

# TEST REPORT

Report No.: BCTC2206140715E

---

Applicant: Ningbo Cowell Electronics & Technology Co., LTD

---

Product Name: REMOTE SOCKET

---

Model/Type  
reference: KWE-YK02

---

Tested Date: 2022-06-17 to 2022-06-22

---

Issued Date: 2022-07-01

---

**Shenzhen BCTC Testing Co., Ltd.**



Product Name: REMOTE SOCKET

Trademark: 

Model/Type reference: KWE-YK02  
KWE-YK01, KWE-YK00

Prepared For: Ningbo Cowell Electronics & Technology Co., LTD

Address: Building 1, No. 59, Changxing RD., Hongtang, Jiangbei District, Ningbo City, Zhejiang, China

Manufacturer: Ningbo Cowell Electronics & Technology Co., LTD

Address: Building 1, No. 59, Changxing RD., Hongtang, Jiangbei District, Ningbo City, Zhejiang, China

Prepared By: Shenzhen BCTC Testing Co., Ltd.

Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Sample Received Date: 2022-06-17

Sample tested Date: 2022-06-17 to 2022-06-22

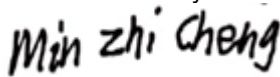
Issue Date: 2022-07-01

Report No.: BCTC2206140715E

Test Standards: EN 55032:2015+A1:2020, EN 55035: 2017+A11:2020  
EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A2:2021

Test Results: PASS

Tested by:



Min Zhi Cheng/ Project Handler

Approved by:



Zero Zhou/Reviewer

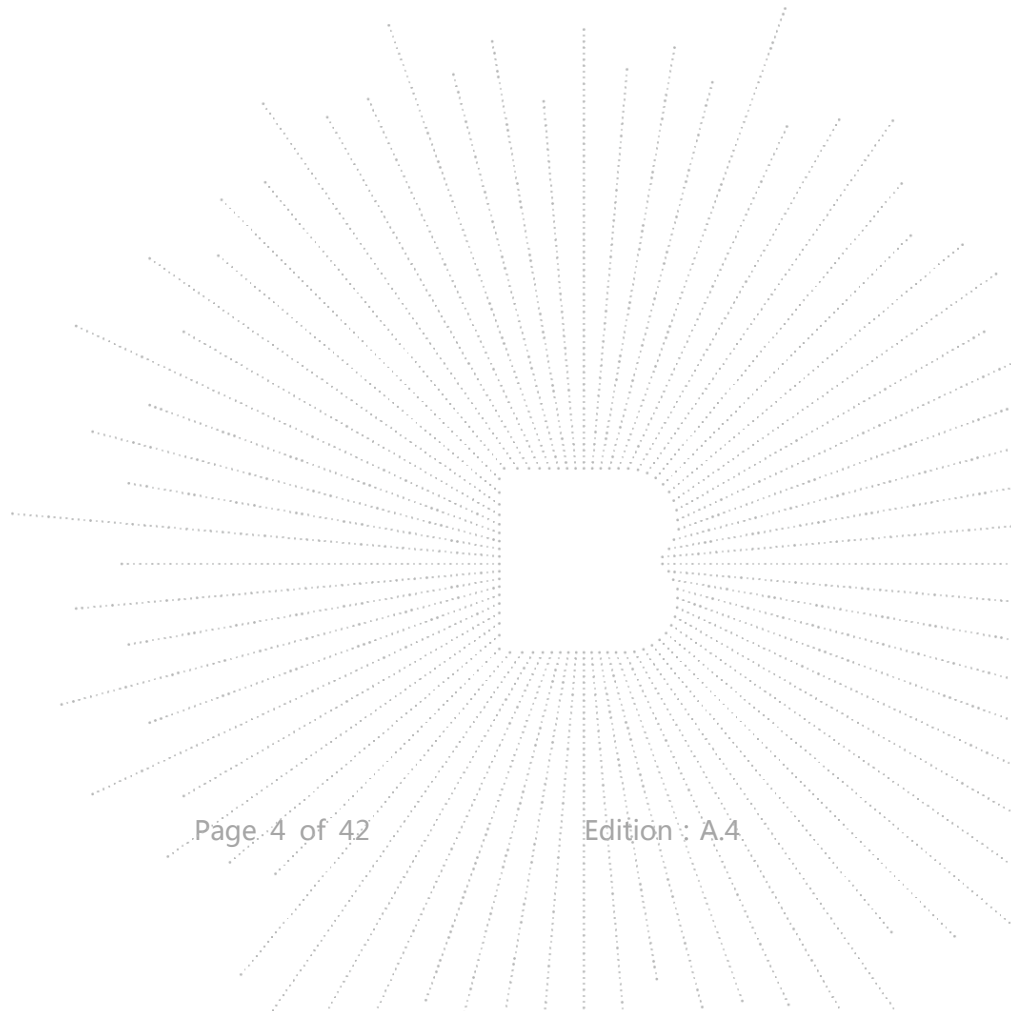
The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

## Table Of Content

Test Report Declaration	Page
1. Version .....	5
2. Test Summary .....	6
3. Measurement Uncertainty .....	7
4. Product Information And Test Setup .....	8
4.1 Product Information.....	8
4.2 Test Setup Configuration .....	8
4.3 Support Equipment .....	8
4.4 Test Mode .....	9
5. Test Facility And Test Instrument Used.....	10
5.1 Test Facility.....	10
5.2 Test Instrument Used.....	10
6. Conducted Emissions.....	12
6.1 Block Diagram Of Test Setup.....	12
6.2 Limit .....	12
6.3 Test Procedure .....	12
6.4 Test Result.....	13
7. Radiated Emissions Test.....	15
7.1 Block Diagram Of Test Setup.....	15
7.2 Limits.....	15
7.3 Test Procedure .....	15
7.4 Test Results .....	16
8. Harmonic Current Emission(H).....	18
8.1 Block Diagram Of Test Setup.....	18
8.2 Limit .....	18
8.3 Test Procedure .....	18
8.4 Test Results .....	19
9. Voltage Fluctuations & Flicker(F) .....	22
9.1 Block Diagram Of Test Setup.....	22
9.2 Limit .....	22
9.3 Test Procedure .....	22
9.4 Test Results .....	23
10. Immunity Test Of General The Performance Criteria .....	24
11. Electrostatic Discharge (ESD).....	25
11.1 Test Specification.....	25
11.2 Block Diagram Of Test Setup.....	25
11.3 Test Procedure .....	25
11.4 Test Results .....	26
12. Continuous RF Electromagnetic Field Disturbances (RS).....	27
12.1 Test Specification.....	27
12.2 Block Diagram Of Test Setup.....	27
12.3 Test Procedure .....	27
12.4 Test Results .....	28
13. Electrical Fast Transients/Burst (EFT).....	29
13.1 Test Specification.....	29

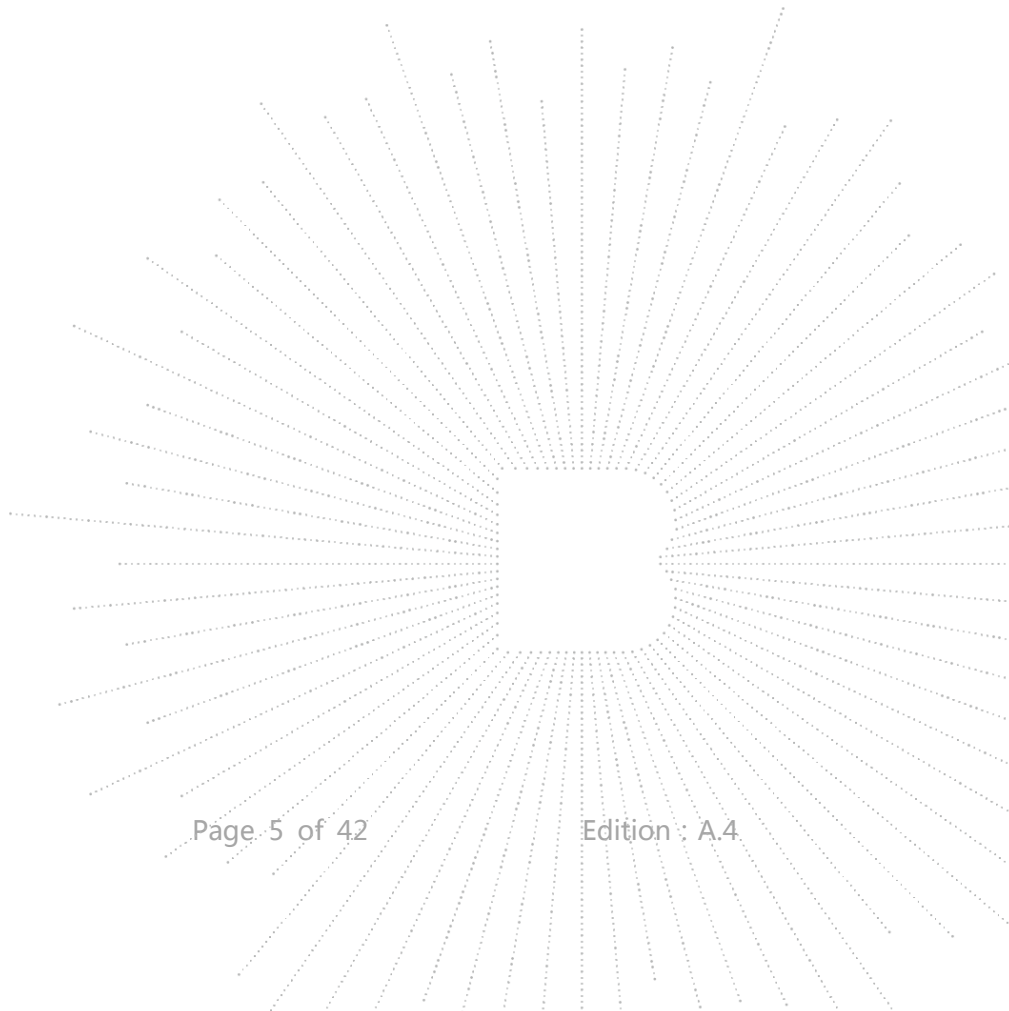
13.2	Block Diagram Of EUT Test Setup .....	29
13.3	Test Procedure .....	29
13.4	Test Results .....	29
14.	Surges Immunity Test .....	30
14.1	Test Specification.....	30
14.2	Block Diagram Of EUT Test Setup .....	30
14.3	Test Procedure .....	30
14.4	Test Result.....	31
15.	Continuous Induced RF Disturbances (CS) .....	32
15.1	Test Specification.....	32
15.2	Block Diagram Of EUT Test Setup .....	32
15.3	Test Procedure .....	32
15.4	Test Result.....	33
16.	Voltage Dips And Interruptions (DIPS) .....	34
16.1	Test Specification.....	34
16.2	Block Diagram Of EUT Test Setup .....	34
16.3	Test Procedure .....	34
16.4	Test Result.....	34
17.	EUT Photographs.....	35
18.	EUT Test Setup Photographs.....	38

(Note: N/A Means Not Applicable)



**1. Version**

<b>Report No.</b>	<b>Issue Date</b>	<b>Description</b>	<b>Approved</b>
BCTC2206140715E	2022-07-01	Original	Valid



## 2. Test Summary

The Product has been tested according to the following specifications:

<b>Emission</b>		
<b>Standard</b>	<b>Test Item</b>	<b>Test result</b>
EN 55032	Conducted emissions from the AC mains power ports	Pass
EN 55032	Asymmetric mode conducted emissions	N/A <sup>1</sup>
EN 55032	Conducted differential voltage emissions	N/A <sup>2</sup>
EN 55032	Radiated emissions	Pass
EN IEC 61000-3-2	Harmonic current emission(H)	Pass
EN 61000-3-3	Voltage fluctuations & flicker(F)	Pass

<b>Immunity</b>		
<b>Standard</b>	<b>Test Item</b>	<b>Test result</b>
EN 55035	Electrostatic discharge (ESD)	Pass
EN 55035	Continuous RF electromagnetic field disturbances(RS)	Pass
EN 55035	Electrical fast transients/burst (EFT)	Pass
EN 55035	Surges	Pass
EN 55035	Continuous induced RF disturbances (CS)	Pass
EN 55035	Broadband impulse noise disturbances, repetitive	N/A <sup>3</sup>
EN 55035	Broadband impulse noise disturbances, isolated	N/A <sup>3</sup>
EN 55035	Power frequency magnetic field (PFMF)	N/A <sup>4</sup>
EN 55035	Voltage dips and interruptions (DIPS)	Pass

Remark:

1. Applicable to ports listed above and intended to connect to cables longer than 3 m.
2. The Product has no antenna port.
3. Applicable only to CPE xDSL ports.
4. The Product doesn't contain any device susceptible to magnetic fields.

