TEST REPORT

No.24T04N001462-001-EMC

for

Guilin Zhishen Information Technology Co., Ltd.

ZHIYUN CINEPEER CRANE 4E Professional Camera Stabilizer

Model Name：CR131

With

Hardware Version: V1.0

Software Version: V1.75

FCC ID: 2AIHFZYCR131

Issued Date:2024-07-23

Designation Number: CN1210

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 SAICT.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04N001462-001-EMC	Rev.0	1st edition	2024-07-23

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. SUMMARY OF TEST REPORT

1.1. Test Items

Description	ZHIYUN CINEPEER CRANE 4E Professional Camera Stabilizer
Model Name	CR131
Applicant's name	Guilin Zhishen Information Technology Co., Ltd.
Manufacturer's Name	Guilin Zhishen Information Technology Co., Ltd.

1.2. Test Standards

FCC Part 15, Subpart B (10-1-2023 Edition); ANSI C63.4-2014.

1.3. Test Result

Total test 2 items, pass 2 items. Please refer to "6.2 Test Results".

1.4. Testing Location

Address: EMC Laboratory, Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, China

1.5. Project data

Testing Start Date: 2024-07-09 Testing End Date: 2024-07-17

1.6. Signature

Huang Yuqing
(Prepared this test report)

Liang Yong
(Reviewed this test report)

Cao Junfei
(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	Guilin Zhishen Information Technology Co., Ltd.
Address:	09 Huangtong Road, Tieshan Industrial Zone, Qixing District, Guilin, Guangxi, China.
Contact	Zou Jian
Email	zouj@zhiyun-tech.com
Tel.	13066932837
Fax	/

2.2. Manufacturer Information

Company Name:	Guilin Zhishen Information Technology Co., Ltd.
Address:	09 Huangtong Road, Tieshan Industrial Zone, Qixing District, Guilin, Guangxi, China.
Contact	Zou Jian
Email	zouj@zhiyun-tech.com
Tel.	13066932837
Fax	/

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)

3.1. About EUT

Description	ZHIYUN CINEPEER CRANE 4E Professional Camera Stabilizer
Model Name	CR131
FCC ID	2AIHFZYCR131
Condition of EUT as received	No obvious damage in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version	Receive Date
UT02aa	/	V1.0	V1.75	2024-7-05

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

3.3. Internal Identification of AE

AE ID*	Description
AE1	Battery
AE2	Charger
AE3	Power Cable
AE4	USB Cable
AE5	Camera

AE1

Model	ZY-CR122
Manufacturer	DongGuan Howell Energy Co., Ltd.
Capacity	2600mAh
Nominal Voltage	14.8V

AE2

Model	/
Manufacturer	/

AE3

Model	XL01077
Manufacturer	Guilin Zhishen Information Technology Co., Ltd.

AE4-1

Model	LN-NBUC-A01
Manufacturer	Guilin Zhishen Information Technology Co., Ltd.

AE4-2

Model	LN-UCUS-A03
Manufacturer	Guilin Zhishen Information Technology Co., Ltd.

AE4-3

Model	LN-UCUC-A02
Manufacturer	Guilin Zhishen Information Technology Co., Ltd.

AE4-4

Model	LN-MBUC-A02
Manufacturer	Guilin Zhishen Information Technology Co., Ltd.

AE5

Model	/
Manufacturer	/

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

3.4. EUT Set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT+AE1+AE2+AE3+AE4-3+AE5	

3.5. General Description

The Equipment Under Test (EUT) is a model of ZHIYUN CINEPEER CRANE 4E Professional Camera Stabilizer with internal antenna.

Manual and specifications of the EUT were provided to fulfill the test.

Samples (EUT+AE) undergoing test were selected by the Client. Relevant information is provided by the client.

