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Produkte

| | | | |
|---|---|---|---|
| **Prüfbericht - Nr.:** *Test Report No.:* | **50028216 001** | | **Seite 1 von 2** *Page 1 of 2* |
| **Auftraggeber:** *Client:* | **Hyundai Wacortec. Co., Ltd. Pocheon Factory**<br>581-7, Idongkyo-ri, Soheul-Eup,<br>Pocheon-si, Gyeonggi-do, 487-826, Rep. of Korea | | |
| **Gegenstand der Prüfung:** *Test item:* | **Water vending machine** | | |
| **Bezeichnung:** *Identification:* | **WVRO-1001** | **Serien-Nr.:** *Serial No.:* | **Production sample** without serial number |
| **Wareneingangs-Nr.:** *Receipt No.:* | **214061095** | **Eingangsdatum:** *Date of receipt:* | **2015-04-09** |
| **Prüfort:** *Testing location:* | TÜV Rheinland Japan Ltd. Kansai Technology Assessment Center<br>1-3-14Fukae Minami, Higashinari-ku, Osaka, 537-0002, Japan | | |
| **Prüfgrundlage:** *Test specification:* | 電気用品の技術上の基準を定める省令の解釈（H25.07.01）<br>別表第十二：J60335-1 (H20), J60335-2-75 (H20), J55014-1(H20)<br>Interpretation for METI Ordinance of Technical Requirements (H25.07.01)<br>Appendix 12: J60335-1 (H20), J60335-2-75(H20), J55014-1(H20) | | |
| **Prüfergebnis:** *Test Result:* | **Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).**<br>The test item passed the test specification(s). | | |
| **Prüflaboratorium:** *Testing Laboratory:* | TÜV Rheinland Japan Ltd. Kansai Technology Assessment Center<br>1-3-14Fukae Minami, Higashinari-ku, Osaka, 537-0002, Japan | | |

| **geprüft**/*tested by:* | | | **kontrolliert**/*reviewed by:* | | |
|---|---|---|---|---|---|
| 2015-07-02 | M.Horibata / Tester | | 2015-07-02 | T.Kasaoka / Reviewer | |
| **Datum** *Date* | **Name/Stellung** *Name/Position* | **Unterschrift** *Signature* | **Datum** *Date* | **Name/Stellung** *Name/Position* | **Unterschrift** *Signature* |

**Sonstiges**/*Other Aspects:*

電気用品安全法 - 特定電気用品 - 電動力応用機械器具 - "自動販売機"

This test report is based on TUV Rheinland Korea Ltd. ( report no. 50020652 001)
This product is classified as "Specified Electrical Appliances and Materials (Category A Product, <PS>E Mark)"– Electric Motor-operated Appliances – "Vending machines" under the Electrical Applianc Material Safety Law (DENAN Law).

As for J55014-1(H20):Evaluation is based on the test report (No: 50027191 001)
J3000(H25) standard had not applied for this application, due to no appliance inlet.
製造者の設備検査： 工場検査報告書（No.50020654 001 ）確認済み。

（電気用品安全法施行規則第１５条に基づき設備が技術上の基準を満足していると判断した。）

| *Abkürzungen:* | | | | *Abbreviations:* | | | |
|---|---|---|---|---|---|---|---|
| | *P(ass)* | = | *entspricht Prüfgrundlage* | | *P(ass)* | = | *passed* |
| | *F(ail)* | = | *entspricht nicht Prüfgrundlage* | | *F(ail)* | = | *failed* |
| | *N/A* | = | *nicht anwendbar* | | *N/A* | = | *not applicable* |
| | *N/T* | = | *nicht getestet* | | *N/T* | = | *not tested* |

Test item

Description ..... : Water vending machine

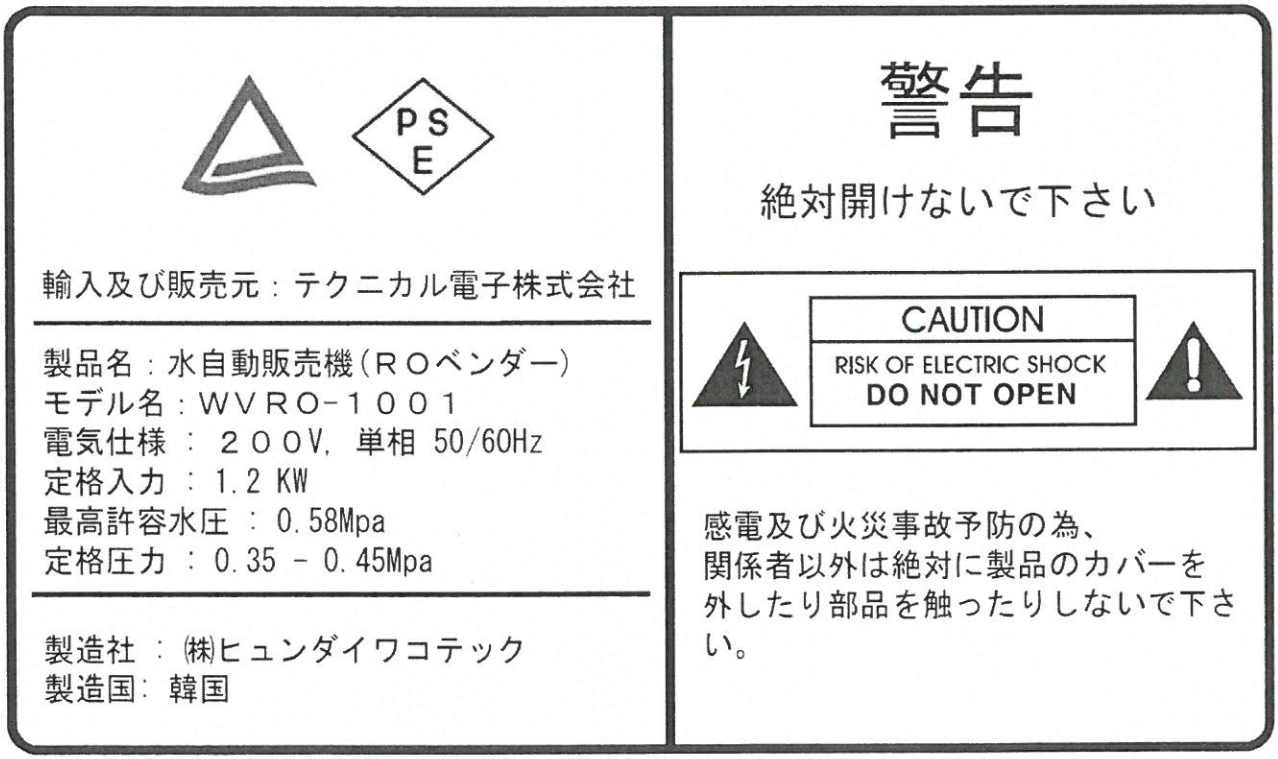
Trademark ..... : --

Model and/or type reference ..... : WVRO-1001

Rating(s) ..... : 200 V, 単相, 50/60 Hz, 1.2kW

Protection Class ..... : Class 0I

**Copy of marking plate**



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| | | |
|---|---|---|
| **Prüfbericht - Nr.:** *Test Report No.:* | **50020652 001** | **Seite 1 von 79** *Page 1 of 79* |

| | | | |
|---|---|---|---|
| **Auftraggeber:** *Client:* | **Hyundai Wacortec. Co., Ltd.** A-301, Hagye Technotwon,10, Nowon-ro 15-gil,Nowon-gu, Seoul,139-727, Rep. of Korea | | |
| **Gegenstand der Prüfung:** *Test item:* | **Water vending machine** | | |
| **Bezeichnung:** *Identification:* | **WVRO-1001** | **Serien-Nr.:** *Serial No.:* | **n.a. (prototype)** |
| **Wareneingangs-Nr.:** *Receipt No.:* | **133039155** | **Eingangsdatum:** *Date of receipt:* | 21.11.2014 |
| **Prüfort:** *Testing location:* | **TÜV Rheinland Korea Ltd.** 4F., E&C Venture Dream Tower., 197-28, Guro-dong, Guro-gu Seoul 152-719, Rep. of Korea | | |
| **Prüfgrundlage:** *Test specification:* | **J60335-2-75(H20), J60335-1(H20), J3000(H25)** | | |
| **Prüfergebnis:** *Test Result:* | **Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).* | | |
| **Prüflaboratorium:** *Testing Laboratory:* | **TÜV Rheinland Korea Ltd.** 4F., E&C Venture Dream Tower., 197-28, Guro-dong, Guro-gu Seoul 152-719, Rep. of Korea | | |

**geprüft/** *tested by:*

03.04.2015 Ki-Tae Park/Project Manager

| **Datum** *Date* | **Name/Stellung** *Name/Position* | **Unterschrift** *Signature* |
|---|---|---|

**kontrolliert/** *reviewed by:*

03.04.2015 Jong-Man Kim / Technical Reviewer

| **Datum** *Date* | **Name/Stellung** *Name/Position* | **Unterschrift** *Signature* |
|---|---|---|

**Sonstiges/** *Other Aspects:*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***Abkürzungen:*** | ***P(ass)*** | = | ***entspricht Prüfgrundlage*** | ***Abbreviations:*** | ***P(ass)*** | = | ***passed*** |
| | ***F(ail)*** | = | ***entspricht nicht Prüfgrundlage*** | | ***F(ail)*** | = | ***failed*** |
| | ***N/A*** | = | ***nicht anwendbar*** | | ***N/A*** | = | ***not applicable*** |
| | ***N/T*** | = | ***nicht getestet*** | | ***N/T*** | = | ***not tested*** |

**TEST REPORT**

**IEC 60335-2-75**

**Household and similar electrical appliances – Safety –**

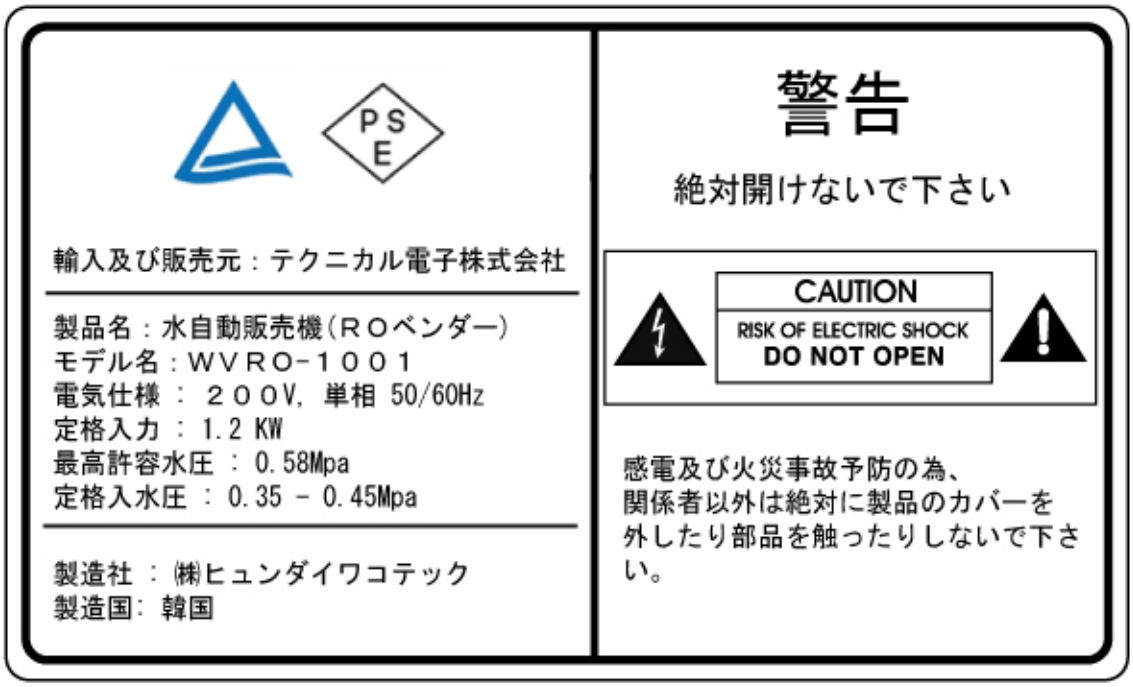
**Part 2-75: Particular requirements for commercial dispensing appliances and vending machines**

| | |
|---|---|
| Report Reference No.....: | 50020652 001 |
| Tested by.....: | See the cover page |
| | ..... |
| Approved by.....: | See the cover page |
| | ..... |
| Date of issue.....: | See the cover page |
| CB Testing Laboratory.....: | See the cover page |
| Address .....: | See the cover page |
| Testing location/procedure .....: | See the cover page |
| Address .....: | See the cover page |
| Applicant's name .....: | See the cover page |
| Address .....: | See the cover page |
| Test specification: | |
| Standard .....: | IEC 60335-2-75:2002 (Second Edition) used in conjunction with IEC 60335-1:2001 (Fourth Edition) (incl. Corrigendum 1:2002) |
| Test procedure .....: | CB Scheme |
| Non-standard test method……..: | N/A |
| Test Report Form No.....: | IEC60335_2_75B |
| TRF Originator.....: | SGS Fimko Ltd |
| Master TRF.....: | Dated 2003-08 |



| | |
|---|---|
| Test item description .....: | **Water vending machine** |
| Trade Mark .....: | N/A |
| Model/Type reference.....: | WVRO-1001 |
| Manufacturer .....: | Hyundai Wacortec. Co., Ltd. Pocheon Factory<br>581-7, Idongkyo-ri,Soheul-Eup, Pocheon-si, Gyeonggi-do, 487-826, Rep. of Korea |
| Serial number .....: | - |
| Ratings .....: | 200 V~, 50/60 Hz, 1.2kW, Class 0I |

Copy of marking plate and summary of test results (information/comments):




Summary of testing:

- The product “Water vending machine”, model “WVRO-1001”, is tested and evaluated according to the standard J 60335-2-75 (H20) used in conjunction with J 60335-1 (H20), J3000(H25).
- The product “Water vending machine, model “WVRO-1001”, is complied with standard J 60335-2-75 (H20) used in conjunction with J 60335-1 (H20), J3000(H25).

| Test item particulars ..... : | |
|---|---|
| Classification of installation and use ..... : | Stationery appliance and indoor used |
| Supply Connection..... : | Set of terminals allowing the connection of a flexible cord (Field supply power connection) |
| Additional information ..... : | - |
| National requirements ..... : | JAPAN |
| Other requirements..... : | - |
| Nature of supply ..... : | a.c. |
| Class of protection against electrical shock ..... : | Class 0I |
| Degree of protection against moisture ..... : | IPX0 |
| Type of cord attachment ..... : | Type Y attachment |
| Nominal capacity of container ..... : | No |
| Type of mounting ..... : | (see below) |
| - building-in ..... : | No |
| - independent ..... : | Yes |
| - to be fixed to a support ..... : | No |
| - hand-held ..... : | No |
| switch ..... : | Yes |
| thermostat ..... : | No |
| thermal cut-out ..... : | Yes |
| electronic circuit ..... : | Yes |
| programme controller ..... : | Yes |
| timer ..... : | Yes |
| portable appliance ..... : | No |
| more than one function ..... : | No |
| alternative accessories provided ..... : | Yes |
| interlock between lid and main switch ..... : | No |
| water outlet ..... : | Yes |
| power supply cord provided ..... : | No |
| appliance inlet provided ..... : | No |
| appliance for unattended use ..... : | Yes |
| bare heating elements ..... : | No |
| series motors incorporated ..... : | No |
| motor with capacitor in auxiliary winding ..... : | Yes |
| appliance to be immersed for cleaning ..... : | No |
| appliance for outdoor use ..... : | No |
| connector incorporating a thermostat ..... : | No |

| | |
|---|---|
| Possible test case verdicts: | |
| - test case does not apply to the test object..... | N/A |
| - test object does meet the requirement ..... | Pass (P) |
| - test object does not meet the requirement ..... | Fail (F) |
| Testing ..... | |
| Date of receipt of test item ..... | 2014-11-21 |
| Date (s) of performance of tests ..... | 2015-01-21 to 2015-03-18 |

General remarks:

**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

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 is used as the decimal separator.

**Factory information;**
Hyundai Wacortec. Co., Ltd. Pocheon Factory
581-7, Idongkyo-ri,Soheul-Eup, Pocheon-si, Gyeonggi-do, 487-826, Rep. of Korea

**Attachment on Photo-documentation:**
- Photographs : 9 pages

General product information:

- This described product was water vending machine.
- Model WVRO-1001 is consisting of pumps, filters, coin system and ballast with UV lamp.

| IEC 60335-2-75 | | | |
|---|---|---|---|
| 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. | Considered. | P |
| 5.2 | Note: Three samples used for test of 15.102 | Not intended to be partially or completely immersed in water for cleaning | N/A |
| 5.6 | Controls, switching devices or other parts adjusted to most unfavourable settings in (IEC 60335-2-75) | No adjustable control or switch ing device in the user area | P |
| | - user area | (see above) | N/A |
| | - maintenance area | Control panel | P |
| 5.9 | Appliance tested with software (IEC 60335-2-75) | No software used. | N/A |
| 5.10 | Appliances installed accordance with instructions (IEC 60335-2-75) | Complied. | P |
| 5.101 | Appliances connected to water (temperature 15 °C ± 5 °C) (IEC 60335-2-75) | Complied | P |
| | Appliances filled with water (temperature 15 °C ± 5 °C) (IEC 60335-2-75) | (see above) | N/A |
| | Appliances intended to cool water (temperature 25 °C ± 5 °C) (IEC 60335-2-75) | (see above) | N/A |
| 5.102 | Instruction for maintenance are used (IEC 60335-2-75) | | P |
| | Override key used (IEC 60335-2-75) | | P |
| 5.103 | Test probe 18 of IEC 61032 applied in user area (IEC 60335-2-75) | Complied | P |
| 5.104 | Appliances of the professional and supervised types tested as heating appliances (IEC 60335-2-75) | Not appliances of the professional and supervised types | N/A |

