TEST REPORT

FCC Part15, Subpart B

Report Reference No..... :	EA2008182F 01001
Engineer (name + signature)..... :	Wite Chen
Reviewed by (name + signature)..... :	Tiger Xu
Approved by (name + signature)..... :	Alan He
Date of Receipt of EUT..... :	August 25, 2020
Date of Test..... :	August 25, 2020 to September 3, 2020
Date of issue..... :	September 3, 2020
Testing Laboratory..... :	Dong Guan Anci Electronic Technology Co., Ltd
Address..... :	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.
Laboratory location..... :	EMC Laboratory
Applicant's name..... :	ZHEJIANG TWINSEL ELECTRONIC TECHNOLOGY CO.,LTD
Address..... :	Tashan Industry Zone,Meilin Street,Ninghai County,Ningbo City,315609,Zhejiang,P.R.China
Manufacturer..... :	ZHEJIANG TWINSEL ELECTRONIC TECHNOLOGY CO.,LTD
Address..... :	Tashan Industry Zone,Meilin Street,Ninghai County,Ningbo City,315609,Zhejiang,P.R.China
Factory……..:.	ZHEJIANG SHUANGYU ELECTRONIC TECHNOLOGY CO.,LTD
Address……:….	Tashan Industry Zone,Meilin Street,Ninghai County,Ningbo City,315609,Zhejiang,P.R.China

Test specification:

EUT description.....:	Under cabinet light
Trade Mark.....:	TWINSEL, RISEN, Artika, SHUANGYU, SYL
FCC ID.....:	2AX93L1010000012P
Model/Type reference ..... :	CAU01-4624R-840W, UCLT
Test Sample……:	CAU01-4624R-840W
Input Rating..... :	Input for SWITCHING ADAPTER(GQ24-240100-AU): 100-240V~, 520/60Hz, 0.5A Max. Input for under cabinet light: 24V⎓1.0A
Tested Power……:	I/P: 120V~, 60Hz
Standards.....:	47 CFR FCC Part 15 Subpart B: 2020 ANSI C63.4: 2014

The device described above was tested by Dong Guan Anci Electronic Technology Co., Ltd. to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and Dong Guan Anci Electronic Technology Co., Ltd. assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliance with the above official standards.

This report applies to the above sample only and shall not be reproduced in part without written approval of Dong Guan Anci Electronic Technology Co., Ltd.

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1 GENERAL INFORMATION

1.1 GENERAL PRODUCT INFORMATION

1. The equipment is Under cabinet light Luminaires for the use in lighting equipment.
2. This test report only reflects the worst data of the test mode.

All tests was performed on model CAU01-4624R-840W.

The EUT passed the test.

1.2 FACILITIES AND ACCREDITATION

Test Location	Dong Guan Anci Electronic Technology Co., Ltd
Address	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.
Accreditation Certificate	The Laboratory has been assessed and proved to be in compliance with A2LA, The Certificate Number is 4422.01.
Description	All tests measurement facilities use to collect the measurement data are located at 1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

1.3 NORMATIVE REFERENCES

[1] ANSI C63.4:2014 American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

[2] FCC 47 CFR Part 2 General Rules and Regulations

[3] FCC 47 CFR Part 15 Radio Frequency Devices (Subpart B)

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part15, Subpart B ANSI C63.4-2014	Conducted Emission	Class B	PASS	
	Radiated Emission Below 1 GHz	Class B	PASS	
	Radiated Emission Above 1 GHz	Class B	N/A	NOTE (1) NOTE (2)

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

(2) If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1GHz, measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U (dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	3.19	

B. Radiated Measurement :

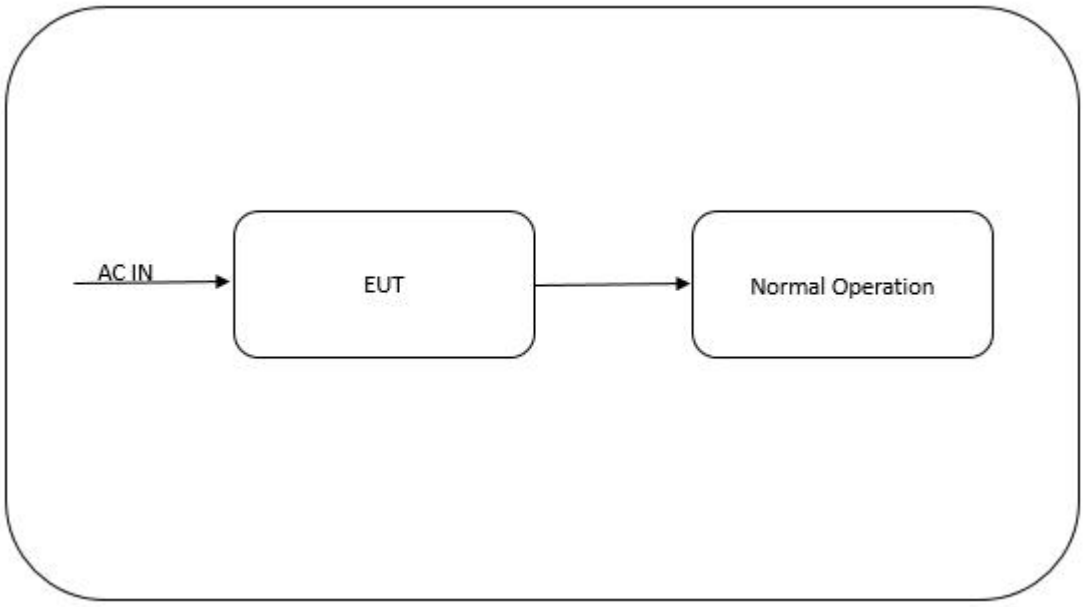
Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)	NOTE
S02	ANSI	30MHz ~ 200MHz	V	3.69	
		30MHz ~ 200MHz	H	3.69	
		200MHz ~ 1,000MHz	V	3.67	
		200MHz ~ 1,000MHz	H	3.67	

