

TEST REPORT

Prepared For : SensoScientific, Inc.
685 Cochran Street Suite 200 Simi Valley CA 93065

Product Name : WiFi Node

Model(s) : B80-200-OTA, B26-200-OTA, B23-200-OTA, B22-200-OTA,
B21-200-OTA, B20-200-OTA, B19-200-OTA, B18-200-OTA,
B17-200-OTA, B16-200-OTA, B15-200-OTA, B14-200-OTA,
B13-200-OTA, B11-200-OTA, B10-200-OTA

Prepared By : Shenzhen POCE Technology Co., Ltd.
102 Building H1 & 1/F., Building H, Hongfa Science & Technology
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Test Date : Apr. 01, 2023 to Apr. 24, 2023

Date of Report : Apr. 24, 2023

Report No. : POCE230412140FRS

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Revision History Of Report

Version	Description	Report No.	Modified information
A0	Original	POCE230412140FRS	None

TEST REPORT
IEC 61010-1
**Safety requirements for electrical equipment for measurement,
control, and laboratory use
Part 1: General requirements**
Report Number.....: POCE230412140FRS

Compiled by (name + signature) ..: Eva / Project Engineer

Approved by (name + signature) .: Macheal Mo / Manager

Date of issue.....: Apr. 24, 2023

Testing Laboratory.....: Shenzhen POCE Technology Co., Ltd

Address.....: 102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park,
Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China

Applicant's name.....: SensoScientific, Inc.

Address.....: 685 Cochran Street Suite 200 Simi Valley CA 93065

Test specification:
Standard.....: BS EN 61010-1:2010+A1:2019

Test Report Form No.....: IEC61010_1ENA

Master TRF.....: 2020-04-22

Product Name: WiFi Node

Trade Mark.....: SensoScientific

Manufacturer's name.....: IBE ELECTRONICS CO.,LTD

Address.....: IBE industry building, TangTou No.1 Industrial Estate, Shiyan Town, Baoan
district, Shenzhen, 518108, Guangdong, China

Model(s).....: B80-200-OTA, B26-200-OTA, B23-200-OTA, B22-200-OTA,
B21-200-OTA, B20-200-OTA, B19-200-OTA, B18-200-OTA,
B17-200-OTA, B16-200-OTA, B15-200-OTA, B14-200-OTA,
B13-200-OTA, B11-200-OTA, B10-200-OTA

Ratings.....: Supplied by USB port: 5V --- 1A
Supplied by 2X AAA batteries: 3V ---

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


Document No.	Documents included / attached to this report (description)	Page No.
1	Main of this report	1-71
2	European group differences	72
3	Product photos	73-80

Documents referenced by this report (available on request):


Document Name or No.	Documents description	Page No.
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Test Report History:	
Ref. No.	Item
POCE230412140FRS	First version
Tests performed (name of test and test clause): See below	Testing location: 102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyao, Bao'an District, Shenzhen, Guangdong, China
Summary of compliance with National Differences	
List of countries addressed: EU Group Differences, EU Special National Conditions.	

Copy of marking plate:
The artwork below may be only a draft.





MODEL: B80-200-OTA





E0FFF123BF8B

FCC ID: 2BAJL-BXX200OTA

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Manufacturer: IBE ELECTRONICS CO.,LTD

Test item particulars:	
Type of item	<input checked="" type="checkbox"/> Measurement / <input type="checkbox"/> Control / <input type="checkbox"/> Laboratory
Description of equipment function.....	Remote WiFi Node
Connection to MAINS supply.....	<input type="checkbox"/> Permanent / <input checked="" type="checkbox"/> Detachable cord set / <input type="checkbox"/> Non detachable cord set / <input type="checkbox"/> None / <input checked="" type="checkbox"/> Battery operated
Overvoltage category.....	<input type="checkbox"/> II / <input checked="" type="checkbox"/> III / <input checked="" type="checkbox"/> IV
POLLUTION DEGREE.....	PD2
Means of protection.....	<input type="checkbox"/> Class I (PE connected) / <input type="checkbox"/> Class II (isolated)
Environmental conditions.....	<input checked="" type="checkbox"/> Normal / <input type="checkbox"/> Extended (Specify):
For use in wet locations.....	<input type="checkbox"/> Yes / <input checked="" type="checkbox"/> No
Equipment mobility.....	<input checked="" type="checkbox"/> Portable / <input type="checkbox"/> Hand-held / <input type="checkbox"/> Floor standing / <input type="checkbox"/> Fixed / <input type="checkbox"/> Built-in
Operating conditions.....	<input checked="" type="checkbox"/> Continuous / <input type="checkbox"/> Short-time / <input type="checkbox"/> Intermittent
Overall size of equipment (W x D x H).....	See manual
Mass of equipment (kg).....	See manual
Marked degree of protection to IEC 60529.....	IP20
Possible test case verdicts:	
- Test case does not apply to the test object.....	N/A (Not Applicable)
- Test object does meet the requirement.....	P (Pass)
- Test object does not meet the requirement.....	F (Fail)
Testing:	
Date of receipt of test item.....	Apr. 01, 2023
Date (s) of performance of tests.....	Apr. 01, 2023 to Apr. 24, 2023
General remarks:	
<p>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 testing laboratory. "(see ENCLOSURE #)" refers to additional information appended to the report. "(see Form A.xx)" refers to a table appended to the report. Bottom lines for measurement tables Form A.xx are optional if used as record.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
<p>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.....</p> <p style="text-align: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable</p>	
When differences exist; they shall be identified in the general product information section.	

General product information:

1. The unit covered in this report is a WiFi Node for the use in measurement equipment.
2. Maximum ambient temperature: 40°C.

Description of model differences.

The all models are same except their model number, and all tests are based on B80-200-OTA.

Description of special features.

1. The product is intended for use on the following power systems: TN
2. This appliance supplied by 5VDC or 3VDC.
3. The max altitude: 2000m.

Abbreviations used in the report:


- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	TESTS		P
4.4	Testing in SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests	(see Form A.1)	P
4.4.2	Application of SINGLE FAULT CONDITIONS		P
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.2 to 4.4.2.14	(see Form A.1)	—
4.4.2.2	PROTECTIVE IMPEDANCE		P
4.4.2.3	PROTECTIVE CONDUCTOR	(see Form A.6)	P
4.4.2.4	Equipment or parts for short-term or intermittent operation	Continuous operation	N/A
4.4.2.5	Motors		—
	– stopped while fully energized		N/A
	– prevented from starting		N/A
	– one phase interrupted (multi-phase)		N/A
4.4.2.6	Capacitors		N/A
4.4.2.7	MAINS transformers		N/A
4.4.2.7.2	Short circuit	(see Form A.39)	N/A
4.4.2.7.3	Overload		N/A
4.4.2.8	Outputs		N/A
4.4.2.9	Equipment for more than one supply		N/A
4.4.2.10	Cooling	(see Form A.26A)	—
	– air holes closed		N/A
	– fans stopped		N/A
	– coolant stopped		N/A
	– loss of cooling liquid		N/A
4.4.2.11	Heating devices		N/A
	– timer overridden		N/A
	– temperature controller overridden		N/A
4.4.2.12	Insulation between circuits and parts		P
4.4.2.13	Interlocks	No such interlocks	N/A
4.4.2.14	Voltage selectors		P
4.4.3	Duration of tests	(see Form A.1)	—
4.4.4	Conformity after application of fault conditions	(see Form A.1; A.6, A.18)	P

5	MARKING AND DOCUMENTATION		P
5.1.1	Required equipment markings		—
	– visible from the exterior; or		P
	– visible after removing cover or opening door		P
	– visible after removal from a rack or panel		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Not put on parts which can be removed by an operator		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (IEC 61010-1: Table 1) used		P
5.1.2	Identification		P
	Equipment is identified by:		—
	a) Manufacturer's or supplier's name or trademark	IBE ELECTRONICS CO.,LTD	P
	b) Model number, name or other means	B80-200-OTA	P
	Manufacturing location identified	IBE industry building, TangTou No.1 Industrial Estate, Shiyan Town, Baoan district, Shenzhen, 518108, Guangdong, China	P
5.1.3	MAINS supply		P
	Equipment is marked as follows:		—
	a) Nature of supply:		—
	1) a.c. RATED MAINS frequency or range of frequencies.....:		—
	2) d.c. with symbol 1.....:	≡	—
	b) RATED supply voltage(s) or range.....:	5V	—
	c) Max. RATED power (W or VA) or input current.....:		—
	The marked value not less than 90 % of the maximum value	(see Form A.2)	P
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %	(see Form A.2)	N/A
	d) OPERATOR-set for different RATED supply voltages:		—
	Indicates the equipment set voltage		N/A
	Portable equipment indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
	e) Accessory MAINS socket-outlets accepting standard MAINS plugs are marked:		—
	With the voltage if it is different from the MAINS supply voltage.....:		—
	For use only with specific equipment		N/A
	If not marked for specific equipment it is marked with:		—
	The maximum rated current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses		N/A
	Operator replaceable fuse marking (see also 5.4.5).....:		—

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.5	TERMINALS, connections and operating devices		P
5.1.5.1	General		—
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		P
	Push-buttons and actuators of emergency stop devices and indicators:		—
	– used only to indicate a warning of danger; or		N/A
	– the need for urgent action		N/A
	– coloured red		N/A
	– coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		—
	– to safety of persons; or		N/A
	– safety of the environment		N/A
5.1.5.2	terminals		—
	MAINS supply TERMINAL identified		N/A
	Other TERMINAL marking:		—
	a) FUNCTIONAL EARTH TERMINALS (symbol 5 used)		N/A
	b) PROTECTIVE CONDUCTOR TERMINALS:		—
	Symbol 6 is placed close to or on the TERMINAL; or		N/A
	Part of appliance inlet		N/A
	c) TERMINALS of control circuits (symbol 7 used)		N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior		N/A
	Standard MAINS socket outlet; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.6	Switches and circuit breakers		P
	If disconnecting device, off position clearly marked		P
	If push-button used as power supply switch:		N/A
	– symbol 9 and 15 used for on-position		N/A
	– symbol 10 and 16 used for off-position		N/A
	– pair of symbols 9, 15 and 10, 16 close together		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		N/A
	Protected throughout (symbol 11 used)		N/A
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If TERMINAL or ENCLOSURE exceeds 60 °C:	(see Form A.26A)	N/A
	Cable temperature RATING marked.....:		N/A
	Marking visible before and during connection or beside TERMINAL		N/A
5.2	Warning markings		P
	Visible when ready for NORMAL USE		P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour:		P
	a) symbols min 2,75 mm and text 1,5 mm high and contrasting in colour with background		P
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and		P
	0,5 mm depth or raised if not contrasting in colour		P
	If necessary marked with symbol 14		P
	Statement to isolate or disconnect if access by using a tool to HAZARDOUS LIVE parts is permitted		P
5.3	Durability of markings		P
	The required markings remain clear and legible in NORMAL USE	(see Form A.3)	P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation for safety purposes for OPERATOR or RESPONSIBLE BODY		P
	Safety documentation for service personnel authorized by the manufacturer	See user manual	P
	Documentation necessary for safe operation is provided in printed media or	See user manual	P
	in electronic media if available at any time	See user manual	P
	Documentation includes:	See user manual	P
	a) intended use	See user manual	P
	b) technical specification	See user manual	P
	c) name and address of manufacturer or supplier	See user manual	P
	d) information specified in 5.4.2 to 5.4.6	See user manual	P
	e) information to mitigate residual RISK (see also subclause 17)	See user manual	P
	f) accessories for safe operation of the equipment specified	See user manual	P
	g) guidance provided to check correct function of the equipment, if incorrect reading may cause a HAZARD from harmful or corrosive substances of HAZARDOUS live parts	See user manual	P
	h) instructions for lifting and carrying	See user manual	P

