Prüfbericht-Nr.: *Test report no.*:	**CN23Q0BF 001**	**Auftrags-Nr.:** *Order no.*:	180209900	Seite 1 von 37 *Page 1 of 37*
Kunden-Referenz-Nr.: *Client reference no.*:	N/A	**Auftragsdatum:** *Order date:*	2021.06.18	
Auftraggeber: *Client*:	Zhejiang Bellagio Luxury Co., Ltd. Tianzihu Industrial Park Gaoyu Town, Anji 313310 Zhejiang P.R. China			
Prüfgegenstand: *Test item*:	Whirlpool Spas			
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	Refer to pages 2-5			
Auftrags-Inhalt: *Order content*:	TÜV Rheinland – EMC Service			
Prüfgrundlage: *Test specification*:	**EN IEC 55014-1:2021** **EN IEC 55014-2:2021** **ENIEC 61000-3-11:2019** **EN IEC 61000-3-2:2019+A1**			
Wareneingangsdatum: *Date of sample receipt*:	2022.08.10			
Prüfmuster-Nr.: *Test sample no:*	A003266036-001			
Prüfzeitraum: *Testing period*:	2022.08.24-2022.10.28			
Ort der Prüfung: *Place of testing*:	Refer to section 1.1			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.			
Prüfergebnis*: *Test result**:	Pass			

geprüft von: tested by:	Bingbing Li	**genehmigt von:** *authorized by*:	Shey Zheng
Datum: *Date:* 2023.02.06		**Ausstelldatum:** *Issue date:* 2023.02.06	
Stellung / Position:	Bingbing Li/PE	**Stellung** / Position:	Shey Zheng/Reviewer

Sonstiges / *Other*: Refer to pages 2-5 for further information.

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

- Model List:

No.	Model	Input (V, Hz)	Rated Power (W)
1.	Roma	AC 400V, 50Hz	Pump: Max. 5100W, Heater:3000W
2.	Tacus		Pump: Max. 5100W, Heater:3000W
3.	Firenze		Pump: Max. 5100W, Heater:3000W
4.	Sicilia		Pump: Max. 5100W, Heater:3000W
5.	Sardegna		Pump: Max. 5100W, Heater:3000W
6.	Santorini		Pump: Max. 5100W, Heater:3000W
7.	New Queen		Pump: Max. 5100W, Heater:3000W
8.	Napoli		Pump: Max. 5100W, Heater:3000W
9.	New Napoli		Pump: Max. 5100W, Heater:3000W
10.	Baikal		Pump: Max. 5100W, Heater:3000W
11.	Caspian Sea		Pump: Max. 5100W, Heater:3000W
12.	Victoria		Pump: Max. 5100W, Heater:3000W
13.	Superior		Pump: Max. 5100W, Heater:3000W
14.	Malawi		Pump: Max. 5100W, Heater:3000W
15.	Vernice		Pump: Max. 4050W, Heater:3000W
16.	Venezia		Pump: Max. 4050W, Heater:3000W
17.	IRIS -C		Pump: Max. 4750W, Heater:3000W
18.	Capri		Pump: Max. 4750W, Heater:3000W
19.	Bari		Pump: Max. 4050W, Heater:3000W
20.	Travis		Pump: Max. 4050W, Heater:3000W
21.	Seville		Pump: Max. 4750W, Heater:3000W
22.	Poros		Pump: Max. 4750W, Heater:3000W
23.	Valencia		Pump: Max. 5100W, Heater:3000W
24.	Barcelona		Pump: Max. 5100W,

			Heater:3000W
25.	Madrid		Pump: Max. 5100W, Heater:3000W
26.	Corfu		Pump: Max. 5100W, Heater:3000W
27.	Leon		Pump: Max. 4750W, Heater:3000W
28.	Murcia		Pump: Max. 2200W, Heater:3000W
29.	BO-01		Pump: Max. 7550W, Heater:3000W
30.	BO-02		Pump: Max. 7550W, Heater:3000W
31.	BO-03		Pump: Max. 4750W, Heater:3000W
32.	BO-04		Pump: Max. 4750W, Heater:3000W
33.	BO-05		Pump: Max. 4750W, Heater:3000W
34.	BO-07		Pump: Max. 7550W, Heater:3000W
35.	Sorrento 5.8		Pump: Max. 7550W, Heater:3000W
36.	Sorrento 4.8		Pump: Max. 7550W, Heater:3000W
37.	Sorrento 4.5		Pump: Max. 7550W, Heater:3000W
38.	Como 4.5		Pump: Max. 7550W, Heater:3000W
39.	Como 4.0		Pump: Max. 7550W, Heater:3000W
40.	Arum-C		Pump: Max. 7550W, Heater:3000W
41.	ARUM-D		Pump: Max. 4750W, Heater:3000W
42.	Cinque Terre		Pump: Max. 2900W, Heater:3000W
43.	New Roma		Pump: Max. 5100W, Heater:3000W
44.	Pisa		Pump: Max. 5100W, Heater:3000W
45.	Niagara		Pump: Max. 5350W, Heater:3000W
46.	Canyon		Pump: Max. 5350W, Heater:3000W
47.	New Torina		Pump: Max. 2550W, Heater:3000W
48.	Comox		Pump: Max. 2850W, Heater:3000W
49.	Tofino		Pump: Max. 2850W, Heater:3000W
50.	Radium		Pump: Max. 5350W,

			Heater:3000W
51.	Banff		Pump: Max. 5350W, Heater:3000W
52.	New Milano		Pump: Max. 2550W, Heater:3000W
53.	Torina		Pump: Max. 2550W, Heater:3000W
54.	Milano		Pump: Max. 2550W, Heater:3000W
55.	Modena		Pump: Max. 2550W, Heater:3000W
56.	Verona		Pump: Max. 2550W, Heater:3000W
57.	Genova		Pump: Max. 2550W, Heater:3000W
58.	Malaga		Pump: Max. 2550W, Heater:3000W
59.	Metro		Pump: Max. 2550W, Heater:3000W
60.	San Marino		Pump: Max. 2250W, Heater:3000W
61.	Tirol		Pump: Max. 2550W, Heater:3000W
62.	Tekapo		Pump: Max. 2550W, Heater:3000W
63.	Diablo		Pump: Max. 2250W, Heater:3000W
64.	Plitvice		Pump: Max. 2250W, Heater:3000W
65.	Tahoe		Pump: Max. 2250W, Heater:3000W
66.	Catania		Pump: Max. 2550W, Heater:3000W
67.	Bologna		Pump: Max. 2550W, Heater:3000W
68.	Crater		Pump: Max. 2550W, Heater:3000W
69.	Mellisani		Pump: Max. 2550W, Heater:3000W
70.	Alpine		Pump: Max. 2550W, Heater:3000W
71.	Palma		Pump: Max. 2550W, Heater:3000W
72.	IRIS-D		Pump: Max. 2550W, Heater:3000W
73.	Atlantic 11		Pump: Max. 7550W, Heater:3000W
74.	Atlantic 12		Pump: Max. 7550W, Heater:3000W
75.	Agean 12		Pump: Max. 7550W, Heater:3000W

76.	Atlantic 15		Pump: Max. 7550W, Heater:3000W
77.	Atlantic 18		Pump: Max. 7550W, Heater:3000W
78.	Atlantic 20		Pump: Max. 7550W, Heater:3000W
79.	Gotburg 5.5		Pump: Max. 7550W, Heater:3000W
80.	Gotburg 6.2		Pump: Max. 7550W, Heater:3000W
81.	Cute Spa		Pump: Max. 1900W, Heater:3000W
82.	Lily		Pump: Max. 5100W, Heater:3000W
83.	Peony		Pump: Max. 5100W, Heater:3000W
84.	Calypso		Pump: Max. 5100W, Heater:3000W
85.	Oceana		Pump: Max. 5100W, Heater:3000W
86.	Atlantis		Pump: Max. 5350W, Heater:3000W
87.	Saturna		Pump: Max. 5350W, Heater:3000W
88.	Sparta		Pump: Max. 5350W, Heater:3000W
89.	Solara		Pump: Max. 5350W, Heater:3000W

Other aspects:

1. In electrical characteristics, all models are based on the similar circuit diagram. The differences between them are in the mechanical aspects and rated power.
2. Therefore all EMC tests were performed as below table. The symbol "√" means the testing item was performed.

