Safety Test Report

Report No.: AGC07434231102TS01

PRODUCT DESIGNATION	:	Label Printer
BRAND NAME	:	NIIMBOT
MODEL NAME	:	NIIMBOT K3_W, NIIMBOT K3M_W, NIIMBOT MP3K_W
APPLICANT	:	Wuhan Jingchen Intelligent Identification Technology Co., Ltd.
DATE OF ISSUE	:	Dec. 06, 2023
STANDARD(S)	:	IEC 62368-1:2018, CSA/UL 62368-1:2019
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.

TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number.....	AGC07434231102TS01	
Tested by (+ signature).....	Bog Zhuang	Bog Zhuang
Reviewed by (+ signature).....	Byron Wang	Byron Wang
Approved by (+ signature).....	Matte He (Authorized Officer)	Matte He
Date of issue.....	Dec. 06, 2023	
Total number of pages.....	Total 59 pages	

Testing laboratory

Name.....	Attestation of Global Compliance (Shenzhen) Co., Ltd.
Address.....	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Testing location.....	Same as above.

Applicant

Name.....	Wuhan Jingchen Intelligent Identification Technology Co., Ltd.
Address.....	Creative Workshop No. 5, Creative World, Yezhihu West Road, Hongshan District, Wuhan, China

Manufacturer

Name.....	Wuhan Jingchen Intelligent Identification Technology Co., Ltd.
Address.....	Creative Workshop No. 5, Creative World, Yezhihu West Road, Hongshan District, Wuhan, China

Factory

Name.....	Huangpi branch of Wuhan Jingchen Intelligent Identification Technology Co., Ltd.
Address.....	3rd Floor, Building 1 Workshop, Building 1 Spare Warehouse, Linkong Economic Demonstration Industrial Park, Hengdian Street, Huangpi District, Wuhan, China

Test specification:

Standard.....	IEC 62368-1:2018, CSA/UL 62368-1:2019
Test procedure.....	Type test
Procedure deviation.....	N/A
Non-standard test method.....	N/A

Test Report Form/blank test report	
Test Report Form No..... :	AGC62368A3
TRF originator..... :	AGC
Master TRF..... :	2020-07
Test item	
Test item description..... :	Label Printer
Trade Mark..... :	NIIMBOT
Test model..... :	NIIMBOT K3_W
Series model..... :	NIIMBOT K3M_W, NIIMBOT MP3K_W
Ratings..... :	Input: 24V ⎓ 2.5A
Test item particulars	
Product group ..... :	☒ end product ☐ built-in component
Classification of use by..... :	☒ Ordinary person ☐ Children likely present ☒ Instructed person ☒ Skilled person
Supply connection..... :	☐ AC mains ☐ DC mains ☒ not mains connected: ☒ ES1 ☐ ES2 ☐ ES3
Supply tolerance ..... :	☐ +10%/-10% ☐ +20%/-15% ☐ + %/ - % ☒ None
Supply connection – type ..... :	☐ pluggable equipment type A - ☐ non-detachable supply cord ☐ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☒ other: not mains connected
Considered current rating of protective device..... :	☐ 16 A; Location: ☐ building ☐ equipment ☒ N/A
Equipment mobility..... :	☒ movable ☐ hand-held ☒ transportable ☐ direct plug-in ☐ stationary ☐ for building-in ☐ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:
Overvoltage category (OVC) ..... :	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV ☒ other: not mains connected
Class of equipment ..... :	☐ Class I ☐ Class II ☒ Class III ☐ Not classified ☐

Special installation location ..... :	☒ N/A ☐ restricted access area ☐ outdoor location☐
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified T_{ma}..... :	40°C
IP protection class ..... :	☒ IPX0 ☐ IP
Power systems ..... :	☐ TN ☐ TT ☐ IT - V_{L-L} ☒ not AC mains
Altitude during operation (m) ..... :	☐ 2000 m or less ☒ 5000 m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ m
Mass of equipment (kg) ..... :	☒ <1 kg

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..... : Nov. 07, 2023

Date (s) of performance of tests..... : N/A

Attachments:

Attachment A..... : Photos of product

General remarks:

This report shall not be reproduced except in full without the written approval of the testing laboratory.
The test results presented in this report relate only to the item tested.
"(See remark #)" refers to a remark appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a point is used as the decimal separator.

Report Revise Record:

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 06, 2023	Valid	Initial release

General product information and other remarks:

The product be tested is Label Printer which supplied by approved Charger via connection. It is considered transportable apparatus and for dry loction used only.

Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.

The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tma) of 40°C.

The series models are identical except for model name, which have no effect on test result.

The original test report Ref. No. AGC07434231102ES01 (dated Dec. 06, 2023 and tested Nov. 07, 2023 to Dec. 01, 2023) was modified on Dec. 06, 2023, including the following changes and additions:

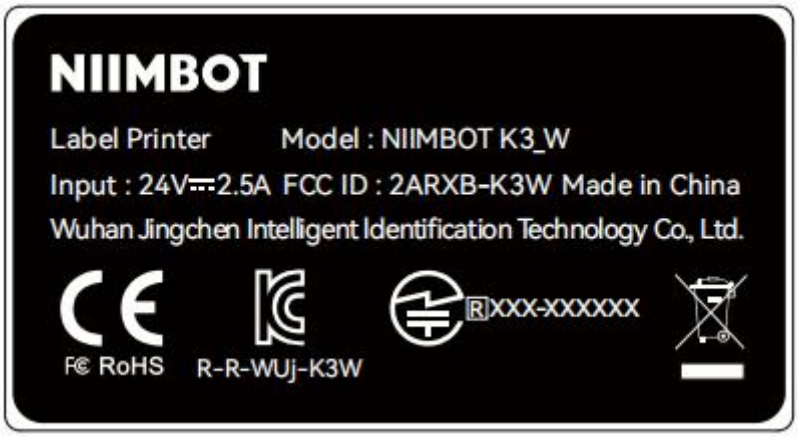
-changed the standard from EN IEC 62368-1: 2020+A11:2020 to IEC 62368-1:2018, CSA/UL 62368-1:2019.

For the above described changes, no further testing is necessary.

Summary of testing

The product fulfils the requirements of IEC 62368-1:2018, CSA/UL 62368-1:2019.

Copy of marking plate:



Remark:

1) The markings and instructions are the minimum requirements required by safety standard. For final production samples, the additional markings which do not give rise to misunderstanding may be added.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	**Possible Hazard**			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: All internal circuits	Ordinary person	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1st S	2nd S
PS2: Internal circuits	All Flammable materials inside and plastic enclosure	1. No ignition occurred. 2. No parts exceeding 90% of its spontaneous ignition temperature.	1. PCB is complied with V-0 material; 2. all other components: at least V-2 except for mounted on min. V-1 material or small parts of combustible material	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Edges and corners	Ordinary person	N/A	N/A	N/A
MS1: Equipment mass	Ordinary person	N/A	N/A	N/A
MS1: Internal stepper motor	Ordinary person	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: Accessible enclosure	Ordinary person	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS1: Indicator LED	Ordinary person	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM
Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems. Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings
See OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS for details ☒ **ES** ☒ **PS** ☒ **MS** ☒ **TS** ☒ **RS**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies	See appended table 4.1.2	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
4.1.3	Equipment design and construction	No accessible part which could cause injury	P
4.1.4	Specified ambient temperature for outdoor use (ºC)..... :		N
4.1.5	Constructions and components not specifically covered	No such parts.	N
4.1.8	Liquids and liquid filled components (LFC)	No such parts.	N
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Annex T.4)	P
4.4.3.3	Drop tests	(See Annex T.7)	P
4.4.3.4	Impact tests		N
4.4.3.5	Internal accessible safeguard tests		N
4.4.3.6	Glass impact tests		N
4.4.3.7	Glass fixation tests		N
	Glass impact test (1J)		N
	Push/pull test (10 N)		N
4.4.3.8	Thermoplastic material tests	(See Annex T.8)	P
4.4.3.9	Air comprising a safeguard		N
4.4.3.10	Accessibility, glass, safeguard effectiveness	Safeguard remain effective.	P
4.4.4	Displacement of a safeguard by an insulating liquid		N
4.4.5	Safety interlocks	No such component within equipment.	N
4.5	**Explosion**		P
4.5.1	General	No explosion occurs during normal/abnormal operation and	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
		single fault conditions	
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Clause B.4)	P
4.6	**Fixing of conductors**		N
	Fix conductors not to defeat a safeguard	Not defeat a safeguard.	N
	Compliance is checked by test..... :		N
4.7	**Equipment for direct insertion into mains socket–outlets**		N
4.7.2	Mains plug part complies with relevant standard..:		N
4.7.3	Torque (Nm)..... :		N
4.8	**Equipment containing coin/button cell batteries**		N
4.8.1	General	No coin/button cell is used	N
4.8.2	Instructional safeguard.....:		N
4.8.3	Battery compartment door/cover construction		N
	Open torque test		N
4.8.4.2	Stress relief test		N
4.8.4.3	Battery replacement test		N
4.8.4.4	Drop test		N
4.8.4.5	Impact test		N
4.8.4.6	Crush test		N
4.8.5	Compliance		N
	30N force test with test probe		N
	20N force test with test hook		N
4.9	**Likelihood of fire or shock due to entry of conductive object**		N
4.10	**Component requirements**		N
4.10.1	Disconnect Device		N
4.10.2	Switches and relays		N
5	**ELECTRICALLY-CAUSED INJURY**		P
5.2	**Classification and limits of electrical energy sources**		P
5.2.2	ES1, ES2 and ES3 limits	(See appended table 5.2)	P
5.2.2.2	Steady-state voltage and current limits..... :	ES1	P
5.2.2.3	Capacitance limits..... :		N
5.2.2.4	Single pulse limits.....:	No such single pulses with the EUT	N

