

EMC Test Report

Applicant Pet Gravity (Hangzhou)
Technology Co., Ltd.

Product Snack Shack Ball

Model PG-DT515; PG-DT516

Report No. EFTA25060345-IE-01-E1V1

Date of issue July 9, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **EN IEC 55014-1: 2021/ EN IEC 55014-2: 2021**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Version	Revision Description	Issue Date
Rev.0	Initial issue of report.	July 8, 2025
Rev.1	Updated information.	July 9, 2025
Note: This revised report (Report No.: EFTA25060345-IE-01-E1V1) supersedes and replaces the previously issued report (Report No.: EFTA25060345-IE-01-E1). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of Measurement Results

EMISSION				
Test Item	Standard	Limit	Result	Remark
Radiated Emissions	EN IEC 55014-1	Refer to the section 3.1 of this report	PASS	--
Conducted Emission	EN IEC 55014-1	--	NA ^{Note 2}	--
Click	EN IEC 55014-1	--	NA ^{Note 4}	--
Harmonic Current Emission	EN IEC 61000-3-2	--	NA ^{Note 1}	--
Voltage Fluctuation and Flicker	EN 61000-3-3	--	NA ^{Note 2}	--
IMMUNITY (EN IEC 55014-2: 2021)				
Test Item	Standard	Class / Severity	Criteria	Result
Electrostatic Discharge	EN 61000-4-2	Contact Discharges: ±2kV, ±4kV Air Discharges: ±2kV, ±4kV, ±8kV	B	PASS
Radiated RF Electromagnetic Field	EN IEC 61000-4-3	3V/m 80%, 1kHz, AM	A	PASS
Electrical Fast Transients Common Mode	EN 61000-4-4	--	--	NA ^{Note 3}
Surge	EN 61000-4-5	--	--	NA ^{Note 2}
Conducted Radio Frequency Common Mode	EN 61000-4-6	--	--	NA ^{Note 3}
Voltage Dips and Interruptions	EN IEC 61000-4-11	--	--	NA ^{Note 2}
Date of Testing: June 23, 2025 ~June 25, 2025				
Date of Sample Received: June 20, 2025				
Note: NA = Not Applicable. - There is no need for Harmonics test to be performed on this product (rated power is less than 75 W) in accordance with EN IEC 61000-3-2. - The equipment is not connected to the public network, so test items (Conducted Emission, Voltage Fluctuation and Flicker, Voltage Dips and Interruptions and Surge) do not apply. - The DC power cable is less than 3m and the equipment is not connected to the public network, so test items (Electrical Fast Transients Common Mode and Conducted Radio Frequency Common Mode) do not apply. - Equipment meets the following 3 conditions for the clicks, so does not applicable. - The click rate is not more than 5; - none of the caused clicks has a duration longer than 20 ms; 90 % of the caused clicks have a duration less than or equal to 10 ms. - All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology				

(Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

1 Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Testing Location

Company: Eurofins TA Technology (Shanghai) Co., Ltd.
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2 General Description of Equipment Under Test

2.1 Applicant and Manufacturer Information

Applicant	Pet Gravity (Hangzhou) Technology Co., Ltd.
Applicant address	No.17-1 Chuxin Road, Gongshu District, Hangzhou, China
Manufacturer	Pet Gravity (Hangzhou) Technology Co., Ltd.
Manufacturer address	No.17-1 Chuxin Road, Gongshu District, Hangzhou, China

2.2 General Information

EUT Description	
Model	PG-DT515; PG-DT516
Lab internal SN	EFTA25060345-IE-01/S01
HW Version	/
SW Version	/
Power Supply	DC 5V
Category	☐ Category I ☐ Category II ☒ Category III ☐ Category IV ☐ Category V
Clock	< 108MHz
Auxiliary Test Equipment	
Adapter	Manufacturer: HONOR Model: HW-100400E02
Note: 1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the manufacturer. 2. The customer claims that PG-DT515; PG-DT516 are only different in model and appearance color, and the others are the same.	

2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

EN IEC 55014-1: 2021

EN IEC 55014-2: 2021

2.4 Test Configuration

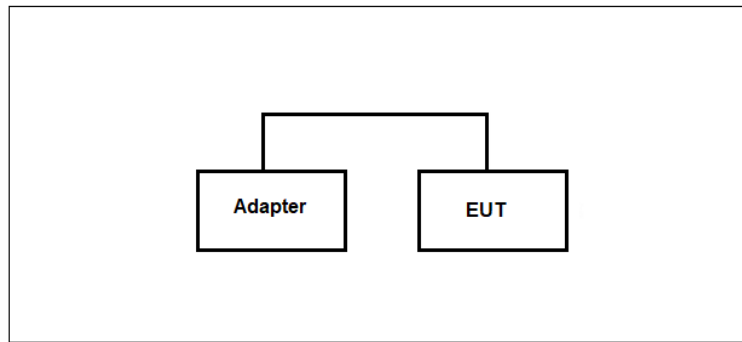
Test Mode

Test Mode	
Mode 1:	Adapter + EUT + maximum working
Mode 2:	Battery + EUT+ maximum working

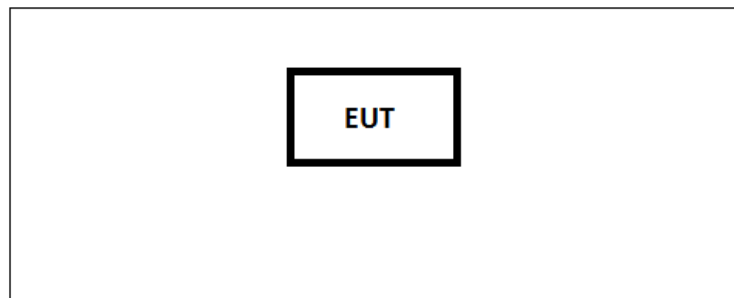
Test Type	Test Mode	Worst Mode
Radiated Emission	Mode 1, 2	Mode 1
Conducted Emission	/	/
Click	/	/
Harmonic Current Emission	/	/
Voltage Fluctuation and Flicker	/	/
Electrostatic Discharge	Mode 2	Mode 2
Radiated RF Electromagnetic Field	Mode 2	Mode 2
Electrical Fast Transients Common Mode	/	/
Surge	/	/
Conducted Radio Frequency Common Mode	/	/
Voltage Dips and Interruptions	/	/
After technical evaluation or/and preliminary test, the test data of the worst-case condition was recorded in this report.		

System Configurations

Connection Diagram (Mode 1)



Connection Diagram (Mode 2)



2.5 Immunity Tests Applicable to Category

Category I equipment is deemed to comply with the immunity requirements of this document without testing.

Category II

Environmental phenomenon	Performance criterion	Test specifications (see subclause)
Electrostatic discharges	B	5.1
Electric fast transients	B	5.2
Injected currents 150 kHz to 230 MHz	A	5.3
Surges	B	5.6
Voltage dips	C	5.7

Category III

Environmental phenomenon	Performance criterion	Test specifications (see subclause)
Electrostatic discharges	B/C ^a	5.1
Electric fast transients	B	5.2
Injected currents 150 kHz to 80 MHz	A	5.4
Radio frequency electromagnetic fields ^{b, c} 80 MHz to (F) MHz	A	5.5
Surges	B	5.6
^a Performance criterion C may be applied to toys not using score or data entered by the user (e.g. musical soft toys and sounding toys). ^b The frequency (F), up to which this test needs to be performed, is determined from either Table 17 or Table 18, according to the principle for distinguishing between categories IV and V. ^c For Category III toys, the radio frequency electromagnetic fields test shall be applicable only for ride on toys.		