Model	DV	DP	Har	Flicker	Click	ESD	EFT	RS	Surge	CS	Dips
Arum-C	√	√	√	√	√	√	√		√	√	√

TEST SUMMARY

4.1.1 HARMONICS ON AC MAINS
Result:
Pass
4.1.2 VOLTAGE CHANGES, VOLTAGE FLUCTUATIONS AND FLICKER ON AC MAINS
Result:
Pass
4.1.3 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE
Result:
Pass
4.1.4 DISCONTINUOUS INTERFERENCE ON AC MAINS
Result:
Pass
4.2.1 DISTURBANCE POWER
Result:
Pass
4.2.2 RADIATED DISTURBANCE IN THE FREQUENCY RANGE FROM 30MHZ TO 1000MHZ
Result:
Pass
5.1.1 ELECTROSTATIC DISCHARGE
Result:
Pass
5.2.1 FAST TRANSIENTS ON AC POWER LINES
Result:
Pass
5.2.2 INJECTED CURRENT INTO AC POWER PORT
Result:
Pass
5.2.3 SURGES TO AC POWER PORT
Result:
Pass
5.2.4 VOLTAGE DIPS AND INTERRUPTIONS TO AC POWER PORT
Result:
Pass

Contents

1 Test Sites

1.1 Test Facilities

Laboratory: EMTEK (NINGBO) CO., LTD.

1F Building 4, 1177#, Lingyun Road, National Hi-Tech Zone, Ningbo, Zhejiang, China

The tests performed in Laboratory were under supervision of TÜV Rheinland/CCIC's engineer.
The used test equipment is in accordance with CISPR 16-1 series standards for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment of Laboratory

No.	Equipment	Model	Serial no.	Cal. due date
1.	EMI Test Receiver	ESCI	101107	2023.07.06
2.	L.I.S.N	NSLK 8126	8126-462	2023.07.06
3.	Absorbing Clamp	MDS21	100397	2023.07.06
4.	Click Meter	DDA55+	14042134205	2023.11.22
5.	ICE VOLTAGE DIPS Module/ICE	EPTS-75A-3	20027	2023.11.17
6.	Harmonic/ flicker analyzer	ECTS2-3300Z-M18012	550128	2023.11.17
7.	AC Power source	330AZX-CE	140250014	2023.11.17
8.	ESD Tester	NSG 437	1732	2023.11.29
9.	Coupling and Decoupling Network Three Phase	FP-EFT 32M	190170	2023.12.28
10.	Combination Wave Generator	HCWG 100	204303	2023.11.17
11.	Three Phase Coupling/Decoupling Network	HCOUPLER 30S	204103	2023.11.17
12.	Simulator	CDG-6000-75	126B1404/2016	2023.07.06
13.	Three phase CDN	CDN M5-N32 HV	10751-1	2023.11.17

1.3 Measurement Uncertainty

Test Item	Expanded Measurement Uncertainty (k=2)
Conducted Emission (9-150kHz)	2.08dB
Conducted Emission (150k-30MHz)	2.40dB
Disturbance Power	4.34dB
Click	1.50dB
Harmonic test	4.16%
Flicker test	0.43%

2 General Product Information

2.1 Product Function and Intended Use

The EUT (equipment under test) is an ordinary Whirlpool Spas for household and similar use. For the further information, refer to the user's manual.

2.2 Ratings and System Details

System input voltage	:	Refer to pages 2-5
Frequency	:	Refer to pages 2-5
Rated Input	:	Refer to pages 2-5
Protection class	:	I
Highest clock frequency F_x	:	＜ 15 MHz

Refer to the user's manual for further information.

2.3 Independent Operation Modes

The basic operation modes are: "On" or "Off", with power regulation means.
Refer to the user's manual for further information.

2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit diagram for further information.

2.5 Submitted Documents

Circuit diagram, PCB, label and user's manual etc.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

Immunity: The equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

3.2 Physical Configuration for Testing

Refer to the related paragraph of this report.

3.3 Test Operation and Test Software

Refer to the related paragraph of this report. No software was used.

3.4 Special Accessories and Auxiliary Equipment

None.

3.5 Countermeasures to achieve EMC Compliance

The tested sample contained noise suppression components as described in the circuit diagram. No special measure is employed to achieve the requirement.

4 Test Results E M I S S I O N

4.1 Emission in the Frequency Range up to 30 MHz

4.1.1 Harmonics on AC Mains

Result:	**Pass**

Date of testing	:	2022.09.01
Test procedure	:	EN IEC 61000-3-2:2019+A1
Test duration	:	2.5min
Harmonic order	:	2 – 40th
Frequency range	:	0 – 2kHz
Test voltage	:	AC 400V, 50Hz
Ambient Condition	:	Temperature: 25 ºC; Relative Humidity: 52 %
Test conditions	:	EN IEC 61000-3-2:2019+A1 clause B.5

The harmonics on AC Mains in the frequency from 0 to 2 kHz were measured in accordance with EN IEC 61000-3-2:2019+A1.

The measurement was conducted with an automatic current harmonic analyzing system. This equipment is in compliance with the requirements of EN IEC 61000-3-2:2019+A1.

The results indicated in the following tables and figures were those measured and recorded by an automatic measuring system.

Table 2: Harmonic currents measurement result for L1

Equipment category: Class A;
Fundamental current: 7.219A; Power factor: 0.998; Active input power: 1871.3W.

Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Win. (150%)	% Of Max
2	0.0110	1.0800	1.0	PASS	PASS	0.0195	1.6200	1.2
3	0.1096	2.3000	4.8	PASS	PASS	0.1236	3.4500	3.6
4	0.0032	0.4300	0.7	PASS	PASS	0.0048	0.6450	0.7
5	0.1814	1.1400	15.9	PASS	PASS	0.2014	1.7100	11.8
6	0.0027	0.3000	0.9	PASS	PASS	0.0041	0.4500	0.9
7	0.0576	0.7700	7.5	PASS	PASS	0.0622	1.1550	5.4
8	0.0022	0.2300	1.0	PASS	PASS	0.0029	0.3450	0.8
9	0.0279	0.4000	7.0	PASS	PASS	0.0337	0.6000	5.6
10	0.0013	0.1840	0.7	PASS	PASS	0.0016	0.2760	0.6
11	0.0131	0.3300	4.0	PASS	PASS	0.0174	0.4950	3.5
12	0.0006	0.1530	0.4	PASS	PASS	0.0009	0.2295	0.4
13	0.0075	0.2100	3.6	PASS	PASS	0.0093	0.3150	3.0
14	0.0008	0.1310	0.6	PASS	PASS	0.0011	0.1965	0.6
15	0.0045	0.1500	3.0	PASS	PASS	0.0058	0.2250	2.6
16	0.0005	0.1150	0.4	PASS	PASS	0.0009	0.1725	0.5
17	0.0026	0.1320	1.9	PASS	PASS	0.0030	0.1980	1.5
18	0.0006	0.1020	0.6	PASS	PASS	0.0015	0.1530	1.0
19	0.0013	0.1180	1.1	PASS	PASS	0.0016	0.1770	0.9
20	0.0008	0.0920	0.9	PASS	PASS	0.0019	0.1380	1.4
21	0.0011	0.1070	1.0	PASS	PASS	0.0014	0.1605	0.9
22	0.0016	0.0830	1.9	PASS	PASS	0.0038	0.1245	3.0
23	0.0009	0.0970	0.9	PASS	PASS	0.0011	0.1455	0.8
24	0.0018	0.0760	2.4	PASS	PASS	0.0052	0.1140	4.5
25	0.0011	0.0900	1.3	PASS	PASS	0.0015	0.1350	1.1
26	0.0061	0.0700	8.8	PASS	PASS	0.0172	0.1050	16.4
27	0.0012	0.0830	1.4	PASS	PASS	0.0018	0.1245	1.4
28	0.0038	0.0650	5.9	PASS	PASS	0.0116	0.0975	11.9
29	0.0008	0.0770	1.0	PASS	PASS	0.0015	0.1155	1.3
30	0.0013	0.0610	2.1	PASS	PASS	0.0036	0.0915	4.0
31	0.0007	0.0720	0.9	PASS	PASS	0.0009	0.1080	0.8
32	0.0007	0.0570	1.2	PASS	PASS	0.0016	0.0855	1.9
33	0.0005	0.0680	0.7	PASS	PASS	0.0006	0.1020	0.6
34	0.0005	0.0540	0.8	PASS	PASS	0.0009	0.0810	1.1
35	0.0003	0.0640	0.4	PASS	PASS	0.0005	0.0960	0.5
36	0.0004	0.0510	0.7	PASS	PASS	0.0007	0.0765	0.9
37	0.0002	0.0600	0.4	PASS	PASS	0.0004	0.0900	0.4
38	0.0002	0.0480	0.5	PASS	PASS	0.0005	0.0720	0.7
39	0.0002	0.0570	0.4	PASS	PASS	0.0003	0.0855	0.4
40	0.0002	0.0460	0.4	PASS	PASS	0.0003	0.0690	0.4

Table 3: Harmonic currents measurement result for L2

Equipment category: Class A;
Fundamental current: 11.383A; Power factor: 1.000; Active input power: 2498.7W.

Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Win. (150%)	% Of Max
2	0.0126	1.0800	1.2	PASS	PASS	0.0129	1.6200	0.8
3	0.0205	2.3000	0.9	PASS	PASS	0.0207	3.4500	0.6
4	0.0017	0.4300	0.4	PASS	PASS	0.0019	0.6450	0.3
5	0.0143	1.1400	1.3	PASS	PASS	0.0145	1.7100	0.8
6	0.0010	0.3000	0.3	PASS	PASS	0.0011	0.4500	0.3
7	0.0053	0.7700	0.7	PASS	PASS	0.0055	1.1550	0.5
8	0.0010	0.2300	0.4	PASS	PASS	0.0012	0.3450	0.4
9	0.0018	0.4000	0.5	PASS	PASS	0.0020	0.6000	0.3
10	0.0014	0.1840	0.7	PASS	PASS	0.0015	0.2760	0.6
11	0.0019	0.3300	0.6	PASS	PASS	0.0022	0.4950	0.4
12	0.0006	0.1530	0.4	PASS	PASS	0.0009	0.2295	0.4
13	0.0011	0.2100	0.5	PASS	PASS	0.0013	0.3150	0.4
14	0.0006	0.1310	0.4	PASS	PASS	0.0007	0.1965	0.4
15	0.0007	0.1500	0.4	PASS	PASS	0.0009	0.2250	0.4
16	0.0003	0.1150	0.3	PASS	PASS	0.0005	0.1725	0.3
17	0.0008	0.1320	0.6	PASS	PASS	0.0009	0.1980	0.5
18	0.0005	0.1020	0.5	PASS	PASS	0.0007	0.1530	0.4
19	0.0006	0.1180	0.5	PASS	PASS	0.0008	0.1770	0.4
20	0.0004	0.0920	0.4	PASS	PASS	0.0006	0.1380	0.4
21	0.0003	0.1070	0.3	PASS	PASS	0.0004	0.1605	0.3
22	0.0003	0.0830	0.4	PASS	PASS	0.0004	0.1245	0.3
23	0.0005	0.0970	0.5	PASS	PASS	0.0006	0.1455	0.4
24	0.0004	0.0760	0.5	PASS	PASS	0.0005	0.1140	0.5
25	0.0005	0.0900	0.6	PASS	PASS	0.0007	0.1350	0.5
26	0.0006	0.0700	0.9	PASS	PASS	0.0008	0.1050	0.8
27	0.0005	0.0830	0.6	PASS	PASS	0.0007	0.1245	0.6
28	0.0003	0.0650	0.5	PASS	PASS	0.0005	0.0975	0.5
29	0.0004	0.0770	0.5	PASS	PASS	0.0006	0.1155	0.5
30	0.0003	0.0610	0.5	PASS	PASS	0.0005	0.0915	0.5
31	0.0004	0.0720	0.6	PASS	PASS	0.0006	0.1080	0.5
32	0.0003	0.0570	0.5	PASS	PASS	0.0004	0.0855	0.5
33	0.0004	0.0680	0.6	PASS	PASS	0.0005	0.1020	0.5
34	0.0003	0.0540	0.6	PASS	PASS	0.0004	0.0810	0.5
35	0.0005	0.0640	0.7	PASS	PASS	0.0006	0.0960	0.6
36	0.0003	0.0510	0.6	PASS	PASS	0.0004	0.0765	0.6
37	0.0004	0.0600	0.7	PASS	PASS	0.0006	0.0900	0.7
38	0.0003	0.0480	0.7	PASS	PASS	0.0005	0.0720	0.7
39	0.0003	0.0570	0.6	PASS	PASS	0.0005	0.0855	0.6
40	0.0003	0.0460	0.7	PASS	PASS	0.0005	0.0690	0.7

Table 4: Harmonic currents measurement result for L3

Equipment category: Class A;
Fundamental current: 0.002A; Power factor: 0; Active input power: 0W.

Current Harmonics (values at the end of test)

Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Win. (150%)	% Of Max
2	0.0001	1.0800	0.0	PASS	PASS	0.0001	1.6200	0.0
3	0.0002	2.3000	0.0	PASS	PASS	0.0002	3.4500	0.0
4	0.0001	0.4300	0.0	PASS	PASS	0.0001	0.6450	0.0
5	0.0001	1.1400	0.0	PASS	PASS	0.0001	1.7100	0.0
6	0.0000	0.3000	0.0	PASS	PASS	0.0001	0.4500	0.0
7	0.0001	0.7700	0.0	PASS	PASS	0.0001	1.1550	0.0
8	0.0000	0.2300	0.0	PASS	PASS	0.0001	0.3450	0.0
9	0.0001	0.4000	0.0	PASS	PASS	0.0001	0.6000	0.0
10	0.0000	0.1840	0.0	PASS	PASS	0.0001	0.2760	0.0
11	0.0001	0.3300	0.0	PASS	PASS	0.0001	0.4950	0.0
12	0.0000	0.1530	0.0	PASS	PASS	0.0001	0.2295	0.0
13	0.0000	0.2100	0.0	PASS	PASS	0.0001	0.3150	0.0
14	0.0000	0.1310	0.0	PASS	PASS	0.0001	0.1965	0.0
15	0.0000	0.1500	0.0	PASS	PASS	0.0001	0.2250	0.0
16	0.0001	0.1150	0.0	PASS	PASS	0.0001	0.1725	0.0
17	0.0000	0.1320	0.0	PASS	PASS	0.0001	0.1980	0.0
18	0.0000	0.1020	0.0	PASS	PASS	0.0001	0.1530	0.0
19	0.0000	0.1180	0.0	PASS	PASS	0.0001	0.1770	0.0
20	0.0000	0.0920	0.1	PASS	PASS	0.0001	0.1380	0.0
21	0.0000	0.1070	0.0	PASS	PASS	0.0001	0.1605	0.0
22	0.0000	0.0830	0.1	PASS	PASS	0.0001	0.1245	0.0
23	0.0000	0.0970	0.0	PASS	PASS	0.0001	0.1455	0.0
24	0.0000	0.0760	0.1	PASS	PASS	0.0001	0.1140	0.1
25	0.0000	0.0900	0.0	PASS	PASS	0.0001	0.1350	0.0
26	0.0000	0.0700	0.1	PASS	PASS	0.0001	0.1050	0.1
27	0.0000	0.0830	0.1	PASS	PASS	0.0001	0.1245	0.1
28	0.0000	0.0650	0.1	PASS	PASS	0.0001	0.0975	0.1
29	0.0000	0.0770	0.1	PASS	PASS	0.0001	0.1155	0.1
30	0.0000	0.0610	0.1	PASS	PASS	0.0001	0.0915	0.1
31	0.0001	0.0720	0.1	PASS	PASS	0.0001	0.1080	0.1
32	0.0001	0.0570	0.2	PASS	PASS	0.0002	0.0855	0.2
33	0.0001	0.0680	0.1	PASS	PASS	0.0001	0.1020	0.1
34	0.0001	0.0540	0.1	PASS	PASS	0.0001	0.0810	0.1
35	0.0001	0.0640	0.1	PASS	PASS	0.0001	0.0960	0.1
36	0.0001	0.0510	0.2	PASS	PASS	0.0001	0.0765	0.2
37	0.0001	0.0600	0.1	PASS	PASS	0.0001	0.0900	0.2
38	0.0001	0.0480	0.1	PASS	PASS	0.0001	0.0720	0.1
39	0.0001	0.0570	0.1	PASS	PASS	0.0001	0.0855	0.1
40	0.0001	0.0460	0.2	PASS	PASS	0.0001	0.0690	0.2

4.1.2 Voltage changes, voltage fluctuations and flicker on AC mains

Result:	**Pass**

Date of testing : 2022.08.29
Test procedure : ENIEC 61000-3-11:2019
Ambient Condition : Temperature: 25 °C ; Relative Humidity: 57 %

According to the ENIEC 61000-3-11:2019:

According to the characteristics of the sample, as specified by clause 5 of the basic standard, following limits apply:

- the value of Pst shall not be greater than 1.0;
- the value of Plt shall not be greater than 0.65;
- the value of *d(t)* during a voltage change shall not exceed 3.3% for more than 500ms;
- the relative steady-state voltage change, d_c, shall not exceed 3.3%;
- the maximum relative voltage change d_{max}, shall not exceed 6%.

Following are the measurement results obtained via an automatic testing system.