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Warning statements and a clear explanation of warning symbols:	See user manual	P
	– provided in the documentation; or	See user manual	P
	– information is marked on the equipment		P
5.4.2	Equipment ratings		P
	Documentation includes:		P
	a) Supply voltage or voltage range.....:	See marking	P
	Frequency or frequency range.....:	See marking	P
	Power or current rating.....:	See marking	P
	b) Description of all input and output connections in accordance to 6.6.1 a)	See user manual	P
	c) Rating of insulation of external circuits in accordance to 6.6.1 b)		N/A
	d) Statement of the range of environmental conditions (see 1.4)		P
	e) Degree of protection (IEC 60529)	IP20	P
	f) If impact rating less than 5 J:		P
	IK code in accordance to IEC 62262 marked; or		N/A
	symbol 14 of table 1 marked, with		P
	RATED energy level and test method stated		P
5.4.3	Equipment installation		N/A
	Documentation includes instructions for:		--
	a) assembly, location and mounting requirements		N/A
	b) protective earthing		N/A
	c) connections to supply		N/A
	d) PERMANENTLY CONNECTED EQUIPMENT:		N/A
	1) Supply wiring requirements		N/A
	2) If external switch or circuit-breaker, requirements and location recommendation		N/A
	e) ventilation requirements		N/A
	f) special services (e. g. air, cooling liquid)		N/A
	g) instructions relating to sound level		N/A
5.4.4	Equipment operation		P
	Instructions for use include:		P
	a) identification and description of operating controls		P
	b) positioning for disconnection		P
	c) instructions for interconnection		P
	d) specification of intermittent operation limits		N/A
	e) explanation of symbols used		P

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Clause	Requirement + Test	Result - Remark	Verdict
	f) replacement of consumable materials		N/A
	g) cleaning and decontamination		P
	h) listing of any poisonous or injurious gases and quantities		N/A
	i) RISK reduction procedures relating to flammable liquids (see 9.5)		N/A
	j) RISK reduction procedures relating burn from surfaces permitted to exceed limits of 10.1		N/A
	Additional precautions for IEC 60950 conforming equipment in regard to moistures and liquids		N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer		N/A
5.4.5	Equipment maintenance and Service		P
	Instructions for responsible body include:		--
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:		--
	Instruction against the use of detachable MAINS supply cord with inadequate rating		P
	Specific battery type of user replaceable batteries		N/A
	Any manufacturer specified parts		P
	Rating and characteristics of fuses	See table 14.1	N/A
	Instructions include following subjects permitting safe servicing and continued safety:		--
	a) product specific RISKS may affect service personnel		P
	b) protective measures for these RISKS		P
	c) verification of the safe state after repair		P
5.4.6	Integration into systems or effects resulting from special conditions		N/A
	Aspects described in documentation		N/A

