T E S T – R E P O R T

23P-002451

Client:	*Name:*	Clouds Crane Technology Co., Ltd.
	Street:	No.9 of Yongning Road, Tongguang Industrial Zone
	Place:	Yuyao, Ningbo
	Country:	China

Device:	*Test item:*	Water kettle
	Article No.:	BK705, BK705-A, BK708, BK707, BK707-A, BK901, BK901-A, BK902-1, BK902-A1, BK902-A2, BK105, BK121, BK710, BK710-1, BK710-B, BK710-B1, BK710-E, BK710-E1, BK710-F, BK710-F1, BK902, BK902-A, BK902-2, BK710-C1, BK710-C3, BK710-C2, BK101-A, BK101-A1, BK1610, BK1610-T, BK1610-E, BK1610-ET, BK1610-BT1, BK1611, BK1611-E, BK1612, BK1612-T, BK1612-E, BK1612-ET, BK1612-BT1, BK1613, BK1613-T, BK1613-E, BK1613-ET, BK1709, BK1709-A, BK1709-B, BK1709-B1, BK1709-1, BK1709-A1
	Date of receipt:	2023-05-19 *Sample-no.:* 23P002451-S01,02

Test:	*Description:*	EMC Test
	Standards:	EN IEC 55014-1: 2021 EN IEC 55014-2: 2021 EN IEC 61000-3-2: 2019 EN 61000-3-3: 2013+A1:2019
	Notes:	All test was subcontracted to external laboratory.
	Testing period:	2023-05-19 to 2023-06-06
	Date of report:	2023-06-25 *Pages of report:* 29

Final result: **PASS**

John Qiao Project Engineer	Joyce Liu E&E Lab Manager
Drafted by	Reviewed by

The test result relate only to the tested items. Unless otherwise stated, the results are assessed on the basis of the above-mentioned requirements. If it is not further specified in the report, the decision rule for stating conformity is based on the Hansecontrol decision rule

Hansecontrol Technical Testing Service(Shanghai) Company Limited
Building 11, No. 55 Bixi Road, Maqiao Town, Minhang District, Shanghai. China 201111
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(https://www.hansecontrol.com/fileadmin/user_upload/CRD_HC_Decision_Rule_for_Hardlines_and_EE_products-V1.pdf). The report shall not be reproduced except in full without the written approval of the testing laboratory.

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Testing .....:	
Date(s) of performance of tests ...:	See dates for each test case.

General remarks:

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

A cross ☒ in a rectangular shape means that this option is applied.

Possible test case verdicts:	
- test case does not apply to test object ..:	N/A
- test object does meet requirement :	P (Pass)
- test object does not meet requirement ..:	F (Fail)
- test object was not performed :	N/T

Definition of symbols used in this test report:

☒ Indicates that the listed condition, standard or equipment is applicable for this report.

☐ Indicates that the listed condition, standard or equipment is not applicable for this report.

Decimal separator used in this report.....:	☐ Comma (,)
	☒ Point (.)

Table of Contents

1 General description of test item(s)

Description .....:	Water Kettle
Model Number .....:	BK705, BK705-A, BK708, BK707, BK707-A, BK901, BK901-A, BK902-1, BK902-A1, BK902-A2, BK105, BK121, BK710, BK710-1, BK710-B, BK710-B1, BK710-E, BK710-E1, BK710-F, BK710-F1, BK902, BK902-A, BK902-2, BK710-C1, BK710-C3, BK710-C2, BK101-A, BK101-A1, BK1610, BK1610-T, BK1610-E, BK1610-ET, BK1610-BT1, BK1611, BK1611-E, BK1612, BK1612-T, BK1612-E, BK1612-ET, BK1612-BT1, BK1613, BK1613-T, BK1613-E, BK1613-ET, BK1709, BK1709-A, BK1709-B, BK1709-B1, BK1709-1, BK1709-A1
Project Number.....:	-
Order Number.....:	-
General product information…….:	The products tested in this report are Water Kettles.

Ports.....:

Port name and description	Specified length [m]	Attached during test	Shielded
Enclosure	-	-	-
AC Main (direct plugin)	--	☒	☐
		☐	☐

Supplemental information to the ports .....:	--

Rated power supply ..... :

	Voltage and Frequency	Reference poles			
		N	L1	L2	L3
☒	AC: Detail See the rated power	☒	☒	☐	☐
☐	AC: --	☐	☐	☐	☐
☐	DC: --				

Ratings :	BK705, BK705-A, BK708, BK707, BK707-A, BK901, BK901-A, BK902-1, BK902-A1, BK902-A2, BK105, BK121, BK1610, BK1610-T, BK1610-E, BK1610-ET, BK1611, BK1611-E, BK1612, BK1612-T, BK1612-E, BK1612-ET, BK1612-BT1, BK1613, BK1613-T, BK1613-E, BK1613-ET, BK1613-BT1: 220-240V;1850-2200W;50-60Hz, Class I, Ordinary BK710, BK710-1, BK710-B, BK710-B1, BK710-E, BK710-E1, BK710-F, BK710-F1, BK902, BK902-A, BK902-2: 220-240V;1350-1600W;50-60Hz, Class I, Ordinary BK710-C1, BK710-C3: 110-120V/220-240V;950-1150W/1140-1350W;50-60Hz, Class I, Ordinary BK710-C2: 220-240V;1140-1350W;50-60Hz, Class I, Ordinary BK101-A: 110-120V/220-240V;550-650W;50-60Hz, Class I, Ordinary BK101-A1: 220-240V;550-650W;50-60Hz, Class I, Ordinary BK1709, BK1709-A, BK1709-B, BK1709-B1: 220-240V;770-840W;50-60Hz, Class I, Ordinary BK1709-1, BK1709-A1: 110-120V/220-240V;770-840W;50-60Hz, Class I, Ordinary	
Clock frequencies :	<108MHz	
Other parameters :	--	
Software version :	--	
Hardware version :	--	
Mounting position:	☒	*Table top equipment*
	☐	*Wall/Ceiling mounted equipment*
	☐	*Floor standing equipment*
	☐	*Hand-held equipment*
	☐	*Other:*

Modules/parts :	Module/parts of test item		Type	Manufacturer
	none		--	--
Operating modes :	No.	Operating mode of test item	Applied for testing	
			Emission	Immunity
	1	Working	☒	☒
Supplemental information to the operating modes :	The sample operates only if the charger is not connected.			
Accessories (not part of the test item) :	Accessory		Type	Manufacturer
	--		--	--
Modifications to the test item during testing :	none			

2 Verdict summary section

EN IEC 55014-1: 2021		
Requirement – Test case	Basic standard	Verdict
Terminal disturbance voltages (148,5 kHz to 30 MHz)	EN 55016-1-1 EN 55016-1-2 EN 55016-2-1	P
Terminal disturbance voltages (9 kHz to 30 MHz)	EN 55016-1-1 EN 55016-1-2 EN 55016-2-1	N/A
Disturbance power (30 MHz to 300 MHz)	EN 55016-1-1 EN 55016-1-3 EN 55016-2-2	N/A
Radiated emission (30 MHz to 1000 MHz)	EN 55016-1-1 EN 55016-1-4 EN 55016-2-3	P
Magnetic field induced current for induction cooking appliances	EN 55016-1-4 EN 55016-2-3	N/A
Discontinuous disturbance (clicks)	EN 55016-1-1 EN 55014-1	N/A

EN IEC 55014-2: 2021		
Requirement – Test case	Basic standard	Verdict
Electrostatic discharge	EN 61000-4-2	P
Fast transients	EN 61000-4-4	P
Injected currents, 0,15 MHz to 230 MHz	EN 61000-4-6	N/A
Injected currents, 0,15 MHz to 80 MHz	EN 61000-4-6	P
Radio frequency electromagnetic fields, 80 MHz to 1000 MHz	EN 61000-4-3	P
Surges	EN 61000-4-5	P
Voltage dips and interruptions	EN 61000-4-11	P
Supplementary information:--		

EN IEC 61000-3-2:2019		
Requirement – Test case	Basic standard	Verdict
Harmonic current emissions	EN 61000-4-7	P

EN 61000-3-3:2013+A1:2019		
Requirement – Test case	Basic standard	Verdict
Voltage changes, voltage fluctuations and flicker	EN 61000-4-15	P

3 Test Conditions

3.1 General

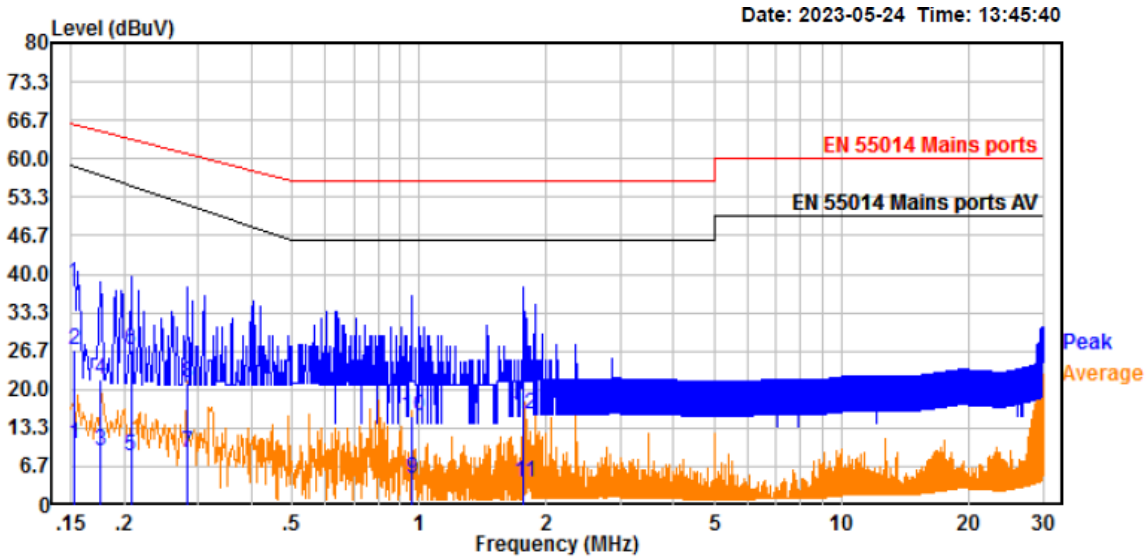
<table>
<tr><td rowspan="3">Environmental reference conditions :</td><td colspan="3">The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.
The climatic conditions during the tests were within the following limits:</td></tr>
<tr><td>Temperature</td><td>Humidity</td><td>Atmospheric pressure</td></tr>
<tr><td>15 °C – 35 °C</td><td>30 % - 60 %</td><td>800 hPa – 1060 hPa</td></tr>
<tr><td colspan="3">If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.</td></tr>
</table>