| | | | |
|---|---|---|---|
| 6 | CLASSIFICATION | | P |
| 6.1 | Protection against electric shock: Class 0, 0I, I, II, III .....: | Class 0I | P |
| 6.1 | Protection against electric shock: Class I, II, III (IEC 60335-2-75) ..... : | Class 0I (J 60335-2-75(H20) deviation) | N/A |
| 6.2 | Protection against harmful ingress of water | IPX0 | P |
| | Appliances of class IPX4 (IEC 60335-2-75) and | Indoor use only | N/A |
| | of class IPX5 (IEC 60335-2-75) | Not appliances that may be cleaned by water jets | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 7 | MARKING AND INSTRUCTIONS | | - |
| 7.1 | Rated voltage or voltage range (V).....: | 200 V | P |
| | Nature of supply.....: | Rated frequency marked | N/A |
| | Rated frequency (Hz).....: | 50/60 Hz | P |
| | Rated power input (W):.....: | 1.2 kW | P |
| | Rated current (A) .....: | | N/A |
| | Manufacturer's or responsible vendor's name, trademark or identification mark .....: | テクニカル電子株式会社 | P |
| | Model or type reference .....: | WVRO-1001 | P |
| | Symbol 5172 of IEC 60417, for Class II appliances | Class 0I appliances | N/A |
| | IP number, other than IPX0 .....: | IPX0 | N/A |
| | Rated pressure in MPa (bar) (IEC 60335-2-75)..: | 0.XX Mpa-0.58 Mpa | P |
| | Maximum permissible water pressure in MPa (bar) (IEC 60335-2-75) .....: | 0.58 Mpa | P |
| | Appliance intended to be filled by hand have means that indicates the required level for correct operation (IEC 60335-2-75) | Not intended to be filled by hands | N/A |
| | Appliances incorporating socket outlet, voltage, nature of the supply and current or power output marked in vicinity of the socket outlet (IEC 60335-2-75) | No incorporating a socket outl et | N/A |
| | Appliance intended to be partially immersed in water for cleaning is marked with the max. level of immersion and text "Do not immerse beyond this level" (IEC 60335-2-75) | Not intended to be partially immersed in water for cleaning | N/A |
| 7.2 | Warning for stationary appliances for multiple supply | No multiple supply appliances. | N/A |
| | Warning placed in vicinity of terminal cover | (see above) | N/A |
| 7.3 | Range of rated values marked with the lower and upper limits separated by a hyphen | Rated voltage: 200 V | N/A |
| | Different rated values marked with the values separated by an oblique stroke | (see above) | N/A |
| | Requirement applied for adjustment made by maintenance person (IEC 60335-2-75) | No adjustment to be made by the maintenance person. | N/A |
| 7.4 | Appliances adjustable for different rated voltages, the voltage setting is clearly discernible | Not intended to be adjusted of different rated voltages. | 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 | Rated voltage: 200 V | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | the power input is related to the mean value of the rated voltage range | (see above) | N/A |
| | Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear | (see above) | N/A |
| 7.6 | Correct symbols used | | P |
| |  [symbol 5021 of IEC 60417-1] equipotentiality<br>(IEC 60335-2-75) | No equipotentiality | N/A |
| 7.7 | Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply | No more than two supply conductors | 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) | | P |
| | - marking of protective earthing terminals (symbol 5019 of IEC 60417) | Marked symbol 5019 of IEC 60417 on rear side | P |
| | - marking not placed on removable parts | Marking on a main frame | P |
| | Terminals for equipotential bonding indicated by symbol 5021 of IEC 60417-1 (IEC 60335-2-75) | No equipotentiality | N/A |
| | Symbol not placed on screws, removable washers or other removable parts (IEC 60335-2-75) | (see above) | N/A |
| 7.9 | Marking or placing of switches which may cause a hazard | No such switches used | N/A |
| 7.10 | Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means .....: | Letter used. | P |
| | The figure 0 indicates only OFF position, unless no confusion with the OFF position | | N/A |
| 7.11 | Indication for direction of adjustment of controls | No adjustment of controls | N/A |
| 7.12 | Instructions for safe use provided | Provided in user's manual. | P |
| 7.12.1 | Sufficient details for installation supplied Installation instructions | Properly described in the install instruction. | P |
| | for means of connection and for national rules that may be applicable (IEC 60335-2-75) | Properly described in the install instruction. | P |
| | states if appliance is suitable for outdoor use (IEC 60335-2-75) | Indoor use only | N/A |
| | for appliances that are not at least IPX5 (IEC 60335-2-75) | IPX0 | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | states maximum tilt of appliance for safe operation (IEC 60335-2-75) | A tilt of less than 2 ° | N/A |
| | Instructions for installation of appliances of the professional type (IEC 60335-2-75) | Not appliances of professional type | N/A |
| | Instructions for installation of appliances of the supervised type (IEC 60335-2-75) | Not appliances of the supervised type | N/A |
| | Instructions for installation of class I appliances of the professional type (IEC 60335-2-75) | Not class I appliance of the professional type | N/A |
| 7.12.101 | Instructions for maintenance states how to gain access to maintenance area (IEC 60335-2-75) | Properly described in the service instruction. | P |
| 7.12.101.1 | Instructions for maintenance includes instructions for descaling, cleaning and details for flushing and removal (IEC 60335-2-75) | Properly described in the service instruction | P |
| | Instructions for maintenance for appliance which is not at least IPX5 (IEC 60335-2-75) | IPX0<br>Marked on the manual | P |
| | Instructions for maintenance for appliances incorporating appliance inlet to be immersed in water (IEC 60335-2-75) | No applaince inlet | N/A |
| 7.12.101.2 | Instructions for maintenance when using override key (IEC 60335-2-75) | No override key used. | N/A |
| 7.12.101.3 | Instructions for maintenance having list of accessories (IEC 60335-2-75) | Properly described in the service instruction | P |
| 7.12.101.4 | Instructions for maintenance states ambient temperatures and gives details concerning freezing (IEC 60335-2-75) | Operating temperature:<br>Min. 5 degree C.,<br>Max. 45 degree C. | P |
| 7.12.101.5 | Instructions for maintenance for appliances containing pressurized gas (IEC 60335-2-75) | Not appliances containing pressurized gas | N/A |
| 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 | With means for disconnection (Power cord fitted with a plug) | 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 | No part exceeding 50 K during clause 11 | N/A |
| 7.12.4 | Instructions for built-in appliances: | | N/A |
| | - dimensions of space | No built-in appliances | N/A |
| | - dimensions and position of supporting means | (see above) | N/A |
| | - distances between parts and surrounding structure | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | - dimensions of ventilation openings and arrangement | (see above) | N/A |
| | - connection to supply mains and interconnection of separate components | (see above) | N/A |
| | - plug accessible after installation, unless | (see above) | N/A |
| | a switch complying with 24.3 | No built-in appliances | N/A |
| 7.12.5 | Replacement cord instructions, type X attachment with a specially prepared cord | | N/A |
| | Replacement cord instructions, type Y attachment | set of terminals allowing the c onnection of a flexible cord<br>(Field supply connection) | P |
| | Replacement cord instructions, type Z attachment | (see above) | N/A |
| 7.13 | Instructions and other texts in an official language | Manual provided in Japanese language | P |
| 7.14 | Marking clearly legible and durable | Legible and durable | P |
| 7.15 | Marking on a main part | On the side enclosure | P |
| | Marking clearly discernible from the outside, if necessary after removal of a cover | The required marking is readily visible in operator access area. | P |
| | For portable appliances, cover can be removed or opened without a tool | Stationary appliances | N/A |
| | For stationary appliances, name, trademark or identification mark and model or type reference visible after installation | Stationary appliances | P |
| | For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions | Visible name or trademark and model or type reference after installation. | P |
| | Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading | Indication for controls marked near switch | P |
| 7.16 | Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link | No replaceable fuse link | N/A |
| 8 | PROTECTION AGAINST ACCESS TO LIVE PARTS | | P |
| 8.1 | Adequate protection against accidental contact with live parts | Live parts reliable covered and insulated | P |
| 8.1.1 | Requirement applies for all positions, detachable parts removed | Adequate protection | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Insertion or removal of lamps, protection against contact with live parts of the lamp cap | No lamps behind detachable cover | N/A |
| | 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 | (see below) | N/A |
| | Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts | Ventilation opening | P |
| 8.1.3 | For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements | No visible glowing heating elements | N/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 | No accessible parts considered live. | N/A |
| | - safety extra-low d.c. voltage: not exceeding 42.4 V | (see above) | N/A |
| | - or separated from live parts by protective impedance | (see above) | N/A |
| | If protective impedance: d.c. current not exceeding 2 mA, and | (see above) | N/A |
| | a.c. peak value not exceeding 0.7 mA | (see above) | N/A |
| | - for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF | (see above) | N/A |
| | - for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC | (see above) | N/A |
| 8.1.5 | Live parts protected at least by basic insulation before installation or assembly: | | N/A |
| | - built-in appliances | No built-in appliance | N/A |
| | - fixed appliances | No fixed appliance | N/A |
| | - appliances delivered in separate units | No appliance 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 | | P |
| | Only possible to touch parts separated from live parts by double or reinforced insulation | Double insulation or reinforced insulation provided | P |