The ZHIYUN CINEPEER CRANE 4E Professional Camera Stabilizer CR131 Applicant by Guilin Zhishen Information Technology Co., Ltd. is a variant model based on CR122 Applicant by Guilin Zhishen Information Technology Co., Ltd,. for conformance test.

According to client's description, the table below shows the difference:

Changes	CR131
Appearance Color	CR131 and CR122 have different exterior colors.
Structure	CR131 has fewer LEDs in the x-axis compared to CR122.
Circuit	CR131 and CR122 A, B, C, E board PCB is the same, but the CR131 A, B, C board relative to the CR122 less LED indicators (D9, D10, D11, D13, D14, D15, D16, D19, D20, D21D23, D24, D25), the E board of the CR131 is relatively less than the CR122's is less affixed with LED dimming circuit (U5, U7, R41, R43R44, R52, R55, R56, R45, R57, C25, C37, D23, D24) - the LED lamp dimming circuit components of 2 above.

According to the declaration of differences by manufacturer, the all tests need to be performed.

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	(10-1-2023 Edition)
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

5. LABORATORY ENVIRONMENT

Anechoic chamber (FACT3-2.0) did not exceed following limits along the EMC testing:
9.10m×6.10m×5.60m (L×W×H)

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz
Voltage Standing Wave Ratio （VSWR）	≤ 6 dB, from 1 to 18 GHz，3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

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

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-18000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω

6. SUMMARY OF TEST RESULTS

6.1. Testing Environment

Normal Temperature: 15~35℃
Relative Humidity: 20~75%
Atmospheric pressure 86~106kPa

6.2. Summary of Measurement Results

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC/IC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)/ Section 6.2	A.1	P
2	Conducted Emission	15.107(a)/ Section 6.1	A.2	P

6.3. Statement

6.3.1 Statements of conformity

This report takes measured values as criterion of test conclusion. The test conclusion meets the limit requirements.

7. MEASUREMENT UNCERTAINTY

Test item	Frequency ranges	Measurement uncertainty
Radiated Emission	30MHz-1GHz	4.80dB(*k*=2)
	1GHz-18GHz	4.62dB(*k*=2)
	18GHz-40GHz	2.36dB(*k*=2)
Conducted Emission	150kHz-30MHz	2.68dB(*k*=2)

8. MEASURING APPARATUS UTILIZED

No.	Name	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1.	Test Receiver	ESR7	101676	R&S	2024.11.22	1 year
2.	Test Receiver	ESCI	100702	R&S	2025.01.10	1 year
3.	Spectrum Analyzer	FSV40	101192	R&S	2025.01.10	1 year
4.	Antenna	VULB 9163	9163-330	Schwarzbeck	2027.04.21	3 years
5.	LISN	ENV216	102067	R&S	2024.10.07	1 year
6.	Horn Antenna	3117	00066577	ETS-Lindgren	2025.04.17	3 years
7.	Anechoic Chamber	FACT3-2.0	1285	ETS-Lindgren	2025.05.28	2 years
8.	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2026.02.01	3 years
9.	Horn Antenna	QSH-SL-8-26-40-K-20	17014	Q-par	2026.01.30	3 years

9. MEASURING SOFTWARE

No.	Name	Manufacturer	Version
1	EMC32	Rohde & Schwarz	V10.50.40

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

Reference

FCC: Part 15.109(a)

IC: ICES-003 section 6.2

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator at a distance of 3 meters or 1 meters 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. Below 18GHz the measurement antenna was placed at a distance of 3 meters from the EUT. Above 18GHz the measurement antenna was placed at a distance of 1 meters from the EUT. (According to Part 15.31(f)(1), 1m limit is calculated by extrapolation factor of 20 dB/decade) . 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:

Normal Working: EUT is powered on, plugged into the USB cable and Audio cable establish a connection with camera, and plugged into the power supply to start charging.