4 Emission

4.1 Terminal disturbance voltages (148,5 kHz to 30 MHz)

Test date ..... :	2023-05-24	
Applied limit class or environment ..... :	☒	Table 1 (Columns 2 and 3); Mains terminals
	☐	Table 1 (Columns 4 and 5); Load terminals and additional terminals
	☐	Table 1 (Columns 6 and 7); Mains terminals of tools 700 W
	☐	Table 1 (Columns 8 and 9); Mains terminals of tools 700 W < P ≤ 1000 W
	☐	Table 1 (Columns 10 and 11); Mains terminals of tools > 1000 W
	☐	Other:
Test set-up description ..... :	☒	Set-up Type A (40 cm distance to vertical ground plane, 80 cm o ground plane)
	☐	Set-up Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment set-up (10 cm over ground plane)
	☐	Other:
	☐	Artificial hand applied
Supplementary Test set-up description ..... :	-	
Test method applied ..... :	☒	Artificial mains network
	☐	Artificial mains network used as voltage probe
	☐	Voltage probe
	☐	CDN according to EN 61000-4-6
	☐	Current probe and capacitive voltage probe (CVP)
	☐	ISN
	☐	In situ CDN (150 Ohm and current probe)
	☐	Other:
Used mains voltage/frequency for the test. Evaluated at 160 kHz (0,9 – 1,1 of U_N) ..... :	*230V/50Hz (worst case)*	
Supplementary information ..... :	--	

4.1.1 Test result – L – Model 1

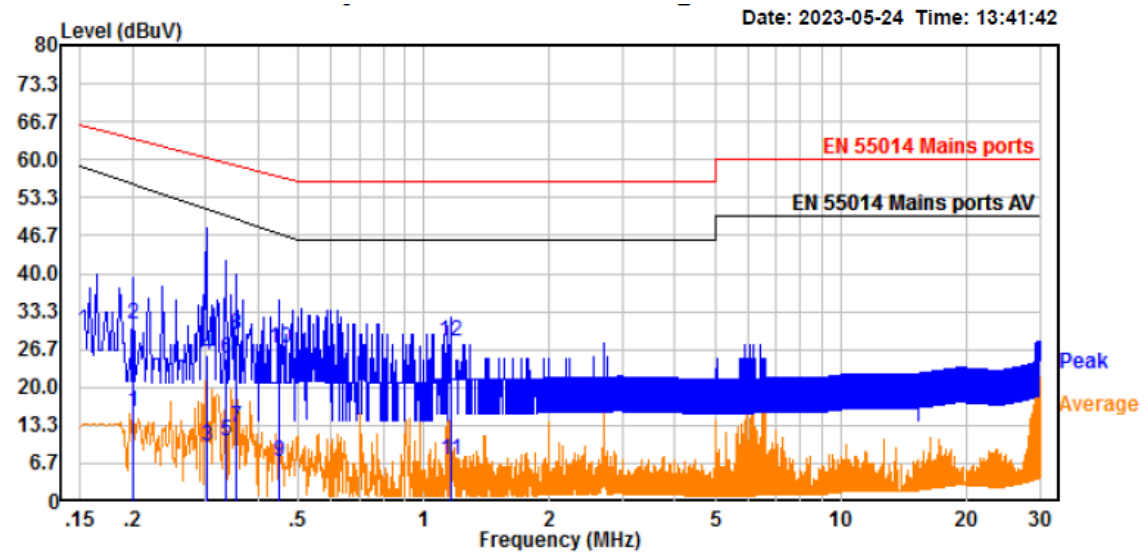


Trace: 1

Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
MHz	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB	
0.15	16.87	0.62	9.94	26.81	10.56	65.89	58.86	39.08	48.30	Line
0.18	11.75	-0.58	9.94	21.69	9.36	64.68	57.28	42.99	47.92	Line
0.21	17.08	-1.39	9.94	27.02	8.55	63.29	55.48	36.27	46.93	Line
0.28	11.22	-0.83	9.94	21.16	9.11	60.71	52.13	39.55	43.02	Line
0.96	5.27	-5.47	10.02	15.29	4.55	56.00	46.00	40.71	41.45	Line
1.77	5.72	-6.02	10.05	15.77	4.03	56.00	46.00	40.23	41.97	Line

Remarks: 1. C.F (Correction Factor) = Insertion loss + Cable loss
2. Result Value = RD Value + C.F Value
3. Margin = Limit - Result

4.1.2 Test result – N – Model 1

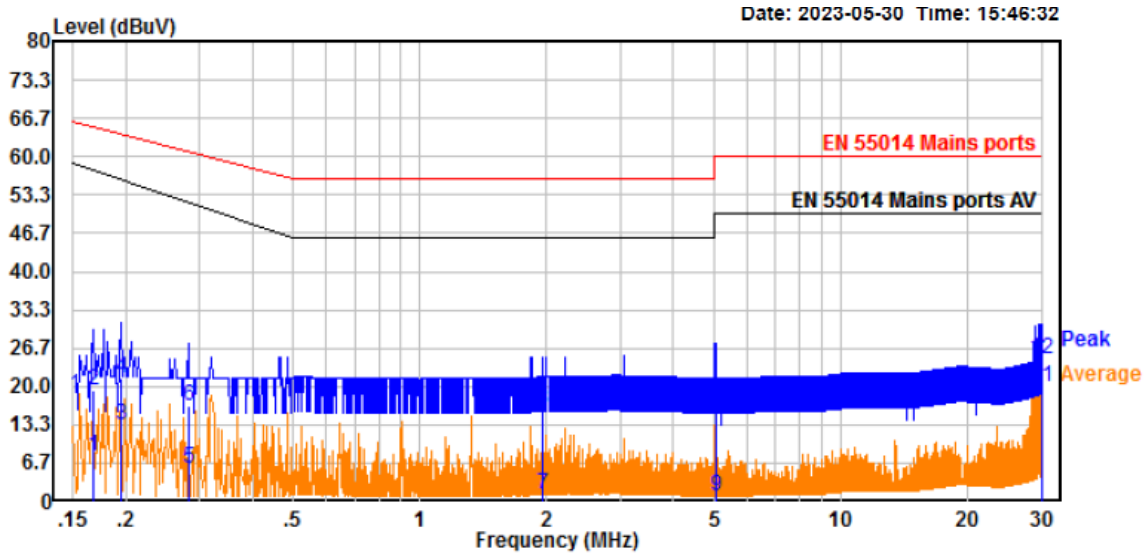


Trace: 1

Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
MHz	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB	
0.20	21.25	5.75	9.94	31.19	15.69	63.54	55.80	32.35	40.11	Neutral
0.30	15.75	-0.32	9.94	25.69	9.62	60.20	51.46	34.51	41.84	Neutral
0.34	14.97	0.71	9.94	24.91	10.65	59.32	50.31	34.41	39.66	Neutral
0.36	19.40	2.99	9.94	29.34	12.93	58.84	49.69	29.50	36.76	Neutral
0.45	16.97	-3.13	9.94	26.91	6.81	56.89	47.16	29.98	40.35	Neutral
1.16	18.14	-2.74	10.02	28.16	7.28	56.00	46.00	27.84	38.72	Neutral

Remarks: 1. C.F (Correction Factor) = Insertion loss + Cable loss
2. Result Value = RD Value + C.F Value
3. Margin = Limit - Result

4.1.3 Test result – L – Model 2

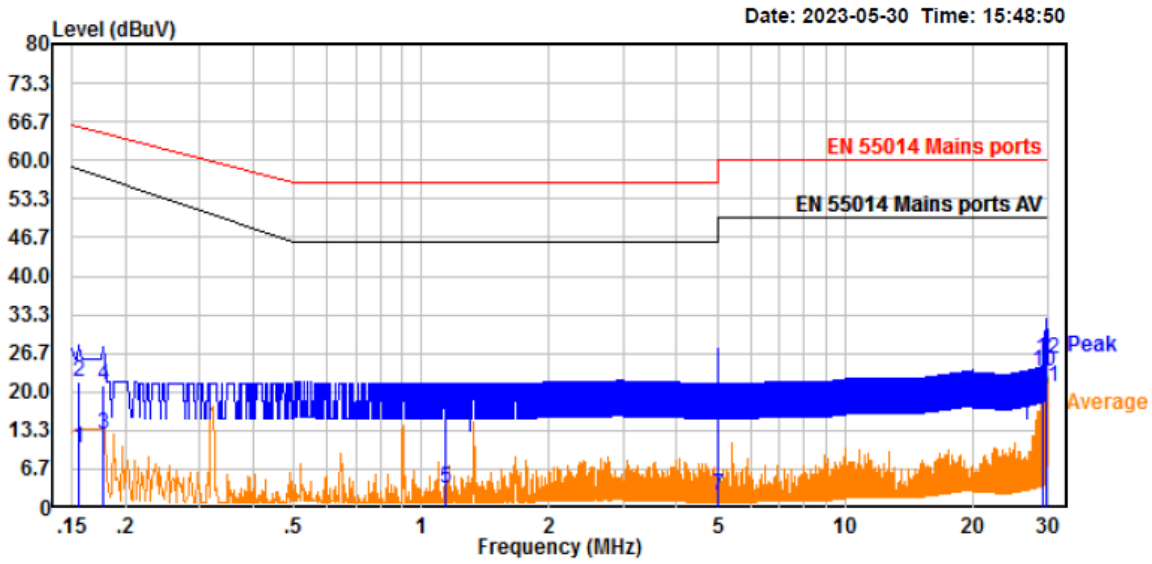


Trace: 1

Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
MHz	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB	
0.17	9.39	-2.17	9.94	19.33	7.77	65.06	57.78	45.73	50.01	Line
0.20	11.53	3.22	9.94	21.47	13.16	63.79	56.12	42.32	42.96	Line
0.28	6.55	-4.16	9.94	16.49	5.78	60.77	52.20	44.28	46.42	Line
1.96	5.82	-8.96	10.05	15.87	1.09	56.00	46.00	40.13	44.91	Line
5.07	5.61	-9.07	10.08	15.69	1.01	60.00	50.00	44.31	48.99	Line
29.91	14.25	9.39	10.59	24.84	19.98	60.00	50.00	35.16	30.02	Line

