



FC TEST REPORT for

Violent fan

Model: ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS

Prepared for: Shenzhen Jianyu Digital Technology Co., Ltd
Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road,
Guanlan Street, Longhua District, Shenzhen City, Guangdong Province

Prepared by: Europe Ber (Guangdong) Testing Co., Ltd.
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Report Number: EBSZ240603023F
Date of Test: 2024-Jun-03 to 2024-Jun-06
Date of Issue: 2024-Jun-06

Tested by

Wendy Lin

Wendy Lin

Approved by



Tommy Wei

The results detailed in this test report relate only to the specific sample(s) tested. It is the Application's responsibility to ensure that all production units are manufactured with equivalent Electromagnetic Compatibility characteristics. This report is not to be reproduced except in full, without written approval from EurBer Testing Technology.

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TEST REPORT DECLARATION

Applicant	:	Shenzhen Jianyu Digital Technology Co., Ltd
Address	:	Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
EUT Description	:	Violent fan
Model Name	:	ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Technical data	:	Input: DC 5V, 1A; Output: 7.4V---

Test Standards:

FCC 47 CFR Part 15 ANSI C63.4:2014

The EUT described above is tested by US to determine the maximum emission levels emanating from the EUT, the maximum emission levels comply with of FCC Part 15 limits.

The measurement results are contained in this test report. And EurBer is assumed of full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT is to be technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EurBer.

1. GENERAL INFORMATION

1.1. Report information

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that EurBer approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that EurBer in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by applicant, EurBer therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

1.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through EurBer, unless the applicant has authorized EurBer in writing to do so.

1.2. Test Facility

The test site used to collect the data is located on the address of EurBer.

The sites are constructed in conformance with the requirements of the ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

1.3. Test Uncertainty

(95% confidence levels, $k=2$)

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.0dB
Uncertainty for Radiation emission test (30MHz to 1GHz)	3.0dB

2. PRODUCT DESCRIPTION

2.1. EUT Description

Description	:	Violent fan
Applicant	:	Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Manufacturer	:	Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Model Number	:	ZY7400-SE
Additional model	:	ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Model differences	:	All models are the same except appearance

2.2. Test Conditions

Temperature: 23~25°C

Relative Humidity: 55~65 %

3. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	Pass
Radiated disturbance	Pass

Remark: "N/A" means "Not applicable."

4. TEST EQUIPMENT USED

4.1. For Conducted Emission Test

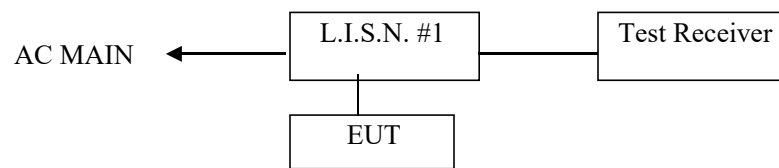
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS30	828985/018	Mar. 08, 24	1 Year
2.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Mar. 08, 24	1 Year
3.	L.I.S.N.	Rohde & Schwarz	ESH2-Z5	834549/005	Mar. 08, 24	1 Year
4.	Conical	Emtek	N/A	N/A	N/A	N/A
5.	Voltage Probe	Schwarzbeck	TK9416	N/A	Mar. 08, 24	1 Year
6.	Coaxial Switch	Anritsu	MP59B	6100214550	Mar. 08, 24	1 Year

4.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	Mar. 08, 24	1 Year
2.	Test Receiver	Rohde&Schwarz	ESC830	828982/018	Mar. 08, 24	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	Mar. 08, 24	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	Mar. 08, 24	1 Year
5.	Cable	Schwarzbeck	AK9513	ACRX1	Mar. 08, 24	1 Year
6.	Cable	Rosenberger	N/A	FR2RX2	Mar. 08, 24	1 Year
7.	Cable	Schwarzbeck	AK9513	CRRX2	Mar. 08, 24	1 Year
8.	Cable	Schwarzbeck	AK9513	CRRX2	Mar. 08, 24	1 Year
9.	Single Phase Power Line Filter	MPE	23332C	N/A	Mar. 08, 24	1 Year
10.	Single Phase Power Line Filter	MPE	23333C	N/A	Mar. 08, 24	1 Year
11.	Signal Generator	HP	864A	3625U00573	Mar. 08, 24	1 Year

5. CONDUCTED EMISSION TEST

5.1. Block Diagram of Test Setup



(EUT: Violent fan)

5.2. Test Standard

FCC 47 CFR Part 15

5.3. Conducted Emission Limit (Class B)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

5.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet Part 15 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.1. EUT Information

Model Number : ZY7400-SE

Serial Number : --

5.5. Operating Condition of EUT

5.5.1. Setup the EUT and simulators as shown in Section 5.1.

5.5.2. Turn on the power of all equipments.

5.5.3. Let the EUT work in test modes (On) and test it.

5.6. Test Procedure

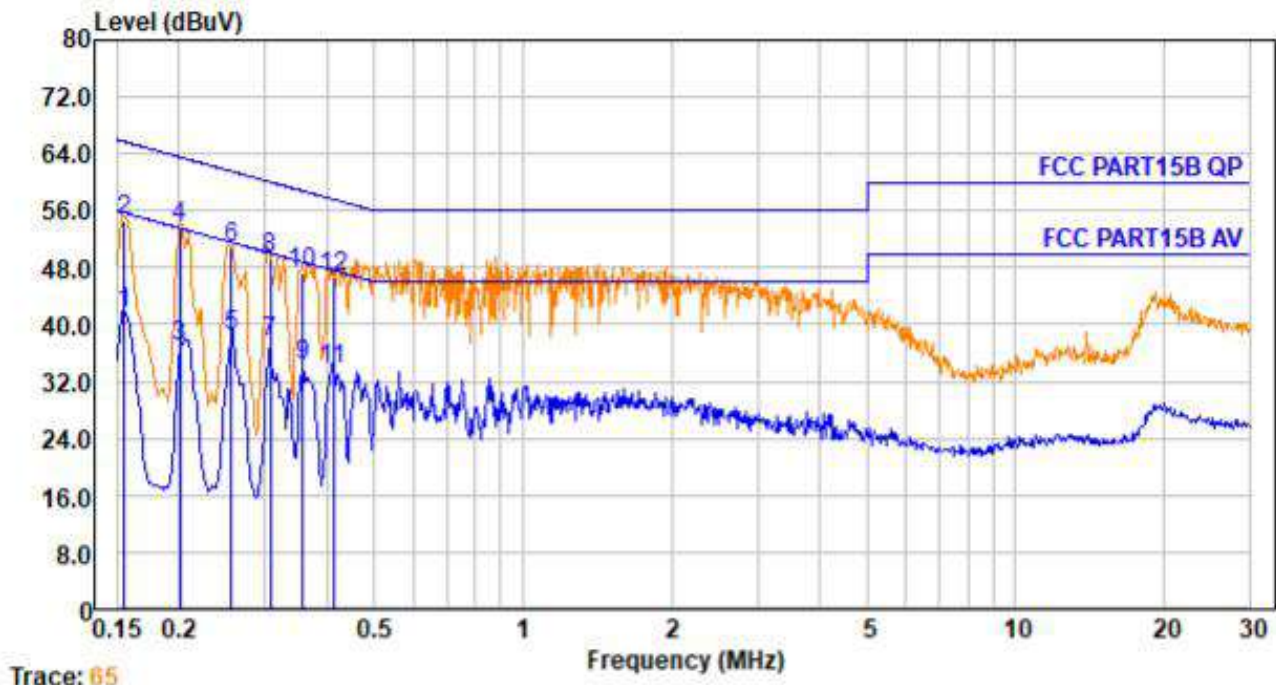
The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). An EMI test receiver is used to test the emissions from both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

The bandwidth of the test receiver is set at 9kHz.

5.7. Test Result

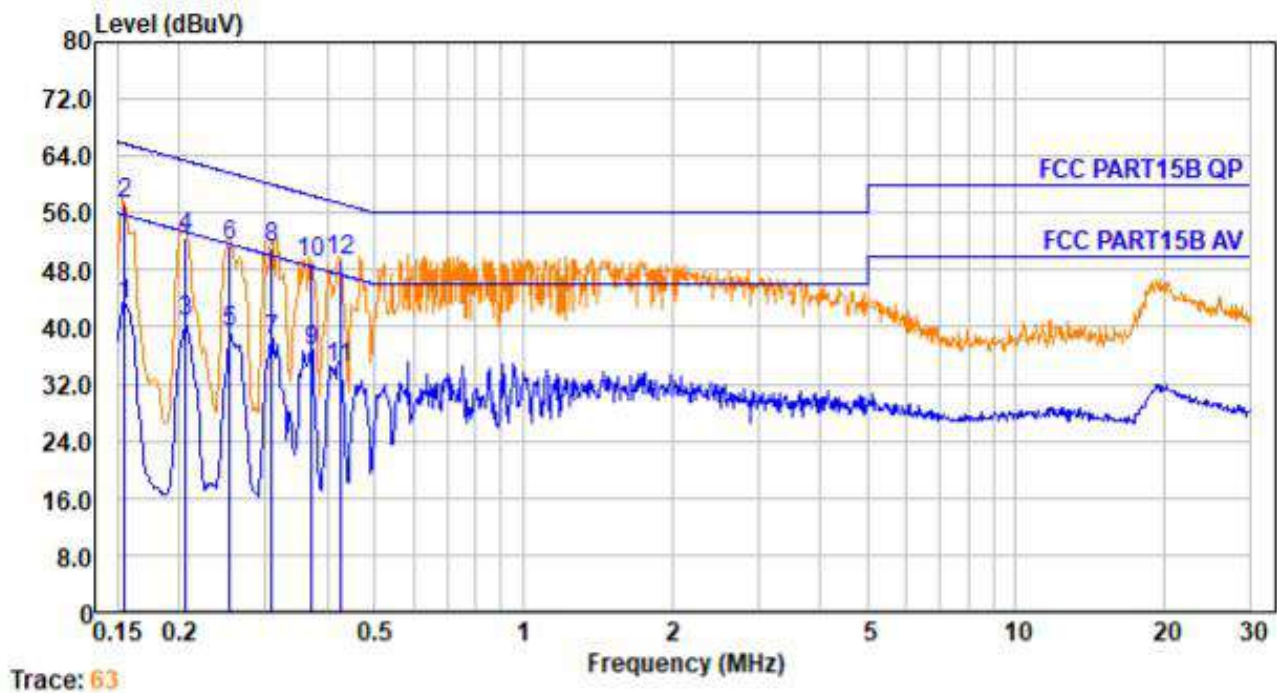
PASS

Interface conducted interference voltage limit of the power cable(150kHz to 30MHz) L



No.	Freq MHz	Cable Loss dB	LISN Factor dB/m	Aux Factor dB	Receiver Reading dBuV	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	0.155	0.08	9.54	10.16	21.90	41.68	55.74	-14.06	Average
2.	0.155	0.08	9.54	10.16	34.80	54.58	65.74	-11.16	QP
3.	0.202	0.09	9.55	10.15	17.08	36.87	53.54	-16.67	Average
4.	0.202	0.09	9.55	10.15	33.90	53.69	63.54	-9.85	QP
5.	0.256	0.10	9.56	10.14	18.46	38.26	51.56	-13.30	Average
6.	0.256	0.10	9.56	10.14	31.10	50.90	61.56	-10.66	QP
7.	0.307	0.11	9.56	10.13	17.61	37.41	50.06	-12.65	Average
8.	0.307	0.11	9.56	10.13	29.60	49.40	60.06	-10.66	QP
9.	0.358	0.09	9.56	10.13	14.44	34.22	48.78	-14.56	Average
10.	0.358	0.09	9.56	10.13	27.40	47.18	58.78	-11.60	QP
11.	0.413	0.08	9.57	10.12	13.81	33.58	47.59	-14.01	Average
12.	0.413	0.08	9.57	10.12	26.80	46.57	57.59	-11.02	QP

Interface conducted interference voltage limit of the power cable (150kHz to 30MHz) N

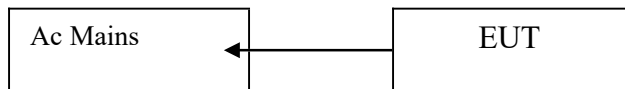


No.	Freq MHz	Cable Loss dB	LISN Factor dB/m	Aux Factor dB	Receiver Reading dBuV	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	0.155	0.08	9.53	10.16	23.43	43.20	55.74	-12.54	Average
2.	0.155	0.08	9.53	10.16	37.40	57.17	65.74	-8.57	QP
3.	0.206	0.09	9.55	10.15	20.84	40.63	53.36	-12.73	Average
4.	0.206	0.09	9.55	10.15	32.80	52.59	63.36	-10.77	QP
5.	0.253	0.10	9.56	10.14	19.58	39.38	51.64	-12.26	Average
6.	0.253	0.10	9.56	10.14	31.50	51.30	61.64	-10.34	QP
7.	0.308	0.11	9.56	10.13	18.40	38.20	50.02	-11.82	Average
8.	0.308	0.11	9.56	10.13	31.30	51.10	60.02	-8.92	QP
9.	0.371	0.09	9.57	10.13	16.85	36.64	48.47	-11.83	Average
10.	0.371	0.09	9.57	10.13	29.09	48.88	58.47	-9.59	QP
11.	0.424	0.08	9.57	10.12	14.41	34.18	47.37	-13.19	Average
12.	0.424	0.08	9.57	10.12	29.40	49.17	57.37	-8.20	QP

6. RADIATED EMISSION MEASUREMENT

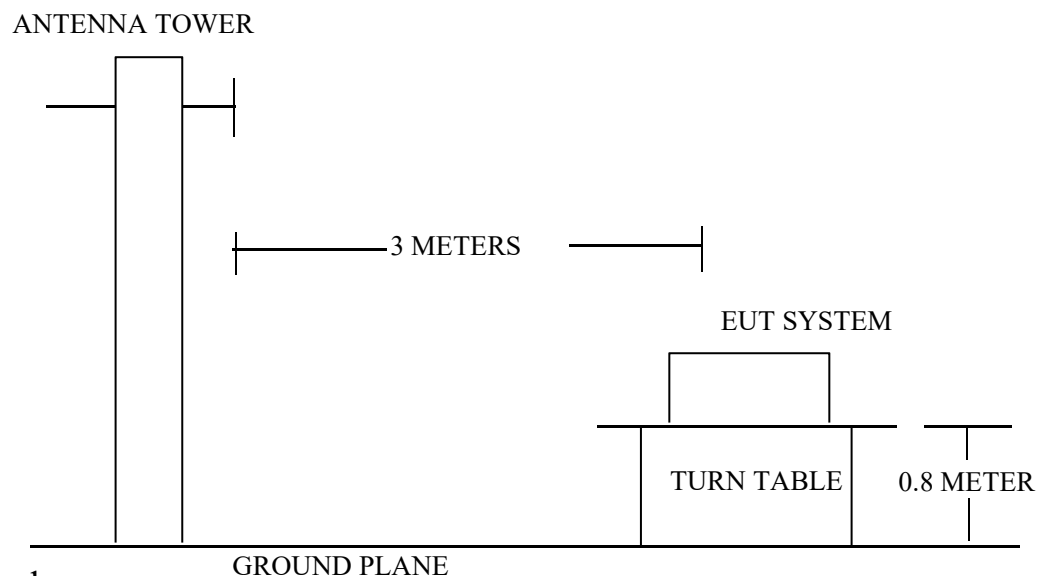
6.1. Block Diagram of EUT Configuration

6.1.1. Block Diagram of connection between the EUT and the simulators



(EUT: Violent fan)

6.1.2. Semi-Anechoic Chamber Test Setup Diagram



6.2. Test Standard

FCC 47 CFR Part 15

6.3. Radiated Emission Limit (Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

Note:(1) The smaller limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or system.

6.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.5. Operating Condition of EUT

6.5.1 Setup the EUT as shown on Section 6.1.2

6.5.2. Turn on the power of all equipments.

6.5.3. Let the EUT work in test mode (On) and measure it.

6.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antennas (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement.

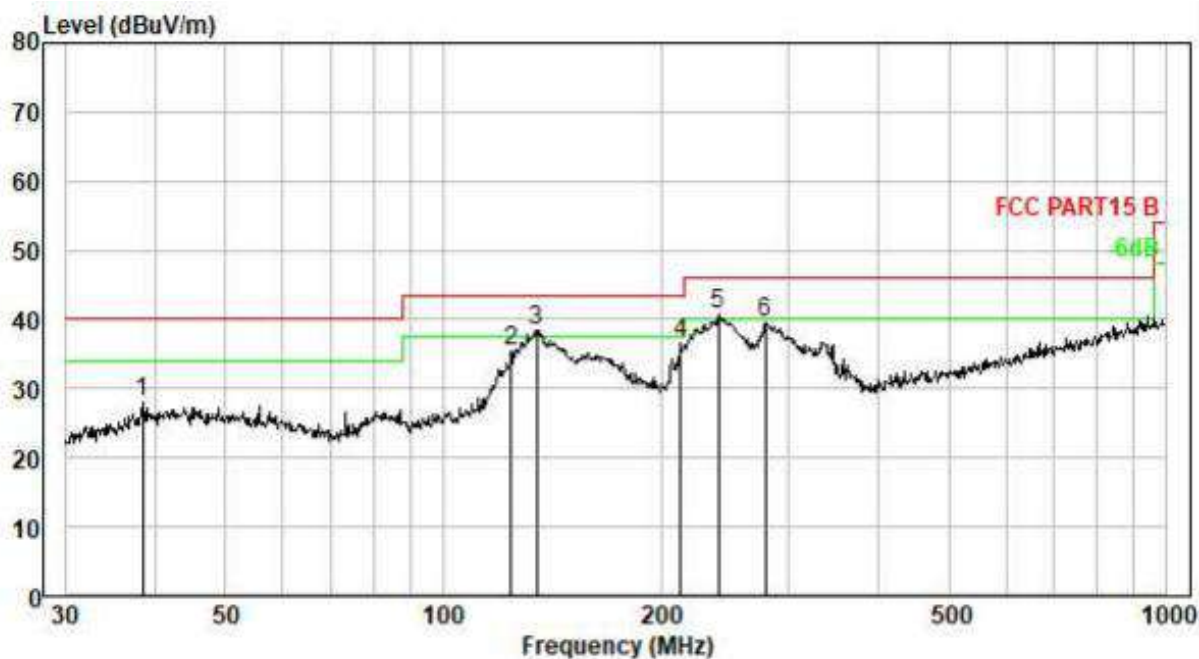
The bandwidth setting on the test receiver is 120 KHz.

The EUT is tested in Semi-Anechoic Chamber. The frequency range from 30MHz to 1000 MHz is checked. All the test results are listed in Section 6.7. and all the scanning waveform are attached within **Appendix I**

6.7. Test Result

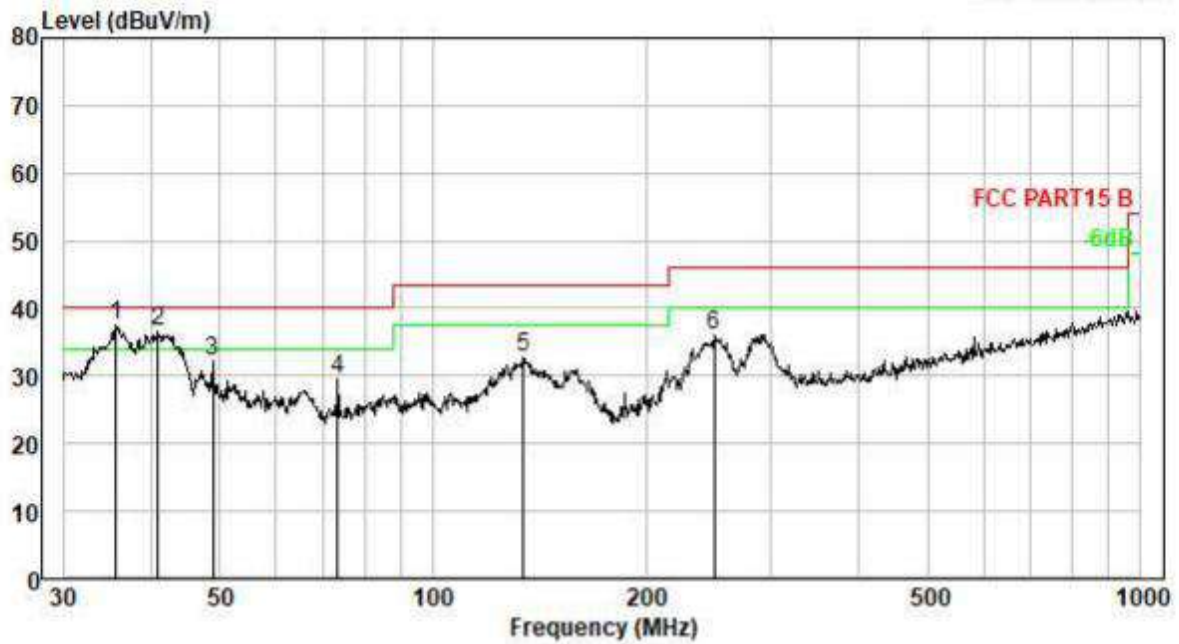
PASS

Radiated Emission In Horizontal (30MHz----1000MHz)



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Preamp Gain dB	Receiver Reading dBμV	Emission Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
1	38.346	0.33	12.07	0.00	15.78	28.18	40.00	-11.82	QP
2	124.133	0.81	9.79	0.00	24.86	35.46	43.50	-8.04	QP
3	134.559	0.85	8.82	0.00	28.71	38.38	43.50	-5.12	QP
4	213.015	1.09	11.85	0.00	23.73	36.67	43.50	-6.83	QP
5	239.987	1.16	12.70	0.00	26.75	40.61	46.00	-5.39	QP
6	279.044	1.24	13.78	0.00	24.41	39.43	46.00	-6.57	QP

Radiated Emission In Vertical (30MHz----1000MHz)



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Preamp Gain dB	Receiver Reading dBμV	Emission Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
1	35.624	0.30	11.33	0.00	25.82	37.45	40.00	-2.55	QP
2	40.845	0.36	12.52	0.00	23.59	36.47	40.00	-3.53	QP
3	48.843	0.42	12.68	0.00	19.22	32.32	40.00	-7.68	QP
4	73.359	0.57	9.51	0.00	19.32	29.40	40.00	-10.60	QP
5	134.088	0.85	8.85	0.00	22.94	32.64	43.50	-10.86	QP
6	249.425	1.18	12.98	0.00	21.97	36.13	46.00	-9.87	QP


Photos of the EUT



*****End of Report*****



TEST REPORT IEC 60335-2-80 Safety of household and similar electrical appliances Part 2 : Particular requirements for fans	
Report Number..... :	EBSZ240603024S
Date of issue..... :	2024-06-07
Total number of pages	107
Name of Testing Laboratory preparing the Report	Europe Ber (Guangdong) Testing Co., Ltd. 401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen
Applicant's name	Shenzhen Jianyu Digital Technology Co., Ltd
Address..... :	Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Test specification:	
Standard	IEC 60335-2-80:2002, IEC 60335-2-80:2002/AMD1:2004, IEC 60335-2-80:2002/AMD2:2008 in conjunction with IEC 60335-1:2010, IEC 60335-1:2010/COR1:2010, IEC 60335-1:2010/COR2:2011, IEC 60335-1:2010/AMD1:2013, IEC 60335-1:2010/AMD2:2016
Test procedure	Test Report
Non-standard test method	N/A
TRF template used..... :	IECEE OD-2020-F1:2020, Ed.1.3
Test Report Form No. :	IEC60335_2_80J
Test Report Form(s) Originator :	DEKRA Certification B.V.
Master TRF	Dated 2021-03-05
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This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
General disclaimer:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

Test item description	Violent Fan	
Trade Mark	Jane feather	
Manufacturer	Same as applicant	
Model/Type reference	ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS	
Ratings	5V---, 3A; Li-ion battery: 7.4V, 5000mAh, 37.0Wh	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> Testing Laboratory:	Europe Ber (Guangdong) Testing Co., Ltd.	
Testing location/ address	401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen	
Tested by (name, function, signature)	Erik Deng	
Approved by (name, function, signature) ..	Tommy Wei	
Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
Testing procedure: CTF Stage 2:		
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature) ..		
Testing procedure: CTF Stage 3:		
Testing procedure: CTF Stage 4:		
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature) ..		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

- Attachment No.1: 14 pages of European Group Differences and National Differences.
- Attachment No.2: 1 page of photograph.

Summary of testing:**Tests performed (name of test and test clause):**

Full tests (all clauses).

Testing location:

Europe Ber (Guangdong) Testing Co., Ltd.
401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen

Summary of compliance with National Differences (List of countries addressed):

European Group Differences and National Differences.

☒ **The product fulfils the requirements of**

- **EN 60335-2-80:2003 + A1:2004 + A2:2009**
- **EN 60335 1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019 + A15:2021**
- **EN 62233:2008 + AC:2008**

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:

Procedure number, issue date and title:

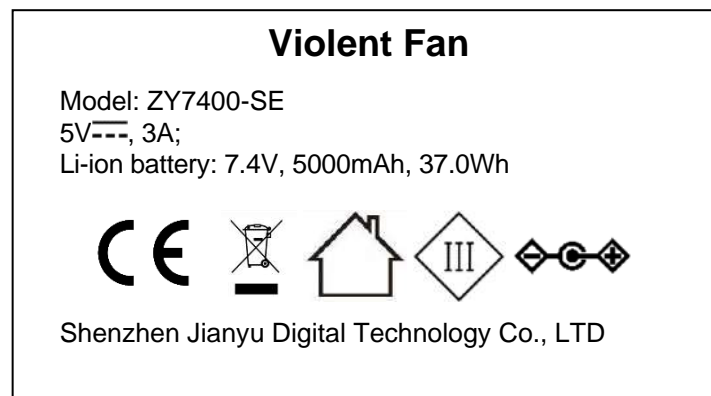
Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

☒ Statement not required by the standard used for type testing

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

Copy of marking plate:

The artwork below may be only a draft.



- The above marking are the minimum requirements required by the safety standard. For the final production sample, the marking which do not give rise to misunderstanding may be add.

- Rating labels for all models are in the same design except for type designation. Above label for representing the other models.

- Manufacturers shall indicate on the electrical equipment their name, registered trade name or registered trademark and the postal address at which they can be contacted.

- Importers shall indicate on the electrical equipment their name, registered trade name or registered trademark and the postal address at which they can be contacted.

- The CE marking and WEEE symbol (if any) should be at least 5.0mm and 7.0mm respectively in height.

Test item particulars :	
Classification of installation and use : Hand-held appliance and indoor use	
Supply Connection : Battery-operated appliances	
..... :	
Possible test case verdicts:	
- test case does not apply to the test object: N/A	
- test object does meet the requirement.....: P (Pass)	
- test object does not meet the requirement: F (Fail)	
Testing:	
Date of receipt of test item: 2024-05-07	
Date (s) of performance of tests: 2024-05-07 to 2024-06-07	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : Same as manufacturer	
General product information and other remarks:	
1.The appliance named Violent Fan is designed as Household and similar electrical appliances for fans, for indoor use only.	
2.All models are similar to each other (similar construction, same components used). Unless otherwise specified, the model ZY7400-SE was chosen as representative model to perform all the tests.	

IEC 60335-2-80			
Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		—
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.7	Fans to be used in tropical climates, the tests of clause 10,11 and 13 are carried out at 40 °C +/- 2 °C (IEC 60335-2-80)		N/A
	Fans marked with ambient operating temperature, the tests of clause 10, 11 and 13 are carried out at marked value +/- 2 °C (IEC 60335-2-80)		N/A
6	CLASSIFICATION		—
6.1	Protection against electric shock: Class 0, 0I, I, II, III	Class III	P
	For a class III construction with a detachable power supply part the appliance is classified according to the detachable power supply part		N/A
6.2	Protection against harmful ingress of water	IPX0	N/A
	At least IPX2 for Duct fans (IEC 60335-2-80)		N/A
6.101	Classification to climatic conditions (IEC 60335-2-80): - fans for temperature climates - fans for tropical climates	Fans for temperature climates	P
7	MARKING AND INSTRUCTIONS		—
7.1	Rated voltage or voltage range (V)	See copy of marking plate	P
	Symbol for nature of supply, or	See copy of marking plate	P
	Rated frequency (Hz)		N/A
	Rated power input (W), or		N/A
	Rated current (A)	See copy of marking plate	P
	Manufacturer's or responsible vendor's name, trademark or identification mark.....	See copy of marking plate	P
	Model or type reference	See page 2 for the details	P
	Symbol IEC 60417-5172, for class II appliances	Battery-operated appliances	N/A
	IP number, other than IPX0.....	IPX0	N/A
	Symbol IEC 60417-5180, for class III appliances, unless	See below	N/A
	the appliance is operated by batteries only	Battery-operated appliances	P
	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A
	Symbol IEC 60417-5180 (2003-02), for class III appliances. This marking is not necessary for appliances operated only by batteries (primary batteries or secondary batteries recharged outside of the appliance) or appliances powered by rechargeable batteries recharged in the appliance.	Appliances powered by rechargeable batteries recharged in the appliance	N/A
	For tropical climates marked with letter T (IEC 60335-2-80)		N/A
	Fans intended for operation in location where the local temperature exceeds 40 °C are marked with the ambient operating temperature. (IEC 60335-2-80)		N/A
7.2	Warning for stationary appliances for multiple supply	Not stationary appliance	N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N/A
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input or current are related to the arithmetic mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	Symbol for nature of supply placed next to rated voltage		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Symbol for class II appliances placed unlikely to be confused with other marking		N/A
	Units of physical quantities and their symbols according to international standardized system	See copy of marking plate	P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		N/A
	correct mode of connection is obvious		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		—
	- marking of terminals exclusively for the neutral conductor (letter N)		N/A
	- marking of protective earthing terminals (symbol IEC 60417-5019)		N/A
	- marking of functional earthing terminals (symbol IEC 60417-5018)		N/A
	- marking not placed on removable parts		N/A
7.9	Marking or placing of switches which may cause a hazard		N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means :		N/A
	This applies also to switches which are part of a control		P
	If figures are used, the off position indicated by the figure 0		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		N/A
	The instructions state that:		—
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
	- children being supervised not to play with the appliance		P

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Clause	Requirement + Test	Result - Remark	Verdict
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		N/A
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A
	it is a battery-operated appliance, the battery being charged outside the appliance		N/A
	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated..... :		N/A
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only		N/A
	If the instructions state that the guard has to be removed for cleaning purposes, the instructions state the substance of the following: (IEC 60335-2-80/A1)		—
	Ensure that the fan is switched off from the supply mains before removing the guard. (IEC 60335-2-80/A1)		N/A
7.12.1	Sufficient details for installation supplied		P
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	The installation instructions include the substance of the following: (IEC 60335-2-80)		—
	–the model or type reference of a luminaire that may be installed in a fan constructed for this purpose; (IEC 60335-2-80)		N/A
	– whether the fan is intended for mounting in outside windows or walls (for partition fans); (IEC 60335-2-80)		N/A
	– that the fan is to be installed so that the blades are more than 2,3 m above the floor (for fans intended to be mounted at high level); (IEC 60335-2-80)		N/A
	– that precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances (for duct and partition fans). (IEC 60335-2-80)		N/A
	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		—
	- dimensions of space		N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		N/A
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		N/A
7.12.8	Instructions for appliances connected to the water mains:		—
	- max. inlet water pressure (Pa) :		N/A
	- min. inlet water pressure, if necessary (Pa)..... :		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.12.9	Instructions specified in 7.12 and from 7.12.1 to 7.12.8 appear together before any other instructions supplied with the appliance	Refer to manual	P

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Clause	Requirement + Test	Result - Remark	Verdict
	These instructions may be supplied with the appliance separately from any functional use booklet		P
	They may follow the description of the appliance that identifies parts, or follow the drawings/sketches		P
	In addition, instructions are also available in an alternative format such as on a website or on request from the user in a format such as a DVD		N/A
	In addition, instructions are also available in an alternative format such as on a website or in a format such as a DVD :		N/A
7.14	Marking clearly legible and durable, rubbing test as specified		P
	Signal words WARNING, CAUTION, DANGER in uppercase having a height as specified..... :		N/A
	Uppercase letter of the text explaining the signal word not smaller than 1,6 mm :		N/A
	Moulded in, engraved, or stamped markings either raised above or have a depth below the surface of at least 0,25 mm, unless		N/A
	contrasting colours are used		N/A
	Markings checked by inspection, measurement and rubbing test as specified		P
7.15	Markings on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		N/A
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		P
	The symbol IEC 60417-5018 placed next to the symbol IEC 60417-5172 or IEC 60417-5180		N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		—
8.1	Adequate protection against accidental contact with live parts	Battery-operated appliances, no live parts inside the appliance.	N/A
8.1.1	Requirement applies for all positions, detachable parts removed		N/A
	Lamps behind a detachable cover not removed, if conditions met		N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		N/A
	Use of test probe B of IEC 61032 through openings, with a force of 20N: no contact with live parts		N/A
	Lamps are not removed. However, during insertion or removal of lamps, no contact with live parts of the lamp cap. (IEC 60335-2-80)		N/A
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		N/A
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements or supporting parts		N/A
	For a single switching action obtained by a switching device, requirements as specified		N/A
	For appliances with a supply cord and without a switching device, the single switching action may be obtained by the withdrawal of the plug		N/A
8.1.4	Accessible part not considered live if:		—
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a.c. peak value not exceeding 0.7 mA		N/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μ F		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μ C		N/A
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		—
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		N/A
	Only possible to touch parts separated from live parts by double or reinforced insulation		N/A
8.2	After removal of detachable parts for user maintenance purposes, the basic insulation of internal wiring may be touched provided the equivalent insulating of cords complying with IEC 60227 or IEC 60245. (IEC 60335-2-80)		N/A
9	STARTING OF MOTOR-OPERATED APPLIANCES		—
	Requirements and tests are specified in part 2 when necessary		N/A
10	POWER INPUT AND CURRENT		—
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 :	(see appended table)	N/A
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the power input is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the rated power input is related to the arithmetic mean value		N/A
	Appliances are tested with shutters or similar devices in the open position.(IEC 60335-2-80)		N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2..... :	(see appended table)	N/A
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the current is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated current is related to the arithmetic mean value of the range		N/A
	Appliances are tested with shutters or similar devices in the open position. (IEC 60335-2-80)		N/A
11	HEATING		—
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described :		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections		P
11.4	Heating appliances operated under normal operation at 1.15 times rated power input (W) :		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V) :	Battery-operated appliances	N/A
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V) :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.7	Appliances are operated until steady conditions are established. (IEC 60335-2-80)		P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3 :	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of Annex C are carried out		N/A
	Sealing compound does not flow out		P
	Protective devices do not operate, except		N/A
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
	The temperature rise limits for appliances for tropical climates are reduced by 15 K. (IEC 60335-2-80)		N/A
	The temperature rise limits for fans marked with an ambient operating temperature are reduced by the difference between the marked value and 25 °C. (IEC 60335-2-80)		N/A
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		—
13.1	Leakage current not excessive and electric strength adequate		N/A
	Heating appliances operated at 1.15 times the rated power input (W)..... :		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times the rated voltage (V)..... :		N/A
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	For class 0, class II and class III appliances, and class II constructions, leakage current measured by means of the circuit described in figure 4 of IEC 60990		N/A
	For class 0I and class I appliances, a low impedance ammeter may be used		N/A
	Leakage current measurements :	(see appended table)	N/A
13.3	The appliance is disconnected from the supply		N/A
	Electric strength tests according to table 4 :	(see appended table)	N/A
	No breakdown during the tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
14	TRANSIENT OVERVOLTAGES		—
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	MOISTURE RESISTANCE		—
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX0	N/A
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		N/A
	No trace of water on insulation which can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529		N/A
	Water valves containing live parts in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
	The outer part of fans to be installed in the external structure is subjected to subclause 14.2.4(a) of IEC 60529:1989. The part of fans that is not mounted on the outside surface is protected against the spray water from the oscillating tube. (IEC 60335-2-80)		N/A
	The test is carried out with the appliance in the rest position and then in operation while supplied at rated voltage, shutters or similar devices being in the open position. (IEC 60335-2-80)		N/A
	Fans marked with the second numeral of the IP system are subjected to the appropriate test of IEC 60529 both at rest and in operation while supplied at rated voltage. (IEC 60335-2-80)		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube, and		N/A
	for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support, and		N/A
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts subjected to the relevant treatment with the main part		N/A
	However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Spillage solution comprising water containing approximately 1 % NaCl and 0,6 % rinsing agent		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts are removed		N/A
	Overfilling test with additional amount of the solution, over a period of 1 min (I)..... :		N/A
	The appliance withstands the electric strength test of 16.3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		P
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part		N/A
	Humidity test for 48 h in a humidity cabinet	93%R.H., 30°C	P
	Reassembly of those parts that may have been removed		N/A
	The appliance withstands the tests of clause 16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		—
16.1	Leakage current not excessive and electric strength adequate		N/A
	Protective impedance disconnected from live parts before carrying out the tests		N/A
	Tests carried out at room temperature and not connected to the supply		N/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V)		N/A
	Three-phase appliances: test voltage 1.06 times rated voltage divided by $\sqrt{3}$ (V).....		N/A
	Leakage current measurements	(see appended table)	N/A
	Limit values doubled if:		—
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified	(see appended table)	N/A
16.3	Electric strength tests according to table 7	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified.....	(see appended table)	P
	No breakdown during the tests		P