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. For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

A.1.3 Measurement Limit

Limit from Part 15.109(a)

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

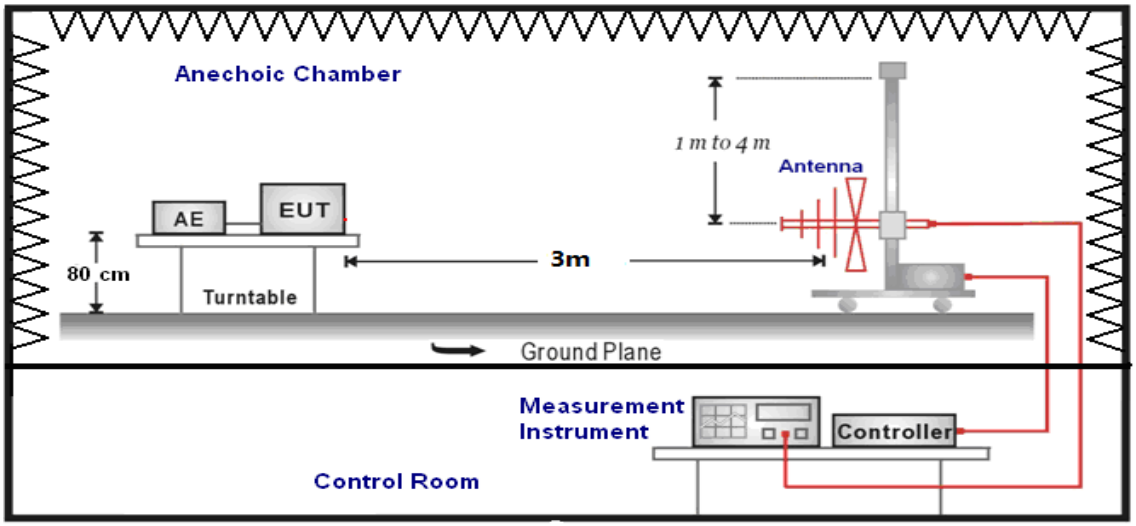
*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

A.1.4 Test Condition

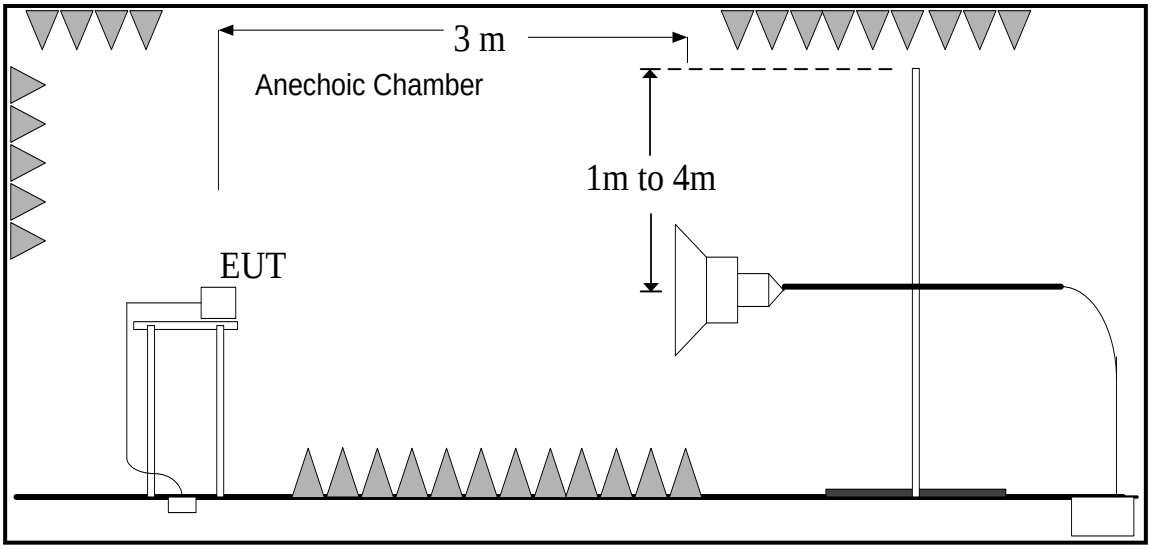
Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	15

A.1.5 Test set-up:

30MHz-1GHz



1GHz-40GHz



A.1.6 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:

Result=P_{Mea}+A_{Rpl} = P_{Mea} +G_A+G_{PL}

Where

G_A: Antenna factor of receive antenna

G_{PL}:PathLoss

P_{Mea}: Measurement result on receiver.

