APPLICATION FOR LOW VOLTAGE DIRECTIVE

On Behalf of

Foshan Huangtebei Refrigeration Equipment Co., Ltd

Popsicle display cabinet

Model : B32-12, B32-15, B32-18, B32-20, B4-18, B6-15, B6-18, B6-20, B8-15, B8-18, B8-20, C6-20, C6-22, B7-15, B7-18, B7-20, B0-12, B0-15, B28-12, B28-15, B28-18, B28-20

Prepared For :	**Foshan Huangtebei Refrigeration Equipment Co., Ltd** **Block B, No. 26-7, Area C, Southwest Park, Science and Technology Industrial Park, Sanshui Center, Foshan City, China**
Prepared By :	**Beide (Shenzhen) Product Service Limited** **6F, Bldg E, Hourui 3rd Ind Zone, Xixiang, Bao'an Dist, Shenzhen, China**

Date of Test	**:**	**Jun.20-Jul.03,2019**
Date of Report	**:**	**Jul.03,2019**
Report Number	**:**	**B-S190624160**

LVD Report

EN 60335

Household and similar electrical appliances safety

Part 1: General requirements

Part 2-24:Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers

EN 62233

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

Testing laboratory ……..……...:	Beide (Shenzhen) Product Service Limited
Address ……..:	6F, Bldg E, Hourui 3rd Ind Zone, Xixiang, Bao'an Dist, Shenzhen, China
Report body.....…….. :	Beide (Shenzhen) Product Service Limited
Address (China) …… :	6F, Bldg E, Hourui 3rd Ind Zone, Xixiang, Bao'an Dist, Shenzhen, China
Applicant ……..……..…..:	Foshan Huangtebei Refrigeration Equipment Co., Ltd
Address ……..……..……..:	Block B, No. 26-7, Area C, Southwest Park, Science and Technology Industrial Park, Sanshui Center, Foshan City, China
Client No.....:	007578747
Standard ……...……..:	EN 60335-1:2012+A11:2014+A13:2017,EN 62233:2008+AC:2008 EN 60335-2-24:2010
Test Result ……..:	Compliance with EN 60335-1:2012+A11:2014, EN 62233:2008+AC:2008 EN 60335-2-24:2010
Procedure deviation …… ……..:	N.A.
Non-standard test method ……...:	N.A.
Type of test object ……...:	Popsicle display cabinet
Trademark …… ……..:	/
Model/type reference …….. ……..:	B32-20
Rating ……..……..:	210-240V~,50Hz,11.7A,2500W
Manufacturer …… ……..:	Same as applicant
Address ……...:	Same as applicant
Test item particulars :	N/A
Operation condition …….. :	Consecutive
Tested IT power system …….. :	No
IT testing, phase-phase voltage (V) .... :	N/A
Class of equipment …….. :	Class I

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

Name and address of the testing laboratory : **Beide (Shenzhen) Product Service Limited**
6F, Bldg E, Hourui 3rd Ind Zone, Xixiang,
Bao'an Dist, Shenzhen, China

Reported by : Signature / Austin.Zhong Date: Jul.03,2019

Checked by : Signature / Anna.Deng Date: Jul.03,2019

Approved by : Signature / Martin.Wang Date: Jul.03,2019

General remarks:	

"(see remark #)" refers to a remark appended to the report. "(refer to table X)" refers to a table appended to the report. Throughout this report a comma is used as the decimal separator. The test results presented in this report relate only to the object tested. This report shall not be reproduced except in full without the written approval of the testing laboratory. Until otherwise specified, all tests are done under normal ambient condition 20℃±5℃, RH: 65%±20% and air pressure of 860 mbar to 1060mbar.	Attached with: A. Photograph

Marking Label:

Popsicle display cabinet

Model No: B32-20
Rating: 210-240V~,50Hz,11.7A,2500W

Foshan Huangtebei Refrigeration Equipment Co., Ltd.
Block B, No. 26-7, Area C, Southwest Park, Science and Technology Industrial Park, Sanshui Center, Foshan City, China