2.2 DESCRIPTION OF TEST MODES

For Conducted Emission Test	
Test Mode	Description
Mode	Normal Operation

For Radiated Emission Test	
Test Mode	Description
Mode	Normal Operation

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Specification
E-1	N/A	N/A

Item	Type of cable
C-1	0.8M

3. CONDUCTED EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION (MAINS PORT) (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79	66	66 to 56	56 to 46
0.50 -5.0	73	60	56	46
5.0 -30.0	73	60	60	50

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

(3) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)

Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Instr.Code	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	AN-E010	L.I.S.N	SCHWARZBECK	NSLK 8127	8127-669	2021-05-27
2	AN-E028	TRANSIENT LIMITER	CYBERTEK	EM5010A	E1950100113	2021-05-23
3	AN-E022	RF Cable	N/A	ZT06S-BNCJ-NJ-7.5M	19044020	2021-05-23
4	AN-E020	EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101358	2021-05-23
5	AN-E058	1# Shielded Room	chengyu	8m*4m*3.3m	N/A	2022-05-06
6	AN-E046	Test Software	Farad	EZ-EMC Ver:ANCI-8A1	N/A	N/A

Remark: ” N/A” denotes No Model No. , Serial No. or No Calibration specified.

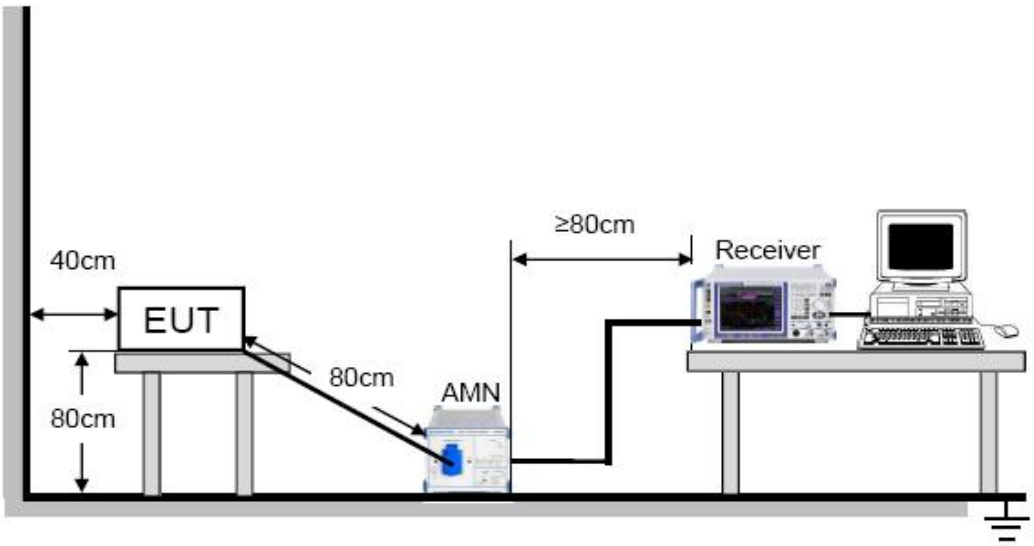
3.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item:EUT Test Photos.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



For the actual test configuration, please refer to Appendix: Photographs of the Conducted Emission Test.

3.1.6 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use.

3.1.7 TEST RESULTS

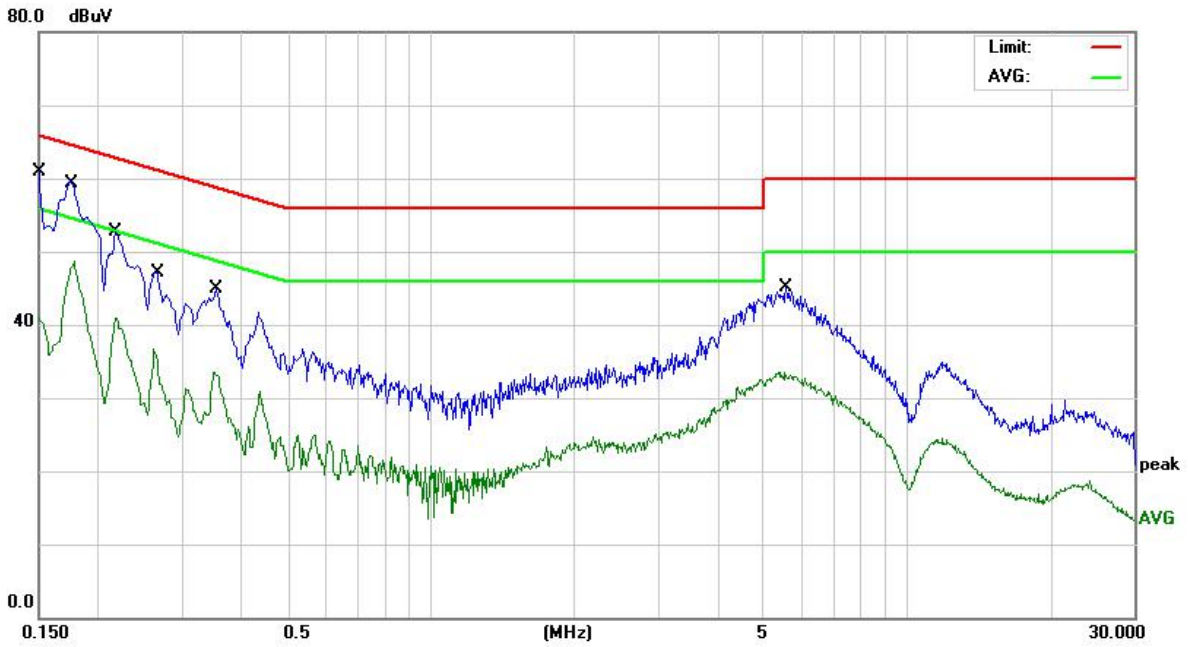
EUT：	Under cabinet light	**Model No. ：**	CAU01-4624R-840W
Temperature：	24.6℃	**Relative Humidity：**	57.1 %
Pressure：	1008 hPa	**Test Power ：**	AC 120V/60Hz
Test Mode ：	Normal operation		

Remark：

(1) Reading in which marked as QP means measurements by using Quasi-Peak Detector, and AV means measurements by using Average Detector.

