

TEST REPORT

Applicant: Shenzhen discover technology co.,ltd.

Address of Applicant: Floor 4, Building 4, Haomai High-Tech Park, No. 387, Huating Road, Dalang Street, Longhua District, Shenzhen, Guangdong, China

Manufacturer/ Factory: Shenzhen youyang technology co.,ltd.

Address of Manufacturer/Factory: Floor 4, Building 4, Haomai High-Tech Park, No. 387, Huating Road, Dalang Street, Longhua District, Shenzhen, Guangdong, China

Equipment Under Test (EUT)

Product Name: RGB VIDEO LIGHT

Model No.: P100, P100S, P100E

Applicable standards: BS EN IEC 55015:2019+A11:2020
BS EN 61547:2009
BS EN IEC 61000-3-2:2019
BS EN 61000-3-3:2013+A1:2019

Date of sample receipt: November 16, 2021

Date of Test: November 16- 19, 2021

Date of report issued: November 23, 2021

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Luo

Laboratory Manager

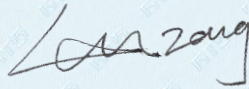
This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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2 Version

Version No.	Date	Description
00	November 23, 2021	Original

Prepared By:

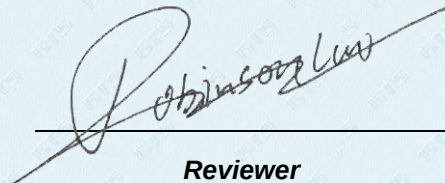


Date:

November 23, 2021

Project Engineer

Reviewed By:



Date:

November 23, 2021

Reviewer

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4 Test Summary

Test item	Test Requirement	Test Method	Class / Severity	Result
Radiated electromagnetic disturbances (9kHz-30MHz)	BS EN IEC 55015	BS EN IEC 55015	Table 9	Pass
Radiated electromagnetic disturbances	BS EN IEC 55015	BS EN IEC 55015	Table 10	Pass
Disturbance voltages	BS EN IEC 55015	BS EN IEC 55015	Table 1	Pass
Harmonic Emission	BS EN IEC 61000-3-2	BS EN IEC 61000-3-2	Class C	Pass
Flicker Emission	BS EN 61000-3-3	BS EN 61000-3-3	Clause 5 of EN61000-3-3	Pass
Electrostatic discharges	BS EN 61547	BS EN 61000-4-2	Contact ± 4 kV Air ± 8 kV	Pass
Radio-frequency electromagnetic fields	BS EN 61547	BS EN 61000-4-3	3V/m 80%, 1kHz, AM	Pass
Fast Transients	BS EN 61547	BS EN 61000-4-4	AC ± 1.0 kV	Pass
Surges	BS EN 61547	BS EN 61000-4-5	Table 10	Pass
Injected currents	BS EN 61547	BS EN 61000-4-6	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage dips and short interruptions	BS EN 61547	BS EN 61000-4-11	0 % UT* for 0.5per 70 % UT* for 10per	Pass

Remark:

UT* is the nominal supply voltage.

N/A: Not applicable.

5 General Information

5.1 General Description of EUT

Product Name:	RGB VIDEO LIGHT
Model No.:	P100, P100S, P100E
Test Model No:	P100
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The difference is model name for commercial purpose.	
Power Supply:	USB input: DC 5V

5.2 Test mode and voltage

Test mode:	
Charge mode	Keep the EUT charging.
Operation mode	Keep the EUT in the operation status.
Test voltage:	
AC 230V/50Hz	

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Apple adapter	USB Charger	A1443	N/A

5.4 Monitoring of EUT for All Immunity Test

Visual:	Monitor the luminous intensity
Audio:	N/A

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Test Facility

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

• **FCC —Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen 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 files.

• **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

• **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.8 Test Location

RI test was performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen

Address: No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

All other test items were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480; Fax: 0755-27798960

6 Test Instruments List

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 24 2021	June. 23 2022
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 24 2021	June. 23 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 24 2021	June. 23 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 24 2021	June. 23 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 24 2021	June. 23 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 24 2021	June. 23 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 24 2021	June. 23 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 24 2021	June. 23 2022
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 24 2021	June. 23 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 24 2021	June. 23 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 24 2021	June. 23 2022
15	Band filter	Amindeon	82346	GTS219	June. 24 2021	June. 23 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 24 2021	June. 23 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 24 2021	June. 23 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 24 2021	June. 23 2022
19	Splitter	Agilent	11636B	GTS237	June. 24 2021	June. 23 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 24 2021	June. 23 2022
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 17 2021	Oct. 16 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 17 2021	Oct. 16 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 17 2021	Oct. 16 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 24 2021	June. 23 2022

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 24 2021	June. 23 2022
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 24 2021	June. 23 2022
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 24 2021	June. 23 2022
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 24 2021	June. 23 2022
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	June. 24 2021	June. 23 2022
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	July. 09 2021	July. 08 2022

Loop						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	TPIPLE-LOOP ANTENNA	EVERFINE	LLA-2	GTS539	June. 24 2021	June. 23 2022

ESD						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	KIKUSUI	KES4021A	GTS242	June. 24 2021	June. 23 2022
2	Thermo meter	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022

Conducted Immunity						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Signal Generator	ROHDE & SCHWARZ	SMB 100A	GTS553	June. 24 2021	June. 23 2022
2	CDN	LionCEL	CDN-M3-16	GTS554	June. 24 2021	June. 23 2022
3	CDN	CYBERTEK	EM 5070	GTS559	June. 24 2021	June. 23 2022
4	Power amplifier	rflight	NTWPA-00010475	GTS555	June. 24 2021	June. 23 2022
5	ATT	SUNWAVE	SJ-50-06DB	GTS556	June. 24 2021	June. 23 2022
6	Clamp	SCHAFFNER	KEMZ 801	GTS558	June. 24 2021	June. 23 2022

Harmonic/ Flicker						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Power Analyzer H/F	EMTEST	DPA500	GTS235	June. 24 2021	June. 23 2022
2	AC POWER SUPPLY	EMTEST	ACS500	GTS236	June. 24 2021	June. 23 2022
3	Thermo meter	KTJ	TA328	GTS256	June. 24 2021	June. 23 2022

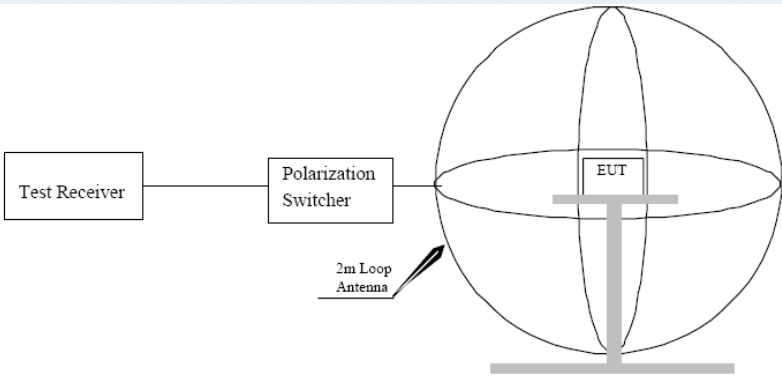
EFT, Surge, Voltage dips and Interruption						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	EMTEST system	EMTEST	UCS500N	GTS239	June. 24 2021	June. 23 2022
2	Clamp	EMTEST	HFK	GTS557	June. 24 2021	June. 23 2022
3	Thermo meter	KTJ	TA328	GTS238	June. 24 2021	June. 23 2022

Radiated Immunity						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	854	SEM001-05	2020-05-09	2023-05-08
2	Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-09	2021-03-31	2022-03-30
3	Stacked Log.-Per.- Broadband Antenna (70MHz-10GHz)	Schwarzbeck	STLP 9129	SEM003-25	N/A	N/A
4	Signal Generator (9kHz-6GHz)	Rohde & Schwarz	SMB100A	SEM006-11	2021-03-31	2022-03-30
5	Broadband Amplifier (80MHz-1GHz)	Rohde & Schwarz	BBA150-BC250	SEM005-12	2021-09-22	2022-09-21
6	Broadband Amplifier(800MHz-3GHz)	Rohde & Schwarz	BBA150-D110	SEM005-13	2021-03-31	2022-03-30
7	Broadband Amplifier(2.5GHz-6GHz)	Rohde & Schwarz	BBA150-E60	SEM005-16	2021-04-10	2022-04-09
8	Measurement Software	Rohde & Schwarz	EMC32 V9.25.00	N/A	N/A	N/A

