Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street, Longgang District,Shenzhen,Guangdong,China

TEST REPORT

47 CFR FCC Part 15 Subpart B (Class B)
Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement
ANSI C63.4: 2014
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

Report Reference No.....:	**GTS20200902008-1-4**
FCC ID..... :	**2AXAC-EF200G-44**
Compiled by (position+printed name+signature)..:	File administrators Jimmy Wang
Supervised by (position+printed name+signature)..:	Test Engineer Aaron Tan
Approved by (printed name + signature) .....:	Manager Jason Hu
Date of issue.....:	Sep.02, 2020
Testing Laboratory Name .....:	**Shenzhen Global Test Service Co.,Ltd.**
Address .....:	No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong
Applicant's name.....:	**Powermax Electric Co.,Ltd., Guangdong**
Address .....:	1-4 Region South of Qibao Industries, Xinhui District, Jiangmen City, Guangdong Province, China
Test specification:	
Standard .....:	**47 CFR FCC Part 15 Subpart B (Class B)** **ANSI C63.4: 2014**

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Test item description .....:	Ceiling Fan
Trade Mark .....:	N/A
Manufacturer.....:	Powermax Electric Co.,Ltd., Guangdong
Model/Type reference.....:	EF200G-44
Listed Models .....:	N/A
Ratings .....:	AC 120V/60Hz
Result.....:	**Pass**

TEST REPORT

Test Report No. :	GTS20200902008-1-4	Sep.02, 2020 Date of issue

Equipment under Test	:	Ceiling Fan
Model /Type	:	EF200G-44
Listed Models	:	N/A
Applicant	:	Powermax Electric Co.,Ltd., Guangdong
Address	:	1-4 Region South of Qibao Industries, Xinhui District, Jiangmen City, Guangdong Province, China
Manufacturer		Powermax Electric Co.,Ltd., Guangdong
Address		1-4 Region South of Qibao Industries, Xinhui District, Jiangmen City, Guangdong Province, China

Test Result	Pass

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:

47 CFR FCC Part 15 Subpart B (Class B) Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement
ANSI C63.4: 2014 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.

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Aug.18, 2020
Testing commenced on	:	Aug.18, 2020
Testing concluded on	:	Sep.02, 2020

Product Description

Product Name:	Ceiling Fan
Model/Type reference:	EF200G-44
Testing sample ID:	**GTS20200902008-1-4#**
Power supply:	AC 120V/60Hz
Modulation:	ASK
Operation frequency:	304MHz
Channel number:	1
Antenna type:	Internal antenna
Antenna gain:	0 dBi
Hardware version:	V1.0
Software version:	V1.0
Note:	The EUT only has the receiving function

2.2. Equipment Under Test

Power supply system utilised

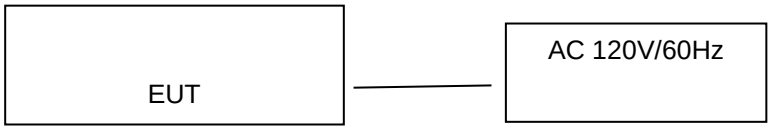
Power supply voltage	:	●	120V / 60 Hz	○	230V / 50Hz
		○	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

/

2.3. EUT operation mode

Operation mode	
Mode 1	304MHz receiving

2.4. Block Diagram of Test Setup



2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

○ - supplied by the manufacturer

○ - Supplied by the lab

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

3.2. Test Facility

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

FCC-Registration No.: 165725

Shenzhen Global Test Service Co.,Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

A2LA-Lab Cert. No.: 4758.01

Shenzhen Global Test Service Co.,Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

CNAS-Lab Code: L8169

Shenzhen Global Test Service Co.,Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories. Date of Registration: Dec. 11, 2015. Valid time is until Dec. 10, 2024.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:
Radiated Emission:

Temperature:	25 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

AC Power Conducted Emission

Temperature:	25 ° C
Humidity:	46 %
Atmospheric pressure:	950-1050mbar

3.4. Test Description

Emission Measurement		
Radiated Emission	47 CFR FCC Part 15 Subpart B Class B ANSI C63.4 2014	PASS
Conducted Disturbance	47 CFR FCC Part 15 Subpart B Class B ANSI C63.4 2014	PASS

Remark: N/A means “not applicable”.
The measurement uncertainty is not included in the test result.

