CE CONFORMANCE VERIFICATION

NOT TRANSFERABLE

CE CONFORMANCE VERIFICATION is hereby issued to the named Applicant, and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below:

Applicant's Name:	Seggi Century Co., Ltd.
Applicant's Address:	#68, Sinyang-ri ,Saenggeuk-myeon ,Eumseong-gun, Chungbuk, Korea (Zip Code : 369-841)
Manufacturer's Name:	Same as above
Manufacturer's Address:	Same as above
Type of Equipment:	Heating Film
Model Number:	GC-100
Serial Number:	Prototype
Applicable Regulation:	Low Voltage Directive 2006/95/EC EN60335-1:1994+A1/+A2/+A11/+A12/+A13/ +A14/+A15/+A16 EN60335-2-45:2002 Safety of household and similar electrical appliances - Part 2: Particular requirements for portable heating tools and similar appliances

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s) as described in the attached test report.

TESTED and CERTIFIED by:

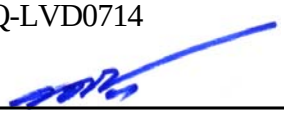
Korea Standard Quality Laboratories

KSQ Bldg., #23-123,
Daebang-Dong, Dongjak-Gu,
Seoul 156-807, KOREA
Tel: +822-827-0005 Fax: +822-824-5642

Date: July 20, 2008

Report Number KSQ-LVD0714

Authorized Signature:



S. G. Kim / President

CE CONFORMANCE TEST REPORT
LOW VOLTAGE DIRECTIVE 2006/95/EC
EN60335-1:1994+A1/+A2/+A11/+A12/+A13/+A14/+A15/+A16
EN60335-2-45:2002

for

Seggi Century Co., Ltd.
#68, Sinyang-ri ,Saenggeuk-myeon ,Eumseong-gun, Chungbuk, Korea (Zip Code : 369-841)

on the

Heating Film
GC-100

Issued Date : July 20, 2008
Report Number : KSQ-LVD080714

Prepared By:

Test Date: July 10 ~ July 15 , 2008

Test Engineer: Ji Hyeok, Kang
Printed Name Signature

Compliance Engineer: Young Cheon, Kim
Printed Name Signature

Korea Standard Quality Laboratories
Testing Laboratories for EMC and Safety Compliance
#102, Jangduk-Dong, Hwasung-City, Gyeonggi-Do,

LVD TEST REPORT

Report Number : KSQ-LVD080714

1. General Information

1.1 Introduction

The LVD Test Report for CE Declaration of Conformity is prepared on behalf of named applicant in accordance with the Low Voltage Directive (2006/95/EC) of the European Economic Community. The test results reported in this document relate only to the item that was tested.

All measurements contained in this report were conducted in accordance with EN60335-1:1994+A1/+A2/+A11 /+A12/+A13/+A14/+A15/+A16, EN60335-2-49:2003 Safety of household and similar electrical appliances - Part 2-49 : Particular requirements for commercial electric hot cupboards.

All measurements required by the Low Voltage Directive were performed manually at Korea Standard Quality Laboratories (hereinafter called KSQ), #102, Jangduk-Dong, Hwasung-Si, Gyeonggi-Do, KOREA. The KSQ test facilities in Hwasung-Si are designated EMC and Safety testing laboratory according to ISO/IEC 17025 by Radio Research Laboratory (RRL), Ministry of Information and Communication.

1.2 Product Description for Equipment Under Test (EUT)

Seggi Century Co., Ltd.'s .Heating Film, Model No: GC-100, or the "EUT" as referred to turn on the power of requirements and let the EUT work in test mode(max load) and test it.

1.3 General Requirements

Equipment Classification :

Equipment Mobility ·····	☑	Movable	☐	Hand-held	☐	Stationary
Operating Condition ·····	☑	Continuous	☐	Short-time	☐	Intermittent
Tested for IT Power Systems ·····	☐	Yes ____V		phase-phase	☑	No
Class of Equipment ·····	☐	Class I	☑	Class II	☐	Class III
Size of Equipment ·····	980 × 780 × 15					
Protection against ingress of water ·····	IP X0					

Test Environments :

Ambient Temperatures ·····	15°C to 35°C
Relative Humidity ·····	40% to 60%
Atmospheric Pressure ·····	860mbar to 1060mbar

Test Case Verdicts :

Test item does meet the requirements ·····	P (Passed)
Test item does not meet the requirements ····	F (Failed)
Test case does not apply to the test object ···	N (N/A - Not Applicable)

Clause	Requirement - Test	Result - Remark	Verdict

Copy of Marking Plate

Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
6	CLASSIFICATION		
6.1	Protection against electric shock: Class I, II	Class II appliance	P
6.2	Protection against harmful ingress of water	IPX0	P
	Insect killer intended for outdoor use is at least IPX4		N
7	MARKING AND INSTRUCTIONS		
7.1	Rated voltage or voltage range (V).....:	230V	P
	Nature of supply.....:	AC	P
	Rated frequency (Hz).....:	50Hz	P
	Rated power input (W):.....:	120W	P
	Rated current (A) .....:		P
	Manufacturer's or responsible vendor's name, trademark or identification mark.....:	Seggi Century Co., Ltd.	P
	Model or type reference.....:	GC-100	P
	Symbol 5172 of IEC 60417, for Class II appliances	Symbol 5172 of IEC 60417	P
	IP number, other than IPX0.....:	IPX0	N
	Symbol or warning for high voltage		N
	Appliances provided with replaceable lamps marked with the type reference of the lamp		N
7.2	Warning for stationary appliances for multiple supply	No multiple supply	N
	Warning placed in vicinity of terminal cover		N
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	No range of rated values	P
	Different rated values marked with the values separated by an oblique stroke		N
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible	One rated voltage	P

