




www.nemko.com

| | |
|---|---|
| TEST REPORT IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements | |
| Report Number | 308697 |
| Date of issue | 2016-06-03 |
| Total number of pages | Refer to page 3 |
| Applicant's name | GlobTek, Inc. |
| Address | 186 Veterans Dr. Northvale, NJ 07647 USA |
| Test specification: | |
| Standard | IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 |
| Test procedure | CB Scheme |
| Non-standard test method | N/A |
| Test Report Form No. | IEC60950_1F |
| Test Report Form(s) Originator | SGS Fimko Ltd |
| Master TRF | Dated 2014-02 |
| Copyright © 2014 Worldwide System for Conformity Testing and Certification of Electrotechnical Equipment and Components (IECEE), Geneva, Switzerland. All rights reserved. <p>This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.</p> <p>If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.</p> <p>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.</p> <p>General disclaimer:</p> <p>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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.</p> | |
| Test item description | Power supply for business machine |
| Trade Mark |  |
| Manufacturer | Same as applicant |
| Model/Type reference | GT-41131-WWVV-X.X (see general product information for model designation) |
| Ratings | I/P: 1.0A, 100-240Vac, 50-60Hz output: 12-15/24-48Vdc, max 30W |

| | | |
|---|---|---|
| Testing procedure and testing location: | | |
| <input checked="" type="checkbox"/> | CB Testing Laboratory: | Nemko Shanghai Ltd. Shenzhen Branch |
| Testing location/ address | | Unit C & D, Floor 10, Tower 2, Kefa Road #8 Hi-Technology Park Nanshan District 518057 Shenzhen CHINA |
| <input type="checkbox"/> | Associated CB Laboratory: | |
| Testing location/ address | | |
| Tested by (name + function + signature) | | Bill Yang (Project handler) |
| Approved by (name + function + signature) | | Jane Sun (Verificator) |
| <input type="checkbox"/> | Testing procedure: TMP/CTF Stage 1: | |
| Testing location/ address | | |
| Tested by (name + signature) | | |
| Approved by (name + signature) | | |
| <input type="checkbox"/> | Testing procedure: WMT/CTF Stage 2: | |
| Testing location/ address | | |
| Tested by (name + signature) | | |
| Witnessed by (name + signature) | | |
| Approved by (name + signature) | | |
| <input type="checkbox"/> | Testing procedure: SMT/CTF Stage 3 or 4: | |
| Testing location/ address | | |
| Tested by (name + signature) | | |
| Approved by (name + signature) | | |
| Supervised by (name + signature) ... | | |

List of Attachments (including a total number of pages in each attachment):

1. Main Test report (77 pages)
2. Photos (4 pages)
3. European Group differences and National differences (19 pages)
4. Australian/New Zealand differences (8 pages)
5. Canadian differences (5 pages)
6. Korean differences (1 page)
7. US differences (5 pages)
8. Chinese differences (9 pages)
9. Japanese differences (8 pages)
10. Israeli differences (5 pages)
11. Singapore differences (3 pages)
12. Nemko test report of EU plug, Ref No. 177091P(7 pages)

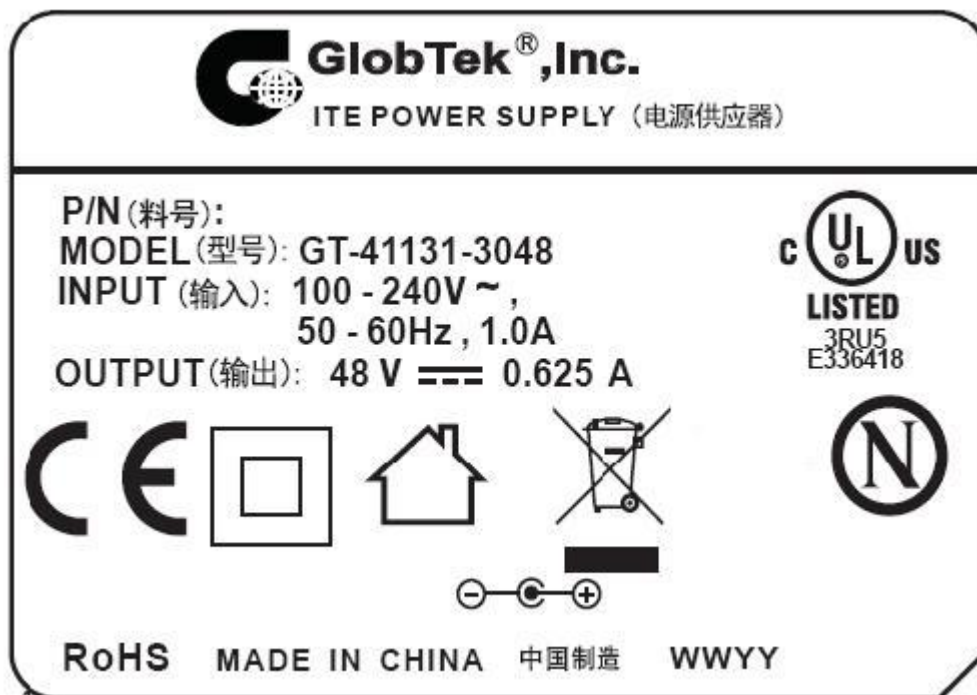
| Summary of testing: | |
|--|--|
| Radio and television interference Suppression Compliance with the EMC directive is necessary for achieving type certification. The appliance shall comply with the relevant EMC standards, depending on the equipment in question. In NO, compliance with standards for radio interference suppression is a part of Nemko's certification. In FI, DK and SE compliance is not necessary for achieving safety certification. | The manufacturer has self-declared according to the EMC directive. |
| 1.7.2.1 Language of safety markings/ instructions. | Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold. |
| 1.7.2.4 The equipment is intended and tested for installation to IT power system (Norway) | The following information should be given (but it is not required) in the installation: "This Product is also designed for IT power system with phase to phase voltage 230V" |
| 2.7.5 Number and location of protective devices | The standard requires protective device in NEUTRAL when connected to IT power system. For Norway this is not required. For other countries additional requirement may apply. |
| 2.7.6 Warning to service persons. | After operation of the protective device, the equipment is still under voltage if it is connected to an IT power system. A warning is required for service personnel. Norway does not require this warning. |
| 4.3.6 Direct plug-in equipment with removable plug | Only Europe plug have been evaluated. Other plug should be checked when marketed in relevant country. The Europe plug complies with EN50075. The EUT/removable plug additionally tested to the following: Mechanical rigidity of the removable parts: Tested by repeat of connection and disconnection 50 times, electrical contact points are not impaired. Refer to 4.2.1 Electrical safety: Tested removable plug with test probe B, test probe 13 and test probe 19 of EN61032, no contact with metal pins of plug. Refer to 2.1.1.1, 2.10.3 and 2.10.4 Temperature stability: No extensive temperature rise of the contact surface. Refer to 4.5. |

| | |
|---|--|
| Tests performed (name of test and test clause): 1.6.2; Input current 1.7.11; Durability test 2.1.1.1; Access to energized parts 2.2; SELV circuits 2.4; Limited current circuits 2.5; Limited power sources 2.9; Electrical insulation 2.10; Clearances, creepage distances and distances through insulation 4.2; Mechanical strength 4.3.6 Direct plug-in equipment 4.5.1; Temperature test 4.7; Resistance to fire 5.1; Touch current 5.2; Electric strength 5.3; Abnormal operation and fault conditions Annex C | Testing location: Refer to page 2. |
| Summary of compliance with National Differences The sample(s) tested compliance with the requirements of IEC 60950-1: 2005 (2nd Edition); Am1: 2009; Am2: 2013 and all CENELEC members as listed in EN 60950-1: 2006 +A11: 2009+A1: 2010+A12: 2011+A2: 2013. At the time of issuing this test report, not all countries are listed for IEC 60950-1:2005 (2nd Edition); Am1:2009; Am2:2013. Therefore this test report includes national differences for IEC 60950-1:2005 (2nd Edition); Am1:2009 and IEC 60950-1: 2005 (2nd Edition) and IEC 60950-1: 2001 1st Edition. All national differences listed in the IECEE Online CB Bulletin are covered by the Common Modifications, Special National Conditions, National Deviations, and the National Requirements noted above except for the countries which are documented in Attachment. National Differences attached to this test report: list from IEC 60950-1, 1st edition: Japan list from IEC 60950-1, 2nd edition: China and Singapore list from IEC 60950-1: 2005 (2nd Edition); Am1: 2009 : Korea, Israeli and Australia. list from IEC 60950-1: 2005 (2nd Edition); Am2: 2013 :USA and Canada | |

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Additional requirements for markings. See 1.7 NOTE)