3.5. 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 CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the Shenzhen Global Test Service 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 GTS laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24dB	(1)
Conducted Disturbance	0.15~30MHz	3.12dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	3560.6550.08	2019/09/20	2020/09/19
LISN	R&S	ESH2-Z5	893606/008	2019/09/20	2020/09/19
EMI Test Receiver	R&S	ESPI3	101841-cd	2019/09/20	2020/09/19
EMI Test Receiver	R&S	ESCI7	101102	2019/09/20	2020/09/19
Spectrum Analyzer	Agilent	N9020A	MY48010425	2019/09/20	2020/09/19
Spectrum Analyzer	R&S	FSV40	100019	2019/09/20	2020/09/19
Vector Signal generator	Agilent	N5181A	MY49060502	2019/09/20	2020/09/19
Signal generator	Agilent	E4421B	3610AO1069	2019/09/20	2020/09/19
Climate Chamber	ESPEC	EL-10KA	A20120523	2019/09/20	2020/09/19
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2019/09/23	2020/09/22
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2019/10/12	2020/10/11
Bilog Antenna	Schwarzbeck	VULB9163	000976	2020/05/25	2021/05/24
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2019/09/20	2020/09/19
Amplifier	Schwarzbeck	BBV 9743	#202	2019/09/20	2020/09/19
Amplifier	Schwarzbeck	BBV9179	9719-025	2019/09/20	2020/09/19
Amplifier	EMCI	EMC051845B	980355	2019/09/20	2020/09/19
Temperature/Humidity Meter	Gangxing	CTH-608	02	2019/09/20	2020/09/19
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2019/09/20	2020/09/19
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2019/09/20	2020/09/19
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2019/09/20	2020/09/19
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2019/09/20	2020/09/19

Spectrum analyzer	Agilent	E4407B	MY45132751	2019/09/20	2020/09/19
Data acquisition card	Agilent	U2531A	TW53323507	2019/09/20	2020/09/19
Power Sensor	Agilent	U2021XA	MY5365004	2019/09/20	2020/09/19
Test Control Unit	Tonscend	JS0806-1	178060067	2019/06/20	2020/06/19
Automated filter bank	Tonscend	JS0806-F	19F8060177	2019/06/20	2020/06/19
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

The calibration interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. Radiated Emission

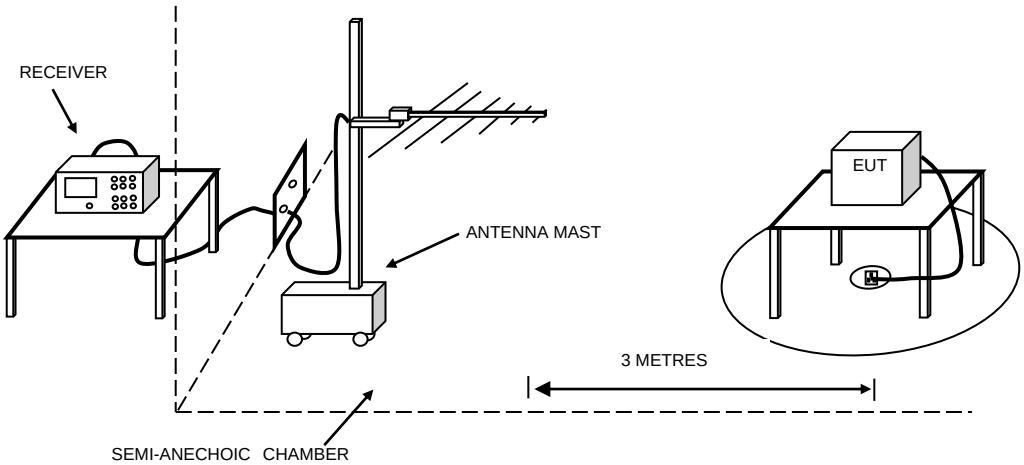
4.1.1. LIMITS OF DISTURBANCE (Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~1000	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.1.2. TEST CONFIGURATION



4.1.3. TEST PROCEDURE

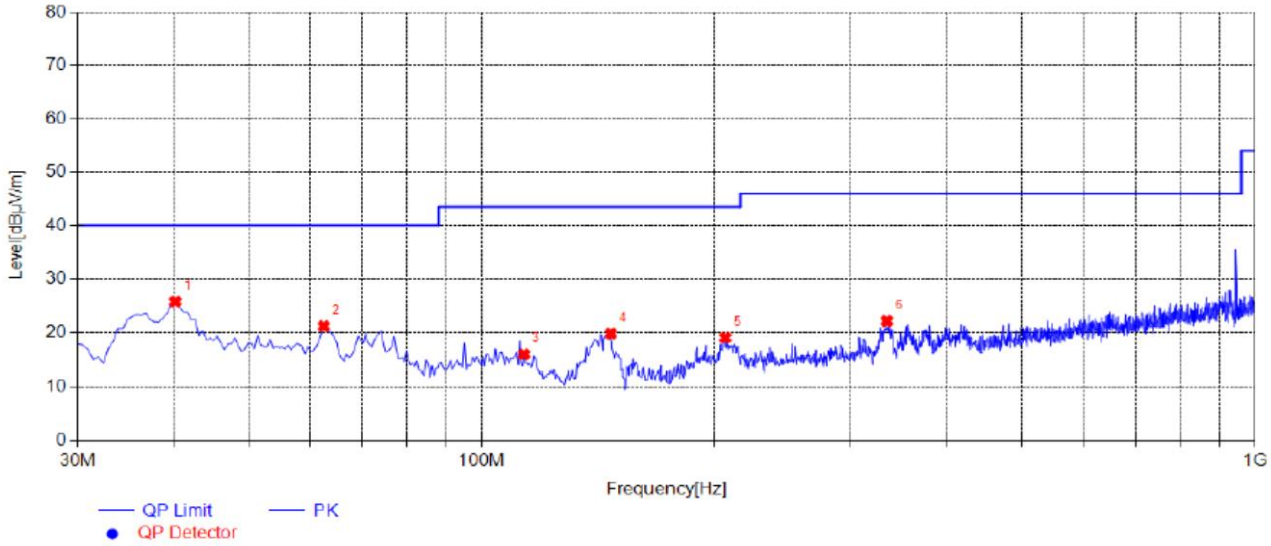
EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna. The antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test.