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.5	Limits for repetitive pulses..... :	No such repetitive pulses with the EUT	N
5.2.2.6	Ringing signals	No such ringing signals with the EUT	N
5.2.2.7	Audio signals		N
5.3	**Protection against electrical energy sources**		N
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	ES1	N
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		N
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N
5.3.2.1	Accessibility to electrical energy sources and safeguards		N
	Accessibility to outdoor equipment bare parts		N
5.3.2.2	Contact requirements		N
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V)..... :		N
5.3.2.2 b)	Air gap – distance (mm) ..... :		N
5.3.2.3	Compliance		N
5.3.2.4	Terminals for connecting stripped wire		N
5.4	**Insulation materials and requirements**		N
5.4.1.2	Properties of insulating material		N
5.4.1.3	Material is non-hygroscopic		N
5.4.1.4	Maximum operating temperature for insulating materials..... :		N
5.4.1.5	Pollution degrees..... :		N
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N
5.4.1.5.3	Thermal cycling test		N
5.4.1.6	Insulation in transformers with varying dimensions		N
5.4.1.7	Insulation in circuits generating starting pulses		N
5.4.1.8	Determination of working voltage..... :		N
5.4.1.9	Insulating surfaces		N
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N
5.4.1.10.2	Vicat test..... :		N

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10.3	Ball pressure test..... :		N
5.4.2	Clearances		N
5.4.2.1	General requirements		N
	Clearances in circuits connected to AC Mains, Alternative method		N
5.4.2.2	Procedure 1 for determining clearance		N
	Temporary overvoltage ..... :		—
5.4.2.3	Procedure 2 for determining clearance		N
5.4.2.3.2.2	a.c. mains transient voltage..... :		—
5.4.2.3.2.3	d.c. mains transient voltage ..... :		—
5.4.2.3.2.4	External circuit transient voltage..... :		—
5.4.2.3.2.5	Transient voltage determined by measurement..... :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test ..... :		N
5.4.2.5	Multiplication factors for clearances and test voltages..... :		N
5.4.2.6	Clearance measurement..... :		N
5.4.3	Creepage distances		N
5.4.3.1	General		N
5.4.3.3	Material group..... :		—
5.4.3.4	Creepage distances measurement..... :		N
5.4.4	Solid insulation		N
5.4.4.1	General requirements		N
5.4.4.2	Minimum distance through insulation ..... :		N
5.4.4.3	Insulating compound forming solid insulation		N
5.4.4.4	Solid insulation in semiconductor devices		N
5.4.4.5	Insulating compound forming cemented joints		N
5.4.4.6	Thin sheet material		N
5.4.4.6.1	General requirements		N
5.4.4.6.2	Separable thin sheet material		N
	Number of layers (pcs) ..... :		N
5.4.4.6.3	Non-separable thin sheet material		N
	Number of layers (pcs) ..... :		N
5.4.4.6.4	Standard test procedure for non-separable thin sheet material..... :		N

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.5	Mandrel test		N
5.4.4.7	Solid insulation in wound components		N
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P, K_R, d, V_{PW} (V)..... :		N
	Alternative by electric strength test, tested voltage (V), K_R..... :		N
5.4.5	Antenna terminal insulation		N
5.4.5.1	General		N
5.4.5.2	Voltage surge test		N
5.4.5.3	Insulation resistance (MΩ)..... :		N
	Electric strength test..... :		N
5.4.6	Insulation of internal wire as part of supplementary safeguard		N
5.4.7	Tests for semiconductor components and for cemented joints		N
5.4.8	Humidity conditioning		N
	Relative humidity (%), temperature (°C), duration (h)..... :		—
5.4.9	Electric strength test		N
5.4.9.1	Test procedure for type test of solid insulation..... :		N
5.4.9.2	Test procedure for routine test		N
5.4.10	Safeguards against transient voltages from external circuits		N
5.4.10.1	Parts and circuits separated from external circuits		N
5.4.10.2	Test methods		N
5.4.10.2.1	General		N
5.4.10.2.2	Impulse test..... :		N
5.4.10.2.3	Steady-state test..... :		N
5.4.10.3	Verification for insulation breakdown for impulse test..... :		N
5.4.11	Separation between external circuits and earth		N
5.4.11.1	Exceptions to separation between external circuits and earth		N
5.4.11.2	Requirements		N
	SPDs bridge separation between external circuit and earth		N
	Rated operating voltage U_{op} (V)..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Nominal voltage U_{peak} (V)..... :		—
	Max increase due to variation ΔU_{sp} ..... :		—
	Max increase due to ageing ΔU_{sa} ..... :		—
5.4.11.3	Test method and compliance..... :		N
5.4.12	Insulating liquid		N
5.4.12.1	General requirements		N
5.4.12.2	Electric strength of an insulating liquid..... :		N
5.4.12.3	Compatibility of an insulating liquid..... :		N
5.4.12.4	Container for insulating liquid..... :		N
5.5	**Components as safeguards**		N
5.5.1	General		N
5.5.2	Capacitors and RC units		N
5.5.2.1	General requirement		N
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector..... :		N
5.5.3	Transformers		N
5.5.4	Optocouplers		N
5.5.5	Relays		N
5.5.6	Resistors		N
5.5.7	SPDs		N
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable..... :		N
5.5.9	Safeguards for socket-outlets in outdoor equipment		N
	RCD rated residual operating current (mA)..... :		—
5.6	**Protective conductor**		N
5.6.2	Requirement for protective conductors		N
5.6.2.1	General requirements		N
5.6.2.2	Colour of insulation		N
5.6.3	Requirement for protective earthing conductors		N
	Protective earthing conductor size (mm^2) ..... :		—
	Protective earthing conductor serving as a reinforced safeguard		N
	Protective earthing conductor serving as a double safeguard		N

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.4	Requirements for protective bonding conductors		N
5.6.4.1	Protective bonding conductors		N
	Protective bonding conductor size (mm^2)..... :		—
5.6.4.2	Protective current rating (A)..... :		N
5.6.5	Terminals for protective conductors		N
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N
	Terminal size for connecting protective bonding conductors (mm)..... :		N
5.6.5.2	Corrosion		N
5.6.6	Resistance of the protective bonding system		N
5.6.6.1	Requirements		N
5.6.6.2	Test Method..... :		N
5.6.6.3	Resistance (Ω) or voltage drop..... :		N
5.6.7	Reliable connection of a protective earthing conductor		N
5.6.8	Functional earthing		N
	Conductor size (mm^2)..... :		N
	Class II with functional earthing marking ..... :		N
	Appliance inlet cl & cr (mm)..... :		N
5.7	**Prospective touch voltage, touch current and protective conductor current**		N
5.7.2	Measuring devices and networks		N
5.7.2.1	Measurement of touch current		N
5.7.2.2	Measurement of voltage		N
5.7.3	Equipment set-up, supply connections and earth connections		N
5.7.4	Unearthed accessible parts..... :		N
5.7.5	Earthed accessible conductive parts..... :		N
5.7.6	Requirements when touch current exceeds ES2 limits		N
	Protective conductor current (mA)..... :		N
	Instructional Safeguard..... :		N
5.7.7	Prospective touch voltage and touch current associated with external circuits		N
5.7.7.1	Touch current from coaxial cables		N

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N
5.7.8	Summation of touch currents from external circuits		N
	a) Equipment connected to earthed external circuits, current (mA)..... :		N
	b) Equipment connected to unearthed external circuits, current (mA)..... :		N
5.8	**Backfeed safeguard in battery backed up supplies**		N
	Mains terminal ES..... :		N
	Air gap (mm)..... :		N
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2	**Classification of PS and PIS**		P
6.2.2	Power source circuit classifications.....:	PS (power source) classification determined by measuring the maximum power in Figures 34 and 35 for load and power source circuits.	P
6.2.3	Classification of potential ignition sources	(See appended table 6.2.2)	P
6.2.3.1	Arcing PIS .....:		N
6.2.3.2	Resistive PIS .....:		P
6.3	**Safeguards against fire under normal operating and abnormal operating conditions**		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials.....:	(See appended table B.1.5 and B.3)	P
	Combustible materials outside fire enclosure..... :		N
6.4	**Safeguards against fire under single fault conditions**		P
6.4.1	Safeguard method		P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	Method by control of fire spread.	N
6.4.3.1	Supplementary safeguards		N
6.4.3.2	Single Fault Conditions.....:		N
	Special conditions for temperature limited by fuse		N
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.5.2	Supplementary safeguards	Refer to appended table 4.1.2 for detail. PCB rated V-0	P
6.4.6	Control of fire spread in PS3 circuits		N
6.4.7	Separation of combustible materials from a PIS		N
6.4.7.2	Separation by distance		N
6.4.7.3	Separation by a fire barrier		N
6.4.8	Fire enclosures and fire barriers		N
6.4.8.2	Fire enclosure and fire barrier material properties		N
6.4.8.2.1	Requirements for a fire barrier	No such construction.	N
6.4.8.2.2	Requirements for a fire enclosure		N
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N
6.4.8.3.1	Fire enclosure and fire barrier openings	No opening	N
6.4.8.3.2	Fire barrier dimensions	No barrier used.	N
6.4.8.3.3	Top openings and properties		N
	Openings dimensions (mm)..... :		N
6.4.8.3.4	Bottom openings and properties		N
	Openings dimensions (mm)..... :		N
	Flammability tests for the bottom of a fire enclosure		N
	Instructional Safeguard.....:		N
6.4.8.3.5	Side openings and properties		N
	Openings dimensions (mm)..... :		N
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :		N
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating... :		N
6.4.9	Flammability of insulating liquid.....:		N
6.5	**Internal and external wiring**		P
6.5.1	General requirements		P
6.5.2	Requirements for interconnection to building wiring.....:		–
6.5.3	Internal wiring size (mm^2) for socket-outlets.....:	No such wiring, outlet and inlet.	N
6.6	**Safeguards against fire due to the connection to additional equipment**		N
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		N
7.2	**Reduction of exposure to hazardous substances**		N