6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General		P
6.1.1	Requirements		P
	Protection against electric shock maintained in normal condition and single fault condition		P
	Accessible parts not hazardous live		P
	Voltage, current, charge or energy below the limits in normal condition and in single fault condition between:		—
	Accessible parts and earth		N/A
	Two accessible parts on same piece of the equipment within a distance of 1,8 m		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		N/A
6.1.2	Exceptions		N/A
	Following hazardous live parts may be accessible to an operator:		—
	a) parts of lamps and lamp sockets after lamp removal		N/A
	b) parts to be replaced by operator only by the use of tool and warning marking		N/A
	Those parts not hazardous live 10 s after interruption of supply	(see Form A.5)	N/A
	Capacitance test if charge is received from internal capacitor	(see Form A.4 and A.5)	N/A
6.2	Determination of accessible parts	(see Form A.4)	P
6.2.1	General		P
	Unless obviously determination of accessible parts as specified in 6.2.2 to 6.2.4		P
6.2.2	Examination		P
	– with jointed test finger (as specified B.2)		P
	– with rigid test finger (as specified B.1) and a force of 10N		P
6.2.3	Openings above parts that are hazardous live		N/A
	– test pin with length of 100 mm and 4 mm in diameter applied		N/A
6.2.4	Openings for pre-set controls		N/A
	– test pin with length of 100 mm and 3 mm in diameter applied		N/A
6.3	Limit values for accessible parts		P
6.3.1	Levels in normal condition	(see Form A.5)	—
	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.		P
	for wet locations voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		N/A
	Voltages are not hazardous live the levels of:		—
	b) Current less than 0,5 mA r.m.s. for sinusoidal, 0,7 mA peak non-sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz		P
	for wet locations measuring circuit A.4 used		N/A
	70 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	or		—
	c) Levels of capacitive charge or energy less:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	1) 45 μ C for voltages up to 15 kV peak or d.c. or line A of Figure 3		P
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.3.2	Levels in single fault condition	(see Form A.6)	—
	a) Voltage limits less than 55 V r.m.s. and 78 V peak or 140 V d.c.		N/A
	for wet locations voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.		N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 3,5 mA r.m.s. for sinusoidal, 5 mA peak non-sinusoidal or mixed frequencies or 15 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz		P
	for wet locations measuring circuit A.4 used		N/A
	500 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	or		—
	c) Levels of capacitive charge or energy less line B of Figure 3		N/A
6.4	Primary means of protection		N/A
6.4.1	ACCESSIBLE parts prevented from being HAZARDOUS LIVE by one or more of following means:		—
	a) Enclosures or protective barriers (see 6.4.2)		N/A
	b) Basic insulation (see 6.4.3)		N/A
	c) Impedance (see 6.4.4)		N/A
6.4.2	Enclosures or protective barriers	(see Form A.15 and A.16)	—
	– meet rigidity requirements of 8.1		N/A
	– meet requirements for BASIC INSULATION, if protection is provided by insulation		N/A
	– meet requirements of 6.7 for CREEPAGE and CLEARANCES between ACCESSIBLE parts and HAZARDOUS live parts, if protection is provided by limited access		N/A
6.4.3	Basic insulation	(see Form A.15 and A.16)	—
	– meet clearance, creepage distance and solid insulation requirements of 6.7		N/A
6.4.4	Impedance	(see Form A.12 and A.15)	—
	Impedance used as primary means of protection meets all of following requirements:		—
	a) limits current or voltage to level of 6.3.2	(see Form A.6)	N/A
	b) Rated for maximum working voltage and the amount of power it will dissipate		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) Clearance, creepage distance between terminations of the impedance meet requirements of basic insulation of 6.7	(see Form A.15)	N/A
6.5	Additional means of protection in case of single fault condition		N/A
6.5.1	Accessible parts are prevented from becoming hazardous live by the primary means of protection and supplemented by one of:		—
	a) protective bonding (see 6.5.2)		N/A
	b) supplementary insulation (see 6.5.3)		N/A
	c) automatic disconnection of the supply (see 6.5.5)		N/A
	d) current- or voltage-limiting device (see 6.5.6)		N/A
	Alternatively one of the single means of protection is used:		—
	e) reinforced insulation (see 6.5.3)		N/A
	f) protective impedance (see 6.5.4)		N/A
6.5.2	Protective bonding		N/A
6.5.2.1	Accessible conductive parts, may become hazardous live in single fault condition:		—
	Bonded to the protective conductor terminal; or		N/A
	Separated by conductive screen or barrier bonded to protective conductor terminal		N/A
6.5.2.2	Integrity of protective bonding		—
	A) PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N/A
	b) Soldered connections:		—
	Independently secured against loosening		N/A
	Not used for other purposes		N/A
	c) Screw connections are secured		N/A
	D) Protective bonding not interrupted; or		N/A
	exempted as removable part carries MAINS SUPPLY input connection		N/A
	e) Any movable protective bonding connection specifically designed, and meets 6.5.2.4		N/A
	f) No external metal braid of cables used (not regarded as protective bonding)		N/A
	G) If mains supply passes through:		—
	Means provided for passing protective conductor;		N/A
	Impedance meets 6.5.2.4		N/A
	H) Protective conductors bare or insulated, if insulated, green/yellow		N/A
	Exceptions:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	1) earthing braids;		N/A
	2) internal protective conductors etc.;		N/A
	Green/yellow not used for other purposes		N/A
	Terminal suitable for connection of a protective conductor, and meets 6.5.2.3		N/A
6.5.2.3	Protective conductor terminal		—
	a) Contact surfaces are metal		N/A
	b) Appliance inlet used		N/A
	c) For rewritable cords and permanently connected equipment, protective conductor terminal is close to mains supply terminals		N/A
	d) If no MAINS supply is required, any protective conductor terminal:		—
	Is near terminals of circuit for which protective earthing is necessary		N/A
	External if other terminals external		N/A
	e) Equivalent current-carrying capacity to mains supply terminals	(see Form A.7)	N/A
	f) If plug-in, makes first and breaks last		N/A
	g) If also used for other bonding purposes, protective conductor:		—
	Applied first;		N/A
	Secured independently;		N/A
	Unlikely to be removed by servicing		N/A
	h) Protective conductor of measuring circuit:		—
	1) Current rating equivalent to measuring circuit terminal;		N/A
	2) protective bonding: not interrupted by any switch or interrupting device		N/A
	i) functional earth terminals allow independent connection		N/A
	j) If a binding screw used for protective conductor terminal:		—
	Suitable size for bond wire		N/A
	Not smaller than M 4		N/A
	At least 3 turns of screw engaged		N/A
	Passes tightening torque test	(see Form A.8)	N/A
	k) Contact pressure not capable being reduced by deformation of materials		N/A
6.5.2.4	Impedance of protective bonding of plug-connected equipment	(see Form A.9)	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Impedance between protective conductor terminal and each accessible part where protective bonding is specified, is:		—
	– less than 0,1 Ohm; or		N/A
	– less than 0,2 Ohm if equipment is provided with non-detachable cord		N/A
6.5.2.5	Bonding impedance of permanently connected equipment	(see Form A.10)	—
6.5.2.6	Transformer protective bonding screen	(see Form A.11)	—
	Transformer provided with screen for protective bonding:		—
	screen bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses (see 6.5.2.2 a)		N/A
	screen bonding with soldered connection (see 6.5.2.2 b) is:		N/A
	– Independently secured against loosening		N/A
	– Not used for other purposes		N/A
6.5.3	Supplementary and reinforced insulation		N/A
	Meet clearance, creepage distance and solid insulation requirements of 6.7		N/A
6.5.4	Protective impedance		N/A
	Limits current or voltage to level of 6.3.1 in NORMAL and to level of 6.3.2 in SINGLE FAULT CONDITION		N/A
	Clearance, creepage distance between terminations of the impedance meet requirements of double or reinforced insulation of 6.7		N/A
	The protective impedance consists of one or more of the following:		—
	a) appropriate single component suitable for safety and reliability for protection, it is:		—
	1) rated twice the maximum working voltage		N/A
	2) resistor rated for twice the power dissipation for maximum working voltage		N/A
	b) combination of components		N/A
	Single electronic device not used as PROTECTIVE IMPEDANCE		N/A
6.5.5	Automatic disconnection of the supply		N/A
	a) Rated to disconnect the load within time specified in Figure 2		N/A
	b) Rated for the maximum load conditions of the equipment		N/A
6.5.6	Current- or voltage-limiting devices	(see Form A.12)	N/A
	Device complies with all of:		—
	a) Rated to limit the current or voltage to the level of 6.3.2	(see Form A.6)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Rated for the maximum working voltage; and	1000V	N/A
	RATED for the maximum operational current if applicable		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of SUPPLEMENTARY INSULATION of 6.7	(see Form A.14, A.15)	N/A
6.6	Connections to external circuits		N/A
6.6.1	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		—
	– the external circuits		N/A
	– the equipment		N/A
	Protection achieved by separation of circuits; or		N/A
	short circuit of separation does not cause a hazard		N/A
	Instructions or markings for each terminal include:		—
	A) RATED conditions for TERMINAL		N/A
	B) Required RATING of external circuit insulation		N/A
6.6.2	Terminals for external circuits		N/A
	Terminals which receive a charge from an internal capacitor are not hazardous live after 10 s of interrupting supply connection	(see Form A.5)	N/A
6.6.3	Circuits with terminals which are hazardous live		N/A
	These circuits are:		—
	Not connected to accessible conductive parts; or		N/A
	Connected to accessible conductive parts, but are not mains circuits and have one terminal contact at earth potential		N/A
	No accessible conductive parts are hazardous live		N/A
6.6.4	Accessible terminals for stranded conductors		N/A
	No risk of accidental contact because:		—
	– Located or shielded		N/A
	– Self-evident or marked whether or not connected to accessible conductive parts		N/A
	ACCESSIBLE TERMINALS will not work loose		N/A
6.7	Insulation requirements	(see Form A.14)	N/A
6.7.1	The nature of insulation	Supplied by 3Vdc, without direct contact with live parts	—
6.7.1.1	Insulation between ACCESSIBLE parts or between separate circuits consist of CLEARANCES, CREEPAGE DISTANCES and solid insulation if provided as protection against a HAZARD		N/A
6.7.1.2	CLEARANCES		—
	Required CLEARANCES reflecting factors of 6.7.1.1	(see Form A.14 and A.15)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied		N/A
6.7.1.3	CREEPAGE DISTANCES		—
	Required CREEPAGE DISTANCES reflecting factors of 6.7.1.1 a) to d)	(see Form A.14 and A.15)	N/A
	CTI material group reflected by requirements		N/A
	CTI test performed		N/A
6.7.1.4	Solid insulation		—
	Required solid insulation reflecting factors of 6.7.1.1 a) to d)	(see Form A.14 and A.15)	N/A
6.7.1.5	Requirements for insulation according to type of circuit	(see Form A.14 and A.15)	—
	A) 6.7.2 MAINS circuits of OVERVOLTAGE CATEGORY II up to nominal supply voltage of 300 V		N/A
	B) 6.7.3 secondary circuits separated from circuits defined in a) by transformer		N/A
	C) K.1 MAINS circuits of OVERVOLTAGE CATEGORY III and IV or OVERVOLTAGE CATEGORY II over 300 V		P
	D) K.2 secondary circuits separated from circuits defined in c) by transformer		N/A
	E) K.3 circuits having one or more of:		—
	1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT		N/A
	2) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT		N/A
	3) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		N/A
	4) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N/A
	5) WORKING VOLTAGE with a frequency above 30 kHz		N/A
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V		N/A
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES	(see Form A.14 and A.15)	—
	Values for MAINS CIRCUITS of Table 4 are met		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.2.2	Solid insulation		—
6.7.2.2.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	Equipment passed voltage tests of 6.8.3 with values of Table 5	(see Form A.18)	N/A
	Complies as applicable:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	A) ENCLOSURE or PROTECTIVE BARRIER of Clause 8		N/A
	b) moulded and potted parts requirements of 6.7.2.2.2		N/A
	c) inner layers of printed wiring boards requirements of 6.7.2.2.3		N/A
	d) thin-film insulation requirements of 6.7.2.2.4		N/A
6.7.2.2.2	Moulded and potted parts		—
	Conductors between same two layers are separated by at least 0,4 mm after moulding is completed		N/A
6.7.2.2.3	Inner insulating layers of printed wiring boards		—
	Separated by at least 0,4 mm between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness of insulation is at least 0,4 mm		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 5 for REINFORCED INSULATION		N/A
6.7.2.2.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE of 6.7.2.1		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness through the insulation at least 0,4 mm		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests of 6.8.3 with values of Table 5 for REINFORCED INSULATION	(see Form A.18)	N/A
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V		N/A
6.7.3.1	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		—
	– REINFORCED INSULATION		N/A
	– DOUBLE INSULATION		N/A
	– screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES		—
	a) meet the values of Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or		N/A
	twice the values of Table 6 for REINFORCED INSULATION		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	or		—
	B) pass the voltage tests of 6.8 with values of Table 6;	(see Form A.18)	—
	with following adjustments:		—
	1) values for reinforced insulation are 1,6 times the values for basic insulation		N/A
	2) if operating altitude is greater than 2000 m values of CLEARANCES multiplied with factor of Table 3		N/A
	3) minimum CLEARANCE is 0,2 mm for POLLUTION DEGREE 2 and 0,8 mm for POLLUTION DEGREE 3		N/A
6.7.3.3	CREEPAGE DISTANCES		—
	Based on WORKING VOLTAGE meets the values of Table 7 for BASIC and SUPPLEMENTARY INSULATION		N/A
	Values for REINFORCED INSULATION are twice the values of BASIC INSULATION		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.3.4	Solid insulation		—
6.7.3.4.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		—
	a) Equipment passed voltage test of 6.8.3.1 for 5 s with VALUES of Table 6 for BASIC and SUPPLEMENTARY INSULATION	(see Form A.18)	N/A
	values for REINFORCED INSULATION are 1,6 times the values of BASIC INSULATION		N/A
	b) if WORKING VOLTAGE exceeds 300 V, equipment passed voltage test of 6.8.3.1 for 1 min with a test voltage of 1,5 times working voltage for BASIC or SUPPLEMENTARY INSULATION	(see Form A.18)	N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		N/A
	Complies as applicable:		—
	1) ENCLOSURE or PROTECTIVE BARRIER of Clause 8		N/A
	2) moulded and potted parts requirements of 6.7.3.4.2		N/A
	3) inner layers of printed wiring boards requirements of 6.7.3.4.3		N/A
	4) thin-film insulation requirements of 6.7.3.4.4		N/A
6.7.3.4.2	Moulded and potted parts		—
	Conductors between same two layers are separated by applicable distances of Table 8		N/A
6.7.3.4.3	Inner insulation layers of printed wiring boards		—
	Separated by at least by applicable distances of Table 8 between same two layers		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min two separate layers, where the combination is RATED for 1,6 times the test voltage of Table 6		N/A
6.7.3.4.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE of 6.7.3.2 and 6.7.3.3		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of min. two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min. three separate layers, where the combination of two layers passed voltage tests with 1,6 time values of Table 6:	(see Form A.18)	—
	a.c. test of 6.8.3.1; or		N/A
	d.c. test of 6.8.3.2 for circuits stressed only by d.c. voltages		N/A
6.8	Procedure for dielectric strength tests	(see Form A.14 and A.18)	P
6.9	Constructional requirements for protection against electric shock		P
6.9.1	If a failure could cause a HAZARD:		—
	a) security of wiring connections		P
	b) screws securing removable covers		P
	c) accidental loosening		P
	d) CLEARANCES and CREEPAGE DISTANCES not reduced below the values of basic insulation by loosening of parts or wires		P
6.9.2	Insulating materials		N/A
	Material not to be used for safety relevant insulation:		—
	a) easily damaged materials not used		N/A
	b) non-impregnated hygroscopic materials not used		N/A
6.9.3	Colour coding		N/A
	Green-and-yellow insulation shall not be used except:		—
	a) protective earth conductors;		N/A
	b) PROTECTIVE BONDING conductors;		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) potential equalization conductors;		N/A
	d) functional earth conductors		N/A
6.10	Connection to MAINS supply source and connections between parts of equipment		N/A
6.10.1	MAINS supply cords		—
	RATED for maximum equipment current (see 5.1.3 c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
	Heat-resistant if likely to contact hot parts		N/A
	Temperature RATING (cord and inlet).....:		—
	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS		N/A
	Detachable cords with IEC 60320 MAINS connectors:		—
	Conform to IEC 60799; or		N/A
	Have the current RATING of the MAINS connector		N/A
6.10.2	Fitting of non-detachable MAINS supply cords		—
6.10.2.1	Cord entry		—
	a) inlet or bushing with a smoothly rounded opening; or		N/A
	b) insulated cord guard protruding >5 D (diameter)		N/A
6.10.2.2	Cord anchorage		—
	Protective earth conductor is the last to take the strain		N/A
	a) cord is not clamped by direct pressure from a screw		N/A
	b) knots are not used		N/A
	c) cannot push the cord into the equipment to cause a HAZARD		N/A
	d) no failure of cord insulation in anchorage with metal parts		N/A
	e) not to be loosened without a tool		N/A
	f) cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull and or torque test	(see Form A.19)	N/A
6.10.3	Plugs and connectors		N/A
	MAINS supply plugs, connectors etc., conform with relevant specifications		N/A
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage		N/A
	MAINS type plugs used only for connection to MAINS supply		N/A
	Plug pins which receive a charge from an internal capacitor	(see Form A.5)	N/A
	Accessory MAINS socket outlets:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	a) marking if accepts a standard MAINS supply plug (see 5.1.3e)		N/A
	b) input has a protective earth conductor if outlet has EARTH TERMINAL CONTACT		N/A
6.11	Disconnection from supply source		N/A
6.11.1	Disconnects all current-carrying conductors		N/A
6.11.2	Exceptions		N/A
6.11.3	Requirements according to type of equipment		—
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment		N/A
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation requires:		—
	a) switch or circuit-breaker to be included in building installation		N/A
	b) suitable location easily reached		N/A
	c) marking as disconnecting for the equipment		N/A
6.11.3.2	Single-phase cord-connected equipment		P
	Equipment is provided with one of the following:		—
	a) switch or circuit-breaker		P
	b) appliance coupler (disconnectable without tool)		N/A
	c) separable plug (without locking device)		N/A
6.11.4	Disconnecting devices		N/A
6.11.4.1	Disconnecting device part of equipment		N/A
	Electrically close to the SUPPLY		N/A
	Power-consuming components not electrically located between the supply source and the disconnecting device		N/A
	Except electromagnetic interference suppression circuits permitted to be located on the supply side of the disconnecting device		N/A
6.11.4.2	Switches and circuit-breakers		N/A
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function.....:		—
	Not incorporated in MAINS cord		N/A
	Does not interrupt PROTECTIVE EARTH CONDUCTOR		N/A
6.11.4.3	Appliance couplers and plugs		N/A
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		—
	Readily identifiable and easily reached by the operator		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Single-phase portable equipment cord length not more than 3 m		N/A
	PROTECTIVE EARTH CONDUCTOR connected first and disconnected last		N/A