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 24 2021	June. 23 2022

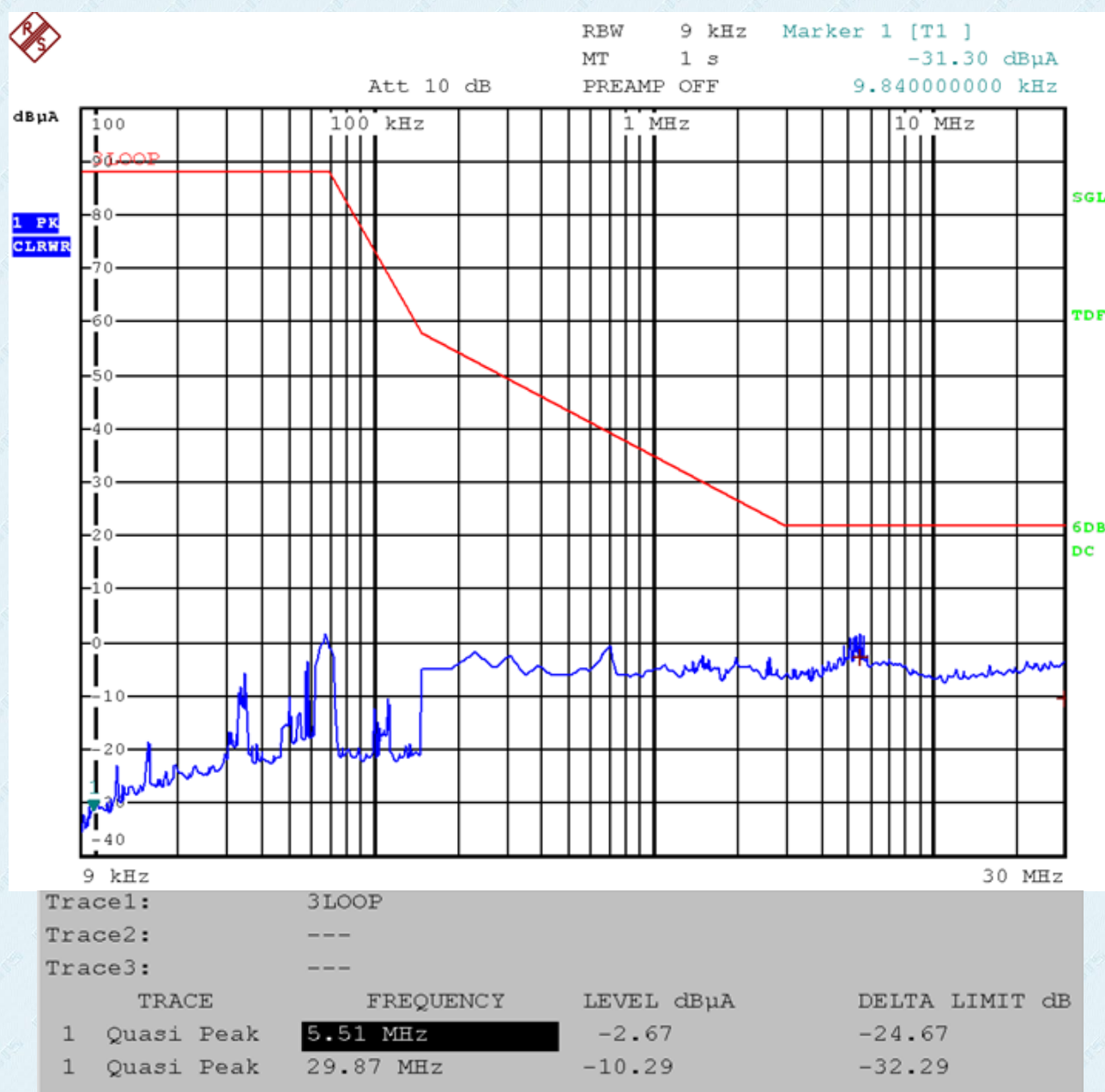
7 Emission Test Results

7.1 Radiated Electromagnetic Disturbance(9kHz-30MHz)

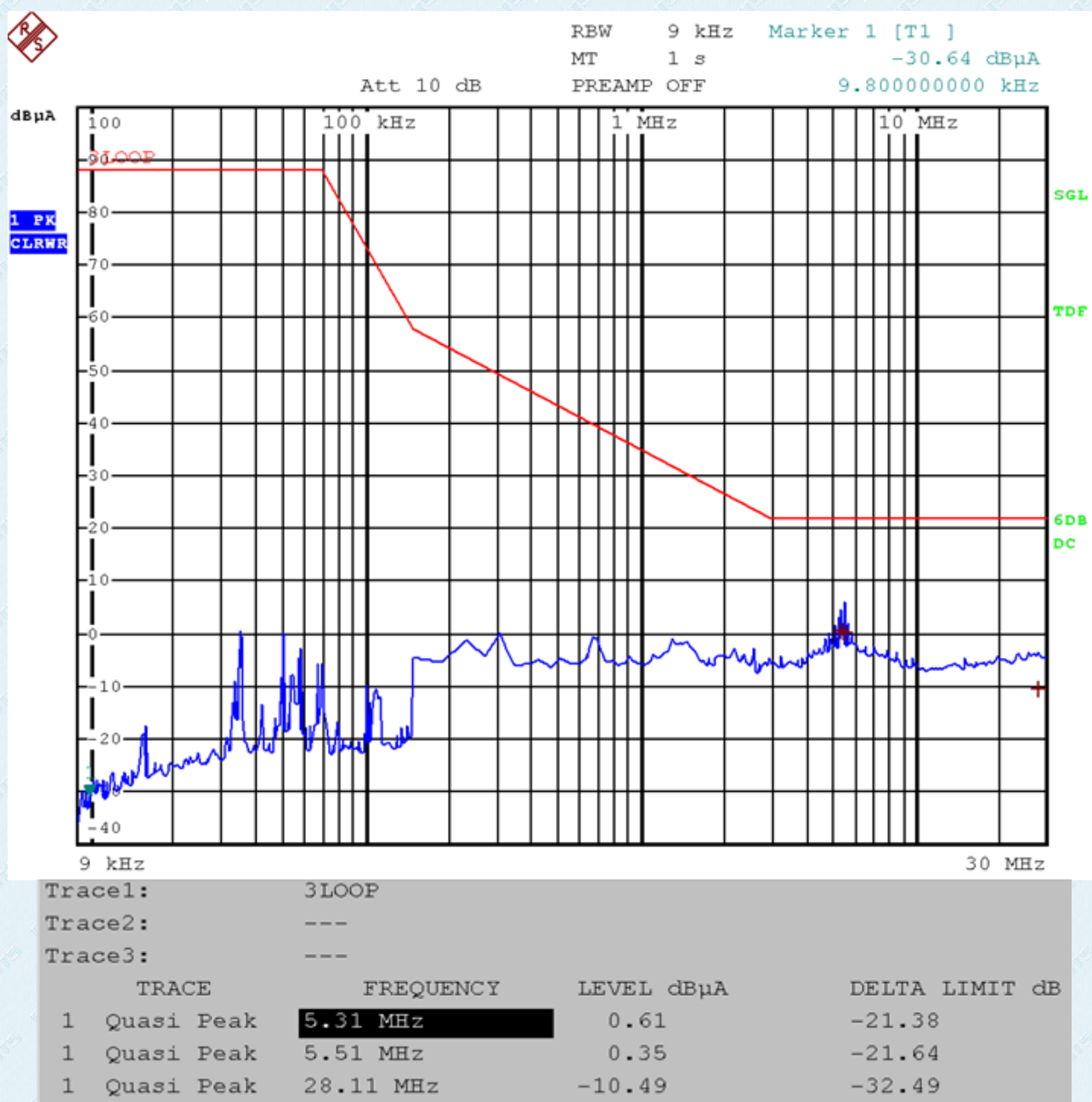
Test Requirement:	BS EN IEC 55015														
Test Method:	BS EN IEC 55015														
Test Frequency Range:	9kHz to 30MHz														
Receiver set:	Frequency	Detector	RBW	VBW	Value										
	9KHz~150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak										
	150KHz~30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak										
Limit:	<table><tr><th>Frequency range (MHz)</th><th>Limits for loop diameter dBuA @2m</th></tr><tr><td>0.009-0.070</td><td>88</td></tr><tr><td>0.070-0.150</td><td>88 to 58*</td></tr><tr><td>0.15-3.0</td><td>58 to22*</td></tr><tr><td>3.0-30</td><td>22</td></tr></table> *Decreasing linearly with the logarithm of the frequency. For electrodeless lamps and luminaires, the limit in the frequency range of 2,2 MHz to 3,0 MHz is 58 dB(μA) for 2 m, 51dB(μA) for 3 m and 45 dB(μA) for 4 m loop diameter.					Frequency range (MHz)	Limits for loop diameter dBuA @2m	0.009-0.070	88	0.070-0.150	88 to 58*	0.15-3.0	58 to22*	3.0-30	22
Frequency range (MHz)	Limits for loop diameter dBuA @2m														
0.009-0.070	88														
0.070-0.150	88 to 58*														
0.15-3.0	58 to22*														
3.0-30	22														
Test Setup:															
Test procedure	1. An initial pre-scan was performed in the 2m loop antenna using the spectrum analyser in peak detection mode. 2. The EUT was measured for X(A), Y(B), Z(C) polarities. 3. No further quasi-peak measurements were performed since no peak emissions from the EUT were detected within 6dB of the limit for 2m diameter loop antenna.														
Test Instruments:	Temp.:	25 °C	Humid.:	50%	Press.: 1 012mbar										
Measurement Record:	Uncertainty: 3.26dB														
Test Instruments:	Refer to section 6 for details														
Test mode:	Refer to section 5.2 for details, only show the worst case.														
Test results:	Pass														

Measurement Data

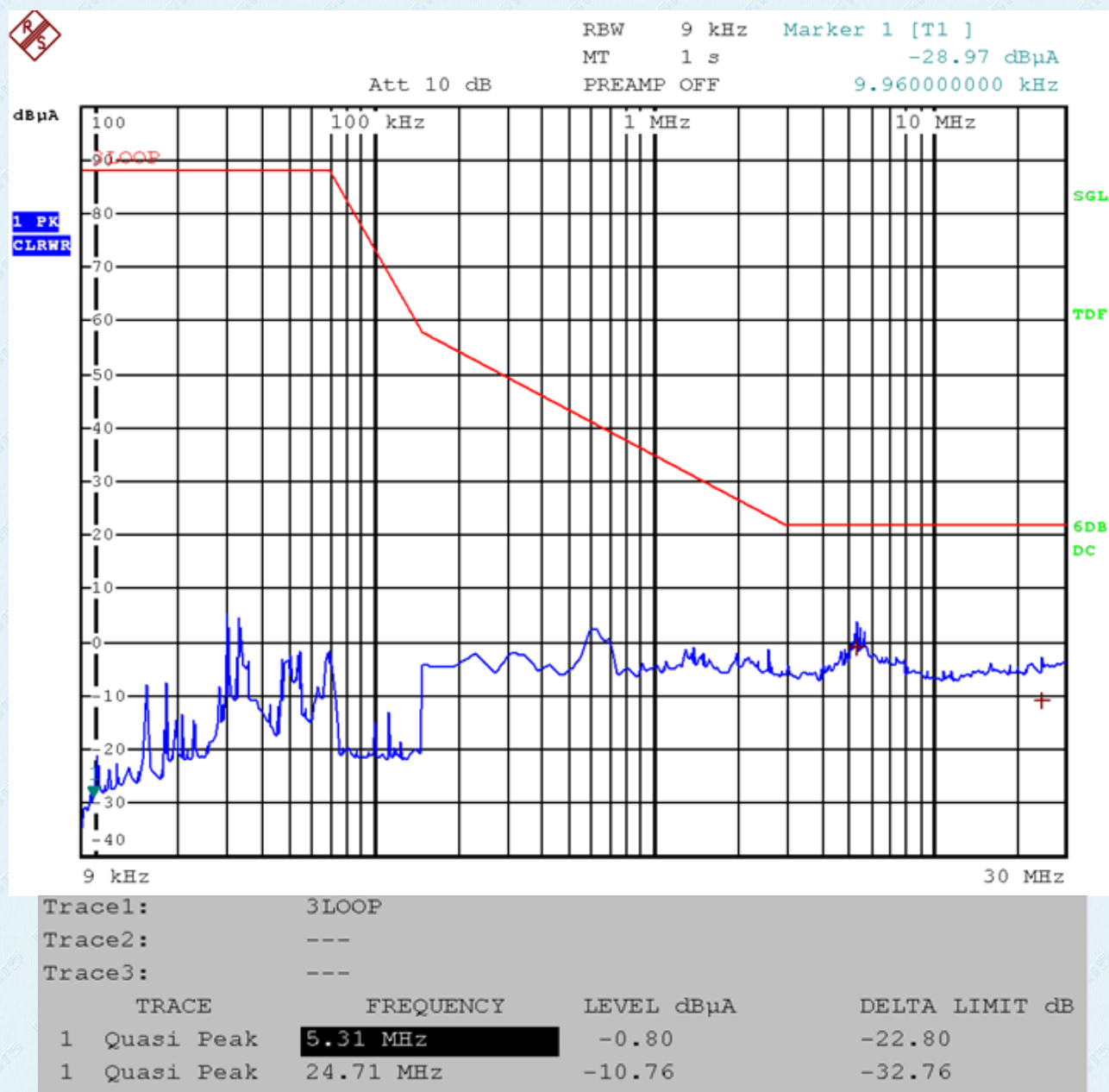
X:



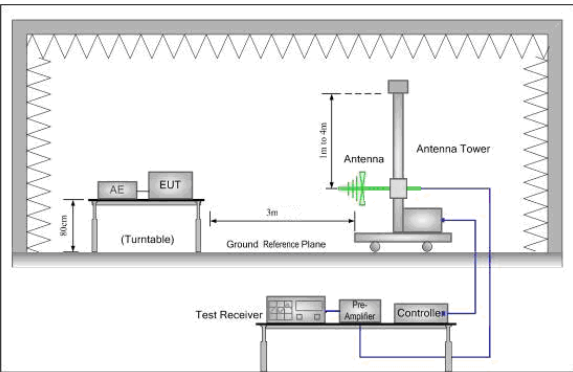
Y:



Z:

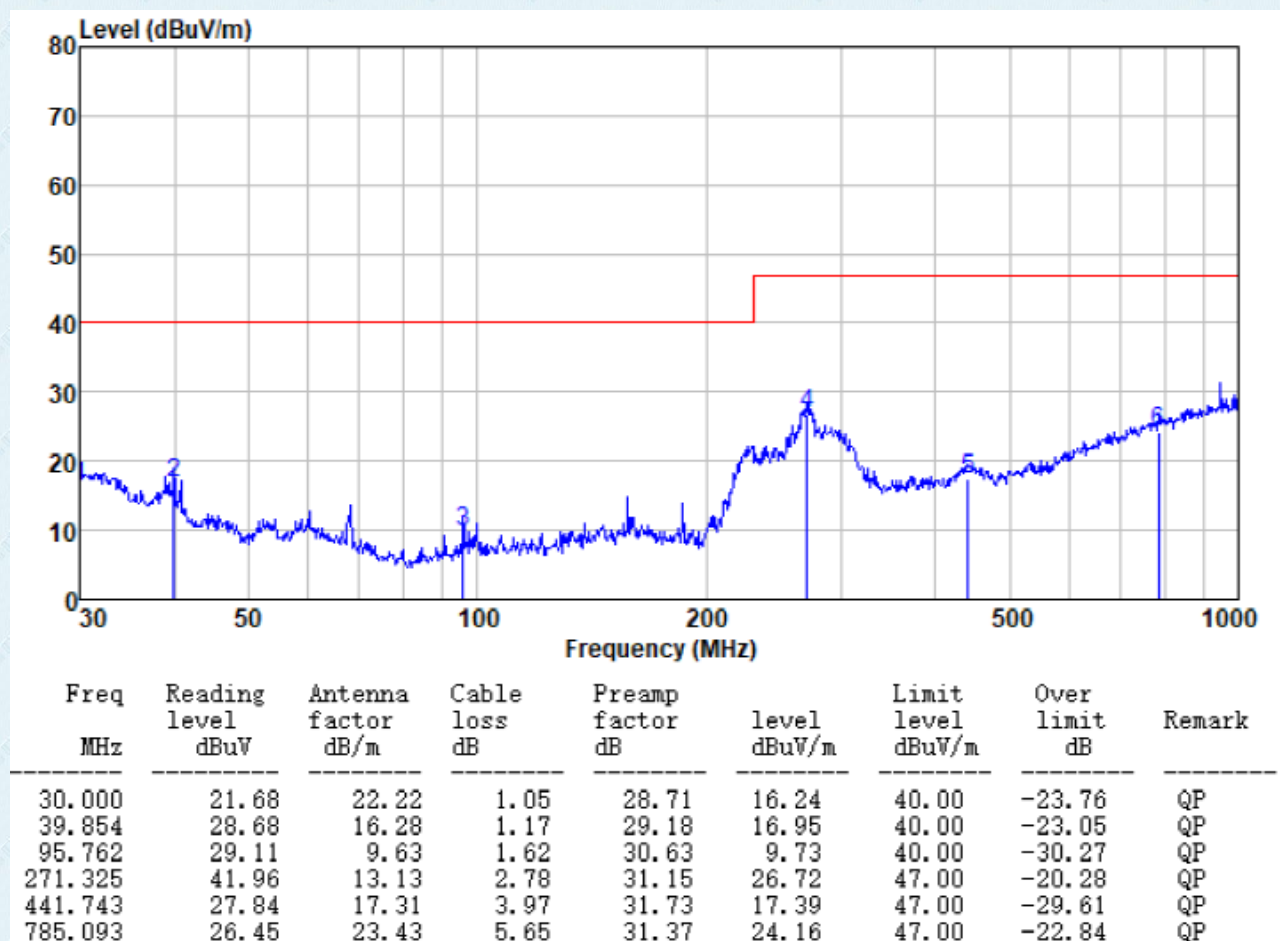


7.2 Radiated electromagnetic disturbances(30MHz-1000MHz)

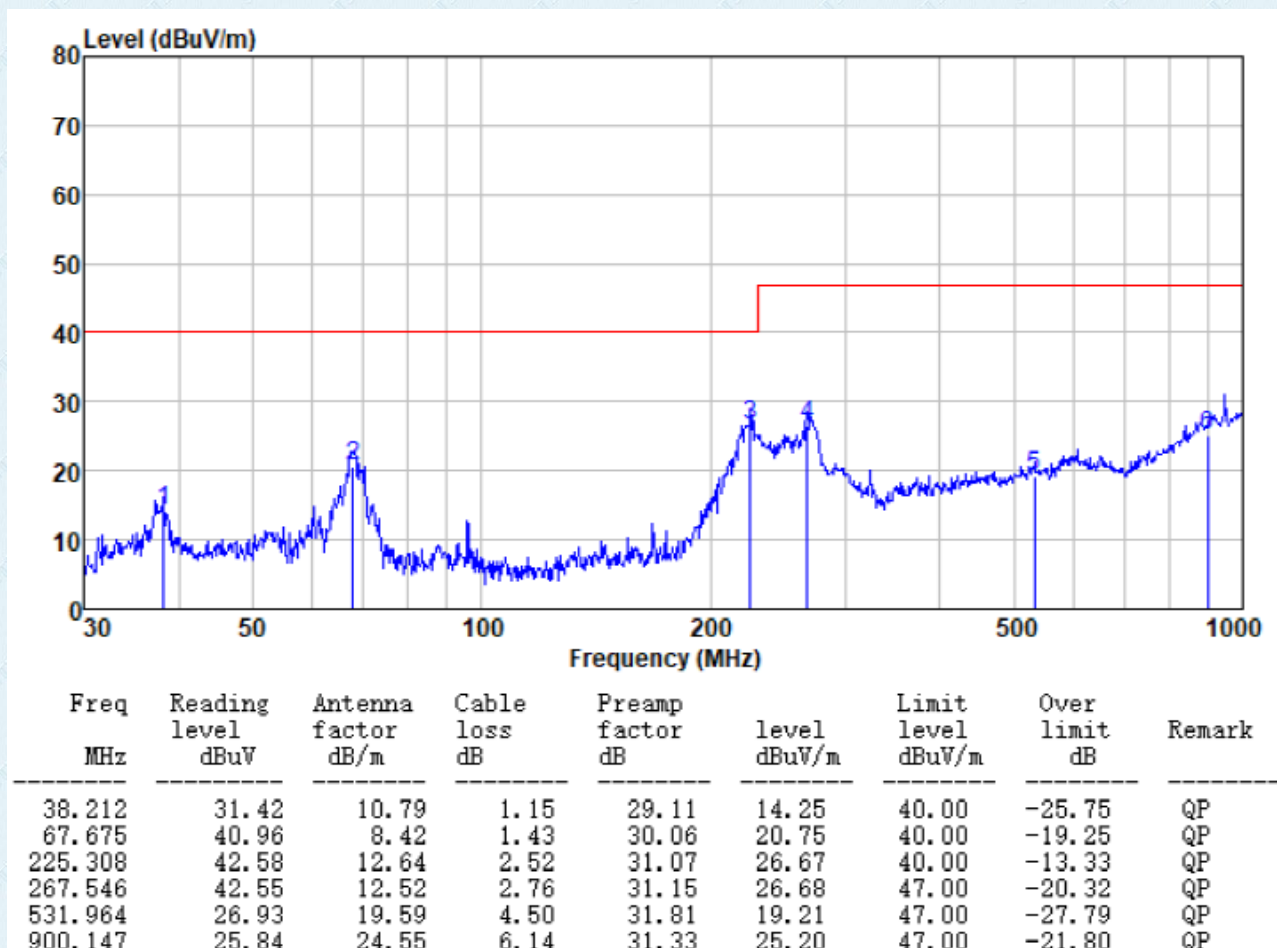
Test Requirement:	BS EN IEC 55015					
Test Method:	BS EN IEC 55015					
Test Frequency Range:	30MHz to 1000MHz					
Test site:	Measurement Distance: 3m					
Limit:	Frequency range(MHz)			Limit @3m (dBuV)		
	30 to 230			40.00		
	230 to 1000			47.00		
	* At the transition frequency, the lower limit applies.					
Test setup:						
Test procedure	1. The radiated emissions test was conducted in a semi-anechoic chamber. 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.					
Test Instruments:	Temp.:	25 °C	Humid.:	50%	Press.:	1 012mbar
Measurement Record:	Uncertainty: 3.8039dB (30MHz-200MHz) 3.9679dB (200MHz-1GHz)					
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details, only show the worst case.					
Test results:	Pass					