Category IV

Environmental phenomenon	Performance criterion	Test specifications (see subclause)
Electrostatic discharges	B	5.1
Electric fast transients	B	5.2
Injected currents 150 kHz to 80 MHz	A	5.4
Radio frequency electromagnetic fields 80 MHz to 1 000 MHz	A	5.5
Surges	B	5.6
Voltage dips	C	5.7

Category V

Environmental phenomenon	Performance criterion	Test specifications (see subclause)
Electrostatic discharges	B	5.1
Electric fast transients	B	5.2
Injected currents 150 kHz to 80 MHz	A	5.4
Radio frequency electromagnetic fields 80 MHz to 6 GHz	A	5.5
Surges	B	5.6
Voltage dips	C	5.7

2.6 Mains operation

Voltage at the AC Mains Port

During the tests, the EUT shall be operated at the rated voltage specified for the equipment.

For single-phase equipment with a rated voltage range in the range between:

- 100 V to 127 V, testing shall be done at one nominal voltage within this range; the recommended test voltage is 120 V;
- 200 V to 240 V, testing shall be done at one nominal voltage within this range; the recommended test voltage is 230 V;
- 100 V to 240 V, testing shall be done at one nominal voltage within the range 100 V to 127 V, or at one nominal voltage within the range 200 V to 240 V. However, the user of this document may specify that the equipment is tested twice; once at one nominal voltage within the range 100 V to 127 V and once within the range 200 V to 240 V. This decision shall be recorded in the test report.

Where applicable, the same applies to the AC mains port of EPS.

Multi-phase equipment shall be tested applying the same principles set-out above.

For three-phase equipment with a rated voltage range in the range between:

- 200 V to 240 V, testing shall be done at one nominal voltage within this range; the recommended test voltage is 220 V;
- 380 V to 450 V, testing shall be done at one nominal voltage within this range; the recommended test voltage is 400 V.

Frequency at the AC mains port

During the tests, the EUT shall be operated at the rated frequency specified for the equipment.

If the equipment has more than one rated frequency (e.g. 50 Hz and/or 60 Hz), then the EUT shall be tested at one of these frequencies only.

If the equipment has a rated frequency range (e.g. 50 Hz to 60 Hz), then the EUT shall be tested at one frequency within that range.

2.7 DC operation

Battery operation

When testing an EUT for battery operation, the type of batteries used and their connection shall be as specified in the instructions for use. If the instructions provide for different ratings of batteries to be used, the batteries with the highest capacity (e.g. in Ah) should be used.

Fully charged batteries shall be used when starting each test. During the test, the battery condition shall be adequate to maintain normal operating conditions.

If the battery is charged from the AC mains supply, the equipment shall be treated in this operation mode as mains operated equipment.

Operation from a DC supply other than a battery

During the tests, the EUT shall be operated at the rated voltage specified for the DC powered equipment using a representative source.

DC powered equipment which operate from a dedicated DC supply unit (e.g. EPS) shall be tested using the DC supply unit supplied, specified or recommended in the instructions for use. Where the DC supply unit is not specified nor recommended in the instructions for use, or not made available at the time of testing, a representative source providing the rated voltage and current specified for the equipment shall be used. The representative source chosen shall be adequate to meet the specifications of the EUT and shall meet the performance criteria of this document when operated in combination with the DC powered equipment.

The representative source used shall be documented in the test report.

3 Emission Test Results

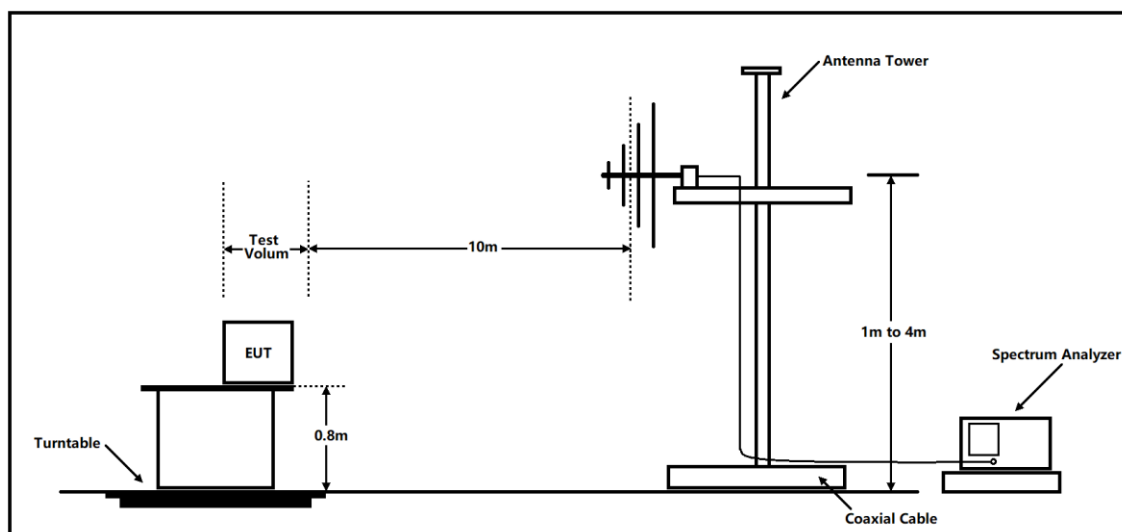
Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	30% ~ 60%	86 kPa ~ 106 kPa

3.1 Radiated Emission

Below 1G and above 30MHz

Test Setup



Note: Area side: 21m x 12m

1. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp was used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
2. The EUT was placed on a turntable with 80cm above ground.
3. 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.
4. 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.
5. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
6. The EUT was set 10 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
7. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

