# LVD TEST REPORT

**For**

## Soma Medical (Sabah) Sdn Bhd (1248058-D)

## UVGI AIR STERILIZER

**Model No.:**
**SM 20**

**Prepared For** : **Soma Medical (Sabah) Sdn Bhd (1248058-D)**

: **Block E, Lot 28, 2nd floor, Signature Office, KK Times Square, Off Coastal Highway, 88400 Kota Kinabalu Sabah, Malaysia**

**Prepared By** : **Shenzhen PTSI Testing Co., Ltd.**

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| | | |
|---|---|---|
| **Report Number** | : | **PRSZ17120402S** |
| **Date of Test** | : | **December 04, 2017 - December 12, 2017** |
| **Date of Report** | : | **December 12, 2017** |

# TEST REPORT
## EN 60335-2-65
## Safety of household and similar electrical appliances
## Part 2: Particular requirements for air-cleaning appliances

| | |
|---|---|
| **Report Number**. .....: | PRSZ17120402S |
| Compiled by (name + signature) .....: | Cathy Zhang |
| Approved by (name + signature) .....: | Sunny Ge |
| Date of issue.....: | December 11, 2017 |
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| **Testing Laboratory** .....: | **Shenzhen PTSI Testing Co., Ltd.** |
| Address .....: | 2/F, Building C, Hongwan Commercial Center, Bao'an Road, Xixiang, Baoan, Shenzhen, China |
| Testing location / address .....: | Same as above |
| **Applicant's name .....:** | Soma Medical (Sabah) Sdn Bhd (1248058-D) |
| Address .....: | Block E, Lot 28, 2nd floor, Signature Office, KK Times Square, Off Coastal Highway, 88400 Kota Kinabalu Sabah, Malaysia |
| **Manufacturer's name** .....: | SOMA MEDICAL SDN BHD (671166-M) |
| Address .....: | 102, Lorong Maarof, Bangsar. 59000. Kuala Lumpur. MALAYSIA. |
| **Test specification:** | |
| Standard .....: | EN60335-1:2012+A11:2014 |
| | EN60335-2-65:2003 + A1:2008+A11:2012 |
| | EN62233:2008 |
| Test procedure.....: | PTSI |
| Non-standard test method……..: | N/A |
| **Test Report Form No. .....:** | IECEN60335 |
| Test Report Form(s) Originator.....: | Intertek Semko AB |
| Master TRF.....: | Dated 2013-10 |
| **Test item description..... :** | UVGI AIR STERILIZER |
| Trade Mark .....: | SOMA MEDICAL |
| Model/Type reference.....: | SM 20 |
| Ratings .....: | 220-240V~, 50Hz, 960W |

**Summary of testing:**

**Tests performed (name of test and test clause):**

The product has been tested according to standard EN60335-1:2012+A11:2014

- Tests performed on the bench
- Maximum ambient temperature: +25°C
- Tested for moderate conditions
- EUT is designed for altitudes not exceeding 2000 m.

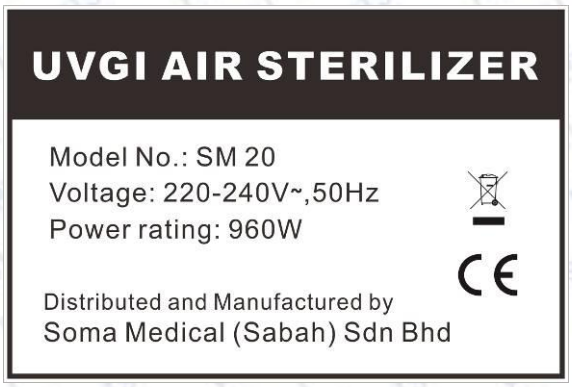
This test report includes:

Annex 1: Photos.

**Summary of compliance with National Differences**

Compliance with the National requirements of CENELEC common modification.

**Copy of marking plates:**




*Remark:*

*The above label is draft of the artwork for marking plate pending approval by National Certification Bodies and they shall not be affixed to products prior to such approvals.*

| | |
|---|---|
| **Test item particulars.....:** | |
| Classification of installation and use.....: | Class I |
| Supply connection .....: | Directly connected to the mains by plug |
| **Possible test case verdicts:** | |
| - test case does not apply to the test object.....: | N/A (Not Applicable) |
| - test object does meet the requirement.....: | Pass (P) |
| - test object does not meet the requirement.....: | Fail (F) |
| Mass.....: | Approximately 35kg |
| **Testing:** | |
| Date of receipt of test items .....: | December 04, 2017 |
| Date(s) of performance of tests .....: | December 04, 2017 - December 11, 2017 |

**General remarks:**

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report, a point (coma) is used as the decimal separator.

List of test equipment must be kept on file and available for review.

**General product information:**

UVGI AIR STERILIZER, powered by mains. For indoor use only.

Model difference:

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| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| **5** | **GENERAL CONDITIONS FOR THE TESTS** | | **P** |
| | Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc. | | P |
| 5.2 | If the test of Annex D has to be carried out, an additional appliance may be used. | Annex D not to be carried out | N/A |
| 5.3 | The tests of Clause 14 and 21.2 and 22.24 are carried out after the tests of Clause 29. | | P |
| | The test of 19.14 is carried out before the tests of 19.11. | | N/A |
| 5.14 | NOTE: Guidance is given in Annex P for enhanced requirements that may be used to ensure an acceptable level of protection against electrical and thermal hazards for particular types of appliances used in an installation without a protective earthing conductor in countries that have warm damp equable climates. | | N/A |
| 5.101 (-2-65) | Appliances are tested as motor-operated appliances. | | P |
| **6** | **CLASSIFICATION** | | **P** |
| 6.1 | Protection agains electric shock: Class 0, 0I, I, II, III | Class I | P |
| 6.2 | Protection against harmful ingress of water | IP20 | N/A |
| **7** | **MARKING AND INSTRUCTIONS** | | **P** |
| 7.1 | Rated voltage or voltage range (V) | 220-240V~ | P |
| | The marking of rated voltage or rated voltage range, for appliances intended to be connected to the supply mains, shall cover: | | P |
| | Single-phase appliances to be connected to the supply mains: 230 V covered | 230V covered | P |
| | Multi-phase appliances to be connected to the supply mains: 400 V covered | | N/A |
| | Nature of supply: | AC symbol used ~ | P |
| | Rated frequency (Hz) | 50Hz | P |
| | Rated power input (W) | 960W | P |
| | Rated current (A) | | N/A |
| | Manufacturer's or responsible vendor's name, trademark or identification mark | See the label for details | P |
| | Model or type reference | See the label for details | P |
| | Symbol 5172 of IEC 60417, for Class II appliances | | N/A |
| | symbol 5180 of IEC 60417, for class III appliances | | N/A |
| | -this marking is not necessary for appliances that are operated only by batteries | No batteries uesd | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | IP number, other than IPX0 | IP20 | N/A |
| | The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains shall be marked with symbol IEC 60417-5036 (DB:2002-10) if their working voltage exceeds extra-low voltage. | | N/A |
| 7.2 | Warning for stationary appliances for multiple supply | Only one ac mains supply | N/A |
| | Warning placed in vicinity of terminal cover | | N/A |
| 7.3 | Range of rated values marked with the lower and upper limits separated by a hyphen | | P |
| | Different rated values marked with the values separated by an oblique stroke | | N/A |
| 7.4 | Appliances adjustable for different rated voltages, the voltage setting is clearly discernible | No such voltage adjustable device | N/A |
| | Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram | | N/A |
| 7.5 | Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless | | P |
| | the power input is related to the mean value of the rated voltage range | | P |
| | Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear | | N/A |
| 7.6 | Correct symbols used | | P |
| | [symbol IEC 60417-5021 (DB:2002-10)] equipotentiality |  | N/A |
| | [symbol IEC 60417-5036 (DB:2002-10)] dangerous voltage |  | N/A |
| 7.7 | Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply | | N/A |
| | Correct mode of connection is obvious | | N/A |
| 7.8 | Except for type Z attachment, terminals for connection to the supply mains indicated as follows: | | P |
| | - marking of terminals exclusively for the neutral conductor (N) | | N/A |
| | - marking of protective earthing terminals (symbol 5019 of IEC 60417) | | P |
| | - marking of functional earthing terminals (symbol 5018 of IEC 60417) | | N/A |
| | - marking not placed on removable parts | | P |
| 7.9 | Marking or placing of switches which may cause a hazard | No hazard | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 7.10 | Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means | Indicated by figures 0 and 1 | P |
| | This applies also to switches which are part of a control | | N/A |
| | If figures are used, the off position indicated by the figure 0 | | P |
| | The figure 0 indicates only OFF position, unless no confusion with the OFF position | Figure 0 indicates OFF position | P |
| 7.11 | Indication for direction of adjustment of controls | No such contols | N/A |
| 7.12 | Instructions for safe use provided | | P |
| | Details concerning precautions during user maintenance | | P |
| | The instructions state that: | | P |
| | -the appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. | Statement included. | P |
| | -children being supervised not to play with the appliance | Statement included. | P |
| | -a part of class III construction supplied from a detachable power supply unit shall state that the appliance is only to be used with the power supply unit provided with the appliance. | | N/A |
| | - class III appliances shall state that it must only be supplied at safety extra low voltage corresponding to the marking on the appliance. This instruction is not necessary for battery-operated appliances if the battery is a primary battery or secondary battery charged outside of the appliance. | | N/A |
| | For appliances for altitudes exceeding 2000m, the maximum altitude is stated.....: | | N/A |
| | The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only | | N/A |
| (-2-65) | Instructions for safe use provided including details for cleaning and other user maintenance of the appliance | | P |
| 7.12.1 | Sufficient details for installation supplied | | P |
| | For an appliance intended to be permanently connected to the water mains and not connected by a hose-set,this is stated | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 7.12.2 | Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules | No need to installation | N/A |
| 7.12.3 | Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected | | N/A |
| 7.12.4 | Instructions for built-in appliances: | | N/A |
| | - dimensions of space | | N/A |
| | - dimensions and position of supporting means | | N/A |
| | - distances between parts and surrounding structure | | N/A |
| | - dimensions of ventilation openings and arrangement | | N/A |
| | - connection to supply mains and interconnection of separate components | | N/A |
| | - plug accessible after installation, unless | | N/A |
| | a switch complying with 24.3 | | N/A |
| | - Necessity to allow disconnection of the appliance from the supply after installation, unless the appliance incorporates a switch complying with 24.3. | | N/A |
| | The disconnection may be achieved by having the plug accessible or by incorporating a switch in the fixed wiring in accordance with the wiring rules. | | N/A |
| 7.12.5 | Replacement cord instructions, type X attachment with a specially prepared cord | | N/A |
| | Replacement cord instructions, type Y attachment | | P |
| | Replacement cord instructions, type Z attachment | | N/A |
| 7.12.6 | The instructions for heating appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains shall contain the substance of the following: | | N/A |
| | CAUTION: In order to avoid a hazard due to inadvertent resetting of the thermal cutout,this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility. | | N/A |
| 7.12.7 | The instructions for fixed appliances shall state how the appliance is to be fixed to its support. | Not fixed appliances | N/A |
| 7.12.8 | The instructions for appliances connected to the water mains shall state | | N/A |
| | - the maximum inlet water pressure, in pascals | | N/A |
| | - the minimum inlet water pressure, in pascals, if this is necessary for the correct operation of the appliance. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | The instructions for appliances connected to the water mains by detachable hose-sets shall state that the new hose-sets supplied with the appliance are to be used and that old hose-sets should not be reused. | | N/A |
| 7.13 | Instructions and other texts in an official language | In English and/or local language | P |
| 7.14 | Marking clearly legible and durable | 15s with water, 15s with petroleum spirit, legible no curling, not easily removed. | P |
| | Compliance is checked by inspection and by rubbing the marking by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit. | | P |
| | After all the tests of this standard, the marking shall be clearly legible. It shall not be easily possible to remove marking plates nor shall they show curling. | | P |
| 7.15 | Marking on a main part | | P |
| | Marking clearly discernible from the outside, if necessary after removal of a cover | Marking on outside | P |
| | For portable appliances, cover can be removed or opened without a tool | No cover can be removed by hand | P |
| | For stationary appliances, name, trademark or identification mark and model or type reference visible after installation | | N/A |
| | For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions | | N/A |
| | Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading | | N/A |
| | The symbol IEC60417-5018 placed next to the symbol IEC60417-5172 or IEC60417-5180 | | N/A |
| 7.16 | Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link | | P |
| **8** | **PROTECTION AGAINST ACCESS TO LIVE PARTS** | | **P** |
| 8.1 | Adequate protection against accidental contact with live parts | | P |
| 8.1.1 | Requirement applies for all positions, detachable parts removed | | P |
| | Lamps behind adetachable covernotre moved,if conditions met | | N/A |
| | Insertion or removal of lamps, protection against contact with live parts of the lamp cap | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Use of test probe B of IEC 61032: no contact with live parts | No contact with live parts | P |
| 8.1.2 | Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts | No contact with live part. | P |
| | Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts | | N/A |
| 8.1.3 | For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements | | N/A |
| 8.1.4 | Accessible part not considered live if: | | N/A |
| | - safety extra-low a.c. voltage: peak value not exceeding 42.4 V | | N/A |
| | - safety extra-low d.c. voltage: not exceeding 42.4 V | | N/A |
| | - or separated from live parts by protective impedance | | N/A |
| | If protective impedance: d.c. current not exceeding 2 mA, and | | N/A |
| | a.c. peak value not exceeding 0.7 mA | | N/A |
| | - for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF | | N/A |
| | - for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μF | | N/A |
| | -for peak values over 15 kV, the energy in the discharge not exceeding 350 mJ | | N/A |
| (-2-65) | - for peak values over 15 kV, discharge not exceeding 350 mJ | | N/A |
| | The quantity of electricity in the discharge is measured using a resistor having a nominal non-inductive resistance of 2 000 Ω | | N/A |
| 8.1.5 | Live parts protected at least by basic insulation before installation or assembly: | | N/A |
| | - built-in appliances | | N/A |
| | - fixed appliances | | N/A |
| | - appliances delivered in separate units | | N/A |
| 8.2 | Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only | Class I construction. | P |
| | Only possible to touch parts separated from live parts by double or reinforced insulation | | P |
| | Compliance is checked by inspection and by applying test probe B of IEC 61032 in accordance with the conditions specified in 8.1.1. | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Test probe B of IEC 61032 is applied to built-in appliances and fixed appliances only after installation. | | N/A |
| **9** | **STARTING OF MOTOR-OPERATED APPLIANCES** | | **N/A** |
| | Requirements and tests are specified in part 2 when necessary | | N/A |
| **10** | **POWER INPUT AND CURRENT** | | **P** |
| 10.1 | Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 | (see appended table) | P |
| | Test for an appliance with one or more rated voltage ranges | | P |
| 10.2 | Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 | | N/A |
| | If the power input varies through out the operating cycle and the maximum value of the power input exceeds, by afact or greater than two, the arithmetic mean value of the power input occurring during are presentative period, the power input is the maximum value that is exceeded for more than 10% of the representative period | | N/A |
| | Otherwise the power input is the arithmetic mean value | | N/A |
| | Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless | | N/A |
| | The rated power input is related to the arithmetic mean value | | N/A |
| | Test for an appliance with one or more rated voltage ranges | | N/A |
| **11** | **HEATING** | | **P** |
| 11.1 | No excessive temperatures in normal use | | P |
| 11.2 | Placing and mounting of appliance as described | Placing on a floor | P |
| 11.3 | Temperature rises, other than of windings, determined by thermocouples | By thermocouples | P |
| | Temperature rises of windings determined by resistance method, unless | | P |
| | the windings makes it difficult to make the necessary connections | | P |
| 11.4 | Heating appliances operated under normal operation at 1.15 times rated power input .....: | | N/A |
| 11.5 | Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage .....: | 1.06 times rated voltage | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 11.6 | Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage .....: | | N/A |
| 11.7 (-2-65) | Appliances are operated until steady conditions are established. | | P |
| 11.8 | Temperature rises not exceeding values in table 3 | | P |
| | If the temperature rise of a motor winding exceeds the value of table 3, or | | N/A |
| | If there is doubt with regard to classification of insulation, | | N/A |
| | Tests of Annex C are carried out | | N/A |
| | Sealing compound does not flow out | | N/A |
| | Protective devices do not operate | | P |
| | However, components in protective electronic circuits are allowed to operate provided they are tested for the number of cycles of operation specified in 24.1.4. | | N/A |
| | The temperature rise limit does not apply to switches or controls tested in accordance with the conditions occurring in the appliance. | | N/A |
| | Sealing compound does not flow out | | P |
| **13** | **LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE** | | **P** |
| 13.1 | Leakage current not excessive and electric strength adequate | | P |
| | Heating appliances operated at 1.15 times rated power input.....: | | N/A |
| | Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage .....: | 1.06 X240V=254.4V | P |
| | Protective impedance and radio interference filters disconnected before carrying out the tests | | P |
| 13.2 | Leakage current measured by means of the circuit described in figure 4 of IEC 60990 | Single-phase | P |
| | For class 0I and classI appliances, a low impedance ammeter may be used | | P |
| | Leakage current measurements | (see appended table) | P |
| 13.3 | Electric strength tests according to table 4 | (see appended table) | P |
| | The appliance is disconnected from the supply and the insulation is immediately subjected to a voltage having a frequency of 50 Hz or 60 Hz for 1 min, in accordance with IEC 61180-1. | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | The high-voltage source used for the test is to be capable of supplying a short circuit current Is between the output terminals after the output voltage has been adjusted to the appropriate test voltage. | Is: 200mA | P |
| | The overload release of the circuit is not to be operated by any current below the tripping current Ir. The values of Is and Ir are given in Table 5 for various high-voltage sources. | Ir: 100mA | P |
| | No breakdown during the tests | No breakdown | P |
| **14** | **TRANSIENT OVERVOLTAGES** | | **N/A** |
| | Appliances withstand the transient overvoltages to which they may be subjected | | N/A |
| | Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 | | N/A |
| | No flashover during the test, unless of functional insulation | | N/A |
| | In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited | | N/A |
| **15** | **MOISTURE RESISTANCE** | | **P** |
| 15.1 | Enclosure provides the degree of moisture protection according to classification of the appliance | IP20 | P |
| | Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3 | | N/A |
| | No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29 | | N/A |
| 15.1.1 | Appliances, other than IPX0, subjected to tests as specified in IEC 60529.....: | | N/A |
| | Water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains are subjected to the test specified for IPX7 appliances. | | N/A |
| 15.1.2 | Hand-held appliance turned continuously through the most unfavourable positions during the test | | N/A |
| | Built-in appliances installed according to the instructions | | N/A |
| | Appliances with an automatic cord reel are tested with the cord in the most unfavourable position in such a way that the reeling of the wet cord may affect electrical insulation during operation. The cord shall not be dried before reeling. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Appliances placed or used on the floor or table placed on a horizontal unperforated support | | N/A |
| | Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board | | N/A |
| | Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support that is constructed to prevent water spraying onto its top surface. The pivot axis of the oscillating tube is located at the same level as the underside of the support and aligned centrally with the appliance. The spray is directed upwards. | | N/A |
| | For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube | | N/A |
| | For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube | | N/A |
| | For IPX4 appliances, the movement of the tube is limited to two times 90º from the vertical for a period of 5 min. | | N/A |
| | However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube | | N/A |
| | Wall-mounted appliances, take into account the distance to the floor stated in the instructions | | N/A |
| | Appliances with type X attachment fitted with a flexible cord as described | | N/A |
| | Detachable parts tested as specified | | N/A |
| | However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed | | N/A |
| 15.2 | Spillage of liquid does not affect the electrical insulation | | N/A |
| | Spillage solution comprising water containing approximately 1% NaCl and 0,6% rinsing agent | | N/A |
| | Appliances with type X attachment fitted with a flexible cord as described | | N/A |
| | Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable | | N/A |
| | Detachable parts removed | | N/A |
| | Overfilling test with additional amount of water, over a period of 1 min (l).....: | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | The appliance withstands the electric strength test of 16.3 | | N/A |
| | No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29 | | N/A |
| 15.3 | Appliances proof against humid conditions | | P |
| | Checked by test Cab: Damp heat steady state in IEC 60068-2-78 | | P |
| | Detachable parts removed and subjected, if necessary, to the humidity test with the main part | | N/A |
| | Humidity test for 48 h in a humidity cabinet | 93%, 25°C, 48h | P |
| | Reassembly of those parts that may have been removed | | P |
| | The appliance withstands the tests of clause 16 | | P |
| **16** | **LEAKAGE CURRENT AND ELECTRIC STRENGTH** | | **P** |
| 16.1 | Leakage current not excessive and electric strength adequate | | P |
| | Protective impedance disconnected from live parts before carrying out the tests | | P |
| | Tests carried out at room temperature and not connected to the supply | | P |
| 16.2 | Single-phase appliances: test voltage 1.06 times rated voltage .....: | 1.06 X 240V=254.4V | P |
| | Three-phase appliances: test voltage 1.06 times rated voltage divided by √3 .....: | | N/A |
| | Leakage current measurements | (see appended table) | P |
| | Limit values doubled if: | | N/A |
| | -all controls have an off position in all poles, or | | N/A |
| | -the appliance has no control other than a thermal cut-out,or | | N/A |
| | -all thermostats, temperature limiters and energy regulators do not have an off position, or | | N/A |
| | -the appliance has radio interference filters | | N/A |
| | With the radio interference filters disconnected, the leakage current donot exceed limits specified.....: | | N/A |
| 16.3 | Electric strength tests according to table 7 | (See appended table) | P |
| | Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified.....: | | N/A |
| | No breakdown during the tests | No breakdown | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 16.101 (-2-65) | High-voltage transformers must have adequate internal insulation. The duration of the test is ... sec. | No hazard | P |
| **17** | **OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS** | | **P** |
| | No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use | | P |
| | Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied .....: | | P |
| | Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K | | P |
| | Temperature of the winding not exceeding the value specified in table 8 | | P |
| | however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1 | | N/A |
| **18** | **ENDURANCE** | | **N/A** |
| | Requirements and tests are specified in part 2 when necessary | | N/A |
| **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 |
| | Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and | | N/A |
| | If the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and | | N/A |
| | If applicable, to the test of 19.5 | | N/A |
| | Appliances incorporating PTC heating elements are also subjected to the test of 19.6 | | N/A |
| | Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable | | N/A |
| | Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable | | P |
| | Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11 | | P |
| | Appliances incorporating voltages elector switches subjected to the test of 19.15 | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Unless otherwise specified, the tests are continued until an on-self-resetting thermal cut-out operates, or | | N/A |
| | Until steady conditions are established | | P |
| | If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample | | N/A |
| 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/A |
| 19.3 | Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input .....: | | N/A |
| 19.4 | Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited | | N/A |
| 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/A |
| | The test repeated with reversed polarity and the other end of the heating element connected to the sheath | | N/A |
| | The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4 | | N/A |
| 19.6 | Appliances with PTC heating elements tested at rated voltage, establishing steady conditions | | N/A |
| | The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures | | N/A |
| 19.7 | Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances | | N/A |
| | Locking moving parts of other appliances | | N/A |
| | Locked rotor, motor capacitors open-circuited or short-circuited, if required | No capacitors in the circuit of an auxiliary winding | N/A |
| | Locked rotor, capacitors open-circuited one at a time | | N/A |
| | Test repeated with capacitors short-circuited one at a time, if required | | N/A |
| | The capacitor is of class P2 of IEC 60252-1 | | N/A |
| | Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | An electronic timer or programmer that operates to ensure compliance with the test before the maximum period under the conditions of Clause 11 is reached, is a protective electronic circuit | | N/A |
| | Other appliances supplied with rated voltage for a period as specified | | N/A |
| | Winding temperatures not exceeding values specified in table 8 | (see appended table) | N/A |
| 19.8 | Three-phase motors operated at rated voltage with one phase disconnected | | N/A |
| 19.9 | Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously | | N/A |
| | Winding temperatures not exceeding values as specified | | N/A |
| 19.10 | Series motor operated at 1.3 times rated voltage for 1 min.....: | | N/A |
| | During the test, parts not being ejected from the appliance | | N/A |
| 19.11 | Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1 | | P |
| | Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless restarting does not result in a hazard | | N/A |
| | Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.3 and 19.11.4. | | N/A |
| | Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can place the appliance in a stand-by mode, are subjected to the tests of 19.11.4. | | N/A |
| | Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8 | | N/A |
| | If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC60127, the test of 19.12 is carried out | | P |
| | During and after each test the following is checked: | | P |
| | -the temperature of the windings does not exceed the values specified in table 8 | | P |
| | -the appliance complies with the conditions specified in 19.13 | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | -any current flowing through protective impedance not exceeding the limits specified in 8.1.4 | | N/A |
| | If a conductor of a printed board becomes open-circuited,the appliance is considered to have withstood the particular test, provided both of the following conditions are met: | | N/A |
| | -the base material of the printed circuit board withstands the test of Annex E | | N/A |
| | -any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29 | | N/A |
| 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: | | P |
| | - 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/A |
| | - 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/A |
| 19.11.2 | Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified: | | P |
| | a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29 | (see appended table) | P |
| | b) open circuit at the terminals of any component | Ditto | P |
