



EMC Test Report

Certificate No. : TBC-C-202211-0131-5
Applicant : V-TAC EXPORT LIMITED
Equipment Under Test (EUT)
EUT Name : Portable Power Station
Model No. : K5-VT-1001
Series Model No. : N/A
Brand Name : ----
Receipt Date : 2022-02-17
Test Date : 2022-02-18 to 2022-03-11
Issue Date : 2022-11-28
Standards : EN 55032:2015/A11:2020
EN IEC 61000-3-2:2019/A1:2021
EN 61000-3-3:2013/A2:2021
EN 55035:2017/A11:2020
Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above
The EUT technically complies with the 2014/30/EU Directive requirements.

Test/Witness Engineer :

Jiye Qin

Engineer Supervisor :

WAN SU

Engineer Manager :

Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-075-3.0

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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202201-0223-1	Rev.01	Initial issue of report	2022-03-14
TBR-C-202211-0131-5	Rev.02	Change the Applicant/ Manufacturer/ Address/ EUT Name/ Model No.	2022-11-28



1. General Information

1.1. Client Information

Applicant	:	V-TAC EXPORT LIMITED
Address	:	Room 301 Kam ON Building 176A ,Queen's Road Central HongKong
Manufacturer	:	V-TAC EXPORT LIMITED
Address	:	Room 301 Kam ON Building 176A ,Queen's Road Central HongKong

1.2. General Description of EUT (Equipment Under Test)

EUT Name	:	Portable Power Station
Model(s)	:	K5-VT-1001
Model Difference	:	N/A
Brand Name	:	----
Class of EUT	:	<input type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B
EUT Type	:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing <input type="checkbox"/> combination
F_x	:	≤108 MHz
Power Supply	:	AC Input: 230V~ 50/60Hz,3A AC Output: 100V, 50/60Hz, 1200W Max USB Output: 5V---2.4A Max USB 3.0 Output: 5-12V,18W Max USB-C Output: 5-20V,65W Max DC output:12.5V---8A Max Wireless output: 15V --- 1.25A Battery capacity: 22.4V, 42Ah

Remark:

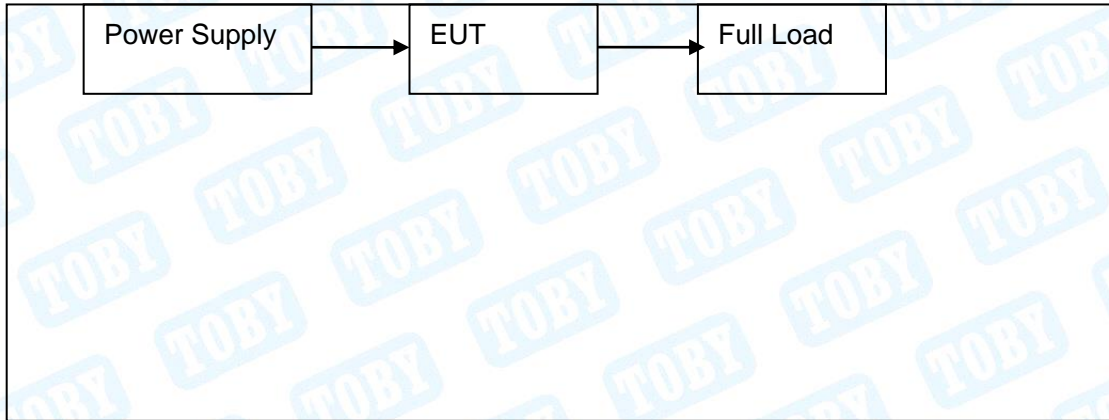
F_x: Highest fundamental frequency generated or used within the EUT or highest frequency at which it operates.

Class A Equipment: the Equipment is not intended primarily for use in a residential environment.

Class B Equipment: the Equipment is intended primarily for use in a residential environment.



1.3. Block Diagram Showing The Configuration of System Tested



1.4. Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
----	----	----	----	----
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
----	----	----	----	
----	----	----	----	



1.5. Description of Operating Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Charging Mode
Mode 2	Discharging Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as Following:

For EMI Test	
Final Test Mode	Description
Mode 1	Charging Mode
Mode 2	Discharging Mode
For EMS Test	
Final Test Mode	Description
Mode 1	Charging Mode
Mode 2	Discharging Mode



1.6. General Performance Criterion

General

General performance criteria are defined in 8.2, 8.3 and 8.4. These criteria shall be used during the testing of primary functions where no relevant annex is applicable.

When assessing the impact of a disturbance on a function, the assessment should take into consideration the function's performance prior to the application of the disturbance and only identify as failures those changes in performance that are a result of the disturbance.

Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion B

During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.

After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.



1.7. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Test	Parameters	Expanded Uncertainty (U_{Lab})	Expanded Uncertainty (U_{Cispr})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB	± 4.0 dB ± 3.6 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB	N/A
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB	± 5.2 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB	N/A
Mains Harmonic	Voltage	$\pm 3.11\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 3.25\%$	N/A

1.8. Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:1A/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.



2. TEST Results Summary

EMISSION (<input checked="" type="checkbox"/> EN 55032:2015/A11:2020)			
Description of test items	Standards	Class	Results
Conducted disturbance at mains terminals	EN 55032:2015/A11:2020	<input type="checkbox"/> Class A	Pass ⁽¹⁾
		<input checked="" type="checkbox"/> Class B	
Conducted disturbance for asymmetric mode	EN 55032:2015/A11:2020	<input type="checkbox"/> Class A	N/A
		<input type="checkbox"/> Class B	
Conducted differential voltage emission	EN 55032:2015/A11:2020	Class B	N/A ⁽²⁾
Radiated Disturbance	EN 55032:2015/A11:2020	<input type="checkbox"/> Class A	Pass
		<input checked="" type="checkbox"/> Class B	
Harmonic current emissions	EN IEC 61000-3-2:2019/A1:2021	<input checked="" type="checkbox"/> Class A	Pass
		<input type="checkbox"/> Class D	
Voltage fluctuation and flicker	EN 61000-3-3:2013/A2:2021		Pass

Note:

- (1) Class A/Class B: Applicable to AC mains power ports
- (2) Class A: Applicable to wired network ports, optical fibre ports with metallic shield or tension members and antenna ports.
Class B: Applicable to wired network ports, optical fibre ports with metallic shield or tension members, broadcast receiver tuner ports and antenna ports.
Applicable to ports listed above and intended to connect to cables longer than 3 m.
- (3) Class B: Applicable to TV broadcast receiver tuner ports with an accessible connector, RF modulator output ports and FM broadcast receiver tuner ports with an accessible connector.
- (4) Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.
- (5) The power consumption of EUT is less than 75W and no Limits apply.



IMMUNITY (<input checked="" type="checkbox"/> EN 55035:2017/A11:2020)		
Description of test items	Standards	Results
Electrostatic Discharge (ESD)	EN 61000-4-2: 2009	Pass
Continuous RF Electromagnetic Field Disturbances	EN 61000-4-3: 2006+A2:2008+A2: 2010	Pass
EFT/B Immunity	EN 61000-4-4: 2012	Pass
Surge Immunity	EN 61000-4-5: 2014	Pass
Continuous RF Disturbances	EN 61000-4-6: 2014	Pass
Power frequency magnetic field	EN 61000-4-8: 2010	N/A
Voltage dips	EN 61000-4-11: 2004	Pass
Voltage interruptions		
Note: N/A is an abbreviation for Not Applicable.		

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	TS+(J32-RE)	Tonsced	3.0.0.4
Harmonic Current	CTS4	CI	4.24.0
Voltage Fluctuation and Flicker	CTS4	CI	4.24.0
Conducted Immunity	IEC/EN 61000-6-4 Application	FRANKONIA	1.1.1
Electrical Fast Transient	lec.control	Nemtest	5.1.1.0
Surge	lec.control	Nemtest	5.1.1.0
Voltage Dip and Interruption	lec.control	Nemtest	5.1.1.0



4. Test Equipment Used

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 02, 2021	Jul. 01, 2022
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 02, 2021	Jul. 01, 2022
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 02, 2021	Jul. 01, 2022
LISN	Rohde & Schwarz	ENV216	101131	Jul. 02, 2021	Jul. 01, 2022
ISN	SCHWARZBECK	NTFM 8131	8131-193	Jul. 02, 2021	Jul. 01, 2022
ISN	SCHWARZBECK	CAT3 8158	cat3 5158-0094	Jul. 02, 2021	Jul. 01, 2022
ISN	SCHWARZBECK	NTFM5158	NTFM5158 0145	Jul. 02, 2021	Jul. 01, 2022
ISN	SCHWARZBECK	CAT 8158	cat5 8158-179	Jul. 02, 2021	Jul. 01, 2022
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
MXA Signal Analyzer	Agilent	N9020A	MY4910006 0	Sep. 03, 2021	Sep. 02, 2022
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 02, 2021	Jul. 01, 2022
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 26, 2022	Feb.25, 2023
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Dec. 05, 2021	Dec. 04, 2023
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	May 20, 2021	May 19, 2022
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	May 20, 2021	May 19, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2021	Jul. 05, 2022
HF Amplifier	Tonscend	TAP9E6343	AP21C8061 17	Sep. 03, 2021	Sep. 02, 2022
HF Amplifier	Tonscend	TAP051845	AP21C8061 41	Sep. 03, 2021	Sep. 02, 2022
HF Amplifier	Tonscend	TAP0184050	AP21C8061 29	Sep. 03, 2021	Sep. 02, 2022
Harmonic Current and Voltage Fluctuation and Flicker Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Harmonic Flicker Test System	CI	5001ix-CTS-400	100321	Jul. 02, 2021	Jul. 01, 2022
AC Power Source	CI	500liX	59468	Jul. 02, 2021	Jul. 01, 2022
Discharge Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
ESD Tester	TESEQ	NSG437	304	Jul. 06, 2021	Jul. 05, 2022



Radiated Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Gestockte Log.-Per.-Breitband-antenna Stacked Log.-Per.-Broadband	SCHWARZBECK	STLP 9129	162	N/A	N/A
Electric field probe	Narda	EP 601	811ZX01000	Mar. 02, 2022	Mar. 01, 2023
Signal Generator	Agilent	N5181A	MY50141953	Sep. 03, 2021	Sep. 02, 2022
EPM Series Power Meter	KEYSIGT	N1914A	MY61180020	May 04, 2021	May 03, 2022
Power Sensor	KEYSIGT	E9301A	MY61130007	N/A	N/A
Power Sensor	KEYSIGT	E9301A	MY61130011	N/A	N/A
Radio Frequency Switch	Tonscend	JS0806s	21E8060428	N/A	N/A
Microwave Power amplifier	Micotop	MPA-80-1000-250	MPA2105144	N/A	N/A
Microwave Power amplifier	Micotop	MPA-1000-6000-100	MPA2105150	N/A	N/A
Electrical Fast Transient/ Surge/ Voltage Dip and Interruption Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Simulator	EMTEST	UCS500N5	V0948105575	Jul. 02, 2021	Jul. 01, 2022
Auto-transformer	EMTEST	V4780S2	0109-41	Jul. 02, 2021	Jul. 01, 2022
Coupling Clamp	EMTEST	HFK	1109-04	Jul. 02, 2021	Jul. 01, 2022
Conducted Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
RF Generator	FRANKONIA	CIT-10/75	126B1126	Jul. 02, 2021	Jul. 01, 2022
Attenuator	FRANKONIA	59-6-33	A413	Jul. 02, 2021	Jul. 01, 2022
M-CDN	LUTHI	L-801 M2/M3	2599	Jul. 02, 2021	Jul. 01, 2022
AF2-CDN	LUTHI	L-801:AF2	2538	Feb. 26, 2022	Feb.25, 2023
EM Injection Clamp	LUTHI	EM101	35958	Jul. 02, 2021	Jul. 01, 2022



5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

EN 55032:2015/A11:2020

5.1.2 Test Limit

Table A.9 – Requirements for conducted emissions from the AC mains power ports of Class A equipment

Applicable to				
1. AC mains power ports (3.1.1)				
Table clause	Frequency range MHz	Coupling device (see Table A.8)	Detector type / bandwidth	Class A limits dB(μV)
A9.1	0,15 to 0,5	AMN	Quasi Peak / 9 kHz	79
	0,5 to 30			73
A9.2	0,15 to 0,5	AMN	Average / 9 kHz	66
	0,5 to 30			60

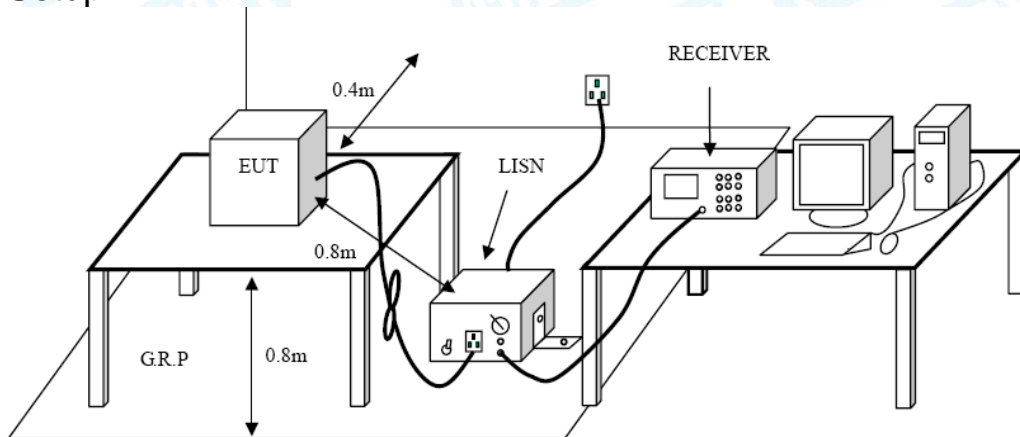
Apply A9.1 and A9.2 across the entire frequency range.

