TEST REPORT

Reference No.	:	WTX24F03065744E
Applicant	:	Shenzhen Macon Technology Co., Ltd
Address	:	Room 518 ,TianHui Building BLOCK A , Rd Yousong Longhua District ,Shenzhen City ,Guangdong China
Manufacturer	:	Shenzhen Micron Electronic Co.,Ltd.
Address	:	3/F, Buildling I, No.75, Longhua East Huan Er Road, Longhua District,Shenzhen City Guangdong china
Product Name	:	THZ Bio Foot Massage
Model No.	:	p120, p90, p91c, p100, p108, p130
Test specification	:	EN IEC 55014-1:2021 EN IEC 55014-2:2021 EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-3:2013+A1:2019+A2:2021
Date of Receipt sample	:	2024-03-27
Date of Test	:	2024-03-27 to 2024-04-22
Date of Issue	:	2024-04-29
Test Report Form No.	:	WEH-55014A-01C
Test Result	:	**Pass**

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

Prepared By:
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Tested by: Leo Feng

Leo Feng

Approved by: Danny Zhou

1 Test Summary

EMISSION			
Test Item	**Test Standard**	**Class / Severity**	**Result**
Mains Terminal Disturbance Voltage, 150kHz to 30MHz	EN IEC 55014-1:2021	Clause 4.3.3.6	Pass
Disturbance Power, 30MHz to 300MHz	EN IEC 55014-1:2021	Clause 4.3.4.4	Pass
Discontinuous Disturbance (Click)	EN IEC 55014-1:2021	Clause 4.4.2	Pass
Radiated Emission, 30MHz to 1000MHz	EN IEC 55014-1:2021	Clause 4.3.4.5	N/A
Harmonic Current Emission	EN IEC 61000-3-2:2019+A1:2021	Class A	Pass
Voltage Fluctuation and Flicker	EN 61000-3-3:2013+A1:2019+A2:2021	Clause 5	Pass

IMMUNITY (EN IEC 55014-2:2021)				
Test Item	**Test Method**	**Class / Severity**	**Performance Criteria**	**Result**
Electrostatic Discharge(ESD)	IEC 61000-4-2:2008	±4 kV Contact ±8 kV Air	B	Pass
Radio-Frequency Electromagnetic Fields (80MHz to 1GHz)	IEC 61000-4-3:2006+A1:2007+A2:2010	3V/m, 80%, 1kHz, Amp. Mod.	A	N/A
Electrical Fast Transients (EFT)	IEC 61000-4-4:2012	AC ±1.0kV DC ±0.5kV	B	Pass
Surge	IEC 61000-4-5:2014+A1:2017	±1kV D.M.† ±2kV C.M.‡	B	Pass
Injected Currents, 0.15MHz to 230MHz	IEC 61000-4-6:2013	3Vr.m.s.(emf), 80%, 1kHz Amp. Mod.	A	Pass
Voltage Dips and Interruptions	IEC 61000-4-11:2020	0 % U_T * for 0.5per	C	Pass
		40 % U_T * for 10per		Pass
		70 % U_T * for 25per		Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object
A.M	Amplitude Modulation
†	Differential Mode
‡	Common Mode
*	U_T is the nominal supply voltage

2 Contents

3 General Information

3.1 General Description of E.U.T.

Product Name	:	THZ Bio Foot Massage
Model No.	:	p120, p90, p91c, p100, p108, p130
Remark	:	All models have same circuit diagram except for different appearance. Therefore the full EMC tests were performed on model p120.

3.2 Details of E.U.T.

Technical Data.....	:	AC 220-240V, 50/60Hz

3.3 Description of Support Units

The EUT has been tested as an independent unit. p120 is the test sample. The DV,DP&Click tests were performed in the condition of AC 240V/50Hz input. The other tests were performed in the condition of AC 230V/50Hz input.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

EN IEC 55014-1:2021	Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus-Part 1:Emission
EN IEC 55014-2:2021	Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus-Part 2: Immunity Product Family Standard.
EN IEC 61000-3-2:2019 +A1:2021	Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).
EN 61000-3-3:2013 +A1:2019+A2:2021	Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Testing Group (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science an Economic Development Canada(ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number:21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items:---

Lab information:---

3.7 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

☐Mains Terminal Disturbance Voltage (Conducted Emission) 1#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESR3	102423	Valid
2.	LISN	R&S	ENV216	101343	Valid
3.	Cable 7	HUBER+SUHNER	CBL2-NN-6M	223NN624	Valid
4.	Switch	CD	RSU-A4 18G	RSUA4008	Valid
☒Mains Terminal Disturbance Voltage (Conducted Emission) 2#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESCI	101178	Valid
2.	LISN	R&S	ENV216	101215	Valid
3.	Cable 1	HUBER+SUHNER	CBL2-NN-6M	6102701	Valid
4.	Switch	ESE	RSU/M2	---	Valid
☐Mains Terminal Disturbance Voltage (Conducted Emission) 3#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESR3	102842	Valid
2.	LISN	R&S	ENV216	101542	Valid
3.	Cable 12	YIHENG	LMR195UF-NMNM-2.5	---	Valid
4.	Manual RF Switch	YIHENG	SW-2	RSU0402	Valid
☐Disturbance Power 1#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESR3	102423	Valid
2.	Absorbing Clamp	TESEQ	MDS21B	52398	Valid
3.	Cable	YIHENG	LMR195UF-NMRANMRA-10	---	Valid
4.	Switch	CD	RSU-A4 18G	RSUA4008	Valid
☒Disturbance Power 2#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESCI	101178	Valid
2.	Absorbing Clamp	LUTHI	MDS21	4067	Valid
3.	Cable 5	HUBER+SUHNER	CBL2-NN-12m	223NN121	Valid
4.	Switch	ESE	RSU/M2	---	Valid
☒Discontinuous Disturbance					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	Discontinues Disturbance Analyzer	TESEQ	DIA1512D	28302	Valid
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Valid

☒Harmonics and Flicker Measuring System					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	Harmonics and Flicker Measuring System	YUANFANG	HFM-3000	V200	Valid
☒ESD					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	ESD Simulator	TESEQ	NSG437	521	Valid
☒EFT & Voltage Dips and Interruptions					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMS test system	TESEQ	NSG3040	1858	Valid
☒Surge					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	Surge Simulator	TESEQ	NSG3060	1395	Valid
☒Injected Currents					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	Conducted Immunity test system	TESEQ	NSG4070	45345	Valid
2.	CDN	TESEQ	CDN M016	31586	Valid
3.	6dB Attenuator	TESEQ	ATN6075	32122	Valid
☐Radio-frequency Electromagnetic Fields					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	RF Power Amplifier	OPHIR	5225R	1051/1712	Valid
2.	RF Power Amplifier	OPHIR	5293RE	1051/171	Valid
3.	Stacked double logarithmic periodic antenna	SCHWARZBECK	STLP9128E-SPECIAL	142	Valid
4.	Stacked double logarithmic periodic antenna	SCHWARZBECK	STLP 9149	476	Valid
5.	Analog signal generator	RS	SMB100A	105566	Valid
6.	Power meter	RS	NRP6A	101133	Valid
7.	Power meter	RS	NRP6A	101134	Valid

☐: ***Not Used***
☒: ***Used***

4.1 Software List

Description	Manufacturer	Model	Version
EMI Test Software (Conducted Emission 1#)	FARATRONIC	EZ-EMC	EMEC-3A1
EMI Test Software (Conducted Emission 2#)	FARATRONIC	EZ-EMC	CON-03A1
EMI Test Software (Conducted Emission 3#)	FARATRONIC	EZ-EMC	COM 3A1.1
EMI Test Software (Disturbance Power 1#)	FARATRONIC	EZ-EMC	EMEC-3A1
EMI Test Software (Disturbance Power 2#)	FARATRONIC	EZ-EMC	CON-03A1
Click Test Software	SCHAFFNER	DIS9966	V2.5
Harmonics and Flicker Test Software	YUANFANG	HFM-3000	V2.00.120

4.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conducted Emission	150kHz~30MHz	±2.6dB	(1)
Disturbance Power	30MHz~300MHz	±3.2dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.3 Special Accessories and Auxiliary Equipment

Item	Equipment	Technical Data	Manufacturer	Model No.	Serial No.
1.	/	/	/	/	/

4.4 Decision Rule

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{LAB} is less than or equal to U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

-Non-compliance is deemed to occur is any measured disturbance level exceeds the disturbance limt.