Clause	Requirement - Test	Result - Remark	Verdict
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N
	the power input is related to the mean value of the rated voltage range		N
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N
7.6	Correct symbols used		N
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		N
	- marking of terminals exclusively for the neutral conductor (N)	Reversible plug provided	N
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)	No earthing terminals	N
	- marking not placed on removable parts		N
7.9	Marking or placing of switches which may cause a hazard	"O" and "I" marked on the main switch	P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means.....:	"Arrow" indicated on the controller	P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls	"Arrow" indicated on the controller	P
7.12	Instructions for safe use provided	Manual Provided.	P
	The instructions shall state whether the appliance is for indoor use only or suitable for outdoor use.		N
	The instructions for appliances for indoor use only shall state that they are not suitable for use in barns , stables and similar locations		N
	The instructions for appliances intended for outdoor use shall include the substance of the following		N
	WARNING : An electric shock hazard may exist if water form a garden hose is directed at the insect killer,		N

Clause	Requirement - Test	Result - Remark	Verdict
	When using extension cords, keep the socket-outlet away from moisture and avoid damage to the cord		N
	The instructions shall state the substance of the following :		N
	- the appliance is to be kept out of reach of children		N
	- the appliance is not to be used in locations where flammable vapour or explosive dust is likely to exist		N
	The instructions shall give details concerning :		N
	The method and frequency of cleaning, together with the precautions to be taken		N
	Precautions to be taken when replacing laps and starters		N
	If symbol 5036 of IEC 60417-1 is used, its meaning shall be explained		N
7.12.1	Sufficient details for installation supplied	Provide.	P
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	Not for permanent connection.	P
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected	Not such part.	N
7.12.4	Instructions for built-in appliances:		N
	- dimensions of space		N
	- dimensions and position of supporting means		N
	- distances between parts and surrounding structure		N
	- dimensions of ventilation openings and arrangement		N
	- connection to supply mains and interconnection of separate components	Provided for remote units.	N
	a switch complying with 24.3		N
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N
	Replacement cord instructions, type Y attachment	See the manual	P
	Replacement cord instructions, type Z attachment		P

Clause	Requirement - Test	Result - Remark	Verdict
7.13	Instructions and other texts in an official language	To be provided in official language of country.	P
7.14	Marking clearly legible and durable	Main label	P
	The height of symbol 5036 of 60417-1 shall be at least 10 mm		N
	The height of the lettering of the warning relating to high voltage shall be at least 3 mm		P
7.15	Marking on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool	Fixed appliances	N
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link	250V;T2AL	P
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed	Complied	P
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap	No lamps.	N
	Use of test probe B of IEC 61032: no contact with live parts		N
	Test finger can touch earthed parts of secondary circuit when grid voltage is obtained from an isolation transformer .	Complies	P

Clause	Requirement - Test	Result - Remark	Verdict
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts	No opening	N
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements	No visible glowing heating elements	N
8.1.4	Accessible part not considered live if:		N
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V	No SELV	N
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N
	- or separated from live parts by protective impedance		N
	If protective impedance: d.c. current not exceeding 2 mA, and		N
	a.c. peak value not exceeding 0.7 mA		N
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 µF		N
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 µC		N
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		P
	- built-in appliances	No built-in appliances	N
	- fixed appliances		P
	- appliances delivered in separate units	No separate units	N
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		N
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	STARTING OF MOTOR-OPERATED APPLIANCES		
	Requirements and tests are specified in part 2 when necessary		N

Clause	Requirement - Test	Result - Remark	Verdict
10	POWER INPUT AND CURRENT		
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1	(see appended table)	P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(see appended table)	N
11	HEATING		
11.1	No excessive temperatures in normal use	Marked with hot surface warning marking or symbol.	P
11.2	Placing and mounting of appliance as described		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N
	the windings makes it difficult to make the necessary connections		N
11.4	Heating appliances operated under normal operation at 1.15 times rated power input.....:	120W x 1,15=138W	P
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage.....:		N
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage.....:		N
11.7	Operation duration corresponding to the most unfavourable conditions of normal use		P
	Appliances are operated until steady conditions are established		P
11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
	The temperature rise of surfaces likely to collect dust or insects shall not exceed 60 K		P
	Protective devices do not operate		P
	Sealing compound does not flow out	No sealing compound	N
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	Leakage current not excessive and electric strength adequate	Complies	P
	Heating appliances operated at 1.15 times rated power input.....:	120W x 1,15 = 138W	P

Clause	Requirement - Test	Result - Remark	Verdict
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage.....:		N
	Protective impedance and radio interference filters disconnected before carrying out the tests	No protective impedance and radio interference filters	N
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990	Complied	P
	Leakage current measurements	(see appended table)	P
13.3	Electric strength tests according to table 4	(see appended table)	P
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES		
	Appliances withstand the transient overvoltages to which they may be subjected	See below	N
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	Clearances having a value more than specified in table 16	N
	No flashover during the test, unless of functional insulation		N
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N
15	MOISTURE RESISTANCE		
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX0	N
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		N
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		N
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529.....:	IPX0	N
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test	No hand-held appliances	N
	Built-in appliances installed according to the instructions	No built-in appiances	N
	Appliances placed or used on the floor or table placed on a horizontal unperforated support	See above	N