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Clause	Requirement + Test	Result - Remark	Verdict
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		—
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use :	(see appended table)	N/A
	Appliance supplied with 1.06 or 0.94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V) :		N/A
	Basic insulation is not short-circuited		N/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
	Temperature of the winding not exceeding the value specified in table 8		N/A
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
18	ENDURANCE		—
	Requirements and tests are specified in part 2 when necessary		N/A
19	ABNORMAL OPERATION		—
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe :	(see appended table)	P
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		N/A
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N/A
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		P
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N/A
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
	If the control performs more than one function, only that aspect of the control under consideration is rendered inoperative. Other functions of the control may continue to operate normally.		N/A
	Fans incorporating shutters or similar subjected to the test of cl. 19.101 (IEC 60335-2-80)		P
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W) :		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W) :		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures (V)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		P
	locking moving parts of other appliances		N/A
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	the capacitor is of class S2 or S3 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed..... :		N/A
	An electronic timer or programmer that operates to ensure compliance with the test before the maximum period under the conditions of Clause 11 is reached, is a protective electronic circuit		N/A
	Other appliances supplied with rated voltage for a period as specified		P
	Winding temperatures not exceeding values specified in table 8..... :	(see appended table)	P
	Mounting of separate control (IEC 60335-2-80)		N/A
	Approximately 50 % of the area of each ventilating opening is blocked. (IEC 60335-2-80)		N/A
	Winding temperatures not exceeding values specified in table 8 (IEC 60335-2-80)	(see appended table)	P
	The temperature rise of the board not exceed: (IEC 60335-2-80)		—
	– 50 K, for appliances with T marking; (IEC 60335-2-80)		N/A
	– 65 K, for other appliances. (IEC 60335-2-80)		P
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.9	Not applicable. (IEC 60335-2-80)		N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V)..... :		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless		P
	they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	restarting does not result in a hazard		N/A
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		N/A
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		N/A
	During and after each test the following is checked:		—
	- the temperature of the windings do not exceed the values specified in table 8		P
	- the appliance complies with the conditions specified in 19.13		P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		P
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		—
	- the base material of the printed circuit board withstands the test of Annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		—
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		—
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		P
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless		P
	they comply with IEC 60384-14		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		P
	This fault condition is not applied between the two circuits of an optocoupler		P
	e) failure of triacs in the diode mode		N/A
	f) failure of microprocessors and integrated circuits		N/A
	g) failure of an electronic power switching device		N/A
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N/A
19.11.3	If the appliance incorporates a protective electronic circuit that operates to ensure compliance with clause 19, the appliance is tested as specified		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N/A
	a device that can be placed in the stand-by mode,		N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, at frequency ranges specified		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N/A
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode		N/A
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling		N/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N/A
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)..... :		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9..... :	(see appended table)	P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		—
	- basic insulation (V)..... :		N/A
	- supplementary insulation (V)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- reinforced insulation (V) :		N/A
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		N/A
	The appliance does not undergo a dangerous malfunction, and		N/A
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		—
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		—
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		N/A
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N/A
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		N/A
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
19.101	Fans incorporating shutters or similar that are operated automatically are supplied at rated voltage in the closed or open position, whichever is more unfavourable (IEC 60335-2-80)		N/A
20	STABILITY AND MECHANICAL HAZARDS		—
20.1	Appliances having adequate stability		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn		N/A
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
	Portable pedestal fans exceeding 1,7 m and exceeding 10 kg tested with a force of 40 N at 1,5 m. (IEC 60335-2-80)		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable, and		N/A
	have adequate mechanical strength		N/A
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		N/A
	Not possible to touch dangerous moving parts with the test probe described		N/A
20.101	Fan blades, other than those for mounting at high level, are guarded, unless their leading edges and tips are rounded and: (IEC 60335-2-80)		N/A
	-they have a hardness less than D 60 Shore, or (IEC 60335-2-80)		N/A
	-they have a peripheral speed less than 15 m/s when the fan is supplied at rated voltage, or (IEC 60335-2-80)		N/A
	-the fan has a power output not exceeding 2 W when supplied at rated voltage. (IEC 60335-2-80)		N/A
21	MECHANICAL STRENGTH		—
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J	(see appended table)	P
	The appliance shows no damage impairing compliance with this standard, and		P
	compliance with 8.1, 15.1 and clause 29 not impaired		P

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Clause	Requirement + Test	Result - Remark	Verdict
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		N/A
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		N/A
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		N/A
21.101	Fan guards are subjected to a push and pull force of 20 N applied along the axis of the motor. Dangerous moving parts are not accessible with a test probe that is similar to test probe B of IEC 61032, but having a circular stop face with a diameter of 50 mm instead of the non-circular face. (IEC 60335-2-80)		P
	The test probe is applied with a force not exceeding 5N. (IEC 60335-2-80)		P
21.102	Ceiling fans have adequate strength. Ceiling fans are mounted in accordance with the installation instructions. A load equal to four times the mass of the fan is suspended from the body of the fan for 1 min. A torque of 1 Nm is then applied to the fixed body of the fan for 1 min. The test is repeated with the torque applied in the reverse direction. The suspension system does not break and the fan is not be damaged to such an extent that compliance with 8.1, 16.3 and Clause 29 is impaired. (IEC 60335-2-80)		N/A
22	CONSTRUCTION		—
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX0	N/A
	NOTE 101 The enclosure defined in IEC 60529 does not include guards for fan blades. (IEC 60335-2-80)		N/A
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		—
	- a supply cord fitted with a plug, or		N/A
	- a switch complying with 24.3, or		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- an appliance inlet		N/A
	Single-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has been placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating, unless		N/A
	rotating does not impair compliance with this standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching pins, for appliances having a capacitor with rated capacitance equal to or greater than 0,1μF, the appliance being disconnected from the supply at the instant of voltage peak		N/A
	Voltage not exceeding 34 V (V) :		N/A
	If compliance relies on the operation of an electronic circuit, the electromagnetic phenomena tests of 19.11.4.3 and 19.11.4.4 are applied		N/A
	The discharge test is then repeated three times, voltage not exceeding 34 V (V) :		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		N/A
	Electrical insulation of Class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless		P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		P
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		P
	The 50 N force is not applied to clips used to fasten fan guards. (IEC 60335-2-80)		P
	Instead, a force of 15 N is applied in any direction to the clips in an attempt to release them. (IEC 60335-2-80)		P
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner, if loosening result in a hazard		N/A
	Removing or fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible, if resulting in a hazard		N/A
	A choking hazard does not apply to appliances for commercial use		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If the part is removed and can be contained within the small parts cylinder, it is considered to be a choking hazard		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		P
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion		N/A
22.19	Driving belts not relied upon to provide the required level of insulation, unless		N/A
	constructed to prevent inappropriate replacement		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless		N/A
	material used is non-corrosive, non-hygroscopic and non-combustible		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless		P
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P

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Clause	Requirement + Test	Result - Remark	Verdict
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		N/A
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		N/A
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		N/A
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		N/A
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		N/A
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or		N/A
	unearthed metal parts separated from live parts by basic insulation only		N/A
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless		N/A
	the shaft is not accessible when the part is removed		N/A
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	This requirement does not apply to handles, levers and knobs on stationary appliances and cordless appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N/A
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		N/A
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N/A
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible		N/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		N/A
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1		N/A
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N/A
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N/A
	No leakage from any part, including any inlet water hose		N/A
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		—
	- continuously, or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- automatically, or		N/A
	- remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.53	Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts		N/A
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless		N/A
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously		N/A
22.55	Devices operated to stop the intended function of the appliance, if any, are to be distinguished from other manual devices by means of shape, size, surface texture or position		N/A
	The requirement concerning position does not preclude use of a push on push off switch		N/A
	An indication when the device has been operated is given by:		N/A
	– tactile feedback from the actuator or from the appliance, or		N/A
	– reduction in heat output; or		N/A
	– audible and visible feedback		N/A
22.56	Detachable power supply part provided with the part of class III construction		N/A
22.57	The properties of non-metallic materials do not degrade from exposure to UV-C radiation, as specified in Annex T		N/A
	This requirement does not apply to glass, ceramics or similar materials		N/A
22.101	Appliances having provision for attaching a luminaire incorporate appropriate terminals and internal wiring. (IEC 60335-2-80)		N/A
23	INTERNAL WIRING		—
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well-rounded or provided with bushings		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	Fans with an oscillating mechanism influencing wiring, the conductors show no damage after 100 000 cycles of flexing at rated voltage and operated under normal operation , the angle being the maximum allowed by the construction (IEC 60335-2-80)		N/A
	100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10% of the strands of any conductor broken, and		N/A
	not more than 30% for wiring supplying circuits that consume no more than 15W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		P
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		N/A
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N/A
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		N/A
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.		N/A
	A single layer of internal wiring insulation does not provide reinforced insulation		N/A
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or		N/A
	be such that it can only be removed by breaking or cutting		N/A
23.7	The colour combination green/yellow only used for earthing conductors		N/A
23.8	Aluminium wires not used for internal wiring		P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A
24	COMPONENTS		—
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components :	(see appended table)	P
	Motors not required to comply with IEC 60034-1, they are tested as part of the appliance		N/A
	Relays tested as part of the appliance, or		N/A
	alternatively acc. to IEC 60730-1, and meeting the additional requirements in IEC 60335-1		N/A
	The requirements of Clause 29 apply between live parts of components and accessible parts of the appliance		N/A
	Components can comply with the requirements for clearances and creepage distances for functional insulation in the relevant component standard		N/A
	30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Components that have not been previously tested to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2		P
	Components that have been previously tested to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided the specified conditions are met		P
	If these conditions are not satisfied, the component is tested as part of the appliance.		N/A
	Power electronic converter circuits not required to comply with IEC 62477-1, they are tested as part of the appliance		N/A
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		N/A
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		N/A
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		N/A
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, comply with IEC 60384-14		N/A
	If the capacitors have to be tested, they are tested according to Annex F		N/A
24.1.2	Transformers in associated switch mode power supplies comply with Annex BB of IEC 61558-2-16		N/A
	Safety isolating transformers comply with IEC 61558-2-6		N/A

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Clause	Requirement + Test		Verdict
	If they have to be tested, they are tested according to Annex G		N/A
24.1.3	Switches comply with IEC 61058-1, the number of cycles of operation being at least 10 000		N/A
	If they have to be tested, they are tested according to Annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A
	If the switch only operates a motor starting relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested		N/A
24.1.4	Automatic controls comply with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		—
	- thermostats:	10 000	N/A
	- temperature limiters:	1 000	N/A
	- self-resetting thermal cut-outs:	300	N/A
	- voltage maintained non-self-resetting thermal cut-outs:	1 000	N/A
	- other non-self-resetting thermal cut-outs:	30	N/A
	- timers:	3 000	N/A
	- energy regulators:	10 000	N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N/A
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N/A
	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9		N/A
24.1.5	Appliance couplers comply with IEC 60320-1		N/A
	However, for class II appliances classified higher than IPX0, the appliance couplers comply with IEC 60320-2-3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Interconnection couplers comply with IEC 60320-2-2		N/A
24.1.6	Small lamp holders similar to E10 lampholders comply with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		N/A
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance..... :		N/A
24.2	Appliances not fitted with:		—
	- switches, automatic controls or power supplies in flexible cords		N/A
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		N/A
	- thermal cut-outs that can be reset by soldering, unless		N/A
	the solder has a melting point of at least 230 °C		N/A
	Switches or automatic controls in flexible cords are allowed for appliances not exceeding 25 W. (IEC 60335-2-80)		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		N/A
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of Annex I		N/A
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		N/A
	One or more of the following conditions are to be met:		—
	- the capacitors are of class S2 or S3 according to IEC 60252-1		N/A
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
24.101	Thermal cut-outs incorporated in duct fans in order to comply with cl. 19 are not self-resetting (IEC 60335-2-80)		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		—
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- supply cord fitted with a plug, the current rating and voltage rating of the plug being not less than the corresponding ratings of its associated appliance		N/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N/A
	- pins for insertion into socket-outlets		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		N/A
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		—
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		N/A
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm) :		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		N/A
25.5	Method for assembling the supply cord to the appliance:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- type X attachment		N/A
	- type Y attachment		N/A
	- type Z attachment is allowed for portable fans (IEC 60335-2-80)		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord		N/A
25.7	Supply cords, other than for class III appliances, being one of the following types:		—
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		—
	<ul style="list-style-type: none"> light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg 		N/A
	<ul style="list-style-type: none"> ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances 		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		—
	<ul style="list-style-type: none"> heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg 		N/A
	<ul style="list-style-type: none"> heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances 		N/A
	- halogen-free, low smoke, thermoplastic insulated and sheathed		—
	<ul style="list-style-type: none"> - light duty halogen-free low smoke flexible cable (62821 IEC 101) for circular cable and (62821 IEC 101f) for flat cable 		N/A
	<ul style="list-style-type: none"> - Ordinary duty halogen-free low smoke flexible cable (62821 IEC 102) for circular cable and (62821 IEC 102f) for flat cable 		N/A
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm ²)..... :		N/A
25.9	Supply cords not in contact with sharp points or edges		N/A
25.10	Supply cord of class I appliances have a green/yellow core for earthing		N/A
	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue.		N/A
	Where additional neutral conductors are provided in the supply cord:		—
	- other colours may be used for these additional neutral conductors;		N/A
	- all of the neutral conductors and line conductors are identified by marking using the alpha numeric notation specified in IEC 60445		N/A
	- the supply cord is fitted to the appliance		N/A
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		N/A
25.13	Inlet openings so constructed as to prevent damage to the supply cord		N/A
	If it is not evident that the supply cord can be introduced without risk of damage, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Flexing test, as described:		—
	- applied force (N)..... :		N/A
	- number of flexings..... :		N/A
	The test does not result in:		—
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		N/A
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		N/A
	Pull and torque test of supply cord:		—
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm)..... :		N/A
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)..... :		N/A
	Cord not damaged and max. 2 mm displacement of the cord		N/A
25.16	Cord anchorages for type X attachments constructed and located so that:		—
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of supply cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N/A
	they are separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless		N/A
	it is part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N/A
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N/A
	failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for class II appliances they are of insulating material, or		N/A
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance		N/A
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	Constructed so that the cord can only be fitted with the aid of a tool		N/A
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts		N/A
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		—
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N/A
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N/A
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- live parts not accessible during insertion or removal		N/A
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		N/A
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		N/A
	- the thickness of the insulation may be reduced		N/A
	- for class I or class II appliance with class III construction, the cross sectional areas of the conductors need not comply with 25.8 if specified conditions are met		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N/A
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		—
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		N/A
	Terminals only accessible after removal of a non-detachable cover, except		N/A
	for class III appliances that do not contain live parts		N/A
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
26.2	Appliances with type X attachment and appliances for the connection of cables to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless		N/A
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		N/A
	Terminals fixed so that when the clamping means is tightened or loosened:		—
	- the terminal does not become loose		N/A
	- internal wiring is not subjected to stress		N/A
	- neither clearances nor creepage distances are reduced below the values in clause 29		N/A
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm)..... :		N/A
	No deep or sharp indentations of the conductors		N/A
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N/A
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm ²)..... :		N/A
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless		N/A
	conductors ends fitted with means suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		N/A
	For Class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	PROVISION FOR EARTHING		—

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Clause	Requirement + Test	Result - Remark	Verdict
27.1	Accessible metal parts of Class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		N/A
	Earthing terminals and earthing contacts not connected to the neutral terminal		N/A
	Class 0, II and III appliances have no provision for protective earthing		N/A
	Class II appliances and class III appliances can incorporate an earth for functional purposes		N/A
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits		N/A
27.2	Clamping means of earthing terminals adequately secured against accidental loosening		N/A
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm ² , and		N/A
	- do not provide earthing continuity between different parts of the appliance, and		N/A
	- conductors cannot be loosened without the aid of a tool		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part		N/A
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		N/A
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion		N/A
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		N/A
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω)..... :		N/A
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes		N/A
28	SCREWS AND CONNECTIONS		—
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		N/A
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14..... :	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		N/A
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
	This requirement does not apply to electrical connections in circuits of appliances for which:		—
	<ul style="list-style-type: none"> 30.2.2 is applicable and that carry a current not exceeding 0,5 A 		N/A
	<ul style="list-style-type: none"> 30.2.3 is applicable and that carry a current not exceeding 0,2 A 		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		—
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N/A
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		N/A
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		—
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies..... :		N/A
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation :		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless :	(see appended table)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For appliances intended for use at altitudes exceeding 2 000 m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1		N/A
	Impulse voltage test is not applicable:		—
	- when the microenvironment is pollution degree 3, or		N/A
	- for basic insulation of class 0 and class 01 appliances, or		N/A
	- to appliances intended for use at altitudes exceeding 2 000 m		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable..... :	(see appended table)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		N/A
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16:	(see appended table)	N/A
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage :	(see appended table)	N/A
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		N/A
29.1.4	Clearances for functional insulation are the largest values determined from:		—
	- table 16 based on the rated impulse voltage :	(see appended table)	P
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless		N/A
	the microenvironment is pollution degree 3, or		N/A
	the distances can be affected by wear, distortion, movement of the parts or during assembly		N/A
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Lacquered conductors of windings considered to be bare conductors		N/A
	However, clearances at crossover points are not measured		N/A
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		—
	- table 16 based on the rated impulse voltage :		N/A
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz		N/A
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or Clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation		N/A
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree..... :	(see appended table)	P
	Pollution degree 2 applies, unless		N/A
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		N/A
	Microenvironment is pollution degree 3 unless insulation is enclosed or located that it is unlikely to be exposed to pollution during normal use. (IEC 60335-2-80)		P
	A force of 2 N is applied to bare conductors, other than heating elements		P
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		N/A
29.2.1	Creepage distances of basic insulation not less than specified in table 17..... :	(see appended table)	N/A
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17		N/A
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
29.2.4	Creepage distances of functional insulation not less than specified in table 18..... :	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		N/A
	Compliance checked:		—
	- by measurement, in accordance with 29.3.1, or		N/A
	- by an electric strength test in accordance with 29.3.2, or		N/A
	- for insulation, other than single layer internal wiring insulation, by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A
29.3.1	Supplementary insulation have a thickness of at least 1 mm		N/A
	Reinforced insulation have a thickness of at least 2 mm		N/A
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19..... :		N/A
30	RESISTANCE TO HEAT AND FIRE		—
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		N/A
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)..... :	(see appended table 30.1)	P
	Parts supporting live parts tested at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C)..... :	(see appended table 30.1)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C) :	(see appended table 30.1)	N/A
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P
	This requirement does not apply to:		—
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		P
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N/A
	Compliance checked by the test of 30.2.1, and in addition:		P
	- for attended appliances, 30.2.2 applies		N/A
	- for unattended appliances, 30.2.3 applies		P
	For appliances for remote operation, 30.2.3 applies		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For base material of printed circuit boards, 30.2.4 applies		P
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550°C	(see appended table 30.2)	P
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.2	Not applicable. (IEC 60335-2-80)		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	The tests are not applicable to conditions as specified :		P
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		P
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		N/A
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C	(see appended table 30.2)	P
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C		N/A
30.2.3.2	Parts of non-metallic material supporting connections, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with appropriate severity level:	(see appended table 30.2)	P
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		P
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications:		—
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	<ul style="list-style-type: none"> 775 °C, for connections carrying a current exceeding 0,2 A during normal operation 		N/A
	<ul style="list-style-type: none"> 675 °C, for other connections 		N/A
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		N/A
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		—
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The consequential needle-flame test of Annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		—
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N/A
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of Annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of Annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E	(see appended table 30.2/30.2.4)	N/A
	Test not applicable to conditions as specified..... :	Approved V-0 class PCB used.	P
31	RESISTANCE TO RUSTING		—
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		—
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		—
	Description of routine tests to be carried out by the manufacturer		N/A
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE		—
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		P
	Three forms of construction covered:		—
	a) Appliance supplied directly from the supply mains or a renewable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance		N/A
	b) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit		P
3.1.9	Appliance operated under the following conditions:		—
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		P
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		P
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		P
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage (V) and polarity of the terminals :		N/A
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N/A
	Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181 and its type reference along with symbol ISO 7000-0790 (2004-01), or		P
	use only with <model designation> supply unit ... :		—
7.6	Additional symbols		P
7.12	The instructions give information regarding charging		P
	Instructions for appliances incorporating batteries intended to be replaced by the user include required information		N/A
	Instructions for appliances containing non-user-replaceable batteries state the substance of the following:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	This appliance contains batteries that are only replaceable by skilled persons		P
	Instructions for appliances containing non-replaceable batteries state the substance of the following:		—
	This appliance contains batteries that are non-replaceable		P
	For appliances intending to be supplied from a detachable supply unit for the purposes of recharging the battery, the type reference of the detachable supply unit is stated along with the following:		—
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		N/A
	If the symbol for detachable supply unit is used, its meaning is explained		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		P
	The type reference of the detachable supply unit is placed in close proximity to the symbol		P
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period stated in the instructions or 24 h :	24h	P
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K) :		P
	If no limit specified, the temperature rise does not exceed 20 K; measured (K) :	20K	P
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		P
19.10	Not applicable		N/A
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		P
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N/A
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.13	The battery does not rupture or ignite		P
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		—
	- 100, if the mass of the part does not exceed 250 g (g)		N/A
	- 50, if the mass of the part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		P
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		—
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
	Test conditions as specified		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		—
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard		N/A
	Test conditions as specified		N/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		—
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		—
7	Severities		P
	The duration of application of the test flame is 30 s ± 1 s		P
9	Test procedure		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1		P
9.2	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		N/A
9.3	The test is carried out on one specimen		P
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		P
	The duration of burning not exceeding 30 s		P
	However, for printed circuit boards, the duration of burning not exceeding 15 s		P
F	ANNEX F (NORMATIVE) CAPACITORS		—
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		—
1.5	Terms and definitions		N/A
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		N/A
	Items a) and b) are applicable		N/A
3.4	Approval testing		N/A
3.4.3.2	Table 3 is applicable as described		N/A
4.1	Visual examination and check of dimensions		N/A
	This subclause is applicable		N/A
4.2	Electrical tests		N/A
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table 11 is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		N/A
	This subclause is applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		N/A
	This subclause is applicable		N/A
4.14	Endurance		N/A
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 are applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	No visible damage		N/A
4.17	Passive flammability test		N/A
	This subclause is applicable		N/A
4.18	Active flammability test		N/A
	This subclause is applicable		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		—
	The following modifications to this standard are applicable for safety isolating transformers:		—
7	Marking and instructions		N/A
7.1	Transformers for specific use marked with:		—
	-name, trademark or identification mark of the manufacturer or responsible vendor		N/A
	-model or type reference		N/A
17	Overload protection of transformers and associated circuits		N/A
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		N/A
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		N/A
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		N/A
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		N/A
H	ANNEX H (NORMATIVE) SWITCHES		—
	Switches comply with the following clauses of IEC 61058-1, as modified below:		—
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		N/A
	Switches are not required to be marked		N/A
	However, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		N/A
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		N/A
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		N/A
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless		N/A
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335 :		N/A
	Switches for operation under no load and which can be operated only by a tool, and		N/A
	switches operated by hand that are interlocked so that they cannot be operated under load,		N/A
	are not subjected to the tests		N/A
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N/A
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K) :		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N/A
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection		N/A
	It is also applicable to creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in Table 24		N/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		—
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		—
8	Protection against access to live parts		N/A
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		N/A
11.3	The temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
11.8	The temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		N/A
16.3	Insulation between live parts of the motor and its other metal parts is not subjected to the test		N/A
19	Abnormal operation		N/A
19.1	The tests of 19.7 to 19.9 are not carried out		N/A
19.1.101	Appliance operated at rated voltage with each of the following fault conditions:		—
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		N/A
22.1.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		—
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		—
5.7	Conditioning of the test specimens		N/A
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		N/A
	The test is carried out at -25 °C		N/A
5.7.3	Rapid change of temperature		N/A
	Severity 1 is specified		N/A
5.9	Additional tests		N/A
	This subclause is not applicable		N/A
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		—
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P

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Clause	Requirement + Test	Result - Remark	Verdict
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		—
	Information for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		—
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		N/A
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		N/A
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		—
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		N/A
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		P
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		—

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Clause	Requirement + Test	Result - Remark	Verdict
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		—
7	Test apparatus		P
7.3	Test solutions		P
	Test solution A is used		P
10	Determination of proof tracking index (PTI)		P
10.1	Procedure		P
	The proof voltage is 100V, 175V, 400V or 600V.. :		P
	The test is carried out on five specimens		P
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		N/A
10.2	Report		N/A
	The report states if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N/A
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		—
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		—
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332		N/A
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332, if liable to be connected to a supply mains that excludes the protective earthing conductor		N/A
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N/A
7.1	The appliance marked with symbol IEC 60417-6332		N/A
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a tropical climate, but may also be used in other countries		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If symbol IEC 60417-6332 is used, its meaning is explained		N/A
11.8	The values of Table 3 are reduced by 15 K		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15.3	The value of t is 37 °C		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA (mA):		N/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		—
	Description of tests for appliances incorporating electronic circuits		P
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		—
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex		N/A
R.1	Programmable electronic circuits using software		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 constructed so that the software does not impair compliance with the requirements of this standard		N/A
R.2	Requirements for the architecture		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 use measures to control and avoid software-related faults/errors in safety-related data and safety-related segments of the software		N/A
R.2.1.1	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.2 have one of the following structures:		—
	- single channel with periodic self-test and monitoring		N/A
	- dual channel (homogenous) with comparison		N/A
	- dual channel (diverse) with comparison		N/A
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 have one of the following structures:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- single channel with functional test		N/A
	- single channel with periodic self-test		N/A
	- dual channel without comparison		N/A
R.2.2	Measures to control faults/errors		N/A
R.2.2.1	When redundant memory with comparison is provided on two areas of the same component, the data in one area is stored in a different format from that in the other area		N/A
R.2.2.2	Programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.2 and that use dual channel structures with comparison, have additional fault/error detection means for any fault/errors not detected by the comparison		N/A
R.2.2.3	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, means are provided for the recognition and control of errors in transmissions to external safety-related data paths		N/A
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate		N/A
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, detection of a fault/error occur before compliance with clause 19 is impaired		N/A
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions		N/A
R.2.2.7	Labels used for memory locations are unique		N/A
R.2.2.8	The software is protected from user alteration of safety-related segments and data		N/A
R.2.2.9	Software and safety-related hardware under its control is initialized and terminates before compliance with clause 19 is impaired		N/A
R.3	Measures to avoid errors		N/A
R.3.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		N/A
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1		N/A
R.3.2	Specification		N/A
R.3.2.1	Software safety requirements:	Software Id:	N/A
	The specification of the software safety requirements includes the descriptions listed		N/A
R.3.2.2	Software architecture		N/A
R.3.2.2.1	<p>The specification of the software architecture includes the aspects listed</p> <ul style="list-style-type: none"> - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data 	Document ref. No:	N/A
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis		N/A
R.3.2.3	Module design and coding		N/A
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules		N/A
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements		N/A
R.3.2.3.2	Software code is structured		N/A
R.3.2.3.3	Coded software is validated against the module specification by static analysis		N/A
	The module specification is validated against the architecture specification by static analysis		N/A
R.3.3.3	Software validation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The software is validated with reference to the requirements of the software safety requirements specification		N/A
	Compliance is checked by simulation of:		—
	- input signals present during normal operation		N/A
	- anticipated occurrences		N/A
	- undesired conditions requiring system action		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

TABLE R.1 ^e – GENERAL FAULT/ERROR CONDITIONS						
Component ^a	Fault/error	Acceptable measures ^{b, c}	Definitions	Document reference for applied measure	Document reference for applied test	Verdict
1 CPU						N/A
1.1 Registers	Stuck at	Functional test, or periodic self-test using either: - static memory test, or - word protection with single bit redundancy	H.2.16.5 H.2.16.6 H.2.19.6 H.2.19.8.2			
1.2 VOID						—
1.3 Programme counter	Stuck at	Functional test, or Periodic self-test, or Independent time-slot monitoring, or Logical monitoring of the programme sequence	H.2.16.5 H.2.16.6 H.2.18.10.4 H.2.18.10.2			N/A
2 Interrupt handling and execution	No interrupt or too frequent interrupt	Functional test, or time-slot monitoring	H.2.16.5 H.2.18.10.4			N/A
3 Clock	Wrong frequency (for quartz synchronized clock: harmonics/sub-harmonics only)	Frequency monitoring, or time slot monitoring	H.2.18.10.1 H.2.18.10.4			N/A
4. Memory						N/A
4.1 Invariable memory	All single bit faults	Periodic modified checksum, or multiple checksum, or word protection with single bit redundancy	H.2.19.3.1 H.2.19.3.2 H.2.19.8.2			

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Clause	Requirement + Test			Result - Remark		Verdict
4.2 Variable memory	DC fault	Periodic static memory test, or word protection with single bit redundancy	H.2.19.6 H.2.19.8.2			N/A
4.3 Addressing (relevant to variable and invariable memory)	Stuck at	Word protection with single bit redundancy including the address	H.2.19.8.2			N/A
5 Internal data path	Stuck at	Word protection with single bit redundancy	H.2.19.8.2			N/A
5.1 VOID						—
5.2 Addressing	Wrong address	Word protection with single bit redundancy including the address	H.2.19.8.2			N/A
6 External communicat ion	Hamming distance 3	Word protection with multi-bit redundancy, or CRC – single work, or Transfer redundancy, or Protocol test	H.2.19.8.1 H.2.19.4.1 H.2.18.2.2 H.2.18.14			N/A
6.1 VOID						—
6.2 VOID						—
6.3 Timing	Wrong point in time	Time-slot monitoring, or scheduled transmission Time-slot and logical monitoring, or comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator	H.2.18.10.4 H.2.18.18 H.2.18.10.3 H.2.18.15 H.2.18.3			N/A
	Wrong sequence	Logical monitoring, or time-slot monitoring, or Scheduled transmission	H.2.18.10.2 H.2.18.10.4 H.2.18.18			

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Clause	Requirement + Test			Result - Remark		Verdict
7 Input/output periphery	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N/A
7.1 VOID						—
7.2 Analog I/O						N/A
7.2.1 A/D and D/A- converter	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			N/A
7.2.2 Analog multiplexer	Wrong addressing	Plausibility check	H.2.18.13			N/A
8 VOID						—
9 Custom chips ^d e.g. ASIC, GAL, gate array	Any output outside the static and dynamic functional specification	Periodic self-test	H.2.16.6			N/A
<p>NOTE A Stuck-at fault model denotes a fault model representing an open circuit or a non-varying signal level. A DC fault model denotes a stuck-at fault model incorporating short circuit between signal lines.</p> <p>a) For fault/error assessment, some components are divided into their sub-functions. b) For each sub-function in the table, the Table R.2 measure will cover the software fault/error. c) Where more than one measure is given for a sub-function, these are alternatives. d) To be divided as necessary by the manufacturer into sub-functions. e) Table R.1 is applied according to the requirements of R.1 to R.2.2.9 inclusive.</p>						