Representative of all models

| | |
|---------------------------------|--|
| Calibration: | <p>All instruments used in the tests given in this test report are calibrated and traceable to national or international standards.</p> <p>Further information about traceability will be given on request.</p> |
| Measurement uncertainty: | <p>Measurement uncertainties are calculated for all instruments and instrument set-ups given in this report. Calculations are based on the principles given in the standard EA-4/02 (Dec. 1999), IEC Guide 115:2007, Nemko routine L227 and other relevant internal Nemko-procedures.</p> <p>Further information about measurement uncertainties will be given on request.</p> |
| Evaluation of results: | <p>If not explicitly stated otherwise in the standard, the test is passed if the measured value is equal to or below (above) the limit line, regardless of the measurement uncertainty. If the measured value is above (below) the limit line, the test is not passed - ref IEC Guide 115:2007, and Nemko routine L220. The instrumentation accuracy is within limits agreed by IECEE-CTL (ref. Nemko routine L227).</p> |

| | |
|---|---|
| Test item particulars | |
| Equipment mobility | <input type="checkbox"/> movable <input type="checkbox"/> hand-held <input checked="" type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input checked="" type="checkbox"/> direct plug-in |
| Connection to the mains | <input checked="" type="checkbox"/> pluggable equipment <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains |
| Operating condition | <input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time: |
| Access location | <input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: |
| Mains supply tolerance (%) or absolute mains supply values | -10% and +10% |
| Tested for IT power systems | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| IT testing, phase-phase voltage (V) | 230V |
| Class of equipment | <input type="checkbox"/> Class I <input checked="" type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified |
| Considered current rating of protective device as part of the building installation (A) | 16A (20A for US and Canada) |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| IP protection class | IP20 |
| Altitude during operation (m) | ≤ 3500m |
| Altitude of test laboratory (m) | ≤ 2000m |
| Mass of equipment (kg) | 230g(without replaceable plug) Dimension: 56.3mm by 89.0mm by 37.5mm (without replaceable plug) |
| Possible test case verdicts: | |
| - test case does not apply to the test object..... | N/A |
| - test object does meet the requirement | P (Pass) |
| - test object does not meet the requirement | F (Fail) |
| Testing | |
| Date of receipt of test item | 2016-04-20 |
| Date(s) of performance of tests | 2016-04-20 – 2016-05-24 |
| General remarks: | |
| " (see attachment #)" refers to additional information appended to the report. | |
| "(see appended table)" refers to a table appended to the report. | |
| Throughout this report a 0 comma / 1 point is used as the decimal separator. | |

Manufacturer's Declaration per sub-clause 4.2.5 of IEC60950:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided : ☒ Yes ☐ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....:

1. GlobTek, Inc.
186 Veterans Dr. Northvale, NJ 07647 USA
2. GlobTek (Suzhou) Co., Ltd
Building 4, No. 76, Jin Ling East Rd., Suzhou Industrial Park, Suzhou, JiangSu 215021, China

General product information:

The equipment under test is a class II switching power adaptor for ITE and indoor use only. External enclosure is made of min. V-1 plastic material. Two pieces of enclosure are enclosed with ultrasonic welding without screw.

The equipment uses replaceable plug part. Only Europe plug have been evaluated and compliance by EN50075.

Explanation of model designation GT-41131-WWVV-X.X:

WW is the rated output wattage designation, with a maximum value of "30".

VV is the standard rated output voltage designation, with a range of "12-15/24-48V".

-X.X is optional or blank and denotes the output voltage differentiator, subtracting or adding X.X volts from standard output voltage VV in 0.1V increments.

All models are identical except minor differences in transformer and secondary circuit.

Three transformers type XF00399/XF00435/XF00436 used for models with output voltage 12-15V/24-36V/36.1-48V.

Transformer type XF00435 is the same as XF00436, except secondary windings. Type XF00399 is different from XF00435 and XF00436 (different turns of primary and secondary windings).

The models GT-41131-3015-3.0, GT-41131-3015, GT-41131-3024 and GT-41131-3048 represent the worst case because the models have highest V, A and VA.

| Model designation | Output voltage | Output current | Output power | Transformer |
|-------------------|----------------|----------------|--------------|-------------|
| GT-41131-3015-3.0 | 12Vdc | 2.5A | 30W | XF00399 |
| GT-41131-3015 | 15Vdc | 2A | 30W | XF00399 |
| GT-41131-3024 | 24Vdc | 1.25A | 30W | XF00435 |
| GT-41131-3048 | 48Vdc | 0.625A | 30W | XF00436 |

Unless otherwise specified, all tests were conducted under worst case.

Max. normal load condition: Output load to rated output.

Circuit characteristics: the equipment contains primary circuit and SELV circuit in secondary.

Maximum recommended ambient (Tma): 40°C.

1.1.2 - Additional requirements:

Exposure to extreme temperatures, excessive dust, moisture or vibration; to flammable gases; to corrosive or explosive atmospheres:

This equipment is intended to operate in a "normal" environment (Offices and homes).

Electromedical equipment connected to the patient:

This equipment is not an electromedical equipment intended to be physically connected to a patient.

Equipment used in vehicles, ships or aircrafts, in tropical countries, or at elevations > 2000m:

This equipment is intended to operate in a "normal" environment (Offices and homes).

This equipment is intended to be operated under altitude up to 3500m, so the clearance is multiplied by the altitude correction factor 1.215, specified in table A.2 of IEC 60664-1

Abbreviations used in the report:


| | | | |
|--------------------------------------|------|----------------------------|-------|
| - normal conditions | N.C. | - single fault conditions | S.F.C |
| - functional insulation | OP | - basic insulation | BI |
| - double insulation | DI | - supplementary insulation | SI |
| - between parts of opposite polarity | BOP | - reinforced insulation | RI |

Indicate used abbreviations (if any)

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1 | GENERAL | | P |
| 1.5 | Components | | P |
| 1.5.1 | General | Refer below. | P |
| | Comply with IEC 60950-1 or relevant component standard | (see appended tables 1.5.1) | P |
| 1.5.2 | Evaluation and testing of components | <p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component standard.</p> <p>Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.</p> | P |
| 1.5.3 | Thermal controls | No thermal controls. | N/A |
| 1.5.4 | Transformers | Transformers used are suitable for their intended applications and comply with relevant parts of this standard and particularly Annex C. | P |
| 1.5.5 | Interconnecting cables | No interconnecting cables. | N/A |
| 1.5.6 | Capacitors bridging insulation | <p>X2 and Y1 capacitors are certified according to IEC 60384-14.</p> <p>Refer to appended table 1.5.1</p> | P |
| 1.5.7 | Resistors bridging insulation | Refer below: | P |
| 1.5.7.1 | Resistors bridging functional, basic or supplementary insulation | Bleed resistors are located after fuse bridging functional insulation. | P |
| 1.5.7.2 | Resistors bridging double or reinforced insulation between a.c. mains and other circuits | No such components bridging double or reinforced insulation. | N/A |
| 1.5.7.3 | Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable | | N/A |
| 1.5.8 | Components in equipment for IT power systems | No such capacitors | N/A |
| 1.5.9 | Surge suppressors | Certified VDR connected between line and neutral, ref. appended table 1.5.1 and Annex Q. | P |

| IEC 60950-1 | | | |
|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.5.9.1 | General | Refer to 1.5.9. | P |
| 1.5.9.2 | Protection of VDRs | Mains fuse used as protection of varistor which is located after mains fuse. | P |
| 1.5.9.3 | Bridging of functional insulation by a VDR | Refer to 1.5.9. | P |
| 1.5.9.4 | Bridging of basic insulation by a VDR | | N/A |
| 1.5.9.5 | Bridging of supplementary, double or reinforced insulation by a VDR | | N/A |

| | | | |
|------------|--------------------------------------|--|-----|
| 1.6 | Power interface | | P |
| 1.6.1 | AC power distribution systems | TN, and IT for Norway | P |
| 1.6.2 | Input current | (see appended table 1.6.2) | P |
| 1.6.3 | Voltage limit of hand-held equipment | The equipment is not hand-held. | N/A |
| 1.6.4 | Neutral conductor | Considering the neutral conductor was line conductor, the neutral conductor was insulated from the body through the equipment. | P |

| | | | |
|------------|--|--|-----|
| 1.7 | Marking and instructions | | P |
| 1.7.1 | Power rating and identification markings | The required marking is located on the outside surface of the equipment. | P |
| 1.7.1.1 | Power rating marking | Refer below. | P |
| | Multiple mains supply connections.....: | Only one mains supply connections. | N/A |
| | Rated voltage(s) or voltage range(s) (V) | 100-240V AC | P |
| | Symbol for nature of supply, for d.c. only | The equipment is for a.c. supply. | N/A |
| | Rated frequency or rated frequency range (Hz) | 50-60Hz | P |
| | Rated current (mA or A) | 1.0A | P |
| 1.7.1.2 | Identification markings | Refer below. | P |
| | Manufacturer's name or trade-mark or identification mark |  | P |
| | Model identification or type reference | GT-41131-WWVV-X.X | P |
| | Symbol for Class II equipment only | Class II symbol (IEC 60417-1, symbol No. 5172) is applied to the label. | P |
| | Other markings and symbols | The additional marking does not give rise to misunderstandings. | P |
| 1.7.2 | Safety instructions and marking | Refer below | P |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.7.2.1 | General | Refer below. | P |
| 1.7.2.2 | Disconnect devices | The plug is used as disconnect device. | P |
| 1.7.2.3 | Overcurrent protective device | Pluggable equipment type A | N/A |
| 1.7.2.4 | IT power distribution systems | The following or similar information should be given in the installation instruction: "This product is also designed for IT power distribution system with phase-to-phase voltage 230V". | N/A |
| 1.7.2.5 | Operator access with a tool | All areas containing hazard(s) are inaccessible to the operator. | P |
| 1.2.7.6 | Ozone | The equipment does not produce ozone. | N/A |
| 1.7.3 | Short duty cycles | The equipment is intended for continuous operation. | N/A |
| 1.7.4 | Supply voltage adjustment | No voltage selector. | N/A |
| | Methods and means of adjustment; reference to installation instructions | | N/A |
| 1.7.5 | Power outlets on the equipment | No standard power outlets in the equipment. | N/A |
| 1.7.6 | Fuse identification (marking, special fusing characteristics, cross-reference) | Non-replaceable PCB-mount fuse: F1, T2A 250V | P |
| 1.7.7 | Wiring terminals | Refer below. | P |
| 1.7.7.1 | Protective earthing and bonding terminals | Class II equipment | N/A |
| 1.7.7.2 | Terminals for a.c. mains supply conductors | The equipment is not permanently connected or provided with a nondetachable power supply cord. | N/A |
| 1.7.7.3 | Terminals for d.c. mains supply conductors | The equipment is not for connection to a d.c. mains supply. | N/A |
| 1.7.8 | Controls and indicators | No switch and controls. | N/A |
| 1.7.8.1 | Identification, location and marking | | N/A |
| 1.7.8.2 | Colours | No indicators with colour where safety is involved. | N/A |
| 1.7.8.3 | Symbols according to IEC 60417 | No such control. | N/A |
| 1.7.8.4 | Markings using figures | No controls use figures. | N/A |
| 1.7.9 | Isolation of multiple power sources | Only one connection supplying hazardous voltages and energy levels to the equipment. | N/A |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.7.10 | Thermostats and other regulating devices | No adjustable thermostat and other regulating device intended to be adjusted. | N/A |
| 1.7.11 | Durability | The marking withstands required tests. | P |
| 1.7.12 | Removable parts | No marking is placed on removable parts. | P |
| 1.7.13 | Replaceable batteries | No battery. | N/A |
| | Language(s) | | — |
| 1.7.14 | Equipment for restricted access locations..... | Equipment not intended for installation in RAL. | N/A |