Measurement Data

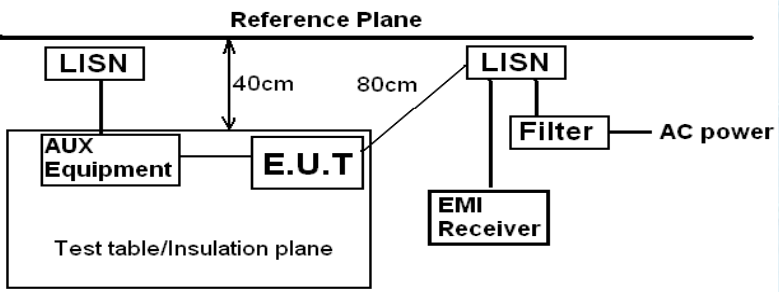
Test mode:	Operation mode	Antenna Polarity:	Horizontal
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Test mode:	Operation mode	Antenna Polarity:	Vertical
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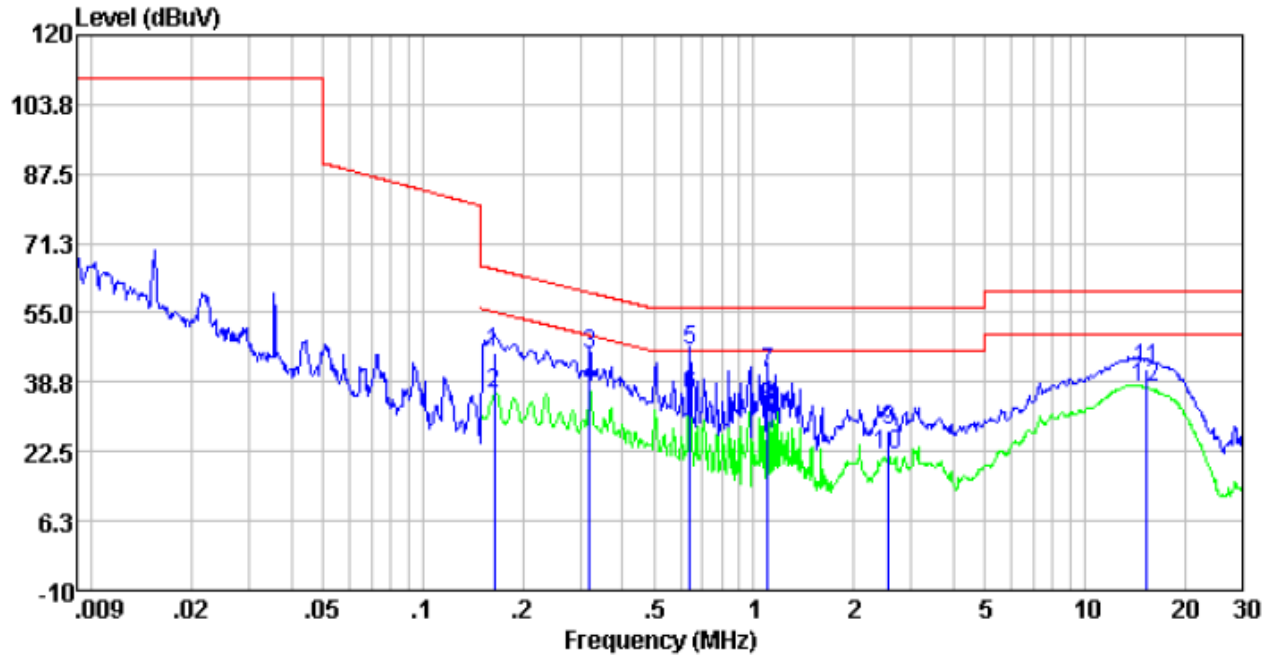
7.3 Disturbance voltages

Test Requirement:	BS EN IEC 55015					
Test Method:	BS EN IEC 55015					
Test Frequency Range:	9kHz to 30MHz					
Receiver setup:	Frequency range		RBW		VBW	
	9KHz~150KHz		200Hz		600Hz	
	150KHz~30MHz		9KHz		30KHz	
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.009-0.05		110		-	
	0.05-0.15		90-80*		-	
	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.					
Test setup:	Reference Plane  Remark: E.U.T.: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m					
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to BS EN IEC 55015 Class B on conducted measurement.					
Test Instruments:	Temp.:	25 °C	Humid.:	50%	Press.:	1 012mbar
Measurement Record:	Uncertainty: 3.44dB					
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details, only show the worst case.					
Test results:	Pass					

Measurement Data

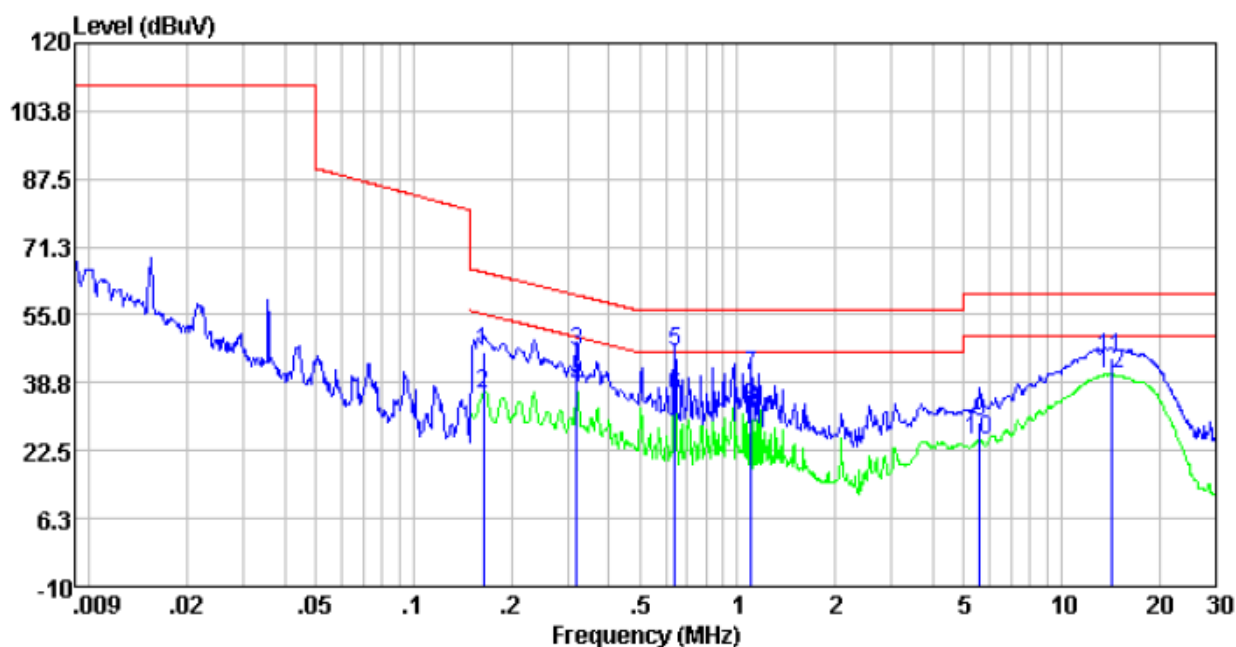
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Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960

Test mode:	Charge mode	Antenna Polarity:	Line
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Freq	Reading	LISN/ISN	Cable		Limit	Over	
level	factor	loss	Level	level	limit	Remark	
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.16	25.31	20.40	0.01	45.72	65.25	-19.53	QP
0.16	15.43	20.40	0.01	35.84	55.25	-19.41	Average
0.32	24.88	20.39	0.01	45.28	59.71	-14.43	QP
0.32	17.12	20.39	0.01	37.52	49.71	-12.19	Average
0.64	25.93	20.27	0.02	46.22	56.00	-9.78	QP
0.64	15.48	20.27	0.02	35.77	46.00	-10.23	Average
1.11	20.58	20.20	0.03	40.81	56.00	-15.19	QP
1.11	12.32	20.20	0.03	32.55	46.00	-13.45	Average
2.55	7.30	20.20	0.05	27.55	56.00	-28.45	QP
2.55	1.51	20.20	0.05	21.76	46.00	-24.24	Average
15.39	21.26	20.21	0.16	41.63	60.00	-18.37	QP
15.39	17.16	20.21	0.16	37.53	50.00	-12.47	Average

Test mode:	Charge mode	Antenna Polarity:	Neutral
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Freq	Reading	LISN/ISN	Cable	Level	Limit	Over	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.16	25.74	20.40	0.01	46.15	65.25	-19.10	QP
0.16	15.80	20.40	0.01	36.21	55.25	-19.04	Average
0.32	25.49	20.39	0.01	45.89	59.71	-13.82	QP
0.32	17.27	20.39	0.01	37.67	49.71	-12.04	Average
0.64	26.04	20.27	0.02	46.33	56.00	-9.67	QP
0.64	15.43	20.27	0.02	35.72	46.00	-10.28	Average
1.11	20.14	20.20	0.03	40.37	56.00	-15.63	QP
1.11	12.24	20.20	0.03	32.47	46.00	-13.53	Average
5.59	9.20	20.20	0.07	29.47	60.00	-30.53	QP
5.59	4.74	20.20	0.07	25.01	50.00	-24.99	Average
14.21	24.34	20.20	0.15	44.69	60.00	-15.31	QP
14.21	20.29	20.20	0.15	40.64	50.00	-9.36	Average