S	ANNEX S (NORMATIVE) BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE					—
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or					N/A
	rechargeable batteries (secondary batteries) that are not recharged in the appliance					N/A
5.8.1	If the supply terminals for the connection of the battery have no indication of polarity, the more unfavourable polarity is applied					N/A
5.S.101	Appliances intended for use with a battery box are tested with the battery box supplied with the appliance or with the battery box recommended in the instructions					N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.S.102	Appliances are tested as motor-operated appliances.		N/A
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless..... : the polarity is irrelevant		N/A
	Appliances also marked with:		—
	– name, trade mark or identification mark of the manufacturer or responsible vendor		N/A
	– model or type reference		N/A
	– IP number according to degree of protection against ingress of water, other than IPX0 ..		N/A
	– type reference of battery or batteries		N/A
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		N/A
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		N/A
7.6	Additional symbols		N/A
7.12	The instructions contain the following, as applicable: – the types of batteries that may be used .. – how to remove and insert the batteries – non-rechargeable batteries are not to be recharged – rechargeable batteries are to be removed from the appliance before being charged – different types of batteries or new and used batteries are not to be mixed – batteries are to be inserted with the correct polarity – exhausted batteries are to be removed from the appliance and safely disposed of – if the appliance is to be stored unused for a long period, the batteries are removed – the supply terminals are not to be short-circuited		—
11.5	Appliances are supplied with the most unfavourable supply voltage between – 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		N/A
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		N/A
19.1	The tests are carried out with the battery fully charged unless otherwise specified		N/A
19.13	The battery does not rupture or ignite		N/A
19.S.101	Appliances are supplied with the voltage specified in 11.5. The supply terminals having an indication of polarity are connected to the opposite polarity, unless		N/A
	such a connection is unlikely to occur due to the construction of the appliance		N/A
19.S.102	For appliances with provision for multiple batteries, one or more of the batteries are reversed and the appliance is operated, if reversal of batteries is allowed by the construction		N/A
25.5	The flexible leads or flexible cord used to connect an external battery or battery box in is connected to the appliance by a type X attachment		N/A
25.13	This requirement is not applicable to the flexible leads or flexible cord connecting external batteries or a battery box with an appliance		N/A
25.S.101	Appliances have suitable means for connection of the battery. If the type of battery is marked on the appliance, the means of connection is suitable for this type of battery		N/A
26.5	Terminal devices in an appliance for the connection of the flexible leads or flexible cord connecting an external battery or battery box are so located or shielded that there is no risk of accidental connection between supply terminals		N/A
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		N/A
	the battery is shielded by a barrier that meets the needle flame test of Annex E, or		N/A
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
T	ANNEX T (NORMATIVE) UV-C RADIATION EFFECT ON NON-METALLIC MATERIALS		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Requirements for non-metallic materials subject to direct or reflected UV-C radiation exposure and whose mechanical and electrical properties are relied upon for compliance with the		N/A
	Does not apply to glass, ceramic and similar materials		N/A
	Tested as specified in ISO 4892-1 and ISO 4892-2, with the following modifications:		—
	Modifications to ISO 4892-1:		—
5.1.6	The UV-C emitter is a low pressure mercury lamp with a quartz envelope having a continuous spectral irradiance of 10 W/m ² at 254 nm		N/A
	Subclause 5.1.6.1 and Table 1 are not applicable		N/A
5.2.4	The black-panel temperature is 63 °C +/- 3 °C		N/A
5.3.1	Humidification of the chamber air is specified in part 2 when necessary		N/A
9	This clause is not applicable		N/A
	Modifications to ISO 4892-2:		—
7.1	At least three test specimens are tested		N/A
	Ten samples of internal wiring is tested		N/A
7.2	The specimens are attached to the specimen holders such that they are not subject to any stress		N/A
7.3	Apparatus prepared as specified		N/A
	The test specimens and, if used, the irradiance-measuring instrument are exposed for 1 000 h		N/A
7.4	If used, a radiometer is mounted and calibrated such that it measures the irradiance at the exposed surface of the test specimen		N/A
7.5	Material properties and test methods for parts providing mechanical support or impact resistance as specified in Table T.1		N/A
	Material properties and test method for electrical insulation of internal wiring as specified in Table T.2		N/A
8	This clause is not applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation					N/A
Input deviation of/at:	P rated (W)	P measured (W)	ΔP	Required ΔP	Remark	
--	--	--	--	--	--	--
Supplementary information:						

10.2	TABLE: Current deviation					N/A
Current deviation of/at:	I rated (A)	I measured (A)	ΔI	Required ΔI	Remark	
--	--	--	--	--	--	--
Supplementary information:						

11.8	TABLE: Heating test			P
	Test voltage (V)..... :	7.4V (battery-operated appliances)		—
	Ambient (°C)..... :	21.8		—
Thermocouple locations:		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)	
Type-C port		10.9	Ref.	
Battery surface		9.7	20	
Plastic enclosure		10.2	60	
Internal wire		19.2	105-25(T105)	
Motor		15.8	65	
Handle surface		8.5	60	
Ambient of switch		9.2	30	
Switch surface		8.6	105-25(T105)	
Test corner		10.1	65	
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

11.8	TABLE: Heating test, resistance method					N/A
	Test voltage (V)..... :		--			—
	Ambient, t1 (°C)		--			—
	Ambient, t2 (°C)		--			—
Temperature rise of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	Max. Δ T (K)	Insulation class
--		--	--	--	--	--
--		--	--	--	--	--
Supplementary information:						

13.2	TABLE: Leakage current			N/A
	Heating appliances: 1.15 x rated input (W)....:	--		—
	Motor-operated and combined appliances: 1.06 x rated voltage (V)	--		—
Leakage current between:		I (mA)	Max. allowed I (mA)	
--		--	--	
Supplementary information:				

13.3	TABLE: Dielectric strength			P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)	
Battery “+/-” to plastic enclosure		500	No	
Supplementary information:				

14	TABLE: Transient overvoltages					N/A
Clearance between:		CI (mm)	Required CI (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)
--		--	--	--	--	--
--		--	--	--	--	--
Supplementary information:						

16.2	TABLE: Leakage current					N/A
------	------------------------	--	--	--	--	-----

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Clause	Requirement + Test	Result - Remark	Verdict
	Single phase appliances: 1.06 x rated voltage (V).....:	--	—
	Three phase appliances 1.06 x rated voltage divided by $\sqrt{3}$ (V).....:	--	—
Leakage current between:		I (mA)	Max. allowed I (mA)
--		--	--
--		--	--
Supplementary information:			

16.3	TABLE: Dielectric strength		P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)
Battery "+/-" to plastic enclosure		500	No
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

17	TABLE: Overload protection		N/A
Thermocouple locations:		Max. temperature rise measured, ΔT (K)	Max. temperature rise limit, ΔT (K)
--		--	--
--		--	--
Supplementary information:			

17	TABLE: Overload protection, resistance method					N/A
	Test voltage (V)..... :	--			—	
	Ambient, t1 (°C) :	--			—	
	Ambient, t2 (°C) :	--			—	
Temperature of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)
--		--	--	--	--	--
--		--	--	--	--	--
Supplementary information:						

19	Abnormal operation conditions						P
Operational characteristics		YES/NO	Operational conditions				
Are there electronic circuits to control the appliance operation?		NO	--				
Are there “off” or “stand-by” position?		NO	--				
The unintended operation of the appliance results in dangerous malfunction?		NO	--				
Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result
19.2	N.A.	N.A.	N.A.	N.A	N.A.	N.A.	N.A.
19.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
19.4	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.5	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.6	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.7	Locking the rotor	P	N.A.	N.A.	N.A.	N.A.	P
19.8	N.A	N.A	N.A	N.A	N.A	N.A	N.A

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Clause	Requirement + Test			Result - Remark			Verdict
19.9	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.10	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.11.2	Reference components short-circuit and opened	The electronic circuit protection	N.A.	Pass	N.A	YES	Pass
19.11.4.8	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.10X	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Supplementary information:							

19.7	TABLE: Abnormal operation, locked rotor/moving parts					P
	Test voltage (V)..... :			7.4V (battery-operated appliances)		—
	Ambient, t1 (°C)			21.8		—
	Ambient, t2 (°C)			22.5		—
Temperature of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)
DC motor		--	--	--	68.5	175
Supplementary information:						

19.9	TABLE: Abnormal operation, running overload					N/A
	Test voltage (V)..... :			--		—
	Ambient, t1 (°C)			--		—
	Ambient, t2 (°C)			--		—
Temperature of winding:		R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)
--		--	--	--	--	--
--		--	--	--	--	--
Supplementary information:						

19.13	TABLE: Abnormal operation, temperature rises			P
Thermocouple locations:		Max. temperature rise measured, Δ T (K)		Max. temperature rise limit, Δ T (K)
Test corner		35.9		150
Internal wire		31.0		150
DC motor		43.5		150

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

21.1	TABLE: Impact resistance			P
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
3		Enclosure	0.5	No damage, no hazard.
Supplementary information:				

24.1	TABLE: Critical components information				
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Switch	Various	Various	--	EN 61058-1	CE
Motor	Various	Various	Class A	EN 60335-2-80, EN 60335-1	Tested with appliance
Li-ion Battery	--	--	7.4V, 5000mAh 37.0Wh	IEC 62133-2	Reference Test Report
Plastic enclosure	Various	Various	HB or better, min. 80°C	UL 94	UL
Internal wire	Various	Various	VW-1, min.20AWG, 105°C, 300V	UL 758	UL
PCB	Various	Various	V-0, 130°C	UL 796	UL
-Description:					
Supplementary information:					
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

28.1	TABLE: Threaded part torque test			P
Threaded part identification:		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
To plastic enclosure		2.9	II	0.5
Supplementary information:				

29.1	TABLE: Clearances			P
	Overvoltage category	II	—	
	Type of insulation:			

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Clause	Requirement + Test			Result - Remark		Verdict
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	Verdict / Remark
330	0,2* / 0,5 / 0,8**	—	—	—	—	N/A
500	0,2* / 0,5 / 0,8**	—	—	—	X	P
800	0,2* / 0,5 / 0,8**	—	—	—	—	N/A
1 500	0,5 / 0,8** / 1,0***	—	—	—	—	N/A
2 500	1,5 / 2,0***	—	—	—	—	N/A
4 000	3,0 / 3,5***	—	—	—	—	N/A
6 000	5,5 / 6,0***	—	—	—	—	N/A
8 000	8,0 / 8,5***	—	—	—	—	N/A
10 000	11,0 / 11,5***	—	—	—	—	N/A
Supplementary information:						
*) For tracks on printed circuit boards if pollution degree 1 and 2						
**) For pollution degree 3						
***) If the construction is affected by wear, distortion, movement of the parts or during assembly						

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										N/A
Working voltage (V):	Creepage distance (mm) Pollution degree							Type of insulation			
	1	2			3						
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	Verdict
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	N/A
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	N/A
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	N/A
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		N/A
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0		—	—	N/A
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—		—	N/A
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—		N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A

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Clause	Requirement + Test							Result - Remark			Verdict
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	N/A
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A

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Clause	Requirement + Test							Result - Remark			Verdict
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	N/A
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A
Supplementary information:											
*) Material group IIIb is allowed if the working voltage does not exceed 50 V											
**) B = Basic insulation, S = Supplementary insulation, R = Reinforced insulation											

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V):	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	Verdict / Remark
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	P
50	0,16	0,56	0,8	1,1	1,4	1,6	1,8	N/A
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	N/A
250	0,42	1,0	1,4	2,0	2,5	2,8	3,2	N/A
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	N/A
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A

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Clause	Requirement + Test						Result - Remark	Verdict
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A
Supplementary information:								
*) Material group IIIb is allowed if the working voltage does not exceed 50 V								

30.1	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm):		2		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Plastic enclosure	See table 24.1	75	0.5	
Switch	See table 24.1	125	0.9	
DC connector	See table 24.1	125	0.8	
Supplementary information:				

IEC 60335-2-80			
Clause	Requirement + Test	Result - Remark	Verdict

30.2	TABLE: Resistance to heat and fire - Glow wire tests							P
Object/ Part No./ Material	Manufacturer / trademark	Glow wire test (GWT); (°C)						Verdict
		550	650		750		850	
			te	ti	te	ti		
Plastic enclosure	See table 24.1	X	--	--	--	--	--	Pass
Switch	See table 24.1	--	--	--	--	--	X	Pass
DC connector	See table 24.1	--	--	--	0	0	--	Pass
Object/ Part No./ Material	Manufacturer / trademark	Glow-wire flammability index (GWFI), °C				GW ignition temp. (GWIT), °C		Verdict
		550	650	750	850	675	775	
--	--	--	--	--	--	--	--	N/A
--	--	--	--	--	--	--	--	N/A
--	--	--	--	--	--	--	--	N/A
The test specimen passed the glow wire test (GWT) with no ignition [(te – ti) ≤ 2s] (Yes/No) :								N/A
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No):								N/A
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)?.....:								Yes
Ignition of the specified layer placed underneath the test specimen (Yes/No):								No
Supplementary information:								
- 550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF								
- The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances								

30.2/30.2.4	TABLE: Needle- flame test (NFT)				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
PCB	--	--	--	--	UL approved
Supplementary information:					
- NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1					
- NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0					

Attachment No.1:

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 60335-1:2010, IEC 60335-1:2010/AMD1:2013, IEC 60335-1:2010/AMD2:2016 IEC 60335-2-80:2002, IEC 60335-2-80:2002/AMD1:2004, IEC 60335-2-80:2002/AMD2:2008 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Household and similar electrical appliances – Safety – Part 2-80: Particular requirements for fans			
Differences according to		EN 60335-2-80:2003 + A1:2004 + A2:2009 used in conjunction with EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019 + A15:2021 EN 62233:2008 + AC:2008	
TRF template used.....		IECEE OD-2020-F2:2022, Ed. 1.2	
Attachment Form No.		EU_GD_IEC60335_2_80J	
Attachment Originator.....		Nemko Group AS	
Master Attachment		Dated 2022-11-25	
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	CENELEC COMMON MODIFICATIONS (EN)		—
6.1	Delete “class 0” and “class 01”		N/A
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered		N/A
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.12	The instructions include the substance of the following:		—
	- this appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P
8.1.1	Also test probe 18 of EN 61032 is applied		P
	The appliance being in every possible position during the test, except that		P
	appliances normally used on the floor and having a mass exceeding 40 kg are not tilted		N/A
	The force on the probe in the straight position is increased to 10 N when probe 18 is used		P

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	When using test probe 18 the appliance is fully assembled as in normal use without any parts removed, and		P
	parts intended to be removed for user maintenance are also not removed		N/A
8.1.3	Instead of test probe B, test probe 18 and test probe 13, for appliances other than those of class II, test probe 41 of IEC 61032 is applied with a force not exceeding 1 N to live parts of visibly glowing heating elements, all poles of which can be disconnected by a single switching action		P
8.2	Compliance is checked by inspection and by applying the test probes of EN 61032 in accordance with the conditions specified in 8.1.1		P
	Test probe B and probe 18 of EN 61032 are applied to built-in appliances and fixed appliances only after installation		N/A
15.1.2	Appliances with an automatic cord reel tested with the cord in the most unfavourable position so that the reeling of the wet cord may affect electrical insulation during operation, the cord not being dried before reeling		N/A
20.2	For appliances having hazardous moving parts, due to their working function, e.g. the needle of a sewing machine, tools of kitchen machines or the blade of an electrical knife, full protection is not possible for performing their intended use		P
	When using a test probe similar to test probe B of EN 61032, having a circular stop face and applied with a force of 5N, the accessories and detachable covers are removed		P
	When using test probe 18 it is applied with a force of 2,5N on the appliance fully assembled		P
22.12	Other parts intended to be detached during use, maintenance or cleaning (e.g. batteries, battery covers, lids, attachments, steam nozzles) are not considered as parts providing a similar function as handles, knobs, grips, levers		N/A
22.17	The requirement is not applicable to built-in appliances		N/A
22.44	An appliance is child-appealing if one of the following criteria is present:		—
	- appliance decorated using faces, cartoon like characters, or similar images		N/A
	- appliance using shapes representing animals, characters, persons or scale models		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	An appliance is child-appealing if more than one of the following criteria are present:		—
	- using non-functional light (functional light is e.g. illumination of an object or area, signal indicating status of an appliance)		N/A
	- using non-functional sound (e.g. music)		N/A
	- using non-functional movement		N/A
	If the appliance is child-appealing, has a mass less than 4 kg or is mounted or normally intended for use at a height less than 850 mm, the following conditions shall be met:		—
	- surface temperature rise requirements not exceeded		N/A
	- hazardous moving parts not accessible		N/A
	- live parts not accessible		N/A
	- liquid temperature requirement not exceeded,		N/A
	unless for vessels in which two independent and sequential actions are needed to access the liquid		N/A
	- the requirement of 22.12 is applicable for all accessible parts of the appliance		N/A
24.1	Components comply with the safety requirements specified in the relevant EN standards as far as they reasonably apply		P
	Motors are not required to comply with EN 60034-1, but tested as part of the appliance according to this standard		N/A
	Relays are tested as part of the appliance according to this standard		N/A
	Relays may be alternatively tested to EN 60730-1 and the additional requirements in EN 60335-1		N/A
	The requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance		N/A
	Components may comply with the requirements for clearances and creepage distances for functional insulation as specified in the relevant component standard		N/A
	The requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components		P

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	Components that have not been tested and shown to comply with the EN standard for the relevant component are tested according to the requirements of 30.2 of this standard		P
	Components that have been tested and shown to comply with the resistance to fire requirements in the EN standard for the relevant component need not be retested provided that:		—
	- the severity specified in the component standard is not less than the severity specified in 30.2, and		P
	- the test report for the component states the values of t_e and t_i acc. to EN 60695-2-11		N/A
	If the above two conditions are not satisfied, the component is tested as part of the appliance		N/A
	Power electronic converter circuits are not required to comply with EN 62477-1, but tested as part of the appliance according to this standard		N/A
	Unless components have been tested and found to comply with the relevant EN standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9, no additional tests specified in the relevant EN standard for the component are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components that have not been tested and found to comply with the relevant EN standard, and		P
	components that are not marked or not used in accordance with their marking,		P
	are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		P
	Lamp-holders and starter-holders that have not been tested and found to comply with the relevant EN standard are tested as a part of the appliance and additionally comply with the gauging and interchangeability requirements of the relevant EN standard under the conditions occurring in the appliance		N/A
	Where the relevant EN standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used		P

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	There are no additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of EN 60320-1 and EN 60309, unless they are specifically mentioned in the text of this standard		N/A
	Plugs and socket-outlets and other connecting devices of interconnection cords are not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1, or		N/A
	with connectors and appliance inlets complying with the standard sheets of EN 60320-1, if		N/A
	direct supply to these parts from the supply mains gives rise to a hazard		N/A
	For plugs used in CENELEC countries Annex ZH applies		N/A
24.Z1	Type S2 and S3 capacitors according to EN 60252-1 are not required to undergo the testing as required by 30.2.2 and 30.2.3.1		N/A
25.1	Plugs and pins for insertion into socket outlets follow the relevant standards sheets in Annex ZH		N/A
25.7	Rubber sheathed cords (60245 IEC 53) are not suitable for appliances intended to be used outdoors, or		N/A
	when they are liable to be exposed to significant amount of ultraviolet radiation		N/A
25.25	Instead of IEC/TR 60083, dimensions of the pins and engagement face of plugs of appliances that are inserted into socket-outlets are in accordance with the dimensions of the relevant plug standard		N/A
	Common plugs and socket-outlets types in CENELEC countries as shown in Annex ZH		N/A
26.11	Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position,		N/A
	unless they are held in place near the terminals independently of the solder		N/A
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
Annex I, 19.1.101	The appliance is supplied at rated voltage and operated under normal operation with each of the fault conditions specified		N/A
	The duration of any of the tests is as specified in 19.7		N/A
ZA	ANNEX ZA (NORMATIVE) SPECIAL NATIONAL CONDITIONS (EN)		—
	Denmark, Sweden, Norway and Finland		—
7.12.8	The maximum inlet water pressure is at least 1,0 MPa :		N/A
	Norway		—
19.5	The test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
	Norway		—
22.2	The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system		N/A
	Denmark		—
22.47	The maximum inlet water pressure is at least 1,0 MPa :		N/A
	Ireland, United Kingdom and Cyprus		—
25.8	In the table, the line >10 A and ≤16 A is replaced with:		—
	> 10 and ≤ 13 1,25 (1,0) ^p		N/A
	> 13 and ≤ 16 1,5 (1,0) ^p		N/A
ZB	ANNEX ZB (INFORMATIVE) A-DEVIATIONS		—
	Ireland		—

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances		N/A
	United Kingdom		—
25.1 and 25.25	These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and in general allow only plugs to BS 1363 to be fitted to domestic appliances.		N/A
	It also allows plugs to BS 4573 and EN 50075 to be fitted to shavers and toothbrushes		N/A
ZC	ANNEX ZC (NORMATIVE) <i>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</i>		—
	A list of documents referred to in the text of this standard in such a way that some or all of their content constitutes requirements of this document		P
ZD	ANNEX ZD (INFORMATIVE) IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS		—
	List of IEC and CENELEC code designations for flexible cords		P
ZE	ANNEX ZE (INFORMATIVE) SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE		—
7.1	Business name and full address of the manufacturer and, where applicable, his authorized representative		N/A
	Model or type reference.....		N/A
	Serial number, if any		N/A
	Production year		N/A
	Designation of the appliance		N/A
7.12	Instructions provided with the appliance so that the appliance can be used safely		N/A
	The instructions contain at least the following information:		—
	- the business name and full address of the manufacturer and, where applicable, his authorized representative		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	- model or type reference of the appliance as marked on the appliance itself, except for the serial number		N/A
	- the designation of the appliance together with its explanation in case it is given by a combination of letters and/or numbers		N/A
	- the general description of the appliance, when needed due to the complexity of the appliance		N/A
	- specific precautions required during installation, operation, adjusting, user maintenance, cleaning, repairing or moving		N/A
	- when needed drawings, diagrams, descriptions and explanations necessary for the safe use and user maintenance of the appliance		N/A
	- the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the appliance		N/A
	The words "Original instructions" appear on the language version(s) verified by the manufacturer or by the authorized representative		N/A
	When a translation of the original instructions has been provided by a person introducing the appliance on the market; the meaning of the sentence "Translation of the original instructions" appear in the relevant instructions delivered with the appliance		N/A
	The instructions for maintenance/service to be done by specialized personnel, mandated by the manufacturer or the authorized representative may be supplied in only one Community language which the specialized personnel understand		N/A
	The instructions indicate the type and frequency of inspections and maintenance required for safe operation including the preventive maintenance measures		N/A
7.12.ZE1	If needed for specific appliances, the following information to be given:		—
	- on use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns, if these operations have consequences on stability of the appliance in order to avoid overturning, falling or uncontrolled movements of the appliance or of its component parts		N/A
	- on how to maintain adequate mechanical stability when in use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	- on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided		N/A
	- on the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur the operating method to safely unblock the appliance		N/A
	- on the specifications on the spare parts to be used, when these affect the health and safety of the operator		N/A
	- on airborne noise emissions, determined and declared in accordance with the relevant Part 2, which includes:		—
	- the A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A)..... ;		N/A
	- where this level does not exceed 70 dB(A), this fact is indicated		N/A
	- the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 µPa) :		N/A
	- the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A) :		N/A
7.12.ZE2	The instructions include a warning to disconnect the appliance from its power source during service and when replacing parts		N/A
	If the removal of the plug is foreseen, it is clearly indicated that the removal of the plug is such that an operator can check from any of the points to which he has access that the plug remains removed		N/A
	If this is not possible, due to the construction of the appliance or its installation, a disconnection with a locking system in the isolated position is provided		N/A
19.11.4.8	The appliance continues to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage fluctuation occurred, or		N/A
	a manual operation is required to restart it		N/A
20.1	Appliances and their components and fittings have adequate mechanical stability during transportation, assembly, dismantling and any other action involving the appliance		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
20.2	Dangerous moving transmission parts safeguarded either by design or guards		N/A
	When guards are used, they are fixed guards, interlocking movable guards or protective devices		N/A
	Moving parts directly involved in the function of the appliance which cannot be made completely inaccessible fitted with:		—
	- fixed guards or interlocking movable guards preventing access to those sections of the parts that are not used in the work, and		N/A
	- adjustable guards restricting access to those sections of the moving parts where access is necessary		N/A
	Interlocking movable guards used where frequent access is required		N/A
21.1	Appliances and their components and fittings have adequate mechanical strength and is constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance		N/A
22.ZE.1	For appliances provided with a seat, the seat gives adequate stability		N/A
	The distance between the seat and the control devices capable of being adapted to the operator		N/A
22.ZE.2	For appliances provided with separate devices for the start and the stop functions, the stop function is unambiguously identifiable and does always override the start function		N/A
	For appliances provided with one device performing the start and the stop function, the stop function is unambiguously identifiable and does always override the start function		N/A
22.ZE.3	Appliances designed in such a way that incorrect mounting is avoided, if this can lead to an unsafe situation		N/A
	If this is not possible, information on the correct mounting is given directly on the part and/or the enclosure		N/A
22.ZE.4	Where the weight, size or shape prevents appliances from being moved manually, they are fitted with attachments for lifting gear, or		N/A
	so designed that they can be fitted with such attachments, or		N/A
	be shaped in such a way that standard lifting gear can easily be used		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances to be moved manually are constructed or equipped so that they can be moved easily and safely		N/A
22.ZE.5	The fixing systems of fixed guards which prevent access to dangerous moving transmission parts only removable with the use of tools		N/A
	If such guards have to be removed by the user for routine cleaning or maintenance their fixing systems remain attached to the fixed guards or to the machine after removal		N/A
	Where possible, guards are incapable of remaining in place without their fixings		N/A
	This does not apply if, after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative		N/A
	Movable guards are interlocked		N/A
	The interlocking devices prevent the start of hazardous appliance functions until the guards are fixed in their position, and give a stop command whenever they are no longer closed		N/A
	Where it is possible for an operator to reach the danger zone before the risk due to hazardous appliance functions has ceased, movable guards associated with a guard locking device in addition to an interlocking device that:		—
	- prevents the start of hazardous appliance functions until the guard is closed and locked, and		N/A
	- keeps the guard closed and locked until the risk of injury from the hazardous appliance functions has ceased		N/A
	Interlocking movable guards remain attached to the appliance when open, and		N/A
	they are designed and constructed in such a way that they can be adjusted only by means of an intentional action		N/A
22.ZE.6	Interlocking movable guards designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous appliance functions		N/A
	The guard is opened to the extent needed to cause the interlocking to operate and is then closed, the number of operations being defined in the specific Part 2 :		N/A
	After this test any defect that may be expected in normal use is applied to the interlock system, including interruption of the supply, only one defect being simulated at a time		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	After these tests the interlock system is fit for further use		N/A
22.ZE.7	Adjustable guards restricting access to areas of the moving parts strictly necessary for the work are:		—
	- adjustable manually or automatically, depending on the type of work involved, and		N/A
	- readily adjustable without the use of tools		N/A
22.ZE.8	In case of interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply, the appliance does not restart		N/A
	However, automatic restarting of the operation is allowed if the appliance may continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage interruption or fluctuation occurred		N/A
22.ZE.9	Appliances fitted with means to isolate them from all energy sources		N/A
	Such isolators are clearly identified, and		N/A
	they are capable of being locked if reconnection endanger persons		N/A
	After the energy source is disconnected, it is possible to dissipate any energy remaining or stored in the circuits of the appliance without risk to persons		N/A
ZF	ANNEX ZF (INFORMATIVE) CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD OR MD		—
	List of standards under CENELEC/TC61 with the allocation under the LVD (Low Voltage Directive) or the MD (Machinery Directive)..... :		P
ZG	ANNEX ZG (NORMATIVE) UV APPLIANCES		—
	The following modifications to this standard apply to appliances having UV emitters		N/A
	This annex is not applicable to appliances covered by the scopes of IEC 60335-2-27, IEC 60335-2-59 or IEC 60335-2-109		N/A
7.12.ZG	The instructions for appliances incorporating UVC emitters include the substance of the following: WARNING — This appliance contains a UV emitter. Do not stare at the light source		N/A

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
32	For appliances incorporating UV emitters the manufacturer delivers a declaration providing evidence that the plastic material exposed to the radiation is UV resistant		N/A
ZH	ANNEX ZH (INFORMATIVE) Common plug and socket-outlet types in CENELEC countries		—
	In general, supply cords of single-phase appliances having a rated current not exceeding 16 A are fitted with a plug complying with the following standard sheets:		—
	- for class I appliances or class II appliances with functional earth, standard sheet EU2, EU3 or EU4:		N/A
	- for class II appliances, standard sheet EU5, EU6 or EU7..... :		N/A
	There are exemptions or differences in certain CENELEC countries		N/A
ZI	ANNEX ZI (INFORMATIVE) Information on the application of A11:2014 to EN 60335-1:2012 CENELEC CLC/TC 61(SEC)2096A		—
	Clarification of the application of parts 2 in conjunction with the 2002 or 2012 version of EN 60335-1		P
ZZA	ANNEX ZZA (INFORMATIVE) RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE SAFETY OBJECTIVES OF DIRECTIVE 2014/35/EU [2014 OJ L96] AIMED TO BE COVERED		—
	This standard provides one means of conforming to safety objectives of Directive 2014/35/EU		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZA.1 confers a presumption of conformity with the safety objectives of that Directive and associated EFTA regulations		P
	Compliance with this Part 1 when used together with the relevant Part 2 provides one means of conformity with the safety objectives		P
ZZB	ANNEX ZZB (INFORMATIVE) RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ESSENTIAL REQUIREMENTS OF DIRECTIVE 2006/42/EC AIMED TO BE COVERED		—

ATTACHMENT to TRF IEC60335_2_80J			
Clause	Requirement + Test	Result - Remark	Verdict
	This standard provides one means of conforming to essential requirements of EU Directive 2006/42/EC		P
	When cited in the Official Journal under that Directive, compliance with the normative clauses of this standard given in Table ZZB.1 confers a presumption of conformity with the essential requirements of that Directive and associated EFTA regulations		P
	Compliance with this Part 1 when used together with the relevant Part 2 provides one means of conformity with the essential health and safety requirements		P
	ANNEX EN 62233:2008 + AC:2008 EMF- ELECTROMAGNETICS FIELDS		—
	The tested product also complies with the requirements of EN 62233:2008		—
	Limit100%	Measured max. :0.9%	P

Attachment No.2: Photo Document



---End of report---



TEST REPORT

Product description: Violent fan

Model name(s): ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI,
ZY7400-5000-PRO, ZY7400-5000-PLUS

Prepared for: Shenzhen Jianyu Digital Technology Co., Ltd
Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road,
Guanlan Street, Longhua District, Shenzhen City, Guangdong Province

Prepared by: Europe Ber (Guangdong) Testing Co., Ltd.
401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road,
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TEL: +86-755-23284856
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Report Number: EBSZ240603025R

Date of Test: 2024-Jun-03 to 2024-Jun-06

Date of Issue: 2024-Jun-12

Tested by

Wendy Lin

Wendy Lin

Approved by

Tommy Wei

Tommy Wei

The results detailed in this test report relate only to the specific sample(s) tested. It is the Application's responsibility to ensure that all production units are manufactured with equivalent chemical characteristics. This report is not to be reproduced except in full, without written approval from EurBer Testing Technology.



TEST REPORT

Report No.: EBSZ240603025R

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TEST REPORT

Report No.: EBSZ240603025R

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1.0 General Details

1.1 Test Lab Details

Name: Europe Ber (Guangdong) Testing Co., Ltd.
Address: 401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen
Tel: 0755-23284856
Fax: 0755-23284856
Test location: Same as above

1.2 Applicant Details

Applicant: Shenzhen Jianyu Digital Technology Co., Ltd
Address: Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Tel: --
Fax: --

1.3 Description of EUT

Product: **Violent fan**
Manufacturer: Shenzhen Jianyu Digital Technology Co., Ltd
Address: Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Model: ZY7400-SE
Brand Name: Jane feather
Model difference: --

1.4 Submitted Sample

1 pcs samples

1.5 Test Time

2024-Jun-03 to 2024-Jun-06

1.6 Possible test case verdicts:

--N.D.= NOT DETECTED (<2ppm)
--ppm =PART PER MILLION
--MDL=Method Detection Limit
--XRF= X-ray fluorescence spectrometry

1.7 General remark:

The test conclusions presented in this report relate only to the object tested.