Remarks: 1. C.F (Correction Factor) = Insertion loss + Cable loss
2. Result Value = RD Value + C.F Value
3. Margin = Limit - Result

4.1.4 Test result – N – Model 2



Trace: 1

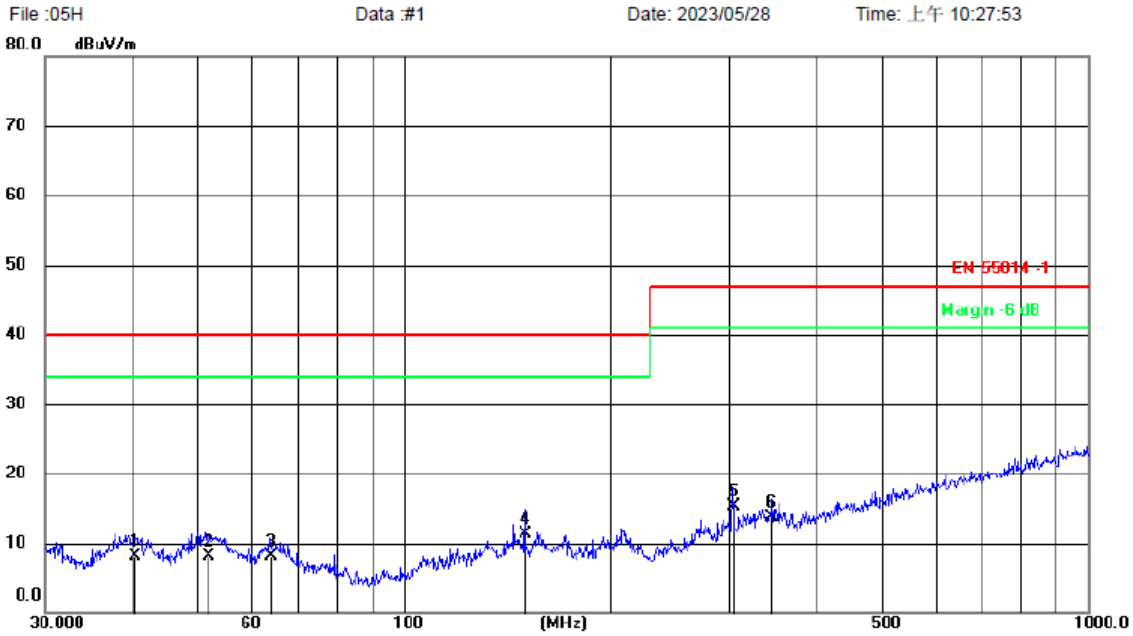
Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase
MHz	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB	
0.16	11.80	0.26	9.94	21.74	10.20	65.68	58.58	43.94	48.38	Neutral
0.18	11.29	2.61	9.94	21.23	12.55	64.58	57.16	43.35	44.61	Neutral
1.14	6.63	-6.57	10.02	16.65	3.45	56.00	46.00	39.35	42.55	Neutral
5.02	5.61	-8.03	10.08	15.69	2.05	60.00	50.00	44.31	47.95	Neutral
29.29	13.15	9.13	10.48	23.63	19.61	60.00	50.00	36.37	30.39	Neutral
29.81	15.28	10.23	10.48	25.76	20.71	60.00	50.00	34.24	29.29	Neutral

Remarks: 1. C.F (Correction Factor) = Insertion loss + Cable loss
2. Result Value = RD Value + C.F Value
3. Margin = Limit - Result

4.2 Radiated emission (30 MHz to 1000 MHz)

Test date ..... :	2023-05-28	
Applied limit class ..... :	☒	Table 3 Radiated disturbance limits
	☐	Other:
Test set-up description ..... :	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other:
Supplementary test set-up description ..... :		
Test method applied ..... :	☒	OATS or SAC with measurement distance [m]: 3
	☐	FAR with measurement distance [m]:
	☐	TEM Waveguide
Supplementary information..... :	--	

4.2.1 Test result – horizontal – model 1



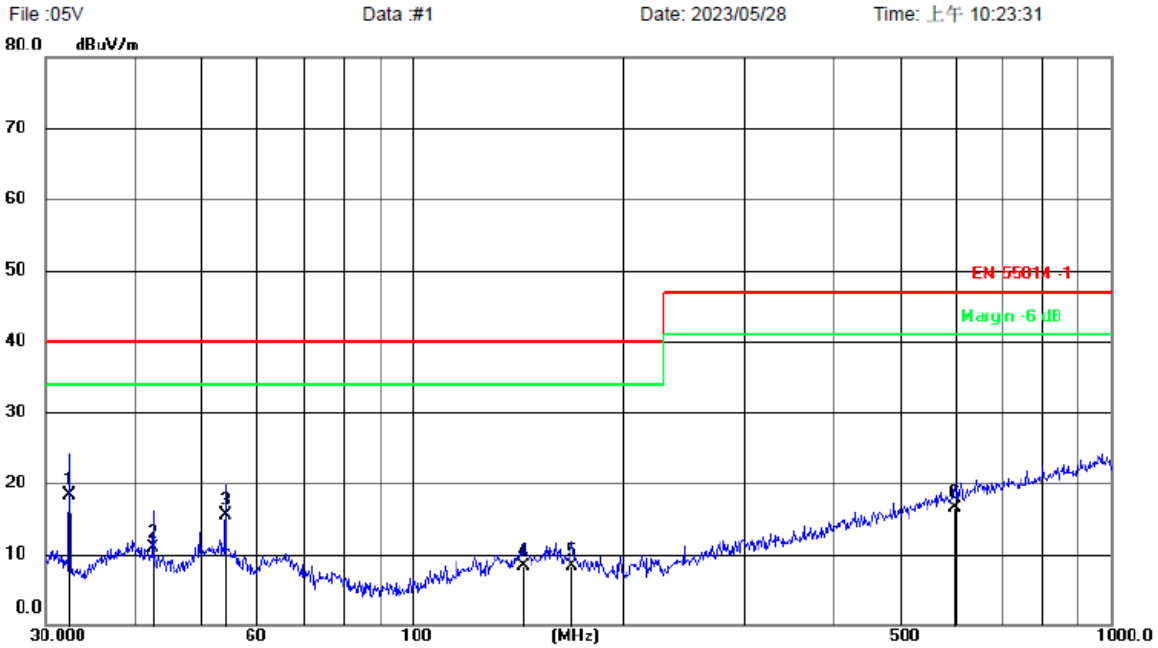
Site 966 3m Site LAB
Limit: EN 55014 -1
EUT: 23P-002451
M/N:
Mode:
Note:

Polarization: *Horizontal*
Power: AC230V/50Hz
Distance: 3m

Temperature: 22.8
Humidity: 44 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		40.4172	28.51	-20.32	8.19	40.00	-31.81	QP	200	131	
2		51.6797	28.09	-19.93	8.16	40.00	-31.84	QP	200	134	
3		63.8707	29.12	-20.99	8.13	40.00	-31.87	QP	100	26	
4	*	151.0136	30.52	-19.24	11.28	40.00	-28.72	QP	200	162	
5		303.4373	33.15	-17.88	15.27	47.00	-31.73	QP	100	75	
6		345.5952	30.59	-16.87	13.72	47.00	-33.28	QP	100	293	

4.2.2 Test result – vertical – model 1



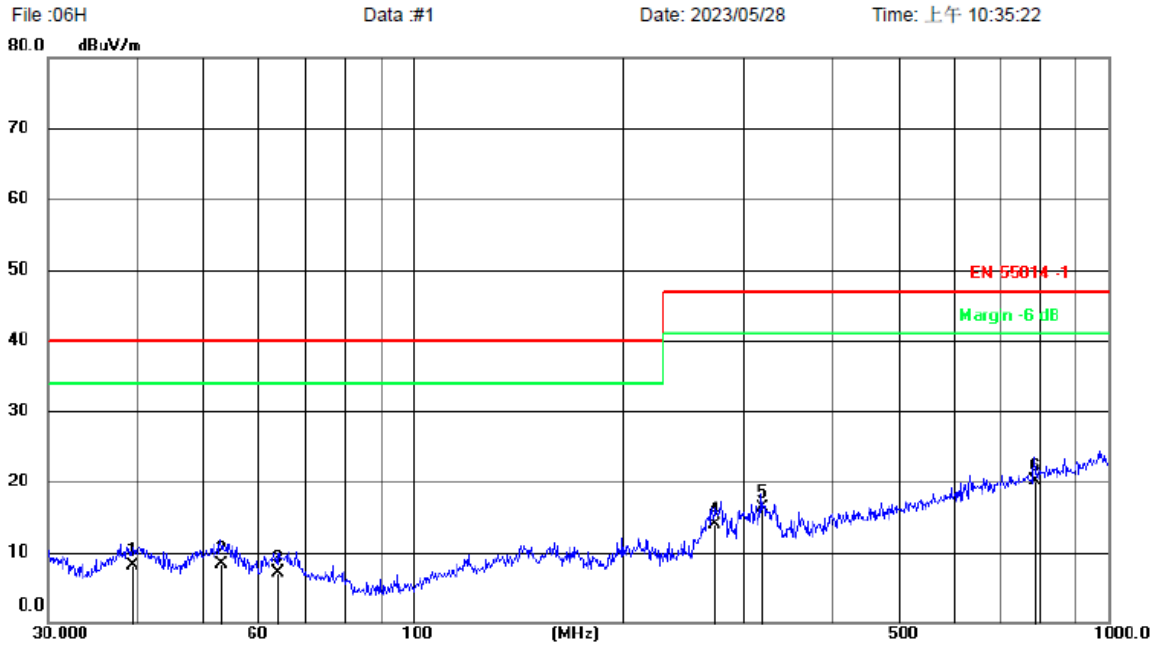
Site 966 3m Site LAB
Limit: EN 55014 -1
EUT: 23P-002451
M/N:
Mode:
Note:

Polarization: *Vertical*
Power: AC230V/50Hz
Distance: 3m

Temperature: 22.8
Humidity: 44 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	32.4059	39.12	-20.84	18.28	40.00	-21.72	QP	100	17	
2		42.6000	31.19	-20.21	10.98	40.00	-29.02	QP	200	160	
3		54.0711	35.56	-20.07	15.49	40.00	-24.51	QP	100	90	
4		144.3348	27.98	-19.61	8.37	40.00	-31.63	QP	100	79	
5		169.5990	27.98	-19.64	8.34	40.00	-31.66	QP	200	97	
6		599.3212	26.40	-9.81	16.59	47.00	-30.41	QP	100	292	