Result:Quasi-Peak(dBμV/m) /Average(dBμV/m)/Peak(dBμV/m)

Note: the result contains vertical part and Horizontal part

Normal Working

Frequency range (MHz)	Quasi-Peak Limit (dBμV/m)	Result (dBμV/m) UT02aa/Set.1	Conclusion
30-88	40.00	See Figure A.1.1.	P
88-216	43.52		
216-960	46.02		
960-1000	54.00		

Frequency range (MHz)	Average Limit (dBμV/m)	Peak Limit (dBμV/m)	Result (dBμV/m) UT02aa/Set.1	Conclusion
1000 to 18000	54.00	74.00	See Figure A.1.2.	P
18000 to 26500	63.54	83.54	See Figure A.1.3.	

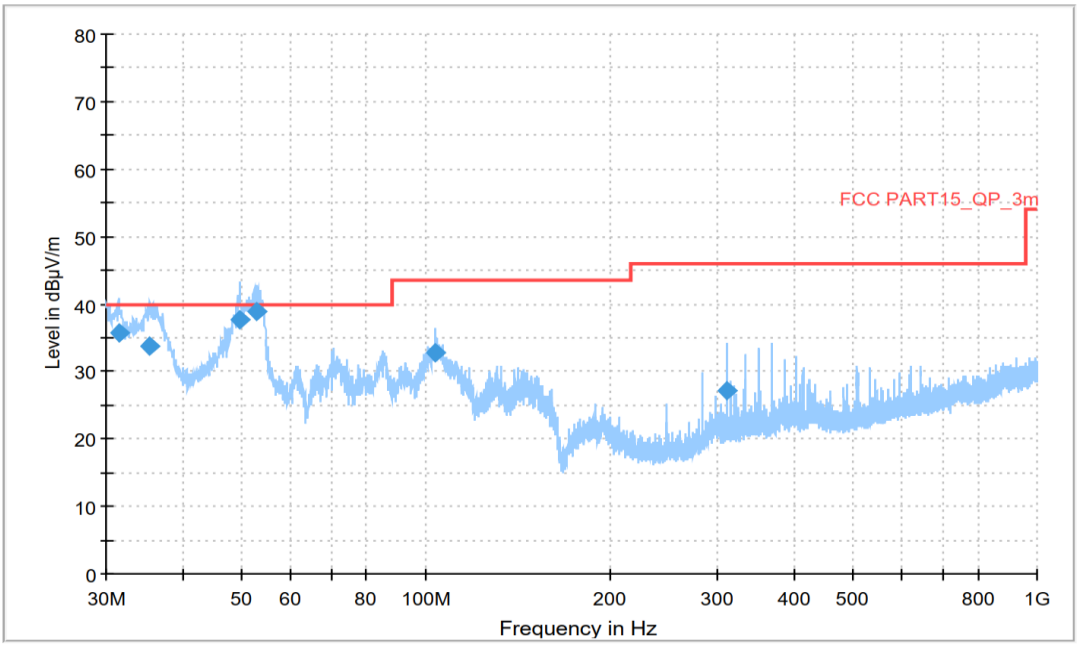


Figure A.1.1. Radiated Emission (Camera, 30MHz to 1GHz)