Clause	Requirement - Test	Result - Remark	Verdict
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		N
	However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Detachable parts tested as specified		N
15.2	Spillage of liquid does not affect the electrical insulation	No spillage of liquid in normal use	N
	Appliances with type X attachment fitted with a flexible cord as described	See above	N
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N
	Detachable parts removed		N
	Overfilling test with additional amount of water, over a period of 1 min (l).....:		N
	The appliance withstands the electric strength test of 16.3		N
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		N
15.3	Appliances proof against humid conditions		P
	Humidity test for 48 h in a humidity cabinet	93%, 30℃	P
	The appliance withstands the tests of clause 16	Complied	P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.1	Leakage current not excessive and electric strength adequate		P

Clause	Requirement - Test	Result - Remark	Verdict
	Protective impedance disconnected from live parts before carrying out the tests	No protective impedance	N
16.2	Single-phase appliances: test voltage 1.06 times rated voltage.....:	230V x 1.06 = 243.8V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3.....:		N
	Leakage current measurements	(see appended table)	N
16.3	Electric strength tests according to table 7	(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	(see appended table)	P
	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.....:	230V x 1.06 = 243.8V	P
	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 8,		P
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N
18	ENDURANCE		N
	Requirements and tests are specified in part 2 when necessary		N
19	ABNORMAL OPERATION		
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe	No risk of fire or mechanical damage	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.....:	120W x 0.85 = 102W 204V	P
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input.....:	120W x 1.24 = 148.8W 245V	N

Clause	Requirement - Test	Result - Remark	Verdict
19.4	Test conditions as in cl. 11, 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	No tubular sheathed or embedded heating elements	N
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures		N
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances	No rotor	N
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		N
	Locked rotor, capacitors open-circuited one at a time		N
	Test repeated with capacitors short-circuited one at a time, if required		N
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N
	Other appliances supplied with rated voltage for a period as specified		P
	Winding temperatures not exceeding values specified in table 8	(see appended table)	P
19.8	Three-phase motors operated at rated voltage with one phase disconnected	No three-phase motors	N
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously	No such motors	N

Clause	Requirement - Test	Result - Remark	Verdict
	Winding temperatures not exceeding values as specified	(see appended table)	N
19.10	Series motor operated at 1.3 times rated voltage for 1 min.....:	No series motor	N
	During the test, parts not being ejected from the appliance		N
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		P
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		N
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 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:		P
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N
	b) open circuit at the terminals of any component		N
	c) short circuit of capacitors, unless they comply with IEC 60384-14	C1	P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler	D1	P
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit. 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
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

Clause	Requirement - Test	Result - Remark	Verdict
	During and after each test the following is checked:		P
	- the temperature rise of the windings do not exceed the values specified in table 8	Complies	P
	- the appliance complies with the conditions specified in 19.13	Complies	P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4	No protective impedance	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:		N
	- the material of the printed circuit board withstands the burning test of annex E	No open-circuited	N
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29	See above	N
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A).....:	D1(2,3)short circuit F1 rated current:2A F1 measured current:6A C1 short circuit F1 rated current:2A F1 measured current:6A	N
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts	No emit flames, molten metal, poisonous orignitable gas	P
	Temperature rises not exceeding the values shown in table 9		N
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired	Enclosures not deformed	P
	If the appliance can still be operated it complies with 20.2	See above	N
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		
	- basic insulation.....:		N
	- supplementary insulation.....:		N
	- reinforced insulation.....:	3,000V	P
20	STABILITY AND MECHANICAL HAZARDS		

Clause	Requirement - Test	Result - Remark	Verdict
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 9		N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	No moving parts	N
	Protective enclosures, guards and similar parts are non-detachable	See above	N
	Adequate mechanical strength and fixing of protective enclosures		N
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure	No such devices	N
	Not possible to touch dangerous moving parts with test probe	No moving parts	N
21	MECHANICAL STRENGTH		
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling	Complies	P
	No damage after three blows applied to various parts of the enclosure, impact energy 0,5 ± 0,04 J		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N
	If necessary, repetition of groups of three blows on a new sample		N
22	CONSTRUCTION		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX0	N
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		P
	- a supply cord fitted with a plug	Complies	P
	- a switch complying with 24.3		N

Clause	Requirement - Test	Result - Remark	Verdict
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N
	- an appliance inlet		N
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		N
22.3	Appliance provided with pins: no undue strain on socket-outlets	No direct plug-in appliance	N
	Applied torque not exceeding 0.25 Nm	See above	N
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets	No heating liquids	N
22.5	No risk of electric shock when touching the pins of the plug	0V after 1s	P
22.6	Electrical insulation not affected by condensing water or leaking liquid	No water	N
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N
	Drain hole is at least 5 mm in diameter or 20 mm in area with a width of at least 3 mm		N
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices	No steam-producing devices	N
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use	Not such parts	N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		N

Clause	Requirement - Test	Result - Remark	Verdict
	Adequate insulating properties of oil or grease to which insulation is exposed		N
22.10	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely	No reset buttons of non-self-resetting controls	N
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts	Complied	P
	Obvious locked position of snap-in devices used for fixing such parts	No snap-in devices	N
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N
	Tests as described		N
22.12	Handles, knobs etc. fixed in a reliable manner	No handles, knobs	N
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible	See above	N
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance	Complied	P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance	Complied	P
22.15	Storage hooks and the like for flexible cords smooth and well rounded	No storage hooks	N
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts	No automatic cord reels	N
	Cord reel tested with 6000 operations, as specified	See above	N
	Electric strength test of 16.3, voltage of 1000 V applied		N

