



FCC 15B TEST REPORT

No. I21Z60329-EMC01

for

Luxshare Precision Industry Co.,Ltd

Conn. 2MP Indoor Smart Camera

Model Name: 100022770

FCC ID: 2AYYS-CM001

with

Hardware Version: PCB-MINI16S-A2MB_F37 REV1_0

Software Version: ppstrong-a3-tuya2_std-4.0

Issued Date: 2021-04-25

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

The 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.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: ctl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z60329-EMC01	Rev.0	1 st edition	2021-04-20
I21Z60329-EMC01	Rev.1	2nd edition.Delete the Chinese in Section A.1.2.Updata the Measurement result of Radiated Emission.	2021-04-25

CONTENTS

1. TEST LABORATORY.....	4
1.1. TESTING LOCATION.....	4
1.2. TESTING ENVIRONMENT.....	4
1.3. PROJECT DATA.....	4
1.4. SIGNATURE.....	4
2. CLIENT INFORMATION.....	5
2.1. APPLICANT INFORMATION.....	5
2.2. MANUFACTURER INFORMATION.....	5
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE).....	6
3.1. ABOUT EUT.....	6
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST.....	6
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....	6
3.4. EUT SET-UPS.....	6
4. REFERENCE DOCUMENTS.....	7
4.1. REFERENCE DOCUMENTS FOR TESTING.....	7
5. LABORATORY ENVIRONMENT.....	8
6. SUMMARY OF TEST RESULTS.....	9
7. TEST EQUIPMENTS UTILIZED.....	10
ANNEX A: MEASUREMENT RESULTS.....	11
ANNEX B: PERSONS INVOLVED IN THIS TESTING.....	16

1. Test Laboratory

1.1. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2021-03-08

Testing End Date: 2021-04-08

1.4. Signature



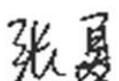
An Hui

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Luxshare Precision Industry Co.,Ltd
Address /Post: Floor 2,Block A,Sanyo New Industrial Area,West Haoyi
Community,Shajing Subdistrict Office
Contact: Bin Lin
Email: Bin Lin@luxshare-ict.com
Telephone: 15197269372

2.2. Manufacturer Information

Company Name: LUXSHARE -ICT(NGHE AN)
Address /Post: No. 18, Street 03, VSIP Nghe An Industrial Park, Hung Tay
Commune, Hung Nguyen District, Nghe An Province
Contact: Nan Zhang
Email: Nan Zhang@luxshare-ict.com
Telephone: +86 13237197110

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	onn. 2MP Indoor Smart Camera
Model Name	100022770
FCC ID	2AYYS-CM001

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	064243319	PCB-MINI16S-A2MB_F37 REV1_0	ppstrong-a3-tuya2_std-4.0

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Charger	/
AE2	USB Cable	/

AE1

Model	GTA92-0501000EU
Manufacturer	SHEN ZHEN GREENPOWER ONE CO., LTD
Length of cable	/

AE2

Model	USB Cable
Manufacturer	/
Length of cable	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1 + AE2	/

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2019
ANSI C63.4	American National Standard for Methods of Measurement of Radio- Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters × 17meters × 10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 10 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz – 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:				
Verdict Column	P	Pass		
	NA	Not applicable		
	F	Fail		
	BR	Re-use test data from basic model report.		

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	A.1	P	CTTL(huayuan North Road)
2	Conducted Emission	15.107(a)	A.2	P	CTTL(huayuan North Road)

7. Test Equipments Utilized

NO.	DESCRIPTION	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	LISN	ENV216	101200	Rohde & Schwarz	2021-05-19	1 Year
2	Test Receiver	ESCI 3	100344	Rohde & Schwarz	2022-02-23	1 Year
3	Test Receiver	ESU26	100235	Rohde & Schwarz	2022-03-23	1 Year
4	BiLog Antenna	VULB9163	9163-483	Schwarzbeck	2021-08-27	1 Year
5	Dual-Ridge Waveguide Horn Antenna	3115	00167250	ETS-Lindgren	2021-05-14	1 Year

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.0	R&S
Conducted Emission	EMC32 V8.52.0	R&S

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (Power supply mode) at distances of 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

The EUT is operating in the Power supply mode. During the test EUT is connected to a charger in the case of Power supply mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in Section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit (μ V/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

$$\text{Limit}(10\text{m}) = \text{Limit}(3\text{m}) + 20[\log(3/10)]$$

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/1MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{RPL} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{RPL} = P_{\text{Mea}} + G_A + G_{PL}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.16dB, 1GHz-18GHz: 5.44dB, $k=2$.