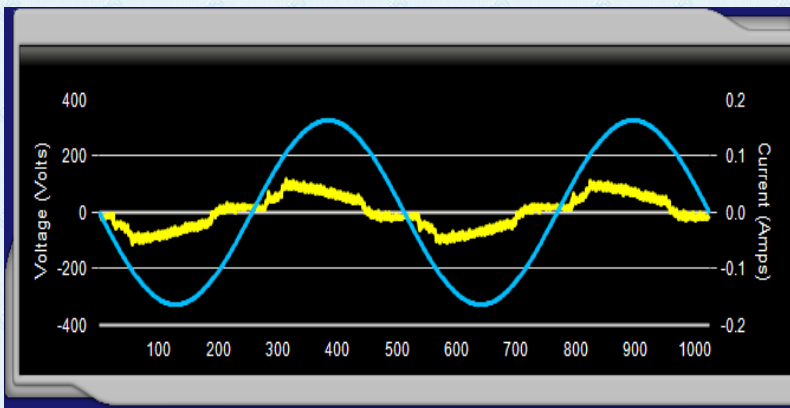
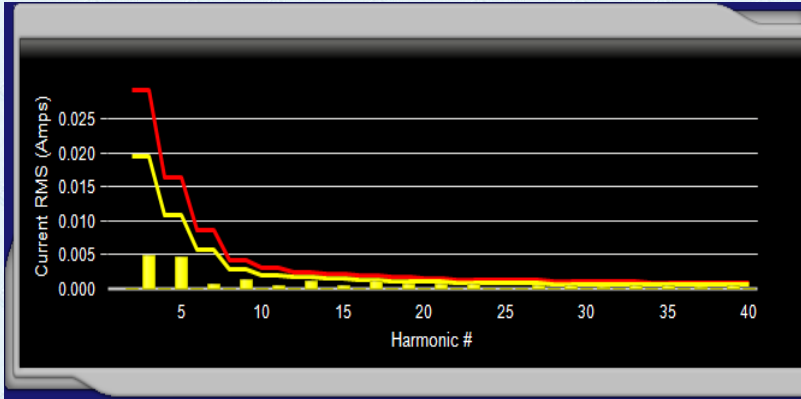
7.4 Harmonics Test Results

Test Requirement:	BS EN IEC 61000-3-2					
Test Method:	BS EN IEC 61000-3-2					
Frequency range:	100Hz to 2kHz					
Measurement Time:	2.5 min					
Class/Severity:	Class C					
Detector:	As per BS EN IEC 61000-3-2					
Test environment:	Temp.:	24 °C	Humid.:	51%	Press.:	1 010mbar
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					

Measurement Data

General Test Data: (Phase A)

Vrms (Volts):	231.34	Frequency (Hz):	50.00
I _{rms} (Amps):	0.029	Power (VA):	6.6
I _{fund} (Amps):	0.027	Power (W):	5.7
I _{peak} (Amps):	0.063	Power Factor:	0.858
V-THD (%):	0.08	I-THD (%):	26.57
I-THC (A):	0.007		



Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Win. (150%)	% Of Max
2	0.0001	0.0195	0.3	PASS	PASS	0.0001	0.0292	0.2
3	0.0049	0.0195	25.2	PASS	PASS	0.0050	0.0292	17.0
4	0.0000	0.0109	0.2	PASS	PASS	0.0000	0.0163	0.1
5	0.0045	0.0109	41.8	PASS	PASS	0.0046	0.0163	28.0
6	0.0000	0.0057	0.6	PASS	PASS	0.0000	0.0086	0.5
7	0.0007	0.0057	11.7	PASS	PASS	0.0008	0.0086	9.2
8	0.0000	0.0029	1.4	PASS	PASS	0.0000	0.0043	1.1
9	0.0014	0.0029	49.8	PASS	PASS	0.0014	0.0043	33.5
10	0.0000	0.0020	2.0	PASS	PASS	0.0000	0.0030	1.5
11	0.0004	0.0020	19.4	PASS	PASS	0.0004	0.0030	13.4
12	0.0000	0.0017	2.1	PASS	PASS	0.0000	0.0025	1.6
13	0.0011	0.0017	63.3	PASS	PASS	0.0011	0.0025	43.7
14	0.0000	0.0015	2.2	PASS	PASS	0.0000	0.0022	1.7
15	0.0004	0.0015	28.9	PASS	PASS	0.0004	0.0022	19.8
16	0.0001	0.0013	5.7	PASS	PASS	0.0001	0.0019	4.1
17	0.0011	0.0013	81.8	PASS	PASS	0.0011	0.0019	55.4
18	0.0000	0.0012	2.9	PASS	PASS	0.0000	0.0017	2.2
19	0.0007	0.0012	56.5	PASS	PASS	0.0007	0.0017	40.5
20	0.0000	0.0010	2.6	PASS	PASS	0.0000	0.0016	2.1
21	0.0007	0.0010	65.0	PASS	PASS	0.0007	0.0016	46.1
22	0.0000	0.0010	2.4	PASS	PASS	0.0000	0.0014	1.9
23	0.0006	0.0010	65.5	PASS	PASS	0.0006	0.0014	45.3
24	0.0000	0.0009	2.5	PASS	PASS	0.0000	0.0013	2.1
25	0.0001	0.0009	9.3	PASS	PASS	0.0001	0.0013	8.0
26	0.0000	0.0008	2.5	PASS	PASS	0.0000	0.0012	2.2
27	0.0004	0.0008	44.0	PASS	PASS	0.0004	0.0012	31.0
28	0.0000	0.0008	2.1	PASS	PASS	0.0000	0.0011	1.9
29	0.0004	0.0008	52.5	PASS	PASS	0.0004	0.0011	37.0
30	0.0000	0.0007	1.7	PASS	PASS	0.0000	0.0011	1.8
31	0.0002	0.0007	25.7	PASS	PASS	0.0002	0.0011	20.3
32	0.0001	0.0007	15.7	PASS	PASS	0.0001	0.0010	11.1
33	0.0004	0.0007	58.8	PASS	PASS	0.0005	0.0010	44.9
34	0.0000	0.0006	1.6	PASS	PASS	0.0000	0.0009	1.8
35	0.0004	0.0006	62.0	PASS	PASS	0.0004	0.0009	43.5
36	0.0000	0.0006	1.7	PASS	PASS	0.0000	0.0009	1.9
37	0.0002	0.0006	41.5	PASS	PASS	0.0003	0.0009	31.7
38	0.0000	0.0006	1.7	PASS	PASS	0.0000	0.0009	1.7
39	0.0004	0.0006	70.8	PASS	PASS	0.0004	0.0009	47.9
40	0.0000	0.0006	1.6	PASS	PASS	0.0000	0.0009	1.8

Harm No.	Harm. Value	Harm. Limit	% Of Limits	% Of Vfund	Result
2	0.036	0.460	7.870	0.016	OK
3	0.053	2.070	2.566	0.023	OK
4	0.013	0.460	2.757	0.005	OK
5	0.050	0.920	5.416	0.022	OK
6	0.014	0.460	3.021	0.006	OK
7	0.027	0.690	3.960	0.012	OK
8	0.009	0.460	1.940	0.004	OK
9	0.029	0.460	6.395	0.013	OK
10	0.022	0.460	4.791	0.010	OK
11	0.055	0.230	24.107	0.024	OK
12	0.021	0.230	8.935	0.009	OK
13	0.069	0.230	30.100	0.030	OK
14	0.015	0.230	6.619	0.007	OK
15	0.038	0.230	16.320	0.016	OK
16	0.009	0.230	3.787	0.004	OK
17	0.030	0.230	13.104	0.013	OK
18	0.010	0.230	4.154	0.004	OK
19	0.067	0.230	29.341	0.029	OK
20	0.010	0.230	4.461	0.004	OK
21	0.064	0.230	27.773	0.028	OK
22	0.011	0.230	4.877	0.005	OK
23	0.036	0.230	15.865	0.016	OK
24	0.010	0.230	4.381	0.004	OK
25	0.021	0.230	9.287	0.009	OK
26	0.011	0.230	4.633	0.005	OK
27	0.055	0.230	24.098	0.024	OK
28	0.008	0.230	3.479	0.003	OK
29	0.062	0.230	26.814	0.027	OK
30	0.011	0.230	4.680	0.005	OK
31	0.034	0.230	14.968	0.015	OK
32	0.009	0.230	3.776	0.004	OK
33	0.015	0.230	6.427	0.006	OK
34	0.009	0.230	3.910	0.004	OK
35	0.042	0.230	18.234	0.018	OK
36	0.007	0.230	2.907	0.003	OK
37	0.045	0.230	19.579	0.019	OK
38	0.009	0.230	3.707	0.004	OK
39	0.028	0.230	12.082	0.012	OK
40	0.008	0.230	3.657	0.004	OK

7.5 Flicker Test Result

Test Requirement:	BS EN 61000-3-3					
Test Method:	BS EN 61000-3-3					
Class/Severity:	Clause 5 of BS EN 61000-3-3					
Measurement Time:	10 min					
Detector:	As per BS EN 61000-3-3					
Test environment:	Temp.:	24 °C	Humid.:	51%	Press.:	1 012mbar
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details only show the worst case					
+	Pass					
Test results:						

Measurement Data

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.060	4.00	PASS
dt [s]	0.000	0.50	PASS

8 Immunity Test Results

8.1 Performance Criteria Description in Clause 4.2 of BS EN 61547

Criterion A:	During the test no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
Criterion B:	During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
Criterion C:	During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for lighting equipment incorporating a starting device: After the test, the lighting equipment is switched off. After half an hour, it is switched on again. The lighting equipment shall start and operate as intended.