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2.0 Test Requested and Standard**2.1 Test requested:**

- 1) Determination of lead content in the submitted samples
- 2) Determination of cadmium content in the submitted samples
- 3) Determination of mercury content in the submitted samples
- 4) Determination of chromium(VI) content in the submitted samples
- 5) Determination of polybrominated biphenyls (PBB) & polybrominated diphenyl ethers (PBDE) content in the submitted samples

2.2 Test standard:

EN 62321-4:2014+A1:2017

EN 62321-5:2014


EN 62321-6:2015

EN 62321-7-1:2015

EN 62321-7-2:2017

EN 62321-8:2017

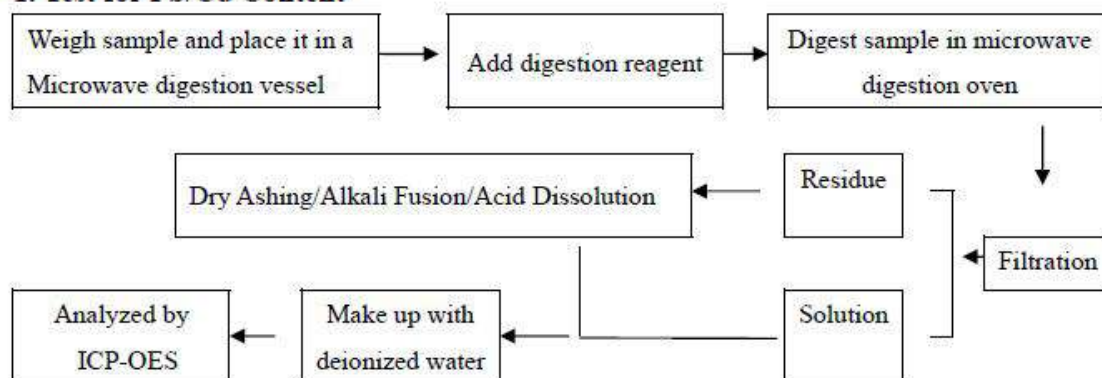
3.0 Test Conclusions

1.			
Testing item	Test Results	Limit	Picture
Lead (Pb)	N.D.	1000ppm	
Cadmium (Cd)	N.D.	100ppm	
Mercury (Hg)	N.D.	1000ppm	
Hexavalent Chromium (Cr6+)	N.D.	1000ppm	
Polybromobiphenyl (PBBs)	N.D.	1000ppm	
Polybromodiphenyl ether (PBDEs)	N.D.	1000ppm	
Bis-(2-ethylhexyl) Phthalate (DEHP)	N.D.	1000ppm	
Benzyl Butyl Phthalate (BBP)	N.D.	1000ppm	
Dibutyl Phthalate (DBP)	N.D.	1000ppm	
Diisobutyl Phthalate (DIBP)	N.D.	1000ppm	

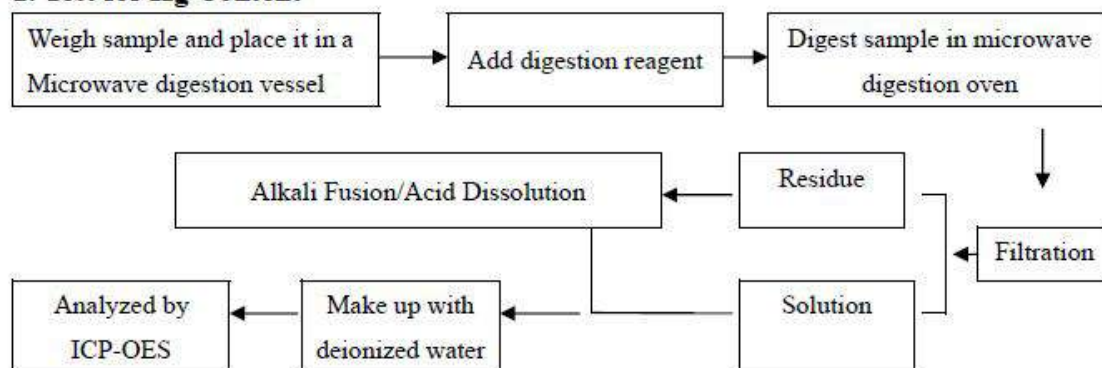
4.0 Appended Figure and Table

Flowchart of the test methods:

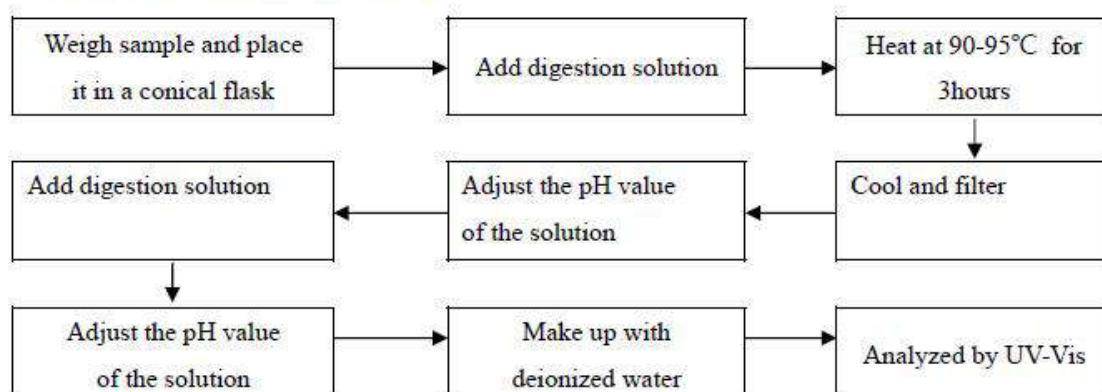
1. Test for Pb/Cd Content

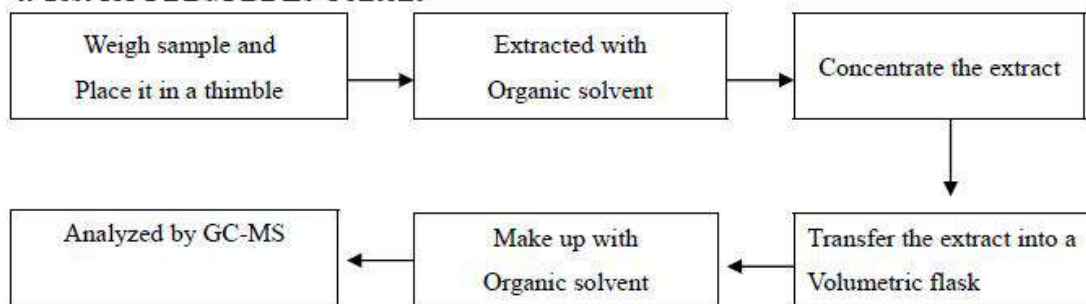
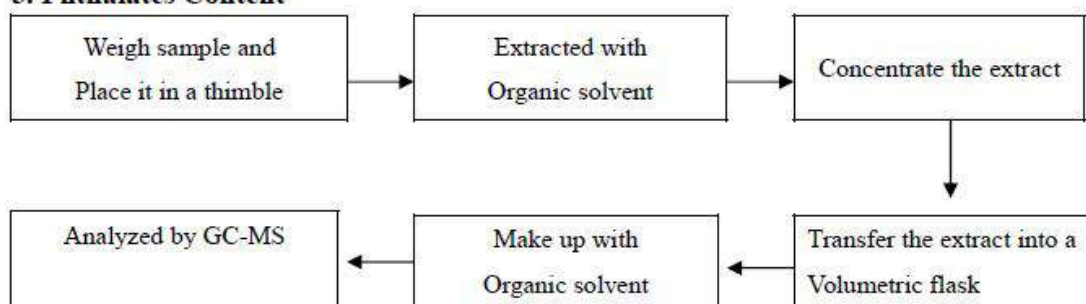


2. Test for Hg Content



3. Test for Chromium (VI) Content



4. Test for PBBs/PBDEs Content**5. Phthalates Content**

Appendix

Photo of sample





**--- End Of Test Report ---**

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EMC Test Report

For

WeiJianhuang

Test Standards: EN 55014-1 :2021
EN 55014-2 :2021
EN IEC 61000-3-2 :2019/A1:2021
EN 61000-3-3 :2013/A2:2021

Product Description: Violent fan

Tested Model: ZY7400-SE

Adding Models: ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI,
ZY7400-5000-PRO, ZY7400-5000-PLUS

Report No.: EBSZ240813192E

Tested Date: 2024-Aug-14

Issued Date: 2024-Aug-19

Tested By: 
Wendy Lin

Reviewed By: 
Jerry Liu

Europe Ber (Guangdong) Testing Co., Ltd.
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Baoan District, Shenzhen
www.eurber.com

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Europe Ber (Guangdong) Testing Co., Ltd., the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2024-Aug-19	Valid	Original Report

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1. GENERAL INFORMATION

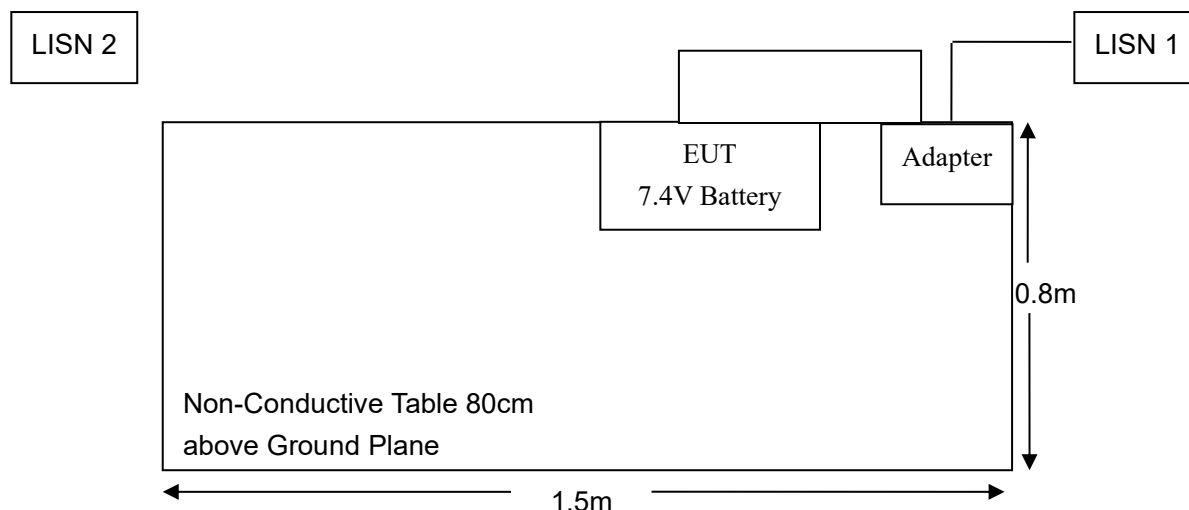
1.1 Product Description for Equipment Under Test (EUT)

Client Information	
Applicant:	WeiJianhuang
Address of applicant:	Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Manufacturer:	Shenzhen Jianyu Digital Technology Co., LTD
Address of manufacturer:	Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province

General Description of EUT	
Product Name:	Violent fan
Trade Name:	Jane feather
Model No.:	ZY7400-SE
Adding Model(s):	ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Difference description	All models are identical to each other except out appearance, model names.
Rated Voltage:	Battery: DC 7.4V
Power Adaptor Model:	N/A
Equipment Category:	Class B
Highest Internal Frequency:	N/A

1.2 EUT Setup and Operation Mode

Block Configuration Diagram for Conducted Emissions



Test Mode List		
Test Mode	Description	Remark
1	Charging	for all test
2	Working	For RE/ESD/RS test

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Adapter	Honor	HW-050200C02	N/A

1.3 Measurement Uncertainty

Measurement uncertainty			
Parameter	Frequency	Polarity	Measurement uncertainty
Conducted Emission	150kHz~30MHz	----	2.64dB
Radiated Emission	30MHz-200MHz	Horizontal	3.77dB
Radiated Emission	30MHz-200MHz	Vertical	3.95dB
Radiated Emission	200MHz-1000MHz	Horizontal	4.27dB
Radiated Emission	200MHz-1000MHz	Vertical	5.45dB

1.4 Test Facility

Site	Europe Ber (Guangdong) Testing Co., Ltd.
Location	401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen and Technological Development Zone, Hunan, P.R.C
Telephone:	+86-755-23284856
Fax:	+86-755-23284856

1.5 Test Equipment List and Details

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
LISN	R&S	ENV216	102125	2024/6/22	2025/6/21
LISN	R&S	ENV432	101327	2024/6/22	2025/6/21
EMI Test Receiver	R&S	ESR3	102143	2024/6/22	2025/6/21
EMI Test Software	Audix	E3	N/A	N/A	N/A
Test Equipment for Radiated Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
EMI Test Receiver	R&S	ESR-3	102144	2024/6/22	2025/6/21
Amplifier	Sonoma	310	363917	2024/6/22	2025/6/21
Broadband Antenna	Schwarz beck	VULB9168	9168-757	2023/03/03	2026/03/02
EMI Test Software	Audix	E3	N/A	N/A	N/A
Test Equipment for ESD					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
ESD Generator	Teseq	NSG 437	1121	2024/6/22	2025/6/21
Test Equipment for EFT/SURGE/DIPS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Surge Generator	Teseq	NSG 3060-MF	4040	2024/6/22	2025/6/21
CDN	Teseq	CDN 3061-S16	3003	2024/6/22	2025/6/21
EFT/DIPS Generator	Teseq	NSG 3040-MF	6033	2024/6/22	2025/6/21
Transformer	Teseq	INA6501	1002	2024/6/22	2025/6/21
Test Equipment for CS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
CS Generator	Teseq	NSG 4070B-80	45341	2024/6/22	2025/6/21
6dB Attenuator	Teseq	ATN 6075	32154	2024/6/22	2025/6/21
CDN	Teseq	CDN M016	45065	2024/6/22	2025/6/21
Test Equipment for RS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Signal generator	R&S	SMB100A	113825	2024/6/22	2025/6/21
Power Meter	R&S	NRP2	105581	2024/6/22	2025/6/21
Power Sensor	R&S	NRP-Z91	103778	2024/6/22	2025/6/21
Power Sensor	R&S	NRP-Z91	103779	2024/6/22	2025/6/21
Power Amplifier	R&S	BBA150	102377	2024/6/22	2025/6/21
Antenna	R&S	HL046E	100230	N/A	N/A
RS Test Software	Fala	EZ-RS	N/A	N/A	N/A

1.6 Performance Criteria for EMS

According Clause 6 of EN55014-2,

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. 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. The following Table 14 serves as a guide to formulate the permissible degradation of the equipment under test (EUT) caused by electromagnetic stress. Not all functions of the apparatus need to be tested. The selection, the specification of functions, and the permissible degradation is left to the responsibility of the manufacturer.

2. SUMMARY OF TEST RESULTS

EN 55014-1:2021 Emissions		
Test Standards	Description of Test Item	Result
EN 55014-1:2021	Disturbance Voltage	Compliance
EN 55014-1:2021	Disturbance Power	N/A
EN 55014-1:2021	Radiated Disturbance	Compliance
EN 55014-1:2021	Discontinuous Disturbance	N/A

EN 55014-2:2021 Immunity		
Test Standards	Description of Test Item	Result
IEC 61000-4-2	Electrostatic Discharge	Compliance
IEC 61000-4-4	Fast Transients	Compliance
IEC 61000-4-6	Injected Currents	Compliance
IEC 61000-4-3	Radio Frequency Electromagnetic Fields	Compliance
IEC 61000-4-5	Surges	Compliance
IEC 61000-4-11	Voltage Dips and Interruptions	Compliance

*Note1: N/A means not applicable.

3. Disturbance Voltage

3.1. Disturbance Voltage Limit

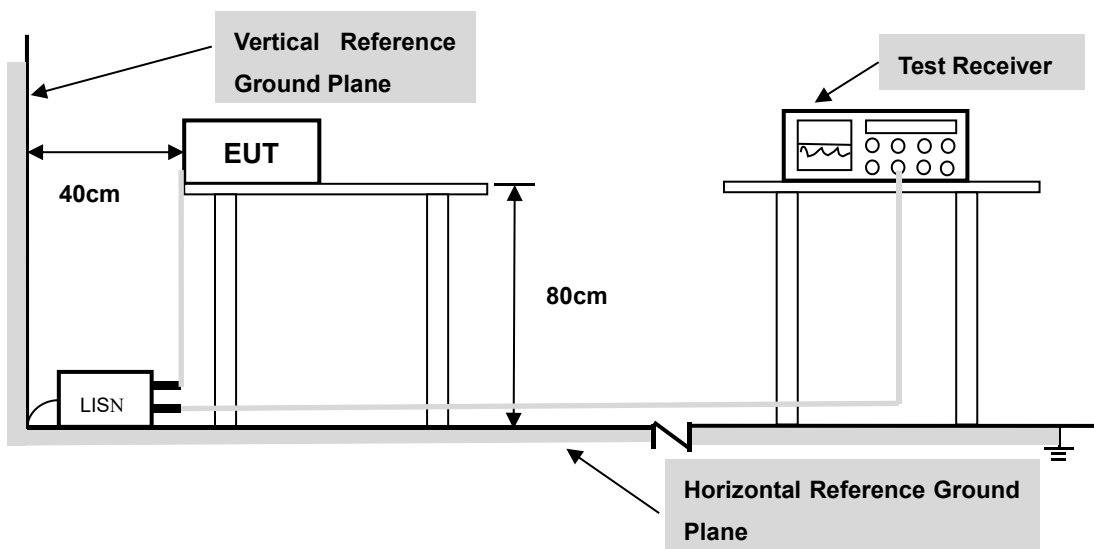
Continuous disturbance voltage limits at mains ports

Frequency Range (MHz)	Quasi Peak (dBμV)	Average (dBμV)
0.15-0.5	66-56	59-46
0.5-5	56	46
5-30	60	50

Note1 The lower limit shall applies at the transition frequencies.

Note2 The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.2 Block Diagram of Test Setup



3.3. Test Procedure

During the conducted emissions test, the adapter was connected to the main outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the Quasi-peak and average detection mode.

3.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the LISN Factor and the Cable Factor, The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{LISN Factor} + \text{Cable Factor}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a Over Limit of -6dB means the emission is 6dB below the maximum limit for Class B device. The equation for margin calculation is as follows:

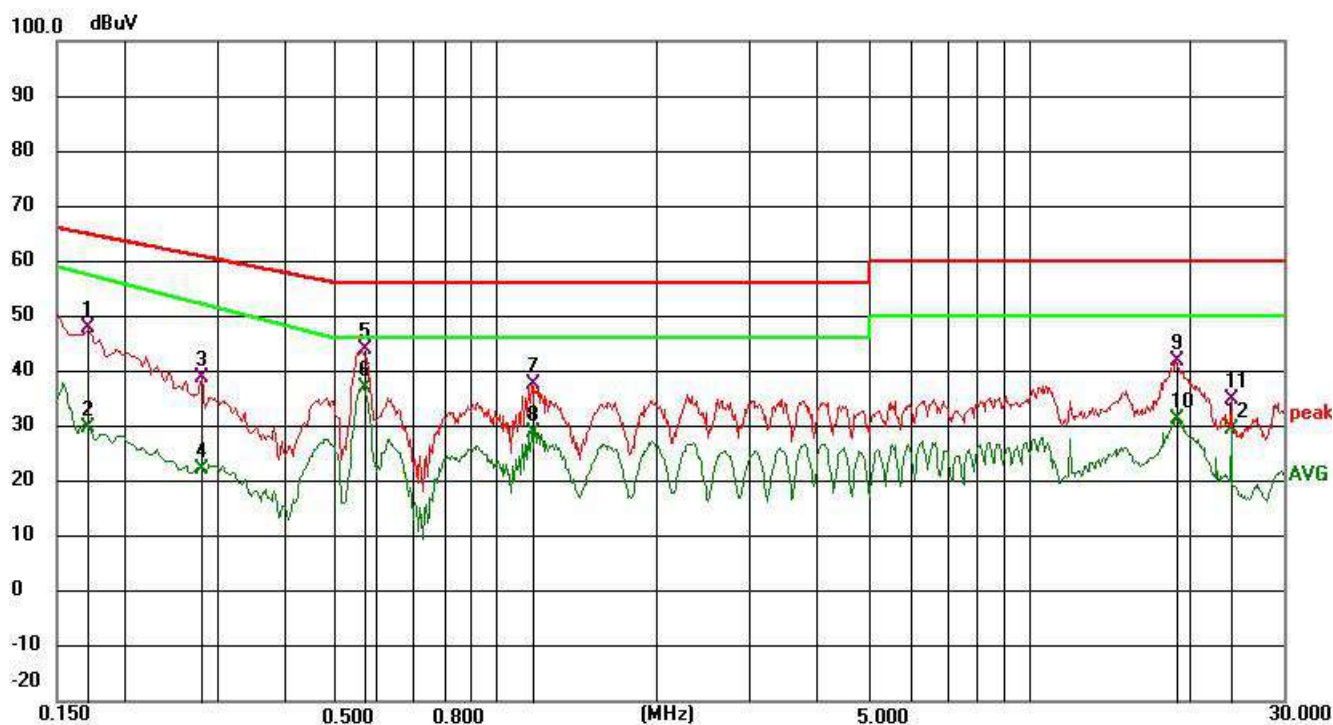
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

3.5 Environmental Conditions

Temperature:	25.5° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

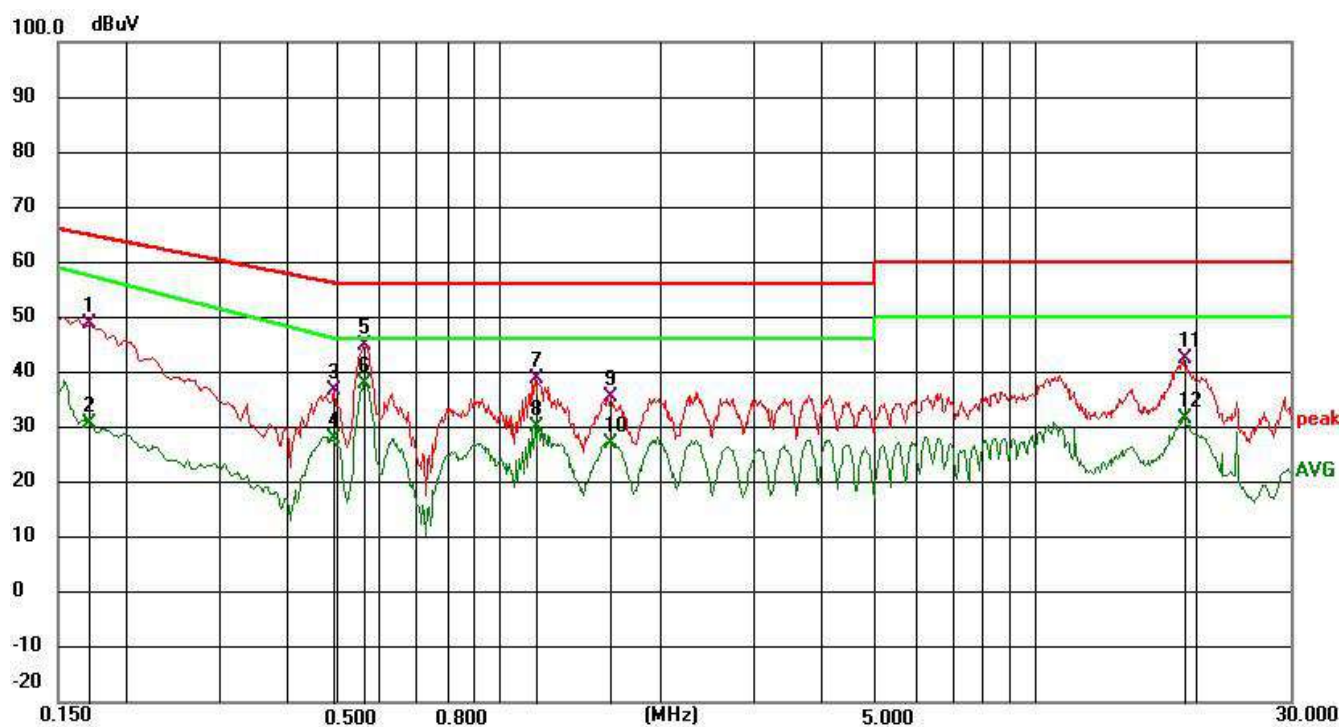
3.6 Test Data and Result

LINE



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1723	37.41	10.54	47.95	64.85	16.90	QP
2	0.1723	19.27	10.54	29.81	57.50	27.69	AVG
3	0.2802	28.19	10.57	38.76	60.81	22.05	QP
4	0.2802	11.62	10.57	22.19	52.25	30.06	AVG
5	0.5639	33.39	10.65	44.04	56.00	11.96	QP
6	0.5639	26.24	10.65	36.89	46.00	9.11	AVG
7	1.1669	26.72	10.78	37.50	56.00	18.50	QP
8	1.1669	18.07	10.78	28.85	46.00	17.15	AVG
9	18.8681	30.19	11.62	41.81	60.00	18.19	QP
10	18.8681	19.52	11.62	31.14	50.00	18.86	AVG
11	23.9166	23.03	11.69	34.72	60.00	25.28	QP
12	23.9166	17.87	11.69	29.56	50.00	20.44	AVG

NEUTRAL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1723	38.07	10.64	48.71	64.85	16.14	QP
2	0.1723	20.06	10.64	30.70	57.50	26.80	AVG
3	0.4919	25.92	10.65	36.57	56.14	19.57	QP
4	0.4919	17.16	10.65	27.81	46.18	18.37	AVG
5	0.5595	34.08	10.68	44.76	56.00	11.24	QP
6	0.5595	27.17	10.68	37.85	46.00	8.15	AVG
7	1.1669	27.81	10.89	38.70	56.00	17.30	QP
8	1.1669	19.09	10.89	29.98	46.00	16.02	AVG
9	1.6168	24.57	10.98	35.55	56.00	20.45	QP
10	1.6168	16.04	10.98	27.02	46.00	18.98	AVG
11	18.9716	30.86	11.62	42.48	60.00	17.52	QP
12	18.9716	19.81	11.62	31.43	50.00	18.57	AVG

Note: 1. Result Level = Read Level + LISN Factor + Cable loss

4. Disturbance Power

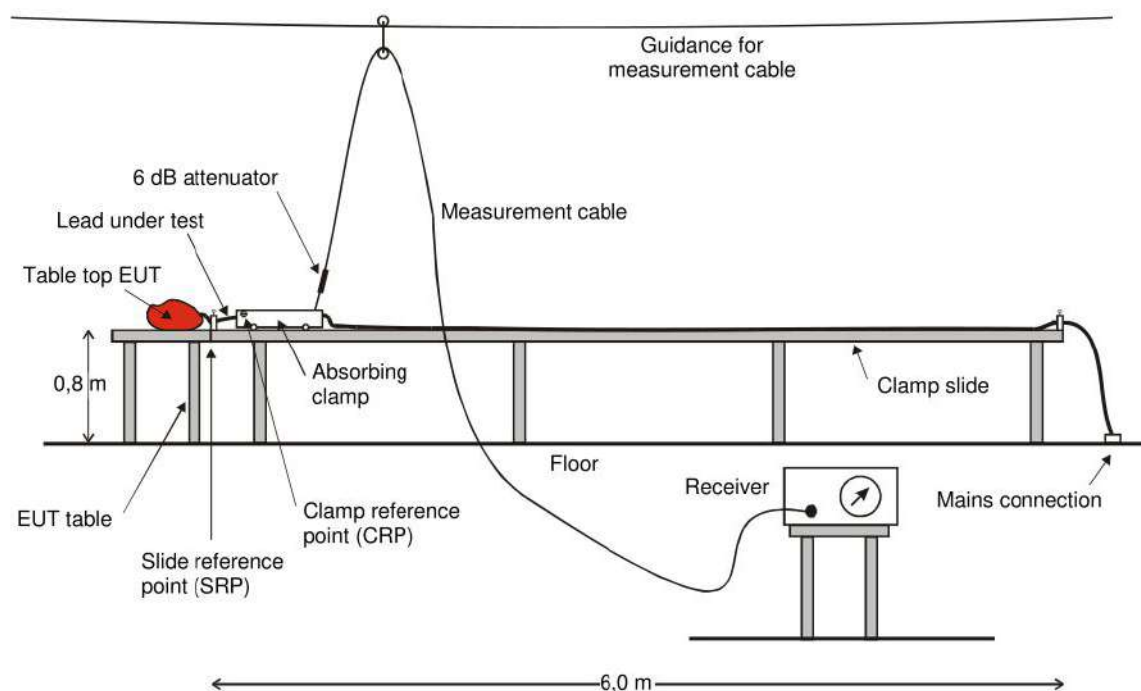
4.1. Disturbance Power Limit

Disturbance Power limits

Frequency Range	General		Tools					
			$P \leq 700W$		$700W \leq P \leq 1000W$		$P > 1000W$	
1	2	3	4	5	6	7	8	9
(MHz)	Quasi Peak (dBpW)	Average (dBpW)	Quasi Peak (dBpW)	Average (dBpW)	Quasi Peak (dBpW)	Average (dBpW)	Quasi Peak (dBpW)	Average (dBpW)
30 to 300	Increasing linearly with the frequency from:							
	45 to 55	35 to 45	45 to 55	35 to 45	49 to 59	39 to 49	55 to 65	45 to 55

Key
P=rated power of the motor only

4.2 Block Diagram of Test Setup



4.3. Test Procedure

Measurement of the disturbance power shall be made firstly on the mains lead (if applicable) of the main EUT using the absorbing clamp in accordance with 5.3.3.2. Any lead connecting the main EUT to an associated device is disconnected, if this does not affect the operation of the main EUT; otherwise it is isolated by means of ferrite rings (e.g. an additional absorbing clamp or a CAMD) placed close to the main EUT.

Secondly, a similar measurement shall be made on each lead which is or may be connected to an

associated device, whether or not it is essential for the operation of the EUT; the current transformer of the clamp pointing towards the main EUT. Isolation, or disconnection of the mains lead and other leads is made in accordance with the above paragraph.

NOTE For permanently connected short leads the movement of the clamp (as described in 5.3.3.2.2)

is limited by the length of the lead.

In addition, measurements shall be made as above but with the current transformer of the clamp pointing towards any associated device, unless this device is not essential for the operation of the main EUT and a separate test procedure for it is specified elsewhere in this standard (no disconnection or RF isolation of other leads is of course necessary in this case).

4.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the LISN Factor and the Cable Factor, The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{LISN Factor} + \text{Cable Factor}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a Over Limit of -6dB means the emission is 6dB below the maximum limit for Class B device. The equation for margin calculation is as follows:

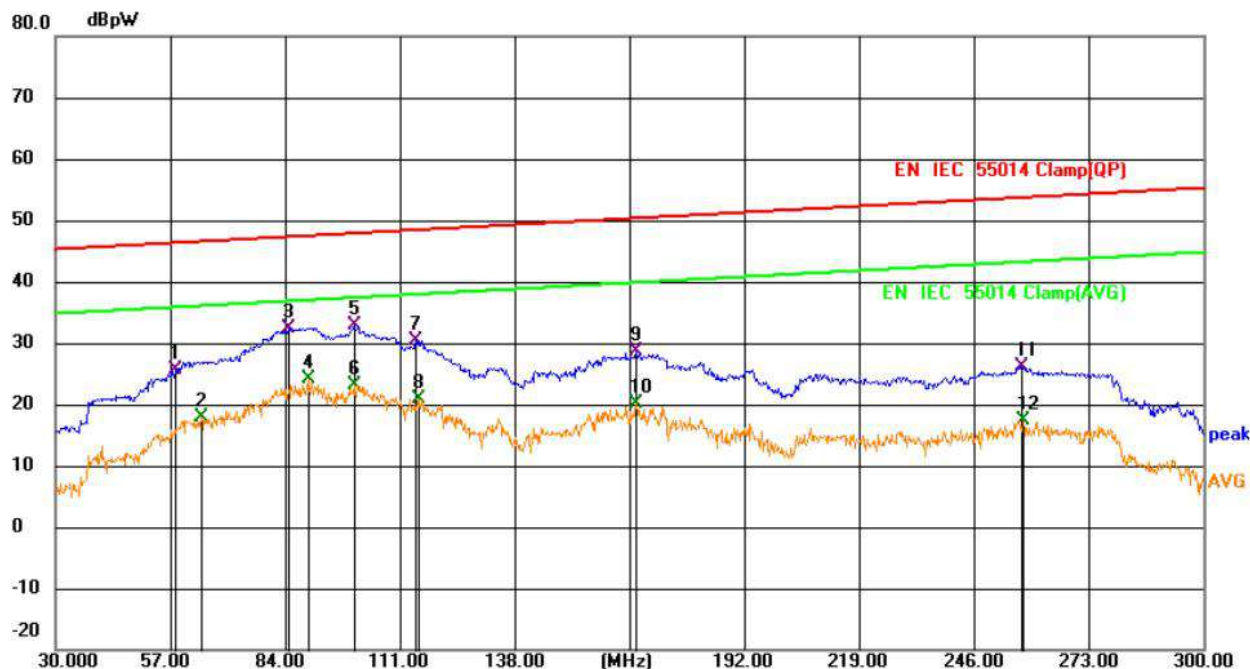
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

4.5 Environmental Conditions

Temperature:	25.0° C
Relative Humidity:	54.0%RH
Atmospheric Pressure:	101.2kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

4.6 Test Data and Result

AC 230V/50Hz



No.	Mk.	Freq. MHz	Level [~] dBpV	Factor dB	ment dBpV	Limit dBpV	Margin dB	Detector	Position cm	Comment
1		58.3200	18.53	7.03	25.56	46.05	-20.49	QP		
2		64.3200	9.91	8.03	17.94	36.27	-18.33	AVG		
3		84.9000	24.76	7.65	32.41	47.03	-14.62	QP		
4	*	89.6400	15.72	8.29	24.01	37.21	-13.20	AVG		
5		100.4400	25.01	7.94	32.95	47.61	-14.66	QP		
6		100.4400	15.16	7.94	23.10	37.61	-14.51	AVG		
7		114.9600	20.34	10.14	30.48	48.15	-17.67	QP		
8		115.3800	10.63	10.17	20.80	38.16	-17.36	AVG		
9		166.6799	22.10	6.46	28.56	50.06	-21.50	QP		
10		166.6799	13.68	6.46	20.14	40.06	-19.92	AVG		
11		257.4000	21.73	4.36	26.09	53.42	-27.33	QP		
12		257.7000	13.04	4.35	17.39	43.43	-26.04	AVG		

Note: 1. Result Level = Read Level + LISN Factor + Cable loss

5. Radiated Disturbances

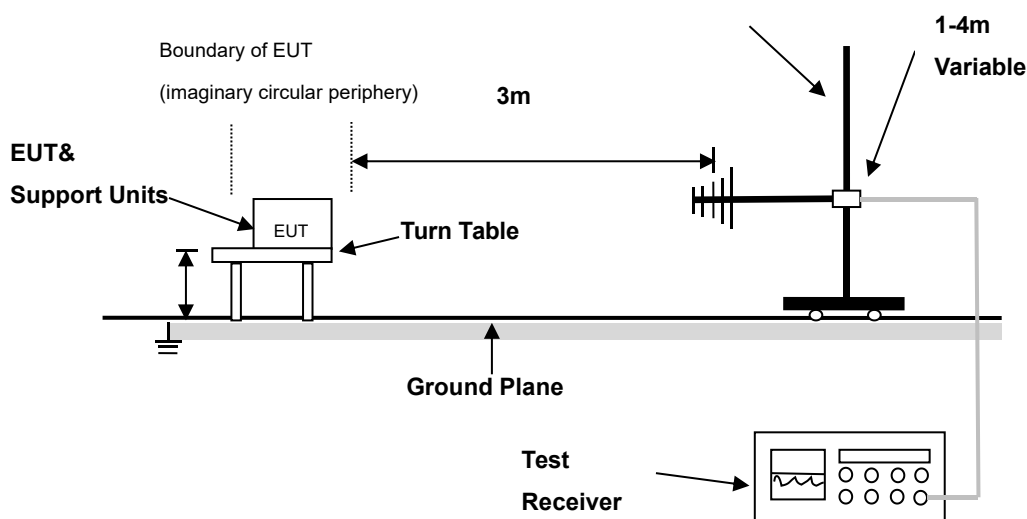
5.1. Radiated Disturbances Limit

Radiated disturbance limits

Frequency range (MHz)	Distance (Meters)	Field Strength Quasi-Peak(dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.2. Block Diagram of Test Setup



5.3 Test Procedure

(1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual.

(2) Support equipment, if needed, was placed as per EN 55014-1. All I/O cables were positioned to simulate typical actual usage as per EN 55014-1.

(3) The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

(4) Recorded at least the six highest emissions.