4.1.4. CLIMATIC CONDITIONS

- ambient temperature : 24 ℃
- relative humidity: 48%
- atmospheric pressure: 960 mbar

4.1.5. TEST RESULTS

Test mode:	Mode 1	Polarization	Horizontal



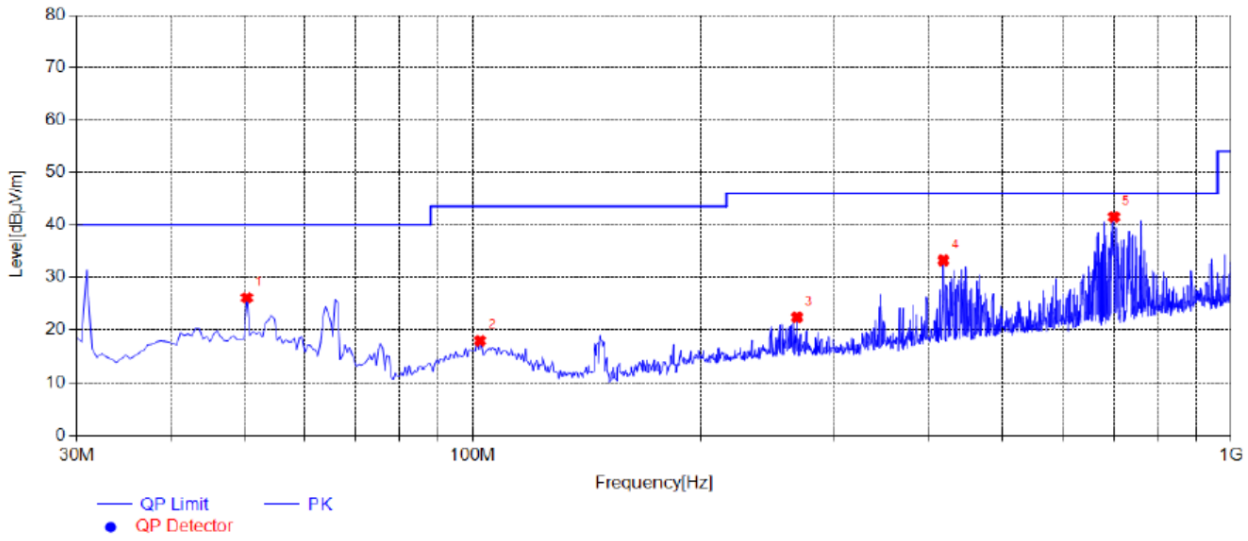
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	40.1850	33.26	-7.48	25.78	40.00	14.22	100	358	PK	Horizonta	PASS
2	62.4950	30.09	-8.90	21.19	40.00	18.81	100	352	PK	Horizonta	PASS
3	113.4200	25.15	-9.25	15.90	43.50	27.60	100	349	PK	Horizonta	PASS
4	146.8850	32.44	-12.64	19.80	43.50	23.70	100	352	PK	Horizonta	PASS
5	206.5400	28.45	-9.42	19.03	43.50	24.47	100	346	PK	Horizonta	PASS
6	334.0950	28.53	-6.38	22.15	46.00	23.85	100	346	PK	Horizonta	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Test mode:	Mode 1	Polarization	Vertical



Suspected List

NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	50.3700	32.72	-6.64	26.08	40.00	13.92	100	352	PK	Vertical	PASS
2	102.2650	26.20	-8.32	17.88	43.50	25.62	100	275	PK	Vertical	PASS
3	267.6500	30.31	-7.96	22.35	46.00	23.65	100	352	PK	Vertical	PASS
4	417.5150	38.06	-4.86	33.20	46.00	12.80	100	279	PK	Vertical	PASS
5	700.7550	41.89	-0.43	41.46	46.00	4.54	100	312	PK	Vertical	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Test mode:	Mode 1	Polarization	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1149.82	61.49	-3.64	57.85	74	-16.15	peak
1149.82	45.63	-3.64	41.99	54	-12.01	AVG
3705.12	57.41	-0.95	56.46	74	-17.54	peak
3705.12	44.27	-0.95	43.32	54	-10.68	AVG
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---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Test mode:	Mode 1	Polarization	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1152.16	62.86	-3.64	59.22	74	-14.78	peak
1152.16	46.81	-3.64	43.17	54	-10.83	AVG
3708.31	57.65	-0.95	56.7	74	-17.3	peak
3708.31	42.19	-0.95	41.24	54	-12.76	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Notes:

1). Measuring frequencies from 9 KHz~5th harmonic

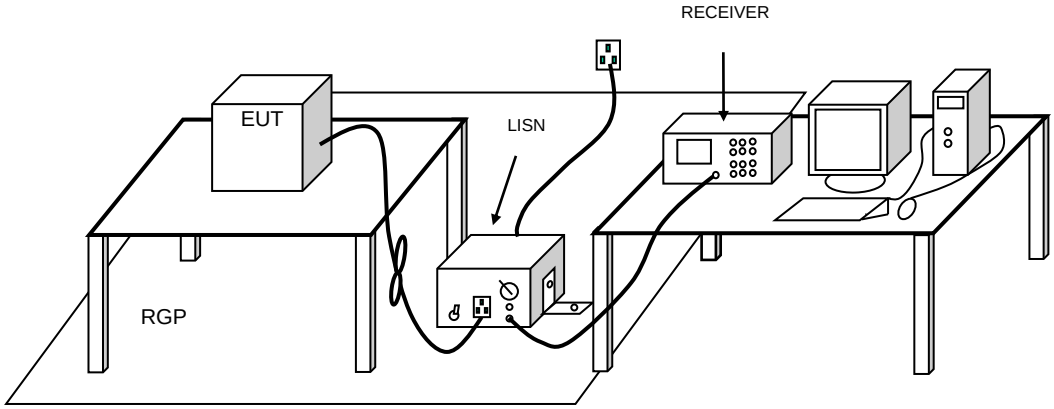
4.2. Conducted disturbance

4.2.1. LIMITS OF DISTURBANCE (Class B)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66~56	56~46
0.500～5.000	56	46
5.000~30.000	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

4.2.2. TEST CONFIGURATION



4.2.3. TEST PROCEDURE

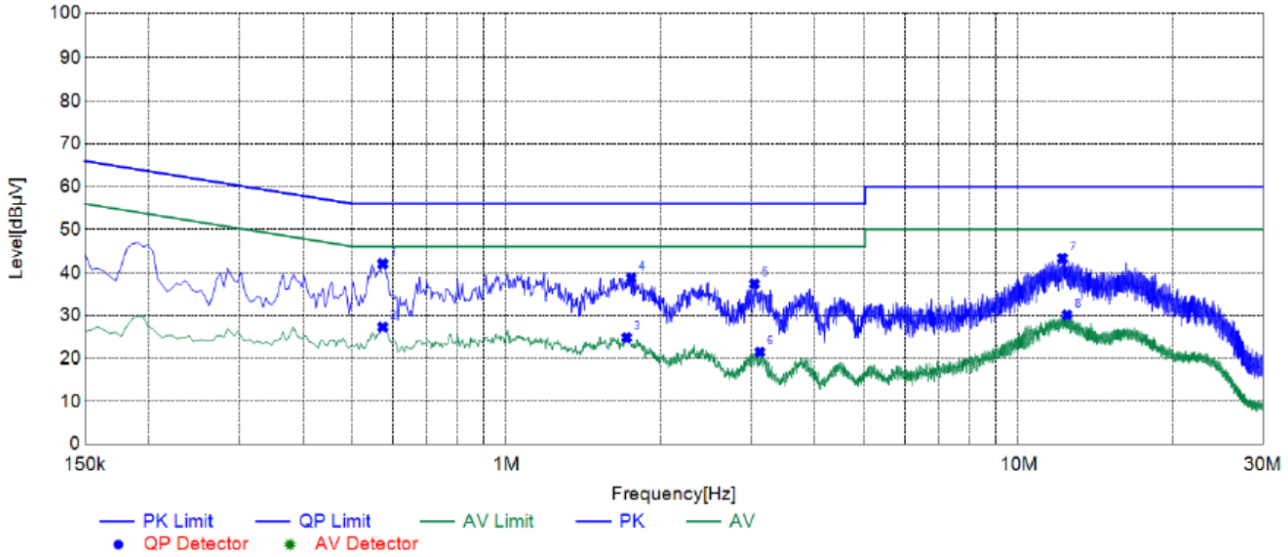
EUT is placed on a nonmetal table which is 0.8 meter (or 0.1 meter for floor-stood equipments) above the grounded reference plane. Connect the power line of the EUT to the LISN. Voltage of the power supply is varied over a range of 0.9 to 1.1 times of the rated voltage in order to check whether the level of disturbance varies considerably with the supply voltage at the selected frequency about 160KHz. Perform an initial measurement on each line with peak detector to identify the frequencies where the maximum disturbances may occur. Then measure and record the maximum disturbances with quasi-peak and average detector.