| | | |
|---|---|---|
| 9 | STARTING OF MOTOR-OPERATED APPLIANCES | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Not applicable (IEC 60335-2-75) | | 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 |
| 10.2 | Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 | Complied Clause 10.1 | N/A |
| 11 | HEATING | | P |
| 11.1 | No excessive temperatures in normal use | Temperature did not exceed the limits | P |
| 11.2 | Appliances placed and installed in accordance with instructions (IEC 60335-2-75) | Installed in accordance with the instruction | P |
| 11.3 | Temperature rises, other than of windings, determined by thermocouples | Thermocouples used | P |
| | Temperature rises of windings determined by resistance method, unless | Thermocouples used | N/A |
| | the windings makes it difficult to make the necessary connections | Thermocouples used | N/A |
| 11.4 | Heating appliances operated under normal operation at 1.15 times rated power input .....: | Motor operated appliances | N/A |
| | Test repeated with appliance supplied at 1,06 times rated voltage (IEC 60335-2-75) | Motor operated appliances | N/A |
| 11.5 | Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage.....: | Tested at 188 V and 212 V | P |
| 11.6 | Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage.....: | Motor operated appliances | N/A |
| 11.7 | Operation duration corresponding to the most unfavourable conditions of normal use | Until steady conditions established | P |
| | Steady conditions established under normal operation (IEC 60335-2-75) | Until steady conditions established | P |
| 11.8 | Temperature rises not exceeding values in table 3 | (see appended tables) | P |
| | Protective devices do not operate | Protective devices did not operate under normal condition. | P |
| | Sealing compound does not flow out | No sealing compound | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | In user area temperature rise of the surfaces not exceeding limits for handles, knobs, grips and similar parts held in short periods only (IEC 60335-2-75) | Temerature rise of surface in the user area was not exceed the limit | P |
| | Appliance operated at 1,15 times rated power input (IEC 60335-2-75) | Operated at 1.06 times rated voltage | N/A |
| 11.101 | Appliances incorporating refrigerating equippment and having motor-compressors that do not comply with IEC 60335-2-34, are tested at ambient temperature of (IEC 60335-2-75) | No incorporating refrigerating equippment and having motor -compressors | N/A |
| | - 32 °C for temperate contries | (see above) | N/A |
| | - 43 °C for tropical countries | (see above) | N/A |
| | Temperature not exceeding | (see above) | N/A |
| | Windings of motor-compressors with | (see above) | N/A |
| | - synthetic insulation 140 °C | (see above) | N/A |
| | - cellulosic insulation 130 °C | (see above) | N/A |
| | - external enclosures of motor-compressors 150 °C | (see above) | N/A |
| 13 | LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE | | P |
| 13.1 | Leakage current not excessive and electric strength adequate | Complied | P |
| | Heating appliances operated at 1.15 times rated power input.....: | Motor operated appliances | N/A |
| | Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage.....: | Tested voltage:212 V | P |
| | Protective impedance and radio interference filters disconnected before carrying out the tests | No protective impedance and radio interference filters | N/A |
| 13.2 | Leakage current measured by means of the circuit described in figure 4 of IEC 60990 | Leakage current measured with circuit described in figure 4 of IEC 60990. | P |
| | Leakage current measurements | (see appended table) | P |
| 13.3 | Electric strength tests according to table 4 | (see appended table) | P |
| | No breakdown during the tests | No breakdown | P |
| 14 | TRANSIENT OVERVOLTAGES | | N/A |
| | Appliances withstand the transient overvoltages to which they may be subjected | No clearances having a value less than specified in table 16. | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 | (see appended table) | N/A |
| | No flashover during the test, unless of functional insulation | Not applied. | N/A |
| | In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited | (see above) | N/A |
| 15 | MOISTURE RESISTANCE | | P |
| 15.1 | Enclosure provides the degree of moisture protection according to classification of the appliance | IPX0 | N/A |
| | Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3 | IPX0 | 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 | IPX0 | N/A |
| 15.1.1 | Appliances, other than IPX0, subjected to tests as specified in IEC 60529 .....: | IPX0 | N/A |
| | Appliances of the professional type (IPX3) subjected to test for 5 min (IEC 60335-2-75) | Not appliances of the professional type | N/A |
| 15.1.2 | Hand-held appliance turned continuously through the most unfavourable positions during the test | Not hand-held appliances | N/A |
| | Built-in appliances installed according to the instructions | Not built-in appliances | N/A |
| | 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 |
| | 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 |
| | 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 |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Wall-mounted appliances, take into account the distance to the floor stated in the instructions | Not wall-mounted appliances | N/A |
| | Appliances with type X attachment fitted with a flexible cord as described | Not Type X attachment | N/A |
| | Detachable parts tested as specified | No detachable parts | N/A |
| 15.2 | Spillage of liquids or solids does not affect the electrical insulation (IEC 60335-2-75) | Complied | P |
| | Electrical insulation affected by cleaning, desinfecting, descaling and similar operations (IEC 60335-2-75) | Complied | P |
| | Water for tests contains appr. 1 % NaCl (IEC 60335-2-75) | 1 % NaCl | P |
| | Appliance inlet tested in most unfavourable position (IEC 60335-2-75) | No appalince inlet | N/A |
| | Appliance is operated under standby mode before each test (IEC 60335-2-75) | Complied | P |
| | After each overfilling or application of liquid appliance withstand electric strength test in 16.3 (IEC 60335-2-75) | Line/Neutral and metallic part : 1 250 V<br><br>Line/Neutral and non-metallic part with wrapping foil: 3 000 V | P |
| | No trace of liquids or solids on insulation which can result in reduction of creepage distances and clearances below values specified in 29 (IEC 60335-2-75) | No trace of liquids or solids on insulation which can result in reduction of creepage distances and clearances below values specified in 29 | P |
| | Detachable parts in user area removed or kept in most unfavourable position (IEC 60335-2-75) | No detachable parts | N/A |
| 15.2.101 | Containers for powdered or granulated ingredients or products filled with dry granulated sugar and further quantity equal to 15 % of the total capacity of the container, poured in steadily over 1 min (IEC 60335-2-75) (l) .....: | No container for powdered or granulated | N/A |
| 15.2.102 | Manually filled liquid containers are filled with water and further quantity equal to 15 % of the total capacity of each container or 0,25 l, poured in steadily over 1 min (IEC 60335-2-75) (l) .....: | No manually filled liquid container | N/A |
| 15.2.103 | Outlets of liquid mixing containers filled with water and further quantity equal to 15 % of total capacity of each container or 0,25 l, poured in steadily over 15 s (IEC 60335-2-75) (l) .....: | No outlets of liquid mixing container | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 15.2.104 | Drains for liquid waste containers filled with water and further quantity equal to 15 % of total capacity of each container or 0,25 l, poured in steadily over 15 s (IEC 60335-2-75) (l) .....: | No liquid waste container | N/A |
| 15.2.105 | Drain taps of containers in turn to most unfavourable position and supplied at rated voltage and operated under normal operation until water emergence stabilizes (IEC 60335-2-75) | No drain taps of containers used during maintenance operations are adjusted | N/A |
| 15.2.106 | Failure of water level control system simulated (IEC 60335-2-75) | | P |
| | Water allowed flow 1 min after first evidence of overflow unless inflow stops automaticly (IEC 60335-2-75) | Water go out of product throu gh the drain pump. | P |
| 15.2.107 | Appliances dispensing liquid into serving container tested by pouring rapidly 0,5 l of water over the surface where container is filled, transported and removed by user (IEC 60335-2-75) | No water reservoir | P |
| 15.2.108 | Appliances with accessible openings tested by slowly pouring 0,25 l of saline solution into each opening (IEC 60335-2-75) | Pouring 0.25l to coin opening | P |
| 15.2.109 | Appliances having external surfaces on which it is possible to place a vessel, tested by rapidly pouring 0,5 l of water over surface (IEC 60335-2-75) | No surfaces on which it is pos sible to place a vessel | N/A |
| | For appliances of the professional type (highest surface lower than 1,5 m) quantity of saline solution is increased to 5 l (IEC 60335-2-75) | Not appliances of the professional type | N/A |
| 15.2.110 | Appliances delivering prepacked products tested to simulate leakage from package over any area where the package is stored or transported (IEC 60335-2-75) | Not appliances delivering prepacked products | N/A |
| | Liquid leakage (IEC 60335-2-75) (l) .....: | (see above) | N/A |
| | Leakage of dry products (IEC 60335-2-75) (dl) .: | (see above) | N/A |
| 15.2.111 | Instructions for maintenance carried out three times (IEC 60335-2-75) | Complied | P |
| 15.2.112 | Parts liable to be cleaned are cleaned with a sponge approximately 150 mm x 75 mm x 50 mm saturated with water and sponge applied approximately 10 s to each surface (IEC 60335-2-75) | No such parts | N/A |
| 15.2.113 | Appliances subject to descaling are descaled 10 times and then operated under standby mode (IEC 60335-2-75) | No such parts | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 15.3 | Appliances proof against humid conditions | Properly proof against humid conditions in normal use | P |
| | Humidity test for 48 h in a humidity cabinet | For 48 h at temperature: 30 °C, humidity: 93 % R.H. | P |
| | The appliance withstands the tests of clause 16 | There were no breakdown occurred. | P |
| 15.101 | No water contact with live parts (IEC 60335-2-75) | No contact with live parts | P |
| 15.102 | Appliance operated in normal operation at 1,15 times rated power input (IEC 60335-2-75) | Not intended to be partially or completely immersed in water | N/A |
| | Immersed in water; temperature 10 °C – 25 °C (IEC 60335-2-75) (°C) .....: | (see above) | N/A |
| | After 1 h appliance removed and subjected to leakage current test of 16.2 (IEC 60335-2-75) | (see above) | N/A |
| | Withstands electric strength test of 16.3 (IEC 60335-2-75) | (see above) | N/A |
| | Operated under normal operation 240 h (IEC 60335-2-75) | (see above) | N/A |
| | No trace of water on insulation, which could result in reduction of clearances and creepage distances below values specified in cl. 29 (IEC 60335-2-75) | (see above) | N/A |
| 16 | LEAKAGE CURRENT AND ELECTRIC STRENGTH | | P |
| 16.1 | Leakage current not excessive and electric strength adequate | Complied | P |
| | Protective impedance disconnected from live parts before carrying out the tests | No protective impedance | N/A |
| 16.2 | Single-phase appliances: test voltage 1.06 times rated voltage.....: | Tested voltage: 212 V | P |
| | Three-phase appliances: test voltage 1.06 times rated voltage divided by √3 .....: | Single-phase appliances | N/A |
| | Leakage current measurements | (see appended table) | P |
| | Leakage current limits as specified for stationary class I heating appliances; measurements (IEC 60335-2-75) | Motor operated appliances | N/A |
| 16.3 | Electric strength tests according to table 7 | (see appended table) | P |
| | No breakdown during the tests | No breakdwon | P |
| 17 | OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS | | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use | (see appended table) | P |
| | Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied.....: | Tested voltage: 212 V | 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 | No such parts | N/A |
| | Temperature of the winding not exceeding the value specified in table 8, | (see appended table) | P |
| | however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1 | No fail-safe transformers | N/A |
| 18 | ENDURANCE | | N/A |
| | Not applicable (IEC 60335-2-75) | | N/A |
| 19 | ABNORMAL OPERATION | | P |
| 19.1 | The risk of fire or mechanical damage under abnormal or careless operation obviated | No risk of fire or mechanical damage | P |
| | Electronic circuits so designed and applied that a fault will not render the appliance unsafe | Complied | P |
| | Appliances subjected to tests of 19.101 and 19.102 (IEC 60335-2-75) | Clause 19.101 only applied | P |
| | Detachable parts in user area placed in most unfavourable position of removed (IEC 60335-2-75) | Bottle buttress | P |
| | Containers filled to most unfavourable level (IEC 60335-2-75) .....: | | N/A |
| | Appliances provided with control limiting the pressure during tests of cl. 11 are tested subjected to tests of 19.4 (IEC 60335-2-75) | No control limiting the pressure | 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.....: | No heating element | N/A |
| 19.3 | Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input.....: | No heating element | N/A |
| 19.4 | Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited | No heating element | 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 | No heating element | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | The test repeated with reversed polarity and the other end of the heating element connected to the sheath | (see above) | 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 | (see above) | N/A |
| 19.6 | Appliances with PTC heating elements tested at rated voltage, establishing steady conditions | No PTC heating elements | 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 | (see above) | 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 | 1. RO Pump<br>2. Drain Pump | P |
| | Locked rotor, motor capacitors open-circuited or short-circuited, if required | | P |
| | Locked rotor, capacitors open-circuited one at a time | | P |
| | Test repeated with capacitors short-circuited one at a time, if required | | P |
| | Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed | period equal to the maximum period allowed | P |
| | 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) | P |
| | Appliance operated with most unfavourable dispensing cycle for the motor (IEC 60335-2-75) | | N/A |
| 19.8 | Three-phase motors operated at rated voltage with one phase disconnected | No three-phase motors | N/A |
| 19.9 | Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously | No motors intended to be remotely or automatically controlled | N/A |
| | Winding temperatures not exceeding values as specified | (see above) | N/A |
| 19.10 | Series motor operated at 1.3 times rated voltage for 1 min.....: | No serires motor | N/A |
| | During the test, parts not being ejected from the appliance | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 19.11 | Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1 | | P |
| 19.11.1 | Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions: | | 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 | | P |
| | - 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 | | P |
| 19.11.2 | Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified: | | P |
| | a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29 | | N/A |
| | b) open circuit at the terminals of any component | (see appended table) | P |
| | c) short circuit of capacitors, unless they comply with IEC 60384-14 | (see appended table) | 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 | (see appended table) | P |
| | e) failure of triacs in the diode mode | (see appended table) | N/A |
| | 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 | (see appended table) | N/A |
| | Fault conditions simulated until steady conditions established (IEC 60335-2-75) | Until steady conditions established | P |
| 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 | No protective electronic circuit | N/A |
| | - the appliance complies with the conditions specified in 19.13 | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | - any current flowing through protective impedance not exceeding the limits specified in 8.1.4 | (see above) | 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 | Conductor of a printed board was not open-circuited | 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 | (see above) | N/A |
| | - the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged | (see above) | 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).....: | Fuse(FS1) on PCB rating : 3.1 5 A,<br>Measured current:<br>more than 10 A. | P |
| 19.13 | During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts | No emit flames, molten metal, poisonous or ignitable gas in hazardous amounts | P |
| | Temperature rises not exceeding the values shown in table 9 | (see appended table) | P |
| | Enclosures not deformed to such an extent that compliance with cl. 8 is impaired | No deformed | P |
| | If the appliance can still be operated it complies with 20.2 | Complied | P |
| | 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.....: | Line/Neutral and metallic part: 1 250 V | P |
| | - supplementary insulation .....: | | N/A |
| | - reinforced insulation.....: | Line/Neutral and non-metallic part with wrapping foil: 3 000 V | P |
| | Molten plastic not emitted during tests (IEC 60335-2-75) | Complied | P |
| | Liquid (over 80 °C), steam or solid objects not emitted from unexpected places (IEC 60335-2-75) | Not uesd liquid (over 80 °C), s team or solid objects | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 19.101 | Appliance supplied at rated voltage and operated under normal operation; any operation or defect in normal use applied (IEC 60335-2-75) | (see appended table) | P |
| 19.102 | Thermal cut-out of capillary type tested as specified in 19.4 (IEC 60335-2-75) | No capilary type cut-out | N/A |
| 20 | STABILITY AND MECHANICAL HAZARDS | | P |
| 20.1 | Adequate stability | | P |
| | Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn | No overturned. | P |
| | Tilting test repeated on appliances with heating elements, angle of inclination increased to 15° | No heating elements | N/A |
| | Possible heating test in overturned position; temperature rise does not exceed values shown in table 9 | (see above) | N/A |
| | Tested with doors, lids and similar parts in maintenance area placed in normal position of use (IEC 60335-2-75) | | N/A |
| | in most unfavourable position, being tilted to angle of 5° (IEC 60335-2-75) | (see above) | N/A |
| 20.2 | Moving parts adequately arranged or enclosed as to provide protection against personal injury | Enclosed | P |
| | Protective enclosures, guards and similar parts are non-detachable | Fixed by screws, No detachable | P |
| | Adequate mechanical strength and fixing of protective enclosures | Adequate mechanical strength | P |
| | Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure | Complied | P |
| | Not possible to touch dangerous moving parts with test probe | Not possible to touch dangerous moving parts | N/A |
| | Removing of covers over moving parts having a kinetic energy exceeding 4 J possible when parts stationary or with tool only (IEC 60335-2-75) | No such parts | N/A |
| 21 | MECHANICAL STRENGTH | | P |
| | Appliance has adequate mechanical strength and is constructed as to withstand rough handling | Appliance has adequate mechanical strength | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | No damage after three blows applied to various parts of the enclosure, impact energy 0,5 ± 0,04 J | Spring hammer used for testing, enclosure, display parts, fan motor cover , No damaged | P |
| | If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3 | No damaged | N/A |
| | If necessary, repetition of groups of three blows on a new sample | No damaged | N/A |
| | Impact energy of 0,5 J applied in maintenance area (IEC 60335-2-75) | | P |
| | Impact energy 1,0 J in user area (IEC 60335-2-75) | Spring hammer used for testing, enclosure, display parts, fan motor cover , No damaged | P |
| 22 | CONSTRUCTION | | P |
| 22.1 | Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled | IPX0 | 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 | | N/A |
| | - a switch complying with 24.3 | | N/A |
| | - a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided | Field supply power connection | P |
| | - an appliance inlet | (see above) | 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 | (see above) | 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 | (See above) | N/A |
| | 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 | (See above) | 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 | (See above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 22.4 | Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets | No provided with pin | P |
| 22.5 | No risk of electric shock when touching the pins of the plug | No provided supply plug | N/A |
| 22.6 | Electrical insulation not affected by condensing water or leaking liquid | Adequately protected | P |
| | Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak | Class 0I appliances | 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 |
| | Pressure relief devices constructed so that they cannot be rendered inoperative or set to a higher pressure without aid of a tool (IEC 60335-2-75) | No pressure relief device | N/A |
| | Pressure not exceeding 1,2 times rated pressure (IEC 60335-2-75) | Not steam-producing devices | N/A |
| | Pressure raised 2 x rated pressure for 5 min (IEC 60335-2-75) | Not steam-producing devices | N/A |
| | No rupture and permanent deformation (IEC 60335-2-75) | Not steam-producing devices | N/A |
| | Withstand electric strength test of 16.3 (IEC 60335-2-75) | 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 pulling during cleaning of components | P |
| 22.9 | Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances | Complied | P |
| | Adequate insulating properties of oil or grease to which insulation is exposed | | N/A |
| 22.10 | Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely | No non-self-resetting controls | 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 | Secured by screws | P |
| | Obvious locked position of snap-in devices used for fixing such parts | No snap-in devices | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing | (see above) | N/A |
| | Tests as described | Pull: 50 N, Push: 50 N | P |
| 22.12 | Handles, knobs etc. fixed in a reliable manner | No handle, knob etc. | N/A |
| | Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible | No handle, knob etc. | N/A |
| | Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied | No handle, knob etc. | N/A |
| | Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied | Door on/off lever | 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 | No handles when gripped as in normal use | N/A |
| 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 | No exposed pointed ends of self tapping screws | 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 | (see above) | N/A |
| | Electric strength test of 16.3, voltage of 1000 V applied | (see above) | N/A |
| 22.17 | Spacers not removable from the outside by hand or by means of a screwdriver or a spanner | No spacers | N/A |
| 22.18 | Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use | Adequate resistant to corrosion | P |
| 22.19 | Driving belts not used as electrical insulation | No driving belts | 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 | No thermal insulation | N/A |
| | Compliance is checked by inspection and, if necessary, by appropriate test | (See above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 22.21 | Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated | Such materials are not used as insulation. | P |
| 22.22 | Appliances not containing asbestos | No asbestos | P |
| 22.23 | Oils containing polychlorinated biphenyl (PCB) not used | No Oils containing polychlorinated biphenyl | N/A |
| 22.24 | Bare heating elements adequately supported | No bare heating elements | N/A |
| | In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts | (see above) | N/A |
| 22.25 | Sagging heating conductors cannot come into contact with accessible metal parts | No sagging heating conductors | 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 | Double or reinforced insulation is provided between SELV circuit and other live parts | P |
| 22.27 | Parts connected by protective impedance separated by double or reinforced insulation | Part connected by protective impedance separated by double insulation or reinforced insulation | P |
| 22.28 | Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation | Class 0I appliance | 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 | Class 0I appliance | N/A |
| 22.30 | Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or | Plastic part of enclosure was s erving as reinforced insulation after it was removed. | 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 | (see above) | N/A |
| 22.31 | Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified in clause 29 as a result of wear | Not reduce the limits as a result of wear | P |
| | Clearances and creepage distances between live parts and accessible parts not reduced below values for supplementary insulati0on, if wires, screws etc. become loose | Not reduce the limits as a result of loosening | P |
| 22.32 | Supplementary and reinforced insulation designed or protected against deposition of dirt or dust | Protected against pollution. | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2 | No rubber insulations. | N/A |
| | Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation | No ceramic materials as insulation. | N/A |
| | Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature | No runbber parts | N/A |
| 22.33 | Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts | Liquids was not direct contact with live parts. | P |
| | Electrodes not used for heating liquids | No electroides | 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 | Liquids was not direct contact with basic or reinforced insulation | P |
| | For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation | Liquids was not contact with live parts | N/A |
| | Ingredients and products have not direct contact with live parts or for class II constructions, with basic insulation (IEC 60335-2-75) | No such parts | N/A |
| 22.34 | Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed | Window door handle | P |
| 22.35 | Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault | Window door handle | 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 | No such handles, levers and knob | 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 | | 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 handles continuously held in the hand in normal use | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 22.37 | Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42 | Class 0I appliance | N/A |
| | Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42 | Class 0I appliance | N/A |
| 22.38 | Capacitors not connected between the contacts of a thermal cut-out | Complied | P |
| 22.39 | Lamp holders used only for the connection of lamps | Complied | 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 | Not appliances intended to be moved while in operation | N/A |
| 22.41 | No components, other than lamps, containing mercury | Not used component containing mercury | P |
| 22.42 | Protective impedance consisting of at least two separate components | No protective impedance | N/A |
| | Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited | (see above) | N/A |
| 22.43 | Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur | Rated voltage: 200 V~ | 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 | No shaped and decorated so that the appliance is likely to be treated as a toy by chidren | 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 | No air used as reinforced insulations | N/A |
| 22.101 | It is not possible to render an interlock inoperative without using override key (IEC 60335-2-75) | No interlock | N/A |
| 22.102 | Access to service area with access key only for maintenance area (IEC 60335-2-75) | Complied | P |
| 22.103 | Appliances constructed so that scalding by steam is prevented (IEC 60335-2-75) | No steam | N/A |
| 22.104 | Dispensed products not contaminated by substances (lubricants, debris) (IEC 60335-2-75) | Complied | P |
| 22.105 | It is not possible to open draw-off taps and drain valves, or to withdraw drain plugs inadvertently (IEC 60335-2-75) | Complied | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 22.106 | Coin boxes and containers positioned or protected so that overfilling cannot cause hazard (IEC 60335-2-75) | Complied | P |
| 22.107 | Appliances connected to water mains constructed for a static water pressure not less than 0,6 MPa (IEC 60335-2-75) | Checked water pressure test by 0,6 MPa and passed | P |
| 22.108 | Moisture, grease and products used in appliance does not affect clearance and creepage distance values (IEC 60335-2-75) | Complied | P |
| 22.109 | Warning lights coloured red (IEC 60335-2-75) | No warning lights | N/A |
| 22.110 | Appliance having pressurized containers constructed so that lid cannot be removed while the pressure within container is excessive, or when pressure released to value that lid can be removed without risk (IEC 60335-2-75) | Not appliance having pressurized containers | N/A |
| 23 | INTERNAL WIRING | | - |
| 23.1 | Wireways smooth and free from sharp edges | Wireways are smooth and free from sharp edges | P |
| | Wires protected against contact with burrs, cooling fins etc. | No burr or cooling fins along wire ways | P |
| | Wire holes in metal well rounded or provided with bushings | Adequate well rounded | P |
| | Wiring effectively prevented from coming into contact with moving parts | No contact with moving part | P |
| 23.2 | Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners | No such components | N/A |
| | Beads inside flexible metal conduits contained within an insulating sleeve | No beads | N/A |
| 23.3 | Electrical connections and internal conductors movable relatively to each other not exposed to undue stress | Not movable relatively to each other in normal use | N/A |
| | Flexible metallic tubes not causing damage to insulation of conductors | No flexible metallic tubes | N/A |
| | Open-coil springs not used | No open-coil springs | N/A |
| | Adequate insulating lining provided inside a coiled spring, the turns of which touch one another | No coiled springs | N/A |
| | No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance | No movable conductors | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | For conductors 200 000 flexings during normal use, and (IEC 60335-2-75) | (see above) | N/A |
| | 10 000 flexings during maintenance operations (IEC 60335-2-75) | (see above) | N/A |
| | Electric strength test, 1000 V between live parts and accessible metal parts | (see above) | N/A |
| 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 | (see below) | P |
| | No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation | 2000 V, 15 min | P |
| 23.6 | Sleeving used as supplementary insulation on internal wiring retained in position by positive means | No sleeving used as supplementary insulation | N/A |
| 23.7 | The colour combination green/yellow used only for earthing conductors | The colour combination green/yellow used | P |
| 23.8 | Aluminium wires not used for internal wiring | No aluminium wires | P |
| 23.9 | No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless | No lead-tin soldering used | P |
| | clamping means so constructed that there is no risk of bad contact due to cold flow of the solder | (see above) | N/A |
| 23.101 | Construction and location of anchorages for internal wiring (IEC 60335-2-75) | No anchorages for internal wiring | N/A |
| | - wiring cannot touch the clamping screws of the anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation; | (see above) | N/A |
| | - wiring is not clamped by a metal screw which bears directly on the wiring; | (see above) | N/A |
| | - for class I appliances, the anchorages are of insulating material or provided with insulating lining | (see above) | N/A |
| | - for class II appliances, the anchorages are of insulating material or if of metal, insulated from accessible metal parts by supplementary insulation | No anchorages for internal wiring | N/A |
| 23.102 | Internal wiring comply with 25.13, 25.14, 25.15 and 25.21 (IEC 60335-2-75) | No such internal wiring | N/A |
| 24 | COMPONENTS | | - |
| 24.1 | Components comply with safety requirements in relevant IEC standards | Complying with IEC or equivalent standard | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | 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 | Complying with IEC or equivalent standard | P |
| | 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 | Complying with IEC or equivalent standard | 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 | Complied with standard IEC 60384-14 | P |
| | tested according to annex F | (see above) | N/A |
| 24.1.2 | Safety isolating transformers complying with IEC 61558-2-6, or | No safety isolating transformers | N/A |
| | tested according to annex G | (see above) | N/A |
| 24.1.3 | Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or | Switch was operated on the low voltage (24 V d.c.) | N/A |
| | tested according to annex H | (see above) | N/A |
| 24.1.4 | Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being: | | P |
| | - thermostats: 10 000 | Not used such components | N/A |
| | - temperature limiters: 1 000 | Not used such components | N/A |
| | - self-resetting thermal cut-outs: 300 | Not used such components | N/A |
| | - non-self-resetting thermal cut-outs: 30 | Not used such components | N/A |
| | - timers: 3 000 | | P |
| | - energy regulators: 10 000 | Not used such components | N/A |
| 24.1.5 | Appliance couplers complying with IEC 60320-1 | No appliance couplers | N/A |
| | However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3 | (see above) | N/A |
| | Appliance couplers incorporating thermostats, thermal cut-outs or fuses in connector complying with IEC 60320-1 (IEC 60335-2-75) | (see above) | N/A |
| 24.1.6 | Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable | No small lampholders | N/A |
| 24.2 | No switches or automatic controls in flexible cords | No switches or automatic controls in flexible cords. | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| 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 | Protective device is not located in the fixed wiring. | P |
| | No thermal cut-outs that can be reset by soldering | No reset by soldering | P |
| | Switches and automatic controls operating at safety extra-low voltage fitted in interconnection cords in maintenance area (IEC 60335-2-75) | No such construction | 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 switches intended for all-pole disconnection | 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 plugs and socket-outlets for ELV circuit and heating elements. | N/A |
| 24.5 | Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly | | P |
| | 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 | | P |
| 24.6 | Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V. | No such motors | N/A |
| | In addition, the motors are complying with the requirements of Annex I | (see above) | N/A |
| 24.101 | Connecting devices of interconnection cords identified (IEC 60335-2-75) | No interconnection cords | N/A |
| 24.102 | Interlock switches complying with IEC 61058-1 and ensures all-pole disconnection (IEC 60335-2-75) | No interlock switches | N/A |
| | Compliance checked accordance with IEC 61058-1 (IEC 60335-2-75) | No interlock switches | N/A |
| | Number of cycles of operation for test of cl. 17 (IEC 60335-2-75) | No interlock switches | N/A |
| | - 10 000 cycles | (see above) | N/A |
| | - 100 000 cycles | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 24.103 | Thermal cut-outs are non-self-resetting with trip-free mechanism if they disconnect heating elements or motors (IEC 60335-2-75) | Motor operated appliances | N/A |
| 25 | SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS | | - |
| 25.1 | Appliance not intended for permanent connection to fixed wiring, means for connection to the supply: | | N/A |
| | - supply cord fitted with a plug | It will be permanently connected to fixed wiring by field supply power connection | N/A |
| | - an appliance inlet having at least the same degree of protection against moisture as required for the appliance | No inlets used | N/A |
| | - pins for insertion into socket-outlets | No pins used | N/A |
| 25.2 | Appliance not provided with more than one means of connection to the supply mains | One means of connection was used. | P |
| | Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown | No multiple 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 | Field supply power connection by manufacturer | P |
| | Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6 | (see above) | N/A |
| | Appliance provided with a set of terminals allowing the connection of a flexible cord | Set of terminals allowing the connection of a flexible cord provided. | P |
| | Appliance provided with a set of supply leads accommodated in a suitable compartment | (see above) | 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 | (see above) | N/A |
| 25.4 | Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10 | No cable and conduit | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29 | No cable and conduit | N/A |
| 25.5 | Method for assemble supply cord with the appliance: | | N/A |
| | - type X attachment | Set of terminals allowing the c onnection of a flexible cord pro vided. | N/A |
| | - type Y attachment | | N/A |
| | - 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 |
| 25.6 | Plugs fitted with only one flexible cord | No provided plugs fitted with flexible cord | N/A |
| 25.7 | Supply cord not lighter than: | | N/A |
| | - braided cord (60245 IEC 51) | Set of terminals allowing the connection of a flexible cord provided. | N/A |
| | - ordinary tough rubber sheathed cord (60245 IEC 53) | | N/A |
| | - flat twin tinsel cord (60227 IEC 41) | | N/A |
| | - light polyvinyl chloride sheathed cord (60227 IEC 52), appliance not exceeding 3 kg | | N/A |
| | - ordinary polyvinyl chloride sheathed cord (60227 IEC 53), appliance exceeding 3 kg | | N/A |
| | Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless | | N/A |
| | 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 |
| | Supply cord of appliances intended for outdoor use is polychloroprene sheathed cord (60245 IEC 57) (IEC 60335-2-75) | | N/A |
| 25.8 | Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area ($mm^2$).....: | Set of terminals allowing the c onnection of a flexible cord pro vided. | N/A |
| 25.9 | Supply cord not in contact with sharp points or edges | No provided plugs fitted with flexible cord | N/A |
| 25.10 | Green/yellow core for earthing purposes in Class I appliance | No provided plugs fitted with flexible cord | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 25.11 | Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless | No provided plugs fitted with flexible cord | N/A |
| | 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 | No provided plugs fitted with flexible cord | N/A |
| 25.13 | Inlet opening so shaped as to prevent damage to the supply cord | Inlet bushing was provided for field supply connection | P |
| | Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided | No provided plugs fitted with flexible cord | N/A |
| | If unsheathed supply cord, a similar additional bushing or lining is required, unless | No provided plugs fitted with flexible cord | N/A |
| | the appliance is class 0 | Class 0I appliance | N/A |
| 25.14 | Supply cords adequately protected against excessive flexing | No moving during normal use | N/A |
| | Flexing test: | | |
| | - applied force (N) .....: | No moving during normal use | N/A |
| | - number of flexings .....: | (see above) | N/A |
| | The test does not result in: | | |
| | - short circuit between the conductors | No moving during normal use | N/A |
| | - breakage of more than 10% of the strands of any conductor | (see above) | N/A |
| | - separation of the conductor from its terminal | (see above) | N/A |
| | - loosening of any cord guard | (see above) | N/A |
| | - damage, within the meaning of the standard, to the cord or the cord guard | (see above) | N/A |
| | - broken strands piercing the insulation and becoming accessible | (see above) | N/A |
| 25.15 | Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage | Set of terminals allowing the connection of a flexible cord provided. | N/A |
| | The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged | (see above) | N/A |
| | Pull and torque test of supply cord, values shown in table 12: pull (N); torque (not on automatic cord reel) (Nm) .....: | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals | (see above) | N/A |
| | Creepage distances and clearances not reduced below values specified in 29.1 | (see above) | N/A |
| | Internal wiring; pull force 30 N, torque 0,1 Nm, and push force 30 N (IEC 60335-2-75) | (see above) | N/A |
| 25.16 | Cord anchorages for type X attachments constructed and located so that: | | N/A |
| | - replacement of the cord is easily possible | Not type X attachments | N/A |
| | - it is clear how the relief from strain and the prevention of twisting are obtained | Not type X attachments | N/A |
| | - they are suitable for different types of cord | (see above) | 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 | (see above) | N/A |
| | - the cord is not clamped by a metal screw which bears directly on the cord | (see above) | N/A |
| | - at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord | (see above) | N/A |
| | - screws which have to be operated when replacing the cord do not fix any other component, if applicable | (see above) | N/A |
| | - if labyrinths can be bypassed the test of 25.15 is nevertheless withstood | (see above) | 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 | (see above) | 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 | (see above) | N/A |
| 25.17 | Adequate cord anchorages for type Y and Z attachment | No provided plugs fitted with flexible cord | N/A |
| 25.18 | Cord anchorages only accessible with the aid of a tool, or | | N/A |
| | so constructed that the cord can only be fitted with the aid of a tool | No provided plugs fitted with flexible cord | N/A |
| 25.19 | Type X attachment, glands not used as cord anchorage in portable appliances | Not type X attachment | N/A |
| | Tying the cord into a knot or tying the cord with string not used | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 25.20 | Conductors of the supply cord for type Y and Z attachment adequately additionally insulated | No accessible metal parts insulated by basic insulation | 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. | Not type X attachment | 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 | Not portable appliances | N/A |
| 25.22 | Appliance inlet: | | — |
| | - live parts not accessible during insertion or removal | No appliance inlet | N/A |
| | - connector can be inserted without difficulty | (see above) | N/A |
| | - the appliance is not supported by the connector | (see above) | 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 | (see above) | N/A |
| 25.23 | Interconnection cords comply with the requirements for the supply cord, except as specified | No interconnection cords | N/A |
| | If necessary, electric strength test of 16.3 | (see above) | 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 | No interconnection cords | N/A |
| 25.25 | Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083 | No such pins | N/A |
| 26 | TERMINALS FOR EXTERNAL CONDUCTORS | | - |
| 26.1 | Appliances provided with terminals or equally effective devices for connection of external conductors | Complied | P |
| | Terminals only accessible after removal of a non-detachable cover | Complied | P |
| 26.2 | Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered | Provided with terminals which was connected by screws. | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Screws and nuts serve only to clamp supply conductors, except | Screws serve only to clamp su pply conductors | P |
| | 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 | No soldered connections used | N/A |
| | Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint | (see above) | 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 | | P |
| | Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means: | | P |
| | - the terminal does not loosen | | P |
| | - internal wiring is not subjected to stress | | P |
| | - clearances and creepage distances are not reduced below the values in 29 | | P |
| | 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) .....: | | P |
| 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 | Conductors was prevented from slipping out | P |
| 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 | No type X attachment | N/A |
| | Stranded conductor test, 8 mm insulation removed | (see above) | 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 | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 26.6 | Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm²) .....: | Rated current: 12 A nominal cross-sectional area: 1.5 mm² | P |
| | Terminals only suitable for a specially prepared cord | No specially prepared cord | N/A |
| 26.7 | Terminals for type X attachment accessible after removal of a cover or part of the enclosure | Not type X attachment | N/A |
| 26.8 | Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other | located close to each other | P |
| 26.9 | Terminals of the pillar type constructed and located as specified | No pillar type terminal | 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 | Not used flat twin tinsel cords. | N/A |
| | Pull test of 5 N to the connection | (see above) | N/A |
| 26.11 | For type Y and Z attachment: soldered, welded, crimped and similar connections may be used | Not type Y and Z attchment | N/A |
| | For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone | Class 0I appliance | N/A |
| | For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free | Class 0I appliance | N/A |
| 27 | PROVISION FOR EARTHING | | - |
| 27.1 | Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet | Class 0I appliances, Complied | P |
| | Earthing terminals not connected to neutral terminal | Complied | P |
| | Class 0, II and III appliance have no provision for earthing | Class 0I appliances | N/A |
| | Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits | Complied | P |
| 27.2 | Clamping means adequately secured against accidental loosening | Screw and star washer used. | P |
| | Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and | No external equipotential bonding conductors | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | do not provide earthing continuity between different parts of the appliance | (see above) | N/A |
| | Conductors cannot be loosened without the aid of a tool | (see above) | N/A |
| | Stationary Class I appliances of professional type installed in kitchens incorporates terminal for connection of external equipotential conductor, and this terminal connected to all fixed accessible metal parts (IEC 60335-2-75) | No professional type appliance | N/A |
| 27.3 | For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage | Class 0I appliance | N/A |
| 27.4 | No risk of corrosion resulting from contact between metal of earthing terminal and other metal | No risk of corrosion | P |
| | Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure | (see above) | P |
| | Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm | No electroplated coating | N/A |
| | Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure | Adequate protection against rusting | P |
| | In case of aluminium alloys precautions taken to avoid risk of corrosion | No aluminium enclosure | N/A |
| 27.5 | Low resistance of connection between earthing terminal and earthed metal parts | (see below) | 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 | No PELV circuit | N/A |
| | Resistance not exceeding 0,1 Ω at the specified low-resistance test | Measured: 0,052 Ω | P |
| 27.6 | The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances | No hand held appliance | 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 | No hand held appliance | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | - the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5 | (see above) | N/A |
| 28 | SCREWS AND CONNECTIONS | | - |
| 28.1 | Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses | Electrical connection parts can be withstand mechanical stress occurring in normal use | P |
| | Screws not of soft metal liable to creep, such as zinc or aluminium | No screw made by zinc or alu minium | P |
| | Diameter of screws of insulating material min. 3 mm | No screw of insulating material | N/A |
| | Screws of insulating material not used for any electrical connection or connections providing earthing continuity | No screw of insulating material | N/A |
| | Screws used for electrical connections or connections providing earthing continuity screw into metal | Screw into metal | P |
| | Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation | No screw of insulating material | 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 | Not type X attachment | N/A |
| | For screws and nuts; test as specified | (see appended table) | P |
| | Screws which may be removed during maintenance operations (IEC 60335-2-75) | Complied | P |
| | Screws to be tightened during maintenance operations (IEC 60335-2-75) | Complied | 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 | Not transmitted through non-ceramic insulating material that is liable to shrink or distort. | P |
| | This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A | No electrical connections in circuits of appliances | N/A |
| 28.3 | Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together | No screws used for electrical connection | N/A |
| | Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread | No screws used for electrical connection | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | 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 | No screws used for electrical connection | N/A |
| | 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 | No screws used for electrical connection | N/A |
| | Screws operated by maintenance person (IEC 60335-2-75) | Complied | P |
| 28.4 | Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity | Considered. | P |
| | Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion | No rivets | N/A |
| 29 | CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION | | - |
| | Clearances, creepage distances and solid insulation withstand electrical stress | See appended Cl 29.1, Cl 29.2 and Cl 29.3. | P |
| | For coatings used on printed circuits boards to protect the microenvironment or to provide basic insulation, annex J applies | No coating | N/A |
| 29.1 | Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15 | (see appended table) | P |
| | The values specified may be smaller for basic insulation and functional insulation if the clearance meets the impulse voltage test of clause 14 | No impulse voltage test applied | 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, | | P |
| | or if pollution degree 3 is applicable | Pollution degrees 2 | N/A |
| | Compliance is checked by inspection and measurements as specified | | P |
| 29.1.1 | Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage | (see appended table) | P |
| | Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1 | No tubular sheathed heating element | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| 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 | Transformer and ballast for UV lamp | P |
| 29.1.2 | Clearances of supplementary insulation not less than those specified for basic insulation in table 16 | No supplementary insulation | N/A |
| 29.1.3 | Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage | | P |
| 29.1.4 | For functional insulation, the values of table 16 are applicable, unless | | P |
| | the appliance complies with clause 19 with the functional insulation short-circuited | | N/A |
| | Clearances at crossover points of lacquered conductors not measured | | N/A |
| | Clearance between surfaces of PTC heating elements may be reduced to 1mm | No PTC heating elements | 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 | Transformer and ballast for UV lamp | 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 | No parts having higher working voltage than 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 | | P |
| 29.2 | Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree | (see appended table) | P |
| | Pollution degree 2 applies, unless | Pollution degree 2 | P |
| | precautions taken to protect the insulation; pollution degree 1 | No such parts | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | insulation subjected to conductive pollution; pollution degree 3 | No such parts | N/A |
| | Compliance is checked by inspection and measurements as specified | | N/A |
| | Pollution degree 3 applied for microenvironment, unless it is unlikely to be exposed to pollution during normal use due to (IEC 60335-2-75) | Pollution degree 2 | N/A |
| | - condensation produced by the appliance (IEC 60335-2-75); | (see above) | N/A |
| | - use of liquids and solids, such as ingredients, products or cleaning agents (IEC 60335-2-75) | (see above) | N/A |
| 29.2.1 | Creepage distances of basic insulation not less than specified in table 17 | (see appended table) | P |
| | For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14 | Pollution degree 2 | N/A |
| 29.2.2 | Creepage distances of supplementary insulation at least as specified for basic insulation in table 17 | No supplementary insulation | N/A |
| 29.2.3 | Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17 | (see appended table) | 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 | No such parts | N/A |
| 29.3 | Solid insulation having a minimum thickness of 1mm for supplementary insulation, | No supplementary insulation | N/A |
| | and 2mm for reinforced insulation | Display panel:<br>at least 3,0 mm thickness | P |
| | This requirement does not apply if the supplementary insulation, other than mica or similar scaly material, consists of at least two layers, each of the layers withstands the electric strength test of 16.3 | | N/A |
| | This requirement does not apply if the reinforced insulation, other than mica or similar scaly material, consists of at least three layers, any two layers together withstand the electric strength test of 16.3 | Transformer | P |
| | This requirement also does not apply to inaccessible insulation and does not exceed the maximum permissible temperature values, or | | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | if the insulation, after conditioning as specified, withstands the electric strength test of 16.3 | | N/A |
| 30 | RESISTANCE TO HEAT AND FIRE | | - |
| 30.1 | External parts of non-metallic material, | (see appended table) | P |
| | parts supporting live parts, and | (see appended table) | P |
| | thermoplastic material providing supplementary or reinforced insulation, | No applicable parts | N/A |
| | sufficiently resistant to heat | (see below) | 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) .....: | SMPS terminal block<br>Lamp holder<br>Terminal block<br>Transformer bobbin (T1) on SMPS<br>Choke (L100) on SMPS | P |
| | Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C) .....: | No applicable parts | N/A |
| 30.2 | Relevant parts of non-metallic material adequately resistant to ignition and spread of fire | (see appended table) | P |
| 30.2.1 | Glow-wire test of IEC 60695-2-11 at 550 °C, unless | | N/A |
| | the material is classified at least HB40 according to IEC 60695-11-10 | No such parts | N/A |
| | Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material | No such parts | N/A |
| 30.2.2 | Not applicable | No applicable | N/A |
| 30.2.3 | Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2 | Tested as specified in 30.2.3.1 and 30.2.3.2 | P |
| | Test not applicable to conditions as specified | | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 30.2.3.1 | Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and | SMPS terminal block<br>Lamp holder<br>Terminal block<br>Transformer bobbin (T1) on SMPS<br>Choke (L100) on SMPS | P |
| | parts of insulating material within a distance of 3mm, | No applicable parts | N/A |
| | having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12 | No applicable parts | N/A |
| 30.2.3.2 | Parts of insulating material supporting current-carrying connections, and | | P |
| | parts of insulating material within a distance of 3mm, | | P |
| | subjected to glow-wire test of IEC 60695-2-11 | | P |
| | Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified | | N/A |
| | Glow-wire test of IEC 60695-2-11, the temperature being: | | P |
| | -750°C, for connections carrying a current exceeding 0,2A during normal operation | SMPS terminal block<br>Lamp holder<br>Terminal block<br>Transformer bobbin (T1) on SMPS<br>Choke (L100) on SMPS | P |
| | -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 | V-0 | P |