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
5	GENERAL CONDITIONS FOR THE TESTS		P
5.8.2	If an appliance is marked for use at two different rated voltages, and the instructions indicate that it is suitable for use at two different ranges of voltages ,the appliance is assumed to have two rated rated voltage ranges.		P
5.2	At least one additional specially prepared sample is required for the tests of 22.107(EN60335-2-24)		P
5.3	Before starting the tests, ice-cream appliances are operated empty at rated voltage for 1 h, or for the maximum setting of an incorporated timer, whichever is shorter; other compression-type appliances shall be operated at rated voltage for at least 24 h, then switched off and left to stand for at least 12 h.(EN60335-2-24)		N
5.4	Tests are carried out using each source of energy (electricity, gas or other fuel) in turn. Gas appliances are supplied at the appropriate rated pressure.Tests are additionally carried out with all combinations of energy sources supplied simultaneously unless this is prevented by interlocking devices.(EN60335-2-24)		P
5.8.1	Appliances which can be battery operated are tested at the more unfavourable polarity when the supply terminals or terminations for the connection of the battery have no indication for polarity. (EN60335-2-24)	No battery	N
5.9	Appliances incorporating an ice-maker are tested with the ice-maker operating to give the most unfavourable results. (EN60335-2-24)		P
6	CLASSIFICATION		P
6.1	Appliances shall be of one of the following classes with respect to protection against electric shock: class 0, class 0I, class I, class II, class III.	Class I	P
6.2	Appliances shall have the appropriate degree of protection against harmful ingress of water.	IPX0	N
6.101	Appliances, other than ice-cream appliances, shall be of one or more of the following climatic classes(EN60335-2-24)		P
	– appliances of extended temperate class (SN);		N
	– appliances of temperate class (N);		N
	– appliances of subtropical class (ST);		N
	– appliances of tropical class (T).		P
7	MARKING		P
7.1	Rated voltage or voltage range (V) :	210-240V	P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	Single-phase appliances: 230 V covered		P
	Multi-phase appliances: 400 V covered	Not multi-phase	N
	Nature of supply	~	P
	Rated frequency or frequency range (Hz) :	50Hz	P
	Rated input or rated current	See marking label	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	Refer to marking label	P
7.1	Portable hairdryers, curling irons and similar appliances shall be marked with symbol 5582 of IEC 60417-1 combined with the prohibition sign of ISO 3864, except for the specified colours, or with the substance of the following:	No such appliance	N
	Model or type reference		P
	Symbol for Class II		N
	IP number, other than IPX0	IPX0	N
7.2	Warning for stationary appliances		P
	Warning placed in vicinity of terminal cover		N
7.3	Range of rated values correctly marked	See EUT itself	P
7.4	Voltage setting clearly discernible	Refer to marking label	P
7.5	Marking of rated input for each rated voltage		P
	Marking for upper and lower limits of rated input		P
7.6	Correct symbols used	Refer to marking label	P
	Additional symbols		P
7.6	[symbol 5582 of IEC 60417-1] Suitable for use in a bath or shower		N
7.7	Correct connection diagram	Refer to diagram	P
7.8	Not for type Z attachment:		--
	- marking of terminals for the neutral conductor (N)		P
	- marking of earthing terminals		P
	- marking not placed on removable parts	On enclosure	P
	- marking of terminal for single-pole protective device		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches and regulating devices by use of figures, letters or other	See EUT itself	P
	The figure O indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided	Operation instruction provided	P
	Appliances incorporating batteries which contain materials hazardous to the environment: statement in the instructions how to remove, scrap and dispose of the battery safely		P
	Statement in the instructions that the appliance must be disconnected from the supply		P
7.12.1	Sufficient details for installation or maintenance supplied	Refer to supplied instruction	P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
7.12.2	Means for disconnection with contact separation at least 3 mm		P
	Stationary appliances without power supply cord: hint in instruction about disconnection from mains	stationary appliance	P
	Stationary appliance with supply cord and plug: statement in the instructions that the appliance is so positioned that the plug is accessible		P
7.12.3	Insulation in contact with parts exceeding 50 K; instruction		P
7.12.4	Information with regard to building-in:		--
	- dimensions of space		P
	- dimensions and position of support		P
	- ventilation openings		P
	- connection/interconnection plug accessible		P
7.12.5	Replacement cord, type X attachment		N
	Replacement cord, type Y attachment		P
	Replacement cord, type Z attachment		N
7.13	Instructions and other texts in official language	In English	P
7.14	Marking easily legible and durable	The marking is clear and durable	P
7.15	Marking on a main part	On enclosure	P
	Marking clearly discernible from outside	The marking is clear on enclosure	P
	Stationary appliance: name or trademark and model or type reference visible after installation	stationary appliance	P
	Indication for switches and controls in vicinity of components; not on removable parts if misleading	Red indication for power switch	P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		P
7.12	The instructions for refrigerating appliances and ice-makers for camping or similar use shall include the substance of the following: *(EN60335-2-24)*		--
	– suitable for camping use;		N
	– the appliance may be connected to more than one source of energy;	Just connected one source of energy	N
7.12.1	Instructions shall include the method for replacing illuminating lamps*(EN60335-2-24)*	No illuminating	N
	For appliances designed for incorporating ice-makers, the instructions shall include the types of ice-makers which can be incorporated.		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	The instructions shall include information on the installation of incorporated ice-makers which are available as optional accessories and intended to be installed by the user. If it is intended that incorporated ice-makers are to be installed only by the manufacturer or its service agent, this shall be stated.		N
7.12.4	This subclause is also applicable to fixed appliances. (EN60335-2-24)		N
7.14	The height of the triangle in the symbol “Caution: risk of fire” shall be at least 15 mm(EN60335-2-24)		P
7.15	The marking of the maximum rated wattage of illuminating lamps shall be easily discernible while the lamp is being replaced. *(EN60335-2-24)*		N
7.101	For appliances which can be battery operated, the supply terminals or terminations for connections to the battery shall be clearly indicated by symbols. The positive terminal shall be indicated by symbol IEC 60417-5005 (2002-10) and the negative terminal by symbol IEC 60417-5006 (2002-10). *(EN60335-2-24)*		N
8	PROTECTION AGAINST ACCESSIBILITY TO LIVE PARTS		P
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	All positions; detachable parts removed		P
	Lamps are not removed, provided that the appliance can be isolated from the supply by means of a plug or an all-pole switch. However, during the insertion or removal of lamps, protection against contact with live parts of the lamp cap shall be ensured.*(EN60335-2-24)*		N
	Use of test finger: no contact with live parts		N
8.1.2	Use of test pin: no contact with live parts		P
	Test pin is used at openings in earthed metal under certain conditions		P
8.1.3	Use of test probe: no contact with live parts of visible glowing heating elements		N
8.1.4	Accessible part not considered live if:		--
	- extra-low a.c. voltage: peak values not exceeding 42.4 V		N
	- extra-low d.c. voltage: not exceeding 42.4 V		N
	- or separated from live parts by protective impedance, d.c. current not exceeding 2 mA		N
	- or separated from live parts by protective impedance, a.c. peak value not exceeding 0.7 mA		P
	- for peak value 42.4 V up to and including 450 V capacitance not exceeding 0.1 F		N
	- for peak value 450 V up to and including 15 kV capacitance not exceeding 0.1 F		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
8.1.5	Live parts protected at least by basic insulation before installation or assembly: checked by inspection and the test of 8.1.1		P
	- built-in appliances		P
	- fixed appliances		N
	- separate units		N
	compliance is checked by 8.1.1		--
8.2	Class II appliances and constructions adequately protected against accidental contact with basic insulation and metal parts separated from live parts with only basic insulation		N
	Only possible to touch parts separated from live parts by double or reinforced insulation		N
	Appliances with batteries replaceable by the user, basic insulation between live parts and the inner surface of the battery compartment adequate	No batteries used	N
	If appliance can be operated without batteries: double or reinforced insulation used		N
10	POWER INPUT AND CURRENT		P
10.1	Power input at rated voltage and normal operating temperature not deviating from rated input by more than shown in table; measured power input (W); rated input (W); deviation :		P
	the appliance being operated under normal operation except that user adjustable temperature controls are set to give the lowest temperature. *(EN60335-2-24)*		P
	The power input is considered to be stabilized when steady conditions are established or when any incorporated timer operates, whichever occurs first. *(EN60335-2-24)*		P
10.2	The appliance is operated for a period of 1 h or the maximum setting of an incorporated timer whichever is shorter. Excluding starting current, the maximum value of the current averaged over any 5 min period is obtained. The interval between current measurements shall not exceed 30 *s. (EN60335-2-24)*		P
	the appliance being operated under normal operation except that user adjustable temperature controls are set to give the lowest temperature. (EN60335-2-24)		P
10.101	The power input of the defrosting system shall not deviate from the defrosting power input marked on the appliance by more than the deviation shown in Table 1. (EN60335-2-24)		P
	Compliance is checked by operating the appliance at rated voltage and measuring the power input of the defrosting system after the power input has stabilized.		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
10.102	The power input of any heating system shall not deviate from the power input of these systems marked on the appliance by more than the deviation shown in Table 1. (EN60335-2-24)		N
	Compliance is checked by operating the appliance at rated voltage and measuring the power input of the heating system after the power input has stabilized.		N
11	HEATING		P
11.1	No excessive temperatures in normal use		P
11.2	Built-in appliances are installed in accordance with the instructions for installation.	Refer to instructions	N
	Ice-cream appliances are placed as near to the walls of the test corner as possible, unless the manufacturer indicates in the instructions for use that a free distance shall be observed from the walls, in which case, this distance is observed during the test. If means of ventilation are supplied by the manufacturer, they are mounted as intended. (EN60335-2-24)		P
	Other appliances are placed in a test enclosure. The walls enclose the appliance as near to all its sides and above as possible, unless the manufacturer indicates in the instructions for installation that a free distance shall be observed from the walls or the ceiling, in which case this distance is observed during the test. *(EN60335-2-24)*		N
	Dull black painted plywood approximately 20 mm thick is used for the test corner, supports and installation of built-in appliances and for the test enclosure for other appliances. *(EN60335-2-24)*		N
11.3	Temperature rises determined by thermocouples or resistance method	Temperature rises determined by thermocouples	P
11.4	Heating appliances operated under normal operation at 1,15 times rated power input		N
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage	Test as motor-operated appliance	P
11.6	Combined appliances are operated as motor-operated appliances.		N
11.7	The appliance is operated until steady conditions are established.		--
11.8	Protective devices do not operate		P
	Sealing compound not flowing out		P
	temperature rises are monitored continuously. (EN60335-2-24)		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	For appliances of extended temperate (SN) or temperate (N) class, the temperature rises shall not exceed the values given in Table 3. *(EN60335-2-24)*		N
	For appliances of subtropical (ST) or tropical (T) class, the temperature rises shall not exceed the values given in Table 3 reduced by 7 K. *(EN60335-2-24)*		P
11.101	If the temperatures of the windings of motor-compressors other than those complying with IEC 60335-2-34 including its Annex AA are higher than the temperature limits given in Table 101, the test is carried out again, the thermostat or similar control device being set at the lowest temperature, and the short circuit of the user-adjustable temperature control device removed. (EN60335-2-24)		P
11.102	Any defrosting system shall not give rise to excessive temperatures*(EN60335-2-24)*		N
11.103	Heating systems, other than defrosting systems, incorporated in an appliance shall not give rise to excessive temperatures(EN60335-2-24)		N
13	LEAKAGE CURRENT		P
13.1	Leakage current not excessive and electric strength adequate		P
	The test of 13.2 does not apply to battery circuits.		P
13.2	Leakage current measured by means of circuit described in Annex G		P
	Leakage current measurements	(see appended table)	P
13.3	Electric strength test of insulation	(see appended table)	P
	No breakdown during the test	No breakdown	P
	The test voltage specified in Table 4 for **r**einforced insulation is applied between separate circuits for battery operation and mains supply operation. (EN60335-2-24)		N
15	MOISTURE RESISTANCE		P
15.1	Enclosure provides the degree of moisture protection according to classification of appliance		P
15.1.1	Appliance subjected to test as specified		P
	Withstand electric strength test specified in 16.3		P
	No trace of water on insulation which can result in a reduction of distances and clearances below values specified in 29.1		P
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test	Not hand-held appliance	N
	Built-in appliance installed according to the manufacturer's instruction		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	Other appliances tested as specified		N
	Parts to be removed by aid of tool , are not removed		P
15.2	Spillage of liquid does not affect the electrical insulation	Protected by enclosure	P
	Overfilling test with additional amount of liquid (l) :		P
	Withstand electric strength test in 16.3		P
	No trace of water on insulation which can result in reduction of distances and clearances below values specified in 29.1		P
15.3	Humidity treatment for 48 h	Put into humidity treatment for 48 h	P
	humidity is 93 ± 3%	95%	P
	Withstanding the test of Cl. 16		P
15.2	Lamp covers are not removed. (EN60335-2-24)	No lamp	N
15.101	Appliances subject to spillage of liquid from containers onto the inside walls of the cabinet or compartment or onto the top of the cabinet shall be constructed so that such spillage does not affect their electrical insulation. *(EN60335-2-24)*		N
15.102	The apparatus shown in Figure 101 is filled with water containing approximately 1 % NaCl and 0,6 % of acid rinsing agent, as specified in Annex AA of IEC 60335-2-5, to the level of the lip, and the displacement block is supported just above the water by means of any suitable release mechanism and bridge support. *(EN60335-2-24)*		N
	All shelves and containers which can be removed without the use of a tool are removed and the appliance is disconnected from the supply. Lamp covers are not removed.		P
	The apparatus is supported with its base horizontal and so positioned and at such a height that when the release mechanism is operated, the water is discharged over the back and side interior walls of the cabinet or compartment including any electrical components mounted thereon, in the most unfavourable manner. The test is made only once with the apparatus in any one position, but the test may be repeated as many times as necessary in different positions, provided that there is no residual water on parts wetted by a previous test.		P
	after the test, the appliance shall withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation which could result in a reduction of clearances and creepage distances below the values specified in Clause 29(EN60335-2-24)		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
15.103	Appliances, other than built-in appliances, ice-makers and ice-cream appliances are tilted at an angle of up to 2° in relation to the position of normal use in the direction which is likely to be the most unfavourable for this test. One half-litre of water containing approximately 1 % NaCl and 0,6 % of acid rinsing agent, as specified in Annex AA of IEC 60335-2-5, is poured uniformly over the top of the appliance in approximately 60 s at the most unfavourable place from a height of approximately 50 mm with the controls in the on position and the appliance disconnected from the supply. (EN60335-2-24)		P
15.104	For ice-makers which are directly connected to the water supply, the container, or that part of the appliance which serves as the container, is filled with water as in normal use. The inlet valve is then held open and the filling is continued for 1 min after the first evidence of overflow. (EN60335-2-24)		P
15.105	Operation of a defrosting system shall not affect the electrical insulation of defrost heating elements. *(EN60335-2-24)*		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		P
16.1	No excessive leakage current and adequate insulation and electric strength (tests 16.2 and 16.3)		P
16.2	Leakage current measurements	(see appended table)	P
16.3	Electric strength tests (values in table 5)	(see appended table)	P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		N
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		N
	Appliance supplied with 1,06 or 0,94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied		N
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N
	Temperature of the winding not exceeding the value specified in table 6		P
	Values are not applicable for fail-safe- transformers accord. 15.5) of IEC 61558- 1		N
19	ABNORMAL OPERATION		P
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input :		N
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input :		N
19.4	Test conditions as in Cl. 11, the power input being 1.15 times rated power input, any control limiting the temperature during tests of Cl.11 short-circuited		N
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		N
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N
19.6	Appliances with PTC heating elements tested as specified. Supplied at working voltage, establishing steady conditions, then the voltage increased in steps by 5% until 1.5 times at working voltage is reached or until the 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		P
	Locked rotor, motor capacitors open circuited or short-circuited, if required		P
	Appliances with timer or controller supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N
	Test period at rated voltage (s or min) or until steady state conditions established :		N
	Winding temperatures not exceeding limiting temperature; type of appliance; insulation class; measured temperature (C) :		N
	Test is not repeated at capacitors of class P2 of IEC 60252		N
19.8	Three-phase motors operated at rated voltage with one phase disconnected	Not such motor	N
19.9	Not applicable		N
19.10	Series motor operated at 1.3 times rated voltage for 1 min	No series motor	N
	Parts not ejected from the appliance during test		N
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		N
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		--
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in Cl. 11, but supplied at rated voltage, the duration of the tests as specified:		--
	a) short-circuit of creepage distances and clearances between live parts of different potential, if these distances are less than the values specified in 29.1, unless the relevant part is adequately encapsulated		N
	b) open circuit at the terminals of any component		N
	c) short-circuit of capacitors, unless they comply with IEC 60384-14		N
	d) short-circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the circuits of an optocoupler		N
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit. In this case the possible hazardous situations of the appliance are assessed to ensure that safety does not rely on the correct functioning of such a component		N
	During and after each test the following is checked:		--
	- the temperature rise of the windings do not exceed the values specified in table 6		N
	- the appliance complies with the conditions specified in 19.13		N
	- live parts not accessible to the test finger or test pin as specified in Cl. 8		N
	- any current flowing through protective impedance not exceeding the limits specified in 8.14		N
	If a conductor of a printed board becomes open circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		--
	- the material of the printed circuit board withstands the burning test of 20.1 of IEC 65		N
	- any loosened conductor does not reduce the creepage distances or clearances between live part and accessible metal parts		N
	- the appliance withstands the tests of 19.11.2 with open circuited conductor bridged		N
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A) :		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts	No such hazard	P
	Temperature rises not exceeding the values shown in table 7		P
	Enclosures not deformed to such an extent that compliance with Cl. 8 is impaired		P
	Appliance still operable and complying with 20.2		P
	Appliance, other than Class III, withstands the electric strength test of 16.3, however, the test voltage being:		P
	- basic insulation: 1000 V	No breakdown	P
	- supplementary insulation: 1750 V		N
	- reinforced insulation: 3000 V		N
19.1	Subclauses 19.2 and 19.3 do not apply to heating systems. (EN60335-2-24)		P
19.7	Fan motors of ice-cream appliances are tested for 5 min(EN60335-2-24)		P
19.8	This test is not applicable to three-phase motor-compressors complying with IEC 60335-2-34. (EN60335-2-24)		N
19.13	The temperature of the housing of motor-compressors other than those which comply with IEC 60335-2-34 is determined at the end of the test period and shall not exceed 150 °C. (EN60335-2-24)		P
19.101	Heating systems shall be so dimensioned and located that there is no risk of fire even in the case of abnormal operation. (EN60335-2-24)		N
19.102	Ice-makers and ice-cream appliances shall be constructed so that they shall not cause any risk of fire, mechanical hazard or electric shock even in the case of abnormal operation. (EN60335-2-24)		P
	Compliance is checked by applying any defect which may be expected in normal use, while the ice-maker, incorporated ice-maker or ice-cream appliance is operated under normal operation at rated voltage. Only one fault condition is reproduced at a time and the tests are made consecutively. (EN60335-2-24)		P
19.103	Appliances intended for camping and similar use shall be constructed so that the risk of fire, mechanical hazard or electric shock is obviated as far as is practicable in the event of the appliance being operated whilst inclined. *(EN60335-2-24)*		P
19.104	Illuminating equipment shall not cause a hazard under abnormal operating conditions. *(EN60335-2-24)*		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
19.105	Appliances intended for battery operation and having the polarity marked on or adjacent to the terminals or terminations shall be constructed so that the risk of fire, mechanical hazard or electric shock is obviated in the event of an inverted polarity connection. *(EN60335-2-24)*		N
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Adequate stability		P
	Tilting test through an angle of 10 (appliance placed on an inclined plane/horizontal plane); appliance does not overturn	Not overturn	P
	appliance is tilted 10 ° in most unvavourable direction		P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15		N
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 7		N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	No moving parts	N
	Protective enclosures, guards and similar parts are non-detachable		N
	Adequate mechanical strength and fixing of protective enclosures		N
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, if unexpectedly reclosed		N
	Not possible to touch dangerous moving parts with test finger		N
21	MECHANICAL STRENGTH		P
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	No damage after three blows applied to various parts of the enclosure, impact energy 0.5 ± 0.04 J	0.5J, 3 blows, on enclosures no damage	P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		P
	If necessary, repetition of groups of three blows on a new sample		-
	Spring hammer accord. IEC 60068-2 – 75		P
21.101	Appliances for camping or similar use shall withstand the effects of dropping and vibration. *(EN60335-2-24)*		N
21.102	Lamps shall be protected against mechanical shocks. *(EN60335-2-24)*		N
22	CONSTRUCTION		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.1	Appliance marked with the first numeral of the IP system: relevant requirements of IEC 529 are fulfilled		P
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		--
	- a supply cord fitted with a plug		N
	- a switch complying with 24.3		N
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N
	- an appliance coupler		N
	Single-phase Class I appliance with heating elements, intended to be permanently connected to fixed wiring, incorporating single-pole switches or single-pole protective devices for the disconnection of the heating element(s): the switches/devices being connected in the phase conductor		N
22.3	Appliance provided with pins: no undue strain on socket-outlets		N
	Applied torque not exceeding 0.25 Nm		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets	Not for heating liquids	N
22.5	No risk of electric shock when touching the pins of the plug		P
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N
22.7	Compression-type appliances, including protective enclosures of a protected cooling system, using flammable refrigerants shall withstand	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 which are likely to be cleaned in normal use		P
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		P
22.10	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely		N
22.11	Reliable fixing of non-detachable parts which provide the necessary degree of protection against electric shock, moisture or contact with moving parts		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	Obvious locked position of snap-in devices used for fixing such parts		N
	No deterioration of the fixing properties of snap-in devices used in parts which are likely to be removed during installation or servicing		N
	Tests		N
22.12	Handles, knobs etc. fixed in a reliable manner	No handles	N
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N
	Axial force 15 N applied to parts, the shape of which being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape of which being so that an axial pull is likely to be applied		N
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance	No such hazard	P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded	The flexible cords are smooth	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 such parts	N
	Cord reel tested with 6000 operations, as specified	No cord reel	N
	Electric strength test of 16.3, voltage of 1000 V applied		N
22.17	The requirement is not applicable to refrigerating appliances and ice-makers(EN60335-2-24)		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 such parts	N
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible	Material used is non-corrosive, non-hygroscopic and non-combustible	P
	Compliance is checked and if necessary tested	Checked	P
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	No such material used as insulation	P
	Remark: MgO and mineral ceramic fibres are not hygroscopic		N
22.22	Asbestos not used in the construction of the appliance	No asbestos used	N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.23	Oils containing polychlorinated biphenyl (PCB) not used		N
22.24	The heating element shall also be unlikely to come into contact with the skin or hair if it ruptures.	No such parts	N
	In case of rupture, the heating conductor is unlikely to come in contact with earthed metal parts or accessible metal parts		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		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		P
22.27	Parts connected by protective impedance separated by double or reinforced insulation		P
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of protection against electric shock is maintained after installation		N
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
	So constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Creepage distances and clearances over supplementary and reinforced insulation not reduced below values specified in 29.1 as a result of wear		P
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29.1 if wires, screws etc. becomes loose		P
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		P
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation	No ceramic material	N
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.1		P
	Oxygen bomb test at 70 C for 96 h and 16 h at room temperature		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.33	Conductive liquids which are or may become accessible in normal use are not in direct contact with live parts		P
	Conductive liquids not in direct contact to live parts (electrodes for heating)		P
	in class –II- constructions touchabl liquids not in contact to basic insulation or reinforced insulation		N
	in class –II- constructions liquids not in contact to reinforced insulation		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault		N
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		P
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 Handle	N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N
22.38	Capacitors not connected between the contacts of a thermal cut-out		N
22.39	Lamp holders only used for the connection of lamps	No lampholder used	N
22.40	Motor-operated appliances and combined appliances, intended to be moved while in operation or which have accessible moving parts, are fitted with a switch to control the motor		P
	The actuating member of this switch easily visible and accessible		N
22.41	No mercury used		P
22.Z2	Fully halogenated chlorofluorocarbons (CFC's) not used		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.41	Mercury switches mounted according to the requirement	No mercury switches	N
22.42	Protective impedance consisting of at least two separate components		N
	Values specified in 8.1.4 not exceeded if any one of the components is short-circuited or open circuited		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N
22.44	Not designed as children toy		P
22.45	Air is used as a reinforced insulation, clearance can not be reduced below the values specified in 29.1.3 when external force applied to the enclosure.		P
22.46	Software used in protective electronic circuits shall be class B or class C.		N
22.47	Appliance intended to be connected water mains shall withstand the water pressure expected in norm use.		N
22.48	Appliance intended to be connected water mains shall be constructed to prevent back siphonage of non-potable water into water mains.		N
22.49	For **remote operation**, the duration of operation shall be set before the appliance can be started unless the appliance switches off automatically at the end of a cycle or it can operate continuously without giving rise to a hazard.		N
22.50	Controls incorporated in the appliance, if any, shall take priority over controls actuated by **remote operation**.		N
22.51	A control on the appliance shall be manually adjusted to the setting for **remote operation** before the appliance can be operated in this mode. There shall be a visual indication on the appliance showing that the appliance is adjusted for **remote operation**. The manual setting and the visual indication of the remote mode are not necessary on appliances that can – operate continuously, or – operate automatically, or – be operated remotely, without giving rise to a hazard.		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.52	Socket-outlets on appliances accessible to the user shall be in accordance with the socket-outlet system used in the country in which the appliance is sold.		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.6	**Thermostats**, with the exception of their thermosensitive parts, shall not be in contact with the **evaporator** unless they are adequately protected against condensation on cold surfaces and against the effect of water formed during the defrosting process. *(EN60335-2-24)*		N
22.33	Heating conductors having only one layer of insulation, shall not be in direct contact with water or ice during normal use. *(EN60335-2-24)*		N
22.101	Lampholders shall be fixed so that they do not work loose in normal use. (EN60335-2-24)		N
22.102	Insulated wire heaters and their joints located in, and in integral contact with, thermal insulation shall be protected against entry of water. (EN60335-2-24)		P
22.103	Appliances employing a transcritical refrigeration system shall in the high pressure side of the refrigeration system include a pressure relief device on the compressor or between the compressor and the gas cooler. There shall be no shut off devices or other components except piping between the compressor and the pressure relief device, which could introduce a pressure drop. (EN60335-2-24)		P
	The pressure relief device shall be mounted so that the refrigerant released from the system cannot cause any harm to the user of the appliance. The aperture shall be located so that it is unlikely to be obstructed in normal use.		P
	The pressure relief device shall have no provisions for setting by the end user.		P
	The operating pressure of the pressure relief device shall be no higher than the design pressure of the high pressure side.		P
	The design pressure of the high pressure side shall be not less than the minimum high side test pressure required in Table 101 of of IEC 60335-2-34 divided by 3.		P
	The refrigeration system, including all components, shall withstand the pressures expected in normal and abnormal use and during standstill.		P
	Pressure testing has to be done on the complete refrigeration system, however it can be done separately for the low pressure side and for the high pressure side.		N
22.104	Appliances with two or more temperature control devices which control the same motor-compressor shall not cause undue operation of the thermal motor-protector of the motor-compressor. *(EN60335-2-24)*		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.105	For mains-operated appliances which can also be battery operated, the battery circuit shall be insulated from live parts by double insulation or reinforced insulation. (EN60335-2-24)		N
	Moreover, it shall not be possible to touch live parts when making the connections to the battery. This applies even if covers, or other parts, which have to be removed to make the connections are non-detachable parts. (EN60335-2-24)		N
22.106	The mass of refrigerant in compression-type appliances which use flammable refrigerant in their cooling system shall not exceed 150 g in each separate refrigerant circuit. (EN60335-2-24)		N
22.107	Compression-type appliances with a protected cooling system and which use flammable refrigerants shall be constructed to avoid any fire or explosion hazard, in the event of leakage of the refrigerant from the cooling system. (EN60335-2-24)		N
22.107.1	A leakage is simulated at the most critical point of the cooling system. For refrigerant circuits that do not meet the corrosion requirements of 22.107.3 a leak is also simulated at any point of the cooling circuit that is nearest to an entry of a pipe or cable into a food storage compartment. (EN60335-2-24)		N
22.107.2	All accessible surfaces of protected cooling system components, including accessible surfaces in intimate contact with protected cooling systems, are scratched usingthe tool whose tip is shown in Figure 102. (EN60335-2-24)		P
22.107.3	If aluminium having a purity of less than 99,5 % according to ISO 209 is used in a protected cooling system that is embedded in thermal insulation, a sample of the cooling system is subjected to the salt mist test of IEC 60068-2-11 for a test duration of 48 h. (EN60335-2-24)		N
	After the test there shall be no sign of blistering, pitting or other active corrosion of the aluminium or its coating, if any. (EN60335-2-24)		N
22.108	For compression-type appliances with unprotected cooling systems and which use flammable refrigerants, any electrical component located inside the food storage compartment, which during normal operation or abnormal operation produces sparks or arcs and luminaires, shall be tested and found at least to comply with the requirements in Annex CC for group IIA gases or the refrigerant used. (EN60335-2-24)		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
22.109	Compression-type appliances which use flammable refrigerants shall be constructed so that leaked refrigerant will not stagnate and thus cause a fire or explosion hazard in areas outside the food storage compartments where components producing arcs or sparks or luminaires are mounted. (EN60335-2-24)		N
22.110	Temperatures on surfaces that may be exposed to leakage of flammable refrigerants shall not exceed the ignition temperature of the refrigerant, as specified in table 102, reduced by 100 K. (EN60335-2-24)		N
22.111	In compression-type appliances which use flammable refrigerant in their cooling system, all possible inadvertent contact points between uncoated aluminium and copper pipes or similar dissimilar metals shall be prevented from galvanic coupling by positive means such as the use of insulated sleeving or spacers. (EN60335-2-24)		N
22.112	The doors and lids of compartments in appliances with a free space shall be capable of being opened from the inside. (EN60335-2-24)		N
22.113	Drawers which are only accessible after opening a door or lid shall not contain a free space. (EN60335-2-24)		P
22.114	Drawers which are accessible without opening a door or lid and which contain a free space shall(EN60335-2-24)		--
	– have an opening in their rear wall that has a height of at least 250 mm and a width of at least two-thirds of the inner width of the drawer; – be capable of being opened from the inside.		N
22.115	In appliances intended for household use and which contain compartments with a free space, any door or drawer giving access to these compartments shall not be fitted with a self-latching lock. (EN60335-2-24)		P
22.116	Accessible glass panels with an area having any two orthogonal dimensions exceeding 75 mm shall be either made from glass that shatters into small pieces when broken or be made from glass that has enhanced mechanical strength. (EN60335-2-24)		N