If U_{LAB} is greater than U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level, increased by(U_{LAB}-U_{cispr}) , exceeds the disturbance limit;

-Non-compliance is deemed to occur if any measured disturbance level, increased by(U_{LAB}-U_{cispr}) , exceeds the disturbance limit.

5 Emission Test Results

5.1 Mains Terminals Disturbance Voltage, 150kHz to 30MHz

Test Requirement..... : EN IEC 55014-1

Test Method..... : EN IEC 55014-1

Test Result..... : Pass

Frequency Range..... : 150kHz to 30MHz

Class/Severity..... : Table 5 of EN IEC 55014-1

5.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 24.8°C

Humidity..... : 49.3%RH

Atmospheric Pressure ..... : 101.2kPa

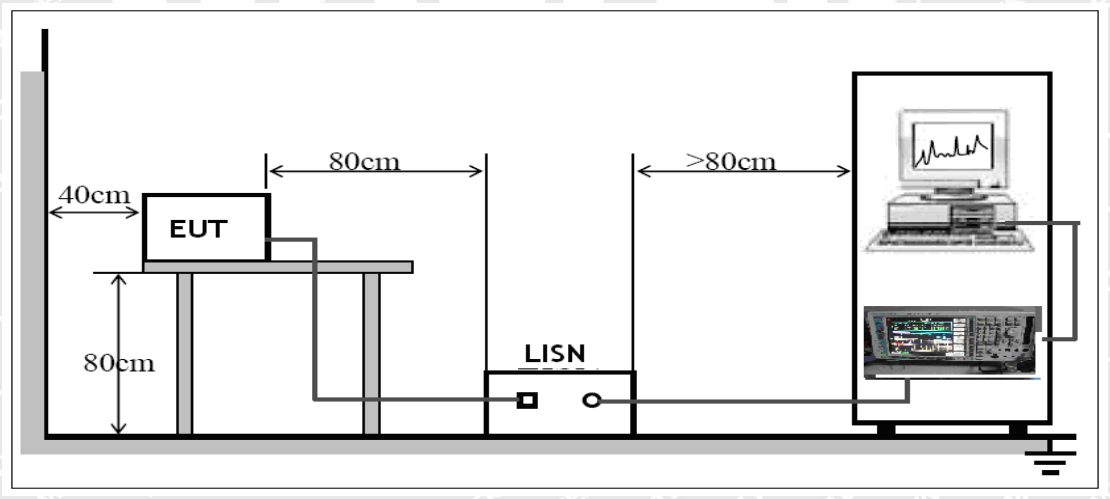
EUT Operation:

Input Voltage ..... : AC 240V/50Hz

Operating Mode..... : Running mode

5.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the EN IEC 55014-1.



5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.1.4 Corrected Amplitude & Margin Calculation

The Corrected factor is calculated by adding LISN VDF(Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Measurement=Reading Level+Correct Factor