| | c) short circuit of capacitors, unless they comply with IEC 60384-14 | Ditto | P |
| | d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler | Ditto | P |
| | This fault condition is not applied between the two circuits of an optocoupler | | N/A |
| | e) failure of triacs in the diode mode | Ditto | P |
| | f) failure of an integrated circuit. The possible hazardous situations of the appliance are assessed to ensure that safety does not rely on the correct functioning of such a component | | P |
| | g) failure of an electronic power switching device | | N/A |
| | Eachlowpowercircuitisshort-circuitedbyconnectingthelow-powerpointtothepoleofthesupplysourcefromwhichthemeasurementsweremade | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 19.11.3 | If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2 | No protective electronic circuit | N/A |
| | During and after each test the following is checked: | | N/A |
| | - the temperature rise of the windings do not exceed the values specified in table 8 | | N/A |
| | - the appliance complies with the conditions specified in 19.13 | | N/A |
| | - any current flowing through protective impedance not exceeding the limits specified in 8.1.4 | | N/A |
| | If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met: | | N/A |
| | - the material of the printed circuit board withstands the burning test of annex E | | N/A |
| | - any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29 | | N/A |
| | - the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged | | N/A |
| 19.11.4 | Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can be placed in the stand-by mode, are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out with the appliance supplied at rated voltage, the switch being set in the off position or in the stand-by mode. | | N/A |
| | Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out after the protective electronic circuit has operated during the relevant tests of Clause 19 except 19.2, 19.6 and 19.11.3. However, appliances that are operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena. | | N/A |
| | The tests are carried out with surge arresters disconnected, unless they incorporate spark gaps | | N/A |
| 19.11.4.1 | The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 being applicable. Ten discharges having a positive polarity and ten discharges having a negative polarity are applied at each preselected point | | N/A |
| 19.11.4.2 | The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 being applicable. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 19.11.4.3 | The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4. Test level 3 s applicable for signal and control lines. Test level 4 is applicable for the power supply lines. The bursts are applied for 2 min with a positive polarity and for 2 min with a negative polarity | | N/A |
| 19.11.4.4 | The power supply terminals of the appliance are subjected to voltage surges in accordance with IEC 61000-4-5, five positive impulses and five negative impulses being applied at the selected points. Test level 3 is applicable for the line-to-line coupling mode, a generator having a source impedance of 2Ω being used. Test level 4 is applicable for the line-to-earth coupling mode, a generator having a source impedance of 12Ω being used. | | N/A |
| | Earthed heating elements in class I appliances are disconnected during this test | | N/A |
| | For appliances having surge arresters incorporating spark gaps, the test is repeated at a level that is 95 % of the flashover voltage. | | N/A |
| 19.11.4.5 | The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 being applicable. During the test, all frequencies between 0.15 MHz to 80 MHz are covered. | | N/A |
| 19.11.4.6 | The appliance rated current not exceeding 16 A, subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11 | | N/A |
| | The appliance rated current exceeding 16 A, subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34 | | N/A |
| 19.11.4.7 | The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2 being applicable | | N/A |
| 19.11.4.8 | The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduces to a level such that the appliance ceases to respond or a programmable component cease to operate | | N/A |
| | The appliance continues to operate normally, or | | N/A |
| | Requires a manual operation to restart | | N/A |
| 19.12 | If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A) .....: | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **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 | | P |
| | Temperature rises not exceeding the values shown in table 9 | (see appended table) | P |
| | After the tests, and when the appliance has cooled to approximately room temperature, compliance with Clause 8 shall not be impaired. | | P |
| | If the appliance can still be operated it complies with 20.2 | | P |
| | -if they become operational, not result in a dangerous malfunction during or after the tests of 19.11.4. | | N/A |
| | If they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4 | | N/A |
| | Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4: | | P |
| | - basic insulation .....: | 1000V | P |
| | - supplementary insulation.....: | 1750V | N/A |
| | - reinforced insulation.....: | 3000V | P |
| 19.14 | Appliances are operated under the conditions of Clause 11. Any contactor or relay contact that operates under the conditions of Clause 11 is short-circuited. | | N/A |
| | If a relay or contactor with more than one contact is used, all contacts are short-circuited at the same time. | | N/A |
| | A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited | | N/A |
| | If more than one relay or contactor operates in clause 11, they are short-circuited in turn | | N/A |
| 19.15 | For appliances incorporating a mains voltage selector switch, this switch is set to the lowest rated voltage position and the highest value of rated voltage is applied. | | N/A |
| **20** | **MECHANICAL STRENGTH** | | **P** |
| 20.1 | Adequate stability | Used on floor | P |
| | Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn | Not overturn | P |
| | Tilting test repeated on appliances with heating elements, angle of inclination increased to 15° | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Possible heating test in overturned position; temperature rise does not exceed values shown in table 9 | | N/A |
| 20.2 | Moving parts adequately arranged or enclosed as to provide protection against personal injury | | P |
| | Protective enclosures, guards and similar parts are non-detachable | Enclosure is non-detachable | P |
| | Adequate mechanical strength and fixing of protective enclosures | | P |
| | Enclosures that can be opened by overriding an interlock are considered to be detachable parts | | N/A |
| | Self-resetting thermal cut-outs and over current protective devices not causing a hazard, by unexpected reclosure | | N/A |
| | Compliance is checked by inspection, by the tests of 21.1 and by means of | | P |
| | - a test probe that is similar to test probe B of IEC 61032 but having a circular stop face with a diameter of 50 mm, instead of the non circular face, applied with a force of 5N with the accessories and detachable covers removed | | P |
| | Not possible to touch dangerous moving parts with test probe | No such dangerous | P |
| **21** | **MECHANICAL STRENGTH** | | **P** |
| | Appliance has adequate mechanical strength and is constructed as to withstand rough handling | | P |
| | Compliance is checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, the spring hammer test. | | P |
| | The appliance is rigidly supported and three blows, having an impact energy of 0,5 J, are applied to every point of the enclosure that is likely to be weak. | 0.5J, three blows, no hazard | P |
| | If necessary, repetition of groups of three blows on a new sample | | N/A |
| 21.2 | Accessible parts of solid insulation shall have sufficient strength to prevent penetration by sharp implements. | | P |
| | Compliance is checked by subjecting the insulation to the following test, unless the thickness of supplementary insulation is at least 1 mm and that of reinforced insulation is at least 2 mm. | supplementary insulation is at least 1 mm.<br>reinforced insulation is at least 2 mm. | P |
| | The insulation is raised to the temperature measured during the test of Clause 11. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | The surface of the insulation is then scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40°.Its tip is rounded with a radius of 0,25 mm ± 0,02 mm. | | N/A |
| | The pin is held at an angle of 80° - 85° to the horizontal and loaded so that the force exerted along its axis is 10 N ± 0,5 N. | | N/A |
| | The scratches are made by drawing the pin along the surface of the insulation at a speed of approximately 20 mm/s. Two parallel scratches are made. | | N/A |
| | They are spaced sufficiently apart so that they are not affected by each other, their length covering approximately 25% of the length of the insulation. | | N/A |
| | Two similar scratches are made at 90° to the first pair without crossing them. | | N/A |
| | The test fingernail of Figure 7 is then applied to the scratched surface with a force of approximately 10 N. No further damage, such as separation of the material, shall occur. The insulation shall then withstand the electric strength test of 16.3. | | N/A |
| | The hardened steel pin is then applied perpendicularly with a force of 30 N ± 0,5 N to an unscratched part of the surface. The insulation shall then withstand the electric strength test of 16.3 with the pin still applied and used as one of the electrodes. | | N/A |
| **22** | **CONSTRUCTION** | | **P** |
| 22.1 | Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled | IP20, not marked | N/A |
| 22.2 | Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available: | | P |
| | - a supply cord fitted with a plug | | P |
| | - a switch complying with 24.3 | | P |
| | - a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided | | N/A |
| | - an appliance inlet | | N/A |
| | Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor | | N/A |
| 22.3 | Appliance provided with pins: no undue strain on socket-outlets. | Not direct plug-in appliance | N/A |
| | Applied torque not exceeding 0.25 Nm. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm. | | N/A |
| | Each pin subjected to a torque of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard. | | N/A |
| 22.4 | Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets. | No provided with pins for insertion into socket-outlets | P |
| 22.5 | No risk of electric shock when touching the pins of the plug. | | P |
| | The appliance is supplied at rated voltage. Any switch is then placed in the off position and the appliance is disconnected from the supply mains at the instant of voltage peak. One second after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured. | | P |
| | The voltage shall not exceed 34 V | <34V | P |
| 22.6 | Electrical insulation not affected by condensing water or leaking liquid. | No liquid | N/A |
| | Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak. | | N/A |
| 22.7 | Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices. | Not steam-producing devices | N/A |
| 22.8 | Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use | No such compartments | N/A |
| 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 | | N/A |
| 22.10 | It shall not be possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance. | | N/A |
| | NOTE 1: Voltage-maintained controls will automatically reset if they become de-energized. | | N/A |
| | Non-self-resetting thermal motor protectors shall have a trip-free action unless they are voltage maintained. | | N/A |
| | NOTE 2: Trip-free is an automatic action that is independent of manipulation or position of the actuating member. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Reset buttons of non-self-resetting controls shall be located or protected so that their accidental resetting is unlikely to occur if this could result in a hazard. | | N/A |
| | NOTE 3: For example, this requirement precludes the location of reset buttons on the back of an appliance, which could result in them being reset by pushing the appliance against a wall. | | N/A |
| 22.11 | Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts | | P |
| | Obvious locked position of snap-in devices used for fixing such parts | | N/A |
| | No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing | | N/A |
| | Tests as described | | P |
| 22.12 | Handles, knobs etc. fixed in a reliable manner | | P |
| | Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible | | P |
| | Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied | | P |
| | Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied | | N/A |
| 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 | | P |
| 22.14 | No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance | No ragged or sharp edges | 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 | No storage hooks | N/A |
| 22.16 | Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts | No automatic cord reels | N/A |
| | Cord reel tested with 6000 operations, as specified | | N/A |
| | Electric strength test of 16.3, voltage of 1000 V applied | | N/A |
| 22.17 | Spacers not removable from the outside by hand or by means of a screwdriver or a spanner | | N/A |
| 22.18 | Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 22.19 | Driving belts not used as electrical insulation | | P |
| | Constructed to prevent in appropriate replacement | | N/A |
| 22.20 | Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible | | P |
| | Compliance is checked by inspection and, if necessary, by appropriate test | Compliance is checked | P |
| 22.21 | Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated. | Such material not used as insulation | P |
| | This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements | | N/A |
| 22.22 | Appliances not containing asbestos | No asbestos | P |
| 22.23 | Oils containing polychlorinated biphenyl (PCB) not used | | P |
| 22.24 | Bare heating elements adequately supported | | N/A |
| | In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts | | N/A |
| 22.25 | Sagging heating conductors cannot come into contact with accessible metal parts | | N/A |
| 22.26 | The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation | No SELV | N/A |
| 22.27 | Parts connected by protective impedance separated by double or reinforced insulation | | N/A |
| 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/A |
| 22.29 | Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation | | N/A |
| 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 | Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified in clause 29 as a result of wear | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Clearances and creepage distances between live parts and accessible parts not reduced below values for supplementary insulation, if wires, screws etc. become loose | | P |
| 22.32 | Supplementary and reinforced insulation designed or protected against deposition of dirt or dust | | P |
| | Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2 | | N/A |
| | Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation | No such material | N/A |
| | Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature | | N/A |
| | Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation | | N/A |
| 22.33 | Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts | No conductive liquids | N/A |
| | Electrodes not used for heating liquids | | N/A |
| | For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation | | N/A |
| | For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation | | N/A |
| | The reinforced insulation consists of at least 3 layers | | N/A |
| | An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid | | N/A |
| 22.34 | Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed | Such devices not live | P |
| 22.35 | Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault | | P |
| | 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/A |
| | 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 |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation | | N/A |
| 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 such handles | N/A |
| 22.37 | Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42 | | N/A |
| | Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42 | | N/A |
| 22.38 | Capacitors not connected between the contacts of a thermal cut-out | | P |
| 22.39 | Lamp holders used only for the connection of lamps | | P |
| 22.40 | Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible | | P |
| | Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible | | N/A |
| 22.41 | No components, other than lamps, containing mercury | No mercury | P |
| 22.42 | Protective impedance consisting of at least two separate components | | P |
| | Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited | | N/A |
| | Resistors checked by the test of 14.1a) in IEC60065 | | N/A |
| | Capacitors checked by the tests for class Y capacitors in IEC 60384-14 | | N/A |
| 22.43 | Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur | No voltage setting device | N/A |
| 22.44 | Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children | The appliance is unlikely to be treated as a toy | P |
| 22.45 | When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure | | P |
| 22.46 | Software used in protective electronic circuits shall be software class B or software class C. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | NOTE 1 Failure of software class B in the presence of another fault in the appliance, or failure of software class C alone, could result in dangerous malfunction, electric shock, fire, mechanical or other hazards. Software class A denotes software used for functional purposes. | | N/A |
| | Compliance is checked by evaluating the software in accordance with Annex R. | | N/A |
| | NOTE 2 If the software program is modified, the evaluation and relevant tests are repeated if the modification can influence the results of the test involving protective electronic circuits. | | N/A |
| 22.47 | Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use. | Not intended to be connected to the water | N/A |
| | Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum inlet water pressure or 1,2 MPa, whichever is higher, for a period of 5 min | | N/A |
| | There shall be no leakage from any part, including any inlet water hose | | N/A |
| 22.48 | Appliances intended to be connected to the water mains shall be constructed to prevent backsiphonage of non-potable water into the water mains. | | N/A |
| | Compliance is checked by the relevant tests of IEC 61770 | | N/A |
| 22.49 | For remote operation, the duration of operation shall be set before the appliance can be started, unless | | P |
| | the appliance switches off automatically or can operate continuously without hazard | | P |
| 22.50 | Controls incorporated in the appliance take priority over controls actuated by remote operation | | N/A |
| 22.51 | A control on the appliance being manually adjusted to the setting for remote operation before the appliance can be operated in this mode | | N/A |
| | There is a visual indication showing that the appliance is adjusted for remote operation | | N/A |
| | Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard | | N/A |
| | -operate continuously, | | N/A |
| | -operate automatically, or | | N/A |
| | -be operated remotely | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 22.52 | Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold | | N/A |
| 22.53 | Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts | | N/A |
| 22.54 | Button cells and batteries designated R1 not accessible without the aid of a tool, unless the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously | | N/A |
| 22.101 (-2-65) | Appliance has no openings on the underside that would allow small items to penetrate and touch live parts | | N/A |
| 22.102 (-2-65) | Interlock switches preventing access to live parts during user maintenance are connected in the input circuit and preventing unintentional operation | | N/A |
| **23** | **INTERNAL WIRING** | | **P** |
| 23.1 | Wireways smooth and free from sharp edges | Smooth and free from sharp edges | P |
| | Wires protected against contact with burrs, cooling fins etc. | | P |
| | Wire holes in metal well rounded or provided with bushings | | P |
| | Wiring effectively prevented from coming into contact with moving parts | No moving parts available. | N/A |
| 23.2 | Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners | No such parts | P |
| | Beads inside flexible metal conduits contained within an insulating sleeve | | N/A |
| 23.3 | Electrical connections and internal conductors movable relatively to each other not exposed to undue stress | Internal wire and motor not exposed to undue stress | P |
| | Flexible metallic tubes not causing damage to insulation of conductors | | N/A |
| | Open-coil springs not used | | N/A |
| | Adequate insulating lining provided inside a coiled spring, the turns of which touch one another | | N/A |
| | No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance | | N/A |
| | Electric strength test, 1000 V between live parts and accessible metal parts | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 23.4 | Bare internal wiring sufficiently rigid and fixed | No bare internal wiring | N/A |
| 23.5 | The insulation of internal wiring withstanding the electrical stress likely to occur in normal use | Approved insulated internal wire | P |
| | Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC60245, or | | 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 |
| | For classII construction, the requirements for supplementary insulation and reinforced insulation apply, | | P |
| | Except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation. | | N/A |
| | A single layer of internal wiring insulation does not provide reinforced insulation | | N/A |
| 23.6 | Sleeving used as supplementary insulation on internal wiring retained in position by positive means | | P |
| 23.7 | The colour combination green/yellow used only for earthing conductors | | P |
| 23.8 | Aluminium wires not used for internal wiring | Copper wire used | P |
| 23.9 | No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless | | P |
| | clamping means so constructed that there is no risk of bad contact due to cold flow of the solder | | N/A |
| 23.10 | The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 52). | | N/A |
| **24** | **COMPONENTS** | | **P** |
| 24.1 | Components shall comply with the safety requirements specified in the relevant standards as far as they reasonably apply. | | P |
| | List of components | (see appended table) | P |
| | Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6 | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance | | P |
| | Lamp holders and starter holders that have not been previously tested and found to comply with the relevant standard are tested as a part of the appliance and shall additionally comply with the gauging and interchangeability requirements of the relevant standard under the conditions occurring in the appliance. Where the relevant standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used. | | P |
| 24.1.1 | Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or | Type x capacitor used | P |
| | Tested according to annex F | | N/A |
| 24.1.2 | Safety isolating transformers complying with IEC 61558-2-6, or | | P |
| | Tested according to annex G | | N/A |
| 24.1.3 | Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or | Mains switch separately approved | P |
| | If they have to be tested, they are tested according to Annex H | | N/A |
| | If the switch operates are lay or contactor, the complete switching system is subjected to the test | | N/A |
| | If the switch only operates a motor staring relayc omplying with IEC60730-2-10 with the number of cycles of a least 10000 asspecified, the complete switching system need not be tested | | N/A |
| (-2-65) | Interlock switches are operated 1 000 times. | | N/A |
| | tested according to annex H | | N/A |
| | If the switch operates a relay or contactor, the complete switching system is subjected to the test | | N/A |
| 24.1.4 | Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being: | | — |
| | - thermostats: 10000 | Approved | N/A |
| | - temperature limiters: 1000 | | N/A |
| | - self-resetting thermal cut-outs: 300 | | N/A |
| | - voltage-maintained non-self-resetting thermal cut-outs 1000 | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | - other non-self-resetting thermal cut-outs 30 | | N/A |
| | - non-self-resetting thermal cut-outs: 30 | | N/A |
| | - timers: 3 000 | | P |
| | - energy regulators: 10000 | | N/A |
| | The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited | | P |
| | Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D. | | N/A |
| | For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection provided by enclosures against harmful ingress of water declared for subclause 6.5.2 of IEC 60730-2-8 shall be IPX7 | | N/A |
| | Thermal cut-outs of the capillary type comply with the requirements for type 2. K controls in IEC 60730-2-9 | | N/A |
| 24.1.5 | Appliance couplers complying with IEC 60320-1 | | N/A |
| | The relevant standard for interconnection couplers is IEC 60320-2-2. | | N/A |
| | However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3 | | N/A |
| 24.1.6 | Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable | | N/A |
| 24.1.7 | For remote operation of the appliance via at elecommunication network, the relevant standard for the telecommunication interfacec ircuitry in the appliance is IEC 62151 | | N/A |
| 24.1.8 | The relevant standard for thermal links is IEC 60691 | | N/A |
| | Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19 | | N/A |
| 24.1.9 | Contactors and relays, other than motor starting relays, tested as part of the appliance | | P |