23	INTERNAL WIRING		P
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		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	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		N
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		P
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings		N
	Electric strength test, 1000 V between live parts and metal parts		N
23.4	Bare internal wiring sufficiently rigid and fixed	No bare wiring	N
23.5	The basic insulation of internal wiring withstanding the electrical stress likely to occur in normal use	For internal wires	P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		P
23.7	Only the colour combination green/yellow used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		N
	Clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N
24	COMPONENTS		P
24.1	Components comply with safety requirements in relevant IEC standards	See appended table	P
24.1.1	Capacitors likely to be subjected to the supply mains voltage and used for radio interference suppression or voltage dividing, comply with Annex Q		P
	Small lampholders: compliance with requirements for E10 lampholders		N
	Safety isolating transformer wich not comply with IEC 61558-2-6 shall complxy with annex R		N
	Appliance couplers for IPX0 appliances: compliance with IEC 320		N
	Automatic controls: compliance with IEC 730, unless tested with the appliance		N
	Other appliance couplers: compliance with IEC 309		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	Switches shall comply with IEC 61058 –1 or tested in the appliance	Approved switch, comply with EN 61058-1, 10000 cycles	P
24.1.2	Automatic controls complying with IEC 730: additional tests according to this standard and 11.3.5 to 11.3.8 and Cl. 17 of IEC 730 as type 1 controls, the cycles of operation being:		--
	- thermostats: 10 000		N
	- temperature limiters: 1000		N
	- self-resetting thermal cut-outs: 300		N
	- non-self-resetting thermal cut-outs: 30		N
	energy regulators 10.000		N
	timers 3000		N
24.1.3	Switches, which not comply IEC 61058 are tested accord. annex S		N
	10.000 cycles of operation		N
	Switches for no-load-operation and operable only with the aid of a tool, are not subjected to the tests of Cl. 17 of IEC 1058-1		N
	Switches for no- load-operation		N
24.1.4	Components marked with their operating characteristics are used in the appliance in accordance with these markings		P
	Components which have to comply with other standards are tested separately, according to the relevant standard		P
	Components used within the limits of its marking, tested in accordance with conditions occurring in the appliance		P
	Components not marked, or not used in accordance with its marking, or no IEC standard exists, tested under the conditions occurring in the appliance		P
	Components not mentioned in table 3 tested as part of the appliance		P
24.1.5	Voltage across capacitors in series with a motor winding does not exceed 1.1 times rated voltage, when the appliance is supplied at 1.1 times rated voltage under minimum load		N
	Capacitors permanent connected to motor windings and have to comply 30.2.3 shall be of class P1 or P2 of IEC 60252		N
24.2	Helmet-type hairdryers and permanent-wave appliances may incorporate a switch in a flexible cord.		N
	No thermal cut-outs which can be reset by soldering		N
	Remark: solder with melting point < 250 °C allowed		N
24.3	Switch intended for all-pole disconnection of stationary appliances is directly connected to the supply terminals, having a contact separation of at least 3 mm in each pole		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
24.4	Plugs and socket-outlets for heating elements and extra-low voltage circuits, not interchangeable with plugs, and	No heating elements	N
	Socket-outlets or with connectors and appliance inlets complying with IEC 83 or IEC 320, respectively add IEC 60906-1		N
24.5	Plugs and socket-outlets etc. for interconnection cords, not interchangeable with plugs and socket-outlets or connectors and appliance inlets complying with IEC 83 or IEC 320, respectively, if direct supply from the mains could give rise to a hazard add IEC 60906-1		P
24.6	Motors connected to the supply mains and having inadequate basic insulation for the rated voltage of the appliance, comply with the requirements of Annex F		P
24.1	Motor-compressors are not required to be separately tested in accordance with IEC 60335-2-34 nor are they required to meet the requirements of IEC 60335-2-34 if they meet the requirements of this standard. (EN60335-2-24)		P
24.3	Voltage selection switches used in appliances for camping or similar use shall have a contact separation in all poles that provide full disconnection from the supply under overvoltage category III conditions. (EN60335-2-24)		N
24.5	For starting capacitors, the voltage across the capacitors shall not exceed 1,3 times the rated voltage of the capacitor when the appliance is operating at 1,1 times the rated voltage. (EN60335-2-24)		N
24.101	Lampholders shall be of the insulated type. (EN60335-2-24)		N
24.102	The discharge capacity of the pressure relief device shall be such that it is able to release an adequate amount of refrigerant so that the pressure during the release of the refrigerant does not increase beyond the pressure setting of the pressure relief device even if the compressor is operating. (EN60335-2-24)		N