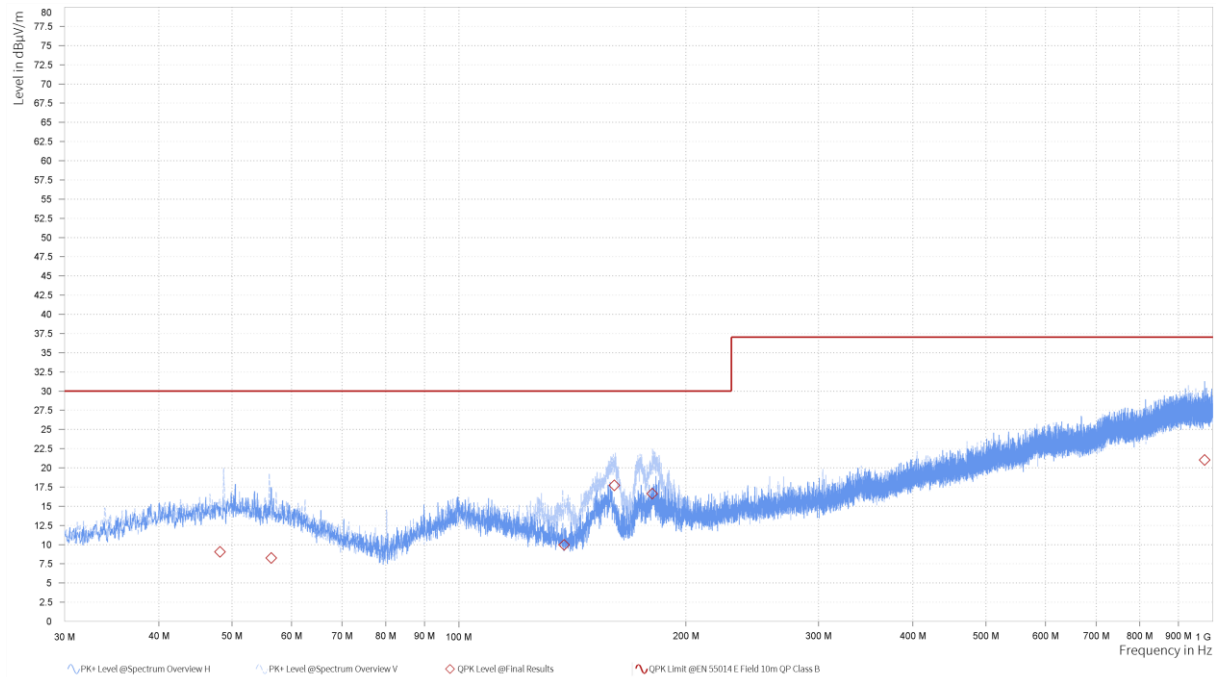
Limits

Required highest frequency for radiated electric field strength measurements

Highest clock frequency (F_x)	Highest measurement frequency
$F_x \leq 108 \text{ MHz}$	1 GHz
$108 \text{ MHz} < F_x \leq 500 \text{ MHz}$	2 GHz
$500 \text{ MHz} < F_x \leq 1 \text{ GHz}$	5 GHz
$F_x > 1 \text{ GHz}$	$5 \times F_x$ up to a maximum of 6 GHz

Frequency (MHz)	Quasi-peak (dB μ V/m)	Measurement distance (m)
30 -230	30	10
230-1000	37	10

Test Results:



Radiated Emission 30M-1GHz

Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correc tion [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
48.225	9.03	30.00	20.97	-8.52	V	311.1	1.08
56.388	8.23	30.00	21.77	-9.11	V	136.6	1.18
137.857	9.96	30.00	20.04	-13.19	V	34	1.98
160.811	17.70	30.00	12.30	-12.60	V	2.6	1.02
180.481	16.63	30.00	13.37	-11.62	V	162.7	1.04
974.761	20.99	37.00	16.01	2.61	H	18.3	1.07

Remark: 1. Correct Factor = Insertion loss + Cable loss

2. Margin = Limit – Quasi-Peak

3.2 Conducted Emission

Methods of Measurement

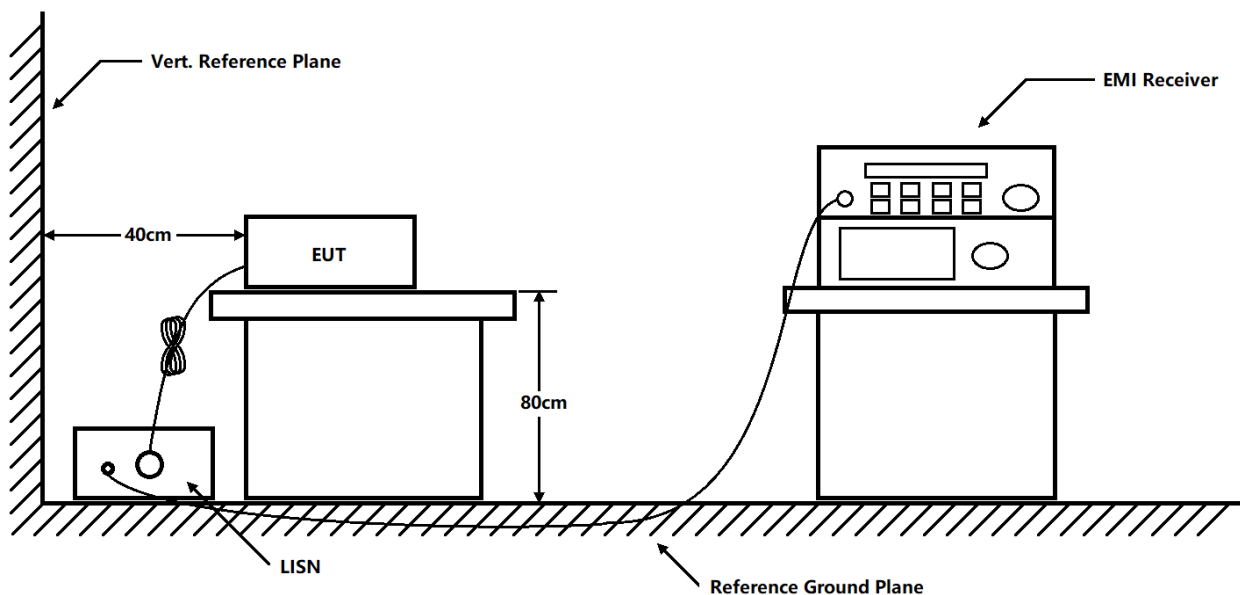
Procedure of Preliminary Test

- The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 15cm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage.
- The EUT installed by main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.
- All support equipment power by a second LISN.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- After the preliminary scan, the worst configuration of EUT and cable of the highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, L and N, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

Test Setup



Limits

General limits

Frequency range	Mains ports		Auxiliary ports			
	Disturbance voltage		Disturbance voltage		Disturbance current	
1	2	3	4	5	6	7
MHz	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ A	Average dB μ A
0,15 to 0,50	Decreasing linearly with the logarithm of the frequency from: 66 to 56		80	70	Decreasing linearly with the logarithm of the frequency from: 40 to 30	
0,50 to 5	56	46	74	64	30	20
5 to 30	60	50	74	64		
The lower limit applies at the transition frequencies.						
The test report shall state which test method was used and which limits were applied.						

Limits for the mains port of motor operated tools

Frequency range	$P \leq 700 \text{ W}$		$700 \text{ W} < P \leq 1\,000 \text{ W}$		$P > 1\,000 \text{ W}$	
	2	3	4	5	6	7
MHz	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ V	Average dB μ V	Quasi-peak dB μ V	Average dB μ V
0,15 to 0,35	Decreasing linearly with the logarithm of the frequency from:					
	66 to 59	59 to 49	70 to 63	63 to 53	76 to 69	69 to 59
0,35 to 5	59	49	63	53	69	59
5 to 30	64	54	68	58	74	64
The lower limit applies at the transition frequencies.						
Key						
P = rated power of the motor only.						

Test Results:

The equipment doesn't connect to public network, therefore this requirement does not apply.

3.3 Click

Methods of Measurement

A disturbance, the amplitude of which exceeds the quasi-peak limit of continuous disturbance, the duration of which is not longer than 200 ms and which is separated from a subsequent disturbance by at least 200 ms. The durations are determined from the signal which exceeds the i.f. reference level of the measuring receiver

A click may contain a number of impulses; in which case the relevant time is that from the beginning of the first to the end of the last impulse.

1. Verify the test and run the boot instrument for 20 minutes, then resume the demonstration (change from NO CAL to CAL)
2. Check whether the connection and layout of the EUT are correct, start the operation after confirming the correctness, and test after the work is stable.
3. Choose to measure the phase line or the neutral line, and the selection on the manual network corresponds.
4. Select the test program to perform the first round of testing, you can see the results of the first round of testing to determine whether to perform the second round of testing.

Note: According to the provisions of GB 4343, for an appliance that automatically stops, T is the minimum required number of 40 clicks and 40 switch operations or the duration of the complete program. When 120 minutes after the start of the test, there is no more than 40 clicks, the test should be stopped after the end of the procedure.