| | | | |
|----------|--|---|------------|
| 2 | PROTECTION FROM HAZARDS | | P |
| 2.1 | Protection from electric shock and energy hazards | | P |
| 2.1.1 | Protection in operator access areas | Refer below. | P |
| 2.1.1.1 | Access to energized parts | There is adequate protection against operator contact with bare parts at ELV or hazardous voltage or parts separated from these with basic or functional insulation only, also after operator detectable parts are removed and doors and covers are opened. No hazardous voltages exceeding 1000V a.c. or 1500V d.c. Checked by test finger and test pin. | P |
| | Test by inspection | No access to hazardous part. | P |
| | Test with test finger (Figure 2A) | No access to hazardous part. | P |
| | Test with test pin (Figure 2B) | No access to hazardous part. | P |
| | Test with test probe (Figure 2C) | No TNV circuit. | N/A |
| 2.1.1.2 | Battery compartments | No battery compartments or TNV circuits. | N/A |
| 2.1.1.3 | Access to ELV wiring | No ELV circuits. | N/A |
| | Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm) | | — |
| 2.1.1.4 | Access to hazardous voltage circuit wiring | No hazardous voltage circuit wiring. | N/A |
| 2.1.1.5 | Energy hazards | No energy hazard in operator access area. Checked by means of the test finger. | P |
| 2.1.1.6 | Manual controls | No shafts of knobs etc. | N/A |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.1.1.7 | Discharge of capacitors in equipment | The capacitance of the input circuit is > 0.1 μ F measurements are performed. | P |
| | Measured voltage (V); time-constant (s) | Time-constant: Max. 453ms. X-Cap (CX1): 0.33 μ F Discharge resistors (R1A, R1B): each=1.5M Ω . | — |
| 2.1.1.8 | Energy hazards – d.c. mains supply | Not connected to DC mains supply. | N/A |
| | a) Capacitor connected to the d.c. mains supply | | N/A |
| | b) Internal battery connected to the d.c. mains supply | | N/A |
| 2.1.1.9 | Audio amplifiers | No Audio amplifier. | N/A |
| 2.1.2 | Protection in service access areas | Checked by inspection, unintentional contact is unlikely during service operations. | P |
| 2.1.3 | Protection in restricted access locations | Equipment not intended for installation in RAL. | N/A |

| | | | |
|------------|---|---|---|
| 2.2 | SELV circuits | | P |
| 2.2.1 | General requirements | SELV limits are not exceeded under normal condition and after a single fault. | P |
| 2.2.2 | Voltages under normal conditions (V) | Within SELV limits. | P |
| 2.2.3 | Voltages under fault conditions (V) | Within SELV limits. | P |
| 2.2.4 | Connection of SELV circuits to other circuits | SELV circuits are only connected to other SELV circuits. | P |

| | | | |
|------------|--|------------------|-----|
| 2.3 | TNV circuits | | N/A |
| 2.3.1 | Limits | No TNV circuits. | N/A |
| | Type of TNV circuits | | — |
| 2.3.2 | Separation from other circuits and from accessible parts | | N/A |
| 2.3.2.1 | General requirements | | N/A |
| 2.3.2.2 | Protection by basic insulation | | N/A |
| 2.3.2.3 | Protection by earthing | | N/A |
| 2.3.2.4 | Protection by other constructions | | N/A |
| 2.3.3 | Separation from hazardous voltages | | N/A |
| | Insulation employed..... | | — |
| 2.3.4 | Connection of TNV circuits to other circuits | | N/A |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Insulation employed.....: | | — |
| 2.3.5 | Test for operating voltages generated externally | | N/A |
| 2.4 | Limited current circuits | | P |
| 2.4.1 | General requirements | Limits are not exceeded. | P |
| 2.4.2 | Limit values | (See appended table 2.4) | P |
| | Frequency (Hz) | | — |
| | Measured current (mA).....: | | — |
| | Measured voltage (V) | | — |
| | Measured circuit capacitance (nF or μ F) | | — |
| 2.4.3 | Connection of limited current circuits to other circuits | No connection to other circuits. | P |
| 2.5 | Limited power sources | | P |
| | a) Inherently limited output | DC output complies with limited power source. (see appended table 2.5) | P |
| | b) Impedance limited output | | N/A |
| | c) Regulating network limited output under normal operating and single fault condition | Considered. | P |
| | Use of integrated circuit (IC) current limiters | | — |
| | d) Overcurrent protective device limited output | | N/A |
| | Max. output voltage (V), max. output current (A), max. apparent power (VA).....: | (see appended table 2.5) | — |
| | Current rating of overcurrent protective device (A) .. | | — |
| 2.6 | Provisions for earthing and bonding | | N/A |
| 2.6.1 | Protective earthing | Class II equipment | N/A |
| 2.6.2 | Functional earthing | | N/A |
| 2.6.3 | Protective earthing and protective bonding conductors | | N/A |
| 2.6.3.1 | General | | N/A |
| 2.6.3.2 | Size of protective earthing conductors | | N/A |
| | Rated current (A), cross-sectional area (mm^2), AWG | | — |
| 2.6.3.3 | Size of protective bonding conductors | | N/A |
| | Rated current (A), cross-sectional area (mm^2), AWG | | — |
| | Protective current rating (A), cross-sectional area (mm^2), AWG | | |

| IEC 60950-1 | | | |
|-------------|---|-----------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.6.3.4 | Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min) | | N/A |
| 2.6.3.5 | Colour of insulation | | N/A |
| 2.6.4 | Terminals | | N/A |
| 2.6.4.1 | General | | N/A |
| 2.6.4.2 | Protective earthing and bonding terminals | | N/A |
| | Rated current (A), type, nominal thread diameter (mm) | | — |
| 2.6.4.3 | Separation of the protective earthing conductor from protective bonding conductors | | N/A |
| 2.6.5 | Integrity of protective earthing | | N/A |
| 2.6.5.1 | Interconnection of equipment | | N/A |
| 2.6.5.2 | Components in protective earthing conductors and protective bonding conductors | | N/A |
| 2.6.5.3 | Disconnection of protective earth | | N/A |
| 2.6.5.4 | Parts that can be removed by an operator | | N/A |
| 2.6.5.5 | Parts removed during servicing | | N/A |
| 2.6.5.6 | Corrosion resistance | No risk of corrosion. | N/A |
| 2.6.5.7 | Screws for protective bonding | Not used. | N/A |
| 2.6.5.8 | Reliance on telecommunication network or cable distribution system | No TNV circuit. | N/A |

| | | | |
|------------|---|--|-----|
| 2.7 | Overcurrent and earth fault protection in primary circuits | | P |
| 2.7.1 | Basic requirements | Protective device is integrated in the equipment, see also 5.3. | P |
| | Instructions when protection relies on building installation | Protective device are integrated in the equipment. | N/A |
| 2.7.2 | Faults not simulated in 5.3.7 | Considered. | P |
| 2.7.3 | Short-circuit backup protection | Adequate protective device. | P |
| 2.7.4 | Number and location of protective devices | In Norway, IT power distribution system is used. Equipment with a single protective device is accepted in Norway. Other countries (e.g. Germany and Belgium) may have additional requirements. | P |
| 2.7.5 | Protection by several devices | Only one protective device in line conductor, see 2.7.4. | N/A |

| IEC 60950-1 | | | |
|-------------|------------------------------------|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.7.6 | Warning to service personnel | After operation of the protective device, the equipment is still under voltage if it is connected to an IT power distribution system. A warning is required for service persons. Norway does not require this warning. See also 2.7.4. | N/A |

| | | | |
|------------|---|----------------------|-----|
| 2.8 | Safety interlocks | | N/A |
| 2.8.1 | General principles | No safety interlock. | N/A |
| 2.8.2 | Protection requirements | | N/A |
| 2.8.3 | Inadvertent reactivation | | N/A |
| 2.8.4 | Fail-safe operation | | N/A |
| | Protection against extreme hazard | | N/A |
| 2.8.5 | Moving parts | | N/A |
| 2.8.6 | Overriding | | N/A |
| 2.8.7 | Switches, relays and their related circuits | | N/A |
| 2.8.7.1 | Separation distances for contact gaps and their related circuits (mm) | | N/A |
| 2.8.7.2 | Overload test | | N/A |
| 2.8.7.3 | Endurance test | | N/A |
| 2.8.7.4 | Electric strength test | | N/A |
| 2.8.8 | Mechanical actuators | | N/A |

