Test Report

Number: VNMH22006747
Date: September 1, 2022

Applicant: Vight Limited
Room 1702, Sino Centre 582-592 Nathan Road, Mongkok, Kowloon, Hong Kong

The following sample was submitted and identified on behalf of the client as:

Sample description:	Heated skirting
Item/ Style No:	Sleek Heat, various lengths
Buyer name:	TLC Modular Construction Limited Liability Company 326 Vo Kiet Street, Co Giang Ward, District 1, Ho Chi Minh City, Vietnam
Country of origin:	Vietnam
Country of destination:	Global but first New Zealand
Date sample received:	July 26, 2022
Testing period:	July 26, 2022 to August 16, 2022
Date information confirmed:	August 31, 2022

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Tests conducted: As requested by the applicant, please refer to attached page for details.

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Conclusion:

Tested sample	Requirement	Result
Submitted sample	IEC 60335-2-30 Safety of household and similar electrical appliances Part 30: Particular requirements for room heaters	Pass

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For and on behalf of
Intertek Vietnam LTD

LIEM MAI
Hardlines Manager

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TEST CONDUCTED (AS REQUESTED BY THE APPLICANT)

As Per/ With reference to 60335-2-30:2009+AMD1:2016+AMD2:2021 used in conjunction with IEC 60335-1: 2020 Household and similar electrical appliances – Safety – Part 1: General requirements

P- Pass
N-Not applicable
NR-Not requested

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		—
	Tests performed according to cl.5, e.g. nature of supply, sequence of testing, etc.		P
5.2	Heaters intended to be installed adjacent to each other, tests made with sufficient number (IEC 60335-2-30)		N
5.3	Appliance used for tests of cl.19 also used for the test of cl.22.24 (IEC 60335-2-30)		N
	Test of cl.22.24 carried out after test of cl.29 (IEC 60335-2-30)		N
5.6	Thermostats short-circuited if sensible to room air temperature (IEC 60335-2-30)	No thermostat	N
	However, if the thermostat can be set so that it does not cycle, it is not short-circuited, unless otherwise specified (IEC 60335-2-30)		N
5.10	Heaters intended to be installed adjacent to each other, installed in accordance with instructions (IEC 60335-2-30)		N
5.101	Heaters intended to be used as both portable and fixed appliances are subjected to the tests applicable to both types (IEC 60335-2-30)		N
5.102	If the heater is a combination of two or more types, tests relevant for each type (IEC 60335-2-30)		N
	Heaters for wall-mounting are tested both as heaters for mounting high level and as heaters for mounting other than at high level (IEC 60335-2-30)		N
	unless the installation instructions state that the heater has to be installed at least 1,8m above the floor (IEC 60335-2-30)		N
6	CLASSIFICATION	—	
6.1	Protection against electric shock: Class 0, 0I, I, II, III ..... :	Class I	P
6.2	Protection against harmful ingress of water	IPX4	P

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Heaters intended for use in greenhouses or building sites shall be at least IPX4 (IEC 60335-2-30)		P
7	MARKING AND INSTRUCTIONS		
7.1	Rated voltage or voltage range (V)..... :	110V – 240V	P
	Nature of supply ..... :	AC	P
	Rated frequency (Hz)..... :	50 to 60 Hz	P
	Rated power input (W):..... :	250W/m	P
	Rated current (A)..... :	20 amp	P
	Manufacturer's or responsible vendor's name, trademark or identification mark ..... :	VIGHT	P
	Model or type reference ..... :	Sleek Heat	P
	Symbol 5172 of IEC 60417, for Class II appliances		N
	IP number, other than IPX0 ..... :		N
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains		N
	Heaters intended to be filled with liquid by the user shall be marked with max. and min. levels (IEC 60335-2-30)		N
	Heaters shall be marked: "WARNING ”Do not cover” or with the symbol 5641 of IEC 60417-1 except for colours (IEC 60335-2-30)		N
	This marking is not required for (IEC 60335-2-30)		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- heaters for mounting high level		N
	- visible glowing radiant heaters		N
	- heaters constructed so that they cannot be covered		N
	- heaters also intended to dry clothes and which comply with IEC 60335-2-43		N
	- heaters for mounting under benches	No marking provided	NR
	Heaters having a fireguard that is intended to be removed for transportation or storage shall be marked to state that the heater must not be operated without this guard in place (IEC 60335-2-30)		N
	For ceiling mounting heat lamp appliances, the maximum rated wattage and type of each lamp shall be marked (IEC 60335-2-30)		N
7.2	Warning for stationary appliances for multiple supply	No marking provided	NR
	Warning placed in vicinity of terminal cover	No marking provided	NR
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	No marking provided	NR
	Different rated values marked with the values separated by an oblique stroke	No marking provided	NR
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless	No marking provided	NR
	the power input is related to the arithmetic mean value of the rated voltage range	No marking provided	NR
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear	No marking provided	NR

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
7.6	Correct symbols used	No marking provided	NR
	Symbol 5641 of IEC 60417-1 (Do not cover) is used except for colours (IEC 60335-2-30)		N
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply	No marking provided	NR
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:	No marking provided	NR
	- marking of terminals exclusively for the neutral conductor (N)	No marking provided	NR
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)	No marking provided	NR
	- marking not placed on removable parts	No marking provided	NR
7.9	Marking or placing of switches which may cause a hazard	No marking provided	NR
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means..... :	No marking provided	NR
	The figure 0 indicates only OFF position, unless no confusion with the OFF position	No marking provided	NR
7.11	Indication for direction of adjustment of controls	No marking provided	NR
7.12	The instructions state that:	No instruction provided	NR
	- the appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction	No instruction provided	NR
	- children being supervised not to play with the appliance	No instruction provided	NR
	Instructions for safe use provided:	No instruction provided	NR