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Clause	Requirement + Test	Result - Remark	Verdict
7.3	**Ozone exposure**		N
7.4	**Use of personal safeguards or personal protective equipment (PPE)**		N
	Personal safeguards and instructions..... :	No PPE used.	—
7.5	**Use of instructional safeguards and instructions**		N
	Instructional safeguard (ISO 7010)..... :		—
7.6	**Batteries and their protection circuits**		N
8	**MECHANICALLY-CAUSED INJURY**		P
8.2	**Mechanical energy source classifications**		P
8.3	**Safeguards against mechanical energy sources**		N
8.4	**Safeguards against parts with sharp edges and corners**		N
8.4.1	Safeguards	MS1 only	N
	Instructional Safeguard..... :		N
8.4.2	Sharp edges or corners	No sharp edges and corners	N
8.5	**Safeguards against moving parts**		N
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	MS1: Internal stepper motor	N
	MS2 or MS3 part required to be accessible for the function of the equipment		N
	Moving MS3 parts only accessible to skilled person		N
8.5.2	Instructional safeguard..... :		N
8.5.4	Special categories of equipment containing moving parts		N
8.5.4.1	General		N
8.5.4.2	Equipment containing work cells with MS3 parts		N
8.5.4.2.1	Protection of persons in the work cell		N
8.5.4.2.2	Access protection override		N
8.5.4.2.2.1	Override system		N
8.5.4.2.2.2	Visual indicator		N
8.5.4.2.3	Emergency stop system		N
	Maximum stopping distance from the point of activation (m)..... :		N
	Space between end point and nearest fixed mechanical part (mm)..... :		N
8.5.4.2.4	Endurance requirements		N

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Clause	Requirement + Test	Result - Remark	Verdict
	Mechanical system subjected to 100 000 cycles of operation		N
	- Mechanical function check and visual inspection		N
	- Cable assembly.....:		N
8.5.4.3	Equipment having electromechanical device for destruction of media		N
8.5.4.3.1	Equipment safeguards		N
8.5.4.3.2	Instructional safeguards against moving parts..... :		N
8.5.4.3.3	Disconnection from the supply		N
8.5.4.3.4	Cut type and test force (N)..... :		N
8.5.4.3.5	Compliance		N
8.5.5	High pressure lamps		N
	Explosion test.....:		N
8.5.5.3	Glass particles dimensions (mm)..... :		N
8.6	**Stability of equipment**		N
8.6.1	General		N
	Instructional safeguard.....:		N
8.6.2	Static stability		N
8.6.2.2	Static stability test.....:		N
8.6.2.3	Downward force test		N
8.6.3	Relocation stability		N
	Wheels diameter (mm)..... :		—
	Tilt test		N
8.6.4	Glass slide test		N
8.6.5	Horizontal force test..... :		N
8.7	**Equipment mounted to wall, ceiling or other structure**		N
8.7.1	Mount means type.....:		N
8.7.2	Test methods		N
	Test 1, additional downwards force (N)..... :		N
	Test 2, number of attachment points and test force (N).....:		N
	Test 3 Nominal diameter (mm) and applied torque (Nm)..... :		N
8.8	**Handles strength**		N

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Clause	Requirement + Test	Result - Remark	Verdict
8.8.1	General	No handles.	N
8.8.2	Handle strength test		N
	Number of handles.....:		—
	Force applied (N).....:		—
8.9	**Wheels or casters attachment requirements**		N
8.9.2	Pull test	No wheels or casters	N
8.10	**Carts, stands and similar carriers**		N
8.10.1	General	No such part	N
8.10.2	Marking and instructions.....:		N
8.10.3	Cart, stand or carrier loading test		N
	Loading force applied (N).....:		N
8.10.4	Cart, stand or carrier impact test		N
8.10.5	Mechanical stability		N
	Force applied (N).....:		—
8.10.6	Thermoplastic temperature stability		N
8.11	**Mounting means for slide-rail mounted equipment (SRME)**		N
8.11.1	General	No slide-rail mounted.	N
8.11.2	Requirements for slide rails		N
	Instructional Safeguard.....:		N
8.11.3	Mechanical strength test		N
8.11.3.1	Downward force test, force (N) applied.....:		N
8.11.3.2	Lateral push force test		N
8.11.3.3	Integrity of slide rail end stops		N
8.11.4	Compliance		N
8.12	**Telescoping or rod antennas**		N
	Button/ball diameter (mm).....:	No antenna	—
9	**THERMAL BURN INJURY**		P
9.2	**Thermal energy source classifications**		P
9.3	**Touch temperature limits**		P
9.3.1	Touch temperatures of accessible parts.....:	(See appended table 9.3)	P
9.3.2	Test method and compliance	Checked by test.	P
9.4	**Safeguards against thermal energy sources**		P
9.5	**Requirements for safeguards**		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.5.1	Equipment safeguard	Enclosure as a safeguard.	P
9.5.2	Instructional safeguard.....:		N
9.6	**Requirements for wireless power transmitters**		N
9.6.1	General	No wireless power transmitters	N
9.6.2	Specification of the foreign objects		N
9.6.3	Test method and compliance.....:		N
10	**RADIATION**		P
10.2	**Radiation energy source classification**		P
10.2.1	General classification		P
	Lasers..... :		—
	Lamps and lamp systems.....:	RS1: Indicator LED	—
	Image projectors..... :		—
	X-Ray.....:		—
	Personal music player.....:		—
10.3	**Safeguards against laser radiation**		N
	The standard(s) equipment containing laser(s) comply.....:	No laser	N
10.4	**Safeguards against optical radiation from lamps and lamp systems (including LED types)**		P
10.4.1	General requirements	RS1: Indicator LED	P
	Instructional safeguard provided for accessible radiation level needs to exceed		N
	Risk group marking and location..... :		N
	Information for safe operation and installation		N
10.4.2	Requirements for enclosures		N
	UV radiation exposure..... :		N
10.4.3	Instructional safeguard.....:		N
10.5	**Safeguards against X-radiation**		N
10.5.1	Requirements	No X-radiation	N
	Instructional safeguard for skilled persons..... :		—
10.5.3	Maximum radiation (pA/kg)..... :		—
10.6	**Safeguards against acoustic energy sources**		N
10.6.1	General		N
10.6.2	Classification		N

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Clause	Requirement + Test	Result - Remark	Verdict
	Acoustic output $L_{Aeq,T}$, dB(A)..... :		N
	Unweighted RMS output voltage (mV)..... :		N
	Digital output signal (dBFS)..... :		N
10.6.3	Requirements for dose-based systems		N
10.6.3.1	General requirements		N
10.6.3.2	Dose-based warning and automatic decrease		N
10.6.3.3	Exposure-based warning and requirements		N
	30 s integrated exposure level (MEL30)..... :		N
	Warning for MEL ≥ 100 dB(A)..... :		N
10.6.4	Measurement methods		N
10.6.5	Protection of persons		N
	Instructional safeguards..... :		N
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N
10.6.6.1	Corded listening devices with analogue input		N
	Listening device input voltage (mV)..... :		N
10.6.6.2	Corded listening devices with digital input		N
	Max. acoustic output $L_{Aeq,T}$, dB(A)..... :		N
10.6.6.3	Cordless listening devices		N
	Max. acoustic output $L_{Aeq,T}$, dB(A)..... :		N
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.1	**General**		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	**Normal operating conditions**		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers..... :		N
B.2.3	Supply voltage and tolerances		N
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	**Simulated abnormal operating conditions**		N
B.3.1	General		N
B.3.2	Covering of ventilation openings	No ventilation openings	N
	Instructional safeguard..... :		N