Table A.10 – Requirements for conducted emissions from the AC mains power ports of Class B equipment

Applicable to				
1. AC mains power ports (3.1.1)				
Table clause	Frequency range MHz	Coupling device (see Table A.8)	Detector type / bandwidth	Class B limits dB(μV)
A10.1	0,15 to 0,5	AMN	Quasi Peak / 9 kHz	66 to 56
	0,5 to 5			56
	5 to 30			60
A10.2	0,15 to 0,5	AMN	Average / 9 kHz	56 to 46
	0,5 to 5			46
	5 to 30			50

Apply A10.1 and A10.2 across the entire frequency range.

5.2 Test Setup



5.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from the nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

5.4 Deviation From Test Standard

No deviation

5.5 Test Data

Please refer to the Attachment A.



6 Radiated Emission Test

6.1 Test Standard and Limit

6.1.1 Test Standard

EN 55032:2015/A11:2020

6.1.2 Test Limit

Radiated Disturbance Test Limit

FREQUENCY (MHz)	Class A (at 3m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 – 230	50	40
230 – 1000	57	47

Notes:

- (1) The limit for radiated test was performed according to as following: EN 55032
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Limits of Radiated Emission Measurement (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
1000-3000	76	56	70	50
3000-6000	80	60	74	54

Notes:

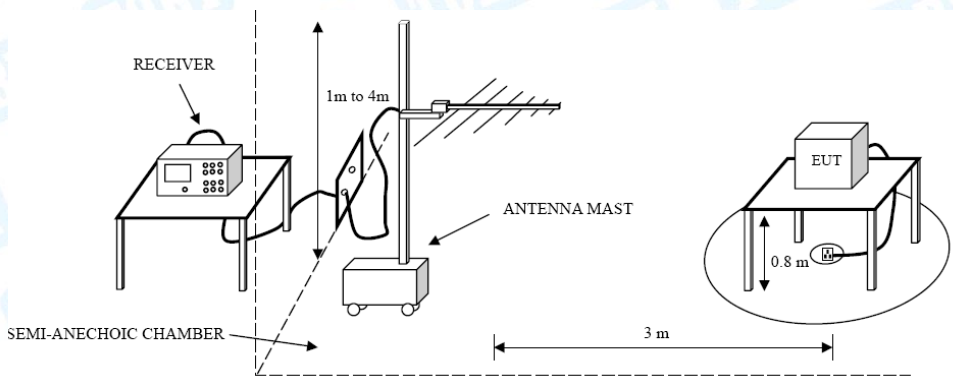
- (1) The lower limit applies at the transition frequency.

Frequency Range of Radiated Measurement

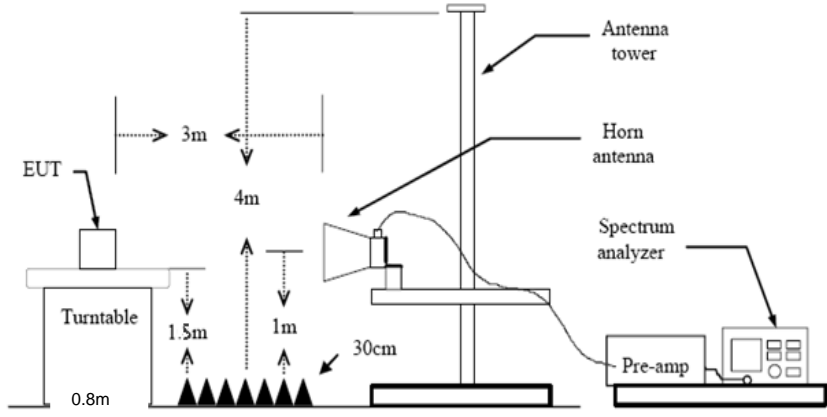
Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 6 GHz, whichever is lower



6.2 Test Setup



Below-1G



Above 1G

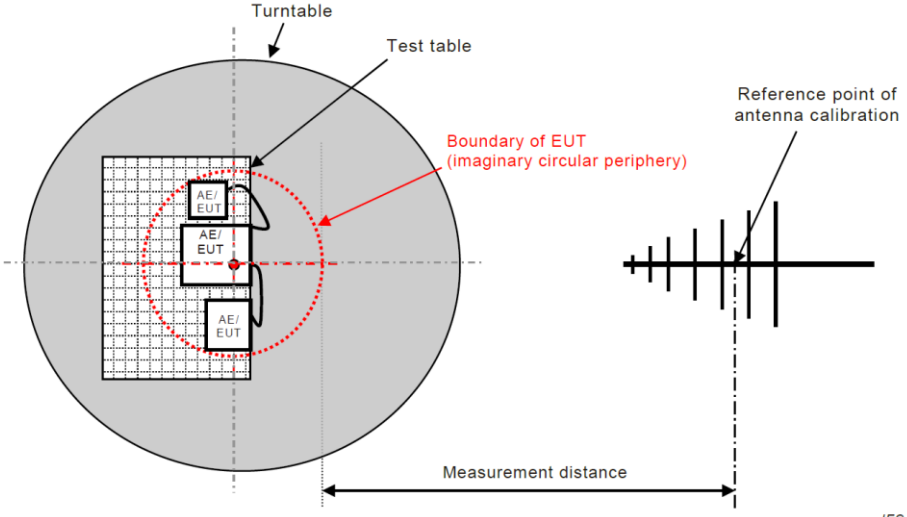


Figure C.1 – Measurement distance



6.3 Test Procedure

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT and local AE shall be arranged in the most compact practical arrangement within the test volume, while respecting typical spacing and the requirements defined in Annex D. The central point of the arrangement shall be positioned at the centre of the turntable. The measurement distance is the shortest horizontal distance between an imaginary circular periphery just encompassing this arrangement and the calibration point of the antenna. See Figure C.1 and Figure C.2.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

The initial step in collecting radiated emission data is a spectrum Quasi Peak detector mode scanning the measurement frequency range.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

6.4 Deviation From Test Standard

No deviation

6.5 Test Data

Please refer to the Attachment B.



7 Harmonic Current Emission Test

7.1 Test Standard and Limit

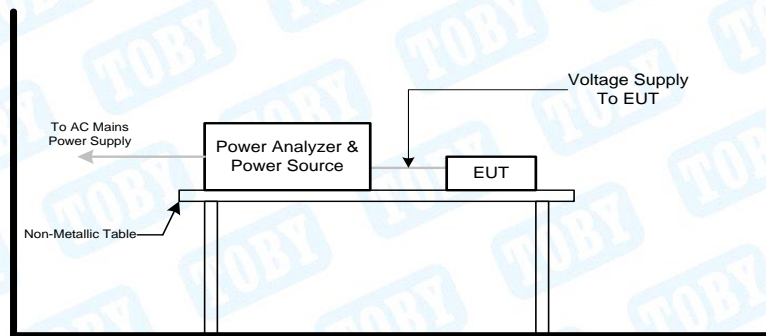
7.1.1 Test Standard

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

7.1.2 Test Limit

Limits for Class A equipment				Limits for Class D equipment		
Odd Harmonics		Even Harmonics		Harmonic Order (n)	Maximum Permissible Harmonic Current per watt (mA/W)	Maximum Permissible Harmonic Current (A)
Harmonic Order (n)	Maximum permissible harmonic Current (A)	Harmonic Order (n)	Maximum permissible harmonic Current (A)			
3	2.30	2	1.08	3	3.4	2.30
5	1.14	4	0.43	5	1.9	1.14
7	0.77	6	0.30	7	1.0	0.77
9	0.40	8 ≤ n ≤ 40	0.23X8/n	9	0.5	0.40
11	0.33			11	0.35	0.33
13	0.21			15 ≤ n ≤ 39	3.85/n	0.15X15/n
15 ≤ n ≤ 39	0.15X15/n			(odd harmonics only)		

7.2 Test Setup



7.3 Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.

The classification of EUT is according to section 5 of EN 61000-3-2. The EUT is classified as follows:

Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.

Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.

7.4 Deviation From Test Standard

No deviation



7.5 Test Data

Please refer to the Attachment C.



8 Voltage Fluctuation and Flicker Test

8.1 Test Standard and Limit

8.1.1 Test Standard

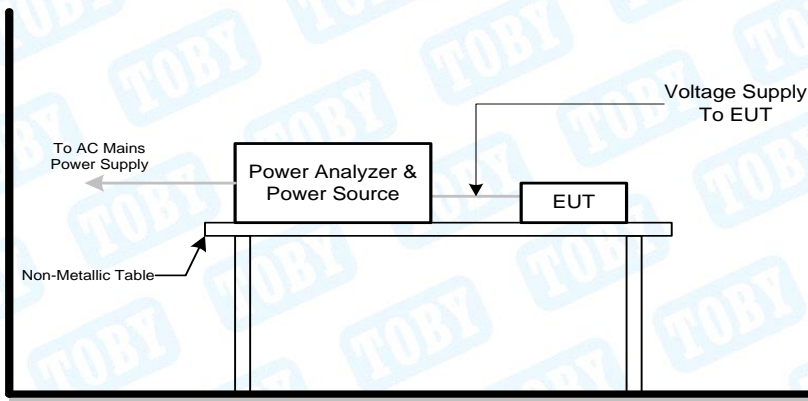
EN 61000-3-3:2013/A2:2021

8.1.2 Test Limit

Flicker Test Limit

Test Items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

8.2 Test Setup



8.3 Test Procedure

Fluctuation and Flickers Test:

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.

All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

For the actual test configuration, please refer to the related Item–Block Diagram of system tested.

8.4 Deviation From Test Standard

No deviation

8.5 Test Data

Please refer to the Attachment D.



9 Electrostatic Discharge Immunity Test

9.1 Test Standard and Limit

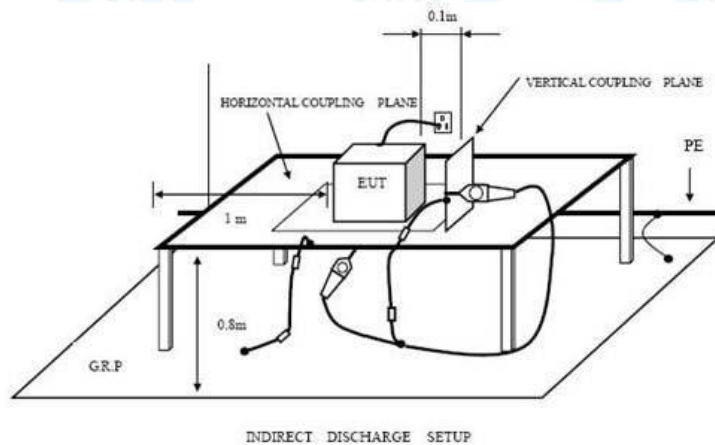
9.1.1 Test Standard

EN 55035:2017/A11:2020
EN 61000-4-2: 2009

9.1.2 Test Level

Discharge Impedance:	330 ohm/ 150pF
Discharge Voltage:	Air Discharge: 2kV/4kV/8kV(Direct) Contact Discharge: 2kV/4kV (Direct /Indirect)
Polarity:	Positive& Negative
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

9.2 Test Setup



9.3 Test Procedure

The test method shall be in accordance with CENELEC EN 61000-4-2 [2], clauses 6, 7 and 8.

For radio equipment and ancillary equipment the following requirements and evaluation of test results shall apply.

The test severity level for contact discharge shall be ± 4 kV and for air discharge ± 8 kV. All other details, including intermediate test levels, are contained within CENELEC EN 61000-4-2 [2], clause 5.

Electrostatic discharges shall be applied to all exposed surfaces of the EUT except where the user documentation specifically indicates a requirement for appropriate protective measures (as specified in CENELEC EN 61000-4-2 [2], clauses 8.3.2 and 8.3.3).

9.4 Deviation From Test Standard

No deviation



9.5 Test Data

Please refer to the Attachment E.



10 Radiated Electromagnetic Field Immunity Test

10.1 Test Standard and Limit

10.1.1 Test Standard

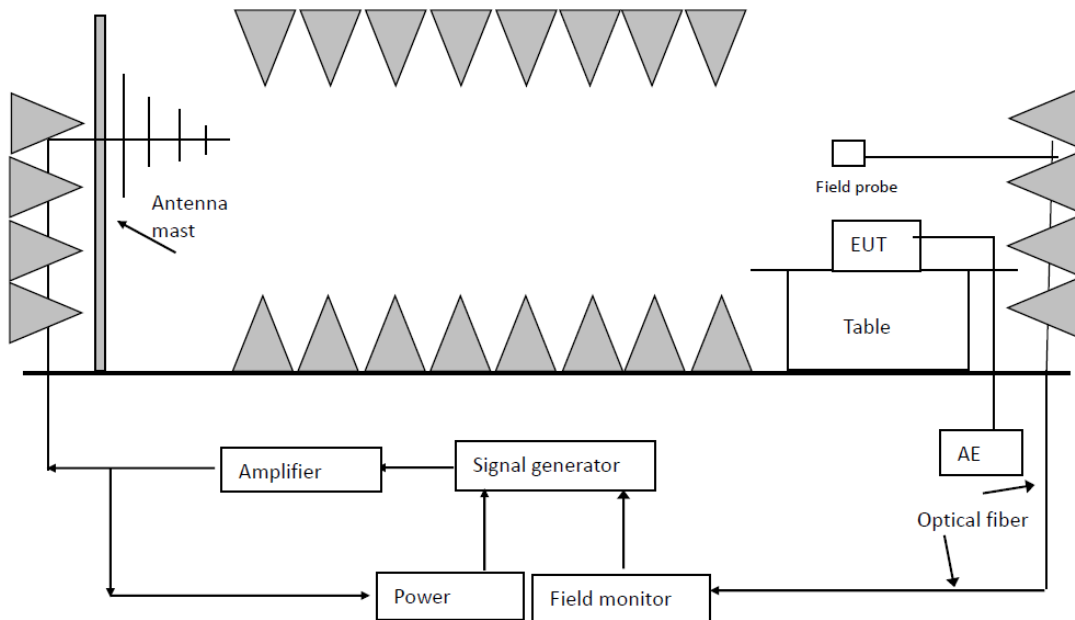
EN 55035:2017/A11:2020
EN IEC 61000-4-3:2020

10.1.2 Test Level

Test Level for Radiated Electromagnetic Field Immunity Test

Port	Test Specification
Enclosure Port	80-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz 3 V/m 80 % AM (1kHz)

10.2 Test Setup



10.3 Test Procedure

The test method shall be in accordance with CENELEC EN 61000-4-3 [3], clauses 6, 7 and 8.