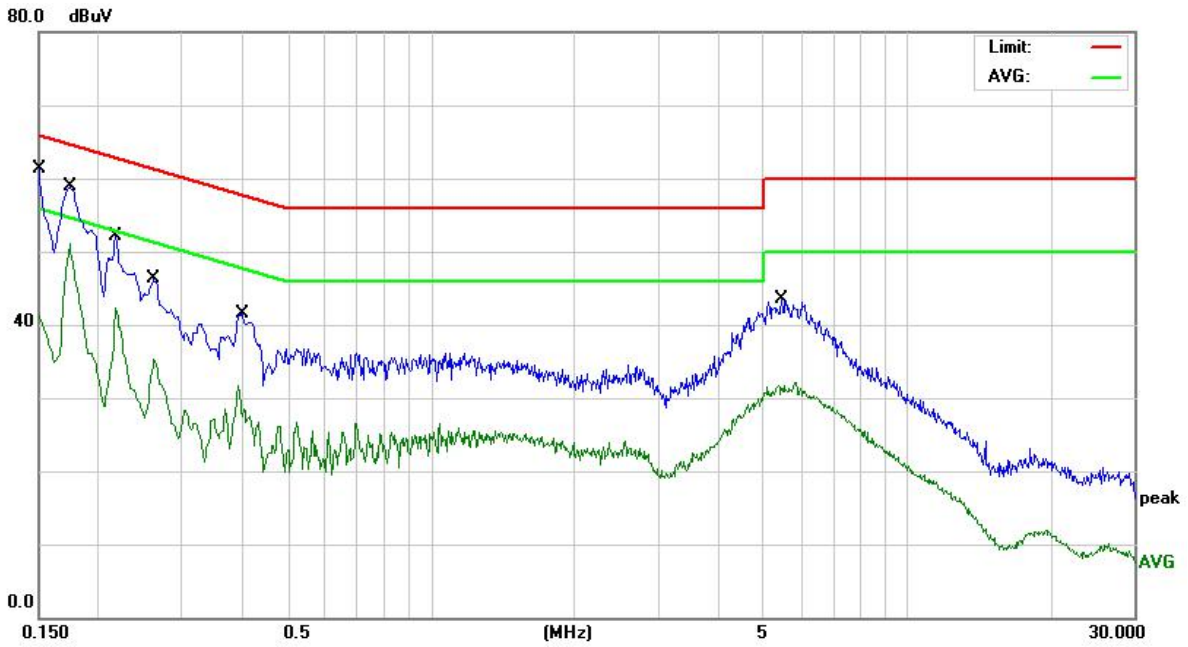
(2) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(3) Measuring frequency range from 150KHz to 30MHz.



Site:	**843.3**	**Phase:N**	**Temperature(C):24.6(C)**
Limit:	**FCC Part 15 B Conduction(QP)**		**Humidity(%):57.1%**
EUT:	**Under cabinet light**	**Test Time:**	**2020-08-26**
M/N.:	**CAU01-4624R-840W**	**Power Rating:**	**AC 120V/60Hz**
Mode:	**Normal Operation**	**Test Engineer:**	**Jack**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.1500	47.99	10.16	58.15	65.99	-7.84	QP	
2	0.1500	31.14	10.16	41.30	55.99	-14.69	AVG	
3	0.1780	47.56	10.15	57.71	64.57	-6.86	QP	
4 *	0.1780	38.53	10.15	48.68	54.57	-5.89	AVG	
5	0.2180	39.94	10.16	50.10	62.89	-12.79	QP	
6	0.2180	30.08	10.16	40.24	52.89	-12.65	AVG	
7	0.2660	33.96	10.17	44.13	61.24	-17.11	QP	
8	0.2660	24.78	10.17	34.95	51.24	-16.29	AVG	
9	0.3540	31.86	10.18	42.04	58.87	-16.83	QP	
10	0.3540	21.89	10.18	32.07	48.87	-16.80	AVG	
11	5.5700	28.61	10.49	39.10	60.00	-20.90	QP	
12	5.5700	21.81	10.49	32.30	50.00	-17.70	AVG	



Site:	**843.3**	**Phase:L1**	**Temperature(C):24.9(C)**
Limit:	**FCC Part 15 B Conduction(QP)**		**Humidity(%):57.1%**
EUT:	**Under cabinet light**	**Test Time:**	**2020-08-26**
M/N.:	**CAU01-4624R-840W**	**Power Rating:**	**AC 120V/60Hz**
Mode:	**Normal Operation**	**Test Engineer:**	**Jack**
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	0.1500	46.70	10.16	56.86	65.99	-9.13	QP	
2	0.1500	30.41	10.16	40.57	55.99	-15.42	AVG	
3	0.1740	47.02	10.15	57.17	64.76	-7.59	QP	
4 *	0.1740	40.85	10.15	51.00	54.76	-3.76	AVG	
5	0.2180	39.15	10.16	49.31	62.89	-13.58	QP	
6	0.2180	29.73	10.16	39.89	52.89	-13.00	AVG	
7	0.2620	33.72	10.17	43.89	61.36	-17.47	QP	
8	0.2620	23.16	10.17	33.33	51.36	-18.03	AVG	
9	0.4020	27.76	10.19	37.95	57.81	-19.86	QP	
10	0.4020	17.86	10.19	28.05	47.81	-19.76	AVG	
11	5.4620	26.78	10.48	37.26	60.00	-22.74	QP	
12	5.4620	19.82	10.48	30.30	50.00	-19.70	AVG	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

Frequency MHz	Class A		Class B	
	10m (dBuV/m) Field strength	3m (dBuV/m) Field strength	10m (dBuV/m) Field strength	3m (dBuV/m) Field strength
30 ~ 88	39.1	49.5	29.5	40
88 ~ 216	43.5	54	33.1	43.5
216 ~ 960	46.4	56.4	35.6	46
960 ~ 1000	54	64	44	54

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (GHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000MHz	80	60	74	54

Notes:

(1) The limit for radiated test was performed according to as following:
FCC PART 15B

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

(4) The test result calculated as following:
Level = Reading + Factor,
Margin = Level - Limit.