4.2.3 Test result – horizontal – model 2



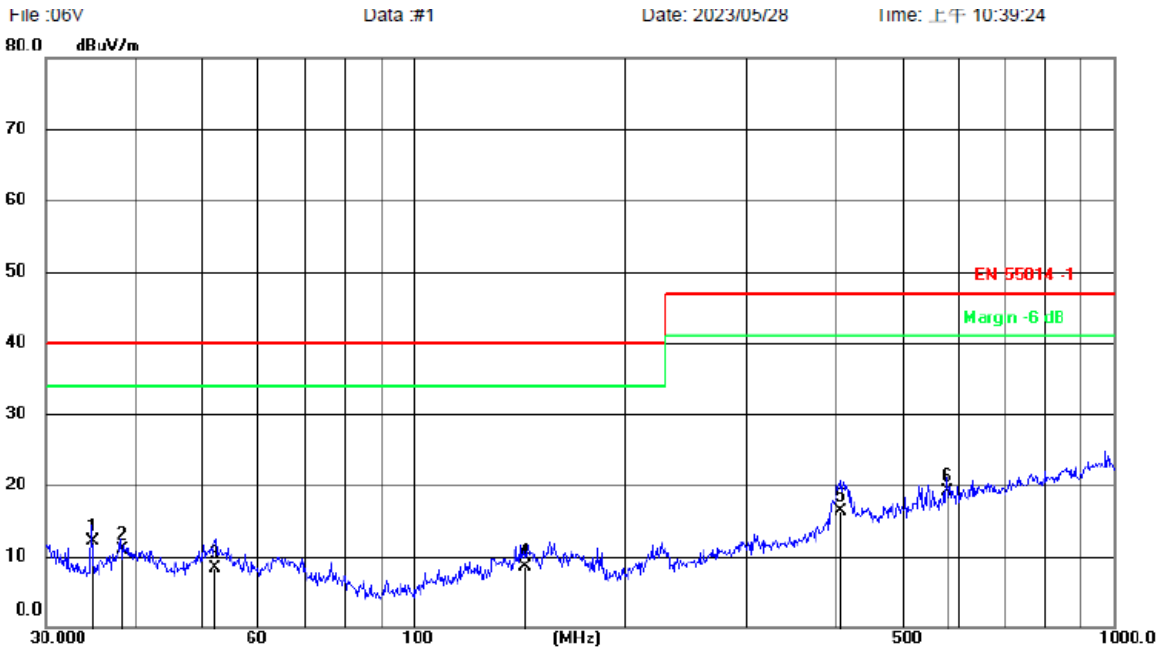
Site 966 3m Site LAB
Limit: EN 55014 -1
EUT: 23P-002451
M/N:
Mode:
Note:

Polarization: *Horizontal*
Power: AC230V/50Hz
Distance: 3m

Temperature: 22.8
Humidity: 44 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		39.5757	28.52	-20.36	8.16	40.00	-31.84	QP	200	252	
2		52.9639	28.35	-20.01	8.34	40.00	-31.66	QP	200	242	
3		64.0052	28.19	-21.00	7.19	40.00	-32.81	QP	100	20	
4		272.2776	32.99	-19.02	13.97	47.00	-33.03	QP	100	59	
5		318.0353	33.73	-17.52	16.21	47.00	-30.79	QP	200	291	
6	*	783.4434	26.47	-6.28	20.19	47.00	-26.81	QP	100	105	

4.2.4 Test result – vertical



Site 966 3m Site LAB
Limit: EN 55014 -1
EUT: 23P-002451
M/N:
Mode:
Note:

Polarization: *Vertical*
Power: AC230V/50Hz
Distance: 3m

Temperature: 22.8
Humidity: 44 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	34.7724	32.86	-20.68	12.18	40.00	-27.82	QP	100	160	
2		38.4540	31.39	-20.45	10.94	40.00	-29.06	QP	100	96	
3		52.0434	28.33	-19.96	8.37	40.00	-31.63	QP	100	269	
4		144.1325	28.08	-19.62	8.46	40.00	-31.54	QP	100	72	
5		407.6574	31.09	-14.82	16.27	47.00	-30.73	QP	100	255	
6		577.8588	29.55	-10.37	19.18	47.00	-27.82	QP	100	26	

4.3 Harmonic Current emission

Test date ..... :	2023-05-24		
Limit classification in accordance with the standard ..... :	☒	Class A	
	☐	Class B	
	☐	Class C with active input power > 25 W	
	☐	Class C with active input power ≤ 25 W (First requirement, Table 3 column 2)	
	☐	Class C with active input power ≤ 25 W (Second requirement)	
	☐	Class D	
Observation period ..... :	Description		Period selected T_{obs}
	☒	Quasi stationary	2.5 min
	☐	Short cyclic	Tobs ≥ 10 cycles =
	☐	Random	Tobs =
	☐	Long cyclic	Full program cycle or 2.5 min. with highest THC Tobs =
Version of measurement instrument standard used IEC 61000-4-7 (Clause 7)..... :	☐	IEC 61000-4-7:1991	
	☒	IEC 61000-4-7:2002 + A1:2008	
Supplementary information..... :	--		

4.3.1 Test result – model 1

Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Win. (150%)	% Of Max
2	0.0079	1.0800	0.7	PASS	PASS	0.0091	1.6200	0.6
3	0.0029	2.3000	0.1	PASS	PASS	0.0049	3.4500	0.1
4	0.0017	0.4300	0.4	PASS	PASS	0.0022	0.6450	0.3
5	0.0024	1.1400	0.2	PASS	PASS	0.0033	1.7100	0.2
6	0.0015	0.3000	0.5	PASS	PASS	0.0017	0.4500	0.4
7	0.0015	0.7700	0.2	PASS	PASS	0.0017	1.1550	0.1
8	0.0008	0.2300	0.3	PASS	PASS	0.0009	0.3450	0.3
9	0.0008	0.4000	0.2	PASS	PASS	0.0010	0.6000	0.2
10	0.0006	0.1840	0.3	PASS	PASS	0.0007	0.2760	0.3
11	0.0006	0.3300	0.2	PASS	PASS	0.0007	0.4950	0.1
12	0.0008	0.1530	0.5	PASS	PASS	0.0009	0.2295	0.4
13	0.0017	0.2100	0.8	PASS	PASS	0.0018	0.3150	0.6
14	0.0006	0.1310	0.4	PASS	PASS	0.0006	0.1965	0.3
15	0.0004	0.1500	0.3	PASS	PASS	0.0005	0.2250	0.2
16	0.0004	0.1150	0.3	PASS	PASS	0.0005	0.1725	0.3
17	0.0003	0.1320	0.2	PASS	PASS	0.0004	0.1980	0.2
18	0.0004	0.1020	0.4	PASS	PASS	0.0005	0.1530	0.3
19	0.0004	0.1180	0.3	PASS	PASS	0.0005	0.1770	0.3
20	0.0011	0.0920	1.2	PASS	PASS	0.0012	0.1380	0.8
21	0.0004	0.1070	0.4	PASS	PASS	0.0005	0.1605	0.3
22	0.0003	0.0830	0.3	PASS	PASS	0.0004	0.1245	0.3
23	0.0003	0.0970	0.3	PASS	PASS	0.0004	0.1455	0.3
24	0.0003	0.0760	0.4	PASS	PASS	0.0004	0.1140	0.4
25	0.0003	0.0900	0.3	PASS	PASS	0.0004	0.1350	0.3
26	0.0006	0.0700	0.8	PASS	PASS	0.0007	0.1050	0.6
27	0.0003	0.0830	0.4	PASS	PASS	0.0004	0.1245	0.3
28	0.0003	0.0650	0.5	PASS	PASS	0.0004	0.0975	0.4
29	0.0003	0.0770	0.4	PASS	PASS	0.0004	0.1155	0.4
30	0.0003	0.0610	0.5	PASS	PASS	0.0004	0.0915	0.4

31	0.0003	0.0720	0.4	PASS	PASS	0.0004	0.1080	0.3
32	0.0003	0.0570	0.5	PASS	PASS	0.0004	0.0855	0.4
33	0.0004	0.0680	0.5	PASS	PASS	0.0004	0.1020	0.4
34	0.0003	0.0540	0.5	PASS	PASS	0.0004	0.0810	0.4
35	0.0003	0.0640	0.4	PASS	PASS	0.0004	0.0960	0.4
36	0.0003	0.0510	0.6	PASS	PASS	0.0004	0.0765	0.5
37	0.0003	0.0600	0.5	PASS	PASS	0.0004	0.0900	0.4
38	0.0002	0.0480	0.5	PASS	PASS	0.0003	0.0720	0.4
39	0.0003	0.0570	0.5	PASS	PASS	0.0004	0.0855	0.4
40	0.0033	0.0460	7.1	PASS	PASS	0.0034	0.0690	4.9

4.3.2 Test result – model 2

Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Win. (150%)	% Of Max
2	0.0055	1.0800	0.5	PASS	PASS	0.0060	1.6200	0.4
3	0.0031	2.3000	0.1	PASS	PASS	0.0036	3.4500	0.1
4	0.0020	0.4300	0.5	PASS	PASS	0.0022	0.6450	0.3
5	0.0013	1.1400	0.1	PASS	PASS	0.0015	1.7100	0.1
6	0.0016	0.3000	0.5	PASS	PASS	0.0017	0.4500	0.4
7	0.0015	0.7700	0.2	PASS	PASS	0.0016	1.1550	0.1
8	0.0009	0.2300	0.4	PASS	PASS	0.0011	0.3450	0.3
9	0.0009	0.4000	0.2	PASS	PASS	0.0010	0.6000	0.2
10	0.0007	0.1840	0.4	PASS	PASS	0.0008	0.2760	0.3
11	0.0012	0.3300	0.4	PASS	PASS	0.0013	0.4950	0.3
12	0.0009	0.1530	0.6	PASS	PASS	0.0010	0.2295	0.4
13	0.0017	0.2100	0.8	PASS	PASS	0.0017	0.3150	0.5
14	0.0006	0.1310	0.5	PASS	PASS	0.0007	0.1965	0.3
15	0.0008	0.1500	0.5	PASS	PASS	0.0009	0.2250	0.4
16	0.0004	0.1150	0.4	PASS	PASS	0.0005	0.1725	0.3
17	0.0006	0.1320	0.4	PASS	PASS	0.0006	0.1980	0.3
18	0.0005	0.1020	0.5	PASS	PASS	0.0006	0.1530	0.4
19	0.0006	0.1180	0.5	PASS	PASS	0.0008	0.1770	0.5
20	0.0011	0.0920	1.2	PASS	PASS	0.0012	0.1380	0.9
21	0.0005	0.1070	0.5	PASS	PASS	0.0006	0.1605	0.4
22	0.0004	0.0830	0.4	PASS	PASS	0.0005	0.1245	0.4
23	0.0005	0.0970	0.5	PASS	PASS	0.0006	0.1455	0.4
24	0.0004	0.0760	0.6	PASS	PASS	0.0005	0.1140	0.5
25	0.0004	0.0900	0.4	PASS	PASS	0.0005	0.1350	0.3
26	0.0006	0.0700	0.9	PASS	PASS	0.0007	0.1050	0.7
27	0.0003	0.0830	0.4	PASS	PASS	0.0004	0.1245	0.3
28	0.0003	0.0650	0.5	PASS	PASS	0.0004	0.0975	0.4
29	0.0005	0.0770	0.7	PASS	PASS	0.0006	0.1155	0.5
30	0.0003	0.0610	0.6	PASS	PASS	0.0004	0.0915	0.5