Limits

For discontinuous disturbance, the click limit L_q is attained by increasing the relevant limit L with:

44 dB for $N < 0,2$, or

$20 \lg (30/N)$ dB for $0,2 \leq N < 30$

Test Results:

Equipment meets the following 3 conditions for the clicks, so does not applicable.

- 1). The click rate is not more than 5;
- 2). none of the caused clicks has a duration longer than 20 ms;
- 3). 90 % of the caused clicks have a duration less than or equal to 10 ms.

3.4 Harmonic Current Emission

Methods of Measurement

- 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 for each successive harmonic component in turn.

- The classification of EUT is according to section 5 of EN IEC 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 B: Portable tools; Arc welding equipment which is not professional equipment.

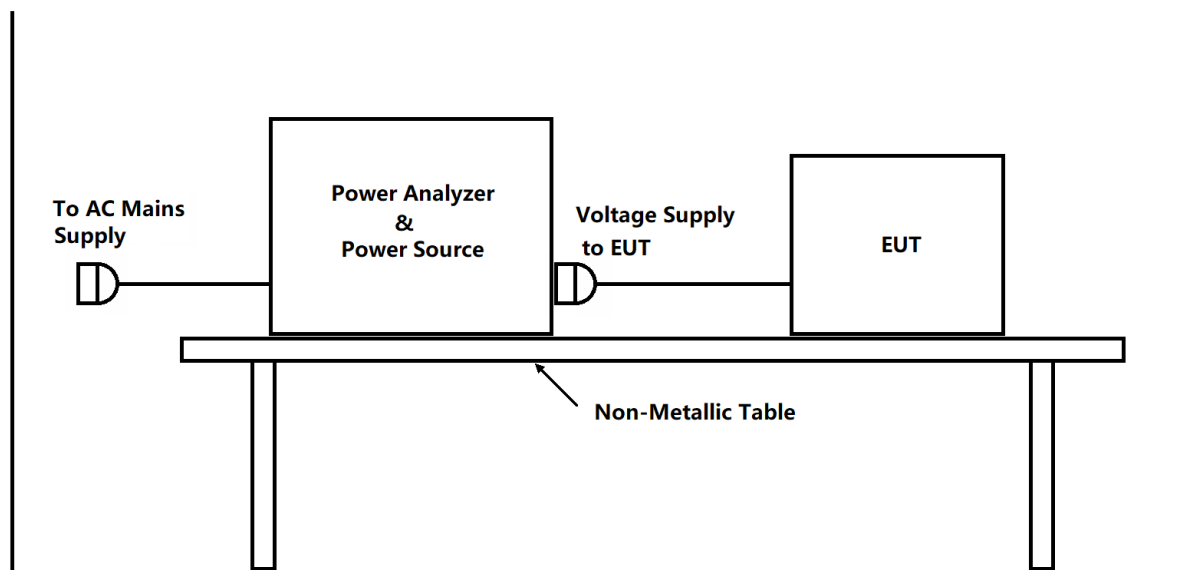
Class C: Lighting equipment.

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.

- The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

Test Setup



Limits

Limits for Class A equipment	
Harmonic order n	Maximum permissible Harmonic current A
Odd Harmonics only	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 \frac{15}{n}$
Even harmonic	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 \frac{8}{n}$

Limits for Class C equipment	
Harmonic order n	Maximum permissible Harmonic current expressed as a percentage of the input current at the fundamental frequency %
Odd Harmonics only	
2	2
3	$30 \cdot \lambda^*$
5	10
7	7
9	5
$11 \leq n \leq 39$ (odd harmonics only)	3
* λ is the circuit power factor	

Limits for Class D equipment		
Harmonic order n	Max. permissible harmonics current per watt mA/W	Maximum permissible Harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13	0.30	0.21
15≤n≤39 (odd harmonics only)	$\frac{3.85}{n}$	$0.15 \frac{15}{n}$

Test Results:

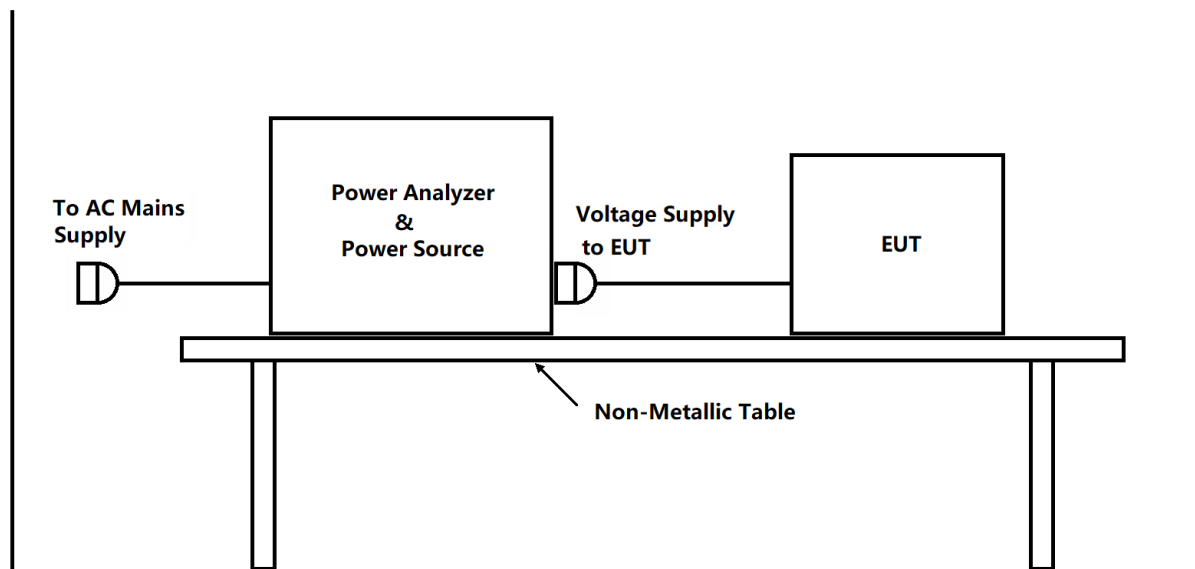
There is no need for Harmonics test to be performed on this product (rated power is less than 75 W)

3.5 Voltage Fluctuation and Flicker

Methods of Measurement

- a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal Condition
- b. During the flick measurement, the measure time shall include that part of whole operation changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.
- c. Tests was performed according to the Test Condition/Assessment of Voltage Fluctuations specified in Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.
- d. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

Test Setup



Limits

1. The value of P_{st} shall not be greater than 1,0;
2. The value of P_{it} shall not be greater than 0,65;
3. The value of $d(t)$ during a voltage change shall not exceed 3,3 % for more than 500 ms;
4. The relative steady-state voltage change, d_c , shall not exceed 3,3 %;
5. The maximum relative voltage change d_{max} , shall not exceed
 - a) 4 % without additional conditions;
 - b) 6 % for equipment which is:
 - switched manually, or
 - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.
 - c) 7 % for equipment which is

- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

Test Results:

The equipment is not connected to the public network, therefore this requirement does not apply.

4 Immunity Test Results

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	30% ~ 60%	86 kPa ~ 106 kPa

Performance criterion

A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, shall be provided by the manufacturer and noted in the test report, based on the following 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 to persist after the test. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

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.