7	PROTECTION AGAINST MECHANICAL HAZARDS		P
7.1	Equipment does not cause a mechanical HAZARD in NORMAL nor in SINGLE FAULT CONDITION		P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges		P
	Easily touched parts are smooth and rounded		P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts		N/A
7.3.1	HAZARDS from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5		N/A
	RISK assessment in accordance with 7.3.3 carried out		N/A
7.3.2	Exceptions		N/A
	Access to HAZARDOUS moving parts permitted under following circumstances:		—
	a) obviously intended to operate on parts or materials external of the equipment		N/A
	inadvertent touching of moving parts minimized by equipment design (e.g. guards or handles)		N/A
	b) If operator access is unavoidable outside normal use following precautions have been taken:		—
	1) access requires tool		N/A
	2) statement about training in the instructions		N/A
	3) warning markings on covers prohibiting access by untrained OPERATORS		N/A
	or symbol 14 with full details in documentation		N/A
7.3.3	RISK assessment for mechanical HAZARDS to body parts		N/A
	RISK is reduced to a tolerable level by protective measures as specified in table 12		N/A
	Minimum protective measures:		—
	A. Low level measures		N/A
	B. Moderate measures		N/A
	C. Stringent measures		N/A
7.3.4	Limitation of force and pressure	(see Form A.20)	N/A
	Following levels are met in NORMAL and SINGLE FAULT CONDITION:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Continuous contact pressure below 50 N / cm ² with force below 150 N		N/A
	Temporary force below 250 N for an area at least of 3 cm ² for a maximum duration of 0,75 s		N/A
7.3.5	Gap limitations between moving parts	(see Form A.20)	N/A
7.3.5.1	Access normally allowed		—
	If levels of 7.3.4 exceeded and body part may be inserted minimum gap as specified in table 13 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.3.5.2	Access normally prevented		—
	Maximum gap as specified in table 14 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.4	Stability		N/A
	Equipment not secured to building structure is physical stable		N/A
	Stability maintained after opening of drawers etc. by automatic means, or		N/A
	warning marking requires the application of means		N/A
	Compliance checked by following tests as applicable:		—
	a) 10° tilt test for other than hand-held equipment		N/A
	b) multi-directional force test for equipment exceeds height of 1 m and mass of 25 kg		N/A
	c) downward force test for floor-standing equipment		N/A
	d) overload test with 4 times maximum load for castor or support that supports greatest load		N/A
	e) castor or support that supports greatest load removed from equipment		N/A
7.5	Provisions for lifting and carrying		N/A
7.5.1	Equipment more than 18 kg :		—
	Has means for lifting or carrying; or		N/A
	Directions in documentation		N/A
7.5.2	Handles and grips		—
	Handles or grips withstand four times weight		N/A
7.5.3	Lifting devices and supporting parts		—
	RATED for maximum load; or		N/A
	tested with four times maximum static load		N/A
7.6	Wall mounting		N/A
	Mounting brackets withstand four times weight		N/A
7.7	Expelled parts		N/A
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a tool		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	Equipment does not cause a HAZARD when subjected to mechanical stresses in NORMAL USE		P
	Normal protection level is 5 J		P
	Levels below 5 J but not less than 1 J are acceptable if all of following criteria are met:		—
	a) lower level justified by RISK assessment of manufacturer		P
	b) equipment installed in its intended application is not easily touched		P
	c) only occasional access during NORMAL USE		P
	d) IK code in accordance to IEC 62262 marked or symbol 14 used with full information in the documentation		P
	for non-metallic ENCLOSURES rated below 2 °C ambient temperature value chosen for minimum RATED temperature		P
	impact energies between IK values, the IK code marked for nearest lower value		P
	Conformity is checked by performing following tests:		—
	1) static test of 8.2.1		P
	2) impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT		P
	if impact energy not selected to 5 J alternate method of IEC 62262 used		N/A
	3) drop test of 8.3.1 or 8.3.2 except for FIXED EQUIPMENT and equipment with mass over 100 kg		P
	Equipment RATED with an impact rating of IK 08 that obviously meets the criteria		P
	After the tests inspection with following results:		—
	– HAZARDOUS LIVE parts above the limits of 6.3.2 not ACCESSIBLE		P
	– insulation pass the voltage tests of 6.8	(see Form A.30)	P
	i) no leaks of corrosive and harmful substances		P
	ii) ENCLOSURE shows no cracks resulting in a HAZARD		P
	iii) CLEARANCES not less than their permitted values		P
	iv) insulation of internal wiring remains undamaged		P
	v) PROTECTIVE BARRIERS not damaged or loosened		P
	vi) No moving parts exposed, except permitted by 7.3		P
	vii) no damage which could cause spread of fire		P
8.2	ENCLOSURE rigidity test		P
8.2.1	Static test		P

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Clause	Requirement + Test	Result - Remark	Verdict
	– 30 N with 12 mm rod to each part of ENCLOSURE		P
	– in case of doubt test conducted at maximum RATED ambient temperature		P
8.2.2	Impact test	hand-held equipment	N/A
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged		N/A
	Impact energy level and corresponding IK code.....:		—
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		N/A
8.3	Drop test		P
8.3.1	Other than hand-held and direct-plug-in equipment		N/A
	Tests conducted with a drop height or angle of.....:		—
8.3.2	hand-held and direct-plug-in equipment		—
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		P
	Drop test conducted with an height of 1 m		P

9	PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	No spread of fire in NORMAL and SINGLE FAULT CONDITION		P
	MAINS supplied equipment meets requirements of 9.6 additionally		P
	Conformity is checked by minimum one or a combination of the following (see Figure 11):	(see Form A.22)	—
	a) SINGLE FAULT test of 4.4; or	(see Form A.1)	P
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or		P
	c) Application of 9.3 (containment of fire within the equipment)		P
9.2	Eliminating or reducing the sources of ignition within the equipment		P
	a) 1) Limited-energy circuit (see 9.4); or		N/A
	b) 2) BASIC INSULATION provided for parts of different potential; or	(see Form A.14 and A.18)	P
	Bridging the insulation does not cause ignition	(see Form A.1)	P
	c) Surface temperature of liquids and parts (see 9.5)		N/A
	d) No ignition in circuits designed to produce heat	(see Form A.1)	P
9.3	Containment of the fire within the equipment, should it occur		P
9.3.1	Spread of fire outside equipment reduced to a tolerable level if:		—
	a) Energizing of the equipment is controlled by an OPERATOR held switch		P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) ENCLOSURE is conform with constructional requirements of 9.3.2; and		P
	Requirements of 9.5 are met		P
9.3.2	Constructional requirements		—
	a) Connectors and insulating material have flammability classification V-2 or better	(see TABLE 1 or Form A.23)	P
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)	(see TABLE 1 or Form A.23)	P
	c) ENCLOSURE meets following requirements:	(see Form A.22)	—
	1) Bottom and sides in arc of 5 ° (see Figure 13) to non-limited circuits (9.4) meets:		—
	i) no openings; or		P
	ii) perforated as specified in table 16; or		P
	iii) metal screen with a mesh; or		N/A
	iv) baffles as specified in Figure 12		N/A
	2) Material of ENCLOSURE and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N/A
	Non-metallic materials have flammability classification V-1 or better	(see TABLE 1 or Form A.22)	P
	3) ENCLOSURE and any baffle or flame barrier have adequate rigidity		P
9.4	Limited-energy circuit	(see Form A.24)	N/A
	a) Potential not more than 30 r.m.s. and 42,4 V peak, or 60 V dc		N/A
	b) Current limited by one of following means:		—
	1) Inherently or by impedance (see table 17); or		N/A
	2) Overcurrent protective device (see table 18); or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION (see table 17)		N/A
	c) Is separated by at least BASIC INSULATION		N/A
	Fuse or a nonadjustable electromechanical device is used		N/A
9.5	Requirements for equipment containing or using flammable liquids		N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire	(see Form A.25)	N/A
	RISK is reduced to a tolerable level:		—
	a) The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N/A
	b) The quantity of liquid is limited		N/A
	c) Flames are contained within the equipment		N/A
	Detailed instructions for RISK-reduction provided		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.6	Overcurrent protection		P
9.6.1	Mains supplied equipment protected		P
	Basic insulation between mains parts of opposite polarity provided	(see Form A.14 and A.15)	P
	Devices not in the protective conductor		P
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		N/A
9.6.2	permanently connected equipment		N/A
	Overcurrent protection device:		—
	Fitted within the equipment; or		N/A
	Specified in manufacturer's instructions		N/A
9.6.3	Other equipment		—
	Protection within the equipment		P

10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in NORMAL and in SINGLE FAULT CONDITION:	(see Form A.26A)	—
	– at an specified ambient temperature of 40 °C		P
	– for equipment rated above 40 °C ambient temperature limits not exceeded raised by the difference to 40 °C		P
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	– Are recognizable as such by appearance or function; or		N/A
	– Are marked with symbol 13		N/A
	– Guards are not removable without tool		N/A
10.2	Temperatures of windings		N/A
	Limits not exceeded in:	(see Form A.26B)	—
	normal condition		N/A
	single fault condition		N/A
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:	(see Form A.26A)	—
	a) Value of 60 °C of field-wiring terminal box not exceeded		N/A
	b) Surface of flammable liquids and parts in contact with this liquids		N/A
	c) Surface of non-metallic ENCLOSURES		P
	d) Parts made of insulating material supporting parts connected to MAINS supply		P

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	e) Terminals carrying a current more than 0,5 A		N/A
10.4	Conduct of temperature tests		P
10.4.1	Tests conducted under reference test conditions and manufacturer's instructions	(see Form A.26A)	P
10.4.2	Temperature measurement of heating equipment		N/A
	Tests conducted in test corner	(see Form A.26A)	N/A
10.4.3	Equipment intended for installation in a cabinet or wall		N/A
	Equipment built in as specified in installation instructions	(see Form A.26A)	N/A
10.5	Resistance to heat		P
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES	(see Form A.16)	P
10.5.2	Non-metallic ENCLOSURES	(see Form A.27)	P
	Within 10 min after treatment:		—
	Equipment subjected to suitable stresses of 8.2 and 8.3 complying with criteria of 8.1		N/A
10.5.3	Insulating material		P
	a) Parts supporting parts connected to MAINS supply		N/A
	b) Terminals carrying a current more than 0,5 A		N/A
	Examination of material data; or		P
	in case of doubt:		P
	1) Ball pressure test; or	(see Form A.28)	P
	2) Vicat softening test of ISO 306		N/A

11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N/A
11.1	Protection to OPERATORS and surrounding area provided by EQUIPMENT		N/A
	All fluids specified by manufacturer considered		N/A
11.2	Cleaning	(see Form A.30)	N/A
11.3	Spillage	(see Form A.30)	N/A
11.4	Overflow	(see Form A.30)	N/A
11.5	Battery electrolyte		N/A
	Battery electrolyte leakage presents no HAZARD		N/A
11.6	Specially protected equipment	(see Form A.30)	N/A
11.7	Fluid pressure and leakage		N/A
11.7.1	Maximum pressure..... :	(see Form A.31)	—
	Maximum pressure of any part does not exceed P _{rated}		N/A
11.7.2	Leakage and rupture at high pressure		—
	Fluid-containing parts subjected to hydraulic test if..... :	(see Form A.31)	—
	a) product of pressure and volume > 200 kPa; and		N/A
	b) pressure > 50 kPa		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Parts of refrigerating systems meets pressure-related requirements of IEC 60335-24 or IEC 60335-2-89		N/A
11.7.3	Leakage from low-pressure parts	(see Form A.32)	N/A
11.7.4	Overpressure safety device		N/A
	Does not operate in NORMAL USE		N/A
	a) Connected as close as possible to parts intended to be protected		N/A
	b) Easy access for inspection, maintenance and repair		N/A
	c) Adjustment only with TOOL		N/A
	d) No discharge towards person		N/A
	e) No HAZARD from deposit of discharged material		N/A
	f) Adequate discharge capacity		N/A
	No shut-off valve between overpressure safety device and protected parts		N/A

12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE		P
12.1	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation	(see Form A.33)	N/A
12.2.1.1	Equipment meets the following requirements:		—
	a) if intended to emit radiation meets requirements of 12.2.1.2; or		N/A
	tested, classified and marked in accordance to IEC 60405		N/A
	b) if only emits stray radiation meets requirements of 12.2.1.3		N/A
12.2.1.2	Equipment intended to emit radiation		—
	Effective dose rate of radiation measured..... :		—
	If dose rate exceeds 5 μ Sv/h marked with the following:		—
	a) symbol 17 (ISO 361)		N/A
	b) abbreviations of the radionuclides..... :		—
	c) with maximum dose at 1 m; or..... :		—
	with dose rate value between 1 μ Sv/h and 5 μ Sv/h in m..... :		—
12.2.1.3	Equipment not intended to emit radiation	(see Form A.34)	—
	Limit for unintended stray radiation of 1 μ Sv/h at any easily reached point kept		—
12.2.2	Accelerated electrons		—
	Compartments opened only by the use of a TOOL		N/A
12.3	Ultraviolet (UV) radiation		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	No unintentional HAZARDOUS escape of UV radiation:		—
	– checked by inspection; and		N/A
	– evaluation of RISK assessment documentation		N/A
12.4	Microwave radiation		N/A
	Power density does not exceed 10 W/m ² :		N/A
12.5	Sonic and ultrasonic pressure		N/A
12.5.1	Sound level	(see Form A.35)	—
	No HAZARDOUS sound emission		P
	Maximum sound pressure level measured and calculated for maximum sound power level as specified in ISO 3746 or ISO 9614-1		P
	Instruction describes measures for protection		N/A
12.5.2	Ultrasonic pressure	(see Form A.36)	N/A
	Equipment not intended to emit ultrasound does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	Equipment intended to emit ultrasound:		N/A
	Outside useful beam does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	If inside useful beam above values exceeded:		—
	Marked with Symbol 14 of table 1		N/A
	and following information in the documentation:		—
	a) dimensions of useful beam		N/A
	b) area where ultrasonic pressure exceed 110 dB		N/A
	c) maximum sound pressure inside beam area		N/A
12.6	Laser sources		N/A
	Equipment meets requirements of IEC 60825-1		N/A