31	0.0003	0.0720	0.4	PASS	PASS	0.0004	0.1080	0.4
32	0.0003	0.0570	0.6	PASS	PASS	0.0004	0.0855	0.5
33	0.0005	0.0680	0.7	PASS	PASS	0.0006	0.1020	0.6
34	0.0003	0.0540	0.6	PASS	PASS	0.0005	0.0810	0.6
35	0.0003	0.0640	0.5	PASS	PASS	0.0004	0.0960	0.4
36	0.0004	0.0510	0.7	PASS	PASS	0.0005	0.0765	0.6
37	0.0004	0.0600	0.7	PASS	PASS	0.0005	0.0900	0.6
38	0.0003	0.0480	0.6	PASS	PASS	0.0004	0.0720	0.5
39	0.0004	0.0570	0.8	PASS	PASS	0.0005	0.0855	0.6
40	0.0031	0.0460	6.8	PASS	PASS	0.0033	0.0690	4.8

4.4 Voltage changes, voltage fluctuations and flicker

Test date ..... :	2023-05-24	
Test set-up description ..... :	-	
Test method ..... :	☒	4.2.2 Flickermeter according EN 61000-4-15
	☐	4.2.3 Simulation
	☐	4.2.4 Analytical method
	☐	4.2.5 Use of Pst = 1 curve
	☐	4.3 Long-Term flicker value Plt
Observation time selected ..... :	☒	10 Minutes
	☐	120 Minutes
	☐	24 times switching according to Annex B
Limit for dmax applied..... :	☒	4 %
	☐	6 %
	☐	7 %
AC Mains voltage during test..... :	230V 50Hz	
Supplementary information..... :	---	

4.4.1 Test result – model 1

EUT:	**23p-002451**
Test Standard:	**Test per IEC 61000-3-3 Ed. 3.1 : 2017**
Test Class:	**Flicker Test, Pst-dc-dmax-Tmax**
Test Result:	**PASS**
Test Date:	2023/5/24
Start Time:	14:36:40
Stop Time:	14:46:58
Test Duration (min):	10

Source Qualification:	**Compliance with IEC 61000-3-3 Ed. 3.1 : 2017**
Customer:	
Test By:	
Comments:	

Phase A

Vrms (Volts):	227.50	Frequency (Hz):	50.00
I_rms (Amps):	8.367	Power (W):	1903.5
V-THD (%):	0.051	T-Max (ms):	0 (500)
dmax (%):	0.000 (4.000)	Hi dmax (%):	0.000 (4.000)
dc (%):	0.000 (3.300)	Hi dc (%):	0.000 (3.300)
Pst-1 :	0.062 (1.000)		
Plt :	0.027 (0.650)		

4.4.2 Test result – model 2

EUT:	**23p-002451**
Test Standard:	**Test per IEC 61000-3-3 Ed. 3.1 : 2017**
Test Class:	**Flicker Test, Pst-dc-dmax-Tmax**
Test Result:	**PASS**
Test Date:	2023/5/29
Start Time:	16:30:32
Stop Time:	16:33:46
Test Duration (min):	3

Source Qualification:	**Compliance with IEC 61000-3-3 Ed. 3.1 : 2017**
Customer:	
Test By:	
Comments:	

Phase A

Vrms (Volts):	227.50	Frequency (Hz):	50.00
I_rms (Amps):	8.272	Power (W):	1881.9
V-THD (%):	0.044	T-Max (ms):	0 (500)
dmax (%):	0.000 (4.000)	Hi dmax (%):	0.000 (4.000)
dc (%):	0.000 (3.300)	Hi dc (%):	0.000 (3.300)
Pst (Inst) :	0.074 (1.000)		
Plt :	0.000 (0.650)		

5 Immunity

5.1 General information

Performance criteria as defined by the standard	
Criterion	**Description from standard**
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.
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 to persist after the test. 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.
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.
Other:	--

Manufacturer defined performance criteria .....:	--
Monitoring during the tests .....:	Visual and acoustic

5.2 Specific information CISPR 14-2

Category acc. CISPR 14-2 (7.2)..:	☒	CAT I (Category I)
	☐	CAT II (Category II)
	☐	CAT III (Category III)
	☐	CAT IV (Category IV)

5.3 Electrostatic discharge

Test date ..... :	2022-08-22	
Test set-up ..... :	☐	Table top equipment
	☐	Floor standing equipment
	☒	Wall or ceiling mounted equipment (Treated as table top)
Supplementary test set-up description ..... :	--	
Size of horizontal coupling plate .. :	1,6 x 0,8 m	
Size of vertical coupling plate ..... :	0,5 x 0,5 m	
Number of discharges for each test point ..... :	10	
Discharge interval ..... :	1/s	
Performance criterion ..... :	B	
Supplementary information ..... :	--	

Photo of selected test points ..... :	 (the assembled sample was tested) Air discharge: switch, button, caps in the enclosure, display (red arrow) Contact discharge: no metal parts or screws

Table: Test results for electrostatic discharges							
No.	Location of discharge	Polarity	Discharge	Number of discharges	Test level [kV]	Operating mode	Observations
1	HCP top side	P	C	10	4	1	Criterion A
2	HCP top side	N	C	10	4	1	Criterion A
3	HCP bottom side	P	C	10	4	1	Criterion A
4	HCP bottom side	N	C	10	4	1	Criterion A
5	VCP right side	P	C	10	4	1	Criterion A
6	VCP right side	N	C	10	4	1	Criterion A
7	VCP left side	P	C	10	4	1	Criterion A
8	VCP left side	N	C	10	4	1	Criterion A
9	Points on conductive surface as indicated in the picture above	P	C	10	4	1	Criterion A
10	Points on conductive surface as indicated in the picture above	N	C	10	4	1	Criterion A
11	Points on non-conductive surface as indicated in the picture above	P	A	10	8	1	Criterion A
12	Points on non-conductive surface as indicated in the picture above	N	A	10	8	1	Criterion A
HCP = Horizontal coupling plate VCP = Vertical coupling plate			N = Negative P = Positive			A = Air discharge C = Contact discharge	
Supplementary information: ---							

5.4 Radio frequency electromagnetic fields

Test date ..... :	2023-05-28	
Test set-up ..... :	☒	Equipment on the table (0,8 m height)
	☐	Equipment standing on floor (0,05 – 0,15 m height)
Supplementary test set up description ..... :	--	
Exposed side of EUT ..... :	☒	0° (Front)
	☒	90 °
	☒	180 ° (Rear)
	☒	270 °
Reason for not exposing a side ... :	--	
Distance Antenna to EUT ..... :	150 cm	
Test method ..... :	☒	IEC 61000-4-3
	☐	IEC 61000-4-22
Step size [%] ..... :	1%	
Performance criterion ..... :	A	
Mains voltage / frequency during test ..... :	230V / 50 Hz	
Supplementary information ..... :	--	

Test results for radiated electromagnetic field						
Frequency range	Test Level [V/m]	Polari-zation	Modulation	Operation mode	Dwell time [s]	Observations
80-1000 MHz	3	H/V	80% AM 1kHz	1 and 2	3	Criterion: A
H = Horizontal V = Vertical						
Supplementary information: ---						

5.5 Injected currents, 0,15 MHz to 80 MHz

Test date ..... :	2023-05-28	
Test set-up ..... :	☒	Equipment located (0,1 ± 0,05) m above ground plane
	☐	Elevated ground plane according to Annex F
	☐	Artificial hand applied. Location see photo.
	☐	Other:
Supplementary test set-up description ..... :	--	
Modulation ..... :	☒	80 % AM with 1 kHz
	☐	100 % PM with 222 Hz
	☐	Other:
Step size ..... :	1% log	
Performance criterion ..... :	A	
Mains voltage / frequency during test ..... :	230V 50Hz	
Supplementary information ..... :	--	

Test results for conducted disturbances, induced by radio-frequency fields							
Frequency range	Test Level [V]	Port under test	CDN type	Port with terminated CDN	Operating mode	Dwell time [s]	Observations
0.15~80 MHz	3	AC Main	CDN-M016	[only one port]	1	3	Criterion: A
Supplementary information: ---							

5.6 Fast transients

Test date ..... :	2023-05-28	
Test set-up ..... :	☒	Equipment on the table (0,1 ± 0,01) m above ground plane
	☐	Equipment standing on floor at (0,1 ± 0,01) m above ground plane
	☐	Artificial hand applied. Location see photo.
Supplementary test set-up description ..... :	--	
Repetition frequency ..... :	5 kHz	
Test time ..... :	2 min	
Performance criterion ..... :	B	
Supplementary information ..... :	--	

Test results fast transients

Port	Coupling	Level [kV]	Polarity	Operating mode	Mains voltage/ frequency	Observation
AC Main	L-N-PE	1	+/-	1	230VAC / 50Hz	Criterion: A

Supplementary information:

5.7 Surges

Test date ..... :	2023-05-28
Test set-up description ..... :	--
Repetition rate ..... :	1/min
Number of pulses for each coupling ..... :	5
Performance criterion ..... :	C