Table 5: Voltage fluctuations and flicker measurement results

	dc	***dmax (average)***	***d(t)***	***Pst***	***Plt***
Limits	3.3%	6%	3.3%/500ms	1.0	0.65
Result of L1	0.547%	4.712%	40ms	0.800	0.537
Result of L2	1.258%	23.633%	550ms	1.109	1.604
Result of L3	0.561%	2.127%	0ms	0.519	0.401

The impedance Z_{ref} is according to EN IEC 61000-3-11:2019:
For single phase system: Ra=0.24Ω Xa=j0.15Ω at 50Hz
Rn=0.16Ω Xn=j0.10Ω at 50Hz
Z_{ref} =0.471Ω for all following calculations
For the calculation of the maximum permissible system impedance Z_{max}, the measured values of table 3 have been used:

Zsys1 = ((6.0%)/(dmax %))*0.471Ω (for dmax)
Zsys2 = ((3.3%)/(dc%))*0.471Ω (for dc)
Zsys3 = $(1/(Pst))^{3/2}$*0.471Ω (for Pst)
Zsys4 = $(0.65/(Plt))^{3/2}$*0.471Ω (for Plt)

	Zsys1 (dmax)	Zsys2 (dc)	Zsys3 (Pst)	Zsys4 (Plt)	Zmax smallest value Zsys1-4
L1 [Ohm]	0.600	2.841	0.658	0.778	0.600
L2 [Ohm]	0.120	1.236	0.403	0.122	0.120
L3 [Ohm]	1.329	2.770	1.260	0.972	0.972

According to EN IEC 61000-3-11:2019, the minimum of the four calculated value of Zsys is the maximum permissible system impedance Zmax.
Zmax(L1)= 0.600Ω; Zmax(L2)= 0.120Ω; Zmax(L3)= 0.972Ω;

The equipment has been provided with the requirement information regarding the Zmax and the user is instructed to consult the supply authorities to verify the impedance of the supply.

Base on above calculations ,according to EN IEC 61000-3-11:2019 and the instruction in the user manual ,the product is considered to be in compliance with the protection requirements of the EMC Directive 2014/30/EU.

4.1.3 Mains Terminal Continuous Disturbance Voltage

Result:	**Pass**

Date of testing	:	2022.10.17
Kind of test site	:	EMC Shielding Room
Port	:	Mains
Basic Standard	:	EN IEC 55014-1:2021
Frequency Range	:	150kHz – 30MHz
Limit	:	EN IEC 55014-1:2021, Clause 4.3.3 Table5
Ambient Condition	:	Temperature: 24 °C; Relative Humidity: 55%

Test Setup

Input Voltage	:	AC 400V, 50Hz
Operational mode	:	ON
Earthing	:	Yes
Test Setup	:	According to Clause 5 of EN IEC 55014-1:2021

The measurement setup was made according to EN IEC 55014-1:2021 in an EMC shielding room.
The measurement equipment like test receiver, quasi-peak detector and Artificial Mains Network (AMN) are in compliance with CISPR 16-1 series standards and EN IEC 55014-1:2021. The tested object was operated under its rated voltage and its rated frequency. Prior to the measurements the test object operated about 15 minutes (warm-up) in order to stabilize its operating conditions and to ensure reliable measurement values.

Furthermore an internal calibration with the test receiver was conducted prior to and after each measurement.

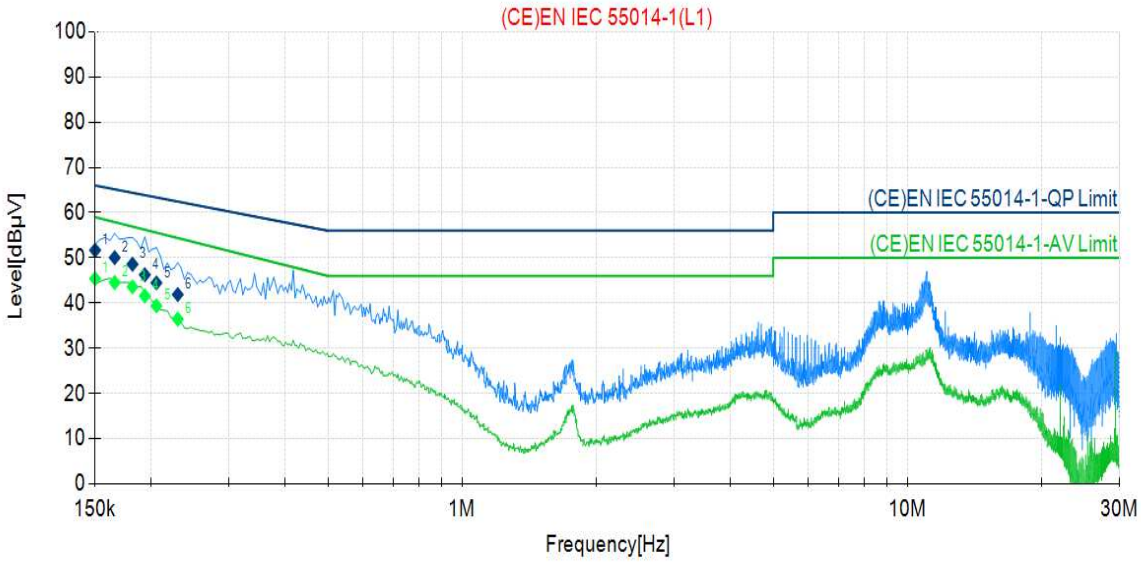
Before measurement, a survey was made to determine in which state the maximum disturbance was obtained. And the measurement was made in the state the maximum disturbance was obtained.

The tested object was set-up on a wooden table. The length of the power cord of the tested object was about 0.8m. The EUT was set 0.8m away from the AMN.

The Disturbance Voltage was determined according to clause 5 of EN IEC 55014-1:2021 while measuring the conductor by turns.

The following figures were those measured by an automatic measuring system. The disturbance voltage was scanned firstly with both Peak and Average detector and then a final measurement was performed with both Quasi-peak and Average detector at the frequencies which showed the Max. in a designated frequency sub-range. In the figures below, the higher curve is that of peak-value and the lower one is average-value. The symbol "♦" refers to Quasi-peak value and the Average value which were measured in the final measurement.

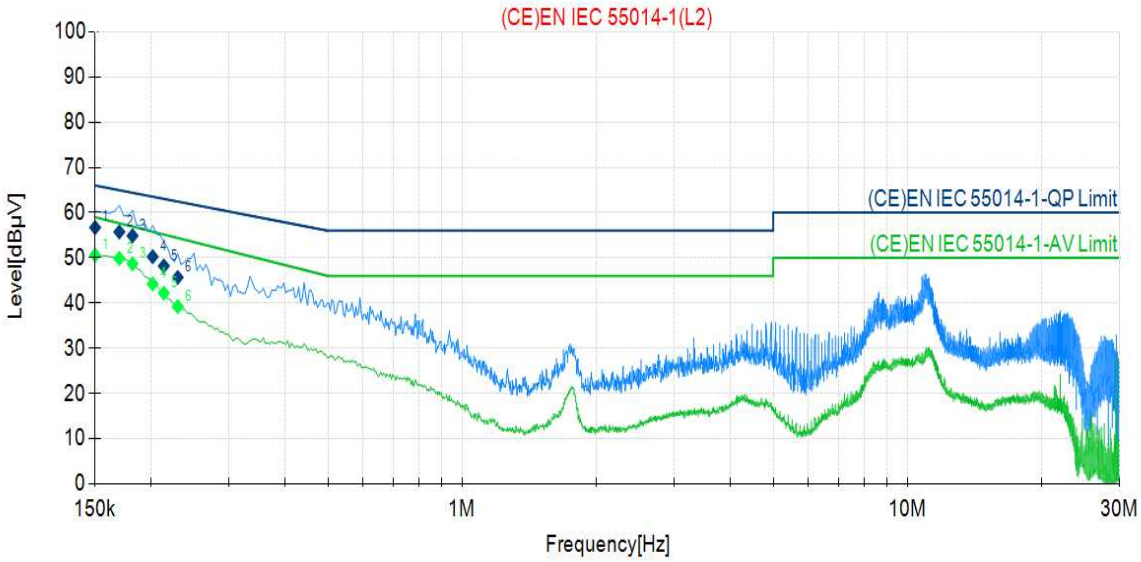
Figure 1: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, L1



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.150	10.68	41.01	51.69	66.00	14.31	34.72	45.40	59.00	13.60	PASS
2	0.166	10.67	39.37	50.04	65.16	15.12	33.88	44.55	57.91	13.36	PASS
3	0.182	10.67	37.92	48.59	64.39	15.80	32.93	43.60	56.91	13.31	PASS
4	0.194	10.66	35.60	46.26	63.86	17.60	30.93	41.59	56.22	14.63	PASS
5	0.206	10.66	33.80	44.46	63.37	18.91	28.71	39.37	55.57	16.20	PASS
6	0.230	10.68	31.20	41.88	62.45	20.57	25.76	36.44	54.38	17.94	PASS

