

TEST REPORT

Report No.: BCTC2301524366E

Applicant: Bestter (Xiamen) Technology Inc.

Product Name: Smart Toilet

Model/Type
reference: T054-01

Tested Date: 2022-10-20 to 2022-10-25

Issued Date: 2023-01-09

Shenzhen BCTC Testing Co., Ltd.



Product Name: Smart Toilet
Trademark: BESTTER
Model/Type reference: T054-01
T054-02, T056-01, T056-02
Prepared For: Bestter (Xiamen) Technology Inc.
Address: No.601 Tonghong Road, Tong'an Park, Tong'an Industrial Zone, Xiamen City,
Fujian Province, China
Manufacturer: Bestter (Xiamen) Technology Inc.
Address: No.601 Tonghong Road, Tong'an Park, Tong'an Industrial Zone, Xiamen City,
Fujian Province, China
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road,
Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2022-10-20
Sample tested Date: 2022-10-20 to 2022-10-25
Issue Date: 2023-01-09
Report No.: BCTC2301524366E
Test Standards: EN IEC 55014-1:2021, EN IEC 55014-2:2021
EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A2:2021
Test Results: PASS

Tested by:



Icay Chen/ Project Handler

Approved by:



Zero Zhou/Reviewer

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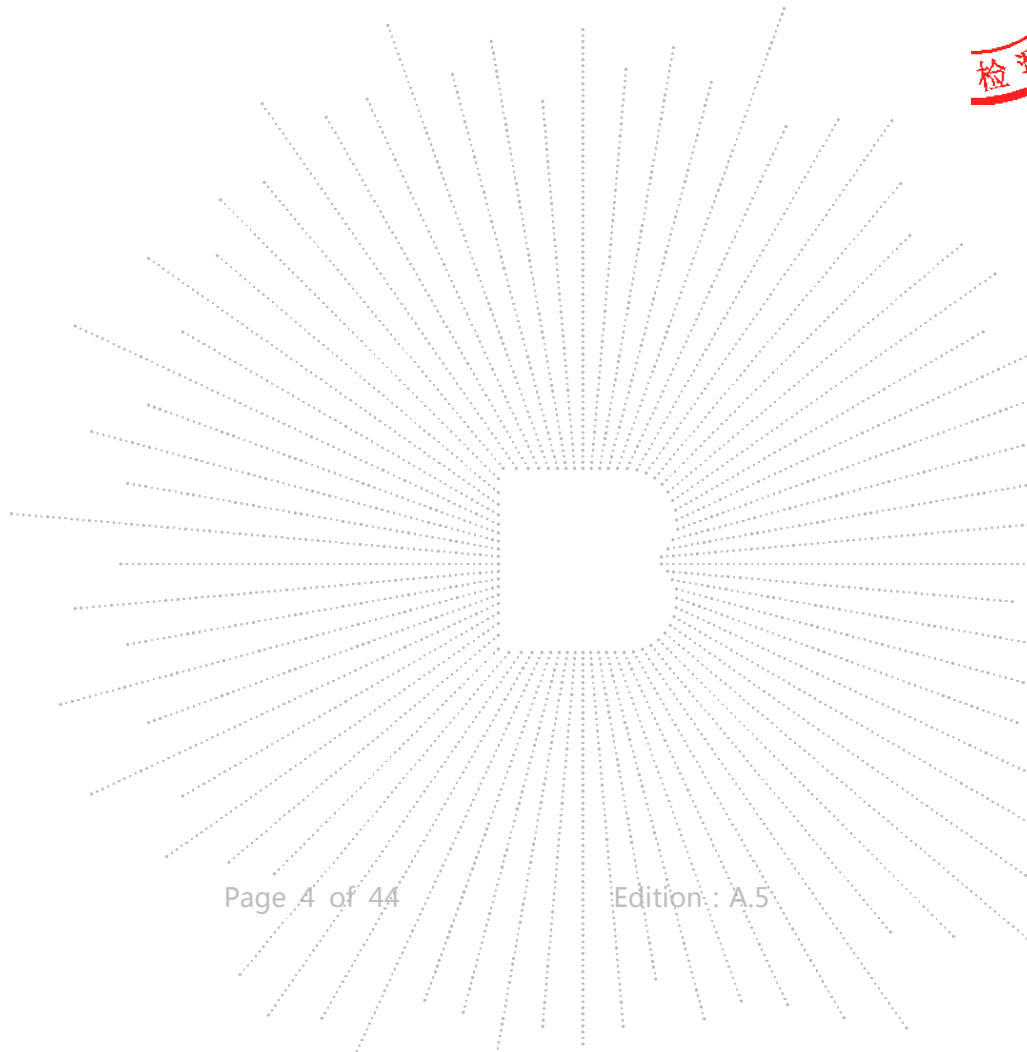
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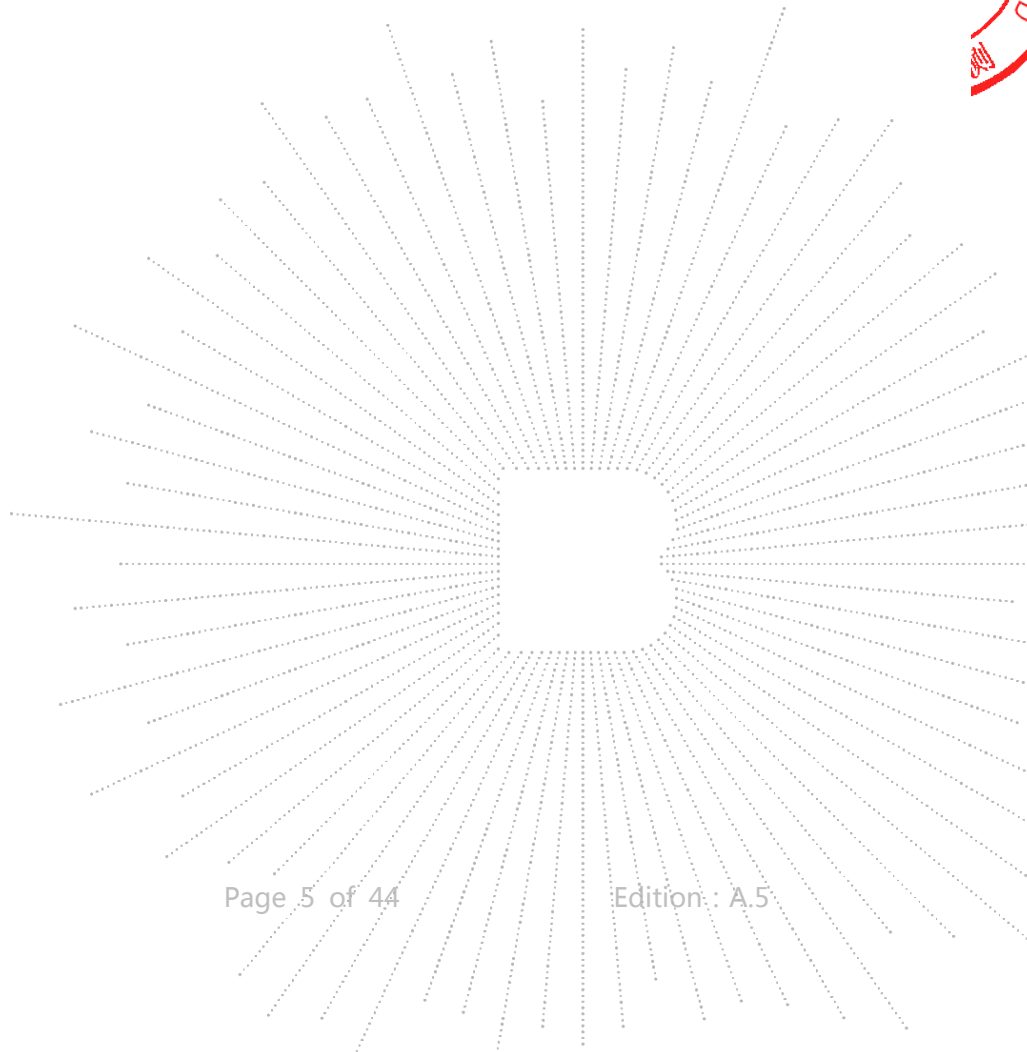
(Note: N/A means not applicable)

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1. Version

Report No.	Issue Date	Description	Approved
BCTC2301524366E	2023-01-09	Original	Valid



2. Test Summary

The Product has been tested according to the following specifications:

EMISSION		
Standard	Test Item	Test result
EN IEC 55014-1	Disturbance voltages(CE)	Pass
EN IEC 55014-1	Discontinuous disturbance (Clicks)	N/A ¹
EN IEC 55014-1	Disturbance power(DP)	N/A ²
EN IEC 55014-1	Magnetic field induced current in a 2m loop antenna(ME)	N/A ³
EN IEC 55014-1	Magnetic field strength	N/A ³
EN IEC 55014-1	Radiated disturbance (RE)	Pass
EN IEC 61000-3-2	Harmonic current emission(H)	Pass
EN 61000-3-3	Voltage fluctuations & flicker(F)	Pass

IMMUNITY (EN IEC 55014-2)		
Standard	Test Item	Test result
IEC 61000-4-2	Electrostatic discharge immunity Test (ESD)	Pass
IEC 61000-4-3	Radio frequency electromagnetic fields(RS)	N/A ⁴
IEC 61000-4-4	Fast transients immunity Test (EFT)	Pass
IEC 61000-4-5	Surges immunity Test	Pass
IEC 61000-4-6	Injected currents immunity Test (CS)	Pass
IEC 61000-4-11	Voltage dips and interruptions immunity Test (DIPS)	Pass

Remark:

1. The Product has no switching operations, automatic programme or other electrically controlled or operated functions
2. The Product shall be evaluated for emissions in the 30 MHz to 1 000 MHz range by testing in accordance with method b as described in clause 4.3.4.2 of EN IEC 55014-1.
3. It only apply to induction cooking appliances.
4. Mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz, no testing required.

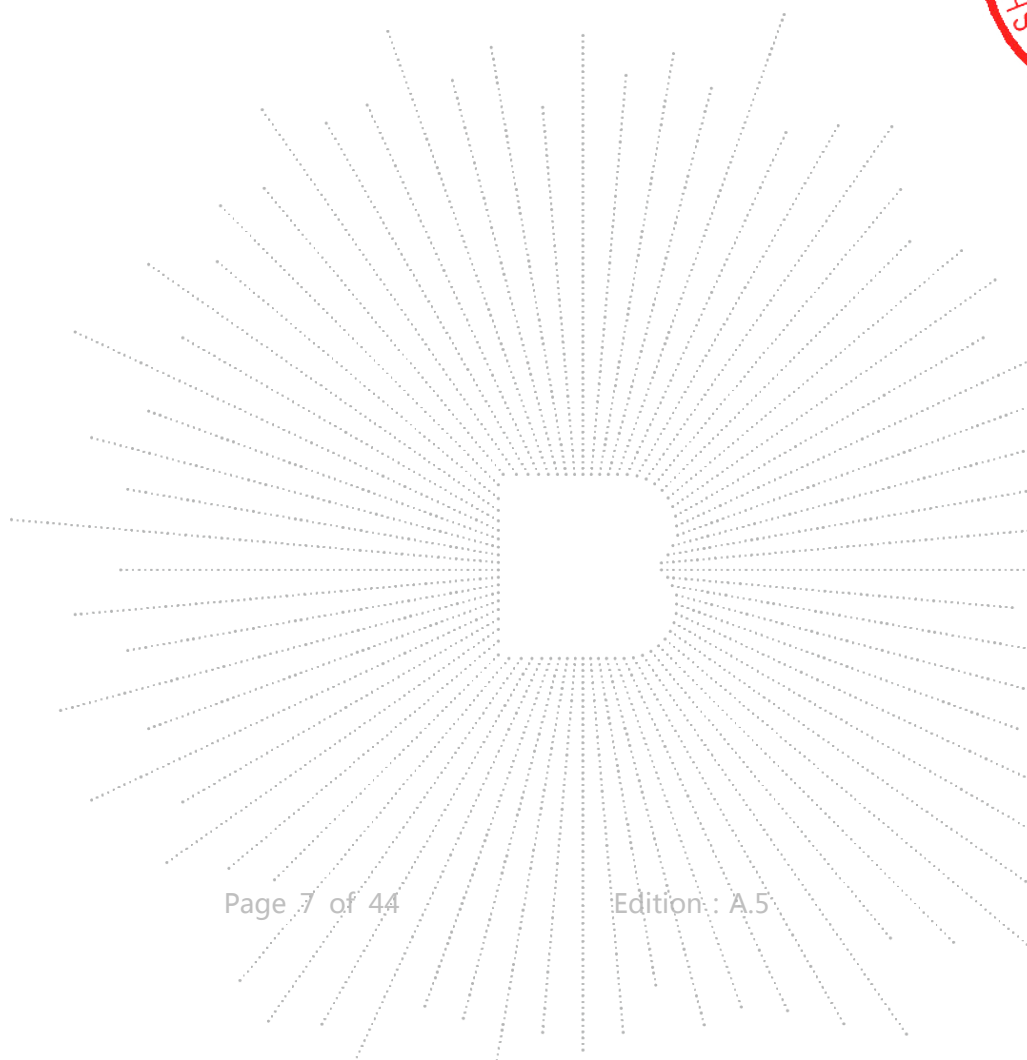
Remark: Based on the following changes in the original test report (BCTC2210378045EN1), No changes were made to the product.