The following requirements and evaluation of test results shall apply:

- the test level shall be 3 V/m (measured unmodulated). The test signal shall be amplitude modulated to a depth of 80 % by a sinusoidal audio signal of 1 000 Hz. If the wanted signal is modulated at 1 000 Hz, then an audio signal of 400 Hz shall be used;

- the test shall be performed over the frequency range 80 MHz to 6 000 MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers (see clause 4.3), as appropriate;
- for receivers and transmitters the stepped frequency increments shall be 1 % frequency increment of the momentary used frequency;
- the dwell time of the test phenomena at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond;

NOTE: Dwell time is product dependent.

- the frequencies selected and used during the test shall be recorded.

All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3V/m
Radiated Signal	80%AM,1kHz Since Wave
Scanning Frequency	80-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz

10.4 Deviation From Test Standard

No deviation

10.5 Test Data

Please refer to the Attachment F.



11 Electrical Fast Transient/Burst Test

11.1 Test Standard and Limit

11.1.1 Test Standard

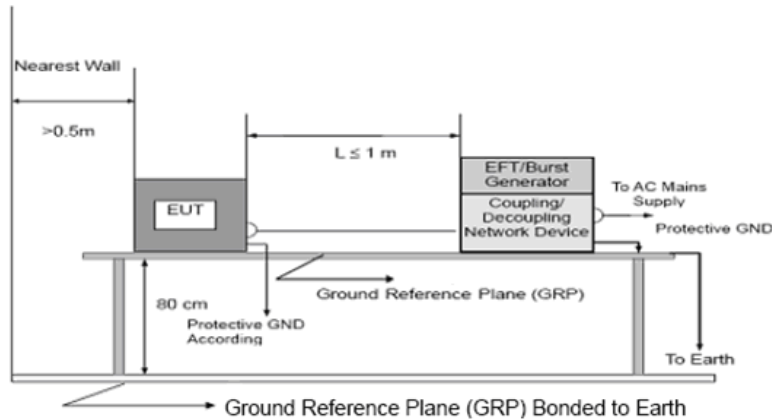
EN 55035:2017/A11:2020
EN 61000-4-4: 2012

11.1.2 Test Level

Test Level for Electrical Fast Transient Test

	On Switching Adapter Lines	On I/O (Input/Output) Signal data and control lines
Test Voltage:	1 kV	0.5 kV
Polarity:	Positive & Negative	
Impulse Wave Shape:	5/50ns	
Burst Duration:	15ms	
Burst Period:	300ms	
Test Duration:	Not less than 1 min	

11.2 Test Setup



11.3 Test Procedure

The test method shall be in accordance with CENELEC EN 61000-4-4 [4], clauses 7 and 8.

The following requirements and evaluation of test results shall apply:

- the test level for signal ports, wired network ports (excluding xDSL), and control ports shall be 0,5 kV open circuit voltage at a repetition rate of 5 kHz as given in CENELEC EN 61000-4-4 [4], clause 5;
- the test level for xDSL wired network ports shall be 0,5 kV open circuit voltage at a repetition rate of 100 kHz as given in CENELEC EN 61000-4-4 [4], clause 5;
- the test level for DC power input ports shall be 0,5 kV open circuit voltage at a repetition rate of 5 kHz as given CENELEC EN 61000-4-4 [4], clause 5;
- the test level for AC mains power input ports shall be 1 kV open circuit voltage at a repetition rate of 5 kHz as given CENELEC EN 61000-4-4 [4], clause 5.

11.4 Deviation From Test Standard

No deviation



11.5 Test Data

Please refer to the Attachment G.



12 Surge Immunity Test

12.1 Test Standard and Limit

12.1.1 Test Standard

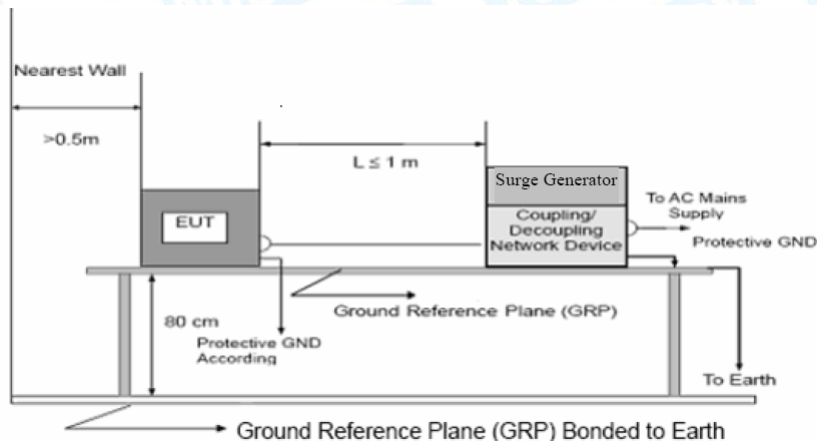
EN 55035:2017/A11:2020
EN 61000-4-5:2014/A1:2017

12.1.2 Test Level

Test Level for Surge Immunity Test

Basic Standard:	EN 61000-4-5
Test Requirement:	Analogue/digital data ports: 1KV (see a)
	DC network power ports: 0.5KV
	AC mains power ports: 1KV(Line-Line), 2KV(Line-earth)
Tr/Th	1.2/50us, 10/700us
Polarity:	Positive/Negative
Phase Angle:	0/90/180/270
Pulse Repetition Rate:	1 time/min.(maximum)
Number of Tests:	5 positive and 5 negative at selected points
a: Port type: coaxial or shielded. Apply: shield to ground.	

12.2 Test Setup



12.3 Test Procedure

- 1) Set the parameters of the CW generator and interference generator as shown in tables 4.2.9.2-1 and 4.2.9.2-2.
- 2) Set the power level of the UE according to tables 4.2.9.2-1 and 4.2.9.2-2 with a $\pm 1\text{ dB}$ tolerance.
- 3) Measure the BER of DCH received from the UE at the SS.

Details of initial conditions for UEs supporting UTRA FDD can be found in ETSI TS 134 121-1 [1], clause 6.7.

12.4 Deviation From Test Standard

No deviation

12.5 Test Data

Please refer to the Attachment H.



13 RF Common Mode

13.1 Test Standard and Limit

13.1.1 Test Standard

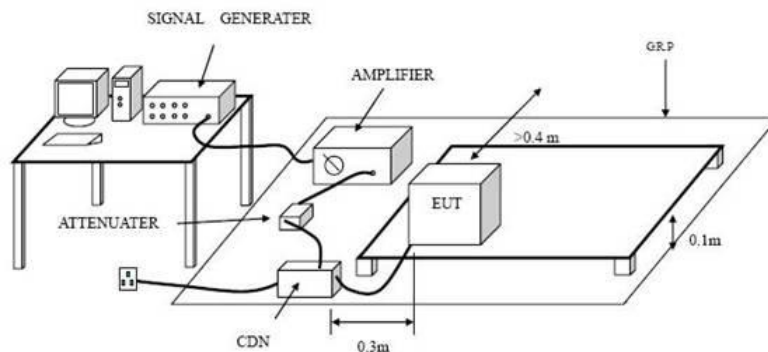
EN 55035:2017/A11:2020
EN 61000-4-6: 2014

13.1.2 Test Level

Test Level for RF Common Mode

Port	Test Specification
Input AC power port/ Signal Port/ Input DC Port	0.15MHz~10MHz 3V(r.m.s.) (unmodulated)
	10MHz~30MHz 3V to 1V(r.m.s.) (unmodulated)
	30MHz~80MHz 1V(r.m.s.) (unmodulated)
Test Signal	80% AM modulated sine wave, 1KHz
Note: Only applies when the overall cable length between the EUT and another item of active equipment may be greater than 3 m.	

13.2 Test Setup



13.3 Test Procedure

The following requirements and evaluation of test results shall apply:

- the test level shall be severity level 2 as given in CENELEC EN 61000-4-6 [6], clause 5 corresponding to 3 V rms unmodulated. The test signal shall then be amplitude modulated to a depth of 80 % by a sinusoidal audio signal of 1 000 Hz. If the wanted signal is modulated at 1 000 Hz, then the test signal of 400 Hz shall be used;
- the test shall be performed over the frequency range 150 kHz to 80 MHz with the exception of an exclusion band for transmitters, and for receivers and duplex transceivers, (see clause 4.3);
- for receivers and transmitters the stepped frequency increments shall be 1 % frequency increment of the momentary frequency in the frequency range 150 kHz to 80 MHz;
- the injection method to be used shall be selected according to the basic standard CENELEC EN 61000-4-6 [6], clause 7;



-
- responses on receivers or receiver parts of transceivers occurring at discrete frequencies which are narrow band responses (spurious responses), are disregarded from the test (as specified in clause 4); the dwell time of the test phenomena at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond;
 - the frequencies of the immunity test signal selected and used during the test shall be recorded.

13.4 Deviation From Test Standard

No deviation

13.5 Test Data

Please refer to the Attachment I.



14 Voltage Dips and Interruptions Immunity Test

14.1 Test Standard and Limit

14.1.1 Test Standard

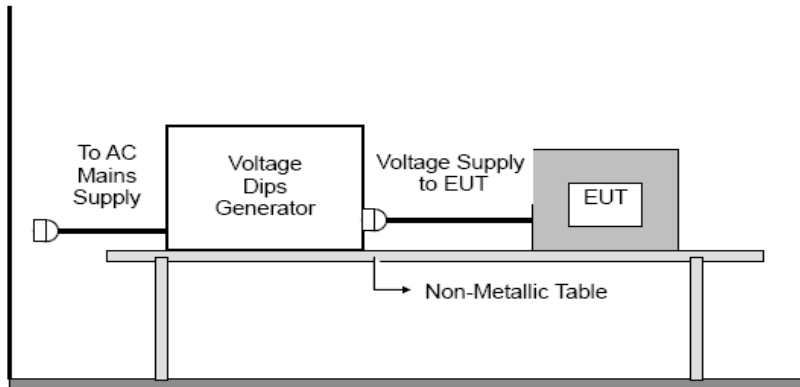
EN 55035:2017/A11:2020
EN IEC 61000-4-11:2020

14.1.2 Test Level

Test Level for Voltage Dips and Interruptions

Basic Standard:	EN 61000-4-11
Required Performance:	B(For 100%, 0.5 cycle Voltage Dips) C(For 70%, 25 cycles for 50Hz, 30 cycles for 50Hz Voltage Dips) C(For 100%, 250 cycles for 50Hz, 300 cycles for 50Hz Voltage Interruptions)
Test Duration Time:	Minimum three test events in sequence
Interval Between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

14.2 Test Setup



14.3 Test Procedure

The following requirements and evaluation of test results shall apply. The test method shall be in accordance with CENELEC EN 61000-4-11 [7], clause 8 or for equipment requiring a mains current of greater than 16 A CENELEC EN 61000-4-34 [16], clause 8 shall be used.

The test levels shall be:

- voltage dip: 0 % residual voltage for 0,5 cycle;
- voltage dip: 0 % residual voltage for 1 cycle;
- voltage dip: 70 % residual voltage for 25 cycles (at 50 Hz);
- voltage interruption: 0 % residual voltage for 250 cycles (at 50 Hz).

14.4 Deviation From Test Standard

No deviation



14.5 Test Data

Please refer to the Attachment J.