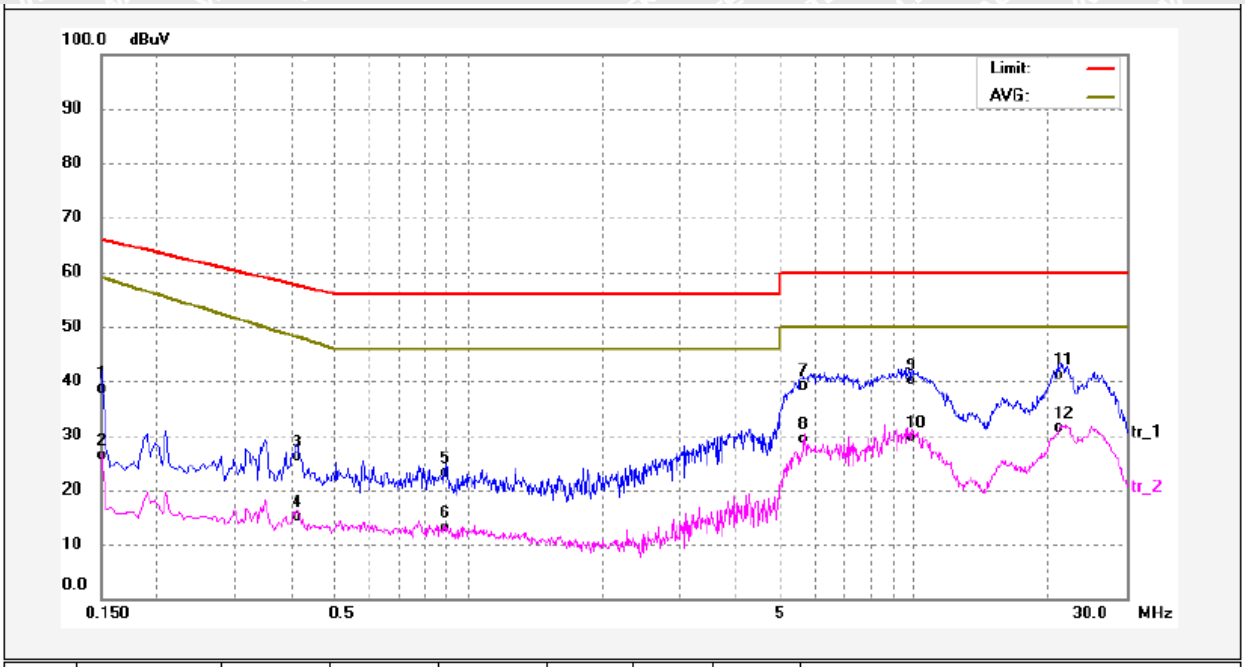
Correct Factor=LISN VDF+Cable Loss

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin=Measurement-Limit

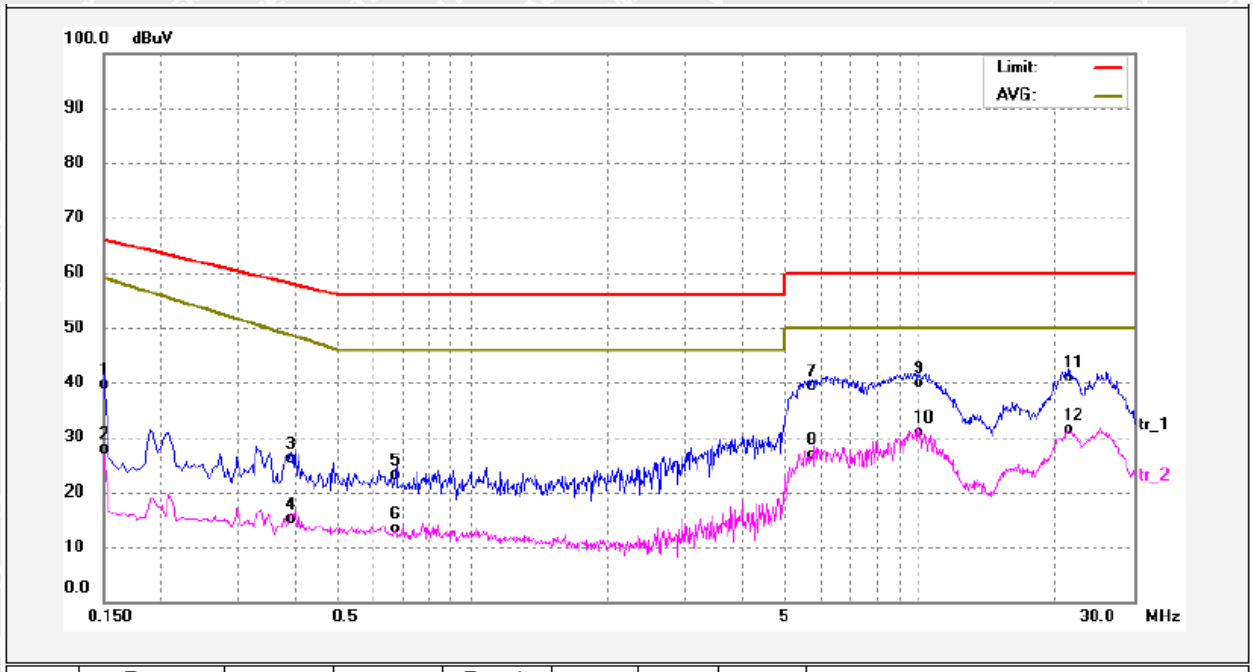
5.1.5 Mains Terminals Disturbance Voltage Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	27.94	9.62	37.56	65.99	-28.43	QP	
2	0.1500	15.64	9.62	25.26	58.99	-33.73	AVG	
3	0.4140	15.47	9.65	25.12	57.57	-32.45	QP	
4	0.4140	4.38	9.65	14.03	48.04	-34.01	AVG	
5	0.8980	12.32	9.70	22.02	56.00	-33.98	QP	
6	0.8980	2.38	9.70	12.08	46.00	-33.92	AVG	
7	5.6620	28.30	9.91	38.21	60.00	-21.79	QP	
8	5.6620	18.44	9.91	28.35	50.00	-21.65	AVG	
9	9.9340	29.09	10.06	39.15	60.00	-20.85	QP	
10	9.9340	18.53	10.06	28.59	50.00	-21.41	AVG	
11	21.5980	29.91	10.34	40.25	60.00	-19.75	QP	
12	21.5980	20.10	10.34	30.44	50.00	-19.56	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	29.03	9.53	38.56	65.99	-27.43	QP	
2	0.1500	17.46	9.53	26.99	58.99	-32.00	AVG	
3	0.3940	15.62	9.58	25.20	57.98	-32.78	QP	
4	0.3940	4.49	9.58	14.07	48.57	-34.50	AVG	
5	0.6780	12.52	9.60	22.12	56.00	-33.88	QP	
6	0.6780	2.74	9.60	12.34	46.00	-33.66	AVG	
7	5.7300	28.53	9.83	38.36	60.00	-21.64	QP	
8	5.7300	16.17	9.83	26.00	50.00	-24.00	AVG	
9	9.9260	28.99	9.97	38.96	60.00	-21.04	QP	
10	9.9260	20.03	9.97	30.00	50.00	-20.00	AVG	
11	21.5340	29.77	10.23	40.00	60.00	-20.00	QP	
12	21.5340	20.05	10.23	30.28	50.00	-19.72	AVG	

5.2 Disturbance Power, 30MHz to 300MHz

Test Requirement..... : EN IEC 55014-1

Test Method..... : EN IEC 55014-1

Test Result..... : Pass

Frequency Range..... : 30MHz to 300MHz

Class/Severity..... : Table 7, 8 of EN IEC 55014-1

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 24.8°C

Humidity..... : 49.3%RH

Barometric Pressure..... : 101.2kPa

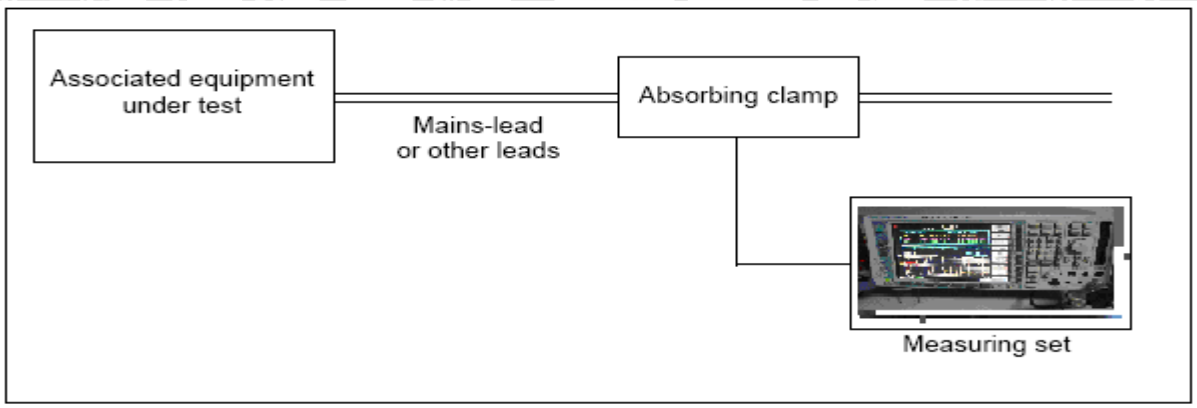
EUT Operation:

Input Voltage ..... : AC 240V/50Hz

Operating Mode..... : Running mode

5.2.2 Block Diagram of Test Setup

The Disturbance Power test was performed in accordance with the EN IEC 55014-1.

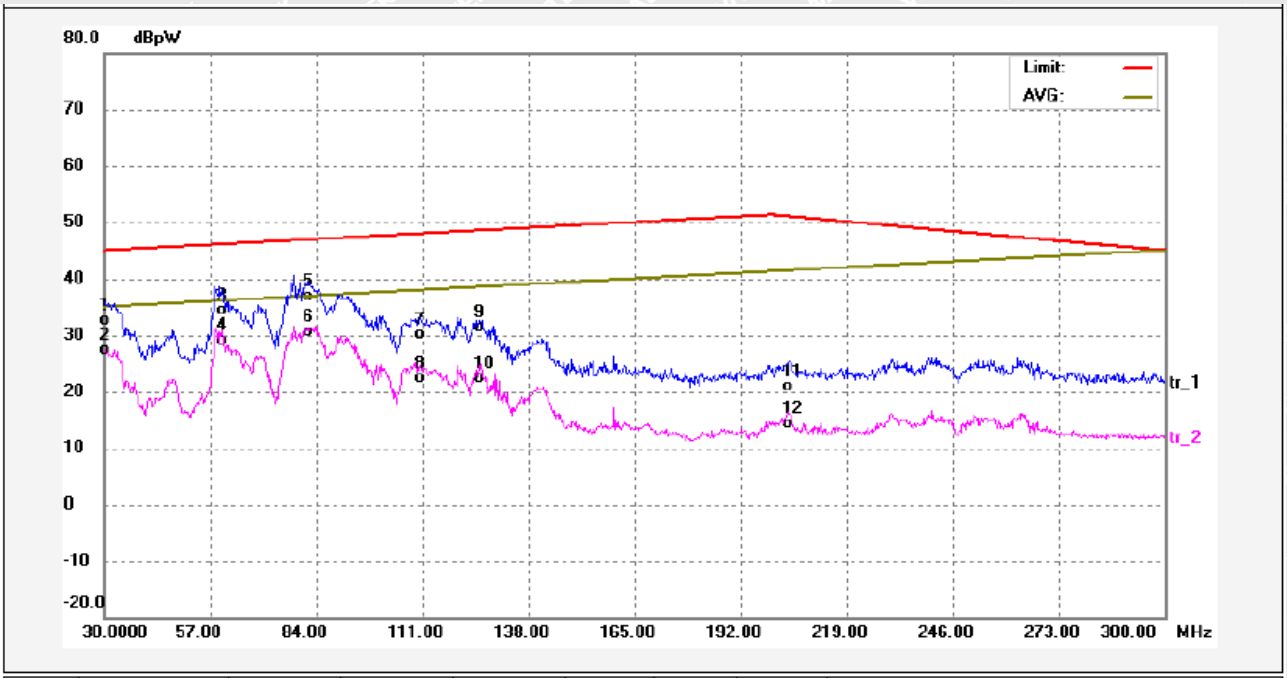


5.2.3 Measurement Data

Extending the cable to 6 meters, performed quasi-peak & average measurements since peak emissions from the EUT were detected within 15dB of the limit line. Average measurements were only performed if the quasi-peak measurements were within 15dB of the average limit line.