Only changes Applicant Company, Applicant Address, Model/Type reference, Trademark.

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)
Disturbance voltages (150K-30MHZ)	3.20
Disturbance power(DP)	3.70
Radiated disturbance (30MHz-1000MHz)	4.80



4. Product Information And Test Setup

4.1 Product Information

Ratings:
Model differences :
(Radiated disturbance)

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

(Radio frequency electromagnetic fields)

The clock frequency of the internal sources of the EUT is (less than 15)MHz:

Rated voltage: 220-240V~; Rated power: 1100W

All models are identical except for the appearance color.

☒ 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.

☒ Mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz, no testing required.

☐ Mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 15 MHz but lower than or equal to 200 MHz, the measurement shall only be made up to 1 GHz.

☐ Mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 200 MHz, the measurement shall be made up to 6 GHz.

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Specification	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.	Data Cable	Power Cord
1.	---	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. 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
Disturbance voltages(150KHz-30MHz)	Working	AC 230V/50Hz
Radiated disturbance(30MHz-1GHz)	Working	AC 230V/50Hz
Harmonic current emission Class <u> A </u>	Working	AC 230V/50Hz
Voltage fluctuations & flicker(F)	Working	AC 230V/50Hz
Electrostatic discharge (ESD)B <input checked="" type="checkbox"/> Air Discharge: $\pm 8\text{Kv}$ <input checked="" type="checkbox"/> Contact Discharge: $\pm 4\text{kV}$ <input checked="" type="checkbox"/> HCP & VCP: $\pm 4\text{kV}$	Working	AC 230V/50Hz
Electrical fast transients/burst (EFT) B <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, B <input checked="" type="checkbox"/> 2kV Line-PE, N-PE B Line-Line:90°+1kV,270°-1kV Line-PE, N-PE:90°+2kV,270°-2kV	Working	AC 230V/50Hz
Injected Currents (CS) A 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) 0% 0.5P C 40% 200ms C 70% 500ms C	Working	AC 230V/50Hz

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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, Zhancheng, 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

Disturbance voltagesTest					
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 DC-6GHz	1650	May 24, 2022	May 23, 2023

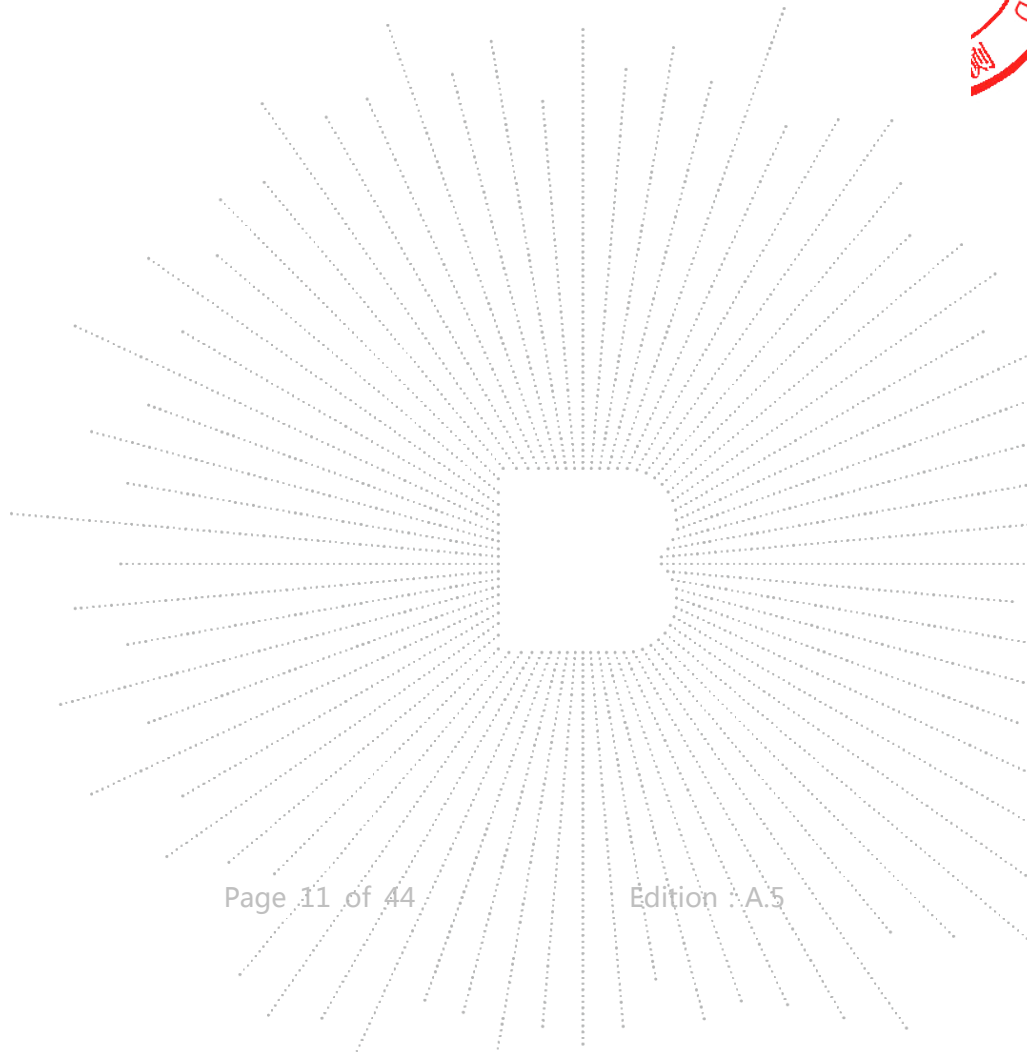
Radiated Emissions Test (966 Chamber#01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESRP	101154	May 24, 2022	May 23, 2023
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
Amplifier	SKET	LAPA_01G18 G-45dB	\	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	Jun. 06, 2022	Jun. 06, 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	HTEC	H/F	V1.5	\	\

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

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

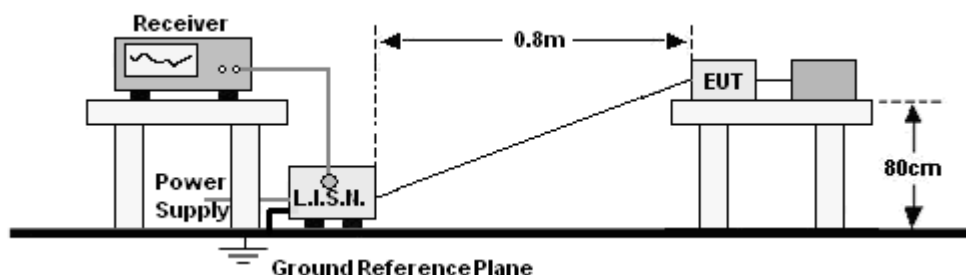
Continuous Induced RF Disturbances Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
C/S Test System	SCHLODER	CDG-6000-75	126B1405/2016	Jun 28, 2022	Jun 27, 2023
Attenuator	SCHLODER	6DB DC-1G	HA1630	May 24, 2022	May 23, 2023
CDN	SCHLODER	CDN M2+M3	A2210389/2016	May 24, 2022	May 23, 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. Disturbance Voltages

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

AT MAINS PORTS LIMITS FOR HOUSEHOLD APPLIANCE

Frequency (MHz)	Limits dB(μ V)	
	Quasi-peak	Average
0,15 ~ 0,50	66 ~ 56*	59 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

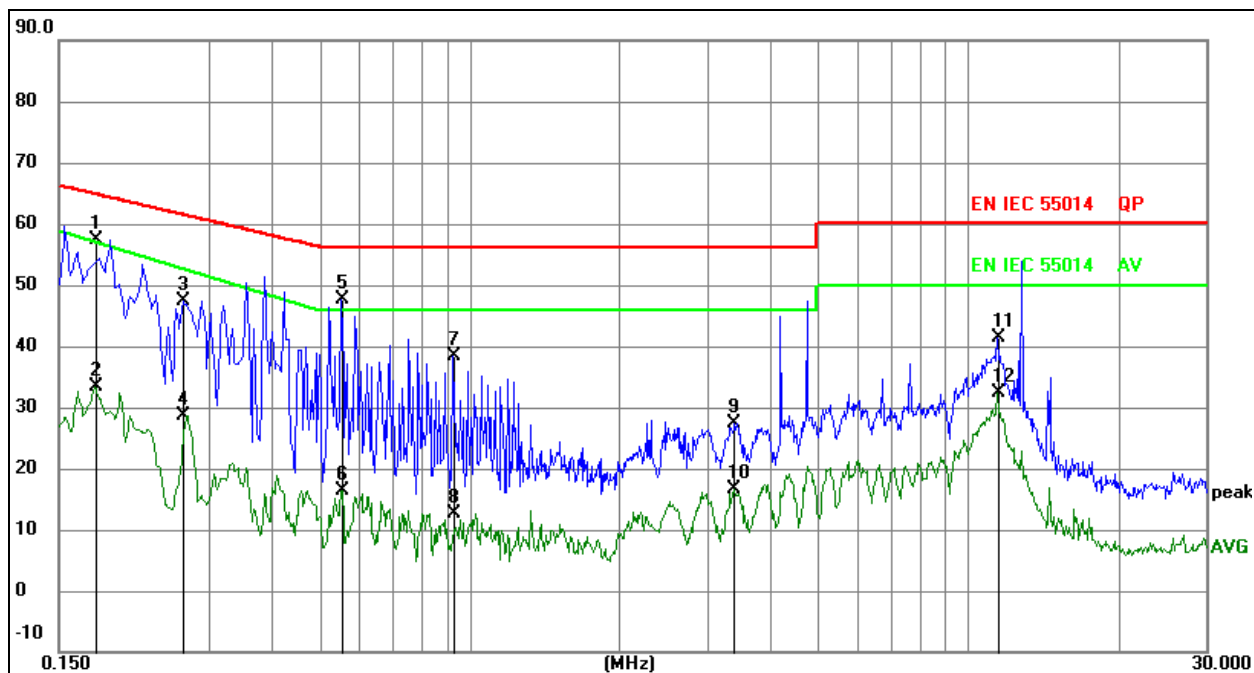
6.3 Test procedure

For mains ports:

- The Product was placed on a nonconductive table 0.8m 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

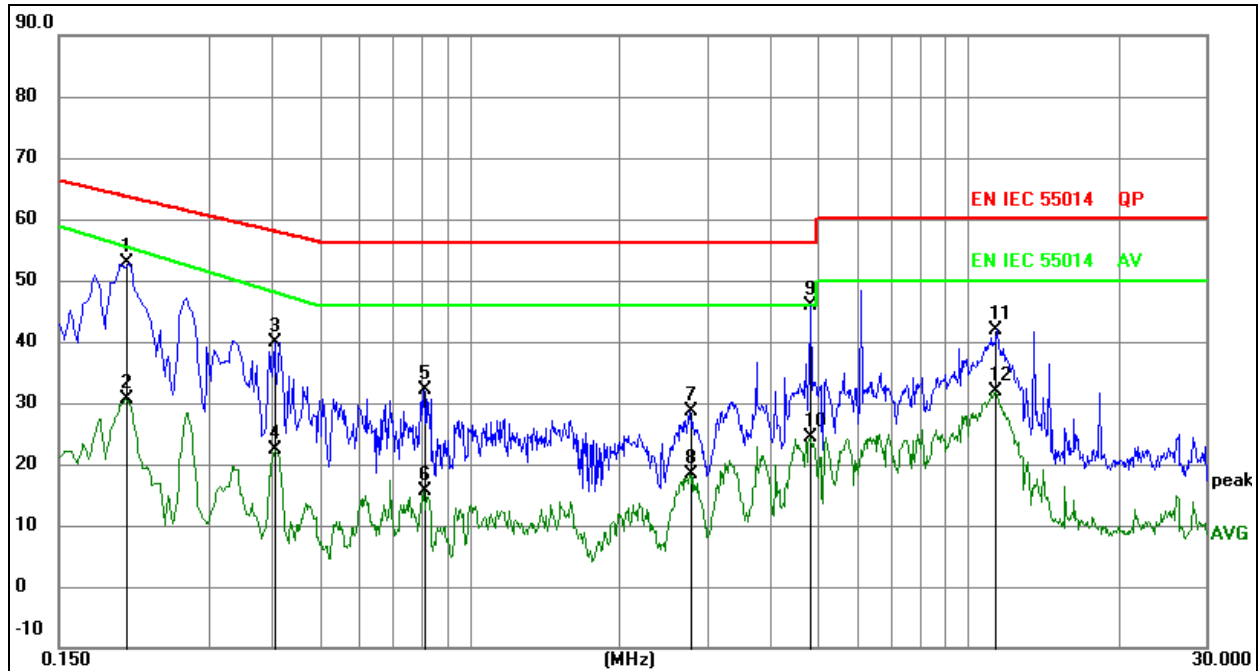


Remark:

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.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz		dB	dBuV	dBuV	dB	
1	*	0.1770	37.52	19.74	57.26	64.63	-7.37	QP
2		0.1770	13.61	19.74	33.35	57.21	-23.86	AVG
3		0.2670	27.66	19.78	47.44	61.21	-13.77	QP
4		0.2670	8.85	19.78	28.63	52.77	-24.14	AVG
5		0.5550	27.97	19.73	47.70	56.00	-8.30	QP
6		0.5550	-3.23	19.73	16.50	46.00	-29.50	AVG
7		0.9240	18.63	19.75	38.38	56.00	-17.62	QP
8		0.9240	-7.11	19.75	12.64	46.00	-33.36	AVG
9		3.3990	7.42	20.03	27.45	56.00	-28.55	QP
10		3.3990	-3.40	20.03	16.63	46.00	-29.37	AVG
11		11.4450	21.05	20.28	41.33	60.00	-18.67	QP
12		11.4450	12.14	20.28	32.42	50.00	-17.58	AVG

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


Remark:

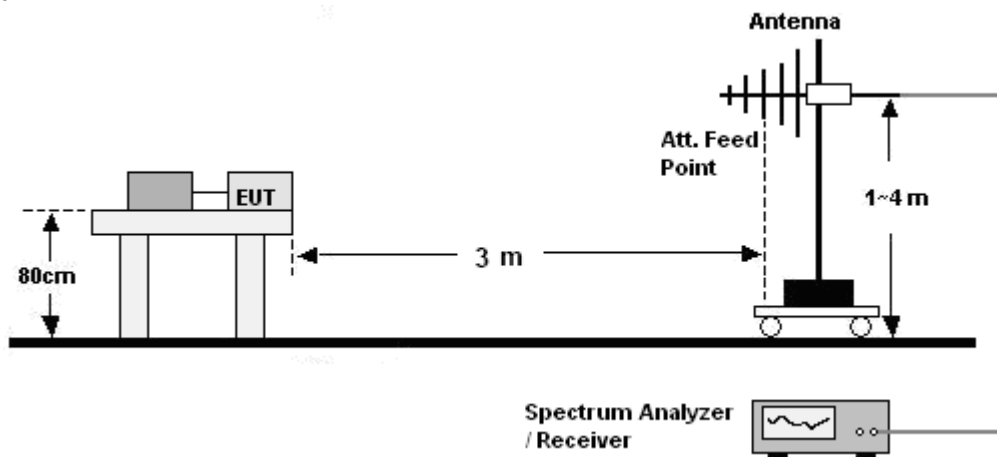
1. All readings are Quasi-Peak and Average values
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz		dB	dBuV	dBuV	dB	
1		0.2040	33.12	19.80	52.92	63.45	-10.53	QP
2		0.2040	10.88	19.80	30.68	55.68	-25.00	AVG
3		0.4061	20.15	19.74	39.89	57.73	-17.84	QP
4		0.4061	2.72	19.74	22.46	48.25	-25.79	AVG
5		0.8088	12.48	19.75	32.23	56.00	-23.77	QP
6		0.8088	-4.01	19.75	15.74	46.00	-30.26	AVG
7		2.7648	8.66	19.96	28.62	56.00	-27.38	QP
8		2.7648	-1.59	19.96	18.37	46.00	-27.63	AVG
9	*	4.8224	25.81	20.12	45.93	56.00	-10.07	QP
10		4.8224	4.26	20.12	24.38	46.00	-21.62	AVG
11		11.3771	21.70	20.28	41.98	60.00	-18.02	QP
12		11.3771	11.69	20.28	31.97	50.00	-18.03	AVG

7. Radiated Disturbance Test

7.1 Block Diagram Of Test Setup

Floor Stand



7.2 Limits

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

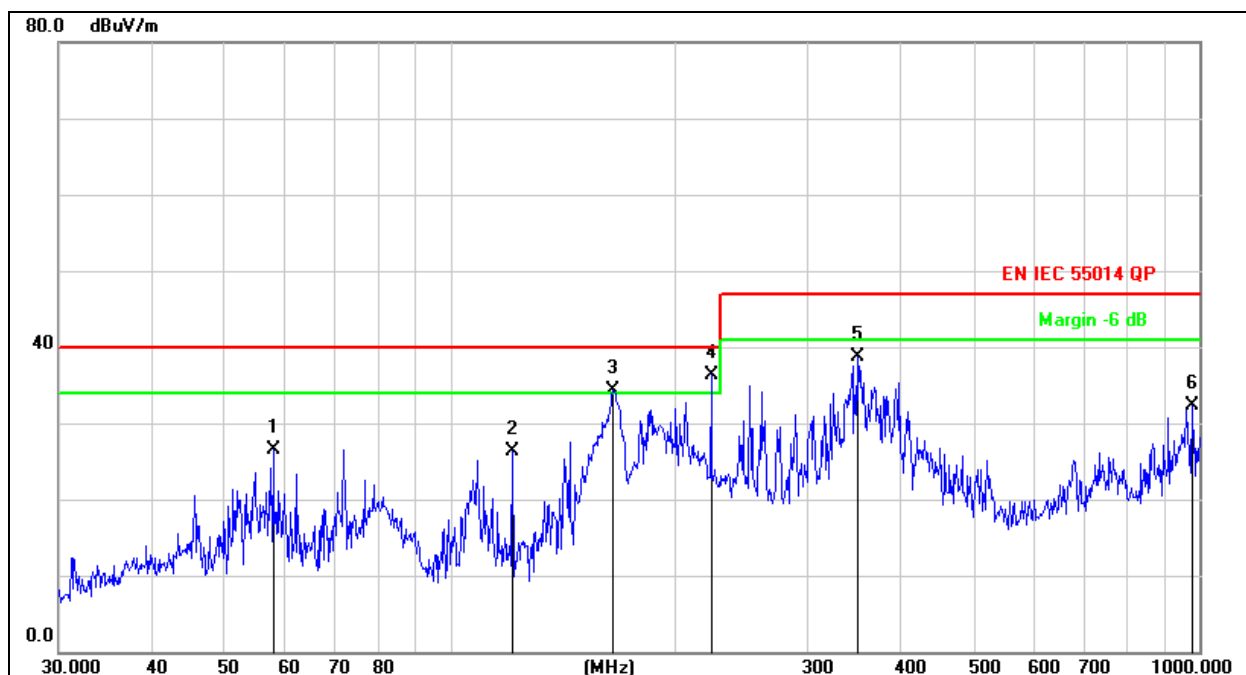
Note: The lower limit shall apply at the transition frequencies.

7.3 Test Procedure

- The Product was placed on the nonconductive turntable 0.8m above the ground at a 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

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

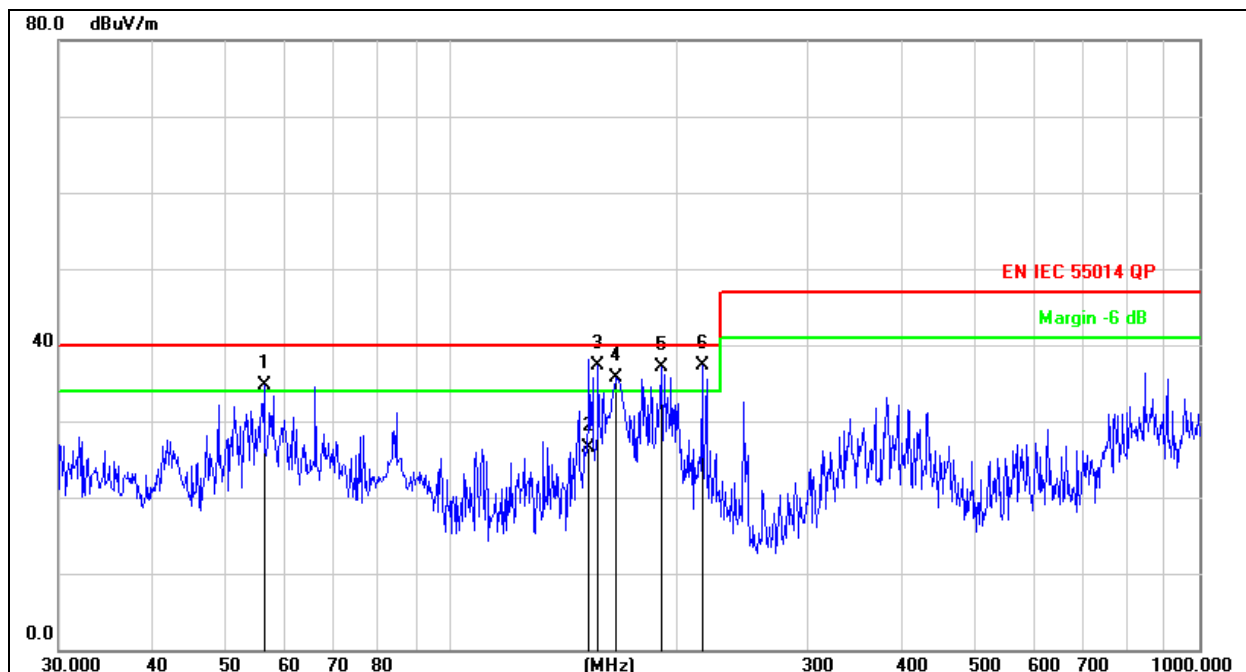


Remark:

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

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		57.9992	43.34	-16.79	26.55	40.00	-13.45	QP
2		121.1230	45.52	-19.15	26.37	40.00	-13.63	QP
3	!	164.9074	54.18	-19.95	34.23	40.00	-5.77	QP
4	*	222.9501	52.90	-16.66	36.24	40.00	-3.76	QP
5		349.2500	51.56	-12.82	38.74	47.00	-8.26	QP
6		979.1803	36.22	-3.88	32.34	47.00	-14.66	QP

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



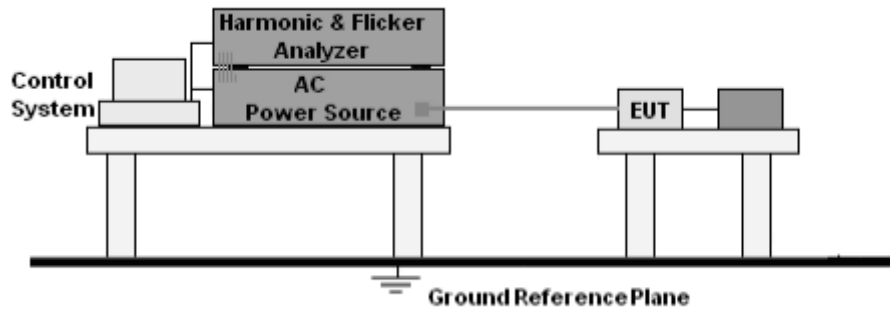
Remark:

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

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	!	56.3947	51.16	-16.55	34.61	40.00	-5.39	QP
2		152.6014	47.36	-20.86	26.50	40.00	-13.50	QP
3	*	157.5588	57.86	-20.49	37.37	40.00	-2.63	QP
4	!	166.6514	55.55	-19.82	35.73	40.00	-4.27	QP
5	!	191.7450	55.09	-17.98	37.11	40.00	-2.89	QP
6	!	216.7828	54.10	-16.85	37.25	40.00	-2.75	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

- 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.
- 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

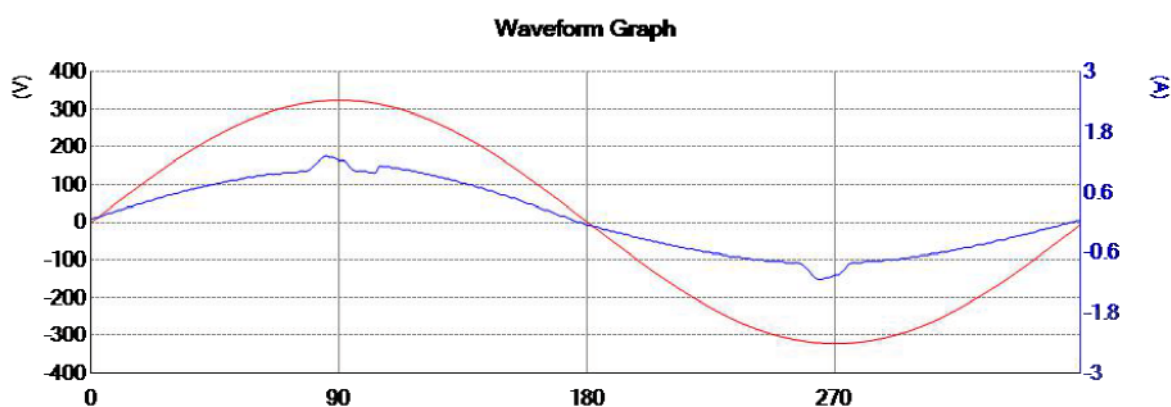
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	AC 230V/50Hz		

Test duration (sec):150

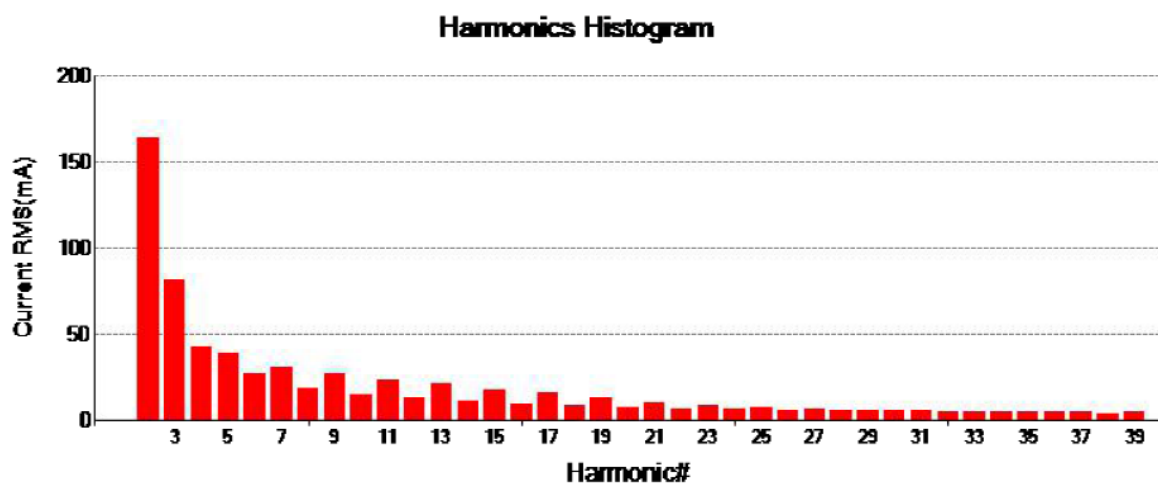
Describe:

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): 206.200

I - THD(%): 24.2

POHC(mA):22.000

POHC Limit(mA):251.353

Parameter values during test:

V_RMS (Volts): 229.8

I_RMS(mA): 851.5

Power (Watts): 169.6

Frequency(Hz): 50.0

Crest Factor: 1.673

Power Factor: 0.819

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	852.100						
2	162.500	1080.000	143.700	13.306	165.200	10.198	Pass
3	82.000	2300.000	77.300	3.361	93.600	2.713	Pass
4	42.700	430.000	37.600	8.744	43.100	6.682	Pass
5	39.200	1140.000	39.400	3.456	56.700	3.316	Pass
6	26.900	300.000	24.600	8.200	28.000	6.222	Pass
7	31.500	770.000	32.600	4.234	49.300	4.268	Pass
8	18.400	230.000	16.300	7.087	18.600	5.391	Pass
9	27.400	400.000	28.600	7.150	43.100	7.183	Pass
10	15.300	184.000	13.900	7.554	16.000	5.797	Pass
11	23.300	330.000	24.600	7.455	36.500	7.374	Pass
12	12.700	153.300	11.500	7.502	12.800	5.566	Pass
13	21.000	210.000	21.900	10.429	30.700	9.746	Pass
14	10.800	131.400	9.800	7.458	10.900	5.530	Pass
15	17.800	150.000	18.300	12.200	24.400	10.844	Pass
16	9.800	115.000	8.800	7.652	9.800	5.681	Pass
17	15.200	132.400	15.400	11.631	18.600	9.366	Pass
18	8.200	102.200	7.400	7.241	8.300	5.414	Pass
19	12.700	118.400	12.500	10.557	13.700	7.714	Pass
20	7.500	92.000	6.800	7.391	7.600	5.507	Pass
21	10.500	107.100	9.900	9.244	10.600	6.598	Pass
22	6.600	83.600	5.900	7.057	6.700	5.343	Pass
23	8.800	97.800	8.200	8.384	8.900	6.067	Pass
24	6.200	76.700	5.600	7.301	6.500	5.650	Pass
25	7.100	90.000	6.600	7.333	7.100	5.259	Pass
26	5.800	70.800	5.300	7.486	6.100	5.744	Pass
27	6.500	83.300	6.100	7.323	7.100	5.682	Pass
28	5.400	65.700	5.000	7.610	5.500	5.581	Pass
29	5.600	77.600	5.400	6.959	7.100	6.100	Pass
30	5.300	61.300	4.900	7.993	5.400	5.873	Pass
31	5.300	72.600	5.200	7.163	7.100	6.520	Pass
32	4.900	57.500	4.400	7.652	4.900	5.681	Pass
33	5.100	68.200	5.000	7.331	6.500	6.354	Pass
34	4.700	54.100	4.200	7.763	4.700	5.792	Pass
35	4.800	64.300	4.700	7.309	5.800	6.013	Pass
36	4.300	51.100	3.900	7.632	4.400	5.740	Pass
37	4.800	60.800	4.600	7.566	5.300	5.811	Pass
38	4.100	48.400	3.700	7.645	4.400	6.061	Pass
39	4.700	57.700	4.400	7.626	4.700	5.430	Pass
40	4.000	46.000	3.700	8.043	4.200	6.087	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 & IEC/EN61000-4-7 Ed. 2.1

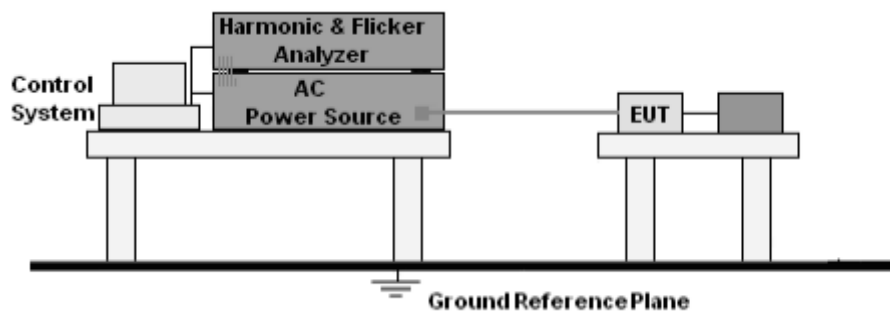
	Nominal	Measured	Measured	Deviation	Allowed	Result
		Low	High		Deviation	
Supply Voltage	230	229.84	229.91	0.16	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	91.2	91.2	1.2	87 - 93	N/A
Crest Factor	1.414	1.412	1.413	0.002	1.40 - 1.42	N/A
Fundamental Voltage	229.84	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.130	0.061	0.200	Pass
3	0.150	0.066	0.900	Pass
4	0.030	0.021	0.200	Pass
5	0.080	0.047	0.400	Pass
6	0.000	0.010	0.200	Pass
7	0.090	0.052	0.300	Pass
8	0.010	0.007	0.200	Pass
9	0.040	0.032	0.200	Pass
10	0.000	0.005	0.100	Pass
11	0.040	0.021	0.100	Pass
12	0.000	0.001	0.100	Pass
13	0.020	0.008	0.100	Pass
14	0.000	0.000	0.100	Pass
15	0.040	0.024	0.100	Pass
16	0.010	0.005	0.100	Pass
17	0.020	0.009	0.100	Pass
18	0.000	0.003	0.100	Pass
19	0.040	0.018	0.100	Pass
20	0.000	0.005	0.100	Pass
21	0.040	0.018	0.100	Pass
22	0.000	0.005	0.100	Pass
23	0.030	0.013	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.020	0.013	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.040	0.025	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.010	0.008	0.100	Pass
30	0.000	0.002	0.100	Pass
31	0.010	0.005	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	0.026	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.040	0.021	0.100	Pass
40	0.000	0.001	0.100	Pass

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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

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

Test duration (sec):600

Describe:

Load Power : 0.180 kW

Power Factor:0.833

Load Current : 0.101 Arms

Crest Factor:1.931

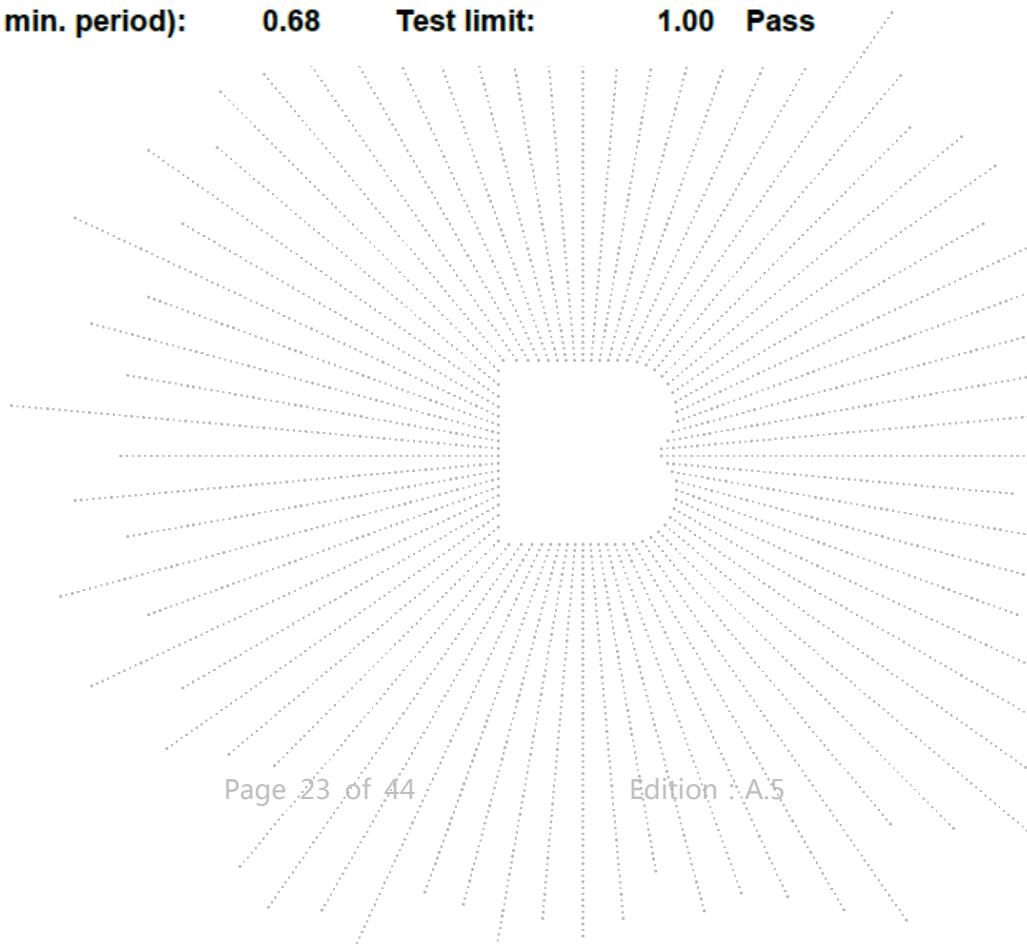
Nominal Voltage : 230.03 Vrms

Test Result: pass

Status: Test Completed

Result:

T-max (ms):	0.00	Test limit (ms):	500.00	Pass
Highest dc (%):	0.19	Test limit (%):	3.30	Pass
Highest dmax (%):	0.66	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.68	Test limit:	1.00	Pass



10. Immunity Test Of General The Performance Criteria

Product Standard	EN IEC 55014-2:2021 clause 6
CRITERION A	The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonably expect from the apparatus if used as intended
CRITERION B	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. 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 from what the user may reasonably expect from the apparatus if used as intended.
CRITERION C	Temporary loss of function is allowed, provided the function is self- recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

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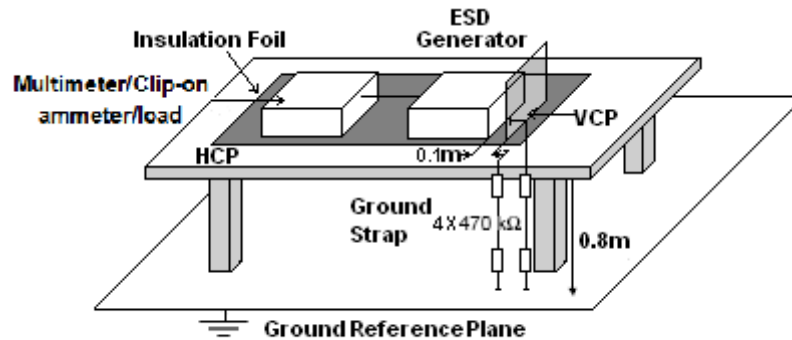
11. Electrostatic Discharge Immunity Test (ESD)

11.1 Test Specification

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

11.2 Block Diagram of Test Setup

For Floor Stand:



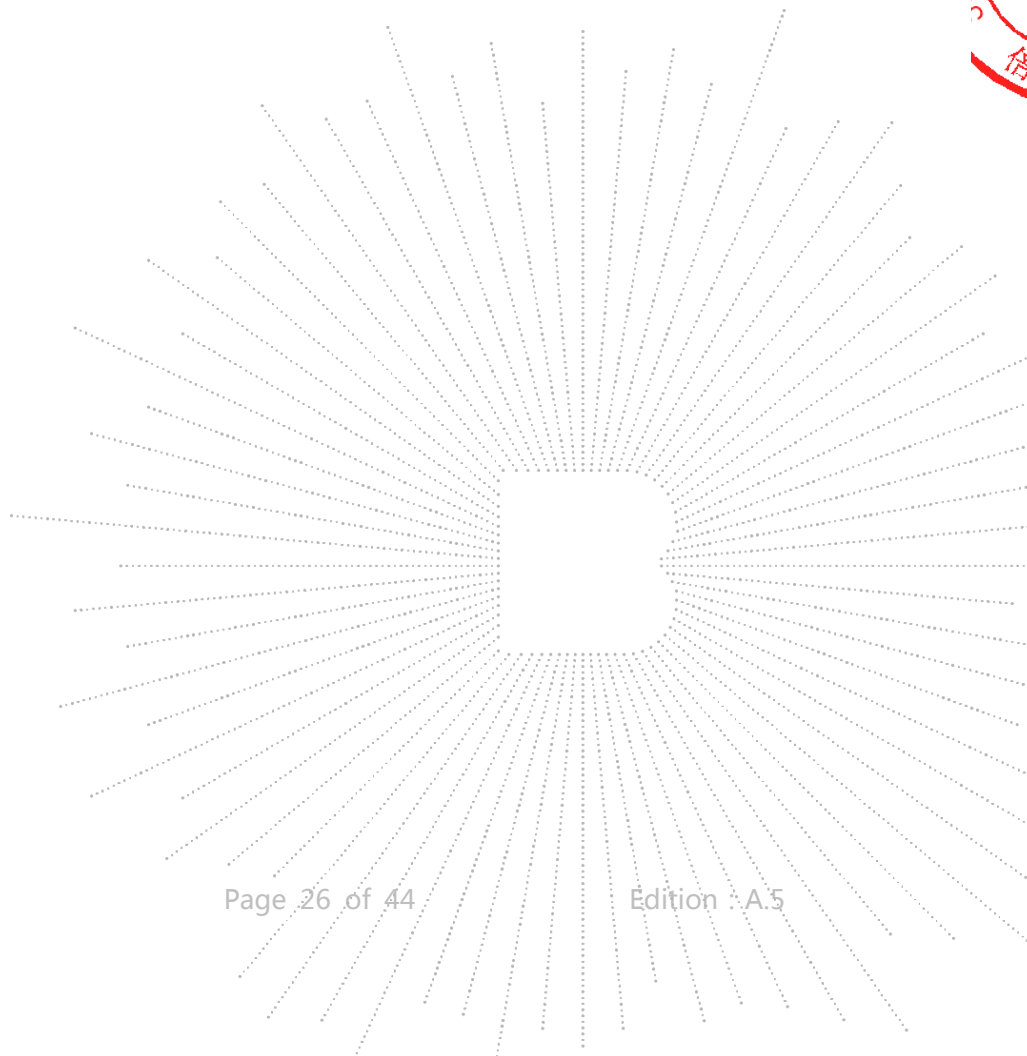
11.3 Test Procedure

- 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.
- 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.
- At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
- 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



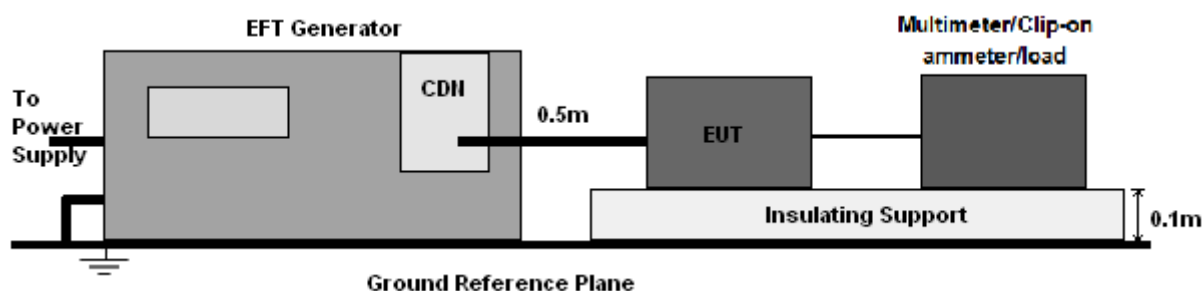
12. Fast Transients Immunity Test (EFT)

12.1 Test Specification

Test Port	: input a.c. power port
Impulse Frequency	: 5 kHz
Impulse Wave-shape	: 5/50 ns
Burst Duration	: 15 ms
Burst Period	: 300 ms
Test Duration	: 2 minutes per polarity

12.2 Block Diagram of EUT Test Setup

For input a.c. power port:



12.3 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.