### 3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.20
Radiated Emission(30MHz~1GHz)	4.80

## 4. Product Information And Test Setup

### 4.1 Product Information

**Ratings:** Input: AC 230V/50Hz, 16A Max  
Output: AC 230V/50Hz

**Model differences:** All models are identical except for the appearance color, the test model is KWE-YK02 and the test results are applicable to other tests.

**The highest frequency of the internal sources of the EUT is (less than 108)MHz:**

- less than 108 MHz, the measurement shall only be made up to 1 GHz.
- between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.
- between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz.
- above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

No.	Cable Type	Quantity	Provider	Length (m)	Shielded	Note
1	--	--	Applicant	---	Yes/No	With a ferrite ring in mid Detachable
2	--	--	BCTC	--	Yes/No	--

### 4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

### 4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---

Notes:

- All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



#### 4.4 Test Mode

Test item	Test Mode	Test Voltage
Conducted emissions from the AC mains power ports (150KHz-30MHz) Class B	Working	AC 230V/50Hz
Radiated emissions(30MHz-1GHz) Class B	Working	AC 230V/50Hz
Harmonic current emission Class A	Working	AC 230V/50Hz
Voltage fluctuations & flicker(F)	Working	AC 230V/50Hz
Electrostatic discharge (ESD) <input checked="" type="checkbox"/> Air Discharge: $\pm 2,4,8$ kV <input checked="" type="checkbox"/> Contact Discharge: $\pm 2,4$ kV <input checked="" type="checkbox"/> HCP & VCP: $\pm 2,4$ kV	Working	AC 230V/50Hz
Continuous RF electromagnetic field disturbances(RS) 80MHz-1000MHz, 1800MHz, 2600MHz,3500MHz,5000MHz 3V/m,80% AM Front, Rear, Left, Right H/V	Working	AC 230V/50Hz
Electrical fast transients/burst (EFT) <input checked="" type="checkbox"/> 1kV AC(Input) <input type="checkbox"/> 0.5kV DC(Input) <input type="checkbox"/> 0.5kV signal,Telec,control	Working	AC 230V/50Hz
Surges <input checked="" type="checkbox"/> 1kV Line-Line, <input type="checkbox"/> 2kV Line-PE, N-PE <input type="checkbox"/> 0.5kVDC(Input) <input type="checkbox"/> 1KV, <input type="checkbox"/> 4KV signal,Telec, control Line-Line:90°+1kV,270°-1kV Line-PE:90°+2kV,270°-2kV N-PE:90°-2kV,270°+2kV	Working	AC 230V/50Hz
Continuous induced RF disturbances (CS) 0.15MHz to 80MHz 3V <input checked="" type="checkbox"/> AC( Input) <input type="checkbox"/> DC(Input) <input type="checkbox"/> signal, control	Working	AC 230V/50Hz
Voltage dips and interruptions (DIPS) <input checked="" type="checkbox"/> Less 5% 0.5P <input checked="" type="checkbox"/> 70% 500ms Voltage Interruptions <input checked="" type="checkbox"/> less5% 5000ms	Working	AC 230V/50Hz

## 5. Test Facility And Test Instrument Used

### 5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

### 5.2 Test Instrument Used

Conducted Emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
LISN	R&S	ENV216	101375	May 24, 2022	May 23, 2023
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB C-6GHz	1650	May 24, 2022	May 23, 2023

Radiated Emissions Test (966 Chamber#01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESRP	101154	May 24, 2022	May 23, 2023
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 24, 2022	May 23, 2023
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 24, 2022	May 23, 2023
TRILOG Broadband Antenna	schwarzbeck	VULB9163	942	May 26, 2022	May 25, 2023
Horn Antenna	schwarzbeck	BBHA9120D	1541	May 26, 2022	May 25, 2023
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Harmonic / Flicker Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Harmonic & Flicker Tester	LAPLAEC	AC2000A	439263	May 24, 2022	May 23, 2023
AC Power Supply	KIKUSUI	PCR4000M	UK001879	May 24, 2022	May 23, 2023
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Electrostatic discharge Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
ESD Tester	KIKUSUI	KES4201A	UH002321	May 26, 2022	May 25, 2023

Radio frequency electromagnetic fields Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power meter	Keysight	E4419	\	May 24, 2022	May 23, 2023
Power sensor	Keysight	E9300A	\	May 24, 2022	May 23, 2023
Power sensor	Keysight	E9300A	\	May 24, 2022	May 23, 2023
Amplifier	SKET	HAP_801000-250W	\	May 24, 2022	May 23, 2023
Amplifier	SKET	HAP_0103-75W	\	May 24, 2022	May 23, 2023
Amplifier	SKET	HAP_0306-50W	\	May 24, 2022	May 23, 2023
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9129	\	\	\
Field Probe	Narda	EP-601	\	Jun. 29, 2021	Jun. 28, 2022
Signal Generator	Agilent	N5181A	MY50143748	May 24, 2022	May 23, 2023
Software	SKET	EMC-S	1.2.0.18	\	\

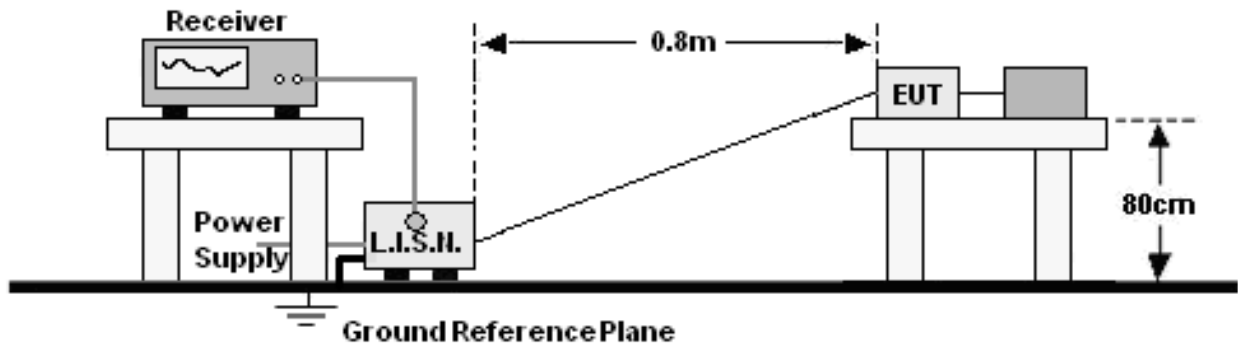
EFT and Surge and Voltage dips and interruptions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Compact Generator	TRANSIENT	TRA2000	646	May 24, 2022	May 23, 2023
Coupling Clamp	PARTNER	CN-EFT1000	CN-EFT1000-1624	May 24, 2022	May 23, 2023

Continuous induced RF disturbances Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
C/S Test System	SCHLODER	CDG-6000-75	126B1405/2016	May 24, 2022	May 23, 2023
Attenuator	SCHLODER	6DB DC-1G	HA1630	May 24, 2022	May 23, 2023
CDN	SCHLODER	CDN M2+M3	A2210389/2016	May 24, 2022	May 23, 2023
Injection Clamp	SCHLOBER	EMCL-20	132A1272/2016	May 24, 2022	May 23, 2023
Software	HUBERT	HUBERTEN 61000-4-6	1.4.1.0	\	\

## 6. Conducted Emissions

### 6.1 Block Diagram Of Test Setup

For mains ports:



### 6.2 Limit

#### Limits for Conducted emissions at the mains ports of Class B MME

Frequency range (MHz)	Limits dB( $\mu$ V)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

Notes:

- \*Decreasing linearly with logarithm of frequency.
- The lower limit shall apply at the transition frequencies.

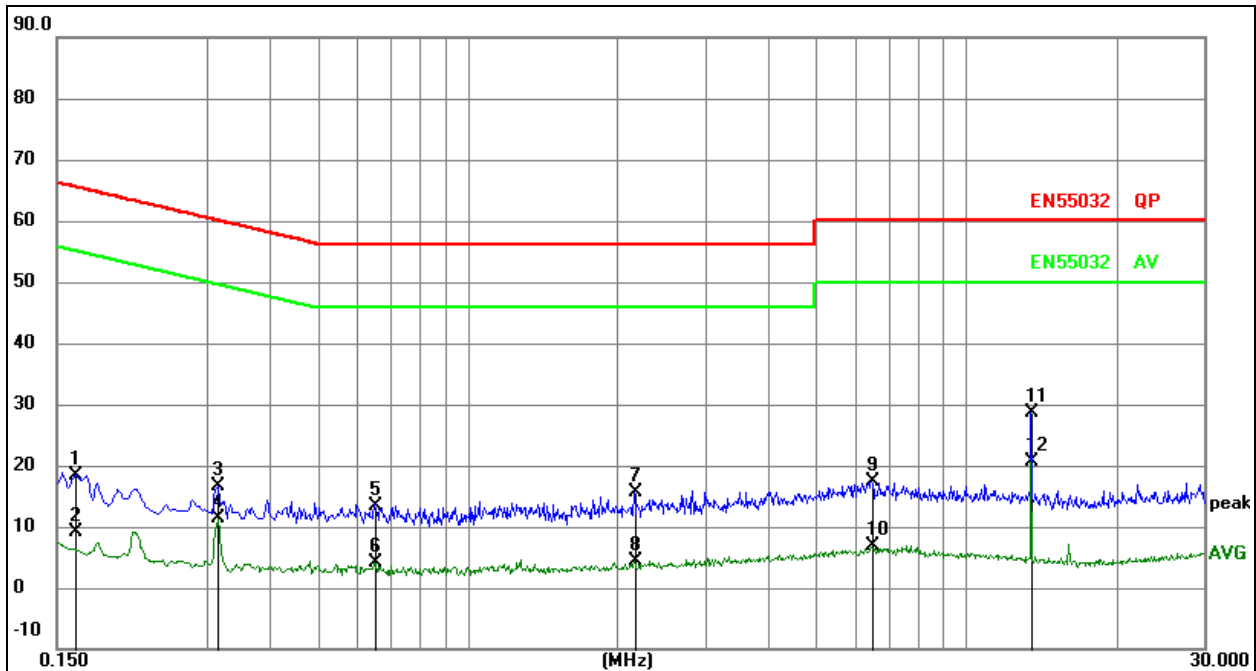
### 6.3 Test Procedure

For mains ports:

- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

## 6.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC 230V/50Hz	Test Mode:	Working

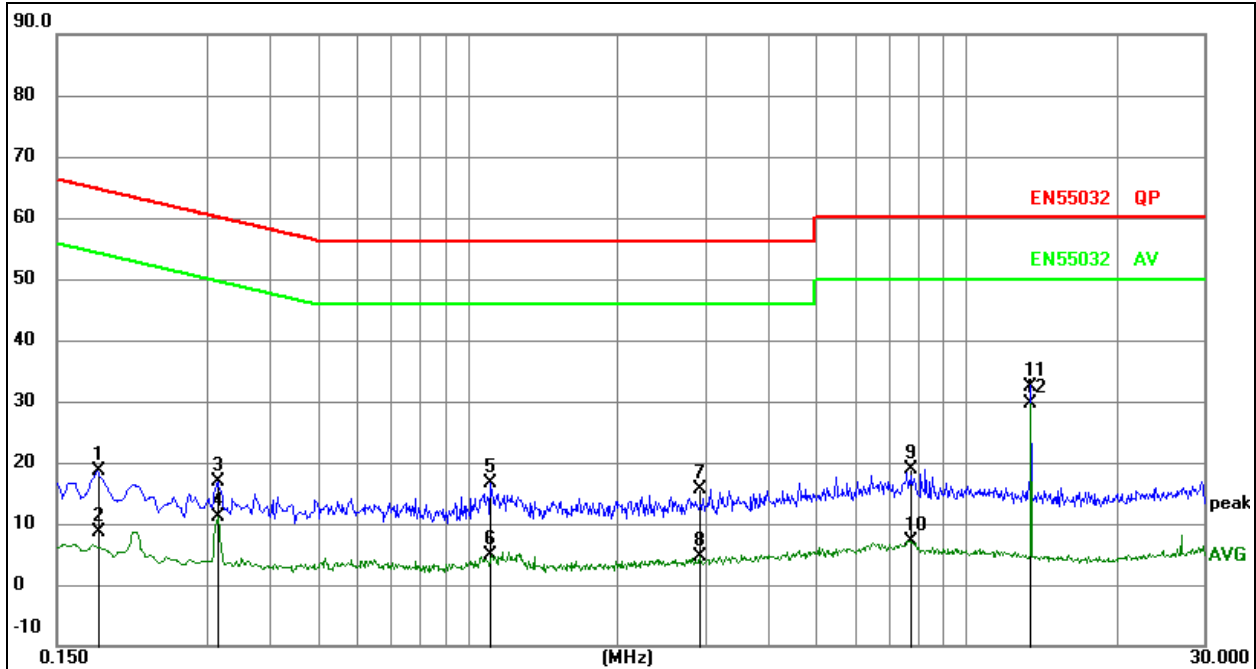


## Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq. MHz	Reading Level dB	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1641	-1.22	19.60	18.38	65.25	-46.87	QP
2		0.1641	-10.59	19.60	9.01	55.25	-46.24	AVG
3		0.3165	-2.94	19.61	16.67	59.80	-43.13	QP
4		0.3165	-8.14	19.61	11.47	49.80	-38.33	AVG
5		0.6540	-6.26	19.61	13.35	56.00	-42.65	QP
6		0.6540	-15.45	19.61	4.16	46.00	-41.84	AVG
7		2.1614	-4.02	19.62	15.60	56.00	-40.40	QP
8		2.1614	-15.23	19.62	4.39	46.00	-41.61	AVG
9		6.4545	-2.43	19.72	17.29	60.00	-42.71	QP
10		6.4545	-12.82	19.72	6.90	50.00	-43.10	AVG
11		13.5240	8.87	19.78	28.65	60.00	-31.35	QP
12	*	13.5240	0.92	19.78	20.70	50.00	-29.30	AVG

