

APPLICATION REPORT

On Behalf of

Global Tech China Limited

1 Metre Slim Line Tube Heater

Model: HHT210



**Prepared For : Global Tech China Limited
3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong,
Kowloon, Hong Kong**

**Prepared By : Shenzhen LCS Compliance Testing Laboratory Ltd.
1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, China**

Date of Test : August 15, 2014 – August 28, 2014

Date of Report : August 28, 2014

Report Number : LCS1408200791S

<p>TEST REPORT</p> <p>EN 60335-2-30</p> <p>Safety of household and similar electrical appliances</p> <p>Part 2: Particular requirements for room heaters</p>	
Report Reference No.....	LCS1408200791S
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Date of issue	August 28, 2014
Contents	63 pages
Testing laboratory	
Name	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing location	As above
Client	
Name	Global Tech China Limited
Address	3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Manufacturer	
Name	Global Tech China Limited
Address	3 Flat A, Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Test specification	
Standard	EN 60335-2-30: 2009+A11: 2012 (also see EN 60335-1: 2012 and EN 62233: 2008)
Test procedure	Compliance with EN 60335-2-30: 2009+A11: 2012 (also see EN 60335-1: 2012 and EN 62233: 2008)
Non-standard test method	N/A
Test item Description	
Trademark.....	ECOHEATER, HYLITE
Model and/or type reference.....	HHT210
Rating(s).....	230V~, 50Hz, 120W, IP44

Particulars: test item vs. test requirements

Nature of supply : ~
 Class of protection against electrical shock : Class I
 Degree of protection against moisture : IP44
 Type of cord attachment : Coupling appliances
 Type of mounting : --
 - building-in : Fixed appliances
 - independent : No
 - integrated : No
 Switch : Yes
 Thermostat : Yes
 Thermal cut-out : No
 Electronic circuit : No
 Programme controller : No
 Timer : No
 More than one function : No
 Appliance inlet provided : No
 Appliance for unattended use : No
 Bare heating elements : No
 Appliance to be immersed for cleaning : No
 Appliance for outdoor use : No
 Connector incorporating a thermostat : No
 Mass of appliance : 1.32kG

Test case verdicts

Test case does not apply to the test object : N(.A.)
 Test item does meet the requirement : P(ass)
 Test item does not meet the requirement : F(ail)

Testing

Date of receipt of test item : August 15, 2014
 Date(s) of performance of test : August 15, 2014 – August 28, 2014

General remarks

"This report is not valid as a CB Test Report unless appended to a CB Test Certificate issued by a NCB, in accordance with IECEE 02".

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

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

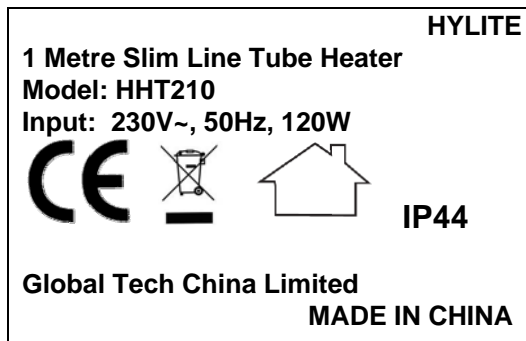
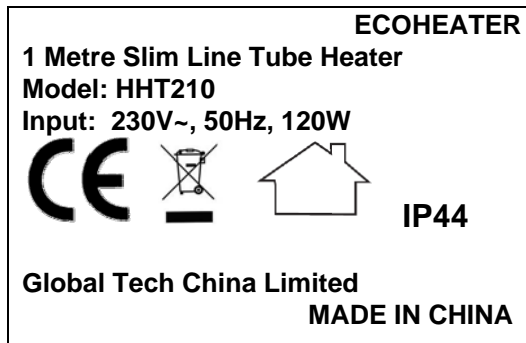
"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Remark

1. The Max ambient temperature is +25 °C.
2. The test report includes: Attachment 1: 3 pages of product photos.

Copy of marking plate




EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
4	GENERAL REQUIREMENT		---
	Appliance shall be constructed so that in normal use they function safely so as to cause no danger to persons or surroundings, even in the event of carelessness that may occur in normal use		P
	In general this principle is achieved by fulfilling the relevant requirements specified in this standard and compliance is checked by carrying out all the relevant tests	All the relevant tests are carried out	P
5	GENERAL CONDITIONS FOR THE TESTS		---
	Unless otherwise specified, the tests are carried out in accordance with this clause		P
5.1	Tests according to this standard are type tests		P
5.2	Tests are carried out on a single appliance that shall withstand all the relevant tests		P
5.3	The tests are carried out in the order of the clauses		P
5.4	When testing appliances that are also supplied by other energies such as gas, the influence of their consumption has to be taken into account	No such construction	N
5.5	The tests are carried out with the appliance placed in the most unfavourable position that may occur in normal use.	According to the product manual	P
5.6	If the setting can be altered by the user, tests shall be adjusted to their most unfavourable setting	Adjusted to their most unfavourable setting according to the product manual	P
5.7	Tests are carried out at a temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$.	Tests are carried out at ambient of 25°C	P
5.8.1	For a.c. only, tested at rated frequency (EN 60335-1: 12)	Tested with 50Hz	P
5.8.2	For a.c./d.c., tested at the most unfavourable supply (EN 60335-1: 12)	230V~	P
5.8.3	For heating appliance, it operated at rated power input range	Tested with 1.15x120W	P
5.9	Alternative heating elements, the appliance is tested in the most unfavourable results		N
5.10	The tests are carried out on the appliance as supplied		P
5.11	Flexible cord appliance are tested with the appropriate flexible cord connected to the appliance		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict

5.12	For heating appliance, only to heating elements without appreciable positive temperature coefficient of resistance	No such construction	N
5.13	Appliance with PTC heating elements are carried out at a voltage corresponding to the specified power input	No such construction	N
5.14	If class 0I appliance or class I appliance have accessible metal parts that are not earthed, such parts are checked for class II construction	Class I appliance	N
5.15	If appliance have parts operating at safety extra-low voltage, such parts are checked for class III construction		N
5.16	When testing electronic circuits, the supply is to be free from perturbations	No such construction	N
5.17	Appliance powered by rechargeable batteries are tested in accordance with annex B	No rechargeable batteries	N
5.18	If liner and angular dimensions are specified without a tolerance, ISO2768-1 is applicable		N

6	CLASSIFICATION		--
6.1	With respect to protection against electric shock:		P
6.2	Appliances shall have the appropriate degree of protection against harmful ingress of water	IP44	P
	Appliances intended for outdoor use shall be at least IPX4.		N

7	MARKING		--
7.1	Rated voltage or voltage range (V)	230V	P
	Single-phase appliances: 230 V covered (EN 60335-1: 12)	230 V covered	P
	Multi-phase appliances: 400 V covered (EN 60335-1: 12)	Only single-phase appliance	N
	Nature of supply	~	P
	Rated frequency or frequency range (Hz)	50Hz	P
	Rated input or rated current	120W	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	See page 1 of the report	P
	Model or type reference	See page 1 of the report	P
	Symbol for Class II	Class I appliance	N
	IP number	IP44	P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
7.2	Warning for stationary appliances	Single-phase appliance	N
	Warning placed in vicinity of terminal cover		N
7.3	Range of rated values correctly marked	230V	P
7.4	Voltage setting clearly discernible		P
7.5	Marking of rated input for each rated voltage		N
	Marking for upper and lower limits of rated input		N
7.6	Correct symbols used		P
	 Do not cover	Not comply with	N
7.7	Correct connection diagram, fixed to the appliance		N
7.8	Not for type Z attachment:		N
	- marking of terminals for the neutral conductor (N)		N
	- marking of earthing terminals		P
	- marking not placed on removable parts		P
	- marking of terminal for single-pole protective device		N
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches and regulating devices by use of figures, letters or other		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	Statement in the instructions that the appliance must not use programmer, timer, separate remote-control system, or any other device that switches on automatically	No such construction	N
	The installation instructions for stationary visibly glowing heaters shall warn possible danger of installation close curtains and other combustible materials (EN 60335-2-30:09)		N
	If the “Do not cover” symbol is marked on the appliance, its meaning shall be explained. The instructions for heaters marked “Do not cover” or with the “Do not cover” symbol shall contain the substance of the following: WARNING: In order to avoid overheating, do not cover the heater. (EN 60335-2-30:09)	Fixed appliance	N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	The instructions shall state that the heater must not be located immediately below a socket outlet. (EN 60335-2-30:09)		N
	The instructions for heaters with heating elements that are in direct contact with panels made of glass, ceramic or similar material that are accessible parts shall include the substance of the following warning: WARNING: The heater must not be used if the glass panels are damaged. (EN 60335-2-30:09)	Not such construction	N
	The instructions for visibly glowing radiant heaters, other than heaters for mounting at high level, shall include the substance of the following: Do not use this heater with a programmer, timer, separate remote-control system or anyother device that switches the heater on automatically, since a fire risk exists if the heater is covered or positioned incorrectly. (EN 60335-2-30:09)		P
	The instructions for visibly glowing radiant heaters having a fireguard that can be partly removed without the aid of a tool shall include the substance of the following: – the fireguard of this heater is intended to prevent direct access to heating elements and must be in place when the heater is in use; – the fireguard does not give full protection for young children and for infirm persons. The instructions for portable heaters shall include the substance of the following: Do not use this heater in the immediate surroundings of a bath, a shower or a swimming pool. (EN 60335-2-30:09)		N
	Instructions shall be provided for cleaning the reflector of visibly glowing radiant heaters, if appropriate. (EN 60335-2-30:09)	Installed in the wall	N
	The instructions for oil-filled radiators shall include the substance of the following: – 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 leak; (EN 60335-2-30:09)		N
	– when scrapping the heater, follow the regulations concerning the disposal of oil. Instructions shall be provided for routine cleaning of ceiling mounted heat lamp appliances including removal of covers, if applicable. (EN 60335-2-30:09)		N
7.12.1	Sufficient details for installation or maintenance supplied	See the manual	P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	- dimensions of space	Ditto	P
	- dimensions and position of support	Ditto	P
	- ventilation openings		N
	- connection/interconnection plug accessible		P
7.12.5	Replacement cord, type X attachment	Coupling appliance	N
	Replacement cord, type Y attachment		N
	Replacement cord, type Z attachment		N
7.13	Instructions and other texts in official language	In English	P
7.14	Marking easily legible and durable		P
7.15	Marking on a main part		P
	Marking clearly discernible from outside		P
	Stationary appliance: name or trademark and model or type reference visible after installation		N
	Indication for switches and controls in vicinity of components; not on removable parts if misleading		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link.	No such construction	N
8	PROTECTION AGAINST ACCESSIBILITY 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 accessible only when the heat lamp is extracted. (EN 60335-2-30:09)	No such construction	N
8.1.1	All positions; detachable parts removed		N
	Removal of lamps: protection against contact with live parts	No such lamps	N
	Use of test finger: no contact with live parts		N
	It shall not be possible to touch these parts with the test probe of fig. 3 (EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Detachable fireguards are not removed if their removal requires the use of a tool, provided that – the instructions state that the plug must be removed from the socket-outlet before cleaning the reflector, or – the heater incorporates a switch having a contact separation in all poles that provides full disconnection under overvoltage category III conditions. (EN 60335-2-30:09)		N
8.1.2	Use of test pin: no contact with live parts		P
8.1.3	Use of test probe: no contact with live parts of visible glowing heating elements		N
8.1.4	Accessible part not considered live if:		--
	- extra-low a.c. voltage: peak values not exceeding 42,4 V		N
	- extra-low d.c. voltage: not exceeding 42,4 V		N
	- or separated from live parts by protective impedance, d.c. current not exceeding 2 mA		N
	- or separated from live parts by protective impedance, a.c. peak value not exceeding 0,7 mA		N
	- for peak value 42,4 V up to and including 450 V capacitance not exceeding 0,1 μ F		N
	- for peak value 450 V up to and including 15 kV capacitance not exceeding 0,1 μ F		N
8.1.5	Live parts protected at least by basic insulation before installation or assembly: checked by inspection and the test of 8.1.1 (EN 60335-1: 12):		P
	- built-in appliances	fixed appliances	N
	- fixed appliances		P
	- separate units		N
8.2	Class II appliances and constructions adequately protected against accidental contact with basic insulation and metal parts separated from live parts with only basic insulation		N
	During user maintenance and after the removal of detachable parts during replacement of heat lamps, the basic insulation of internal wiring may be touched provided it is electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245. (EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict

10	POWER INPUT AND CURRENT		--
10.1	Power input at rated voltage and normal operating temperature not deviating from rated input by more than shown in table; measured power input (W); rated input (W); deviation	(see appended table 10.1)	P
10.2	Current at normal operating temperature not deviating from rated current by more than shown in table; measured current at rated voltage under normal operation (A); rated current (A); deviation . :		N

11	HEATING		--
11.1	No excessive temperatures in normal use		P
11.2	Heaters normally placed on the floor are placed in a test corner as follows: (EN 60335-2-30:09)	Appliance fixed on the wall	N
	– portable fan heaters are placed with the back 150 mm from one of the walls and away from the other wall; (EN 60335-2-30:09)		N
	– other heaters are placed on the floor with their back as near to one of the walls as possible and away from the other wall. However, circular and similar heaters that emit heat in several directions are placed 300 mm from one of the walls and away from the other wall. (EN 60335-2-30:09)		P
	Heaters containing PTC heating elements are placed away from the walls if this results in higher temperatures. (EN 60335-2-30:09)		N
	Fixed heaters are installed in the test corner as follows, unless otherwise specified in the installation instructions: (EN 60335-2-30:09)		P
	– heaters for mounting at high level are fixed to one of the walls and as near as possible to the other wall and ceiling; (EN 60335-2-30:09)		N
	– other heaters for wall mounting are fixed to one of the walls and as near as possible to the other wall and floor. A shelf having a depth of 200 mm and of sufficient length to cover the heater is fixed over the heater. It is positioned as close as possible to the heater; (EN 60335-2-30:09)		N
	– heaters for ceiling mounting are fixed to the ceiling as near as possible to the walls; (EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	– heaters for mounting under benches are fixed to the ceiling of the test corner as near as possible to the walls, the distance between the heater surface and the floor shall be as stated in the instructions. (EN 60335-2-30:09)		N
	Built-in heaters are installed as close as possible to a floor or ceiling, unless otherwise specified in the installation instructions. (EN 60335-2-30:09)		N
	Dull black-painted plywood approximately 20 mm thick is used for the test corner, the shelf and for installation of built-in heaters. (EN 60335-2-30:09)		N
	The ceiling of the test corner is covered with insulating material having a coefficient of thermal insulation of approximately 3,2 m ² K/W. (EN 60335-2-30:09)		N
	If a fixed heater has an opening at floor level, a felt pad 20 mm thick is placed on the floor and pushed flat into the opening as far as the construction will permit. If a guard is provided or if the opening is too small to permit the entry of the pad, the pad is pushed as close as possible against the opening. (EN 60335-2-30:09)		N
	Heaters having an air-outlet grille intended to be recessed in a floor, a window-sill or similar location are also tested with the air outlets covered with the felt strips specified in 19.103. (EN 60335-2-30:09)	No such construction	N
	The strips are applied at right angles to the longest side of the outlet grilles. The strips are applied to each half of the grille in turn and then to the complete grille. (EN 60335-2-30:09)		N
	For appliances provided with an automatic cord reel, one-third of the total length of the cord is unreeled. The temperature rise of the cord sheath is determined as near as possible to the hub of the reel and also between the two outermost layers of the cord on the reel. (EN 60335-2-30:09)		N
	For cord storage devices, other than automatic cord reels, that are intended to accommodate the supply cord partially while the appliance is in operation, 50 cm of the cord is unwound. The temperature rise of the stored part of the cord is determined at the most unfavourable place. (EN 60335-2-30:09)		N
	Ceiling mounted heat lamp appliances that are recessed into a ceiling space or cavity are installed in the test corner as follows, unless otherwise specified in the installation instructions. (EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Recessed ceiling mounted heat lamp appliances are mounted as near as possible to the walls in a test recess, consisting of the test corner ceiling, on top of which is a rectangular box with vertical sides and horizontal top. (EN 60335-2-30:09)		N
	The test corner ceiling shall extend at least 100 mm outside the projection of the heater on the ceiling. The box is made of dull black-painted plywood approximately 20 mm thick and the top of the box is tightly sealed to its sides. The ceiling of the test corner external to the box and the outside of the box is covered with insulating material having a coefficient of thermal insulation of approximately 3,2 m ² K/W. (EN 60335-2-30:09)		N
	The position of the recessed ceiling mounted heat lamp appliances within the test box shall be such that there is a space of 25 mm between the sides and top of the box and the top and sides of the recessed parts of the heater. (EN 60335-2-30:09)		N
11.3	Temperature rises determined by thermocouples or resistance method	By thermocouples	P
	The temperature rise of the felt pad is determined by means of thermocouples attached to small blackened disks of copper or brass, 15 mm in diameter and 1 mm thick. The disks are placed on the surface of the pad. (EN 60335-2-30:09)		P
11.4	Heating appliances operated under normal operation at 1,15 times rated power input	1.15X120W	P
	Heating appliances: If the temperature rise limits are exceeded in appliances incorporating motors, the test repeated with the appliance at 1.06 times rate voltage (EN 60335-2-30:09)		N
	If temperature rise limits are exceeded in appliances incorporating motors, transformers or electronic circuits and the power input is lower than the rated input, the test is repeated with the appliance supplied at 1,06 times the rated voltage (EN 60335-2-30:09)		N
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage	Heating appliances	N
11.6	Combined appliances operated as heating appliances		N
11.7	Operation duration corresponding to the most unfavourable conditions of normal use		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Appliances are operated until steady conditions are established. (EN 60335-2-30:09)		P
11.8	Protective devices do not operate		P
	Sealing compound not flowing out	No sealing compound	N
	Temperatures not exceeding values in table 3 ,and the temperature rise of surfaces of heaters shall not exceed the values shown in Table 101(EN 60335-1: 10& EN 60335-2-30:09)	(see appended table)	P
	The temperature rise limits of motors, transformers and parts directly influenced by them may be exceeded when the appliance is operated at 1,15 times rated power input (EN 60335-2-30:09)		N
	In Table 3, stationary heaters are considered liable to be operated continuously for long periods. (EN 60335-2-30:09)		N
	The temperature rise limits of motors, transformers and components of electronic circuits, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times rated power input. (EN 60335-2-30:09)		N
	For liquid-filled radiators, the temperature rise of parts in contact with oil is not measured. (EN 60335-2-30:09)	Not such construction	N
	However, for unvented liquid-filled radiators, the temperature rise of the outer surface of the liquid container is measured. It shall be at least 50 K less than the boiling point of the liquid. (EN 60335-2-30:09)		N
	For heaters intended to be mounted under church benches only, the temperature rise of surfaces accessible to the test rod shall not exceed 70 K. For heaters intended to be mounted under other benches, the temperature rise of surfaces accessible to the test rod shall not exceed the limits specified in Table 3 for parts that are held for short periods only. (EN 60335-2-30:09)		N
13	LEAKAGE CURRENT		--
13.1	Leakage current not excessive and electric strength adequate		P
13.2	Leakage current measured by means of circuit described in Annex G		N
	Leakage current measurements	(see appended table)	P
13.3	Electric strength test of insulation	(see appended table)	P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	No breakdown during the test		P
15	MOISTURE RESISTANCE		--
15.1	Enclosure provides the degree of moisture protection according to classification of appliance (EN 60335-1: 12)	IP44	P
15.1.1	Appliance subjected to test as specified		P
	Withstand electric strength test specified in 16.3		P
	No trace of water on insulation which can result in a reduction of distances and clearances below values specified in 29.1		P
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N
	Built-in appliance installed according to the manufacturer's instruction		N
	Other appliances tested as specified	Fixed appliance	P
15.2	Spillage of liquid does not affect the electrical Insulation.		--
	Appliances with type X attachment fitted with a flexible cord as described		P
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		P
	Detachable parts removed	No detachable parts	N
	The liquid container of the appliance is completely filled with water containing approximately 1 % NaCl. the appliance is then supplied at rated voltage and operated for 15 s. Lids are in position or removed, whichever is more unfavourable.	No such construction	N
	The appliance withstands the electric strength test of 16.3		N
	Saline solution is then added to the liquid container until it is completely full again. a further quantity equal to 15 % of the capacity of the container or 0,25 l, whichever is greater, is poured in steadily over a period of 1 min.		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
	The appliance withstands the electric strength test of 16.3		N
15.3	Humidity treatment for 48 h	93%, 25 °C, 48hrs	P
	Withstanding the test of Cl. 16		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Appliances to be immersed in water for cleaning sufficiently protected against effects of immersion (EN 60335-2-9:09)		N
	Testing conditions and scheduling as specified (EN 60335-2-9:09)		N
	No trace of water on insulation which can result in reduction of distances and clearances below values specified in 29.1		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		--
16.1	No excessive leakage current and adequate insulation and electric strength (tests 16.2 and 16.3)		P
16.2	Leakage current measurements	(see appended table)	P
16.3	Electric strength tests (values in table 5)	(see appended table)	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
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N
	Temperature of the winding not exceeding the value specified in table 6		N
	Fail-safe transformers complying with subclause 15.5 of IEC 61558-1		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		P
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0,85 times rated power input	0.85x120W	P
	Lids, doors and hoods, detachable reflectors and grill pans in most adverse position (EN 60335-2-9:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Test ended by non-self-resetting thermal cut-out or otherwise (test of 19.3 not made) (EN 60335-2-9:09)		N
19.3	Test of 19.2 repeated; test voltage (V): power input of 1,24 times rated power input	1.24x120W	P
19.4	Test conditions as in Cl. 11, the power input being 1,15 times rated power input, any control limiting the temperature during tests of Cl. 11 short-circuited		P
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	No PTC heating	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 (EN 60335-1: 12)		N
	Locked rotor, motor capacitors open circuited or short-circuited, if required	No such capacitors	N
	Appliances with timer or controller supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N
	Test period at rated voltage (s or min) or until steady state conditions established		N
	Winding temperatures not exceeding limiting temperature; type of appliance; insulation class; measured temperature (°C)		N
19.8	Three-phase motors operated at rated voltage with one phase disconnected		N
19.9	Appliance for short-time or intermittent operation are operated at rated voltage until steady conditions established		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Winding temperatures not exceeding values as specified		N
19.10	Series motor operated at 1,3 times rated voltage for 1 min	No such series motor	N
	Parts not ejected from the appliance during test (EN 60335-1: 12)		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
	During and after each test, the temperature of the windings shall not exceed the values specified in table 6.		N
	These limits do not apply to fail-safe transformers complying with subclause 15.5 of IEC 61558-1.		N
	Comply with the conditions specified in 19.13.		N
	Any current flowing through protective impedance not exceeds the limits specified in 8.1.4.	No protective impedance	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:		--
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N
	- 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:		--
	a) short-circuit of creepage distances and clearances between live parts of different potential, if these distances are less than the values specified in 29.1, unless the relevant part is adequately encapsulated		N
	b) open circuit at the terminals of any component		N