25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		P
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		P
	- supply cord fitted with a plug		P
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N
	- pins for insertion into socket-outlets		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
25.2	Appliance not provided with more than one means of connection to the supply	Only one means of connection to the supply	P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N
25.3	Connection of supply wires for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		N
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.2		P
	Appliance provided with a set of terminals allowing the connection of a flexible cord		P
	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		P
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 8		P
	Introduction of conduit or cable does not affect the protection against electric shock or reduce creepage distances and clearances below values specified in 29.1		P
25.5	Method for assemble supply cord with the appliance:		--
	- type X attachment		N
	- type Y attachment		P
	- type Z attachment, if allowed in part 2		N
	Type X attachment: specially prepared cord		N
	Type X attachment not used for flat twin tinsel cord		N
25.6	Plugs fitted with only one flexible cord		P
	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, provided with a plug complying with the following Standard Sheets of IEC 83:		P
	- for Class I appliances: Standard Sheet C2b, C3b or C4		P
	- for Class II appliances: Standard Sheet C5 or C6		N
25.7	Appliance supply cord not lighter than:		--
	- braided cord (245 IEC 51)		N
	- ordinary tough rubber sheathed cord (245 IEC 53)		N
	- ordinary polychloroprene sheathed flexible cord (245 IEC 57)		N
	- flat twin tinsel cord (227 IEC 41)		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	- light polyvinyl chloride sheathed cord (227 IEC 52), appliance not exceeding 3 kg		N
	- ordinary polyvinyl chloride sheathed cord (227 IEC 53), appliance exceeding 3 kg		P
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used		N
	PVC cord used: appliance so constructed that the supply cord is not likely to touch external metal parts in normal use		N
	PVC supply cord appropriate for higher temperatures, type Y or type Z attachment used		N
	Power supply cord with high flexibility not lighter than:		--
	- rubber sheated cord (60245 IEC 86) flexibility		N
	- sheathed cord of net-PVC (60245 IEC 88) flexibility		N
	- sheathed cord with rubber insulation and supply insulation of net-PVC (60245 IEC 87) flexibility		N
25.8	Nominal cross-sectional area of supply cords according to table 9; rated current (A); cross-sectional area (mm^2) :		P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless	No Solder terminal	N
	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 provided with a bushing, or is so constructed, that there is no risk of damage to the supply cord when introduced		N
25.13.1	Inlet bushing so shaped as to prevent damage to the supply cord		N
	Inlet bushing not detachable		N
25.13.2	At inlet openings, the insulation between the conductor of a supply cord and the enclosure of the appliance is consisting of the insulation of the conductor, and in addition:		--
	- for Class 0 appliances: at least one separate insulation		N
	- for other appliances: at least two separate insulations		N
	Only one separate insulation is required if the enclosure at the inlet opening is of insulating material	Insulating inlet opening	N
	The separate insulation consists of:		--