According to the Clause 4.3.4.2, if both of the following conditions (1) and (2) are fulfilled: 1) all emission readings from the equipment under test shall be lower than the applicable limits (Table 7) reduced by the margin (Table 8); 2) the maximum clock frequency shall be less than 30 MHz. The Appliances are deemed to comply in the frequency range from 300 MHz to 1 000 MHz.

5.2.4 Disturbance Power Test Results on AC Line



No.	Freq. (MHz)	Reading (dBpW)	Factor (dB)	Result (dBpW)	Limit (dBpW)	Margin (dB)	Detector	Remark
1	30.0000	22.14	9.54	31.68	45.00	-13.32	QP	
2	30.0000	16.83	9.54	26.37	35.00	-8.63	AVG	
3	59.5600	26.50	6.77	33.27	46.10	-12.83	QP	
4	59.5600	21.40	6.77	28.17	36.09	-7.92	AVG	
5	81.8399	29.76	6.15	35.91	46.92	-11.01	QP	
6	81.8399	23.58	6.15	29.73	36.92	-7.19	AVG	
7	110.6400	23.43	5.67	29.10	47.99	-18.89	QP	
8	110.6400	15.70	5.67	21.37	37.99	-16.62	AVG	
9	125.6000	25.31	5.15	30.46	48.54	-18.08	QP	
10	125.6000	16.13	5.15	21.28	38.54	-17.26	AVG	
11	204.4400	15.33	4.58	19.91	51.02	-31.11	QP	
12	204.4400	8.81	4.58	13.39	41.46	-28.07	AVG	

5.3 Discontinuous Disturbance (Click)

Test Requirement..... : EN IEC 55014-1

Test Method..... : EN IEC 55014-1

Test Result..... : Pass

Frequency Range..... : 150kHz to 30MHz

Class/Severity..... : Annex C of EN IEC 55014-1

5.3.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23.7°C

Humidity..... : 53.0%RH

Atmospheric Pressure ..... : 100.8kPa

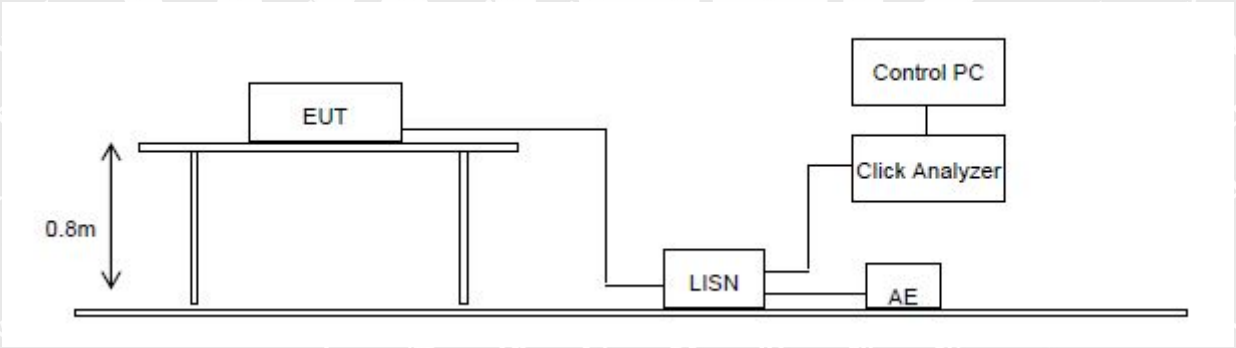
EUT Operation :

Input Voltage ..... : AC 240V/50Hz

Operating Mode..... : Heating mode

5.3.2 Block Diagram of Setup

The discontinuous disturbance test was performed in accordance with EN IEC 55014-1.



5.3.3 Measurement Data

If none of the caused clicks has a duration longer than 20ms, 90% of the caused clicks have a duration less than 10ms, and the click rate is not more than 5, then the product is deemed to comply with the click requirements of EN IEC 55014-1. See Clause 5.4.3.4 of EN IEC 55014-1 for further details.

5.3.4 Discontinuous Disturbance(Click) Test Results

Run A **Observation time T1=** 120 mins 0 secs

Frequency	150kHz	500kHz	1.4MHz	30MHz
Limit value (L)(dBuV)	66	56	56	60
Short clicks	0	0	0	0
Long clicks	0	0	0	0
Total (short + long) n	0	0	0	0
Click rate	0.00	0.00	0.00	0.00
Continuous Interference (max)	0.00sec	0.00sec	0.00sec	0.00sec

Switching operations: s= ---

Click rate formula: N= n / T1

Click rate used in calculating Run B limit : N1= --- **N2**= --- (used for 0.5MHz to 30MHz)

Run B **Observation time T2=** N/A

Frequency	150kHz	500kHz	1.4MHz	30MHz
Limit value (L)(dBuV) Lq = L + 20 log 30/N (max L + 44)	---	---	---	---
Short clicks	---	---	---	---
Long clicks	---	---	---	---
Total (short + long) n	---	---	---	---
Limit = RunA/4	---	---	---	---

Remark:

1) The click rate N shall be determined at 150kHz for the frequency range 150kHz to 500kHz and at 500kHz for the frequency 500kHz to 30MHz ;

2) During RUN A, the click rate is not more than 5 and there is no long click. RUN B is unnecessary;

5.4 Harmonics Current Emission

Test Requirement..... : EN IEC 61000-3-2

Test Method..... : EN IEC 61000-3-2

Test Result..... : Pass

Class/Severity..... : Class A

5.4.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23.1°C

Humidity..... : 47.3%RH

Barometric Pressure..... : 101.2kPa

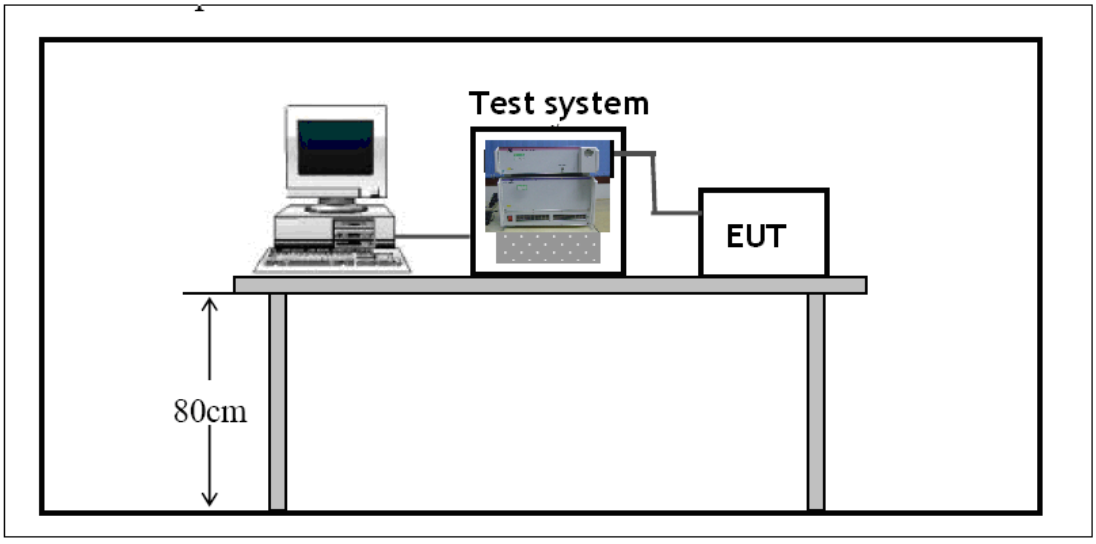
EUT Operation:

Input Voltage ..... : AC 230V/50Hz

Operating Mode..... : Working mode

5.4.2 Block Diagram of Setup

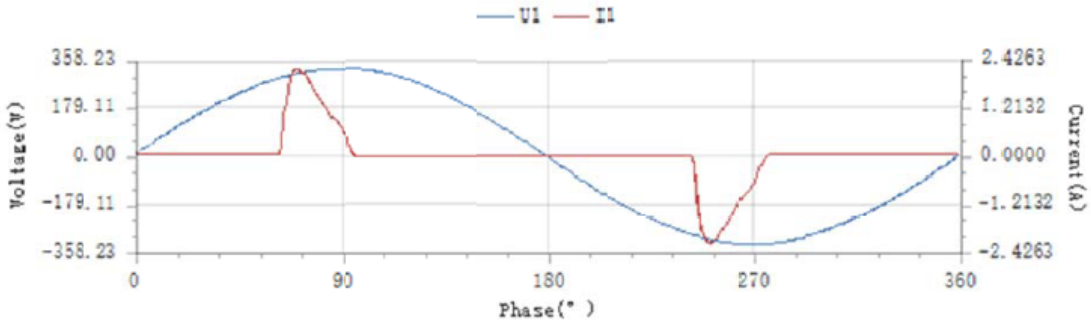
The Harmonics Current Emission test was performed in accordance with the EN IEC 61000-3-2.

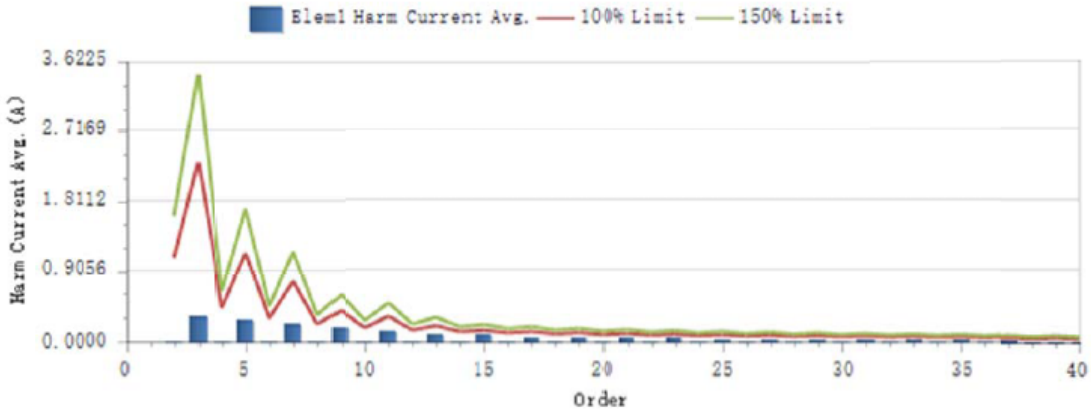


5.4.3 Harmonic Current Emission Test Data

Harmonics Test Report_IEC 61000-3-2 Ed. 5.1 (2020)

Tester	:	Tre				
				Work Mode	:	Working Mode
Test Type	:	Class A_IEC 61000-3-2 Ed. 5.1 (2020)				
Test Date	:	2024-04-07	Start Time : 17:27:19	End Time	:	17:29:50
				Test Volt.	:	230.00V
Comments	:					
Customer	:			Result	:	Pass





Current Test Record

Tester : Tre

Work Mode : Working Mode

Test Type : Class A_IEC 61000-3-2 Ed. 5.1 (2020)

Test Date : 2024-04-07 Start Time : 17:27:19 End Time : 17:29:50

Test Volt. : 230.00V

Comments :

Customer : Result : Pass

Total Current Harmonic ans Some Odd Harmonic Parameters

THC(A)	0.5405	THD(%)	195.59	POHC(A)	0.0901	POHC Limit(A)	0.2514

Maximum Value of Relevant Parameter During Test Period

Urms(V)	230.09	Freq(Hz)	49.999
Irms(A)	0.6372	Ipeak(A)	2.2782
I1(A)	0.3418	ICF	3.6173
P(W)	72.146	λ	0.5144

Determination of Harmonics and Limits

Order(n)	Harmonics Current Avg.(A)	100% Limit(A)	Limit Percent(%)	Harmonics Current Max.(A)	150% Limit(A)	Limit Percent(%)	Result
2	0.0012	1.0800	N/A	0.0025	1.6200	N/A	Pass
3	0.3045	2.3000	13.24	0.3159	3.4500	20.60	Pass
4	0.0010	0.4300	N/A	0.0035	0.6450	N/A	Pass
5	0.2667	1.1400	23.40	0.2733	1.7100	35.96	Pass
6	0.0008	0.3000	N/A	0.0152	0.4500	7.58	Pass
7	0.2169	0.7700	28.17	0.2208	1.1550	43.01	Pass
8	0.0005	0.2300	N/A	0.0168	0.3450	10.94	Pass
9	0.1626	0.4000	40.66	0.1641	0.6000	61.53	Pass
10	0.0005	0.1840	N/A	0.0123	0.2760	10.06	Pass
11	0.1122	0.3300	34.01	0.1124	0.4950	51.08	Pass
12	0.0007	0.1533	N/A	0.0093	0.2300	9.10	Pass
13	0.0754	0.2100	35.88	0.0755	0.3150	53.91	Pass
14	0.0009	0.1314	N/A	0.0067	0.1971	7.67	Pass
15	0.0597	0.1500	39.78	0.0612	0.2250	61.17	Pass
16	0.0009	0.1150	N/A	0.0041	0.1725	N/A	Pass
17	0.0588	0.1324	44.40	0.0614	0.1985	69.61	Pass
18	0.0008	0.1022	N/A	0.0025	0.1533	N/A	Pass
19	0.0581	0.1184	49.04	0.0603	0.1776	76.40	Pass
20	0.0006	0.0920	N/A	0.0021	0.1380	N/A	Pass
21	0.0515	0.1071	48.03	0.0524	0.1607	73.41	Pass
22	0.0004	0.0836	N/A	0.0014	0.1255	N/A	Pass
23	0.0397	0.0978	40.60	0.0402	0.1467	61.64	Pass
24	0.0003	0.0767	N/A	0.0010	0.1150	N/A	Pass
25	0.0275	0.0900	30.54	0.0280	0.1350	46.73	Pass
26	0.0004	0.0708	N/A	0.0012	0.1062	N/A	Pass
27	0.0213	0.0833	25.50	0.0221	0.1250	39.78	Pass
28	0.0006	0.0657	N/A	0.0020	0.0986	N/A	Pass
29	0.0230	0.0776	29.58	0.0248	0.1164	47.91	Pass
30	0.0006	0.0613	N/A	0.0020	0.0920	N/A	Pass
31	0.0260	0.0726	35.76	0.0273	0.1089	56.47	Pass
32	0.0006	0.0575	N/A	0.0023	0.0863	N/A	Pass
33	0.0257	0.0682	37.64	0.0260	0.1023	57.30	Pass
34	0.0004	0.0541	N/A	0.0024	0.0812	N/A	Pass
35	0.0216	0.0643	33.59	0.0219	0.0964	51.18	Pass
36	0.0003	0.0511	N/A	0.0020	0.0767	N/A	Pass
37	0.0157	0.0608	25.77	0.0164	0.0912	40.33	Pass
38	0.0002	0.0484	N/A	0.0013	0.0726	N/A	Pass
39	0.0105	0.0577	18.12	0.0108	0.0865	27.99	Pass
40	0.0003	0.0460	N/A	0.0007	0.0690	N/A	Pass

Voltage Test Record

Tester : Tre

Work Mode : Working Mode

Test Type : Class A_IEC 61000-3-2 Ed. 5.1 (2020)

Test Date : 2024-04-07 Start Time : 17:27:19 End Time : 17:29:50

Test Volt. : 230.00V

Comments :