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 230V/50Hz	Test Mode:	Working


**Remark:**

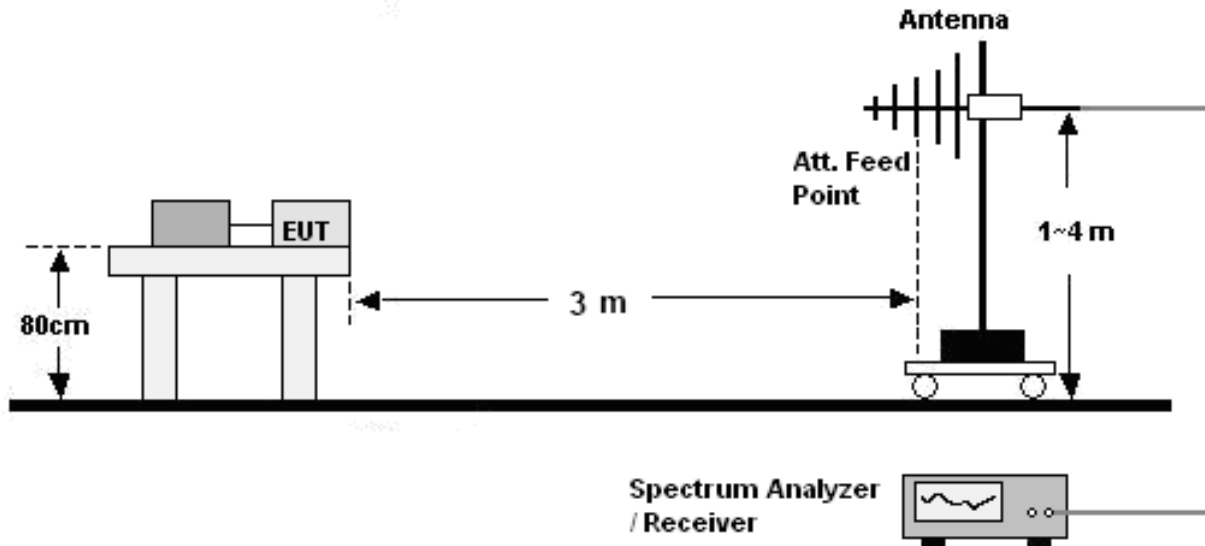
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq. MHz	Reading Level dB	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1806	-1.03	19.60	18.57	64.46	-45.89	QP
2		0.1806	-10.91	19.60	8.69	54.46	-45.77	AVG
3		0.3149	-2.81	19.61	16.80	59.84	-43.04	QP
4		0.3149	-8.43	19.61	11.18	49.84	-38.66	AVG
5		1.1114	-3.01	19.62	16.61	56.00	-39.39	QP
6		1.1114	-14.83	19.62	4.79	46.00	-41.21	AVG
7		2.9152	-4.08	19.64	15.56	56.00	-40.44	QP
8		2.9152	-14.92	19.64	4.72	46.00	-41.28	AVG
9		7.6870	-0.95	19.74	18.79	60.00	-41.21	QP
10		7.6870	-12.49	19.74	7.25	50.00	-42.75	AVG
11		13.4792	12.72	19.78	32.50	60.00	-27.50	QP
12	*	13.4792	9.92	19.78	29.70	50.00	-20.30	AVG

## 7. Radiated Emissions Test

### 7.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



### 7.2 Limits

#### Limits for radiated disturbance of Class B MME

Frequency (MHz)	Quasi-peak limits at 3m dB( $\mu$ V/m)
30-230	40
230-1000	47

### 7.3 Test Procedure

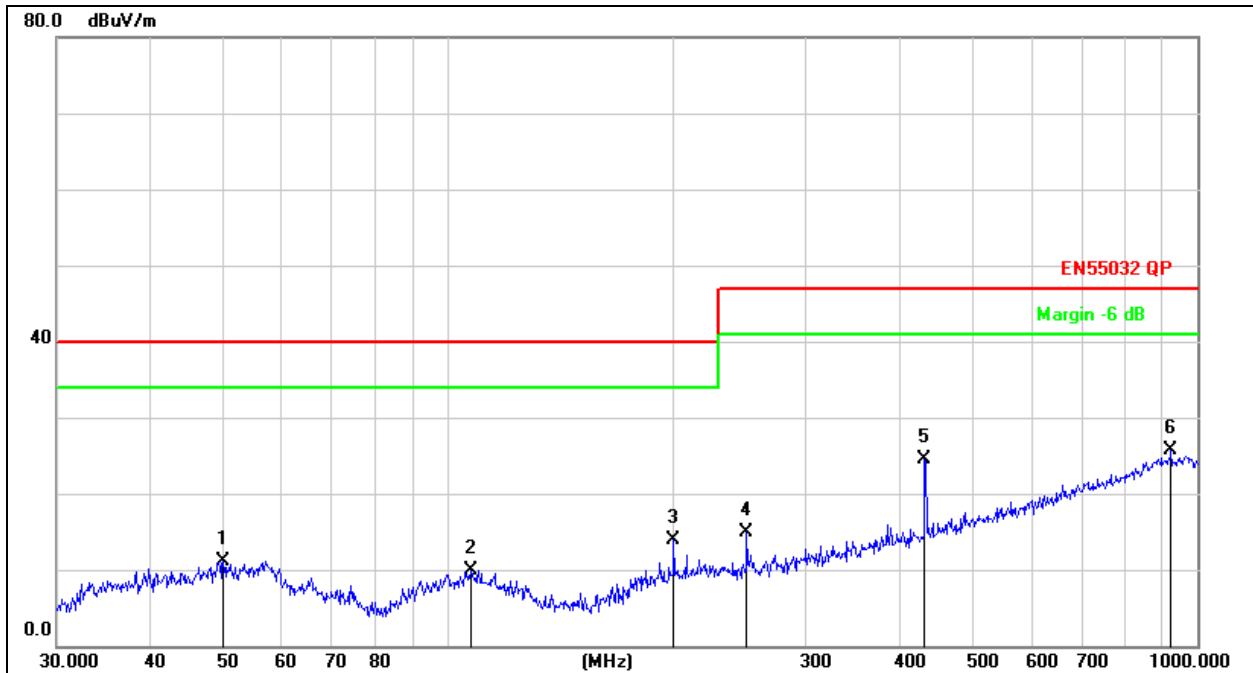
30MHz ~ 1GHz:

- The Product was placed on the nonconductive turntable 0.8 m above the ground in a semi anechoic chamber.
- Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

### 7.4 Test Results

#### 30MHz ~ 1GHz:

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	AC 230V/50Hz	Test Mode:	Working



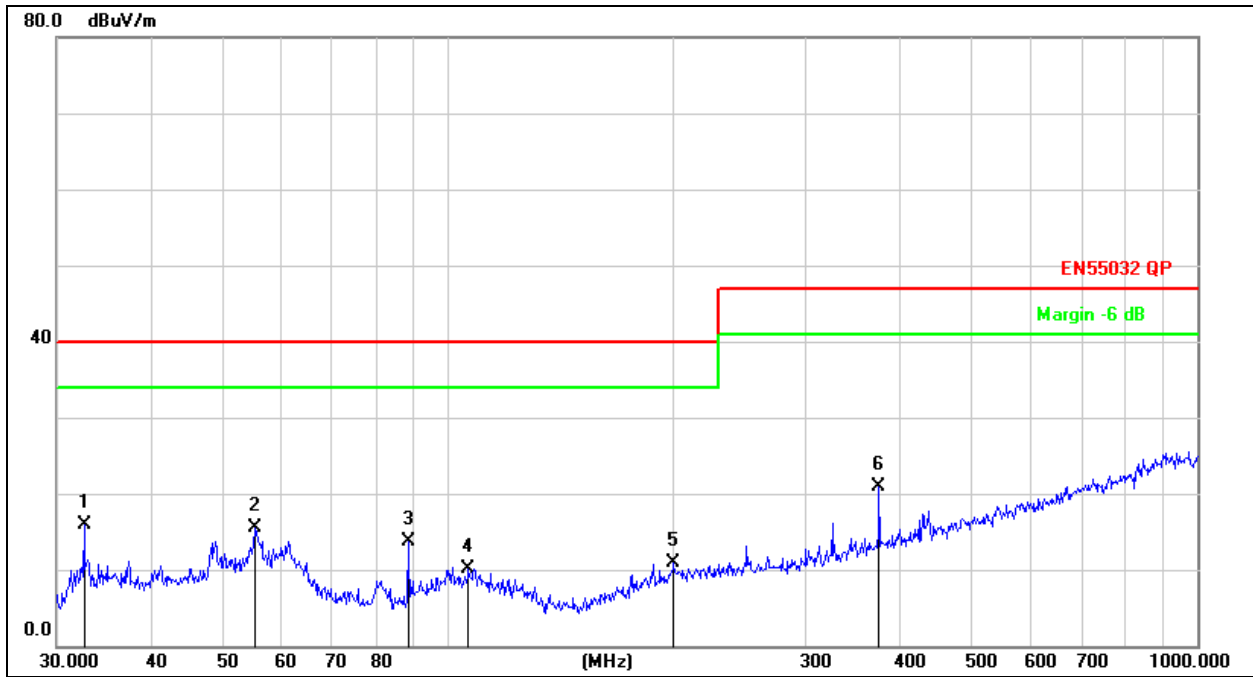
**Remark:**

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1		50.0566	26.62	-15.43	11.19	40.00	-28.81	QP
2		107.1337	26.55	-16.61	9.94	40.00	-30.06	QP
3		199.9856	29.43	-15.45	13.98	40.00	-26.02	QP
4		250.3012	29.53	-14.64	14.89	47.00	-32.11	QP
5		432.5457	34.50	-10.02	24.48	47.00	-22.52	QP
6	*	922.5157	25.34	0.45	25.79	47.00	-21.21	QP



Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	AC 230V/50Hz	Test Mode:	Working

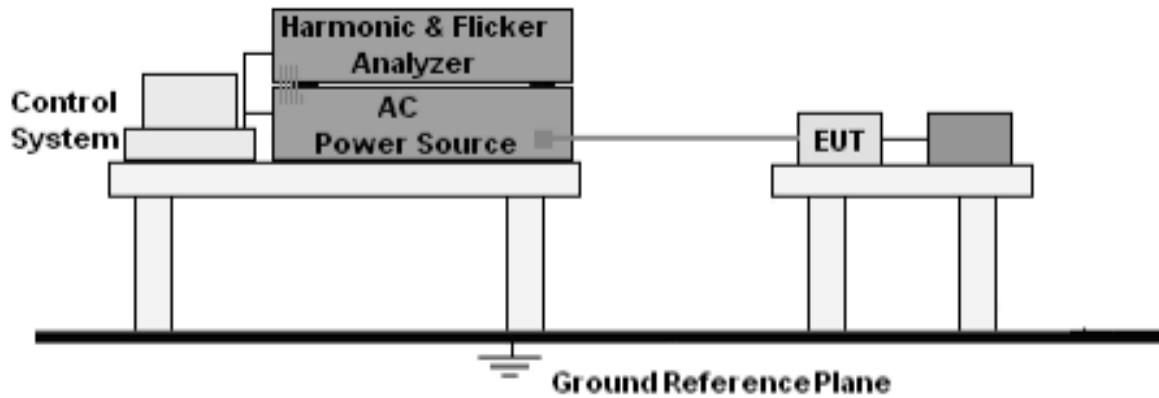


Remark:  
 1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
 2. Measurement = Reading Level + Correct Factor  
 3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1	*	32.6340	33.86	-18.04	15.82	40.00	-24.18	QP
2		55.2207	31.16	-15.73	15.43	40.00	-24.57	QP
3		88.3421	32.80	-19.01	13.79	40.00	-26.21	QP
4		106.3850	26.74	-16.56	10.18	40.00	-29.82	QP
5		199.9856	26.42	-15.45	10.97	40.00	-29.03	QP
6		375.9385	32.36	-11.55	20.81	47.00	-26.19	QP

## 8. Harmonic Current Emission(H)

### 8.1 Block Diagram Of Test Setup



### 8.2 Limit

EN IEC 61000-3-2:2019+A1:2021

### 8.3 Test Procedure

- a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
- b. The correspondent test program of test instrument to measure the current harmonics emanated from Product was chosen. The measure time shall be not less than the time necessary for the Product to be exercised.