Note: The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note: The measurement results showed here are worst cases.

Measurement results for Set.1:

EUT1 Charger+Camera Mode Mode/QP detector

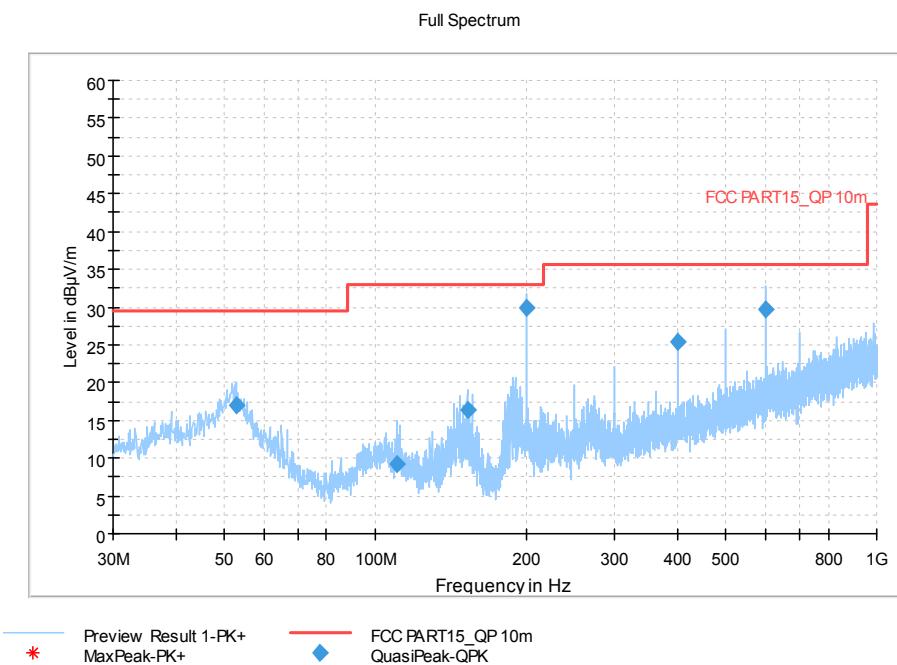
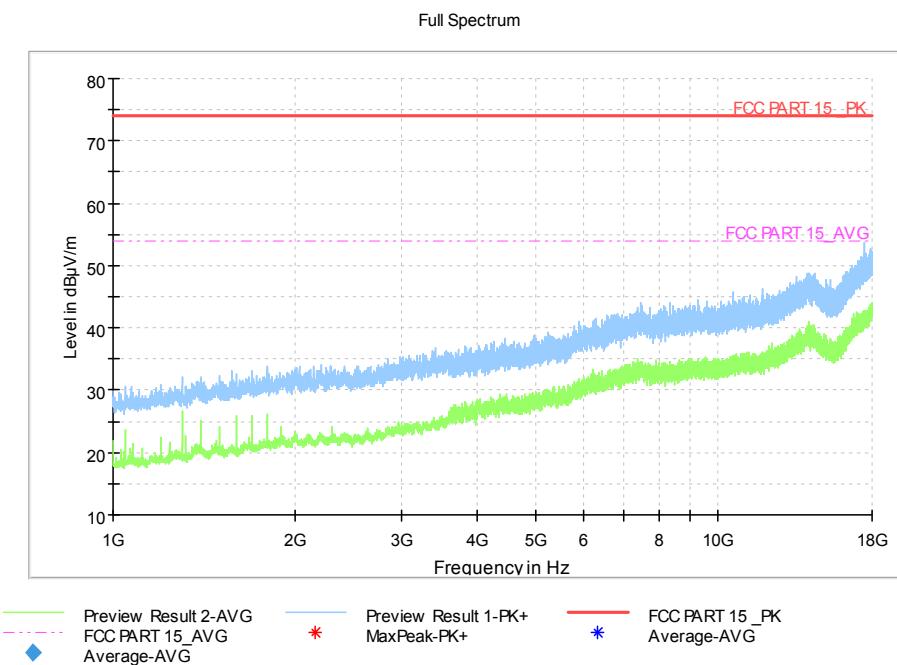
Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
52. 698000	17. 03	29. 54	12. 51	102. 0	V	300. 0
110. 219000	9. 14	33. 06	23. 92	102. 0	V	284. 0
152. 511000	16. 33	33. 06	16. 73	117. 0	V	30. 0
200. 041000	29. 84	33. 06	3. 68	101. 0	V	-18. 0
400. 055000	25. 46	35. 56	10. 10	101. 0	V	240. 0
600. 069000	29. 78	35. 56	5. 78	325. 0	V	102. 0