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.3	DC mains polarity test	No DC mains	N
B.3.4	Setting of voltage selector	No such device.	N
B.3.5	Maximum load at output terminals		N
B.3.6	Reverse battery polarity		N
B.3.7	Audio amplifier abnormal operating conditions		N
B.3.8	Safeguards functional during and after abnormal operating conditions..... :		N
B.4	**Simulated single fault conditions**		P
B.4.1	General		P
B.4.2	Temperature controlling device		N
B.4.3	Blocked motor test		N
B.4.4	Functional insulation	See the following details.	P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.3 &B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.3 &B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards within the EUT	N
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		P
B.4.6	Short circuit or disconnection of passive components	(See appended table B.3 &B.4)	P
B.4.7	Continuous operation of components	The EUT is continuous operating type and no such components intended for short time operation or intermittent operation	N
B.4.8	Compliance during and after single fault conditions..... :	(See appended table B.3&B.4)	P
B.4.9	Battery charging and discharging under single fault conditions		N
C	**UV RADIATION**		N
C.1	**Protection of materials in equipment from UV radiation**		N
C.1.2	Requirements	No UV radiation	N
C.1.3	Test method		N
C.2	**UV light conditioning test**		N
C.2.1	Test apparatus..... :		N
C.2.2	Mounting of test samples		N
C.2.3	Carbon-arc light-exposure test		N

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Clause	Requirement + Test	Result - Remark	Verdict
C.2.4	Xenon-arc light-exposure test		N
D	**TEST GENERATORS**		N
D.1	**Impulse test generators**		N
D.2	**Antenna interface test generator**		N
D.3	**Electronic pulse generator**		N
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N
E.1	**Electrical energy source classification for audio signals**		N
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω) ..... :		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard..... :		—
E.2	**Audio amplifier normal operating conditions**		N
	Audio signal source type..... :		—
	Audio output power (W)..... :		—
	Audio output voltage (V)..... :		—
	Rated load impedance (Ω) ..... :		—
	Requirements for temperature measurement		N
E.3	Audio amplifier abnormal operating conditions		N
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	**General**		P
	Language ..... :	Only english version review. Versions in other language will be provided when submitted for national approval.	—
F.2	**Letter symbols and graphical symbols**		P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols for quantities and units are complied with IEC 60027-1.	P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010.	P
F.3	**Equipment markings**		P
F.3.1	Equipment marking locations	Equipment marking is located on the exterior surface and is easily visible.	P
F.3.2	Equipment identification markings	See the following details.	P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.2.1	Manufacturer identification .....:	See copy of marking plate.	—
F.3.2.2	Model identification .....:	See copy of marking plate.	—
F.3.3	Equipment rating markings	See the following details.	P
F.3.3.1	Equipment with direct connection to mains		N
F.3.3.2	Equipment without direct connection to mains	See above.	P
F.3.3.3	Nature of the supply voltage.....:	⎓	P
F.3.3.4	Rated voltage.....:	24V	P
F.3.3.5	Rated frequency.....:		N
F.3.3.6	Rated current or rated power.....:	2.5A	P
F.3.3.7	Equipment with multiple supply connections		N
F.3.4	Voltage setting device		N
F.3.5	Terminals and operating devices		N
F.3.5.1	Mains appliance outlet and socket-outlet markings.....:	No such devices on the equipment.	N
F.3.5.2	Switch position identification marking.....:	No such switch on the equipment.	N
F.3.5.3	Replacement fuse identification and rating markings.....:		N
	Instructional safeguards for neutral fuse.....:		N
F.3.5.4	Replacement battery identification marking.....:		N
F.3.5.5	Neutral conductor terminal		N
F.3.5.6	Terminal marking location		N
F.3.6	Equipment markings related to equipment classification	Class III	N
F.3.6.1	Class I equipment		N
F.3.6.1.1	Protective earthing conductor terminal.....:		N
F.3.6.1.2	Protective bonding conductor terminals .....:		N
F.3.6.2	Equipment class marking.....:		N
F.3.6.3	Functional earthing terminal marking.....:		N
F.3.7	Equipment IP rating marking.....:	This equipment is classified as IPX0.	—
F.3.8	External power supply output marking.....:		N
F.3.9	Durability, legibility and permanence of marking	See the following details.	P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.10	Test for permanence of markings	The label was subjected to the permanence of marking test, 15 sec. for water and 15 sec. for petroleum spirit. After each test, the marking remained legible.	P
F.4	**Instructions**		P
	a)... Information prior to installation and initial use	Relevant safety caution texts and installation instruction are available.	P
	b)... Equipment for use in locations where children not likely to be present		N
	c)... Instructions for installation and interconnection		P
	d)... Equipment intended for use only in restricted access area		N
	e)... Equipment intended to be fastened in place	No such terminal	N
	f).... Instructions for audio equipment terminals		N
	g)... Protective earthing used as a safeguard		N
	h)... Protective conductor current exceeding ES2 limits		N
	i)..... Graphic symbols used on equipment		N
	j)..... Permanently connected equipment not provided with all-pole mains switch	The EUT is not a permanently connected equipment	N
	k)... Replaceable components or modules providing safeguard function		N
	l)..... Equipment containing insulating liquid		N
	m).. Installation instructions for outdoor equipment		N
F.5	Instructional safeguards		P
G	**COMPONENTS**		P
G.1	**Switches**		N
G.1.1	General		N
G.1.2	Ratings, endurance, spacing, maximum load		N
G.1.3	Test method and compliance		N
G.2	**Relays**		N
G.2.1	Requirements	No relays	N
G.2.2	Overload test		N

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Clause	Requirement + Test	Result - Remark	Verdict
G.2.3	Relay controlling connectors supplying power to other equipment		N
G.2.4	Test method and compliance		N
G.3	**Protective devices**		N
G.3.1	Thermal cut-offs	No such device	N
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)	No thermal cut-off provided within the equipment.	N
	Thermal cut-outs tested as part of the equipment as indicated in c)		N
G.3.1.2	Test method and compliance		N
G.3.2	Thermal links		N
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N
	b) Thermal links tested as part of the equipment		N
G.3.2.2	Test method and compliance		N
G.3.3	PTC thermistors	No such device	N
G.3.4	Overcurrent protection devices		N
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N
G.3.5.1	Non-resettable devices suitably rated and marking provided		N
G.3.5.2	Single faults conditions..... :		N
G.4	**Connectors**		N
G.4.1	Spacings	No such connector within the EUT	N
G.4.2	Mains connector configuration.....:		N
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N
G.5	**Wound components**		N
G.5.1	Wire insulation in wound components	No such component.	N
G.5.1.2	Protection against mechanical stress		N
G.5.2	Endurance test		N
G.5.2.1	General test requirements		N
G.5.2.2	Heat run test		N
	Test time (days per cycle)..... :		—
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.2.4	No insulation breakdown		N
G.5.3	Transformers		N
G.5.3.1	Compliance method.....:		N
	Position.....:		N
	Method of protection.....:		N
G.5.3.2	Insulation		N
	Protection from displacement of windings..... :		—
G.5.3.3	Transformer overload tests		N
G.5.3.3.1	Test conditions		N
G.5.3.3.2	Winding temperatures		N
G.5.3.3.3	Winding temperatures - alternative test method		N
G.5.3.4	Transformers using FIW		N
G.5.3.4.1	General		N
	FIW wire nominal diameter.....:		—
G.5.3.4.2	Transformers with basic insulation only		N
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N
G.5.3.4.5	Thermal cycling test and compliance		N
G.5.3.4.6	Partial discharge test		N
G.5.3.4.7	Routine test		N
G.5.4	Motors		N
G.5.4.1	General requirements		N
G.5.4.2	Motor overload test conditions		N
G.5.4.3	Running overload test		N
G.5.4.4.2	Locked-rotor overload test		N
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N
G.5.4.5.2	Tested in the unit		N
G.5.4.5.3	Alternative method		N
G.5.4.6	Locked-rotor overload test for DC motors		N
G.5.4.6.2	Tested in the unit		N
	Maximum Temperature .....:		N

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.6.3	Alternative method		N
G.5.4.7	Motors with capacitors		N
G.5.4.8	Three-phase motors		N
G.5.4.9	Series motors		N
	Operating voltage ..... :		—
G.6	**Wire Insulation**		N
G.6.1	General		N
G.6.2	Enamelled winding wire insulation		N
G.7	**Mains supply cords**		N
G.7.1	General requirements		N
	Type..... :		—
G.7.2	Cross sectional area (mm^2 or AWG)..... :		N
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N
G.7.3.2	Cord strain relief		N
G.7.3.2.1	Requirements		N
	Strain relief test force (N)..... :		N
G.7.3.2.2	Strain relief mechanism failure		N
G.7.3.2.3	Cord sheath or jacket position, distance (mm)..... :		N
G.7.3.2.4	Strain relief and cord anchorage material		N
G.7.4	Cord Entry		N
G.7.5	Non-detachable cord bend protection		N
G.7.5.1	Requirements		N
G.7.5.2	Test method and compliance		N
	Overall diameter or minor overall dimension, *D* (mm)..... :		—
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N
G.7.6.1	General requirements		N
G.7.6.2	Stranded wire		N
G.7.6.2.1	Requirements		N
G.7.6.2.2	Test with 8 mm strand		N
G.8	**Varistors**		N
G.8.1	General requirements	No such device.	N