	c) short-circuit of capacitors, unless they comply with IEC 384-14 or 14.2 of IEC 65		N
	d) short-circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the circuits of an optocoupler		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit. In this case the possible hazardous situations of the appliance are assessed to ensure that safety does not rely on the correct functioning of such a component		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
	During and after each test the following is checked:		--
	- the temperature rise of the windings do not exceed the values specified in table 9		N
	- the appliance complies with the conditions specified in 19.13		N
	- live parts not accessible to the test finger or test pin as specified in Cl. 8		N
	- any current flowing through protective impedance not exceeding the limits specified in 8.14		N
	If a conductor of a printed board becomes open circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		--
	- the material of the printed circuit board withstands the burning test of 20.1 of IEC 65		N
	- any loosened conductor does not reduce the creepage distances or clearances between live part and accessible metal parts		N
	- the appliance withstands the tests of 19.11.2 with open circuited conductor bridged		N
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		N
	a device 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 of 19.11.4.1 to 19.11.4.7, except that		N
	Appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
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 the Class 3 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 is reduces to a level such that the appliance ceases to respond or a programmable component cease to operate.		N
	The appliance continues to operate normally or requires a manual operation to restart		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 127, 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	Comply with requirements	P
	Temperature rises not exceeding the values shown in table 7	(see appended table 19)	P
	Enclosures not deformed to such an extent that compliance with Cl. 8 is impaired		N
	Appliance still operable and complying with 20.2		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Appliance, other than Class III, withstands the electric strength test of 16.3, however, the test voltage being:		--
	- basic insulation: 1250 V	L to N, Live parts to metal accessible parts with metal foil	P
	- supplementary insulation: 1750 V		N
	- reinforced insulation: 3000 V		P
	During the test of 19.106, the temperature of the motor windings shall not exceed the values specified in Table 8. (EN 60335-2-30:09)		P
19.101	All thermal controls that operate during the test of Clause 11 are short-circuited simultaneously (EN 60335-2-30:09)		P
19.102	Circular and similar portable heaters that emit heat in several directions are placed as close as possible to one of the walls of the test corner and operated at 1,24 times rated power input. (EN 60335-2-30:09)		N
19.103	Heaters are operated as specified in Clause 11 but with the appliance covered. This does not apply to – heaters for mounting at high level, except those intended to be installed in wardrobes; – visibly glowing radiant heaters; – portable fan heaters. (EN 60335-2-30:09)		N
	The covering is made with felt strips each having a width of 100 mm and which are lined with a single layer of textile material. The felt has a specific mass of 4 kg/m ² ± 0,4 kg/m ² and a thickness of 25 mm. The textile material consists of prewashed double-hemmed cotton sheet having a specific mass between 140 g/m ² and 175 g/m ² in the dry condition. (EN 60335-2-30:09)		P
	Thermocouples are attached to the back of small blackened disks of copper or brass, 15 mm in diameter and 1 mm thick. The disks are spaced 50 mm apart and placed between the textile material and the felt on the vertical centre line of each strip. The disks are supported to prevent them from sinking into the felt. (EN 60335-2-30:09)		P
	The strips are applied with the textile material in contact with the heater so that they cover the top and front surface down to the floor. (EN 60335-2-30:09)		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	The rear surface of the heater is completely covered with strips down to the floor if – the heater is constructed to stand away from the wall; – for fixed heaters, the gap between the heater and the wall exceeds 30 mm, and the horizontal distance • between any two fixing points or spaces exceeds 200 mm, or • between any fixing point or spaces and the end of heater exceeds 100 mm, (EN 60335-2-30:09)	Not such appliance	N
	otherwise the rear surface is covered to a distance of approximately one-fifth of the height of the heater from the top. The top rear surface of other heaters is covered to a distance of approximately one-fifth of the height of the heater. The strips are applied to each half of the heater in turn and then to the complete heater. (EN 60335-2-30:09)		N
	The temperature rise of the strips shall not exceed 150 K but an over-shoot of 25 K is allowed during the first hour. (EN 60335-2-30:09)		N
19.104	Built-in heaters having air outlets in the floor, window-sill or similar locations are operated as specified in Clause 11 with the grilles covered. Thermal controls that operate during the test of Clause 11 are short-circuited. (EN 60335-2-30:09)		N
	The temperature rise of the strips shall not exceed 150 K but an overshoot of 25 K is allowed during the first hour. (EN 60335-2-30:09)		N
19.105	Heaters having a liquid container that is intended to be filled by the user are operated as specified in Clause 11 but with the container empty. NOTE Thermal controls that operate during the test of Clause 11 are allowed to operate. (EN 60335-2-30:09)		N
19.106	Fan heaters and other heaters incorporating motors are operated as specified in Clause 11. However, the heater is supplied at rated voltage with the motor rotor locked. (EN 60335-2-30:09)		N
19.107	Fan heaters having an enclosure substantially of non-metallic material are operated at their working voltage as specified in Clause 11 except that the motor is supplied separately at its working voltage. Thermal controls that operate during the test of Clause 11 are short-circuited. (EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	When steady conditions are established, the voltage applied to the motor is reduced until the running speed of the motor is just sufficient to prevent a thermal cut-out from operating, the voltage applied to the heating elements being maintained at the value used for 11.4. (EN 60335-2-30:09)		N
	Under these conditions, the heater is again operated until steady conditions are established or for 1 h, whichever is longer. After this period, the airflow is further restricted to verify that a thermal cut-out operates. (EN 60335-2-30:09)		N
19.108	Portable fan heaters are operated as specified in Clause 11. A rectangular sheet of paper is held against air inlets, without additional pressure. The paper has an area sufficient to cover the surface where air inlets are situated and is moved in any direction in order to restrict the airflow so that the most unfavourable conditions are established. (EN 60335-2-30:09)		N
19.109	Portable fan heaters are operated as specified in Clause 11, but placed so that the airflow is directed against one of the walls of the test corner. The heater is then moved as near as possible to the wall without the thermal cut-out operating. Thermal controls that operate during the test of Clause 11 are short-circuited. The temperature rise of the wall shall not exceed 150 K. (EN 60335-2-30:09)		N
19.110	Portable visibly glowing radiant heaters are operated as specified in Clause 11 but placed so that the radiation is directed against one of the walls of the test corner. The heater is placed with the fireguard 500 mm from the wall and this distance is progressively increased so that the highest wall temperature is measured. The temperature rise of the wall shall not exceed 70 K. (EN 60335-2-30:09)		N
19.111	Visibly glowing radiant heaters: flannelette covers test (EN 60335-2-30:09)		N
19.112	Portable heaters: operated as specified in Clause 11 but placed on a soft-wood surface that is covered with a double layer of bleached cotton gauze having a specific mass of approximately 40 g/m ² . The heater is then pushed so that it overturns in the most unfavourable position(EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
19.113	Fan heaters having an enclosure substantially of non-metallic material are operated as specified in Clause 11, except that all self-resetting thermal cut-outs and controls that operate during the test of Clause 11 are short-circuited and the fan motor is stalled(EN 60335-2-30:09)		N
19.114	A quantity of oil is drained from the container of oil-filled radiators until the oil level is approximately 10 mm above the heating element. The container is then resealed and the appliance operated as specified in Clause 11 but at rated power input(EN 60335-2-30:09)	No such construction	N
19.115	Ceiling mounted heat lamp appliances are operated as specified in Clause 11 but with the highest rated wattage heat lamps fitted as allowed by the construction(EN 60335-2-30:09)	No such construction	N
20	STABILITY AND MECHANICAL HAZARDS		--
20.1	Adequate stability	Fixed appliances	N
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		N
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 7		N
	Appliances having a mass exceeding 5 kg are then placed on a horizontal surface. A force of 5 N ± 0,1 N is applied to the top of the appliance in the most unfavourable horizontal direction. (EN 60335-2-30:09)	mass not exceeding 5 kg	N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		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, if unexpectedly reclosed		N
	Not possible to touch dangerous moving parts with test finger		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
21	MECHANICAL STRENGTH		--
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling	Comply with requirements	P
	No damage after three blows applied to various parts of the enclosure, impact energy $0,5 \pm 0,04$ J	0.5J, three blows for back cover, no hazards	P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3	After testing, no breakdown	P
	If necessary, repetition of groups of three blows on a new sample	Not require to conduct the test	N
21.101	Visibly glowing radiant heaters: A mass of 5 kg having a flat base 100 mm in diameter is placed for 1 min on the central part of the fireguard.	fireguard show no significant permanent deformation	N
22	CONSTRUCTION		--
22.1	Appliance marked with the first numeral of the IP system: relevant requirements of IEC 529 are fulfilled	IP44	P
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		--
	- a supply cord fitted with a plug		N
	- 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 coupler		N
22.3	Appliance provided with pins: no undue strain on socket-outlets		N
	Applied torque not exceeding 0,25 Nm		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets	No such construction	N
22.5	No risk of electric shock when touching the pins of the plug		P
22.6	Electrical insulation not affected by condensing water or leaking liquid	No such construction	N
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Class II appliances and class II constructions shall not be affected if hose ruptures or a seal leaks.		N
22.7	Appliances containing liquid or gases in normal use shall be against the risk of excessive pressure	No such construction	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 which are likely to be cleaned in normal use	No such connections	N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed	No such parts	N
22.10	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely	No such reset button	N
22.11	Reliable fixing of non-detachable parts which provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		N
	No deterioration of the fixing properties of snap-in devices used in parts which are likely to be removed during installation or servicing		N
	Tests	50N	P
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 of which being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape of which 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		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded	No such device	P
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	No such device	N
	Cord reel tested with 6000 operations, as specified		N
	Electric strength test of 16.3, voltage of 1000 V applied		N
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No such spacers	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	No driving belts	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
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	No such material.	P
22.22	Asbestos not used in the construction of the appliance	No asbestos	P
	Asbestos is used, but the liberation of dust of impregnated asbestos or of asbestos fibres into the surrounding air adequately prevented		N
22.23	Oils containing polychlorinated biphenyl (PCB) not used	No oils	P
22.24	Bare heating elements adequately supported	No such bare heating elements	N
	In case of rupture, the heating conductor is unlikely to come in contact with earthed metal parts or accessible metal parts		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts	No such parts	P
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