13	PROTECTION AGAINST LIBERATED GASES AND SUBSTANCES, EXPLOSION AND IMPLOSION		N/A
13.1	Poisonous and injurious gases and substances		N/A
	No poisonous or injurious gases or substances liberated in NORMAL CONDITION		N/A
	Attached data/test reports demonstrate conformity		N/A
13.2	Explosion and implosion		N/A
13.2.1	Components		N/A
	Components liable to explode:		—
	Pressure release device provided; or		N/A
	Apparatus incorporates operator protection (see also 7.7)		N/A
	Pressure release device:		—

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Discharge without danger		N/A
	Cannot be obstructed		N/A
13.2.2	Batteries and battery charging	(see Form A.37)	—
	If explosion or fire HAZARD could occur:		—
	Protection incorporated in the equipment; or		N/A
	Instructions specify batteries with built-in protection		N/A
	In case of wrong type of battery used:		—
	No HAZARD; or		N/A
	Warning by marking and within instructions		N/A
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		N/A
	Type of rechargeable battery indicated; or		N/A
	Symbol 14 used		N/A
	Battery compartment design		N/A
	Single component failure		N/A
	Polarity reversal test		N/A
13.2.3	Implosion of cathode ray tubes		N/A
	If maximum face dimensions > 160 mm..... :		—
	Intrinsically protected and correctly mounted; or		N/A
	ENCLOSURE provides protection:		N/A
	If non-intrinsically protected:		—
	Screen not removable without TOOL		N/A
	If glass screen, not in contact with surface of tube		N/A

14	COMPONENTS AND SUBASSEMBLIES		P
14.1	Where safety is involved, components and subassemblies meet relevant requirements	(see TABLE 1)	P
14.2	Motors		N/A
14.2.1	Motor temperatures		N/A
	Does not present a HAZARD when stopped or prevented from starting; or		N/A
	Protected by over-temperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors		N/A
	Connected direct to device, if overspeeding causes a HAZARD		N/A
14.3	Overtemperature protection devices		N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	a) Reliable function is ensured		N/A
	B) RATED to interrupt maximum current and voltage		N/A
	c) Does not operate in NORMAL USE		N/A
	If self-resetting device used to prevent a HAZARD, protected part requires intervention before restarting		N/A
14.4	Fuse holders		N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	MAINS voltage selecting devices		N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment	(see Form A.39 and A.40)	N/A
14.7	Printed circuit boards		P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or		P
	Test shows conformity with V-1 of IEC 60695-11-10 or better	(see Form A.23)	N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N/A
14.8	Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices		N/A
	Test conducted between each pair of MAINS SUPPLY TERMINALS	(see Form A.41)	N/A
	No HAZARD resulting from rupture or overheating of the component:		—
	– no bridging of safety relevant insulation		N/A
	– no heat to other parts above the self-ignition points		N/A

15	PROTECTION BY INTERLOCKS		N/A
15.1	Interlocks are designed to remove a HAZARD before OPERATOR exposed		N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		N/A
	Single fault unlikely to occur; or		N/A
	Cannot cause a HAZARD		N/A

16	HAZARDS RESULTING FROM APPLICATION		N/A
16.1	Reasonably foreseeable misuse		N/A
	No hazards arising from settings not intended and not described in the instructions		N/A
	Other cases of reasonably foreseeable misuse addressed by risk assessment		N/A
16.2	Ergonomic aspects		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Factors giving rise to a HAZARD the RISK assessment is reflecting those aspects:		—
	a) limitation of body dimensions		N/A
	b) displays and indicators		N/A
	c) accessibility and conventions of controls		N/A
	d) arrangement of terminals		N/A

17	RISK ASSESSMENT		N/A
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 6 to 16		N/A
	Tolerable risk achieved by iterative documented process covering the following:		—
	a) RISK analysis		N/A
	Identifies HAZARDS and estimates RISK		N/A
	b) RISK evaluation		N/A
	Plan to judge acceptability of resulting RISK level based on the estimated severity and likelihood of RISK	a	N/A
	c) RISK reduction		N/A
	Initial RISK reduced by counter measures;		N/A
	Repeated RISK evaluation without new RISKS introduced		N/A
	RISKS remaining after RISK assessment addressed in instructions to RESPONSIBLE BODY:		—
	Information contained how to mitigate these RISKS		N/A
	Following principles in methods of RISK reduction applied by manufacturer in given order:		—
	1) RISKS eliminated or reduced as far as possible		N/A
	2) Protective measures taken for RISKS that cannot be eliminated		N/A
	3) User information about residual RISK due to any defect of the protective measures		N/A
	Indication of particular training is required		N/A
	Specification of the need for personal protective equipment		N/A
	Conformity checked by evaluation of the RISK assessment documentation		N/A

ANNEX F	ROUTINE TESTS		P
	Manufacturer 's declaration		P

ANNEX H	QUALIFICATION OF CONFORMAL COATINGS FOR PROTECTION AGAINST POLLUTION		N/A
H.1	General		N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Conformal coatings meet the requirements of Clause H.2 and H.3.		N/A
H.2	Technical properties		N/A
	Technical properties of conformal coatings are suitable for the intended application. In particular:		—
	a) Manufacturer indicate that it is a coating for PWBs;		N/A
	b) RATED operating temperature include the temperature range of the indicated application;		N/A
	c) CTI, insulation resistance and dielectric strength are suitable for the intended application;		N/A
	d) Coating have adequate UV resistance, if it is exposed to sunlight;		N/A
	e) Flammability RATING of the coating is at least the required flammability RATING of the applied PWB.		N/A
H.3	Qualification of coatings	(see Form A.42)	N/A
	Coating complies with the conformity requirements.		N/A
ANNEX K	INSULATION REQUIREMENTS NOT COVERED BY CLAUSE 6.7	(see Form A.15 and A.18)	N/A

4.4		TABLE: Testing in SINGLE FAULT CONDITION – Results		Form A.1	N/A
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
--	--	--	--	--	--
--	--	--	--	--	--

NOTE Td = Test duration in hh:mm:ss
 Record dielectric strength test on Form A.18 and temperature tests on Form A.26A and or A.26B.
 Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.

Supplementary information:

5.1.3c)		TABLE: MAINS supply				Form A.2	P
		Marked rating..... :	5VDC				—
		Phase..... :	Single-phase				—
		Frequency	--				—
		Current	--				—
		Power	--				—
Test No.	Voltage [V]	Frequency [Hz]	Current [A]	Power		Comments	
				[W]	[VA]		
1	5VDC	--	0.86	4.30	--	Max. loading	
NOTE – Measurements are only required for marked ratings.							
Supplementary information: the measured value not exceed the marked value by more than 10%							

5.3	TABLE: Durability of markings			Form A.3	P
Marking method (see NOTE)			Agent		
1) Adhesive label			A Water		
2) Ink printed			B Isopropyl alcohol 70%		
3) Laser marked			C (specify agent)		
4) Film-coated (plastic foil control panel)			D (specify agent)		
5) Imprinted on plastic (moulded in)			E (specify agent)		
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.					
Marking location			Marking method (see above)		
Identification (5.1.2)			1), 2)		
MAINS supply (5.1.3)			1), 2)		
Fuses (5.1.4)			N/A		
Terminals and operating devices (5.1.5.2)			N/A		
Switches and circuit breakers (5.1.6)			1), 2)		
Double/reinforced equipment (5.1.7)			N/A		
Field wiring Terminal boxes (5.1.8)			Not such equipment		
Warning marking (5.2)			1), 2)		
Battery charging (13.2.2)			N/A		
Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
1), 2)	A, B	Remains legible	No loose	No curled	
Supplementary information:					

6.2	TABLE: List of accessible parts		Form A.4	P
6.1.2	Exceptions			—
6.2	Determination of ACCESSIBLE parts			—
Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)	
1	Plastic enclosure	Rigid test finger and Test pin 3 mm diameter	No hazard voltage	
NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.2) NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2) NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see 6.4). NOTE 4 – Capacitor test may be required (see Form A.5). NOTE 5 – The determination methods are: V = visual; R = rigid test finger; J = jointed test finger; P3 = pin 3 mm diameter; P4 = pin 4 mm diameter.				
Supplementary information:				

6 TABLE: Values in NORMAL CONDITION													Form A.5	P
6.1.2	Exceptions								11.2				Cleaning and decontamination	—
6.3.1	Values in NORMAL CONDITION (see NOTE 1)								11.3				Spillage	—
6.6.2	Terminals for external circuit								11.4				Overflow	—
6.10.3	Plugs and connections								No					—
Item (see Form A.4)	Voltage			Current				Capacitance		10 s / 5 s test (NOTE)			Comments	
	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μC	mJ	V	μC	mJ		
Live part – plastic enclosure	--	--	5	A1	--	0.005	--	--	--	--	--	--	No hazard	
NOTE – A 10 s test is specified in 6.1.2 a) b). A. 5 s test is specified in 6.10.3. The capacitance level versus voltage below the limits given from figure 3 of IEC 61010-1.														
Supplementary information:														

6.3.2 TABLE: Values in SINGLE FAULT CONDITION													Form A.6	P
Item (see Form A.1)	Subclause and fault No. (see Form A.1)	Voltage			Transient (see NOTE)		Current				Capacitance	Comments		
		V r.m.s.	V peak	V d.c.	V	s	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μF (see NOTE)			
Live part – plastic enclosure	--	--	--	5	--	--	A1	--	0.007	--	--	No hazard		
NOTE – Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of IEC 61010-1.														
Supplementary information:														

6.5.2.2	TABLE: Cross-sectional area of bonding conductors		Form A.7	N/A
Conductor location	CROSS-SECTIONAL AREA [mm ²]		Verdict	
--	--		--	
--	--		--	
Supplementary information:				

6.5.2.3	TABLE: Tightening torque test		Form A.8	N/A
Conductor location	Size of screw	Tightening torque [Nm]	Verdict	
Supplementary information:				

6.5.2.4	TABLE: Bonding impedance of plug connected equipment			Form A.9	N/A
ACCESSIBLE part under test	Test current [A]	Voltage attained after 1 min [V]	Calculated resistance (Maximum 0,1 or 0,2 Ω) [Ω] (NOTE 1)	Verdict	
--	--	--	--	N/A	
NOTE 1 – For none-detachable power cord the impedance between protective conductor plug pin of MAINS cord and each ACCESSIBLE part shall not exceed 0,2 Ohm.					
Supplementary information:					
6.5.2.5	TABLE: Bonding impedance of permanently connected equipment			Form A.10	N/A
ACCESSIBLE part under test	Test current [A]	Voltage attained after 1 min (maximum 10 V) [V]	Verdict		
--	--	--	--		
--	--	--	--		
Supplementary information:					
6.5.2.6	TABLE: Transformer PROTECTIVE BONDING screen			Form A.11	N/A
ACCESSIBLE part under test	Test current (see NOTE) [A]	Voltage attained after 1 min (maximum 10 V) [V]	Calculated resistance (maximum 0,1 Ω) [Ω]	Verdict	
--	--	--	--	--	
--	--	--	--	--	
NOTE – Test current must be twice the value of the overcurrent protection means of the winding. Test is specified in 6.5.2.6 a) or b).					
Supplementary information:					

6.5.4		TABLE: protective impedance					Form A.12	N/A
A single component								
Component	Location	Measured		Calculated	Rated		Verdict	Comments
		Working voltage [V]	Current [A]	Power dissipation [W]	Working voltage [V]	Power dissipation [W]		
A combination of components								
Component			Location			Comments		
NOTE – A PROTECTIVE IMPEDANCE shall not be a single electronic device that employs electron conduction in a vacuum, gas or semiconductor.								
Supplementary information:								