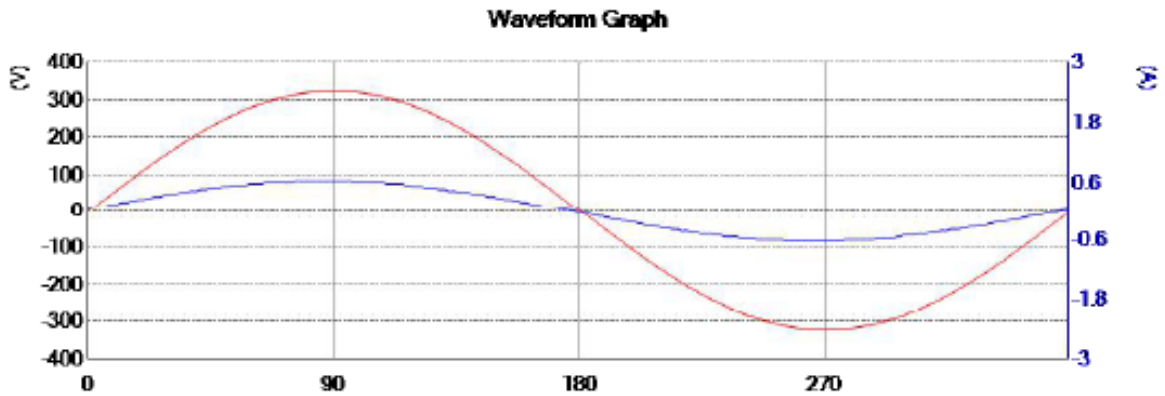
## 8.4 Test Results

Test duration (sec):150

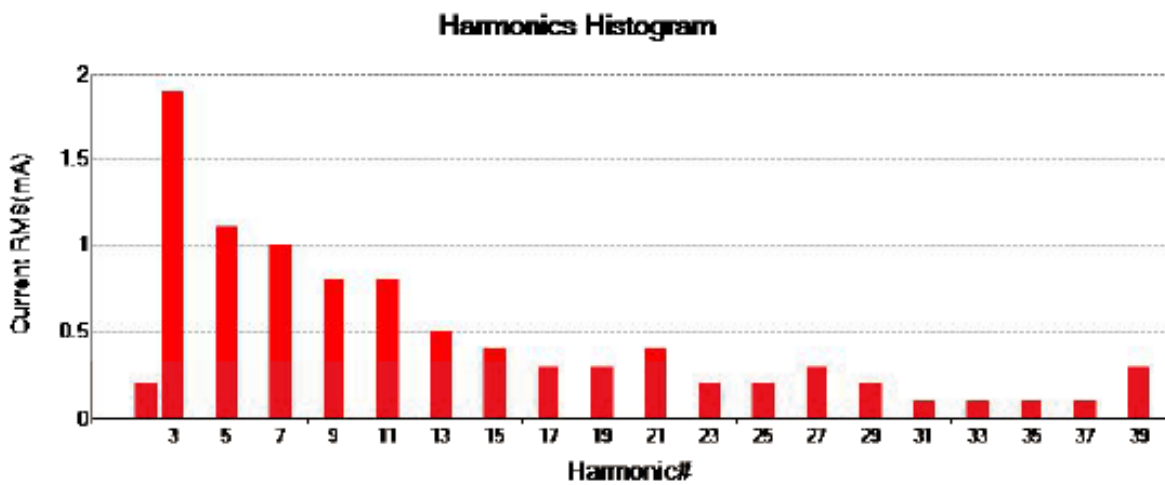
Describe:

Test Result: **pass**      Source qualification(Power Off Load): **Idle - Pass**

Current & voltage waveforms



Harmonics and Class A



Test duration (sec):150

Describe:

 Test Result: **pass**

 Source qualification(Power Off Load): **Idle - Pass**

THC(mA): 3.100

I - THD(%): 0.7

POHC(mA):0.800

POHC Limit(mA):251.353

Parameter values during test:

V\_RMS (Volts): 229.9

Frequency(Hz): 50.0

I\_RMS(mA): 443.5

Crest Factor: 1.410

Power (Watts): 101.8

Power Factor: 0.998

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I Fund	443.200						
2	0.200	1080.000	0.200	0.019	0.200	0.012	Pass
3	1.900	2300.000	2.000	0.087	2.000	0.058	Pass
4	0.000	430.000	0.000	0.000	0.000	0.000	Pass
5	1.100	1140.000	1.100	0.096	1.100	0.064	Pass
6	0.000	300.000	0.000	0.000	0.000	0.000	Pass
7	1.000	770.000	1.100	0.143	1.100	0.095	Pass
8	0.000	230.000	0.000	0.000	0.000	0.000	Pass
9	0.800	400.000	0.800	0.200	0.800	0.133	Pass
10	0.000	184.000	0.000	0.000	0.000	0.000	Pass
11	0.800	330.000	0.800	0.242	0.800	0.162	Pass
12	0.000	153.300	0.000	0.000	0.000	0.000	Pass
13	0.500	210.000	0.500	0.238	0.500	0.159	Pass
14	0.000	131.400	0.000	0.000	0.000	0.000	Pass
15	0.400	150.000	0.500	0.333	0.500	0.222	Pass
16	0.000	115.000	0.000	0.000	0.000	0.000	Pass
17	0.300	132.400	0.300	0.227	0.300	0.151	Pass
18	0.000	102.200	0.000	0.000	0.000	0.000	Pass
19	0.300	118.400	0.400	0.338	0.300	0.169	Pass
20	0.000	92.000	0.000	0.000	0.000	0.000	Pass
21	0.400	107.100	0.400	0.373	0.400	0.249	Pass
22	0.000	83.600	0.000	0.000	0.000	0.000	Pass
23	0.200	97.800	0.300	0.307	0.300	0.204	Pass
24	0.000	76.700	0.000	0.000	0.000	0.000	Pass
25	0.200	90.000	0.300	0.333	0.200	0.148	Pass
26	0.000	70.800	0.000	0.000	0.000	0.000	Pass
27	0.300	83.300	0.400	0.480	0.300	0.240	Pass
28	0.000	65.700	0.000	0.000	0.000	0.000	Pass
29	0.200	77.600	0.300	0.387	0.200	0.172	Pass
30	0.000	61.300	0.000	0.000	0.000	0.000	Pass
31	0.100	72.600	0.200	0.275	0.100	0.092	Pass
32	0.000	57.500	0.000	0.000	0.000	0.000	Pass
33	0.100	68.200	0.100	0.147	0.100	0.098	Pass
34	0.000	54.100	0.000	0.000	0.000	0.000	Pass
35	0.100	64.300	0.200	0.311	0.100	0.104	Pass
36	0.000	51.100	0.000	0.000	0.000	0.000	Pass
37	0.100	60.800	0.100	0.164	0.100	0.110	Pass
38	0.000	48.400	0.000	0.000	0.000	0.000	Pass
39	0.300	57.700	0.400	0.693	0.300	0.347	Pass
40	0.000	46.000	0.000	0.000	0.000	0.000	Pass

Note: All harmonics are below the minimum limits and are ignored.

Test duration (sec):150

Describe:

 Source qualification(Power Off Load): **Pass**

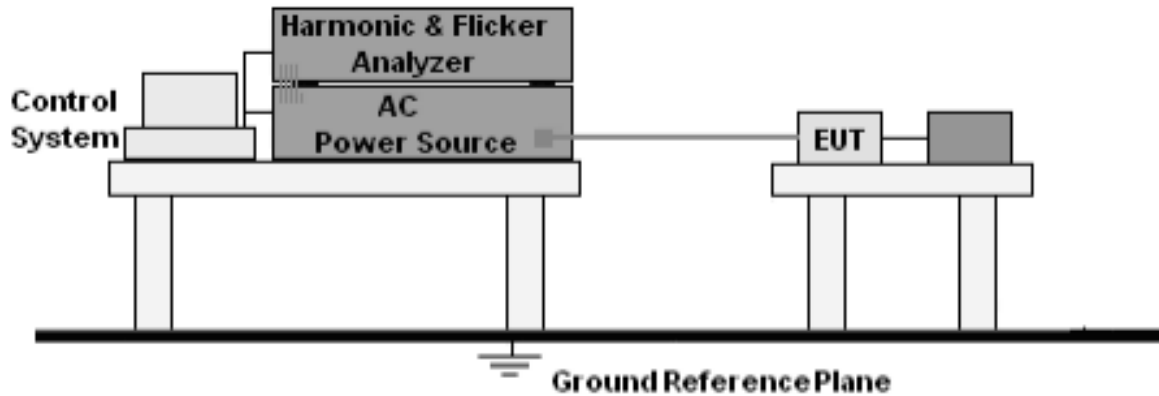
Measurements are compliant with IEC/EN61000-3-2 Ed. 4 &amp; IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured		Deviation	Allowed Deviation	Result
		Low	High			
Supply Voltage	230	229.90	229.90	0.10	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	91.2	91.2	1.2	87 - 93	N/A
Crest Factor	1.414	1.413	1.413	0.001	1.40 - 1.42	N/A
Fundamental Voltage	229.90	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.080	0.039	0.200	Pass
3	0.140	0.068	0.900	Pass
4	0.030	0.013	0.200	Pass
5	0.080	0.037	0.400	Pass
6	0.000	0.003	0.200	Pass
7	0.090	0.042	0.300	Pass
8	0.010	0.008	0.200	Pass
9	0.040	0.024	0.200	Pass
10	0.020	0.010	0.100	Pass
11	0.050	0.028	0.100	Pass
12	0.020	0.010	0.100	Pass
13	0.000	0.003	0.100	Pass
14	0.020	0.010	0.100	Pass
15	0.070	0.031	0.100	Pass
16	0.010	0.005	0.100	Pass
17	0.010	0.005	0.100	Pass
18	0.000	0.005	0.100	Pass
19	0.020	0.016	0.100	Pass
20	0.000	0.001	0.100	Pass
21	0.040	0.021	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.010	0.010	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.030	0.018	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.040	0.024	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.010	0.010	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.010	0.003	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.020	0.010	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.000	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.040	0.021	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.040	0.021	0.100	Pass
40	0.000	0.000	0.100	Pass

## 9. Voltage Fluctuations & Flicker(F)

### 9.1 Block Diagram Of Test Setup



### 9.2 Limit

EN 61000-3-3:2013+A2:2021 Clause 5.