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	If the symbol 5641 of IEC 60417-1 (do not cover) is marked on the appliance, its meaning is explained (IEC 60335-2-30)	No instruction provided	NR
	For heaters marked ”Do not cover” (or with symbol) contain the substance of: "In order to avoid overheating, do not cover the heater" (IEC 60335-2-30)		N
	Statement: heater is not to be located immediately below a socket-outlet (IEC 60335-2-30)		N
	Statement for heaters with heating elements in direct contact with accessible panel made of glass, ceramic or similar material , includes the following warning: "The heater must not be used if the glass *(or ceramic or similar material*) panels are damaged" (IEC 60335-2-30)		N
	Statements for visibly glowing radiant heaters, other than heaters for mounting at high level, includesthe substance of following: "Do not use the heater with a programmer, timer or any other device that switches the heater on automatically" (IEC 60335-2-30)		N
	Statements for visibly glowing radiant heaters that have a fireguard that can be partly removed without the aid of a tool includes the substance of following: (IEC 60335-2-30)		N
	- the fireguard of this heater is intended to prevent direct access to heating elements and must be in place when the heater is used		N
	- the fireguard does not give full protection for young people and infirm persons		N
	Statements for portable heaters: Do not use this heater in the immediate surroundings of a bath, a shower or a swimming pool (IEC 60335-2-30)	No instruction provided	NR
	Statements for visibly glowing radiant heaters: shall be provided for cleaning the reflector, if appropriate (IEC 60335-2-30)		N
	Statement shall be provided for replacing the lamps of fuel-effect heaters (IEC 60335-2-30)		N
	Statements for oil-filled radiators: (IEC 60335-2-30)		N
	- this heater is filled with a precise quantity of special oil. Repairs requiring opening of the oil container are only to be made by the manufacturer or his service agent who should be contacted if there is an oil leakage		N
	- regulations concerning the disposal of oil when scrapping the appliance have to be followed		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructions shall be provided for routine cleaning of ceiling mounted heat lamp appliances including removal of covers if applicable (IEC 60335-2-30)		N
7.12.1	Sufficient details for installation supplied	No instruction provided	NR
	Instructions for heaters intended to be fixed by screws or other give details on the method of fixing (IEC 60335-2-30)	No instruction provided	NR
	Instructions for visibly glowing radiant heaters warn about the possible danger of installation close to curtains and other combustible materials (IEC 60335-2-30)		N
	Instructions for heaters for mounting at high level state that the heater must be installed at least 1,8m above the floor (IEC 60335-2-30)		N
	Instructions for fixed heaters likely to be used in a bathroom: that the heater is to be installed so that switches and other controls cannot be touched by a person in the bath or shower (IEC 60335-2-30)	No instruction provided	NR
	Statement for heaters with rollers or feet delivered separately: how they have to be fixed (IEC 60335-2-30)	No instruction provided	NR
	Statement for heaters intended to be installed in wardrobes or ceiling: for proper installation in a wardrobe or in the ceiling (IEC 60335-2-30)	No instruction provided	NR
	The installation instructions for ceiling mounted heat lamp appliances, recessed into a ceiling place or cavity shall give details for proper installation in the ceiling and shall state the substance of the following: (IEC 60335-2-30)		N
	- the appliance shall, under no circumstances, be covered with insulating material or similar material		N
	- regulations concerning the discharge of air have to be fulfilled		N
	- joists, beams and rafters shall not be cut or notched to install the appliance		N
	The installation instructions for heaters for mounting under church benches shall state: (IEC 60335-2-30)	No instruction provided	NR
	- the heater is intended for installation under benches that are fixed in position	No instruction provided	NR

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- the minimum distance between the underside of the installed heater and the floor	No instruction provided	NR
	- the minimum distances of the relevant surfaces of the heaters to the front and rear edge of the underside of the bench which shall be not less than 50mm	No instruction provided	NR
	The installation instructions for heaters intended to be built into the floor and that incorporate a floor level grille shall state the substance of the following: (IEC 60335-2-30)		N
	- after installation, ensure that any drain holes are free from obstruction		N
	- ensure that any floor level grille has a mechanical strength consistent with the national building codes		N
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	No instruction provided	NR
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50K during cl.11; instructions stating that the fixed wiring must be protected	No instruction provided	NR
7.12.4	Instructions for built-in appliances:	No instruction provided	NR
	- dimensions of space	No instruction provided	NR
	- dimensions and position of supporting means	No instruction provided	NR
	- distances between parts and surrounding structure	No instruction provided	NR
	- dimensions of ventilation openings and arrangement	No instruction provided	NR
	- connection to supply mains and interconnection of separate components	No instruction provided	NR
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless	No instruction provided	NR

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	a switch complying with 24.3	No instruction provided	NR
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord	No instruction provided	NR
	Replacement cord instructions, type Y attachment	No instruction provided	NR
	Replacement cord instructions, type Z attachment	No instruction provided	NR
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out that is reset by disconnection the supply mains	No instruction provided	NR
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed	No instruction provided	NR
7.12.8	Instructions for appliances connected to the water mains:		N
	- max. inlet water pressure (Pa)..... :		N
	- min. inlet water pressure, if necessary (Pa) ..... :		N
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N
7.13	Instructions and other texts in an official language	No instruction provided	NR
7.14	Marking clearly legible and durable	No instruction provided	NR
	The height of the “Do not cover“ symbol shall be at least 15mm (IEC 60335-2-30)		N
	The height of the words “Do not cover “ shall be at least 3mm (IEC 60335-2-30)		N
	The height of the words relating to the maximum rated wattage and type of heat lamp shall be at last 6mm (IEC 60335-2-30)	No instruction provided	NR