12.4 Test Results

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

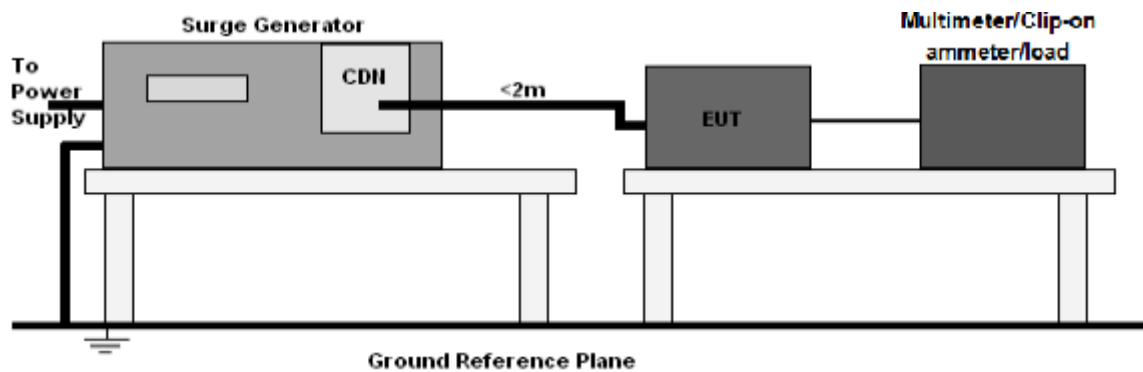
Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
AC MainsL-N-P	1.0	±	B	A

13. Surges Immunity Test

13.1 Test Specification

Test Port	: input a.c.power port
Wave-Shape	: Open Circuit Voltage - 1.2 / 50 us Short Circuit Current - 8 / 20 us
Pulse Repetition Rate	: 1 pulse / min.
Test Events	: Five positive polarity pulses at the 90° phase angel Five negative polarity pulses at the 270° phase angle

13.2 Block Diagram of EUT Test Setup



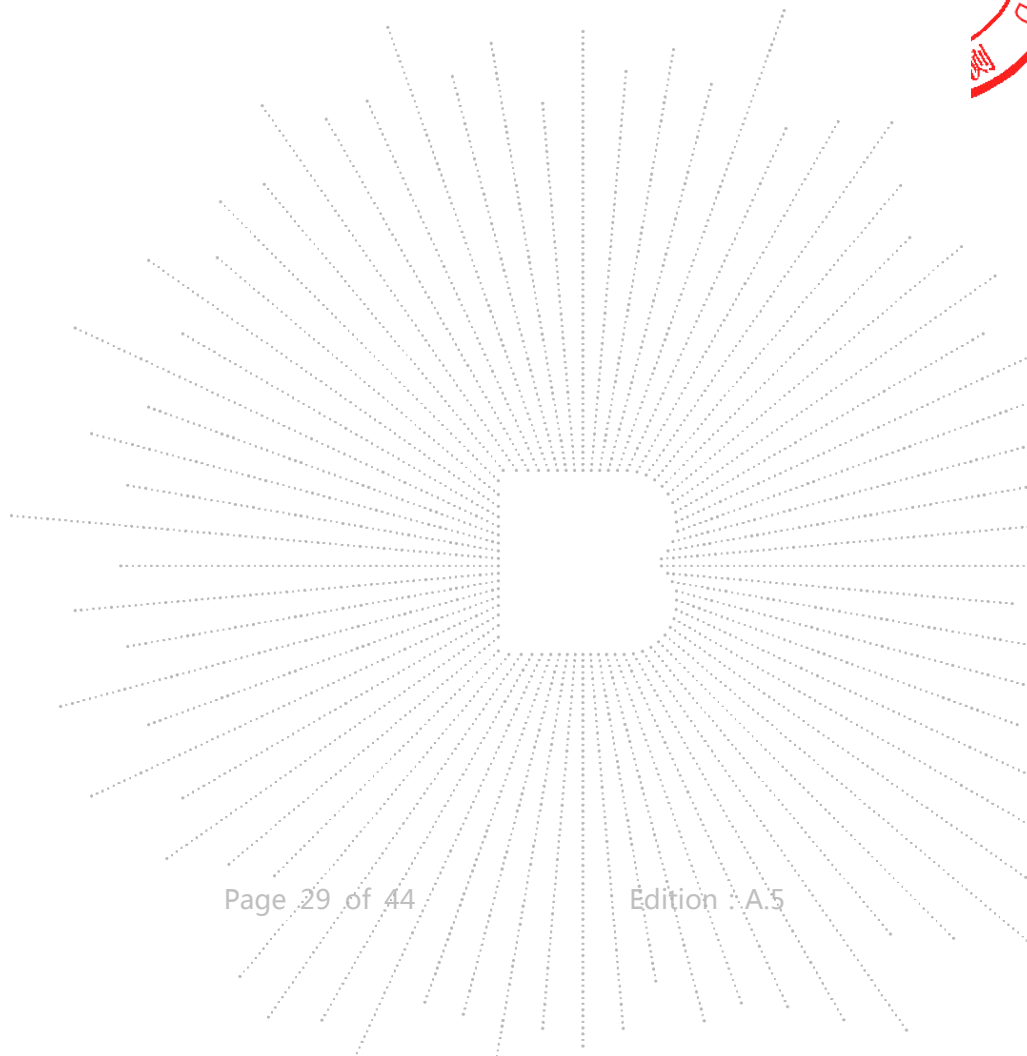
13.3 Test Procedure

- 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).

13.4 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°		
L - PE	+ 2	90°	B	A
	- 2	270°		
N - PE	+ 2	90°	B	A
	- 2	270°		



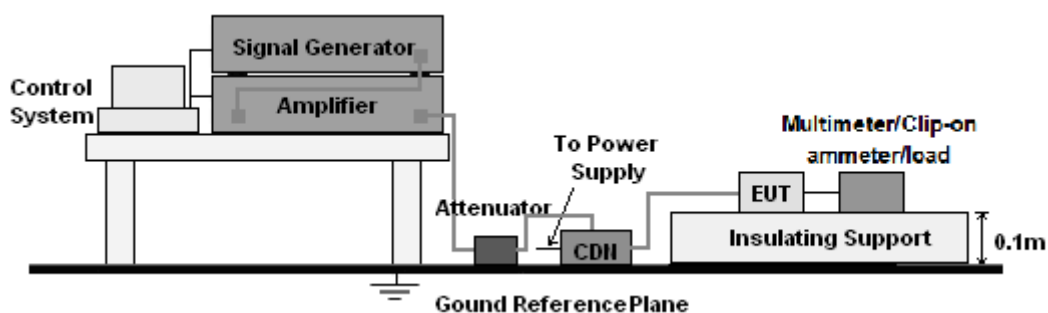
14. Injected Currents Immunity Test (CS)

14.1 Test Specification

Test Port	: input a.c. power port
Step Size	: 1%
Modulation	: 1kHz, 80% AM
Dwell Time	: 1 second

14.2 Block Diagram of EUT Test Setup

For input a.c. power port:



14.3 Test Procedure

For input a.c. 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 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.

14.4 Test Result

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

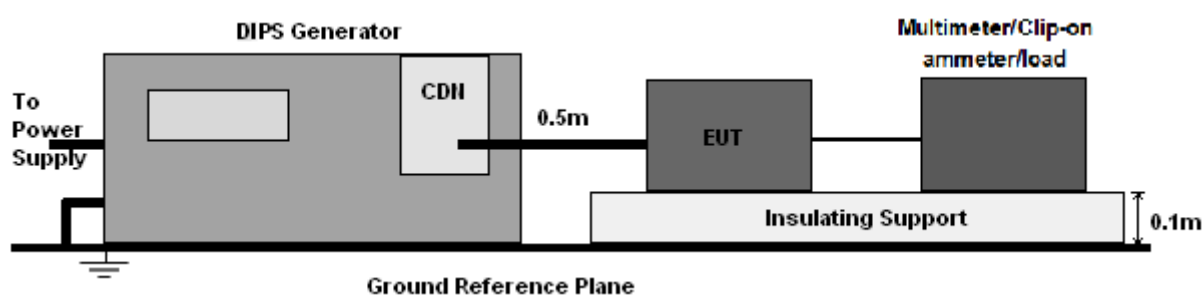
Inject Line	Frequency (MHz)	Voltage Level (V r.m.s.)	Required Level	Performance Criterion
A.C. port	0.15 - 230	3	A	A

15. Voltage Dips And Interruptions Immunity Test (DIPS)

15.1 Test Specification

Test Port	: input a.c. power port
Phase Angle	: 0°, 180°
Test cycle	: 3 times

15.2 Block Diagram of EUT Test Setup



15.3 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.

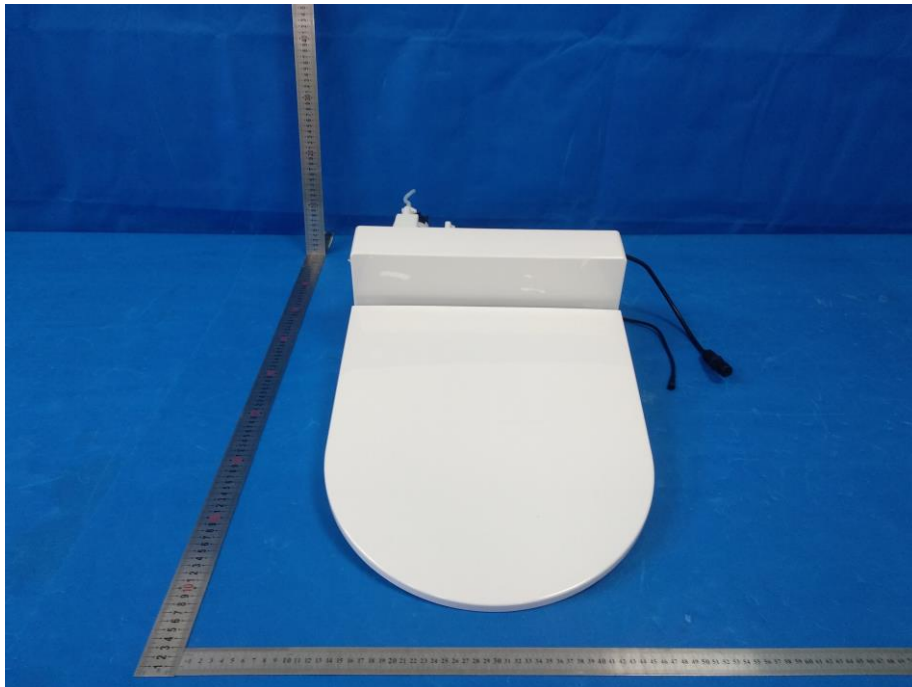
15.4 Test Result

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 (cycles)		Required Level	Performance Criterion
		50Hz	60Hz		
0	100	0.5	0.5	C	A
40	60	10	12	C	A
70	30	25	30	C	A