### 9.3 Test Procedure

- The Product was placed on the top of a non-conductive table above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.
- During the flick test, the measure time shall include that part of whole operation cycle in which the Product produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

## 9.4 Test Results

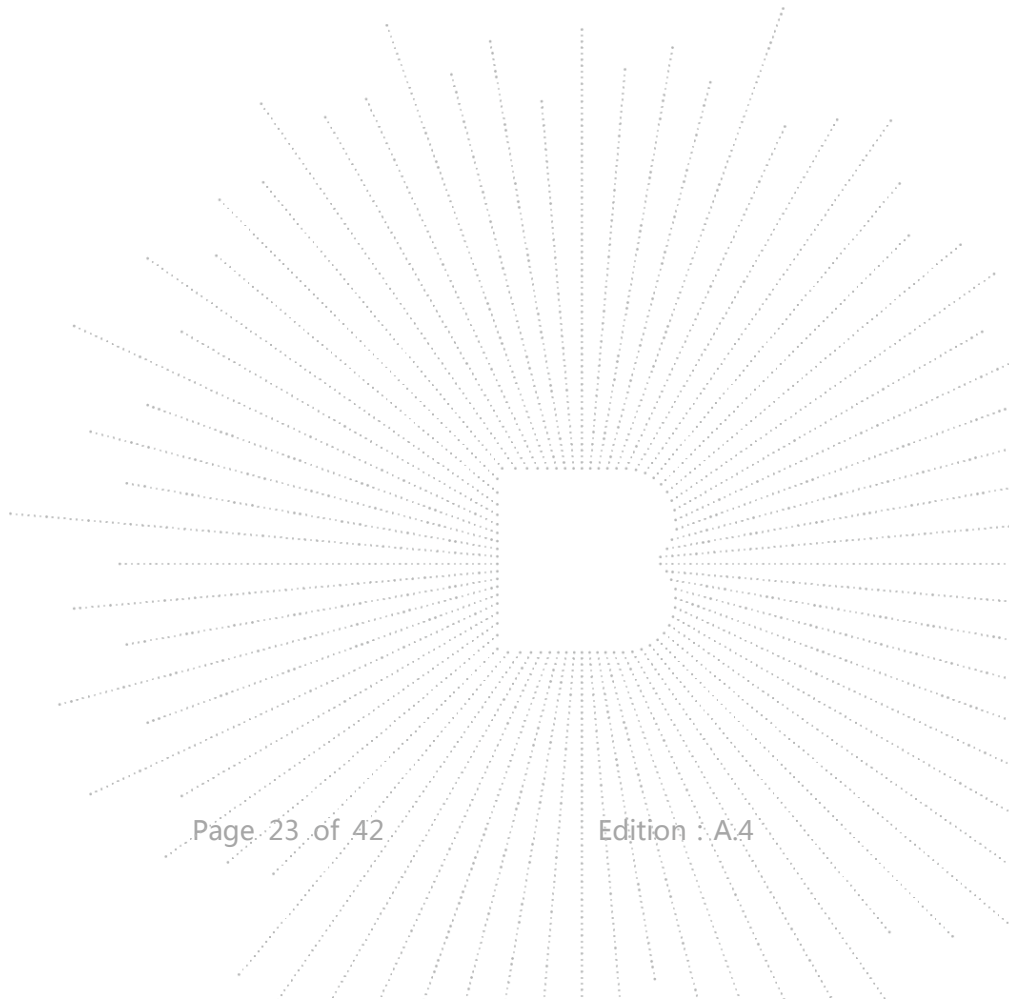
**Test duration (sec):600**
**Describe:**

**Load Power : 0.101 kW**  
**Load Current : 0.443 Arms**  
**Nominal Voltage : 229.81 Vrms**

**Power Factor:1.000**  
**Crest Factor:1.406**

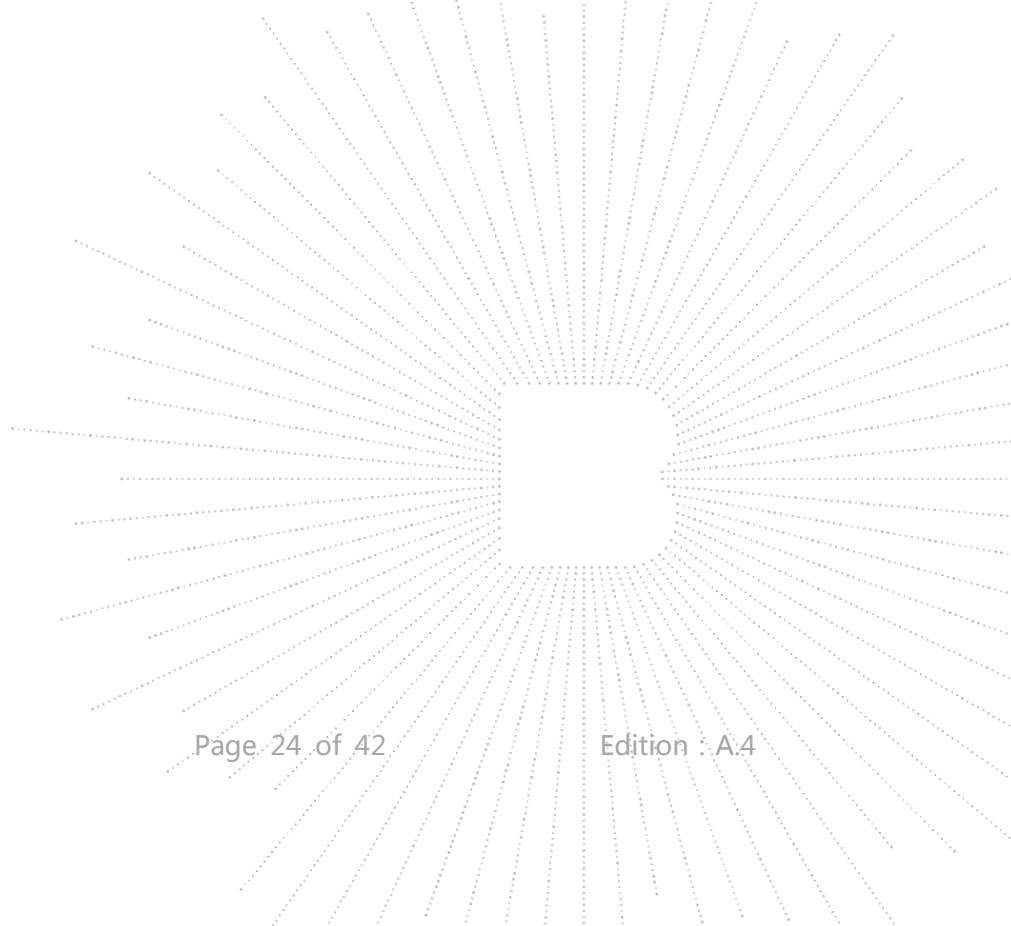
**Test Result: pass**
**Status: Test Completed**
**Result:**

<b>T-max (ms):</b>	<b>0.00</b>	<b>Test limit (ms):</b>	<b>500.00</b>	<b>Pass</b>
<b>Highest dc (%):</b>	<b>0.00</b>	<b>Test limit (%):</b>	<b>3.30</b>	<b>Pass</b>
<b>Highest dmax (%):</b>	<b>0.00</b>	<b>Test limit (%):</b>	<b>4.00</b>	<b>Pass</b>
<b>Highest Pst (10 min. period):</b>	<b>0.00</b>	<b>Test limit:</b>	<b>1.00</b>	<b>Pass</b>



## 10. Immunity Test Of General The Performance Criteria

Product Standard	EN 55035: 2017+A1:2020 clause 8
<b>CRITERION A</b>	<p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<b>CRITERION B</b>	<p>During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.</p> <p>After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<b>CRITERION C</b>	<p>Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.</p> <p>Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>





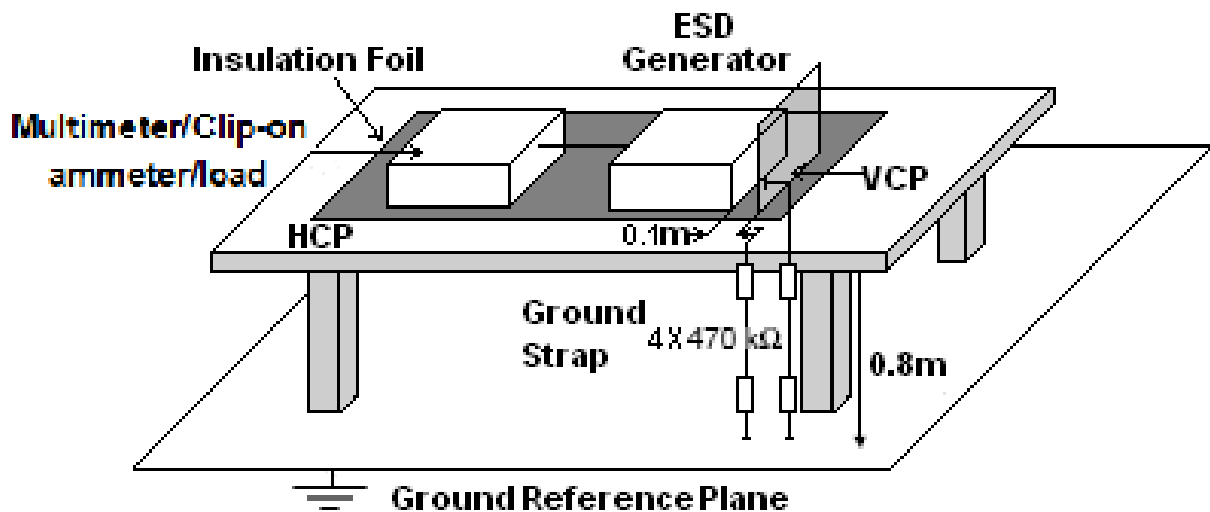
## 11. Electrostatic Discharge (ESD)

### 11.1 Test Specification

<b>Test Port</b>	: Enclosure port
<b>Discharge Impedance</b>	: 330 ohm / 150 pF
<b>Discharge Mode</b>	: Single Discharge
<b>Discharge Period</b>	: one second between each discharge

### 11.2 Block Diagram Of Test Setup

For Floor Stand:



### 11.3 Test Procedure

- Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
- The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- The time interval between two successive single discharges was at least 1 second.
- The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
- Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

#### 11.4 Test Results

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A

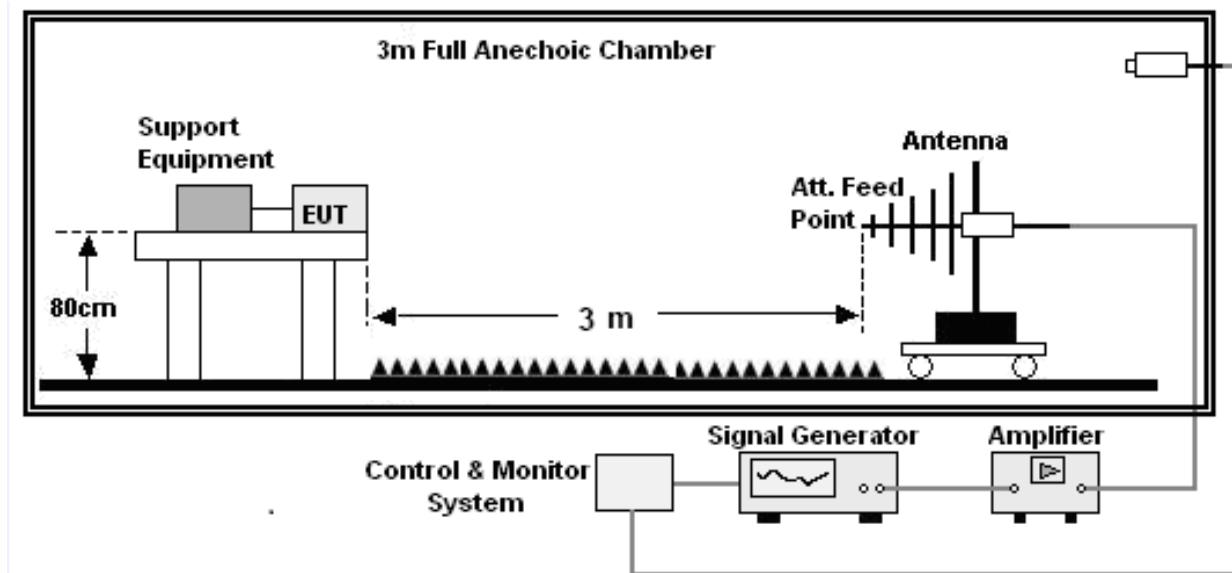
## 12. Continuous RF Electromagnetic Field Disturbances (RS)

### 12.1 Test Specification

<b>Test Port</b>	:	Enclosure port
<b>Step Size</b>	:	1%
<b>Modulation</b>	:	1kHz, 80% AM
<b>Dwell Time</b>	:	1 second
<b>Polarization</b>	:	Horizontal & Vertical

### 12.2 Block Diagram Of Test Setup

Below 1GHz:



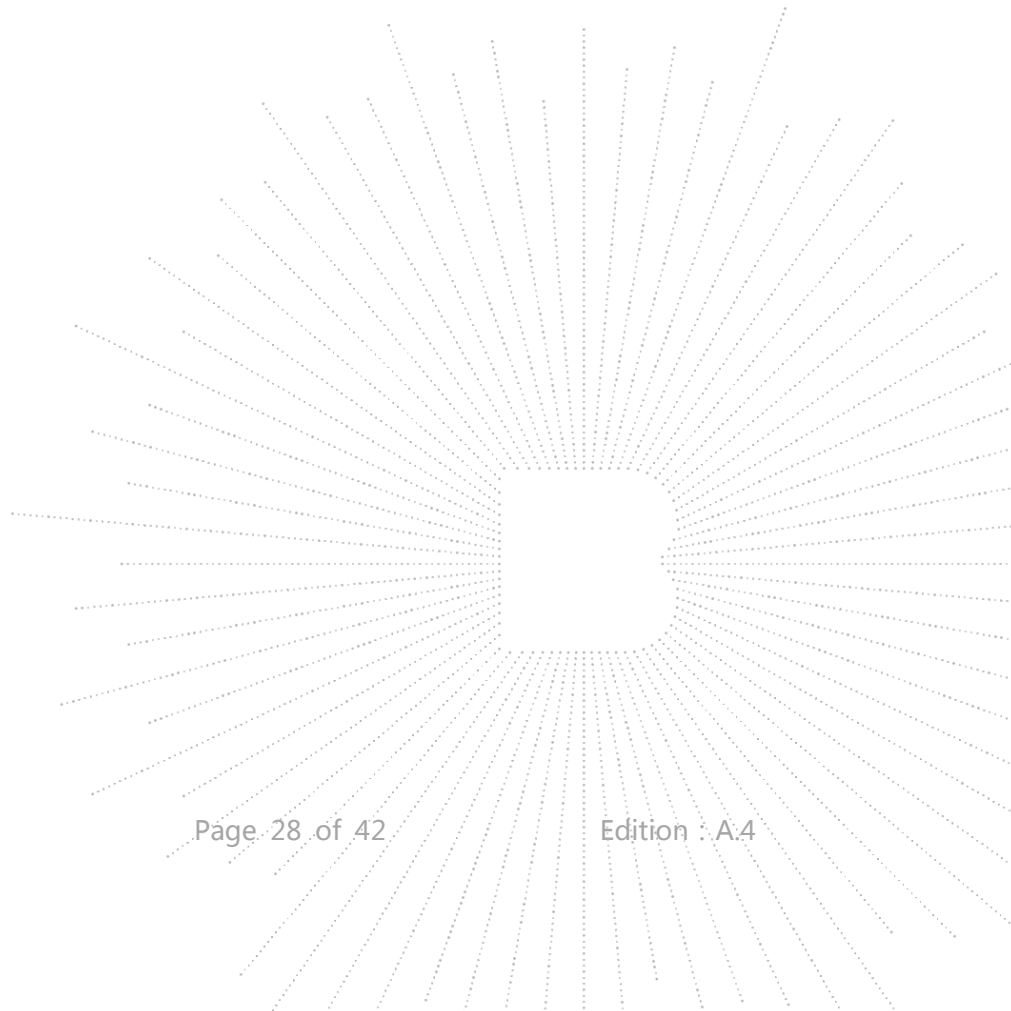
### 12.3 Test Procedure

- The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.
- The frequency range is swept from 80MHz to 1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1%.
- The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond, but should not exceed 5 s at each of the frequencies during the scan.
- The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.
- For Broadcast reception function: Group 2 not apply in this test.

## 12.4 Test Results

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz	Front, Right, Back, Left	3	A	A



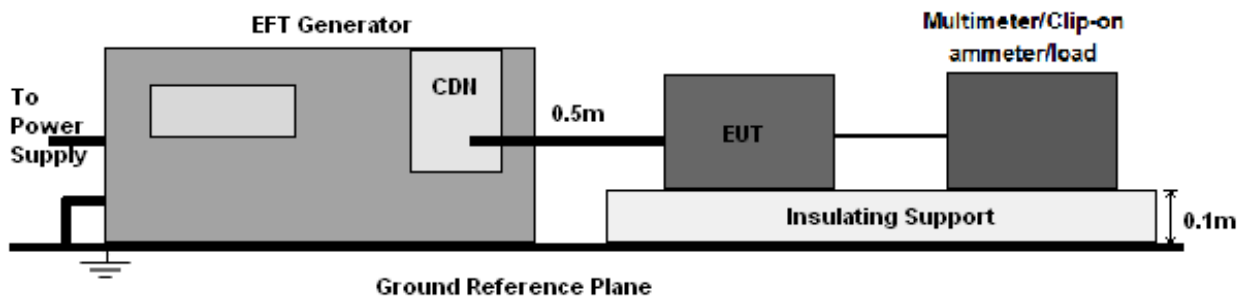
### 13. Electrical Fast Transients/Burst (EFT)

#### 13.1 Test Specification

<b>Test Port</b>	:	input ac/dc. power port
<b>Impulse Frequency</b>	:	5 kHz
<b>Impulse Wave-shape</b>	:	5/50 ns
<b>Burst Duration</b>	:	15 ms
<b>Burst Period</b>	:	300 ms
<b>Test Duration</b>	:	2 minutes per polarity

#### 13.2 Block Diagram Of EUT Test Setup

For input ac/dc. power port:



#### 13.3 Test Procedure

- The Product and support units were located on a non-conductive table above ground reference plane.
- A 0.5m-long power cord was attached to Product during the test.

#### 13.4 Test Results

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

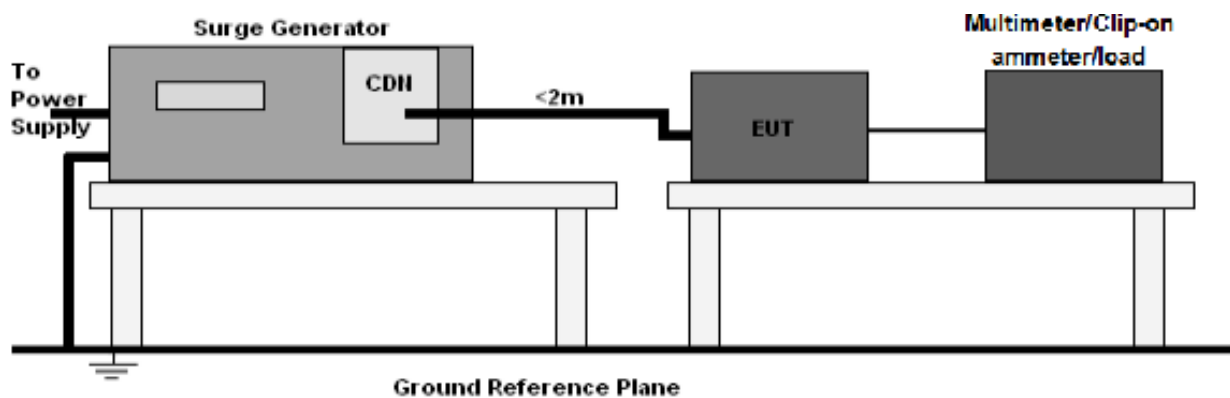
Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
AC MainsL-N-P	1.0	±	B	A

## 14. Surges Immunity Test

### 14.1 Test Specification

<b>Test Port</b>	: input ac/dc. power port
<b>Wave-Shape</b>	: Open Circuit Voltage - 1.2 / 50 us Short Circuit Current - 8 / 20 us
<b>Pulse Repetition Rate</b>	: 1 pulse / min.
<b>Phase Angle</b>	: 0° / 90° / 180° / 270°
<b>Test Events</b>	: 5 pulses (positive & negative) for each polarity

### 14.2 Block Diagram Of EUT Test Setup



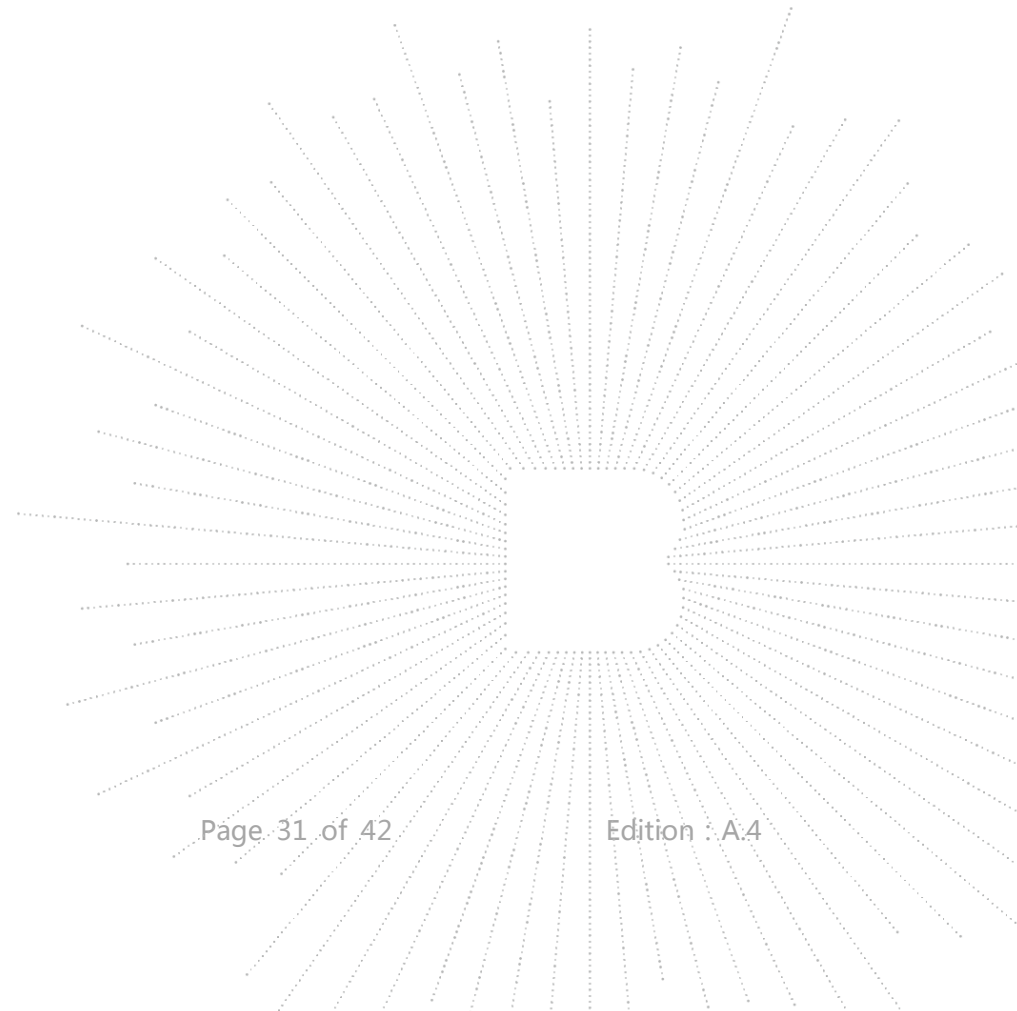
### 14.3 Test Procedure

- The surge is to be applied to the Product power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave.
- The power cord between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter). Interconnection line between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter).