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
7.15	Marking on a main part	No instruction provided	NR
	Marking clearly discernible from the outside, if necessary after removal of a cover	No instruction provided	NR
	For portable appliances, cover can be removed or opened without a tool	No instruction provided	NR
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation	No instruction provided	NR
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions	No instruction provided	NR
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading	No instruction provided	NR
	Heaters for mounting at high level, indication of the different positions of switches visible from a distance of 1m (IEC 60335-2-30)		N
	Marking concerning covering visible shall be visible after the heater has been installed. It shall not be placed on the bottom of, or on the back of, portable heaters (IEC 60335-2-30)		N
	Marking concerning removable fireguards visible before fitting the fireguard (IEC 60335-2-30)		N
	For ceiling mounted heat lamp appliances, the marking relating to the maximum rated wattage and type of heat lamp shall be visible when replacing a lamp in accordance with the instructions (IEC 60335-2-30)		N
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N
8	PROTECTION AGAINST ACCESS TO LIVE PARTS	—	
8.1	Adequate protection against accidental contact with live parts		P
	This requirement does not apply to live parts of screw- type or bayonet-type lampholders incorporated in ceiling mounted heat lamp appliances that are only accessible when the heat lamp is extracted (IEC 60335-2-30)		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N
	Use of test probe B of IEC 61032: no contact with live parts		P
	Detachable fireguards not removed if their removal requires the use of a tool, provided that (IEC 60335-2-30)		N
	- the instructions state that the plug must be removed from the socket-outlet before cleaning the reflector, or		N
	- the heater incorporates a switch having contact separation all poles that provides full disconnection under overvoltage category III conditions		N
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		P
8.1.4	Accessible part not considered live if:		N
	- safety extra-low a.c. voltage: peak value not exceeding 42,4V		N
	- safety extra-low d.c. voltage: not exceeding 42,4V		N
	- or separated from live parts by protective impedance		N
	If protective impedance: d.c. current not exceeding 2mA, and		N
	a.c. peak value not exceeding 0,7 mA		N
	- for peak values over 42,4V up to and including 450V, capacitance not exceeding 0,1□F		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- for peak values over 450V up to and including 15kV, discharge not exceeding 45□C		N
	- for peak values over 15kV, the energy in the discharge not exceeding 350mJ		N
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		P
	- built-in appliances		P
	- fixed appliances		N
	- appliances delivered in separate units		N
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
	During user maintenance and after the removal of detachable parts during replacement of heat lamp, the basic insulation of internal wiring may be touched provided electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245 (IEC 60335-2-30)		N
10	POWER INPUT AND CURRENT	—	
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1	(see appended table)	P
	Test for an appliance with one or more rated voltage ranges		N
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2		N
	Test for an appliance with one or more rated voltage ranges		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
11	HEATING	—	
11.1	No excessive temperatures in normal use		P
11.2	Placing and mounting of appliance (IEC 60335-2-30)		P
	- portable fan heaters		N
	- other heaters normaly placed on a floor		N
	- fixed heater for mounting at high level		N
	- other fixed heaters for wall mounting		N
	- heaters for ceiling mounting		N
	- heaters for mounting under benches		N
	- built-in heaters		N
	- fixed heater with opening at floor level, felt pad pushed flat into the opening		P
	- heaters having an air-outlet grille intended to be recessed in a floor, a window-sill or similar		N
	- appliance provided with an automatic cord reel		N
	- appliance with cord storage devices, other than automatic cord reel intended to accommodate supply cord partially while the appliance is in operation		N
	- ceiling mounted heat lamp appliances		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- recessed ceiling mounted heat lamp appliances are mounted as near as possible to the walls		N
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N
	the windings makes it difficult to make the necessary connections		N
	Temperature rise of the felt pad (IEC 60335-2-30)		N
11.4	Heating appliances operated under normal operation at 1,15 times rated power input ..... :	253VAC	P
	If the temperature rise limits are exceeded in appliances incorporating motors, transformers or electronic circuits and the power input is lower than the rated power input, the test is repeated with the appliance supplied at 1,06 times rated voltage (IEC 60335-2-30)		N
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage..... :		N
11.6	Combined appliances are operated as heating appliances (IEC 60335-2-30)		N
11.7	Operation until steady conditions established (IEC 60335-2-30)		P
11.8	Temperature rises not exceeding values in table 3		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N
	Sealing compound does not flow out		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Modification of temperature rise in table 3 (IEC 60335-2-30)		P
	Temperature rise limits of motors, transformers or components of electronic circuits and other parts may be exceed by 1,15 times rated power input (IEC 60335-2-30)		N
	Outer surface of liquid container of unvested liquid- filled radiators shall be at least 50K less than the boiling point of liquid (IEC 60335-2-30)		N
	Temperature rise of surfaces shall not exceed the values in table 101 (IEC 60335-2-30)		P
	Heaters intended to be mounted under church benches, the temperature rise of surfaces accessible to the test rod shall not exceed 70K (IEC 60335-2-30)		N
	For heaters intended to be mounted under other benches, temperature rises not exceeding values in table 3, for parts that are held for short periods only (IEC 60335-2-30)		N
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE	—	
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1,15 times rated power input..... :	253VAC	P
	Motor-operated appliances and combined appliances supplied at 1,06 times rated voltage..... :		N
	Protective impedance and radio interference filters disconnected before carrying out the tests		N
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements		P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES	—	
	Appliances withstand the transient overvoltages to which they may be subjected		N
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6		N
	No flashover during the test, unless of functional insulation		N
	In case of flashover of functional insulation, the appliance complies with cl.19 with the clearance short circuited		N
15	MOISTURE RESISTANCE	—	
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance		P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in cl.29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529 ..... :	IPX4	P
	Water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N
	Built-in appliances installed according to the instructions		N
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		P
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		P
	However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5m, the support being placed at the level of the pivot axis of the oscillating tube		N
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		P
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support that is constructed to prevent water spraying onto its top surface. The pivot axis of the oscillating tube is located at the same level as the underside of the support and aligned centrally with the appliance. The spray is directed upwards		P
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5m		P
	Appliances with type X attachment fitted with a flexible cord as described		N
	Detachable parts tested as specified		N
15.2	Spillage of liquid does not affect the electrical insulation		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N
	Detachable parts removed		N
	Overfilling test with additional amount of water, over a period of 1m (l) ..... :		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	The appliance withstands the electric strength test of 16.3		N
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		N
	Heaters intended to be built into the floor and having a grille or opening at or near to the floor level shall be constructed so that such spillage does not affect their electrical insulation (IEC 60335-2-30)		N
	The heater is installed as specified in 11.2, however the felt pad is not applied. The content of a container filled with approximately 10l of water containing 1% NaCl and 0,6% rinsing agent as specified in Annex AA of IEC 60335-2-5 is poured steadily over the grille of the appliance at the most unfavourable place over a period of approximately 10s		N
	The appliance withstands the electric strength test of 16.3		N
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in cl.29		N
15.3	Appliances proof against humid conditions		P
	Humidity test for 48h in a humidity cabinet		P
	The appliance withstands the tests of cl.16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		—
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		N
16.2	Single-phase appliances: test voltage 1,06 times rated voltage..... :	233.2VAC	P
	Three-phase appliances: test voltage 1,06 times rated voltage divided by □3..... :		N
	Leakage current measurements		P
16.3	Electric strength tests according to table 7		P
	No breakdown during the tests		P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS	—	
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		N
	Appliance supplied with 1,06 or 0,94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied..... :		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15K		N
	Temperature of the winding not exceeding the value specified in table 8,		N
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N
18	ENDURANCE	—	
	Requirements and tests are specified in part 2 when necessary		N
19	ABNORMAL OPERATION	—	
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		N
	Heaters compliance is checked by the tests of cl.19.5, 19.6, 19.11, 19.12, 19.101 to 19.115, as applicable (IEC 60335-2-30)		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0,85 times rated power input..... :		N
19.3	Test of 19.2 repeated; test voltage (V): power input of 1,24 times rated power input..... :		N
19.4	Test conditions as in cl.11, any control limiting the temperature during tests of cl.11 short-circuited		N
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		N
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1,5 times working voltage or until the PTC heating element ruptures		N
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		N
	Locked rotor, motor capacitors open-circuited or short- circuited, if required		N
	Locked rotor, capacitors open-circuited one at a time		N
	Test repeated with capacitors short-circuited one at a time, if required		N
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N
	Other appliances supplied with rated voltage for a period as specified		N
	Winding temperatures not exceeding values specified in table 8		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
19.8	Three-phase motors operated at rated voltage with one phase disconnected		N
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N
	Winding temperatures not exceeding values as specified		N
19.10	Series motor operated at 1,3 times rated voltage for 1m..... :		N
	During the test, parts not being ejected from the appliance		N
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		N
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4		N
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		N
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8		N
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		N
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15W according to the tests specified		N
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl.11, but supplied at rated voltage, the duration of the tests as specified:		N
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N
	b) open circuit at the terminals of any component		N
	c) short circuit of capacitors, unless they comply with IEC 60384-14		N
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler		N
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit		N
	g) failure of an electronic power switching device		N
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		N
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or		N
	a switch that can be placed in the stand-by mode,		N
	subjected to the tests of 19.11.4.1 to 19.11.4.7		N
	Appliances incorporating a protective electronic circuit subjected to the tests		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	of 19.11.4.1 to 19.11.4.7, except that		
	appliances operated for 30s or 5m during the test of 19.7 are not subjected to the tests for electromagnetic phenomena		N
	Appliances having a device with an off position obtained by electronic disconnection,		N
	or a device that can be placed in the stand-by mode, subjected to the tests of 19.11.4.1 to 19.11.4.7		N
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N
	Earthed heating elements in class I appliances disconnected		N
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11		N
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply ins reduces to a level such that the appliance ceases to respond or a programmable component cease to operate		N
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A) ..... :		N
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9		P
	Enclosures not deformed to such an extent that compliance with cl.8 is impaired		P
	If the appliance can still be operated it complies with 20.2		N
	During cl.19.106, the temperature of motor windings shall not exceed the values in table 8 (IEC 60335-2-30)		N
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:	P	
	- basic insulation..... :	1000V	P
	- supplementary insulation ..... :		N
	- reinforced insulation..... :	3000V	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstanding the electric strength test of 16.3. the test voltage being twice the working voltage		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N
	Appliances tested with an electronic switch in the off position, or in the stand-by mode		N
	- do not become operational, or		N
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N
19.14	Appliances operated under the conditions of cl.11. Contactors or relays contacts operating under the conditions of cl.11 short-circuited		N
19.101	Heaters operated at 1,24 times rated power input, all thermal controls operated during the test of cl.11 short-circuited simultaneously (IEC 60335-2-30)		P
19.102	Circular and similar portable heaters which emit heat in several directions are placed as close as possible to one of the walls of the test corner at 1,24 times rated power input (IEC 60335-2-30)		N
19.103	Tests specified for heaters, other than (IEC 60335-2-30)		N
	- heaters for mounting at high level except those intended to be installed in wardrobes		N
	- visibly glowing radiant heaters		N
	- portable fan heaters		N
	Heaters operated as specified in cl.11 but covered with felt strips (IEC 60335-2-30)		N
	The temperature rise of the strips not exceeds 150K. An over-shoot of 25K is allowed during the first hour (IEC 60335-2-30)		N
	Heaters intended to be installed in wardrobes, including heaters for mounting at high level, comply with the test with any self-resetting thermal cut-out short-circuited (IEC 60335-2-30)		N
19.104	Built-in heaters, having air outlet in the floor, window sill or similar locations, special conditions as specified, thermal controls operated during the test of cl.11 short-circuited (IEC 60335-2-30)		N
	The temperature rise of the strips not exceeds 150K. An over-shoot of 25K is allowed during the first hour (IEC 60335-2-30)		N
19.105	Heaters having a liquid container to be filled by the user, tests specified in cl.11 but container empty (IEC 60335-2-30)		N
19.106	Fan heaters and other heaters, incorporating motors, tests specified in cl.11 but locked rotor and heaters supplied at rated voltage (IEC 60335-2-30)		N
19.107	Fan heaters with an enclosure substantially of non- metallic material, tests specified in cl.11 but the voltage at the terminal of the motor is supplied separately at its working voltage, thermal controls operated during the test of cl.11 short-circuited (IEC 60335-2-30)		N
19.108	Portable fan heaters, tests specified in cl.11. but a sheet of paper covered the air inlets for 4h (IEC 60335-2-30)		N
19.109	Portable fan heaters, tests specified in cl.11 but air flow directed against a wall, thermal controls operated during the test of cl.11 short-circuited (IEC 60335-2-30)		N
	Maximum temperature rise on the wall does not exceed 150K (IEC 60335-2-30)		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
19.110	Portable visibly glowing radiant heaters, tests specified in cl.11 but radiation directed against a wall (IEC 60335-2-30)		N
	Maximum temperature rise on the wall does not exceed 70K (IEC 60335-2-30)		N
19.111	Visibly glowing radiant heaters, other than heaters for mounting at high level, tests specified in cl.11 but rated power input and a piece flannelette in contact with the fireguard. The flannelette shall not smoulder or ignite within 10s (IEC 60335-2-30)		N
19.112	Portable heaters, tests specified in cl.11 but overturned position on a soft wood surface covered with a double layer cotton gauze. The cotton gauze or the wood surface shall not smoulder or ignite (IEC 60335-2-30)		N
	Surface of oil-filled radiators shall be at least 40K lower than the boiling point (°C) of the oil, no deformation of container, leakage of oil or emission of flames (IEC 60335-2-30)		N
	Pressure in liquid-filled radiators (IEC 60335-2-30)		N
	Fuel effect heaters intended to be placed in a fireplace not subjected to this test (IEC 60335-2-30)		N
19.113	Fan heaters having an enclosure substantially of non- metallic material, tests specified in cl.11 but all self- resetting thermal cut-outs and controls which operated during the test of cl.11 short-circuited and the fan motor is stalled (IEC 60335-2-30)		N
19.114	Oil filled radiators, tests specified in cl.11 but at rated power input, the oil level is approximately 10mm above the heating element and the container resealed (IEC 60335-2-30)		N
	Surface of container shall be at least 40K lower than the boiling point of the oil (IEC 60335-2-30)		N
19.115	Ceiling mounted heat lamp appliances tests specified in cl.11 but at the highest rated wattage heat lamps fitted as allowed by the construction (IEC 60335-2-30)		N
20	STABILITY AND MECHANICAL HAZARDS	—	
20.1	Portable heaters shall have adequate stability (IEC 60335-2-30)	Fixed appliance	N
	Portable heaters placed: (IEC 60335-2-30)		N
	- most unfavourable normal position of use on a inclined plane of 15°. The heater shall not overturn (IEC 60335-2-30)		N
	- on a horizontal plane with 5N applied to the top. The heater shall not overturn (IEC 60335-2-30)		N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	No moving parts	N
	Protective enclosures, guards and similar parts are non-detachable		N
	Adequate mechanical strength and fixing of protective enclosures		N
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N
	Not possible to touch dangerous moving parts with test probe		N
21	MECHANICAL STRENGTH	—	
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, spring hammer test, impact energy 0,5J		P
	Compliance also checked by the tests of 21.101 and 21.102 (IEC 60335-2-30)		N
	For appliances with heating elements that are in direct contact with accessible glass panels, the impact energy of the blows applied to the panel is 2J (IEC 60335-2-30)		N
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N
	If necessary, repetition of groups of three blows on a new sample		N
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		N
	The insulation is tested as specified, unless		N
	- the thickness of supplementary insulation is at least 1mm		N
	- and reinforced insulation is at least 2mm		N
	The insulation is raised to the temperature measured during the test of cl.11		N
	The surface of the insulation is then scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40°. Its tip is rounded with a radius of 0,25mm ±0,02mm		N
	The pin is held at an angle of 80°- 85° to the horizontal and loaded so that the force exerted along its axis is 10N ±0,5N		N
	The scratches are made by drawing the pin along the surface of the insulation at a speed of approximately 20mm/s. Two parallel scratches are made		N
	They are spaced sufficiently apart so that they are not affected by each other, their length covering approximately 25 % of the length of the insulation		N
	Two similar scratches are made at 90° to the first pair without crossing them		N
	The test fingernail of Figure 7 is then applied to the scratched surface with a force of approximately 10N. No further damage, such as separation of the material, shall occur. The insulation shall then withstand the electric strength test of 16.3		N
	The hardened steel pin is then applied perpendicularly with a force of 30N ±0,5N to an unscratched part of the surface. The insulation shall then withstand the electric strength test of 16.3 with the pin still applied and used as one of the electrodes		N
21.101	Visibly glowing radiant heaters, other than heaters for mounting at high level, placed that the central part of the fireguard is horizontal - a mass of 5kg having a flat base 100mm placed for 1m on the central part of the fireguard. The fireguard show no significant permanent deformation (IEC 60335-2-30)		N
21.102	Heaters having a part fixed to the wall or ceiling and another part hinged to it, fixed in accordance with the instructions (IEC 60335-2-30)		N
	- the hinged part fall away under its own weight five times		N
	- after test the heater compliance with cl.8.1 and cl.29.1 and show no damage		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
21.103	Panel heaters for ceiling mounting, suspension means shall have adequate strength (IEC 60335-2-30)		N
	- a load equal four times the mass of appliance suspended from the centre for 1h		N
	- if suspension means rigid, torque of 2,5Nm applied for 1m in each direction		N
	After tests suspension means shall show no significant deformation (IEC 60335-2-30)		N
22	CONSTRUCTION	—	
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX4	N
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		P
	- a supply cord fitted with a plug		P
	- a switch complying with 24.3		N
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N
	- an appliance inlet		N
	Single-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N
22.3	Appliance provided with pins: no undue strain on socket-outlets		N
	Applied torque not exceeding 0,25Nm		N
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N
	Each pin subjected to a torque of 0,4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N
22.5	No risk of electric shock when touching the pins of the plug, for appliances having a capacitor with rated capacitance exceeding 0,1□F, the appliance being disconnected from the supply at the instant of voltage peak	No capacitor	N
22.6	Electrical insulation not affected by condensing water or leaking liquid		N
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N
22.7	Heaters containing liquid or gas shall beconstructed that they withstand the pressure to occur during use (IEC 60335-2-30)		N
	- appliance subjected to twice the highest pressure during the tests of cl.19.101, 19.103 or 19.112		N
	- after test there shall be no leakage of liquid or gas		N
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Adequate insulating properties of oil or grease to which insulation is exposed		N
22.10	Not possible to reset voltage-maintained non-self- resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance		N
	Non-self resetting thermal motor protectors have a trip-free action, unless		N
	they are voltage maintained		N
	Location or protection of reset buttons of non-self- resetting controls is so that accidental resetting is unlikely		N
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts	Secured with screws	P
	Obvious locked position of snap-in devices used for fixing such parts		N
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N
	Tests as described		N
22.12	Handles, knobs etc. fixed in a reliable manner		N
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		N
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N
	Cord reel tested with 6000 operations, as specified		N
	Electric strength test of 16.3, voltage of 1000V applied		N
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		P
	Requirement does not apply to rollers or feet, meets requirements of cl.19 without rollers or feet (IEC 60335-2-30)		N
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
22.19	Driving belts not used as electrical insulation		N
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non- combustible		N
	Compliance is checked by inspection and, if necessary, by appropriate test		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		N
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		N
22.24	Bare heating elements shall be supported to prevent excessive displacement occurring during normal use. The rupture of the heating element shall not give rise to a hazard. Compliance is checked by inspection, after the bare heating conductor has been cut in the most unfavourable place. The string shall not break (IEC 60335-2-30)		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N
22.26	The insulation between parts operating at safety extra- low voltage and other live parts complies with the requirements for double or reinforced insulation		N
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		N
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		N
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified for supplementary insulation		P
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29 if wires, screws etc. becomes loose		P
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		N
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N
	Oxygen bomb test at 70°C for 96h and 16h at room temperature		N
	Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation		N
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts		N
	Electrodes not used for heating liquids		N
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N
22.38	Capacitors not connected between the contacts of a thermal cut-out		N
22.39	Lamp holders used only for the connection of lamps	No lamp holder	N
	For ceiling mounted lamp appliances, the insulating parts of lampholders used for the connection of replaceable heat lamp shall be ceramic (IEC 60335-2-30)		N
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N
	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible		N
22.41	No components, other than lamps, containing mercury		NR
22.42	Protective impedance consisting of at least two separate components		N
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N
22.44	Appliances shall not have an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		P
22.46	Software used in protective electronic circuits is software class B or C		N
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	No leakage from any part, including any inlet water hose		N
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		N
22.49	For remote operation, the duration of operation shall be set before the appliance can be started, unless		N
	the appliance switches off automatically or can operate continuously without hazard		N
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N
22.51	A control on the appliance being manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N
	There is a visual indication showing that the appliance is adjusted for remote operation		N
	Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard:		N
	- operate continuously,		N
	- operate automatically, or		N
	- be operated remotely		N
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N
22.101	Heaters other than heaters for mounting at high level, shall be guarded in order to prevent contact with heating elements (IEC 60335-2-30)		N
	Test probe 41 IEC 61032 applied with a force not exceeding 5N not touch the heating elements		N
	Fireguards shall have no openings which exceed		N
	- a major dimension of 126mm and a corresponding minor dimension of 12mm, or		N
	- a major dimension of 53mm and a corresponding minor dimension of 20mm		N
	These dimensions also apply to any gap between the fireguard and its immediate surround. However, any apertures having a minor dimension of less than 5mm are ignored		N
22.102	Fireguards shall have a total open area not less than 50% of the surface area of the fireguard (IEC 60335-2-30)		N
22.103	Fireguards not completely removable without use of a tool (IEC 60335-2-30)		N
22.104	Appliance for wall mounting so constructed that they can be securely fixed to a wall (IEC 60335-2-30)		N
22.105	Accessible panels made of glass, ceramic or similar material in direct contact with heating elements shall withstand thermal shock. 1l water at 15 ±5°C is directed onto the central part of the panel at a rate of 10ml/s through a 5mm diameter tube. The panel shall not be damaged (IEC 60335-2-30)		N
22.106	Portable appliances not have openings on the underside that would allow small items to penetrate and touch live parts (IEC 60335-2-30)		N
22.107	Visibly glowing radiant heaters, after fixing to a wall or ceiling direction of radiation cannot be changed without the aid of a tool (IEC 60335-2-30)		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
22.108	Visibly glowing radiant heaters other than heaters for mounting at high level, do not incorporate thermostats, timers or similar means which switch on heating elements automatically, unless at least one heating element is already visibly glowing.(IEC 60335-2-30)		N
22.109	Disconnection of supply by a switch in the OFF position shall not rely on electronic components (IEC 60335-2-30)		N
22.110	Heaters intended to be mounted under church benches: metal surfaces accessible to the 75mm diameter test rod shall have a non-metallic coating with a thickness of at least 50 microns (IEC 60335-2-30)		N
23	INTERNAL WIRING	—	
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		N
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N
	Beads inside flexible metal conduits contained within an insulating sleeve		N
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N
	Electric strength test, 1 000V between live parts and accessible metal parts		N
23.4	Bare internal wiring sufficiently rigid and fixed		N
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2 000V is applied for 15m between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N
24	COMPONENTS	—	