| | | | |
|---|---|---|---|
| 31 | RESISTANCE TO RUSTING | | - |
| | Relevant ferrous parts adequately protected against rusting | Ferrous part protected from rusting | P |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 32 | RADIATION, TOXICITY AND SIMILAR HAZARDS | | - |
| | Appliance does not emit harmful radiation | No harmful radiation | P |
| | Appliance does not present a toxic or similar hazard | No toxic of similar hazards | P |
| A | ANNEX A (INFORMATIVE)<br>ROUTINE TESTS | | - |
| | Description of routine tests to be carried out by the manufacturer | | N/A |
| AA | ANNEX AA (NORMATIVE) (IEC 60335-2-75)<br>AGEING TEST FOR ELASTOMERIC PARTS | | - |
| | The samples and test procedure as specified in ISO 1817 | | N/A |
| AA.4 | Test liquids | | N/A |
| | Test carried out with water | | N/A |
| AA.5 | Test pieces | | N/A |
| AA.5.4 | Condition of test pieces | | N/A |
| | Temperature (23 ± 2) °C; humidity (50 ± 5) % | | N/A |
| AA.6 | Immersion in the test liquid | | N/A |
| AA.6.1 | Temperature | | N/A |
| AA.6.2 | Duration | | N/A |
| AA.7 | Procedure | | N/A |
| AA.7.2 | Change in mass | | N/A |
| | Increase in mass not exceeding 10 % of value determined before immersion part (g)..... : | | N/A |
| AA.7.6 | Change in hardness | | N/A |
| | Micro-test for hardness applies | | N/A |
| | Hardness not changed more than 8 IRHD; no sticky surface; no visible crack , part (IRHD) ..... : | | N/A |
| B | ANNEX B (NORMATIVE)<br>APPLIANCES POWERED BY RECHARGEABLE BATTERIES | | - |
| | The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance | Not appliances powered by rechargeable batteries | N/A |
| | This annex does not apply to battery chargers | (see above) | N/A |
| 3.1.9 | Appliance operated under the following conditions: | | |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | -the appliance, supplied by its fully charged battery, operated as specified in relevant part 2 | Not appliances powered by rechargeable batteries | N/A |
| | -the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate | (See above) | 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 | (See above) | 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 | (See above) | N/A |
| 3.6.2 | Part to be removed in order to discard the battery is not considered to be detachable | Not appliances powered by rechargeable batteries | N/A |
| 5.101 | Appliances supplied from the supply mains tested as specified for motor-operated appliances | Not appliances powered by rechargeable batteries | N/A |
| 7.1 | Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals | Not appliances powered by rechargeable batteries | N/A |
| 7.12 | The instructions for appliances incorporating batteries intended to be replaced by the user includes required information | Not appliances powered by rechargeable batteries | N/A |
| | Details about how to remove batteries containing materials hazardous to the environment given | (see above) | N/A |
| 7.15 | Markings placed on the part of the appliance connected to the supply mains | Not appliances powered by rechargeable batteries | 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 | Not appliances powered by rechargeable batteries | N/A |
| | If the appliance can be operated without batteries, double or reinforced insulation required | (see above) | N/A |
| 11.7 | The battery is charged for the period described | Not appliances powered by rechargeable batteries | N/A |
| 19.1 | Appliances subjected to tests of 19.101, 19.102 and 19.103 | Not appliances powered by rechargeable batteries | N/A |
| 19.101 | Appliances supplied at rated voltage for 168 h, the battery being continually charged | Not appliances powered by rechargeable batteries | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 19.102 | Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool | Not appliances powered by rechargeable batteries | N/A |
| 19.103 | Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction | Not appliances powered by rechargeable batteries | N/A |
| 21.101 | Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32 | Not appliances powered by rechargeable batteries | 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 | Not appliances powered by rechargeable batteries | N/A |
| | - 50, the mass of part exceeds 250 g | (see above) | N/A |
| | After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met | (see above) | N/A |
| 22.3 | Appliances having pins for insertion into socket-outlets tested as fully assembled as possible | Not appliances powered by rechargeable batteries | N/A |
| 25.13 | An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage | Not appliances powered by rechargeable batteries | N/A |
| 30.2 | For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies | Not appliances powered by rechargeable batteries | N/A |
| | For other parts, 30.2.2 applies | (see above) | N/A |
| C | ANNEX C (NORMATIVE)<br>AGEING TEST ON MOTORS | | - |
| | Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding | No such motors | N/A |
| D | ANNEX D (NORMATIVE)<br>ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS | | - |
| | Applicable to protected motors for unattended use, test of 19.7 carried out on a separate sample according to the specification | | P |
| E | ANNEX E (NORMATIVE)<br>NEEDLE-FLAME TEST | | - |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications: | | N/A |
| 5 | Severities | | N/A |
| | The duration of application of the test flame is 30 s ± 1 s | | N/A |
| 8 | Test procedure | | N/A |
| 8.2 | The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1 | | N/A |
| 8.4 | The first paragraph does not apply | | N/A |
| | If possible, the flame is applied at least 10 mm from a corner | | N/A |
| 8.5 | 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 |
| 10 | 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 | ANNEX F (NORMATIVE) CAPACITORS | | - |
| | Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications: | Capacitors complied by IEC 60384-14 or equivalent | N/A |
| 1.5 | Terminology | | N/A |
| 1.5.3 | Class X capacitors tested according to subclass X2 | Certified capacitors | N/A |
| 1.5.4 | This subclause is applicable | Certified capacitors | N/A |
| 1.6 | Marking | | N/A |
| | Items a) and b) are applicable | Certified capacitors | N/A |
| 3.4 | Approval testing | | N/A |
| 3.4.3.2 | Table II is applicable as described | Certified capacitors | N/A |
| 4.1 | Visual examination and check of dimensions | | N/A |
| | This subclause is applicable | Certified capacitors | N/A |
| 4.2 | Electrical tests | | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 4.2.1 | This subclause is applicable | Certified capacitors | N/A |
| 4.2.5 | This subclause is applicable | Certified capacitors | N/A |
| 4.2.5.2 | Only table IX is applicable | Certified capacitors | N/A |
| | Values for test A apply | (see above) | N/A |
| | However, for capacitors in heating appliances the values for test B or C apply | (see above) | N/A |
| 4.12 | Damp heat, steady state | | N/A |
| | This subclause is applicable | Certified capacitors | N/A |
| | Only insulation resistance and voltage proof are checked | (see above) | N/A |
| 4.13 | Impulse voltage | | N/A |
| | This subclause is applicable | Certified capacitors | N/A |
| 4.14 | Endurance | | |
| | Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable | Certified capacitors | N/A |
| 4.14.7 | Only insulation resistance and voltage proof are checked | Certified capacitors | N/A |
| | Visual examination, no visible damage | (see above) | N/A |
| 4.17 | Passive flammability test | | |
| | This subclause is applicable | Certified capacitors | N/A |
| 4.18 | Active flammability test | | |
| | This subclause is applicable | Certified capacitors | N/A |
| G | ANNEX G (NORMATIVE)<br>SAFETY ISOLATING TRANSFORMERS | | - |
| | The following modifications to this standard are applicable for safety isolating transformers: | No safety isolating transformer | N/A |
| 7 | Marking and instructions | | N/A |
| 7.1 | Transformers for specific use marked with: | | N/A |
| | -name, trademark or identification mark of the manufacturer or responsible vendor | No safety isolating transformer | N/A |
| | -model or type reference | | N/A |
| 17 | Overload protection of transformers and associated circuits | | N/A |
| | Fail-safe transformers comply with subclause 15.5 of IEC 61558-1 | No safety isolating transformer | N/A |
| 22 | Construction | | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable | No safety isolating transformer | N/A |
| 29 | Clearances, creepage distances and solid insulation | | N/A |
| 29.1, 29.2 and 29.3 | The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply | No safety isolating transformer | N/A |
| H | ANNEX H (NORMATIVE)<br>SWITCHES | | - |
| | 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 | Certified switch | N/A |
| | -Before being tested, switches are operated 20 times without load | Certified switch | N/A |
| 8 | Marking and documentation | | N/A |
| | Switches are not required to be marked | Certified switch | 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 | (see above) | N/A |
| 13 | Mechanism | | N/A |
| | The tests may be carried out on a separate sample | Certified switch | N/A |
| 15 | Insulation resistance and dielectric strength | | N/A |
| 15.1 | Not applicable | Certified switch | N/A |
| 15.2 | Not applicable | Certified switch | N/A |
| 15.3 | Applicable for full disconnection and micro-disconnection | Certified switch | N/A |
| 17 | Endurance | | N/A |
| | Compliance is checked on three separate appliances or switches | Certified switch | 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 | (see above) | 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 | (see above) | N/A |
| | Subclause 17.2.5.2 is not applicable | (see above) | N/A |
| | Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 | (see above) | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 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 | Certified switch | N/A |
| I | ANNEX I (NORMATIVE)<br>MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE | | - |
| | The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance: | No such motors | 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 | No such motors | N/A |
| 11 | Heating | | N/A |
| 11.3 | Temperature rise of the body of the motor is determined instead of the temperature rise of the windings | No such motors | 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 | No such motors | 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 | No such motors | N/A |
| 19 | Abnormal operation | | N/A |
| 19.1 | The tests of 19.7 to 19.9 not carried out | No such motors | N/A |
| 19.101 | Appliance operated at rated voltage with each of the following fault conditions: | | N/A |
| | - short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit | No such motors | N/A |
| | - short circuit of each diode of the rectifier | (see above) | N/A |
| | - open circuit of the supply to the motor | (see above) | N/A |
| | - open circuit of any parallel resistor, the motor being in operation | (see above) | N/A |
| | Only one fault simulated at a time, the tests carried out consecutively | (see above) | N/A |
| 22 | Construction | | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| 22.101 | For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation | No such motors | N/A |
| | Compliance checked by the tests specified for double and reinforced insulation | (see above) | N/A |
| J | ANNEX J (NORMATIVE)<br>COATED PRINTED CIRCUIT BOARDS | | - |
| | Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications: | No such coated printed circuit boards | N/A |
| 6.6 | Climatic sequence | | N/A |
| | When production samples are used, three samples of the printed circuit board are tested | No such coated printed circuit boards | N/A |
| 6.6.1 | Cold | | N/A |
| | The test is carried out at -25°C | No such coated printed circuit boards | N/A |
| 6.6.3 | Rapid change of temperature | | N/A |
| | Severity 1 is specified | No such coated printed circuit boards | N/A |
| 6.8.6 | Partial discharge extinction voltage | | N/A |
| | Type A coatings not subjected to a partial discharge test | No such coated printed circuit boards | N/A |
| 6.9 | Additional tests | | N/A |
| | This subclause is not applicable | No such coated printed circuit boards | N/A |
| K | ANNEX K (NORMATIVE)<br>OVERVOLTAGE CATEGORIES | | - |
| | The information on overvoltage categories is extracted from IEC 60664-1 | Overvoltage category II | P |
| | Overvoltage category is a numeral defining a transient overvoltage condition | Considered | P |
| | Equipment of overvoltage category IV is for use at the origin of the installation | Not equipment of overvoltage category lV. | 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 | Not equipment of overvoltage category lll. | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation | Equipment of overvoltage category ll. | P |
| | If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies | No subjected to special requirements. | 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 | Not equipment of overvoltage category l. | N/A |
| L | ANNEX L (INFORMATIVE)<br>GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES | | - |
| | Sequences for the determination of clearances and creepage distances | Considered | P |
| M | ANNEX M (NORMATIVE)<br>POLLUTION DEGREE | | P |
| | The information on pollution degrees is extracted from IEC 60664-1 | Pollution degree 2 | P |
| | Pollution | | P |
| | The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment | Considered. | P |
| | Means may be provided to reduce pollution at the insulation by effective enclosures or similar | (see above) | P |
| | Minimum clearances specified where pollution may be present in the microenvironment | (see above) | 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 | Pollution degree 2. | N/A |
| | - pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected | Pollution degree 2. | P |
| | - pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected | Pollution degree 2. | N/A |

