EUT

Product		Vertical Cooler Camera	
Model		REC-PH550I-W	
Series Model		REC-PH550I-B, REC-AI550I-W	
Hardware Version		205	
Software Version		228	
Antenna Type		☑ Internal ☐ External	
Frequency Band(s)	**Band**	**Tx (MHz)**	**Rx (MHz)**
	LTE Band 2	1850 to 1910	1930 to 1990
	LTE Band 4	1710 to 1755	2110 to 2155
	LTE Band 5	824 to 849	869 to 894
	LTE Band 12	699 to 716	729 to 746
	LTE Band 13	777 to 787	746 to 756
	LTE Band 66	1710 to 1780	2110 to 2200
	Bluetooth LE	2402 to 2480	2402 to 2480

Note 1: The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Note 2: REC-PH550I-W is the main testing model, REC-PH550I-B and REC-AI550I-W are series models, and their main difference is that the power supply battery is different. Each model was pre scanned, and REC-PH550I-W was the worst model. This report only records the worst model.

3 Test Condition

3.1 Laboratory Environment

Temperature	Min.= 20℃, Max.=30℃
Relative Humidity	Min.= 25%, Max.=75%
Ground System Resistance	< 1 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

4 Maximum Permissible Exposure (MPE)

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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^2)**	**Averaging time (minutes)**
(i) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842/f	4.89/f	*($900/f^2$)	<6
30–300	61.4	0.163	1.0	<6
300–1,500	--	--	f/300	<6
1,500–100,000	--	--	5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824/f	2.19/f	*($180/f^2$)	<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.				

The transmitter is using external antennas that operate at 20 cm or more from nearby persons.The maximum permitted level is calculated using the general equation:

$$S = PG/ 4\Pi R^2$$

Where:

S = power density (in appropriate units, e.g. Wm^2)

P = power input to the antenna (in appropriate units, e.g., W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., m)

Solve S, the power density at 20 cm is shown in Appendix A, so the limit is kept.

Appendix A – Test Results

A.1 Maximum Measured Conducted Output Power and Antenna Gain

Band	TX Freq. (MHz)	Maximum conducted output power (dBm)	Maximum Antenna Gain (dBi)
LTE Band 2	1850 to 1910	25.00	1.18
LTE Band 4	1710 to 1755	25.00	1.20
LTE Band 5	824 to 849	25.00	-0.11
LTE Band 12	699 to 716	25.00	-1.28
LTE Band 13	777 to 787	25.00	-1.23
LTE Band 66	1710 to 1780	25.00	1.20
Bluetooth LE	2402 to 2480	6.00	4.30

A.2 Test Results of Maximum Permissible Exposure

Band	Frequency (MHz)	Maximum Power (dBm)	Antenna Gain (dBi)	FCC EIRP Limit(dBm)	FCC MPE Result (mW/cm^2)	MPE Limit (mW/cm^2)	FCC MPE Result / FCC MPE Limit Ratio	Conclusion
LTE Band 2	1850.0	25.00	1.18	33.01	0.0826	1.0000	0.0826	Pass
LTE Band 4	1710.0	25.00	1.20	30.00	0.0829	1.0000	0.0829	Pass
LTE Band 5	824.0	25.00	-0.11	40.60	0.0613	0.5493	0.1117	Pass
LTE Band 12	699.0	25.00	-1.28	36.92	0.0469	0.4660	0.1005	Pass
LTE Band 13	777.0	25.00	-1.23	36.92	0.0474	0.5180	0.0915	Pass
LTE Band 66	1710.0	25.00	1.20	30.00	0.0829	1.0000	0.0829	Pass
Bluetooth LE	2402.0	6.00	4.30	36.00	0.0021	1.0000	0.0021	Pass

Note 1: For mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations indicate EMF distance is less.

Note 2: For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.

Note 3: Chose the maximum RF output tune up power of all antennas among same frequency WWAN bands and the maximum antenna gain to perform MPE calculation conservatively.

Collocated Power Density Calculation

Evolution mode	Frequency(MHz)	Power Density/Limit	Σ(Power Density / Limit) of Bluetooth LE + LTE	Verdict
LTE Band 5	824 to 849	0.1117	0.1138	Pass
Bluetooth LE	2402 to 2480	0.0021		

Note:

1.Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + Bluetooth.

2. The worst-case situation is 0.1138, which is less than “1”. This confirmed that the device comply with FCC 1.1310 MPE limit.

3. The DUT work frequency range used is 2402 to 2480 MHz and 824 to 849 MHz the result close to the limit by the above formula, so we select worst case power to calculate the exclusion power threshold.

4. More power list please refer to RF test report.

Conclusion

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

Appendix B – The EUT Appearance

Refer to “Attachment A.1: External Photograph” and “ Attachment A.2: Internal Photograph” file.

****** End of the Report ******