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

3.2.2 MEASUREMENT INSTRUMENTS LIST

3m Radiated Emission Measurement 30MHz-1GHz

Item	Instr.Code	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	AN-E060	EMI Test Receiver	Rohde & Schwarz	ESCI	100302	2021-05-23
2	AN-E061	Pre-Amplifier	Anritsu	MH648A	M57886	2021-05-23
3	AN-E076	Bilog Antenna	Schwarzbeck	VULB9163	VULB9163-1290	2020-11-15
4	AN-E063	RF Cable	N/A	ZT06S-NJ-NJ-11M	19060398	2021-05-23
5	AN-E064	RF Cable	N/A	ZT06S-NJ-NJ-0.5M	19060400	2021-05-23
6	AN-E065	RF Cable	N/A	ZT06S-NJ-NJ-2.5M	19060404	2021-05-23
7	AN-E056	3m Semi-anechoic Chamber	chengyu	9m*6m*6m	N/A	2022-05-19
8	AN-E069	Test Software	Farad	EZ-EMC Ver:ANCI-2A1	N/A	N/A

3m Radiated Emission Measurement 1GHz-18GHz

Item	Instr.Code	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	AN-E037	Spectrum Analyzer	Rohde & Schwarz	FSV40	102257	2020-11-28
2	AN-E015	Low noise Amplifiers	A-INFO	LA1018N4009	J1013130524001	2020-05-19
3	AN-E014	Horn antenna	A-INFO	LB-10180-SF	J2031090612123	2020-05-19
4	AN-E065	RF Cable	N/A	ZT26-NJ-NJ-11M	19060401	2021-05-23
5	AN-E067	RF Cable	N/A	ZT26-NJ-NJ-2.5M	19060402	2021-05-23
6	AN-E068	RF Cable	N/A	ZT26-NJ-NJ-0.5M	19060403	2021-05-23
7	AN-E056	3m Semi-anechoic Chamber	chengyu	9m*6m*6m	N/A	2022-05-19
8	AN-E069	Test Software	Farad	EZ-EMC Ver:ANCI-2A1	N/A	N/A

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

3.2.3 TEST PROCEDURE

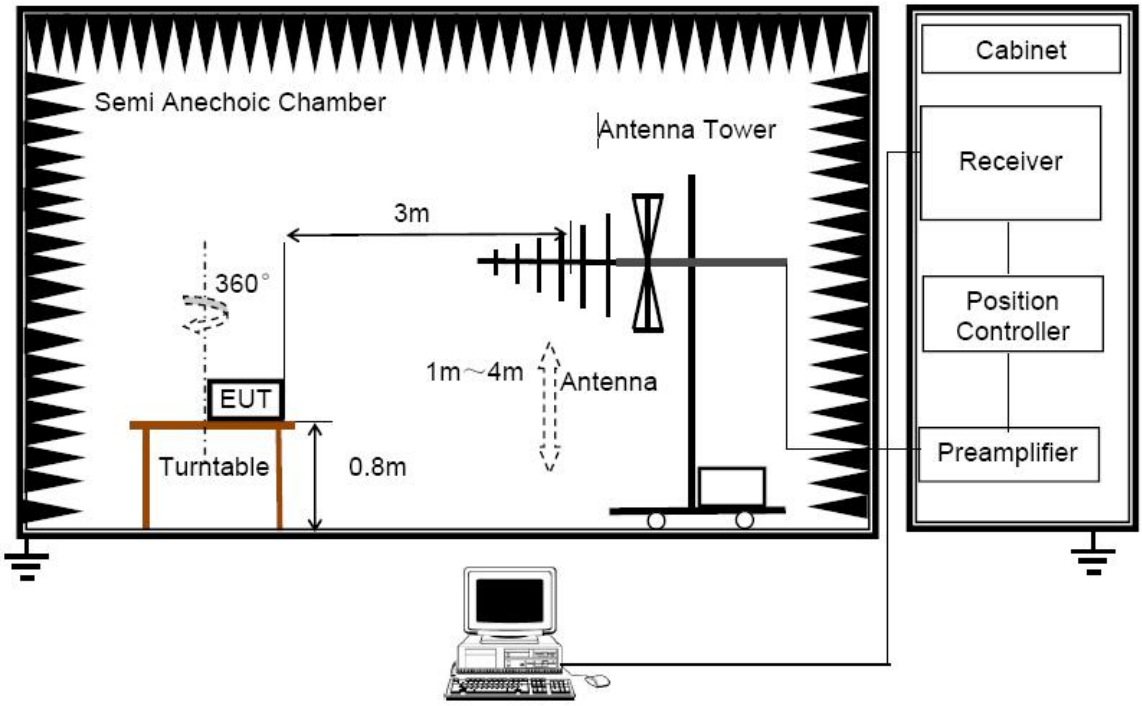
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP

Radiated Emissions Test Set-Up Frequency 30MHz - 1GHz



For the actual test configuration, please refer to Appendix: Photographs of the Radiated Emission Test.