| IEC 60335-2-75 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result – Remark | Verdict |
| | - pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow | Pollution degree 2. | N/A |
| N | ANNEX N (NORMATIVE)<br>PROOF TRACKING TEST | | - |
| | The proof tracking test is carried out in accordance with IEC 60112 with the following modifications: | Not applicable | N/A |
| 5 | Test apparatus | | N/A |
| 5.1 | Electrodes | | N/A |
| | The note does not apply | Not applicable | N/A |
| 5.4 | Test solutions | | N/A |
| | Test solution A is used | Not applicable | N/A |
| 6 | Procedure | | N/A |
| 6.3 | Proof tracking test | | N/A |
| | Voltage is 100V, 175V, 400V or 600V .....: | Not applicable | N/A |
| | Note 3 of clause 3 applies | Not applicable | N/A |
| | The test is carried out on five specimens | (see above) | N/A |
| | In case of doubt, additional test with voltage reduced by 25V, the number of drops increased to 100 | (see above) | N/A |
| 7 | Report | | N/A |
| | The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V | Not applicable | N/A |
| O | ANNEX O (INFORMATIVE)<br>SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30 | | - |
| | Description of tests for determination of resistance to heat and fire | Considered. | P |

| 10.1 | TABLE: Power input deviation | | | | P |
|---|---|---|---|---|---|
| Input deviation of/at: | P rated (W) | P measured (W) | dP | Required dP | Remark |
| 200 V/50 Hz | 1200 | 1280 | +6.66 % | +15 % | Normal max. |
| 200 V/60 Hz | 1200 | 1282 | +6.83 % | +15 % | Normal max. |

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

| 11.8 | TABLE: Heating test, thermocouples | | P |
|---|---|---|---|
| | Test voltage (V)....: | 1: 188 V, 50 Hz | — |
| | Test voltage (V)....: | 2: 188 V, 60 Hz | — |
| | Test voltage (V)....: | 3: 212 V, 50 Hz | — |
| | Test voltage (V)....: | 4: 212 V, 60 Hz | — |
| | Ambient (°C)....: | 1: 23,7 °C / 2: 23,5 °C<br>3: 20,8 °C / 4: 23,7 °C | — |

| Thermocouple locations | dT (K) | | | | Max. dT (K) |
|---|---|---|---|---|---|
| | Test no.1 | Test no.2 | Test no.3 | Test no.4 | |
| Circuit breaker | 7.3 | 6.8 | 10.2 | 6.5 | 30 |
| Contactor | 6.4 | 6.0 | 8.6 | 5.5 | 30 |
| Internal wire for Contactor | 7.8 | 7.0 | 9.7 | 6.1 | 50 |
| Relay for solenoid valve | 7.6 | 7.0 | 11.2 | 6.7 | 30 |
| Relay for solenoid valve | 7.0 | 6.6 | 9.3 | 6.0 | 30 |
| Relay for solenoid valve | 6.5 | 6.1 | 9.6 | 5.8 | 30 |
| Relay for UV lamp | 7.8 | 7.1 | 10.9 | 6.5 | 30 |
| Relay for UV lamp | 9.4 | 9.7 | 11.8 | 9.7 | 30 |
| Internal wire of main supply connection | 7.7 | 7.0 | 10.7 | 6.5 | 50 |
| Terminal block | 6.1 | 5.9 | 7.8 | 5.2 | Cl.30.1 |
| Terminal block | 5.5 | 5.4 | 6.5 | 4.9 | Cl.30.1 |
| Timer | 6.6 | 6.6 | 8.2 | 5.9 | 30 |
| SMPS (NES100-24) enclosure | 9.2 | 9.4 | 12.5 | 10.0 | Ref. |

| | | | | | |
|---|---|---|---|---|---|
| SMPS terminal block | 12.3 | 12.6 | 8.5 | 8.2 | Cl.30.1 |
| LF1 coil_SMPS | 29.6 | 80.0 | 27.5 | 83.2 | 115 |
| PCB under BD1_SMPS | 45.2 | 45.9 | 33.9 | 33.5 | 120 |
| Capacitor (C5)_ SMPS | 43.9 | 32.6 | 28.4 | 28.3 | 60 |
| Transformer (T1)_SMPS | 58.3 | 59.1 | 54.9 | 54.5 | 85 |
| Photo coupler (U2) _SMPS | 43.6 | 43.2 | 44.4 | 43.2 | Ref. |
| d.c Fan motor | 6.0 | 6.0 | 7.2 | 5.3 | 65 |
| Ballast enclosure | 9.1 | 9.1 | 11.8 | 9.4 | Ref. |
| Ballast enclosure | 6.7 | 6.3 | 8.7 | 5.5 | Ref. |
| Internal wire for ballast | 5.9 | 5.6 | 7.6 | 5.1 | 50 |
| PCB _UV ballast | 32.5 | 32.0 | 34.7 | 34.6 | 120 |
| Internal wire_ UV ballast | 23.5 | 23.2 | 25.2 | 24.8 | 50 |
| Toggle Switch | 4.4 | 4.6 | 6.1 | 4.3 | 60 |
| Digital LCD timer (Drain time) | 7.8 | 7.7 | 10.2 | 7.3 | 30 |
| Digital LCD timer (Filling time) | 6.1 | 6.2 | 7.9 | 5.9 | 30 |
| Digital LCD timer (Flushing time) | 0.5 | 0.6 | 0.5 | 0.7 | 30 |
| Pressure switch (HPS) | 0.2 | 0.5 | 0.9 | 0.2 | 30 |
| Pressure switch (LPS) | 0.4 | 0.4 | 0.4 | 0.4 | 30 |
| Drain Pump motor | 5.5 | 5.8 | 7.2 | 5.9 | 85 |
| Inverter | 5.4 | 2.2 | 8.9 | 0.7 | 30 |
| Solenoid valve | 0.3 | 0.3 | 0.3 | 0.3 | 65 |
| Solenoid valve | 9.1 | 5.4 | 12.7 | 3.6 | 65 |
| Lamp holder | 5.0 | 5.1 | 6.0 | 4.8 | Cl.30.1 |
| Front switch | 4.7 | 4.9 | 5.3 | 4.6 | 60 |
| Handle | 5.2 | 5.2 | 5.1 | 4.9 | 35 |
| Enclosure | 4.0 | 4.0 | 4.0 | 3.7 | 60 |
| | | | | | |

| | | | |
|---|---|---|---|
| 13.2 | TABLE: Leakage current | | P |
| | Heating appliances: 1.15 x rated input .....: | -- | — |
| | Motor-operated and combined appliances: 1.06 x rated voltage.....: | 212 V~ | — |

| Leakage current between | I (mA) | Max. allowed I (mA) |
|---|---|---|
| Live and accessible non-metallic enclosure with foil | 0.004 | 0.50 |
| Neutral and accessible non-metallic enclosure with foil | 0.003 | 0.50 |

| | | |
|---|---|---|
| Live and accessible metallic enclosure | 0.01 | 0.50 |
| Neutral and accessible metallic enclosure | 0.01 | 0.50 |
| | | |

| | | |
|---|---|---|
| 13.3 | TABLE: Electric strength | P |

| Test voltage applied between: | Voltage (V) | Breakdown (Yes/No) |
|---|---|---|
| Live parts and accessible metallic enclosure | 1 000 | No |
| Live parts and accessible non-metallic enclosure with foil | 2 500 | 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 .....: | 212 V~ | — |
| | Three phase appliances 1.06 x rated voltage divided by √3: .....: | - | — |

| Leakage current between | I (mA) | Max. allowed I (mA) |
|---|---|---|
| Live and accessible non-metallic enclosure with foil | 0.002 | 0.50 |
| Neutral and accessible non-metallic enclosure with foil | 0.001 | 0.50 |
| Live and accessible metallic enclosure | 0.01 | 0.50 |
| Neutral and accessible metallic enclosure | 0.01 | 0.50 |
| | | |

| | | |
|---|---|---|
| 16.3 | TABLE: Electric strength | P |

| Test voltage applied between: | Voltage (V) | Breakdown (Yes/No) |
|---|---|---|
| Live parts and accessible metallic enclosure | 1 250 | No |
| Live parts and accessible non-metallic enclosure with foil | 2 500 | No |
| | | |
| | | |

| | | |
|---|---|---|
| 17 | TABLE: Overload protection, temperature rise | P |

| Temperature rise of part/at: | dT (K) | Max. dT (K) |
|---|---|---|
| Transformer winding | 83.0 | 150 (Class B) |
| | | |
| Overload tests of SMPS transformrs were seprated from a sample. | | |

| 19.7 | TABLE: Abnormal operation, locked rotor/moving parts | | | | | P |
|---|---|---|---|---|---|---|
| | Test voltage (V) .....: | | 200 V | | | — |
| | Ambient, $t_1$ (°C) .....: | | 1. 22.3 °C<br>2. 23.1 °C | | | — |
| | Ambient, $t_2$ (°C) .....: | | 1. 22.3 °C<br>2. 22.4 °C | | | — |
| Temperature of winding | $R_1$ (Ω) | $R_2$ (Ω) | T (°C) | Max. T (°C) | Max. T (°C) | |
| 1. RO Pump motor | - | - | 124.6 | 240 | Class F | |
| 2. Drain Pump motor | - | - | 53.2 | 150 | Class A | |
| Locking tests of motorts were seprated from a sample. | | | | | | |

| 19.9 | TABLE: Abnormal operation, running overload | | | | | N/A |
|---|---|---|---|---|---|---|
| | Test voltage (V) .....: | | | | | — |
| | Ambient, $t_1$ (°C) .....: | | | | | — |
| | Ambient, $t_2$ (°C) .....: | | | | | — |
| Temperature of winding | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | T (°C) | Max. T (°C) | |
| | | | | | | |

| 19.11.2 & 19.101 | TABLE: fault condition tests | | P |
|---|---|---|---|
| | Test voltage (V) ..... | 200V | |
| | ambient temperature (°C) ..... | 24,5 °C | — |
| component No. | fault | Result | |
| On SMPS PCB | | | |
| BD1 (L- +) | S-c | FS1 opened, no hazard, No breakdown, Repeat all fuse 10 times result were same.<br>I/P: 0A | |

| | | |
|---|---|---|
| C5 | S-c | FS1 opened, no hazard, No breakdown, Repeat all fuse 10 times result were same.<br>I/P: 0A |
| Q1 (G-D) | S-c | FS1 opened, Q1 damaged, no hazard, no breakdown, Repeat all fuse 10 times result were same.<br>I/P: 0A |
| Q1 (G-S) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.05A. |
| Q1 (D-S) | S-c | FS1 opened, Q1 damaged, no hazard, no breakdown, Repeat all fuse 10 times result were same.<br>I/P: 0A |
| U2 (1-2) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.19A |
| U2 (3-4) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.05A |
| U3 (1-2) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.9A |
| U3 (3-4) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.05A |
| T1 (1-2) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.1A |
| T1 (9,10,11-12,13,14) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.11A |
| U2 (1) | S-c | After 1sec, unit shutdown, no hazard, no breakdown.<br>I/P: 0.19A |
| U3 (1) | S-c | Unit normal operation, no hazard, no breakdown. (Input current change to small)<br>I/P: 0.9A |
| Output | S-c | After 1sec, unit shutdown, no hazard, no breakdown, T1=91°C, Ambient air:26°C<br>I/P: 0.15A |

| | | |
|---|---|---|
| Output | Overload | CT at 2.8A, Increased to 3.0A.<br>Unit shutdown, no hazard, no breakdown, T1=109°C, Ambient air: 26°C<br>I/P: 1.13A |
| Ballast for UV lamp | | |
| Out put | S-c | No output voltage, no hazard, no breakdown |

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

| 24.1 | TABLE: Components | | | | P |
|---|---|---|---|---|---|
| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity |
| Power cord | YUNG LI CO., LTD | YP-27 | 250V, 15A | JET5087-43001-1003 | <PS>E |
| Power plug | YUNG LI CO., LTD | VCTF | 300V, 12A<br>2X 1.25mm$^2$ | JET5087-12009-1001 | <PS>E |
| Circuit Breaker (NFB) | Fuji Electric FA Components & Systems Co., Ltd. | EW32AAG-2P10A | 230V, 50/60Hz<br>200 V, 10 A | IEC/EN 60947-2<br>JET1336-42011-1081 | TUV<br><PS>E |
| Contactor | Fuji Electric FA Components & Systems Co., Ltd. | SC-03 series | 440V, 50/60Hz<br>20 A | EN 60947-4-1 | TUV |
| Earth wire | SANG JIN | H07-K | 450/750 V, 1.5mm$^2$ | IEC 60227 | VDE |
| Relay | Omron | MY4N | 250V, 5A | EN 61810-1 | VDE |
| Relay | Korea Auto Controls Co Ltd(KOREA) | RXT | 220V, 5A | EN 60947-1:2004 | CE |
| Inverter for RO pump | Yaskawa Electric Corporation(JAPAN) | CIMR JTBA0010BAA | 200-240V, 50/60Hz, 20.2A/14.1A | IEC 61800-5-1 | CE |
| PLC | Comfile(KOREA) | CUBASE-64M | 24V d.c. 30 mA | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Terminal Block | Dong Seo Electronic | DSTB-15W | V-0 | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Timer Switch(24 HR) | Han Seung Automatic Corp.(KOREA) | HTS-24A | 24V d.c., 3A | IEC 60335-1<br>IEC 60335-2-75 | CE |

| | | | | | |
|---|---|---|---|---|---|
| TDS Meter | Hebei Create Instrumentation Technologies Co Ltd(CHINA) | CCT-3300E | 24V d.c., 3A | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Counter | Autonics Corp(KOREA) | LA8N | 24V d.c. | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Selector Switch | Hanyoung Nux Co Ltd (KOREA) | ARS-S212 | 24V d.c. 5A | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| LED Pilot Lamp | Dae Han Control(KOREA) | TD-208 | 24V d.c. | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Digital LCD Timer | Autonics Corp(KOREA) | LE4S | 24V d.c., 2W | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Toggle Switch | Woo Jin Electric(KOREA) | WJT-4210 | 24V d.c., 10A | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| DC Fan(NMB) | Minebea Co Ltd(JAPAN)-CHINA | 3110KL-05W-B39 | 24V d.c., 0.08A<br>1.92 W | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Proximity Sensor | Autonics Corp(KOREA) | PR12-4DN | 24V d.c. | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Open Frame Solenoid | ADM-System(JAPAN) | M110110F | 24V d.c. | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Solenoid Valve (SUS) | Hyo Shin Electric Co Ltd(KOREA) | HPW2140S | 24V d.c. , 16W<br>Class B | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Solenoid Valve (Brass) | Hyo Shin Electric Co Ltd(KOREA) | HPW2140S | 24V d.c., 16W<br>Class B | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Solenoid Valve (Brass) | Hyo Shin Electric Co Ltd(KOREA) | HPW2240 | 24V d.c. 24W<br>Class B | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Solenoid Valve (Nylon) | Dong Seo Electric(KOREA) | Pilot-15A | 24V d.c. | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Control Switch (LED) | Hanyoung Nux Co Ltd (KOREA) | QRX-NM-A2-D-A | 24V d.c., 10A | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| RO Pump (Submersible Pump) | PUMP-Hanil Electric Motor-Franklin Electric(USA) | SR4H-0022(E) | 220V, 60Hz,<br>370W, 2 pole<br>Insulation class F | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Start capacitor for RO Pump | BMI | 275464105 | 220V, 50/60Hz<br>59-71µF, 65°C | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |

| | | | | | |
|---|---|---|---|---|---|
| Drain Pump | Wilo Pumps Ltd. | PB-350MA | 220V, 60Hz,<br>350 W, 2 pole<br>Insulation class B | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Capacitor for drain pump motor | -- | -- | 9µF, 450V | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Float Level Switch | Dae han sensor Co., Ltd | DLF-BS | 5V d.c., 0.5A | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Ballast for UV lamp | | | | | |
| UV Ballast | UV Pure Lighting Co., Ltd. | YTG01-16W | 230V, 50/60Hz, 16W | EN 61347-1+A1+A2<br>EN 61347-2-3 | CE |
| UV lamp | SANKYO DENKI | G10T6 | AC 200 V, 16 W | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| On SMPS PCB | | | | | |
| Power Supply (DCPS) | Mean Well Enterprises Co Ltd(TAIWAN) | NES100-24 | 200-240V, 50/60Hz, 1.5A, Output 24V d.c., 4.5A | IEC 60335-1<br>IEC 60335-2-75 | Tested in appliance |
| Fuse(FS1) | BEL | 5 HF | F3.15, 250V | IEC/EN 60127-2 | VDE |
| X2 capacitor (C1, C2) | Pilkor | PCX2 337 | 275V, 40/100/24/B | IEC/EN 60384-14:2005 | VDE |
| Varistor(ZNR1) | Thinking | TVR10471<br>TVR14471 | 300Vac,<br>385Vdc, 85°C | IEC61051-2<br>CECC 42000<br>CECC 42200<br>CECC 42201 | VDE |
| Y capacitor (C3, C4, C23, C29, C30) | Murata | KX | Max. 4700pF, min. 250Vac<br>125°C | IEC/EN 60384-14:2005 | VDE |
| Bridging Capacitor(C31) | Murata | KX | Max. 2200pF, min. 250Vac,<br>125°C | IEC/EN 60384-14:2005 | VDE |
| Photo coupler(U2, U3) | Lite-on | LTV-817<br>LTV-817M | Dti=0.4mm<br>Internal dcr=5.2mm<br>Ext. dcr=7.0mm<br>115°C | IEC/EN 60747-5-2<br>IEC/EN 60950-1 | VDE |
| Choke (L100) | Mean Well | TR-615 | Min. 130°C | J 60335-1<br>J 60335-2-75 | Tested in appliance |
| Transformer (T1) | Long Sail | TF-1265 | Class B | J 60335-1<br>J 60335-2-75 | Tested in appliance |

| | | | | | |
|---|---|---|---|---|---|
| Bobbin of transformer | Sumitomo Bakelite | PM-9820 | V-0, 150°C | J 60335-1<br>J 60335-2-75 | Tested in appliance |
| Terminal block ( TB1) | Dinkle | DT-4 series | 300V, 20A | J 60335-1<br>J 60335-2-75 | Tested in appliance |
| PCB | - | - | Min. 130°C | J 60335-1<br>J 60335-2-75 | Tested in appliance |
| | | | | | |

| 28.1 | TABLE: Threaded part torque test | | P |
|---|---|---|---|
| Threaded part identification | Diameter of thread (mm) | Column number (I, II, or III) | Applied torque ( Nm ) |
| Earthing connection screw | 4,0 | II | 1,2 |
| Enclosure fixing screw | 4,0 | 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 |
| 1 500 | 1,0 | | | | | N/A |
| 2 500 | 2,0 | X | X | X | X | P |
| 4 000 | 3,5 | | | | X | P |
| 6 000 | 6,0 | | | | | N/A |
| 8 000 | 8,5 | | | | | N/A |
| 10 000 | 11,5 | | | | | N/A |