16. EUT Photographs

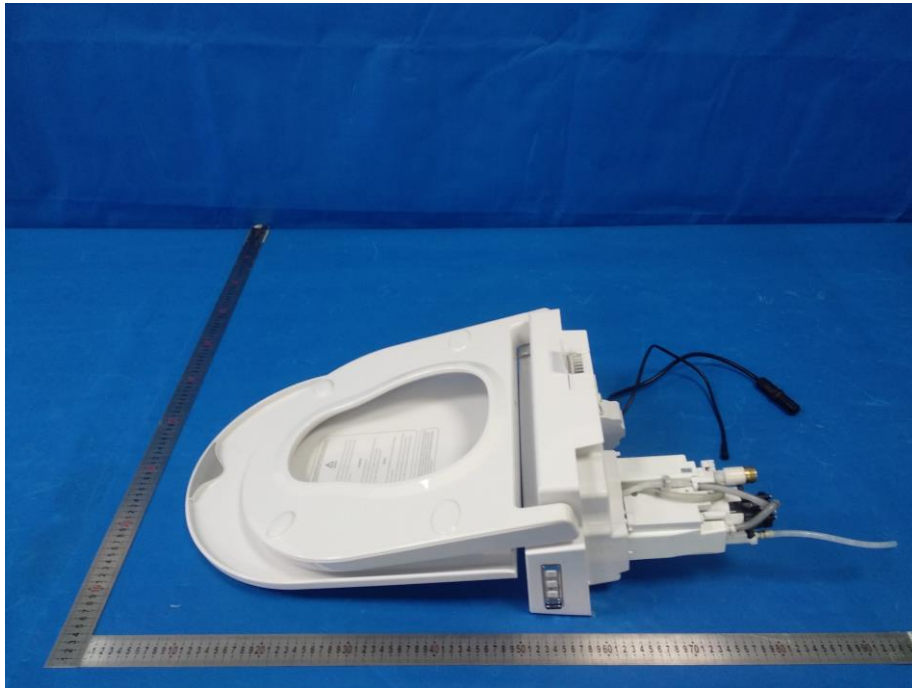
EUT Photo 1



EUT Photo 2



EUT Photo 3



EUT Photo 4



EUT Photo 5

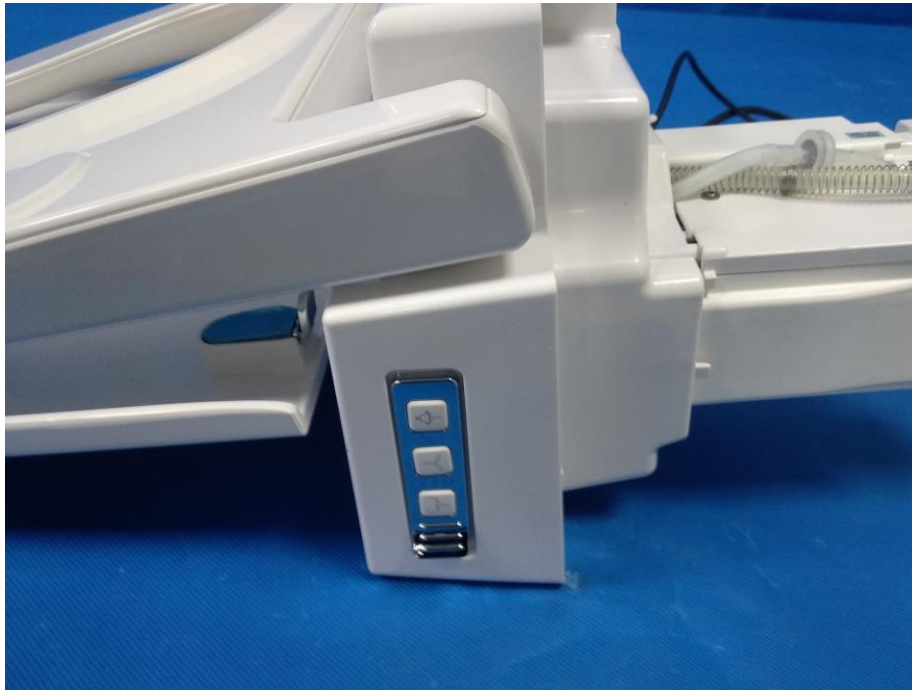


EUT Photo 6

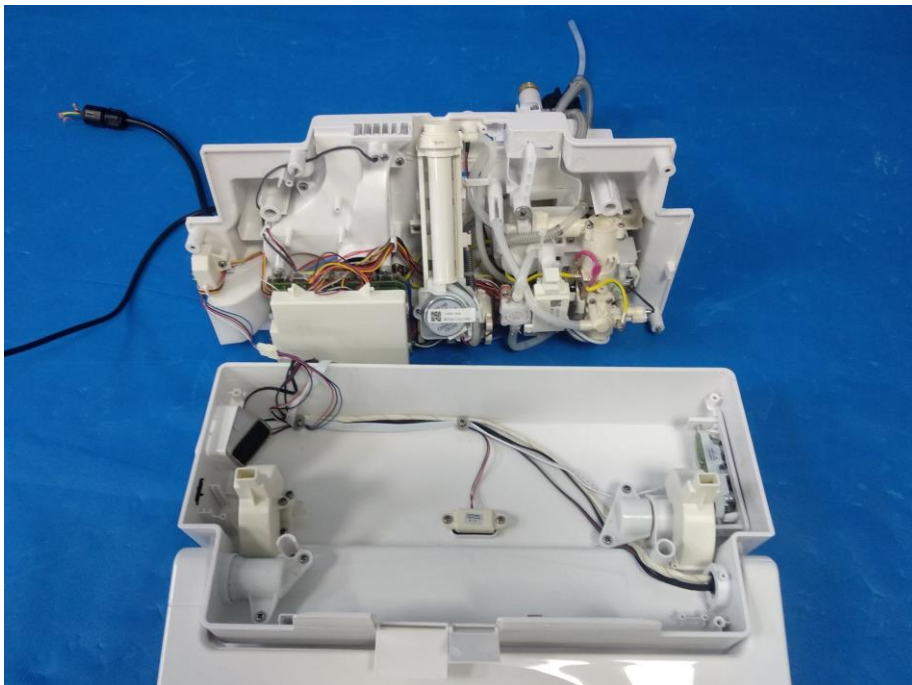


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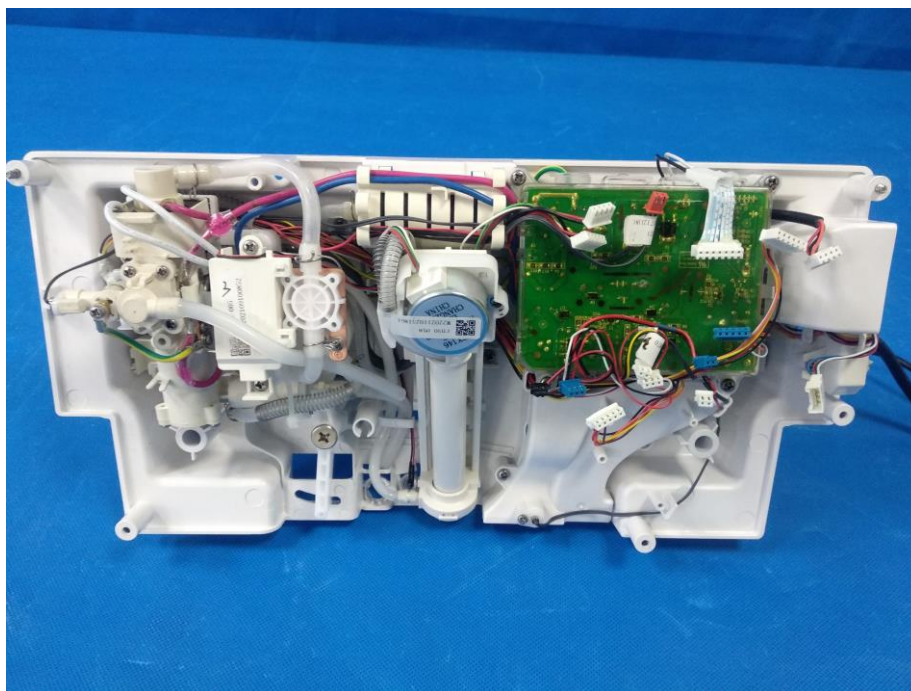
EUT Photo 7



EUT Photo 8



EUT Photo 9



EUT Photo 10



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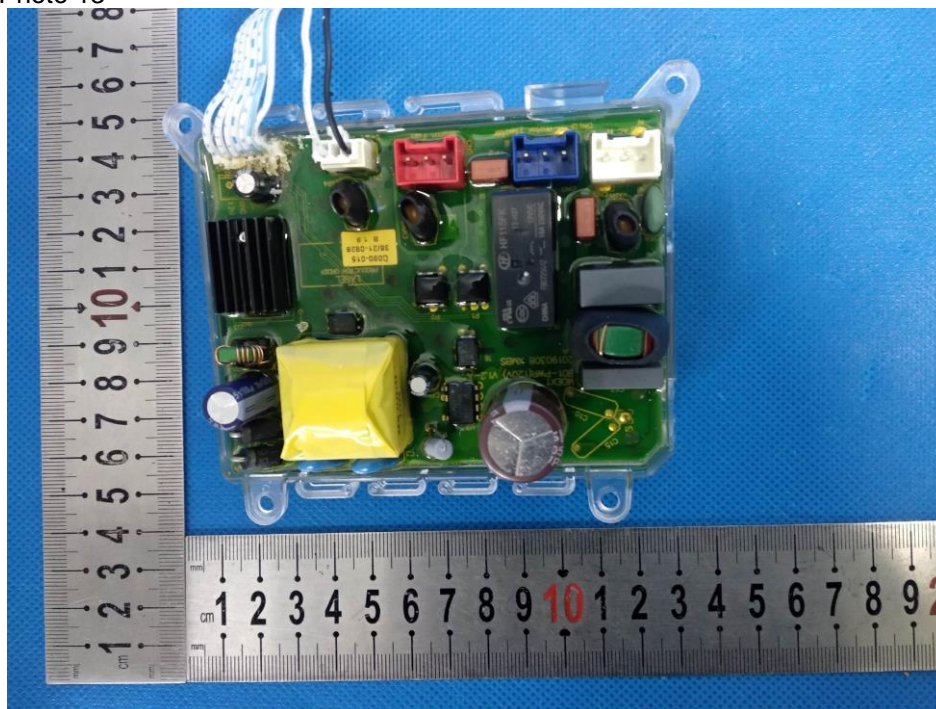
EUT Photo 11



