



Shenzhen HTT Technology Co., Ltd.

RF Exposure MPE	
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Date of issue	Sep. 19, 2024
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Applicant's name.....:	Zhejiang Lingzhu Technology Co., Ltd.
Address.....:	Room 302,No 1 Building Huace Center,Xihu District, Hangzhou City, Zhejiang Province,China
Standard	47CFR §1.1310 47CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
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Test item description	smart cameras
Manufacturer	Zhejiang Lingzhu Technology Co., Ltd.
Trade Mark	N/A
Model/Type reference	SC315-WBZ3
Modulation Type	ASK
Result	PASS

TEST REPORT

Equipment under Test : smart cameras

Model /Type : SC315-WBZ3

Listed Models : SC315-WBZ3A, SC315-WBZ3B, SC315-WBZ3C, SC315-WBZ3D, SC315-WBZ3E, SC315-WBZ3F, SC315-WBZ3G, SC315-WBZ4, SC315-WBZ4A, SC315-WBZ4B, SC315-WBZ4C, SC315-WBZ4D

Model difference : The PCB board, circuit, structure and internal of these models are the same, Only model number is different for these model.

Applicant : **Zhejiang Lingzhu Technology Co., Ltd.**

Address : 701, Building 29, zhifuyuan Industrial Zone, Xingtan town, Shunde District, Foshan City, Guangdong Province, China

Manufacturer : **Zhejiang Lingzhu Technology Co., Ltd.**

Address : 701, Building 29, zhifuyuan Industrial Zone, Xingtan town, Shunde District, Foshan City, Guangdong Province, China

Test Result:	PASS
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB 447498 D01 General RF Exposure Guidance v06](#): Mobile and Portable Device, RF Exposure, Equipment Authorization Procedures.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1091](#): Radiofrequency radiation exposure evaluation: mobile devices

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	Sep. 06, 2024
Testing commenced on	:	Sep. 06, 2024
Testing concluded on	:	Sep. 19, 2024

2.2 Product Description

Product Name:	smart cameras
Model No.:	SC315-WBZ3
Series model:	SC315-WBZ3A, SC315-WBZ3B, SC315-WBZ3C, SC315-WBZ3D, SC315-WBZ3E, SC315-WBZ3F, SC315-WBZ3G, SC315-WBZ4, SC315-WBZ4A, SC315-WBZ4B, SC315-WBZ4C, SC315-WBZ4D
Test sample(s) ID:	HTT202409185-1(Engineer sample) HTT202409185-2(Normal sample)
Operation frequency	2402~2480 MHz
Number of Channels	40
Modulation Type	GFSK
Channel separation	2MHz
Antenna Type:	FPC Antenna
Antenna Gain:	1.21 dBi
Power Supply:	DC 5.0V
2.4GWIFI	
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(HT20): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	FPC Antenna
Antenna gain:	1.21 dBi
Power Supply:	DC 5.0V
Adapter Information:	Mode: BS05A-0501000US Input: AC100-240V, 50/60Hz, 0.25A max Output: DC 5V, 1000mA

2.3 Special Accessories

The following is the EUT test of the auxiliary equipment provided by the laboratory:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
/	/	/	/	/	/

2.4 Modifications

No modifications were implemented to meet testing criteria.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

Shenzhen HTT Technology Co.,Ltd.

1F, Building B, Huafeng International Robotics Industrial Park, Hangcheng Road,Nanchang Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

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

FCC-Registration No.: 779513 Designation Number: CN1319

Shenzhen HTT Technology Co.,Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6435.01

Shenzhen HTT Technology Co.,Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen HTT Technology Co.,Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen HTT Technology Co.,Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.12 dB	(1)
Radiated Emission	30~1000MHz	4.37 dB	(1)
Radiated Emission	1~18GHz	5.40 dB	(1)
Radiated Emission	18-40GHz	5.45 dB	(1)
Conducted Disturbance	0.15~30MHz	2.68 dB	(1)

4 Test limit

4.1 Requirement

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

4.2 MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

Where: S=power density

P=power input to antenna

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

4.3 Conducted Power Results

Type	Channel	Output power (dBm)
GFSK 1Mbps	00	-0.63
	19	-0.8
	39	-1.35

Type	Channel	Output power (dBm)
802.11b	01	14.06
	06	13.71
	11	12.74
802.11g	01	16.66
	06	16.17
	11	16.41
802.11n(HT20)	01	17.27
	06	17.18
	11	17.12

4.4 Manufacturing tolerance

Mode	Max. Peak Conducted Output Power (dBm)	Max. tune-up
BLE	-0.63	0.0 ± 1
2.4GWIFI	17.27	17.0 ± 1

4.5 Standalone MPE Result

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r=20\text{cm}$, as well as the gain of the used antenna is refer to section 2.2, the RF power density can be obtained.

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW				
BLE	1.0	1.2589	1.21	1.3213	0.0003	1.0000
2.4GWIFI	18.0	63.0957	1.21	1.3213	0.0166	1.0000

Remark:

1. Output power (Peak) including turn-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer.
3. BT and WLAN can be active at the same time, but only with interleaving of packages switched on board level. That means that they cannot transmit at the same time.

4.6 Simultaneous Transmission for MPE Result

N/A

5 Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device Threshold per KDB 447498 D01v06

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