5.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB means the emission is 6dB below the maximum limit for Class B device. The equation for margin calculation is as follows:

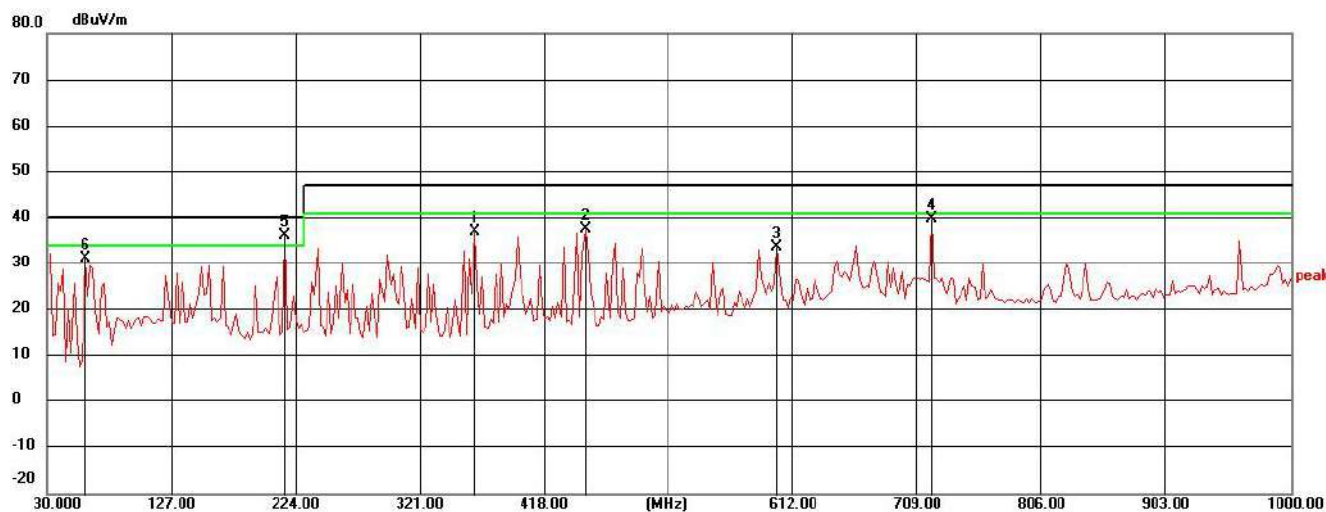
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

5.5 Environmental Conditions

Temperature:	25.1°C
Relative Humidity:	54.3%RH
Atmospheric Pressure:	101.6kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

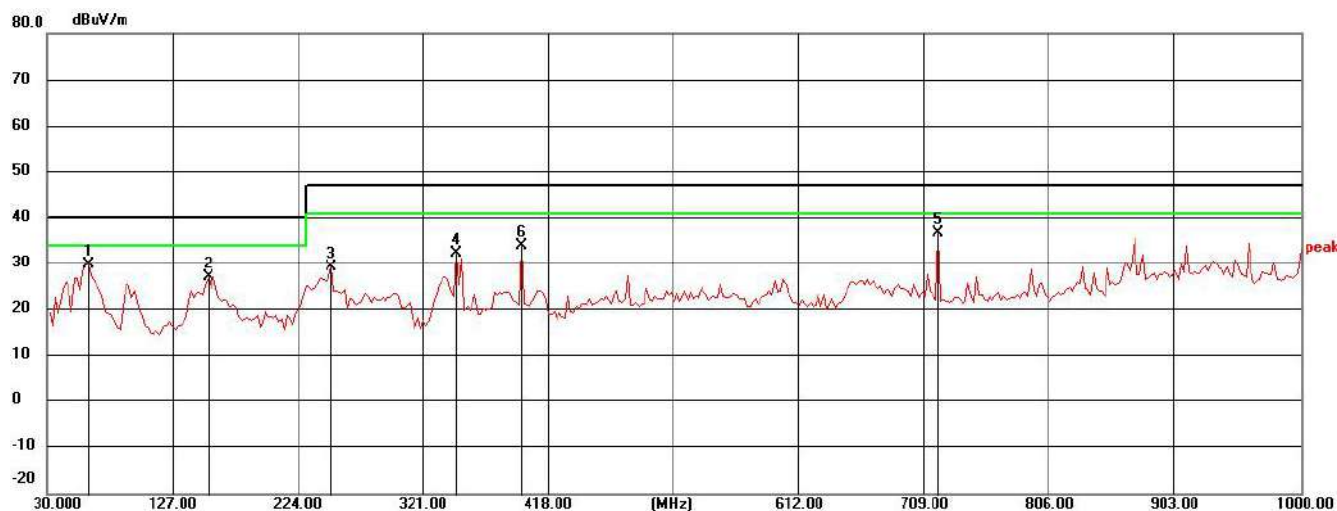
4.6 Test Data and Result

Mode: 1 Vertical



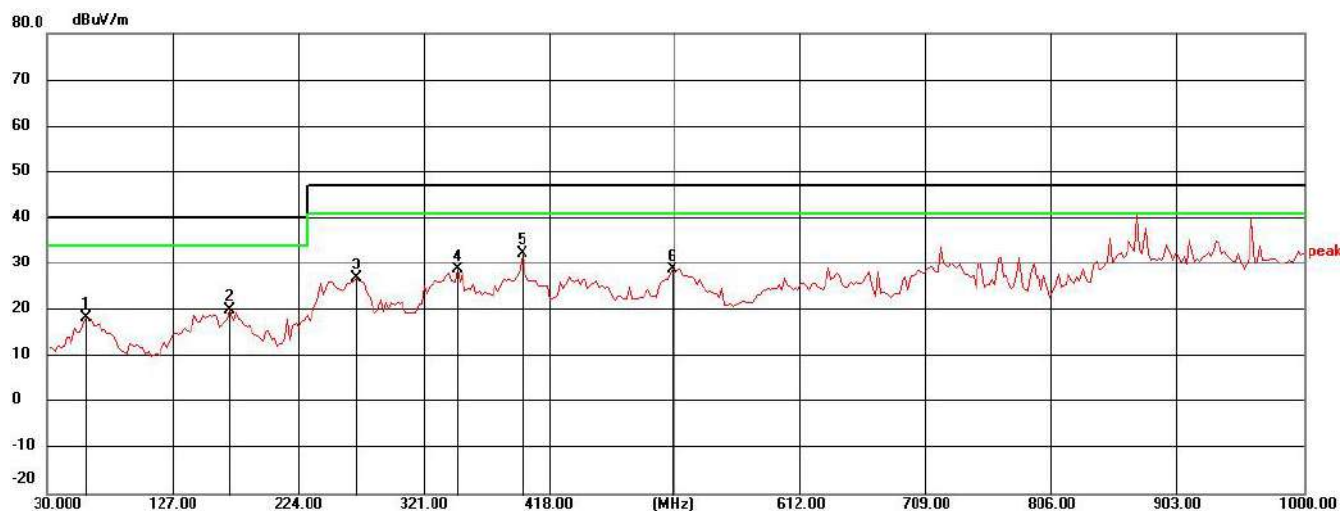
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	363.1739	55.82	-18.71	37.11	47.00	9.89	QP
2	449.6304	54.66	-16.95	37.71	47.00	9.29	QP
3	599.3478	48.31	-14.71	33.60	47.00	13.40	QP
4	719.5434	53.07	-13.18	39.89	47.00	7.11	QP
5	215.5652	58.93	-22.62	36.31	40.00	3.69	QP
6	59.5217	51.69	-20.50	31.19	40.00	8.81	QP

Moed: 1 Horizontal



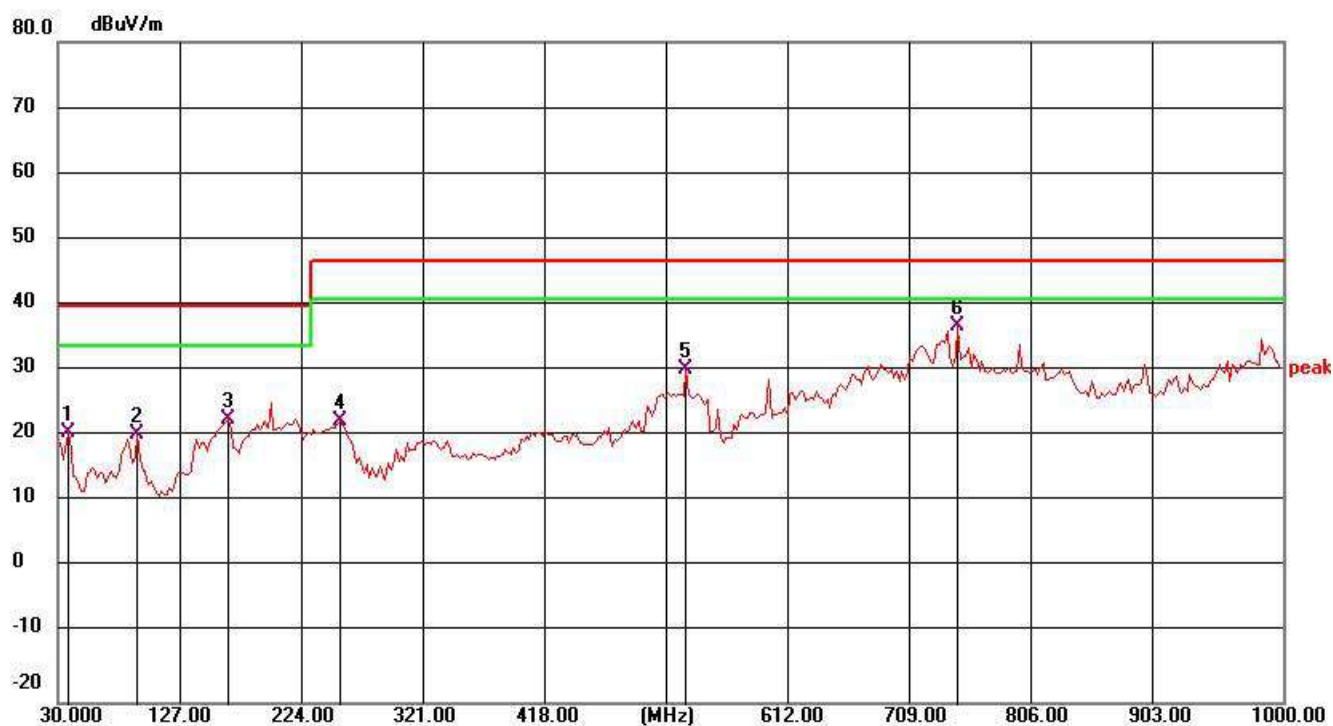
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	61.6304	50.78	-20.84	29.94	40.00	10.06	QP
2	154.4130	46.26	-19.07	27.19	40.00	12.81	QP
3	249.3043	50.67	-21.35	29.32	47.00	17.68	QP
4	346.3043	51.31	-19.03	32.28	47.00	14.72	QP
5	719.5434	49.81	-13.18	36.63	47.00	10.37	QP
6	396.9130	52.23	-18.15	34.08	47.00	12.92	QP

Mode: 2 Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	59.5217	38.63	-20.50	18.13	40.00	21.87	QP
2	171.2826	40.06	-20.27	19.79	40.00	20.21	QP
3	268.2826	47.74	-20.82	26.92	47.00	20.08	QP
4	346.3043	47.67	-19.03	28.64	47.00	18.36	QP
5	396.9130	50.60	-18.15	32.45	47.00	14.55	QP
6	512.8913	44.95	-16.26	28.69	47.00	18.31	QP

Mode: 2 Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	38.4347	36.77	-15.84	20.93	40.00	19.07	QP
2	93.2608	41.52	-20.84	20.68	40.00	19.32	QP
3	164.9565	41.62	-18.57	23.05	40.00	16.95	QP
4	253.5217	42.33	-19.58	22.75	47.00	24.25	QP
5	527.6521	42.65	-12.22	30.43	47.00	16.57	QP
6	742.7391	45.54	-8.56	36.98	47.00	10.02	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss-PRM Factor

6. Harmonic current emissions

According to EN 61000-3-2:2014 section 7: Equipment with a rated power of 75W or less, other than discharging lighting equipment, limits are not included in this standard.

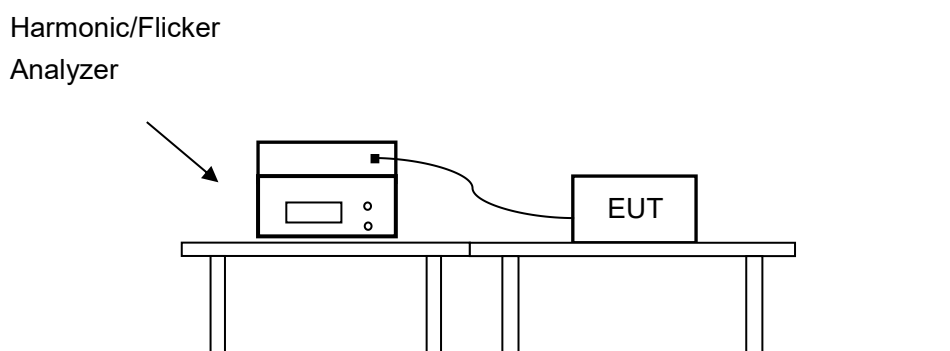
7. Voltage fluctuations and flicker

7.1. Limits

The following limits apply:

- the value of Pst shall not be greater than 1,0;
- the value of Plt shall not be greater than 0,65;
- Tmax, the accumulated time value of d(t) with a deviation exceeding 3,3% during a single voltage change at the EUT terminals, shall not exceed 500ms;
- the maximum relative steady-state voltage change, dc, shall not exceed 3,3%;
- the maximum relative voltage change dmax, 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.

7.2. Block Diagram of Test Setup



7.3 Environmental Conditions

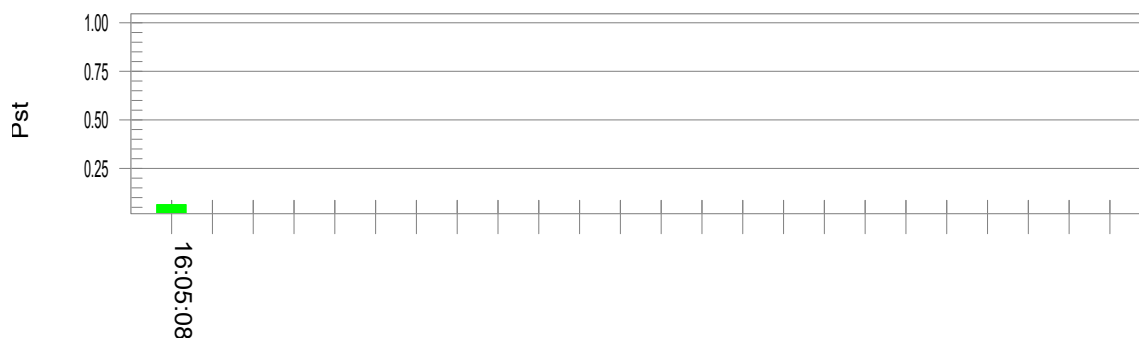
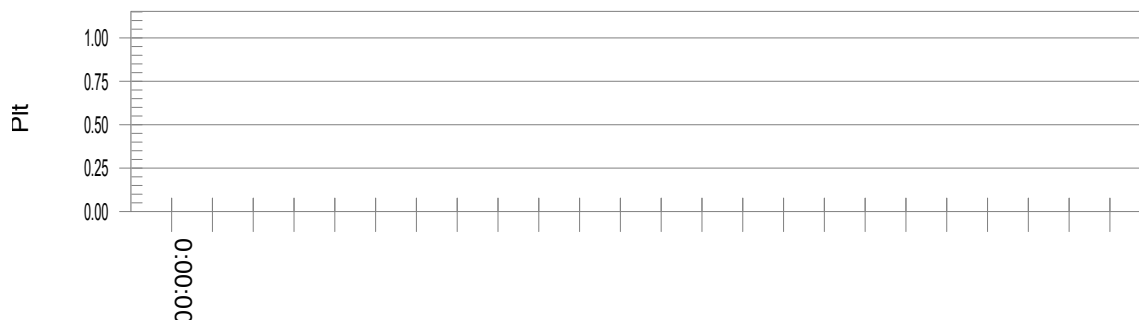
Temperature:	23.5°C
Relative Humidity:	55.0%RH
Atmospheric Pressure:	99.9kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

7.4 Test Data and Result

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (Run time)

Test Result: Pass

Status: Test Completed

Pst and limit line
European Limits

Plt and limit line


Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.74

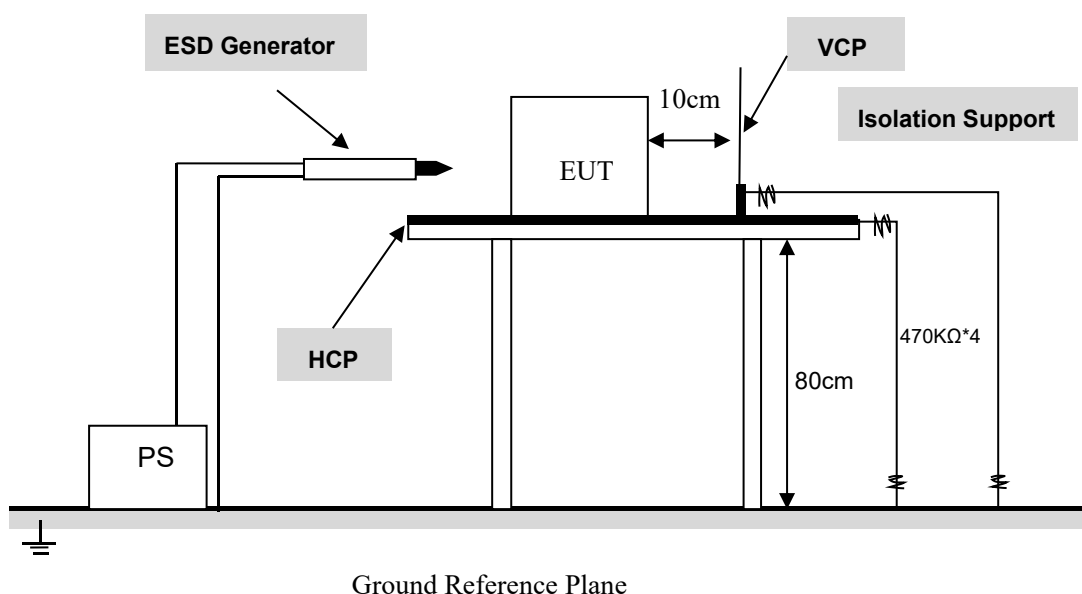
Highest dt (%):	0.00	Test limit (%):	N/A	N/A
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

8. Electrostatic Discharge (ESD)

8.1 ESD Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Electrostatic discharge	Enclosure port	4kV(Contact Discharge)	IEC 61000-4-2	B
		8kV(Air Discharge)	IEC 61000-4-2	B

8.2 Block Diagram of Test Setup



8.3 Test Procedure

Air Discharges:

This test is done on a non-conductive surface. The round Discharges tip of the Discharges electrode shall be approached as fast as possible to touch the EUT. After each Discharge, the Discharges electrode shall be removed from the EUT. The generator is then re-triggered for a new single Discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air Discharges completed.

Contact Discharges:

All the procedure shall be same as Section 8.3.1 of IEC 61000-4-2, except that the tip of the Discharges electrode shall touch the EUT before the Discharges switch is operated.

Indirect Discharges for HCP

At least 20 single Discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The Discharges electrode positions vertically at a distance of 0.1 m from the EUT and with the Discharges electrode touching the coupling plane.

Indirect Discharges for VCP

At least 20 single Discharges shall be applied to the center of one vertical edge of the coupling plane.

The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated

8.4 Environmental Conditions

Temperature:	25.1° C
Relative Humidity:	55.3%RH
Atmospheric Pressure:	101.4kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

8.5 Test Data and Result

IEC 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-8	+8	-15	+15
Air Discharge								
Surface	A	A	A	A	A	A	/	/
Slot	A	A	A	A	A	A	/	/

IEC 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Contact Discharge								
Screw	A	A	A	A	/	/	/	/
Port	A	A	A	A	/	/	/	/

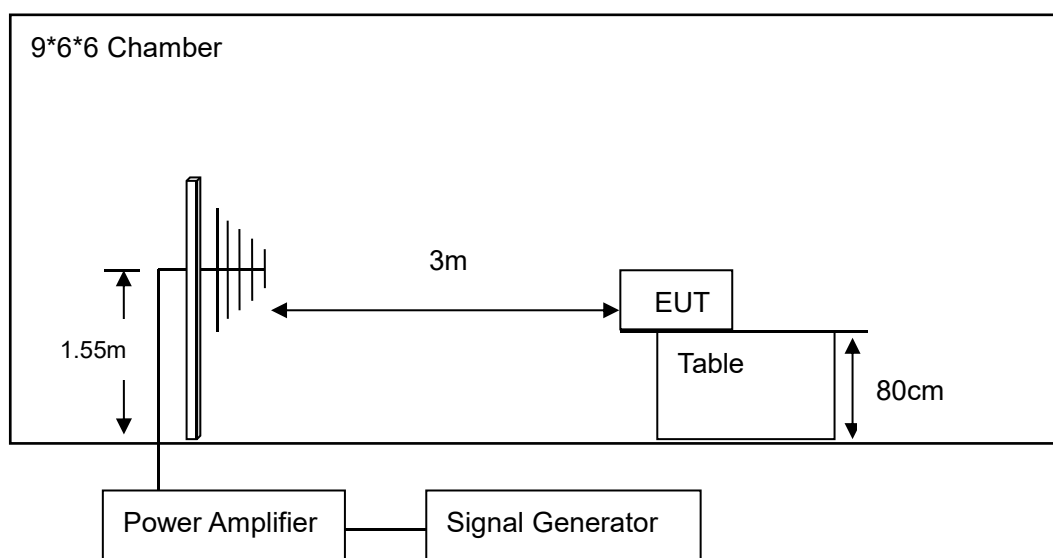
IEC 61000-4-2 Test Points	Test Levels (kV)							
	Indirect Contact Discharge (HCP)				Indirect Contact Discharge (VCP)			
	-2	+2	-4	+4	-2	+2	-4	+4
Front Side	A	A	A	A	A	A	A	A
Back Side	A	A	A	A	A	A	A	A
Left Side	A	A	A	A	A	A	A	A
Right Side	A	A	A	A	A	A	A	A

9. Radio Frequency Electromagnetic Fields

9.1 RS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Radio-frequency electromagnetic field	Enclosure port	80-1000MHz 3V/m(unmodulated, r.m.s) 80% AM(1kHz)	IEC 61000-4-3	A

9.2 Block Diagram of Test Setup



9.3 Test Procedure

Test is conducting under the description of IEC61000-4-3.

- (1)The EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The EUT was exercised and monitored in the manner specified by the customer.

(3)All test instruments were PC controlled, via their IEEE 488.2 bus interfaces, and the test conducted in the following manner:

The testing frequencies were swept over the required frequency range, with a step frequency equal to 1% of fundamental. The sweep rate was 1.0×10^{-3} decades/s. For each frequency tested, the signal generator output level was adjusted automatically until the unmodulated field strength registered by the field monitor reached the desired level. This level was held constant for the specified dwell time.

(4)The EUT was continuously monitored during the test in accordance with the Pass / Fail criteria declared by the customer.

(5)The test was done in both horizontal and vertical antenna polarizations, and for all necessary sides of the EUT.

9.4 Environmental Conditions

Temperature:	24.8° C
Relative Humidity:	55.0%RH
Atmospheric Pressure:	101.5kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

9.5 Test Data and Result

Field Strength: 3V/m

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

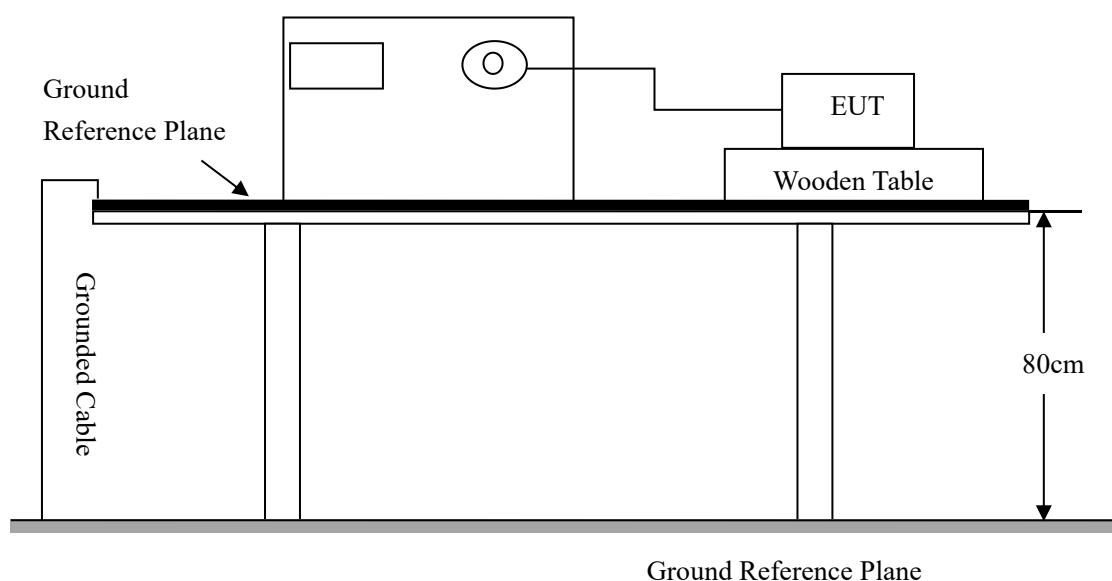
Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

10. Fast transients (EFT)

10.1 EFT Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Electrical transients common mode	Input a.c. power ports	1kV(peak) Tr/Th:5/50ns Repetition frequency:5kHz	IEC 61000-4-4	B

10.2 Block Diagram of Test Setup



10.3 Test Procedure

(1)The EUT was switched on and allowed to warm up to its normal operating condition.

(2)D.C./A.C. Power Line Test

The EFT/B test system has a built-in coupling/decoupling network which couples the generated EFT bursts into the EUT power supply lines connected to it. The EFT bursts were coupled to the selected lines (one at a time) of the EUT.

(3)I/O Signal & Control Line Test

The interference impulses were capacitively coupled to the EUT's signal cables.

(4)The EUT was monitored during the test in accordance with the Pass /Fail criteria declared by the customer.

(5)The test was performed with EFT bursts in the positive and negative polarities and repeated on all necessary lines.

10.4 Environmental Conditions

Temperature:	25.5° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

10.5 Test Data and Result

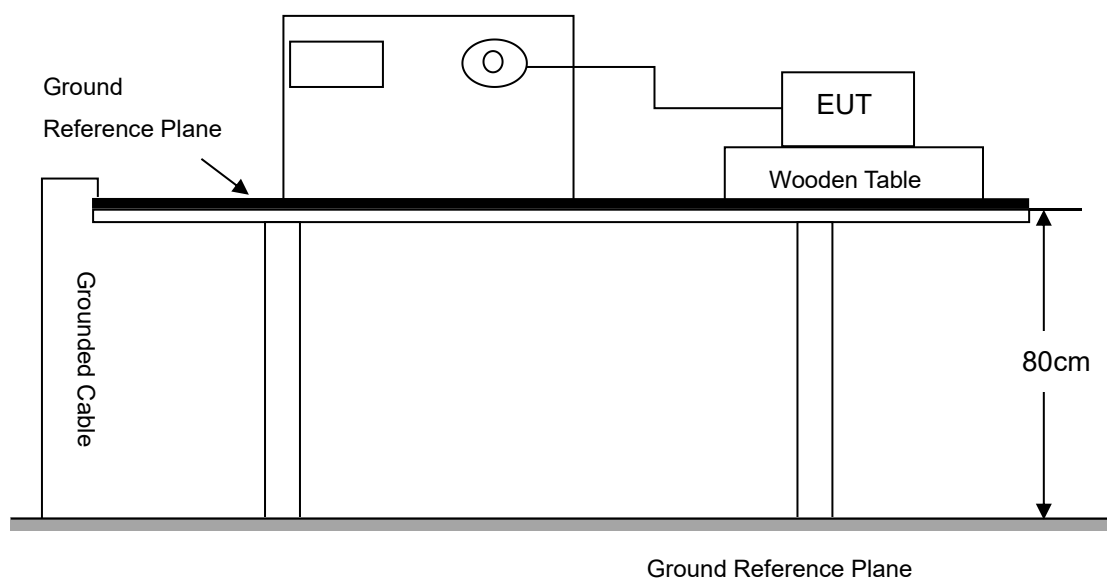
IEC61000-4-4		Test Levels(kV)					
Test Points		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
AC mains power input port	L	A	A	A	A	/	/
	N	A	A	A	A	/	/
	PE	/	/	/	/	/	/
	L+N	A	A	A	A	/	/
	L+PE	/	/	/	/	/	/
	N+PE	/	/	/	/	/	/
	L+N+PE	/	/	/	/	/	/
Single Port	/	/	/	/	/	/	/

11. Surges

10.1 Surges Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Surges	Input a.c. power port	Tr/Th:1,2/50us 1kV (line to line) with 2Ω impedance 2kV(line to earth) with 12Ω impedance	IEC 61000-4-5	B

11.2 Block Diagram of Test Setup



11.3 Test Procedure

- (1)The power supply to EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The surge generator phase shifter was set to different phase angle.
- (3)The correct open-circuit test level was set with the surge generator disconnected from the coupling network.
- (4)The output of the generator was then reconnected back to the coupling network.
- (5)Five discharges, generated by the voltage surge generator, were made on each relevant line, for each polarity, at each test level, with the relevant discharge interval.
- (6)The EUT was observed during, and checked after the test to determine the result.

11.4 Environmental Conditions

Temperature:	25.3° C
Relative Humidity:	57.1%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

11.5 Test Data and Result

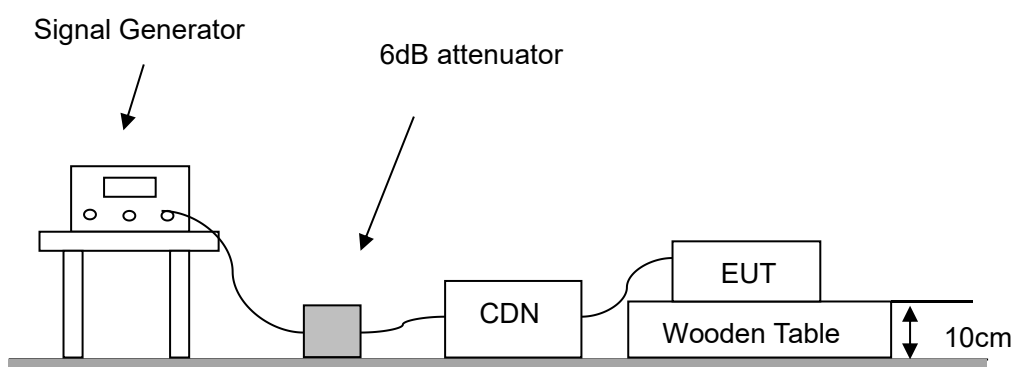
IEC61000-4-5 Test Points		Test Levels(kV)					
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
AC mains power input port	L-N	A	A	A	A	/	/
	L-PE	/	/	/	/	/	/
	N-PE	/	/	/	/	/	/
Signal port	/	/	/	/	/	/	/

12. Injected Currents

12.1 CS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
RF current Common mode	Input a.c. power port	0,15-80MHz 3V(unmodulated,r.m.s) 80% AM(1kHz)	IEC 61000-4-6	A

12.2 Block Diagram of Test Setup



12.3 Test Procedure

- (1)The EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN(coupling and decoupling device) is placed on the ground plane about 0.3 m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- (3)The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
- (4)The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.
- (5)The EUT was continuously monitored during the test in accordance with the PASS/FAIL criteria declared by the customer.

12.4 Environmental Conditions

Temperature:	25.1° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

12.5 Test Data and Result

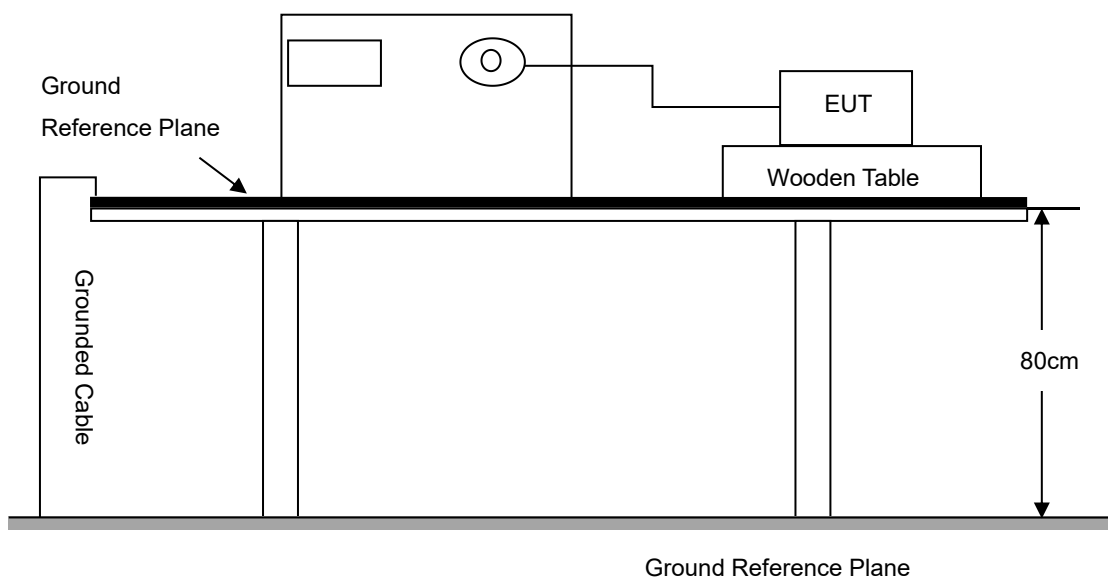
IEC61000-4-6 Test Point	Frequency Range (MHz)	Strength (Vrms)	Modulation	Result
ac power Line	0.15-80	3	AM	A

13. Voltage Dips and Interruptions

13.1 DIPS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Voltage Dips	Input a.c. power port	100% reduction 0.5 period	IEC61000-4-11	C
		60% reduction 10 period		C
		30% reduction 25 period		C

13.2 Block Diagram of Test Setup



13.3 Test Procedure

- (1) The interruption is introduced at selected phase angles with specified duration.
- (2) Record any degradation of performance.