8.2 Electrostatic Discharge

Test Requirement:	BS EN 61547
Test Method:	BS EN 61000-4-2
Discharge Voltage:	Contact Discharge: $\pm 4\text{kV}$ Air Discharge: $\pm 8\text{kV}$ HCP/VCP: $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Limit:	Criteria B
Test setup:	
Test Procedure:	1. Air discharge: The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed 2. Contact Discharge: The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated. 3. Indirect discharge for horizontal coupling plane At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. Consideration should be given to exposing all sides of the EUT. 4. Indirect discharge for vertical coupling plane At least 10 single discharges were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X

	0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Record:

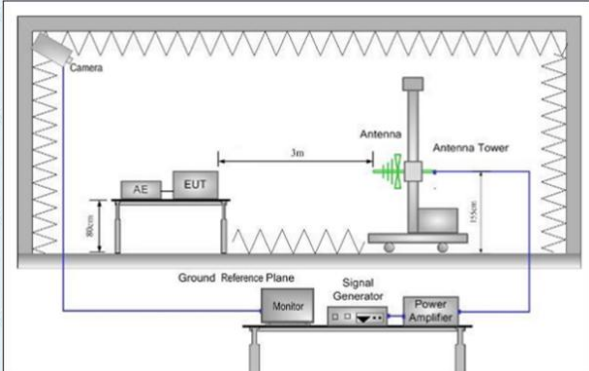
Test points:	I: Metal Part			
	II: Plastic parts			
Direct discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observations (Performance Criterion)	Result
± 4	Contact	I	B	Pass
± 8	Air	II	B	Pass
Indirect discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
± 4	HCP-Bottom/Top/ Front/Back/Left/Right	Edge of the HCP	A	Pass
± 4	VCP-Front/Back /Left/Right	Center of the VCP	A	Pass

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

N/A: Not applicable

8.3 Radio-frequency electromagnetic fields

Test Requirement:	BS EN 61547
Test Method:	BS EN 61000-4-3
Frequency range:	80MHz to 1GHz
Test Level:	3V/m
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	Criteria A
Test setup:	
Test Procedure:	1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s. 6. The test normally was performed with the generating antenna facing each side of the EUT. 7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. 8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to

	monitor the performance of the EUT.					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					

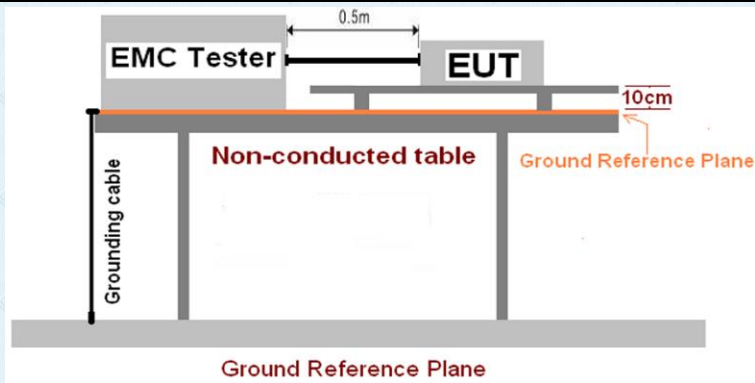
Measurement Record:

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)
80 MHz-1 GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	A
			H		A
			V	Bottom	A
			H		A

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.4 Fast Transients

Test Requirement:	BS EN 61547
Test Method:	BS EN 61000-4-4
Test Level:	1.0kV on AC port
Polarity:	Positive & Negative
Repetition Frequency:	5kHz
Burst Duration:	15ms
Burst Period:	300ms
Test Duration:	2 minute per level & polarity
Performance Criterion:	B
Test setup:	 The diagram illustrates the test setup. An EMC Tester and the EUT (Equipment Under Test) are placed on a non-conducted table. The distance between the EMC Tester and the EUT is 0.5m. The table is 10cm above a ground reference plane. A grounding cable is connected to the table. The ground reference plane is also shown below the table.
Test Procedure:	1. The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. 2. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. 3. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables. 4. The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal. 5. Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes. 6. The length of the signal and power lines between the coupling device and the EUT is 0.5m

Test environment:	Temp.: 26 °C Humid.: 54% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

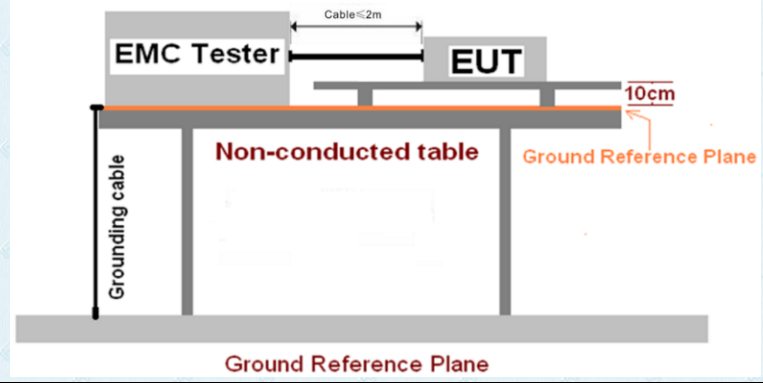
Measurement Record:

Lead under Test	Level (±kV)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	± 1.0	Direct	A	Pass
N	± 1.0	Direct	A	Pass
L-N	± 1.0	Direct	A	Pass

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.5 Surges

Test Requirement:	BS EN 61547		
Test Method:	BS EN 61000-4-5		
Test Level:	Characteristics	Test Levels	
		Self-ballasted lamps and semi-luminaires	Luminaires and independent auxiliaries
	Line to line	$\pm 0.5\text{kV}$	$\pm 0.5\text{kV}$
	Line to ground	$\pm 1.0\text{kV}$	$\pm 2.0\text{kV}$
	NOTE In addition to the specified test level, all lower test levels as detailed in IEC 61000-4-5 should also be satisfied.		
Polarity:	Positive & Negative		
Generator source impedance:	2 Ω (line-line coupling) 12 Ω (line-earth coupling)		
No. of surges:	5 positive at 90°, 5 negative at 270°		
Performance Criterion:	Criterion C		
Test setup:			
Test procedure	- For line-to-line coupling mode, provide a 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral lines to ground. - At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test. - Different phase angles are done individually. - Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.		
Test environment:	Temp.:	26 °C	Humid.: 53% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.2 for details		
Test results:	Pass		

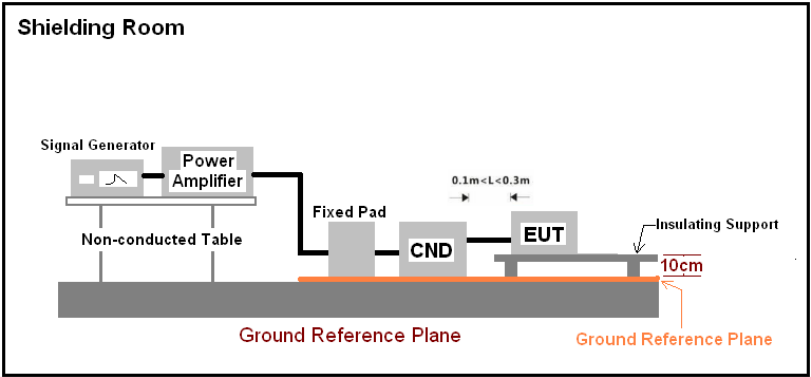
Measurement Record:

Location	Level(kV)	Pulse No	Surge Interval	Phase(deg)	Observations (Performance Criterion)	Result
L-N	+1.0	5	60s	90°	A	Pass
	-1.0			270°		

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.6 Injected Currents

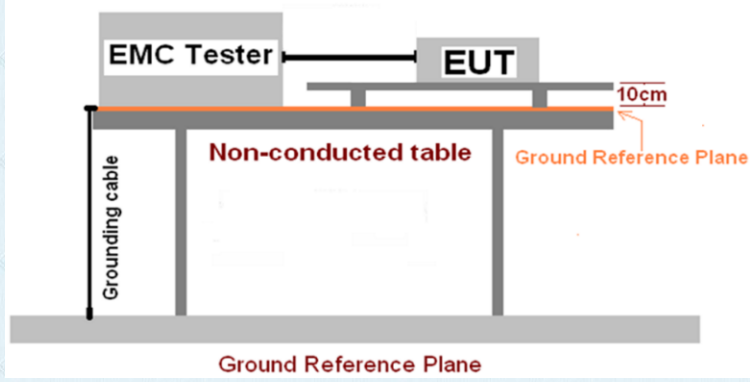
Test Requirement:	BS EN 61547
Test Method:	BS EN 61000-4-6
Frequency range:	0.15MHz to 80MHz
Test Level:	3V rms on AC Ports (unmodulated emf into 150 Ω)
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	Criteria A
Test setup:	 The diagram illustrates the test setup within a Shielding Room. A Signal Generator and Power Amplifier are connected to a Fixed Pad on a Non-conducted Table. A cable connects the Fixed Pad to a CDN (Coupling and Decoupling Network) on a Ground Reference Plane. The EUT (Equipment Under Test) is placed on an Insulating Support 0.1m high above the Ground Reference Plane. The distance between the CDN and EUT is 0.1m < L < 0.3m. The EUT is 10cm above the Ground Reference Plane.
Test Procedure:	- The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible). - The disturbance signal described below is injected to EUT through CDN. - The EUT operates within its operational mode(s) under intended climatic conditions after power on. - Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Record:

Frequency	Injected Position	Level	Modulation	Observations (Performance Criterion)	Result
150kHz to 80MHz	AC Mains	3Vrms	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=2seconds	A	Pass

Remark: Performance Criteria: A, B, C: Refer to section 8.1 for details

8.7 Voltage Dips and Voltage Interruptions

Test Requirement:	BS EN 61547
Test Method:	BS EN 61000-4-11
Test Level:	0% of U_T (Supply Voltage) for 0.5 Periods 70 % of U_T (Supply Voltage) for 10 Periods
No. of Dips / Interruptions:	3 per Level
Performance Criterion:	100% VD ----Performance criterion: B 30% VD ----Performance criterion: C
Test setup:	
Test Procedure:	- The EUT and test generator were setup as shown on above setup photo. - The interruptions are introduced at selected phase angles with specified duration. - Record any degradation of performance.
Test environment:	Temp.: 26 °C Humid.: 53% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Record:

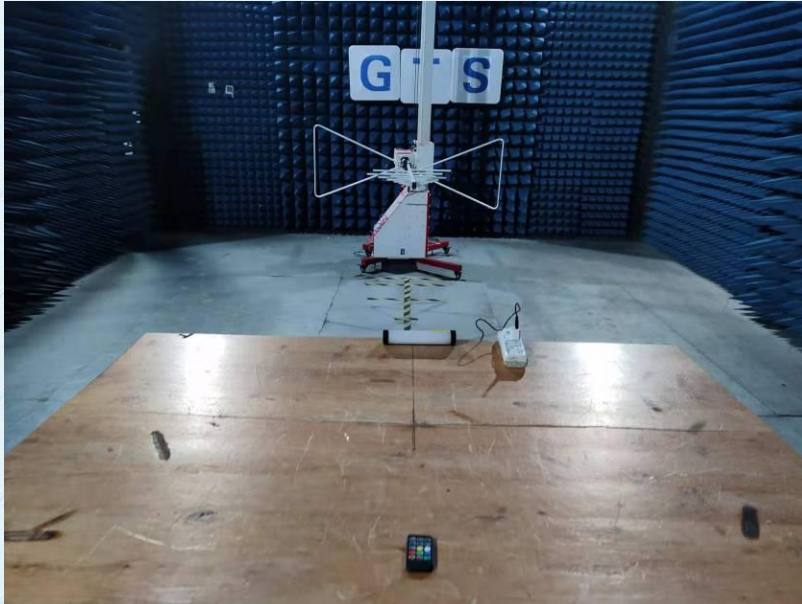
Test Level % U_T	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0°,180°	3	10s	A	Pass
70	10	0°,180°	3	10s	B	Pass