4.2.4. CLIMATIC CONDITIONS

- ambient temperature : 25 ℃
- relative humidity: 52%
- atmospheric pressure: 960 mbar

4.2.5. TEST RESULTS

Test mode:	Mode 1	Polarization	L

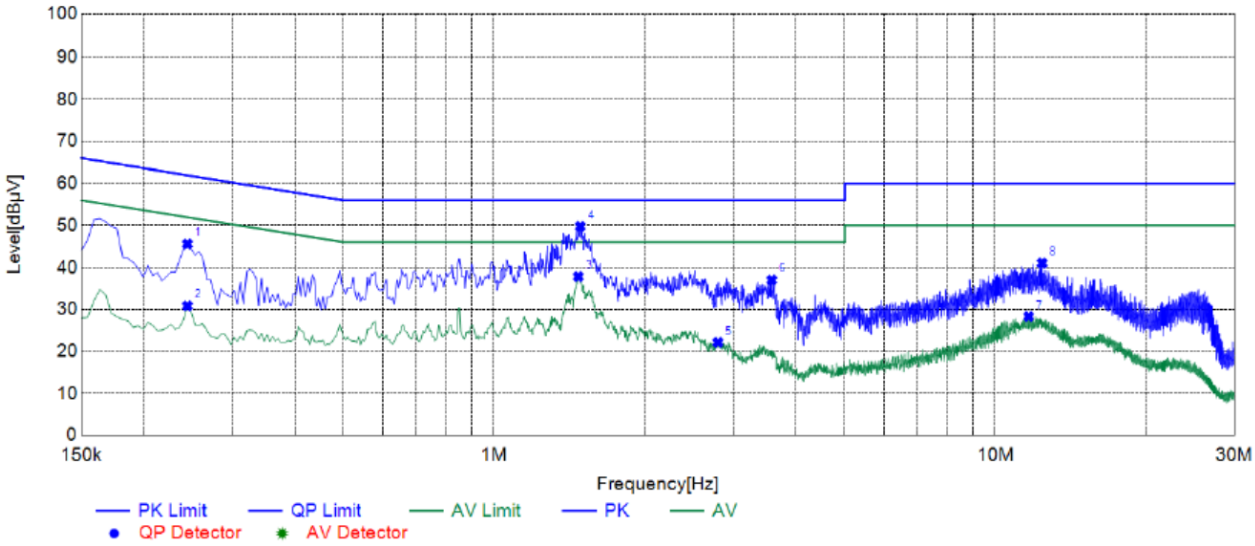


Suspected List									
NO.	Frequency [MHz]	Reading [dBµV]	Factor [dB]	Result [dBµV]	Limit [dBµV]	Margin [dB]	Detector	Line	Remark
1	0.5730	31.99	10.06	42.05	56.00	13.95	Qp	L1	PASS
2	0.5730	17.23	10.06	27.29	46.00	18.71	AV	L1	PASS
3	1.7160	14.69	10.13	24.82	46.00	21.18	AV	L1	PASS
4	1.7520	28.64	10.13	38.77	56.00	17.23	Qp	L1	PASS
5	3.0480	27.08	10.29	37.37	56.00	18.63	Qp	L1	PASS
6	3.1245	11.14	10.30	21.44	46.00	24.56	AV	L1	PASS
7	12.1740	32.42	10.85	43.27	60.00	16.73	Qp	L1	PASS
8	12.4305	19.25	10.87	30.12	50.00	19.88	AV	L1	PASS

Note:1. Result (dBµV) = Reading (dBµV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Test mode:	Mode 1	Polarization	N



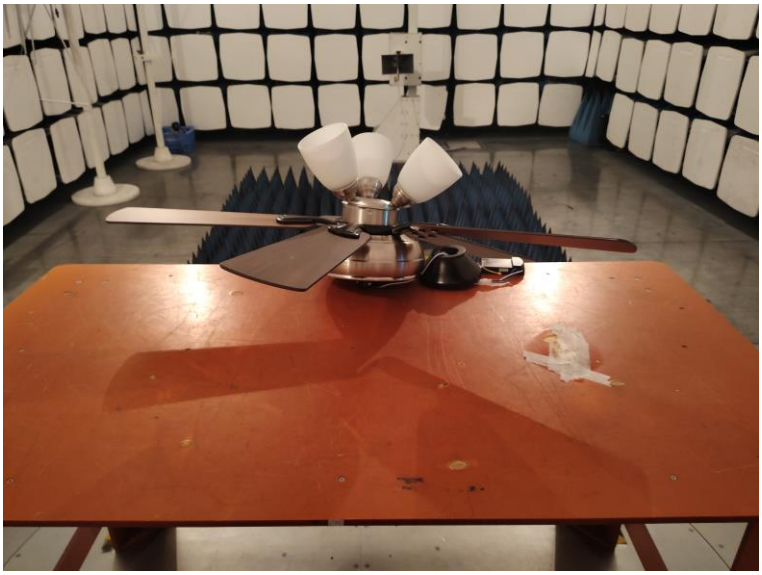
Suspected List

NO.	Frequency [MHz]	Reading [dBµV]	Factor [dB]	Result [dBµV]	Limit [dBµV]	Margin [dB]	Detector	Line	Remark
1	0.2445	35.53	10.02	45.55	61.94	16.39	Qp	N	PASS
2	0.2445	20.83	10.02	30.85	51.94	21.09	AV	N	PASS
3	1.4730	27.75	10.11	37.86	46.00	8.14	AV	N	PASS
4	1.4865	39.65	10.11	49.76	56.00	6.24	Qp	N	PASS
5	2.7960	11.87	10.26	22.13	46.00	23.87	AV	N	PASS
6	3.5790	26.68	10.36	37.04	56.00	18.96	Qp	N	PASS
7	11.6475	17.51	10.82	28.33	50.00	21.67	AV	N	PASS
8	12.3990	30.14	10.87	41.01	60.00	18.99	Qp	N	PASS