| | They are also tested in accordance with Clause 17 of IEC 60730-1, the number of cycles of operations in 24.1. 4 selected according to the contactor or relay function in the appliance.....: | | P |
| 24.2 | No switches or automatic controls in flexible cords | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance | | N/A |
| | No thermal cut-outs that can be reset by soldering | | N/A |
| | The solder has a melding point of at least 230 $^{o}$C | | N/A |
| 24.3 | Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions | No such switches | N/A |
| 24.4 | Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1 | No such plugs and socket-outlets | P |
| 24.5 | Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly | No such capacitors | N/A |
| | 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/A |
| 24.6 | Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V. | | N/A |
| | In addition, the motors are complying with the requirements of Annex I | | N/A |
| 24.7 | Hose-sets for the connection of appliances to the water mains shall comply with IEC 61770. They shall be supplied with the appliance. | | N/A |
| | Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set | | N/A |
| 24.8 | Motor running capacitors i n appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure | | N/A |
| | One or more of the following conditions are to be met: | | N/A |
| | -the capacitors are of class P2 according to IEC 60252-1 | | N/A |
| | -the capacitors are housed within a metallicor ceramic enclosure | | N/A |
| | -the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50mm | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | -adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E | | N/A |
| | -adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10 | | N/A |
| 24.101 (-2-65) | Interlock switches preventing access to live parts during user maintenance -<br>disconnect all poles -<br>contact separation in accordance with IEC 61058-1 | | N/A |
| **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/A |
| | - pins for insertion into socket-outlets | | N/A |
| 25.2 | Appliance not provided with more than one means of connection to the supply mains | Only one means | N/A |
| | 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 | One supply | N/A |
| 25.3 | Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support | Not permanently connected to fixed wiring | N/A |
| | Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6 | | N/A |
| | Appliance provided with a set of terminals allowing the connection of a flexible cord | | N/A |
| | Appliance provided with a set of supply leads accommodated in a suitable compartment | | N/A |
| | Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit | | N/A |
| | For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is metifitis possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 25.4 | Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10 | Not intended to be permanently connected to the fixed wiring | N/A |
| | Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29 | | N/A |
| 25.5 | Method for assemble supply cord with the appliance: | | P |
| | - type X attachment | | N/A |
| | - type Y attachment | | P |
| | - type Z attachment, if allowed in part 2 | | N/A |
| | Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords | | N/A |
| | For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by typeY attachment | | N/A |
| (-2-65) | Type Z attachment is allowed for appliances having a mass not exceeding 3 kg. | | N/A |
| 25.6 | Plugs fitted with only one flexible cord | | P |
| | - for Class I appliances: standard sheet C2b, C3b or C4 .....: | | P |
| | - for Class II appliances: standard sheet C5 or C6.: | | N/A |
| 25.7 | Supply cord not lighter than: | | P |
| | - braided cord (60245 IEC 51) | | N/A |
| | - ordinary tough rubber sheathed cord (60245 IEC 53) | | N/A |
| | - ordinary polychloroprene sheathed flexible cord (60245 IEC 57) | | P |
| | - flat twin tinsel cord (60227 IEC 41) | | N/A |
| | - light polyvinyl chloride sheathed cord (60227 IEC 52), appliance not exceeding 3 kg | H03VVH2-F | P |
| | - ordinary polyvinyl chloride sheathed cord (60227 IEC 53), appliance exceeding 3 kg | | N/A |
| | Supply cords having high flexibility, not lighter than: | | N/A |
| | - rubber insulated and sheathed cord (60245 IEC 86) | | N/A |
| | - rubber insulated, crosslinked PVC sheathed cord (60245 IEC 87) | | N/A |
| | Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or | | N/A |
| | the supply cord is appropriate for higher temperatures, type Y or type Z attachment used | | N/A |
| | Modification:<br>Add the content of NOTE 1 to the requirement as follows:<br>Their properties shall be at least those of ordinary tough rubber sheathed cords (code designation 60245 IEC 53). These cords are not suitable for appliances intended to be used outdoors or when they are liable to be exposed to significant amounts of ultraviolet radiation. | | N/A |
| 25.8 | Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area ($mm^2$).....: | 3x Min. 1.5$mm^2$ | 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 |
| | In multi-phase appliances, the colour of the neutral conduct or of the supply cord is blue. | | N/A |
| 25.11 | Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless | | P |
| | Clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder | | N/A |
| 25.12 | Moulding the cord to part of the enclosure does not damage the insulation of the supply cord | | P |
| 25.13 | Inlet opening so shaped as to prevent damage to the supply cord | | N/A |
| | Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided | | N/A |
| | If unsheathed supply cord, a similar additional bushing or lining is required, unless | | N/A |
| | the appliance is class 0 | | N/A |
| | A class III appliance not containing live parts | | N/A |
| 25.14 | Supply cords adequately protected against excessive flexing | | N/A |
| | Flexing test: | | N/A |
| | - applied force (N) .....: | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | - number of flexings .....: | | N/A |
| | The test does not result in: | | N/A |
| | - short circuit between the conductors | | N/A |
| | - breakage of more than 10% of the strands of any conductor | | N/A |
| | - separation of the conductor from its terminal | | N/A |
| | - loosening of any cord guard | | N/A |
| | - damage, within the meaning of the standard, to the cord or the cord guard | | N/A |
| | - broken strands piercing the insulation and becoming accessible | | N/A |
| 25.15 | Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage | | P |
| | The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged | | P |
| | Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm).....: | 100N, 25 times, 1s, 0.35N.m | P |
| | Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals | 0.92mm displacement | P |
| | Creepage distances and clearances not reduced below values specified in 29.1 | | P |
| 25.16 | Cord anchorages for type X attachments constructed and located so that: | | N/A |
| | - replacement of the cord is easily possible | | N/A |
| | - it is clear how the relief from strain and the prevention of twisting are obtained | | N/A |
| | - they are suitable for different types of cord | | N/A |
| | - cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation | | N/A |
| | - the cord is not clamped by a metal screw which bears directly on the cord | | N/A |
| | - at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord | | N/A |
| | - screws which have to be operated when replacing the cord do not fix any other component, if applicable | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | - if labyrinths can be bypassed the test of 25.15 is nevertheless withstood | | N/A |
| | - 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/A |
| | - for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation | | N/A |
| 25.17 | Adequate cord anchorages for type Y and Z attachment | | P |
| 25.18 | Cord anchorages only accessible with the aid of a tool, or | | P |
| | so constructed that the cord can only be fitted with the aid of a tool | | P |
| 25.19 | Type X attachment, glands not used as cord anchorage in portable appliances | | N/A |
| | Tying the cord into a knot or tying the cord with string not used | | N/A |
| 25.20 | Conductors of the supply cord for type Y and Z attachment adequately additionally insulated | | P |
| 25.21 | Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc. | | N/A |
| | 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/A |
| 25.22 | Appliance inlet: | | N/A |
| | - live parts not accessible during insertion or removal | | N/A |
| | - connector can be inserted without difficulty | | N/A |
| | - the appliance is not supported by the connector | | N/A |
| | - is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts | | N/A |
| 25.23 | Interconnection cords comply with the requirements for the supply cord, except as specified | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | -the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11 | | N/A |
| | -the thickness of the insulation may be reduced | | N/A |
| | If necessary, electric strength test of 16.3 | | N/A |
| 25.24 | Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected | | P |
| 25.25 | Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083 | | P |
| **26** | **TERMINALS FOR EXTERNAL CONDUCTORS** | | **N/A** |
| 26.1 | Appliances provided with terminals or equally effective devices for connection of external conductors | | N/A |
| | Terminals only accessible after removal of a non-detachable cover | | N/A |
| | For class III appliances that do not contain live parts | | N/A |
| | However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection. | | N/A |
| 26.2 | Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered | | N/A |
| | Screws and nuts serve only to clamp supply conductors, except | | N/A |
| | internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors | | N/A |
| | If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone | | N/A |
| | Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint | | N/A |
| | Modification:<br>Change the Note into a requirement. | | N/A |
| 26.3 | Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means: | | N/A |
| | - the terminal does not loosen | | N/A |
| | - internal wiring is not subjected to stress | | N/A |
| | - clearances and creepage distances are not reduced below the values in 29 | | N/A |
| | Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm) .....: | | N/A |
| | No deep or sharp indentations of the conductors | | N/A |
| 26.4 | Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out | | N/A |
| 26.5 | Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard | | N/A |
| | Stranded conductor test, 8 mm insulation removed | | N/A |
| | No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only | | N/A |
| 26.6 | Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area ($mm^2$) .....: | | N/A |
| | Terminals only suitable for a specially prepared cord | | N/A |
| 26.7 | Terminals for type X attachment accessible after removal of a cover or part of the enclosure | | N/A |
| 26.8 | Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other | | N/A |
| 26.9 | Terminals of the pillar type constructed and located as specified | | N/A |
| 26.10 | Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals | | N/A |
| | Pull test of 5 N to the connection | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 26.11 | For type Y and Z attachment: soldered, welded, crimped and similar connections may be used | | N/A |
| | For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone | | N/A |
| | For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free | | N/A |
| | Modification:<br>Change the Note into a requirement. | | N/A |
| **27** | **PROVISION FOR EARTHING** | | **P** |
| 27.1 | Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet | | P |
| | Earthing terminals not connected to neutral terminal | | P |
| | Class 0, II and III appliance have no provision for earthing | | N/A |
| | Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits | | P |
| 27.2 | Clamping means adequately secured against accidental loosening | | P |
| | Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and | | P |
| | do not provide earthing continuity between different parts of the appliance | | P |
| | Conductors cannot be loosened without the aid of a tool | | P |
| | Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes | | N/A |
| 27.3 | If a detachable part having an earth connection is plugged into another part of the appliance, the earth connection shall be made before the current-carrying connections are established. The current-carrying connections shall be separated before the earth connection when removing the part. | | N/A |
| | For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes | | N/A |
| 27.4 | No risk of corrosion resulting from contact between metal of earthing terminal and other metal | | P |
| | Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure | | P |
| | Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm | | N/A |
| | 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/A |
| | Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes | | N/A |
| 27.5 | Low resistance of connection between earthing terminal and earthed metal parts | | P |
| | This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance | | N/A |
| | Resistance not exceeding 0,1 Ω at the specified low-resistance test | 25A , 2min, measured: 0.036Ω < 0.1Ω | P |
| | Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes | | N/A |
| 27.6 | The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances | | N/A |
| | They may be used in other appliances if: | | N/A |
| | - at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit | | N/A |
| | - the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5 | | N/A |
| | Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes | | N/A |
| **28** | **SCREWS AND CONNECTIONS** | | **P** |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 28.1 | Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses | | P |
| | Screws not of soft metal liable to creep, such as zinc or aluminium | | P |
| | Diameter of screws of insulating material min. 3 mm | | N/A |
| | Screws of insulating material not used for any electrical connection or connections providing earthing continuity | No such csrews | P |
| | Screws used for electrical connections or connections providing earthing continuity screw into metal | Screwed into metal | P |
| | Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation | | N/A |
| | Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation | | N/A |
| | For screws and nuts; test as specified | (see appended table) | P |
| 28.2 | Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated | | P |
| | This requirement does not apply to electrical connections in circuits of appliance for which: | | N/A |
| | 30.2.2 is applicable and that carry a current not exceeding 0,5 A | | N/A |
| | 30.2.3 is applicable and that carry a current not exceeding 0,2 A | | N/A |
| 28.3 | Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together | | N/A |
| | Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread | | N/A |
| | Such screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action | Used for fixing wood pedestal | P |
| | Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 28.4 | Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity | | N/A |
| | This requirement does not apply to screws in the earthing circuit if at least two screws are used, or | | N/A |
| | If an alternative earthing circuit is provided | | N/A |
| | Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion | | N/A |
| **29** | **CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION** | | **P** |
| | Clearances, creepage distances and solid insulation withstand electrical stress | | P |
| | If coatings are used on printed circuit boards to protect the microenvironment (Type A coating) or to provide basic insulation (Type B coating), Annex J applies. The microenvironment is pollution degree 1 under Type A coating. There are no creepage distance or clearance requirements under Type B coating. | | N/A |
| 29.1 | Clearances shall not be less than the values specified in Table 16, taking into account the rated impulse voltage for the overvoltage categories of Table 15, unless, for basic insulation and functional insulation, they comply with the impulse voltage test of Clause 14.However, if the construction is such that the distances could be affected by wear, by distortion, by movement of the parts or during assembly, the clearances for rated impulse voltages of 1 500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable. | | P |
| | For appliances intended for use at altitudes exceeding 2000m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1 | | N/A |
| | The impulse voltage test is not applicable when the microenvironment is pollution degree 3 or for basic insulation of class 0 appliances and class 0I appliances. | | N/A |
| | -to appliance intended for use at altitudes exceeding 2000m | | N/A |
| | Appliances are in overvoltage category II | Overvoltage category II | P |
| | Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances, | | N/A |
| | or if pollution degree 3 is applicable | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | A force of 2N is applied to bare conductors, other than heating elements | | N/A |
| | A force of 30N is applied to accessible surfaces | | N/A |
| | Compliance is checked by inspection and measurements as specified | (see appended table) | P |
| | Replace NOTE 6 by:<br>NOTE 6 Attention is drawn on the fact that for appliances intended for use at altitudes exceeding 2 000 m, the altitude correction factors, relevant to the intended altitude, for clearances specified in Table A.2 of EN 60664-1 may need to be taken into account. | | N/A |
| 29.1.1 | Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage | | P |
| | Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1 | | N/A |
| | Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V | | N/A |
| | Lacquered conductors of windings are considered to be bare conductors. | | P |
| 29.1.2 | Clearances of supplementary insulation not less than those specified for basic insulation in table 16 | | P |
| 29.1.3 | Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage | | P |
| | For double insulation, with no intermediate conductive part between basic and supplementary<br>insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation | | N/A |
| 29.1.4 | For functional insulation, the values of table 16 are applicable, unless | | P |
| | the appliance complies with clause 19 with the functional insulation short-circuited | | P |
| | Clearances at crossover points of lacquered conductors not measured | | P |
| | Clearance between surfaces of PTC heating elements may be reduced to 1mm | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V | | N/A |
| | Lacquered conductors of windings are considered to be bare conductors. However, clearances at crossover points are not measured. | | P |
| 29.1.5 | Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage | | N/A |
| | If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage | | N/A |
| | Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15 | | N/A |
| 29.2 | Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree | | P |
| | Pollution degree 2 applies, unless | | N/A |
| | precautions taken to protect the insulation; pollution degree 1 | | N/A |
| | insulation subjected to conductive pollution; pollution degree 3 | Pollution degree 3 | P |
| | Compliance is checked by inspection and measurements as specified | (see appended table) | P |
| | Change NOTE 6 into a requirement | | N/A |
| 29.2.1 | Creepage distances of basic insulation not less than specified in table 17 | | P |
| | However, if the working voltage is periodicand has af requency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table17.....: | | N/A |
| | Except for pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14 | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 29.2.2 | Creepage distances of supplementary insulation at least as specified for basic insulation in table 17 | | P |
| 29.2.3 | Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17 | | P |
| 29.2.4 | Creepage distances of functional insulation not less than specified in table 18 | (see appended table) | P |
| | Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited | | P |
| 29.3 | Supplementary insulation and reinforced insulation shall have adequate thickness, or have a sufficient number of layers, to withstand the electrical stresses that can be expected during the use of the appliance. | | P |
| | Compliane checked: | | P |
| | -by measurement, in accordance with 29.3.1, or | | P |
| | -by an electric strength test in accordance with 29.3.2, or | | P |
| | -for insulation, other than single layer internal wiring insulation, by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and | | N/A |
| | For accessible parts of reinforced insulation consisting of a singlel ayer, by measurement in accordance with 29.3.4, or | | N/A |
| | For accessible reinforced insulation consisting of a single layer, measurement in accordance with 29.3.Z1 | | P |
| | -by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or | | N/A |
| | -as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30kHz | | N/A |
| 29.3.1 | The thickness of the insulation shall be at least | | P |
| | - 1 mm for supplementary insulation; | | P |
| | - 2 mm for reinforced insulation. | | P |
| 29.3.2 | Each layer of material shall withstand the electric strength test of 16.3 for supplementary insulation. Supplementary insulation shall consist of at least 2 layers of material and reinforced insulation of at least 3 layers. | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 29.3.3 | The insulation is subjected to the dry heat test Bb of IEC 60068-2-2 for 48 h at a temperature of 50 K in excess of the maximum temperature rise measured during the test of Clause 19. At the end of the period, the insulation is subjected to the electric strength test of 16.3 at the conditioning temperature and also after it has cooled down to room temperature. | | N/A |
| | If the temperature rise of the insulation measured during the tests of Clause 19 does not exceed the value specified in Table 3, the test of IEC 60068-2-2 is not carried out. | | N/A |
| 29.3.4 | For accessible reinforced insulation consisting of a single layer, the thickness of the layer complies with table 19; rated voltage (V); overvoltage category; thickness (mm) | | N/A |
| **30** | **RESISTANCE TO HEAT AND FIRE** | | **P** |
| 30.1 | External parts of non-metallic material, | | N/A |
| | parts supporting live parts, and | | N/A |
| | thermoplastic material providing supplementary or reinforced insulation, | | P |
| | sufficiently resistant to heat | | P |
| | Ball-pressure test according to IEC 60695-10-2 | (see appended table) | P |
| | External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C) .....: | | N/A |
| | Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C) .....: | | N/A |
| | Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C).....: | | P |
| 30.2 | Relevant parts of non-metallic material adequately resistant to ignition and spread of fire | (see appended table) | P |
| | This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance | | N/A |
| 30.2.1 | Glow-wire test of IEC 60695-2-11 at 550ºC, unless | | N/A |
| | However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550ºC, or | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | the material is classified at least HB40 according to IEC 60695-11-10 | | N/A |
| | Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material | | N/A |
| 30.2.3 | Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2 | | P |
| | Test not applicable to conditions as specified | | N/A |
| 30.2.3.1 | Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and | | P |
| | parts of insulating material within a distance of 3mm, | | P |
| | subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850°C | | P |
| | Glow-wire test not carried out on parts of material classified as having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12 | | N/A |
| 30.2.3.2 | Parts of insulating material supporting current-carrying connections, and | | N/A |
| | parts of insulating material within a distance of 3mm, | | N/A |
| | subjected to glow-wire test of IEC 60695-2-11 | | N/A |
| | Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 of at least : | | N/A |
| | -775°C, for connections carrying a current exceeding 0,2A during normal operation | | N/A |
| | -675°C, for other connections | | N/A |
| | Glow-wire test of IEC 60695-2-11, the temperature being: | | N/A |
| | -750°C, for connections carrying a current exceeding 0,2A during normal operation | | N/A |
| | -650°C, for other connections | | N/A |
| | Parts that during the test produce a flame persisting longer than 2 s, tested as specified | | N/A |
| | If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless | | N/A |
| | the material is classified as V-0 or V-1 according to IEC 60695-11-10 | | N/A |
| 30.2.4 | Base material of printed circuit boards subjected to needle-flame test of annex E | | N/A |
| | Test not applicable to conditions as specified | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| **31** | **RESISTANCE TO RUSTING** | | **P** |
| | Relevant ferrous parts adequately protected against rusting | | N/A |
| **32** | **RESISTANCE TO RUSTING** | | **P** |
| | Appliance does not emit harmful radiation | | P |
| | Relevant tests specified in part 2, if necessary | | N/A |
| | Appliance does not present a toxic or similar hazard | | P |
| | Add at the end:<br>Compliance regarding electromagnetic fields is checked according to EN 50366 or EN 62233. | | P |
| (-2-65) | The ozone concentration produced by ionization is not excessive and shall not exceed 5 x 10/-8 | | P |
| **A** | **ANNEX A (INFORMATIVE) ROUTINE TESTS** | | **N/A** |
| | Description of routine tests to be carried out by the manufacturer | | N/A |
| **B** | **ANNEX B (NORMATIVE)<br>APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE** | | **N/A** |