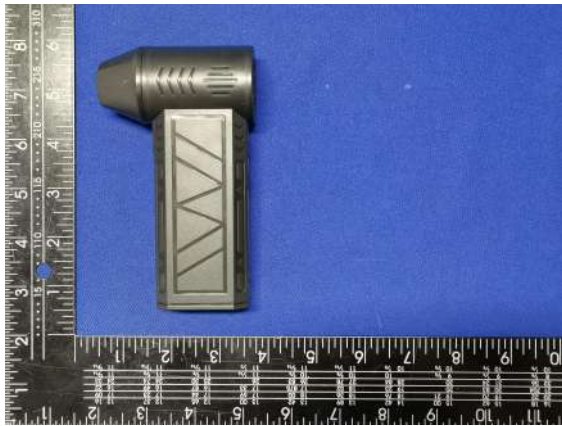
13.4 Environmental Conditions

Temperature:	25.6° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

13.5 Test Data and Result

Environmental Phenomenon	Test Level $\%U_T$	Reduction (%)	Duration (periods)	Result
Voltage Dips	0	100	0.5	A
	40	60	10	A
	70	30	25	A

EXHIBIT - PHOTOGRAPHS OF EUT



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



EMC Test Report

For

WeiJianhuang

Test Standards: EN 55014-1 :2021
EN 55014-2 :2021
EN IEC 61000-3-2 :2019/A1:2021
EN 61000-3-3 :2013/A2:2021

Product Description: Violent fan

Tested Model: ZY7400-SE

Adding Models: ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI,
ZY7400-5000-PRO, ZY7400-5000-PLUS

Report No.: EBSZ240813192E

Tested Date: 2024-Aug-14

Issued Date: 2024-Aug-19

Tested By: 
Wendy Lin

Reviewed By: 
Jerry Liu

Europe Ber (Guangdong) Testing Co., Ltd.
401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street,
Baoan District, Shenzhen
www.eurber.com

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Europe Ber (Guangdong) Testing Co., Ltd., the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2024-Aug-19	Valid	Original Report

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1. GENERAL INFORMATION

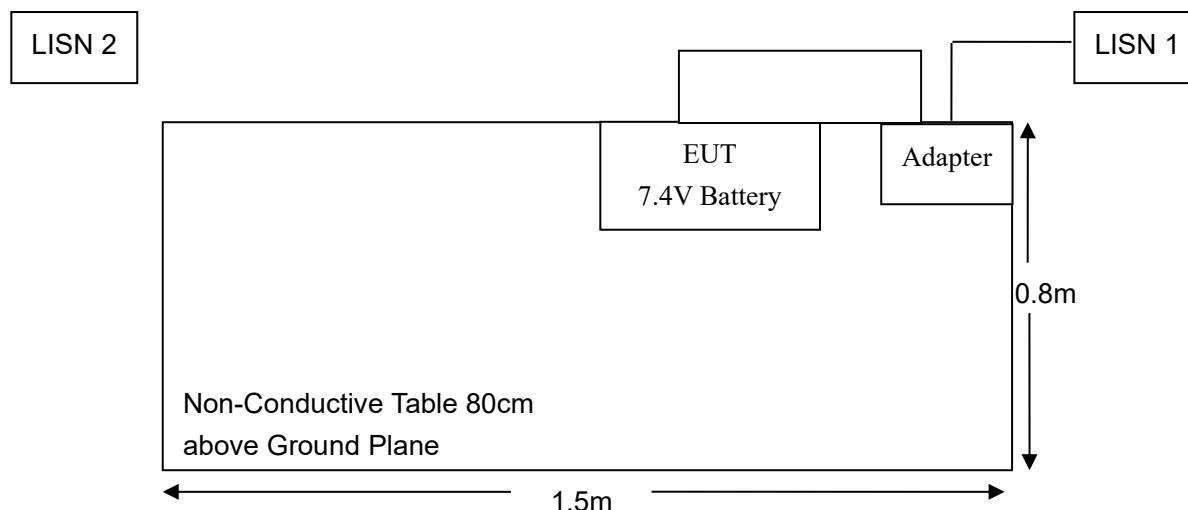
1.1 Product Description for Equipment Under Test (EUT)

Client Information	
Applicant:	WeiJianhuang
Address of applicant:	Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Manufacturer:	Shenzhen Jianyu Digital Technology Co., LTD
Address of manufacturer:	Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province

General Description of EUT	
Product Name:	Violent fan
Trade Name:	Jane feather
Model No.:	ZY7400-SE
Adding Model(s):	ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Difference description	All models are identical to each other except out appearance, model names.
Rated Voltage:	Battery: DC 7.4V
Power Adaptor Model:	N/A
Equipment Category:	Class B
Highest Internal Frequency:	N/A

1.2 EUT Setup and Operation Mode

Block Configuration Diagram for Conducted Emissions



Test Mode List		
Test Mode	Description	Remark
1	Charging	for all test
2	Working	For RE/ESD/RS test

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Adapter	Honor	HW-050200C02	N/A

1.3 Measurement Uncertainty

Measurement uncertainty			
Parameter	Frequency	Polarity	Measurement uncertainty
Conducted Emission	150kHz~30MHz	----	2.64dB
Radiated Emission	30MHz-200MHz	Horizontal	3.77dB
Radiated Emission	30MHz-200MHz	Vertical	3.95dB
Radiated Emission	200MHz-1000MHz	Horizontal	4.27dB
Radiated Emission	200MHz-1000MHz	Vertical	5.45dB

1.4 Test Facility

Site	Europe Ber (Guangdong) Testing Co., Ltd.
Location	401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen and Technological Development Zone, Hunan, P.R.C
Telephone:	+86-755-23284856
Fax:	+86-755-23284856

1.5 Test Equipment List and Details

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
LISN	R&S	ENV216	102125	2024/6/22	2025/6/21
LISN	R&S	ENV432	101327	2024/6/22	2025/6/21
EMI Test Receiver	R&S	ESR3	102143	2024/6/22	2025/6/21
EMI Test Software	Audix	E3	N/A	N/A	N/A
Test Equipment for Radiated Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
EMI Test Receiver	R&S	ESR-3	102144	2024/6/22	2025/6/21
Amplifier	Sonoma	310	363917	2024/6/22	2025/6/21
Broadband Antenna	Schwarz beck	VULB9168	9168-757	2023/03/03	2026/03/02
EMI Test Software	Audix	E3	N/A	N/A	N/A
Test Equipment for ESD					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
ESD Generator	Teseq	NSG 437	1121	2024/6/22	2025/6/21
Test Equipment for EFT/SURGE/DIPS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Surge Generator	Teseq	NSG 3060-MF	4040	2024/6/22	2025/6/21
CDN	Teseq	CDN 3061-S16	3003	2024/6/22	2025/6/21
EFT/DIPS Generator	Teseq	NSG 3040-MF	6033	2024/6/22	2025/6/21
Transformer	Teseq	INA6501	1002	2024/6/22	2025/6/21
Test Equipment for CS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
CS Generator	Teseq	NSG 4070B-80	45341	2024/6/22	2025/6/21
6dB Attenuator	Teseq	ATN 6075	32154	2024/6/22	2025/6/21
CDN	Teseq	CDN M016	45065	2024/6/22	2025/6/21
Test Equipment for RS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Signal generator	R&S	SMB100A	113825	2024/6/22	2025/6/21
Power Meter	R&S	NRP2	105581	2024/6/22	2025/6/21
Power Sensor	R&S	NRP-Z91	103778	2024/6/22	2025/6/21
Power Sensor	R&S	NRP-Z91	103779	2024/6/22	2025/6/21
Power Amplifier	R&S	BBA150	102377	2024/6/22	2025/6/21
Antenna	R&S	HL046E	100230	N/A	N/A
RS Test Software	Fala	EZ-RS	N/A	N/A	N/A

1.6 Performance Criteria for EMS

According Clause 6 of EN55014-2,

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. 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. The following Table 14 serves as a guide to formulate the permissible degradation of the equipment under test (EUT) caused by electromagnetic stress. Not all functions of the apparatus need to be tested. The selection, the specification of functions, and the permissible degradation is left to the responsibility of the manufacturer.

2. SUMMARY OF TEST RESULTS

EN 55014-1:2021 Emissions		
Test Standards	Description of Test Item	Result
EN 55014-1:2021	Disturbance Voltage	Compliance
EN 55014-1:2021	Disturbance Power	N/A
EN 55014-1:2021	Radiated Disturbance	Compliance
EN 55014-1:2021	Discontinuous Disturbance	N/A

EN 55014-2:2021 Immunity		
Test Standards	Description of Test Item	Result
IEC 61000-4-2	Electrostatic Discharge	Compliance
IEC 61000-4-4	Fast Transients	Compliance
IEC 61000-4-6	Injected Currents	Compliance
IEC 61000-4-3	Radio Frequency Electromagnetic Fields	Compliance
IEC 61000-4-5	Surges	Compliance
IEC 61000-4-11	Voltage Dips and Interruptions	Compliance

*Note1: N/A means not applicable.

3. Disturbance Voltage

3.1. Disturbance Voltage Limit

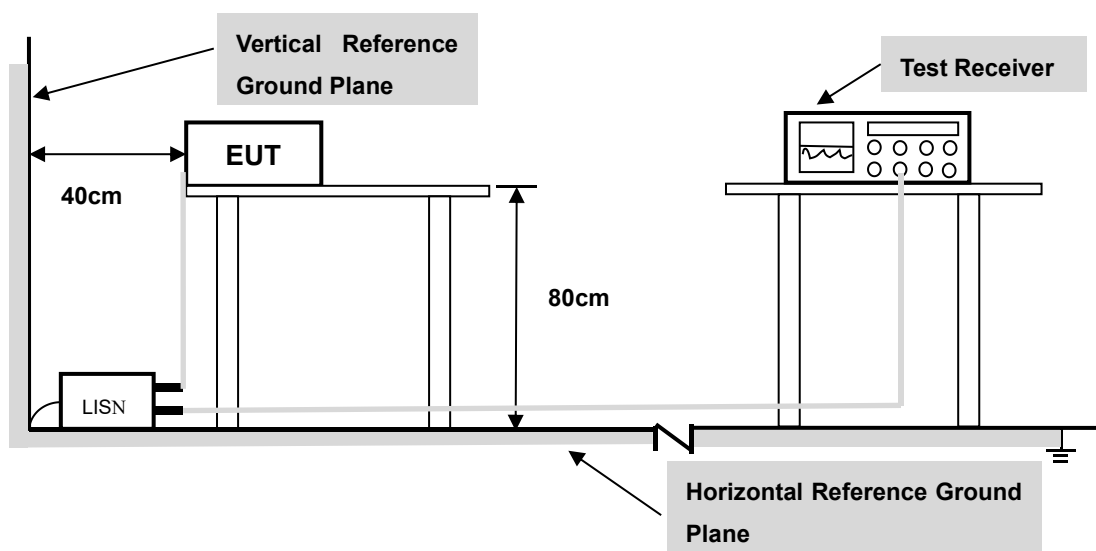
Continuous disturbance voltage limits at mains ports

Frequency Range (MHz)	Quasi Peak (dBμV)	Average (dBμV)
0.15-0.5	66-56	59-46
0.5-5	56	46
5-30	60	50

Note1 The lower limit shall applies at the transition frequencies.

Note2 The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.2 Block Diagram of Test Setup



3.3. Test Procedure

During the conducted emissions test, the adapter was connected to the main outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the Quasi-peak and average detection mode.

3.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the LISN Factor and the Cable Factor, The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{LISN Factor} + \text{Cable Factor}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a Over Limit of -6dB means the emission is 6dB below the maximum limit for Class B device. The equation for margin calculation is as follows:

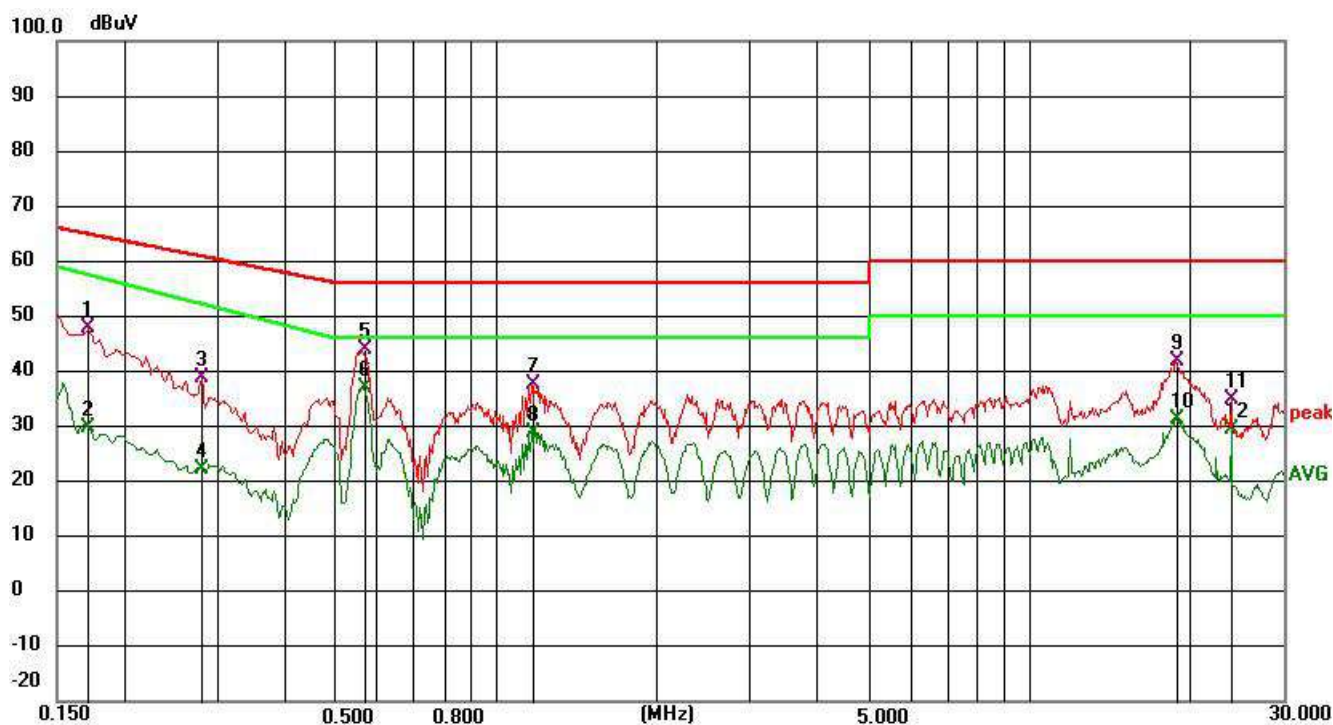
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

3.5 Environmental Conditions

Temperature:	25.5° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

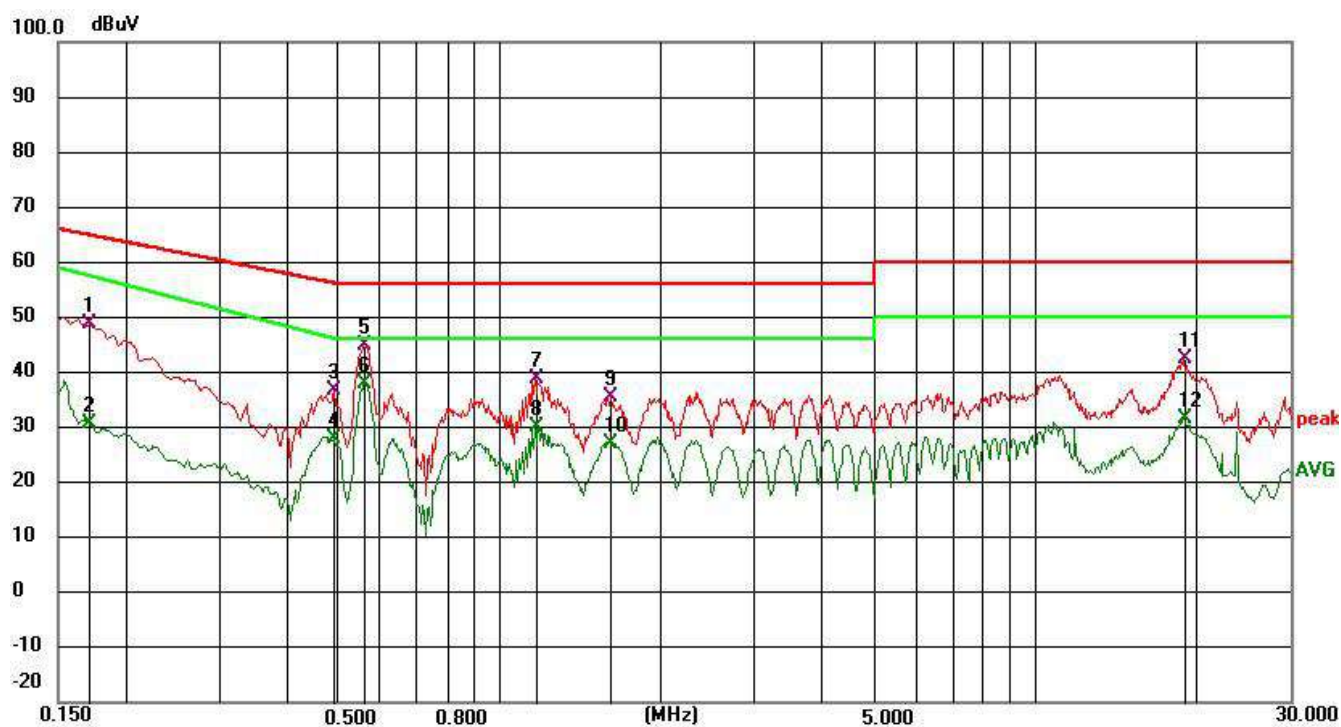
3.6 Test Data and Result

LINE



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1723	37.41	10.54	47.95	64.85	16.90	QP
2	0.1723	19.27	10.54	29.81	57.50	27.69	AVG
3	0.2802	28.19	10.57	38.76	60.81	22.05	QP
4	0.2802	11.62	10.57	22.19	52.25	30.06	AVG
5	0.5639	33.39	10.65	44.04	56.00	11.96	QP
6	0.5639	26.24	10.65	36.89	46.00	9.11	AVG
7	1.1669	26.72	10.78	37.50	56.00	18.50	QP
8	1.1669	18.07	10.78	28.85	46.00	17.15	AVG
9	18.8681	30.19	11.62	41.81	60.00	18.19	QP
10	18.8681	19.52	11.62	31.14	50.00	18.86	AVG
11	23.9166	23.03	11.69	34.72	60.00	25.28	QP
12	23.9166	17.87	11.69	29.56	50.00	20.44	AVG

NEUTRAL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1723	38.07	10.64	48.71	64.85	16.14	QP
2	0.1723	20.06	10.64	30.70	57.50	26.80	AVG
3	0.4919	25.92	10.65	36.57	56.14	19.57	QP
4	0.4919	17.16	10.65	27.81	46.18	18.37	AVG
5	0.5595	34.08	10.68	44.76	56.00	11.24	QP
6	0.5595	27.17	10.68	37.85	46.00	8.15	AVG
7	1.1669	27.81	10.89	38.70	56.00	17.30	QP
8	1.1669	19.09	10.89	29.98	46.00	16.02	AVG
9	1.6168	24.57	10.98	35.55	56.00	20.45	QP
10	1.6168	16.04	10.98	27.02	46.00	18.98	AVG
11	18.9716	30.86	11.62	42.48	60.00	17.52	QP
12	18.9716	19.81	11.62	31.43	50.00	18.57	AVG

Note: 1. Result Level = Read Level + LISN Factor + Cable loss

4. Disturbance Power

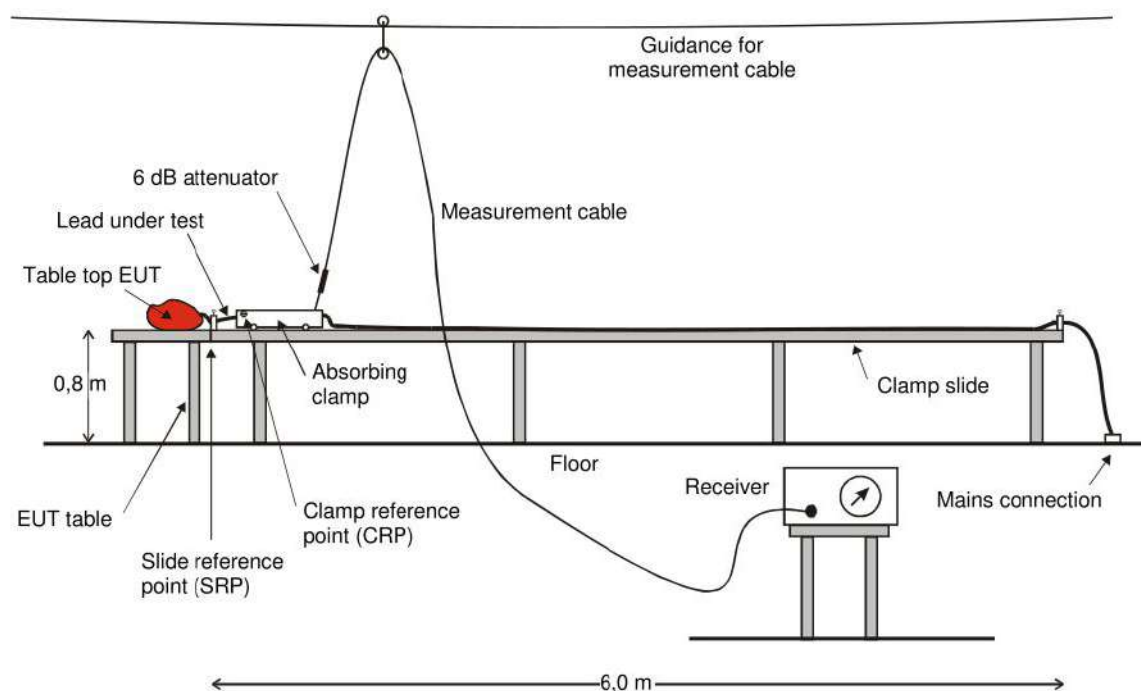
4.1. Disturbance Power Limit

Disturbance Power limits

Frequency Range	General		Tools					
			$P \leq 700W$		$700W \leq P \leq 1000W$		$P > 1000W$	
1	2	3	4	5	6	7	8	9
(MHz)	Quasi Peak (dBpW)	Average (dBpW)	Quasi Peak (dBpW)	Average (dBpW)	Quasi Peak (dBpW)	Average (dBpW)	Quasi Peak (dBpW)	Average (dBpW)
30 to 300	Increasing linearly with the frequency from:							
	45 to 55	35 to 45	45 to 55	35 to 45	49 to 59	39 to 49	55 to 65	45 to 55

Key
P=rated power of the motor only

4.2 Block Diagram of Test Setup



4.3. Test Procedure

Measurement of the disturbance power shall be made firstly on the mains lead (if applicable) of the main EUT using the absorbing clamp in accordance with 5.3.3.2. Any lead connecting the main EUT to an associated device is disconnected, if this does not affect the operation of the main EUT; otherwise it is isolated by means of ferrite rings (e.g. an additional absorbing clamp or a CAMD) placed close to the main EUT.

Secondly, a similar measurement shall be made on each lead which is or may be connected to an

associated device, whether or not it is essential for the operation of the EUT; the current transformer of the clamp pointing towards the main EUT. Isolation, or disconnection of the mains lead and other leads is made in accordance with the above paragraph.

NOTE For permanently connected short leads the movement of the clamp (as described in 5.3.3.2.2)

is limited by the length of the lead.

In addition, measurements shall be made as above but with the current transformer of the clamp pointing towards any associated device, unless this device is not essential for the operation of the main EUT and a separate test procedure for it is specified elsewhere in this standard (no disconnection or RF isolation of other leads is of course necessary in this case).

4.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the LISN Factor and the Cable Factor, The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{LISN Factor} + \text{Cable Factor}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a Over Limit of -6dB means the emission is 6dB below the maximum limit for Class B device. The equation for margin calculation is as follows:

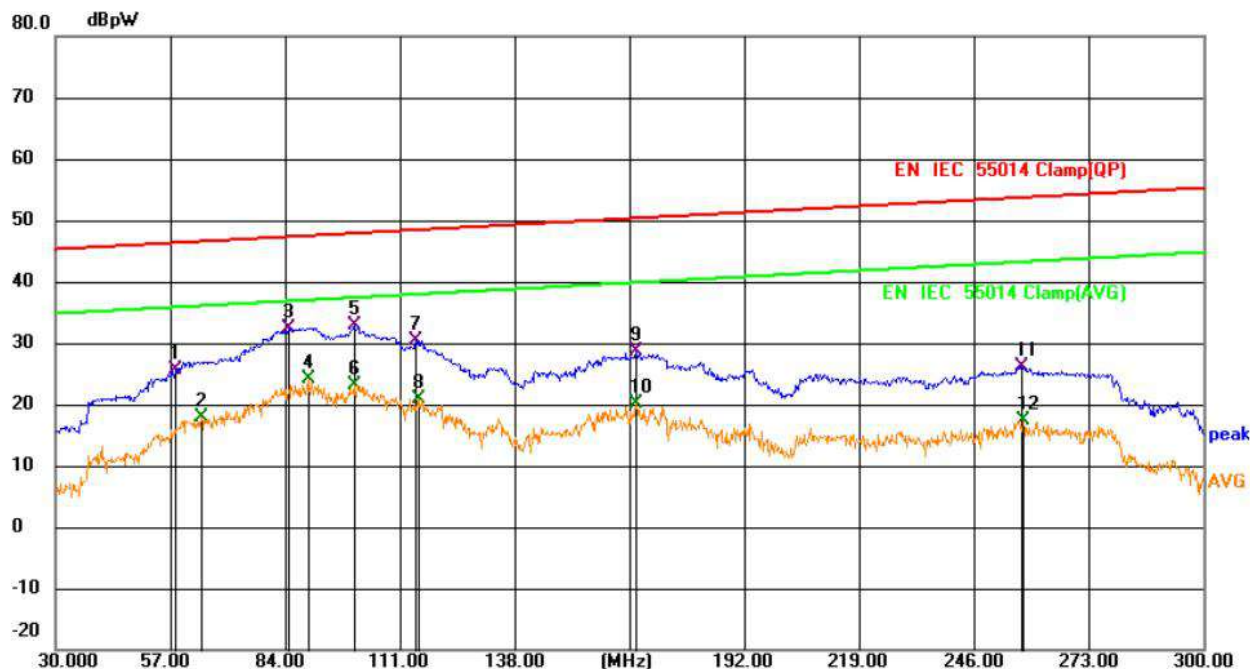
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

4.5 Environmental Conditions

Temperature:	25.0° C
Relative Humidity:	54.0%RH
Atmospheric Pressure:	101.2kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

4.6 Test Data and Result

AC 230V/50Hz



No.	Mk.	Freq. MHz	Level [~] dBpV	Factor dB	ment dBpV	Limit dBpV	Margin dB	Detector	Position cm	Comment
1		58.3200	18.53	7.03	25.56	46.05	-20.49	QP		
2		64.3200	9.91	8.03	17.94	36.27	-18.33	AVG		
3		84.9000	24.76	7.65	32.41	47.03	-14.62	QP		
4	*	89.6400	15.72	8.29	24.01	37.21	-13.20	AVG		
5		100.4400	25.01	7.94	32.95	47.61	-14.66	QP		
6		100.4400	15.16	7.94	23.10	37.61	-14.51	AVG		
7		114.9600	20.34	10.14	30.48	48.15	-17.67	QP		
8		115.3800	10.63	10.17	20.80	38.16	-17.36	AVG		
9		166.6799	22.10	6.46	28.56	50.06	-21.50	QP		
10		166.6799	13.68	6.46	20.14	40.06	-19.92	AVG		
11		257.4000	21.73	4.36	26.09	53.42	-27.33	QP		
12		257.7000	13.04	4.35	17.39	43.43	-26.04	AVG		

Note: 1. Result Level = Read Level + LISN Factor + Cable loss

5. Radiated Disturbances

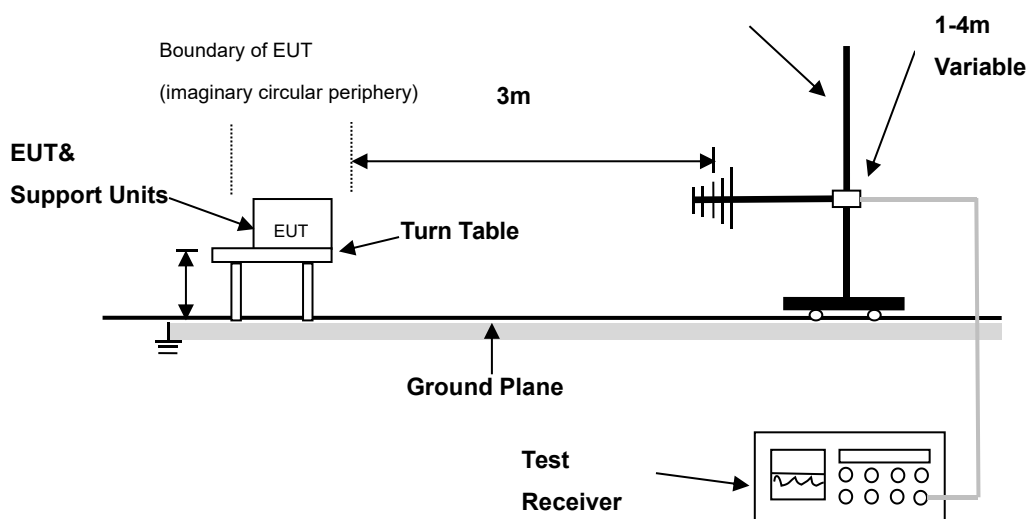
5.1. Radiated Disturbances Limit

Radiated disturbance limits

Frequency range (MHz)	Distance (Meters)	Field Strength Quasi-Peak(dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.2. Block Diagram of Test Setup



5.3 Test Procedure

(1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual.

(2) Support equipment, if needed, was placed as per EN 55014-1. All I/O cables were positioned to simulate typical actual usage as per EN 55014-1.

(3) The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

(4) Recorded at least the six highest emissions.

5.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB means the emission is 6dB below the maximum limit for Class B device. The equation for margin calculation is as follows:

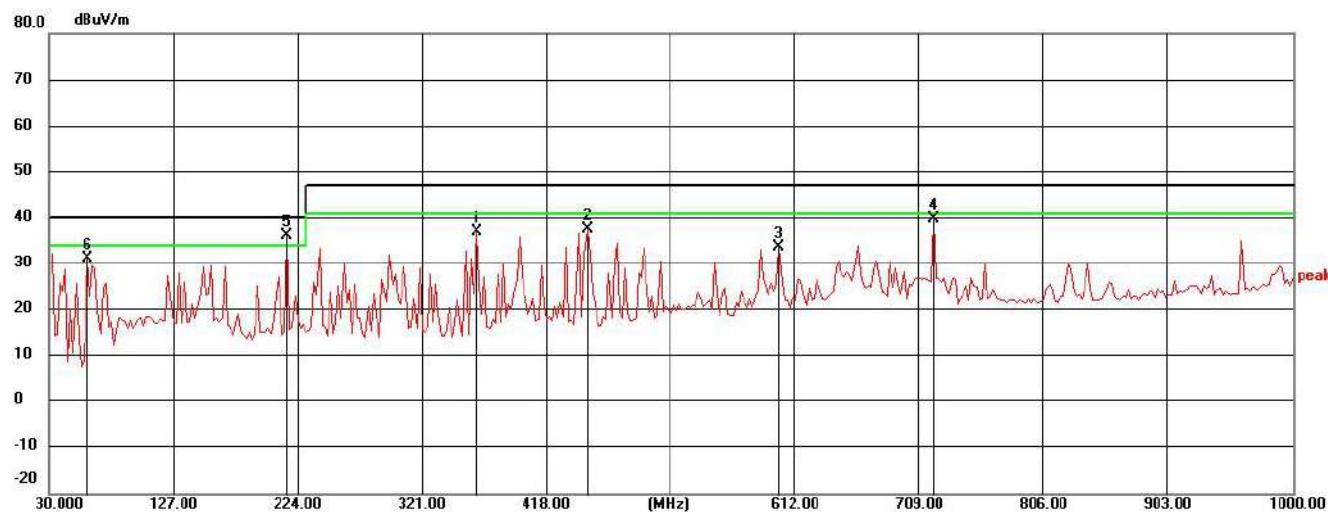
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

5.5 Environmental Conditions

Temperature:	25.1°C
Relative Humidity:	54.3%RH
Atmospheric Pressure:	101.6kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

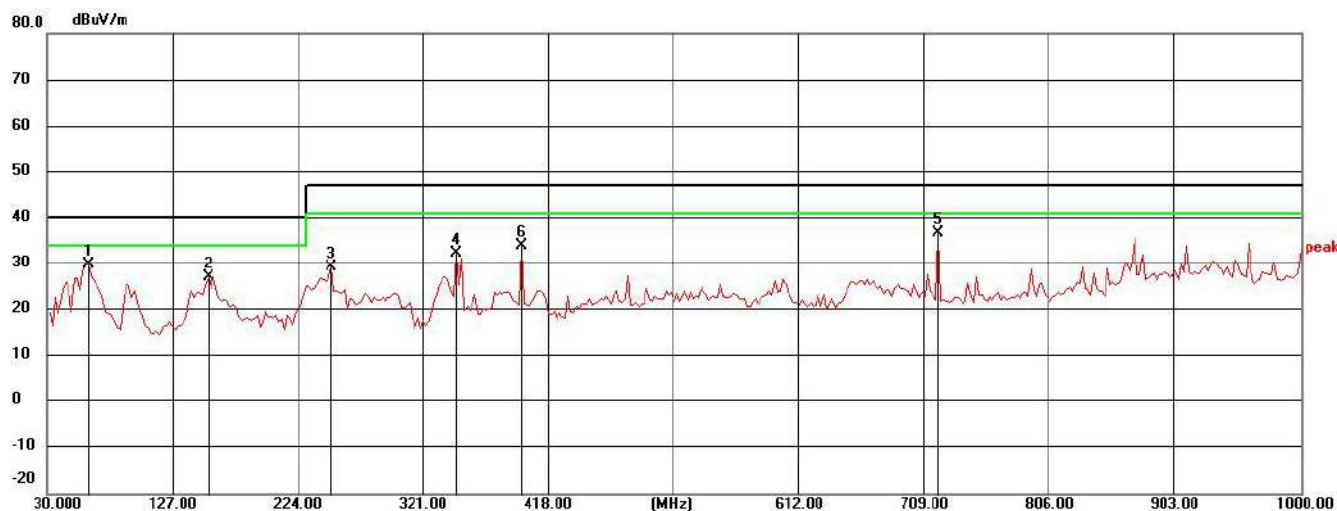
4.6 Test Data and Result

Mode: 1 Vertical



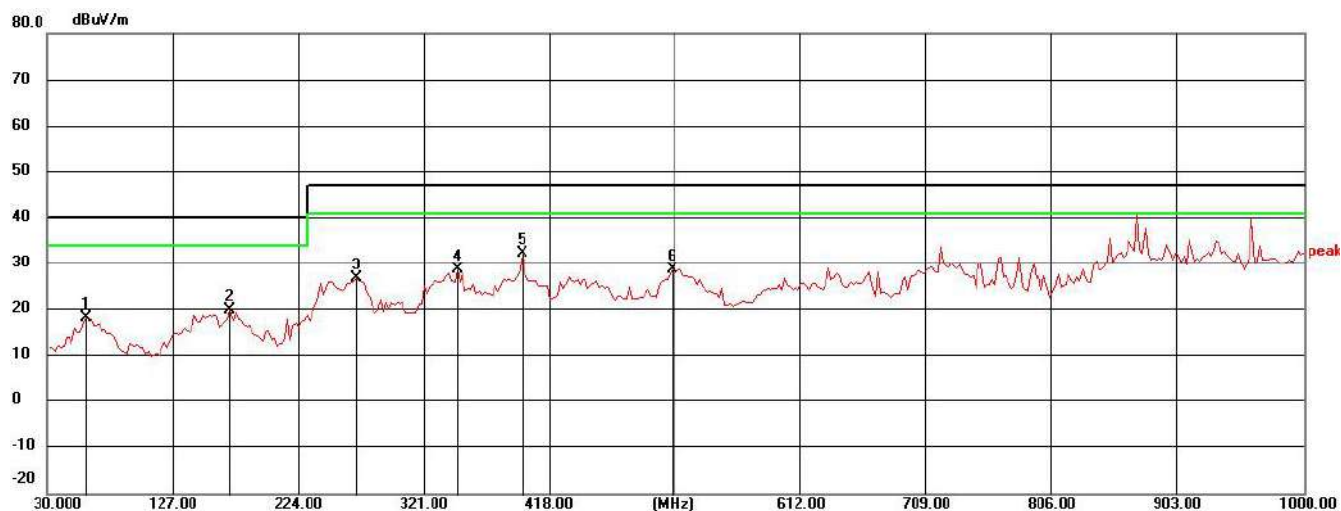
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	363.1739	55.82	-18.71	37.11	47.00	9.89	QP
2	449.6304	54.66	-16.95	37.71	47.00	9.29	QP
3	599.3478	48.31	-14.71	33.60	47.00	13.40	QP
4	719.5434	53.07	-13.18	39.89	47.00	7.11	QP
5	215.5652	58.93	-22.62	36.31	40.00	3.69	QP
6	59.5217	51.69	-20.50	31.19	40.00	8.81	QP

Moed: 1 Horizontal



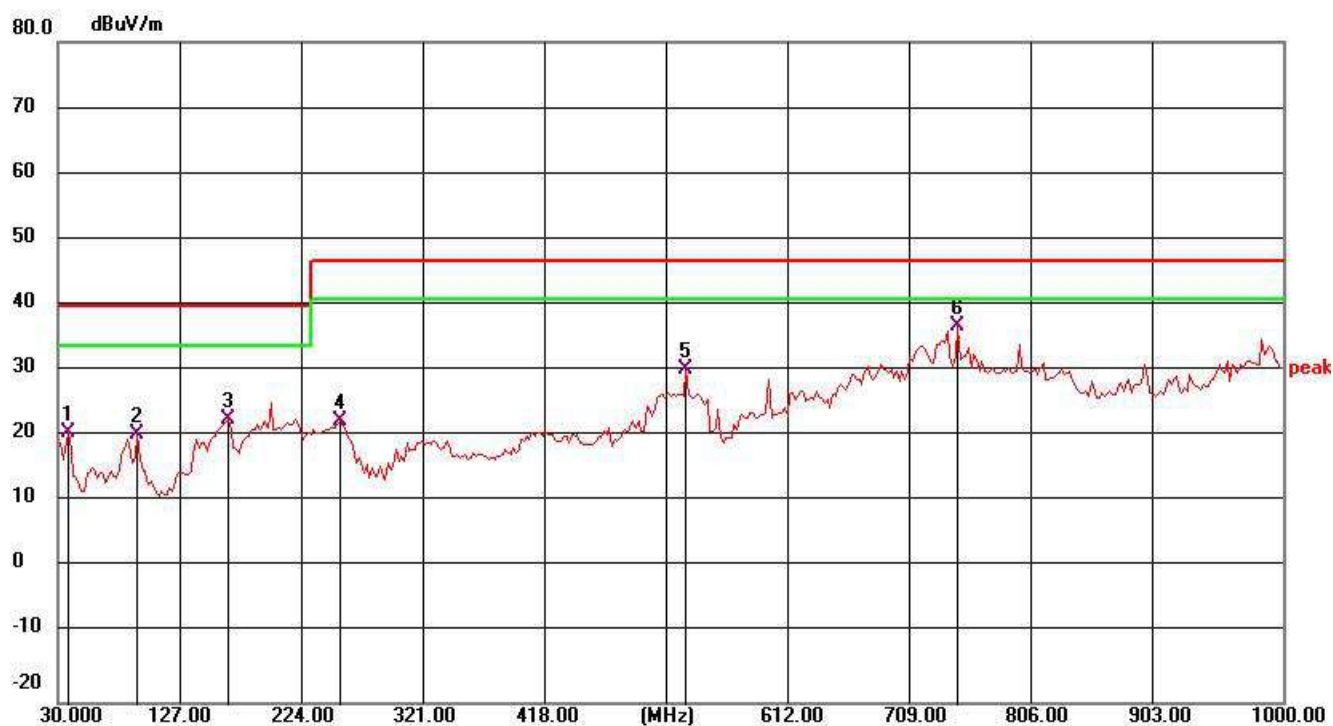
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	61.6304	50.78	-20.84	29.94	40.00	10.06	QP
2	154.4130	46.26	-19.07	27.19	40.00	12.81	QP
3	249.3043	50.67	-21.35	29.32	47.00	17.68	QP
4	346.3043	51.31	-19.03	32.28	47.00	14.72	QP
5	719.5434	49.81	-13.18	36.63	47.00	10.37	QP
6	396.9130	52.23	-18.15	34.08	47.00	12.92	QP

Mode: 2 Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	59.5217	38.63	-20.50	18.13	40.00	21.87	QP
2	171.2826	40.06	-20.27	19.79	40.00	20.21	QP
3	268.2826	47.74	-20.82	26.92	47.00	20.08	QP
4	346.3043	47.67	-19.03	28.64	47.00	18.36	QP
5	396.9130	50.60	-18.15	32.45	47.00	14.55	QP
6	512.8913	44.95	-16.26	28.69	47.00	18.31	QP

Mode: 2 Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	38.4347	36.77	-15.84	20.93	40.00	19.07	QP
2	93.2608	41.52	-20.84	20.68	40.00	19.32	QP
3	164.9565	41.62	-18.57	23.05	40.00	16.95	QP
4	253.5217	42.33	-19.58	22.75	47.00	24.25	QP
5	527.6521	42.65	-12.22	30.43	47.00	16.57	QP
6	742.7391	45.54	-8.56	36.98	47.00	10.02	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss-PRM Factor

6. Harmonic current emissions

According to EN 61000-3-2:2014 section 7: Equipment with a rated power of 75W or less, other than discharging lighting equipment, limits are not included in this standard.