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	- the sheath of a supply cord at least equivalent to that of a cord complying with IEC 227 or 245		N
	- a lining or bushing of insulating material complying with the requirements of 29.2 for supplementary insulation		N
25.14	Supply cords adequately protected against excessive flexing		P
	Flexing test; applied force (N); number of flexings :		--
	The test does not result in:		--
	- short-circuit between the conductors		P
	- breakage of more than 10% of the strands of any conductor	<10% of the strands of conductor	P
	- separation of the conductor from its terminal		P
	- loosening of any cord guard		P
	- damage, within the meaning of the standard, to the cord or the cord guard		P
	- broken strands piercing the insulation and becoming accessible		P
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorages		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (Nm) (not on automatic cord reel) :		P
	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 so constructed and located 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		N
	- accessible metal parts by supplementary insulation		N
	- the cord is not clamped by a metal screw which bears directly on the cord		N
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		N
	So constructed that the cord only can be fitted with the aid of a tool		N
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P
25.21	Space for supply cable for fixed wiring or supply cord for type X attachment constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage, no contact with accessible metal parts if a conductor becomes loose, etc.		N
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N
25.22	Appliance inlet:		--
	- live parts not accessible during insertion or removal		N
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temperature rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		P
	If necessary, electric strength test of 16.3	See 16.3	P
25.24	Interconnection cords not detachable without the aid of a tool		P
	This clause of Part 1 is not applicable to those parts related to motor-compressors with facilities for connecting a supply cord, complying with the appropriate requirements of IEC 60335-2-34.		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
25.7	This subclause does not apply to flexible leads or cords used to connect an appliance to a SELV power supply. (EN60335-2-24)		N
25.13	This subclause does not apply to flexible leads or cords used to connect an appliance to a SELV power supply. (EN60335-2-24)		N
25.23	For appliances which can be battery operated, if the battery is placed in a separate box, the flexible lead or flexible cord used to connect the box to the appliance is considered to be an interconnection cord. (EN60335-2-24)		P
25.101	Appliances which can be battery operated shall have suitable means for connection of the battery. *(EN60335-2-24)*		N
	Appliances shall be provided with terminals or flexible leads, or a flexible cord which, for connection to the battery terminals, may be fitted with clamps or other devices suitable for use with the type of battery marked on the appliance.		N
26	TERMINALS FOR EXTERNAL CONDUCTORS		P
26.1	Appliances shall be provided with terminals or equally effective devices for the connection of external conductors		P
26.2	Appliances having type X attachment, except those having a specially prepared cord, and appliances for the connection of cables of fixed wiring shall be provided with terminals in which the connections are made by means of screws, nuts or similar devices, unless the connections are soldered.		N
	The screws and nuts shall not be used to fix any other component except that they may also clamp internal conductors if these are arranged so that they are unlikely to be displaced when fitting the supply conductors.		P
	If soldered connections are used, the conductor shall be positioned or fixed so that reliance is not placed upon the soldering alone to maintain it in position.		N
26.3	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		--
	- the terminal does not loosen		N
	- internal wiring is not subjected to stress		N
	- creepage distances and clearances are not reduced below the values in 29.1		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
26.4	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N
26.5	Terminals for type X attachment, no special preparation of conductors required, and so constructed and placed that conductors prevented from slipping out, except those with a specially prepared cord and those for connection to fixed wiring		N
26.6	Terminals for type X attachment and for the connection of cables of fixed wiring shall allow the connection of conductors having the nominal cross-sectional areas shown in Table 13. However, if a specially prepared cord is used, the terminals need only be suitable for the connection of that cord.		N
26.7	Terminals for type X attachment, other than those in class III appliances that do not contain live parts, shall be accessible after removal of a cover or part of the enclosure.		N
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, shall be located close to each other.		P
26.9	Terminals of the pillar type shall be constructed and located so that the end of a conductor introduced into the hole is visible, or can pass beyond the threaded hole for a distance equal to half the nominal diameter of the screw but at least 2,5 mm.		P
26.10	Terminals with screw clamping and screwless terminals shall not be used for the connection of the conductors of flat twin tinsel cords unless the ends of the conductors are fitted with means suitable for use with screw terminals		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	For appliances having type Y attachment or type Z attachment, soldered, welded, crimped or similar connections may be used for the connection of external conductors. For class II appliances,the conductor shall be positioned or fixed so that reliance is not placed upon the soldering, crimping or welding alone to maintain the conductor in position. }Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain them in position unless they are held in place near the terminals independently of the solder.However, these methods may be used alone if barriers are provided so that clearances and creepage distances between live parts and other metal parts cannot be reduced below the values specified for supplementary insulation, if the conductor becomes free at the soldered or welded joint or slips out of the crimped connection.		P
	This clause of Part 1 is not applicable to those parts of motor-compressors with facilities for connecting a supply cord and complying with the appropriate requirements of IEC 60335-2-34.		N
26.11	Terminal devices in an appliance for the connection of the flexible leads or cord with type X attachment connecting an external battery or battery box shall be so located or shielded that there is no risk of accidental connection between battery supply terminals.		N
27	PROVISION FOR EARTHING		P
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal	Class I	P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		P
27.2	Screwless terminals comply with IEC 998-2-2		N
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm^2, and		N
	Do not provide earthing continuity between different parts of the appliance		N
	Conductors cannot be loosened without the aid of a tool		N
	Clamping means adequately secured against accidental loosening		N
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 m		N
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	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		P
	Resistance not exceeding 0.1Ωat the specified low-resistance test		P
27.6	In hand-held appliances printed conductors of printed circuit boards not used to provide earthing continuity	Not hand-held appliance	N
	In other appliances at least two tracks are used with independent soldering points, and		N
	The appliance complies with the requirements of 27.5 for each circuit, and		N
	The material of the printed board complies with IEC 249-2-4 or IEC 249-2-5		N
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60335-2-34. (EN60335-2-24)		P
28	SCREWS AND CONNECTIONS		P
28.1	Fixings and electrical connections withstand mechanical stresses “ and connections providing earthing continuity”.		P
	Screws not of soft metal liable to creep, such as zinc or aluminium	Not soft metal	P
	Diameter of screws of insulating material min. 3 mm	No such screws used.	N
	Screws of insulating material not used for any electrical connection ....“ and connections providing earthing continuity“.		N
	Screws transmitting electrical contact only screwing into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
	Type X attachment, screws to be removed for replacement of supply cord, or for users maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
	Screws and nuts transmitting contact pressure subjected to torque test as specified, applying torque as shown in table 12	Screw for fixing enclosure	P
	The test is not carried out on screws and nuts transmitting contact pressure for earthing continuity provided at least two screws or nuts are used		P
28.2	Contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated.		P
	Requirement doesn`t apply to circuits < 0.5 A		--
28.3	Space-threaded (sheet metal) screws only used for the connection “electrical connections“if they clamp these parts directly in contact with each other		P
	Thread-cutting (self-tapping) screws not used for electrical connection of current-carrying parts, unless generating a full form standard machine screw thread		P
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action		P
	Thread-cutting and space-threaded screws used provide earthing continuity:		--
	- it is not necessary to disturb the connection in normal use		P
	- two screws used for each connection		P
28.4	Screws and nuts making mechanical connection between different parts of the appliance, and also making electrical connection or providing earthing continuity secured against loosening		P
	Rivets for current-carrying connections subject to torsion secured against loosening		P
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60335-2-34.		