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Clause	Requirement + Test	Result - Remark	Verdict
G.8.2	Safeguards against fire		N
G.8.2.1	General		N
G.8.2.2	Varistor overload test		N
G.8.2.3	Temporary overvoltage test		N
G.9	**Integrated circuit (IC) current limiters**		N
G.9.1	Requirements	No such device.	N
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift ..... :		—
G.9.2	Test Program		N
G.9.3	Compliance		N
G.10	**Resistors**		N
G.10.1	General	No such device.	N
G.10.2	Conditioning		N
G.10.3	Resistor test		N
G.10.4	Voltage surge test		N
G.10.5	Impulse test		N
G.10.6	Overload test		N
G.11	**Capacitors and RC units**		N
G.11.1	General requirements		N
G.11.2	Conditioning of capacitors and RC units		N
G.11.3	Rules for selecting capacitors		N
G.12	**Optocouplers**		N
	Optocouplers comply with IEC 60747-5-5 with specifics	No such device.	N
	Type test voltage $V_{ini,a}$..... :		—
	Routine test voltage, $V_{ini,b}$..... :		—
G.13	**Printed boards**		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards	No coated printed board provided within the equipment.	N
G.13.4	Insulation between conductors on the same inner surface		N
G.13.5	Insulation between conductors on different surfaces		N

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Clause	Requirement + Test	Result - Remark	Verdict
	Distance through insulation.....:		N
	Number of insulation layers (pcs) .....:		—
G.13.6	Tests on coated printed boards		N
G.13.6.1	Sample preparation and preliminary inspection		N
G.13.6.2	Test method and compliance		N
G.14	**Coating on components terminals**		N
G.14.1	Requirements .....:		N
G.15	**Pressurized liquid filled components**		N
G.15.1	Requirements	No such components used	N
G.15.2	Test methods and compliance		N
G.15.2.1	Hydrostatic pressure test		N
G.15.2.2	Creep resistance test		N
G.15.2.3	Tubing and fittings compatibility test		N
G.15.2.4	Vibration test		N
G.15.2.5	Thermal cycling test		N
G.15.2.6	Force test		N
G.15.3	Compliance		N
G.16	**IC including capacitor discharge function (ICX)**		N
G.16.1	Condition for fault tested is not required	No such device	N
	ICX with associated circuitry tested in equipment		N
	ICX tested separately		N
G.16.2	Tests		N
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test.... :		—
	Mains voltage that impulses to be superimposed on.....:		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test.....:		—
G.16.3	Capacitor discharge test.....:		N
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N
H.1	**General**		N
H.2	**Method A**		N
H.3	**Method B**		N
H.3.1	Ringing signal	No such telephone ringing signal	N

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Clause	Requirement + Test	Result - Remark	Verdict
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault current (mA):..... :		—
H.3.2	Tripping device and monitoring voltage		N
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
H.3.2.2	Tripping device		N
H.3.2.3	Monitoring voltage (V)..... :		N
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N
J.1	**General**		N
	Winding wire insulation..... :		—
	Solid round winding wire, diameter (mm)..... :		N
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm^2)..... :		N
J.2/J.3	Tests and Manufacturing		—
K	**SAFETY INTERLOCKS**		N
K.1	**General requirements**		N
	Instructional safeguard..... :	No such device.	N
K.2	**Components of safety interlock safeguard mechanism**		N
K.3	**Inadvertent change of operating mode**		N
K.4	**Interlock safeguard override**		N
K.5	**Fail-safe**		N
K.5.1	Under single fault condition		N
K.6	**Mechanically operated safety interlocks**		N
K.6.1	Endurance requirement		N
K.6.2	Test method and compliance..... :		N
K.7	**Interlock circuit isolation**		N
K.7.1	Separation distance for contact gaps & interlock circuit elements		N
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test before and after the test of K.7.2.....:		N
K.7.2	Overload test, Current (A)..... :		N
K.7.3	Endurance test		N
K.7.4	Electric strength test		N
L	**DISCONNECT DEVICES**		N
L.1	General requirements		N
L.2	Permanently connected equipment		N
L.3	Parts that remain energized		N
L.4	Single-phase equipment		N
L.5	Three-phase equipment		N
L.6	Switches as disconnect devices		N
L.7	Plugs as disconnect devices		N
L.8	Multiple power sources		N
	Instructional safeguard.....:		N
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		N
M.1	**General requirements**		N
M.2	**Safety of batteries and their cells**		N
M.2.1	Batteries and their cells comply with relevant IEC standards.....:		N
M.3	**Protection circuits for batteries provided within the equipment**		N
M.3.1	Requirements		N
M.3.2	Test method		N
	Overcharging of a rechargeable battery		N
	Excessive discharging		N
	Unintentional charging of a non-rechargeable battery		N
	Reverse charging of a rechargeable battery		N
M.3.3	Compliance		N
M.4	**Additional safeguards for equipment containing a portable secondary lithium battery**		N
M.4.1	General		N
M.4.2	Charging safeguards		N
M.4.2.1	Requirements		N

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.2.2	Compliance.....:		N
M.4.3	Fire enclosure.....:		N
M.4.4	Drop test of equipment containing a secondary lithium battery		N
M.4.4.2	Preparation and procedure for the drop test		N
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%):		N
M.4.4.4	Check of the charge/discharge function		N
M.4.4.5	Charge / discharge cycle test		N
M.4.4.6	Compliance		N
M.5	**Risk of burn due to short-circuit during carrying**		N
M.5.1	Requirement		N
M.5.2	Test method and compliance		N
M.6	**Safeguards against short-circuits**		N
M.6.1	External and internal faults		N
M.6.2	Compliance		N
M.7	**Risk of explosion from lead acid and NiCd batteries**		N
M.7.1	Ventilation preventing explosive gas concentration		N
	Calculated hydrogen generation rate..... :		N
M.7.2	Test method and compliance		N
	Minimum air flow rate, Q (m^3/h).....:		N
M.7.3	Ventilation tests		N
M.7.3.1	General		N
M.7.3.2	Ventilation test – alternative 1		N
	Hydrogen gas concentration (%).....:		N
M.7.3.3	Ventilation test – alternative 2		N
	Obtained hydrogen generation rate.....:		N
M.7.3.4	Ventilation test – alternative 3		N
	Hydrogen gas concentration (%).....:		N
M.7.4	Marking.....:		N
M.8	**Protection against internal ignition from external spark sources of batteries with aqueous electrolyte**		N
M.8.1	General		N
M.8.2	Test method		N

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Clause	Requirement + Test	Result - Remark	Verdict
M.8.2.1	General		N
M.8.2.2	Estimation of hypothetical volume V_Z (m^3/s).....:		—
M.8.2.3	Correction factors.....:		—
M.8.2.4	Calculation of distance *d* (mm) .....:		—
M.9	**Preventing electrolyte spillage**		N
M.9.1	Protection from electrolyte spillage		N
M.9.2	Tray for preventing electrolyte spillage		N
M.10	Instructions to prevent reasonably foreseeable misuse		N
	Instructional safeguard.....:		N
N	**ELECTROCHEMICAL POTENTIALS**		N
	Material(s) used..... :		—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		N
	Value of *X* (mm)..... :		—
P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		N
P.1	**General**	No opening	N
P.2	**Safeguards against entry or consequences of entry of a foreign object**		N
P.2.1	General		N
P.2.2	Safeguards against entry of a foreign object		N
	Location and Dimensions (mm) .....:		—
P.2.3	Safeguards against the consequences of entry of a foreign object		N
P.2.3.1	Safeguard requirements		N
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N
	Transportable equipment with metalized plastic parts..... :		N
P.2.3.2	Consequence of entry test..... :		N
P.3	**Safeguards against spillage of internal liquids**		N
P.3.1	General	No such part.	N
P.3.2	Determination of spillage consequences		N
P.3.3	Spillage safeguards		N
P.3.4	Compliance		N
P.4	**Metallized coatings and adhesives securing parts**		N
P.4.1	General	No such application	N

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Clause	Requirement + Test	Result - Remark	Verdict
P.4.2	Tests		N
	Conditioning, T_C (°C)..... :		—
	Duration (weeks)..... :		—
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		N
Q.1	**Limited power sources**		N
Q.1.1	Requirements		N
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output		N
	d) Overcurrent protective device limited output		N
	e) IC current limiter complying with G.9		N
Q.1.2	Test method and compliance..... :		N
	Current rating of overcurrent protective device (A) ..... :		N
Q.2	**Test for external circuits – paired conductor cable**	No such circuit.	N
	Maximum output current (A) ..... :		N
	Current limiting method..... :		—
R	**LIMITED SHORT CIRCUIT TEST**		N
R.1	**General**	Class III equipment	N
R.2	**Test setup**		N
	Overcurrent protective device for test..... :		—
R.3	**Test method**		N
	Cord/cable used for test..... :		—
R.4	**Compliance**		N
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N
S.1	**Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W**		N
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N
	- Material not consumed completely		N