Test results for surges

Port	Coupling	CDN	Level [kV]	Po-larity	Phase angles [°]	Operating mode	Mains voltage/ frequency	Observation
AC Main	L-N-PE	MCN	1	+/-	90	1	230v / 50Hz	Criterion: A
AC Main	L-N-PE	MCN	1	+/-	270	1	230v / 50Hz	Criterion: A

Lower test levels ..... :	☒	Tested
	☐	Not tested

P = Positive
N = Negative

MCN = Mains Coupling Network
ICN = Coupling Network for interconnection lines
D = Direct Coupling (shielded lines)

Supplementary information: --

5.8 Voltage dips and interruptions

Test date ..... :	2023-05-28
Test set-up description ..... :	Mode 1
Repetition rate ..... :	1/min
Number of dips or interruptions ... :	3
Performance criterion ..... :	B (Voltage dips) C (Short interruptions UN= 0 %)
Supplementary information..... :	Criterion: C

Test results voltage dips and interruptions

U_N [V]	Frequency in Hz	Test Level [% of U_N]	Phase angle	Duration [Cycles]	Operating mode	Observations
230	50	70	0/180	25P	1	Criterion: A
230	50	40	0/180	10P	1	Criterion: A
230	50	0	0/180	0.5P	1	Criterion: A
230	60	70	0/180	30P	1	Criterion: A
230	60	40	0/180	12P	1	Criterion: A
230	60	0	0/180	0.5P	1	Criterion: A

Supplementary information:

6 Test Equipment

Radiated electromagnetic disturbances

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
EMI Test Receiver	R & S	ESR 26	CJSB2019010	2023-06-28
Antenna (below 1GHz)	Schwarzbeck	VULB 9168	CJSB2019011	2023-07-01
Antenna (above 1GHz)	Schwarzbeck	BBHA 9120D	CJSB2019012	2023-07-01
Pre-Amplifier (below 1GHz)	Com-Power	PAM-103	CJSB2019013	2023-07-04
Pre-Amplifier (above 1GHz)	Com-Power	PAM-118A	CJSB2019014	2023-07-04

Disturbance voltage & Disturbance power

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
EMI Test Receiver	PMM	PMM 9010	CJSB2019027	2023-06-28
LISN	Schwarzbeck	NSLK 8127	CJSB2019028	2023-07-04
ISN	Teseq	ISN T8	CJSB2019029	2023-07-04
Spectrum analyzer	R & S	FSU	CJSB2019074	2023-06-28
Absorbing clamp	Zhiyong	EM5018	CJSB2019070	2023-07-04

Electrostatic discharge

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
ESD GUN	Teseq	NSG 437	CJSB2019009	2023-07-04

Radio-frequency electromagnetic fields

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
Signal Generator	Teseq	ITS 6006	CJSB2019016	2023-06-28
Power Amplifier	Teseq	CBA 1G-300B	CJSB2019017	2023-06-28
Power Amplifier	Milmega	AS0860B50/50	CJSB2019019	2023-06-28
High Gain Antenna	Schwarzbeck	STLP 9129	CJSB2019022	2023-07-04
Dual directional couple	Werlatone	C5982-10	CJSB2019020	2023-07-04
Dual directional couple	Werlatone	C10117-10	CJSB2019021	2023-07-04

Fast transients & Surge & Voltage dips and short interruptions

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
Transient disturbance rejection test system	Teseq	NSG 3040	CJSB2019032	2023-07-04
voltage regulator	Teseq	INA 6502	CJSB2019034	2023-07-04
Power frequency magnetic generator	Teseq	MFO 6502	CJSB2019035	2023-07-04
Capacitive coupling pliers	Teseq	CDN 3425	CJSB2019033	2023-07-04

Harmonics & Voltage Fluctuations and Flicker Test

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
Harmonic Flicker test system	PPS	ECTS2-140M	CJSB2019038	2023-07-24

Injected currents (radio-frequency common mode)

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
signal generator	Teseq	NSG 4070C	CJSB2019026	2023-06-28
CDN	Teseq	CDN M016S	CJSB2019039	2023-07-04
Electromagnetic coupling pliers	Teseq	KEMZ801AS	CJSB2019042	2023-07-04

Radiated electromagnetic disturbances (9 kHz to 30 MHz)

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
Triple Loop Antenna	LAPLACE	RF300	N/A	Mar. 18, 2024
EMI Test Receiver	PMM	PMM 9010	CJSB2019027	2023-06-28

CDN

Test Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
EMI Test Receiver	R & S	ESR 26	CJSB2019010	2023-06-28

7 Pictures documentation

7.1 Setup picture

Photo 1: Terminal disturbance voltages (148,5 kHz to 30 MHz)

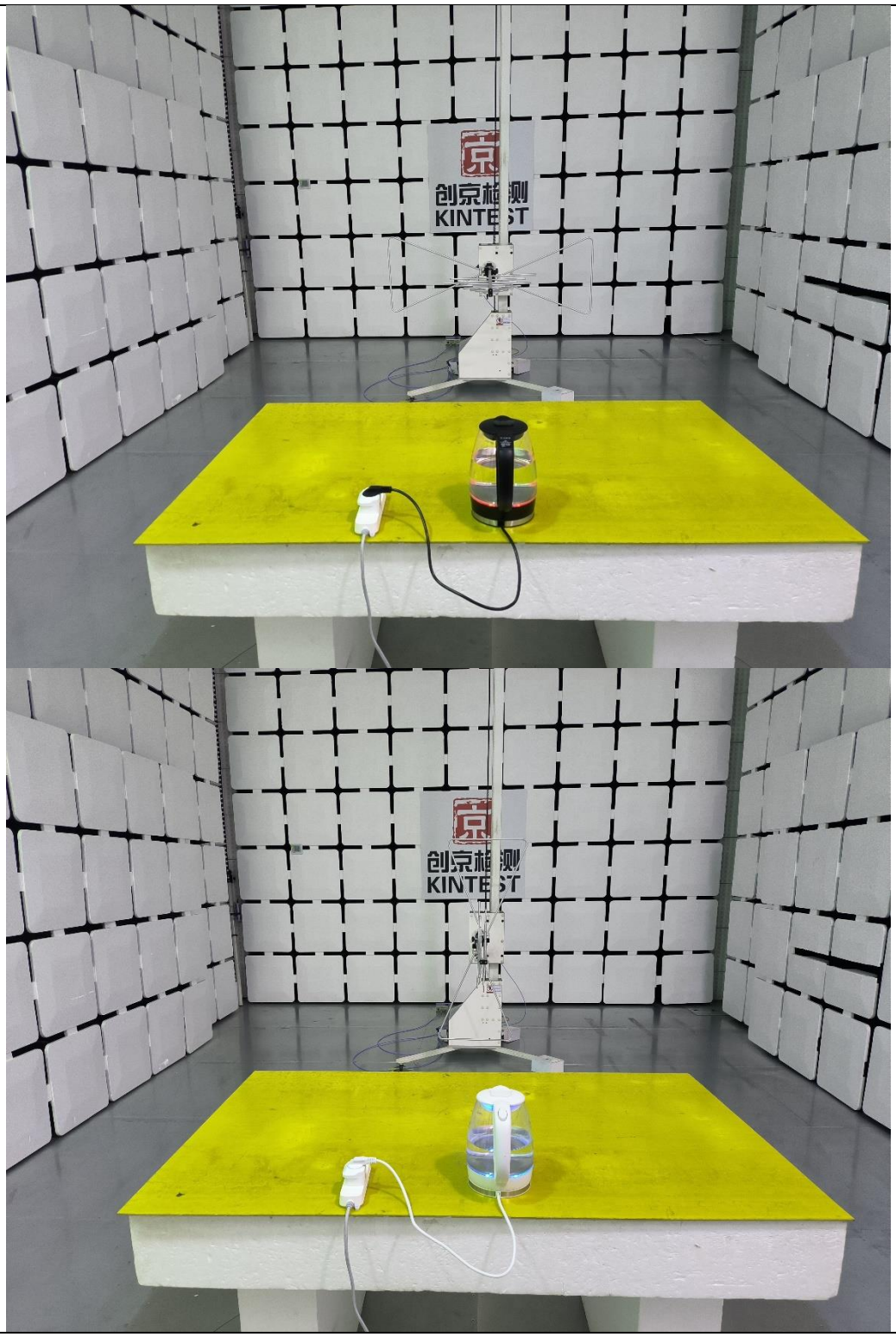


Photo 2: Radiated emission (30 MHz to 1000 MHz)