15 Photographs - Constructional Details

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT



Photo 3 Appearance of EUT



Photo 4 Appearance of EUT



Photo 5 Appearance of EUT



Photo 6 Internal of EUT

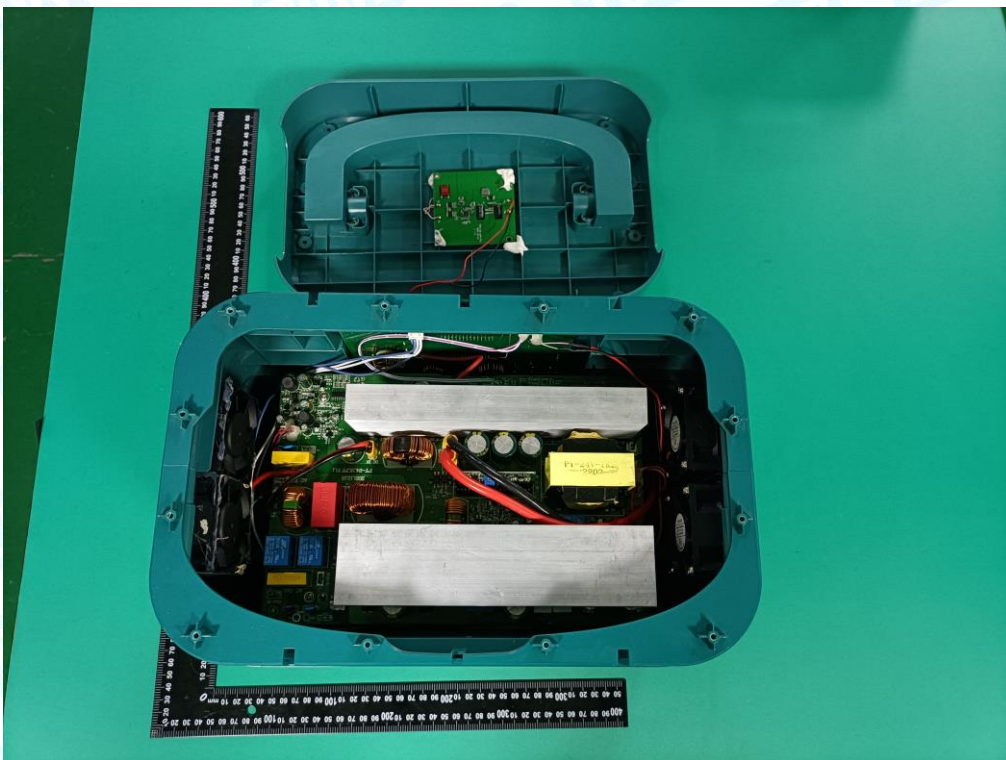


Photo 7 Internal of EUT

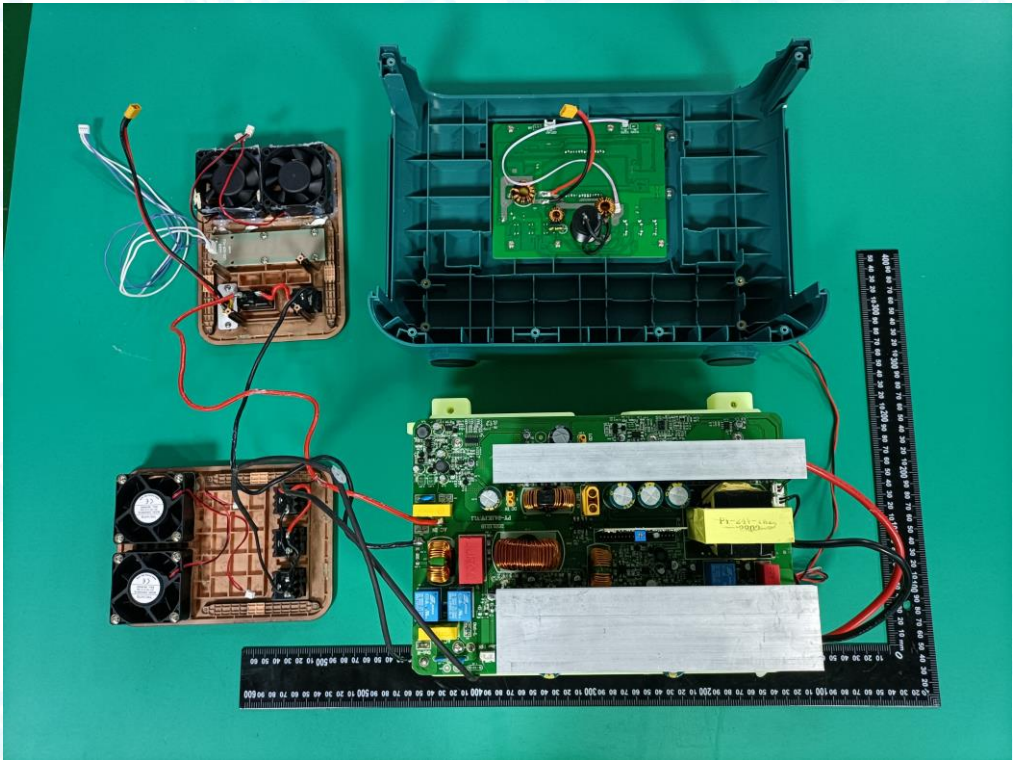


Photo 8 Appearance of PCB

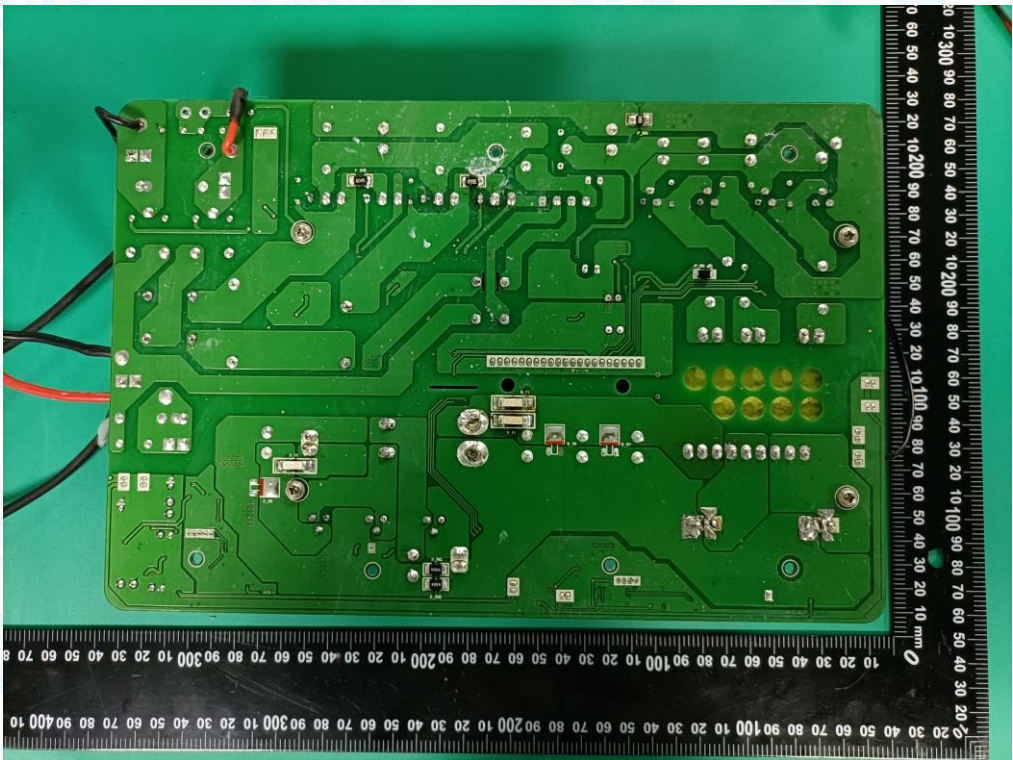


Photo 9 Appearance of PCB



Photo 10 Appearance of PCB

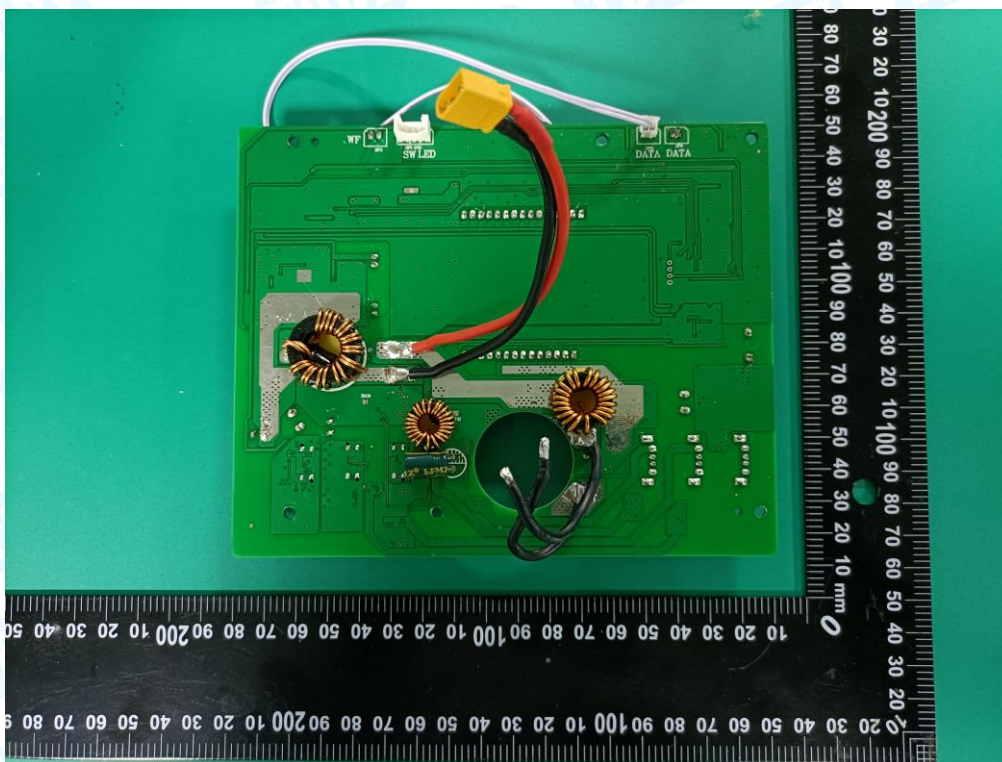


Photo 11 Appearance of PCB

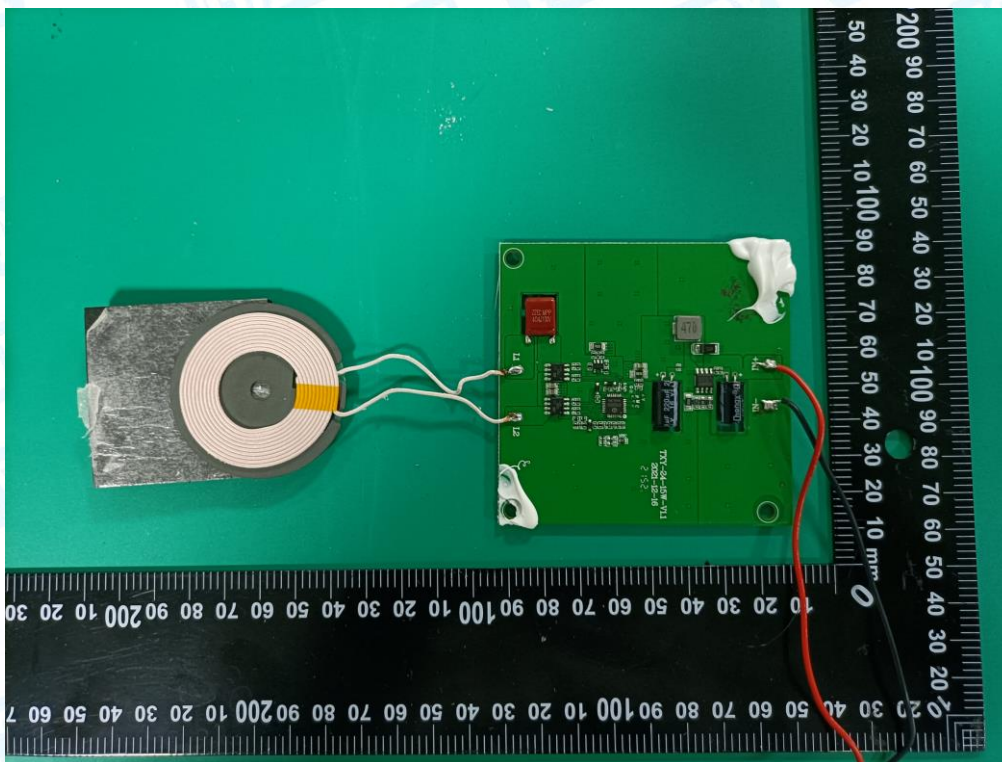
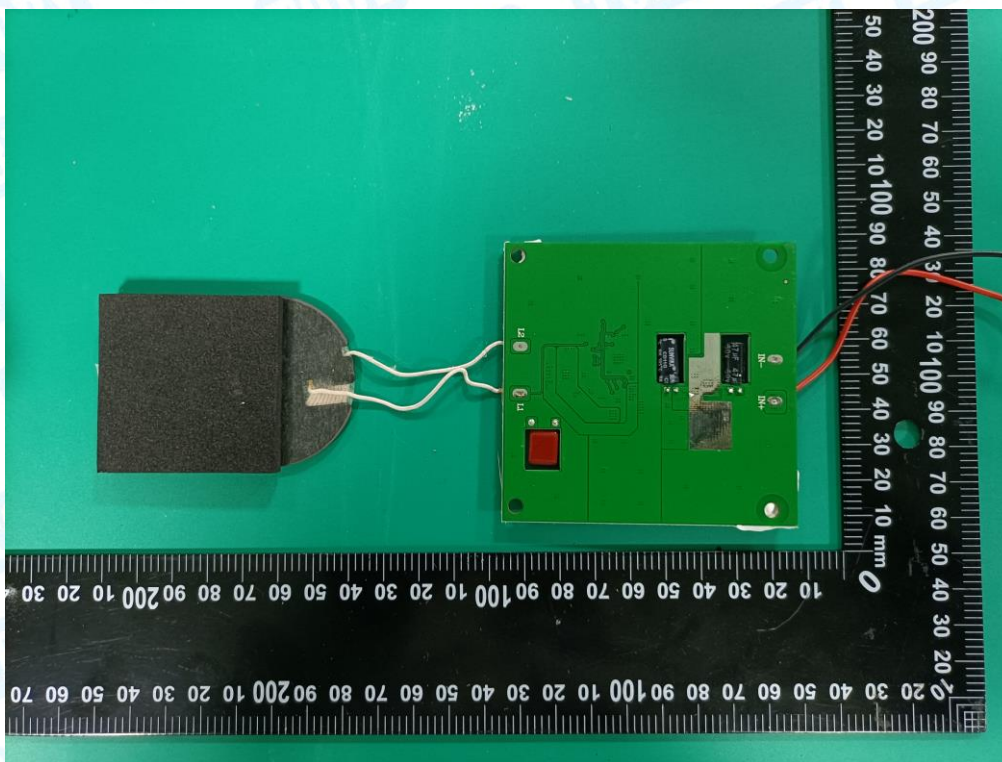