| | | | |
|------------|---|---|---|
| 2.9 | Electrical insulation | | P |
| 2.9.1 | Properties of insulating materials | Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation. No driving belts or couplings used. | P |
| 2.9.2 | Humidity conditioning | Humidity treatment performed for 120h. | P |
| | Relative humidity (%), temperature (°C) | 95%, 40°C | — |
| 2.9.3 | Grade of insulation | Insulation is considered to be functional, basic, reinforced or double insulation. | P |
| 2.9.4 | Separation from hazardous voltages | Refer below: | P |
| | Method(s) used | Method 1 used. | — |

| | | | |
|-------------|--|--|---|
| 2.10 | Clearances, creepage distances and distances through insulation | | P |
|-------------|--|--|---|

| IEC 60950-1 | | | |
|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.1 | General | Refer below: | P |
| 2.10.1.1 | Frequency | Considered. | P |
| 2.10.1.2 | Pollution degrees | Pollution degree 2. | P |
| 2.10.1.3 | Reduced values for functional insulation | Refer to Cl. 5.3.4. | P |
| 2.10.1.4 | Intervening unconnected conductive parts | Considered. | P |
| 2.10.1.5 | Insulation with varying dimensions | No such insulation. | N/A |
| 2.10.1.6 | Special separation requirements | Not used. | N/A |
| 2.10.1.7 | Insulation in circuits generating starting pulses | No insulation in circuit generating starting pluses. | N/A |
| 2.10.2 | Determination of working voltage | See appended table 2.10.2. | P |
| 2.10.2.1 | General | Considered. | P |
| 2.10.2.2 | RMS working voltage | See appended table 2.10.2. | P |
| 2.10.2.3 | Peak working voltage | See appended table 2.10.2. | P |
| 2.10.3 | Clearances | See appended table 2.10.3 and 2.10.4. | P |
| 2.10.3.1 | General | Refer below. | P |
| 2.10.3.2 | Mains transient voltages | Refer below. | P |
| | a) AC mains supply | AC mains supply voltage: up to 300V, Overvoltage category II, Mains transient voltage: 2500V peak. | P |
| | b) Earthed d.c. mains supplies | Not for d.c. mains supply. | N/A |
| | c) Unearthed d.c. mains supplies | Not for d.c. mains supply. | N/A |
| | d) Battery operation | No such battery. | N/A |
| 2.10.3.3 | Clearances in primary circuits | See appended table 2.10.3 and 2.10.4. | P |
| 2.10.3.4 | Clearances in secondary circuits | Only functional insulation in secondary circuits. | N/A |
| 2.10.3.5 | Clearances in circuits having starting pulses | No component having starting pulse. | N/A |
| 2.10.3.6 | Transients from a.c. mains supply | Considered. | P |
| 2.10.3.7 | Transients from d.c. mains supply | Not for d.c. mains supply. | N/A |
| 2.10.3.8 | Transients from telecommunication networks and cable distribution systems | Not connected to telecommunication networks and cable distribution systems. | N/A |
| 2.10.3.9 | Measurement of transient voltage levels | Refer below: | N/A |
| | a) Transients from a mains supply | Measurement not relevant. | N/A |
| | For an a.c. mains supply | | N/A |
| | For a d.c. mains supply | | N/A |
| | b) Transients from a telecommunication network : | | N/A |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.4 | Creepage distances | Refer below: | P |
| 2.10.4.1 | General | Considered. | P |
| 2.10.4.2 | Material group and comparative tracking index | Refer below: | P |
| | CTI tests | Material group IIIb is assumed to be used. | — |
| 2.10.4.3 | Minimum creepage distances | See appended table 2.10.3 and 2.10.4. | P |
| 2.10.5 | Solid insulation | Refer below. | P |
| 2.10.5.1 | General | Refer below. | P |
| 2.10.5.2 | Distances through insulation | See appended table 2.10.5. | P |
| 2.10.5.3 | Insulating compound as solid insulation | For optocouplers, see appended table 1.5.1. | P |
| 2.10.5.4 | Semiconductor devices | No semiconductor devices. | N/A |
| 2.10.5.5 | Cemented joints | No cemented joints. | N/A |
| 2.10.5.6 | Thin sheet material – General | Refer below : | P |
| 2.10.5.7 | Separable thin sheet material | Reinforced insulation consists of two layers of material, each of which passes the electric strength test for reinforced insulation. | P |
| | Number of layers (pcs) | Two layers of insulation tape wrapped around T1 and D8, tested with 1 layer. | — |
| 2.10.5.8 | Non-separable thin sheet material | Not used. | N/A |
| 2.10.5.9 | Thin sheet material – standard test procedure | | N/A |
| | Electric strength test | | — |
| 2.10.5.10 | Thin sheet material – alternative test procedure | | P |
| | Electric strength test | (See appended table 5.2) | — |
| 2.10.5.11 | Insulation in wound components | Not used. | N/A |
| 2.10.5.12 | Wire in wound components | Not used | N/A |
| | Working voltage | | N/A |
| | a) Basic insulation not under stress | | N/A |
| | b) Basic, supplementary, reinforced insulation | | N/A |
| | c) Compliance with Annex U | | N/A |
| | Two wires in contact inside wound component; angle between 45° and 90° | | N/A |
| 2.10.5.13 | Wire with solvent-based enamel in wound components | No wire with solvent-based enamel in wound components. | N/A |
| | Electric strength test | | — |
| | Routine test | | N/A |
| 2.10.5.14 | Additional insulation in wound components | No additional insulation used. | N/A |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Working voltage | | N/A |
| | - Basic insulation not under stress | | N/A |
| | - Supplementary, reinforced insulation | | N/A |
| 2.10.6 | Construction of printed boards | Refer below: | P |
| 2.10.6.1 | Uncoated printed boards | See appended table 2.10.3 and 2.10.4. | P |
| 2.10.6.2 | Coated printed boards | No special coating in order to reduce distances. | N/A |
| 2.10.6.3 | Insulation between conductors on the same inner surface of a printed board | No such parts. | N/A |
| 2.10.6.4 | Insulation between conductors on different layers of a printed board | PCB layout does not serve as insulation barrier. | N/A |
| | Distance through insulation | | N/A |
| | Number of insulation layers (pcs) | | N/A |
| 2.10.7 | Component external terminations | Coatings not used over terminations to increase effective creepage and clearance distances. | N/A |
| 2.10.8 | Tests on coated printed boards and coated components | No special coating in order to reduce distance. | N/A |
| 2.10.8.1 | Sample preparation and preliminary inspection | | N/A |
| 2.10.8.2 | Thermal conditioning | | N/A |
| 2.10.8.3 | Electric strength test | | N/A |
| 2.10.8.4 | Abrasion resistance test | | N/A |
| 2.10.9 | Thermal cycling | | N/A |
| 2.10.10 | Test for Pollution Degree 1 environment and insulating compound | For optocouplers, see appended table 1.5.1. | P |
| 2.10.11 | Tests for semiconductor devices and cemented joints | No such device used. | N/A |
| 2.10.12 | Enclosed and sealed parts | For optocouplers, see appended table 1.5.1. | P |

| | | | |
|----------|---|--|----------|
| 3 | WIRING, CONNECTIONS AND SUPPLY | | P |
| 3.1 | General | | P |
| 3.1.1 | Current rating and overcurrent protection | Adequate cross sectional areas on internal wiring. | P |
| 3.1.2 | Protection against mechanical damage | Wireways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors. | P |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.1.3 | Securing of internal wiring | Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation. | P |
| 3.1.4 | Insulation of conductors | Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved. | P |
| 3.1.5 | Beads and ceramic insulators | No beads or similar ceramic insulators on conductors. | N/A |
| 3.1.6 | Screws for electrical contact pressure | No screw for electrical contact. | N/A |
| 3.1.7 | Insulating materials in electrical connections | No contact pressure through insulating material. | P |
| 3.1.8 | Self-tapping and spaced thread screws | Thread-cutting or space thread screws are not used for electrical connections. | N/A |
| 3.1.9 | Termination of conductors | Terminations cannot become displaced so that clearances and creepage distances can be reduced. | P |
| | 10 N pull test | Considered. | P |
| 3.1.10 | Sleeving on wiring | Sleeving can be removed only by breaking or cutting of either the wiring or sleeving; | P |

| | | | |
|------------|---|---|-----|
| 3.2 | Connection to a mains supply | | P |
| 3.2.1 | Means of connection | Refer below: | P |
| 3.2.1.1 | Connection to an a.c. mains supply | The equipment is intended for direct plug-in. | P |
| 3.2.1.2 | Connection to a d.c. mains supply | The equipment is not for connection to a d.c. mains supply. | N/A |
| 3.2.2 | Multiple supply connections | Only one supply connection. | N/A |
| 3.2.3 | Permanently connected equipment | Not permanently connected equipment. | N/A |
| | Number of conductors, diameter of cable and conduits (mm) : | | — |
| 3.2.4 | Appliance inlets | Not such part | P |
| 3.2.5 | Power supply cords | Refer below: | — |
| 3.2.5.1 | AC power supply cords | The power cord is not provided with equipment, refer to Summary of testing. | N/A |