Photo 3: Harmonic Current emission

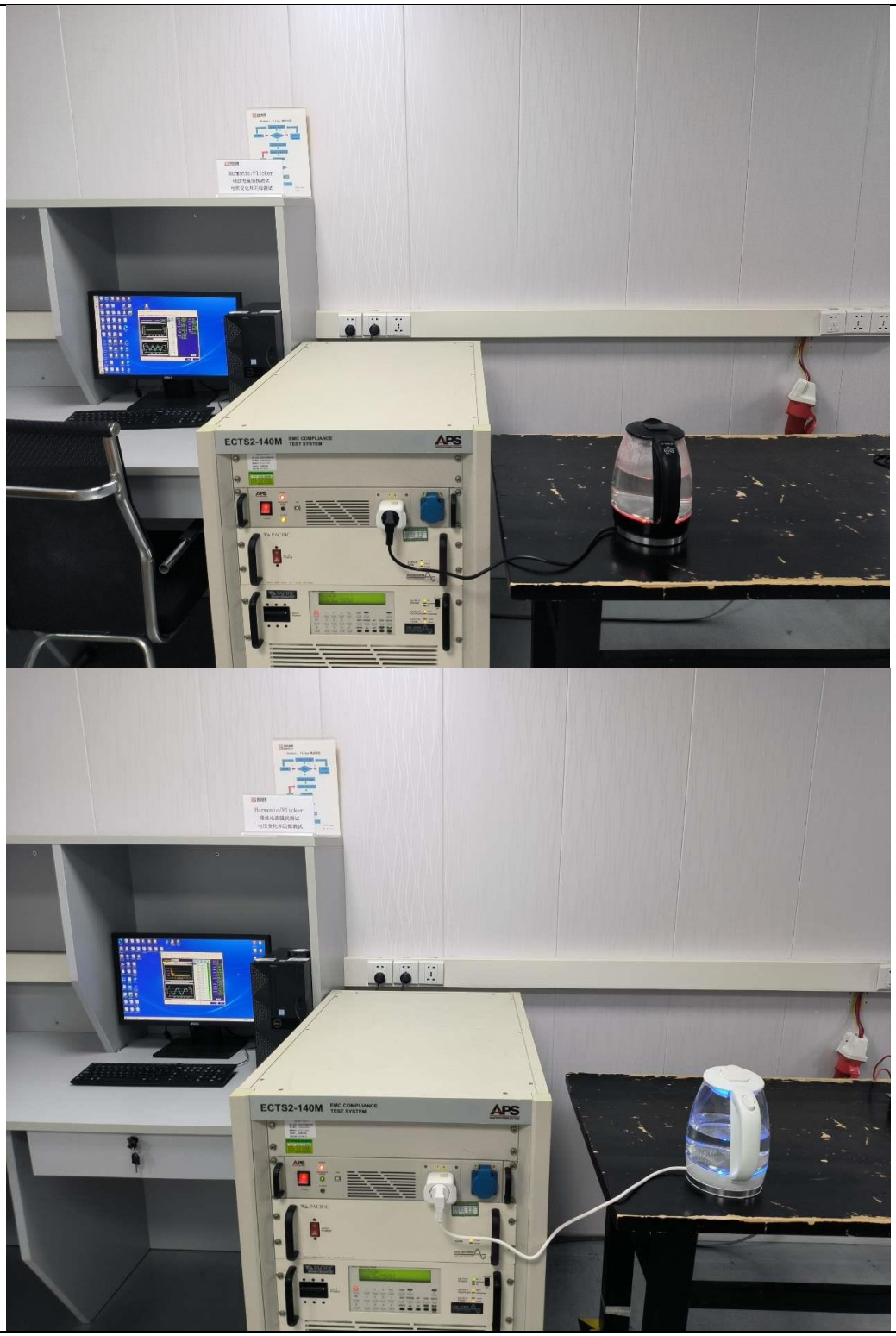


Photo 4: Voltage changes, voltage fluctuations and flicker

Photo 5: Electrostatic discharge

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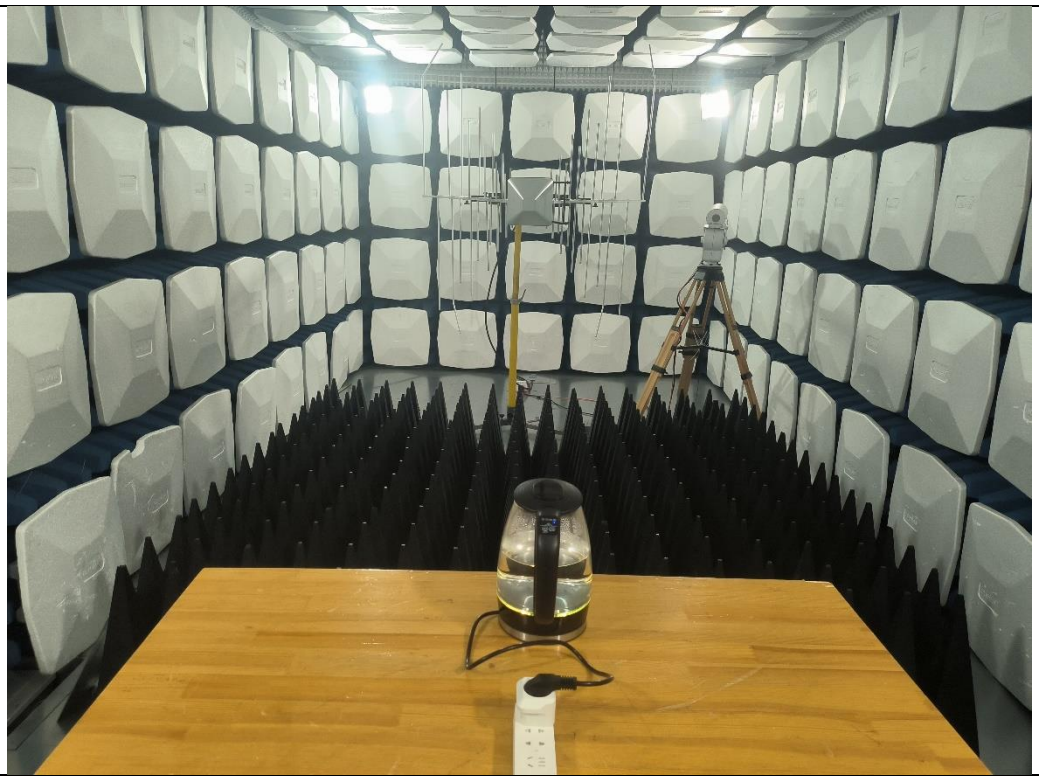


Photo 6: Radio frequency electromagnetic fields

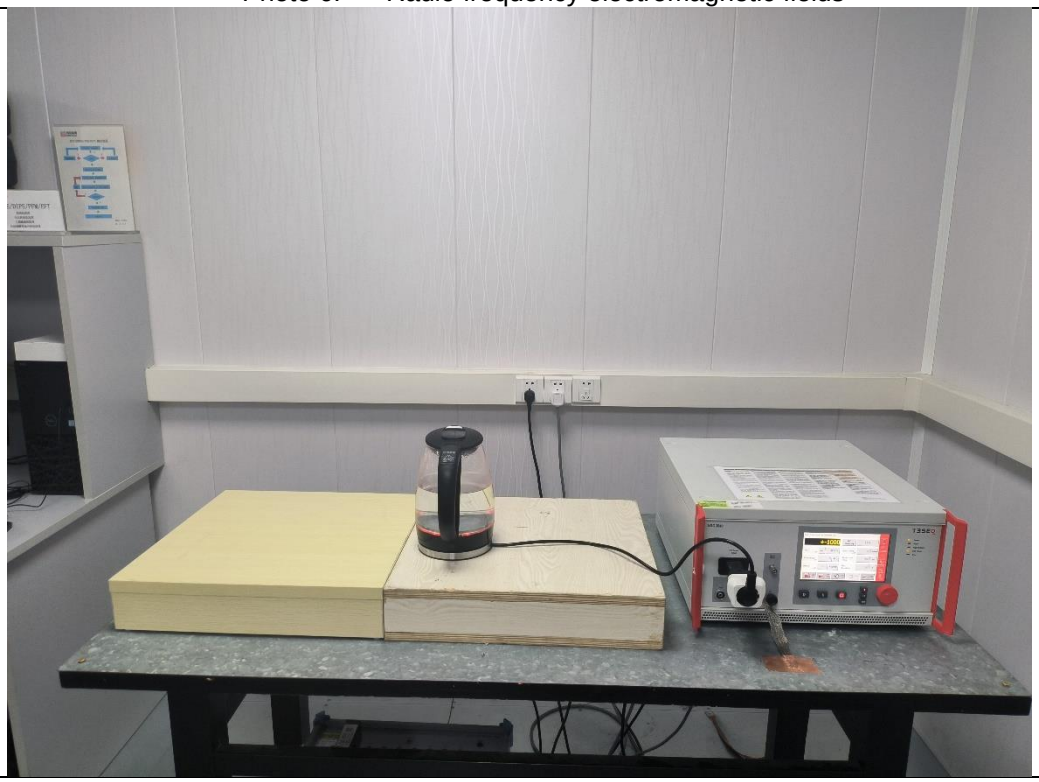
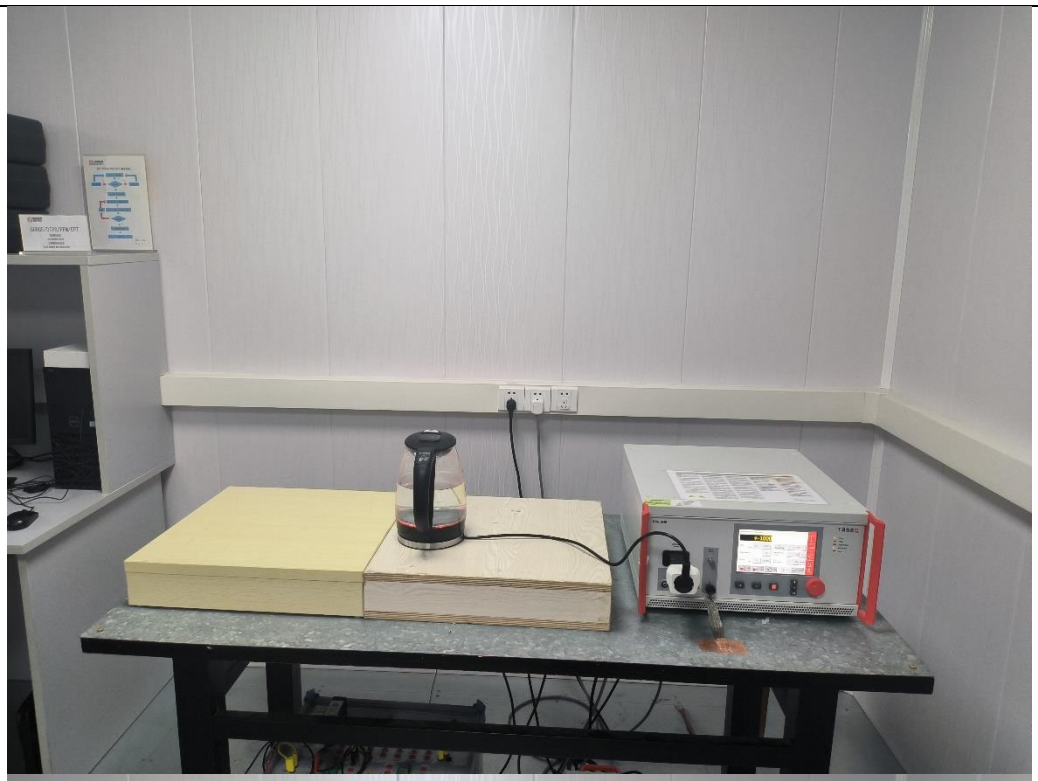