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Clause	Requirement + Test	Result - Remark	Verdict
	- Material extinguishes within 30s		N
	- No burning of layer or wrapping tissue		N
S.2	**Flammability test for fire enclosure and fire barrier integrity**		N
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
S.3	**Flammability test for the bottom of a fire enclosure**		N
S.3.1	Mounting of samples		N
S.3.2	Test method and compliance		N
	Mounting of samples ..... :		—
	Wall thickness (mm)..... :		—
S.4	**Flammability classification of materials**		N
S.5	**Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power exceeding 4 000 W**		N
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
T	**MECHANICAL STRENGTH TESTS**		P
T.1	**General**		P
T.2	**Steady force test, 10 N ..... :**		N
T.3	**Steady force test, 30 N ..... :**		N
T.4	**Steady force test, 100 N ..... :**	(See appended table T.4)	P
T.5	**Steady force test, 250 N ..... :**		N
T.6	**Enclosure impact test**		N
	Fall test		N
	Swing test		N
T.7	**Drop test ..... :**	(See appended table T.7)	P
T.8	**Stress relief test..... :**	(See appended table T.8)	P
T.9	**Glass Impact Test..... :**		N
T.10	**Glass fragmentation test**		N
	Number of particles counted..... :	No glass	N
T.11	**Test for telescoping or rod antennas**		N
	Torque value (Nm) ..... :	No antenna	N

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Clause	Requirement + Test	Result - Remark	Verdict
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		N
U.1	**General**		N
	Instructional safeguard.....**:**		N
U.2	**Test method and compliance for non-intrinsically protected CRTs**		N
U.3	**Protective screen**		N
V	**DETERMINATION OF ACCESSIBLE PARTS**		N
V.1	**Accessible parts of equipment**		N
V.1.1	General	No hazards can be accessible by figure V.1 and V.5	N
V.1.2	Surfaces and openings tested with jointed test probes		N
V.1.3	Openings tested with straight unjointed test probes		N
V.1.4	Plugs, jacks, connectors tested with blunt probe		N
V.1.5	Slot openings tested with wedge probe		N
V.1.6	Terminals tested with rigid test wire		N
V.2	**Accessible part criterion**		N
X	**ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)**		N
	Clearance..... :		N
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		N
Y.1	**General**		N
Y.2	**Resistance to UV radiation**		N
Y.3	**Resistance to corrosion**		N
Y.3	**Resistance to corrosion**		N
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by.....:		N
Y.3.2	Test apparatus		N
Y.3.3	Water – saturated sulphur dioxide atmosphere		N
Y.3.4	Test procedure.....:		N
Y.3.5	Compliance		N
Y.4	**Gaskets**		N
Y.4.1	General		N
Y.4.2	Gasket tests		N

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Clause	Requirement + Test	Result - Remark	Verdict
Y.4.3	Tensile strength and elongation tests		N
	Alternative test methods..... :		N
Y.4.4	Compression test		N
Y.4.5	Oil resistance		N
Y.4.6	Securing means		N
Y.5	**Protection of equipment within an outdoor enclosure**		N
Y.5.1	General		N
Y.5.2	Protection from moisture		N
	Relevant tests of IEC 60529 or Y.5.3..... :		N
Y.5.3	Water spray test		N
Y.5.4	Protection from plants and vermin		N
Y.5.5	Protection from excessive dust		N
Y.5.5.1	General		N
Y.5.5.2	IP5X equipment		N
Y.5.5.3	IP6X equipment		N
Y.6	**Mechanical strength of enclosures**		N
Y.6.1	General		N
Y.6.2	Impact test.....:		N

ATTACHMENT TO TEST REPORT

IEC 62368-1

U.S.A. AND CANADA NATIONAL DIFFERENCES

(Audio/video, information and communication technology equipment – Part 1: Safety requirements)

Differences according to.....:	CSA/UL 62368-1:2019
TRF template used:.....**:**	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No..... :	US_CA_ND_IEC62368_1E
Attachment Originator.....:	UL(US)
Master Attachment..... :	Dated 2022-03-04

IEC 62368-1 - US and Canadian National Differences

Special National Conditions based on Regulations and Other National Differences

1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		P
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits (≤ 200V per conductor to earth).		N/A
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A

1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		N/A
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A

Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked “W.”		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A

	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.		N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A

Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the “Normal Operating Condition” in Table 2 of CAN/CSA C22.2 No. 235.”		N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position, where mounted in an enclosure, vertically mounted **disconnect switches** and **circuit breakers** with vertical operating means extending outside the enclosure are required to indicate in a location visible when accessing the external operating means whether the switch or circuit breaker is in the open (off) or closed (on) position.		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.		N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A

Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix “W” marked on the flexible cord.		N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and rated current output for per conductor for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1are required to be marked with the voltage rating and “Class 2” or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A

Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centres, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.2.1)	For safe and reliable connection to a mains, permanently connected equipment is to be provided.		N/A
Annex DVH (DVH.2.2)	Additional considerations for D.C. mains.		N/A
Annex DVH (DVH.3.2.1)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
Annex DVH (DVH.3.2.3)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
Annex DVH (DVH.3.2.4)	All associated mains supply terminals are located in proximity to each other and to the main protective earthing terminal, if any.		N/A
Annex DVH (DVH.3.2.5)	Terminals are located, guarded or insulated so that, should a strand of a conductor escape when the conductor is fitted, there is no likelihood of accidental contact between such a strand and accessible conductive parts or unearthed conductive parts separated from accessible conductive parts by supplementary insulation only.		N/A

Annex DVH (DVH.3.3)	When field connection to an external circuit is via wires (example, free conductors), the wires are not smaller than 18 AWG (0.82 mm^2) and the free length of the wire inside an outlet box or wiring compartment is 150 mm or more.		N/A
Annex DVH (DVH.3.4)	Size of protective earthing conductors and terminals		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH.4.1)	Wire bending space		N/A
Annex DVH (DVH.4.2)	Volume of wiring compartment		N/A
Annex DVH (DVH.4.3)	Separation of circuits		N/A
Annex DVH (DVH.5)	Equipment markings and instructional safeguards		N/A
Annex DVH (DVH.5.1)	Identification of protective earthing terminal		N/A
Annex DVH (DVH.5.2)	Identification of terminal for earthed conductor (neutral)		N/A
Annex DVH (DVH.5.3)	Identification of terminals for aluminium conductors		N/A
Annex DVH (DVH.5.4)	Wire temperature ratings		N/A
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type[1)]	Additional Info [2)]	
24V	Internal circuit	Normal	24Vdc	--	DC	--	ES1
		Abnormal	--	--	--	--	
		Single fault	--	--	--	--	
Supplementary information:							

5.4.1.8	TABLE: Working voltage measurement				N
Location		RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
--		--	--	--	--
--		--	--	--	--
Supplementary information:					

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics			N
Method..... :		ISO 306 / B50		—
Object/ Part No./Material	Manufacturer/trademark	Thickness (mm)	T softening (°C)	
--	--	--	--	
--	--	--	--	
Supplementary information:				

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics				N
Allowed impression diameter (mm)..... :					—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
--	--	--	--	--	
Supplementary information:					

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance								N
Clearance (cl) and creepage distance (cr) at/of/between:	U_p (V)	U_{rms} (V)	Freq [1)] (Hz)	Required cl (mm)	cl (mm)	E.S. [2)] (V)	Required cr (mm)	cr (mm)	
--	--	--	--	--	--	--	--	--	
Supplementary information:									

5.4.4.2	TABLE: Minimum distance through insulation			N
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)
--	--	--	--	--
Supplementary information:				

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz					N
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)
--	--	--	--	--	--	--
Supplementary information:						

5.4.9	TABLE: Electric strength tests			N
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No	
--	--	--	--	
--	--	--	--	
Supplementary information:				

5.5.2.2	TABLE: Stored discharge on capacitors				N
Location	Supply voltage (V)	Operating and fault condition [1)]	Switch position	Measured voltage (Vpk)	ES Class
--	--	--	--	--	--

Supplementary information:

X-capacitors installed for testing:

☐ bleeding resistor rating:

☐ ICX:

1) Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit

5.6.6	TABLE: Resistance of protective conductors and terminations			N
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
--	--	--	--	--
Supplementary information:				

5.7.4	TABLE: Unearthed accessible parts					N
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V_{rms} or V_{pk})	Current (A_{rms} or A_{pk})	Freq. (Hz)	
--	--	--	--	--	--	--
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part			N
Supply voltage (V)..... :				—
Phase(s) ..... :	[] Single Phase; [ ] Three Phase: [ ] Delta [ ] Wye			
Power Distribution System ..... :	☐ TN ☐ TT ☐ IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
--	--	--	--	
Supplementary Information:				

5.8	TABLE: Backfeed safeguard in battery backed up supplies					N
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
--	--	--	--	--	--	--
Supplementary information: Abbreviation: SC= short circuit, OC= open circuit						

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power[1)] (W)	Time (S)	PS class
Input port	Normal	--	--	--	--	PS2 by approved AC/DC adapter.
Internal circuit	Normal	--	--	--	--	PS2 by declared
Supplementary information:						

6.2.3.1	TABLE: Determination of Arcing PIS			N
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
--	--	--	--	--
Supplementary information:				

6.2.3.2	TABLE: Determination of resistive PIS		P
Location	Operating and fault condition	Dissipate power (W)	Resistive PIS? Yes / No
--	--	--	Yes (declared)
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit			

8.5.5	TABLE: High pressure lamp				N
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No	
--	--	--	--	--	
Supplementary information:					

9.6	TABLE: Temperature measurements for wireless power transmitters								N
Supply voltage (V).....:									—
Max. transmit power of transmitter (W)..... :									—
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
--	--	--	--	--	--	--	--	--	
Supplementary information:									