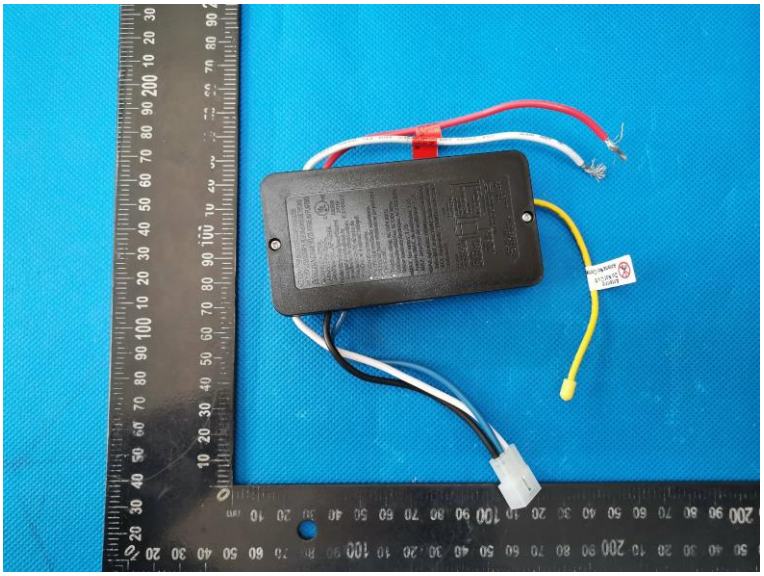
Note:1. Result (dBµV) = Reading (dBµV) + Factor (dB).

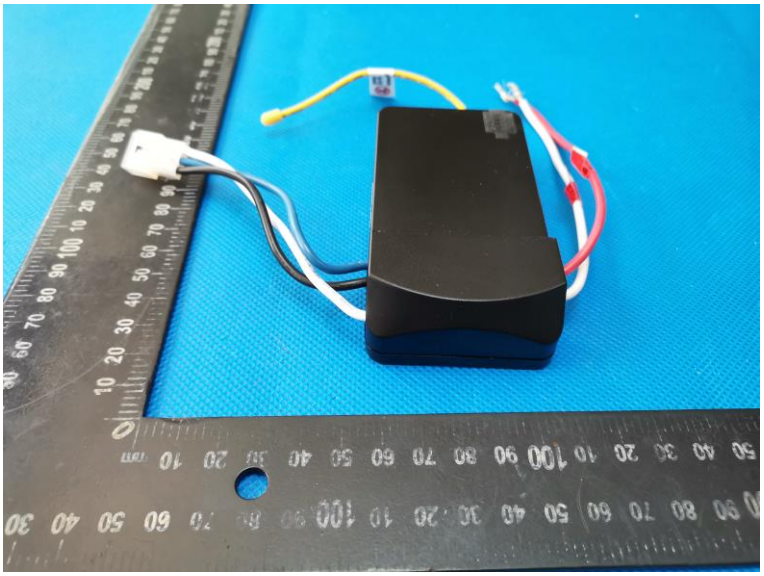
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