Photo 7: Fast transients



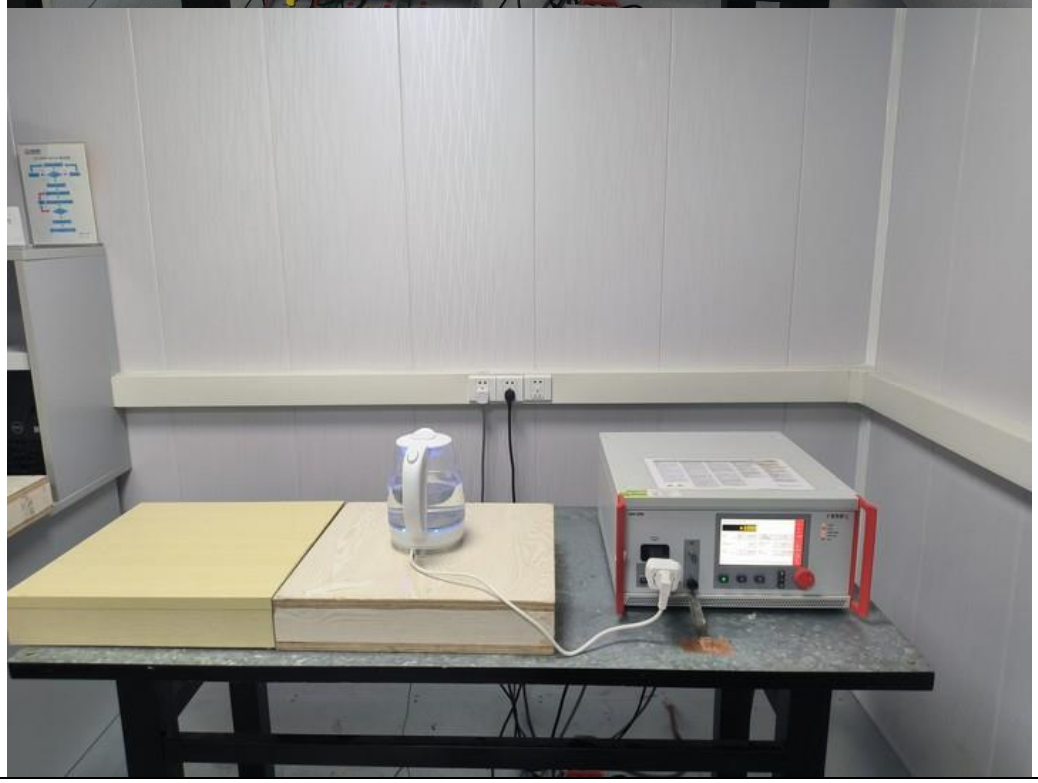


Photo 8: Surges

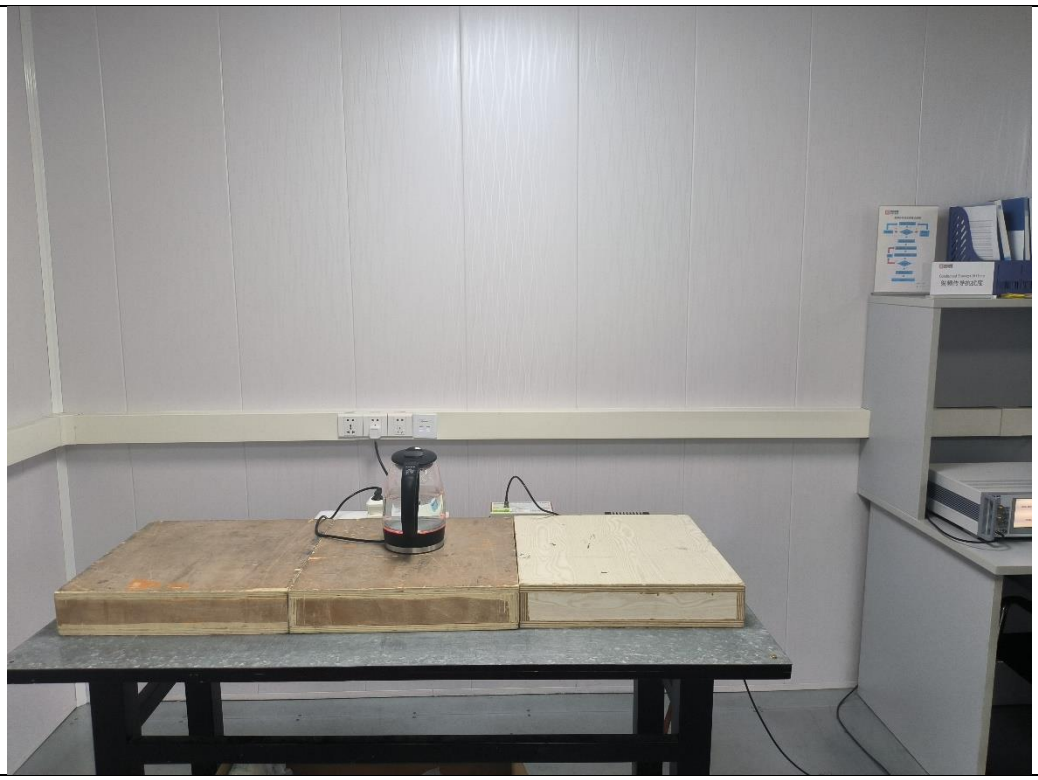


Photo 9: Injected currents,

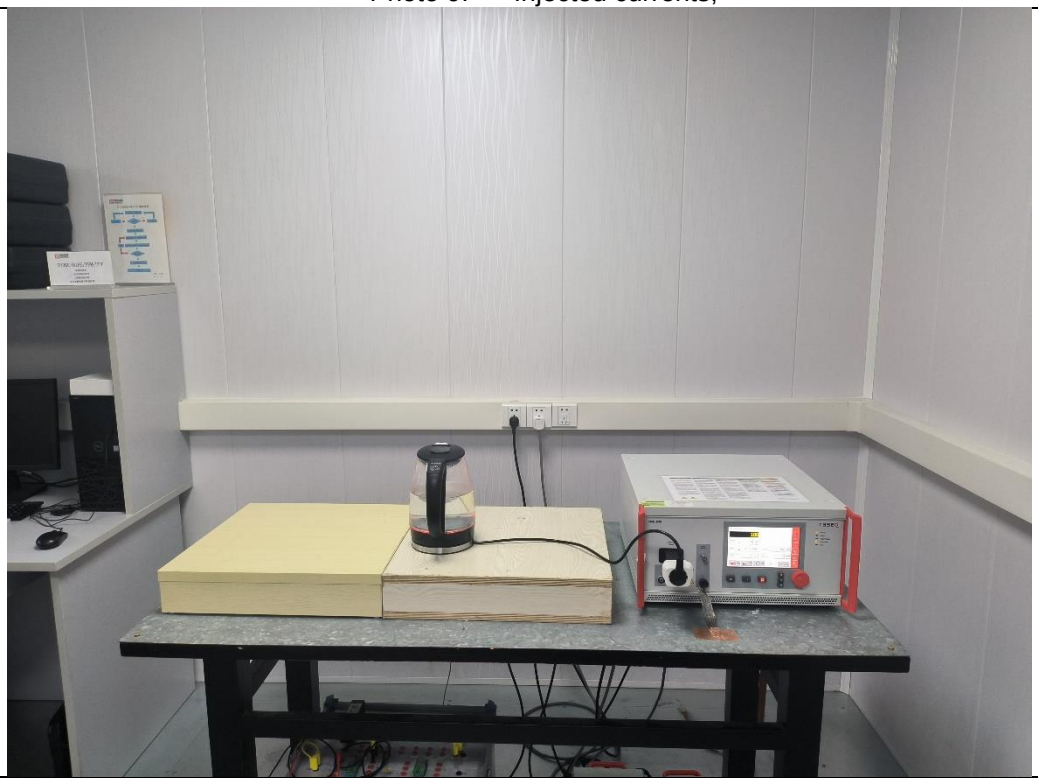


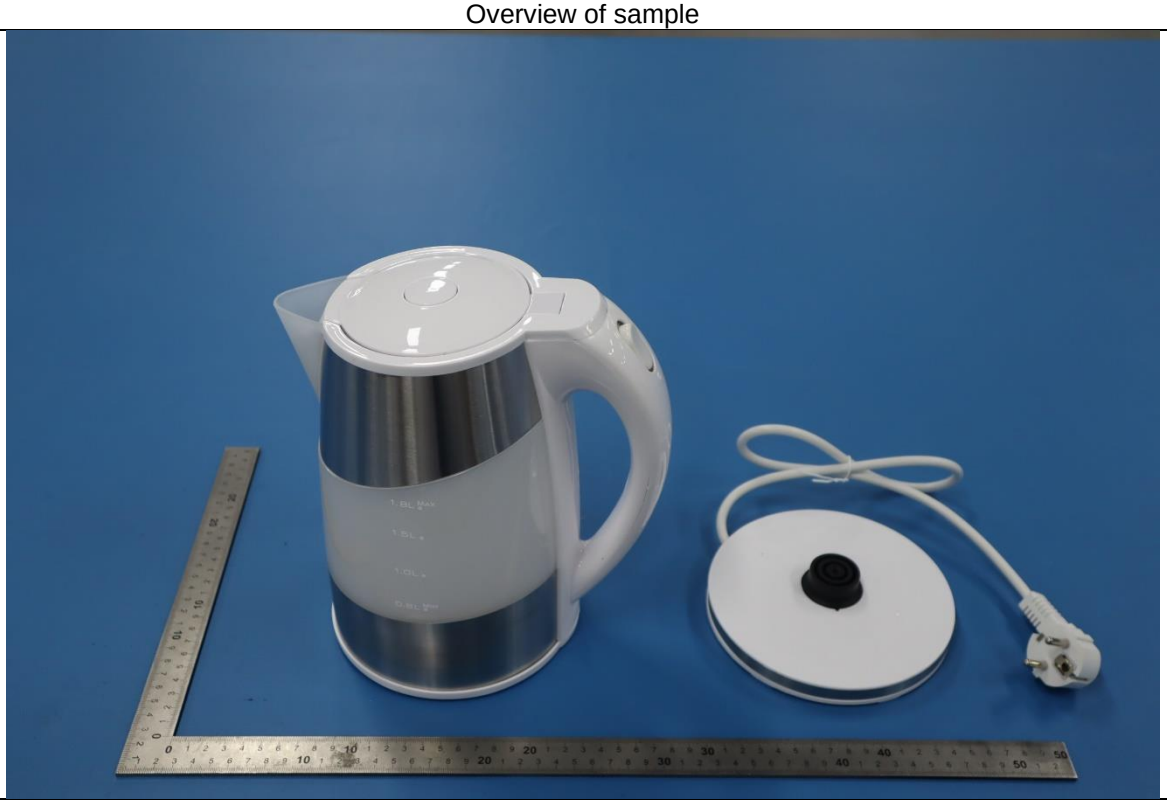
Photo 10: Voltage dips and interruptions

7.2 Product picture

Overview of sample

Overview of sample

Overview of sample



Overview of sample

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-End of report-

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