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P_{Mea} (dBµV)
31.562778	35.63	40.00	4.37	V	-15.2	50.83
35.388889	33.69	40.00	6.31	V	-14.4	48.09
49.507778	37.70	40.00	2.30	V	-13.3	51.00
52.848889	38.82	40.00	1.18	V	-14.0	52.82
103.773889	32.88	43.52	10.64	V	-14.4	47.28
310.491667	27.08	46.02	18.94	H	-11.6	38.68

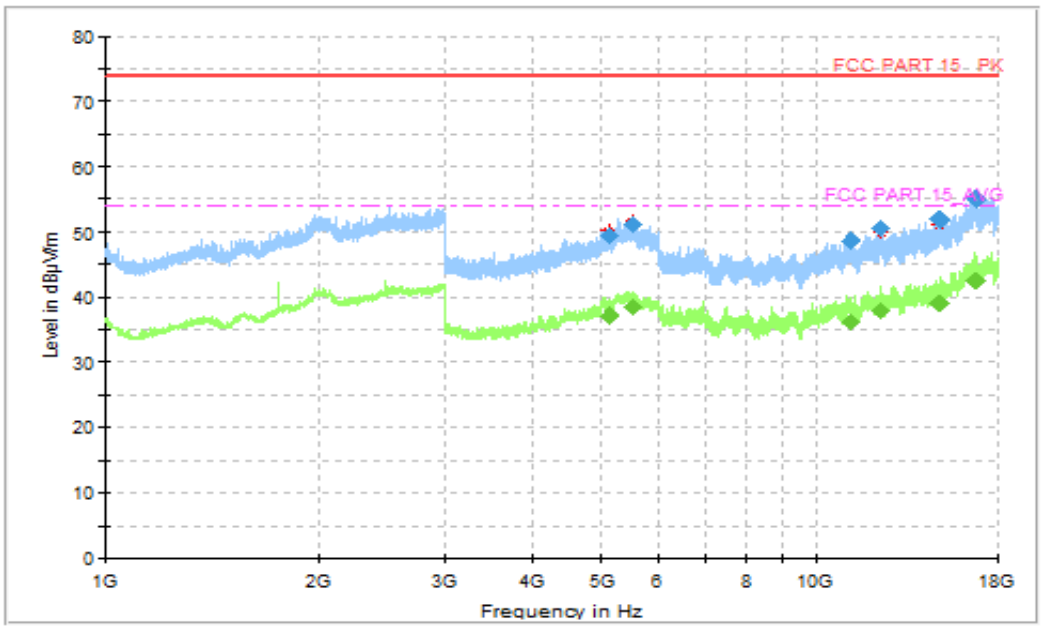


Figure A.1.2. Radiated Emission (Camera, 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P_{Mea} (dBµV)
5106.300000	49.50	74.00	24.50	V	6.1	43.40
5542.500000	51.17	74.00	22.83	V	7.0	44.17
11163.428572	48.58	74.00	25.42	H	10.4	38.18
12341.142857	50.74	74.00	23.26	H	12.8	37.94
14930.571429	51.78	74.00	22.22	H	15.0	36.78
16740.000000	55.01	74.00	18.99	H	18.8	36.21

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P_{Mea} (dBµV)
5106.300000	37.17	54.00	16.83	V	6.1	31.07
5542.500000	38.47	54.00	15.53	V	7.0	31.47
11163.428572	36.18	54.00	17.82	H	10.4	25.78
12341.142857	37.84	54.00	16.16	H	12.8	25.04
14930.571429	39.05	54.00	14.95	H	15.0	24.05
16740.000000	42.58	54.00	11.42	H	18.8	23.78