| | The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance | No rechargeable batteries | N/A |
| | Three forms of construction covered: | | N/A |
| | a) Appliance supplied directly from the supply mains or are newable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance | | N/A |
| | b)The part of the appliance in corporating the battery is supplied from the supply mains or are newable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery | | N/A |
| | c)The part of the appliance incorporating the battery is supplied from the supply mains or are newable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit | | N/A |
| | This annex does not apply to battery chargers | | N/A |
| 3.1.9 | Appliance operated under the following conditions: | | N/A |
| | -the appliance, supplied by its fully charged battery, operated as specified in relevant part 2 | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | -the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate | | N/A |
| | -if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2 | | N/A |
| | If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed | | N/A |
| 3.6.2 | Part to be removed in order to discard the battery is not considered to be detachable | | N/A |
| 5 .B 101 | Appliances supplied from the supply mains tested as specified for motor-operated appliances | | N/A |
| 7.1 | Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals | | N/A |
| | The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006 | | N/A |
| | Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181and its type reference along with symbol ISO 7000-0790 (2004-01), or | | N/A |
| | Use only with <model designation > supply unit....: | | N/A |
| 7.6 | Additionalsymbols | | N/A |
| 7.12 | The instructions for appliances incorporating batteries intended to be replaced by the user includes required information | | N/A |
| | Details about how to remove batteries containing materials hazardous to the environment given | | N/A |
| 7.15 | Markings placed on the part of the appliance connected to the supply mains | | N/A |
| | The type reference of the detachable supply unit is placed inclose proximity to the symbol | | N/A |
| 8.2 | Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment | | N/A |
| | If the appliance can be operated without batteries, double or reinforced insulation required | | N/A |
| 11.7 | The battery is charged for the period described | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 11.8 | Temperaturerise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K).....: | | N/A |
| | If no limit specified, the temperature rise does not exceed 20K; measured (K).....: | | N/A |
| 19.1 | Appliances subjected to tests of 19.101, 19.102 and 19.103 | | N/A |
| 19.B.101 | Appliances supplied at rated voltage for 168 h, the battery being continually charged | | N/A |
| 19. B.102 | Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool | | N/A |
| 19. B.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/A |
| 19.3 | The battery does not rupture or ignite | | N/A |
| 21. B.101 | Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32 | | N/A |
| | Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being: | | N/A |
| | - 100, the mass of part does not exceed 250 g | | N/A |
| | - 50, the mass of part exceeds 250 g | | N/A |
| | After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met | | N/A |
| 22.3 | Appliances having pins for insertion into socket-outlets tested as fully assembled as possible | | N/A |
| 25.13 | An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage | | N/A |
| 30.2 | For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies | | N/A |
| | For other parts, 30.2.2 applies | | N/A |
| **C** | **ANNEX C (NORMATIVE) AGEING TEST ON MOTORS** | | **N/A** |
| | Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding | | N/A |
| **D** | **ANNEX D (NORMATIVE)<br>ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS** | | **N/A** |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Applicable to protected motors for unattended use, test of 19.7 carried out on a separate sample according to the specification | | N/A |
| **E** | **ANNEX E (NORMATIVE) NEEDLE-FLAME TEST** | | **N/A** |
| | Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications: | | N/A |
| 7 | Severities | | N/A |
| | The duration of application of the test flame is 30 s ± 1 s | | N/A |
| 9 | Test procedure | | N/A |
| 9.1 | The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1 | | N/A |
| 9.2 | The first paragraph does not apply | | N/A |
| | If possible, the flame is applied at least 10 mm from a corner | | N/A |
| 9.3 | The test is carried out on one specimen | | N/A |
| | If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test | | N/A |
| 11 | Evaluation of test results | | N/A |
| | The duration of burning not exceeding 30 s | | N/A |
| | However, for printed circuit boards, the duration of burning not exceeding 15 s | | N/A |
| **F** | **AN/AN/AEX F (N/AORMATIVE) CAPACITORS** | | **N/A** |
| | Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications: | | N/A |
| 1.5 | Terminology | | N/A |
| 1.5.3 | Class X capacitors tested according to subclass X2 | Approved | N/A |
| 1.5.4 | This subclause is applicable | | N/A |
| 1.6 | Marking | | N/A |
| | Items a) and b) are applicable | | N/A |
| 3.4 | Approval testing | | N/A |
| 3.4.3.2 | Table II is applicable as described | | N/A |
| 4.1 | Visual examination and check of dimensions | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | This subclause is applicable | | N/A |
| 4.2 | Electrical tests | | N/A |
| 4.2.1 | This subclause is applicable | | N/A |
| 4.2.5 | This subclause is applicable | | N/A |
| 4.2.5.2 | Only table IX is applicable | | N/A |
| | Values for test A apply | | N/A |
| | However, for capacitors in heating appliances the values for test B or C apply | | N/A |
| 4.12 | Damp heat, steady state | | N/A |
| | This subclause is applicable | | N/A |
| | Only insulation resistance and voltage proof are checked | | N/A |
| 4.13 | Impulse voltage | | N/A |
| | This subclause is applicable | | N/A |
| 4.14 | Endurance | | N/A |
| | Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable | | N/A |
| 4.14.7 | Only insulation resistance and voltage proof are checked | | N/A |
| | Visual examination, no visible damage | | N/A |
| 4.17 | Passive flammability test | | N/A |
| | This subclause is applicable | | N/A |
| 4.18 | Active flammability test | | N/A |
| | This subclause is applicable | | N/A |
| **G** | **ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS** | | **P** |
| | The following modifications to this standard are applicable for safety isolating transformers: | No transformer | P |
| 7 | Marking and instructions | | P |
| 7.1 | Transformers for specific use marked with: | | P |
| | -name, trademark or identification mark of the manufacturer or responsible vendor | | P |
| | -model or type reference | | P |
| 17 | Overload protection of transformers and associated circuits | | N/A |
| | Fail-safe transformers comply with subclause 15.5 of IEC 61558-1 | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 22 | Construction | | P |
| | Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable | | P |
| 29 | Clearances, creepage distances and solid insulation | | P |
| 29.1, 29.2 and 29.3 | The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply<br>NOTE: The values stated for pollution degree 2 are applicable. | | P |
| | For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances | | N/A |
| | For windings providing reinforced insulation, the distance specified in item 2c of table13 of IEC 61558-1 is not assessed | | N/A |
| | For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 | | N/A |
| **H** | **ANNEX H (NORMATIVE) SWITCHES** | | **N/A** |
| | Switches comply with the following clauses of IEC 61058-1, as modified: | | N/A |
| | -The tests of IEC 61058-1 carried out under the conditions occurring in the appliance | | N/A |
| | -Before being tested, switches are operated 20 times without load | | N/A |
| 8 | Marking and documentation | | N/A |
| | Switches are not required to be marked | | N/A |
| | However, switches that can be tested separately from the appliance marked with the manufacturer’s name or trade mark and the type reference | | N/A |
| 13 | Mechanism | | N/A |
| | The tests may be carried out on a separate sample | | N/A |
| 15 | Insulation resistance and dielectric strength | | N/A |
| 15.1 | Not applicable | | N/A |
| 15.2 | Not applicable | | N/A |
| 15.3 | Applicable for full disconnection and micro-disconnection | | N/A |
| 17 | Endurance | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Compliance is checked on three separate appliances or switches | | N/A |
| | For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335 | | N/A |
| | Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests | | N/A |
| | Subclause 17.2.5.2 is not applicable | | N/A |
| | Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 | | N/A |
| 20 | Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies | | N/A |
| | This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24 | | N/A |
| **I** | **ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE** | | **P** |
| | The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance: | | N/A |
| 8 | Protection against access to live parts | | N/A |
| 8.1 | Metal parts of the motor are considered to be bare live parts | | N/A |
| 11 | Heating | | P |
| 11.3 | Temperature rise of the body of the motor is determined instead of the temperature rise of the windings | | N/A |
| 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/A |
| 16 | Leakage current and electric strength | | N/A |
| 16.3 | Insulation between live parts of the motor and its other metal parts not subjected to the test | | N/A |
| 19 | Abnormal operation | | P |
| 19.1 | The tests of 19.7 to 19.9 not carried out | | N/A |
| 19. I.101 | Appliance operated at rated voltage with each of the following fault conditions: | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | - short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit | | N/A |
| | - short circuit of each diode of the rectifier | | N/A |
| | - open circuit of the supply to the motor | | N/A |
| | - open circuit of any parallel resistor, the motor being in operation | | N/A |
| | Only one fault simulated at a time, the tests carried out consecutively | | N/A |
| 22 | Construction | | N/A |
| 22. I.101 | For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation | | N/A |
| | Compliance checked by the tests specified for double and reinforced insulation | | N/A |
| **J** | **ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS** | | **N/A** |
| | Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications: | | N/A |
| 5.7 | Climatic sequence | | N/A |
| | When production samples are used, three samples of the printed circuit board are tested | | N/A |
| 5.7.1 | Cold | | N/A |
| | The test is carried out at -25°C | | N/A |
| 5.7.3 | Rapid change of temperature | | N/A |
| | Severity 1 is specified | | N/A |
| 5.8.6 | Partial discharge extinction voltage | | N/A |
| | Type A coatings not subjected to a partial discharge test | | N/A |
| 5.9 | Additional tests | | N/A |
| | This subclause is not applicable | | N/A |
| **K** | **ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES** | | **P** |
| | The information on overvoltage categories is extracted from IEC 60664-1 | | P |
| | Overvoltage category is a numeral defining a transient overvoltage condition | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Equipment of overvoltage category IV is for use at the origin of the installation | | N/A |
| | Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements | | N/A |
| | Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation | Category II overvoltage | P |
| | If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies | | N/A |
| | Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level | | N/A |
| **L** | **ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES** | | **P** |
| | Sequences for the determination of clearances and creepage distances | | P |
| **M** | **ANNEX M (NORMATIVE) POLLUTION DEGREE** | | **P** |
| | The information on pollution degrees is extracted from IEC 60664-1 | | P |
| | Pollution | | P |
| | The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment | | P |
| | Means may be provided to reduce pollution at the insulation by effective enclosures or similar | | P |
| | Minimum clearances specified where pollution may be present in the microenvironment | | P |
| | Degrees of pollution in the microenvironment | | P |
| | For evaluating creepage distances, the following degrees of pollution in the microenvironment are established: | | P |
| | - pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence | | N/A |
| | - pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected | | N/A |
| | - pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected | | P |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | - pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow | | N/A |
| **N** | **ANNEX N (NORMATIVE) PROOF TRACKING TEST** | | **P** |
| | The proof tracking test is carried out in accordance with IEC 60112 with the following modifications: | | N/A |
| 5 | Test apparatus | | N/A |
| 5.1 | Electrodes | | N/A |
| | The note does not apply | | N/A |
| 5.4 | Test solutions | | N/A |
| | Test solution A is used | | N/A |
| 6 | Procedure | | N/A |
| 6.3 | Proof tracking test | | N/A |
| | Voltage is 100V, 175V, 400V or 600V .....: | | N/A |
| | Note 3 of clause 3 applies | | N/A |
| | The test is carried out on five specimens | | N/A |
| | In case of doubt, additional test with voltage reduced by 25V, the number of drops increased to 100 | | N/A |
| 7 | Report | | P |
| | The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V | | P |
| **O** | **ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30** | | **P** |
| | Description of tests for determination of resistance to heat and fire | | P |
| **P** | **ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES** | | **N/A** |
| | Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE | | N/A |
| | Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor | | N/A |
| 5 | General conditions for the tests | | N/A |
| 5.7 | The ambient temperature for the tests of Clauses 11 and 13 is 40 +3/0 | | N/A |
| 7 | Marking and instructions | | N/A |
| 7.1 | The appliance marked with the letters WdaE | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 7.12 | The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA | | N/A |
| | The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries | | N/A |
| 11 | Heating | | N/A |
| 11.8 | The values of Table 3 are reduced by 15 K | | N/A |
| 13 | Leakage current and electric strength at operating temperature | | N/A |
| 13.2 | The leakage current for class I appliances not exceeding 0,5 mA | | N/A |
| 15 | Moisture resistance | | N/A |
| 15.3 | The value of t is 37 °C | | N/A |
| 16 | Leakage current and electric strength | | N/A |
| 16.2 | The leakage current for class I appliances not exceeding 0,5 mA | | N/A |
| 19 | Abnormal operation | | N/A |
| 19.13 | The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3 | | N/A |
| **Q** | **ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS** | | **P** |
| | Description of tests for appliances incorporating electronic circuits | | P |
| **R** | **ANNEX R (NORMATIVE) SOFTWARE EVALUATION** | | **N/A** |
| | Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified | | N/A |
| 7.12 | DENMARK: Requirements regarding marking tag of power supply cord and connection of earthing wire for class I appliances delivered without a plug | | N/A |
| H.2 | Definitions | | N/A |
| | Only definitions H.2.16 to H.2.20 applicable | | N/A |
| H.7 | Information | | N/A |
| | Only footnotes 12) to 18) of Table 7.2, as modified, applicable | | N/A |
| H.11.12 | Controls using software | | N/A |
| | All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable | | N/A |
| H.11.12.7 | Delete text | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| H.11.12.7.1 | For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data | | N/A |
| H.11.12.8 | Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired | | N/A |
| H.11.12.8.1 | Replace text | | N/A |
| H.11.12.13 | Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired | | N/A |
| **ZA** | **ANNEX ZA (NORMATIVE) SPECIAL NATIONAL CONDITIONS** | | **P** |
| 7.12 | DENMARK: Requirements regarding marking tag of power supply cord and connection of earthing wire for class I appliances delivered without a plug | | N/A |
| 19.5 | NORWAY: The test is also applicable to appliances intended to be permanently connected to fixed wiring | | N/A |
| 22.2 | FRANCE, NORWAY: The second paragraph of this subclause, dealing with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system | | N/A |
| 25.6 | BELGIUM, FRANCE, SPAIN, UNITED KINGDOM: Plugs according to standard sheet C2b not allowed | | P |
| | AUSTRIA, FINLAND, GERMANY, ICELAND, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN, SWITZERLAND, UNITED KINGDOM: Plugs according to standard sheet C3b not allowed | | P |
| | DENMARK: Supply cords of single-phase portable appliances having a rated current not exceeding 13 A provided with a plug according to the following: | | N/A |
| | Class I appliances: Section 107-2-D1, ed.3 1998, Standard Sheet DK 2-1a | | N/A |
| | For appliances covered by a Part 2 of EN 60335, also plugs in accordance with Section 107-2-D1, ed. 3, 1998, Standard Sheet C2b, C3b or C4 are allowed | | N/A |
| | Class II appliances: Section 107-2-D1, ed.3 1998, Standard Sheet C1b, C5, C6, DKA 2-1a and DKA 2-1b | | N/A |
| | Stationary single-phase appliances, having a rated current not exceeding 13 A, and provided with a supply cord and a plug, the plug is in accordance with the requirements above | | N/A |
| | Multi-phase appliances and single-phase appliances having a rated current exceeding 13 A, and provided with a supply cord and a plug, the plug is in accordance with the requirements below: | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | Class I appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV | | N/A |
| | Class II appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV, the earthing contact not being connected | | N/A |
| | The current for the plug not exceeding the values specified; standard sheet (no.); current (A) : | | N/A |
| | IRELAND: Only plugs according to Standard Sheets B2 and C5 allowed (see also Annex ZB) | | N/A |
| | ITALY: Only plugs listed in CENELEC Report R0BT-005:2001 allowed | | N/A |
| | SPAIN: For appliances for household use, only the following plugs are allowed: | | N/A |
| | according to UNE 20315: ESC 10-1b, C2b, C4, C6 or ESB 25-5b | | N/A |
| | according to UNE-EN 50075 | | N/A |
| | SWITZERLAND: supply cords of portable household and similar electrical appliances having a rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: | | N/A |
| | SEV 6532-2.1991, plug type 15, 3P+N+PE, 250/400 V, 10 A | | N/A |
| | SEV 6533-2.1991, plug type 11, L+N, 250 V, 10 A | | N/A |
| | SEV 6534-2.1991 plug type 12, L+N+PE, 250 V, 10 A | | N/A |
| | UNITED KINGDOM: Only plugs according to Standard Sheets B2 and C5 allowed (see also Annex ZB) | | N/A |
| 25.8 | IRELAND, UNITED KINGDOM: replacement of figures (rated current/cross-sectional area) in the table | | N/A |
| **ZB** | **ANNEX ZB (INFORMATIVE) A-DEVIATIONS** | | **P** |
| 4 | SWITZERLAND: Information about batteries with carbon-zinc and alkali-manganese | | N/A |
| 7.1 | ITALY: The voltage is 220 V/380 V | | N/A |
| 25.6 | IRELAND: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances. | | N/A |
| | UNITED KINGDOM: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and allow only plugs to BS 1363 to be fitted to domestic appliances. It also allows plugs to BS 4573 and standard sheet C5 to be fitted to shavers and toothbrushes. | | P |
| **ZC** | **ANNEX ZC (NORMATIVE) NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS** | | **P** |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | This Standard incorporates provisions from the publications listed | | P |
| **ZC** | **Add: (EN 60335-1/A14)** | | **P** |
| | -Safety of household and similar electrical appliances – Interpretations related to European Standards within the scope of CENELEC/TC 61- CLC/TR 50417 | | P |
| | -Household and similar electrical appliances - Electromagnetic fields - Methods for evaluation and measurement- EN 50366 | | P |
| | -Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure- EN 62233 | | P |
| **ZD** | **ANNEX ZD (INFORMATIVE) IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS** | | **N/A** |
| | A list of code designations for different types of flexible cords | | N/A |
| **ZE** | **ANNEX ZE (INFORMATIVE) SPECIFIC ADDITIONAL REQUIREMENTS FOR APPLIANCES AND MACHINES INTENDED FOR COMMERCIAL USE** | | **N/A** |
| 7 | Marking and instructions | | N/A |
| 7.1 | Modification | | N/A |
| | Replace the fourth and fifth dashed items by: | | N/A |
| | -business name and full address of the manufacturer and, where applicable, his authorized representative; | | N/A |
| | -model or type reference, serial number, if any, and production year; | | N/A |
| | Add a new dashed item: | | N/A |
| | -designation of the appliance. | | N/A |
| 7.12 | Modification | | N/A |
| | Replace the first sentence in the requirement by: | | N/A |
| | Instructions shall be provided with the appliance so that the appliance can be used safely. | | N/A |
| | Add: | | N/A |
| | The instructions shall contain at least the following information: | | N/A |
| | the business name and full address of the manufacturer and, where applicable, his authorized representative; | | N/A |
| | model or type reference of the appliance as marked on the appliance itself, except for the serial number; | | N/A |
| | the designation of the appliance together with its explanation in case it is given by a combination of letters and/or numbers. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | the general description of the appliance, when needed due to the complexity of the appliance; | | N/A |
| | specific precautions if required during installation, operation, adjusting, user maintenance, cleaning, repairing or moving; | | N/A |
| | when needed drawings, diagrams, descriptions and explanations necessary for the safe use and user maintenance of the appliance; | | N/A |
| | the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the appliance; | | N/A |
| 7.12.Z1 | Wherever needed for specific appliances, information shall be given: | | N/A |
| | on use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns, if these operations have consequences on stability of the appliance in order to avoid overturning, falling or uncontrolled movements of the appliance or of its component parts; | | N/A |
| | on how to maintain adequate mechanical stability when in use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance; | | N/A |
| | on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided; | | N/A |
| | on the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur the operating method to safely unblock the appliance; | | N/A |
| | on the specifications on the spare parts to be used, when these affect the health and safety of the operator; | | N/A |
| | on airborne noise emissions, determined and declared in accordance with the relevant Part 2. This includes: | | N/A |
| | -the A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A); where this level does not exceed 70 dB(A), this fact shall be indicated, | | N/A |
| | -the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 µPa), | | N/A |
| | -the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A). | | N/A |
| 19 | Abnormal operation | | N/A |
| 19.11.4.8 | Replace the second paragraph by: | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| | The appliance shall continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage fluctuation occurred, or a manual operation shall be required to restart it. | | N/A |
| 20 | Stability and mechanical hazards | | N/A |
| 20.1 | Add at the end: | | N/A |
| | Appliances and their components and fittings shall have adequate mechanical stability during transportation, assembly, dismantling and any other action involving the appliance. | | N/A |
| | Compliance is checked by verifying the instruction and by the relevant tests, if necessary, as specified in the relevant Part 2. | | N/A |
| 20.2 | Replace the requirements and notes by: | | N/A |
| | Dangerous moving transmission parts shall be safeguarded either by design or guards. When guards are used, they shall be fixed guards, interlocking movable guards or protective devices. | | N/A |
| 21 | Mechanical strength | | N/A |
| 21.1 | Replace the first paragraph by: | | N/A |
| | Appliances and their components and fittings shall have adequate mechanical strength and constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the appliance. | | N/A |
| 22 | Construction | | N/A |
| 22.ZE.1 | For appliances provided with a seat, the seat has to give adequate stability. The distance between the seat and the control devices shall be capable of being adapted to the operator. | | N/A |
| 22.ZE.2 | For appliances provided with separate devices for the start and the stop functions, the stop function shall be unambiguously identifiable and shall always override the start function. For appliances provided with one device performing the start and the stop function, the stop function shall be unambiguously identifiable and shall always override the start function. | | N/A |
| 22.ZE.3 | Appliances shall be designed in such a way that incorrect mounting is avoided, if this can lead to an unsafe situation. If this is not possible, information on the correct mounting shall be given directly on the part and/or the enclosure. | | N/A |
| 22.ZE.4 | Where the weight, size or shape prevents appliances from being moved manually, they shall be fitted with attachments for lifting gear or be designed so they can be fitted with such attachments, or be shaped in such a way that standard lifting gear can easily be used. | | N/A |