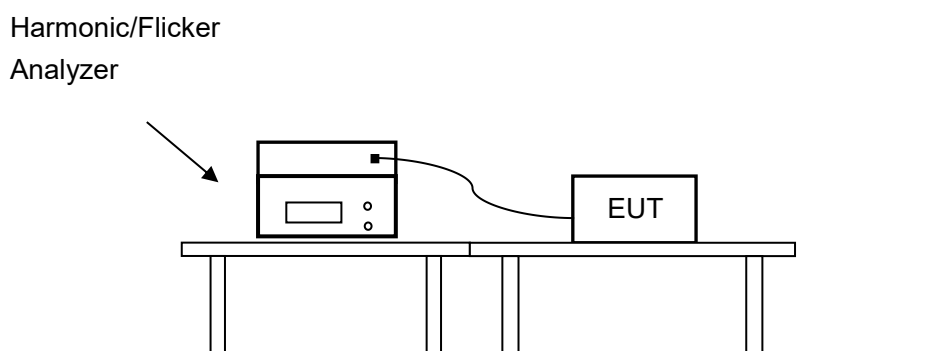
7. Voltage fluctuations and flicker

7.1. Limits

The following limits apply:

- the value of Pst shall not be greater than 1,0;
- the value of Plt shall not be greater than 0,65;
- Tmax, the accumulated time value of d(t) with a deviation exceeding 3,3% during a single voltage change at the EUT terminals, shall not exceed 500ms;
- the maximum relative steady-state voltage change, dc, shall not exceed 3,3%;
- the maximum relative voltage change dmax, 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.

7.2. Block Diagram of Test Setup



7.3 Environmental Conditions

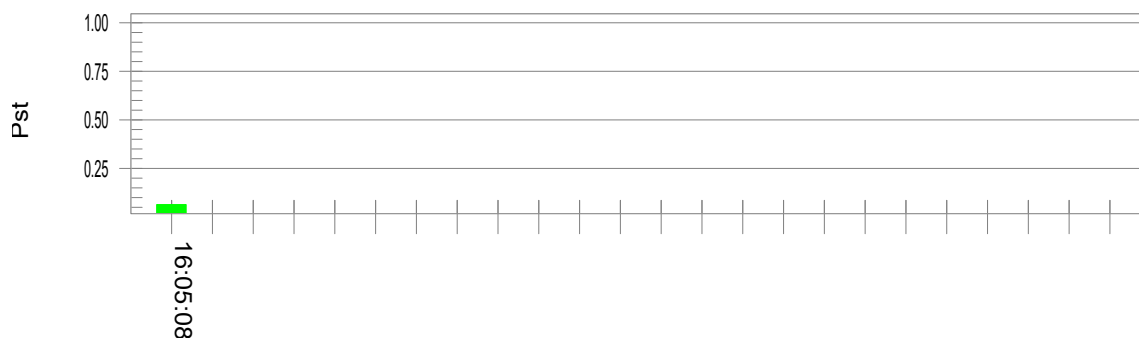
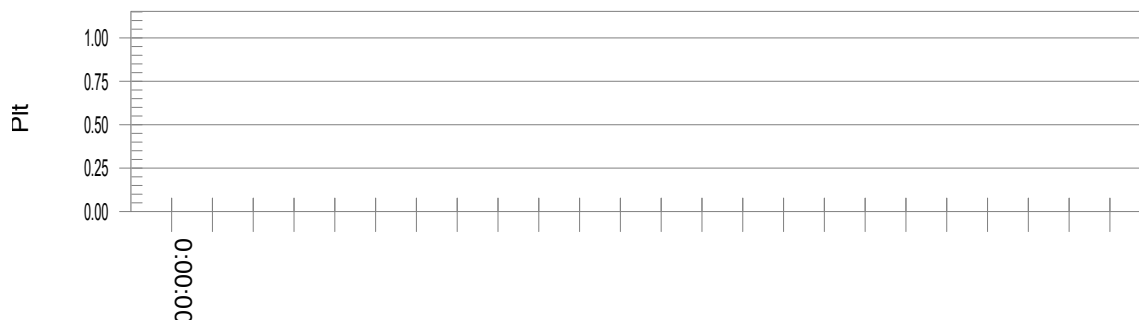
Temperature:	23.5°C
Relative Humidity:	55.0%RH
Atmospheric Pressure:	99.9kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

7.4 Test Data and Result

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (Run time)

Test Result: Pass

Status: Test Completed

Pst and limit line
European Limits

Plt and limit line


Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.74

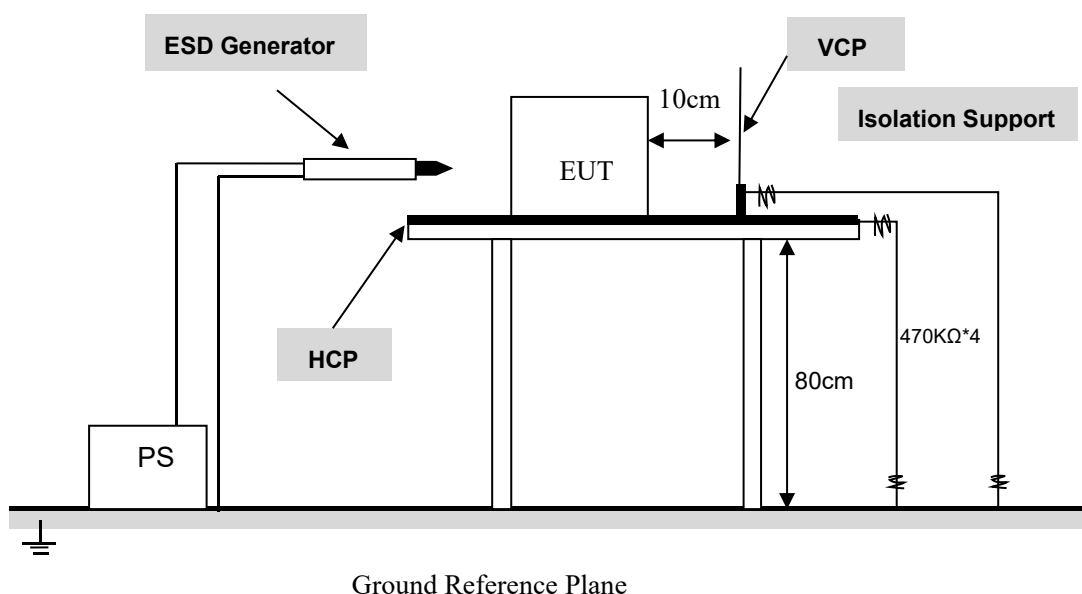
Highest dt (%):	0.00	Test limit (%):	N/A	N/A
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

8. Electrostatic Discharge (ESD)

8.1 ESD Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Electrostatic discharge	Enclosure port	4kV(Contact Discharge)	IEC 61000-4-2	B
		8kV(Air Discharge)	IEC 61000-4-2	B

8.2 Block Diagram of Test Setup



8.3 Test Procedure

Air Discharges:

This test is done on a non-conductive surface. The round Discharges tip of the Discharges electrode shall be approached as fast as possible to touch the EUT. After each Discharge, the Discharges electrode shall be removed from the EUT. The generator is then re-triggered for a new single Discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air Discharges completed.

Contact Discharges:

All the procedure shall be same as Section 8.3.1 of IEC 61000-4-2, except that the tip of the Discharges electrode shall touch the EUT before the Discharges switch is operated.

Indirect Discharges for HCP

At least 20 single Discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The Discharges electrode positions vertically at a distance of 0.1 m from the EUT and with the Discharges electrode touching the coupling plane.

Indirect Discharges for VCP

At least 20 single Discharges shall be applied to the center of one vertical edge of the coupling plane.

The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated

8.4 Environmental Conditions

Temperature:	25.1° C
Relative Humidity:	55.3%RH
Atmospheric Pressure:	101.4kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

8.5 Test Data and Result

IEC 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-8	+8	-15	+15
Air Discharge								
Surface	A	A	A	A	A	A	/	/
Slot	A	A	A	A	A	A	/	/

IEC 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Contact Discharge								
Screw	A	A	A	A	/	/	/	/
Port	A	A	A	A	/	/	/	/

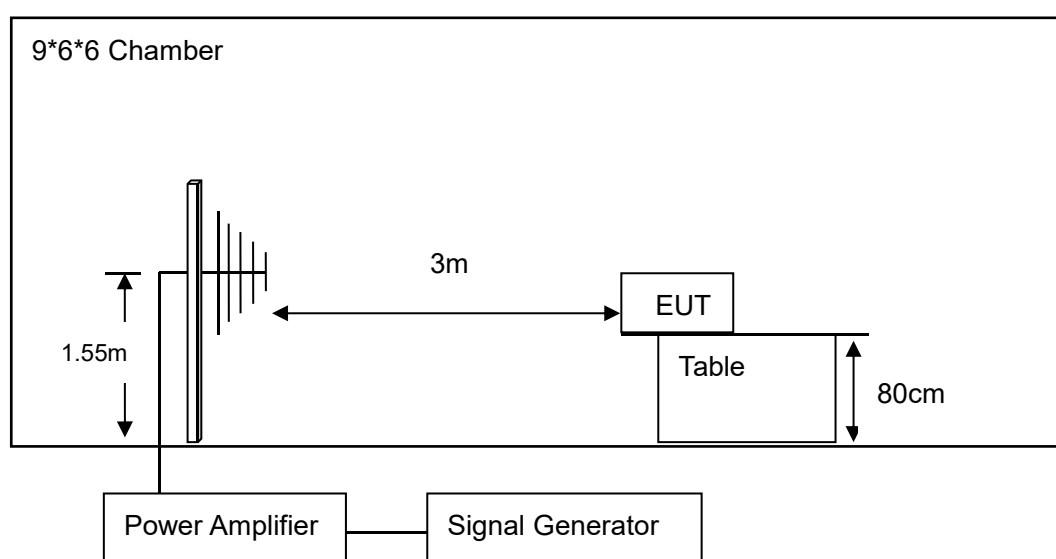
IEC 61000-4-2 Test Points	Test Levels (kV)							
	Indirect Contact Discharge (HCP)				Indirect Contact Discharge (VCP)			
	-2	+2	-4	+4	-2	+2	-4	+4
Front Side	A	A	A	A	A	A	A	A
Back Side	A	A	A	A	A	A	A	A
Left Side	A	A	A	A	A	A	A	A
Right Side	A	A	A	A	A	A	A	A

9. Radio Frequency Electromagnetic Fields

9.1 RS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Radio-frequency electromagnetic field	Enclosure port	80-1000MHz 3V/m(unmodulated, r.m.s) 80% AM(1kHz)	IEC 61000-4-3	A

9.2 Block Diagram of Test Setup



9.3 Test Procedure

Test is conducting under the description of IEC61000-4-3.

- (1)The EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The EUT was exercised and monitored in the manner specified by the customer.

(3)All test instruments were PC controlled, via their IEEE 488.2 bus interfaces, and the test conducted in the following manner:

The testing frequencies were swept over the required frequency range, with a step frequency equal to 1% of fundamental. The sweep rate was 1.0×10^{-3} decades/s. For each frequency tested, the signal generator output level was adjusted automatically until the unmodulated field strength registered by the field monitor reached the desired level. This level was held constant for the specified dwell time.

(4)The EUT was continuously monitored during the test in accordance with the Pass / Fail criteria declared by the customer.

(5)The test was done in both horizontal and vertical antenna polarizations, and for all necessary sides of the EUT.

9.4 Environmental Conditions

Temperature:	24.8° C
Relative Humidity:	55.0%RH
Atmospheric Pressure:	101.5kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

9.5 Test Data and Result

Field Strength: 3V/m

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

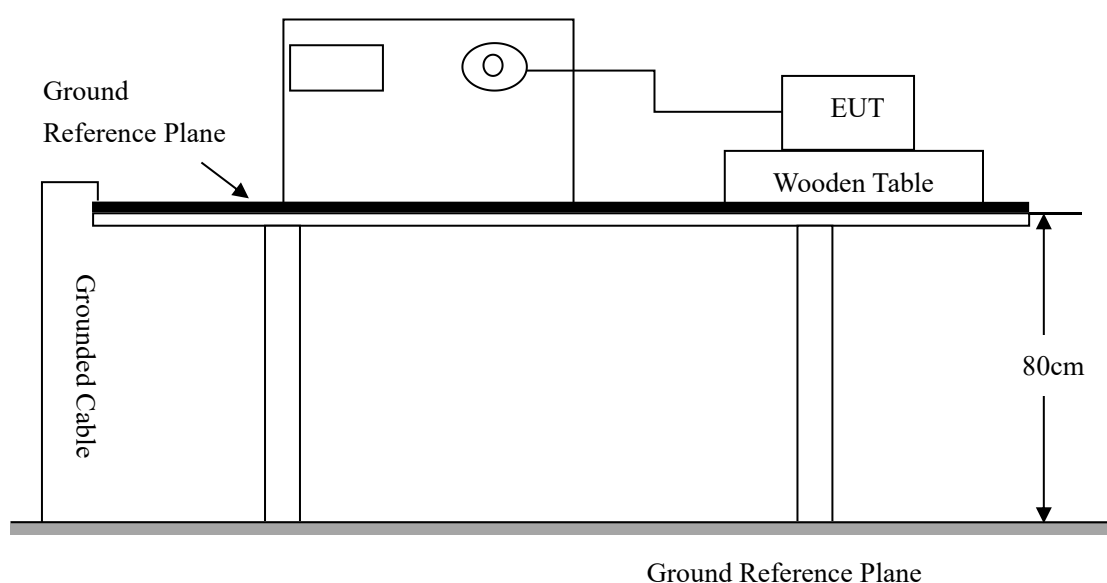
Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

10. Fast transients (EFT)

10.1 EFT Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Electrical transients common mode	Input a.c. power ports	1kV(peak) Tr/Th:5/50ns Repetition frequency:5kHz	IEC 61000-4-4	B

10.2 Block Diagram of Test Setup



10.3 Test Procedure

(1) The EUT was switched on and allowed to warm up to its normal operating condition.

(2) D.C./A.C. Power Line Test

The EFT/B test system has a built-in coupling/decoupling network which couples the generated EFT bursts into the EUT power supply lines connected to it. The EFT bursts were coupled to the selected lines (one at a time) of the EUT.

(3) I/O Signal & Control Line Test

The interference impulses were capacitively coupled to the EUT's signal cables.

(4) The EUT was monitored during the test in accordance with the Pass /Fail criteria declared by the customer.

(5) The test was performed with EFT bursts in the positive and negative polarities and repeated on all necessary lines.

10.4 Environmental Conditions

Temperature:	25.5° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

10.5 Test Data and Result

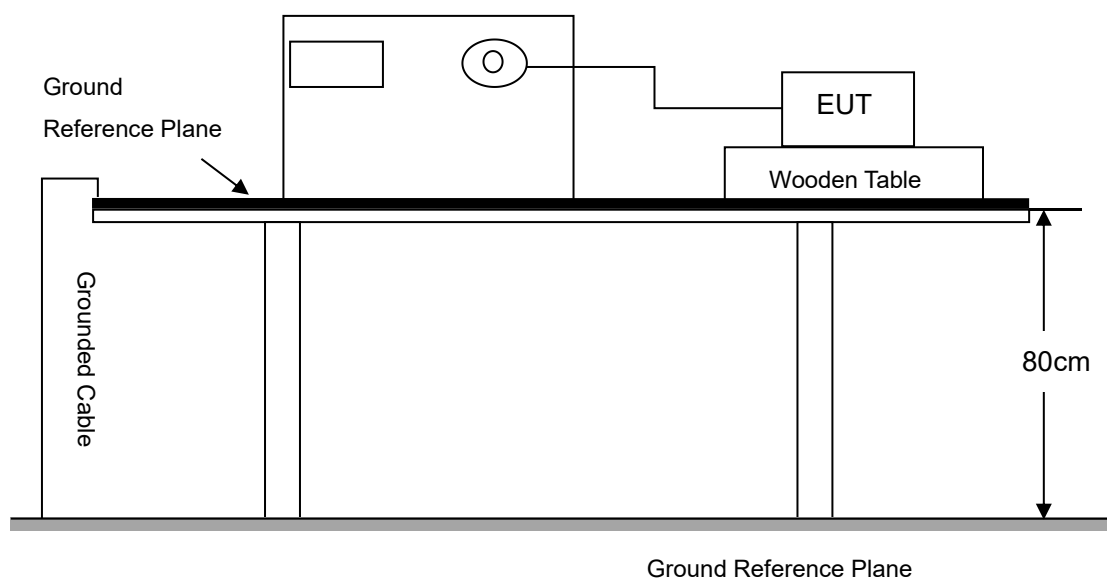
IEC61000-4-4		Test Levels(kV)					
Test Points		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
AC mains power input port	L	A	A	A	A	/	/
	N	A	A	A	A	/	/
	PE	/	/	/	/	/	/
	L+N	A	A	A	A	/	/
	L+PE	/	/	/	/	/	/
	N+PE	/	/	/	/	/	/
	L+N+PE	/	/	/	/	/	/
Single Port	/	/	/	/	/	/	/

11. Surges

10.1 Surges Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Surges	Input a.c. power port	Tr/Th:1,2/50us 1kV (line to line) with 2Ω impedance 2kV(line to earth) with 12Ω impedance	IEC 61000-4-5	B

11.2 Block Diagram of Test Setup



11.3 Test Procedure

- (1)The power supply to EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The surge generator phase shifter was set to different phase angle.
- (3)The correct open-circuit test level was set with the surge generator disconnected from the coupling network.
- (4)The output of the generator was then reconnected back to the coupling network.
- (5)Five discharges, generated by the voltage surge generator, were made on each relevant line, for each polarity, at each test level, with the relevant discharge interval.
- (6)The EUT was observed during, and checked after the test to determine the result.

11.4 Environmental Conditions

Temperature:	25.3° C
Relative Humidity:	57.1%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

11.5 Test Data and Result

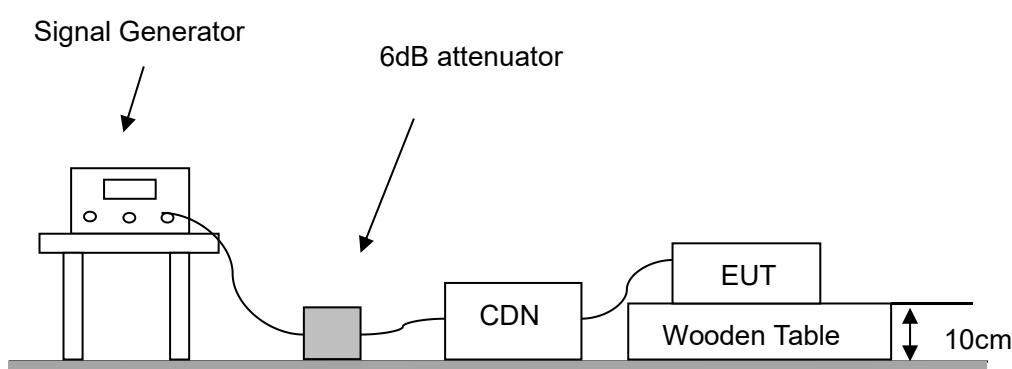
IEC61000-4-5 Test Points		Test Levels(kV)					
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
AC mains power input port	L-N	A	A	A	A	/	/
	L-PE	/	/	/	/	/	/
	N-PE	/	/	/	/	/	/
Signal port	/	/	/	/	/	/	/

12. Injected Currents

12.1 CS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
RF current Common mode	Input a.c. power port	0,15-80MHz 3V(unmodulated,r.m.s) 80% AM(1kHz)	IEC 61000-4-6	A

12.2 Block Diagram of Test Setup



12.3 Test Procedure

- (1)The EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN(coupling and decoupling device) is placed on the ground plane about 0.3 m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- (3)The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
- (4)The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.
- (5)The EUT was continuously monitored during the test in accordance with the PASS/FAIL criteria declared by the customer.

12.4 Environmental Conditions

Temperature:	25.1° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

12.5 Test Data and Result

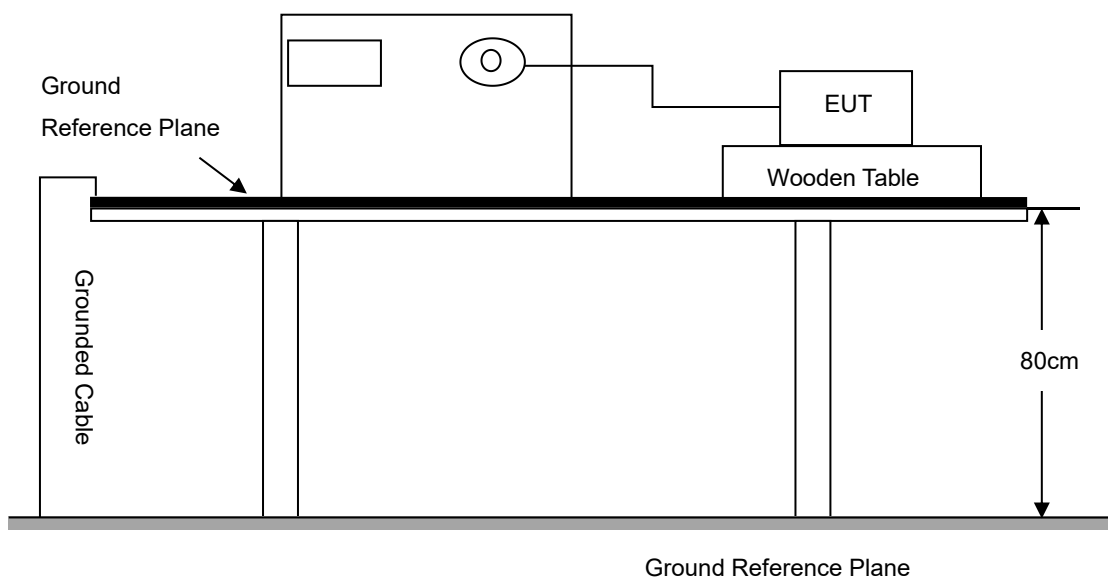
IEC61000-4-6 Test Point	Frequency Range (MHz)	Strength (Vrms)	Modulation	Result
ac power Line	0.15-80	3	AM	A

13. Voltage Dips and Interruptions

13.1 DIPS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Voltage Dips	Input a.c. power port	100% reduction 0.5 period	IEC61000-4-11	C
		60% reduction 10 period		C
		30% reduction 25 period		C

13.2 Block Diagram of Test Setup



13.3 Test Procedure

- (1) The interruption is introduced at selected phase angles with specified duration.
- (2) Record any degradation of performance.

13.4 Environmental Conditions

Temperature:	25.6° C
Relative Humidity:	55.5%RH
Atmospheric Pressure:	101.8kPa
Test Date:	2024-Aug-14
Tested By:	Wendy Lin

13.5 Test Data and Result

Environmental Phenomenon	Test Level $\%U_T$	Reduction (%)	Duration (periods)	Result
Voltage Dips	0	100	0.5	A
	40	60	10	A
	70	30	25	A

EXHIBIT - PHOTOGRAPHS OF EUT



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



TEST REPORT
IEC 62133-2

Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems

Report Number.: EBSZ240815227S

Date of issue: 2024-Aug-22

Total number of pages: 23 pages

Name of Testing Laboratory preparing the Report.....: **Europe Ber (Guangdong) Testing Co., Ltd.**

Applicant's name.....: WeiJianhuang

Address: Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province

Test specification:

Standard: IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021

Test procedure.....: CB Scheme

Non-standard test method.....: N/A

TRF template used: IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No......: IEC62133_2C

Test Report Form(s) Originator.....: DEKRA Certification B.V.

Master TRF: Dated 2022-07-01

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This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description	Rechargeable Li-ion Cell (Used in Violent fan, model: ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS)	
Trade Mark(s)	TE	
Manufacturer	Same as applicant	
Model/Type reference.....	18650-2S1P, ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS	
Ratings.....	7.2V, 2500mAh	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> Testing Laboratory:	Europe Ber (Guangdong) Testing Co., Ltd.	
Testing location/ address	401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen	
Tested by (name, function, signature)	Erick Deng	
Approved by (name, function, signature) ..	Tommy Wei	
<input type="checkbox"/> Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/> Testing procedure: CTF Stage 2:		
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
<input type="checkbox"/> Testing procedure: CTF Stage 3:		
<input type="checkbox"/> Testing procedure: CTF Stage 4:		
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment): - Photo documentation.	
Summary of testing:	
Tests performed (name of test and test clause): Full tests (all clauses.)	Testing location: Europe Ber (Guangdong) Testing Co., Ltd. 401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen.
Summary of compliance with National Differences (List of countries addressed): N/A	
<input checked="" type="checkbox"/> The product fulfils the requirements of <u>IEC 62133-2:2017+A1:2021</u>	
Use of uncertainty of measurement for decisions on conformity (decision rule) : <input checked="" type="checkbox"/> No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method"). <input type="checkbox"/> Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply) Information on uncertainty of measurement: The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer. Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Rechargeable Li-ion Cell			
TE 18650-2S1P 7.2V 2500mAh			
+	WeiJianhuang		—
	YYYYMMDD		
		Made in China	

“YYYY” means year, for example “2023” means 2023 year.

“MM” means month, for example “01” means January.

“DD” means date.

Test item particulars	
Classification of installation and use	To be defined in final product.
Supply Connection.....	DC terminals
Recommend charging method declared by the manufacturer.....	Charging the battery with 500mA constant current until 8.4V, then constant voltage until the charge current reduces to 10mA at ambient 20°C±5°C.
Discharge current (0,2 It A)	500mA
Specified final voltage	6.4V
Upper limit charging voltage per cell	4.2V
Maximum charging current.....	2500mA
Charging temperature upper limit.....	50°C
Charging temperature lower limit	0°C
Polymer cell electrolyte type	<input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" type="checkbox"/> N/A
Possible test case verdicts:	
- test case does not apply to the test object : N/A	
- test object does meet the requirement : P (Pass)	
- test object does not meet the requirement : F (Fail)	
Testing	
Date of receipt of test item.....	2024-08-01
Date (s) of performance of tests.....	2024-08-01 to 2024-08-22
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60068-2-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... N/A	

General product information and other remarks:

This Li-ion battery pack included 2pcs cells (3.6V, 2500mAh) and intended for use with handheld tools.

The main features of the cell are shown as below (clause 7.1.1):

Model	Nominal cap.	Nominal voltage	Nominal charge current	Nominal discharge Current	Max. charge current	Max. discharge current	Max. charge voltage	Final voltage
18650-2S1P	2500mAh	7.2V	500mA	500mA	2500mA	5000mA	4.2V	3.2V

The main features of the cell are shown as below (clause 7.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
18650-2S1P	4.2V	10mA	0°C	50°C

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	PARAMETER MEASUREMENT TOLERANCES		—
	Parameter measurement tolerances		P
5	GENERAL SAFETY CONSIDERATIONS		—
5.1	General		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	Insulation and wiring		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	Only plastic enclosure used no such metal part.	N/A
	Insulation resistance (MΩ):	8.11MΩ	—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearances and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
5.3	Venting		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Venting mechanism exists on the top side of the cylindrical cell. And battery case is also not sealed.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		P
5.4	Temperature, voltage and current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented		P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		P
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified	Associated charger provided.	P
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells into batteries		P
5.6.1	General		P
	Each battery has an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		P
	This protection may be provided external to the battery such as within the charger or the end devices	Inside battery case.	P
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N/A
	If there is more than one battery housed in a single battery case, each battery has protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		P
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		P
	Protective circuit components are added as appropriate and consideration given to the end-device application		P
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		P
5.6.2	Design recommendation		P
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		P
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		P
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection		P
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		P
	It is recommended that the cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage		P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		P
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery are provided to prevent damage as a result of intended use and reasonably foreseeable misuse		P
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product	By battery case.	P
	The battery case and compartments housing cells are designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		P
	For batteries intended for building into a portable end product, testing with the battery installed within the end product is considered when conducting mechanical tests		N/A
5.7	Quality plan		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	Quality plan provided by manufacture.	P
5.8	Battery safety components	(See appended table)	P

6	TYPE TEST AND SAMPLE SIZE		—
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1		N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C \pm 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection		P
	When conducting the short-circuit test, consideration is given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P

7	SPECIFIC REQUIREMENTS AND TESTS		—
7.1	Charging procedure for test purposes		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C \pm 5 °C, using the method declared by the manufacturer		P
	Prior to charging, the battery has been discharged at 20 °C \pm 5 °C at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	After stabilization for 1 h to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant current to constant voltage charging method	Charge temperature range: 0°C-50°C declared. -5°C used for lower limit tests. 55°C used for upper limit tests.	P
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (cells)	Battery.	N/A
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer		N/A
	Results: no fire, no explosion, no leakage :	(See appended table 7.2.1)	N/A
7.2.2	Case stress at high ambient temperature (battery)		P
	Oven temperature (°C)..... : 70°C		—
	Results: no physical distortion of the battery case resulting in exposure of internal protective components and cells		P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)		N/A
	The cells were tested until one of the following occurred:		N/A
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	Results: no fire, no explosion..... :	(See appended table 7.3.1)	N/A
7.3.2	External short-circuit (battery)		P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		P
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		P
	A single fault in the discharge protection circuit is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor		P
	Results: no fire, no explosion..... :	(See appended table 7.3.2)	P
7.3.3	Free fall		P
	Results: no fire, no explosion		P
7.3.4	Thermal abuse (cells)		N/A
	Oven temperature (°C)..... :		—
	Results: no fire, no explosion		N/A
7.3.5	Crush (cells)		N/A
	The crushing force was released upon:		N/A
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: no fire, no explosion..... :	(See appended table 7.3.5)	N/A
7.3.6	Over-charging of battery		P
	The supply voltage which is:		P
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		P
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 I _t A throughout the duration of the test or until the supply voltage is reached		N/A
	Test was continued until the temperature of the outer casing:		P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		P
	Results: no fire, no explosion..... :	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)		N/A
	Discharge a single cell to the lower limit discharge voltage specified by the cell manufacturer		N/A
	The discharged cell is then subjected to a forced discharge at 1 It A to the negative value of the upper limit charging voltage		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- The discharge voltage reaches the negative value of upper limit charging voltage within the testing duration. The voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration. The test is terminated at the end of the testing duration		N/A
	Results: no fire, no explosion..... :	(See appended table 7.3.7)	N/A
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration		P
	Results: no fire, no explosion, no rupture, no leakage or venting. :	(See appended table 7.3.8.1)	P
7.3.8.2	Mechanical shock		P
	Results: no leakage, no venting, no rupture, no explosion and no fire :	(See appended table 7.3.8.2)	P
7.3.9	Design evaluation – Forced internal short-circuit (cells)		N/A
	The cells complied with national requirement for..... :	France, Japan, Korea, Switzerland	—
	The pressing was stopped upon:		N/A
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		N/A
	Results: no fire :	(See appended table 7.3.9)	N/A

8	INFORMATION FOR SAFETY		—
8.1	General		P
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products		N/A
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users		P
	Systems analyses are performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		P
	As appropriate, any information relating to hazard avoidance resulting from a system analysis is provided to the end user		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Do not allow children to replace batteries without adult supervision		P
8.2	Small cell and battery safety information	Not small battery.	N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A

9	MARKING		—
9.1	Cell marking		N/A
	Cells are marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N/A
9.2	Battery marking		P
	Batteries are marked as specified in IEC 61960, except for coin batteries		P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity		N/A
	Batteries are marked with an appropriate caution statement		P
	- Terminals have clear polarity marking on the external surface of the battery, or		N/A
	- Not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		P
9.3	Caution for ingestion of small cells and batteries		N/A
	Coin cells and batteries identified as small batteries include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A
9.4	Other information		N/A
	The following information are marked on or supplied with the battery:	Included in manual.	N/A
	- Storage and disposal instructions		N/A
	- Recommended charging instructions		N/A

10	PACKAGING AND TRANSPORT		—
	Packaging for coin cells are not be small enough to fit within the limits of the ingestion gauge of Figure 3		N/A

ANNEX A	CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE		—
A.1	General		P
A.2	Safety of lithium ion secondary battery		P
A.3	Consideration on charging voltage		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	8.4V applied.	P
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range	0-50°C	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	0-50°C	P
A.4.3	High temperature range	50°C	P
A.4.3.1	General		P
A.4.3.2	Explanation of safety viewpoint		P
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		P
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range	55°C	P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.4	Low temperature range	0°C	P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	-5°C	P
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		P
A.4.6.3	Discharge current and temperature range		P
A.4.6.4	Scope of application of the discharging current		P
A.5	Sample preparation	7.3.9 not applicable.	N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		N/A
A.5.5	Insertion of nickel particle in cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle in winding core		N/A
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N/A
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	Experimental procedure of the forced internal short-circuit test		N/A
A.6.1	Material and tools for preparation of nickel particle		N/A
A.6.2	Example of a nickel particle preparation procedure		N/A
A.6.3	Positioning (or placement) of a nickel particle		N/A
A.6.4	Damaged separator precaution		N/A
A.6.5	Caution for rewinding separator and electrode		N/A
A.6.6	Insulation film for preventing short-circuit		N/A
A.6.7	Caution when disassembling a cell		N/A
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS		N/A
ANNEX C	RECOMMENDATIONS TO THE END-USERS		N/A
ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS		N/A
D.1	General	Not coin cell.	N/A
D.2	Method		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing	(See appended table D.2)	N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	PACKAGING AND TRANSPORT		N/A
ANNEX F	COMPONENT STANDARDS REFERENCES		N/A

7.2.1	TABLE: Continuous charging at constant voltage (cells)				N/A
Sample No.	Recommended charging voltage Vc (Vdc)	Recommended charging current I _{rec} (A)	OCV before test (Vdc)	Results	
Supplementary information: - No fire or explosion - No leakage - Others (please explain)					

7.3.1	TABLE: External short circuit (cell)				N/A
Sample No.	Ambient (°C)	OCV at start of test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results
Samples charged at charging temperature upper limit					
Samples charged at charging temperature lower limit					
Supplementary information: - No fire or explosion - Others (please explain)					

7.3.2	TABLE: External short circuit (battery)					P
Sample No.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Component single fault condition	Results
#001	23.5	8.39	80	0	None	Pass*
#002	23.5	8.41	80	0	Q1 (SC)	Pass*
#003	23.5	8.38	80	0	D3 (SC)	Pass*
#004	23.5	8.38	80	0	C2 (SC)	Pass*
#005	23.5	8.40	80	0	R3 (SC)	Pass*
Supplementary information: - No fire or explosion - Others (please explain) - * Unit shut down immediately once single fault stats.						