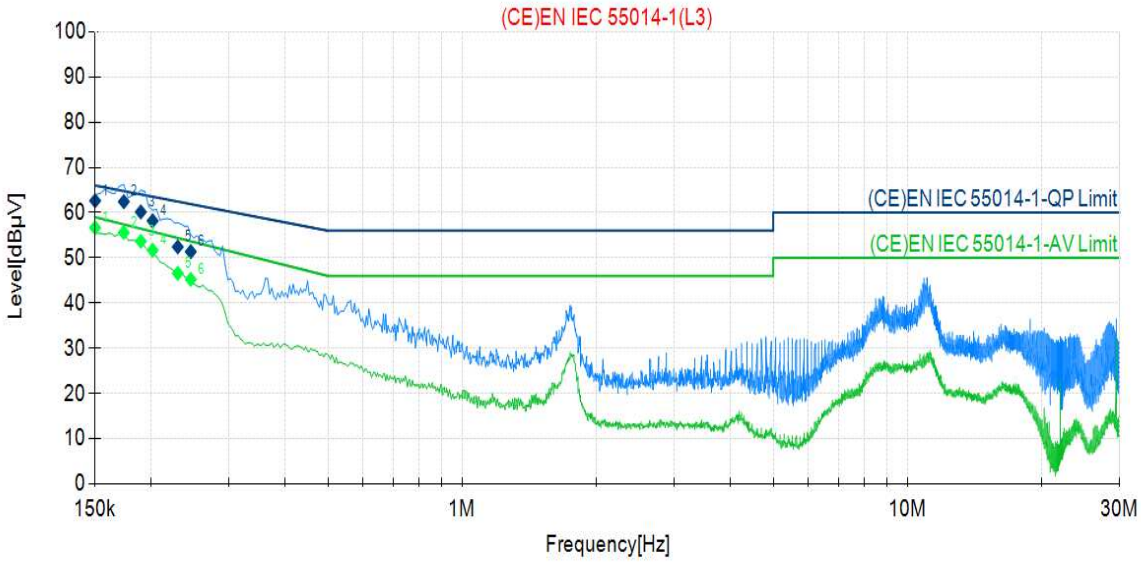
Figure 2: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, L2



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.150	10.59	46.11	56.70	66.00	9.30	40.00	50.59	59.00	8.41	PASS
2	0.170	10.63	45.10	55.73	64.96	9.23	39.26	49.89	57.65	7.76	PASS
3	0.182	10.65	44.24	54.89	64.39	9.50	38.02	48.67	56.91	8.24	PASS
4	0.202	10.69	39.57	50.26	63.53	13.27	33.56	44.25	55.79	11.54	PASS
5	0.214	10.69	37.52	48.21	63.05	14.84	31.51	42.20	55.16	12.96	PASS
6	0.230	10.70	34.98	45.68	62.45	16.77	28.52	39.22	54.38	15.16	PASS

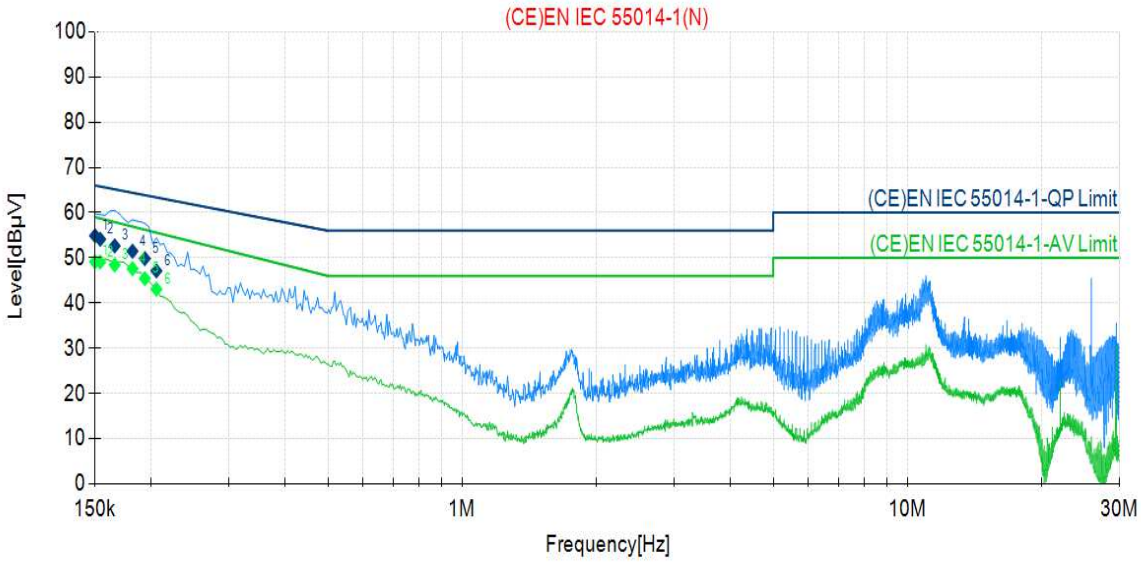
Figure 3: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, L3



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.150	10.59	52.03	62.62	66.00	3.38	46.07	56.66	59.00	2.34	PASS
2	0.174	10.57	51.86	62.43	64.77	2.34	45.03	55.60	57.40	1.80	PASS
3	0.190	10.56	49.59	60.15	64.04	3.89	43.11	53.67	56.45	2.78	PASS
4	0.202	10.55	47.64	58.19	63.53	5.34	41.14	51.69	55.79	4.10	PASS
5	0.230	10.58	41.84	52.42	62.45	10.03	36.00	46.58	54.38	7.80	PASS
6	0.246	10.59	40.78	51.37	61.89	10.52	34.65	45.24	53.66	8.42	PASS

Figure 4: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, N



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.150	10.50	44.39	54.89	66.00	11.11	38.63	49.13	59.00	9.87	PASS
2	0.154	10.50	43.61	54.11	65.78	11.67	38.57	49.07	58.72	9.65	PASS
3	0.166	10.49	42.15	52.64	65.16	12.52	37.94	48.43	57.91	9.48	PASS
4	0.182	10.47	41.00	51.47	64.39	12.92	37.14	47.61	56.91	9.30	PASS
5	0.194	10.46	39.38	49.84	63.86	14.02	34.95	45.41	56.22	10.81	PASS
6	0.206	10.46	36.66	47.12	63.37	16.25	32.60	43.06	55.57	12.51	PASS

4.1.4 Discontinuous Interference on AC Mains

Result:	**Pass**

Date of testing	:	2022.10.28
Test procedure	:	EN IEC 55014-1:2021 and CISPR 16-1 series standards
Kind of test site	:	EMC shielded room
Port	:	Mains
Basic standard	:	EN IEC 55014-1:2021
Frequency range	:	0.15 – 30MHz
Limit	:	EN IEC 55014-1:2021, clause 4.4
Operating Condition	:	EN IEC 55014-1:2021, clause A.4
Ambient Condition	:	Temperature: 25 °C ; Relative Humidity: 47 %

Measuring configuration and description

The discontinuous interference on AC mains in the frequency range from 0.15 to 30MHz was measured in accordance to EN IEC 55014-1:2021.

The measurement setup was made according to EN IEC 55014-1:2021. The used measurement equipment was in accordance to CISPR 16-1 series standards.

The test setup is according to clause A.4 of EN IEC 55014-1:2021.

The clicks were measured when the thermostat of the EUT started or stopped.

The clicks were measured at the frequency of 0.15MHz, 0.5MHz, 1.4MHz and 30MHz.

The tests include RUN A and RUN B. The first one is to detect the Click rate and RUN B is to detect how many clicks overtop the limits that are calculated according the formula below.

For $0.2 \leqslant N<30$ the Sensitivity = RUN A + 20*log(30/Click rate) and for $N<0.2$ the Sensitivity = RUN A + 44.