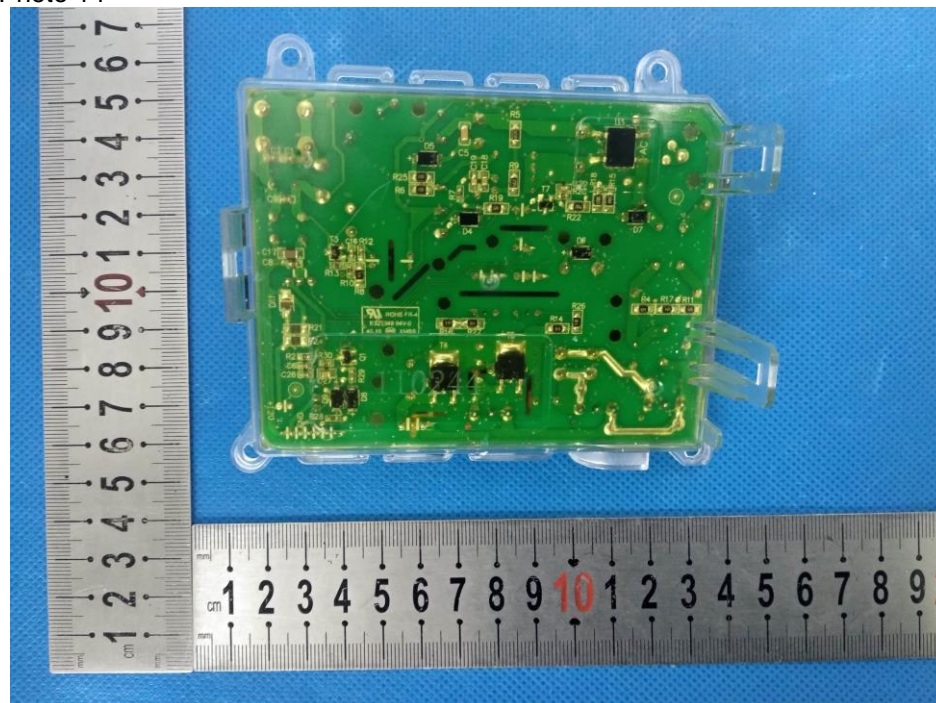
EUT Photo 12



EUT Photo 13

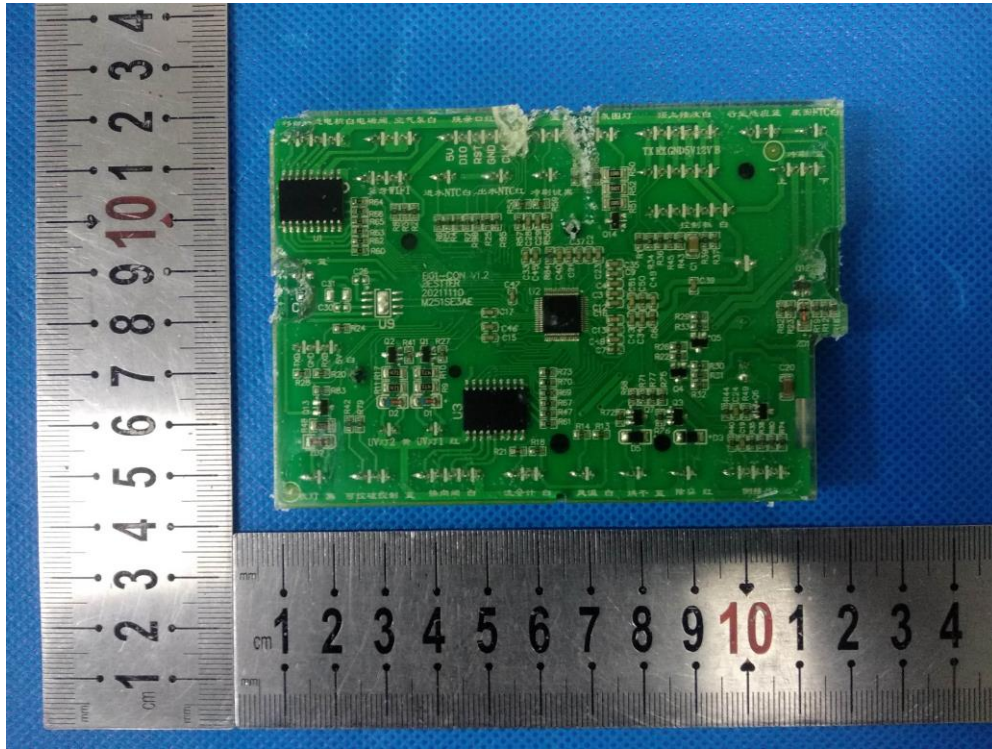


EUT Photo 14

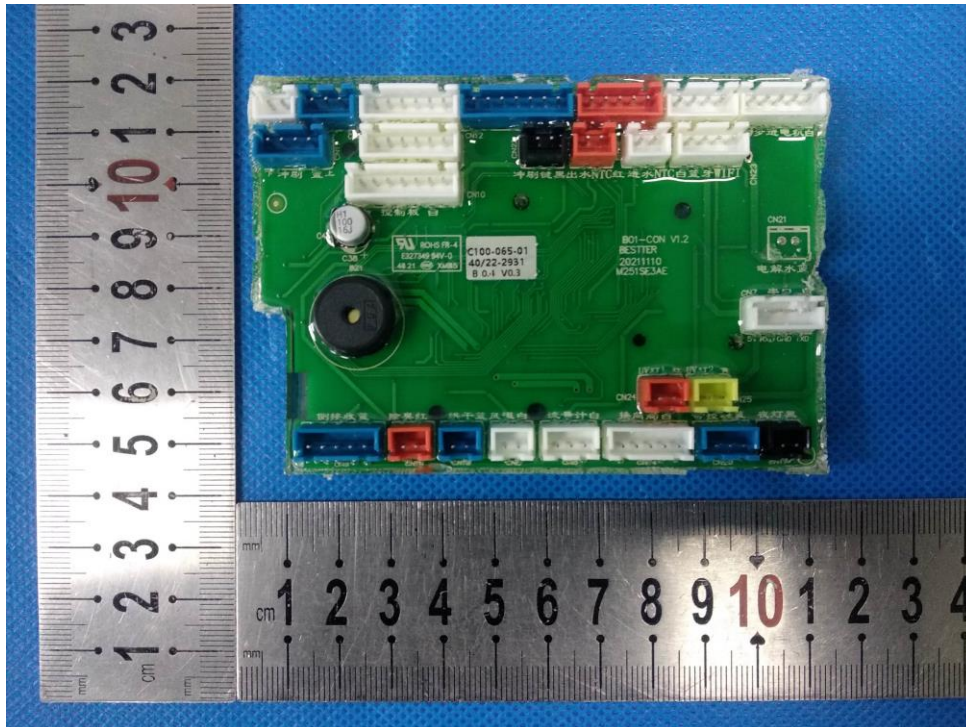


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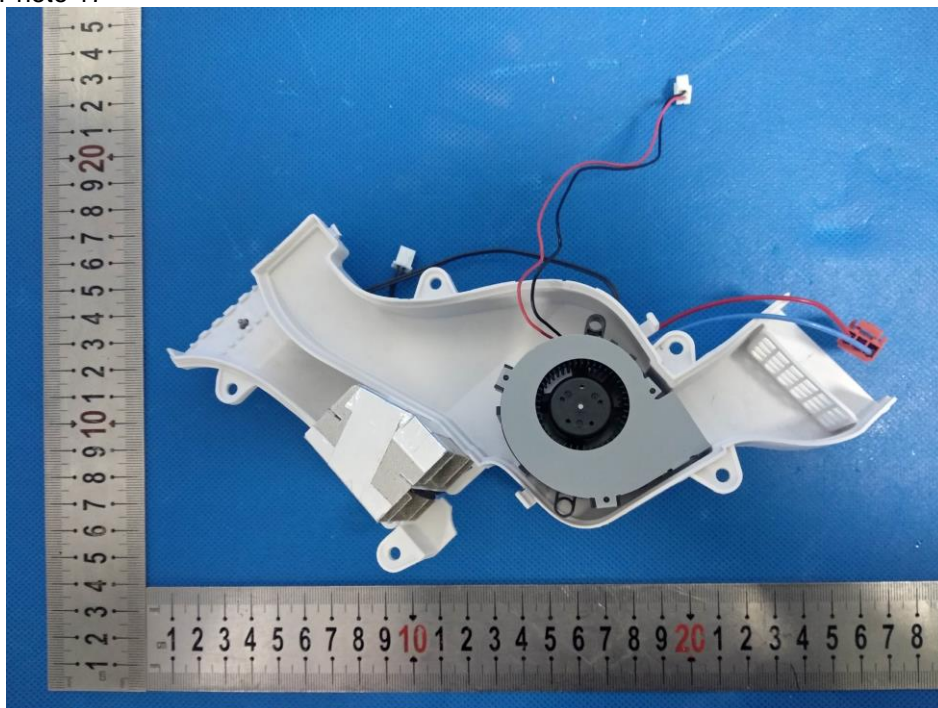
EUT Photo 15



EUT Photo 16



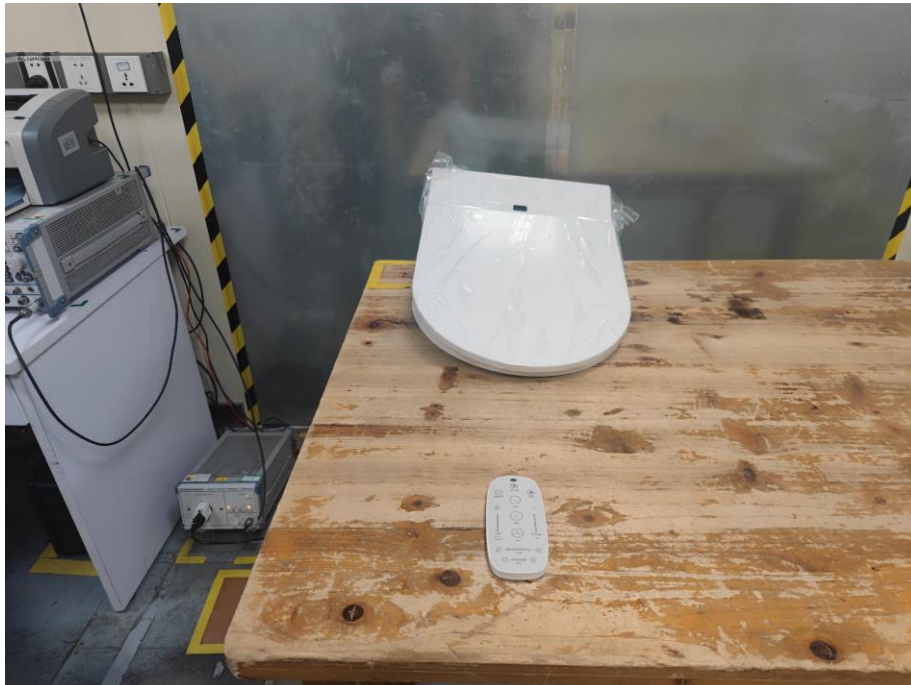
EUT Photo 17



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17. EUT Test Setup Photographs

Disturbance voltages



Radiated emissions



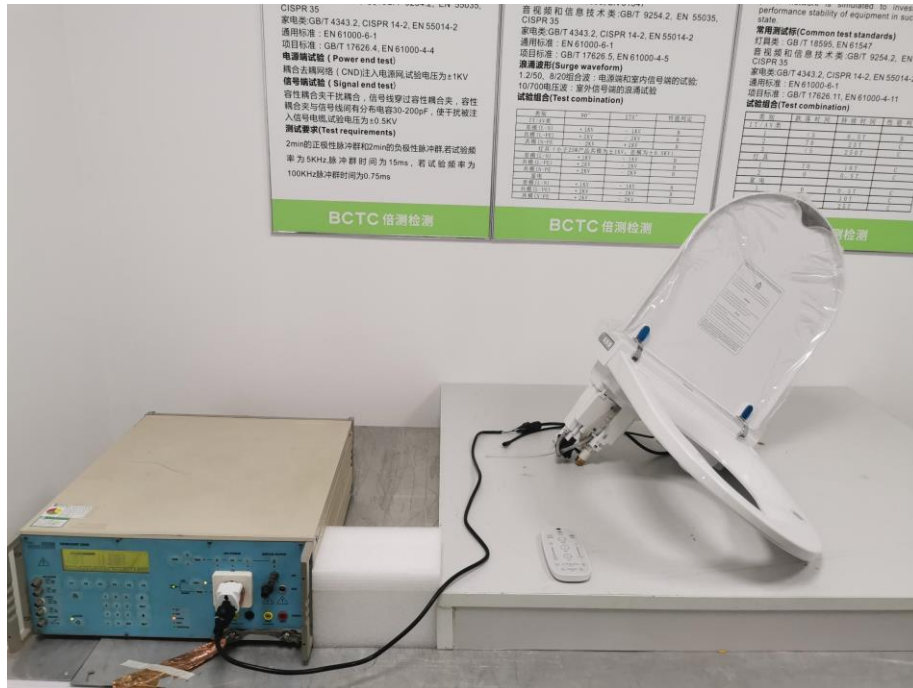
H/F



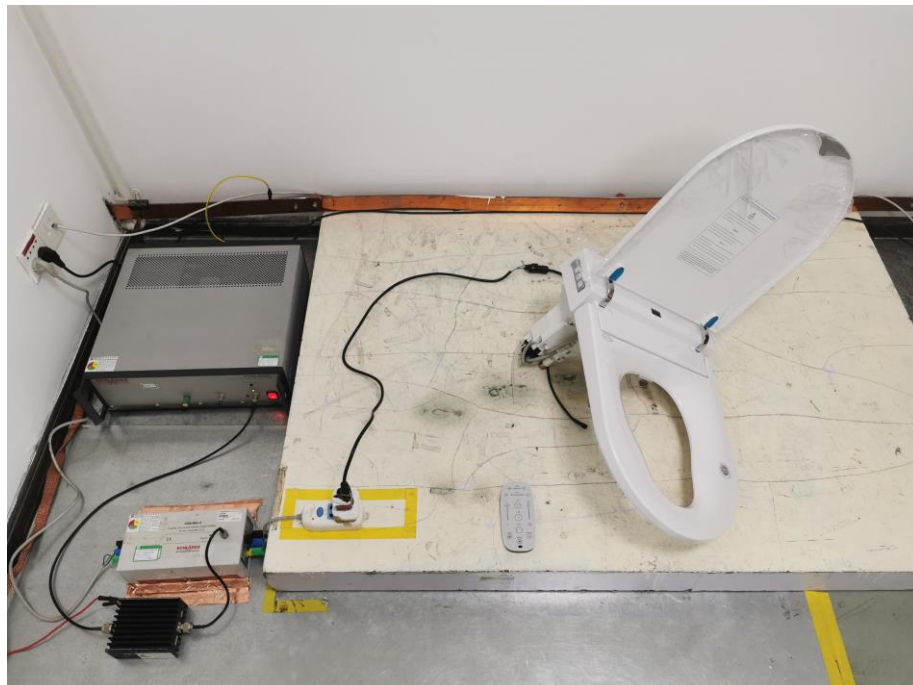
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STATEMENT

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 the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.
8. The quality system of our laboratory is in accordance with ISO/IEC17025.
9. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

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***** **END** *****