7.3.5	TABLE: Crush (cells)				N/A
Sample No.	OCV before test (Vdc)	OCV at removal of crushing force (Vdc)	Maximum force applied to the cell during crush (kN)	Results	
Samples charged at charging temperature upper limit					
Samples charged at charging temperature lower limit					
Supplementary information:					
- No fire or explosion					
- Others (please explain)					

7.3.6	TABLE: Over-charging of battery				P
Constant charging current (A) :			0.3A		—
Supply voltage (Vdc) :			17.64Vdc		—
Sample No.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
#006	6.41	480	46.9	PASS	
#007	6.42	480	47.3	PASS	
#008	6.40	480	45.7	PASS	
#009	6.39	480	48.1	PASS	
#010	6.42	480	47.6	PASS	
Supplementary information:					
- No fire or explosion					
- Others (please explain)					

7.3.7	TABLE: Forced discharge (cells)				N/A
Sample No.	OCV before application of reverse charge (Vdc)	Measured reverse charge I_t (A)	Lower limit discharge voltage (Vdc)	Results	
Supplementary information:					
- No fire or explosion					
- Others (please explain)					

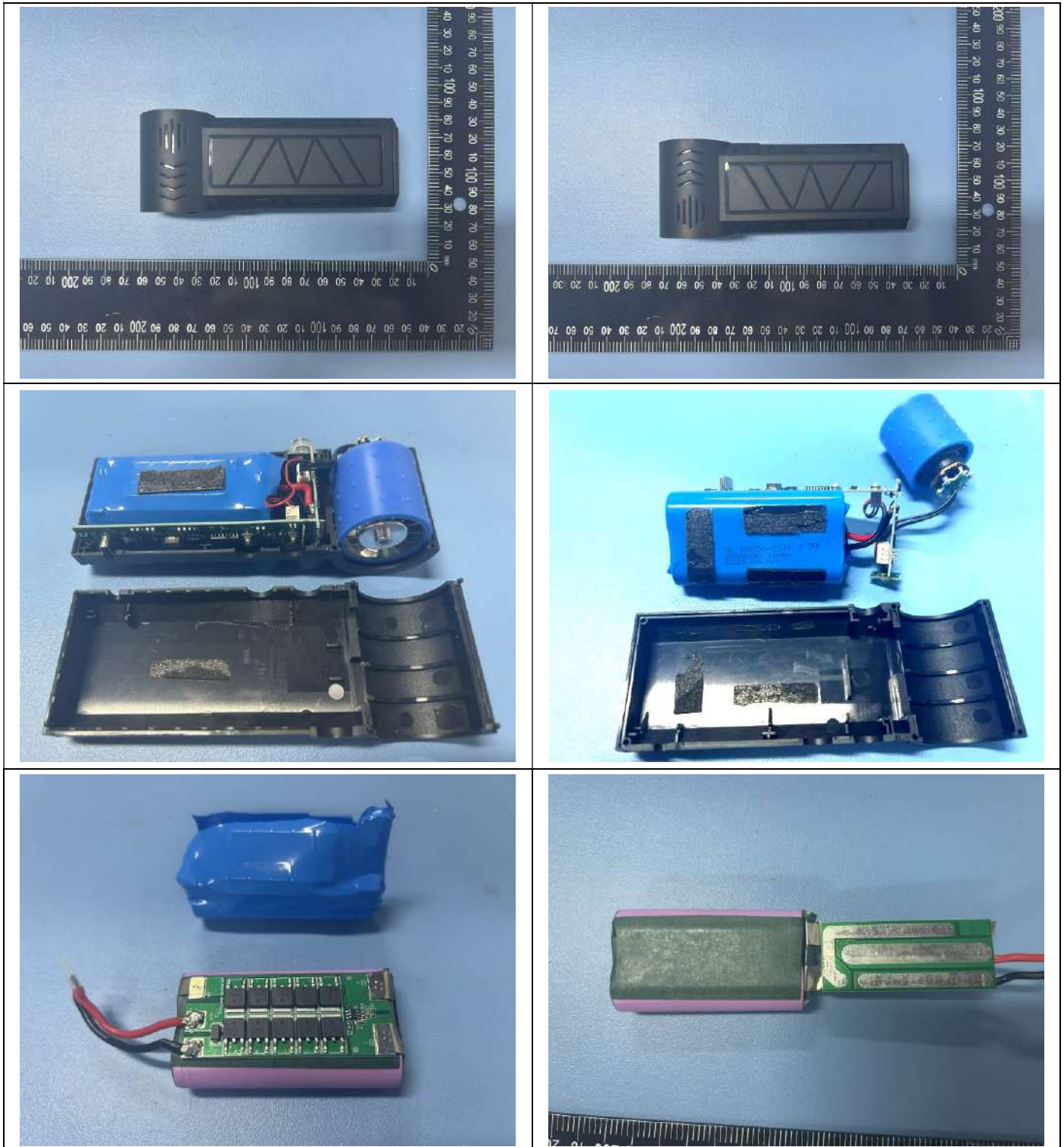
7.3.8.1	TABLE: Vibration					P
Sample No.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
#011	8.39	8.39	103.31	103.31	PASS	
#012	8.38	8.38	103.80	103.80	PASS	
#013	8.40	8.40	103.65	103.65	PASS	
Supplementary information: - No fire or explosion - No rupture - No leakage - No venting - Others (please explain)						

7.3.8.2	TABLE: Mechanical shock					P
Sample No.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
#014	8.38	8.38	103.54	103.54	PASS	
#015	8.39	8.39	103.49	103.49	PASS	
#016	8.38	8.38	103.38	103.38	PASS	
Supplementary information: - No fire or explosion - No rupture - No leakage - No venting - Others (please explain)						

7.3.9	TABLE: Forced internal short circuit (cells)					N/A
Sample No.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results	
Samples charged at charging temperature upper limit						
Samples charged at charging temperature lower limit						
Supplementary information: ¹⁾ Identify one of the following: 1: Nickel particle inserted between positive and negative (active material) coated area. 2: Nickel particle inserted between positive aluminium foil and negative active material coated area. - No fire - Others (please explain)						

D.2	TABLE: Internal AC resistance for coin cells				N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾	
Supplementary information:					
¹⁾ Coin cells with an internal resistance less than or equal to 3 Ω, see test result on corresponding tables according to Clause 6 and Table 1.					

TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Enclosure / bracket	Various	Various	130°C, V-0	--	UL
Internal wire	Various	Various	200°C, 600V, 18-22AWG	--	UL
PCB	Various	Various	130°C, V-0	--	UL
Cell (x3)	TE	18650	3.6V, 2500mAh	IEC 62133-2	CB or equivalent
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

Photo documentation

---End of test report---



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Client : WeiJianhuang
Address : Room 316, Block B, Building 2, Yipeng Industrial Park, Guansheng Second Road,
Guanlan Gaoxin Park, Longhua District, Shenzhen

Description of the submitted sample(s):

Sample Name : Violent fan
Model/Type : ZY7400-SE, ZY7400-PRO
Rating : Input: 5VDC, 2A; Lithium battery:7.4V, 2500mAh
Test Item : Heating tests
Surrounding : 23.8℃, 63.8%RH
State of Sample(s) : Normal
Sample Quantity : 1 pc
Manufacturer : Shenzhen Jianyu Digital Technology Co., LTD
Room 316, Block B, Building 2, Yipeng Industrial Park,
Guansheng Second Road, Guanlan Gaoxin Park, Longhua District,
Shenzhen
Sample Received Date : 2024-12-13
Sample tested Date : 2024-12-[13-25]
Test Requested : Heating tests of Clause 11 and clause 19 according to:
IEC 60335-1:2020

Equipment list:

Test Equipment	Equipment Model	Equipment No.	Calibration Date
Hybrid Recorder	34970A	EurBer-051	2024.03.08
DC source	HCP1020	EurBer-063	2024.03.08
Stopwatch	PC894	EurBer-077	2024.03.08
Multimeter	15B+	EurBer-054	2024.03.08

Test Results: Please refer to next page.

Inspected by: Jack Luo, Approved by: [Signature] Approved date: 2024-Dec-25
Engineer Manager



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1. Standard requirements of Clause 11 & 19:

IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
11	HEATING		P
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described	Next to test corner	P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections	DC Motor, and winding is difficult to make connection.	P
11.4	Heating appliances operated under normal operation at 1.15 times rated power input (W) :		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavorable voltage between 0.94 and 1.06 times rated voltage (V) :	1.06x5V=5.3V: Only for battery charging.	P
11.6	Combined appliances operated under normal operation at most unfavorable voltage between 0.94 and 1.06 times rated voltage (V)		N/A
11.7	Operation duration corresponding to the most unfavorable conditions of normal use	Steady condition established	P
11.8	Temperature rises monitored continuously and not exceeding the values in table 3	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of Annex C are carried out		N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
19	ABNORMAL OPERATION		P
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe :	(see appended table)	P
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and	No heating element.	N/A
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N/A
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6	No such heating element used.	N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable	Tested and passed.	P
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N/A
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W)..... :		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W)..... :		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures (V) :		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		P
	locking moving parts of other appliances		P
	Locked rotor, capacitors open-circuited one at a time	No such capacitor	N/A
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	capacitor is of class P2 of IEC 60252-1		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed... :		N/A
	Other appliances supplied with rated voltage for a period as specified :		N/A
	Winding temperatures not exceeding values specified in table 8 :	(see appended table)	P
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously	No such operation.	N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Motor-operated and combined appliances for which 30.2.3 is applicable and that use overload protective devices relying on electronic circuits to protect the motor windings, are also subjected to the test		N/A
	Winding temperatures not exceeding values as specified	(see appended table)	N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V)		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless		P
	they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless		N/A
	restarting does not result in a hazard		P
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		P
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		N/A
	During and after each test the following is checked:		P

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	- the temperature of the windings do not exceed the values specified in table 8		P
	- the appliance complies with the conditions specified in 19.13		P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		N/A
	- the base material of the printed circuit board withstands the test of Annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		N/A
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		P

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		P
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless		P
	they comply with IEC 60384-14		N/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		P
	This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		P
	f) failure of microprocessors and integrated circuits		P
	g) failure of an electronic power switching device		P
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		P
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to g) of 19.11.2		N/A
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or	No such consideration according to test requests.	N/A
	a device that can be placed in the stand-by mode,		N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/A
	Surge protective devices disconnected, unless		N/A
	They incorporate spark gaps		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N/A
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N/A
	Earthed heating elements in class I appliances disconnected		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N/A
	The appliance continues to operate normally, or		N/A
	requires a manual operation to restart		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A).... :		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9 :	(see appended table)	P
	Compliance with clause 8 not impaired		P

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		N/A
	- basic insulation (V)	1000	N/A
	- supplementary insulation (V)	1750	N/A
	- reinforced insulation (V).....	3000	N/A
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		N/A
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		P
	- do not become operational, or		P
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		N/A
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A

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IEC 60335-1			
Clause	Requirement - Test	Result - Remark	Verdict
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		N/A
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N/A
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		N/A
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
<div>Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement: F (Fail)</div>			

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2. Test result:

11.8-1	TABLE: Heating test, thermocouples—Normal working		P
	Test voltage (V)..... :	7.4VDC (By build-in battery)	—
	Ambient (°C) :	22.8	—
Thermocouple locations		dT (K)	Max. dT (K)
CH(101)	Handle/Out enclosure	10.2	60
CH(102)	Switch knob	9.1	60
CH(103)	Internal wire	26.7	T80-25=55
CH(104)	Motor surface	33.9	65 (Class A)
CH(105)	Battery surface	36.6	For ref.
CH(106)	Switch Knob	5.9	T80-25=55
CH(107)	Enclosure near motor	36.8	For ref.
CH(108)	Enclosure near battery	34.1	For ref.
CH(109)	PCB	37.2	130-25=105
CH(110)	LED lamp PCB	43.7	130-25=105
CH(111)	Test corner	3.6	60
Supplement information: The motor is assumed as Class 105 (A).			

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11.8-2	TABLE: Heating test, thermocouples—Battery charging		P
	Test voltage (V)..... :	5.3VDC	—
	Ambient (°C) :	22.8	—
Thermocouple locations		dT (K)	Max. dT (K)
CH(101)	Handle/Out enclosure	6.3	60
CH(102)	Switch knob	4.6	60
CH(103)	Internal wire	17.9	T80-25=55
CH(105)	Battery surface	38.3	For ref.
CH(108)	Enclosure near battery	35.7	For ref.
CH(111)	Test corner	3.9	60
Supplement information: The motor is assumed as Class 105 (A).			

19.7	TABLE: Abnormal operation, locked rotor/moving parts		P
	Test voltage (V)..... :	By build-in battery	—
	Ambient (°C) :	23.7	—
Thermocouple locations		dT (K)	Max. dT (K)
CH(104)	Motor surface	77.3	175 (Class A)
CH(210)	Test corner	7.4	150
Supplement information: Duration: 30s.			

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Room 401/402, Building A, Tangxi Zhigu, No.21, Xijing Road, Gushu, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Test Report

Report No.: EBSZ241219514S

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Photos of tested sample



*** End of report ***

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Guangdong Eurber Testing Co., Ltd.

Room 401/402, Building A, Tangxi Zhigu, No.21, Xijing Road, Gushu, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

材料安全数据

Material Safety Data Sheet

样品名称: 锂离子电芯

Sample name: Lithium Ion Cell

公司名称: 横店集团东磁股份有限公司

Company name: HENGDIAN GROUP DMEGC MAGNETICS CO.,LTD



材料安全数据表

Material Safety Data Sheet

1.化学品及企业标识			
CHEMICAL PRODUCT AND COMPANY IDENTIFICATION			
样品名称 Sample Name	锂离子电芯 Lithium-Ion Cell		
型号 Model	锂离子电芯 INR18650-25P 3.7V 2500mAh 9.25Wh Lithium-Ion Cell INR18650-25P 3.7V 2500mAh 9.25Wh		
委托单位 Applicant	横店集团东磁股份有限公司 HENGDIAN GROUP DMEGC MAGNETICS CO.,LTD		
委托单位地址 Applicant Address	浙江省东阳市横店镇西环路光伏园区 PV Zone.Xihuan Road ,Hengdian ,Dongyang,Zhejiang Province , China		
生产单位 Manufacture	横店集团东磁股份有限公司 HENGDIAN GROUP DMEGC MAGNETICS CO.,LTD		
生产单位地址 Manufacture Address	浙江省东阳市横店镇西环路光伏园区 PV Zone.Xihuan Road ,Hengdian ,Dongyang,Zhejiang Province , China		
应急电话 Emergency telephone call	+86- 0579-86310263		
Section 2. Composition/information on Ingredient 成分/组成信息			
Chemical Name 化学品名称	ChemicalFormula 化学式	CAS No. CAS 号	Composition 成份 (in % by weight)(重量百分比)
Nickel-cobalt-manganese lithium 镍钴锰酸锂	LiNiCoMnO ₂	346417-97-8	30.9
Graphite 石墨	C	7782-42-5	17.5
PVDF 聚偏氟乙烯	(CH ₂ -CF ₂) _n	24937-79-9	0.3
CMC 羧甲基纤维素	C ₈ H ₁₆ NaO ₈	9000-11-7	0.2
Acetylene black 乙炔黑	C	1333-86-4	0.3
Styrene-butadiene rubber 丁苯橡胶	(C ₈ H ₈ .C ₄ H ₆) _x	9003-55-8	0.6
PP 聚丙烯	(C ₃ H ₆) _n	9003-07-0	0.7
Lithium hexafluorophosphate 六氟磷酸锂	LiF ₆ P	21324-40-3	2.2
Ethylene carbonate 碳酸乙烯酯	C ₃ H ₄ O ₃	96-49-1	2.2
Ethyl methyl carbonate 碳酸甲乙酯	C ₄ H ₈ O ₃	623-53-0	1.3
Dimethyl carbonate 碳酸二甲酯	C ₃ H ₆ O ₃	616-38-6	7.9
Copper 铜	Cu	7440-50-8	12.5
Aluminum 铝	Al	7429-90-5	5.0
Nickel 镍	Ni	7440-02-0	0.7
Iron 铁	Fe	7439-89-6	17.7
3.危险性概述			

Hazards Identification	
爆炸危险性 Explosive risk	该物品不属于爆炸危险品 This article does not belong to the explosion dangerous goods
易燃危险性 Flammable risk	该物品不属于易燃危险品 This article does not belong to the flammable material
氧化危险性 Oxidation risk	该物品不属于氧化危险品 This article does not belong to the oxidation of dangerous goods
毒害危险性 Toxic risk	该物品不属于氧化危险品 This article does not belong to the toxic dangerous goods
放射危险性 Radioactive risk	该物品不属于放射危险品 This article does not belong to the radiation of dangerous goods
腐蚀危险性 Mordant risk	该物品不属于腐蚀危险品 This article does not belong to the corrosion of dangerous goods
其他危险性 other risk	This article is Cylindrical Lithium-ion Rechargeable Cell Watt hour rate 9.25Wh, which belong to the Li-ion batteries. 该物品为圆柱型锂离子电芯,瓦时率9.25Wh,属于锂离子电池。
4.急救措施 First aid measures	
Eye: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid 眼睛:万一接触,立即用大量的清水冲洗至少 15 分钟,翻起上下眼睑,直到化学的残留物消失为止,迅速就医。 Skin: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.皮肤: 万一接触,用大量水冲洗至少 15 分钟,同时除去污染的衣物和鞋子,迅速就医。 Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available. 吸入:立即从暴露处移至空气清新处,如果呼吸困难给予输氧,立即就医。 Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious.Call a physician 食入: 饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法,并且立即就医。	
5.消防措施 Fire-fighting measures	
Flash Point: N/A. 燃点:不适用 Auto-Ignition Temperature: N/A. 自燃温度:不适用 Extinguishing Media: Water, Co2 灭火介质:大量水(降温),二氧化碳 Special Fire-Fighting Procedures: Self-contained breathing apparatus 特殊灭火程序: 自给式呼吸器 Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents. 异常火灾或爆炸:当电芯暴露于过热的环境中时,安全阀可能会打开。 Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes. 燃烧产生的危险物品:一氧化碳,二氧化碳,锂氧化物烟气	
6.泄露应急处理 Accidental release measures	
Steps to be taken in case Material is Released or Spilled If the battery material is released, remove personnel from area	

until fumes dissipate. Provide maximum ventilation to clear out hazardous gases Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate. 为防止电池材料泄露或释放采取的措施如果电池内部材料泄露,试验人员应立刻撤离试验区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区,清除溢出的液体,将泄露电池放进塑料袋中,然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

Waste Disposal Method: It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery. and to bury the discharged battery in soil. 废弃物处置方法: 建议将电池完全放电,消耗电池内部的锂金属,并且深埋于土壤中。

7.操作处置和储存 Handling and storage

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery. or immerse in liquids.

禁止打开、毁坏或焚烧电池,因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

Precautions to be taken in handling and storing Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

操作处置和储存中的防范措施禁止物理或电滥用,禁止高温储存,最好将电池储存在阴凉、干燥、通风及温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露与阳光中。

Other Precautions The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity

其他要注意的防范措施拆解、挤压、直接放入火中或高温条件下,电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中。

8.接触控制/个人防护 Exposure controls/personal protection

Respiratory Protection In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use
呼吸防护当电池排气阀打开时,应尽量使通风设备开至最大,避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下,呼吸保护是不必要的。

Ventilation Not necessary under conditions of normal use
通风条件正常使用条件下不必考虑。

Protective Gloves Not necessary under conditions of normal use.
防护手套正常使用条件下不必考虑。

Other Protective Clothing or Equipment Not necessary under conditions of normal use
其他防护服装或设备正常使用条件下不必考虑。

Personal Protection is recommended for venting battery Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

电池开阀试验时应做好个人防护呼吸防护,防护手套,防护服装和有护边的安全玻璃罩都是要准备的。

9.物理和化学特性 Physical and chemical properties

外形：圆筒形。

Appearance: cylindrical

气味：泄漏时，有醚的气味。

Odors: If leaking, smells of medical ether.

酸碱度：不适用。

pH: Not applicable as supplied.

燃点：除单个电芯暴露实验外其他不适用。

Flash Point: Not applicable unless individual components exposed.

可燃性：除单个电芯暴露实验外其他不适用。

Flammability: Not applicable unless individual components exposed.

相对密度：除单个电芯暴露实验外其他不适用。

Relative density: Not applicable unless individual components exposed.

溶解性（水溶性）：除单个电芯暴露实验外其他不适用。

Solubility (water): Not applicable unless individual components exposed.

溶解性（其他）：除单个电芯暴露实验外其他不适用。

Solubility (other): Not applicable unless individual components exposed.

编号：01051900000263-1(E)

Certification Ref, No.: 01051900000263-1(E)

10.稳定性和反应活性

Stability and reactivity

稳定性：产品在第7节所述的条件下稳定。

Stability: Product is stable under conditions described in Section 7.

应避免的条件：加热70℃以上或焚烧、变形、烧毁、粉碎、拆卸、过充电、短路。

在潮湿的条件下长时间暴露

Conditions to Avoid: Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble.

Overcharge. Short circuit. Expose over a long period to humid conditions.

应避免的材料：氧化剂、碱、水。

Materials to avoid: Oxidising agents, alkalis, water.

危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

聚合危害：不适用。

Hazardous Polymerization: N/A.

如果发生泄漏，避免与强氧化剂，无机酸，强碱，卤代烃接触。

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated Hydrocarbons.

11、毒理学资料

Toxicological information

标志及症状：无，除非电池破裂。

Signs & symptoms: None, unless battery ruptures.

内部物质暴露的情况下，蒸汽烟雾可能对眼睛和皮肤的刺激性。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

吸入：对非有刺激性。

Inhalation: Lung irritant.

皮肤接触：对皮肤有刺激性。

Skin contact: Skin irritant.

眼睛接触：对眼睛有刺激性。

Eye contact: Eye irritant

食入：吞下中毒。

Ingestion: Poisoning if swallowed.

下列状况下健康会恶化：万一发生与内部材料接触的事故，轻微或严重的刺激，都可能使皮肤出现干燥和灼烧的感觉，并且损毁靶器官（肝脏，肾脏）的神经。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to severe irritation, burning and dryness of the skin may occur, Target Organs nerves, liver and kidneys.

12.生态学资料 Ecological information

对哺乳动物的影响：目前未知。

Mammalian effects: None known at present.

生态毒性：目前未知。

Eco-toxicity: None known at present.

生物体内积累：慢慢地生物降解。

Bioaccumulation potential: Slowly Bio-degradable.

环境危害：目前没有未知的环境危害。

Environmental fate: None known environmental hazards at present.

13.废弃处置 Disposal consideration

不要焚烧或将电池置于超过 70°C 的温度下，这样会导致密封泄漏损失和/或电池爆炸。按照当地有关规定处理。

Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

14.运输信息 Transport information

Label for conveyance: Lithium Battery Label

运输标签:锂电池标签

UN Number: UN3480 or UN3481

UN编号: UN3480或3481

Packaging Group: Not Applicable

包装等级:不适用

Marine pollutant: No

海洋污染物:无

Only Lithium Battery during Transport:

锂电池单独运输:

The product has passed the test items of UN Model Regulations, Manual of Test and Criteria Section 38.3 and UN Model Regulations, SP188, 1.2m drop test. The total net weight of the Lithium batteries is less than 10 kg.

通过联合国《关于危险货物运输的建议书试验和标准手册》UN38.3试验和《规章范本》SP188的1.2m跌落测试。

锂电池总净重<10kg。

RID/ADR(2023Edition):

RID/ADR(2023版):

The product is not subject to the other provisions of RID/ADR according to special provision 188.

根据RID/ADR 特殊规定 188, 运输时不受本规则其它规定限制。

According to 2.2.9.1.7(g) of RID/ADR(2023 Edition), Manufacturers and subsequent distributors of cells or batteries manufactured shall make available the test summary as specified in the Manual of Tests and Criteria, Part I II, sub-section 38.3 paragraph 38.3.5.

根据RID/ADR(2023版)的2.2.9.1.7(g), 锂电池或电池组的制造商和出厂后的销售商应提供联合国《试验和标准手册》第 III 部分第 38.3 小节第 38.3.5段规定的UN38.3 试验概要。

IATA DGR(66Edition):

IATA DGR(66版):

Hazard Class:9

危险性类别:9

UN Number: UN3480

UN编号:UN3480

Hazard Label: Miscellaneous

包装标识:杂项

Proper Shipping Name: Lithium ion batteries

运输名称:锂离子电池组

The product shall meet the General Requirements and section IB of Packaging Instruction 965.

本品应满足IATA DGR包装说明965的基本要求和第IB部分的规定。

According to 3.9.2.6.1(g) of IATA DGR (66" Edition), Manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

根据IATA DGR (66版)的3.9.2.6.1(g), 2003年06月30日之后生产的电池或电池组的制造商和出厂后的销售商应提供联合国《试验和标准手册》第III部分第38.3小节第38.3.5段规定的UN38.3试验概要。

IMO IMDG CODE(2022Edition):

IMO IMDG CODE(2022版):

The product is not subject to the other provisions of IMO IMDG Code according to special provision 188.

根据特殊规定188, 运输时不受本规则其它规定限制。

According to 2.9.4.7, Manufacturers and subsequent distributors of cells or batteries manufactured shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

根据2.9.4.7, 锂电池或电池组的制造商和出厂后的销售商应提供联合国《试验和标准手册》第III部分第38.3小节第38.3.5段规定的UN38.3试验概要。

15.法规信息**Regulation information****法规信息:**

Law information

《危险物品规则》

《Dangerous Goods Regulations 》

《对危险货物运输的有关规定的建议》

《Recommendations on the Transport of Dangerous Goods Model Regulations 》

《国际海运危险货物规则》

《International Maritime Dangerous Goods 》

《危险品安全运输技术指令》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险货物分类和品名编号》

《Classification and code of dangerous goods 》

《职业安全卫生法》

《Occupational Safety and Health Act》 (OSHA)

《有毒物质控制法》

《Toxic Substance Control Act 》 (TSCA)

《消费产品安全法》

《Consumer Product Safety Act 》 (CPSA)

《联邦环境污染控制法》

《Federal Environmental Pollution Control Act》 (FEPCA)

《石油污染法案》

《The Oil Pollution Act》 (OPA)

《超级基金修正案和再授权法案III(302/311/312/313) 》

《Superfund Amendments and Reauthorization Act Title III(302/311/312/313)》 (SARA)

《资源保护及恢复法案》

《Resource Conservation and Recovery Act》 (RCRA)

《安全应用水法》

《Safety Drinking Water Act 》 (CWA)

《加州65提案》

《California Proposition 65》

《美国联邦法规》

《Code of Federal Regulations》 (CFR)

根据所有联邦、州和地方法律。

In accordance with all Federal State and local laws.

International Regulations:

国际法规:

Directive (EU)2023/1542 and 2013/56/EU: The label, disposal and recycling of the battery shall meet the requirements of EU Directive (EU)2023/1542 and 2013/56/EU.

欧盟指令(EU)2023/1542 及 2013/56/EU: 电池的标记, 处置, 回收等应满足欧盟指令(EU) 2023/1542 及 2013/56/EU 中的规定。

ICAO TI:

1. Unless be exempted according to ICAO TI, the lithium ion cell/batteries(UN 3480, PI 965)and lithium metal cell/batteries(UN 3090, PI968)are forbidden for carriage on passenger aircraft.

1. 除非依据《技术细则》的相关要求取得豁免, 单独包装的锂离子电池(芯)(UN 3480, PI965)和锂金属电池(芯)(UN 3090, PI968)货物禁止使用客机运输。

2. Unless be approved according to ICAO TI, Lithium ion cells/batteries(UN 3480, PI965)must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.

2.除非依据《技术细则》的相关要求取得特别批准, 按照包装说明 965 要求运输的锂离子电池(芯)货物, 交运时锂离子电池(芯)的荷电状态不得超过其额定容量的 30%。

16. 其他信息 Other Information

Preparation Date: 2025-01-10

编制日期: 2025年01月10日

Preparation Department: Hengdian Group DMEGC Magnetics CO.,LTD.

编制部门:横店集团东磁股份有限公司

Users should read this file carefully, and use the batteries in correct method.

Hengdian Group DMEGC Magnetics CO.,LTD. doesn't assume responsibility for any damage or loss because of misuse of batteries.

用户应仔细阅读此文件，并按照正确的方法使用电池，如因电池使用不当造成的损害或损失，横店集团东磁股份有限公司不承担任何责任。

The copyright of this MSDS belongs to Hengdian Group DMEGC Magnetics CO.,LTD..If no admission,Any units or individual shall not copy、revise or use illegally.

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Supplier's Declaration of Conformity

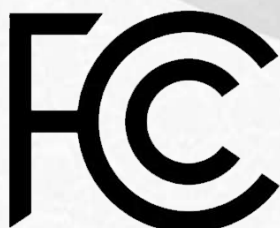
This device complies with part 15 of the FCC Rules. Operation is subject to the condition that:

- 1) this device does not cause harmful interference.
- 2) this device must accept any interference received, including interference that may cause
- 3) undesired operation.

Applicant name & Address	: Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Manufacturer site Address	: Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Description of Equipment	: Violent fan
Model Name	: ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Trade mark	: Jane feather
Technical Data	: Input: DC 5V, 1A; Output: 7.4V---
Certificate No.	: EBSZ202406017EC

Test standards:	Report(s) Number	Issued Date
FCC 47 CFR Part 15 ANSI C63.4: 2014	EBSZ240603023F	2024-Jun-06

This Verification is for the exclusive use of EurBer's Client and is provided pursuant to the agreement between EurBer and its Client. The observations and test results referenced from this Verification are relevant only to the sample tested. This Verification by itself does not imply that the material, product, or service is or has ever been under a EurBer certification program. Note 1: This verification is part of the full test report(s) and should be read in conjunction with it.



Europe Ber (Guangdong) Testing Co., Ltd.
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Gushu Community, Xixiang Street, Baoan District, Shenzhen

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Verification of Conformity

The submitted sample of the following equipment has been tested for CE marking according to the following European LVD Directives 2014/35/EU, It is possible to use CE marking to demonstrate the compliance with this LVD Regulation.

Applicant name & Address	: Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Manufacturer site & Address	: Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Description of Equipment	: Violent Fan
Model Name	: ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Trade mark	: Jane feather
Technical Data	: 5V---, 3A; Li-ion battery: 7.4V, 5000mAh, 37.0Wh
Certificate No.	: EBSZ202406018EC

Test standards:	Report(s) Number	Issued Date
EN 60335-2-80:2003 + A1:2004 + A2:2009 EN 60335 1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019 + A15:2021 EN 62233:2008 + AC:2008	EBSZ240603024S	2024-June-07

This Verification is for the exclusive use of EurBer's Client and is provided pursuant to the agreement between EurBer and its Client. The observations and test results referenced from this Verification are relevant only to the sample tested. This Verification by itself does not imply that the material, product, or service is or has ever been under a EurBer certification program. Note 1: This verification is part of the full test report(s) and should be read in conjunction with it.



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Verification of Conformity

The submitted sample of the following equipment has been tested for CE marking according to the following European RoHS Directive 2011/65/EU and Amendment Directive (EU) 2015/863 & (EU) 2017/2102. It is possible to use CE marking to demonstrate the compliance with this Chemical Regulation.

Applicant name & Address	: Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Manufacturer site & Address	: Shenzhen Jianyu Digital Technology Co., Ltd Room 220, Building D, Zhaoye Creative Park, No.172, Huanguan Road, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province
Description of Equipment	: Violent fan
Model Name	: ZY7400-SE, ZY7400-PRO, ZY7400-PLUS, ZY7400-MINI, ZY7400-5000-PRO, ZY7400-5000-PLUS
Trade mark	: Jane feather
Technical Data	: --
Certificate No.	: EBSZ202406019EC

Test standards:	Report(s) Number	Issued Date
EN 62321-4:2014+A1:2017 EN 62321-5:2014 EN 62321-6:2015 EN 62321-7-1:2015 EN 62321-7-2:2017 EN 62321-8:2017	EBSZ240603025R	2024-Jun-12

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General Manager
2024-Jun-12

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