Table 6: Click Test Results of RUN A for L1

Measured Frequency (MHz)	0.15	0.5	1.4	30
Sensitivity(dBuV)	66.0	56.0	56.0	60.0
Last Time T(min./sec.)	120	120	120	120
Short Click Number n1 of ≤20ms	0	0	0	0
Long Click Number n2 of >20ms	0	0	0	0
Total Click Number n=n1+n2	0	0	0	0
Click Rated N=F x n/T	0	0	0	0

Table 7: Click Test Results of RUN A for L2

Measured Frequency (MHz)	0.15	0.5	1.4	30
Sensitivity(dBuV)	66.0	56.0	56.0	60.0
Last Time T(min./sec.)	120	120	120	120
Short Click Number n1 of ≤20ms	0	0	0	0
Long Click Number n2 of >20ms	0	0	0	0
Total Click Number n=n1+n2	0	0	0	0
Click Rated N=F x n/T	0	0	0	0

Table 8: Click Test Results of RUN A for L3

Measured Frequency (MHz)	0.15	0.5	1.4	30
Sensitivity(dBuV)	66.0	56.0	56.0	60.0
Last Time T(min./sec.)	120	120	120	120
Short Click Number n1 of ≤20ms	0	0	0	0
Long Click Number n2 of >20ms	0	0	0	0
Total Click Number n=n1+n2	0	0	0	0
Click Rated N=F x n/T	0	0	0	0

Table 9: Click Test Results of RUN A for N

Measured Frequency (MHz)	0.15	0.5	1.4	30
Sensitivity(dBuV)	66.0	56.0	56.0	60.0
Last Time T(min./sec.)	120	120	120	120
Short Click Number n1 of ≤20ms	0	0	0	0
Long Click Number n2 of >20ms	0	0	0	0
Total Click Number n=n1+n2	0	0	0	0
Click Rated N=F x n/T	0	0	0	0

According to the clause 5.4.3.4 of EN IEC 55014-1:2021:

“ - the click rate is not more than 5,
- none of the caused clicks has a duration longer than 20ms,
- 90% of the caused clicks have a duration less than or equal 10ms

shall be verified at one frequency only, 150kHz or 500kHz, at which the higher click rate occurs. If any of these conditions is not satisfied then general assessment in accordance with 5.4.2 applies.”

Therefore this model is deemed to fulfill the relevant requirements.

4.2 Emission in the Frequency Range above 30 MHz

4.2.1 Disturbance Power

Result:	**Pass**

Date of testing	:	2022.08.24
Port	:	Mains
Basic Standard	:	EN IEC 55014-1:2021
Frequency Range	:	30 – 300MHz
Limit	:	EN IEC 55014-1:2021, clause 4.3.4.4
Ambient Condition	:	Temperature: 22 ºC ; Relative Humidity: 52 %

Test Setup

Input Voltage	:	AC 400V, 50Hz
Operational mode	:	ON
Earthing	:	Yes

Measuring configuration and description

The measurement setup was made according to EN IEC 55014-1:2021.

The measurement equipment like test receivers and absorption clamp are in compliance with CISPR 16-1 series standards. The test object has been operated by its rated voltage, rated frequency. Prior to the measurements the test objects operated about 10 minutes (warm-up) in order to stabilize their operating conditions and to ensure reliable measurement values.

Furthermore an internal calibration with the test receiver was conducted prior to each measurement.

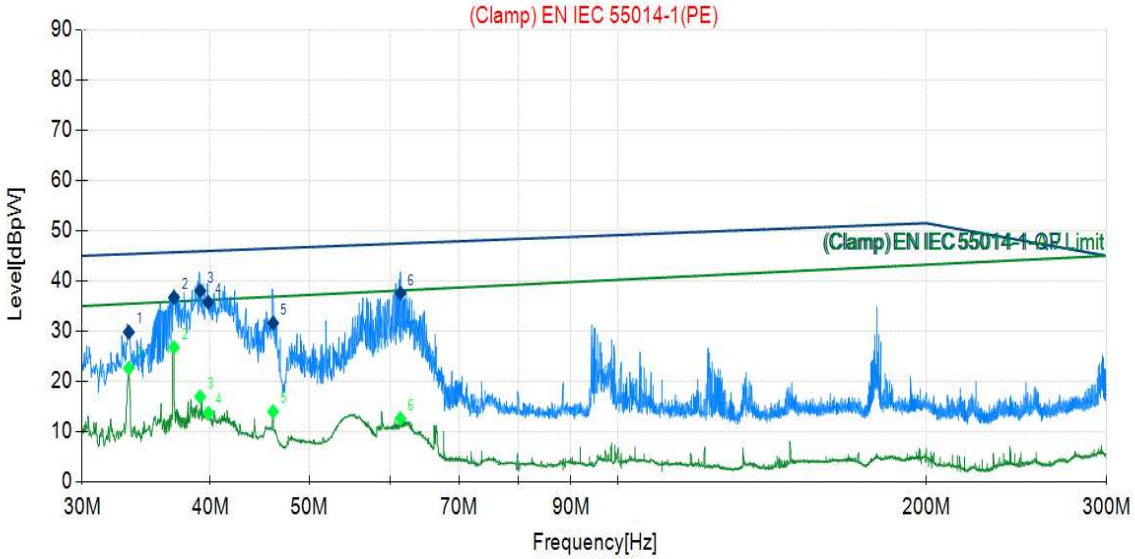
Before measurement, a survey was made to determine in which state the maximum disturbance was obtained. And the measurement was made in the state the maximum disturbance was obtained.

The tested object was set-up on a wooden bench.

The Disturbance Power was determined according to clause 6 of EN IEC 55014-1:2021. The length of power cord of EUT plus that of the extension cord was 6.0 m.

The measurement was performed by operating the EUT in normal operation mode. The figures and tables below were those measured in the operation mode. Both Quasi Peak and Average Value were measured. In final measurement, by moving the absorption clamp along the power supply cord and the extension-power cord from the test object, Quasi-Peak and Average Value were measured and listed respectively where they had a maximum in previous scanning survey. In the Figures, the symbol “+” with blue colour means Average Value and the symbol “×” with red colour means Quasi-Peak Value which was measured in final measurement.

Figure 5: Spectral Diagrams, Power Disturbance, Mains, 30–300MHz



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBpW]	QP Value [dBpW]	QP Limit [dBpW]	QP Margin [dB]	AV Reading [dBpW]	AV Value [dBpW]	AV Limit [dBpW]	AV Margin [dB]	Verdict
1	33.320	26.75	3.06	29.81	45.36	15.55	-4.12	22.63	35.46	12.83	PASS
2	36.880	26.55	10.19	36.74	45.71	8.97	0.23	26.78	35.90	9.12	PASS
3	39.120	26.17	11.87	38.04	45.91	7.87	-9.23	16.94	36.15	19.21	PASS
4	39.840	26.05	9.67	35.72	45.97	10.25	-12.34	13.71	36.23	22.52	PASS
5	46.080	26.22	5.38	31.60	46.47	14.87	-12.23	13.99	36.86	22.87	PASS
6	61.360	24.93	12.64	37.57	47.45	9.88	-12.33	12.60	38.11	25.51	PASS

4.2.2 Radiated Disturbance in the Frequency Range from 30MHz to 1000MHz

Result:	**Pass**

Port : Enclosure
Basic Standard : EN IEC 55014-1:2021
Frequency Range : 30-1000MHz
Limit : EN IEC 55014-1:2021, clause 4.3.4.5, Table 9.

According to a) of the clause 4.3.4.2 of EN IEC 55014-1:2021:
"Appliances are deemed to comply in the frequency range from 300MHz to 1000MHz if both of the following conditions 1) and 2) are fulfilled:"
1): the disturbance power emission from the EUT is lower than the limits of Table 7 reduced by the values of Table 8
2): the maximum clock frequency shall be less than 30MHz.

Because the EUT meets the two conditions mentioned above, the EUT is deemed to meet the radiated requirements without actual testing.

5 Test Results I M M U N I T Y

According to the electrical characteristics above and EN IEC 55014-2:2021, the EUT belongs to category II equipment.

"Category II: mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz."

During the immunity tests, the EUT was operated under conditions specified by clause 3.1 of this report.

Performance 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.

Performance 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.

Performance 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.

Date of testing: 2022.08.30

Room temperature	:	21°C
Relative humidity	:	49%
Atmospheric pressure	:	101 kPa

5.1 Enclosure

5.1.1 Electrostatic Discharge

Result:	**Pass**

The immunity against electrostatic discharge was tested in accordance with EN IEC 55014-2:2021. Test setup and ESD-Generator are according to EN 61000-4-2 which is specified by EN IEC 55014-2:2021.

The EUT is placed on 0,1m wood table above the ground plane. And the minimum distance between the EUT and all other conductive structures except the ground plane beneath the EUT is more than 0,5m.

The reference ground plane is an aluminium sheet of 0.25mm minimum thickness. The reference ground plane is connected to the protective earth. The size of the ground plane is 2m × 2m.

A horizontal coupling plane (HCP), 1.6m × 0.8m, is placed on the table and isolated from the EUT and cables by an insulating support 0.5mm thick. Vertical coupling plane (VCP) of dimensions 0.5m × 0.5m is placed parallel to and positioned at a distance of 0.1m from the EUT.