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components		P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		N
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard	No lamp holder, lamp has integral connectors and leads	N
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or		N
	tested according to annex F		N
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N
	tested according to annex G		N
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		N
	tested according to annex H		N
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N
	Switches operating during the test of cl.19.112: 300 (IEC 60335-2-30)		N
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:	N	
	- thermostats	10 000	N
	- temperature limiters	1 000	N
	- self-resetting thermal cut-outs (IEC 60335-2-30)	10 000	N
	- non-self-resetting thermal cut-outs operating during 19.112 (IEC 60335-2-30)	300	N
	- for other non-self-resetting thermal cut-outs.....	1 000	N
	- voltage maintained non-self-resetting thermal cut-outs:	1 000	N
	- timers:	3 000	N
	- energy regulators:	10 000	N
	- thermostats of liquid-filled radiators which operate during cl.11 to limit the surface temperature rise to 85K (IEC 60335-2-30)	100 000	
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N
24.1.5	Appliance couplers complying with IEC 60320-1		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N
	Interconnection couplers complying with IEC 60320-2- 2		N
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N
24.1.8	The relevant standard for thermal links is IEC 60691. Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of cl.19		N
24.1.9	Relays, other than motor starting relays, tested as part of the appliance		N
	They are also tested in accordance with cl.17 of IEC 60730-1, the number of operations in 24.1.4 selected according to the relay function in the appliance		N
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		N
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N
	Capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, are of class P1 or P2 of IEC 60252		N
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V		N
	In addition, the motors are complying with the requirements of Annex I		N
24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance)		N
24.101	Oil-filled radiators, devices incorporated to comply with cl.19.114 shall be non-self resetting (IEC 60335-2-30)		N
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS	—	
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		P
	- supply cord fitted with a plug		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N
	- pins for insertion into socket-outlets		P
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1 250V for 1m between each means of connection causes no breakdown		N
25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		N
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		N
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N
25.5	Method of assembly of the supply cord with the appliance:		P
	- type X attachment		N
	- type Y attachment		P
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N
25.6	Plugs fitted with only one flexible cord		N
25.7	Supply cords being one of the following types:		P
	- rubber sheathed (at least 60245 IEC 53)	H05RR-F	P
	- polychloroprene sheathed (at least 60245 IEC 57)		N
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 87)		N
	Polyvinyl chloride sheathed: Not used if they are likely to touch metal parts having a temperature rise exceeding 75K during the test of cl.11		N
	- light polyvinyl chloride sheathed cord (at least 60227 IEC 52), appliances not exceeding 3 kg		N
	- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances		N
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords		N
	- heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3kg		N
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), other appliances		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Supply cords of portable heaters intended to be used in greenhouses shall not be lighter than ordinary polychloroprene sheathed flexible cord (IEC 60335-2-30)		N
	Supply cords of heaters intended to be used on building sites shall not be lighter than heavy ordinary polychloroprene sheathed flexible cord (60245 IEC 66) (IEC 60335-2-30)		N
	For portable oil-filled radiators fitted with polyvinyl chloride sheathed cords (code designation 60227 IEC 52 or code designation 60227 IEC 53), metal parts likely to touch the supply cord in normal use include those parts that are inaccessible to the 75mm diameter test rod specified in Table 101 but that may come into contact with the cord when it is wrapped around the heater. This does not apply if storage means for the cord are provided (IEC 60335-2-30)		N
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross- sectional area (mm^2)..... :	300/500V Area 3x1.5mm^2	P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P
25.11	Conductors of supply cords not consolidated by lead- tin soldering where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N
	the appliance is class 0		N
25.14	Supply cords adequately protected against excessive flexing		N
	Flexing test:		N
	- applied force (N) ..... :		N
	- number of flexings ..... :		N
	The test does not result in:		N
	- short circuit between the conductors		N
	- breakage of more than 10% of the strands of any conductor		N
	- separation of the conductor from its terminal		N
	- loosening of any cord guard		N
	- damage, within the meaning of the standard, to the cord or the cord guard		N
	- broken strands piercing the insulation and becoming accessible		N
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
	The cord cannot be pushed into the appliance to such an extent that the		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	cord or internal parts of the appliance can be damaged		
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm) ..... :	Pull 60N Torque 0,25Nm	P
	Max. 2mm displacement of the cord, and conductors not moved more than 1mm in the terminals		P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments constructed and located so that:		P
	- replacement of the cord is easily possible		N
	- it is clear how the relief from strain and the prevention of twisting are obtained		N
	- they are suitable for different types of cord		N
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N
	- the cord is not clamped by a metal screw which bears directly on the cord		N
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		N
	so constructed that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		N
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N
25.22	Appliance inlet:		N
	- live parts not accessible during insertion or removal		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temp. rise of external metal parts exceeds 75K, unless the supply cord is not likely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N
	If necessary, electric strength test of 16.3		N
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		N
26	TERMINALS FOR EXTERNAL CONDUCTORS	—	
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non- detachable cover		P
	However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		N
	Screws and nuts serve only to clamp supply conductors, except		N
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N
26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		N
	- the terminal does not loosen		N
	- internal wiring is not subjected to stress		N
	- clearances and creepage distances are not reduced below the values in 29		N
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm) ..... :		N
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N
	Stranded conductor test, 8mm insulation removed		N
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2):		N
	Terminals only suitable for a specially prepared cord		N
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N
26.9	Terminals of the pillar type constructed and located as specified		P
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		N
	Pull test of 5N to the connection		N
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N
	unless barriers are provided so that clearances and creepage distances remain satisfactory if the conductor becomes free		N
27	PROVISION FOR EARTHING	—	
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		P
	Earthing terminals not connected to neutral terminal		N
	Class 0, II and III appliance have no provision for earthing		N
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N
27.2	Clamping means adequately secured against accidental loosening		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2,5 to 6mm^2, and		N
	do not provide earthing continuity between different parts of the appliance		N
	Conductors cannot be loosened without the aid of a tool		N
27.3	For detachable parts that are plugged into another part of the appliance, and having an earth connection, the earth connection made before and separated after current-carrying connections when removing the part		P
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5µm		N
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N
	In case of aluminium alloys precautions taken to avoid risk of corrosion		P
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N
	Resistance not exceeding 0,1Ω at the specified low- resistance test		P
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand-held appliances		N
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N
28	SCREWS AND CONNECTIONS	—	
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3mm		N
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N
	Screws used for electrical connections or connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N
	For screws and nuts; test as specified		P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply toelectrical connections in circuits carrying a current not exceeding 0,5A		N
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		P