3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.7 TEST RESULTS

EUT：	Under cabinet light	**Model No. ：**	CAU01-4624R-840W
Temperature：	23.2 ℃	**Relative Humidity：**	54.7 %
Pressure：	1009 hPa	**Power Supply ：**	AC 120V/60Hz
Test Mode ：	Normal Operation		

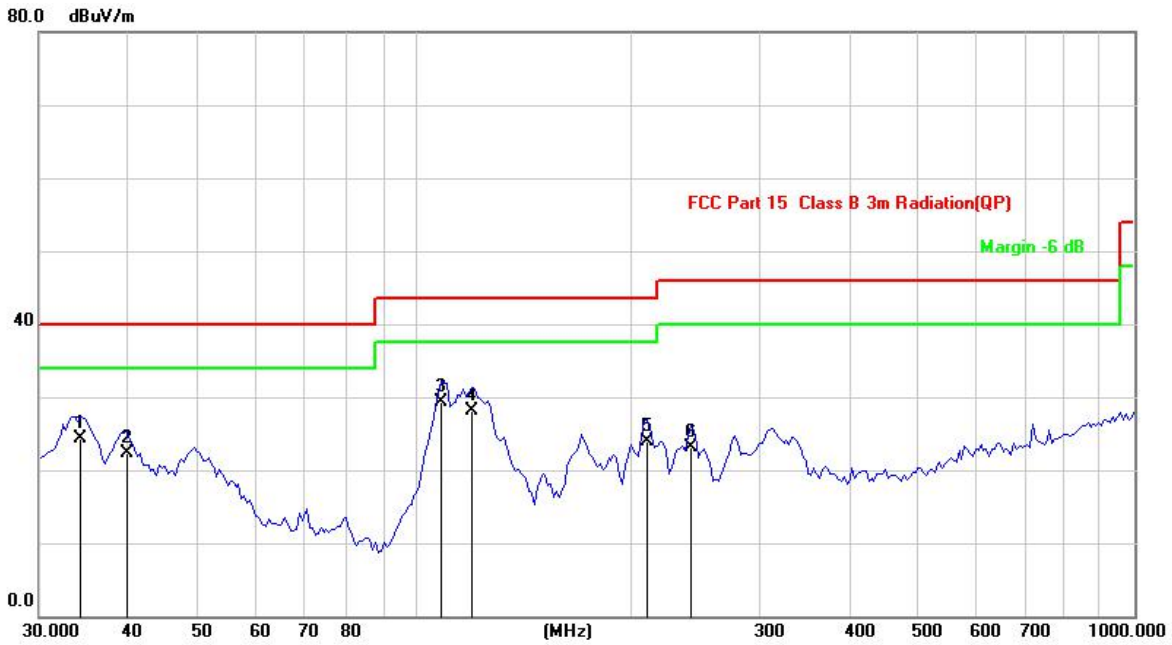
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Detector or Peak Detector.

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

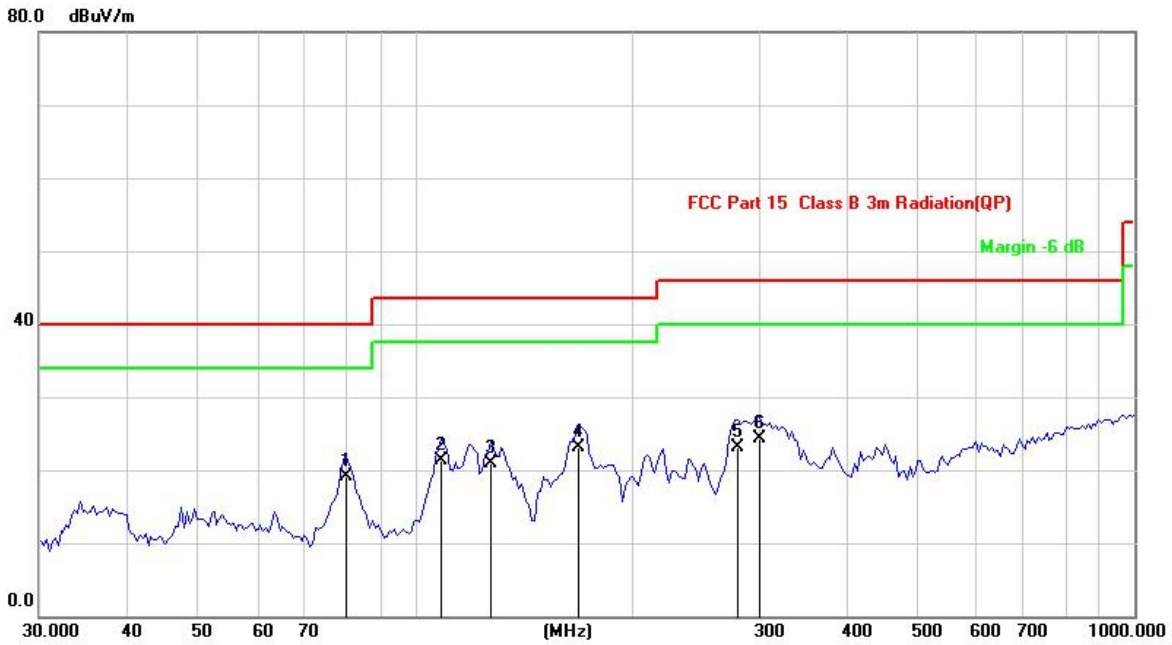
(3) Measuring frequency range from 30MHz to 1000MHz.

(4) If the peak scan value lower limit more than 20dB, then this signal data does not how in table.