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

Functional insulation

Between different polarity of L, N under input terminal: 2.2 mm, Between two terminals of fuse link: 9.79mm on ballast PCB

Between different polarity of L, N under input terminal: 3.0 mm, Between two terminals of fuse link: 5.8mm o n SMPS PCB

Basic insulation/Supplementary insulation

Between LF1 to metal enclosure: 3.2 mm, C6 to metal enclosure: 4.5 mm, Core of T1 to C36: 6.0 mm on S MPS PCB

Reinforced insulation

Between Primary to secondary parts: 7.2mm on SMPS PCB.

| 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 | | — | — | P |
| >125 and ≤ 250 | 0,6 | 1,3 | 1,8 | **2,5** | 3,2 | 3,6 | 4,0 | — | | | P |
| >125 and ≤ 250 | 1,2 | 2,6 | 3,6 | **5,0** | 6,4 | 7,2 | 8,0 | — | — | ) | 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 |

| 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 |
| >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 |
| >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 |

| 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 |
| >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

Basic insulation/Supplementary insulation

Between LF1 to metal enclosure: 3.2 mm, C6 to metal enclosure: 4.5 mm, Core of T1 to C36: 6.0 mm on S MPS PCB

Reinforced insulation

Between Primary to secondary parts: 7.2mm on SMPS PCB.

| 29.2 | TABLE: Creepage distances, functional insulation | | | | | | | P |
|---|---|---|---|---|---|---|---|---|
| Working voltage (V) | Creepage distance (mm) Pollution degree | | | | | | | |
| | 1 | 2 | | | 3 | | | |
| | | Material group | | | Material group | | | |
| | | I | II | IIIa/IIIb | I | II | IIIa/IIIb | Verdict / Remark |
| ≤50 | 0,2 | 0,6 | 0,8 | 1,1 | 1,4 | 1,6 | 1,8 | N/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 |

Functional insulation

Between different polarity of L, N under input terminal: 2.2 mm, Between two terminals of fuse link: 9.79mm on ballast PCB

Between different polarity of L, N under input terminal: 3.0 mm, Between two terminals of fuse link: 5.8mm on SMPS PCB

| 29.3 | TABLE: Electric strength | P |
|---|---|---|

| Test voltage applied between: | Voltage (V) | Breakdown (Yes/No) |
|---|---|---|
| Live parts and accessible metallic enclosure | 1 250 | No |

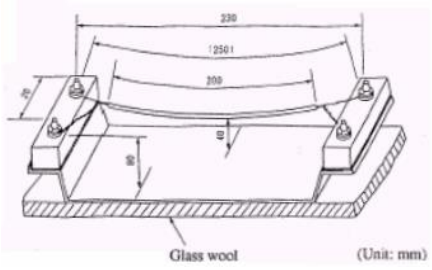
| | | |
|---|---|---|
| Live parts and accessible non-metallic enclosure with foil | 2 500 | No |
| | | |

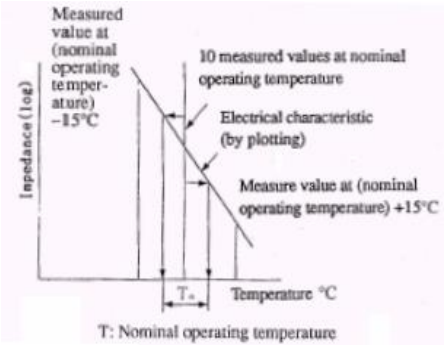
| 30.1 | TABLE: Ball pressure | | | P |
|---|---|---|---|---|
| Part | Test temperature (°C) | Impression diameter (mm) | Allowed impression diameter (mm) | |
| SMPS terminal block | 125 | 0,8 | 2,0 | |
| Lamp holder | 125 | 1,2 | 2,0 | |
| Terminal block | 125 | 1,0 | 2,0 | |
| Transformer bobbin (T1) on S MPS | 125 | 0,9 | 2,0 | |
| Choke (L100) on SMPS | 125 | 1,2 | 2,0 | |

| 30.2 | TABLE: Glow-wire test | P |
|---|---|---|
| Part | Test temperature (°C) | verdict |
| SMPS terminal block | 750/850 | P |
| Lamp holder | 750/850 | P |
| Terminal block | 750/850 | P |
| Transformer bobbin (T1) on SMPS | 750/850 | P |
| Choke (L100) on SMPS | 750/850 | P |

| | | | |
|---|---|---|---|
| **J 60335-1(H20): TEST REPORT**<br>(Deviations from IEC 60335 4th edition, 2001)<br>Special National conditions, National deviation and other information according to MITI Ordinance No. 85. | | | |
| **EXPLANATION FOR ABBREVIATIONS**<br>**P=Pass, F=Fail, N=Not applicable, placed in the right "Verdict" column.** | | | |
| *6.1.101* | Addition:<br>Add to subclause as follows.<br>6.1.101 Note - Class 0 is allowed for only the appliances of rated voltage not exceeding 150 V and indoor use. | Class 0I appliances | N/A |
| *11.8*<br>*Table 3* | *(Addition as J60335)*<br>Delete the reference to E27.<br><br>Replacement of footnote f:<br>The temperature rise has to be determined in order that the tests of Clause 30.1 can be carried out. Materials for which temperature limits are not specified in the table, but which comply with the requirements as shown in Attachment 1 are considered to be acceptable.<br><br>Addition of new footnote j:<br>This limit applies to cords and wires complying with the relevant IEC standards. In other case, they shall comply with the requirements as shown in Attachment 1.<br><br>Addition new sentence of in NOTE 1 by the following.<br>Materials which comply with the requirements as shown in Attachment 1 are considered to be acceptable | Considered | P |
| *16.2* | Modification:<br>The test voltage is 1.06 times rated voltage. | Tested voltage: 212 V | P |

| | | | |
|---|---|---|---|
| *16.3* | Modification:<br>The test voltage is 1250 V for class 0 appliances, class 0I appliances and class I appliances and 1750 V for class II appliances. | Tested voltage: 1 250 V | P |
| *19.12* | Addition:<br>Note 4 - If the fusing characteristics are different from IEC 60127, those characteristics are taken into consideration. | | N/A |
| *22.31* | Addition to note as 5th indent:<br>Hooking the wire into a hole in the terminal before soldering is considered to be a suitable means for keeping clearance and creepage distances over basic insulation. | No such parts | N/A |
| *25.8*<br>*Table 11* | Addition to footnote a:<br>In this case, a fuse with the rated current not exceeding 3 A and the rated breaking capacity at least 500 A has to be incorporated inside the plug. | No provided plug.<br>Set of terminals allowing the co nnection of a flexible cord provi ded. | N/A |
| *25.25* | Replace:<br>Replace ”IEC 60083” by ”JIS C 8303” in 1st paragraph. | No such parts | N/A |
| *29.1*<br>*Table 16* | Modify column ”1500 for rated impuls voltage” as follows.<br>1500 \| 1.0 [c] (1.5) [d]<br>A ddition to footonote d:<br>The value with parenthesis apply to basic insulation for class 0 appliances. | | P |
| *Figure 3* | Replace N in Key as follows.<br>N the earth pole for delta connection | No three-phase appliances | N/A |
| *Figure 4* | Replace N in Key as follows.<br>N the earth pole for delta connection | No three-phase appliances | N/A |

| | | | |
|---|---|---|---|
| *Annex JA* | Uniformity of Heat Sensing Wires<br><br>If heat sensing wires are used in appliances to prevent excessive temperature rise, those heat sensing wires shall comply with the following table after the measurement specified thereafter:<br><br>Mean operating temperature (degC) / Deviation (degC)<br><=120 / ±7<br>>120 / ±10<br><br>Measurement method:<br><br>A system in which the heat sensing wires are short circuited due to melting of the insulation between the said wires or the resistance between the said wires decreases significantly due to the said melting.<br><br>Divide the whole length of heat sensing wire evenly into 10, cut each division to a length of 20 cm excluding terminal treatment parts at both ends to prepare specimen heat sensing wires (place the said length at one measurement point in a thermostatic chamber and carry out the measurement for a heat sensing wire which will cause error in the operating temperature due to cutting) mount the specimen to the device shown in Fig.1, apply the rated voltage and pass the rated current of the circuit to which the heat sensing wire is connected, and measure the operating temperature of specimen while raising the temperature of specimen at a rate of 1degC per minute by externally heating it.<br><br>  <br><br><br>Fig 1 Device to mount the specimen<br><br>A system which utilizes change in electrical characteristics (resistance, capacitance, impedance, etc. the same meaning applies in this Table), or utilizes change in electric characteristics | No heat sensing wires | N/A |

| | | | |
|---|---|---|---|
| | of heat sensing component wire itself.<br>(1) Divide the whole length of heat sensing wire evenly into 10 place each division into a thermostatic chamber at a temperature equal to the nominal operating temperature of the heat sensing wire ±2 degC for 1 h, and then measure the electrical characteristics in the chamber.<br>(2) Take out a specimen which shows a characteristic value most close to the average of 10 measured values in the procedure of (1), maintain it in a thermostatic chamber at the nominal operating temperature of the heat sensing wire plus (15± 2 degC) and also minus (-15 ± 2 degC) each for 1 h, and then measure the electrical characteristics in the chamber.<br>(3) Prepare a graph showing the relation between the temperature and the electrical characteristic value from the data obtained in (1) and (2) as illustrated in Fig.2, and convert the dispersion of the electrical characteristic value into that of the temperature.<br>  <br><br>Fig.2 Dispersion of characteristic converted into temperature | | |
| | Note: Impedance measurement is to be carried out by means of an a.c. power. | No heat sensing wires | N/A |

| | | | |
|---|---|---|---|
| J 60335-2-75(H20): TEST REPORT<br>(Deviations from IEC 60335-2-75 2th edition, 2002)<br>Special National conditions, National deviation and other information according to MITI Ordinance No. 85. | | | |
| EXPLANATION FOR ABBREVIATIONS<br>P=Pass, F=Fail, N=Not applicable, placed in the right “Verdict” column. | | | |
| 3.1.9 | 補充時に温度が低下し定常状態が確立されない自動販売機は，全物品の吐出状態まで行う。ディスペンサは，ディスペンスされるものがすべて吐出され，次の吐出まで一定時間を要するものは，その時間待機とする | | N/A |
| 5.1.4 | 保守領域内では，高速形で定格感度電流が15 mA 以下の漏電遮断器を機器に組み込んだ場合は，回路電 圧150 V 以下の部分に限り，非接地部分がクラス0 構造でもよい. | No earth leakage circuit breaker used. | N/A |
| 6.1 | 機器は，クラス0I，クラスI，クラスII 又はクラスIII でなければならない。 | Class 0I appliance | P |
| 7.12.1 | 屋外用の機器であってIPX5 以上でない機器の据付説明（書）には，高圧水洗浄機を使用できる場所へ の据え付けに適していないことを記載しなければならない | Indoor use only | N/A |
| | プロフェッショナルタイプ及びスーパーバイズドタイプのそれぞれの規格適用項目に適合するディスペ<br>ンサの取扱説明書は，“使用及び保守が訓練を受けた要員だけに制限されている場所又は訓練を受けた要 員が監視できる場所に据付けができる。”旨を明記しなければならない。 | No such type appliance | N/A |
| 8.1.2 | 保守領域のクラス0 構造が認められる部分に使用されているコネクタは，保守説明書に保守中にコネクタを抜かない旨が記載されている場合は，コネクタを接続した状態でテストプローブ13 を適用する。 | No class 0 construction | N/A |
| 8.2 | クラス0I 機器又はクラス I 機器の保守領域のクラス0 構造が認められる部分は，基礎絶縁への可触が 認められる | No class 0 construction | N/A |
| 11.1 | **JIS C 9335-2-34**（附属書AA を含む。）に適合した電動圧縮機の 巻線の温度は，測定しない | | N/A |
| 11.7 | 補充時に温度が低下し定常状態が確立されない自動販売機は，全物品の吐出状態まで行う。ディス<br>ペンサは，ディスペンスされるものがすべて吐出され，次の吐出まで一定時間を要するものは，その<br>時間待機とする | | N/A |
| 11.101 | 冷却装置を内蔵し， **JIS C 9335-2-34**（附属書AA を含む。）に準拠していない圧縮用電動機 をもつ機器は，32 ℃の周囲温度でも試験する | No motor compressor | N/A |

| | | | |
|---|---|---|---|
| 13.2 | によるほか，次による。<br>クラス0I 機器に対しては，妨害雑音抑止用フィルタを取り付けた状態で1 mA の限度値を適用してもよい | | N/A |
| 15.2.108 | を意図しており，機能上必要な穴や通風口などは含まれない | | N/A |
| 16 | クラス0I 機器に対しては，妨害雑音抑止用フィルタを取り付けた状態で1 mA の限度値を適用してもよ | | N/A |
| 19.7 | この試験は，**JIS C 9335-2-34** に適合する圧縮用電動機には適用しない。 | | P |
| 19.8 | **JIS C 9335-2-34** に適合する三相の電動圧縮機には適用しない | No three-phase motor | N/A |
| 19.9 | 備考**201.** 通常負荷を段階的に増加することができるものだけに適用する。適用除外の例として，圧縮用電動機，庫内循環用電動機，商品排出モータ及び水用ポンプモータがある | | N/A |
| 19.13 | **JIS C 9335-2-34** に適合しない電動圧縮機の外郭温度は，試験終了時に測定し，150 ℃を超えてはならない | No motor compressor | N/A |
| 20.2 | 使用者領域において，運動エネ ルギーが4 J を超える可動部分を 覆うカバーは，工具を用いてだけ取り外すことが出来る場合を除 いて，可動部品が停止していると きにだけ取り外すことができるようにインタロックされていな ければならない。 | | N/A |
| 22.111 | 屋外用のクラス0I 機器又はクラス I 機器は，高速形で定格感度 電流が15 mA 以下の漏電遮断器が内蔵されている構造又は取り付けられる構造とする | Indoor use only | N/A |
| 23.3 | 保守動作中に屈曲する導体の屈曲 回数は2 000 回とし，1 分間に24 回の割合で屈曲させる。ただし，ディスペンサの保守動作中にあ っては屈曲回数を10 000 回とする。 | No bending conductor for maint enance | N/A |
| 24.1 | 電動圧縮機がこの規格の要求事項に適合していれば，**JIS C 9335-2-34** に従って，電動圧縮機を別々に試験する必要はない。また，**JIS C 9335-2-34** の全要求事項を満足する必要もない | No motor compressor | N/A |
| 25.7 | 屋外の使用する機器の電源コー ドは，ポリクロロプレンシースコ ードで，一般用ポリクロロプレンシースコード（コード分類**60245 IEC 57**）よりグレードの低いもの であってはならない。ただし，関連法規においてその使用が認められているものは，除く | Indoor use only | N/A |
| 27.2 | プロフェッショナルタイプの据置形クラス I の機器であって，外部の等電位記導体を接続するための端子を備えている場合，その端子は，機器のすべての固定され露出した金属部と有効に電気的接 | Class 0I appliance | N/A |

| | | | |
|---|---|---|---|
| | 触をしなければならない | | |
| 29 | 電動圧縮機が**JIS C 9335-2-34** に適合している場合，その電動圧縮機のこの項に関する部分については，適否判定は行わない。**JIS C 9335-2-34** に適合しない電動圧縮機に関しては，**JIS C 9335-2-34** に規定された 追加及び修正が適用される | | N/A |

| | | | |
|---|---|---|---|
| Appendix | J3000 (H25)<br>Special National conditions, National deviation and other information according to MITI Ordinance No. 85. | | — |
| 1 | General requirement<br>When equipment provides with appliance inlet complying with JIS C 8283-1(2008), soldered parts of appliance inlet is not applied by force during insert or removal of connector.<br>This is not applied when inlet body is fixed itself and not fixed by solder. | No appliance inlet used | N/A |
| 2 | Requirement for equipment | | — |
| 2.1 | Heater Appliances<br>When diode is used in parallel at the power sources for adjustment of power consumption, the equipment shall remain safe for operation under open condition of one diode. | No heater appliance | N/A |
| | The current rating of one diode shall be more than main current. The diodes connected in parallel are same type. | (see above) | N/A |
| | The heating test specified by clause 11 of JIS C 9335-1(2003) and a specified in applicable indivisual requirements under open condition of one diode of parallel shall comply with the requirements. | (see above) | N/A |
| 2.2 | Electric heater with glowing heating elements | Not electric heater with glowing heating elements | N/A |
| | Surface treatment by paint or adhesive on protective frame or protective mesh shall not be used. | (see above) | N/A |
| | Caution marking like below shall be on<br>- easily visible place of the equipment or<br>- Instruction manual<br>「注意 当該機器から、使用初期段階で揮発性有機化合物及びカルボニル化合物が最も放散するおそれがあるため、その際には十分換気を行うこと。」 | (see above) | N/A |
| 3 | Components used in equipment | | N/A |
| 3.1 | Motor capacitors used in ventilating fan, electric fan, air conditioner, electric washing machine, refrigerator or electric freezer shall be comply with<br>- capacitors with protective elements or protective mechanism complying with JIS C 4908(2007) | Not air conditioner, electric washing machine, refrigerator or electric freezer | N/A |

| | | | |
|---|---|---|---|
| | - P2 capacitor complying with IEC 60252-1(2001)<br>Capacitor complying with below is acceptable | | |
| | Enclosed by metal or ceramic | (see above) | N/A |
| | No non-metallic materials within 50 mm from capacitor surface | (see above) | N/A |
| | Non-metallic material within 50mm from capacitor surface comply with needle frame test of JIS C 9335-1(2003), Annex E | (see above) | N/A |
| | Non-metallic material within 50 mm from capacitor surface comply with V-1 test of JIS C 60965-11-10(2006). | (see above) | N/A |
| 3.2 | Plug directly inserted to outlet used refrigerator or electric freezer.<br>Shall comply with<br>- Face contact with outlet shall have CTI with more than 400 according to JIS C 2134(2007) or<br>- Supporting material of blades shall comply with glow wire test by temperature of 750ºC according to JIS C 60695-2-11(2004) or JIS C 60695-2-12(2004).<br>Materials having glow wire frame temperature of 775 ºC are acceptable. | Not refrigerator or electric freezer. | N/A |

**---End of test report---**

TÜVRheinland®

# Testing and Measurement List

Report no. : 50020652 001

Project no. : 133039155

| Measurement /testing | Testing / measuring equipment / material used | Range used | Calibration due date |
|---|---|---|---|
| Torque screw driver | S3-0041 | 0,35Nm | 30.03.2015 |
| Push-pull gauge | S3-0351 | DPPH100kg | 19.09.2015 |
| Ball pressure chamber | S3-0208 | 200℃ | 10.12.2015 |
| Glow-wire tester | S3-0092 | 850℃ | 26.03.2015 |
| Electronic scale | S3-0121 | 150 kg | 25.03.2015 |
| Torque gauge | S3-0072 | 0,35Nm | 01.04.2015 |
| Leakage current tester | S3-0519 | 25V | 29.09.2015 |
| Digital multi meter | S3-0225 | 100 ohm | 21.09.2015 |
| Power analyzer | S3-0245 | 300V, 900W | 25.03.2015 |
| High voltage tester | S3-0250 | AC 5kV | 25.09.2015 |
| Ground Bond Tester | S3-0251 | 25A | 25.09.2015 |
| Calipers | S3-0265 | 0~150,0.01mm | 21.09.2015 |
| Walk-In chamber | S3-0269 | 32℃, 93% | 10.12.2015 |
| Temp. Recorder | S3-0248 | −30℃- 200℃ | 21.09.2015 |
| Impact hammer | S3-0086 | 0.5J | 28.09.2015 |
| Temp. Recorder | S3-0335 | −30℃- 200℃ | 25.03.2015 |
| Digital Storage Oscilloscope | S3-0336 | 100V | 21.09.2015 |
| | | | |
| | | | |