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- in normal use,		P
	- during user maintenance,		P
	- when replacing a supply cord having a type X attachment, or		N
	- during installation		P
	At least two screws being used for each connection providing earthing continuity, unless		N
	the screw forms a thread having a length of at least half the diameter of the screw		P
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION	—	
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), annex J applies ..... :		N
	The microenvironment is pollution degree 1 under Type 1 coating		N
	No clearance or creepage distance requirements under Type 2 coating		N
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless		P
	for basic insulation and functional insulation they comply with the impulse voltage test of cl.14		N
	However, if the construction is affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1 500V and above are increased by 0,5mm and the impulse voltage test is not applicable		P
	Impulse voltage test not applicable:		N
	- when the microenvironment is pollution degree 3		N
	- for basic insulation of class 0 and class 01 appliances		N
	Appliances are in overvoltage category II		P
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		N
	or if pollution degree 3 is applicable		N
	Compliance is checked by inspection and measurements as specified		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		N
	Lacquered conductors of windings considered to be bare conductors		N
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		P
29.1.4	For functional insulation, the values of table 16 are applicable, unless		P
	the appliance complies with cl.19 with the functional insulation short-circuited		N
	Lacquered conductors of windings considered to be bare conductors		N
	However, clearances at crossover points are not measured		N
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		P
	precautions taken to protect the insulation; pollution degree 1		N
	insulation subjected to conductive pollution; pollution degree 3		N
	Compliance is checked by inspection and measurements as specified		P
	For fan heaters, the microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance (IEC60335-2-30)		N
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of cl.14		N
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		N
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		N
29.2.4	Creepage distances of functional insulation not less than specified in table 18		P
	Creepage distances may be reduced if the appliance complies with cl.19 with the functional insulation short- circuited		N
29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		N
	Compliance checked by:		N
	- measurement, in accordance with 29.3.1, or		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	- an electric strength test in accordance with 29.3.2, or		N
	- an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3		N
29.3.1	Supplementary insulation having a thickness of at least 1mm		N
	Reinforced insulation having a thickness of at least 2 mm		N
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N
	Supplementary insulation consisting of at least 2 layers		N
	Reinforced insulation consisting of at least 3 layers		N
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N
	the electric strength test of 16.3		N
30	RESISTANCE TO HEAT AND FIRE	—	
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		N
	sufficiently resistant to heat		P
	For portable fan heaters, the temperature rises determined during the tests of cl.19 are not taken into account (IEC 60335-2-30)		N
	Ball-pressure test according to IEC 60695-10-2		P
	External parts: at 40°C plus the maximum temperature rise determined during the test of cl.11, or at 75°C, whichever is the higher; temperature (°C). :		P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of cl.11, or at 125°C, whichever is the higher; temperature (°C) .....:		P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during cl.19, if higher; temperature (°C) ..... :		N
30.2	Parts of non-metallic material adequately resistant to ignition and spread of fire		P
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		P
	Compliance checked by the test of 30.2.1 In addition:		P
	- attended appliances, 30.2.2 applies		N
	- unattended appliances, 30.2.3 applies		P
	Appliances for remote operation, 30.2.3 applies		N
	Base material of printed circuit board, 30.2.4 applies		N
30.2.1	The glow-wire test is carried out on enclosures at a temperature of 650°C (IEC 60335-2-30)		N
	Glow-wire test of IEC 60695-2-11 at 550°C, unless		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	the material is classified at least HB40 according to IEC 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N
30.2.2	Not applicable (IEC60335-2-30)		N
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Tests not applicable to conditions as specified		P
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2A during normal operation, and		P
	parts of non-metallic material within a distance of 3mm,		N
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850°C		P
	Glow-wire test not carried out on parts of material classified as having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		N
	Glow-wire test not carried out on small parts that comply with the needle-flame test of Annex E or on small parts of material classified as V-0 or V-1 according to IEC 60695-11-10		N
	Test as specified for an interposed shielding material		N
30.2.3.2	Parts of non-metallic material supporting current- carrying connections, and		P
	parts of non-metallic material within a distance of 3mm,		N
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N
	- 775°C, for connections carrying a current exceeding 0,2A during normal operation		N
	- 675°C, for other connections		N
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		P
	- 750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	- 650°C, for other connections		N
	Parts that during the test produce a flame persisting longer than 2s, tested as specified		N
	If a flame persists longer than 2s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N
	Test not applicable to conditions as specified		N
30.101	Fan heaters having an enclosure of substantially non- metallic material shall be resistant to fire. The needle test flame of Annex E is carried out on the enclosure of the appliance. This test is not carried out on fan heaters that are also intended to be operated at maximum heat output with the fan switched off (IEC 60335-2-30)		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
31	RESISTANCE TO RUSTING	—	
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS	—	
	Appliance shall not emit harmful radiation, present a toxic or similar hazard due to their operation in normal use		P
	Relevant tests specified in part 2, if necessary		N
A	ANNEX A (INFORMATIVE) ROUTINE TESTS	—	
	Description of routine tests to be carried out by the manufacturer		-
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES	—	
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N
	This annex does not apply to battery chargers		N
3.1.9	Appliance operated under the following conditions:		N
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N
	- if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N
	Details about how to remove batteries containing materials hazardous to the environment given		N
7.15	Markings placed on the part of the appliance connected to the supply mains		N
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N
	If the appliance can be operated without batteries, double or reinforced insulation required		N
11.7	The battery is charged for the period described		N
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		N
	- 100, the mass of part does not exceed 250g		N
	- 50, the mass of part exceeds 250g		N
	After the test, the requirements of 8.1, 15.1.1, 16.3 and cl.29 are met		N
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N
	For other parts, 30.2.2 applies		N
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS	—	
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS	—	
	Applicable to appliances having motors that incorporate thermal motor protectors		N
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST	—	
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		N
7	Severities		N
	The duration of application of the test flame is 30s ±1s		N
9	Test procedure		N
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N
9.2	The first paragraph does not apply		N
9.3	The test is carried out on one specimen		N
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N
11	Evaluation of test results		N
	The duration of burning not exceeding 30s		N
	However, for printed circuit boards, the duration of burning not exceeding 15s		N
F	ANNEX F (NORMATIVE) CAPACITORS	—	
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		N
1.5	Terminology		N

IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.3	Class X capacitors tested according to subclass X2		N
1.5.4	This subclause is applicable		N
1.6	Marking		N
	Items a) and b) are applicable		N
3.4	Approval testing		N
3.4.3.2	Table II is applicable as described		N
4.1	Visual examination and check of dimensions		N
	This subclause is applicable		N
4.2	Electrical tests		N
4.2.1	This subclause is applicable		N
4.2.5	This subclause is applicable		N
4.2.5.2	Only table IX is applicable		N
	Values for test A apply		N
	However, for capacitors in heating appliances the values for test B or C apply		N
4.12	Damp heat, steady state		N
	This subclause is applicable		N
	Only insulation resistance and voltage proof are checked		N
4.13	Impulse voltage		N
	This subclause is applicable		N
4.14	Endurance		N
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N
4.14.7	Only insulation resistance and voltage proof are checked		N
	Visual examination, no visible damage		N
4.17	Passive flammability test		N
	This subclause is applicable		N
4.18	Active flammability test		N
	This subclause is applicable		N
			N
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS	—	
	The following modifications to this standard are applicable for safety isolating transformers:		N
7	Marking and instructions		N
7.1	Transformers for specific use marked with:		N
	- name, trademark or identification mark of the manufacturer or responsible		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	vendor		
	- model or type reference		N
17	Overload protection of transformers and associated circuits		N
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N
22	Construction		N
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N
H	ANNEX H (NORMATIVE) SWITCHES	—	N
	Switches comply with the following clauses of IEC 61058-1, as modified:		
	- the tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N
	- before being tested, switches are operated 20 times without load		N
8	Marking and documentation		N
	Switches are not required to be marked		N
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N
13	Mechanism		N
	The tests may be carried out on a separate sample		N
15	Insulation resistance and dielectric strength		N
15.1	Not applicable		N
15.2	Not applicable		N
15.3	Applicable for full disconnection and micro- disconnection		N
17	Endurance		N
	Compliance is checked on three separate appliances or switches		N
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N
	The ambient temperature during the test is that occurring in the appliance during the test of cl.11 in IEC 60335-1		N
	Temperature rise of the terminals not more than 30K above the temperature rise measured in cl.11 of IEC 60335-1		N
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N
I	ANNEX I (NORMATIVE)	—	