Site:	**LAB**	**Antenna::Vertical**	**Temperature(C):23.2(C)**
Limit:	**FCC Part 15B 3m Class B Radiation(QP)**		**Humidity(%):54.7%**
EUT:	**Under cabinet light**	**Test Time:**	**2020-08-27**
M/N.:	**CAU01-4624R-840W**	**Power Rating:**	**AC 120V/60Hz**
Mode:	**Normal Operation**	**Test Engineer:**	**Jack**
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	34.2160	42.11	-17.71	24.40	40.00	-15.60	QP			
2	39.7146	39.21	-16.81	22.40	40.00	-17.60	QP			
3 *	108.8377	45.68	-16.28	29.40	43.50	-14.10	QP			
4	119.8556	45.10	-16.90	28.20	43.50	-15.30	QP			
5	210.0482	39.47	-15.57	23.90	43.50	-19.60	QP			
6	241.6763	37.66	-14.46	23.20	46.00	-22.80	QP			



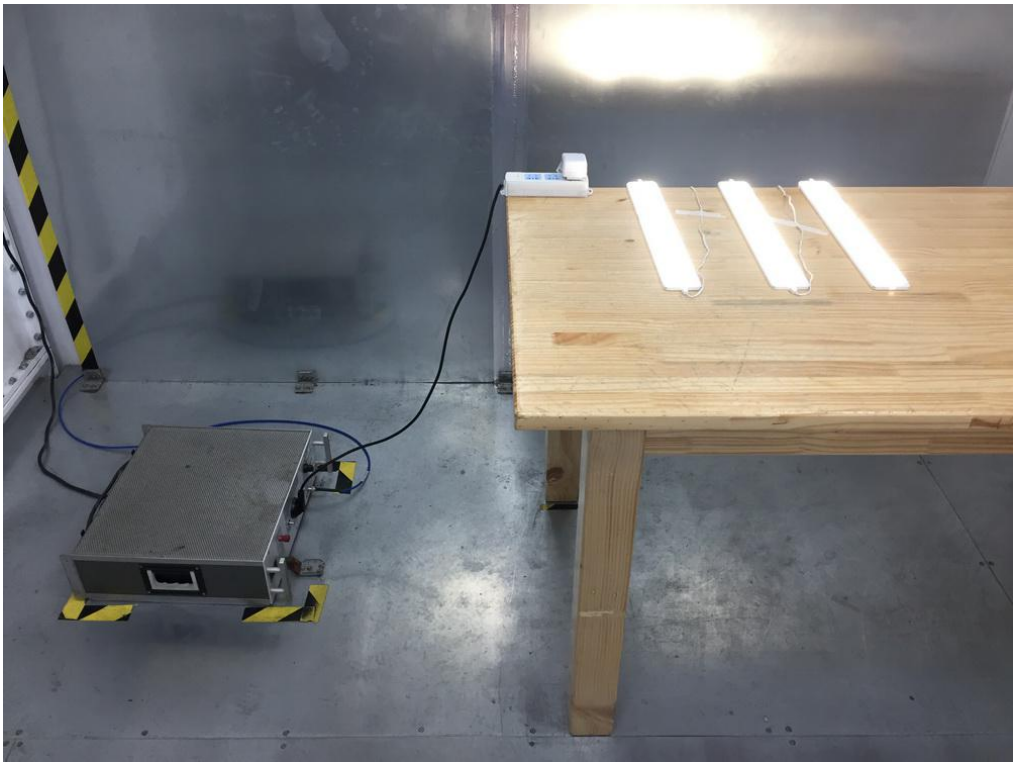
Site:	**LAB**	**Antenna::Horizontal**	**Temperature(C):23.2(C)**
Limit:	**FCC Part 15B 3m Class B Radiation(QP)**		**Humidity(%):54.7%**
EUT:	**Under cabinet light**	**Test Time:**	**2020-08-27**
M/N.:	**CAU01-4624R-840W**	**Power Rating:**	**AC 120V/60Hz**
Mode:	**Normal Operation**	**Test Engineer:**	**Jack**
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	80.0806	37.20	-18.10	19.10	40.00	-20.90	QP			
2	108.8377	37.58	-16.28	21.30	43.50	-22.20	QP			
3	127.4409	38.64	-17.74	20.90	43.50	-22.60	QP			
4 *	168.7093	40.67	-17.47	23.20	43.50	-20.30	QP			
5	280.5152	36.31	-13.21	23.10	46.00	-22.90	QP			
6	300.8943	37.05	-12.75	24.30	46.00	-21.70	QP			