6.5.6 **TABLE: Current- or voltage-limiting device** **Form A.13** N/A

Component	Location	Measured		Rated		Verdict	Comments
		Working voltage [V]	Current [A]	Working voltage [V]	Current [A]		

Supplementary information:

6.7	TABLE: Insulation requirements- Block diagram of system				Form A.14	N/A	
See user manual							
Pollution degree..... : II				Overvoltage category.....: III, IV			
Area	Location	Insulation type (NOTE 1)	WORKING VOLTAGE			Test voltage (NOTE 2) [V]	Comments (NOTE 3)
			RMS [V]	Peak [V]	Frequency [kHz]		
A							
B							
C							
D							
NOTE 1 – Type of insulation: BI = BASIC INSULATION DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION see also Form A.15 for further details		NOTE 2 - Types of voltage Peak impulse test voltage (pulse) r.m.s. d.c. peak			NOTE 3 - OVERVOLTAGE CATEGORIES OR POLLUTION DEGREES which differ should be shown under "Comments"		
Supplementary Information:							

6.7	TABLE: Insulation requirements- Clearances and Creepages			Form A.15	N/A
6.2.2	Examination	6.5.4	Protective impedance		—
6.4.2	ENCLOSURES and protective barriers	6.5.6	Current- or voltage-limiting device		—
6.4.4	Impedance	9.6.1	BASIC INSULATION between opposite polarity		—

Area	Location (See Form A.14)	Insulation type (NOTE 1)	WORKING VOLTAGE (NOTE 2)			Clearance		Creepage		CTI	Verdict	Comments
			RMS [V]	Peak [V]	Frequency [kHz]	Required [mm]	Measured [mm]	Required [mm]	Measured [mm]			
A												
B												
C												
D												

 NOTE 1 – refer to Form A.14 for type of insulation shown in the insulation diagram
 Form A.14)

NOTE 2 - to be used for definition of required insulation (see

Input supply voltage.....:	3	V	--	Hz
----------------------------	---	---	----	----

Supplementary information:

6.7		TABLE: Insulation requirements- Clearances and Creepages								Form A.16		N/A
6.4.2		ENCLOSURES or PROTECTIVE BARRIERS					9.6.1	Overcurrent protection basic insulation between MAINS parts			—	
8		Mechanical resistance to shock and impact					10.5.1	Integrity of CLEARANCES and CREEPAGE distances			—	
Area	Location (See Form A.14)	Insulation type	Mechanical tests (NOTE)					Test at max. RATED ambient	Measured after test (if required)		Verdict	Comments
			Applied force	Rigidity (8.2)		Drop (8.3)			Clearance	Creepage distance		
				N/A	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/Plug-in				
A												
B												
C												
D												
E												
F												

NOTE – Refer to Form A.18 for dielectric strength tests following the above tests.

Supplementary information:

6.7.2.2.2	TABLE: Reliability of potted components			Form A.17 (optional)				N/A
14.1 b)	Components and subassemblies							N/A
Temperature Cycling Test								
Manufacturer.....:								
Type.....:								
Construction.....:								
Potting compound.....:								
CREEPAGE distances measured.....:								
CLEARANCES measured.....:								
Thickness through insulation.....:								
Adhesive test Pass/Fail.....:								
Test temperature T °C.....:								
Cycles at U= AC 500 V					Leakage current (500 V) mA			
Number of cycles		Date			68 h /	1 h /	2 h /	1 h /
					125 °C	25 °C	0 °C	25 °C
1. Cycle from		to						
2. Cycle from		to						
3. Cycle from		to						
4. Cycle from		to						
5. Cycle from		to						
6. Cycle from		to						
7. Cycle from		to						
8. Cycle from		to						
9. Cycle from		to						
10. Cycle from		to						
After Cycling Test :								
Humidity conditioning					48 h			
Requirements for dielectric strength (s. insulation diagram)					Test voltage V r.m.s		Verdict	
Basic insulation _____ V r.m.s.								
Supplementary insulation _____ V r.m.s.								
Reinforced insulation _____ V r.m.s.								
NOTE - to be used for evaluation of components containing insulation through solid insulation, when the component standard require thermal cycling test. Ref Clause 14.1 and Figure 15, option b)								
Supplementary information:								

6.8	TABLE: Dielectric strength tests				Form A.18	N/A
4.4.4.1 b)	Conformity after application of SINGLE FAULT CONDITIONS ¹					N/A
6.4	Primary means of protection ²					N/A
6.6	Connections to external circuits					N/A
6.7.	Insulation requirements ² (see Annex K)					N/A
6.10.2	Fitting of non-detachable MAINS supply cords ¹					N/A
9.2 a) 2)	Eliminating or reducing the sources of ignition within the equipment					N/A
9.4 c)	Limited-energy circuit					N/A
9.6.1	Overcurrent protection basic insulation between MAINS - parts					N/A
	Test site altitude.....:					—
	Test voltage correction factor (see table 10).....:					—
Location or references from Forms A.1 and A.14	Clause or sub-clause	Humidity	Working voltage	Test voltage	Comments (NOTE)	Verdict
		Yes/No	V	r.m.s./peak/ d.c.		
¹ Record the fault, test or treatment applied before the dielectric strength test. ² Humidity preconditioning required. NOTE: Test duration may be recorded.						
Supplementary information:						

6.10.2	TABLE: Cord anchorage						Form A.19	N/A
Location	Mass [kg]	Pull [N/A]	Verdict	Torque [Nm]	Verdict	Comment		
Dielectric strength test for 1 min. (6.8.3.1).....:					V r.m.s.			
Supplementary information:								

7.		TABLE: Protection against mechanical HAZARDS											Form A.20	P	
7.3.4		Limitation of force and pressure												—	
7.3.5		Gap limitations between moving parts												—	
Part / Location	Clause 7.3.4		Clause 7.3.5.1								Clause 7.3.5.2			Verdict	Comments
	Continuous	Temporary	Minimum gaps [mm]								Maximum gaps [mm]				
	Contact pressure max. 50 N/A /cm ² @ max. 150 N/A	max. 250 N/A / 3 cm ² @ max. 0,75 s	Torso 500	Head 300	Leg 180	Foot 120	Toes 50	Arm 120	Hand 100	Finger 25	Head 120	Foot 35	Finger 4		
Enclosure	P	P	--	--	--	--	--	--	--	--	--	--	--	P	No hazards
Supplementary information:															

8.2	ENCLOSURE rigidity test		Form A.21A	P
8.2.1	Static test			P
	Material of enclosure..... :	Plastic		—
	Preparation for the test:			—
	Operated at ambient temperature..... :	25 ° C	0.5 h	—
Location		Comments		Verdict
1)corner		The equipment is held firmly against a rigid support and subjected to a force of 30 N applied by the hemispherical end of a hard rod of 12 mm diameter		P
2)side		The equipment is held firmly against a rigid support and subjected to a force of 30 N applied by the hemispherical end of a hard rod of 12 mm diameter		P
3)top		The equipment is held firmly against a rigid support and subjected to a force of 30 N applied by the hemispherical end of a hard rod of 12 mm diameter		P
4)				
Supplementary information:				
8.2.2	Dynamic test			P
	Material of enclosure..... :	Plastic		—
	Corresponding IK-code..... :	IK08		—
	Preparation for the test:			—
	Cooled to (temperature)..... :	25 ° C		—
Location		Comments		Verdict
1) Top		equipment is held firmly against a rigid support and each test point is subjected to one impact by a smoothsteel sphere with a mass 500 g+25 g and with a diameter of approximately 50 mm, Impact height 1000mm		P
2) Side left / right		equipment is held firmly against a rigid support and each test point is subjected to one impact by a smoothsteel sphere with a mass 500 g+25 g and with a diameter of approximately 50 mm, Impact height 1000mm		P

3) Bottom	equipment is held firmly against a rigid support and each test point is subjected to one impact by a smooth steel sphere with a mass 500 g+25 g and with a diameter of approximately 50 mm, Impact height 1000mm	P
Supplementary information:		

8.3	Drop test		Form A.21B	P
8.3.1	Other equipment			--
	Location	Raised up to		Comments
		[mm]	30 °	—
	1) Top			N/A
	2) Side left / right			N/A
	3) Bottom			N/A
	4)			
Supplementary information:				
8.3.2	Hand-held EQUIPMENT and direct plug-in equipment			P
	Material of enclosure.....:	Metal / non-metallic		—
	Preparation for the test:			—
	Cooled to (temperature).....:	40 ° C		—
	Location	Comments		Verdict
	1) Side	1m test after, no damage		P
	2) Edge	1m test after, no damage		P
	3) Corner	1m test after, no damage		P
Supplementary information:				

9 TABLE: Protection against the spread of fire				Form A.22	P
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9.1 a, b or c)	Protection details	Verdict	
9.1	circuit, component	9.1c	See 4.4	P	
Supplementary information:					

9.3.2	TABLE: Constructional requirements					Form A.23	N/A			
14.7	Printed circuit boards						--			
Material tested..... :							—			
Generic name..... :							—			
Material manufacturer..... :							—			
							--			
Type..... :							—			
Colour..... :							—			
Conditioning details..... :							—			
							--			
					Sample					
					1	2	3	4	5	6
Thickness of specimen	mm									
Duration of flaming after first Application	s									
Duration of flaming plus glowing After second application	s									
Specimen burns to holding clamp	Yes/No									
Cotton ignited	Yes/No									
Sample result	Pass/Fail									
Supplementary information:										

9.4		TABLE: Limited-energy circuit				Form A.24	N/A
Item or Location (see Form A.22)	9.4 a)	9.4 b) Current limitation (NOTE)		9.4 c)	Decision	Comments	
	Maximum potential in circuit voltage r.m.s./d.c. [V]	Maximum available current [A]	Overload protection after 120 s [A]	Circuit separation	Yes/No		

NOTE – Maximum values see Tables 17 and 18 of IEC 61010-1

Supplementary information:

9.5		TABLE: Requirements for equipment containing or using flammable liquids		N/A
Type of liquid	9.5 Flammable liquids		Verdict	
	b) Quantity	c) Containment		

Supplementary information:

10.	TABLE : Temperature Measurements				Form A.26A	P
10.1	Surface temperature limits – NORMAL CONDITION and					P
10.2	Temperature of windings – NORMAL CONDITION and / or SINGLE FAULT CONDITION					N/A
10.3	Other temperature measurements component					P
Operating conditions:						
Frequency..... :	-- Hz	Test room ambient temperature (ta)..... :			24.5 °C	
Voltage..... :	5 V	Test duration..... :			2 h 30 min	
Part / Location	t_m [°C]	t_c [°C]	t_{max} [°C]	Verdict	Comments	
C52	30.8	46.3	105	P	--	
Switch surface	25.3	40.8	70	P	--	
PCB near U11	36.7	52.2	130	P	--	
Screen surface	25.4	40.9	70	P	--	
Plastic enclosure outside	25.8	41.3	70	P	--	
Plastic enclosure inside	31.7	47.2	Ref.	P	--	
Ambient	24.5	40	--	P	--	
NOTE 1 - t_m = measured temperature t_c = t_m corrected ($t_m - t_a + 40$ °C or max. RATED ambient) t_{max} = maximum permitted temperature NOTE 2 - see also 14.1 with reference to component operating conditions NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary NOTE 4 - see Form A.26B for details of winding temperature measurements						
Supplementary information:						