Photo 12 Appearance of PCB

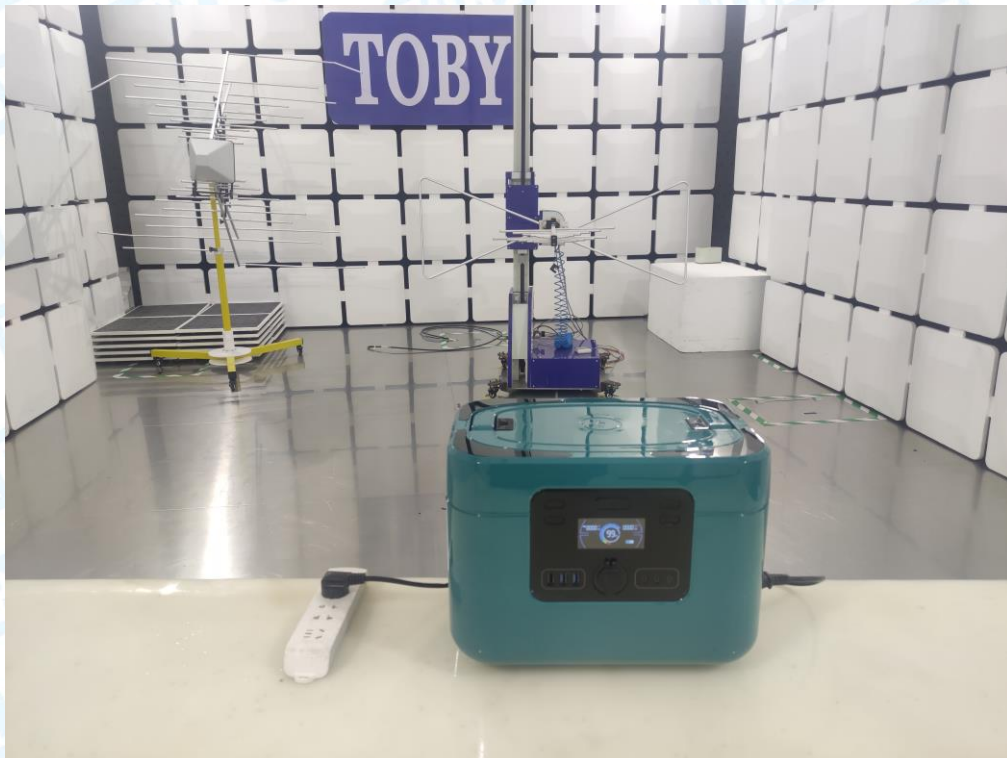


16 Photographs - Test Setup

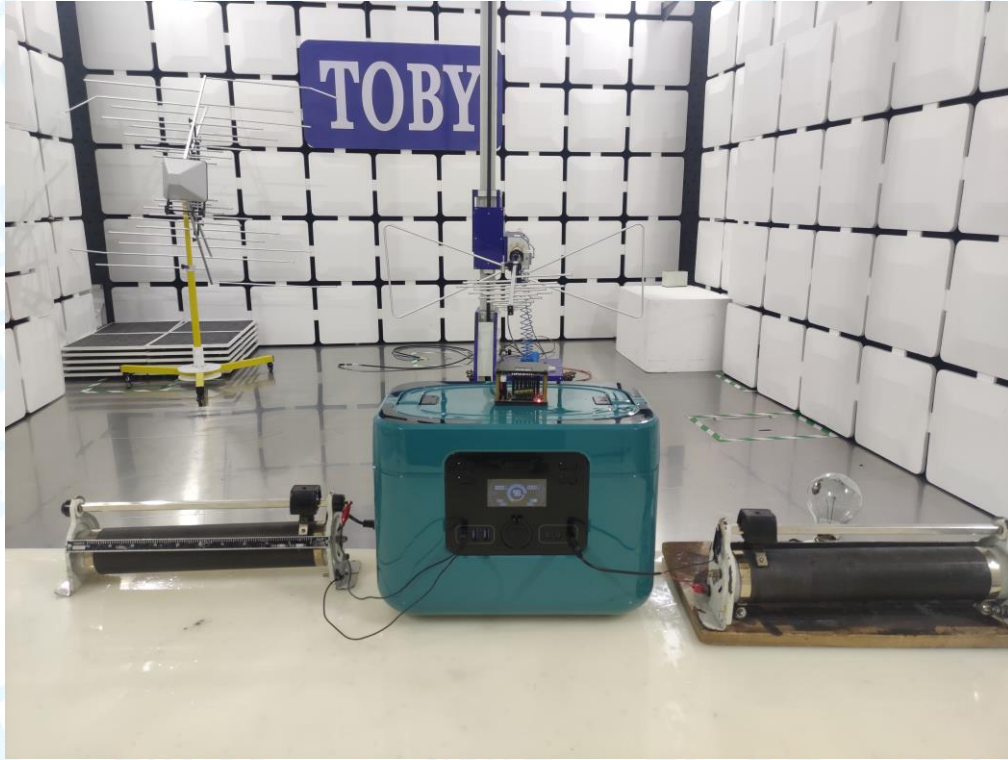
Conducted Emission Test Setup



Radiated Emission Test Setup



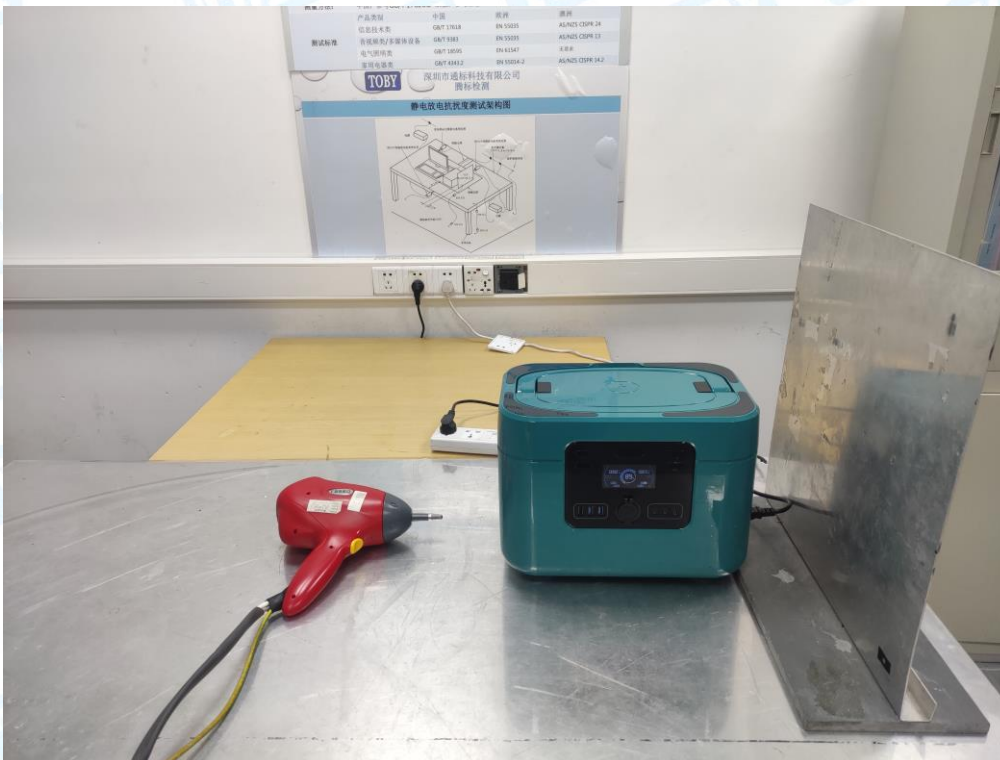
Radiated Emission Test Setup



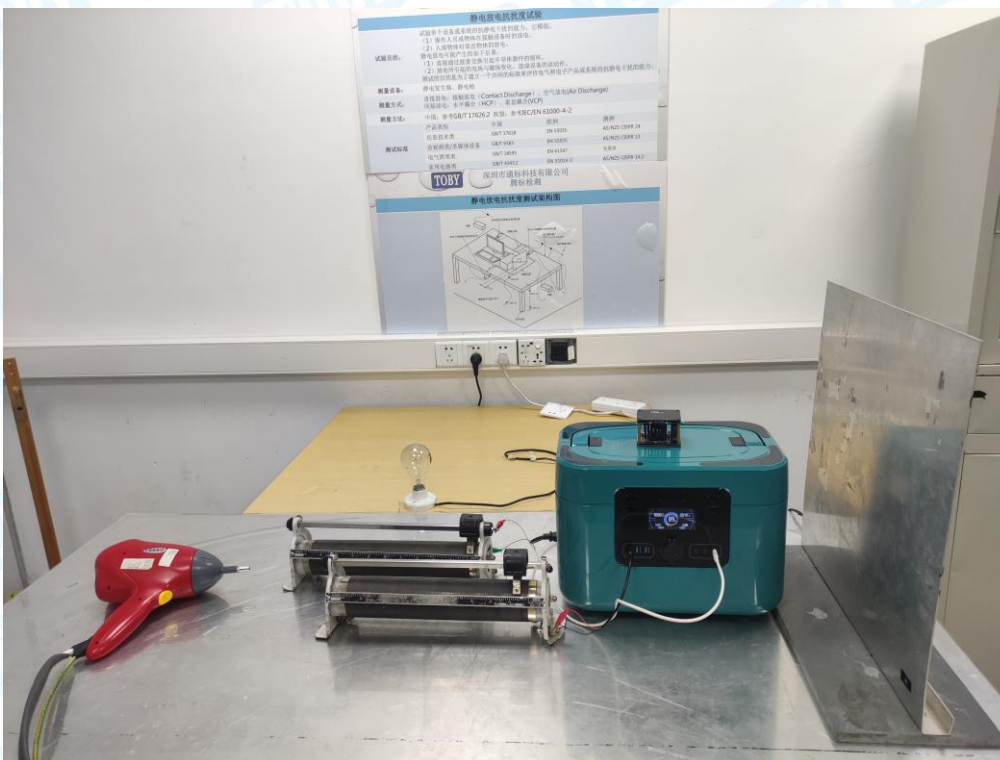
Harmonic current emissions and Voltage fluctuations & flicker Test Setup



Electrostatic Discharge Test Setup



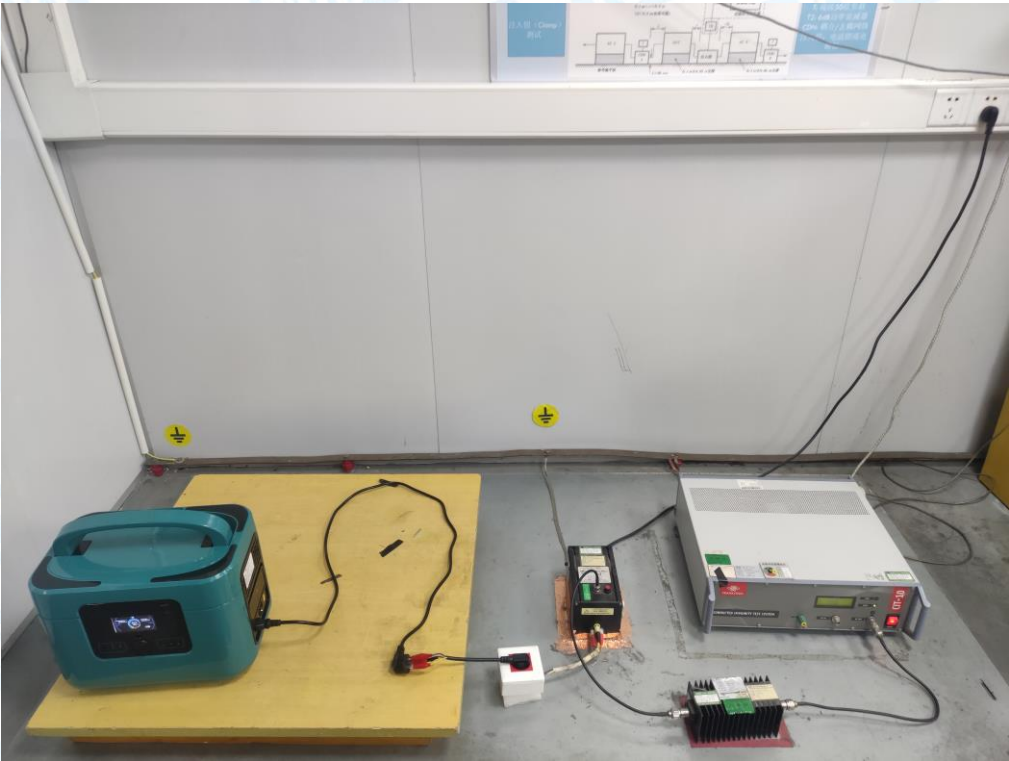
Electrostatic Discharge Test Setup



EFT, Surge, Voltage Dips Test Setup

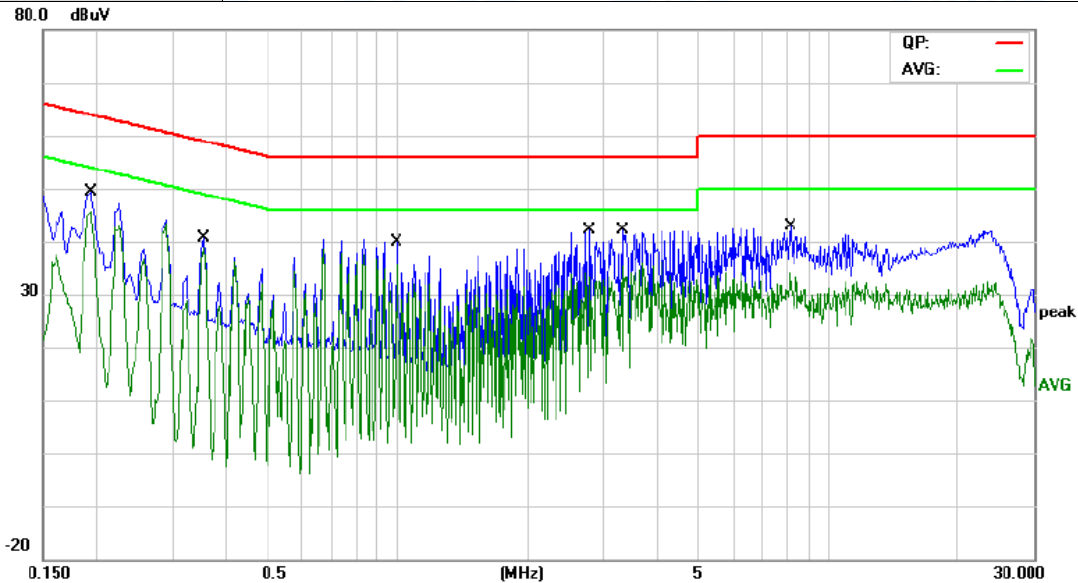


Radio-frequency, Continuous Conducted Disturbance Test Setup



Attachment A--Conducted Emission Data (AC Mains)