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
	MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N
8	Protection against access to live parts		N
8.1	Metal parts of the motor are considered to be bare live parts		N
11	Heating		N
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N
11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N
16	Leakage current and electric strength		N
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		N
19	Abnormal operation		N
19.1	The tests of 19.7 to 19.9 not carried out		N
19.101	Appliance operated at rated voltage with each of the following fault conditions:		N
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N
	- short circuit of each diode of the rectifier		N
	- open circuit of the supply to the motor		N
	- open circuit of any parallel resistor, the motor being in operation		N
	Only one fault simulated at a time, the tests carried out consecutively		N
22	Construction		N
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N
	Compliance checked by the tests specified for double and reinforced insulation		N
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS	—	
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N
5.7	Conditioning of the test specimens		N
	When production samples are used, three samples of the printed circuit board are tested		N
5.7.1	Cold		N
	The test is carried out at -25°C		N
5.7.3	Rapid change of temperature		N
	Severity 1 is specified		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
5.9	Additional tests		N
	This subclause is not applicable		N
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES	—	
	The information on overvoltage categories is extracted from IEC 60664-1		N
	Overvoltage category is a numeral defining a transient overvoltage condition		N
	Equipment of overvoltage category IV is for use at the origin of the installation		N
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		N
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES	—	
	Sequences for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE	—	
	The information on pollution degrees is extracted from IEC 60664-1		NR
	Pollution		NR
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		NR
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		NR
	Minimum clearances specified where pollution may be present in the microenvironment		NR
	Degrees of pollution in the microenvironment		NR
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		NR
	- pollution degree 1: no pollution or only dry, non- conductive pollution occurs. The pollution has no influence		NR
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		NR
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		NR
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		NR