10.2	TABLE: Temperature of windings Resistance method Temperature Measurements						Form A.26B	N/A
4.4.2.7	MAINS transformers							--
14.2.1	Motor temperatures							N/A
Operating conditions... :	Normal working							
Frequency..... :	Hz	Test room ambient temperature (ta1/ta2).. :				/	°C (initial / final)	
Voltage..... :	V	Test duration..... :				h	min	
Part / Designation	Rcold [Ω]	Rwarm [Ω]	Current [A]	t_r [K]	t_c [°C]	t_{max} [°C]	Verdict	Comments
NOTE 1- R_{cold} = initial resistance t_r = temperature rise t_{max} = maximum permitted temperature R_{warm} = final resistance $t_c = t_r$ corrected ($t_c = t_r - \{t_{a2} - t_{a1}\} + [40 \text{ °C or max RATED ambient}]$)								
NOTE 2 - Indicate insulation class (IEC 60085) under comments (optional)								
NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary								
Supplementary information:								

10.5.2	TABLE: Resistance to heat of non-metallic ENCLOSURES						Form A.27	N/A
	Test method used:							—
	Non-operative treatment..... :	[]						
	Empty ENCLOSURE..... :	[]						
	Operative treatment..... :	[]						
	Temperature during tests..... :						—	
Description	Material			Comments		Verdict		
Dielectric strength test (6.8)..... :						V	r.m.s./peak/d.c.	
NOTE – Within 10 minutes of the end of treatment suitable tests in acc. to 8.2 and 8.3 must be conducted and pass criteria of 8.1.								
Supplementary information:								

10.5.3	TABLE: Insulating Materials		Form A.28	P
10.5.3 1)	Ball-pressure test			P
	Max. allowed impression diameter.....:	2 mm		—
Part	Test temperature [°C]	Impression diameter [mm]	Verdict	
Plastic enclosure	75°C	0.96	P	
PCB	125°C	1.02	P	
Supplementary information:				
10.5.3 2)	Vicat softening test (ISO 306)		Form A.29	N/A
Part	Vicat softening temperature [°C]	Thickness of sample [mm]	Verdict	
Supplementary information:				

8	TABLE: Mechanical resistance to shock and impact	Form A.30	N/A
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11	Protection against HAZARDS from fluids		N/A
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Voltage tests can be carried out once after performing the tests of clause 8 and clause 11. However, if voltage tests are carried out separately after each set of tests, two forms can be used.

Location (see Form A.14)	Clause 8 tests				Clause 11 tests				Working voltage [V]	Test voltage [V]	Verdict	Comments
	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)				

NOTE – Use r.m.s., d.c. or peak to indicate the used test voltage.

Supplementary information:

11.7.2		TABLE: Leakage and rupture at high pressure				Form A.31	N/A
Part	Maximum permissible working pressure [MPa]	Test pressure [Mpa]	Leakage Yes / No	Deformation Yes / No	Burst Yes / No	Comments	

NOTE – see also Annex G with requirements for USA and Canada.

Supplementary information:

11.7.3		Leakage from low-pressure parts		Form A.32	N/A
Part	Test pressure [Mpa]	Leakage Yes / No	Comments		

Supplementary information:

12.2.1	TABLE: Ionizing radiation			Form A.33	N/A
12.2.1.2	Equipment intended to emit radiation				
Locations tested	Measured values [$\mu\text{Sv/h}$]	Verdict	Comments		
Supplementary information:					
12.2.1.3	Equipment not intended to emit radiation			Form A.34	N/A
	Max. allowed effective dose rate at 100 mm.....:		1 $\mu\text{Sv/h}$	—	
Locations tested	Measured values [$\mu\text{Sv/h}$]	Verdict	Comments		
Supplementary information:					

12.5.1	TABLE: Sound level		Form A.35	N/A
Locations tested	Measured maximum sound pressure level Db(A)		Calculated maximum sound power level	
At operator's normal position and at bystanders' positions			80	
a)Front			80	
b)Rear			80	
c)Right			80	
d)Left			80	
e)				
f)				
Supplementary information:				
12.5.2	Ultrasonic pressure		Form A.36	N/A
Locations tested	Measured values		Comments	
	[Db]	[kHz]		
At operator's normal position				
At 1 m from the ENCLOSURE				
a)				
b)				
c)				
d)				
e)				
NOTE – No limit is specified at present, but a limit of 110 Db above the reference pressure value of 20 μ Pa is under consideration for applicable frequencies between 20 kHz and 100 kHz.				
Supplementary information:				

13.2.2	TABLE: Batteries		Form A.37	N/A
Battery load and charging circuit diagram:				
	Battery type.....:		—	
	Battery manufacturer/model/catalogue No.....:		—	
	Battery ratings.....:		—	
	Reverse polarity instalment test			
Single component failures		Verdict		
Component		Open circuit	Short circuit	
Supplementary information:				

14.3	TABLE: Overtemperature protection devices		Form A.38	N/A
Reliability test				
Component	Type (NOTE)	Verdict	Comments	
NOTE: NSR = non-self-resetting (10 times) NR = non-resetting (1 time) SR = self-resetting (200 times)				
Supplementary information:				

4.4.2.7	TABLE: MAINS transformer			Form A.39	N/A
4.4.2.7.2	Short circuit				N/A
14.6	MAINS transformers tested outside equipment				N/A
Type.....:					—
Manufacturer.....:					—
Test in equipment					N/A
Test on bench					N/A
Test repeated inside equipment (see 14.6)					N/A
Optional – Insulation class (IEC 60085) of the lowest rated winding..... :					—
Winding identification					
Type of Protector for winding (NOTE 1)					
Elapsed time					
Current, A primary					
secondary					
Winding temperature, °C primary					
(see NOTE 2) secondary					
Tissue paper / cheesecloth OK ? (Pass / Fail)					
Voltage tests (see NOTE 3)					
Primary to secondary	3000	V	AC		
Primary to core		V	--		
Primary to secondary		V	--		
Secondary to core		V	--		
Verdict					
P					
NOTE 1:	Primary fuse	- PF /	()	A	
	Secondary fuse	- SF /	()	A	
	Overtemperature protection	- OP /	()	°C	
	Impedance protection	- Z			
NOTE 2:	Indicate method of measurement				
	- TC = with thermocouple				
	- R = resistance method				
NOTE 3:	If resistance method is used, record resistance in cold and warm condition in FormA.26B.				
	Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown				
Supplementary information:					

14.8 TABLE: Transient overvoltage limiting devices											Form A.41	N/A
Component / Designation	Overvoltage Category	MAINS voltage [V rms]	Test voltage [V]	t_m [°C]	t_c [°C]	t_{max} [°C]	Rupture Yes / No	Circuit breaker tripped	Verdict	Comments		
Test room ambient temperature		°C										
NOTE - t_m = measured temperature t_c = t_m corrected ($t_m - t_a + 40$ °C or max. RATED) t_{max} = maximum permitted temperature Conformity is checked by applying 5 positive and 5 negative impulses with the applicable impulse withstand voltage, spaced up to 1 min apart, from a hybrid impulse generator (see IEC 61180-1).												
Supplementary information:												

Annex H TABLE: Qualification of conformal coating for protection against pollution		Form A.42	N/A
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Technical properties											
Manufacturer.....											—
Type.....											—
Meet requirements of ANSI / UL 746E.....											[yes / no]
Manufacturer declaration of coating material :											[yes / no]
Operating temperature of coating.....											[] °C
Comparative tracking index (CTI).....											[]
Insulation resistance.....											[] Ω
Dielectric strength.....											[] V
UV resistance (if required).....											[yes / no]
Flammability rating.....											
Preparation of the test specimens conducted:											[yes / no]
Item	Test conditioning	Parameter	Td h	Samples						Verdict	Comments
				1	2	3	4	5	6		
1	Scratch resistance										
	Visual inspection										
2	Cold		24								
3	Dry heat		48								
4	Rapid temp. change										
5	Damp heat		24								
6	Adhesion of coating	5 N/A									
	Visual inspection										
7	Humidity		48								

8	Insulation resistance	$\geq 100 \Omega$								
	Visual inspection									

NOTE Td = Test duration time

Supplementary information:

TABLE: Additional or special tests conducted			Form A.43	N/A
Clause and name of test	Test type and condition	Observed results	—	

Supplementary information:

TABLE 1: - List of components and circuits relied on for safety					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
Plastic enclosure	Sabic Innovative Plastics	AS0029XP	PC, V-0, 120°C, min. thickness 2.0mm	UL 94	UL E121562
Internal wire	SHENZHEN HONGGUANSH ENG SCIENCE AND TECHNOLOGY CO LTD	1571	80 deg C, 30 Vac, 28AWG	UL 758	UL E465814
PCB	IBE ELECTRONICS CO LTD	-01	V-0, 130°C	UL 796	UL E326838

Supplementary information:

IEC61010_1L ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 61010-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Electrical Equipment For Measurement, Control, and Laboratory Use; Part1: General Requirements)			
Differences according to.....: BS EN 61010-1:2010+A1:2019			
Attachment Form No.....: EU_GD_IEC61010_1L			
Attachment Originator.....: TÜV Rheinland LGA Products GmbH			
Master Attachment.....: 2020-04-22			
Copyright © 2020 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	CENELEC COMMON MODIFICATIONS (BS EN)		P
	Procedure for voltage tests		P
6.8.3.1	The a.c. voltage test <i>Replace the first sentence by the following sentence:</i> The voltage tester shall be capable of maintaining the test voltage throughout the test within +/- 5 % of the specified value.		P
Annex ZA (normative)	The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.		P
Annex ZZ (informative)	Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered		P

Pictures

Photo 1



Photo 2



Pictures

Photo 3

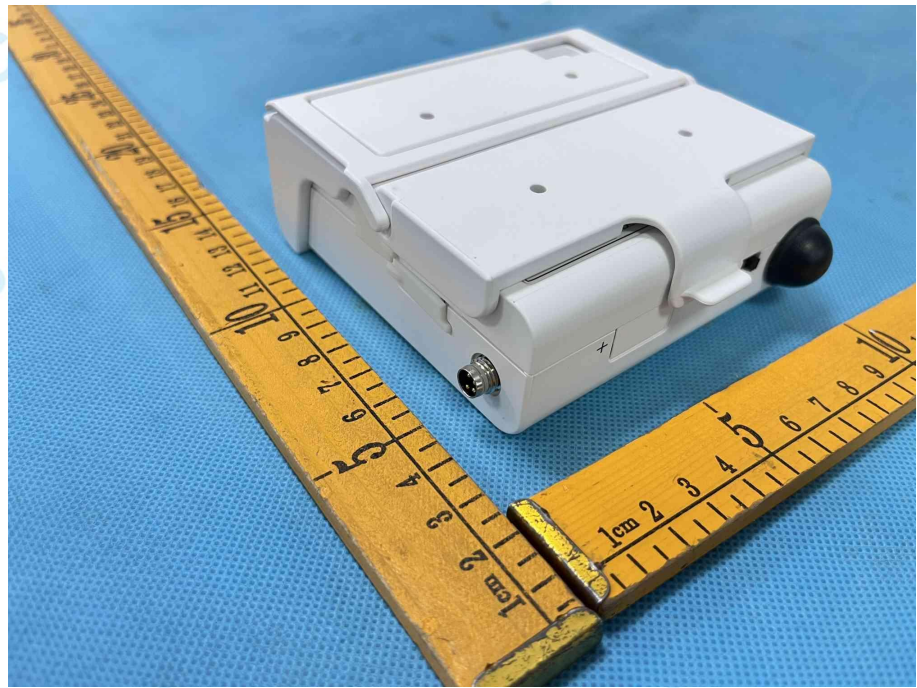
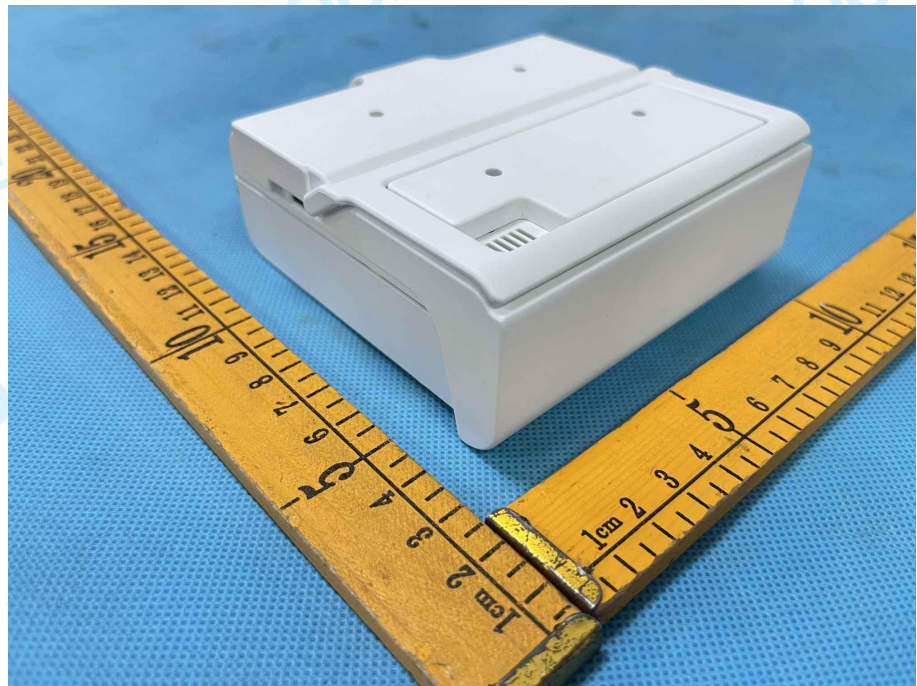