| EN 60335-1 & EN60335-2-65 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |
| 22.ZE.5 | The fixing systems of fixed guards which prevent access to dangerous moving transmission parts shall only be removable with the use of tools. | | N/A |
| 22.ZE.6 | In case of interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply, the appliance shall not restart, however automatic restarting of the operation is allowed if the appliance may continue to operate, without causing any hazard to the user, from the same point in its operating cycle at which the voltage interruption or fluctuation occurred. | | N/A |
| **ZF** | **ANNEX ZF (INFORMATIVE) CRITERIA APPLIED FOR THE ALLOCATION OF PRODUCTS COVERED BY STANDARDS IN THE EN 60335 SERIES UNDER LVD or MD** | | **P** |
| | Criteria applied for the allocation of products covered by standards in the EN 60335 series under LVD or MD | | P |
| | This guide has been prepared by CENELEC/TC 61 based on the discussions with the group of experts set up by the EU Commission to manage the application of the Machinery Directive (2006/42/EC). | | P |
| | EN 60335-1, General requirements | To be listed under LVD (2014/35/EU)<br>To be listed under MD (2006/42/EC) | P |
| **ZG** | **ANNEX ZG (INFORMATIVE) UV APPLIANCES** | | **N/A** |
| 7 | Marking and instructions | | N/A |
| 7.12.ZG | The instructions for appliances incorporating UVC emitters shall include the substance of the following: | | N/A |
| | WARNING — This appliance contains a UV emitter. Do not stare at the light source | | N/A |
| 32 | Radiation, toxicity and similar hazards | | N/A |
| | For appliances incorporating UV emitters the manufacturer's shall deliver a declaration providing evidence that the plastic material exposed to the radiation is UV resistant. | | N/A |
| | NOTE: Examples of appliances that may incorporate UVC emitters are range hoods, air cleaners and finger nail hardeners. | | N/A |
| **ZZ** | **ANNEX ZZ (INFORMATIVE) COVERAGE OF ESSENTIAL REQUIREMENTS OF EC DIRECTIVES** | | **P** |