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

9 Test Setup Photo

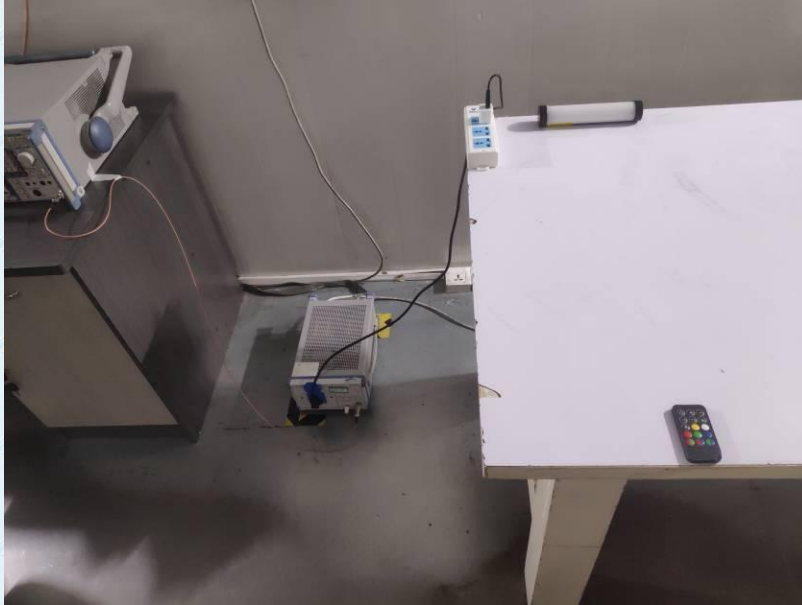
Radiated Emission



Radiated Electromagnetic Disturbance



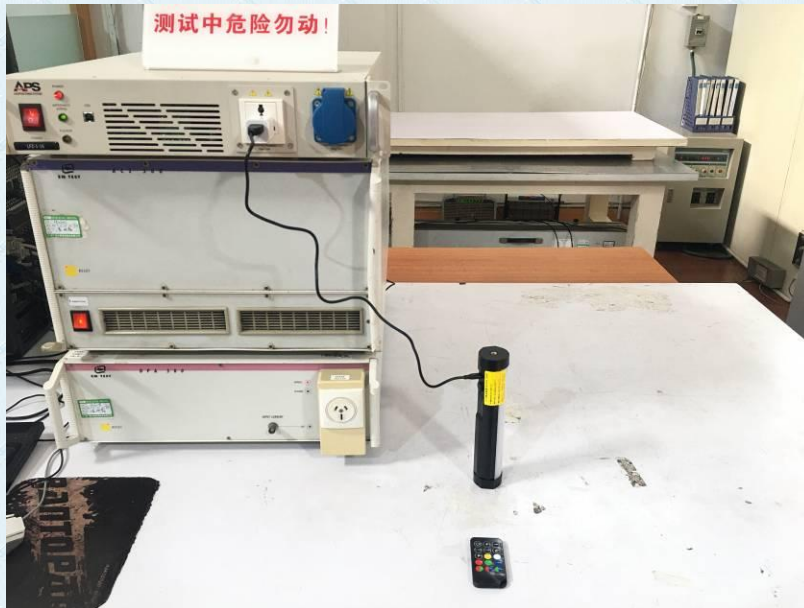
Disturbance voltages



Electrostatic discharge



Harmonics/Flicker



EFT/Surge/V-Dips

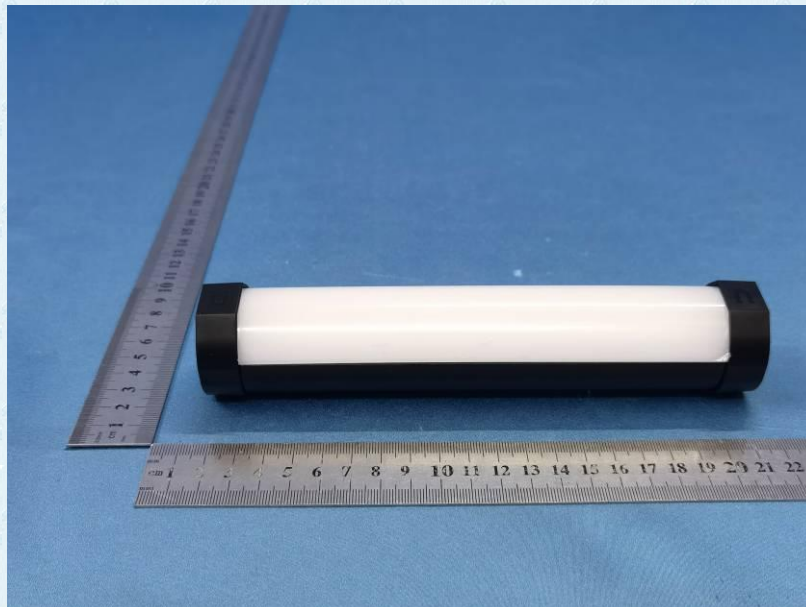


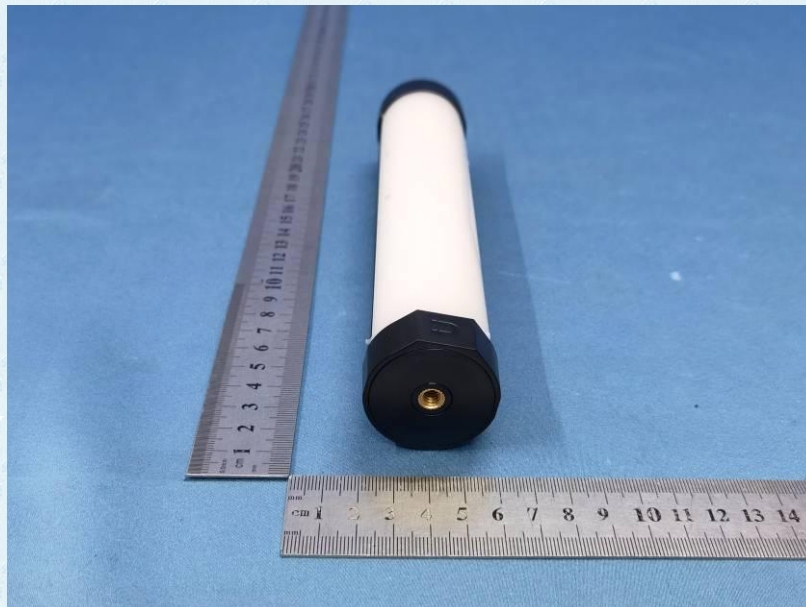
CS