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements			P
Supply voltage (V) .....:	a) 24V, supply condition.			—
Ambient temperature during test T_{amb} (°C).....:	40.0	--	--	—
Maximum measured temperature T of part/at:	T (°C)			Allowed T_{max} (°C)
Test condition No.:	a)	--	--	--
Input wire	45.4	--	--	80
Adapter	50.3	--	--	Ref.
C150	58.8	--	--	105
L1	65.0	--	--	110
PCB near U2	63.1	--	--	130
PCB near U3	61.8	--	--	130
PCB near U4	59.0	--	--	130

PCB near U1	54.8	--	--	130	
Stepper motor	77.0	--	--	Ref.	
Plastic enclosure inside near U2	56.8	--	--	Ref.	
Ambient	40.0	--	--	--	
For accessible part					
Button	31.7	--	--	77	
Plastic enclosure outside near U2	37.7	--	--	77	
Ambient	25.0	--	--	--	

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:
Note 1: Tma should be considered as directed by applicable requirement
Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

B.2.5	**TABLE: Input test**							P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
24	--	2.23	2.5	53.52	--	--	--	Normal working
Supplementary information:								

B.3, B.4	**TABLE: Abnormal operating and fault condition tests**					**P**
Ambient temperature T_{amb} (°C)..... :				See below		—
Power source for EUT: Manufacturer, model/type, outputrating... :				--		—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
U3 pin(3-4)	S-C	24	30mins	--	--	Unit working normally. No damaged, no hazards.
C11	S-C	24	10mins	--	--	Unit shutdown, no damaged, no hazards.
Supplementary information: S-C= short circuit.						

M.3	**TABLE: Protection circuits for batteries provided within the equipment**		N
Is it possible to install the battery in a reverse polarity position?.....:		Impossible	—

Equipment Specification	Charging	
	Voltage (V)	Current (A)
	--	--

Manufacturer/type	Battery specification	
	Non-rechargeable	Rechargeable batteries

	batteries					
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)
			Voltage (V)	Current (A)		
--	--	--	--	--	--	--
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.						
Specified battery temperature (°C)..... :	--					--

Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
Supplementary information:							

M.4.2	**TABLE: Charging safeguards for equipment containing a secondary lithium battery**	**N**
Maximum specified charging voltage (V)..... :	--	—
Maximum specified charging current (A) ..... :	--	—
Highest specified charging temperature (°C) ..... :	--	
Lowest specified charging temperature (°C) ..... :	--	

Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	
--	--	--	--	--	--
--	--	--	--	--	--
Supplementary information:					

Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**							N
Output Circuit	Condition	U_{oc} (V)	Time (s)	I_{sc} (A)		S (VA)		
				Meas.	Limit	Meas.	Limit	
--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	
Supplementary Information:								

T.2, T.3, T.4, T.5	**TABLE: Steady force test**					P
Part/Location	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
Top enclosure	Plastic	See table 4.1.2	30mm probe	100	5	No damaged

Side enclosure	Plastic	See table 4.1.2	30mm probe	100	5	No damaged
Bottom enclosure	Plastic	See table 4.1.2	30mm probe	100	5	No damaged
Supplementary information: --						

T.6, T.9	**TABLE: Impact test**			N
Location/part	Material	Thickness (mm)	Height (mm)	Observation
--	--	--	--	--
Supplementary information:				

T.7	**TABLE: Drop test**			P
Location/part	Material	Thickness (mm)	Height (mm)	Observation
Top enclosure	Plastic	See table 4.1.2	1000	No damaged
Side enclosure	Plastic	See table 4.1.2	1000	No damaged
Bottom enclosure	Plastic	See table 4.1.2	1000	No damaged
Supplementary information:				

T.8	**TABLE: Stress relief test**				P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Completed sample	Plastic enclosure (for all sources)	See table 4.1.2	70	7	No damaged, no hazards.
Supplementary information:					

X	**TABLE: Alternative method for determining minimum clearances distances**		N
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)
--	--	--	--
Supplementary information:			

4.1.2	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
SWITCHING MODE POWER SUPPLY	Dongguan Dongsong Electronic Co., Ltd.	DYS865-240250W	Input: 100-240V~50/60Hz 1.5A MAX Output: 24.0V/2.5A, 60.0W (Class II, PD2, 45°C)	IEC 62368-1:2014	Report No.: 50270974 001
Plug(US)	Dongguan Yuxin Electric Wire & Cable Co., Ltd	YX-121	125V~ 10A	CSA-C22.2	UL E306959
Flexible cable	DONGGUAN YUXIN ELECTRIC WIRE & CABLE CO., LTD	SPT-1	2x 0.824 mm²	CAN/CSA-C22.1	UL E306970
Connector	DONGGUAN YUXIN WIRE & CABLE CO., LTD.	A-150	AC125V, 7A	CSA-C22.2	UL E306959
Internal wire	Interchangeable	Interchangeable	Min. 26AWG, 80°C, Min. 30V, VW-1	UL 758	UL
PCB	Interchangeable	Interchangeable	V-0, 130°C	UL94, UL796	UL
Plastic enclosure	SHEN ZHEN JAKLE INDUSTRIAL CO LTD	JKL6-FR10	Min. 0.8mm, V-0, 60°C	UL 94	UL E510002
Stepper motor	Guangzhou RuiBao Electrical Co., LTD	35PM22034-8WD-100	DC 4.9V	CSA/UL 62368-1:2019	Test with appliance
Supplementary information:					