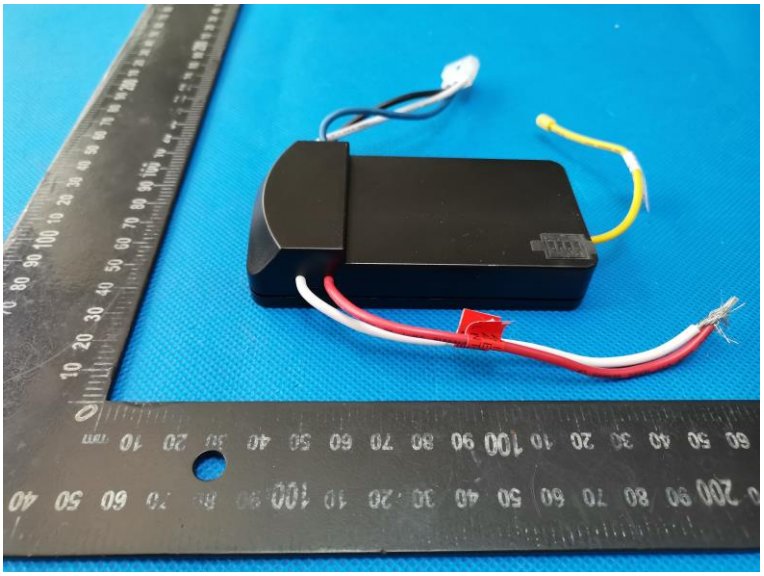
5. The Test Photos of the EUT

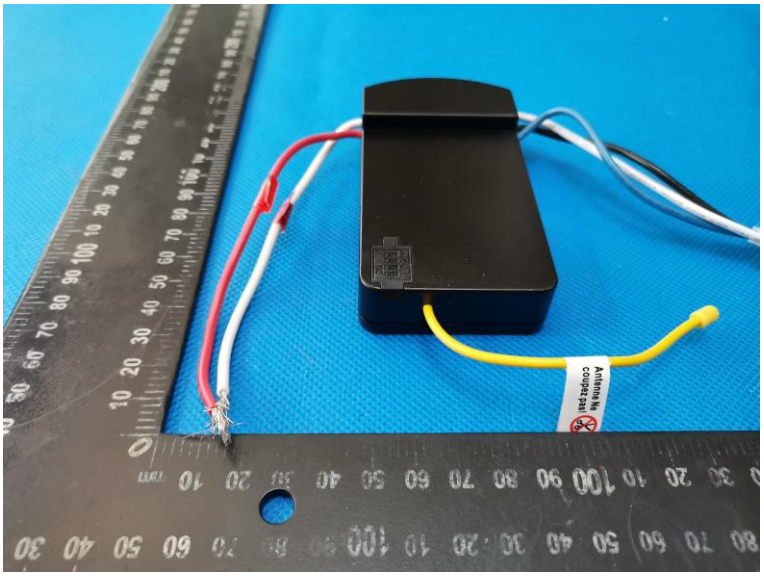


6. External and Internal Photos of the EUT








Antenna Na
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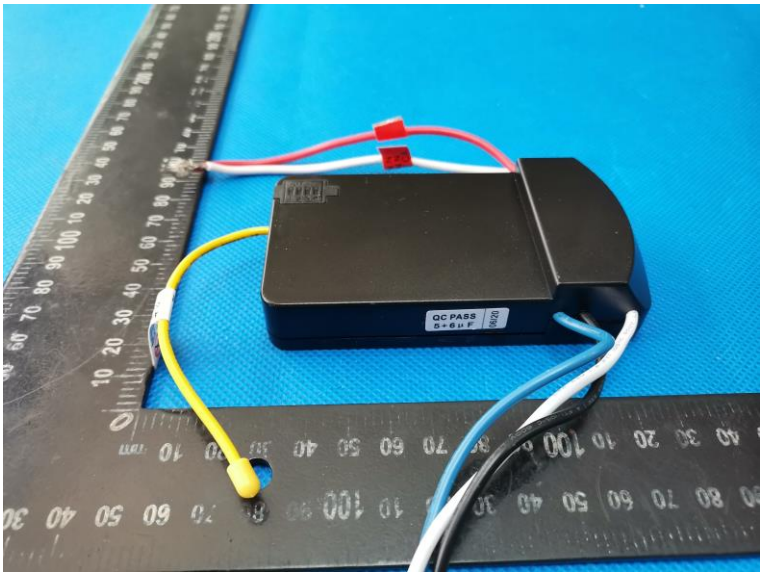
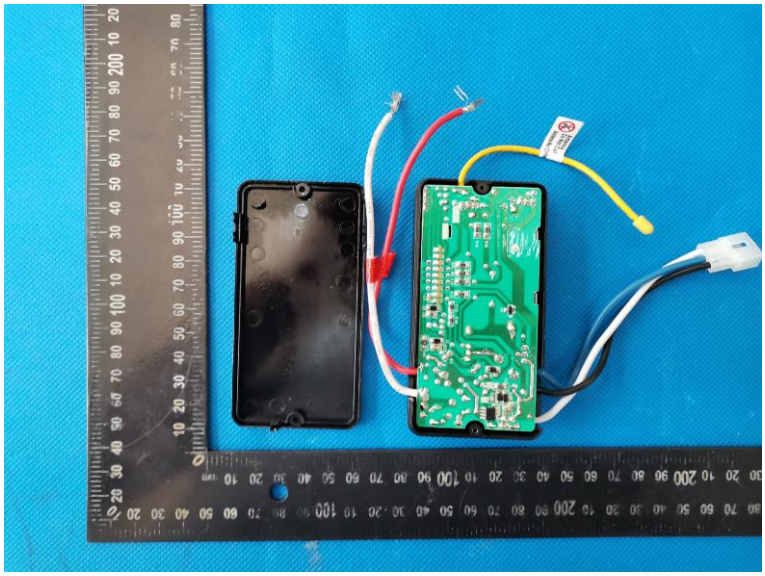
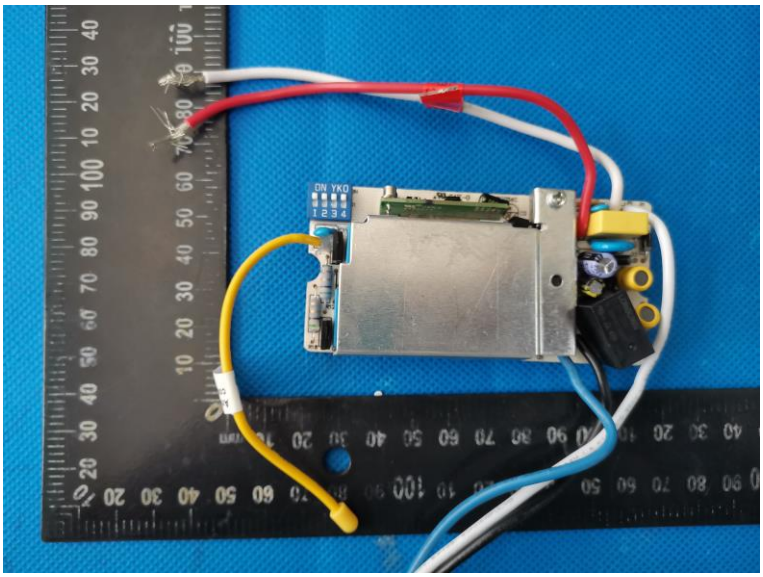
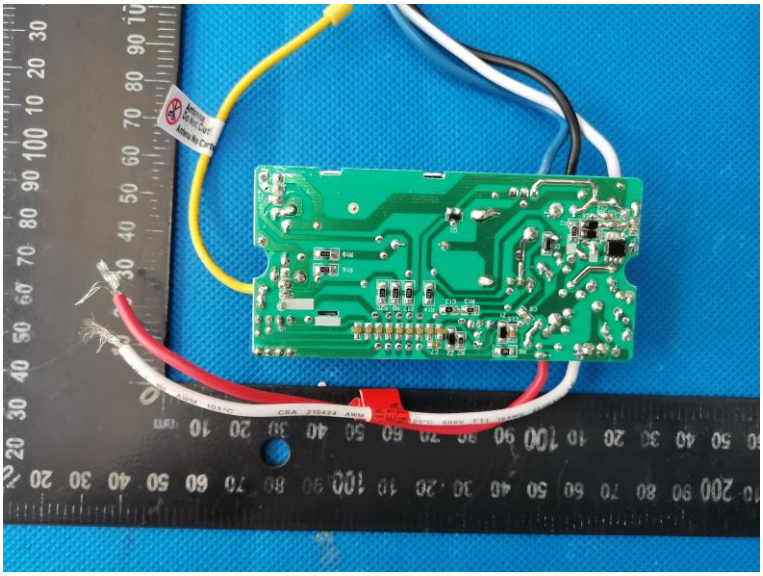
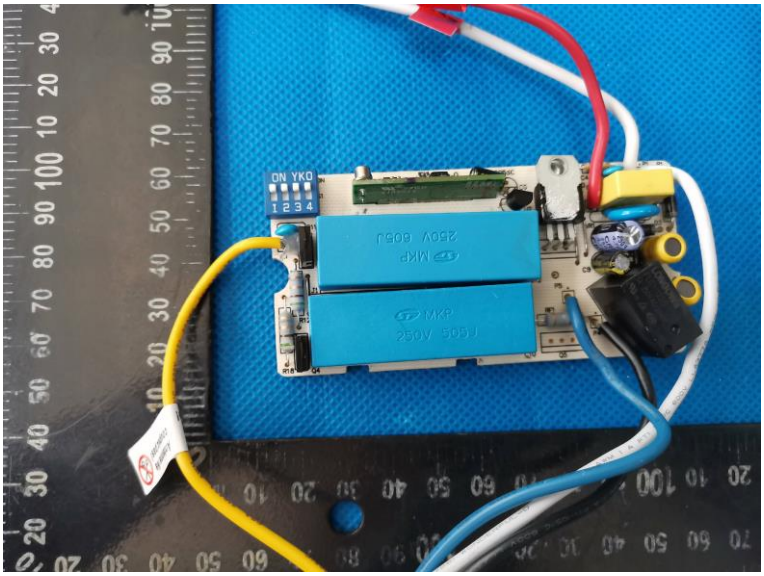