Clause	Requirement - Test	Result - Remark	Verdict
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No 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	No direct contact between live parts and thermal insulation	N
	Compliance is checked by inspection and, if necessary, by appropriate test		N
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	No such materials used as insulation	N
22.22	Appliances not containing asbestos	No asbestos	N
22.23	Oils containing polychlorinated biphenyl (PCB) not used	No polychlorinated biphenyl	N
22.24	Bare heating elements adequately supported	No bare heating elements	N
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts	No sagging heating conductors	N
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation	No SELV	N
22.27	Parts connected by protective impedance separated by double or reinforced insulation	No protective impedance	N
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation	Not connected to gas pipes or in contact with water	N
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation	Not intended to be permanently connected to fixed wiring	N
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P

Clause	Requirement - Test	Result - Remark	Verdict
	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		P
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified for supplementary insulation		N
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29 if wires, screws etc. becomes loose	No such wires, screws	N
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2	No such insulation	N
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation	No ceramic material	N
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts	No conductive liquids	N
	Electrodes not used for heating liquids		N
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		N
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed	No shafts of operating knobs, handles, levers	N
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault	No such handles, levers and knobs	N

Clause	Requirement - Test	Result - Remark	Verdict
	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	See above	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	No handles.	N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42	No such capacitors	P
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42	No such casings	N
22.38	Capacitors not connected between the contacts of a thermal cut-out	No capacitors.	N
22.39	Lamp holders used only for the connection of lamps	No lamp holders	N
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N
22.41	No components, other than lamps, containing mercury	No such components	N
22.42	Protective impedance consisting of at least two separate components	No protective impedance	N
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur	No adjustable for different voltages	N

Clause	Requirement - Test	Result - Remark	Verdict
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		N
23	INTERNAL WIRING		
23.1	Wireways smooth and free from sharp edges	No sharp edges	P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings		N
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners	No beads	N
	Beads inside flexible metal conduits contained within an insulating sleeve	See above	N
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress	No such electrical connections and internal conductors	N
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used	No open-coil springs	N

Clause	Requirement - Test	Result - Remark	Verdict
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N
	Electric strength test, 1000 V between live parts and accessible metal parts		N
23.4	Bare internal wiring sufficiently rigid and fixed	No bare internal wiring	N
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		N
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		N
	For circuits having a voltage over 1000 V no flashover or breakdown occurs; test voltage (V)		N
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means	No sleeving	N
23.7	The colour combination green/yellow used only for earthing conductors	Class II appliance	N
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		P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		N
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance	No such components	N

Clause	Requirement - Test	Result - Remark	Verdict
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or	No capacitors	N
	tested according to annex F		N
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or	No safety isolating transformers	N
	tested according to annex G		N
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or	No switches	N
	Interlock switches are operated 1000 times		N
	tested according to annex H		N
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		P
	- thermostats: 10 000		N
	- temperature limiters: 1 000		N
	- self-resetting thermal cut-outs: 300		P
	- non-self-resetting thermal cut-outs: 30		N
	- timers: 3 000		N
	- energy regulators: 10 000		N
24.1.5	Appliance couplers complying with IEC 60320-1	No appliance couplers	N
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable	No lamp holders	N
24.2	No switches or automatic controls in flexible cords	No switches or automatic controls	P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance	No such devices	P
	No thermal cut-outs that can be reset by soldering	No such thermal cut-outs	N
	Appliances for indoor use only may be fitted with switches in flexible cords		N

Clause	Requirement - Test	Result - Remark	Verdict
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions	No switches	N
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1	No plugs and socket-outlets	N
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly	No capacitors	N
	Capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, are of class P1 or P2 of IEC 60252		N
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V.	No such motors	N
	In addition, the motors are complying with the requirements of Annex I		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:		N
	- supply cord fitted with a plug	Not intended to be permanently connection to fixed wiring	N
	- 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

Clause	Requirement - Test	Result - Remark	Verdict
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown	Single-phase appliance	N
25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support	Not intended to be permanently connected to fixed wiring	N
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6	See above	N
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		N
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10	Not intended to be permanently connected to fixed wiring	N
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29	See above	N
25.5	Method for assemble supply cord with the appliance:		
	- type X attachment		N
	- type Y attachment	Non-detachable power cord used	P
	- type Z attachment, if allowed in part 2		N
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N
25.6	Plugs fitted with only one flexible cord		P
25.7	Supply cord not lighter than:		P
	- braided cord (60245 IEC 51)		N
	- ordinary tough rubber sheathed cord (60245 IEC 53)		N

Clause	Requirement - Test	Result - Remark	Verdict
	- flat twin tinsel cord (60227 IEC 41)		N
	- light polyvinyl chloride sheathed cord (60227 IEC 52), appliance not exceeding 3 kg		N
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), appliance exceeding 3 kg		P
	Supply cords of appliance intended for outdoor use and appliance having a lamp emitting ultra-violet radiation are polychloroprene sheathed and not lighter than ordinary polychloroprene sheathed cord (60245 IEC 57)		N
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless		N
	appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		N
	the supply cord is appropriate for higher temperatures, type Y or type Z attachment used		N
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm²).....:	Rated current:0.5A Cross-sectional area:1mm^2	N
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	Class II appliance	N
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N
	the appliance is class 0		N

Clause	Requirement - Test	Result - Remark	Verdict
25.14	Supply cords adequately protected against excessive flexing	Not moved while in operation	N
	Flexing test:		N
	- applied force (N).....:	See above	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 anchorage		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 (not on automatic cord reel) (Nm).....:	Pull:30N Torque:0.1Nm	P
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments constructed and located so that:		N
	- replacement of the cord is easily possible		N
	- it is clear how the relief from strain and the prevention of twisting are obtained		N
	- they are suitable for different types of cord		N
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N