Charge voltage	:	±4.0kV (Contact Discharge), ±8.0kV (Air Discharge)
Polarity	:	positive / negative
Number of discharges	:	≥10
Performance criteria	:	B

Table 10: ESD, Positive / Negative Polarity

Position	Kind of Discharge	Result	Remarks
Nonmetal Enclosure	Air discharge ±8kV	Pass	No disturbance of function
Button	Air discharge ±8kV	Pass	No disturbance of function
display	Air discharge ±8kV	Pass	No disturbance of function
Coupling plane (Both HCP and VCP)	Contact discharge ±4kV	Pass	No disturbance of function

5.2 Input and Output AC Power Ports

5.2.1 Fast Transients on AC Power Lines

Result:	**Pass**

The immunity against fast transients on AC power lines was tested in accordance to EN IEC 55014-2:2021. Test setup and the fast transient noise generator are according to EN 61000-4-4 which is specified by EN IEC 55014-2:2021.

The EUT is placed on 0.1m wood table above the ground plane. And the minimum distance between the EUT and all other conductive structures except the ground reference plane is more than 0.5m.

The length between the coupling device and the EUT is less than 1m. The cord length more than 1m, the excess length of the cable shall gathered into a flat coil with a 0,4m diameter, and situated at a distance of 0,1m above the ground reference plane.

The reference ground plane is an aluminium sheet of 0.25mm minimum thickness. The reference ground plane is connected to the protective earth. The size of the ground plane is 2m × 2m.

Test Voltage	:	1kV
Polarity	:	negative/positive
Repetition frequency	:	5kHz
Test duration	:	≥120sec
Tr/Tn	:	5ns/50ns
Performance criteria	:	B

Table 11: Burst, AC Power lines, Positive and Negative Polarity

Coupling Method: Direct Injection			
Coupling Port	Test Voltage / Result		Remark
AC mains: L1, L2, L3, PE	±1000V	Pass	No disturbance of function

5.2.2 Injected Current into AC Power Port

Result:	**Pass**

The immunity against injected current into AC power port was tested according to EN IEC 55014-2:2021 in a shielded room. The Test setup and the test generator are according to EN 61000-4-6 which is specified by EN IEC 55014-2:2021.

The EUT is placed on 0,1m wood table above the ground plane. And the minimum distance between the EUT and all other conductive structures except the reference ground plane is more than 0.5m.

The EUT comprised a single unit. The coupling and decoupling networks were inserted on the power supply connection. The coupling and decoupling networks was placed on the ground reference plane, making direct contact with it at about 0.1-0.3 meter from EUT. The cable between EUT and CDN is as short as possible and not bundled nor wrapped. The height of cable between the EUT and the coupling and decoupling networks above the ground reference plane was 50mm.

Voltage Level	:	3V(rms)(unmodulated)
Environmental phenomena	:	r.f. current, common mode, 1kHz, 80%AM
Source impedance	:	150 Ω
Frequency range	:	0.15 - 230 MHz
Sweeping rate	:	$\leq 1{,}5 \times 10^{-3}$ decades/s
Performance criteria	:	A

Table 12: Injected current, AC Power Port

Coupling Port	Coupling Method:	Result	Remark
AC mains: L1, L2, L3, PE	CDN M-5	Pass	No disturbance of function

5.2.3 Surges to AC Power Port

Result:	**Pass**

The immunity against surges to AC power port was tested in accordance to EN IEC 55014-2:2021. Test setup and the Combination Wave Generator (CWG) are according to EN 61000-4-5 which is specified by EN IEC 55014-2:2021.

Open-circuit Test Voltage	:	1 kV (phase to neutral)/2 kV (Phase/neutral to PE)
Tr/Tn	:	1.2/50μs (open-circuit voltage) 8/20μs (short-circuit current)
Test numbers	:	5 positive and 5 negative pulses
Test angle	:	90° and 270°
Repetition rate	:	1 surge/min
Performance criteria	:	B

Table 13: Surges to AC Power lines, positive/negative

Line	Test Voltage/coupling phase	Result	Remarks
Phase to neutral	+1.0kV, +π/2(5 times)	Pass	No disturbance of function
	-1.0kV, -π/2(5 times)	Pass	No disturbance of function
Phase/neutral to PE	+2.0kV, +π/2(5 times)	Pass	No disturbance of function
	-2.0kV, -π/2(5 times)	Pass	No disturbance of function

5.2.4 Voltage dips and interruptions to AC Power Port

Result:	**Pass**

The immunity against voltage dips and interruptions to AC power port was tested in accordance to EN IEC 55014-2:2021. Test setup and the test generator are according to EN 61000-4-11 which is specified by EN IEC 55014-2:2021. The EUT was placed directly on the table of aluminum.

Performance criteria	:	C	
Test level (in % UT) and	:	0	0.5 periods
duration (in periods of the		40	10 periods
rated frequency)		70	25 periods

Table 14: Test condition and Test Result for Voltage dips and Short interruptions

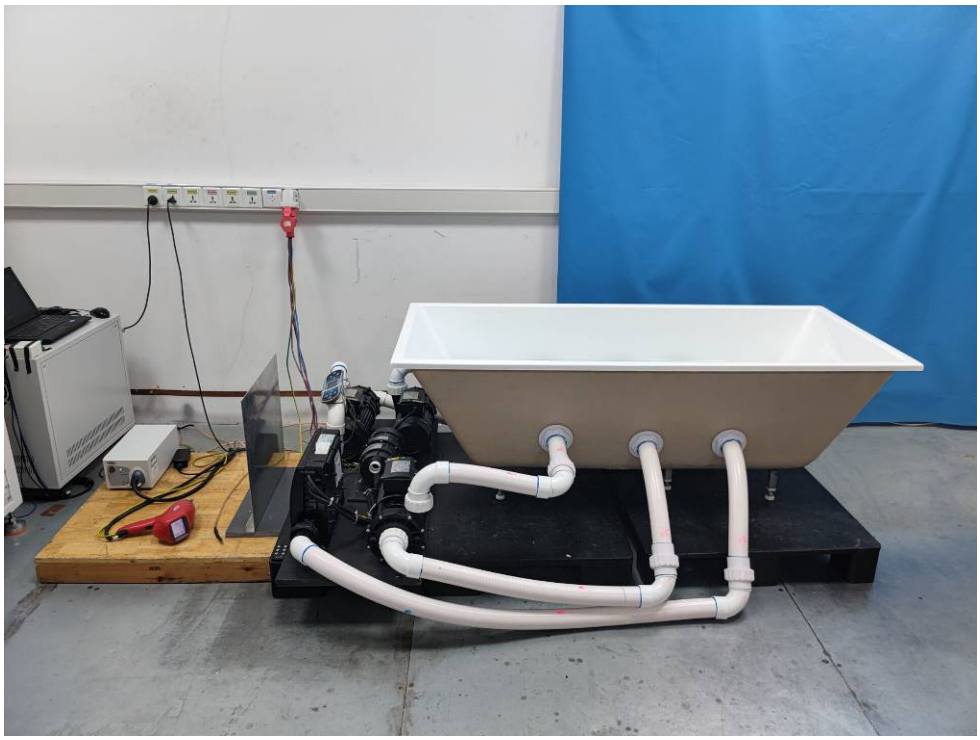
Test level (in % UT)	Duration	Performance criteria	Result	Remarks
0	0.5	C	Pass	No disturbance of function
40	10	C	Pass	No disturbance of function
70	25	C	Pass	No disturbance of function

6 Photographs of the Test Set-Up

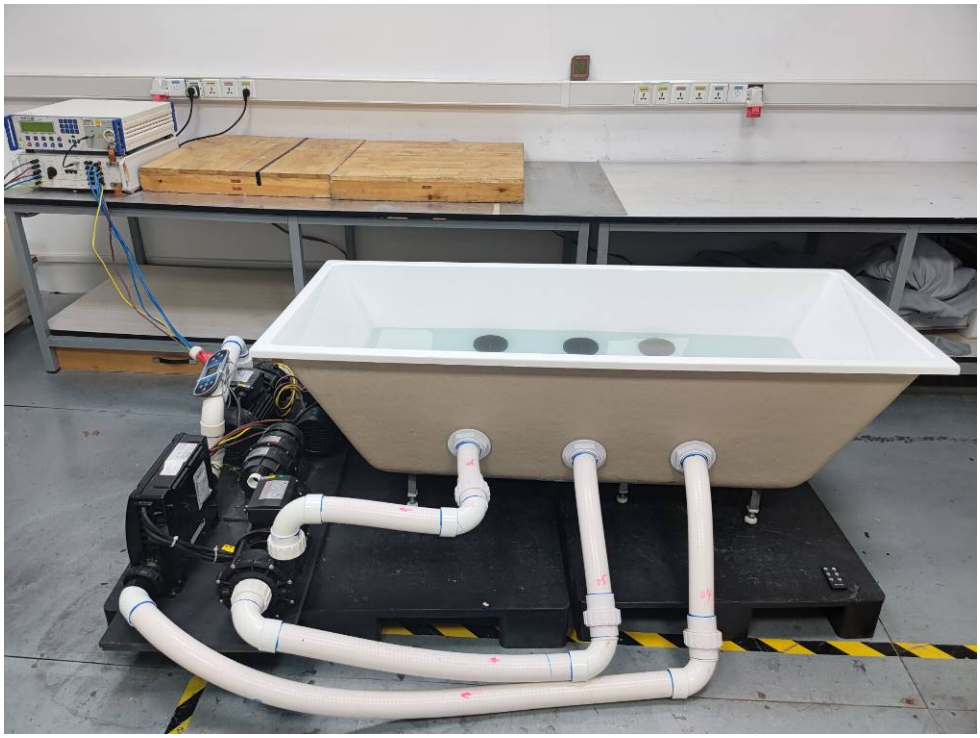
Photograph 1: Set-up for Disturbance Voltage