**Produkte**
*Products*

| **Prüfbericht - Nr.: 50027191 001** *Test Report No.:* | **Auftrags-Nr.:133039155** *Order No.:* | **Seite 1 von 18** *Page 1 of 18* |
|---|---|---|

| | |
|---|---|
| **Kunden-Referenz-Nr.: N/A** *Client Reference No.:* | **Auftragsdatum: 20.10.2014** *Order date:* |
| **Auftraggeber:** *Client:* | **Hyundai Wacortec. Co., Ltd.** **A-301, Hagye Technotown, 10, Nowon-ro 15-gil, Nowon-gu, Seoul, 139-727, Rep. of Korea** |
| **Prüfgegenstand:** *Test item:* | **Water Vending Machine** |
| **Bezeichnung / Typ-Nr.:** *Identification / Type No.:* | **WVRO-1001 / n.a.(engineering sample)** |
| **Auftrags-Inhalt:** *Order content:* | **EMI test for product evaluation** |
| **Prüfgrundlage:** *Test specification:* | **J55014-1(H20)** |
| **Wareneingangsdatum:** *Date of receipt:* | **26. 02.2015** |
| **Prüfmuster-Nr.:** *Test sample No.:* | **N/A** |
| **Prüfzeitraum:** *Testing period:* | **26.02.2015** |
| **Ort der Prüfung:** *Place of testing:* | **ENG, Gwangju** |
| **Prüflaboratorium:** *testing laboratory:* | **TÜV Rheinland Korea Ltd.** |
| **Prüfergebnis*:** *test result*:* | **Pass** |


**Geprüft von** / *tested by:*

2015-03-19 Tag-Sun Park / Inspector

| **Datum** *Date* | **Name/Stellung** *Name/Position* | **Unterschrift** *Signature* |
|---|---|---|

**Kontrolliert von** / *reviewed by:*

2015-03-19 Sang-Hyeup Lee / Reviewer

| **Datum** *Date* | **Name/Stellung** *Name/Position* | **Unterschrift** *Signature* |
|---|---|---|

**Sonstiges** / *Other:*

**Zustand des Prüfgegenstandes bei Anlieferung:** *Condition of the test item at delivery:* **Prüfmuster vollständig und unbeschädigt** *Test item complete and undamaged*

| | | | | | |
|---|---|---|---|---|---|
| * Legende: | 1 = sehr gut | 2 = gut | 3 = befriedigend | 4 = ausreichend | 5 = mangelhaft |
| | P(ass)=entspricht o.g. Prüfgrundlage(n) | | F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | N/A = nicht anwendbar | N/T = nicht getested |
| * *Legend:* | *1 = very good* | *2 = good* | *3 = satisfactory* | *4 = sufficient* | *5 = poor* |
| | *P(ass) = passed a.m.test specification(s)* | | *F(ail) = failed a.m. test specification(s)* | *N/A = not applicable* | *N/T = not tested* |



V04

# TEST SUMMARY

### 5.1.1 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE

*RESULT: PASS*

### 5.1.2 DISCONTINUOUS INTERFERENCE ON AC MAINS

*RESULT: PASS*

### 5.2.1 DISTURBANCE POWER

*RESULT: PASS*

# Contents

# 1. General Remarks

## 1.1 Complementary Materials

All attachments are integral parts of this test report.

# 2. Test Sites

## 2.1 Test Facilities

ENG Co., Ltd., 135-60, Gyeongchungdae-ro, Gonjiam-eup Gwangju-si, Gyeonggi-do, 464-942, Rep. of Korea.

This test site is in accordance with CISPR 16 for measurement of radio interference.

The used test equipment is in accordance with CISPR 16 for measurement of radio interference. The tests have been conducted by a TÜV testing engineer.

## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

| Test Equipment | Model | Manufacturer | Serial No. | Cal. Until |
|---|---|---|---|---|
| EMI Test Receiver | ESCI 7 | Rohde & Schwarz | 100722 | 2015-06-13 |
| LISN | ENV216 | Rohde & Schwarz | 100110 | 2015-12-17 |
| Absorbing Clamp | MDS-21 | Rohde & Schwarz | 100213 | 2016-02-24 |
| Click Analyzer | CL55C | AFJ | 55041413216 | 2015-09-09 |
| LISN | LS16C | AFJ | 1601143310 | 2015-03-28 |

## 2.3 Measurement Uncertainty

**Table 2: Emission Measurement Uncertainty**

| Measurement Type | Frequency | Uncertainty |
|---|---|---|
| Conducted Emission | 150 kHz – 30 MHz | ±3.3dB |
| Discontinuous Interference | 150 kHz – 30 MHz | ±3.3dB |
| Disturbance Power | 30 MHz – 300 MHz | ±3.0dB |

# 3. General Product Information

The EUTs are Water Vending Machine.

## 3.1 Ratings and System Details

| | |
|---|---|
| System Input Voltage: | AC 200 V |
| Frequency: | 50/60 Hz |
| Input Power: | 1.2 kW |
| | |
| Test Voltage: | 200 V |
| Test Frequency: | 50, 60 Hz |

## 3.2 Independent Operation Modes

The basic operation mode is:

A. Normal operation

## 3.3 Noise Generating and Noise Suppressing Parts

Nothing mentioned explicitly.

## 3.4 Submitted Documents

None

# 4. Test Set-up and Operation Modes

## 4.1 Principle of Configuration Selection

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

## 4.2 Physical Configuration for Testing

Refer to section: Photographs of the Test Set-Up

## 4.3 Test Operation and Test Software

None.

## 4.4 Special Accessories and Auxiliary Equipment

None

## 4.5 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

# 5. Test Results EMISSION

## 5.1 Emission in the Frequency Range up to 30 MHz

### 5.1.1 Mains Terminal Continuous Disturbance Voltage

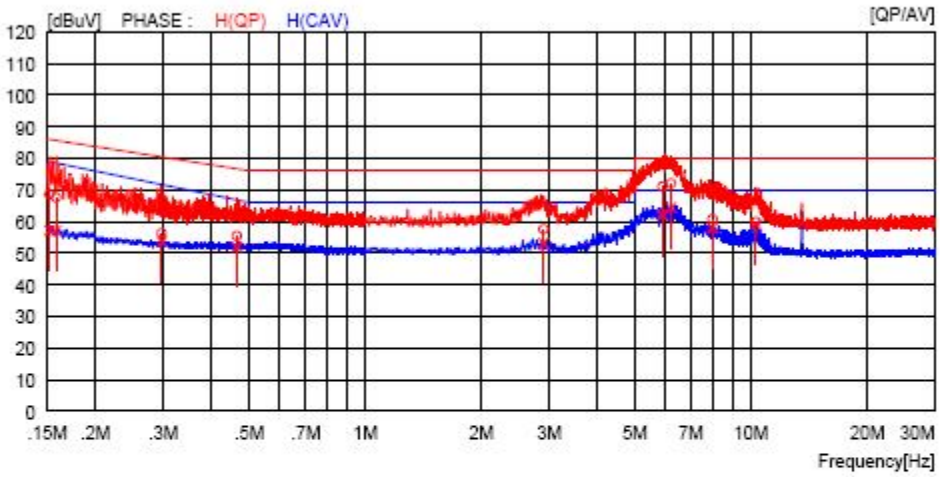
**RESULT:** **PASS**

| | |
|---|---|
| Date of testing: | 26-02-2015 |
| Ambient temperature: | 15℃(5 ~ 35 ℃) |
| Relative humidity: | 32% (45 ~ 85 % R.H.) |
| Test procedure: | J55014-1(H20) |
| Frequency range: | 150 kHz - 30 MHz |
| Kind of test site: | Shielded Room |
| Operation mode: | A |

## Figure 1: Spectral Diagrams, Conducted Emission, 150 kHz - 30 MHz, 200 V, 50 Hz, Phase (H), Test Mode A

| | | | | | |
|---|---|---|---|---|---|
| Applicant | : | TUV | AGR No. | : | |
| Model No. | : | REVERSE OSMOSIS SYSTEM | Power Supply | : | 200 VAC / 50 Hz |
| Serial No. | : | | Temp/Humi | : | 15 Dgree / 32 % R.H. |
| Test Condition | : | Water Supply mode | Operator | : | HSH |
| Memo | : | Hot Line | | | |

LIMIT : QP
AV



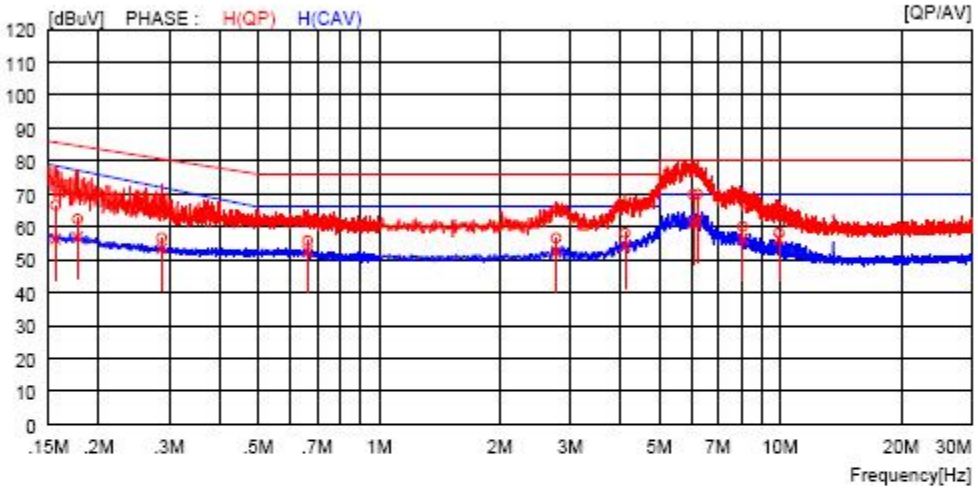

| NO | FREQ [MHz] | READING QP [dBuV] | READING AV [dBuV] | C.FACTOR [dB] | RESULT QP [dBuV] | RESULT AV [dBuV] | LIMIT QP [dBuV] | LIMIT AV [dBuV] | MARGIN QP [dBuV] | MARGIN AV [dBuV] | PHASE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.15200 | 58.6 | ---- | 9.8 | 68.6 | ---- | 85.9 | ---- | 17.3 | ---- | H(QP) |
| 2 | 0.15800 | 57.7 | ---- | 9.8 | 67.5 | ---- | 85.6 | ---- | 18.1 | ---- | H(QP) |
| 3 | 0.29700 | 46.4 | ---- | 9.8 | 56.2 | ---- | 80.3 | ---- | 24.1 | ---- | H(QP) |
| 4 | 0.46500 | 45.5 | ---- | 9.9 | 55.4 | ---- | 76.6 | ---- | 21.2 | ---- | H(QP) |
| 5 | 2.90000 | 47.8 | ---- | 9.7 | 57.5 | ---- | 76.0 | ---- | 18.5 | ---- | H(QP) |
| 6 | 5.90000 | 61.3 | ---- | 9.7 | 71.0 | ---- | 80.0 | ---- | 9.0 | ---- | H(QP) |
| 7 | 6.21000 | 62.3 | ---- | 9.7 | 72.0 | ---- | 80.0 | ---- | 8.0 | ---- | H(QP) |
| 8 | 7.96500 | 51.0 | ---- | 9.7 | 60.7 | ---- | 80.0 | ---- | 19.3 | ---- | H(QP) |
| 9 | 10.29000 | 50.0 | ---- | 9.8 | 59.8 | ---- | 80.0 | ---- | 20.2 | ---- | H(QP) |
| 10 | 0.15200 | ---- | 47.4 | 9.8 | ---- | 57.2 | ---- | 78.9 | ---- | 21.7 | H(CAV) |
| 11 | 0.15800 | ---- | 47.3 | 9.8 | ---- | 57.1 | ---- | 78.4 | ---- | 21.3 | H(CAV) |
| 12 | 0.29700 | ---- | 43.7 | 9.8 | ---- | 53.5 | ---- | 71.6 | ---- | 18.1 | H(CAV) |
| 13 | 0.46500 | ---- | 42.0 | 9.9 | ---- | 51.9 | ---- | 66.8 | ---- | 14.9 | H(CAV) |
| 14 | 2.90000 | ---- | 43.4 | 9.7 | ---- | 53.1 | ---- | 66.0 | ---- | 12.9 | H(CAV) |
| 15 | 5.90000 | ---- | 52.2 | 9.7 | ---- | 61.9 | ---- | 70.0 | ---- | 8.1 | H(CAV) |
| 16 | 6.21000 | ---- | 54.7 | 9.7 | ---- | 64.4 | ---- | 70.0 | ---- | 5.6 | H(CAV) |
| 17 | 7.96500 | ---- | 48.2 | 9.7 | ---- | 57.9 | ---- | 70.0 | ---- | 12.1 | H(CAV) |
| 18 | 10.29000 | ---- | 49.3 | 9.8 | ---- | 59.1 | ---- | 70.0 | ---- | 10.9 | H(CAV) |

## Figure 2: Spectral Diagrams, Conducted Emission, 150 kHz - 30 MHz, 200 V, 50 Hz, Phase (N), Test Mode A

| | | | |
|---|---|---|---|
| Applicant | : TUV | AGR No. | : |
| Model No. | : REVERSE OSMOSIS SYSTEM | Power Supply | : 200 VAC / 50 Hz |
| Serial No. | : | Temp/Humi | : 15 Dgree / 32 % R.H. |
| Test Condition | : Water Supply mode | Operator | : HSH |

Memo : Neu Line

LIMIT : QP
AV



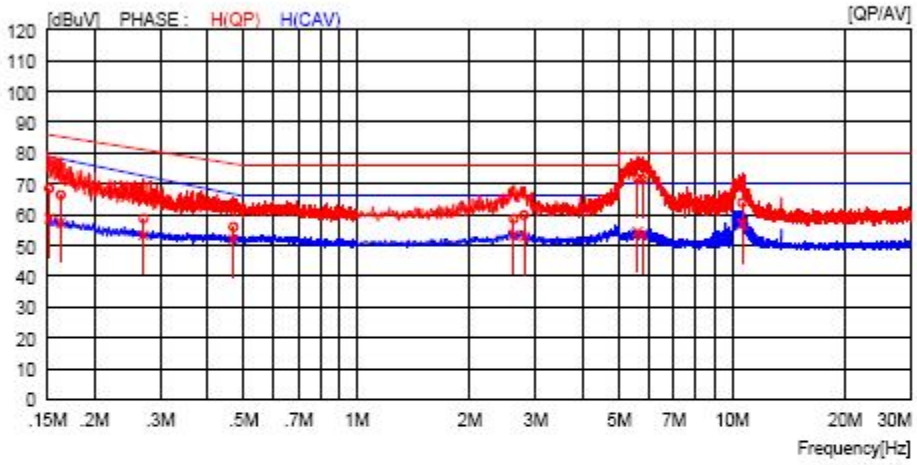

| NO | FREQ [MHz] | READING QP [dBuV] | READING AV [dBuV] | C.FACTOR [dB] | RESULT QP [dBuV] | RESULT AV [dBuV] | LIMIT QP [dBuV] | LIMIT AV [dBuV] | MARGIN QP [dBuV] | MARGIN AV [dBuV] | PHASE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.15600 | 56.7 | ---- | 9.8 | 66.5 | ---- | 85.7 | ---- | 19.2 | ---- | H(QP) |
| 2 | 0.17700 | 52.6 | ---- | 9.8 | 62.4 | ---- | 84.6 | ---- | 22.2 | ---- | H(QP) |
| 3 | 0.28700 | 46.9 | ---- | 9.8 | 56.7 | ---- | 80.6 | ---- | 23.9 | ---- | H(QP) |
| 4 | 0.66300 | 45.9 | ---- | 9.9 | 55.8 | ---- | 76.0 | ---- | 20.2 | ---- | H(QP) |
| 5 | 2.76400 | 46.9 | ---- | 9.7 | 56.6 | ---- | 76.0 | ---- | 19.4 | ---- | H(QP) |
| 6 | 4.10400 | 48.4 | ---- | 9.7 | 58.1 | ---- | 76.0 | ---- | 17.9 | ---- | H(QP) |
| 7 | 6.06000 | 60.1 | ---- | 9.7 | 69.8 | ---- | 80.0 | ---- | 10.2 | ---- | H(QP) |
| 8 | 6.21500 | 60.2 | ---- | 9.7 | 69.9 | ---- | 80.0 | ---- | 10.1 | ---- | H(QP) |
| 9 | 8.06500 | 50.4 | ---- | 9.7 | 60.1 | ---- | 80.0 | ---- | 19.9 | ---- | H(QP) |
| 10 | 9.93000 | 48.4 | ---- | 9.8 | 58.2 | ---- | 80.0 | ---- | 21.8 | ---- | H(QP) |
| 11 | 0.15600 | ---- | 46.5 | 9.8 | ---- | 56.3 | ---- | 78.6 | ---- | 22.3 | H(CAV) |
| 12 | 0.17700 | ---- | 47.1 | 9.8 | ---- | 56.9 | ---- | 77.2 | ---- | 20.3 | H(CAV) |
| 13 | 0.28700 | ---- | 43.7 | 9.8 | ---- | 53.5 | ---- | 72.0 | ---- | 18.5 | H(CAV) |
| 14 | 0.66300 | ---- | 42.7 | 9.9 | ---- | 52.6 | ---- | 66.0 | ---- | 13.4 | H(CAV) |
| 15 | 2.76400 | ---- | 42.8 | 9.7 | ---- | 52.5 | ---- | 66.0 | ---- | 13.5 | H(CAV) |
| 16 | 4.10400 | ---- | 44.4 | 9.7 | ---- | 54.1 | ---- | 66.0 | ---- | 11.9 | H(CAV) |
| 17 | 6.06000 | ---- | 51.3 | 9.7 | ---- | 61.0 | ---- | 70.0 | ---- | 9.0 | H(CAV) |
| 18 | 6.21500 | ---- | 51.9 | 9.7 | ---- | 61.6 | ---- | 70.0 | ---- | 8.4 | H(CAV) |
| 19 | 8.06500 | ---- | 46.7 | 9.7 | ---- | 56.4 | ---- | 70.0 | ---- | 13.6 | H(CAV) |
| 20 | 9.93000 | ---- | 46.5 | 9.8 | ---- | 56.3 | ---- | 70.0 | ---- | 13.7 | H(CAV) |

## Figure 3: Spectral Diagrams, Conducted Emission, 150 kHz - 30 MHz, 200 V, 60 Hz, Phase (H), Test Mode A

| | | | |
|---|---|---|---|
| Applicant | : TUV | AGR No. | : |
| Model No. | : REVERSE OSMOSIS SYSTEM | Power Supply | : 200 VAC / 60 Hz |
| Serial No. | : | Temp/Humi | : 15 Dgree / 32 % R.H. |
| Test Condition | : Water Supply mode | Operator | : HSH |