| IEC 60950-1 | | | |
|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Type | | — |
| | Rated current (A), cross-sectional area (mm ²), AWG | | — |
| 3.2.5.2 | DC power supply cords | The equipment is not for connection to a d.c. mains supply. | N/A |
| 3.2.6 | Cord anchorages and strain relief | Equipment provided with an appliance inlet. | N/A |
| | Mass of equipment (kg), pull (N) | | — |
| | Longitudinal displacement (mm) | | — |
| 3.2.7 | Protection against mechanical damage | No sharp points or cutting edges on the equipment surfaces. | P |
| 3.2.8 | Cord guards | The equipment is neither handheld nor intended to be moved during operation. | N/A |
| | Diameter or minor dimension D (mm); test mass (g) | | — |
| | Radius of curvature of cord (mm) | | — |
| 3.2.9 | Supply wiring space | Direct plug-in equipment. | N/A |
| 3.3 | Wiring terminals for connection of external conductors | | N/A |
| 3.3.1 | Wiring terminals | Direct plug-in equipment. | N/A |
| 3.3.2 | Connection of non-detachable power supply cords | | N/A |
| 3.3.3 | Screw terminals | | N/A |
| 3.3.4 | Conductor sizes to be connected | | N/A |
| | Rated current (A), cord/cable type, cross-sectional area (mm ²) | | — |
| 3.3.5 | Wiring terminal sizes | | N/A |
| | Rated current (A), type, nominal thread diameter (mm) | | — |
| 3.3.6 | Wiring terminal design | | N/A |
| 3.3.7 | Grouping of wiring terminals | | N/A |
| 3.3.8 | Stranded wire | | N/A |
| 3.4 | Disconnection from the mains supply | | P |
| 3.4.1 | General requirement | Direct plug-in equipment. | P |
| 3.4.2 | Disconnect devices | The plug is regarded as disconnect device. | P |
| 3.4.3 | Permanently connected equipment | Not permanently connected equipment. | N/A |

| IEC 60950-1 | | | |
|-------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.4.4 | Parts which remain energized | No parts remain energized after the disconnect device is switched off. | N/A |
| 3.4.5 | Switches in flexible cords | No switch in flexible cord. | P |
| 3.4.6 | Number of poles - single-phase and d.c. equipment | The disconnect device disconnects both poles simultaneously. | P |
| 3.4.7 | Number of poles - three-phase equipment | Single phase equipment. | N/A |
| 3.4.8 | Switches as disconnect devices | No switch as disconnect device. | N/A |
| 3.4.9 | Plugs as disconnect devices | The appliance coupler is regarded as disconnect device, no warning is required. | N/A |
| 3.4.10 | Interconnected equipment | No interconnections using hazardous voltages. | N/A |
| 3.4.11 | Multiple power sources | One power source only. | N/A |

| | | | |
|------------|--|--|-----|
| 3.5 | Interconnection of equipment | | P |
| 3.5.1 | General requirements | Considered. | P |
| 3.5.2 | Types of interconnection circuits | SELV circuit or limited current circuit. | P |
| 3.5.3 | ELV circuits as interconnection circuits | No ELV interconnections. | N/A |
| 3.5.4 | Data ports for additional equipment | No data port. | N/A |

| | | | |
|----------|------------------------------|---------------------------------|-----|
| 4 | PHYSICAL REQUIREMENTS | | P |
| 4.1 | Stability | | N/A |
| | Angle of 10° | < 7kg | N/A |
| | Test force (N) | The unit is not floor-standing. | N/A |

| | | | |
|------------|----------------------------|---|-----|
| 4.2 | Mechanical strength | | P |
| 4.2.1 | General | Complies with the requirement also after tests described below are applied. | P |
| | Rack-mounted equipment. | Not Rack-mounted equipment. | N/A |
| 4.2.2 | Steady force test, 10 N | No hazard. | P |
| 4.2.3 | Steady force test, 30 N | No internal enclosure. | N/A |
| 4.2.4 | Steady force test, 250 N | No hazard. The test is performed at all of enclosure. | P |
| 4.2.5 | Impact test | Direct plug-in equipment. | N/A |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Fall test | | N/A |
| | Swing test | | N/A |
| 4.2.6 | Drop test; height (mm) | No hazard as result from the drop test at 1000mm height. Tested with removable plug. | P |
| 4.2.7 | Stress relief test | Test is carried out at 87.1°C / 7h. No risk of shrinkage or distortion on enclosures due to release of internal stresses. | P |
| 4.2.8 | Cathode ray tubes | No CRT. | N/A |
| | Picture tube separately certified | | N/A |
| 4.2.9 | High pressure lamps | No high pressure lamp. | N/A |
| 4.2.10 | Wall or ceiling mounted equipment; force (N) | Not intended to be mounted on a wall or ceiling. | N/A |

| | | | |
|------------|--|--|----------|
| 4.3 | Design and construction | | P |
| 4.3.1 | Edges and corners | All edges and corners are rounded and/or smoothed. | P |
| 4.3.2 | Handles and manual controls; force (N) | No such knobs, grips, handles, lever etc. | N/A |
| 4.3.3 | Adjustable controls | No hazardous adjustable control. | N/A |
| 4.3.4 | Securing of parts | No loosening of parts impairing creepage distances or clearances is likely to occur. | P |
| 4.3.5 | Connection by plugs and sockets | SELV connectors do not comply with IEC 60320 or IEC 60083. | P |
| 4.3.6 | Direct plug-in equipment | The plug part for EU complies with EN 50075. | P |
| | Torque | < 0.25Nm | — |
| | Compliance with the relevant mains plug standard | The plug part for EU complies with EN 50075. | P |
| 4.3.7 | Heating elements in earthed equipment | No heating elements provided. | N/A |
| 4.3.8 | Batteries | No batteries in the equipment. | N/A |
| | - Overcharging of a rechargeable battery | | N/A |
| | - Unintentional charging of a non-rechargeable battery | | N/A |
| | - Reverse charging of a rechargeable battery | | N/A |
| | - Excessive discharging rate for any battery | | N/A |

| IEC 60950-1 | | | |
|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.3.9 | Oil and grease | Insulation is not exposed to oil, grease etc. | N/A |
| 4.3.10 | Dust, powders, liquids and gases | The equipment does not produce dust or powders, and does not contain flammable liquids or gases. | N/A |
| 4.3.11 | Containers for liquids or gases | No container for liquids or gases. | N/A |
| 4.3.12 | Flammable liquids | The equipment does not contain flammable liquid. | N/A |
| | Quantity of liquid (l) | | N/A |
| | Flash point (°C) | | N/A |
| 4.3.13 | Radiation | Refer below: | N/A |
| 4.3.13.1 | General | Refer below: | N/A |
| 4.3.13.2 | Ionizing radiation | The equipment does not generate ionising radiation. | N/A |
| | Measured radiation (pA/kg) | | — |
| | Measured high-voltage (kV) | | — |
| | Measured focus voltage (kV) | | — |
| | CRT markings | | — |
| 4.3.13.3 | Effect of ultraviolet (UV) radiation on materials | The equipment does not produce UV radiation. | N/A |
| | Part, property, retention after test, flammability classification | | N/A |
| 4.3.13.4 | Human exposure to ultraviolet (UV) radiation | The equipment does not produce UV radiation. | N/A |
| 4.3.13.5 | Lasers (including laser diodes) and LEDs | Refer below. | N/A |
| 4.3.13.5.1 | Lasers (including laser diodes) | No laser. | N/A |
| | Laser class | | — |
| 4.3.13.5.2 | Light emitting diodes (LEDs) | LEDs provided are diffuse. | N/A |
| 4.3.13.6 | Other types | The equipment does not generate other types of radiation. | N/A |

| | | | |
|------------|--|------------------|-----|
| 4.4 | Protection against hazardous moving parts | | N/A |
| 4.4.1 | General | No moving parts. | N/A |
| 4.4.2 | Protection in operator access areas | | N/A |
| | Household and home/office document/media shredders | | N/A |
| 4.4.3 | Protection in restricted access locations | | N/A |
| 4.4.4 | Protection in service access areas | | N/A |

| IEC 60950-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.4.5 | Protection against moving fan blades | | N/A |
| 4.4.5.1 | General | | N/A |
| | Not considered to cause pain or injury. a).....: | | N/A |
| | Is considered to cause pain, not injury. b) | | N/A |
| | Considered to cause injury. c) | | N/A |
| 4.4.5.2 | Protection for users | | N/A |
| | Use of symbol or warning | | N/A |
| 4.4.5.3 | Protection for service persons | | N/A |
| | Use of symbol or warning | | N/A |

| | | | |
|------------|---|---------------------------------------|---|
| 4.5 | Thermal requirements | | P |
| 4.5.1 | General | Refer below. | P |
| 4.5.2 | Temperature tests | (see appended table 4.5) | P |
| | Normal load condition per Annex L | Rated load with continuous operation. | — |
| 4.5.3 | Temperature limits for materials | (see appended table 4.5) | P |
| 4.5.4 | Touch temperature limits | (see appended table 4.5) | P |
| 4.5.5 | Resistance to abnormal heat | (see appended table 4.5.5) | P |

| | | | |
|------------|---|--|-----|
| 4.6 | Openings in enclosures | | P |
| 4.6.1 | Top and side openings | No opening. | P |
| | Dimensions (mm) | | — |
| 4.6.2 | Bottoms of fire enclosures | No opening. | P |
| | Construction of the bottom, dimensions (mm) ... | Refer to 4.6.1 | — |
| 4.6.3 | Doors or covers in fire enclosures | | N/A |
| 4.6.4 | Openings in transportable equipment | Not such equipment. | N/A |
| 4.6.4.1 | Constructional design measures | | N/A |
| | Dimensions (mm) | | — |
| 4.6.4.2 | Evaluation measures for larger openings | | N/A |
| 4.6.4.3 | Use of metallized parts | | N/A |
| 4.6.5 | Adhesives for constructional purposes | No barrier secured by adhesive inside enclosure. | N/A |
| | Conditioning temperature (°C), time (weeks) | | — |

| | | | |
|------------|--|----------------------------|---|
| 4.7 | Resistance to fire | | P |
| 4.7.1 | Reducing the risk of ignition and spread of flame | Method 1 is used. | P |
| | Method 1, selection and application of components wiring and materials | (See appended table 1.5.1) | P |