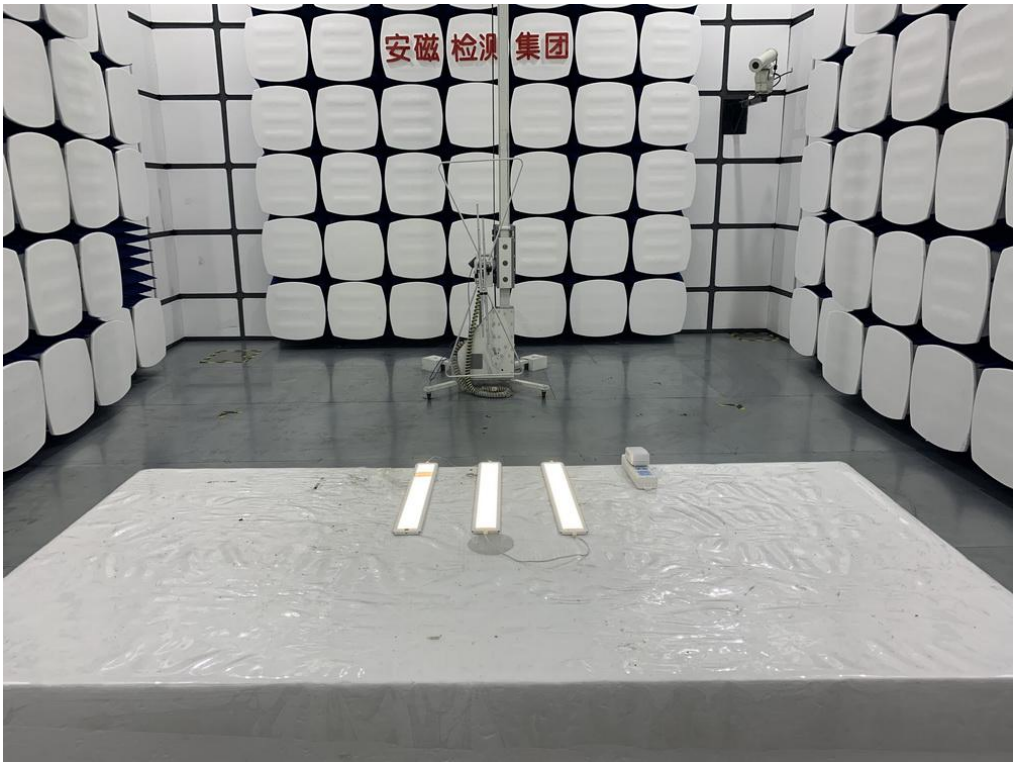
4. ATTACHMENT

4.1. EUT TEST PHOTO

Conducted Emission Measurement Photo



Radiated Measurement Photo



4.2. EUT PRODUCT PHOTO

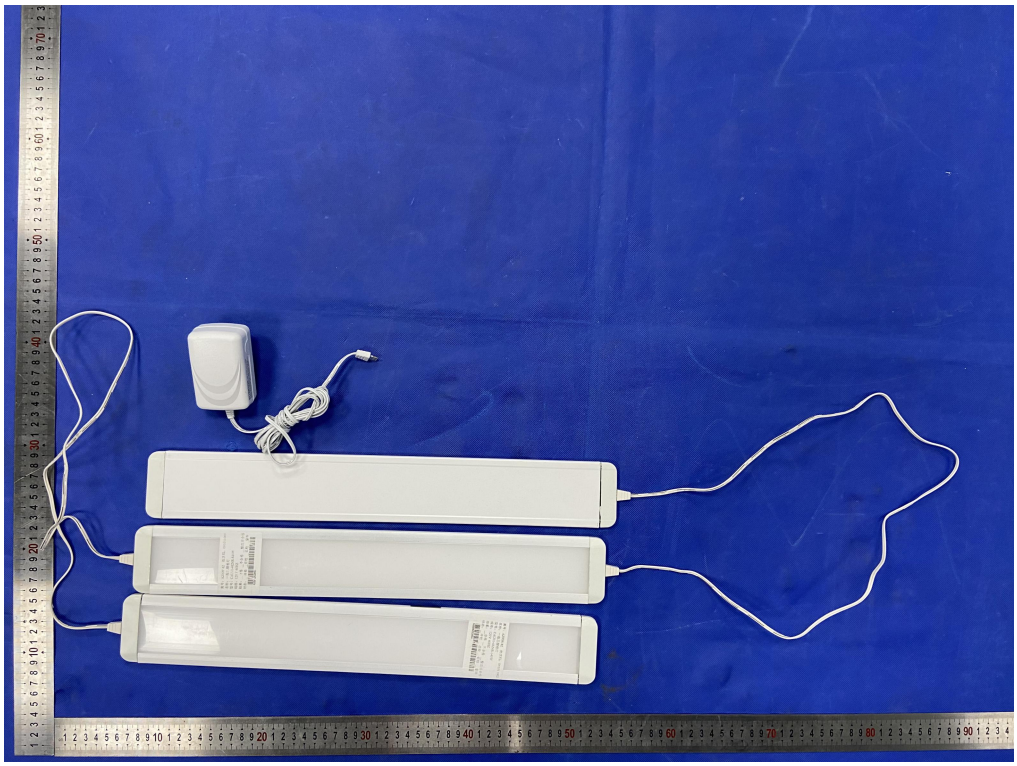


Figure 1. Overall view of unit

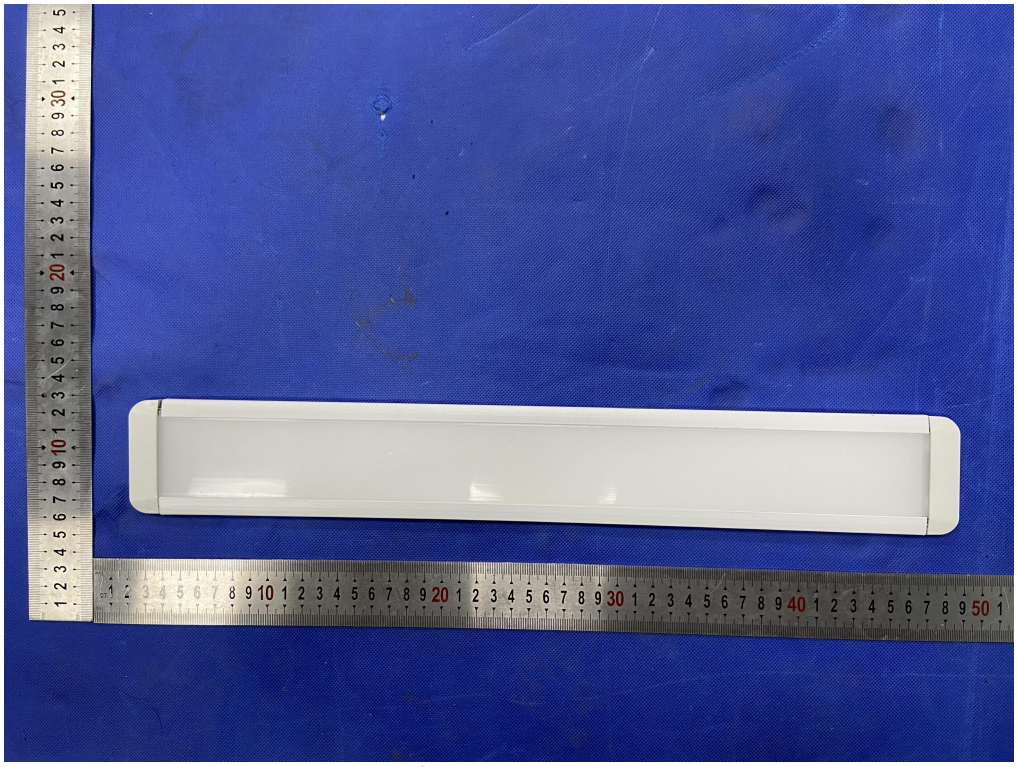