Memo : Hot Line

LIMIT : QP
AV



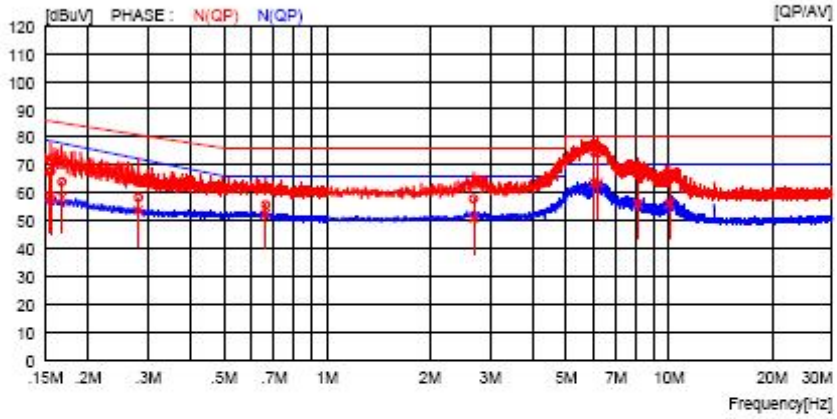

| NO | FREQ [MHz] | READING QP [dBuV] | READING AV [dBuV] | C.FACTOR QP [dB] | C.FACTOR AV [dB] | RESULT QP [dBuV] | RESULT AV [dBuV] | LIMIT QP [dBuV] | LIMIT AV [dBuV] | MARGIN QP | MARGIN AV | PHASE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.15200 | 58.7 | ---- | 9.8 | | 68.5 | ---- | 85.9 | ---- | 17.4 | ---- | H(QP) |
| 2 | 0.16300 | 56.6 | ---- | 9.8 | | 66.4 | ---- | 85.3 | ---- | 18.9 | ---- | H(QP) |
| 3 | 0.27100 | 48.9 | ---- | 9.8 | | 58.7 | ---- | 81.1 | ---- | 22.4 | ---- | H(QP) |
| 4 | 0.47000 | 46.1 | ---- | 9.9 | | 56.0 | ---- | 76.5 | ---- | 20.5 | ---- | H(QP) |
| 5 | 2.62400 | 49.0 | ---- | 9.7 | | 58.7 | ---- | 76.0 | ---- | 17.4 | ---- | H(QP) |
| 6 | 2.79600 | 50.1 | ---- | 9.7 | | 59.8 | ---- | 76.0 | ---- | 16.2 | ---- | H(QP) |
| 7 | 5.61000 | 62.0 | ---- | 9.7 | | 71.7 | ---- | 80.0 | ---- | 8.3 | ---- | H(QP) |
| 8 | 5.77500 | 61.8 | ---- | 9.7 | | 71.5 | ---- | 80.0 | ---- | 8.5 | ---- | H(QP) |
| 9 | 10.66000 | 54.1 | ---- | 9.8 | | 63.9 | ---- | 80.0 | ---- | 16.1 | ---- | H(QP) |
| 10 | 0.15200 | ---- | 49.0 | | 9.8 | ---- | 58.8 | ---- | 78.9 | ---- | 20.1 | H(CAV) |
| 11 | 0.16300 | ---- | 47.7 | | 9.8 | ---- | 57.5 | ---- | 78.1 | ---- | 20.6 | H(CAV) |
| 12 | 0.27100 | ---- | 43.5 | | 9.8 | ---- | 53.3 | ---- | 72.6 | ---- | 19.3 | H(CAV) |
| 13 | 0.47000 | ---- | 42.2 | | 9.9 | ---- | 52.1 | ---- | 66.7 | ---- | 14.6 | H(CAV) |
| 14 | 2.62400 | ---- | 43.7 | | 9.7 | ---- | 53.4 | ---- | 66.0 | ---- | 12.6 | H(CAV) |
| 15 | 2.79600 | ---- | 43.1 | | 9.7 | ---- | 52.8 | ---- | 66.0 | ---- | 13.2 | H(CAV) |
| 16 | 5.61000 | ---- | 44.7 | | 9.7 | ---- | 54.4 | ---- | 70.0 | ---- | 15.6 | H(CAV) |
| 17 | 5.77500 | ---- | 43.9 | | 9.7 | ---- | 53.6 | ---- | 70.0 | ---- | 16.4 | H(CAV) |
| 18 | 10.66000 | ---- | 47.1 | | 9.8 | ---- | 56.9 | ---- | 70.0 | ---- | 13.1 | H(CAV) |

## Figure 4: Spectral Diagrams, Conducted Emission, 150 kHz - 30 MHz, 200 V, 60 Hz, Phase (N), Test Mode A

| | | | |
|---|---|---|---|
| Applicant | : TUV | AGR No. | : |
| Model No. | : REVERSE OSMOSIS SYSTEM | Power Supply | : 200 VAC / 60 Hz |
| Serial No. | : | Temp/Humi | : 15 Dgree / 32 % R.H. |
| Test Condition | : Water Supply mode | Operator | : HSH |

Memo : Neu Line

LIMIT : QP
AV




| NO | FREQ [MHz] | READING QP [dBuV] | READING AV [dBuV] | C.FACTOR QP [dB] | C.FACTOR AV [dB] | RESULT QP [dBuV] | RESULT AV [dBuV] | LIMIT QP [dBuV] | LIMIT AV [dBuV] | MARGIN QP [dB] | MARGIN AV [dB] | PHASE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.15500 | 57.6 | ---- | 9.8 | | 67.4 | ---- | 65.7 | ---- | 18.3 | ---- | N(QP) |
| 2 | 0.15600 | 58.1 | ---- | 9.8 | | 67.9 | ---- | 65.7 | ---- | 17.8 | ---- | N(QP) |
| 3 | 0.16800 | 54.1 | ---- | 9.8 | | 63.9 | ---- | 65.1 | ---- | 21.3 | ---- | N(QP) |
| 4 | 0.28100 | 48.5 | ---- | 9.8 | | 58.3 | ---- | 60.8 | ---- | 22.5 | ---- | N(QP) |
| 5 | 0.66200 | 45.8 | ---- | 9.9 | | 55.7 | ---- | 76.0 | ---- | 20.3 | ---- | N(QP) |
| 6 | 2.66400 | 48.1 | ---- | 9.7 | | 57.8 | ---- | 76.0 | ---- | 18.2 | ---- | N(QP) |
| 7 | 6.04000 | 64.7 | ---- | 9.7 | | 74.4 | ---- | 80.0 | ---- | 5.6 | ---- | N(QP) |
| 8 | 6.22000 | 64.6 | ---- | 9.7 | | 74.3 | ---- | 80.0 | ---- | 5.7 | ---- | N(QP) |
| 9 | 8.11500 | 56.9 | ---- | 9.7 | | 66.6 | ---- | 80.0 | ---- | 13.5 | ---- | N(QP) |
| 10 | 10.02000 | 55.4 | ---- | 9.8 | | 65.2 | ---- | 80.0 | ---- | 14.8 | ---- | N(QP) |
| 11 | 0.15500 | ---- | 49.0 | | 9.8 | ---- | 58.8 | ---- | 78.6 | ---- | 19.8 | N(CAV) |
| 12 | 0.15600 | ---- | 47.9 | | 9.8 | ---- | 57.7 | ---- | 78.6 | ---- | 20.9 | N(CAV) |
| 13 | 0.16800 | ---- | 48.5 | | 9.8 | ---- | 58.3 | ---- | 77.8 | ---- | 19.5 | N(CAV) |
| 14 | 0.28100 | ---- | 43.9 | | 9.8 | ---- | 53.7 | ---- | 72.2 | ---- | 18.5 | N(CAV) |
| 15 | 0.66200 | ---- | 42.6 | | 9.9 | ---- | 52.5 | ---- | 66.0 | ---- | 13.5 | N(CAV) |
| 16 | 2.66400 | ---- | 41.1 | | 9.7 | ---- | 50.8 | ---- | 66.0 | ---- | 15.2 | N(CAV) |
| 17 | 6.04000 | ---- | 53.9 | | 9.7 | ---- | 63.6 | ---- | 70.0 | ---- | 6.4 | N(CAV) |
| 18 | 6.22000 | ---- | 54.0 | | 9.7 | ---- | 63.7 | ---- | 70.0 | ---- | 6.3 | N(CAV) |
| 19 | 8.11500 | ---- | 46.4 | | 9.7 | ---- | 56.1 | ---- | 70.0 | ---- | 13.9 | N(CAV) |
| 20 | 10.02000 | ---- | 46.3 | | 9.8 | ---- | 56.1 | ---- | 70.0 | ---- | 13.9 | N(CAV) |

## 5.1.2 Discontinuous Interference on AC Mains

**RESULT:** **PASS**

Date of testing: 26-02-2015

Ambient temperature: 15℃(5 ~ 35 ℃)
Relative humidity: 32% (45 ~ 85 % R.H.)

Test procedure: J55014-1(H20)

Frequency range: 150 kHz - 30 MHz
Kind of test site: Shielded Room

**Table 3: Discontinuous Disturbances on AC Mains (Clicks)**

| Frequency | 150 kHz | 500 kHz | 1.4 MHz | 30 MHz |
|---|---|---|---|---|
| Continuous Limit, L (dBuV) | 66 | 56 | 56 | 60 |
| Counted clicks < 10ms (number) | 0 | 0 | 0 | 0 |
| 10ms < clicks < 20ms (number) | 0 | 0 | 0 | 0 |
| Counted clicks > 20ms (number) | 0 | 0 | 0 | 0 |
| Counted clicks sum (number) | 0 | 0 | 0 | 0 |
| Duration of continuous interference (s) | 0 | 0 | 0 | 0 |
| Switching operations (number) | - | | | |
| Factor (f) | - | - | - | - |
| Click rate, N | < 5 | < 5 | | |
| Permitted limit, Lq | - | - | - | - |
| Counted Clicks exceeding the limit (number) | - | - | - | - |
| Counted clicks allowed to exceed the permitted limit (number) | - | - | - | - |
| Complies with the limit | YES | YES | YES | YES |

Observation time : 120 minutes.

# 5.2 Emission in the Frequency Range above 30 MHz

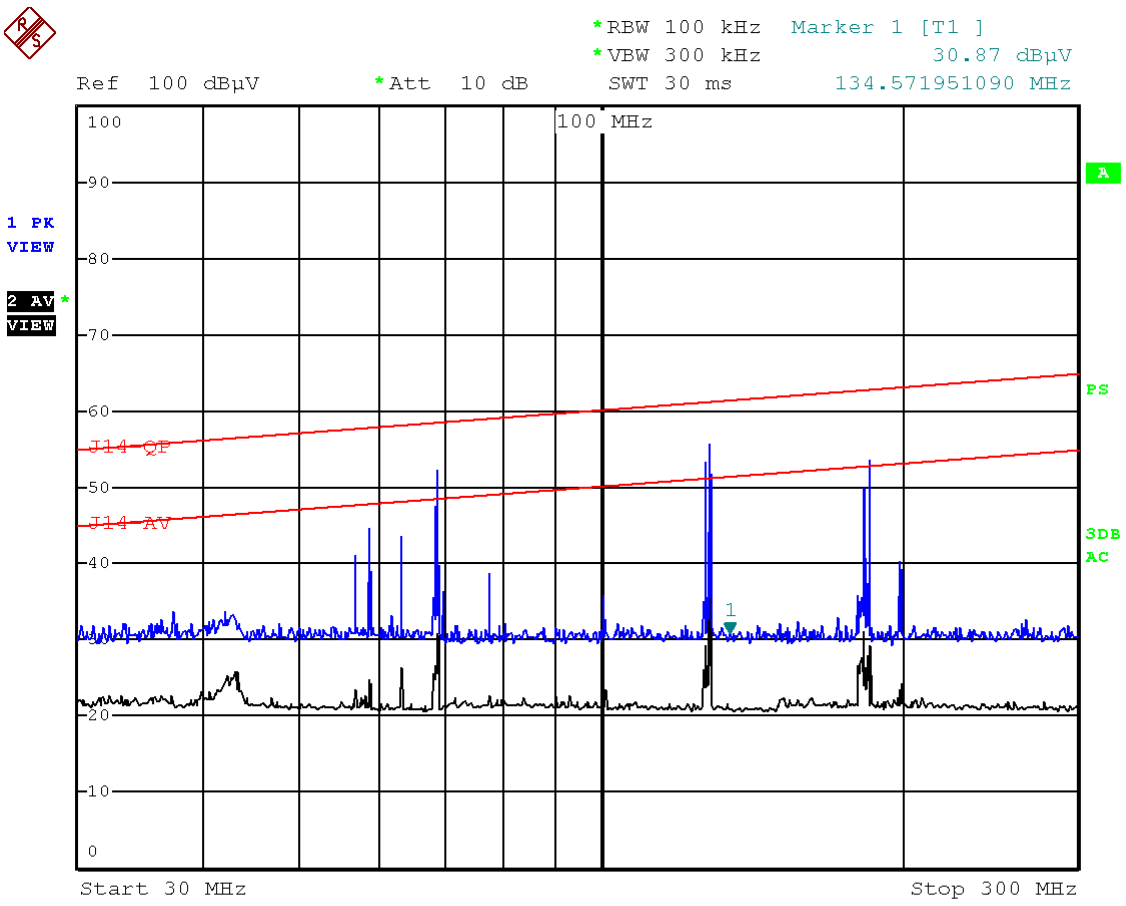
## 5.2.1 Disturbance Power

**RESULT:** **PASS**

| | |
|---|---|
| Date of testing: | 26-02-2015 |
| Ambient temperature: | 15℃(5 ~ 35 ℃) |
| Relative humidity: | 32% (45 ~ 85 % R.H.) |
| Test procedure: | J55014-1(H20) |
| Frequency range: | 30 MHz - 300 MHz |
| Operation mode: | A |

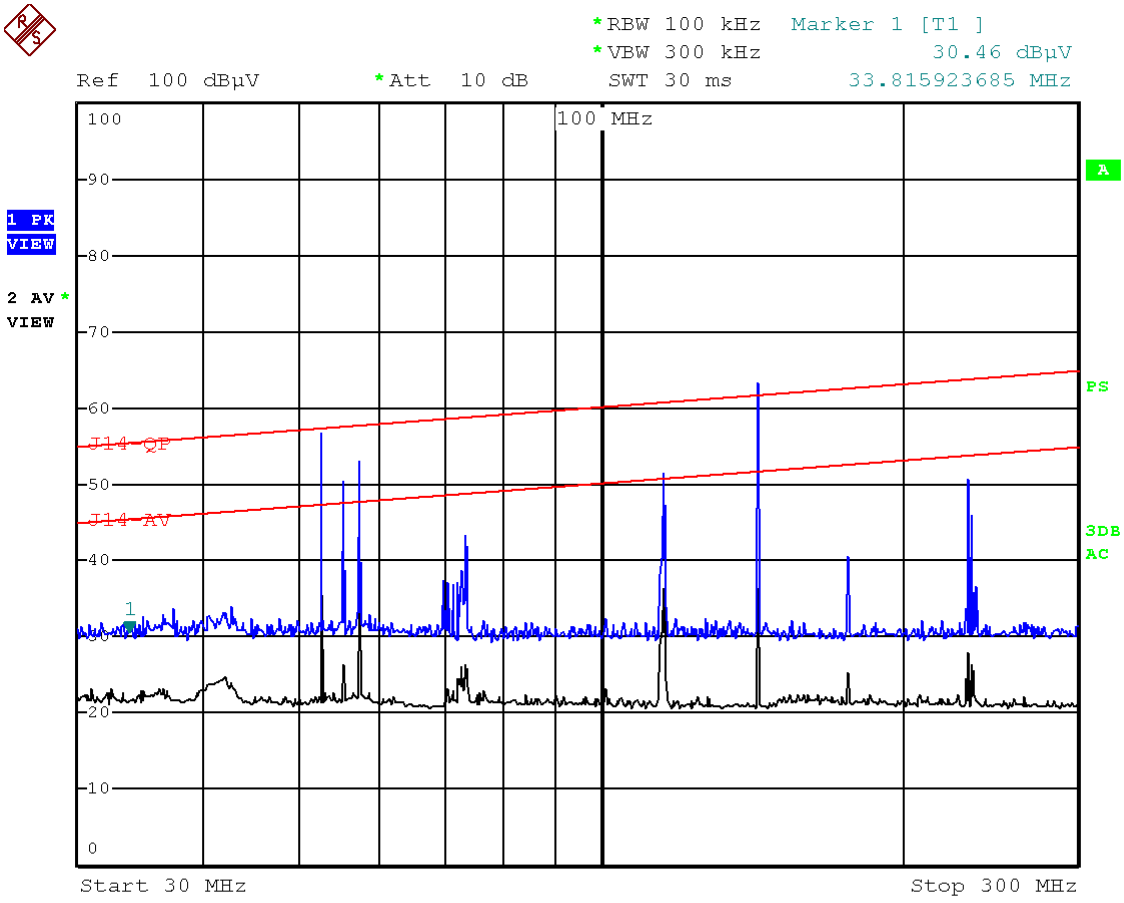
Remark)
All emission readings from the equipment are more than 10 dB margin.

**Figure 5: Spectral Diagrams, Disturbance Power, 30 MHz - 300 MHz, 200 V, 50 Hz, Test Mode A**




Date: 1.JAN.2003 00:03:28

**Figure 6: Spectral Diagrams, Disturbance Power, 30 MHz - 300 MHz, 200 V, 60 Hz, Test Mode A**

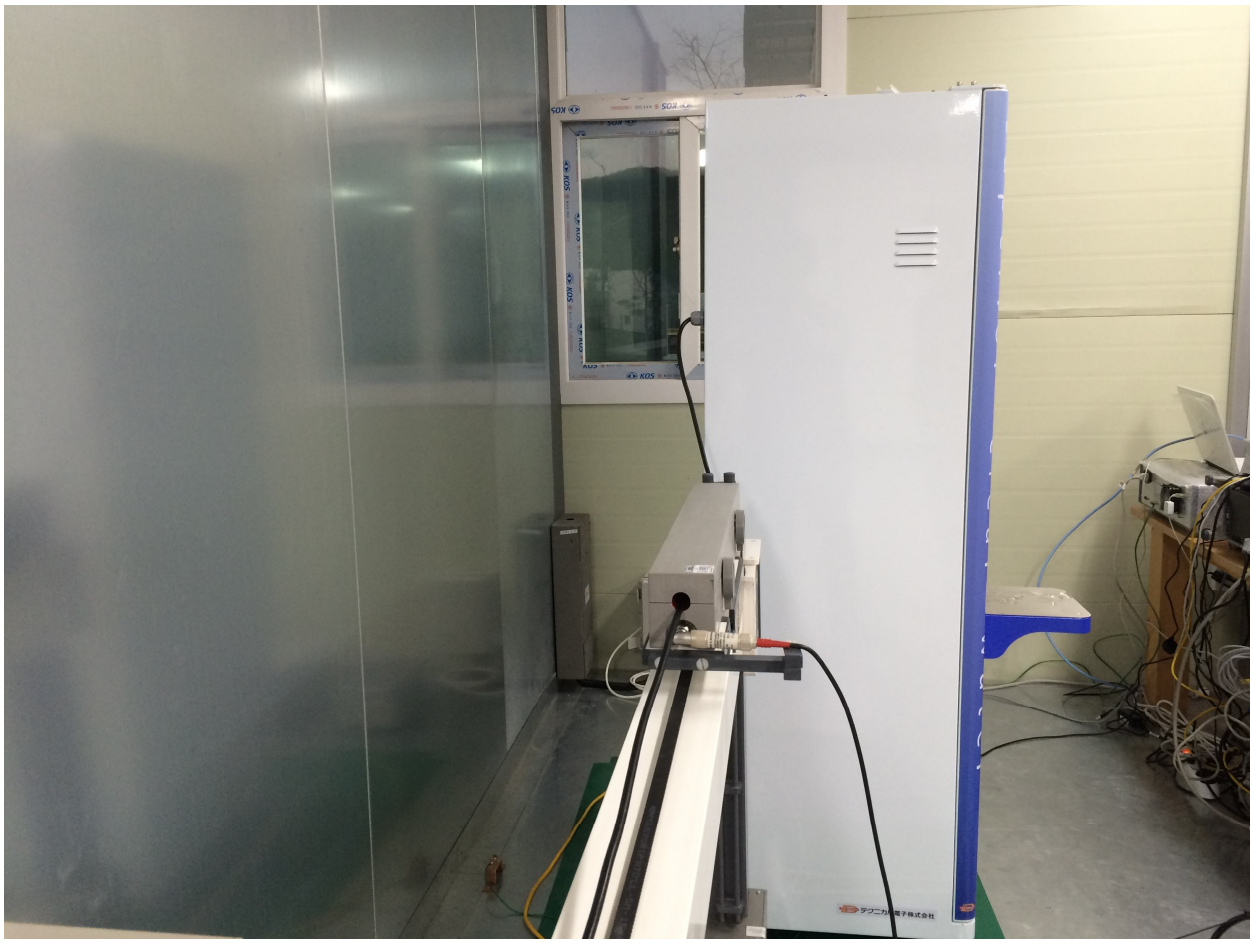



Date: 1.JAN.2003 00:03:54

# 6. Photographs of the Test Set-Up

**Photograph 1: Set-up for Conducted Emisson, 150 kHz - 30 MHz**

## Photograph 2: Set-up for Disturbance Power, 30 MHz - 300 MHz



# 7. List of Tables



# 8. List of Figures



# 9. List of Photographs