Temperature:	24.5°C	Relative Humidity:	45%
Pressure:	1010 hPa		
Test Voltage:	AC 110V/60 Hz		
Terminal:	Line		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



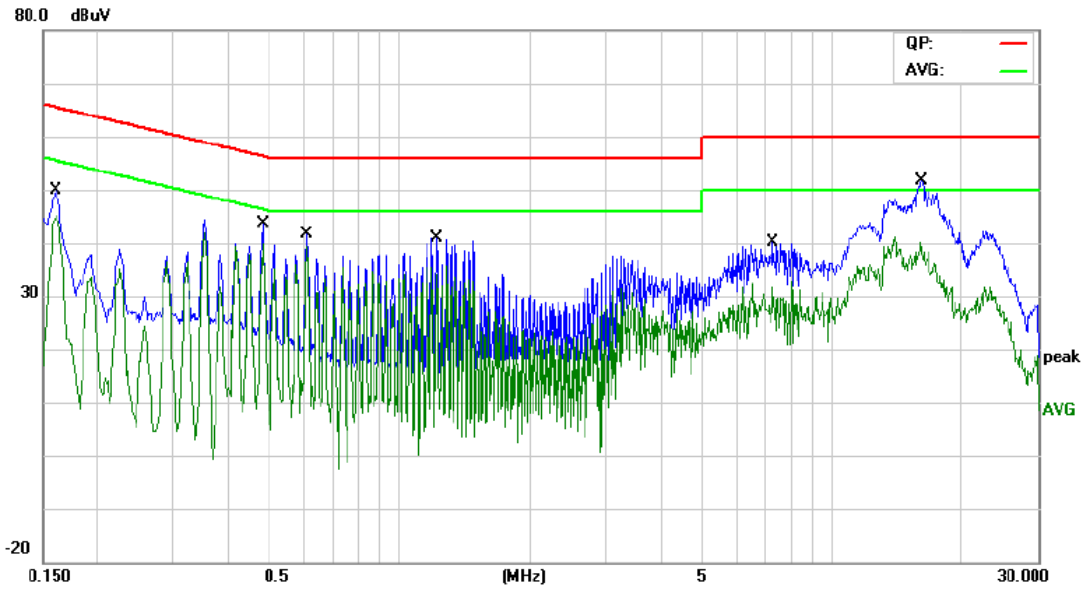
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1940	37.62	11.66	49.28	63.86	-14.58	QP
2	*	0.1940	34.06	11.66	45.72	53.86	-8.14	AVG
3		0.3537	29.15	11.51	40.66	58.87	-18.21	QP
4		0.3537	27.48	11.51	38.99	48.87	-9.88	AVG
5		0.9939	28.69	11.20	39.89	56.00	-16.11	QP
6		0.9939	24.35	11.20	35.55	46.00	-10.45	AVG
7		2.7860	31.86	10.23	42.09	56.00	-13.91	QP
8		2.7860	23.80	10.23	34.03	46.00	-11.97	AVG
9		3.3340	32.07	10.15	42.22	56.00	-13.78	QP
10		3.3340	25.14	10.15	35.29	46.00	-10.71	AVG
11		8.1776	32.90	10.07	42.97	60.00	-17.03	QP
12		8.1776	24.06	10.07	34.13	50.00	-15.87	AVG

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)



Temperature:	24.5°C	Relative Humidity:	45%
Pressure:	1010 hPa		
Test Voltage:	AC 110V/60 Hz		
Terminal:	Neutral		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1607	38.30	11.60	49.90	65.42	-15.52	QP
2		0.1607	33.51	11.60	45.11	55.42	-10.31	AVG
3		0.4818	32.01	11.50	43.51	56.31	-12.80	QP
4	*	0.4818	28.33	11.50	39.83	46.31	-6.48	AVG
5		0.6097	30.13	11.47	41.60	56.00	-14.40	QP
6		0.6097	27.90	11.47	39.37	46.00	-6.63	AVG
7		1.2218	29.85	11.04	40.89	56.00	-15.11	QP
8		1.2218	23.20	11.04	34.24	46.00	-11.76	AVG
9		7.3258	30.01	10.03	40.04	60.00	-19.96	QP
10		7.3258	21.50	10.03	31.53	50.00	-18.47	AVG
11		16.0619	41.27	10.39	51.66	60.00	-8.34	QP
12		16.0619	29.68	10.39	40.07	50.00	-9.93	AVG

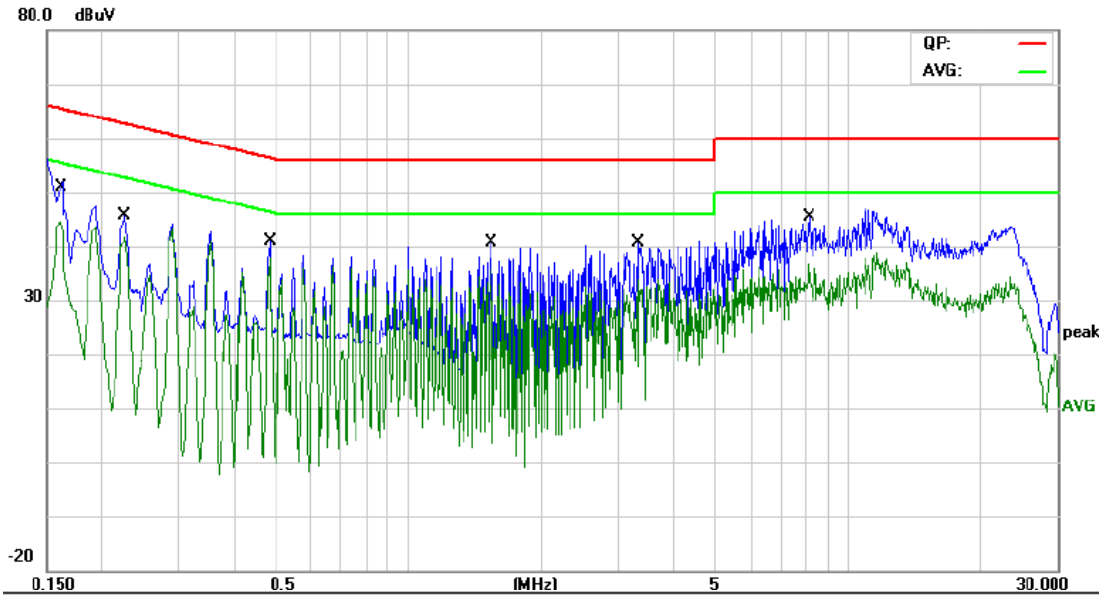
Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = Quasi Peak/Average (dBuV) - Limit (dBuV)



Temperature:	24.5°C	Relative Humidity:	45%
Pressure:	1010 hPa		
Test Voltage:	AC 230V/50 Hz		
Terminal:	Line		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



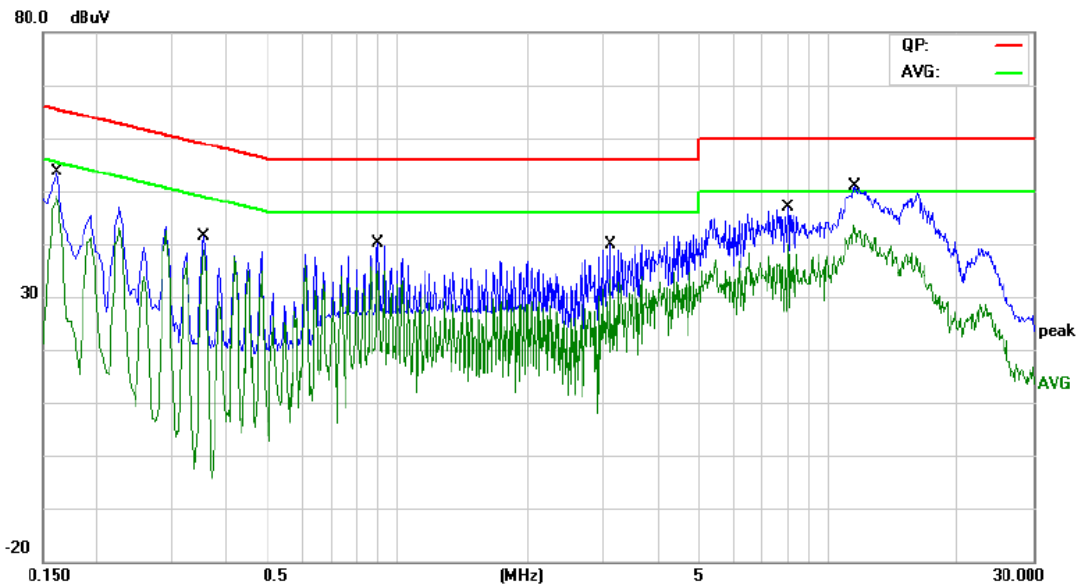
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1597	44.62	11.60	56.22	65.47	-9.25	QP
2		0.1597	33.06	11.60	44.66	55.47	-10.81	AVG
3		0.2260	33.98	11.64	45.62	62.59	-16.97	QP
4		0.2260	29.97	11.64	41.61	52.59	-10.98	AVG
5		0.4818	29.34	11.50	40.84	56.31	-15.47	QP
6	*	0.4818	26.28	11.50	37.78	46.31	-8.53	AVG
7		1.5380	29.89	10.81	40.70	56.00	-15.30	QP
8		1.5380	24.73	10.81	35.54	46.00	-10.46	AVG
9		3.3340	30.57	10.15	40.72	56.00	-15.28	QP
10		3.3340	23.64	10.15	33.79	46.00	-12.21	AVG
11		8.1777	35.40	10.07	45.47	60.00	-14.53	QP
12		8.1777	26.56	10.07	36.63	50.00	-13.37	AVG

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Quasi Peak/Average (dBuV) - Limit (dBuV)



Temperature:	24.5°C	Relative Humidity:	45%
Pressure:	1010 hPa		
Test Voltage:	AC 230V/50 Hz		
Terminal:	Neutral		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1620	41.94	11.60	53.54	65.36	-11.82	QP
2		0.1620	36.32	11.60	47.92	55.36	-7.44	AVG
3		0.3537	29.99	11.51	41.50	58.87	-17.37	QP
4		0.3537	27.30	11.51	38.81	48.87	-10.06	AVG
5		0.9020	28.97	11.27	40.24	56.00	-15.76	QP
6		0.9020	23.62	11.27	34.89	46.00	-11.11	AVG
7		3.1179	29.73	10.16	39.89	56.00	-16.11	QP
8		3.1179	23.19	10.16	33.35	46.00	-12.65	AVG
9		8.0297	36.72	10.06	46.78	60.00	-13.22	QP
10		8.0297	29.79	10.06	39.85	50.00	-10.15	AVG
11		11.4379	40.69	10.20	50.89	60.00	-9.11	QP
12	*	11.4379	33.54	10.20	43.74	50.00	-6.26	AVG

Remark:

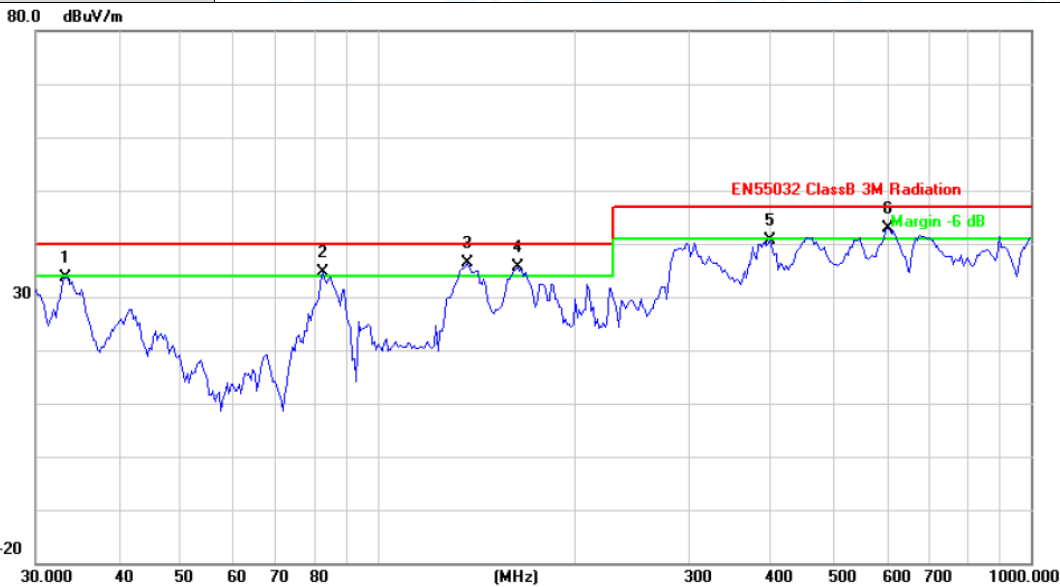
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Quasi Peak/Average (dBuV) - Limit (dBuV)



Attachment B--Radiated Emission Test Data

----Below 1GHz

Temperature:	22.6°C	Relative Humidity:	42%
Pressure:	1010 hPa		
Test Voltage:	AC 230V/50Hz		
Ant. Pol.	Horizontal		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