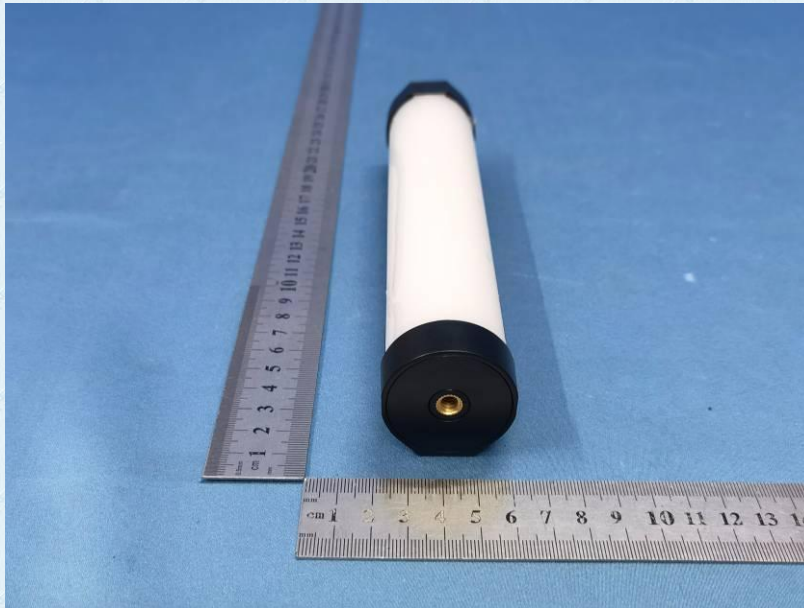


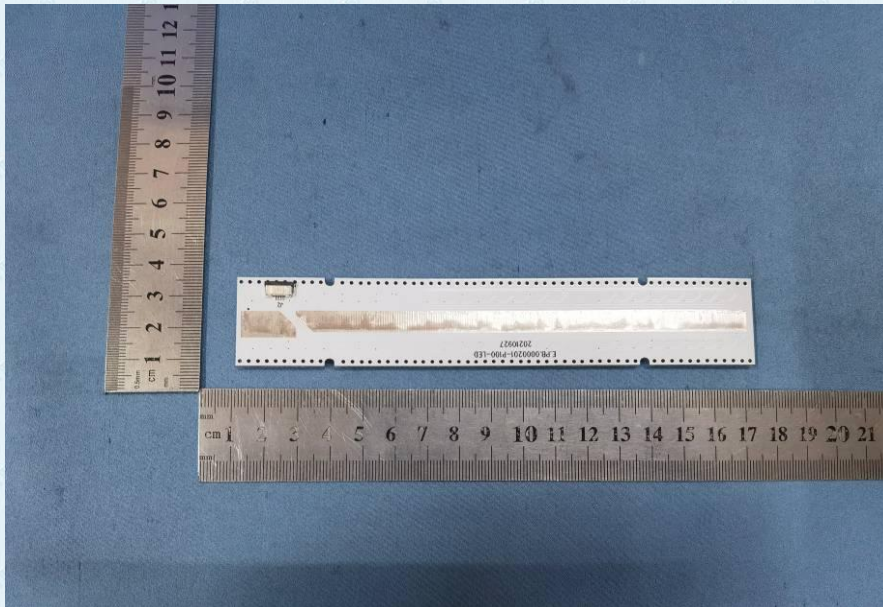
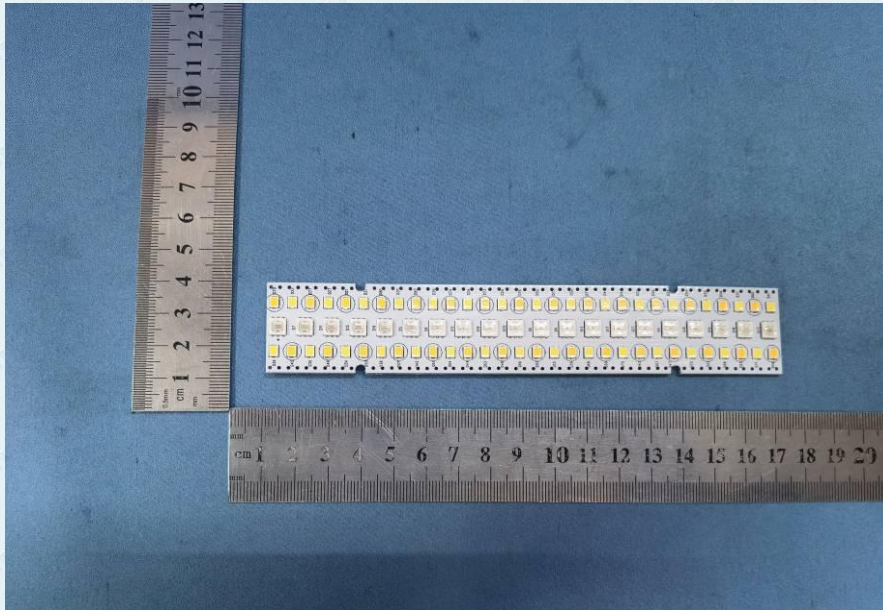
10 EUT Constructional Details

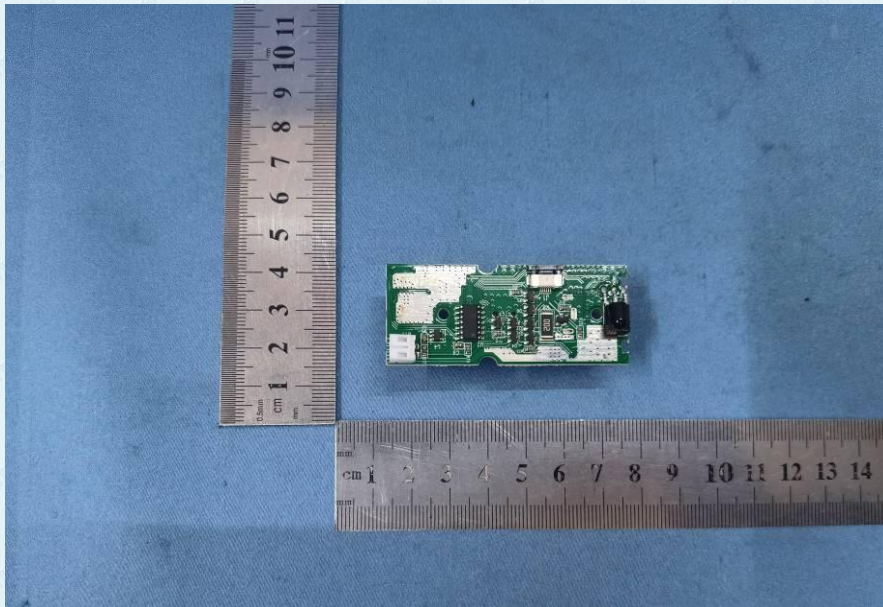
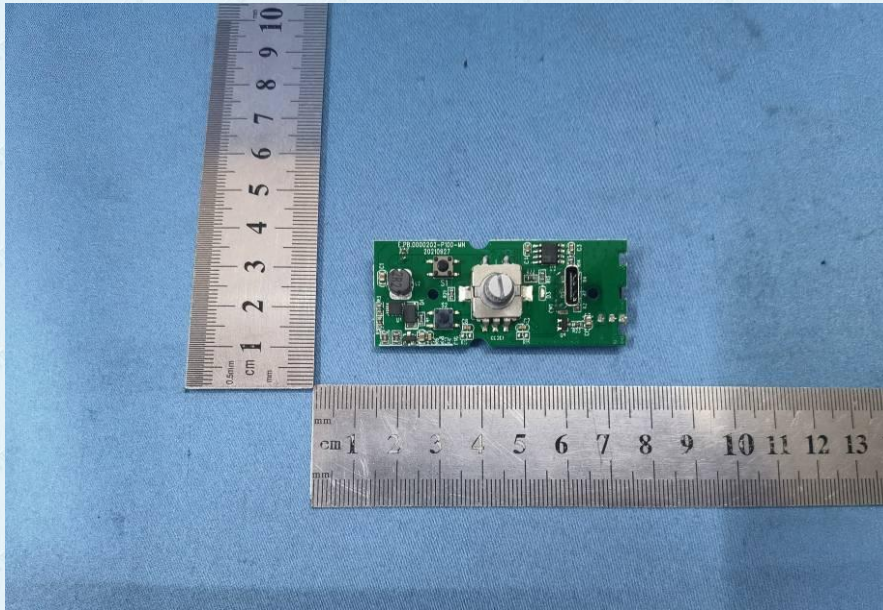




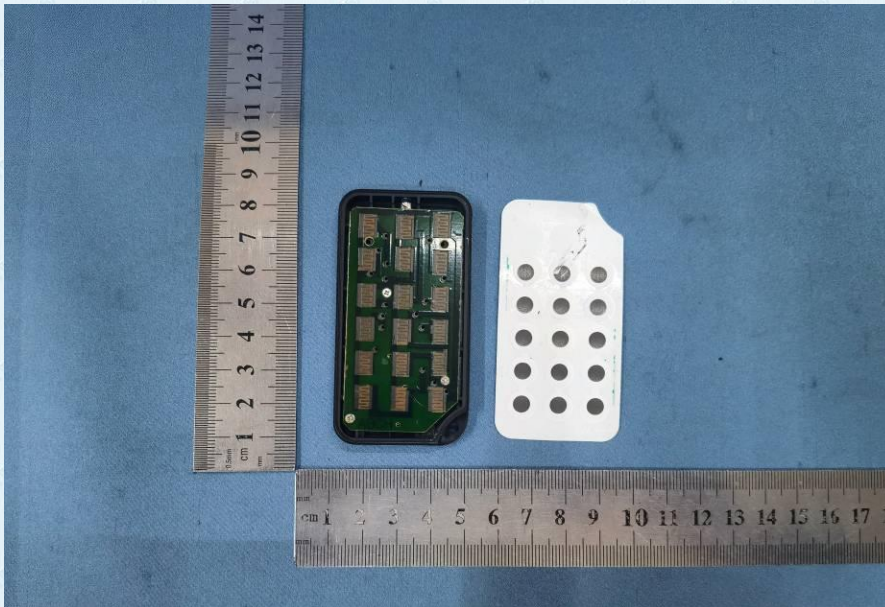


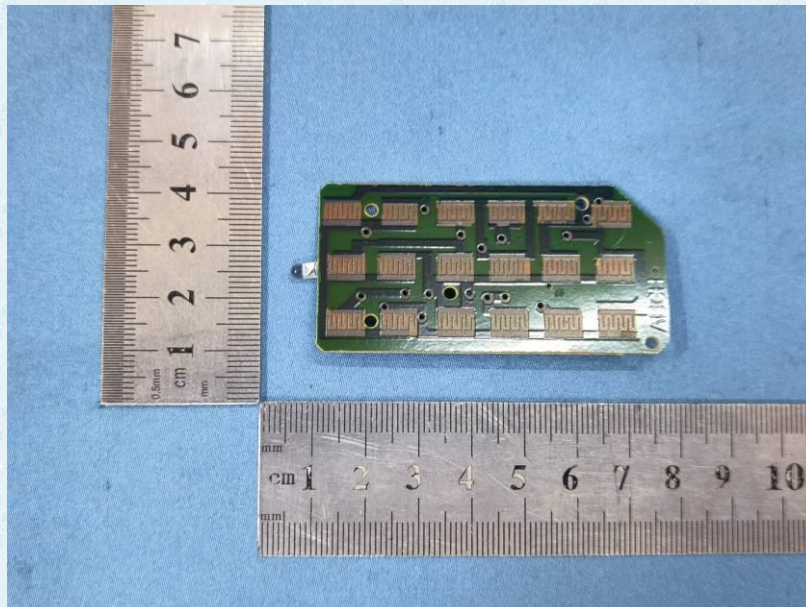
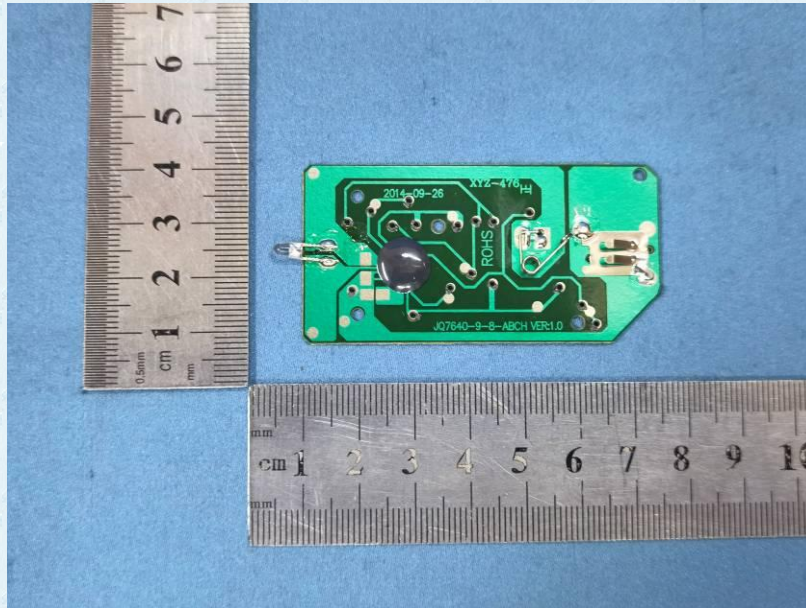












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