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST	—	
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N
7	Test apparatus		N
7.3	Test solutions		N
	Test solution A is used		N
10	Determination of proof tracking index (PTI)		N
10.1	Procedure		N
	The proof voltage is 100V, 175V, 400V or 600V:		N
	The last paragraph of cl.3 applies		N
	The test is carried out on five specimens		N
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		N
10.2	Report		N
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25)V		N
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30	—	
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES	—	
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		N
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor		N
5	General conditions for the tests		N
5.7	The ambient temperature for the tests of cl.11 and 13 is 40 $^{+3}/_{0}$°C		N
7	Marking and instructions		N
7.1	The appliance marked with the letters WDaE		N
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30mA		N
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		N
11	Heating		N
11.8	The values of Table 3 are reduced by 15K		N

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IEC 60335-2-30			
Clause	Requirement + Test	Result - Remark	Verdict
13	Leakage current and electric strength at operating temperature		N
13.2	The leakage current for class I appliances not exceeding 0,5mA		N
15	Moisture resistance		N
15.3	The value of t is 37°C		N
16	Leakage current and electric strength		N
16.2	The leakage current for class I appliances not exceeding 0,5mA		N
19	Abnormal operation		
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS	—	
	Description of tests for appliances incorporating electronic circuits		P
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION	—	
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		N
H.2	Definitions		N
	Only definitions H.2.16 to H.2.20 applicable		P
H.7	Information		N
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		N
H.11.12	Controls using software		N
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		N
H.11.12.7	Delete text		N
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		N
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		N
H.11.12.8.1	Replace text		N
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		N

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END OF THE TEST REPORT