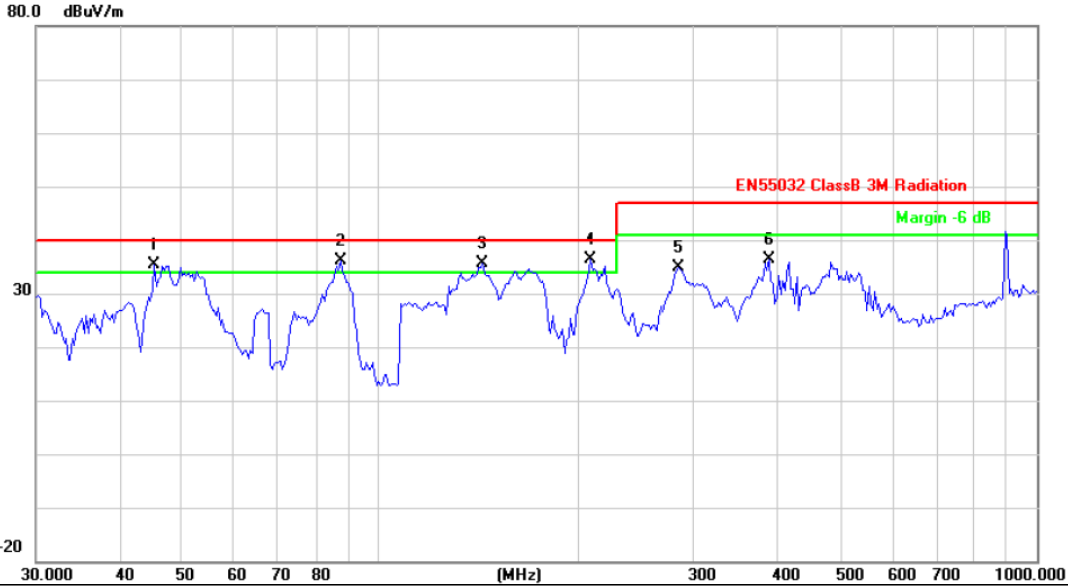
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		33.3278	49.53	-15.88	33.65	40.00	-6.35	peak
2	!	82.3588	57.09	-22.53	34.56	40.00	-5.44	peak
3	*	137.4201	59.02	-22.61	36.41	40.00	-3.59	peak
4	!	163.7549	56.42	-20.89	35.53	40.00	-4.47	peak
5		399.0300	53.08	-12.43	40.65	47.00	-6.35	peak
6	!	603.5392	51.19	-8.38	42.81	47.00	-4.19	peak

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dB μ V/m) = Corr. (dB/m) + Read Level (dB μ V)
3. Margin (dB) = Quasi Peak (dB μ V/m)-Limit QPK (dB μ V/m)



Temperature:	22.6°C	Relative Humidity:	42%
Pressure:	1010 hPa		
Test Voltage:	AC 230V/50Hz		
Ant. Pol.	Vertical		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



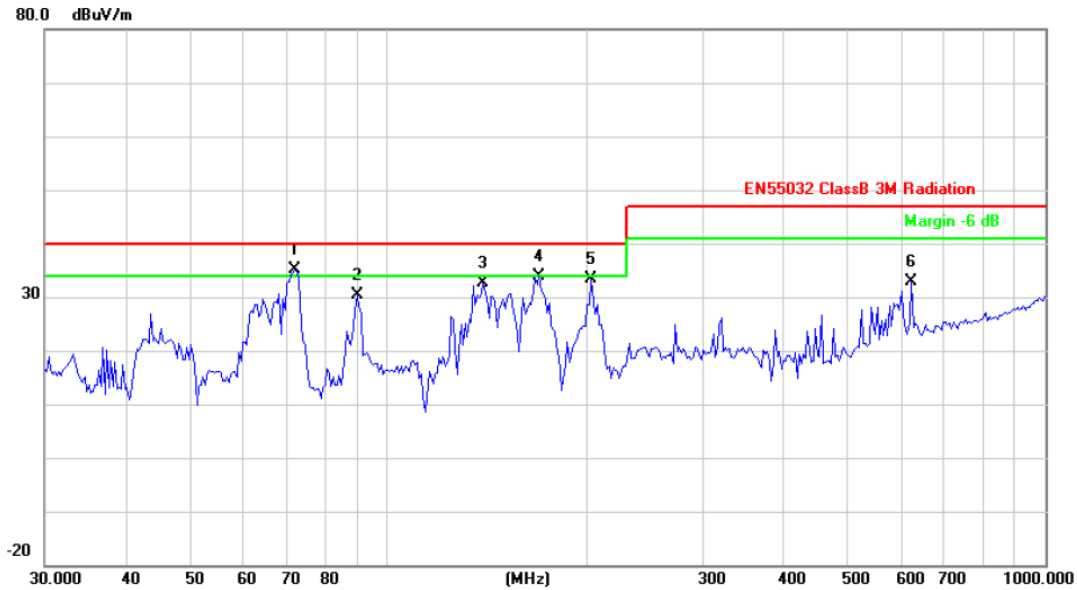
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	!	45.3755	57.31	-22.03	35.28	40.00	-4.72	peak
2	!	87.1116	58.42	-22.26	36.16	40.00	-3.84	peak
3	!	143.3260	58.00	-22.28	35.72	40.00	-4.28	peak
4	*	209.3129	55.93	-19.59	36.34	40.00	-3.66	peak
5		284.9766	51.44	-16.59	34.85	47.00	-12.15	peak
6		390.7225	49.27	-12.81	36.46	47.00	-10.54	peak

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Quasi Peak (dBμV/m)-Limit QPK (dBμV/m)



Temperature:	22.6°C	Relative Humidity:	42%
Pressure:	1010 hPa		
Test Voltage:	AC 100V		
Ant. Pol.	Horizontal		
Test Mode:	Mode 2		
Remark:	Only showed test data of the worst mode		



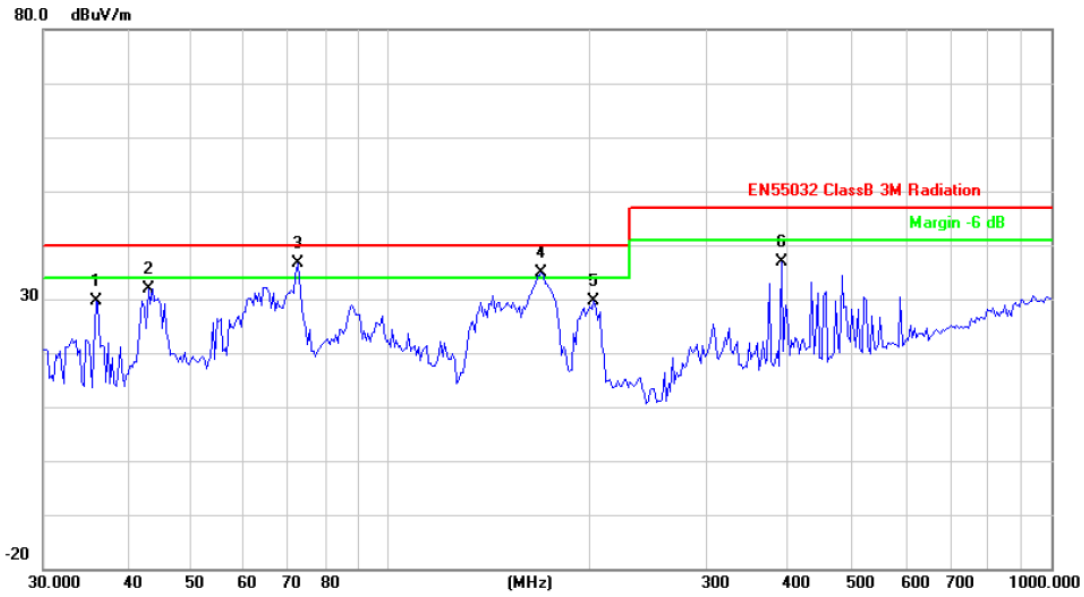
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	72.0841	58.52	-23.48	35.04	40.00	-4.96	peak
2		89.5899	52.54	-22.13	30.41	40.00	-9.59	peak
3		139.3611	55.24	-22.62	32.62	40.00	-7.38	peak
4		169.5988	54.55	-20.68	33.87	40.00	-6.13	peak
5		203.5226	53.29	-19.91	33.38	40.00	-6.62	peak
6		625.0778	41.13	-8.21	32.92	47.00	-14.08	peak

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dB μ V/m) = Corr. (dB/m) + Read Level (dB μ V)
3. Margin (dB) = Quasi Peak (dB μ V/m)-Limit QPK (dB μ V/m)



Temperature:	22.6°C	Relative Humidity:	42%
Pressure:	1010 hPa		
Test Voltage:	AC 100V		
Ant. Pol.	Vertical		
Test Mode:	Mode 2		
Remark:	Only showed test data of the worst mode		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		36.0007	47.22	-17.60	29.62	40.00	-10.38	peak
2		43.2017	53.00	-21.03	31.97	40.00	-8.03	peak
3	*	72.5916	60.09	-23.43	36.66	40.00	-3.34	peak
4	!	169.5989	55.57	-20.68	34.89	40.00	-5.11	peak
5		203.5227	49.49	-19.91	29.58	40.00	-10.42	peak
6		390.7225	49.73	-12.81	36.92	47.00	-10.08	peak

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Quasi Peak (dBμV/m)-Limit QPK (dBμV/m)



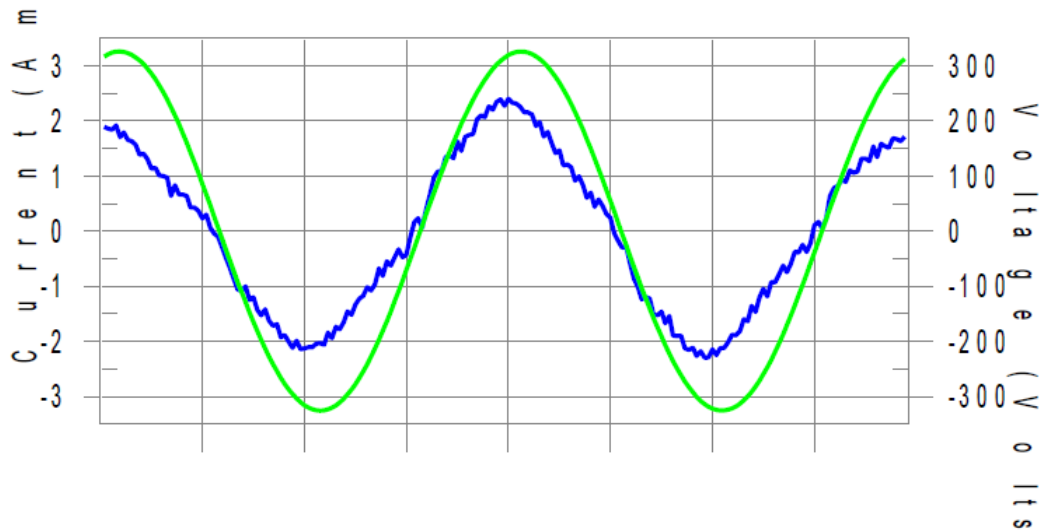
Attachment C--Harmonic Current Emission Test Data

Temperature:	24.4°C	Relative Humidity:	44%
Pressure:	1010 hPa		
Test Voltage:	AC 230V/50 Hz		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		

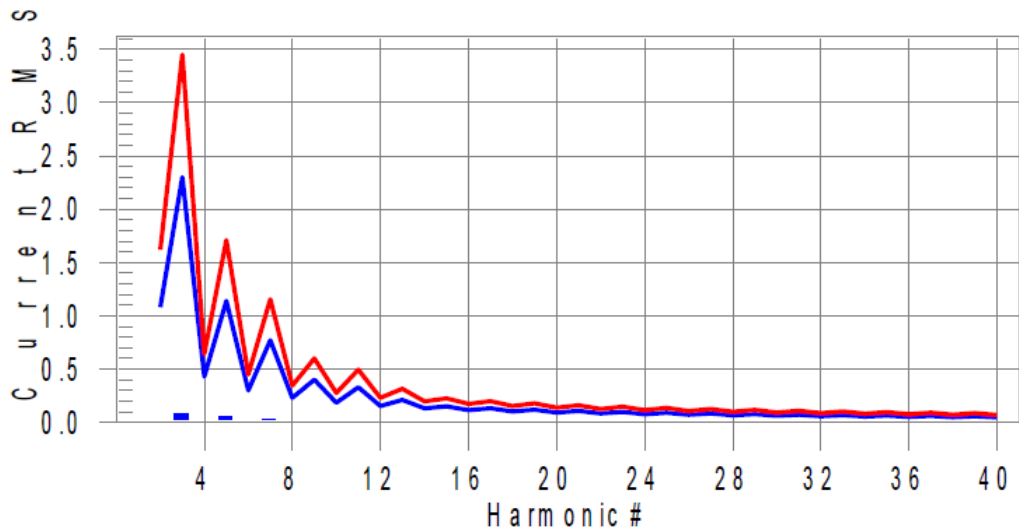
Harmonics EN/IEC61000-3-2 (Run time) Class-A

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonics H25-11.7% of 150% limit, H25-16.3% of 100% limit



Current Test Result Summary (Run time)

Test Result: Pass Source qualification: Normal
 THC(A): 0.106 I-THD(%): 8.1 POHC(A): 0.030 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 230.35	Frequency(Hz): 50.00
I_Peak (Amps): 2.452	I_RMS (Amps): 1.336
I_Fund (Amps): 1.303	Crest Factor: 1.872
Power (Watts): 293.7	Power Factor: 0.974