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
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	No such construction	N
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of protection against electric shock 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		P
	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	Creepage distances and clearances over supplementary and reinforced insulation not reduced below values specified in 29.1 as a result of wear		P
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29.1 if wires, screws etc. becomes loose		P
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		P
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation (EN 60335-1: 12)		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 29.1		N
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N
22.33	Conductive liquids which are or may become accessible in normal use are not in direct contact with live parts	No such construction	N
	Conductive liquids are not in direct contact with basic insulation or reinforced insulation in Class II constructions		N
	Conductive liquids in contact with live parts, not in direct contact with reinforced insulation		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
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 an insulation fault		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	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	Lampholders only used for the connection of lamps		N
22.40	Motor-operated appliances and combined appliances, intended to be moved while in operation or which have accessible moving parts, are fitted with a switch to control the motor (EN 60335-1: 12)		N
	The actuating member of this switch easily visible and accessible (EN 60335-1: 12)		N
22.41	Mercury switches mounted according to the requirement	No such switches	N
22.42	Protective impedance consisting of at least two separate components	No such protective impedance	N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Values specified in 8.1.4 not exceeded if any one of the components is short-circuited or open circuited		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur	No such device	N
22.44	Appliance enclosure not shaped and decorated so that the appliance is likely to be treated as a toy by children (EN 60335-1: 12)		P
22.45	When air is used as reinforced insulation. Due to deformation as a result of an external force applied to the enclosure, shall not be reduced below the values specified in 29.1.3.		P
22.46	Software used in protective electronic circuits shall be software class B or C.....:		N
	NOTE1: Failure of software B in the presence of another fault in the appliance, or failure of software class C alone, could result in dangerous malfunction, electric shock, fire, mechanical or other hazards. Software class A denotes software used for functional purpose		N
	Compliance is checked by evaluating the software in accordance with Annex R.		N
	Note2: If the software program is modified, the evaluation and relevant tests are results of the test involving protective electronic circuits.		N
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N
	Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum inlet water pressure or 1.2MPa, whichever is higher, for a period of 5 min		N
	No leakage from any part, including any inlet water hose		N
22.48	Appliances connected to the water mains constructed to prevent back siphonage of nonpotable water		N
	Compliance is checked by the relevant tests of IEC 61770		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

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N
22.51	Controls incorporated in the appliance take priority over controls actuated by remote operation		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 shall be in accordance with the socket-outlet system used in the country in which the appliance is sold.		N
	Compliance is checked by inspection.		N
22.101	Heaters, other than heaters for mounting at high level, shall be guarded in order to prevent contact with heating elements (EN 60335-2-30:09)		P
	The openings in fireguards are measured and shall not exceed the specified values (EN 60335-2-30:09)		N
22.102	The openings in fireguards are measured and shall not exceed (EN 60335-2-30:09)		N
22.103	The openings in fireguards are measured and shall not exceed (EN 60335-2-30:09)		N
22.104	Appliances for wall mounting shall be constructed so that they can be securely fixed to a wall (EN 60335-2-30:09)		N
22.105	Panels made of glass, ceramic or similar material that are accessible parts and that are in direct contact with heating elements shall withstand thermal shock(EN 60335-2-30:09)	No such construction	N
22.106	Portable appliances shall not have openings on the underside that would allow small items to penetrate and touch live parts(EN 60335-2-30:09)		P
22.107	Visibly glowing radiant heaters intended to be fixed to a wall or ceiling shall be constructed so that the direction of radiation cannot be significantly changed without the use of a tool after the heater has been fixed(EN 60335-2-30:09)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
22.108	Visibly glowing radiant heaters, other than heaters for mounting at high level, shall not incorporate thermostats, timers or similar means which switch on heating elements automatically, unless at least one heating element is already visibly glowing(EN 60335-2-30:09)		N
22.109	The disconnection of the supply by a switch in the off position shall not rely on electronic components(EN 60335-2-30:09)		P
22.110	Heaters intended to be mounted under church benches, metal surfaces accessible to the 75 mm diameter test rod shall have a non-metallic coating with a thickness of at least 50 microns (EN 60335-2-30:09)	Not nounted under church	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	No moving parts	N
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners	No such materials	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	No flexible metallic tubes	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		N
	Appliances with 2 stop positions: 1000 flexings made with moving part fully opened (EN 60335-2-30:09)	No moving parts	N
	Electric strength test, 1000 V between live parts and metal parts		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
23.4	Bare internal wiring sufficiently rigid and fixed	No bare internal wiring	P
23.5	The basic insulation of internal wiring withstanding the electrical stress likely to occur in normal use (EN 60335-1: 10)		N
	No breakdown when a voltage of 2000 V is applied for 15 min 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	Only the colour combination green/yellow used 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		N
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N