4.1 Electrostatic Discharge

Methods of Measurement

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second.

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

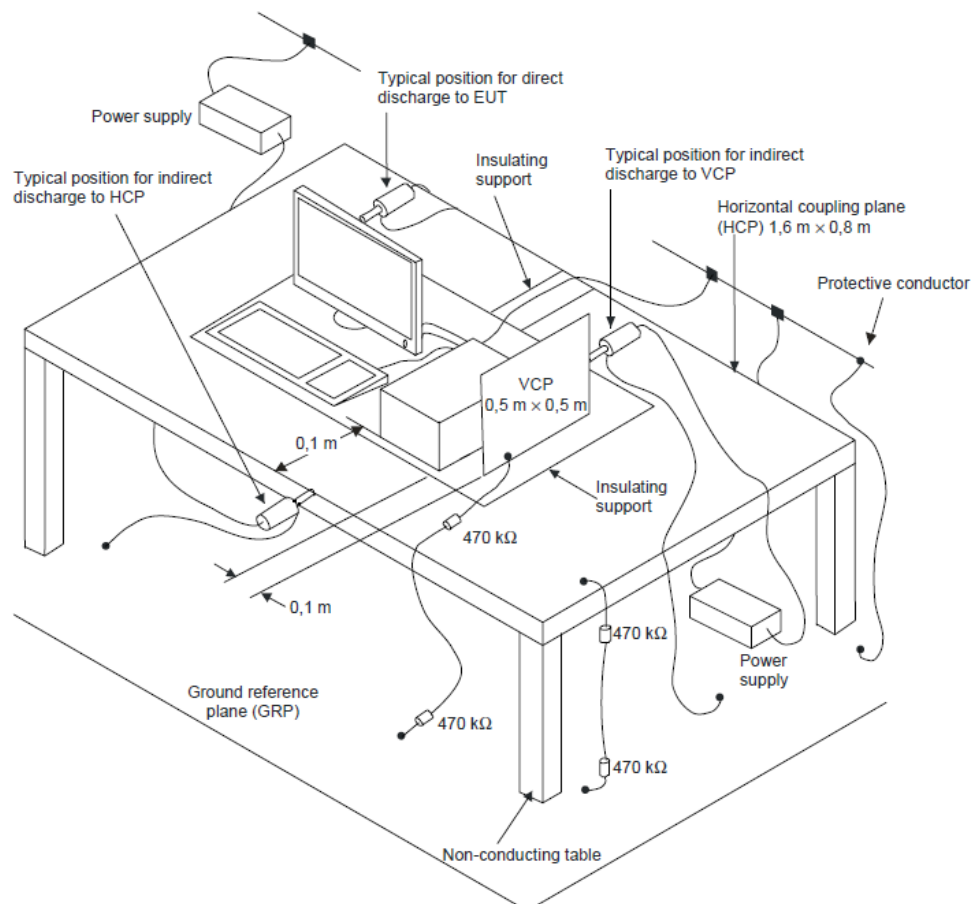
b. Air discharges at insulation surfaces of the EUT.

It was at least ten single discharges with positive and negative at the same selected point.

c. Apply 20 discharges (10 with positive and 10 with negative polarity) to each selected discharging point

d. For the actual test configuration, please refer to the related Item: Photographs of EMC Test Configuration.

Test Setup



Test Results

Test point	Coupling	Voltage	Discharge Number	Performance Criterion	Required Passing Criterion	Results
EUT Gap; Switch	Air Discharge	±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
		±8kV	10	A	B	PASS
Horizontal Coupling Plane		±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
Vertical Coupling Plane		±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS

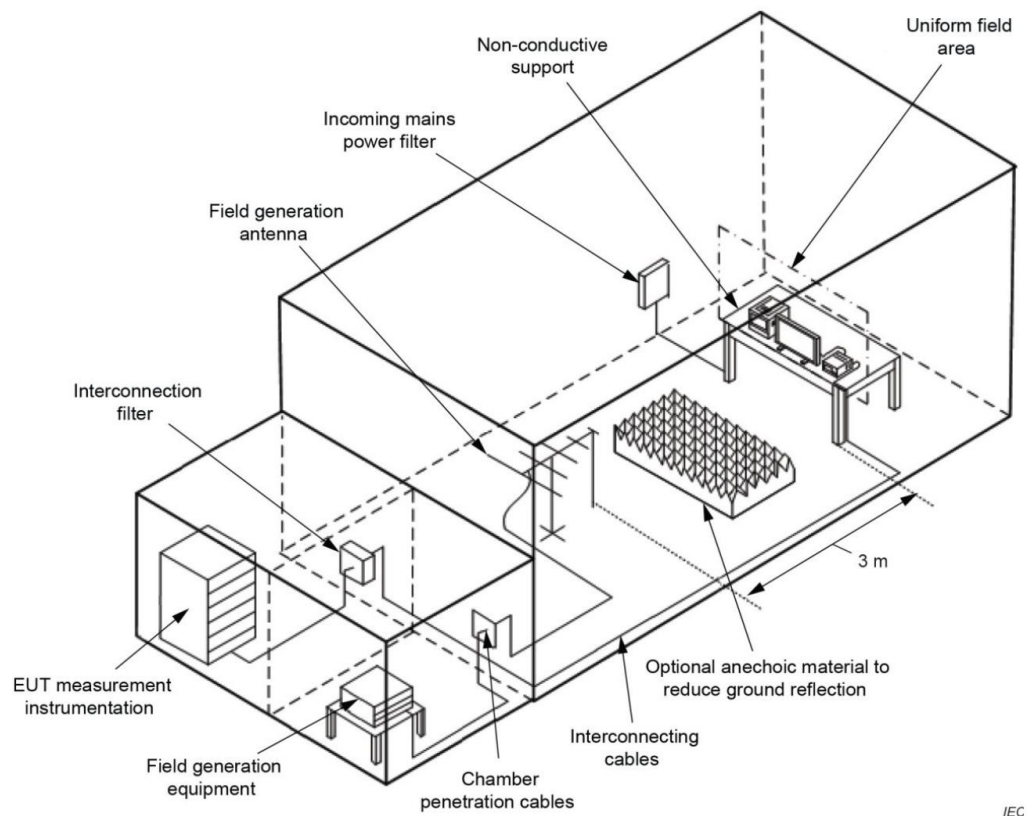
4.2 Radiated RF Electromagnetic Field (RS)

Methods of Measurement

The test procedure was in accordance with EN 61000-4-3

- The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- The interference signal is 80% amplitude modulated with a 1 KHz sine wave. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- Test frequency range 80MHz~1GHz.
- The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides. The test for front side was found to be the worst mode, and this mode was recorded.

Test Setup



NOTE Anechoic lining material on walls and ceiling has been omitted for clarity.