Clause	Requirement - Test	Result - Remark	Verdict
	- the cord is not clamped by a metal screw which bears directly on the cord		N
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		P
	so constructed that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances	Y attachments	N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.	Y attachments	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	See above	N

Clause	Requirement - Test	Result - Remark	Verdict
25.22	Appliance inlet:		N
	- live parts not accessible during insertion or removal	Y attachments	N
	- connector can be inserted without difficulty	See above	N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified	No interconnection cords	N
	If necessary, electric strength test of 16.3	See above	N
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083	No socket-outlet	N
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover		P
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	Y attachments	N
	Screws and nuts serve only to clamp supply conductors, except		N
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N

Clause	Requirement - Test	Result - Remark	Verdict
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	Y attachments	N
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		N
	- the terminal does not loosen		N
	- internal wiring is not subjected to stress		N
	- clearances and creepage distances are not reduced below the values in 29		N
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm).....:		N
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out	Y attachments	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	See above	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 and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm²).....:		N
	Terminals only suitable for a specially prepared cord		N
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		P

Clause	Requirement - Test	Result - Remark	Verdict
26.9	Terminals of the pillar type constructed and located as specified	No pillar type	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		P
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		P
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		P
27	PROVISION FOR EARTHING		
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet	Class II appliance	N
	Earthing terminals not connected to neutral terminal	See above	N
	Class 0, II and III appliance have no provision for earthing		N
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N
27.2	Clamping means adequately secured against accidental loosening	No clamping means	N
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and	No equipotential bonding conductors	N
	do not provide earthing continuity between different parts of the appliance		N
	Conductors cannot be loosened without the aid of a tool		N
27.3	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage	No supply cord	N
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal	No risk og corrosion	P

Clause	Requirement - Test	Result - Remark	Verdict
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		N
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		N
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N
	In case of aluminium alloys precautions taken to avoid risk of corrosion		N
27.5	Low resistance of connection between earthing terminal and earthed metal parts		N
	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		N
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances	No hand held appliances	N
	They may be used in other appliances if:		N
	- 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 IEC 60249-2-4 or IEC 60249-2-5		N
28	SCREWS AND CONNECTIONS		N
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		N
	Screws not of soft metal liable to creep, such as zinc or aluminium	No screws	N
	Diameter of screws of insulating material min. 3 mm		N
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N

Clause	Requirement - Test	Result - Remark	Verdict
	Screws used for electrical connections or connections providing earthing continuity screw into metal	Screw used for earth connection.	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 user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N
	For screws and nuts; test as specified	(see appended table)	N
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		N
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N
	Such 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 may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N

Clause	Requirement - Test	Result - Remark	Verdict
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment 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		N
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		N
	or if pollution degree 3 is applicable		N
	Compliance is checked by inspection and measurements as specified		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		N
	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		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		P
29.1.4	For functional insulation, the values of table 16 are applicable, unless		N
	the appliance complies with clause 19 with the functional insulation short-circuited		N
	Clearances at crossover points of lacquered conductors not measured		N

Clause	Requirement - Test	Result - Remark	Verdict
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		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
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		P
	precautions taken to protect the insulation; pollution degree 1		N
	insulation subjected to conductive pollution; pollution degree 3		N
	The microenvironment is pollution degree 3 ,		N
	unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance		N
	Compliance is checked by inspection and measurements as specified		N
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P

Clause	Requirement - Test	Result - Remark	Verdict
	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	Pollution degree2	P
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		N
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		P
29.2.4	Creepage distances of functional insulation not less than specified in table 18		P
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N
29.3	Solid insulation having a minimum thickness of 1mm for supplementary insulation,		N
	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		P
	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		P
	This requirement also does not apply to inaccessible insulation and does not exceed the maximum permissible temperature values, or		P
	if the insulation, after conditioning as specified, withstands the electric strength test of 16.3		N
30	RESISTANCE TO HEAT AND FIRE		
30.1	External parts of non-metallic material,	Remote controller enclosure	P
	parts supporting live parts, and	Bobbin(T1)	P
	thermoplastic material providing supplementary or reinforced insulation,		N
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P

Clause	Requirement - Test	Result - Remark	Verdict
	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).....:	Remote controller enclosure	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).....:	Bobbin(T1)	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
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless	Remote controller enclosure	P
	the material is classified at least HB40 according to IEC 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category 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 IEC 60695-2-11 at a temperature of:		N
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	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 IEC 60695-2-12		N
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		P
	parts of insulating material within a distance of 3mm,		N
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		N

Clause	Requirement - Test	Result - Remark	Verdict
	Glow-wire test of IEC 60695-2-11, the temperature being:		P
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	-650°C, for other connections		N
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N
	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 IEC 60695-11-10		N
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N
	Test not applicable to conditions as specified		N
31	RESISTANCE TO RUSTING		
	Relevant ferrous parts adequately protected against rusting		P
	Appliances intended for outdoor use tested according to IEC 60068-2-52 (severity 2)		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliance does not emit harmful radiation		P
	Appliance does not present a toxic or similar hazard		P
	Lamps do not emit significant UV radiation; Total Effective Irradiance < 1mW/m^2		N
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		
	Description of routine tests to be carried out by the manufacturer		N
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N

Clause	Requirement - Test	Result - Remark	Verdict
	This annex does not apply to battery chargers		N
3.1.9	Appliance operated under the following conditions:		
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N
	Details about how to remove batteries containing materials hazardous to the environment given		N
7.15	Markings placed on the part of the appliance connected to the supply mains		N
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N
	If the appliance can be operated without batteries, double or reinforced insulation required		N
11.7	The battery is charged for the period described		N
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N