24	COMPONENTS		--
24.1	Components comply with safety requirements in relevant IEC standards(EN 60335-1: 10)	See table 24.1	P
	Appliance couplers incorporating thermostats, thermal cut-outs of fuses in the connectors shall comply with IEC 320 (EN 60335-2-9:09)		N
24.1.1	Capacitors likely to be subjected to the supply mains voltage and used for radio interference suppression or voltage dividing, comply with Annex ZC (EN 60335-1: 12)	No capacitors	N
	Small lampholders: compliance with requirements for E10 lampholders		N
	Isolating transformers and safety isolating transformers comply with IEC 742		N
	Safety isolating transformers tested with the appliance comply with Annex ZD (EN 60335-1: 12)	No safety isolating transformer	N
	Appliance couplers for IPx0 appliances: compliance with IEC 320		P
	Automatic controls: compliance with IEC 730, unless tested with the appliance		P
	Other appliance couplers: compliance with IEC 309		N
	Switches: compliance with IEC 1058, unless tested with the appliance (EN 60335-1: 12)		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
24.1.2	Automatic controls complying with IEC 730: additional tests according to this standard and 11.3.5 to 11.3.8 and Cl. 17 of IEC 730 as type 1 controls, the cycles of operation being:		--
	- thermostats: 10 000		P
	- temperature limiters: 1000		N
	- self-resetting thermal cut-outs: 300		N
	- non-self-resetting thermal cut-outs: 30		N
	- energy regulators: 3000 (EN 60335-1: 12)		N
	- timers: 10 000 (EN 60335-1: 12)		N
24.1.3	For switches, the test of 17.2.7 of IEC 1058-1 carried out for 10 000 cycles of operation (EN 60335-1: 12)		N
	Switches not separately tested and found to comply with IEC 1058-1 under conditions covering those occurring in the appliance, comply with Annex ZE (EN 60335-1: 12)		N
	Switches for no-load-operation and operable only with the aid of a tool, are not subjected to the tests of Cl. 17 of IEC 1058-1 (EN 60335-1: 12)		N
	This applies also to switches operated by hand, and with interlock for no-load-operation (EN 60335-1: 12)		N
	Switches without this interlock subjected to the test of 17.2.7 of IEC 1058-1 for 100 cycles of operation (EN 60335-1: 12)		N
24.1.4	Components marked with their operating characteristics are used in the appliance in accordance with these markings		N
	Components which have to comply with other standards are tested separately, according to the relevant standard		N
	Components used within the limits of its marking, tested in accordance with conditions occurring in the appliance		N
	Components not marked, or not used in accordance with its marking, or no IEC standard exists, tested under the conditions occurring in the appliance		N
	Components not mentioned in table 3 tested as part of the appliance		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
24.1.5	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
	List of components	(see appended table)	P
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 which can be reset by soldering		N
24.3	Switch intended for all-pole disconnection of stationary appliances is directly connected to the supply terminals, having a contact separation of at least 3 mm in each pole	Not stationary appliances	N
24.4	Plugs and socket-outlets for heating elements and extra-low voltage circuits, not interchangeable with plugs, and	No such constructions	N
	socket-outlets or with connectors and appliance inlets complying with IEC 83 or IEC 320, respectively		N
24.5	Plugs and socket-outlets etc. for interconnection cords, not interchangeable with plugs and socket-outlets or connectors and appliance inlets complying with IEC 83 or IEC 320, respectively, if direct supply from the mains could give rise to a hazard		N
24.6	Motors connected to the supply mains and having inadequate basic insulation for the rated voltage of the appliance, comply with the requirements of Annex F		N
	The components are listed on an appended table		N
24.101	Devices incorporated in oil-filled radiators in order to comply with 19.114 shall not be self-resetting	Not applicable	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		P
	- 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		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Appliances incorporating an appliance inlet other than those standardized in IEC 320 shall be supplied with a cord set (IEC 60335-2-9:08)		N
25.2	Appliance not provided with more than one means of connection to the supply	A plug mean connects to the supply	P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown	Only single-phase appliance	N
25.3	Connection of supply wires 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 26.2		N
	Appliance provided with a set of terminals allowing the connection of a flexible cord		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 8 (IEC 60335-1: 10)		N
	Introduction of conduit or cable does not affect the protection against electric shock or reduce creepage distances and clearances below values specified in 29.1		N
25.5	Method for assemble supply cord with the appliance:		--
	- type X attachment	Coupling appliance	N
	- type Y attachment		N
	- type Z attachment, if allowed in part 2		N
	Type X attachment: specially prepared cord		P
	Type X attachment not used for flat twin tinsel cord		P
25.6	Plugs fitted with only one flexible cord		P
	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, provided with a plug complying with the following Standard Sheets of IEC 83 (EN 60335-1: 12):		--
	- for Class I appliances: Standard Sheet C2b, C3b or C4 (EN 60335-1: 12)	C4	P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	- for Class II appliances: Standard Sheet C5 or C6 (EN 60335-1: 12)		N
25.7	Appliance supply cord not lighter than:		--
	- braided cord (245 IEC 51)		N
	- ordinary tough rubber sheathed cord (245 IEC 53)		N
	- ordinary polychloroprene sheathed flexible cord (245 IEC 57) (EN 60335-1: 12)		N
	- flat twin tinsel cord (227 IEC 41)		N
	- light polyvinyl chloride sheathed cord (227 IEC 52), appliance not exceeding 3 kg	IEC 53(RVV)	P
	- ordinary polyvinyl chloride sheathed cord (227 IEC 53), appliance exceeding 3 kg (EN 60335-1: 12)		N
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used		N
	PVC cord used: appliance so constructed that the supply cord is not likely to touch external metal parts in normal use		N
	PVC supply cord appropriate for higher temperatures, type Y or type Z attachment used		P
	Appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		N
25.8	Nominal cross-sectional area of supply cords according to table 9; rated current (A); cross-sectional area (mm ²) (EN 60335-1: 12)	3x1.0mm 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		P
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		P
25.13	Inlet opening provided with a bushing, or is so constructed, that there is no risk of damage to the supply cord when introduced		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
25.13.1	Inlet bushing so shaped as to prevent damage to the supply cord		P
	Inlet bushing not detachable		P
25.13.2	At inlet openings, the insulation between the conductor of a supply cord and the enclosure of the appliance is consisting of the insulation of the conductor, and in addition:		--
	- for Class 0 appliances: at least one separate insulation		N
	- for other appliances: at least two separate insulations		N
	Only one separate insulation is required if the enclosure at the inlet opening is of insulating material		N
	The separate insulation consists of:		--
	- the sheath of a supply cord at least equivalent to that of a cord complying with IEC 227 or 245		N
	- a lining or bushing of insulating material complying with the requirements of 29.2 for supplementary insulation		N
25.14	Supply cords adequately protected against excessive flexing		N
	Flexing test; applied force (N); number of flexings :		N
	The test does not result in:		--
	- 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 anchorages		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (Nm) (not on automatic cord reel)		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Max. 2 mm displacement of the cord, and conductors not moved more than 2 mm in the terminals	<2mm	P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments so constructed and located that:		--
	- replacement of the cord is easily possible	AC-Inlet not easily match	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		P
	- 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	Type X attachment	N
25.18	Cord anchorages only accessible with the aid of a tool, or		N
	so constructed that the cord only can be fitted with the aid of a tool		N
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

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated	Type X attachment	N
25.21	Space for supply cable for fixed wiring or supply cord for type X attachment constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage, 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		P
25.22	Appliance inlet:		--
	- live parts not accessible during insertion or removal		P
	- connector can be inserted without difficulty		P
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temperature rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		P
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		P
	If necessary, electric strength test of 16.3		P
25.24	Interconnection cords not detachable without the aid of a tool		N
25.25	The dimensions of pin compatible with the dimensions of the relevant socket-outlet.		N
	Dimensions of the pin and engagement fact are to be in accordance with IEC 60083.		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		N
	- 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

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	- 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
26	TERMINALS FOR EXTERNAL CONDUCTORS	(no such terminals)	--
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors.		N
	Terminals only accessible after removal of a nondetachable cover.		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
	The conductor soldered shall be positioned or fixed, reliance is not placed upon the soldering alone to maintain it in position.		N
	Soldering alone used, barriers provided, creepage distances and clearances satisfactory if the conductor becomes free		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 - internal wiring is not subjected to stress		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	- 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
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, 8 mm 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, no special preparation of conductors required, and so constructed and placed that conductors prevented from slipping out, except those with a specially prepared cord and those for connection to fixed wiring		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 located close to each other, including the earthing terminal		N
26.9	Terminals of the pillar type constructed and located as specified		N
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 5 N 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