#### 14.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

Coupling Line	Voltage (kV)	Phase Angle	Required Level	Performance Criterion
L - N	+ 1	90°	B	A
	- 1	270°	B	A
L - P	+ 2	90°	B	A
	- 2	270°	B	A
N - P	+ 2	90°	B	A
	- 2	270°	B	A



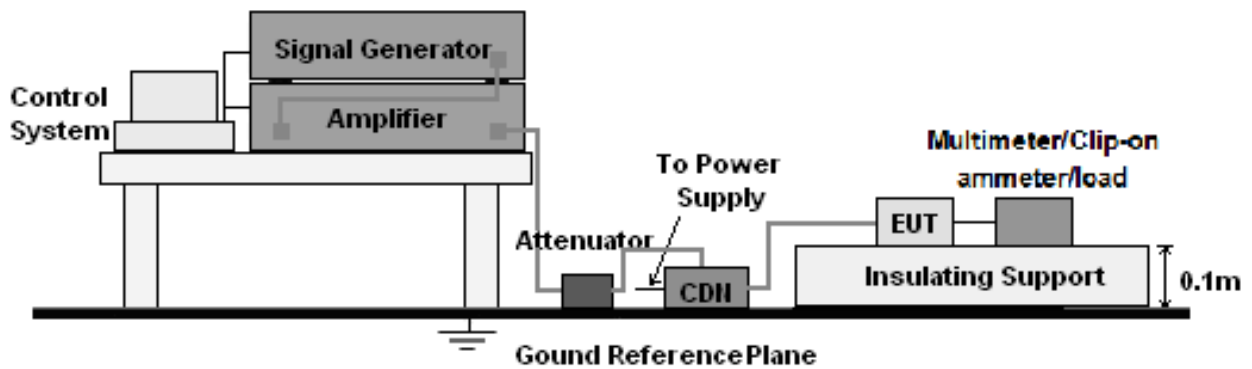
## 15. Continuous Induced RF Disturbances (CS)

### 15.1 Test Specification

<b>Test Port</b>	:	input ac/dc. power port
<b>Step Size</b>	:	1%
<b>Modulation</b>	:	1kHz, 80% AM
<b>Dwell Time</b>	:	1 second

### 15.2 Block Diagram Of EUT Test Setup

For input ac/ac. power port:



### 15.3 Test Procedure

For input ac/dc. power port:

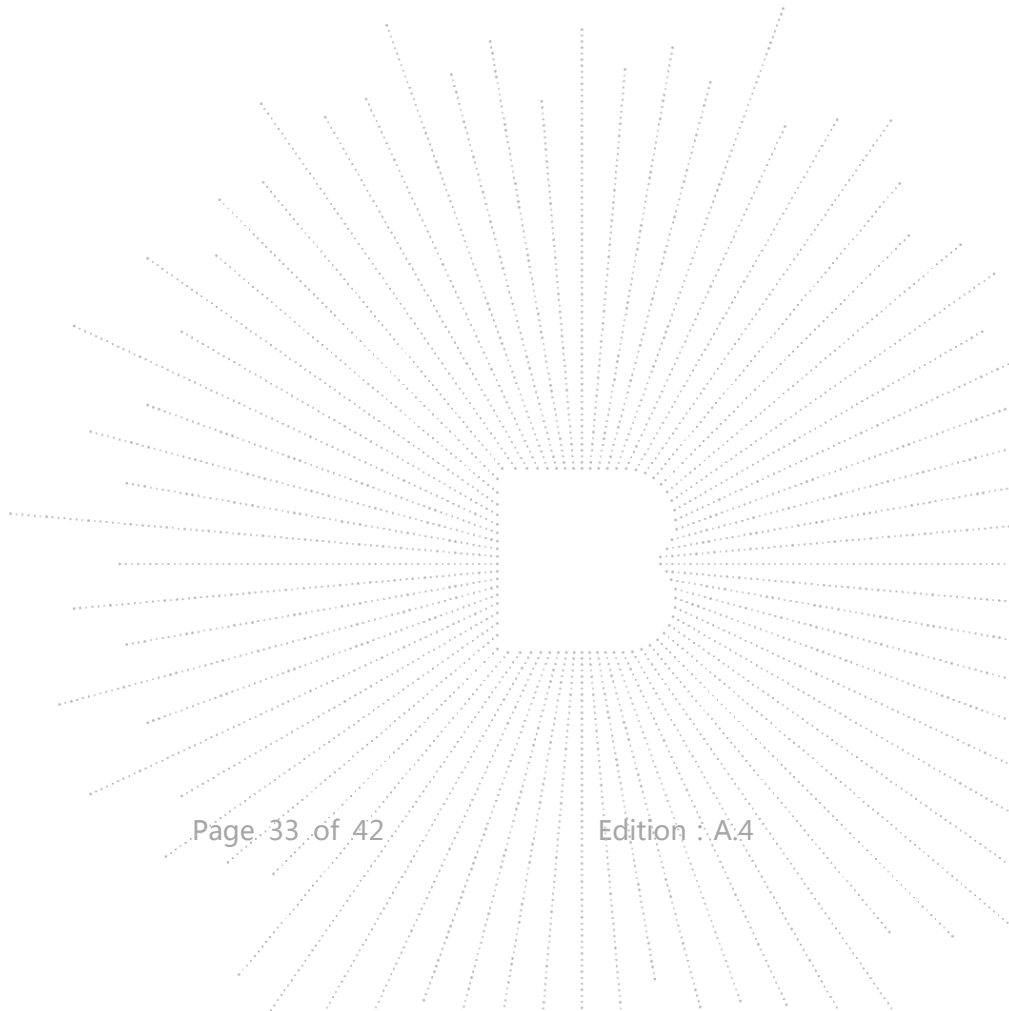
- The Product and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
- The frequency range is swept from 150 kHz to 10MHz, 10MHz to 30MHz, 30MHz to 80MHz with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the Product to be able to respond.



## 15.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

Inject Line	Frequency (MHz)	Voltage Level (V r.m.s.)	Required Level	Performance Criterion
a.c. port	0.15 - 10	3	A	A
	10 to 30	3 to 1	A	A
	30 to 80	1	A	A

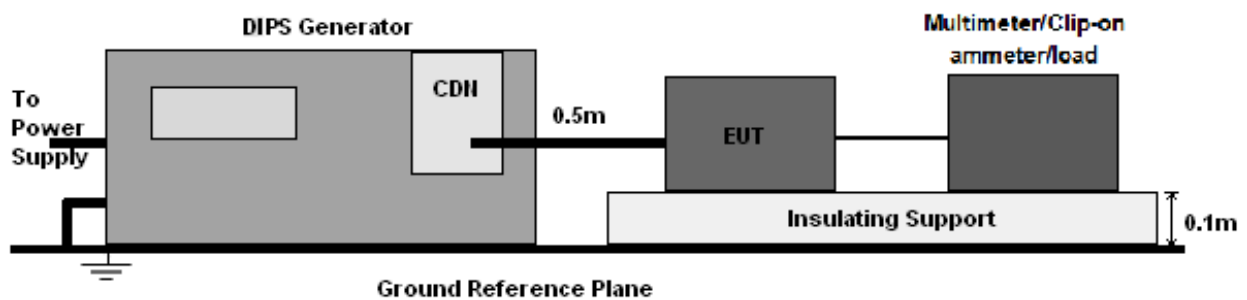


## 16. Voltage Dips And Interruptions (DIPS)

### 16.1 Test Specification

<b>Test Port</b>	:	input ac. power port
<b>Phase Angle</b>	:	0°, 180°
<b>Test cycle</b>	:	3 times

### 16.2 Block Diagram Of EUT Test Setup



### 16.3 Test Procedure

- The Product and support units were located on a non-conductive table above ground floor.
- Set the parameter of tests and then perform the test software of test simulator.
- Conditions changes to occur at 0 degree crossover point of the voltage waveform.

### 16.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

Test Level % $U_T$	Voltage dips in % $U_T$	Duration ( ms)	Required Level	Performance Criterion
< 5	≥95	10	B	A
70	30	500	C	B*
<b>Voltage Interruptions:</b>				
< 5	≥95	5000	C	C*

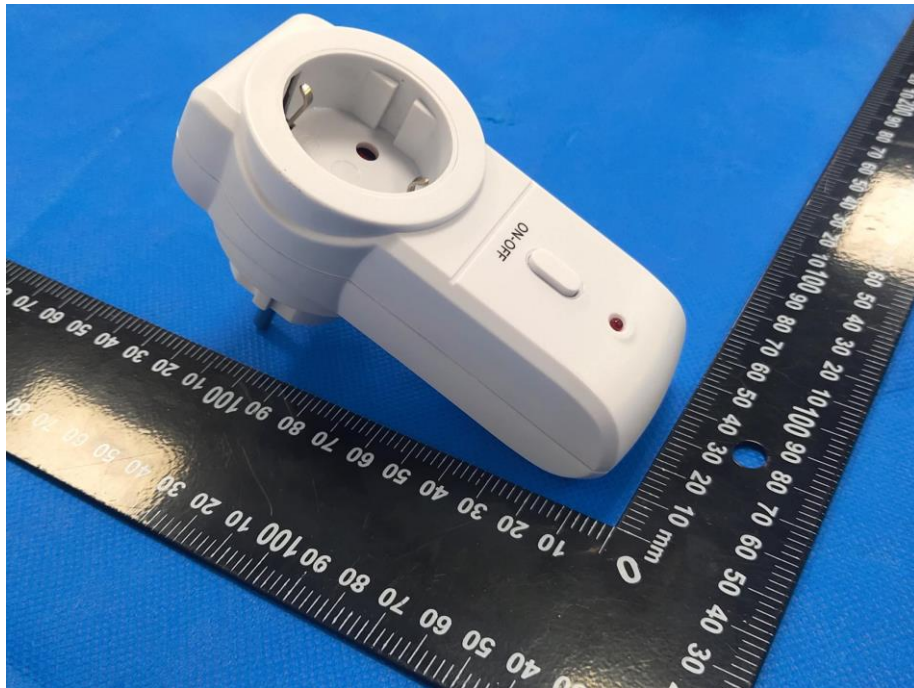
Note\*: The EUT Unable to working during testing, and it need manually connect after test.