Test Results:

Frequency	Field	Test Position	Polarization	Performance Criterion	Required Passing Criterion	Results
80MHz-1GHz	3V/m	Front	Horizontal	A	A	PASS
			Vertical			

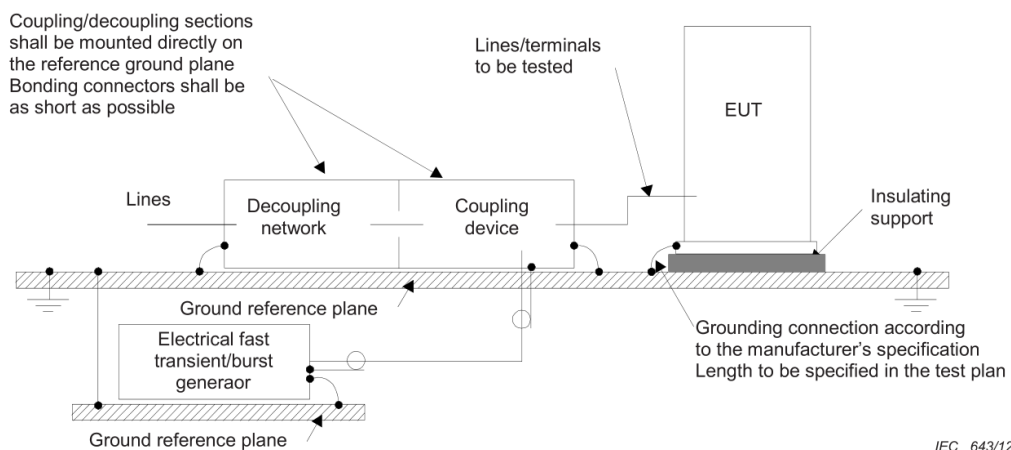
4.3 Electrical Fast Transients Common Mode (EFT)

Methods of Measurement

The test intended to show the immunity of the EUT when subjected to type of transient interference such as originating from switching transients. Bursts consisting of a number of transient are employed, coupled into power supply, control and signal inputs of EUT, The transients must be short rise-time, the repetition rate and the low energy. A performance criteria is classified as A, B, C, the recommendation is criteria B.

The EUT is arranged and connected according to its normal installation requirements. The length of the signal and power lines between the coupling device (clamp) and the EUT is $0.5\text{m} \pm 0.05\text{m}$. If a non-detachable cable more than 0.5m long with the equipment, the excess length of this cable is gathered into a flat coil with 0.4m diameter and situated at a distance of 0.1m above the ground reference plane. Bursts of 5ns/50ns pluses at a repetition rate of 5kHz with a duration of 15ms and period of 300ms, applied in both polarities between power supply terminals (including the protective earth) and a reference ground plane, or via a capacitate coupling clamp onto I/O circuits and communication lines for 3 minutes. The test level is 1kV on power supply, 0.5kV on I/O signal, data and control lines. The 0.5kV is applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 3m.

Test Setup



Test Results

The DC power cable is less than 3m and the equipment is not connected to the public network, therefore this requirement does not apply.

4.4 Surge

Methods of Measurement

a. The EUT and the auxiliary equipment were placed on a table of 0.8m heights above a metal ground reference plane. The size of ground plane is greater than 1m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT was less than 2 meters (provided by the manufacturer).

b. The EUT was connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise was applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).

c. The surges were applied line to line and line(s) to earth. When testing line to earth the test voltage was applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.