Clause	Requirement - Test	Result - Remark	Verdict
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		N
	- 100, the mass of part does not exceed 250 g		N
	- 50, the mass of part exceeds 250 g		N
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N
	For other parts, 30.2.2 applies		N
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N
D	ANNEX D (NORMATIVE) ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS		
	Applicable to protected motors for unattended use, test of 19.7 carried out on a separate sample according to the specification		N
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		

Clause	Requirement - Test	Result - Remark	Verdict
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		N
5	Severities		N
	The duration of application of the test flame is 30 s ± 1 s		N
8	Test procedure		N
8.2	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N
8.4	The first paragraph does not apply		N
	If possible, the flame is applied at least 10 mm from a corner		N
8.5	The test is carried out on one specimen		N
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N
10	Evaluation of test results		N
	The duration of burning not exceeding 30 s		N
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N
F	ANNEX F (NORMATIVE) CAPACITORS		
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		N
1.5	Terminology		N
1.5.3	Class X capacitors tested according to subclass X2		N
1.5.4	This subclause is applicable		N
1.6	Marking		N
	Items a) and b) are applicable		N
3.4	Approval testing		N
3.4.3.2	Table II is applicable as described		N
4.1	Visual examination and check of dimensions		N
	This subclause is applicable		N

Clause	Requirement - Test	Result - Remark	Verdict
4.2	Electrical tests		N
4.2.1	This subclause is applicable		N
4.2.5	This subclause is applicable		N
4.2.5.2	Only table IX is applicable		N
	Values for test A apply		N
	However, for capacitors in heating appliances the values for test B or C apply		N
4.12	Damp heat, steady state		N
	This subclause is applicable		N
	Only insulation resistance and voltage proof are checked		N
4.13	Impulse voltage		N
	This subclause is applicable		N
4.14	Endurance		N
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N
4.14.7	Only insulation resistance and voltage proof are checked		N
	Visual examination, no visible damage		N
4.17	Passive flammability test		N
	This subclause is applicable		N
4.18	Active flammability test		N
	This subclause is applicable		N
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		N
	The following modifications to this standard are applicable for safety isolating transformers:		N
7	Marking and instructions		N
7.1	Transformers for specific use marked with:		N
	-name, trademark or identification mark of the manufacturer or responsible vendor		N
	-model or type reference		N
17	Overload protection of transformers and associated circuits		N

Clause	Requirement - Test	Result - Remark	Verdict
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N
22	Construction		N
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N
29	Clearances, creepage distances and solid insulation		N
29.1 and 29.2	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N
H	ANNEX H (NORMATIVE) SWITCHES		N
	Switches comply with the following clauses of IEC 61058-1, as modified:		N
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N
	-Before being tested, switches are operated 20 times without load		N
8	Marking and documentation		N
	Switches are not required to be marked		N
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N
13	Mechanism		N
	The tests may be carried out on a separate sample		N
15	Insulation resistance and dielectric strength		N
15.1	Not applicable		N
15.2	Not applicable		N
15.3	Applicable for full disconnection and micro-disconnection		N
17	Endurance		N
	Compliance is checked on three separate appliances or switches		N
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N

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

Clause	Requirement - Test	Result - Remark	Verdict
	Only one fault simulated at a time, the tests carried out consecutively		N
22	Construction		N
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N
	Compliance checked by the tests specified for double and reinforced insulation		N
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		N
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N
6.6	Climatic sequence		N
	When production samples are used, three samples of the printed circuit board are tested		N
6.6.1	Cold		N
	The test is carried out at -25°C		N
6.6.3	Rapid change of temperature		N
	Severity 1 is specified		N
6.8.6	Partial discharge extinction voltage		N
	Type A coatings not subjected to a partial discharge test		N
6.9	Additional tests		N
	This subclause is not applicable		N
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		P
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		N
	Equipment of overvoltage category IV is for use at the origin of the installation		N

Clause	Requirement - Test	Result - Remark	Verdict
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		N
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		
	Sequences for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		P
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		P
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N

Clause	Requirement - Test	Result - Remark	Verdict
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N
5	Test apparatus		N
5.1	Electrodes		N
	The note does not apply		N
5.4	Test solutions		N
	Test solution A is used		N
6	Procedure		N
6.3	Proof tracking test		N
	Voltage is 100V, 175V, 400V or 600V.....:		N
	Note 3 of clause 3 applies		N
	The test is carried out on five specimens		N
	In case of doubt, additional test with voltage reduced by 25V, the number of drops increased to 100		N
7	Report		N
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		P

Clause	Requirement - Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation				P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
230V 50Hz	120	130	+8%	+10%	Pass

10.2	TABLE: Current deviation				N
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark

11.8	TABLE: Heating test, thermocouples		P
	Test voltage (V).....:	236Vac	-
	Ambient (°C).....:	22.1	-

Thermocouple locations	dT (K)	Max. dT (K)
Winding of Transformer(T1)	22.3	65
Internal wiring(cord)	3.6	50
PCB	11.1	120
Controll button	6.8	60
Intrnal wiring(primary)	5.6	50
Capacitor(C6)	15.2	60
Film coating	39.9	-
Closing material	23.7	50

Clause	Requirement - Test	Result - Remark	Verdict
11.8	TABLE: Heating test, resistance method		P
	Test voltage (V).....:		-
	Ambient, t_1 (°C).....:		-
	Ambient, t_2 (°C).....:		-

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input.....:		-
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	236Vac	-