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances 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	Class I appliances	P
	Earthing terminals not connected to neutral terminal		P
	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
	No earthing via flexible metal tubes, coiled springs and cord anchorages (EN 60335-2-9:09)		N
27.2	Screw clamping terminals comply with Cl. 26		P
	Screwless terminals comply with EN 998-2-2 (EN 60335-1: 12)		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2,5 to 6 mm ² , and		N
	do not provide earthing continuity between different parts of the appliance		P
	Conductors cannot be loosened without the aid of a tool		P
	Clamping means adequately secured against accidental loosening		P
27.3	Earth connection "made before" and "separated after" current-carrying connections		P
	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
	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 5 µm		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N
	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 0,1 Ω at the specified low-resistance test		P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N
	They may be used in other appliances if:		--
	- at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit		N
	- the material of the printed circuit board complies with EN 60249-2-4 or EN 60249-2-5		N
28	SCREWS AND CONNECTIONS		--
28.1	Fixings and electrical connections withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm	No insulating material screws	N
	Screws of insulating material not used for any electrical connection		P
	Screws transmitting electrical contact only screwing into metal		N
	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 users maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Screws and nuts transmitting contact pressure subjected to torque test as specified, applying torque as shown in table 12		N
	The test is not carried out on screws and nuts transmitting contact pressure for earthing continuity provided at least two screws or nuts are used (EN 60335-1: 12)		N
28.2	Contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated	No such material	P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0,5 A (EN 60335-1: 12)		P
28.3	Space-threaded (sheet metal) screws only used for the connection of current-carrying parts if they clamp these parts directly in contact with each other		N
	Thread-cutting (self-tapping) screws not used for electrical connection of current-carrying parts, unless generating 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 unless the thread is formed by a swaging action		N
	Thread-cutting and space-threaded screws used provide earthing continuity:		--
	- it is not necessary to disturb the connection in normal use		N
	- two screws used for each connection		N
28.4	Screws and nuts making mechanical connection between different parts of the appliance, and also making electrical connection or providing earthing continuity secured against loosening		N
	Rivets for current-carrying connections subject to torsion secured against loosening		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
29	CREEPAGE DISTANCES, CLEARANCES AND SOLID INSULATION		--
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment or to provide basic insulation, annex J applies		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		P
	The values specified may be smaller for basic insulation and functional insulation if the clearance meets the impulse voltage test of clause 14		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		P
	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 assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V		N
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16	No such construction	N
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	No such construction	N
29.1.4	For functional insulation, the values of table 16 are applicable, unless		P
	the appliance complies with clause 19 with the functional insulation short-circuited		N
	Clearances at crossover points of lacquered conductors not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V		P
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
	Values increased by 50% in case of bare heating elements or connecting devices for heating elements subject to spillage of fat or liquids (EN 60335-2-9:09)		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
	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		N
	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
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 clause 14		N
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		P
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
29.2.4	Creepage distances of functional insulation not less than specified in table 18		N
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N
29.3	Solid insulation having a minimum thickness of 1mm for supplementary insulation, and 2mm for reinforced insulation		P
	This requirement does not apply if the supplementary insulation, other than mica or similar scaly material, consists of at least two layers, each of the layers withstands the electric strength test of 16.3		N
	This requirement does not apply if the reinforced insulation, other than mica or similar scaly material, consists of at least three layers, any two layers together withstand the electric strength test of 16.3		N
	This requirement also does not apply to inaccessible insulation and does not exceed the maximum permissible temperature values, or		N
	if the insulation, after conditioning as specified, withstands the electric strength test of 16.3		N
30	RESISTANCE TO HEAT, FIRE AND TRACKING		--
30.1	External parts of non-metallic material		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		P
	sufficiently resistant to heat		P
	Ball-pressure test according to EN 60695-10-2		P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C).....:		P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C).....:		P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C).....:		N
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
30.2.1	Glow-wire test of EN 60695-2-11 at 550 °C, unless		P
	the material is classified at least HB40 according to EN 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material		N
30.2.2	Appliances operated while attended, parts of insulating material supporting current carrying connections and parts within a distance of 3mm subjected to the glow-wire test of EN 60695-2-11 at a temperature of:		N
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		P
	-650°C, for other connections		P
	Test not applicable to conditions as specified		N
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		N
	Test not applicable to conditions as specified		N
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		N
	parts of insulating material within a distance of 3mm		N
	having a glow-wire flammability index of at least 850°C according to EN 60695-2-12		N
30.2.3.2	Parts of insulating material supporting currentcarrying connections, and		N
	parts of insulating material within a distance of 3mm,		N
	subjected to glow-wire test of EN 60695-2-11		N
	Test not carried out on material having a glow-wire ignition temperature according to EN 60695-2-13 as specified		N
	Glow-wire test of EN 60695-2-11, the temperature being:		N
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		N
	-650°C, for other connections		N
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	If a flame persists longer than 2 s 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 EN 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
30.3	Relevant insulating material have adequate resistance to tracking		N
	Tracking test at 175 V according to Annex N		N
	Tracking test at 250 V according to Annex N		N
	No hazard other than fire, tracking test at 175 V according to Annex N, and in addition needle-flame test of surrounding parts according to Annex M		N
	Possible needle-flame test of non-metallic material		N
31	RESISTANCE TO RUSTING		--
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		--
	Appliance does not emit harmful radiation		P
	Appliance does not present a toxic or similar hazard		P
A	ANNEX A, NORMATIVE REFERENCES		--
	The annex contains a list of standards which are referred to, and thus become part of, this standard		P
B	ANNEX B, TESTING OF APPLIANCES POWERED BY RECHARGEABLE BATTERIES (EN 335-1:01)		---
B.2	Definitions		N
B.2.2.9	Appliances operated under the following conditions:		---
	- the appliance supplied by its fully charged battery is operated as specified in part 2		N
	- the appliance is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	- 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 part 2		N
B.2.7.2	If a part has to be removed in order to discard the battery before scrapping the appliance, this part is not considered to be detachable even if the instructions state that it is to be removed		N
B.4	General conditions for the tests		---
B.4.101	Unless otherwise specified, appliances supplied from the supply mains are tested as specified for motor-operated appliances		N
B.7	Marking and instructions		---
B.7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
B.7.12	The instructions for appliances incorporating batteries intended to be replaced by the user, include required information		N
	Details given about how to remove batteries containing materials hazardous to the environment		N
	Materials which are hazardous to the environment are mercury, cadmium or lead (EN 60 335-1:01)		N
B.7.15	Markings placed on the part connected to the supply mains		N
B.8	Protection against access to live parts		---
B.8.2	Basic insulation between live parts and parts accessible during and after removal of the battery		N
B.11	Heating		---
B.11.7	Charging time for the battery		N
B.19	Abnormal operation		N
B.19.101	Charging time at rated voltage		N
B.19.102	Short-circuiting of the battery, fully charged, for appliances having batteries which can be removed without the aid of a tool		N
B.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
B.21	Mechanical strength		---

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
B.21.101	Appliances having pins for insertion into socket-outlets, checked according to procedure 2 of EN 68-2-32		N
	Mass of part not exceeding 250 g, 100 falls		N
	Mass of part exceeding 250 g, 50 falls		N
B.22	Construction		---
B.22.3	Appliances having pins for insertion into socket-outlets are tested as fully assembled as possible		N
B.25	Supply connection and external flexible cords		N
B.25.13.2	The requirement is not applicable to interconnection cords subjected to safety extra-low voltage		N
B.30	Resistance to heat, fire and tracking		N
B.30.2	For parts 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, AGEING TEST ON MOTORS		--
	Test carried out when doubt with regard to the classification of the insulating system of a motor winding		N
D	ANNEX D, ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTOR UNITS		--
	Void (EN 60335-1: 12)		N
E	ANNEX E, MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		--
	Methods of measuring creepage distances and clearances, specified in 29.1, indicated in 10 different cases		P
F	ANNEX F, MOTORS NOT ISOLATED FROM THE SUPPLY MAINS AND HAVING BASIC INSULATION NOT DESIGNED FOR THE RATED VOLTAGE OF THE APPLIANCE		--
	Motors having a working voltage not exceeding 42 V, not being isolated from the supply mains, and having basic insulation not designed for the rated voltage of the appliance are tested according to this annex		N
	All clauses of this standard apply, unless otherwise specified in this annex		N
F.8	Protection against accessibility to live parts		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
F.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
F.16	Leakage current and electric strength		N
F.19	Abnormal operation		N
F.19.101	Appliance operated at rated voltage with each of the following defects:		N
	- short-circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N
	- open circuit of the supply to the motor		N
	- open circuit of any shunt resistor during operation of the motor		N
F.22	Construction		N
F.22.101	Class I appliance 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
G	ANNEX G, CIRCUIT FOR MEASURING LEAKAGE CURRENTS		---
	A suitable circuit for measuring leakage currents is shown		P
H	ANNEX H, SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		--
J	ANNEX J, BURNING TEST		--
	The burning test is made in accordance with EN 707, and method FH is used		N
	Category FH3 applies, the maximum burning rate being 40 mm/min		N
K	ANNEX K, GLOW-WIRE TEST		--
	The glow-wire test is made in accordance with EN 695-2-1 (clause numbers between parentheses refer to EN 695-2-1)		--
(4)	Description of test apparatus: the last paragraph before the note is replaced		P
(5)	Severities: the duration of application of the tip of the glow-wire to the specimen being (30 ± 1) s		P
(10)	Observations and measurements: item c) does not apply		P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict

L	ANNEX L, BAD-CONNECTION TEST WITH HEATERS		--
	The bad-connection test with heaters is made in accordance with EN 695-2-3 (clause numbers between parentheses refer to EN 695-2-3)		--
(3)	General description of the test: additions concerning crimped connections		N
(4)	Description of test apparatus: replacements of some of the test specifications and the first paragraph of the note		N
(6)	Severities: the duration of application of the test power being (30 ± 1) min		N
(8)	Test procedure: 8.6 replaced		N
(11)	Information to be given in the relevant specification: item h), the first dashed paragraph, does not apply		N

M	ANNEX M, NEEDLE-FLAME TEST		--
	The needle-flame test is made in accordance with EN 695-2-2 (clause numbers between parentheses refer to EN 695-2-2)		--
(4)	Description of the apparatus: the sixth paragraph is replaced		N
(5)	Severities: the duration of application of the test flame is (30 ± 1) s		N
(8)	Test procedure: some changes in the test specifications		N
(10)	Evaluation of the test results: addition in the test specification		N

N	ANNEX N, PROOF TRACKING TEST		--
	The proof tracking test is made in accordance with EN 112 (clause numbers between parentheses refer to EN 112)		--
(3)	Test specimen: the last sentence of the first paragraph does not apply		N
(5)	Test apparatus: some changes in the subclauses		N
(6)	Procedure: adjustments of the test specifications		N