Customer : Result : Pass

Determination of Voltage Relevant Parameter During Test Period

Item	Nominal Value	Tested Value	Error Value	Allowable Error Value	Result
Urms(V)	230.00	230.11	0.11	±2.0%	Pass
Frequency(Hz)	50.000	49.998	0.002	±0.5%	Pass

Determination of Voltage Harmonics and Limits

Order(n)	Uhdf	Limit(%)	Limit Percent(%)	Result
1	100%	---	---	---
2	0.01%	0.20	5.70%	Pass
3	0.02%	0.90	1.81%	Pass
4	0.00%	0.20	0.57%	Pass
5	0.01%	0.40	2.85%	Pass
6	0.00%	0.20	1.09%	Pass
7	0.01%	0.30	3.18%	Pass
8	0.00%	0.20	1.47%	Pass
9	0.01%	0.20	6.79%	Pass
10	0.01%	0.20	2.70%	Pass
11	0.01%	0.10	7.33%	Pass
12	0.01%	0.10	5.27%	Pass
13	0.01%	0.10	7.36%	Pass
14	0.00%	0.10	2.82%	Pass
15	0.01%	0.10	10.56%	Pass
16	0.00%	0.10	1.39%	Pass
17	0.00%	0.10	4.93%	Pass
18	0.00%	0.10	0.88%	Pass
19	0.01%	0.10	9.85%	Pass
20	0.00%	0.10	0.91%	Pass
21	0.01%	0.10	12.96%	Pass
22	0.00%	0.10	0.87%	Pass
23	0.00%	0.10	3.15%	Pass
24	0.00%	0.10	0.97%	Pass
25	0.01%	0.10	10.82%	Pass
26	0.00%	0.10	0.91%	Pass
27	0.01%	0.10	11.28%	Pass
28	0.00%	0.10	0.98%	Pass
29	0.01%	0.10	6.11%	Pass
30	0.00%	0.10	0.99%	Pass
31	0.01%	0.10	11.72%	Pass
32	0.00%	0.10	0.97%	Pass
33	0.01%	0.10	10.19%	Pass
34	0.00%	0.10	1.11%	Pass
35	0.01%	0.10	5.37%	Pass
36	0.00%	0.10	1.19%	Pass
37	0.01%	0.10	11.51%	Pass
38	0.00%	0.10	1.07%	Pass
39	0.01%	0.10	6.31%	Pass
40	0.00%	0.10	1.06%	Pass

5.5 Voltage Fluctuation and Flicker

Test Requirement ..... : EN 61000-3-3

Test Method..... : EN 61000-3-3

Test Result ..... : Pass

5.5.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23.3°C

Humidity..... : 47.2%RH

Barometric Pressure..... : 101.2kPa

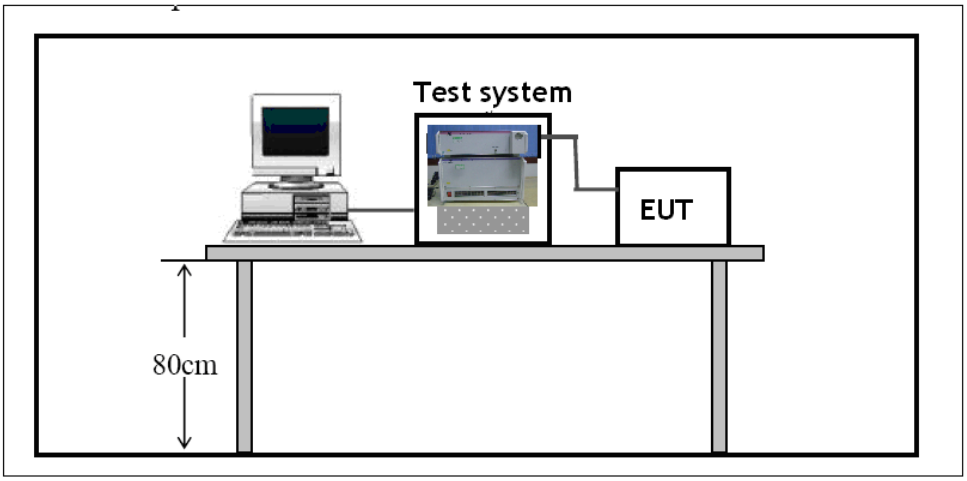
EUT Operation:

Input Voltage ..... : AC 230V/50Hz

Operating Mode..... : Working mode

5.5.2 Block Diagram of Setup

The Voltage Fluctuation and Flicker test was performed in accordance with the EN 61000-3-3.



5.5.3 Voltage Fluctuation and Flicker Test Data

Parameter	Pst	Plt	Tmax ms	dc %	dmax %
Limit	1	0.65	500	3.3	4
Model p120	0.016	/	0.00	0.00	0.00

6 Immunity Test Results

6.1 Performance Criteria

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. 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.

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, 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.

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.
For further details, please refer to EN IEC 55014-2.

6.2 Electrostatic Discharge (ESD)

Test Requirement..... : EN IEC 55014-2

Test Method..... : IEC 61000-4-2

Test Result..... : Pass

Discharge Impedance..... : 330Ω / 150pF

Discharge Voltage..... : Air Discharge: ±8kV
Contact Discharge: ±4kV
HCP & VCP: ±4kV

Polarity..... : Positive & Negative

Number of Discharge..... : Minimum 10 times at each test point

Discharge Mode..... : Single Discharge

Discharge Period..... : 1 second minimum

6.2.1 E.U.T. Operation

Operating Environment:

Temperature..... : 21.3°C

Humidity..... : 51.7%RH

Barometric Pressure..... : 101.4kPa

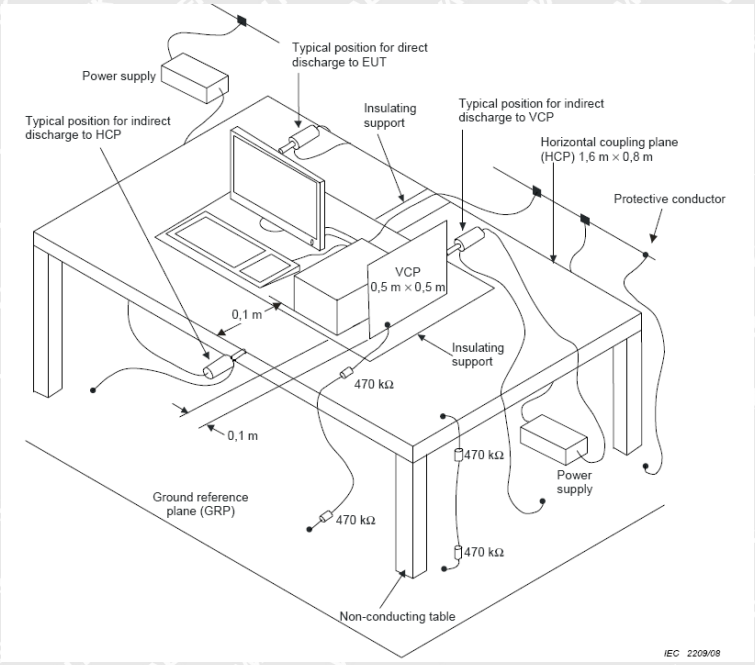
EUT Operation:

Input Voltage..... : AC 230V/50Hz

Operating Mode..... : On mode

6.2.2 Block Diagram of Setup

The ESD test was performed in accordance with the IEC 61000-4-2.