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.006	1.080	N/A	0.019	1.620	N/A	Pass
3	0.077	2.300	3.3	0.080	3.450	2.3	Pass
4	0.001	0.430	N/A	0.002	0.645	N/A	Pass
5	0.052	1.140	4.5	0.053	1.710	3.1	Pass
6	0.001	0.300	N/A	0.001	0.450	N/A	Pass
7	0.024	0.770	3.1	0.026	1.155	2.3	Pass
8	0.001	0.230	N/A	0.001	0.345	N/A	Pass
9	0.014	0.400	3.5	0.015	0.600	2.4	Pass
10	0.001	0.184	N/A	0.002	0.276	N/A	Pass
11	0.013	0.330	4.0	0.015	0.495	3.0	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.012	0.210	5.9	0.014	0.315	4.5	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.011	0.150	7.2	0.012	0.225	5.1	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.013	0.132	9.5	0.014	0.198	6.9	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.017	0.118	14.1	0.018	0.178	10.2	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.016	0.107	15.3	0.018	0.161	11.0	Pass
22	0.001	0.084	N/A	0.002	0.125	N/A	Pass
23	0.015	0.098	15.8	0.016	0.147	11.1	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.015	0.090	16.3	0.016	0.135	11.7	Pass
26	0.000	0.071	N/A	0.001	0.107	N/A	Pass
27	0.010	0.083	12.3	0.011	0.125	8.5	Pass
28	0.000	0.066	N/A	0.001	0.099	N/A	Pass
29	0.006	0.078	N/A	0.007	0.116	N/A	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.004	0.073	N/A	0.005	0.109	N/A	Pass
32	0.000	0.058	N/A	0.001	0.086	N/A	Pass
33	0.003	0.068	N/A	0.003	0.102	N/A	Pass
34	0.000	0.054	N/A	0.001	0.081	N/A	Pass
35	0.002	0.064	N/A	0.002	0.096	N/A	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.002	0.061	N/A	0.002	0.091	N/A	Pass
38	0.000	0.048	N/A	0.000	0.073	N/A	Pass
39	0.001	0.058	N/A	0.002	0.087	N/A	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass



Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	230.35	Frequency(Hz):	50.00
I_Peak (Amps):	2.452	I_RMS (Amps):	1.336
I_Fund (Amps):	1.303	Crest Factor:	1.872
Power (Watts):	293.7	Power Factor:	0.974

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.050	0.460	10.83	OK
3	0.527	2.072	25.43	OK
4	0.050	0.461	10.76	OK
5	0.056	0.921	6.08	OK
6	0.026	0.461	5.56	OK
7	0.032	0.691	4.64	OK
8	0.009	0.461	1.92	OK
9	0.020	0.461	4.26	OK
10	0.013	0.461	2.80	OK
11	0.016	0.230	6.73	OK
12	0.012	0.230	5.19	OK
13	0.014	0.230	5.93	OK
14	0.006	0.230	2.62	OK
15	0.010	0.230	4.27	OK
16	0.007	0.230	2.87	OK
17	0.012	0.230	5.11	OK
18	0.010	0.230	4.55	OK
19	0.013	0.230	5.56	OK
20	0.010	0.230	4.38	OK
21	0.012	0.230	5.25	OK
22	0.004	0.230	1.53	OK
23	0.013	0.230	5.44	OK
24	0.004	0.230	1.67	OK
25	0.013	0.230	5.69	OK
26	0.003	0.230	1.27	OK
27	0.010	0.230	4.22	OK
28	0.003	0.230	1.29	OK
29	0.007	0.230	2.95	OK
30	0.002	0.230	0.94	OK
31	0.007	0.230	2.93	OK
32	0.002	0.230	0.97	OK
33	0.006	0.230	2.40	OK
34	0.002	0.230	1.00	OK
35	0.005	0.230	1.96	OK
36	0.003	0.230	1.09	OK
37	0.003	0.230	1.18	OK
38	0.002	0.230	0.85	OK
39	0.006	0.230	2.67	OK
40	0.005	0.230	2.05	OK



Attachment D--Voltage Fluctuation and Flicker Test Data

Temperature:	24.4°C	Relative Humidity:	44%
Pressure:	1010 hPa		
Test Voltage:	AC 230V/50 Hz		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		

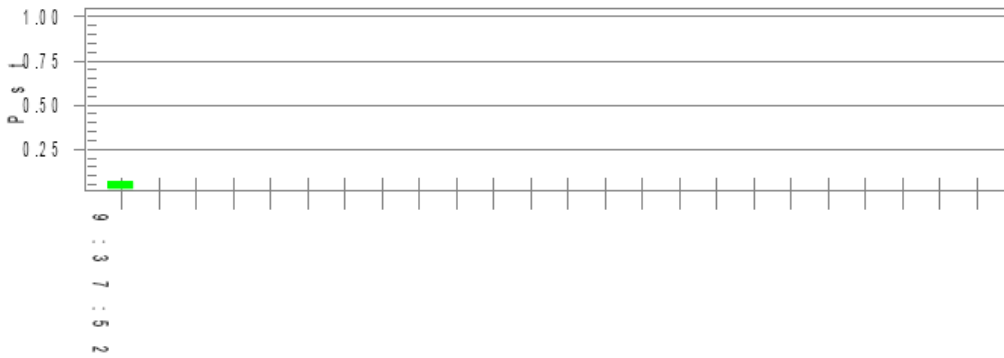
Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Test Result: Pass

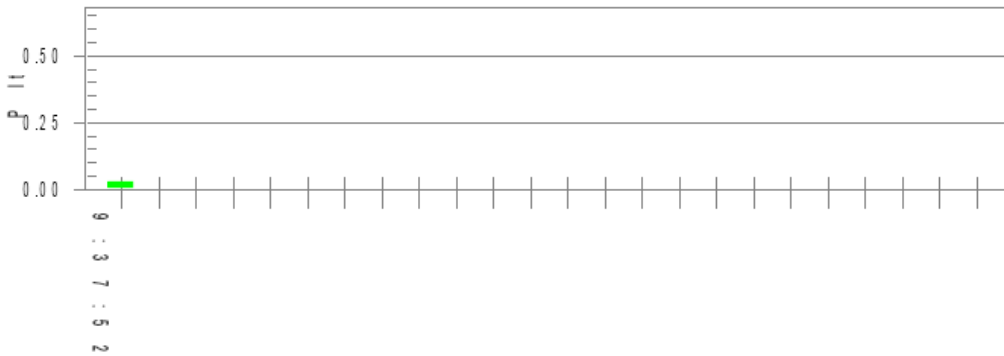
Status: Test Completed

Pst_t and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	227.38		
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650 Pass


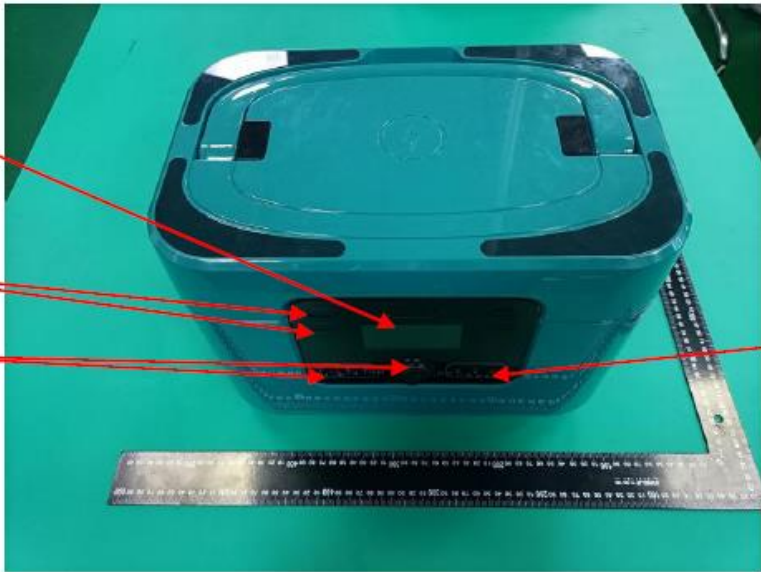


Attachment E--Electrostatic Discharge Test Data

Temperature : 23.5°C		Humidity : 54%	
Pressure : 1008 hPa			
Power supply : AC 230V		Test Mode : Mode 1	
Required Performance Criteria: B			
Air Discharge: $\pm 2/\pm 4/\pm 8$ kV Contact Discharge: $\pm 2/\pm 4$ kV			
Location	Test Level (kV)	Judgment	Result
A1	± 2 kV ± 4 kV ± 8 kV	A	PASS
A2		A	
A3		A	
A4		A	
A5		A	
A6		A	
A7		A	
/	± 2 kV ± 4 kV	/	
HCP	± 4 kV	A	
VCP	± 4 kV	A	
Note: "/" Representative the test not applicable			



Test Location Photos

<p>A1</p>		<p>A2</p> <p>A3</p>
<p>A7</p> <p>A6</p> <p>A5</p>		<p>A4</p>

Note:

- 1) Criteria A: There was no change operated with initial operating during the test.
- 2) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 3) Criteria C: The system shut down during the test.



Attachment F--RF Field Strength Susceptibility Test Data

Temperature	: 23.8°C	Humidity	: 50%						
Pressure	: 1008 hPa								
Power supply	: AC 230V	Test Mode	: Mode 1						
EN 55035:2017/A11:2020									
Required Performance Criteria: A									
Modulation: AM 80%, Field strength: 3V/m, Pulse: 1 kHz.									
Antenna Polarity	Actual Performance Criteria				Result				
	Frequency Range: 80~1000MHz								
	EUT Position								
	Front	Right	Rear	Left					
H	A	A	A	A	PASS				
V	A	A	A	A	PASS				
EUT Position	Frequency								Result
	1800MHz		2600MHz		3500MHz		5000MHz		
	Antenna Polarity								
	H	V	H	V	H	V	H	V	
Front	A	A	A	A	A	A	A	A	PASS
Right	A	A	A	A	A	A	A	A	PASS
Rear	A	A	A	A	A	A	A	A	PASS
Left	A	A	A	A	A	A	A	A	PASS
Remark:									
1) Criteria A: There was no change operated with initial operating during the test.									
2) Criteria B: The EUT function loss during the test, but self-recoverable after the test.									
3) Criteria C: The system shut down during the test.									



Attachment G--Electrical Fast Transient/Burst Test Data

Temperature : 23.5°C		Humidity : 54%				
Pressure : 1008 hPa						
Power supply : AC 230V			Test Mode : Mode 1			
Required Performance Criteria: B						
Line	Voltage (kV)	Required Performance Criteria		Actual Performance Criteria		Result
		(+)	(-)	(+)	(-)	
L	1.0	B	B	A	A	PASS
N	1.0	B	B	A	A	PASS
L-N	1.0	B	B	A	A	PASS
L-PE	1.0	B	B	/	/	/
N-PE	1.0	B	B	/	/	/
L-N-PE	1.0	B	B	/	/	/
Analogue/digital data ports	0.5	B	B	/	/	/
Wired Network Port	0.5	B	B	/	/	/
Remark:						
1) Criteria A: There was no change operated with initial operating during the test. 2) Criteria B: The EUT function loss during the test, but self-recoverable after the test. 3) Criteria C: The system shut down during the test.						



Attachment H--Surge Immunity Test Data

Temperature : 23.5°C Humidity : 54%

Pressure : 1008 hPa

Power supply : AC 230V Test Mode : Mode 1

Required Performance Criteria: B

 T_r/T_h : 1.2/50us for AC Power Port, T_r/T_h : 10/700us for data ports

Injected Line	Voltage (kV)	Pulse number	Phase	Actual Performance Criteria		Result	
				(+)	(-)	(+)	(-)
L-N	1.0	10	0°	A	A	PASS	PASS
		10	90°	A	A	PASS	PASS
		10	180°	A	A	PASS	PASS
		10	270°	A	A	PASS	PASS
L-PE, N-PE	2.0	10	0°	/	/	/	/
		10	90°	/	/	/	/
		10	180°	/	/	/	/
		10	270°	/	/	/	/
L-N-PE	2.0	10	0°	/	/	/	/
		10	90°	/	/	/	/
		10	180°	/	/	/	/
		10	270°	/	/	/	/
Analogue/digital data ports	1.0	/	+/-	/	/	/	/
Wired Network Port	1.0	/	+/-	/	/	/	/

Remark:

- 1) Criteria A: There was no change operated with initial operating during the test.
- 2) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 3) Criteria C: The system shut down during the test.



Attachment I--Conducted Immunity Test Data

Temperature	: 23.5°C	Humidity	: 54%		
Pressure	: 1008 hPa				
Power supply	: AC 230V	Test Mode	: Mode 1		
Required Performance Criteria: A					
EN 55035:2017/A11:2020					
Frequency Range (MHz)	Injected Position	Voltage Level (e.m.f.)	Required Performance Criteria	Actual Performance Criteria	Result
0.15 ~ 10	AC Mains	3V(rms), AM 80% Modulated with 1 kHz	A	A	PASS
10 ~ 30		3V to 1V(rms), AM 80% Modulated with 1 kHz	A	A	PASS
30 ~ 80		1V(rms), AM 80% Modulated with 1 kHz	A	A	PASS
0.15 ~ 10	DC Mains	3V(rms), AM 80% Modulated with 1 kHz	A	/	/
10 ~ 30		3V to 1V(rms), AM 80% Modulated with 1 kHz	A	/	/
30 ~ 80		1V(rms), AM 80% Modulated with 1 kHz	A	/	/
0.15 ~ 10	Wired Network Port	3V(rms), AM 80% Modulated with 1 kHz	A	/	/
10 ~ 30		3V to 1V(rms), AM 80% Modulated with 1 kHz	A	/	/
30 ~ 80		1V(rms), AM 80% Modulated with 1 kHz	A	/	/
Remark:					
1) Criteria A: There was no change operated with initial operating during the test.					
2) Criteria B: The EUT function loss during the test, but self-recoverable after the test.					
3) Criteria C: The system shut down during the test.					



Attachment J--Voltage Dips and Interruptions Test Data

Temperature	: 23.5°C	Humidity	: 54%		
Pressure	: 1008 hPa				
Power supply	: AC 230V	Test Mode	: Mode 1		
Criterion: B&C					
Test Level % UT	Voltage Dips & Short Interruptions % UT	Duration (in period)	Phase Angle	Required Performance Criteria	Result
0	100	250P	0°	C	Pass
70	30	25P	0°	C	Pass
0	100	0.5P	0°	B	Pass
<p>Remark: U_T is the rated voltage for the equipment.</p> <ol style="list-style-type: none"> 1) Criteria A: There was no change operated with initial operating during the test. 2) Criteria B: The EUT function loss during the test, but self-recoverable after the test. 3) Criteria C: The system shut down during the test. 					

-----END OF REPORT-----