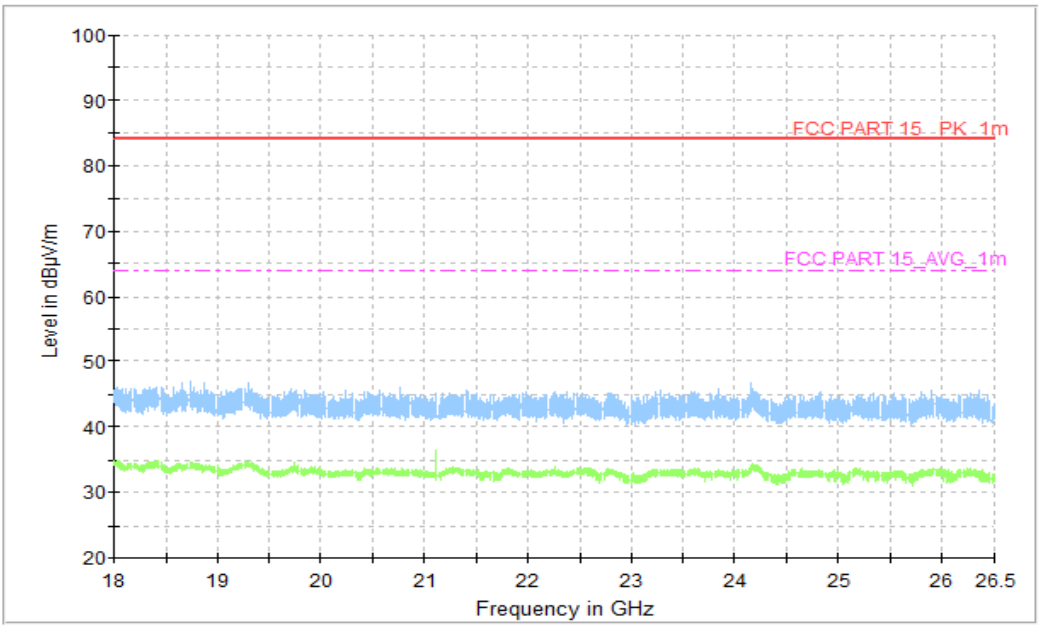


Figure A.1.3. Radiated Emission (Camera, 18GHz to 26.5GHz)

A.2 Conducted Emission (§15.107(a))

Reference

FCC: Part 15.107(a)

IC: ICES-003 section 6.1.

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 150kHz to 30MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 -2014, section 7.3.

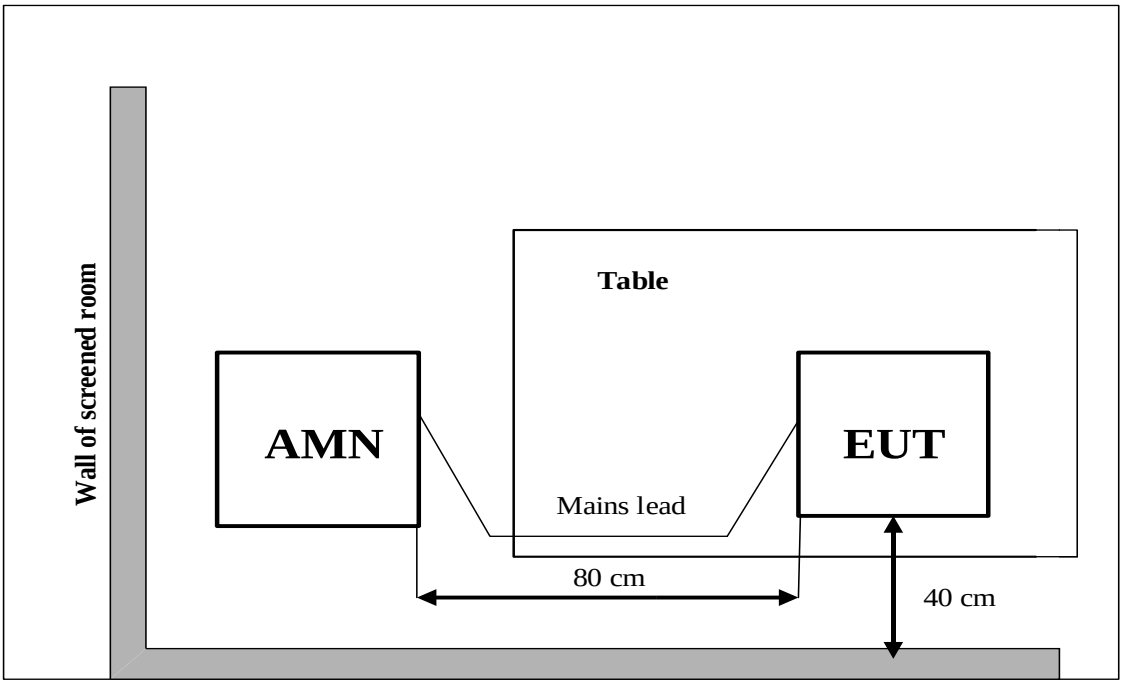
A.2.2 EUT Operating Mode:

Normal Working: EUT is powered on, plugged into the USB cable and Audio cable establish a connection with camera, and plugged into the power supply to start charging.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	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 set-up:



A.2.5 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60
240	60

RBW	Sweep Time(s)
9kHz	1

A.2.6 Measurement Results

QuasiPeak(dBμV) /Average(dBμV) =PMea+Corr

Where

Corr: PathLoss + Voltage Division Factor

PMea: Measurement result on receiver.

Normal Working

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV) UT02aa/Set.1	Conclusion
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.1.	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Normal Working

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV)	Conclusion
			UT02aa/Set.1	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.2.	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

AC Input Port/ Voltage: 120V/60Hz

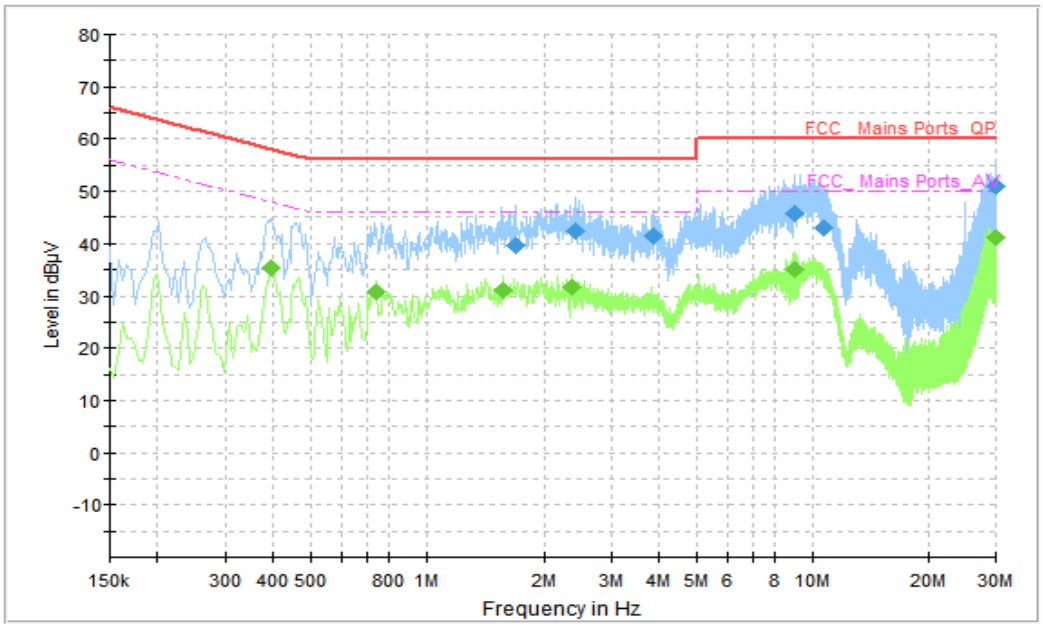


Figure A.2.1. Conducted Emission (Normal Working)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P_{Mea} (dBµV)
1.682000	39.75	56.00	16.25	N	10	29.75
2.426000	42.26	56.00	13.74	N	10	32.26
3.866000	41.41	56.00	14.59	N	10	31.41
8.966000	45.81	60.00	14.19	N	10	35.81
10.682000	42.86	60.00	17.14	N	10	32.86
29.966000	51.07	60.00	8.93	N	10	41.07