6.2.3Direct Discharge Test Results

Observations: **Test points:** **1. All Exposed Surface & Seams;**
2. All metallic part

Direct Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Contact Discharge	Air Discharge
±8	B	1	N/A	Pass*
±4	B	2	Pass*	N/A

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.2.4 Indirect Discharge Test Results

Observations: **Test points:** **1. All sides.**

Indirect Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Horizontal Coupling	Vertical Coupling
±4	B	1	Pass*	Pass*

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.3 Electrical Fast Transients (EFT)

Test Requirement ..... : EN IEC 55014-2

Test Method ..... : IEC 61000-4-4

Test Result ..... : Pass

Test Level ..... : 1.0kV on AC Mains

Polarity ..... : Positive & Negative

Repetition Frequency.... : 5kHz

Burst Duration ..... : 300ms

Test Duration ..... : 2 minutes per level & polarity

6.3.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 21.7°C

Humidity..... : 51.3%RH

Barometric Pressure..... : 101.2kPa

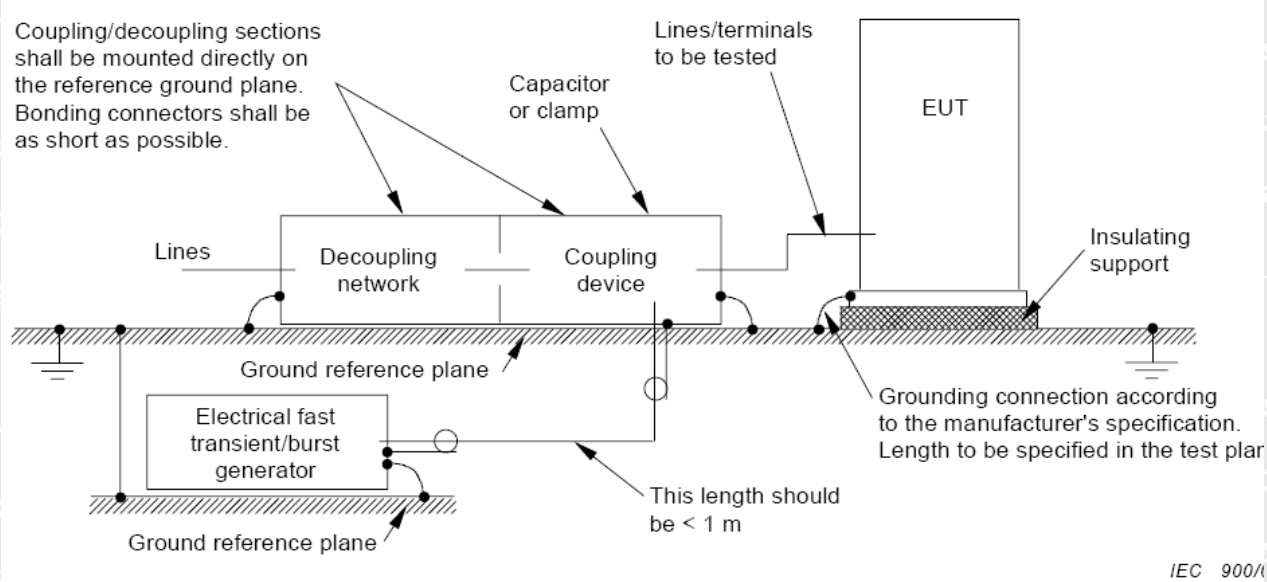
EUT Operation:

Input Voltage ..... : AC 230V/50Hz

Operating Mode..... : On mode

6.3.2 Block Diagram of Setup

The Electrical Fast Transients Immunity test was performed in accordance with the IEC 61000-4-4.



6.3.3Test Results

Test Port	Test Level(kV)	Performance Criterion	Result
Line-Neutral-PE	±1.0	B	Pass*

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.4 Surge

Test Requirement..... : EN IEC 55014-2

Test Method..... : IEC 61000-4-5

Test Result..... : Pass

Test level..... : ±1kV Live to Neutral, ±2kV Live to PE and Neutral to PE

Interval ..... : 60s between each surge

No. of surges ..... : 5 positive at 90°, 5 negative at 270°.

6.4.1E.U.T. Operation

Operating Environment:

Temperature ..... : 21.2°C

Humidity..... : 51.3%RH

Barometric Pressure..... : 101.3kPa

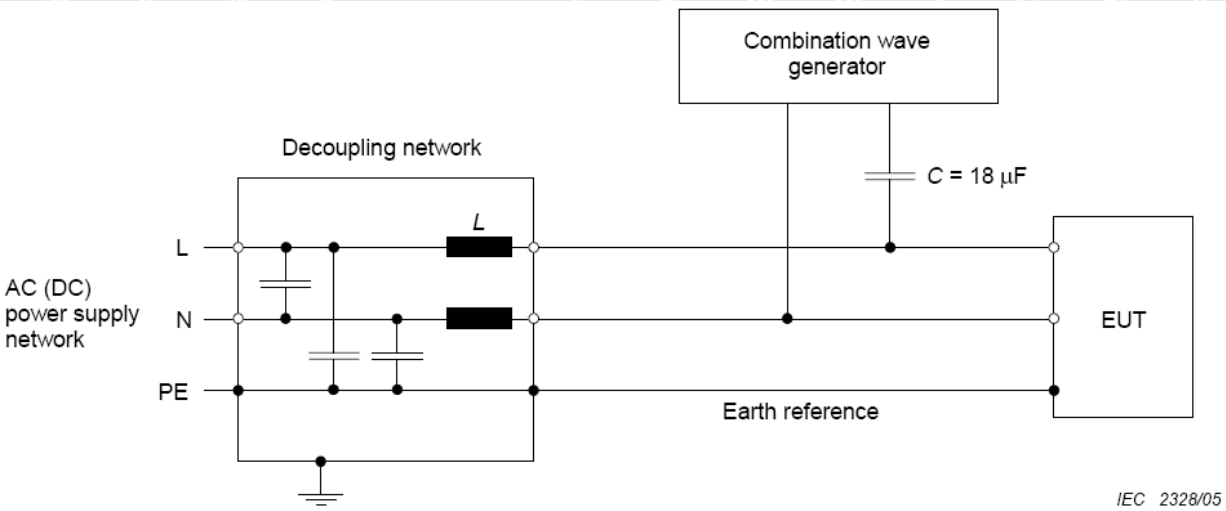
EUT Operation:

Input Voltage ..... : AC 230V/50Hz

Operating Mode..... : On mode

6.4.2Block Diagram of Setup

The Surge Immunity test was performed in accordance with the IEC 61000-4-5.



6.4.3Test Results

Test Port	Applied Voltage (kV)	Performance criterion	Result
Between Phase And Phase	±1	B	N/A
Between Live And Neutral	±1	B	Pass*
Between Live And Earth	±2	B	Pass*
Between Neutral And Earth	±2	B	Pass*

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.5 Injected Currents Immunity, 0.15MHz to 230MHz

Test Requirement..... : EN IEC 55014-2

Test Method..... : IEC 61000-4-6

Test Result..... : Pass

Frequency Range..... : 0.15MHz to 230MHz

Test level..... : 3V r.m.s. (unmodulated emf into 150 Ω)

Modulation..... : 80%, 1kHz Amplitude Modulation.

6.5.1 E.U.T. Operation

Operating Environment:

Temperature..... : 21.7°C

Humidity..... : 51.3% RH

Barometric Pressure..... : 101.4kPa

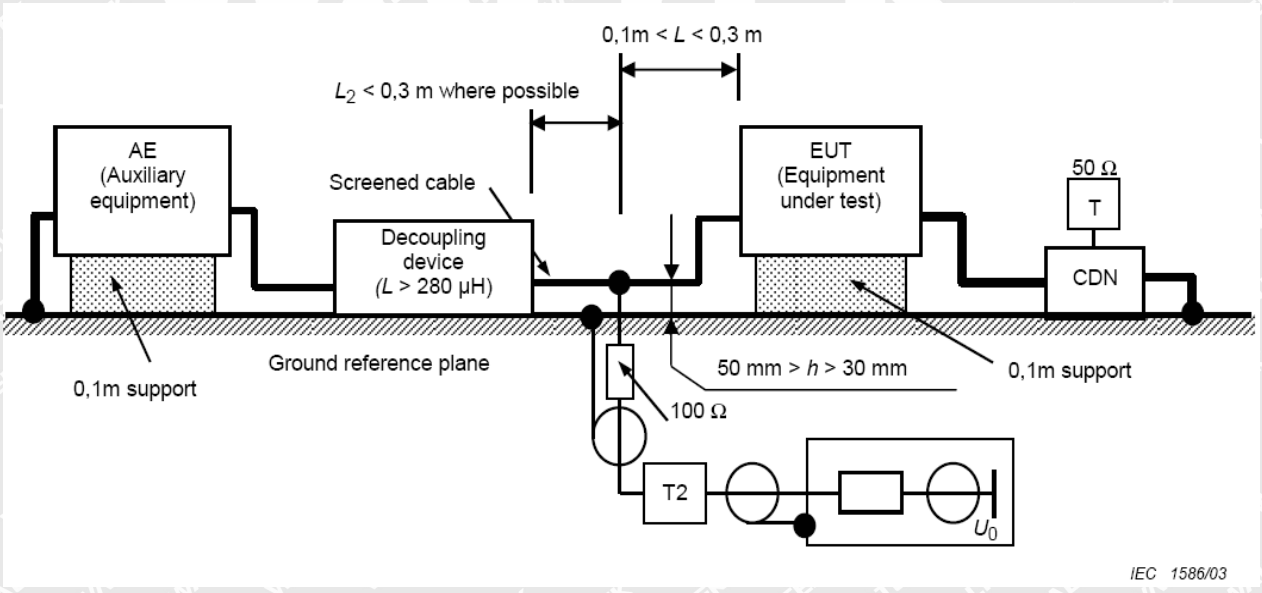
EUT Operation:

Input Voltage..... : AC 230V/50Hz

Operating Mode..... : On mode

6.5.2 Block Diagram of Setup

The Injected Currents Immunity test was performed in accordance with the IEC 61000-4-6.



6.5.3Test Results

Frequency	Line	Test Level	Modulation	Step Size	Dwell Time	Performance Criterion	Result
0.15MHz to 230MHz	3 Wire AC Supply Cables	3Vr.m.s.	80%, 1kHz Amp. Mod.	1%	1s	A	Pass*

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.6 Voltage Dips and Interruptions

Test Requirement..... : EN IEC 55014-2

Test Method..... : IEC 61000-4-11

Test Result..... : Pass

Test Level(Voltage reduction) : 0% & 40% &70 % of U_T (Supply Voltage)

No. of Dips / Interruptions..... : 1 per Level at 20ms intervals

6.6.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 21.7°C

Humidity..... : 50.8%RH

Barometric Pressure..... : 100.7kPa

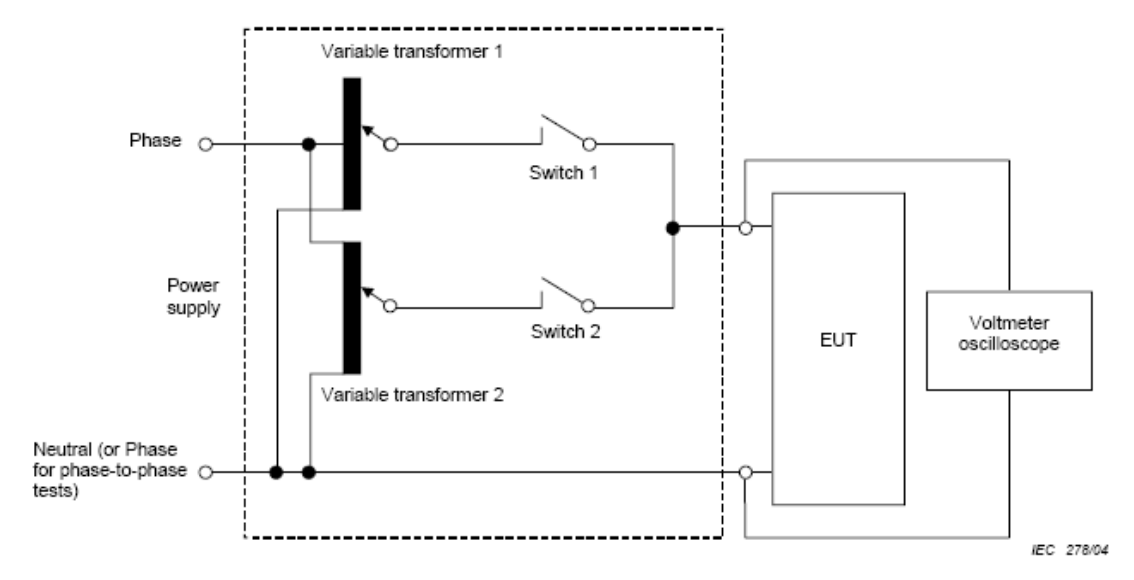
EUT Operation:

Input Voltage ..... : AC 230V/50Hz

Operating Mode..... : On mode

6.6.2 Block Diagram of Setup

The Voltage Dips and Interruptions Immunity test was performed in accordance with the IEC 61000-4-11.



6.6.3Test Results

Test Level in %U_T	Performance criterion	50Hz		60Hz	
		Duration	Result	Duration	Result
0	C	0.5	Pass*	0.5	N/A
40	C	10	Pass*	12	N/A
70	C	25	Pass*	30	N/A

Remark:

* The indicator light was flickered during the test, it could be recovered automatically after test.

7 Photographs – Test Setup

7.1 Photograph – Mains Terminal Disturbance Voltage Test Setup

7.2 Photograph – Disturbance Power Test Setup

7.3 Photograph – Discontinuous Disturbance (Click) Test Setup

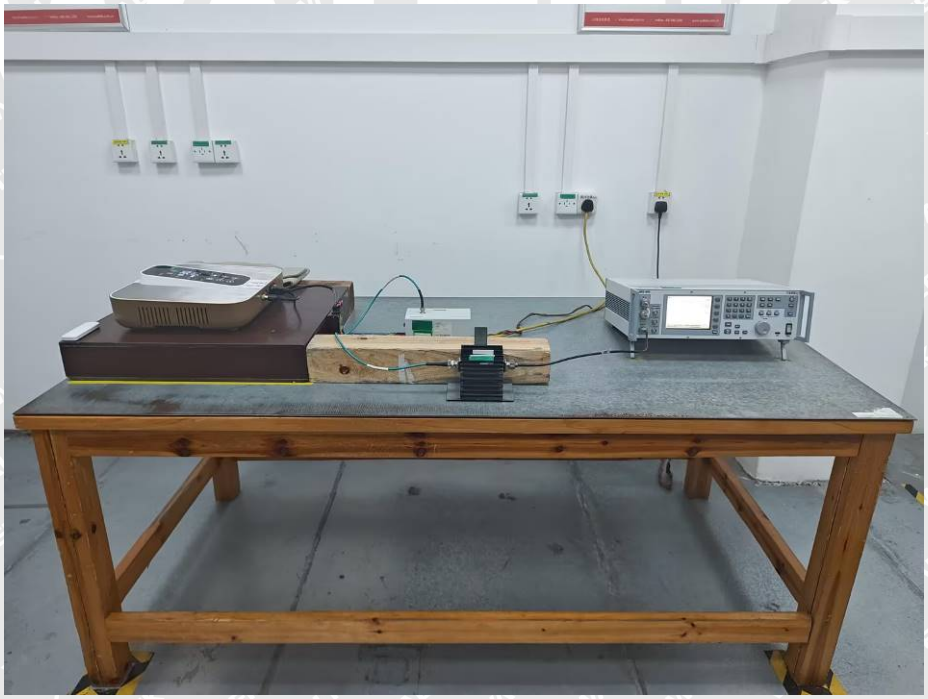
7.4 Photograph – Harmonic Current and Voltage Fluctuation and Flicker Test Setup

7.5 Photograph – ESD Immunity Test Setup

7.6 Photograph – EFT Immunity Test Setup

7.7 Photograph – Surge Immunity Test Setup

7.8 Photograph – Injected Currents Immunity Test Setup



7.9 Photograph – Voltage Dips and Interruptions Immunity Test Setup

8 Photographs – Constructional Details

8.1 EUT – Front View

====== End of Report ======