Leakage current between	I (mA)	Max. allowed I (mA)
Pole of supply(L) and controller with metal foil	0.01	0.75
Pole of supply(N) and controller with metal foil	0.01	0.75
Pole of supply(L) and coating film with metal foil	0.01	0.75
Pole of supply(N) and coating film with metal foil	0.01	0.75

13.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
L+N and enclosure of controller with metal foil		3,000	NO
L+N and coating film with metal foil		3,000	NO

14	TABLE: Transient overvoltages				N
Clearance between:	Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)

Clause	Requirement - Test	Result - Remark	Verdict

16.2	TABLE: Leakage current		P
	Single phase appliances: 1.06 x rated voltage.....:	243.8V	-
	Three phase appliances 1.06 x rated voltage divided by √3:.....:	-	-

Leakage current between	I (mA)	Max. allowed I (mA)
Pole of supply(L) and controller with metal foil	0.01	0.75
Pole of supply(N) and controller with metal foil	0.01	0.75
Pole of supply(L) and coating film with metal foil	0.01	0.75
Pole of supply(N) and coating film with metal foil	0.01	0.75

16.3	Electric Strength	
Location	Tested Voltage (V)	Result
Test voltage applied between:		
L+N and enclosure of controller with metal foil	3,000	NO
L+N and coating film with metal foil	3,000	NO

Note)Certified components and modules are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard.

Clause	Requirement - Test	Result - Remark	Verdict

17	Overload Protection Temperature Test		
	Overload Protection Temperature Test		P
	Rated Voltage ·····	-	-
	Rated Supply Frequency ·····	-	-
	t1 ·····	-	-
	t2 ·····	-	-

Certified components and modules are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard.

No.	T. C. Locations	Measured Temperature °C	Ambient Temperature °C	Remarks (T_{max} (K))
1	Transformer (T1)	36		150
	T ( ) RC (Ω) RH (Ω)			
	T ( ) RC (Ω) RH (Ω)			
	Room Ambient (°C)			

Note)

1) Max allowed ambient temperature 40°C.

2) Temperature was performed with thermocouples. The temperature was measured under worst case normal mode defined in 1.2.1 and as described in 1.6.1 at voltages as described in 1.6.5.

Clause	Requirement - Test	Result - Remark	Verdict

19.7	TABLE: Abnormal operation, locked rotor/moving parts	N
Model/Type of Power Supply:		
Manufacturer of Power Supply:		
Rated Marking of Power Supply:		
Abnormal Tests Conducted at:		

Certified components and modules are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard.

No.	Component Name	Fault (S/O)	Fuse No.	Fuse Current	Test Time	Test Voltage	Result
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Note)
S = Short Circuit
O = Open Circuit

Clause	Requirement - Test	Result - Remark	Verdict

19.9	TABLE: Abnormal operation, running overload		N
	Test voltage (V)..... :		-
	Ambient, t_1 (°C)..... :		-
	Ambient, t_2 (°C)..... :		-

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.13	TABLE: Abnormal operation, temperature rises	P

Thermocouple locations	dT (K)	Max. dT (K)

24.1	TABLE: Components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Power plug	Korea KDK	KKP-4819C	250 V, 10 A	EN 60799	VDE
Power cord	Korea KDK	H05VV-F	2 X 1 mm^2	DIN VDE 0281	VDE
Fuse	ORISEL	50 T	250 V, T2 AL	EN 60127	VDE
Thermal cutout	Texas instruments	7AM…	240 V, 80 C	EN 60730-2-9	KEMA
Thermistor	Lattron	LNTH303H W	30,0 kΩ ± 3 %	EN 60335-1	Tested in appliance
Transformer	SHIN HO	EE1614	Class A, 2,4 mH	EN 60335-1	Tested in appliance
PCB	KUM KANG	B	V-1	EN 60335-1	Tested in appliance(UL)
Enclosure	CHEIL	SR-0320+	HB	EN 60335-1	Tested in appliance(UL)

1) An asterisk indicates a mark which assures the agreed level of surveillance

Clause	Requirement - Test	Result - Remark	Verdict
28.1	TABLE: Threaded part torque test		N

Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)

29.1	TABLE: Clearances		P
	Overvoltage category.... :	II	-

		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					
500	0,5					
800	0,5					
1 500	1,0					
2 500	2,0					
4 000	3,5	-	-	-	OK	Pass
6 000	6,0					
8 000	8,5					
10 000	11,5					

Clause	Requirement - Test	Result - Remark	Verdict
29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation		P

Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
≤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	OK	-	-	Pass
>125 and ≤250	0.6	1.3	1.8	2.5	3.2	3.6	4.0		OK	OK	Pass
>125 and ≤250	1.2	2.6	3.6	5.0	6.4	7.2	8.0	-	-	OK	Pass
>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	-	-		

Clause	Requirement - Test							Result - Remark			Verdict
>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		-	-	
>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	-	-		

Clause	Requirement - Test							Result - Remark			Verdict
>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, basic, supplementary and reinforced insulation							N
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	
>50 and ≤125	0.3	0.7	1.0	1.4	1.8	2.0	2.2	
>125 and ≤250	0.4	1.0	1.4	2.0	2.5	2.8	3.2	
>250 and ≤400	0.8	1.6	2.2	3.2	4.0	4.5	5.0	