Photo 4



Pictures

Photo 5



Photo 6



Pictures

Photo 7



Photo 8



Pictures

Photo 9



Photo 10



Pictures

Photo 11

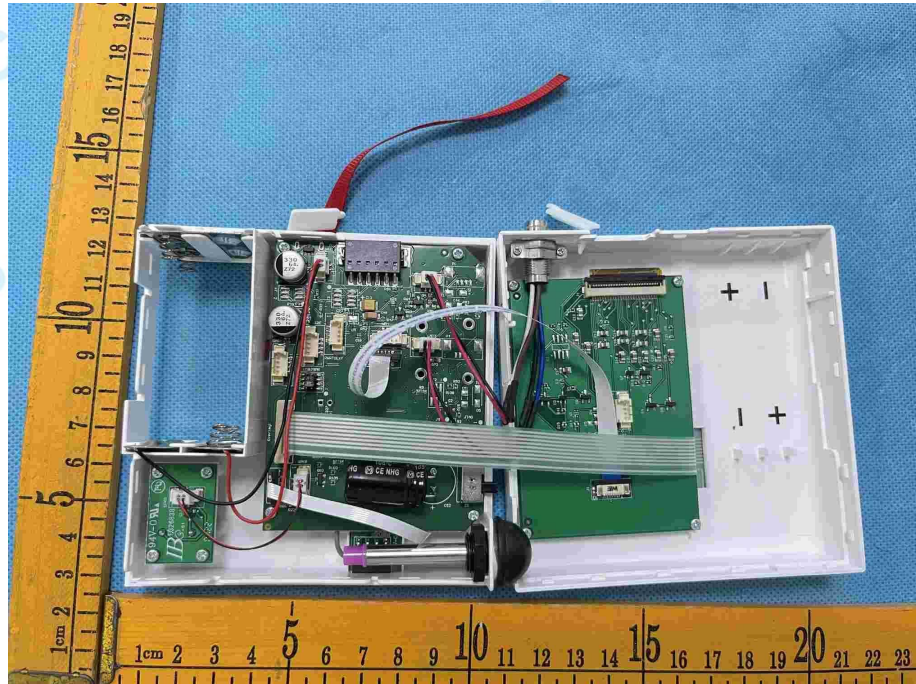
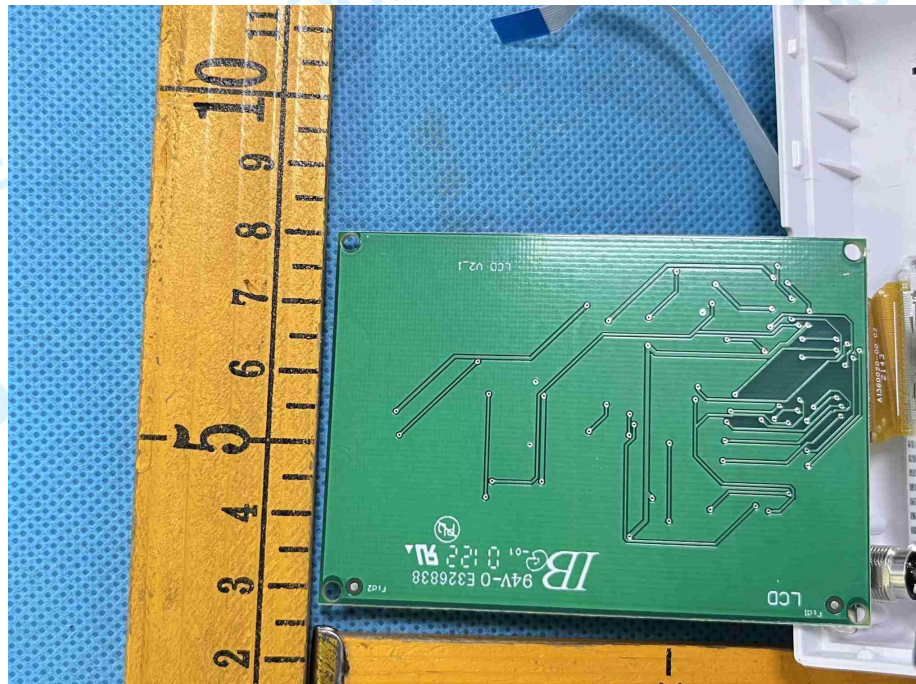


Photo 12



Pictures

Photo 13

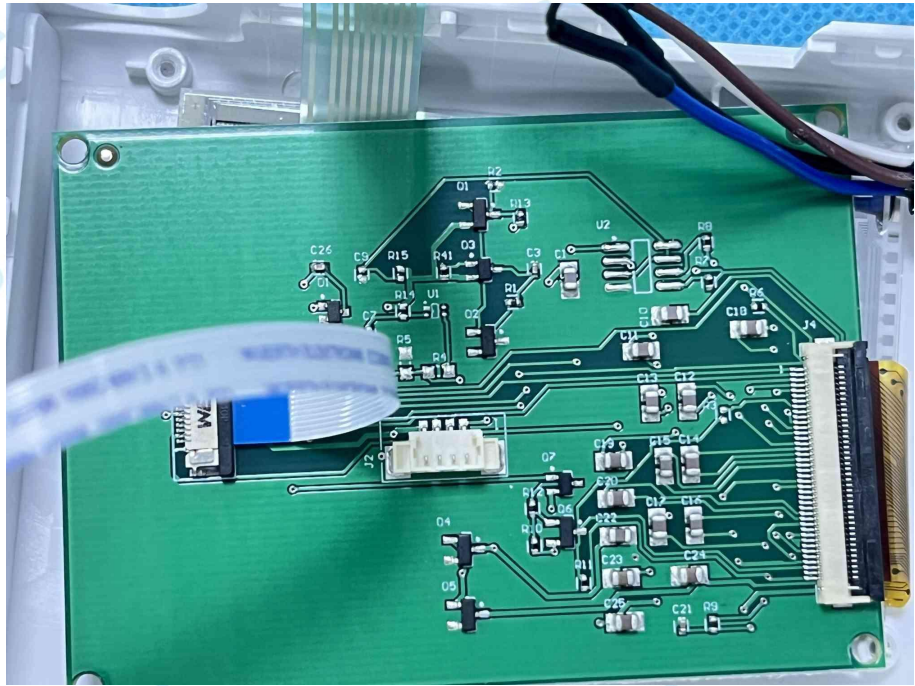
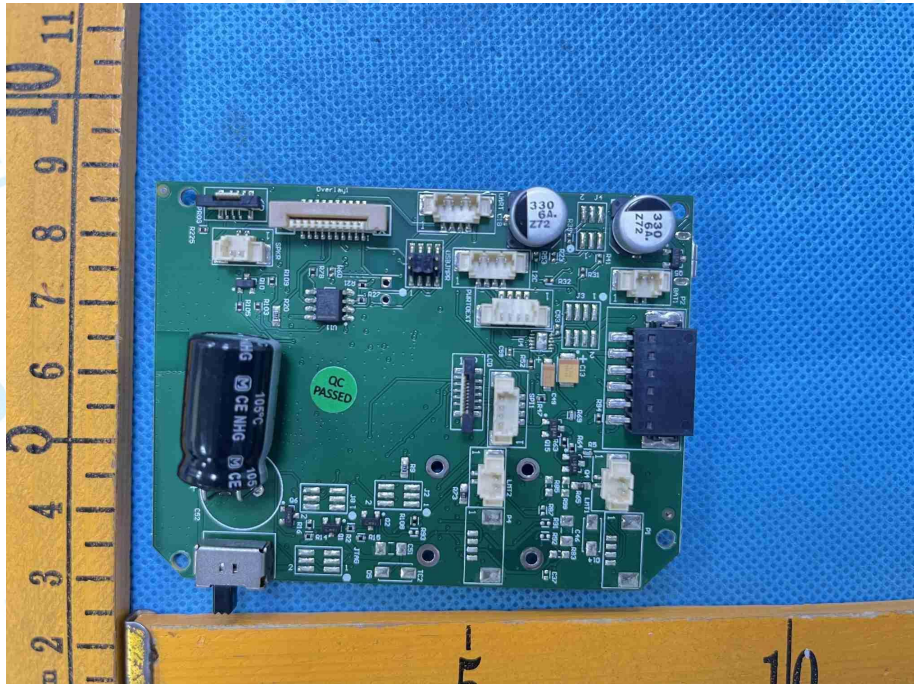
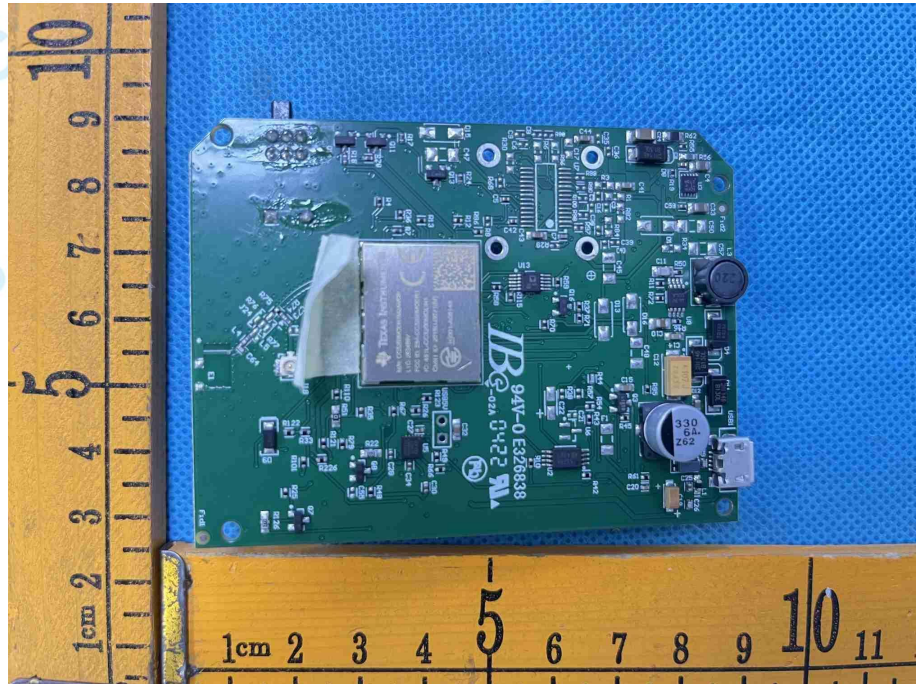


Photo 14



Pictures

Photo 15



*****THE END*****