Figure 2. Overall view of unit

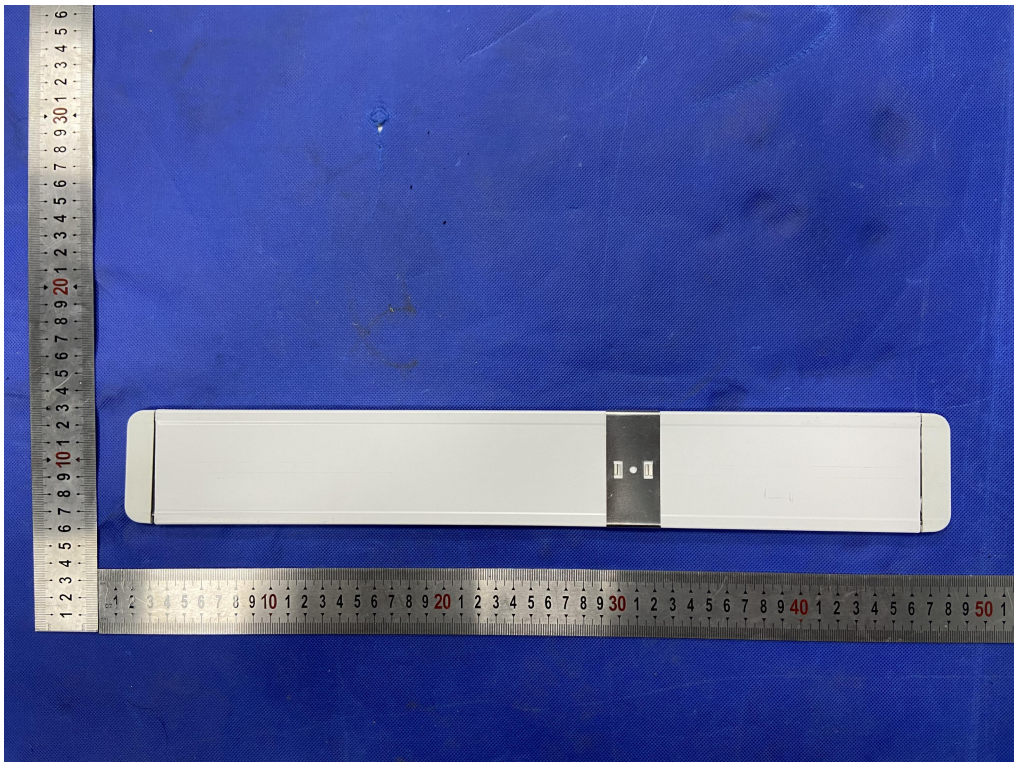


Figure 3. Overall view of unit

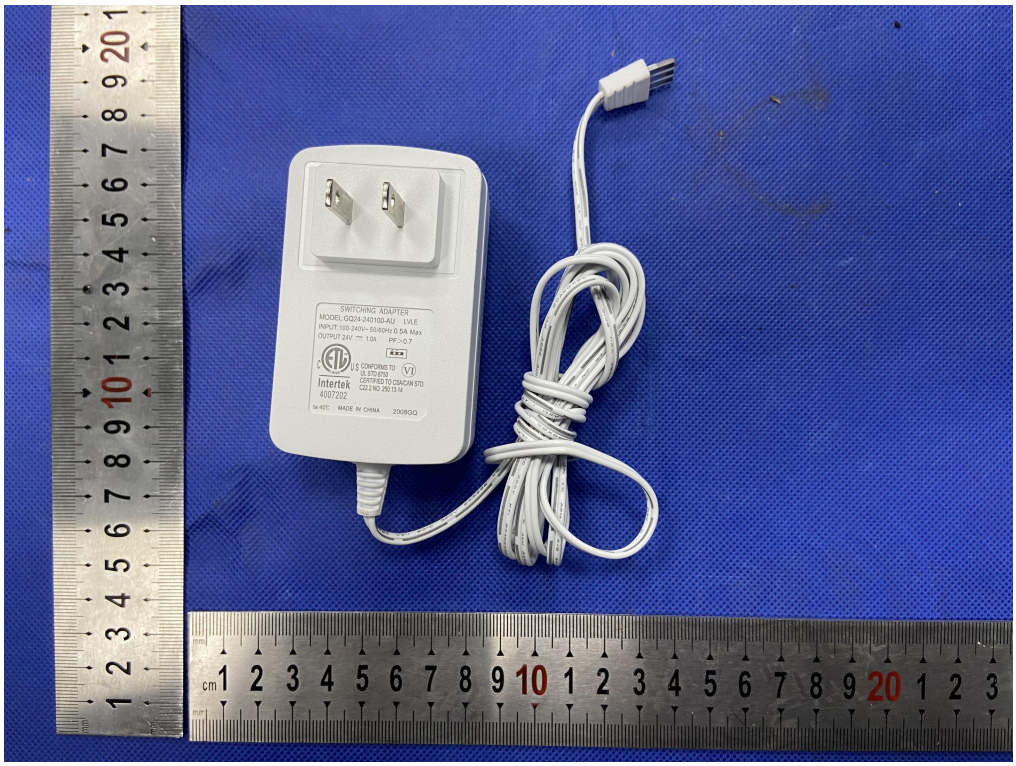


Figure 4. Overall view of SWITCHING ADAPTER

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