### 17. EUT Photographs

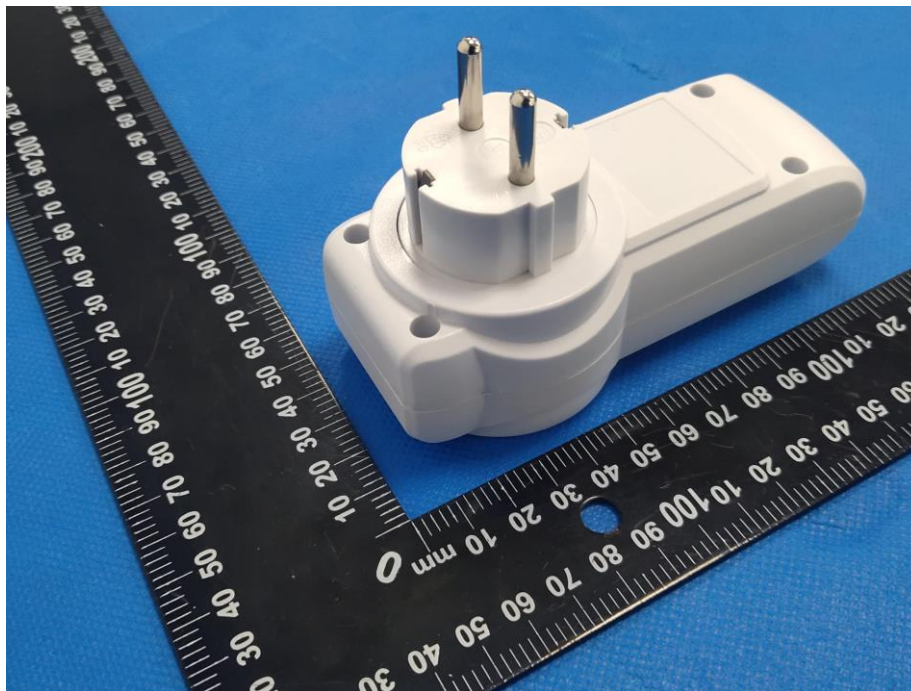
EUT Photo 1



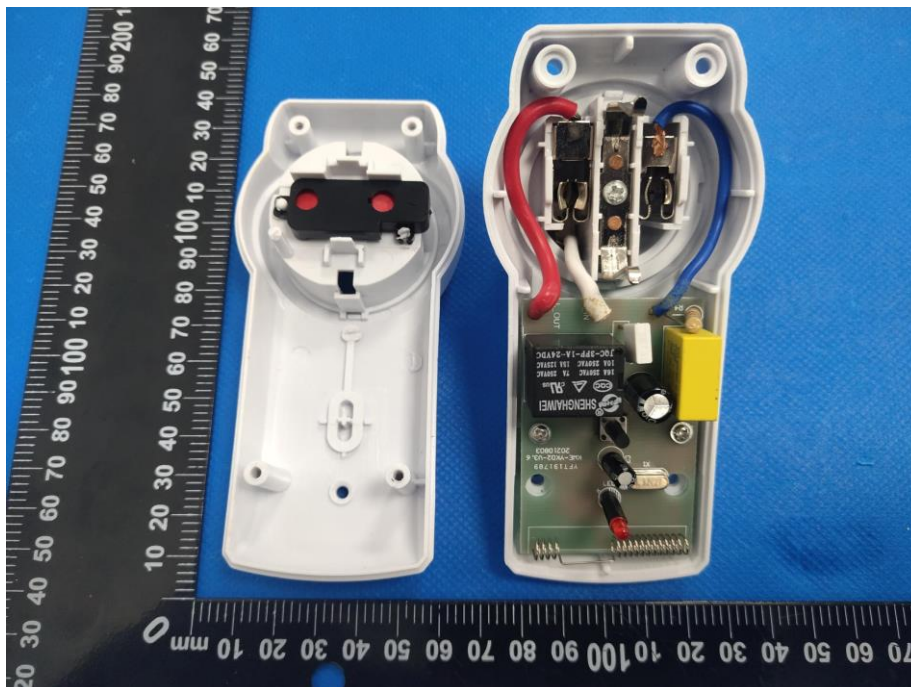
EUT Photo 2



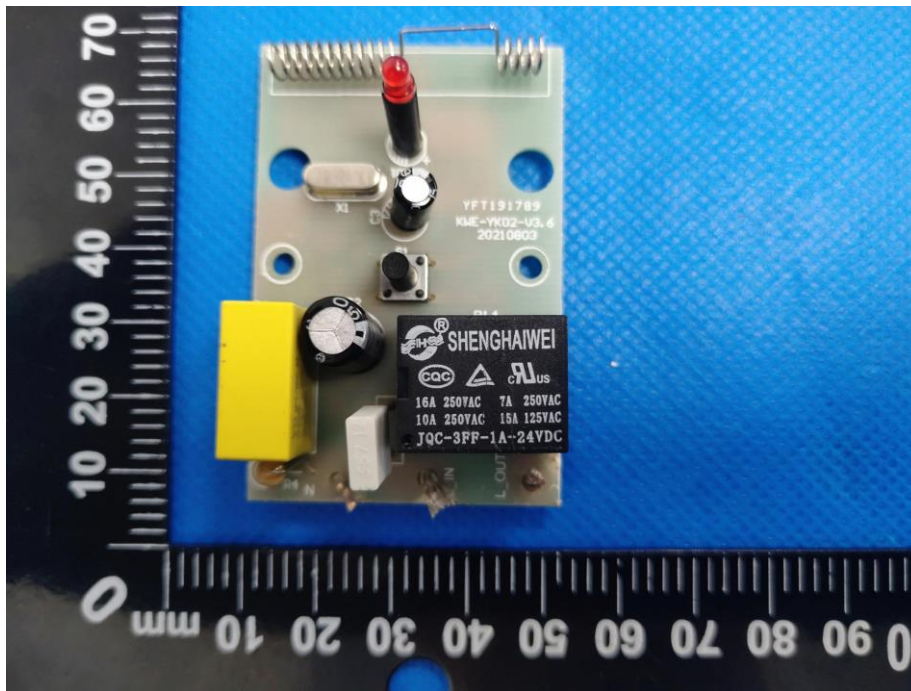
EUT Photo 3



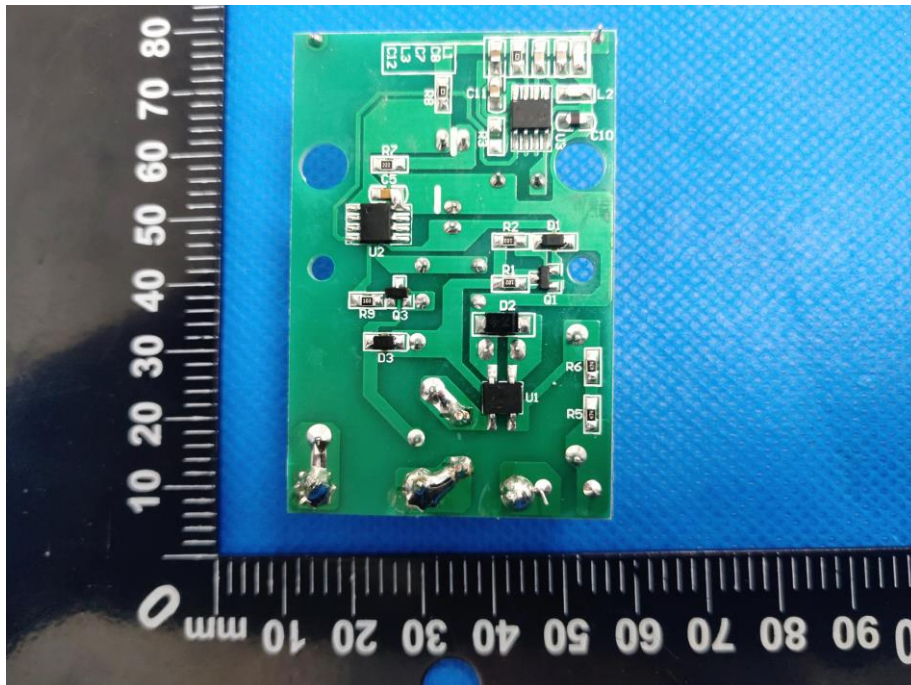
EUT Photo 4



EUT Photo 5



EUT Photo 6

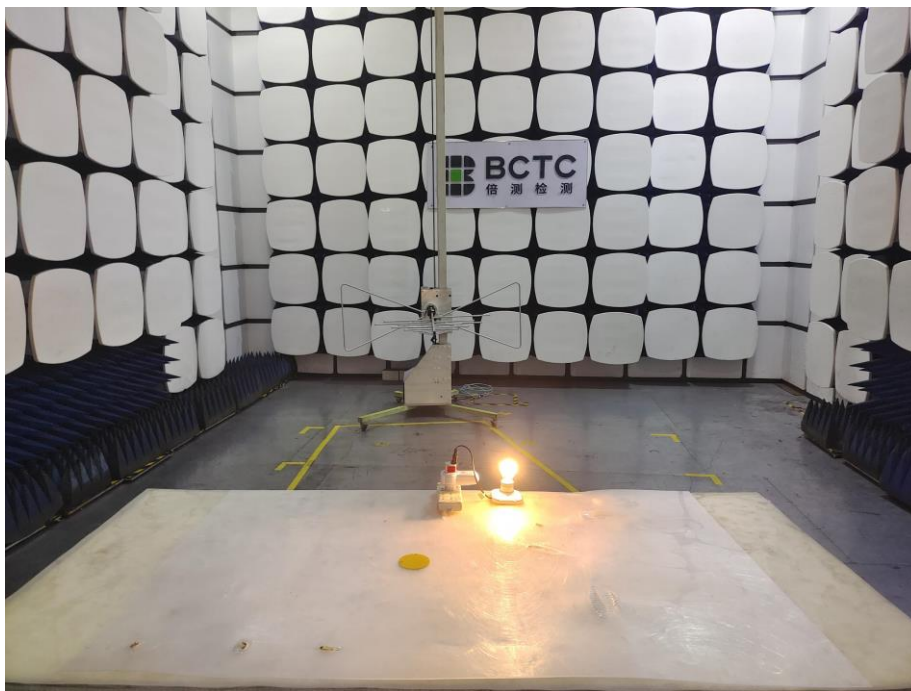


### 18. EUT Test Setup Photographs

Conducted emissions



Radiated emissions



H/F



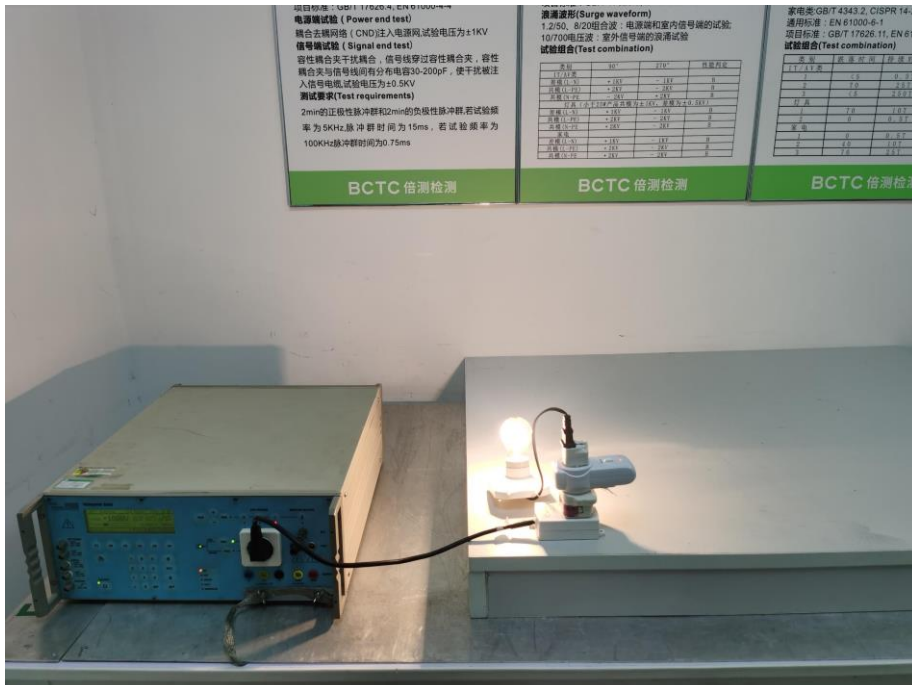
ESD



RS

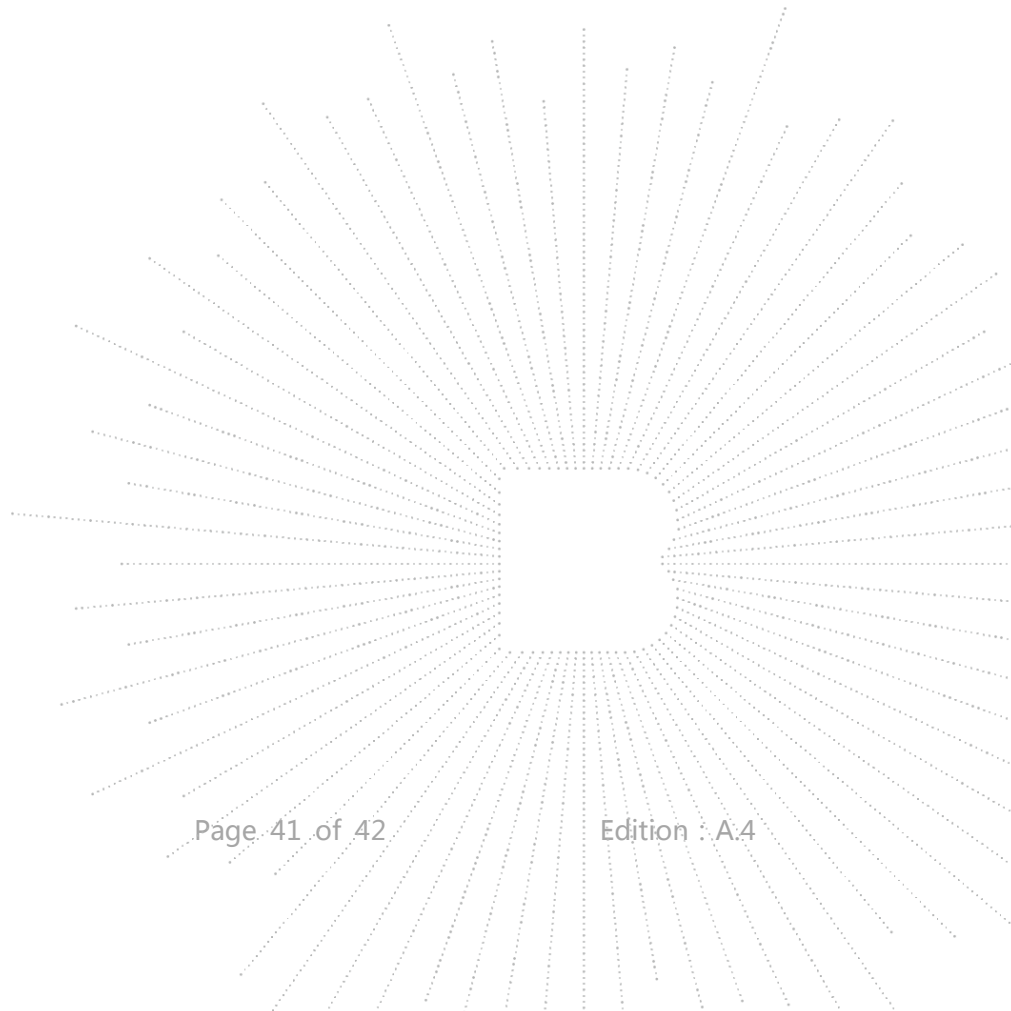


EFT &amp; Dips &amp; Surge





CS



## STATEMENT

- 1.The equipment lists are traceable to the national reference standards.
- 2.The test report can not be partially copied unless prior written approval is issued from our lab.
- 3.The test report is invalid without stamp of laboratory.
- 4.The test report is invalid without signature of person(s) testing and authorizing.
- 5.The test process and test result is only related to the Unit Under Test.
- 6.The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL : 400-788-9558

P.C.: 518103

FAX : 0755-33229357

Website : <http://www.chnbctc.com>

E-Mail : [bctc@bctc-lab.com.cn](mailto:bctc@bctc-lab.com.cn)

\*\*\*\*\* END \*\*\*\*\*