P	ANNEX P, SEVERITY OF DUTY CONDITIONS OF INSULATING MATERIAL WITH RESPECT TO THE RISK OF TRACKING		--
	Recognition of different duty conditions with respect to the risk of tracking		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
ZA	ANNEX ZA, SPECIAL NATIONAL CONDITIONS		---
7.12	DENMARK: requirements regarding marking tag of power supply cord and connecting of earthing wire		Not checked
19.5	NORWAY: the test is also applicable to appliances intended to be permanently connected to fixed wiring		Not checked
19.11.2	AUSTRIA: requirements regarding appliances having circuits which under fault conditions may cause earth-leakage currents having a d.c. component exceeding 5 Ma and exceeding 20% of the total earth-leakage		Not checked
22.2	FRANCE, NORWAY: The second paragraph of this subclause dealing with single-phase Class I appliances with heating elements is not applicable due to the supply system		Not checked
25.6	BELGIUM, FRANCE, GREECE, UNITED KINGDOM: plugs according to Standard Sheet C2b not allowed		Not checked
	AUSTRIA, GERMANY, FINLAND, ICELAND, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN, SWITZERLAND, UNITED KINGDOM: plugs according to Standard C3b not allowed		Not checked
	DENMARK: Supply cords of single-phase portable appliances having a rated current not exceeding 10 A provided with a plug according to the following:		---
	Class I appliances: Section 107-2-DI Standard Sheet DK2-1a		Not checked
	For appliances covered by a Part 2 of EN 60 335, also plugs in accordance with EN 83, Standard Sheet C2b, C3b or C4 are allowed		N
	Class II appliances: EN 83, Standard Sheet C5 or C6		N
	Stationary single-phase appliances, having a rated current not exceeding 10 A, and provided with a plug, the plug is in accordance with the requirements above		N
	Multi-phase appliances and single-phase appliances having a rated current exceeding 10 A, and provided with a plug, the plug is in accordance with the requirements below:		---
	Class I appliances: Section 107-2-D1, Standard Sheet DK6-1a/EN 60 309-2, Standard Sheet 2-II, 2-IV		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	Class II appliances: Section 107-2-D1, Standard Sheet DK6-1a/2-II, 2-IV		N
	IRELAND: plug is in accordance with Standard Sheets B1 (15A), B2 and C2b		N
	SPAIN: Appliances having a rated current not exceeding 6 A, provided with a plug complying with UNE 20 315:		---
	for Class I appliances: Figure 7C		Not checked
	for Class II appliances: Figure 15A		N
	Class I appliances having a rated current not exceeding 16 A, provided with a plug complying with Standard UNE 20 315 Figure 7B		N
	SWITZERLAND: supply cords of portable household and similar electrical appliances, rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or EN 884-1 and one of the following dimension sheets:		---
	SEV 6532-2:1991 plug type 15 3P+N+PE 250/400 V, 10 A		Not checked
	SEV 6532-2:1991 plug type 11 L+N 250 V, 10 A		Not checked
	SEV 6532-2:1991 plug type 12 L+N+PE 250 V, 10 A		Not checked
	UNITED KINGDOM: plug according to Standard Sheet B2 or C5 used (refer to Annex ZB)		Not checked
25.7	FINLAND: PVC insulated cords not used for battery chargers for automobile batteries (EN 60 335-2-29:96)		Not checked
25.8	IRELAND, UNITED KINGDOM: replacement of figures (rated current/cross-sectional area) in the table		Not checked
ZB	ANNEX ZB, A-DEVIATIONS		---
3	SWITZERLAND: information about batteries		Not checked
7.1	ITALY: the voltage is 220 V/380 V		Not checked
	SPAIN: the voltages are 127 V/220 V and 220 V/380 V		Not checked
7.12	IRELAND: information about required label attached to the supply cord, concerning the colour code of the wires		Not checked
22.22	GERMANY: the amount of asbestos in the mass containing asbestos not exceeding 0,1%	No asbestos	P

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
	FINLAND: certain types of asbestos not used		P
24	SWEDEN: components containing mercury not used		P
25.6	UNITED KINGDOM: regulations concerning plugs to be fitted to domestic appliances		Not checked
ZC	ANNEX ZC, CAPACITORS (EN 60335-1: 10)		---
	The following clauses and subclauses of EN 384-14 apply to capacitors likely to be permanently subjected to the supply mains voltage and used for radio interference suppression or for voltage dividing purposes with the following modifications		N
	SECTION ONE - GENERAL		---
1.5	Terminology		N
1.5.3	Applicable. Class X capacitors tested according to sub-Class X2		N
1.5.4	Applicable		N
1.6	Marking		N
	Items a) and b) are applicable		N
	SECTION THREE - QUALITY ASSESSMENT PROCEDURES		---
3.4.3.2	Tests		N
	Table II is applicable as follows:		---
	- group 0: subclause 4.1, 4.2 and 4.2.5		N
	- group 1A: subclause 4.1.1		N
	- group 2: subclause 4.12		N
	- group 3: subclause 4.13 and 4.14		N
	- group 6: subclause 4.17		N
	- group 7: subclause 4.18		N
	SECTION FOUR - TEST AND MEASUREMENT PROCEDURES		---
4.1	Visual examination and check of dimensions		N
	Applicable		N
4.2	Electrical tests		N
4.2.1	Applicable		N
4.2.5	Applicable		N

EN 60335-2-30			
Clause	Requirement – Test	Result - Remark	Verdict
4.2.5.2	Only Table IX applicable. Values for test A apply, for capacitors in heating appliances the values for test B or C apply		N
4.12	Applicable, only insulation resistance and voltage proof are checked (see Table XIII)		N
4.13	Applicable, when capacitors are used for voltage dividing purposes, the impulse voltage is applied to the terminals of the appliance		N
4.14	Applicable, together with subclauses 4.14.1, 4.13.1 and 4.14.7		N
4.17	Applicable		N
4.18	Applicable		N
ZD	ANNEX ZF, informative		---
	EN and CENELEC code designations for flexible cords		Not checked
ANNEX EMF			
	The tested product also complies to the requirements of EN 62233: 2008		--
	Limit.....100%	Measured max.:.....6%	P

Tables

10	TABLE: input deviation measurements				P	
input deviation dP of/at:		Prated (W)	P (W)	dP	Required dP	Remark
230V/50Hz		120	130.6	+8.8%	± 10 %	Until steady

11.8	TABLE: temperature rise measurements		P
	t1 (°C)	25.0	--
	t2 (°C)	25.2	--
	1.15 rated power (W)	1.15x120W	--

temperature rise dT of part/at:	dT (K)	required dT (K)
Power cord, inside	20.6	80
outside, near heating element, bottom	19.1	105
inside, near heating element, above	28.9	105
outside, near heating element, above	16.5	105
near heating element, bottom	29.6	105
AC-inlet	21.7	80
Internal wire	15.2	55
Terminal	25.1	80
Outside wall	20.8	60
Test corner	8.9	60

13.2	TABLE: leakage current measurements at operating temperature		P
	heating appliances: at 1,15 times rated input (W) .:	1.15X120W	--
	motor-operated and combined appliances: at 1,06 times rated voltage (V)	--	--

leakage current I between:	I (mA)	required I (mA)
L to N	0.13	0.75
L/N to Enclosure	0.09	0.35

13.3	TABLE: electric strength measurements at operating temperature		P
test voltage applied between:		test voltage (V)	breakdown
L to N		1250	No
L/N to Enclosure		3000	No

15.3	TABLE: Moisture resistance, humidity treatment		P
Temperature (°C)	Humidity (%)	Duration (hours)	
25°C	93%	48	

Remark: After humidity test, electric strength test specified in clause 16.3 should be applied.

Tables

16.2	TABLE: leakage current measurements		P
	heating appliances: at 1,15 times rated input (W) ..:	1.15X120W	--
	motor-operated and combined appliances: at 1,06 times rated voltage (V)	--	--
leakage current I between:		I (mA)	required I (mA)
L to N		0.12	0.75
L/N to Enclosure		0.08	0.35

16.3	TABLE: electric strength measurements		P
test voltage applied between:		test voltage (V)	breakdown
L/N		1250	No
L/N to Enclosure		3000	No

17	TABLE: abnormal operation tests				N
	ambient temperature (°C)			25°C	---
No.	component No.	fault	test voltage (V)	test time	result

19.2	TABLE: abnormal operation, temperature rise measurements				P
	t (°C) : 25.0				
	1.15 rated power (W) : 0.85x120W				
temperature rise dT of part/at:	dT (K)	(°C)	Max.dT(K)	Max. (°C)	
Power cord	64.6	---	150	--	
Earth terminal	---	120	---	Ref.	
Ac-inlet base plate	120.9	---	150	---	
Enclosure	95.2	---	Cl.30	---	
Test corner(wall)	36.5	---	150	---	
Test corner(floor)	20.2	---	150	---	

19.3	TABLE: abnormal operation, temperature rise measurements				P
	t (°C) : 25.0				
	1.15 rated power (W) : 1.24x120W				
temperature rise dT of part/at:	dT (K)	(°C)	Max.dT(K)	Max. (°C)	
Power cord	73.2	---	150	--	
Earth terminal	82.9	120	---	Ref.	
Ac-inlet base plate	133.6	---	150	---	

Tables

Enclosure	114.8	---	Cl.30	---
Test corner(wall)	29.8	---	150	---
Test corner(floor)	21.9	---	150	---

23.5	TABLE: electric strength measurements for basic insulation of internal wiring			P
Test voltage applied between:		Test voltage (V)		Breakdown
Internal wire (wrapped with metal foil)		2000Vac		No

25.15	TABLE: Strain relief test				N
Appilience mass (Kg)	Pull face (N)	Duration for each time (s)	Times	Result	Limited displacement (mm)
--	--	--	--	--	--