29	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		P
29.1	Creepage distances and clearances not less than specified in table 13		P
	Resonant voltage between the point where a winding and a capacitor are connected together and metal parts separated from live parts by basic insulation only, creepage distances and clearances not less than the values specified for the value of the voltage produced by the resonance		P
	Values increased by 4 mm in case of reinforced insulation when resonance voltage		P
29.2	Distances through insulation not less than 1.0 mm for supplementary insulation, and 2.0 mm for reinforced insulation		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
29.2.1	Supplementary insulation applied in thin sheet form, 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 for supplementary insulation		P
	Reinforced insulation applied in thin sheet form, other than mica or similar scaly material, consists of at least three layers, and any two of the layers together withstand the electric strength test of 16.3 for reinforced insulation		P
29.2.2	Supplementary or reinforced insulation inaccessible and does not exceed the maximum permissible temperature values		P
	Supplementary or reinforced insulation, after conditioning as specified, withstands the electric strength test as specified in 16.3, both at the oven temperature and room temperature		P
	Compliance is not checked on parts related to motor-compressors if the motor-compressor conforms to IEC 60335-2-34. For motor-compressors not conforming to Part 2-34, the additions and modifications specified in Part 2-34 are applicable. (EN60335-2-24)		P
29.2	Unless insulation is enclosed or located so that it is unlikely to be exposed to pollution by condensation due to normal use of the appliance, insulation in refrigeration appliances and ice-makers is in pollution degree 3 and shall have a CTI value of not less than 250.		P
30	RESISTANCE TO HEAT, FIRE AND TRACKING		P
30.1	See Annex H		P
	Relevant external parts of non-metallic material		P
	Parts supporting live parts and parts providing supplementary or reinforced insulation sufficiently resistant to heat		P
	Ball-pressure test with a force of 20 N, diameter of impression not exceeding 2 mm		P
	External parts: at 75℃		N
	Parts supporting live parts: at 125 ℃	Plastic parts	P
	Parts providing supplementary or reinforced insulation: temperature (℃) :		N
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire	Resistance to spread of fire	P
30.2.1	Possible burning test of relevant parts according to Annex J		P
	Glow-wire test of Annex K made at temperature 550 ℃	Glow-wire test at 550℃	P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
30.2.2	Appliances operated while attended, parts of insulating material supporting connections carrying a current exceeding 0,5 A in normal operation, subjected to the glow-wire test of Annex K at 650 ℃		N
30.2.4	Parts of non-metallic material within a distance of 50 mm from parts not withstanding the tests of 30.2.2 or 30.2.3, subjected to the needle-flame test of Annex M		N
30.3	Relevant insulating material have adequate resistance to tracking		N
	Tracking test at 175 V according to Annex N		N
	Tracking test at 250 V according to Annex N		N
	No hazard other than fire, tracking test at 175 V according to Annex N, and in addition needle-flame test of surrounding parts according to Annex M		N
	Possible needle-flame test of non-metallic material		N
30.1	The ball pressure test is not applied to parts related to the motor-compressor if the motor compressor complies with IEC 60335-2-34. (EN60335-2-24)		P
	For accessible parts of non-metallic material within the storage compartment, the temperature of 75 °C ± 2 °C is replaced by 65 °C ± 2 °C. (EN60335-2-24)		P
30.2	These tests are not applied to parts related to the motor-compressor if the motor-compressor complies with IEC 60335-2-34 with no ignition.(EN60335-2-24)		N
31	RESISTANCE TO RUSTING		P
	Relevant ferrous parts adequately protected against rusting		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		P
	Appliance does not emit harmful radiation	No radiation	P
	Appliance does not present a toxic or similar hazard		P