EUT1 Charger+Camera Mode Mode/Average detector

Frequency (MHz)	Result (dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity	Limit (dB μ V/m)	Margin (dB)
17966. 000	43. 9	-29. 1	46. 7	26. 301	H	54	10. 1
17986. 967	43. 7	-29. 1	46. 7	26. 098	H	54	10. 3
17897. 433	43. 7	-29. 5	46. 0	27. 280	H	54	10. 3
17981. 300	43. 6	-29. 1	46. 7	25. 998	V	54	10. 4
17894. 033	43. 5	-29. 5	46. 0	27. 080	H	54	10. 5
17940. 500	43. 4	-28. 9	46. 7	25. 683	H	54	10. 6

EUT1 Charger+Camera Mode Mode/Peak detector

Frequency (MHz)	Result (dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity	Limit (dB μ V/m)	Margin (dB)
17441. 267	53. 7	-29. 9	44. 4	39. 217	V	74	20. 3
17848. 133	52. 6	-29. 3	46. 0	35. 982	V	74	21. 4
17887. 800	52. 4	-29. 5	46. 0	35. 980	H	74	21. 6
17917. 267	52. 2	-29. 3	46. 7	34. 865	H	74	21. 8
17952. 400	52. 2	-28. 9	46. 7	34. 483	H	74	21. 8
17579. 533	52. 1	-29. 8	45. 2	36. 646	H	74	21. 9

EUT1 Charger+Camera Mode, Set.1

Figure A.1 Radiated Emission from 30MHz to 1GHz

Figure A.2 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

A.2.2 EUT Operating Mode

The EUT is operating in the Power supply mode. During the test EUT is connected to a charger in the case of Power supply mode.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency

A.2.4 Test Condition in Power supply mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: $U=3.08\text{dB}$, $k=2$.

EUT1 Charger+Camera Mode, Set.1

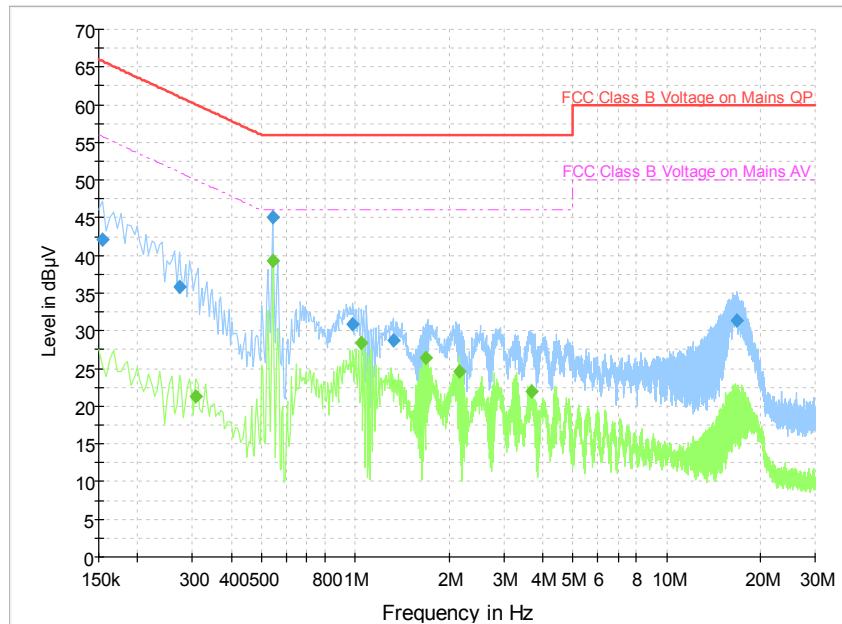


Figure A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154500	42.1	L1	19.7	23.6	65.8
0.271500	35.8	L1	19.6	25.2	61.1
0.541500	45.1	L1	19.6	10.9	56.0
0.982500	30.8	N	19.6	25.2	56.0
1.324500	28.7	N	19.6	27.3	56.0
16.741500	31.4	L1	19.8	28.6	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.307500	21.4	L1	19.6	28.7	50.0
0.541500	39.3	L1	19.6	6.7	46.0
1.045500	28.5	N	19.6	17.5	46.0
1.689000	26.5	N	19.6	19.5	46.0
2.152500	24.7	N	19.5	21.3	46.0
3.669000	21.9	N	19.6	24.1	46.0

ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Yang Mengke
Radiated Continuous Emission	Ding Zai, Zhang Tianli

END OF REPORT