| EN62233: 2008 | | | |
|---|---|---|---|
| **Clause** | **Requirement + Test** | **Result - Remark** | **Verdict** |

| **ANNEX EMF EN 62233 : 2008** | | | |
|---|---|---|---|
| | The Tested product also complies to the requirements of EN 62233 : 2008 | | -- |
| | Limit ……100% | | P |

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| 10.1 | TABLE: Power input deviation | | | | P |
|---|---|---|---|---|---|
| Input deviation of/at: | P rated (W) | P measured (W) | dP | Required dP | Remark |
| 220V/50Hz | 960 | 868 | -9.6% | +15% | Normal work |
| 230V/50Hz | 960 | 897 | -6.5% | +15% | Normal work |
| 240V/50Hz | 960 | 913 | -4.9% | +15% | Normal work |

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

| 10.8 | TABLE: Heating test, thermocouples | | P |
|---|---|---|---|
| | Test voltage (V)..... : | 254.4V/50Hz | -- |
| | Ambient t1 (°C)..... : | 24.1°C | -- |
| | Ambient t2 (°C)..... : | 25°C | -- |

| Thermocouple locations | dT (K) | Max. dT (K) |
|---|---|---|
| Power cord insulation | 7.3 | 50 |
| Switch | 9.7 | 50 |
| Tube on input wire | 23.6 | 35 |
| Ballast surface | 27.8 | 45 |
| Metal enclosure inside near ballast | 21.7 | Ref. |
| Metal enclosure outside near ballast | 10.3 | 60 |
| Lamp body surface | 29.7 | Ref. |
| Lamp terminal | 36.4 | Ref. |
| AC connector J1 | 20.6 | 60 |
| Varisotor R5 | 34.8 | Ref. |
| X capacitor C1 | 44.7 | 75 |
| Ycapacitor C5 | 47.2 | 60 |
| Relay IS1 | 37.3 | 60 |
| Optocoupler U3 | 42.4 | 85 |
| T2 bobbin | 61.8 | Ref. |
| T2 winding | 64.3 | 85 |
| PCB near T2 | 46.4 | 105 |
| Light LED surface | 18.9 | Ref. |
| Metal enclosure inside near T2 | 33.2 | Ref. |
| Metal enclosure outside near T2 | 22.7 | 60 |

| 10.8 | TABLE: Heating test, thermocouples | | N/A |
|---|---|---|---|
| | Test voltage (V)..... : | | -- |
| | Ambient t1 (°C)..... : | | -- |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | Ambient t2 (°C) ..... : | | | | | -- |
| Temperature rise of winding | | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | Max. dT (K) | Insulation class |
| -- | | -- | -- | -- | -- | -- |

| | | | |
|---|---|---|---|
| **13.2** | **TABLE: Leakage current** | | **P** |
| | Heating appliances: 1.15 x rated input ..... : | -- | — |
| | Motor-operated and combined appliances: 1.06 x rated voltage ..... : | 1.06x240V=254.4V | — |
| Leakage current between | | I (mA) | Max. allowed I (mA) |
| Live parts to metal enclosure | | 0.77 | 3.5 |
| Live parts to handler | | 0.21 | 3.5 |

| | | | |
|---|---|---|---|
| **13.3** | **TABLE: Electric strength** | | **P** |
| Test voltage applied between: | | Voltage (V) | Breakdown (Yes/No) |
| Live parts to metal enclosure (for whole EUT) | | 1000 | No |
| PCB primary to output for main board) | | 3000 | No |

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

| | | | |
|---|---|---|---|
| **16.2** | **TABLE: Leakage current** | | **P** |
| | Single phase appliances: 1.06 x rated voltage ... : | 1.06x240V=254.4V | — |
| | Three phase appliances 1.06 x rated voltage divided by √3: ..... : | -- | — |
| Leakage current between | | I (mA) | Max. allowed I (mA) |
| Live parts to metal enclosure | | 0.78 | 3.5 |
| Live parts to handler | | 0.19 | **3.5** |

| | | | |
|---|---|---|---|
| **16.3** | **TABLE: Electric strength** | | **P** |
| Test voltage applied between: | | Voltage (V) | Breakdown (Yes/No) |
| Live parts to metal enclosure (for whole EUT) | | 1250 | No |
| PCB primary to output for main board) | | 3000 | No |

| | | | |
|---|---|---|---|
| **17** | **TABLE: Overload protection, temperature rise** | | **N/A** |
| Temperature rise of part/at: | | dT (K) | Max. dT (K) |
| -- | | -- | -- |

| | | |
|---|---|---|
| **19.7** | **TABLE: Abnormal operation, locked rotor/moving parts** | **N/A** |

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| | | | | | |
|---|---|---|---|---|---|
| | Test voltage (V) ..... : | -- | -- | | |
| | Ambient t1 (°C) ..... : | -- | -- | | |
| | Ambient t2 (°C) ..... : | -- | -- | | |
| Temperature rise of winding | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | T (°C) | Max. T (°C) |
| -- | -- | -- | -- | -- | -- |

| **19.9** | **TABLE: Abnormal operation, running overload** | | | | **N/A** |
|---|---|---|---|---|---|
| | Test voltage (V) ..... : | | | | -- |
| | Ambient t1 (°C) ..... : | | | | -- |
| | Ambient t2 (°C) ..... : | | | | -- |
| Temperature rise of winding | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | T (°C) | Max. T (°C) |
| -- | -- | -- | -- | -- | -- |

| **19.11** | **TABLE: Abnormal operation tests** | | | | **P** |
|---|---|---|---|---|---|
| | Ambient Temperature (°C) ..... : | | 25.2°C | | -- |
| No. | Component no. | Fault | Test voltage (v) | Test time | Result |
| 1 | U5 pin g/s | s-c | 240V | 1s | Unit stop working at once, no hazard. |
| 2 | U5 pin d/s | s-c | 240V | 1s | Fuse opened, No hazard. |
| 3 | U5 pin d/g | s-c | 240V | 1s | Fuse opened, No hazard. |
| 4 | U1 pin1/4 | s-c | 240V | 1s | Unit stop working at once, no hazard. |
| 5 | C4 | s-c | 240V | 1s | Fuse opened, No hazard. |
| 6 | C11 | s-c | 240V | 1s | Fuse opened, No hazard. |

| **19.13** | **TABLE: Abnormal operation, temperature rises** | **N/A** |
|---|---|---|
| Thermocouple locations | dT (K) | Max. dT (K) |
| -- | -- | -- |

| **21** | **TABLE: impact resistance** | | **P** |
|---|---|---|---|
| Impacts per surface | Surface tested times | Impact energy ( nm ) | Comments |
| Top | Three | 0.5 | No damaged |
| Side | Three | 0.5 | No damaged |
| Bottom | Three | 0.5 | No damaged |
| Front | Three | 0.5 | No damaged |
| Rear | Three | 0.5 | No damaged |
| Hander | Three | 0.5 | No damaged |
| supplementary information: | | | |

| **24.1** | **TABLE: Components** | | | | **P** |
|---|---|---|---|---|---|
| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity |

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| | | | | | |
|---|---|---|---|---|---|
| Fuse | Conquer Electronics Co., Ltd. | UDA/ UDA-A | F10AL250VAC | EN 60127-1<br>EN 60127-2 | VDE 40008022 |
| -Fuse holder | SHIN CHIN INDUSTRIAL CO LTD | R3-32AA1 | 250 VAC, 1 A Min | UL 4248-1 | UL E72169 |
| Switch | Zhejiang Zhongxun Electronics Co., Ltd. | KCD1 | 6(4) A, 250 VAC<br>Plastic enclosure<br>of power switch :<br>V-0, 75 °C | EN 61058-1 | TUV R50049218 |
| Alternative | Zhejiang LECI Electronics Co., Ltd. | RS601 series | 6(4) A, 250 VAC<br>Plastic enclosure<br>of power switch :<br>V-0, 75 °C | EN 61058-1 | VDE 40017430 |
| Input wire(Red, Blue, Yellow-Green) | SHENZHEN DONG JU WIRE & CABLE CO LTD | 1015 | 600 V, Min 18 AWG, 105 °C, VW-1 | UL 758 | UL E189674 |
| Alternative | Various | 1015 | Min 300 V, Min 18 AWG, 105 °C, VW-1 | UL 758 | UL |
| -Heat-shrinkable tube | GUANGZHOU KAIHENG NEW<br>MATERIAL CO<br>LTD | K102(+) | 600 V, 125 °C, VW-1 | UL 224 | UL E321827 |
| Alternative | GUANGZHOU KAIHENG ENTERPRISE GROUP | K-2(+) | 600 V, 125 °C, VW-1 | UL 224 | UL E214175 |
| UV lamp | Foshan Comwin light & electricity co., Ltd | GZW120D15W/ Y-Z1148 G10Q | 254NM,150V | EN 61199<br>EN 60901<br>EN 61347-1/2 | BSTDG1605682865SC-2 |
| **For power board** | | | | | |
| AC connector | ZHEJIANG JINDA ELECTRONICS CO LTD | 3.96T-02 | 250 VAC, 7 A | UL 1977 | UL E237523 |
| Alternative | LAND WIN ELECTRONIC CORP | 3961P | 250 VAC, 7 A | UL 1977 | UL E159426 |
| Alternative | ZHEJIANG ZHUOLI ELECTRONIC CO LTD | ZL3963-A | 250 VAC, 7 A | UL 1977 | UL E239965 |

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|---|---|---|---|---|---|
| Fuse F1 | Hollyland Company Limited | 50F | F2AL250V | EN 60127-1, EN 60127-2 | VDE 40014477 |
| Alternative | Suzhou Littelfuse OVS Ltd. | 217-Serie(s) | F2AL250V | EN 60127-1, EN 60127-2 | VDE 40014645 |
| X capacitor C1 | Ultra Tech Xiphi Enterprise Co., Ltd. | HQX | 0.1 uF, 275 VAC, X2 type, 40/100/21/C | EN 60384-14 | VDE 40024534 |
| Alternative | Shenzhen Tongfeng Electronics Co., Ltd. | CBB62 | 0.1 uF, 275 VAC, X2 type, 40/100/21/C | EN 60384-14 | VDE 40031777 |
| Alternative | Dongguan Easy-gather Electronic Co., Ltd. | MKP-X2 | 0.1 uF, 275 VAC, X2 type, 40/100/21/C | EN 60384-14 | VDE 40022258 |
| Y capacitor C5 | Hsuan Tai Electronic Co., Ltd. | CY | 2200 pF,250 VAC, Y2, 40/085/21/C | EN 60384-14 | VDE 118413 |
| Alternative | JUHONG ELE. COMPANY | JA | 2200 pF,250 VAC, Y2, 25/085/21/C | EN 60384-14 | VDE 40035340 |
| Varistor R5 | Joyin Co., Ltd. | 10D471K | Clamping voltage: 550Vac/745Vdc max.Withstanding surge current: 6000A max. | EN 61058-1 | VDE 40004658 |
| Optocoupler U3 | Everlight Electronics Co., Ltd. | EL 817 | Cr≥8.0 mm, Cl≥8.0 mm, Di≥0.4 mm, 55/110/21 | EN 60747-5-2 | VDE 132249 |
| Relay LS1/LS2 | Ningbo Songle Relay Co., Ltd. | SRD-12VDC-SL-A | 10A 250VAC 10A 30VDC | EN 61810-1 | TUV R 50137084 |
| Transformer T2 | You Shi Liang | EE16 | Class B | EN 60065 | Tested with appliance |
| -Bobbin | CHANG CHUN PLASTICS CO LTD | T200HF | V-0, 150 ºC | UL 94 | UL E59481 |
| -Wire | SHANTOU SHENGANG ELECTRICAL INDUSTRIAL CO LTD | UEW/130 | 130 ºC | UL 1446 | UL E239508 |
| -Tape | JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD | JY25-A (b) | 130 ºC | UL 510 | UL E246950 |

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| | | | | | |
|---|---|---|---|---|---|
| -Tube | DONGGUAN LING FREE HARDWARE PLASTICS PRODUCT CO LTD | LING FREE PTFE TUBE | 200 ºC, 300V, VW-1 | UL 224 | UL E352366 |
| PCB | SHENZHEN VICTORY ELECTRTONIC TECHNOLOGY CO LTD | F-D | V-0, 130 ºC | UL 796 | UL E254215 |
| Alternative | Various | Various | V-0, 130 °C | UL 796 | UL |
| Mylar film | CHENGDU KANGLONGXIN PLASTICS CO LTD | KLX FRPC-870B | V-0, 80 °C | UL 94<br>UL 746 | UL E315185 |
| Alternative | MIANYANG LONGHUA FILM CO LTD | PC-770 | V-0, 80 °C | UL 94,<br>UL 746 | UL E254551 |
| Alternative | SABIC JAPAN L L C | FR500 | V-0, 80 °C | UL 94,<br>UL 746 | UL E207780 |
| An aste<br>risk indicates a mark which assures the agreed level of surveillance | | | | | |

| **28.1** | **TABLE: Threaded part torque test** | | **P** |
|---|---|---|---|
| Threaded part identification | Diameter of thread (mm) | Column number (I, II, or III) | Torque( Nm ) |
| Enclosure | 2.89 | II | 0.5 |
| Enclosure | 4.85 | II | 2.0 |
| Enclosure | 5.25 | II | 2.0 |
| Enclosure | 3.93 | II | 1.2 |

| **29.1** | **TABLE: Clearances** | | | | | **P** |
|---|---|---|---|---|---|---|
| | Overvoltage category ...: | | II | | | — |
| | | Type of insulation | | | | |
| Rated impulse voltage (V): | Min. cl (mm) | Basic | Functional | Supplementary | Reinforced | Verdict / Remark |
| 330 | 0,5* | — | — | — | — | N/A |
| 500 | 0,5* | — | — | — | — | N/A |
| 800 | 0,5* | — | — | — | — | N/A |
| 1500 | 0,5*/** | — | — | — | — | N/A |
| 2500 | 1,5** | **4.1** | — | — | — | P |
| 4000 | 3,0** | — | — | — | — | N/A |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 6000 | 5,5** | — | — | — | — | N/A |
| 8000 | 8,0** | — | — | — | — | N/A |
| 10000 | 11,0** | — | — | — | — | N/A |

*) The value is increased to 0,8mm for pollution degree 3
**) If the construction is affected by wear, distortion, movement of the parts or during assembly, the value is increased by 0,5 mm

Basic insulation:

L to N: Cl=4.1mm, Cr=5.1mm.