| IEC 60950-1 | | | |
|-------------|--|---|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Method 2, application of all of simulated fault condition tests | Not used. | N/A |
| 4.7.2 | Conditions for a fire enclosure | Refer below: | P |
| 4.7.2.1 | Parts requiring a fire enclosure | The fire enclosure is required to cover all parts. | P |
| 4.7.2.2 | Parts not requiring a fire enclosure | The fire enclosure is required to cover all parts. | N/A |
| 4.7.3 | Materials | | P |
| 4.7.3.1 | General | Components and materials have adequate flammability classification. See appended table 1.5.1. | P |
| 4.7.3.2 | Materials for fire enclosures | The fire enclosure is of flame class V-1 material. | P |
| 4.7.3.3 | Materials for components and other parts outside fire enclosures | No components and other parts outside fire enclosure. | N/A |
| 4.7.3.4 | Materials for components and other parts inside fire enclosures | Other materials inside fire enclosure are minimum V-2 material. | P |
| 4.7.3.5 | Materials for air filter assemblies | No air filters in the equipment. | N/A |
| 4.7.3.6 | Materials used in high-voltage components | No parts exceeding 4kV. | N/A |
| 5 | ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS | | P |
| 5.1 | Touch current and protective conductor current | | P |
| 5.1.1 | General | Test conducted in accordance with 5.1.2 to 5.1.7. | P |
| 5.1.2 | Configuration of equipment under test (EUT) | No interconnection of equipment or multiple power sources. | N/A |
| 5.1.2.1 | Single connection to an a.c. mains supply | | N/A |
| 5.1.2.2 | Redundant multiple connections to an a.c. mains supply | | N/A |
| 5.1.2.3 | Simultaneous multiple connections to an a.c. mains supply | | N/A |
| 5.1.3 | Test circuit | Tested for connection to IT power distribution system (also relevant for TN or TT power distribution system). | P |
| 5.1.4 | Application of measuring instrument | Measuring instrument D1 is used. | P |
| 5.1.5 | Test procedure | Considered. | P |
| 5.1.6 | Test measurements | Refer below: | P |
| | Supply voltage (V) | (see appended table 5.1) | — |
| | Measured touch current (mA) | (see appended table 5.1) | — |

| IEC 60950-1 | | | |
|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Max. allowed touch current (mA) | (see appended table 5.1) | — |
| | Measured protective conductor current (mA) | (see appended table 5.1) | — |
| | Max. allowed protective conductor current (mA) ... | (see appended table 5.1) | — |
| 5.1.7 | Equipment with touch current exceeding 3,5 mA | The touch current does not exceed 3.5mA. | N/A |
| 5.1.7.1 | General | | N/A |
| 5.1.7.2 | Simultaneous multiple connections to the supply | | N/A |
| 5.1.8 | Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks | No TNV circuitry. | N/A |
| 5.1.8.1 | Limitation of the touch current to a telecommunication network or to a cable distribution system | | N/A |
| | Supply voltage (V) | | — |
| | Measured touch current (mA) | | — |
| | Max. allowed touch current (mA) | | — |
| 5.1.8.2 | Summation of touch currents from telecommunication networks | | N/A |
| | a) EUT with earthed telecommunication ports | | N/A |
| | b) EUT whose telecommunication ports have no reference to protective earth | | N/A |

| | | | |
|------------|--------------------------|--------------------------|---|
| 5.2 | Electric strength | | P |
| 5.2.1 | General | (see appended table 5.2) | P |
| 5.2.2 | Test procedure | (see appended table 5.2) | P |

| | | | |
|------------|--|--|-----|
| 5.3 | Abnormal operating and fault conditions | | P |
| 5.3.1 | Protection against overload and abnormal operation | (see appended table 5.3) | P |
| 5.3.2 | Motors | There are no motors in the equipment. | N/A |
| 5.3.3 | Transformers | See Annex C and appended table C.2. | P |
| 5.3.4 | Functional insulation..... | Complies with a) and c). | P |
| 5.3.5 | Electromechanical components | No electromechanical components in secondary circuits. | N/A |
| 5.3.6 | Audio amplifiers in ITE | No Audio amplifier. | N/A |
| 5.3.7 | Simulation of faults | (see appended table 5.3) | P |

| IEC 60950-1 | | | |
|-------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.3.8 | Unattended equipment | No thermostats, temperature limiters and thermal cut-outs, or having a capacitor not protected by a fuse or the like connected in parallel with the contacts. | N/A |
| 5.3.9 | Compliance criteria for abnormal operating and fault conditions | Refer below: | P |
| 5.3.9.1 | During the tests | No fire or molten metal occurred and no deformation of enclosure. | P |
| 5.3.9.2 | After the tests | No reduction of clearance and creepage distance. Electric strength test is made on basic and reinforced insulation. | P |
| 6 | CONNECTION TO TELECOMMUNICATION NETWORKS | | N/A |
| 6.1 | Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment | | N/A |
| 6.1.1 | Protection from hazardous voltages | | N/A |
| 6.1.2 | Separation of the telecommunication network from earth | | N/A |
| 6.1.2.1 | Requirements | No TNV circuitry. | N/A |
| | Supply voltage (V) | | — |
| | Current in the test circuit (mA) | | — |
| 6.1.2.2 | Exclusions | | N/A |
| 6.2 | Protection of equipment users from overvoltages on telecommunication networks | | N/A |
| 6.2.1 | Separation requirements | No TNV circuitry. | N/A |
| 6.2.2 | Electric strength test procedure | | N/A |
| 6.2.2.1 | Impulse test | | N/A |
| 6.2.2.2 | Steady-state test | | N/A |
| 6.2.2.3 | Compliance criteria | | N/A |
| 6.3 | Protection of the telecommunication wiring system from overheating | | N/A |
| | Max. output current (A) | No TNV circuitry. | — |
| | Current limiting method | | — |
| 7 | CONNECTION TO CABLE DISTRIBUTION SYSTEMS | | N/A |
| 7.1 | General | No Cable distribution systems. | N/A |

| IEC 60950-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 7.2 | Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment | | N/A |
| 7.3 | Protection of equipment users from overvoltages on the cable distribution system | | N/A |
| 7.4 | Insulation between primary circuits and cable distribution systems | | N/A |
| 7.4.1 | General | | N/A |
| 7.4.2 | Voltage surge test | | N/A |
| 7.4.3 | Impulse test | | N/A |

| IEC 60950-1 | | | |
|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|----------|--|---|-----|
| A | ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE | | N/A |
| A.1 | Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2) | All plastic materials have suitable flame class, no testing required. | N/A |
| A.1.1 | Samples | | — |
| | Wall thickness (mm) | | — |
| A.1.2 | Conditioning of samples; temperature (°C) | | N/A |
| A.1.3 | Mounting of samples | | N/A |
| A.1.4 | Test flame (see IEC 60695-11-3) | | N/A |
| | Flame A, B, C or D | | — |
| A.1.5 | Test procedure | | N/A |
| A.1.6 | Compliance criteria | | N/A |
| | Sample 1 burning time (s) | | — |
| | Sample 2 burning time (s) | | — |
| | Sample 3 burning time (s) | | — |
| A.2 | Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4) | | N/A |
| A.2.1 | Samples, material | | — |
| | Wall thickness (mm) | | — |
| A.2.2 | Conditioning of samples; temperature (°C) | | N/A |
| A.2.3 | Mounting of samples | | N/A |
| A.2.4 | Test flame (see IEC 60695-11-4) | | N/A |
| | Flame A, B or C | | — |
| A.2.5 | Test procedure | | N/A |
| A.2.6 | Compliance criteria | | N/A |
| | Sample 1 burning time (s) | | — |
| | Sample 2 burning time (s) | | — |
| | Sample 3 burning time (s) | | — |
| A.2.7 | Alternative test acc. to IEC 60695-11-5, cl. 5 and 9 | | N/A |
| | Sample 1 burning time (s) | | — |
| | Sample 2 burning time (s) | | — |
| | Sample 3 burning time (s) | | — |
| A.3 | Hot flaming oil test (see 4.6.2) | | N/A |
| A.3.1 | Mounting of samples | | N/A |
| A.3.2 | Test procedure | | N/A |
| A.3.3 | Compliance criterion | | N/A |

| IEC 60950-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| B | ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2) | | N/A |
| B.1 | General requirements | No motor. | N/A |
| | Position | | — |
| | Manufacturer | | — |
| | Type | | — |
| | Rated values | | — |
| B.2 | Test conditions | | N/A |
| B.3 | Maximum temperatures | | N/A |
| B.4 | Running overload test | | N/A |
| B.5 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | — |
| | Electric strength test: test voltage (V) | | — |
| B.6 | Running overload test for d.c. motors in secondary circuits | | N/A |
| B.6.1 | General | | N/A |
| B.6.2 | Test procedure | | N/A |
| B.6.3 | Alternative test procedure | | N/A |
| B.6.4 | Electric strength test; test voltage (V) | | N/A |
| B.7 | Locked-rotor overload test for d.c. motors in secondary circuits | | N/A |
| B.7.1 | General | | N/A |
| B.7.2 | Test procedure | | N/A |
| B.7.3 | Alternative test procedure | | N/A |
| B.7.4 | Electric strength test; test voltage (V) | | N/A |
| B.8 | Test for motors with capacitors | | N/A |
| B.9 | Test for three-phase motors | | N/A |
| B.10 | Test for series motors | | N/A |
| | Operating voltage (V) | | — |