QC PASS





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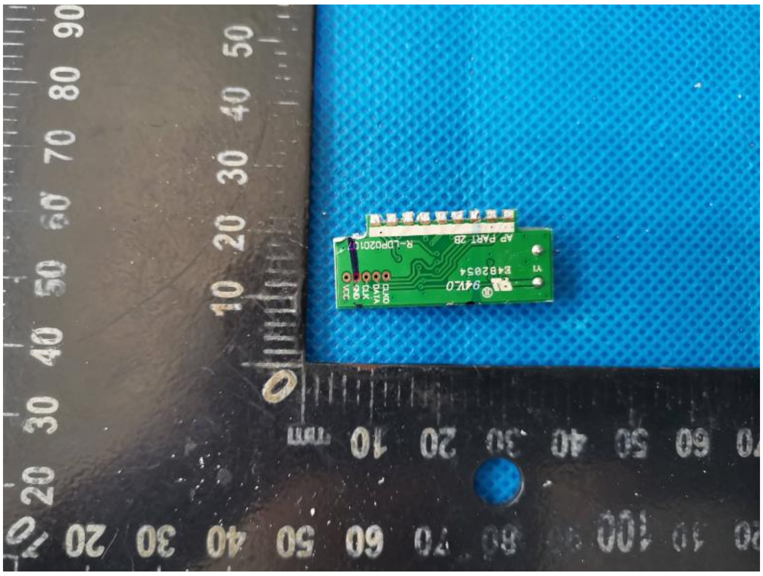

.......................End of Report.........................