24.1	TABLE: components					P
object/part No.	manufacturer/trademark	type/model	technical data	standard	mark(s) of conformity	
Fused Plug	SHANGYU JINTAO ELECTRON CO., LTD.	JT-ST2B	AC 250 V; 2.5 A	DIN EN 60320-1 VDE 0625-1 EN60320-1: BS 1363-1	VDE 40027440 ASTA license No:1120	
Power cord	SHANGYU JINTAO ELECTRON CO., LTD.	H03VV-F	3G 0.75 mm ²	DIN VDE 0281-5	VDE 40013419	
Ac-inlet	ZHEJIANG LECI ELECTRONICS CO., LTD.	DB-6	AC 250 V; 2.5 A; max.70°C	DIN EN 60320-1 (VDE0625-1) IEC 60320-1	VDE 40032465; UL E302229	
Glue	SHENZHEN HUA TIANQI TECHNOLOGY CO., LTD.	CS-836W	-60° -180° ; 20-38shore;	IEC62321:2008;	SGS CANEC1306 002704 A01	
Internal wire	YUEQING NISSFJ ELECTRONIC CO., LTD.	H05S-K	1x0.5...2.5mm ²	DIN VDE 0282-3	VDE 40016704	
Fuse	SHANGYU JINTAO ELECTRON CO., LTD.	JT006A	AC 250 V; 50 Hz; 13 A	BS 1363-1	ASTA license No:1120	
Thermostat	CIXI YUECI THERMOSTAT CO., LTD.	YC WK-B-01	AC 250 V; 50 Hz; 16A; T250;	EN 60730-1 EN 60730-2-9	TUV R 50112969	

29.1	TABLE: Clearances					Pass
Overvoltage category..... :			Class I		—	
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5	N	N	N	N	N
500	0,5	N	N	N	N	N

Tables

800	0,5	N	N	N	N	N
1 500	0,5	N	N	N	N	N
2 500	1,5	N	>1.5	N	N	Pass
4 000	3,0	N	N	N	>3.0	Pass
6 000	5,5	N	N	N	N	N
8 000	8,0	N	N	N	N	N
10 000	11,0	N	N	N	N	N

29.2		TABLE: Creepage distances, basic, supplementary and reinforced insulation							P			
Working voltage (V)	Creepage distance (mm)								Type of insulation			
	Pollution degree											
	1	2			3			B*) S*) R*)			Verdict	
		Material group			Material group							
		I	II	IIIa/IIIb	I	II	IIIa/IIIb					
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9		—	—		
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—		
>50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—			
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—		
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—		
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—			
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0		—	—	Pass	
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—		—	Pass	
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—			
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—		
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—		
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—			
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—		
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—		
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—			
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—		
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—		
>500 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—			
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—		
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—			
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—		
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—			
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—		
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—			
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—		
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—		
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—			

Tables

>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		

*) , B=Basic, S=Supplementary and R=Reinforced

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

Tables

>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N

30.1		TABLE: Ball pressure				P	
Part		Test temperature (°C)		Impression diameter (mm)		Allowed impression diameter (mm)	
Ac-inlet terminal		125		0.7		2.0	
Ac-inlet terminal base plate		125		0.6		2.0	

30.2		TABLE: Glow Wire					P	
Part		GWT 550°C	GWT 650°C	GWT 750°C	GWT 850°C	Flames	Needle flame test	Result
Ac-inlet terminal		--	--	X	X	No	--	P
Ac-inlet terminal base plate		--	--	X	X	No	--	P

ATTACHMENT 1

Photo Documentation

View:
Model:
HHT210

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 1

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 2

ATTACHMENT 1

Photo Documentation

View:

-]General
-]Front
-]Rear
-]Internal
-]Top
-]Bottom
-]PWB

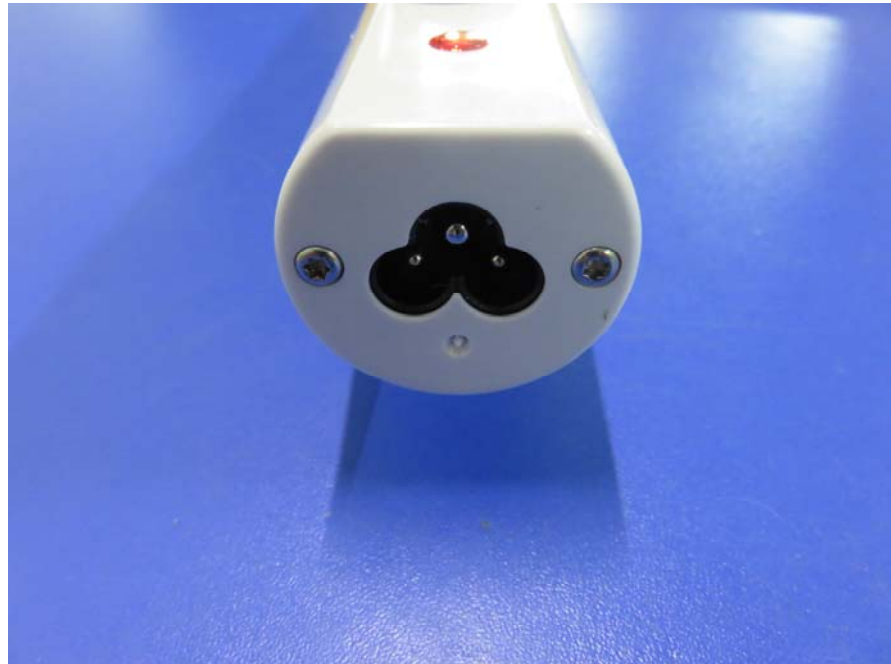


Figure 3

View:

-]General
-]Front
-]Rear
-]Internal
-]Top
-]Bottom
-]PWB

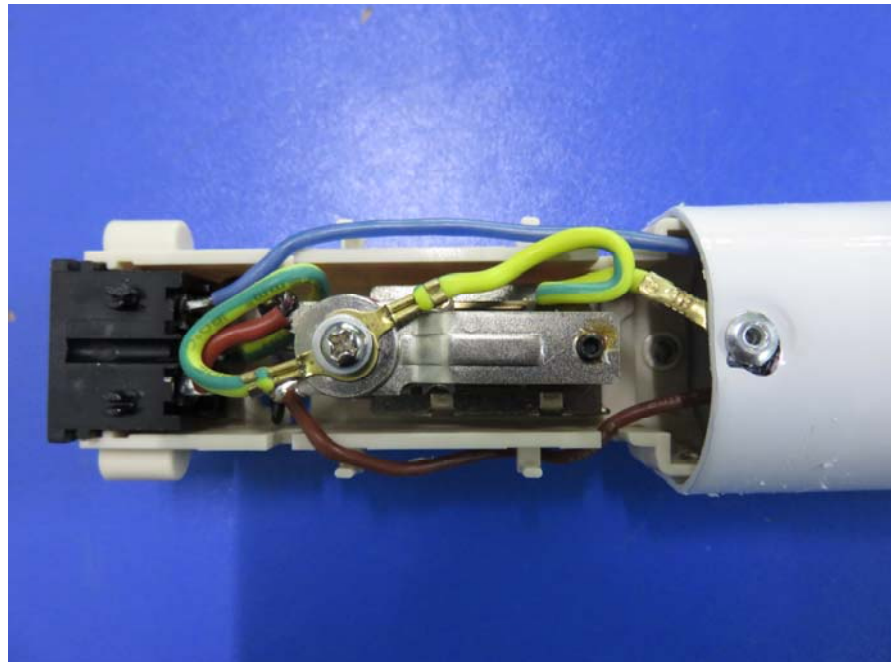


Figure 4

ATTACHMENT 1

Photo Documentation

View:

-]General
-]Front
-]Rear
-]Internal
-]Top
-]Bottom
-]PWB

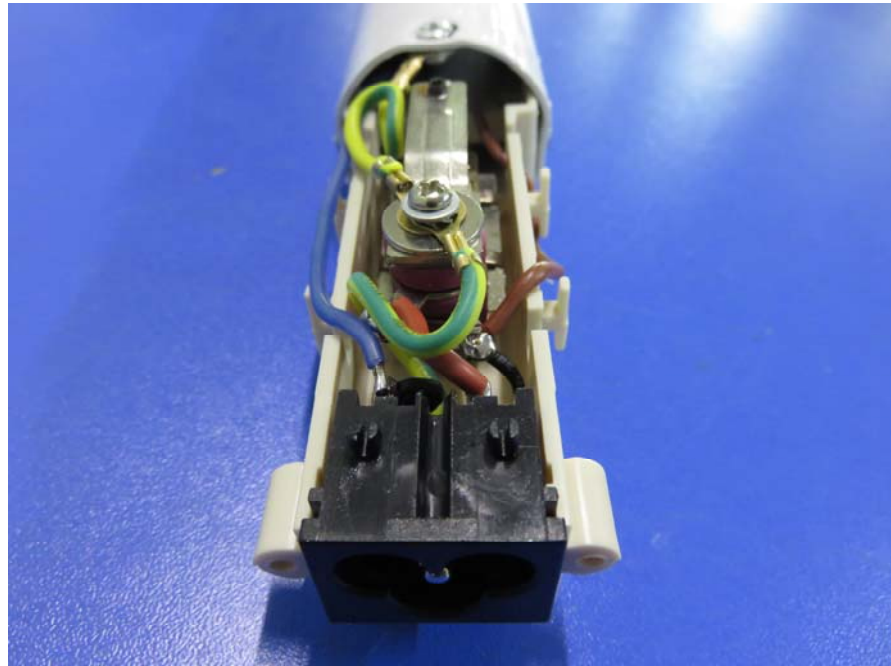


Figure 5

View:

-]General
-]Front
-]Rear
-]Internal
-]Top
-]Bottom
-]PWB



Figure 6