For AC power ports: 1.2/50 (8/20) μ s

2.0kV line-to-earth with 12 Ω Impedance

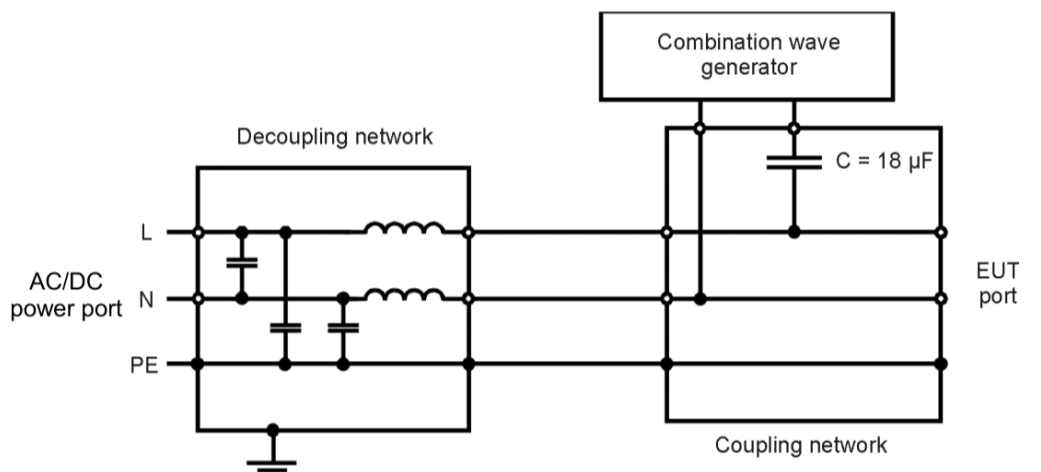
1.0kV line-to-line with 2 Ω Impedance

For Wired network ports: 1.2/50 (8/20) μ s

1.0kV line-to- earth unshielded

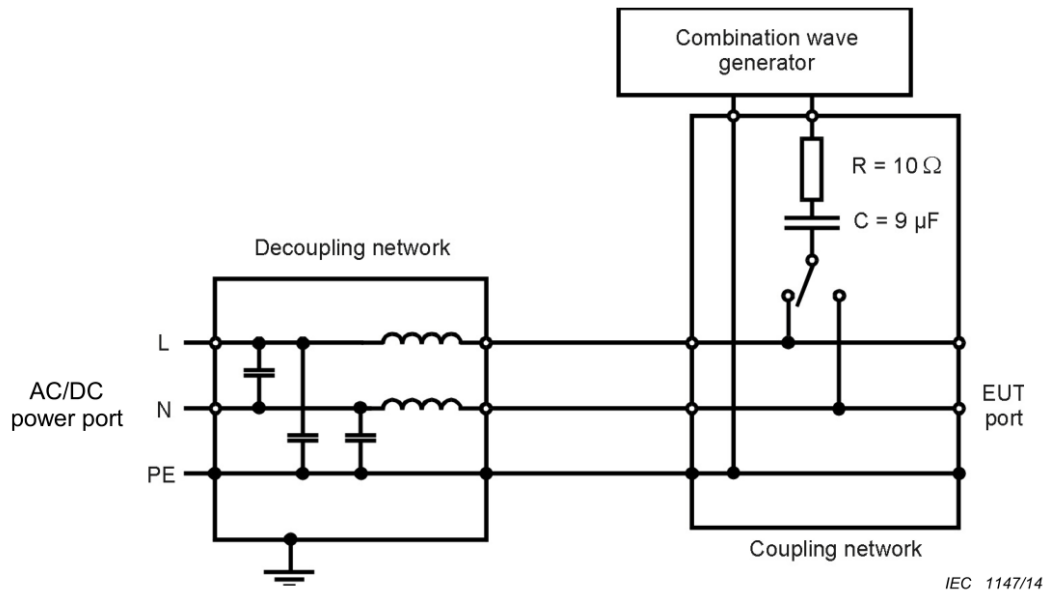
0.5kV shield-to- earth shielded

Test Setup



IEC 1146/14

a.c./d.c. lines line-to-line coupling



a.c./d.c. lines: line-to-ground coupling

Test Results

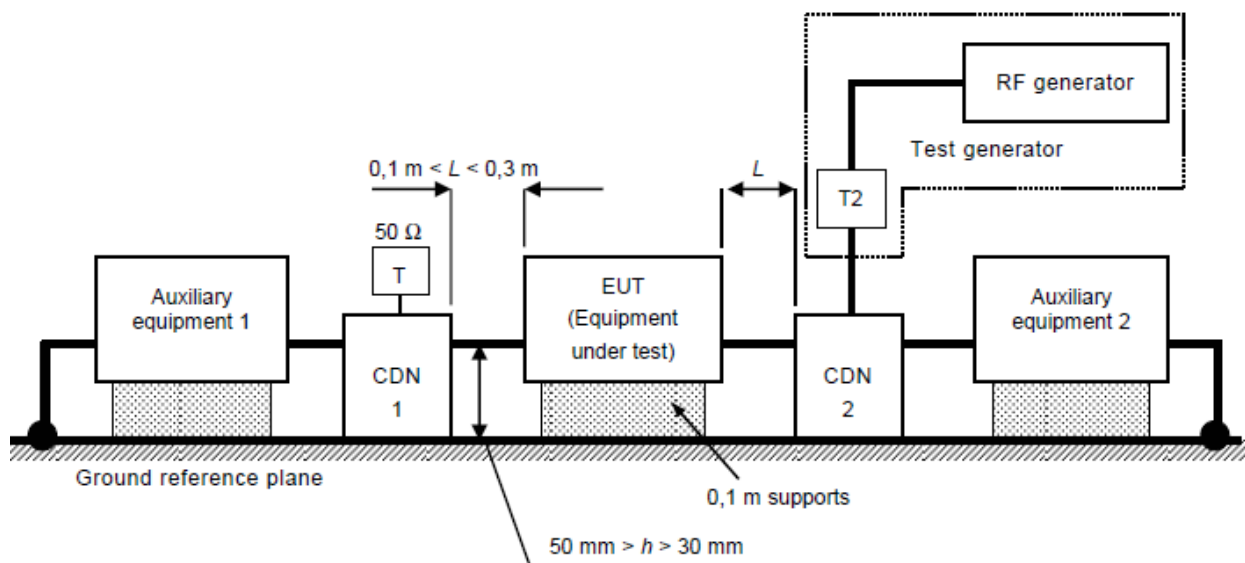
The equipment is not connected to the public network, therefore this requirement does not apply.

4.5 Conducted Radio Frequency Common Mode (CS)

Methods of Measurement

- The EUT shall be tested within its intended operating and climatic Condition.
- The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.
- The frequency range is swept from 150 kHz to 230 MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.
- The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.
- Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

Test Setup



Test Results

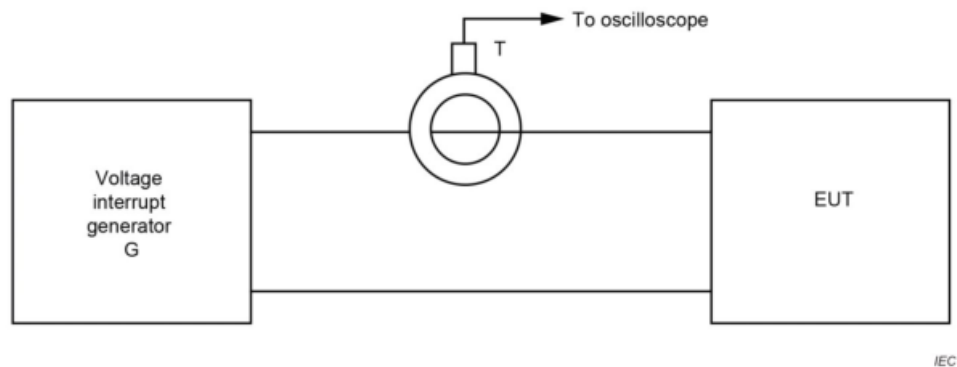
The DC power cable is less than 3m and the equipment is not connected to the public network, therefore this requirement does not apply.

4.6 Voltage Dips and Interruptions

Methods of Measurement

- The EUT and support units were located on a wooden table, 0.8 m away from ground floor.
- Setting the parameter of tests and then perform the test software of test simulator.
- Conditions changes to occur at 0 degree crossover point of the voltage waveform.
- Recording the test result in test record form.
- Removes the Battery Pack to test if any.

Test Setup



Test Results

The equipment is not connected to the public network, therefore this requirement does not apply.

5 Uncertainty Measurement

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

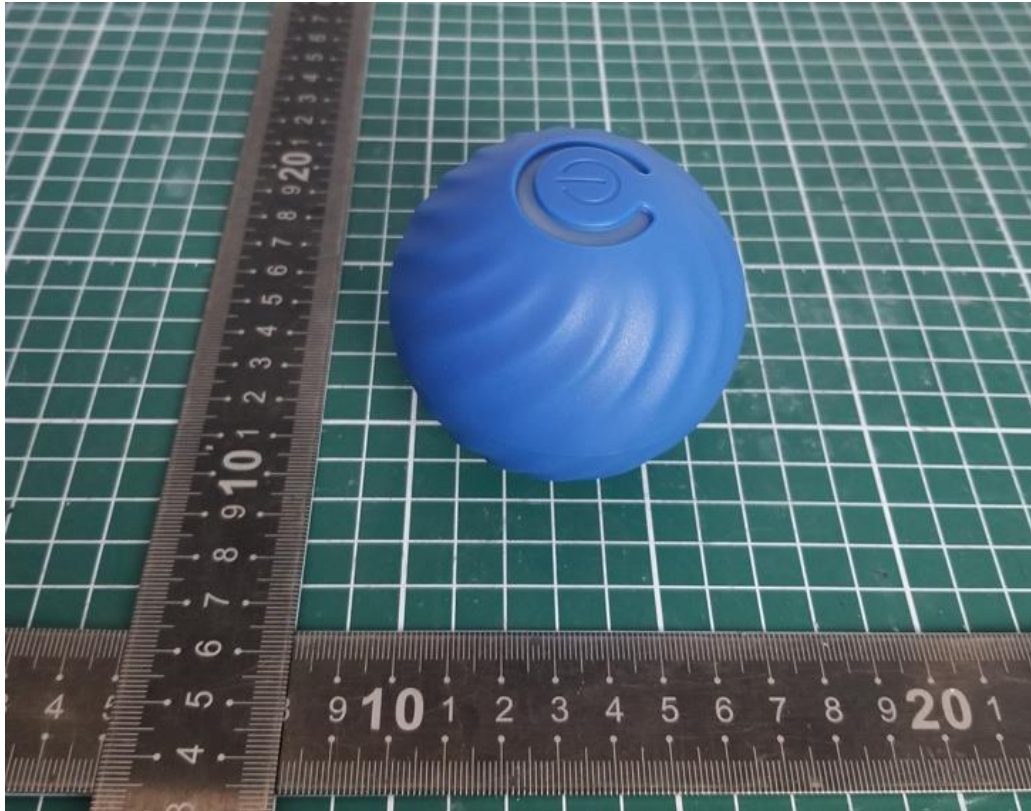
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k.