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P_{Mea} (dBµV)
0.394000	35.26	47.98	12.72	N	10	25.26
0.738000	30.75	46.00	15.25	N	10	20.75
1.566000	31.18	46.00	14.82	N	10	21.18
2.358000	31.69	46.00	14.31	N	10	21.69
9.002000	35.00	50.00	15.00	N	10	25
29.966000	41.30	50.00	8.70	N	10	31.30

AC Input Port/ Voltage: 240V/60Hz

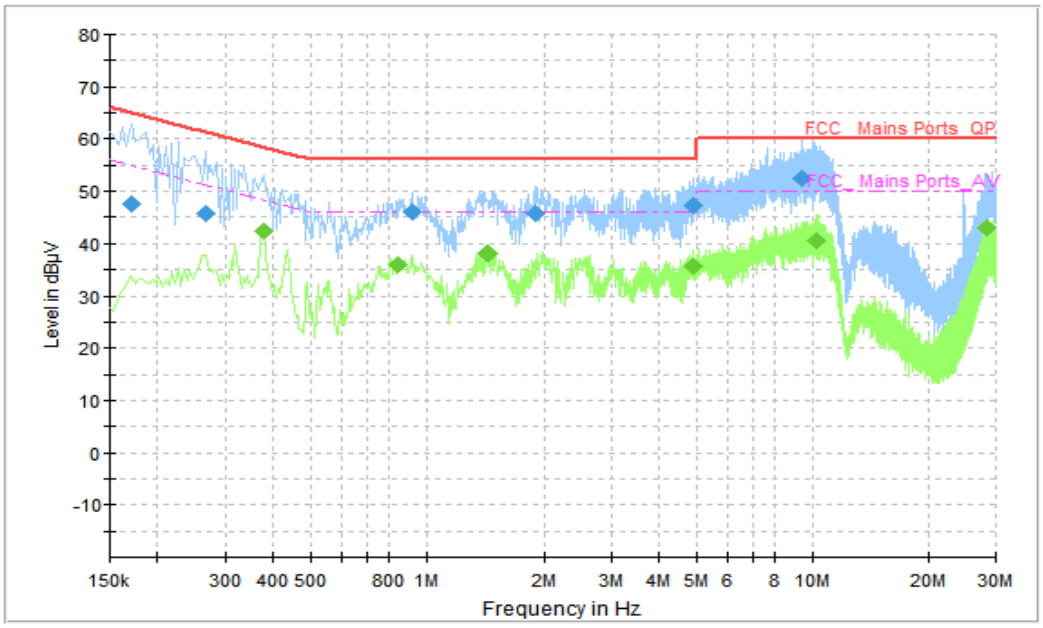


Figure A.2.2. Conducted Emission (Normal Working)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P_{Mea} (dBµV)
0.170000	47.49	64.96	17.47	L1	10	37.49
0.266000	45.77	61.24	15.47	N	10	35.77
0.918000	45.92	56.00	10.08	N	10	35.92
1.902000	45.88	56.00	10.12	N	10	35.88
4.906000	47.28	56.00	8.72	N	10	37.28
9.394000	52.41	60.00	7.59	N	10	42.41

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P_{Mea} (dBµV)
0.378000	42.47	48.32	5.85	N	10	32.47
0.846000	36.03	46.00	9.97	N	10	26.03
1.442000	38.02	46.00	7.98	N	10	28.02
4.914000	35.57	46.00	10.43	N	10	25.57
10.218000	40.54	50.00	9.46	N	10	30.54
28.458000	43.15	50.00	6.85	N	10	33.15

*****END OF REPORT*****