Photograph 2: Set-up for Disturbance Power

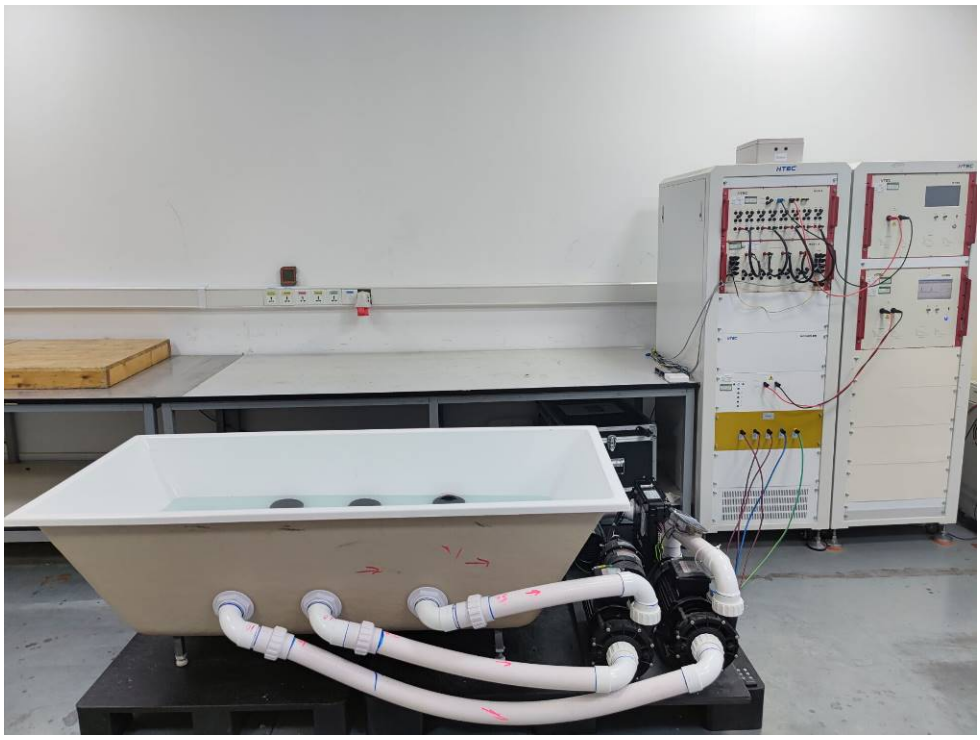
Photograph 3: Set-up for ESD



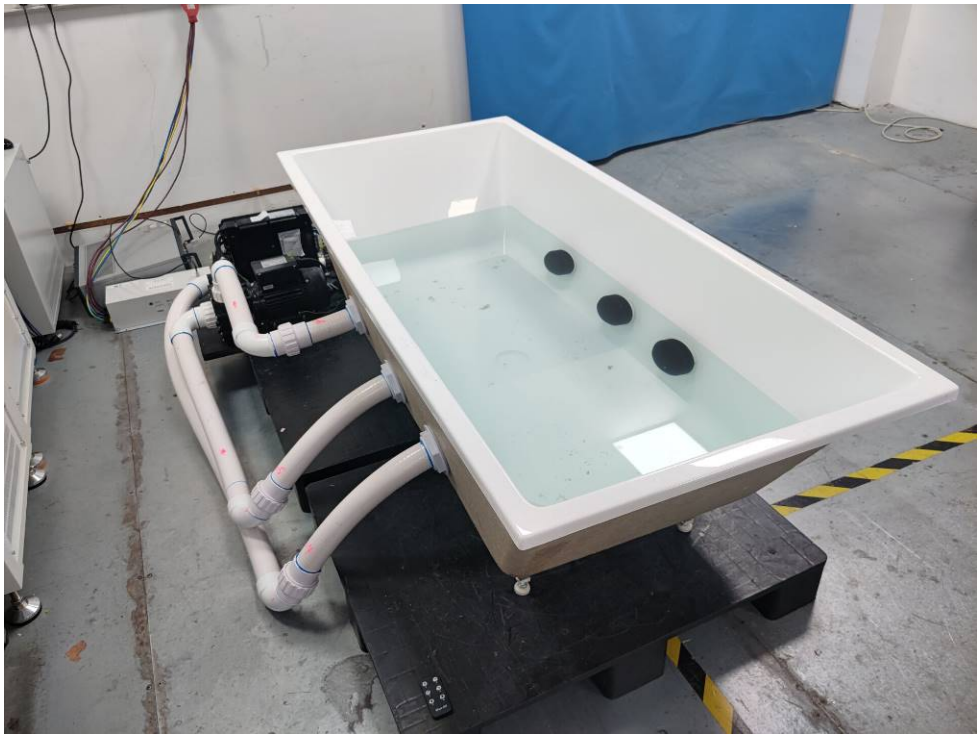
Photograph 4: Set-up for EFT



Photograph 5: Set-up for Surge

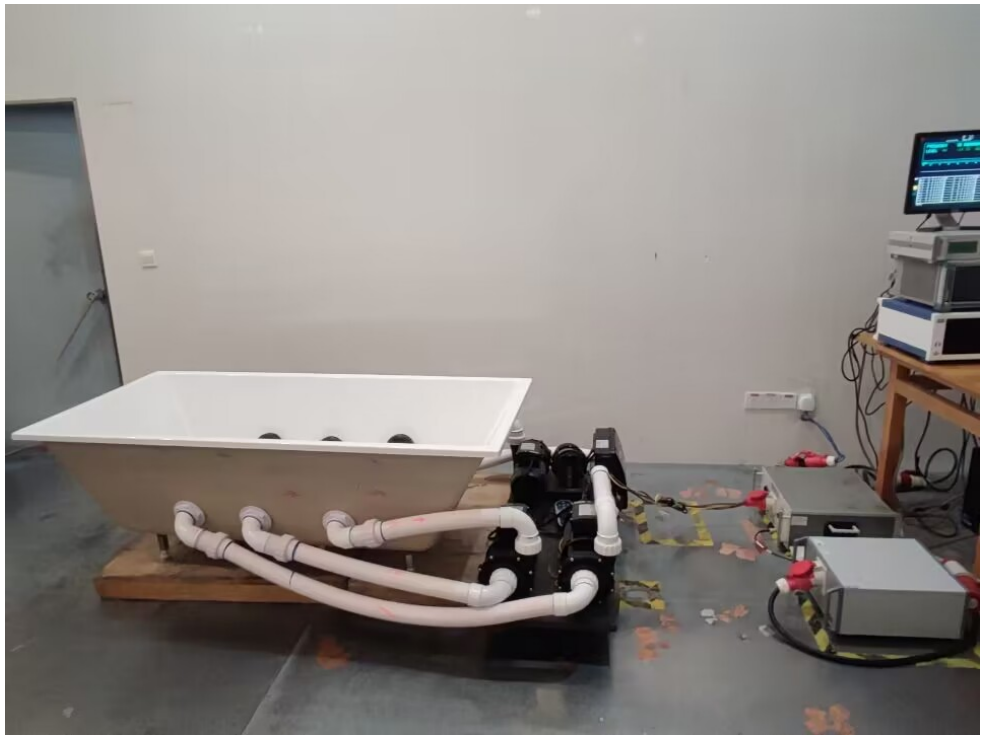


Photograph 6: Set-up for Injected Current



Photograph 7: Set-up for Harmonic and Voltage Fluctuation, Flicker and Dips

Photograph 8: Set-up for Click



7 List of Tables

8 List of Figures

9 List of Photographs

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