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
A	ANNEX A, NORMATIVE REFERENCES		P
	The annex contains a list of standards which are referred to, and thus become part of, this standard		P

B	ANNEX B, TESTING OF APPLIANCES POWERED BY RECHARGEABLE BATTERIES		N
B.2	Definitions		-
B.2.2.9	Appliances operated under the following conditions:		-
	- the appliance supplied by its fully charged battery is operated as specified in part 2		N
	- the appliance is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N
	- if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in part 2		N
B.2.7.2	If a part has to be removed in order to discard the battery before scrapping the appliance, this part is not considered to be detachable even if the instructions state that it is to be removed		N
B.4	General conditions for the tests		-
B.4.101	Unless otherwise specified, appliances supplied from the supply mains are tested as specified for motor-operated appliances		N
B.7	Marking and instructions		N
B.7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
B.7.12	The instructions for appliances incorporating batteries intended to be replaced by the user, include required information		N
	Details given about how to remove batteries containing materials hazardous to the environment		N
	Materials which are hazardous to the environment are mercury, cadmium or lead		N
B.7.15	Markings placed on the part connected to the supply mains		N
B.8	Protection against access to live parts		N
B.8.2	Basic insulation between live parts and parts accessible during and after removal of the battery insulation during replacement of batteries		N
B.11	Heating		N
B.11.7	Charging time for the battery		N
B.19	Abnormal operation		N
B.19.101	Charging time at rated voltage		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
B.19.102	Short-circuiting of the battery, fully charged, for appliances having batteries which can be removed without the aid of a tool		N
B.19.103	Appliances having batteries replaceable by the user, supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N
B.21	Mechanical strength		N
B.21.101	Appliances having pins for insertion into socket-outlets, checked according to procedure 2 of IEC 68-2-32		N
	Mass of part not exceeding 250 g, 100 falls		N
	Mass of part exceeding 250 g, 50 falls		N
B.22	Construction		N
B.22.3	Appliances having pins for insertion into socket-outlets are tested as fully assembled as possible		N
B.25	Supply connection and external flexible cords		N
B.25.13.2	The requirement is not applicable to interconnection cords subjected to safety extra-low voltage		N
B.30	Resistance to heat, fire and tracking		N
B.30.2	For parts connected to the supply mains during the charging period, 30.2.3 applies		N
	For other parts, 30.2.2 applies		N
C	ANNEX C, AGEING TEST ON MOTORS		N
	Test carried out when doubt with regard to the classification of the insulating system of a motor winding		N
D	ANNEX D, ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTOR UNITS		N
	Void		--
E	ANNEX E, MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Methods of measuring creepage distances and clearances, specified in 29.1, indicated in 10 different cases		P
F	ANNEX F, MOTORS NOT ISOLATED FROM THE SUPPLY MAINS AND HAVING BASIC INSULATION NOT DESIGNED FOR THE RATED VOLTAGE OF THE APPLIANCE		N
	Motors having a working voltage not exceeding 42 V, not being isolated from the supply mains, and having basic insulation not designed for the rated voltage of the appliance are tested according to this annex		N
	All clauses of this standard apply, unless otherwise specified in this annex		N
F.8	Protection against accessibility to live parts		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
F.11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N
F.16	Leakage current and electric strength		N
F.19	Abnormal operation		N
F.19.101	Appliance operated at rated voltage with each of the following defects:		--
	- short-circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N
	-short cut on diodes of rectifier		N
	- open circuit of the supply to the motor		N
	- open circuit of any shunt resistor during operation of the motor		N
F.22	Construction		N
F.22.101	Class I appliance incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N
G	ANNEX G, CIRCUIT FOR MEASURING LEAKAGE CURRENTS		P
	Meassuring circuit for leakage current		P
H	ANNEX H, SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		P
J	ANNEX J, BURNING TEST		P
	The burning test is made in accordance with IEC 707, and method FH is used		P
	Category FH3 applies, the maximum burning rate being 40 mm/min		P
K	ANNEX K, GLOW-WIRE TEST		P
	The glow-wire test is made in accordance with IEC 695-2-1 (clause numbers between parentheses refer to IEC 695-2-1)		--
(4)	Description of test apparatus: the last paragraph before the note is replaced		P
(5)	Severities: the duration of application of the tip of the glow-wire to the specimen being (30 ± 1) s	550℃ for 30 s	P
(10)	Observations and measurements: item c) does not apply		P
L	ANNEX L, BAD-CONNECTION TEST WITH HEATERS		N
	The bad-connection test with heaters is made in accordance with IEC 695-2-3 (clause numbers between parentheses refer to IEC 695-2-3)		--
(3)	General description of the test: additions concerning crimped connections		N
(4)	Description of test apparatus: replacements of some of the test specifications and the first paragraph of the note		N
(6)	Severities: the duration of application of the test power being (30 ± 1) min		N