Case	Uncertainty	Factor k
Radiated Emission 30MHz – 200MHz	3.39 dB	1.96
Radiated Emission 200MHz – 1GHz	3.82 dB	1.96
RF Electromagnetic Field (RS) 80MHz – 1GHz	3.60dB	2

6 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
EMI Test Receiver	R&S	ESR	102720	2025-05-06	2026-05-05
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	01614	2023-09-13	2026-09-12
Software	R&S	ELEKTRA	5.02.1	/	/
Electrostatic Discharge (ESD)					
Electro-Static Discharger Generator	3CTEST	EDS-30V	ES0121632	2024-12-02	2025-12-01
Radiated RF Electromagnetic Field (RS)					
Signal Generator	R&S	SMB 100A	102594	2025-05-07	2026-05-06
Power Amplifier	BONN	BLWA 0830-160-100-4 0C	097490	2025-05-07	2026-05-06
High Gain Log-Periodic Antenna	R&S	HL046E	100063	/	/
Power Sensor	R&S	NRP	102186	2025-05-07	2026-05-06
Software	R&S	EMC32	10.35.10	/	/

ANNEX A: The EUT Appearance



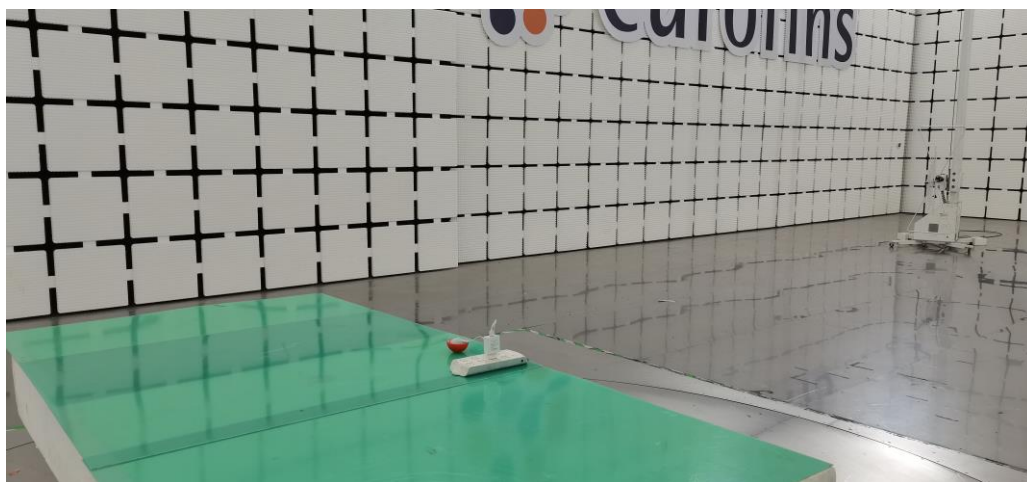




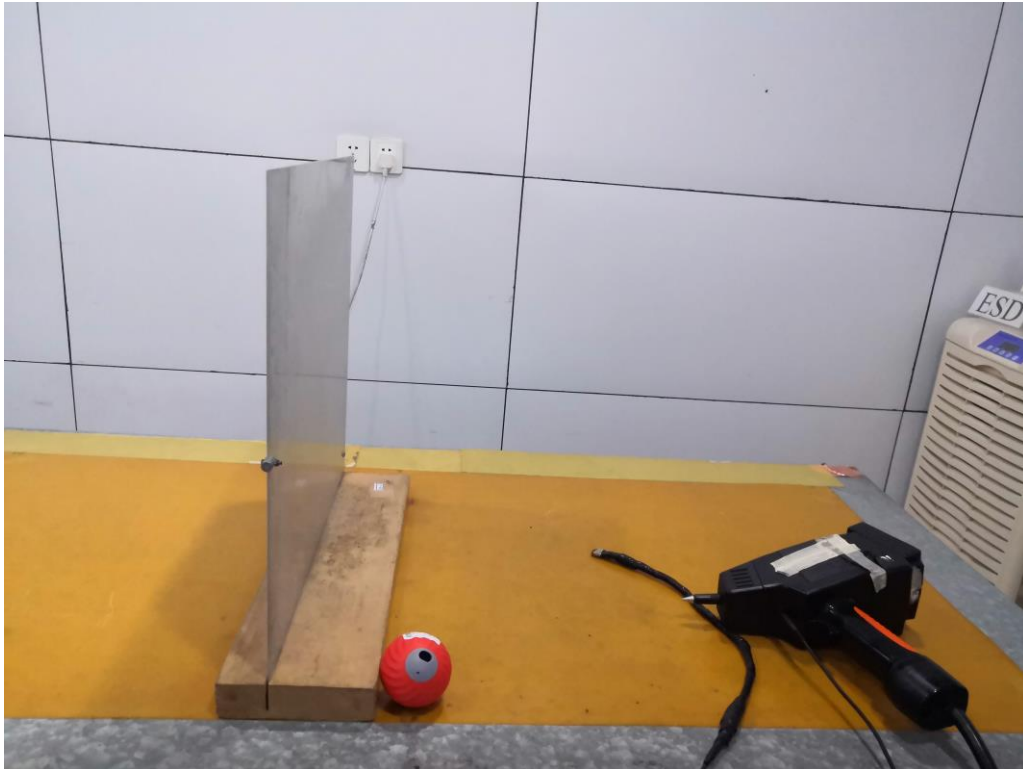


Picture 1: Constituents of EUT

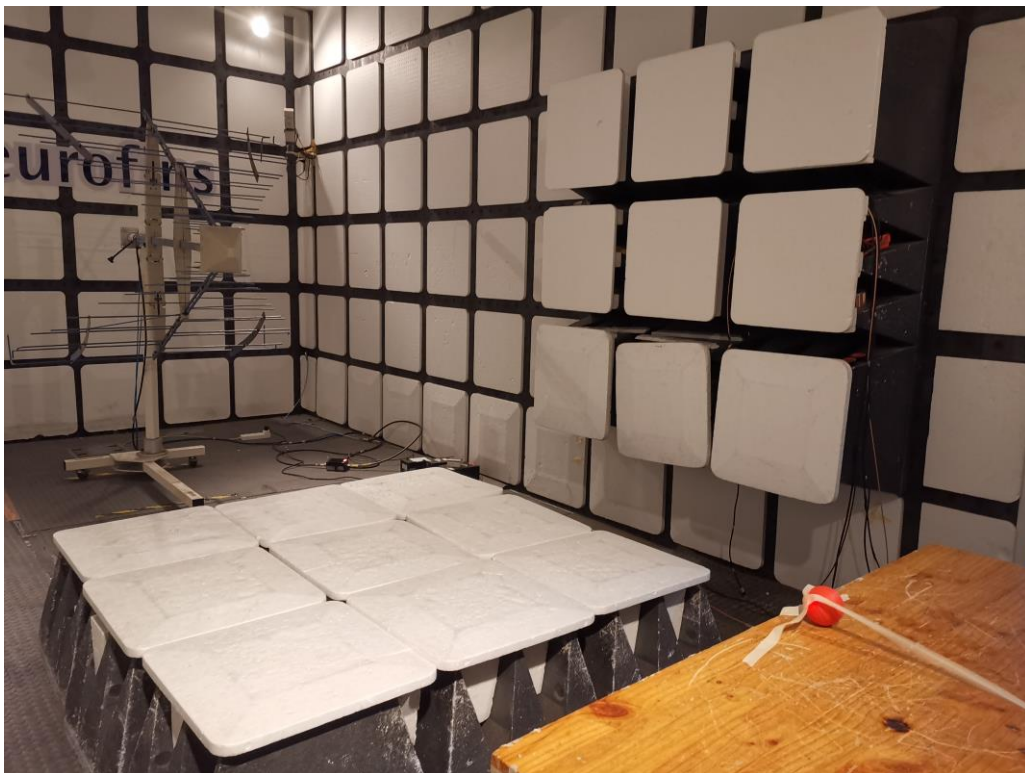
ANNEX B: Test Configuration



Picture 2 Radiated Emission Test Setup



Picture 3 Electrostatic Discharge Test Setup



Picture 4 Radiated RF Electromagnetic Field Test Setup

*******END OF REPORT *******