Attachment A
Photos of product

Fig.1 – over view

Fig.2 – over view

Fig.3 – over view

Fig.4 – port view

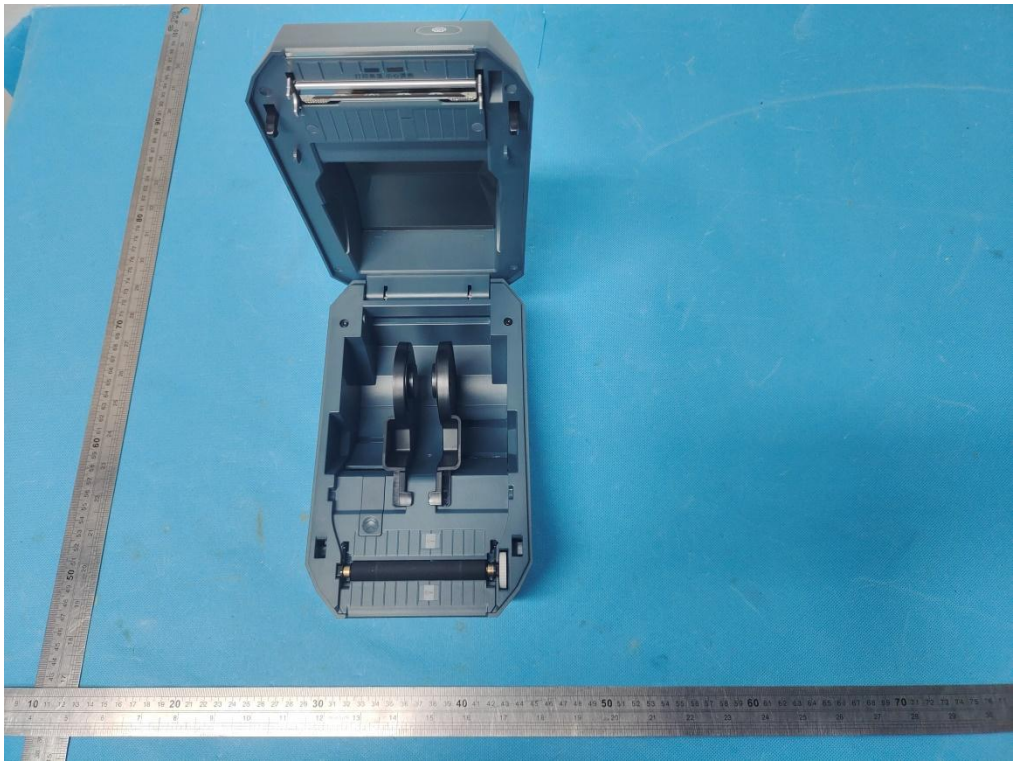

Fig.5 – open view

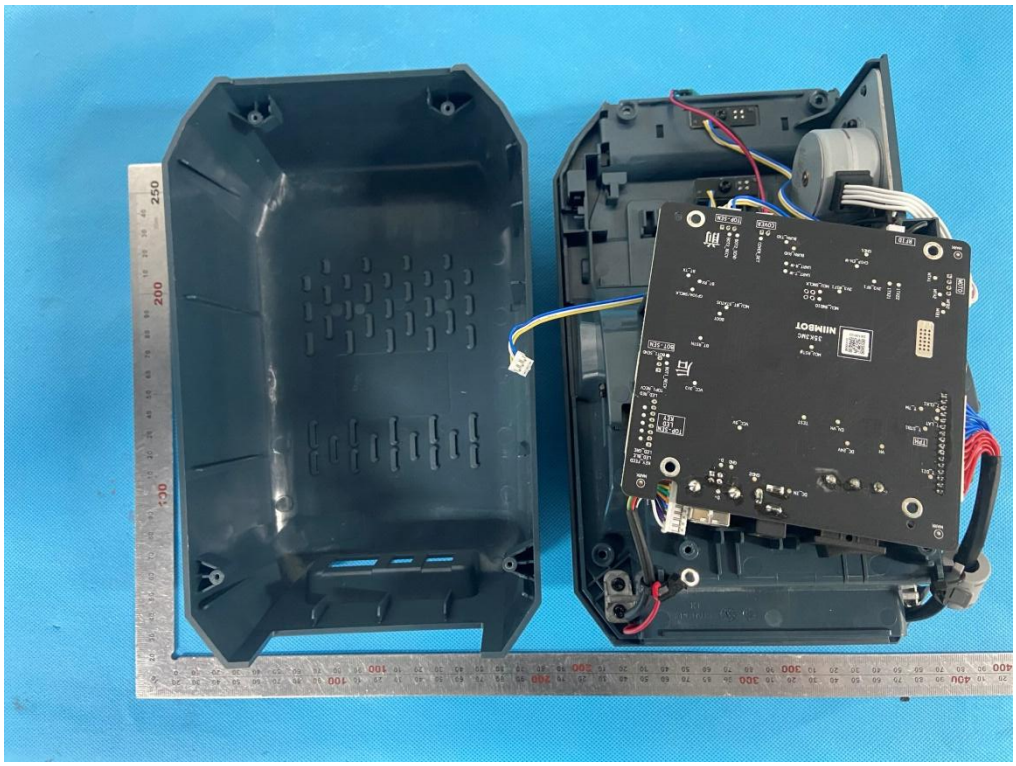

Fig.6 – open view

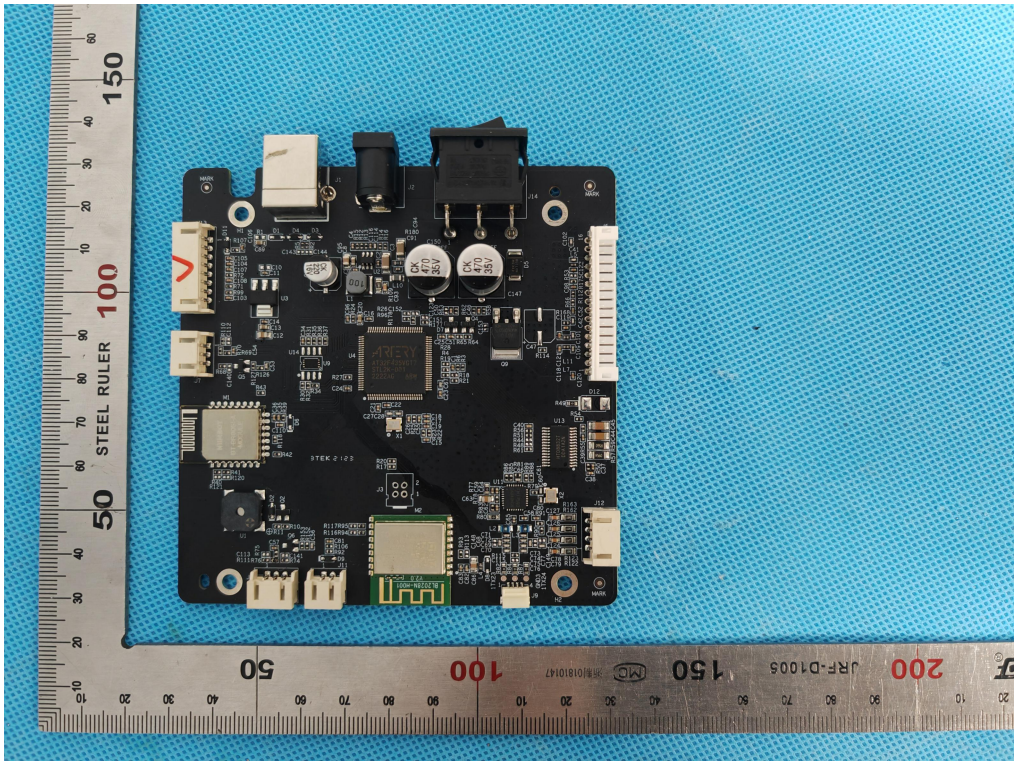

Fig. 7 – PCB view

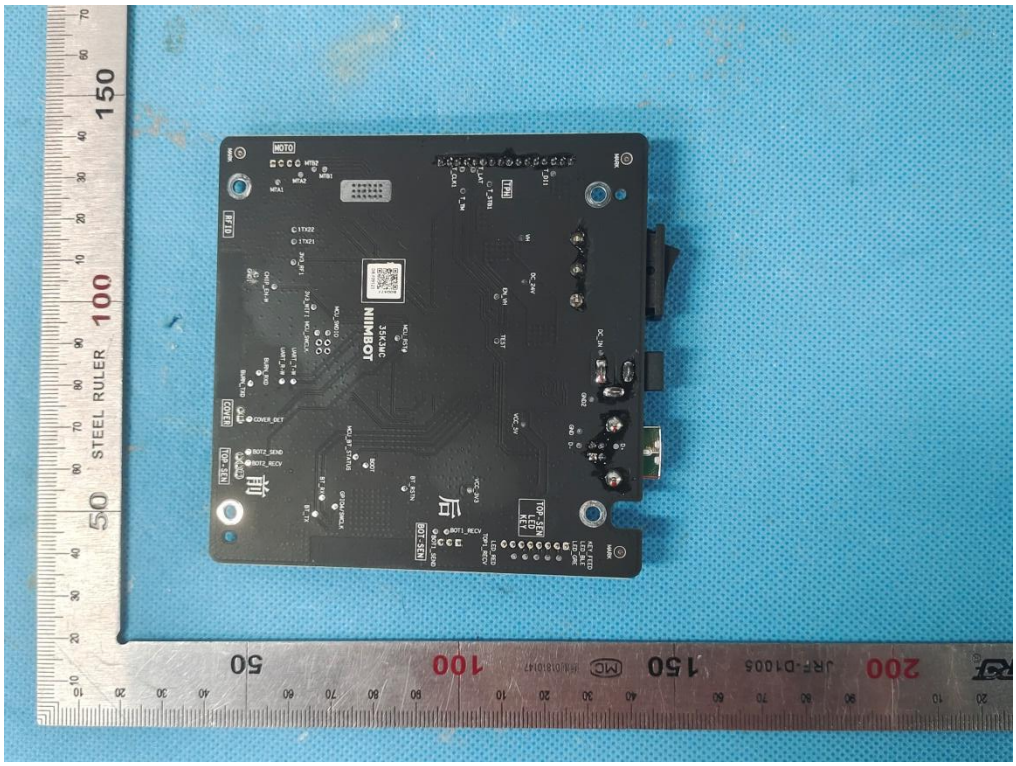

Fig. 8 – PCB view

Fig. 9 – motor view

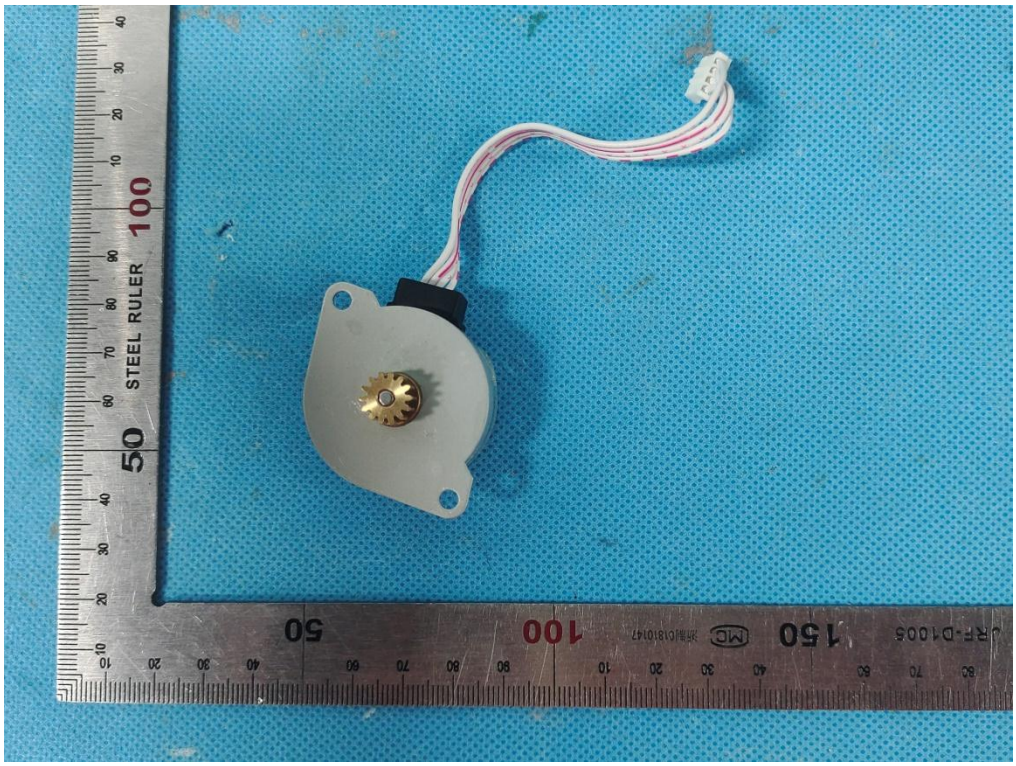

Fig. 10 – motor view

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

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