Clause	Requirement - Test	Result - Remark	Verdict

>400 and ≤500	1.0	2.0	2.8	4.0	5.0	5.6	6.3	
>500 and ≤800	1.8	3.2	4.5	6.3	8.0	9.0	10.0	
>800 and ≤1000	2.4	4.0	5.6	8.0	10.0	11.0	12.5	
>1000 and ≤1250	3.2	5.0	7.1	10.0	12.5	14.0	16.0	
>1250 and ≤1600	4.2	6.3	9.0	12.5	16.0	18.0	20.0	
>1600 and ≤2000	5.6	8.0	11.0	16.0	20.0	22.0	25.0	
>2000 and ≤2500	7.5	10.0	14.0	20.0	25.0	28.0	32.0	
>2500 and ≤3200	10.0	12.5	18.0	25.0	32.0	36.0	40.0	
>3200 and ≤4000	12.5	16.0	22.0	32.0	40.0	45.0	50.0	
>4000 and ≤5000	16.0	20.0	28.0	40.0	50.0	56.0	63.0	
>5000 and ≤6300	20.0	25.0	36.0	50.0	63.0	71.0	80.0	
>6300 and ≤8000	25.0	32.0	45.0	63.0	80.0	90.0	100.0	
>8000 and ≤10000	32.0	40.0	56.0	80.0	100.0	110.0	125.0	
>10000 and ≤12500	40.0	50.0	71.0	100.0	125.0	140.0	160.0	

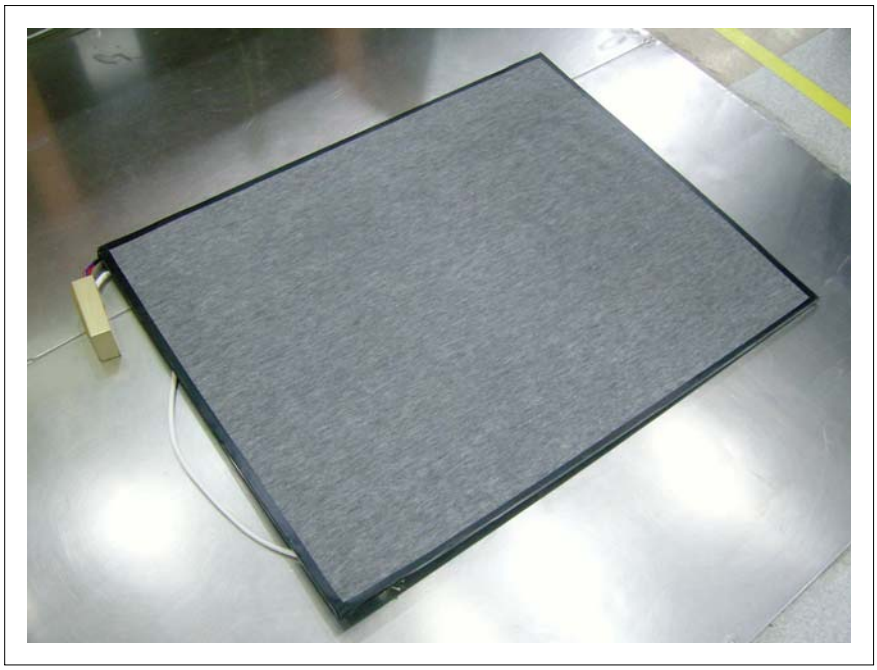
30.1	TABLE: Ball pressure			P
Part		Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)
Remote controller enclosure		75	0.8	2.0
Bobbin		125	0.9	2.0

Test Equipments List

Description	Manufacturer	Model Number	Serial Number	Cal. Due
Digital Oscilloscope	Tektronix	TDS-350	B031902	10, 2008
Analog Oscilloscope	Hungchang	5510	101513	10, 2008
True RMS Multimeter	Fluke	87	61160149	10, 2008
Digital Multimeter	Fluke	70	963551015	10, 2008
Leakage Current Meter	Yokogawa	3226	69NJ0203	10, 2008
Power Factor Meter	CEW	CP-114	501005	10, 2008
AC Watt Meter	CEW	CP-112	none	10, 2008
AC Ampere Meter	CEW	CP-103	427009	10, 2008
DC Ampere Meter	Hwashin	HS-7017AM	A1416	10, 2008
DC Power Supply	Kikusui	PAC	0150035	10, 2008
DC Power Supply	Hanil	303B	0608081	10, 2008
AC Power Supply	Hanchang	3KV	none	10, 2008
Push-pull Gauge	Imada	100KGF	690406	10, 2008
Push-pull Gauge	Imada	30KGF	88982	10, 2008
Electronic Load	Hanyoung	HYP-3030D	990888	10, 2008
Puncture Tester	Daeyang	60KV	990904	10, 2008
W/I Auto Tester	Kikusui	TOS-8850	15310920	10, 2008
Vernier Calipers	Mitsutoyo	CD-20CP	0010768	10, 2008
Multifunction Meter	Delta Ohm	DO9847	02000831	10, 2008
Hybrid Recorder	Konics	HR180N-12P	082641301	10, 2008
Temp/Humidity Chamber	Hyundai	D-22A	2.2.2/2.2.3	10, 2008
Flammability Tester	Hyundai	S909-2	4.4.3	10, 2008
Impact Tester	Daekyung	S909-3	4.2.4	10, 2008
Stability Tester	Daekyung	S909-4	4.1.1	10, 2008
Moment Tester	Daekyung	S909-5	4.3.18	10, 2008
Ball-pressure Apparatus	Daekyung	S909-6-1	5.4.10	10, 2008
Test Probe Set	Daekyung	S909-6-2	6.2.2.1	10, 2008
Drop Tester	Daekyung	S909-7	4.2.5	10, 2008
Stop Watch	-	-	2.11	n/a
Non-inductive Resistor	-	-	2.4.1/6.2.1.1	n/a
DC Power Supply	ED	ED-600S	none	10, 2008

External Photographs

EUT: Front/Rear View



Appendix K - Schematics Diagram

See attached document(s).

Appendix L - User's Manual

See attached document(s).