| 29.2 | TABLE: Creepage distances, basic, supplementary and reinforced insulation | | | | | | | | | | P |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Working voltage (V) | Creepage distance (mm) / Pollution degree | | | | | | | — | | | |
| | 1 | 2 | | | 3 | | | Type of insulation | | | — |
| | | Material group | | | Material group | | | | | | |
| | | I | II | IIIa/IIIb | I | II | IIIa/IIIb | B*) | S*) | R*) | Verdict |
| ≤50 | 0.2 | 0.6 | 0.9 | 1.2 | 1.5 | 1.7 | 1.9 | — | — | — | N/A |
| ≤50 | 0.2 | 0.6 | 0.9 | 1.2 | 1.5 | 1.7 | 1.9 | — | — | — | N/A |
| ≤50 | 0.4 | 1.2 | 1.8 | 2.4 | 3.0 | 3.4 | 3.8 | — | — | — | N/A |
| >50 and ≤125 | 0.3 | 0.8 | 1.1 | 1.5 | 1.9 | 2.1 | 2.4 | — | — | — | N/A |
| >50 and ≤125 | 0.3 | 0.8 | 1.1 | 1.5 | 1.9 | 2.1 | 2.4 | — | | — | N/A |
| >50 and ≤125 | 0.6 | 1.6 | 2.2 | 3.0 | 3.8 | 4.2 | 4.8 | — | — | | N/A |
| >125 and ≤250 | 0.6 | 1.3 | 1.8 | **2.5** | 3.2 | 3.6 | 4.0 | >2.5 | — | — | P |
| >125 and ≤250 | 0.6 | 1.3 | 1.8 | **2.5** | 3.2 | 3.6 | 4.0 | — | >2.5 | — | P |
| >125 and ≤250 | 1.2 | 2.6 | 3.6 | **5.0** | 6.4 | 7.2 | 8.0 | — | — | >5.0 | P |
| >250 and ≤400 | 1.0 | 2.0 | 2.8 | 4.0 | 5.0 | 5.6 | 6.3 | | — | — | N/A |
| >250 and ≤400 | 1.0 | 2.0 | 2.8 | 4.0 | 5.0 | 5.6 | 6.3 | — | | — | N/A |
| >250 and ≤400 | 2.0 | 4.0 | 5.6 | 8.0 | 10.0 | 11.2 | 12.6 | — | — | | N/A |
| >400 and ≤500 | 1.3 | 2.5 | 3.6 | 5.0 | 6.3 | 7.1 | 8.0 | | — | — | N/A |
| >400 and ≤500 | 1.3 | 2.5 | 3.6 | 5.0 | 6.3 | 7.1 | 8.0 | — | | — | N/A |
| >400 and ≤500 | 2.6 | 5.0 | 7.2 | 10.0 | 12.6 | 14.2 | 16.0 | — | — | — | N/A |
| >500 and ≤800 | 1.8 | 3.2 | 4.5 | 6.3 | 8.0 | 9.0 | 10.0 | — | — | — | N/A |
| >500 and ≤800 | 1.8 | 3.2 | 4.5 | 6.3 | 8.0 | 9.0 | 10.0 | — | — | — | N/A |
| >500 and ≤800 | 3.6 | 6.4 | 9.0 | 12.6 | 16.0 | 18.0 | 20.0 | — | — | — | N/A |
| >800 and ≤1000 | 2.4 | 4.0 | 5.6 | 8.0 | 10.0 | 11.0 | 12.5 | — | — | — | N/A |
| >800 and ≤1000 | 2.4 | 4.0 | 5.6 | 8.0 | 10.0 | 11.0 | 12.5 | — | — | — | N/A |
| >800 and ≤1000 | 4.8 | 8.0 | 11.2 | 16.0 | 20.0 | 22.0 | 25.0 | — | — | — | N/A |
| >1000 and ≤1250 | 3.2 | 5.0 | 7.1 | 10.0 | 12.5 | 14.0 | 16.0 | — | — | — | N/A |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| >1000 and ≤1250 | 3.2 | 5.0 | 7.1 | 10.0 | 12.5 | 14.0 | 16.0 | — | — | — | N/A |
| >1000 and ≤1250 | 6.4 | 10.0 | 14.2 | 20.0 | 25.0 | 28.0 | 32.0 | — | — | — | N/A |
| >1250 and ≤1600 | 4.2 | 6.3 | 9.0 | 12.5 | 16.0 | 18.0 | 20.0 | — | — | — | N/A |
| >1250 and ≤1600 | 4.2 | 6.3 | 9.0 | 12.5 | 16.0 | 18.0 | 20.0 | — | — | — | N/A |
| >1250 and ≤1600 | 8.4 | 12.6 | 18.0 | 25.0 | 32.0 | 36.0 | 40.0 | — | — | — | N/A |
| >1600 and ≤2000 | 5.6 | 8.0 | 11.0 | 16.0 | 20.0 | 22.0 | 25.0 | — | — | — | N/A |
| >1600 and ≤2000 | 5.6 | 8.0 | 11.0 | 16.0 | 20.0 | 22.0 | 25.0 | — | — | — | N/A |
| >1600 and ≤2000 | 11.2 | 16.0 | 22.0 | 32.0 | 40.0 | 44.0 | 50.0 | — | — | — | N/A |
| >2000 and ≤2500 | 7.5 | 10.0 | 14.0 | 20.0 | 25. 0 | 28.0 | 32.0 | — | — | — | N/A |
| >2000 and ≤2500 | 7.5 | 10.0 | 14.0 | 20.0 | 25. 0 | 28.0 | 32.0 | — | — | — | N/A |
| >2000 and ≤2500 | 15.0 | 20.0 | 28.0 | 40.0 | 50.0 | 56.0 | 64.0 | — | — | — | N/A |
| >2500 and ≤3200 | 10.0 | 12.5 | 18.0 | 25.0 | 32.0 | 36.0 | 40.0 | — | — | — | N/A |
| >2500 and ≤3200 | 10.0 | 12.5 | 18.0 | 25.0 | 32.0 | 36.0 | 40.0 | — | — | — | N/A |
| >2500 and ≤3200 | 20.0 | 25.0 | 36.0 | 50.0 | 64.0 | 72.0 | 80.0 | — | — | — | N/A |
| >3200 and ≤4000 | 12.5 | 16.0 | 22.0 | 32.0 | 40.0 | 45.0 | 50.0 | — | — | — | N/A |
| >3200 and ≤4000 | 12.5 | 16.0 | 22.0 | 32.0 | 40.0 | 45.0 | 50.0 | — | — | — | N/A |
| >3200 and ≤4000 | 25.0 | 32.0 | 44.0 | 64.0 | 80.0 | 90.0 | 100.0 | — | — | — | N/A |
| >4000 and ≤5000 | 16.0 | 20.0 | 28.0 | 40.0 | 50.0 | 56.0 | 63.0 | — | — | — | N/A |
| >4000 and ≤5000 | 16.0 | 20.0 | 28.0 | 40.0 | 50.0 | 56.0 | 63.0 | — | — | — | N/A |
| >4000 and ≤5000 | 32.0 | 40.0 | 56.0 | 80.0 | 100.0 | 112.0 | 126.0 | — | — | — | N/A |
| >5000 and ≤6300 | 20.0 | 25.0 | 36.0 | 50.0 | 63.0 | 71.0 | 80.0 | — | — | — | N/A |
| >5000 and ≤6300 | 20.0 | 25.0 | 36.0 | 50.0 | 63.0 | 71.0 | 80.0 | — | — | — | N/A |
| >5000 and ≤6300 | 40.0 | 50.0 | 72.0 | 100.0 | 126.0 | 142.0 | 160.0 | — | — | — | N/A |
| >6300 and ≤8000 | 25.0 | 32.0 | 45.0 | 63.0 | 80.0 | 90.0 | 100.0 | — | — | — | N/A |
| >6300 and ≤8000 | 25.0 | 32.0 | 45.0 | 63.0 | 80.0 | 90.0 | 100.0 | — | — | — | N/A |
| >6300 and ≤8000 | 50.0 | 64.0 | 90.0 | 126.0 | 160.0 | 180.0 | 200.0 | — | — | — | N/A |
| >8000 and ≤10000 | 32.0 | 40.0 | 56.0 | 80.0 | 100.0 | 110.0 | 125.0 | — | — | — | N/A |
| >8000 and ≤10000 | 32.0 | 40.0 | 56.0 | 80.0 | 100.0 | 110.0 | 125.0 | — | — | — | N/A |
| >8000 and ≤10000 | 64.0 | 80.0 | 112.0 | 160.0 | 200.0 | 220.0 | 250.0 | — | — | — | N/A |
| >10000 and ≤12500 | 40.0 | 50.0 | 71.0 | 100.0 | 125.0 | 140.0 | 160.0 | — | — | — | N/A |
| >10000 and ≤12500 | 40.0 | 50.0 | 71.0 | 100.0 | 125.0 | 140.0 | 160.0 | — | — | — | N/A |
| >10000 and ≤12500 | 80.0 | 100.0 | 142.0 | 200.0 | 250.0 | 280.0 | 320.0 | — | — | — | N/A |
| *), B=Basic, S=Supplementary and R=Reinforced | | | | | | | | | | | |

| | | |
|---|---|---|
| **29.2** | **TABLE: Creepage distances, functional insulation** | **P** |

## Annex No. 1

| Working voltage (V) | Creepage distance (mm) / Pollution degree | | | | | | | — |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | | | 3 | | | |
| | | Material group | | | Material group | | | |
| | | I | II | IIIa/IIIb | I | II | IIIa/IIIb | Verdict |
| ≤50 | 0.2 | 0.6 | 0.8 | 1.1 | 1.4 | 1.6 | 1.8 | N/A |
| >50 and ≤125 | 0.3 | 0.7 | 1.0 | 1.4 | 1.8 | 2.0 | 2.2 | N/A |
| >125 and ≤250 | 0.4 | 1.0 | 1.4 | 2.0 | 2.5 | 2.8 | **3.2** | P |
| >250 and ≤400 | 0.8 | 1.6 | 2.2 | 3.2 | 4.0 | 4.5 | 5.0 | N/A |
| >400 and ≤500 | 1.0 | 2.0 | 2.8 | 4.0 | 5.0 | 5.6 | 6.3 | N/A |
| >500 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 |

| **30.1** | **TABLE: Ball pressure** | **P** |
|---|---|---|

| Part | Test temperature (°C) | Impression diameter (mm) | Allowed impression diameter (mm) |
|---|---|---|---|
| Bobbin | 125 | 1.22 | ≤2 |
| AC connector | 125 | 0.80 | ≤2 |
| Lamp terminal | 125 | 0.96 | ≤2 |

| **30.1** | **TABLE: Glow wire** | **P** |
|---|---|---|

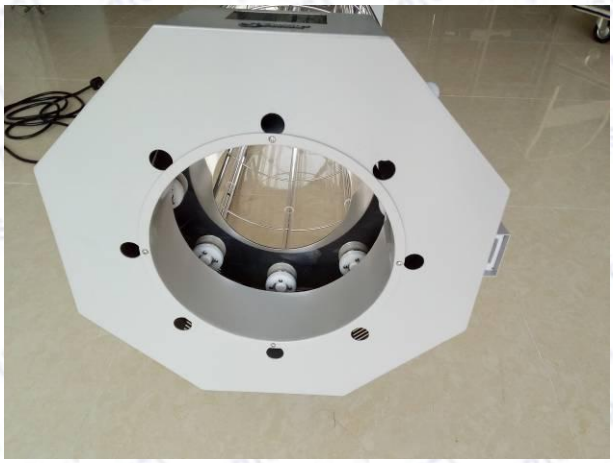
| Part | Test temperature (°C) | Ignition | Verdict |
|---|---|---|---|
| Bobbin | 750 | No Ignition | Pass |
| AC connector | 850 | No Ignition | Pass |
| Lamp terminal | 850 | No Ignition | Pass |

# Annex No. 1

## Photo Documentation

Type of Equipment, Model: UVGI AIR STERILIZER, SM 20


UVGI AIR STERILIZER

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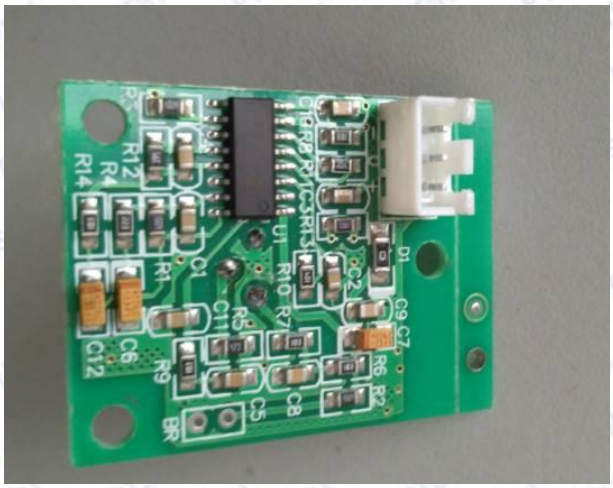
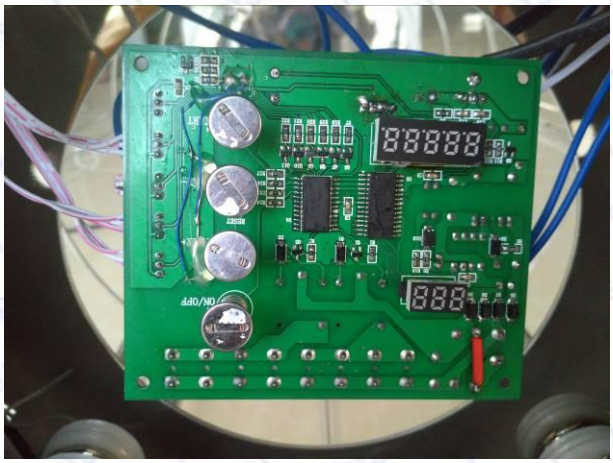
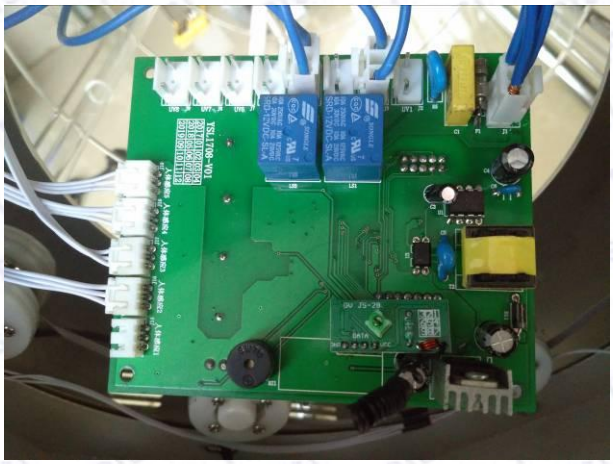

R12
R4
R14
R1
C1
U1
R10
R7
C2
D1
C9
C7
C6
C12
R9
C5
C8
R6
R2





**********End of Report **********