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
(8)	Test procedure: 8.6 replaced		N
(11)	Information to be given in the relevant specification: item h), the first dashed paragraph, does not apply		N
M	ANNEX M, NEEDLE-FLAME TEST		P
	The needle-flame test is made in accordance with IEC 695-2-2 (clause numbers between parentheses refer to IEC 695-2-2)		--
(4)	Description of the apparatus: the sixth paragraph is replaced		P
(5)	Severities: the duration of application of the test flame is (30 ± 1) s	30s	P
(8)	Test procedure: some changes in the test specifications		P
(10)	Evaluation of the test results: addition in the test specification		P
N	ANNEX N, PROOF TRACKING TEST		N
	The proof tracking test is made in accordance with IEC 112 (clause numbers between parentheses refer to IEC 112)		N
(3)	Test specimen: the last sentence of the first paragraph does not apply		N
(5)	Test apparatus: some changes in the subclauses		N
(6)	Procedure: adjustments of the test specifications		N
P	ANNEX P, SEVERITY OF DUTY CONDITIONS OF INSULATING MATERIAL WITH RESPECT TO THE RISK OF TRACKING		N
	Recognition of different duty conditions with respect to the risk of tracking		N
Q	ANNEX Q, CAPACITORS		P
	testing of capacitors		P
	modifications of IEC 60384 – 14		P
R	SAFETY ISOLATING TRANSFORMERS		N
R 7.1	Transformer shall marked with:		-
	name , trade mark		N
	model or type		N
R.17	fail-safe transformers shall comply with 1.5 of IEC 61558-1		N
R.22	19.1 , 19.2 of IEC 61558-2-6 are applicable		N
R.29	distances accord. 2a,2b,3 of table 13 of 61558-1		N
S	SWITCHES		N
	switches are tested additional clauses accord. IEC 61058 – 1		N
	20 no load operation		N
8	marking of trade mark or manufacturer , type		N
13	this clause is applicable		--

EN 60335-1+EN 60335-2-24			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**
15.3	applicable for full disconnection and micro-disconnection		N
17	compliance is checked at three separate samples		N
	temperature rise at terminals not more as 30 k above values measured at clause 11		N
20	appicable for full disconnection and micro-disconnection switches		N

EN 62233			
Clause	**Requirement – Test**	**Result - Remark**	**Verdict**

EMF TEST FOR TG1000L-DD		
Requirement & Testing	**Remark**	**Verdict**
Measuring method 4.2.4.1: (time domain evaluation)		P
Measuring method 4.2.4.2: (line spectrum evaluation)		N
Measuring method 4.2.4.3: (simplified test method)		N
Measuring distance (cm):	50	P
Sensor location:	Front	P
Operation conditions:	Continuously	P
Magnetic flux density (maximum)(μT):	1.052	P
If the measured value exceeds the reference level, the value is weighted with coupling factor:		N
Weighted result, W=		N
Coupling factor:		N
Test result		P

10.1	TABLE: Power input deviation			P	
Input deviation of/at:	P rated (W)	P measured (W)	Dp	Required Dp	Remark
230V/50Hz	2500	2435	-2.6	+15%,	Normal operation

11.8	TABLE: temperature rise measurements			P
	t1 (°C) ..... :	24.5		—
	t2 (°C) ..... :	24.8		—
	Tested at 1,06 times rated voltage input.	1.06*240V=254.4V~（A） 0.94*210V=197.4V~（B）		—
temperature rise dT of part/at:		A dT (K)	B dT (K)	required dT (K)
Power cord		2.8	2.4	50
Motor winding		25.1	23.7	95
Plastic parts		8.2	7.5	35
Ambient		---		---

13.2	TABLE: leakage current measurements at operating temperature		P
	Heating appliances: at 1,15 times rated input (W) . :	N/A	—
	Motor-operated and combined appliances: at 1,06 times rated voltage (V) ..... :	1.06*240V=254.4V~	—
leakage current I between:		I (mA)	required I (mA)
L/N – enclosure		0.07	0,75

13.3	TABLE: electric strength measurements at operating temperature		P
test voltage applied between:		test voltage (V)	breakdown
L/N – enclosure		1000	No
L – N		1000	No
Note: fuse was removed			

16.2	TABLE: leakage current measurements		P
	at 1,06 times rated voltage (V) ..... :	1.06*240V=254.4V~	—
leakage current I between:		I (mA)	required I (mA)
L/N – enclosure		0.07	0,75

16.3	TABLE: electric strength measurements	P

test voltage applied between:	test voltage (V)	breakdown
L/N – enclosure	1250	No
L – N	1250	No
Note: fuse was removed		

24.1	TABLE: list of critical components			P
Object/ part No.	Manufacturer/ trademark	Type/ model	Technical data	Mark(s) of conformity
Plastic	SABIC INNOVATIVE PLASTICS CHINA CO LTD	923 (f1)	Rated V-0 or better, 125 degree, minimun 2.0mm in thickness.	UL
Internal wire	TA HENG ELECTRIC WIRE & CABLE CO LTD	2468	105℃; 300V; 20AWG	UL

29.1	**TABLE: Clearances**					P
	Overvoltage category :	II				—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	Verdict / Remark
330	0,2* / 0,5 / 0,8**	--	--	--	--	N/A
500	0,2* / 0,5 / 0,8**	--	--	--	--	N/A
800	0,2* / 0,5 / 0,8**	--	--	--	--	N/A
1 500	0,5 / 0,8** / 1,0***	--	--	--	--	N/A
2 500	1,5 / 2,0***	4.2	4.6	--	4.0	P
4 000	3,0 / 3,5***	--	--	5.2	--	P
6 000	5,5 / 6,0***	--	--	--	--	N/A
8 000	8,0 / 8,5***	--	--	--	--	N/A
10 000	11,0 / 11,5***	--	--	--	--	N/A
Supplementary information: *) For tracks on printed circuit boards if pollution degree 1 and 2 **) For pollution degree 3 ***) If the construction is affected by wear, distortion, movement of the parts or during assembly						

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	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—	—	—	N/A
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—	—	—	N/A
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—	—	N/A
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—	—	—	N/A

125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—	—	—	N/A
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—	—	N/A
250	0,56	1,25	1,8	**2,5**	3,2	3,6	4,0	4,2	—	—	P
250	0,56	1,25	1,8	**2,5**	3,2	3,6	4,0	—	4,2	—	P
250	1,12	2,5	3,6	**5,0**	6,4	7,2	8,0	—	—	8.5	P
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—	—	—	N/A
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—	—	—	N/A
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—	—	N/A
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—	—	—	N/A

29.2	**TABLE: Creepage distances, functional insulation**							P
Working voltage (V)	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*)	Verdict / Remark
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	N/A
50	0,16	0,56	0,8	1,0	1,4	1,6	1,8	N/A
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	N/A
250	0,42	1,0	1,4	2,0	2,5	2,8	3,2	P(4.0)
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	N/A
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A
Supplementary information: *) Material group IIIb is allowed if the working voltage does not exceed 50 V								

30	**TABLE: Resistance to heat and fire**										P
Object/ part No.	Ball pressure test °C				Glow wire test (GWT)°C						Verdict
	75	125	cl. 11 +40	cl. 19 +25	550	650	750			850	Needle Flame test	Verdict
						te	ti	te	ti			
Plastic part	—	0.8 mm	—	—	X	-	-	—	—	—		P

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ANNEX A
Photo-documentation