| | | | |
|----------|--|----------------------------|---|
| C | ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3) | | P |
| | Position | Primary to SELV. | — |
| | Manufacturer | (see appended table 1.5.1) | — |
| | Type | (see appended table 1.5.1) | — |
| | Rated values | (see appended table 1.5.1) | — |
| | Method of protection | Inherent protection. | — |
| C.1 | Overload test | (see appended table 5.3) | P |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| C.2 | Insulation | The insulation fulfils the requirements in 2.10 and relevant test for 5.2.2. (see appended table 5.2) | P |
| | Protection from displacement of windings : | Secured to the soldering pins with wrapping | P |

| | | | |
|----------|---|------------------|-----|
| D | ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4) | | P |
| D.1 | Measuring instrument | Figure D.1 used. | P |
| D.2 | Alternative measuring instrument | | N/A |

| | | | |
|----------|--|--|-----|
| E | ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13) | | N/A |
|----------|--|--|-----|

| | | | |
|----------|---|--|---|
| F | ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G) | | P |
|----------|---|--|---|

| | | | |
|----------|--|----------------------------------|-----|
| G | ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES | | N/A |
| G.1 | Clearances | Alternate method not considered. | N/A |
| G.1.1 | General | | N/A |
| G.1.2 | Summary of the procedure for determining minimum clearances | | N/A |
| G.2 | Determination of mains transient voltage (V) | | N/A |
| G.2.1 | AC mains supply | | N/A |
| G.2.2 | Earthed d.c. mains supplies | | N/A |
| G.2.3 | Unearthed d.c. mains supplies | | N/A |
| G.2.4 | Battery operation | | N/A |
| G.3 | Determination of telecommunication network transient voltage (V) | | N/A |
| G.4 | Determination of required withstand voltage (V) | | N/A |
| G.4.1 | Mains transients and internal repetitive peaks | | N/A |
| G.4.2 | Transients from telecommunication networks | | N/A |
| G.4.3 | Combination of transients | | N/A |
| G.4.4 | Transients from cable distribution systems | | N/A |
| G.5 | Measurement of transient voltages (V) | | N/A |
| | a) Transients from a mains supply | | N/A |
| | For an a.c. mains supply | | N/A |
| | For a d.c. mains supply | | N/A |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | b) Transients from a telecommunication network | | N/A |
| G.6 | Determination of minimum clearances | | N/A |
| H | ANNEX H, IONIZING RADIATION (see 4.3.13) | | N/A |
| J | ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6) | | P |
| | Metal(s) used | | — |
| K | ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8) | | N/A |
| K.1 | Making and breaking capacity | No thermal control. | N/A |
| K.2 | Thermostat reliability; operating voltage (V) | | N/A |
| K.3 | Thermostat endurance test; operating voltage (V) | | N/A |
| K.4 | Temperature limiter endurance; operating voltage (V) | | N/A |
| K.5 | Thermal cut-out reliability | | N/A |
| K.6 | Stability of operation | | N/A |
| L | ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2) | | P |
| L.1 | Typewriters | | N/A |
| L.2 | Adding machines and cash registers | | N/A |
| L.3 | Erasers | | N/A |
| L.4 | Pencil sharpeners | | N/A |
| L.5 | Duplicators and copy machines | | N/A |
| L.6 | Motor-operated files | | N/A |
| L.7 | Other business equipment | See operating condition in General Product Information. | P |
| M | ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1) | | N/A |
| M.1 | Introduction | | N/A |
| M.2 | Method A | | N/A |
| M.3 | Method B | | N/A |
| M.3.1 | Ringing signal | | N/A |
| M.3.1.1 | Frequency (Hz) | | — |
| M.3.1.2 | Voltage (V) | | — |
| M.3.1.3 | Cadence; time (s), voltage (V) | | — |
| M.3.1.4 | Single fault current (mA) | | — |

| IEC 60950-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| M.3.2 | Tripping device and monitoring voltage | | N/A |
| M.3.2.1 | Conditions for use of a tripping device or a monitoring voltage | | N/A |
| M.3.2.2 | Tripping device | | N/A |
| M.3.2.3 | Monitoring voltage (V) | | N/A |
| N | ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5) | | N/A |
| N.1 | ITU-T impulse test generators | | N/A |
| N.2 | IEC 60065 impulse test generator | | N/A |
| P | ANNEX P, NORMATIVE REFERENCES | | — |
| Q | ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1) | | P |
| | - Preferred climatic categories | | P |
| | - Maximum continuous voltage | | P |
| | - Combination pulse current | | P |
| | Body of the VDR Test according to IEC60695-11-5..... | | P |
| | Body of the VDR. Flammability class of material (min V-1)..... | | P |
| R | ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES | | N/A |
| R.1 | Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2) | | N/A |
| R.2 | Reduced clearances (see 2.10.3) | | N/A |
| S | ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3) | | N/A |
| S.1 | Test equipment | | N/A |
| S.2 | Test procedure | | N/A |
| S.3 | Examples of waveforms during impulse testing | | N/A |
| T | ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2) | | N/A |
| | | | — |
| U | ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4) | | N/A |
| | | | — |

| IEC 60950-1 | | | |
|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|----------|---|--|---|
| V | ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) | | P |
| V.1 | Introduction | | P |
| V.2 | TN power distribution systems | | P |

| | | | |
|----------|--|--|-----|
| W | ANNEX W, SUMMATION OF TOUCH CURRENTS | | N/A |
| W.1 | Touch current from electronic circuits | | N/A |
| W.1.1 | Floating circuits | | N/A |
| W.1.2 | Earthed circuits | | N/A |
| W.2 | Interconnection of several equipments | | N/A |
| W.2.1 | Isolation | | N/A |
| W.2.2 | Common return, isolated from earth | | N/A |
| W.2.3 | Common return, connected to protective earth | | N/A |

| | | | |
|----------|--|--|-----|
| X | ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1) | | N/A |
| X.1 | Determination of maximum input current | | N/A |
| X.2 | Overload test procedure | | N/A |

| | | | |
|----------|--|--|-----|
| Y | ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3) | | N/A |
| Y.1 | Test apparatus | | N/A |
| Y.2 | Mounting of test samples | | N/A |
| Y.3 | Carbon-arc light-exposure apparatus | | N/A |
| Y.4 | Xenon-arc light exposure apparatus | | N/A |

| | | | |
|----------|--|--|---|
| Z | ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2) | | P |
|----------|--|--|---|

| | | | |
|-----------|--|--|-----|
| AA | ANNEX AA, MANDREL TEST (see 2.10.5.8) | | N/A |
|-----------|--|--|-----|

| | | | |
|-----------|--|--|---|
| BB | ANNEX BB, CHANGES IN THE SECOND EDITION | | — |
|-----------|--|--|---|

| | | | |
|-----------|---|--|-----|
| CC | ANNEX CC, Evaluation of integrated circuit (IC) current limiters | | N/A |
| CC.1 | General | | N/A |
| CC.2 | Test program 1..... | | N/A |
| CC.3 | Test program 2..... | | N/A |
| CC.4 | Test program 3..... | | N/A |
| CC.5 | Compliance..... | | N/A |

| IEC 60950-1 | | | |
|-------------|---|--------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| DD | ANNEX DD, Requirements for the mounting means of rack-mounted equipment | | N/A |
| DD.1 | General | No such equipment. | N/A |
| DD.2 | Mechanical strength test, variable N.....: | | N/A |
| DD.3 | Mechanical strength test, 250N, including end stops.....: | | N/A |
| DD.4 | Compliance.....: | | N/A |
| EE | ANNEX EE, Household and home/office document/media shredders | | N/A |
| EE.1 | General | No such equipment. | N/A |
| EE.2 | Markings and instructions | | N/A |
| | Use of markings or symbols.....: | | N/A |
| | Information of user instructions, maintenance and/or servicing instructions.....: | | N/A |
| EE.3 | Inadvertent reactivation test.....: | | N/A |
| EE.4 | Disconnection of power to hazardous moving parts: | | N/A |
| | Use of markings or symbols.....: | | N/A |
| EE.5 | Protection against hazardous moving parts | | N/A |
| | Test with test finger (Figure 2A) | | N/A |
| | Test with wedge probe (Figure EE1 and EE2) | | N/A |

| 1.5.1 | TABLE: List of critical components | | | | | P |
|---|------------------------------------|---|---|--|--|---|
| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ | |
| Europe Plug | GlobTek | Q-EU | 2.5A, 250V | EN 50075 | Nemko report Ref. No. 177091P | |
| Plug holder material | SABIC | SE1X | Min 1.65mm thick, flame class V-1, 110°C | UL 94 | UL | |
| Enclosure | SABIC | SE1X SE100, SE100X, SE1, HF500R CX7211 C2950 EXCY0098 | Min 1.65mm thick, flame class V-1, 110°C | UL 94 | UL | |
| Alternative | Teijin | LN-1250P, LN- 1250G | Min 2.0mm thick, Min.95°C, flame class V-1 or better | UL 94 | UL | |
| Alternative | ChiMei | PA-765A PC- 540 | Min 2.0mm thick, Min.95°C, flame class V-1 or better | UL 94 | UL | |
| PCB material | Interchangeable | Interchangeable | Min. flame class V-1 or better, min. 130°C materials | UL 94 | UL | |
| Fuse (F1) | Conquer | MST | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Conquer | PDU | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Ever Island | 2010 | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Save Fusetech | SS-5 | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Bel Fuse | RST | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Hollyland | 5ET | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Walter | ICP | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Alternative | Das & Sons | 385 T Serie(s) | T2AL, 250V | EN 60127 UL 248 | VDE, UL | |
| Thermistor (RT1) (optional) | Interchangeable | Interchangeable | Min 3A, 5Ω at 25°C, after fuse | IEC 60950-1 | Test in equipment | |
| Varistor, after fuse (ZR1) (optional) | Joyin | 10N471K, 14N471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL | |
| Alternative | Centra | 10D471K, 14D471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 UL 1449 3) IEC 60950-1 Annex Q | VDE UL | |

| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ |
|-------------------------|----------------------------------|---|--|--|--|
| Alternative | Thinking Electronic | TVR10471K, TVR14471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL |
| Alternative | Success Electronics Co Ltd | SVR-10D471K SVR-14D471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 UL 1449 3) IEC 60950-1 Annex Q | VDE UL |
| Alternative | Brightking | 14D471K 10D471K 471KD10 471KD14 | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 UL 1449 3) IEC 60950-1 Annex Q | VDE UL |
| Alternative | Lien Shun | 10D471K, 14D471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL |
| Alternative | TKS | TVR10471K, TVR14471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL |
| Alternative | Walsin | VZ14D471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL |
| Alternative | STE | STE-07D471K STE-10D471K STE-14D471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL |
| Alternative | CERAMATE | GNR10D471K GNR14D471K | 300Vac, 40/85/56 The coating is V- 0 | IEC 61051-2 2) UL 1449 IEC 60950-1 Annex Q | VDE UL |
| X cap (XC1) optional | Cheng Tung | CTX | Max 0.33µF, Min 250Vac Min 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Ultra Tech | HQX | Max 0.33µF, Min 250Vac Min 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Dain | MPX, NPX | Max 0.33µF, Min 250Vac Min 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Winday | MPX | Max 0.33µF, Min 250Vac Min 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Tenta | MEX | Max 0.33µF, Min 250Vac Min 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |

| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ |
|---|----------------------------|-----------------|--|--|--|
| Alternative | Shenzhen Jinghao | CBB62B | Max 0.33 μ F, Min 250Vac 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Shunde Da Hua | HD | Max 0.33 μ F, Min 250Vac 105°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Welson | WD | Max 0.33 μ F, Min 250Vac 125°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Murata | KH | Max 0.33 μ F, Min 250Vac 125°C (Min X2) | IEC 60384-14 2nd edition UL 1414 | VDE, UL |
| Alternative | Walsin | AC | Max 0.33 μ F, Min 250Vac 125°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Chiefcon | CKX | Max 0.33 μ F, Min 250Vac 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Okaya | RE | Max 0.33 μ F, Min 250Vac Min 100°C (Min X2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Line choke (NF1) No bobbin 5) | GlobTek/ | NF00031 | 130°C | IEC 60950-1 | Test in equipment |
| Bulk Capacitor (C1) | Interchangeable | Interchangeable | Max 68 μ F Min 400V 105°C | IEC 60950-1 | Test in equipment |
| Bleed resistor, after fuse (R1A, R1B) | Interchangeable | Interchangeable | Max 1.5M Ω , 1/4W | IEC 60950-1 | Test in equipment |
| Bridge diode (DA1, DA2, DA3, DA4) | Interchangeable | Interchangeable | Min 1.5A, 600V | IEC 60950-1 | Test in equipment |
| Bridging cap (CY1) | Success | SE | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | TDK | CD | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Walsin | AH | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |

| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ |
|---------------------------------------|----------------------------|---------------------------------------|--|-------------------------------------|--|
| Alternative | Pan overseas | AH | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Hao Hua | CT7 | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Murata | KX | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Jya-Nay | JN | Max 220pF Min 250Vac Min 105°C (Y1) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Bridging cap (CY2,CY3) optional | TDK | CD, CS | Max 470pF Min 250Vac Min 85°C (Min. Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Success | SE, SB, SF | Max 470pF Min 250Vac 125°C (Min. Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Walsin | AH ,AC | Max 470pF Min 250Vac 125°C (Min. Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Murata | KX , KH | Max 470pF Min 250Vac 125°C (Min. Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Haohua | CT 7 | Max 470pF Min 250Vac Min 85°C (Min. Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Walsin | WD | Max 470pF Min 250Vac 125°C (Min. Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Alternative | Jya-Nay | JN, JY | Max 470pF Min 250Vac 125°C (Min.Y2) | IEC 60384-14 UL 60384-14 | VDE, UL |
| Optocoupler (PC1) | Lite-on | LTV-817 | See appendix opto elec. Min 100°C | UL 1577 EN 60747-5-2 EN 60950 | UL VDE FI |
| Alternative | Sharp | PC817, PC817U, PC123, PC1231 | See appendix opto elec. Min 100°C | EN 60747-5-2 | VDE FI |
| Alternative | Everlight | EL817 | See appendix opto elec. Min 100°C | EN 60747-5-2 IEC 60950 | VDE, FI |

| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ |
|---|----------------------------|-----------------------------------|---|--------------------------------------|--|
| Alternative | Toshiba | TLP721 | See appendix opto elec. Min 100°C | EN 60747-5-2 | VDE ,FI |
| Alternative | Cosmo | K1010, KP1010 | See appendix opto elec. Min 100°C | EN 60747-5-2 EN 60950 EN 60065 | VDE ,FI |
| Alternative | Bright | BPC-817, BPC-817M, BPC-817S | See appendix opto elec. Min 100°C | EN 60747-5-2 | VDE ,FI |
| Transformer (T1, for models with output voltage 12- 15V) 4) 5) | GlobTek | XF00399 | Class B | IEC 60950-1 | Test in equipment |
| Bobbin | Sumitomo | PM-9820 | Phenolic, 150°C, | UL 94 | UL |
| | Chang Chun | T375J,T375HF | V-0 | | |
| Insulation tape | Plastic | CP-J-8800 | | | |
| | Hitachi | 1350F(#) | 130°C | UL 510 | UL |
| | 3M | 1350T-1 | 130°C | UL 510 | UL |
| | Bondtec Pacific | 44 | 130°C | UL 510 | UL |
| | | 370S | 130°C | UL 510 | UL |
| | YAHUA | PZ CT | 130°C | UL 510 | UL |
| | SYMBIO INC | 35660 | 130°C | UL 510 | UL |
| | JINGJIANG | JY25 | 130°C | UL 510 | UL |
| | JINGYI | | | | |
| | Liang Yi | LY-XX | 130°C | UL 510 | UL |
| Transformer (T1, for models with output voltage 24- 36V) 4) 5) | GlobTek | XF00435 | Class B | IEC 60950-1 | Test in equipment |
| Bobbin | Sumitomo | PM-9820 | Phenolic, 150°C, | UL 94 | UL |
| | Chang Chun | T375J,T375HF | V-0 | | |
| Insulation tape | Plastic | CP-J-8800 | | | |
| | Hitachi | 1350F(#) | 130°C | UL 510 | UL |
| | 3M | 1350T-1 | 130°C | UL 510 | UL |
| | | 44 | 130°C | UL 510 | UL |
| | Bondtec Pacific | 370S | 130°C | UL 510 | UL |
| | YAHUA | PZ CT | 130°C | UL 510 | UL |
| | SYMBIO INC | 35660 | 130°C | UL 510 | UL |
| | JINGJIANG | JY25 | 130°C | UL 510 | UL |
| | JINGYI | | | | |
| | Liang Yi | LY-XX | 130°C | UL 510 | UL |

| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ |
|--|-----------------------------------|--|--|------------------------------|--|
| Transformer (T1, for models with output voltage 36.1- 48V) 4) 5) | GlobTek | XF00436 | Class B | IEC 60950-1 | Test in equipment |
| Bobbin | Sumitomo Chang Chun | PM-9820 T375J,T375HF | Phenolic, 150°C, V-0 | UL 94 | UL |
| Insulation tape | Plastic Hitachi 3M | CP-J-8800 1350F(#) 1350T-1 44 | 130°C 130°C 130°C | UL 510 UL 510 UL 510 | UL UL UL |
| | Bondtec Pacific YAHUA | 370S PZ CT | 130°C 130°C | UL 510 UL 510 | UL UL |
| | SYMBIO INC JINGJIANG JINGYI | 35660 JY25 | 130°C 130°C | UL 510 UL 510 | UL UL |
| | Liang Yi | LY-XX | 130°C | UL 510 | UL |
| Sleeving (wrapped around the wire crossing primary, wrapped around primary heat sink) | Interchangeable | Interchangeable | Min 300V, 125°C, 0.4 mm thick , VW-1 | UL 224 | UL |
| <p>Supplementary information:</p> <p>¹⁾an asterisk indicates a mark which assures the agreed level of surveillance.</p> <p>2) Varistor was tested additionally with IEC 60950-1:2005 (Annex Q) during the approval to IEC 61051-2.</p> <p>3) Varistor is for SPD Type 3 SPD application</p> <p>4) Transformer type XF00435 is the same as XF00436, except secondary windings. Type XF00399 is different from XF00435 and XF00435 (different turns of primary and secondary windings).</p> <p>5) The Transformer T1 /NF1 share the same construction from different vendors.</p> | | | | | |

| 1.5.1 | TABLE: Opto Electronic Devices | P |
|---|--|---|
| Manufacturer | Sharp / Liteon / Everlight / Sharp / Sharp / Sharp / Toshiba / Cosmo / Cosmo / Bright / Bright / Bright | |
| Type..... | PC817 / LTV-817 / EL817 / PC123 / PC1231 / PC817U / TLP721 / K1010 / KP1010 / BPC-817 / BPC817M / BPC-817S | |
| Separately tested..... | FI | |
| Bridging insulation | Reinforced insulation | |
| External creepage distance | 8mm / 7.8mm / 8.3mm / 8mm / 8mm / 8mm / 8mm / 8mm / 8mm / 7.8mm / 7.8mm / 7.8mm | |
| Internal creepage distance | 4.8mm / 5.2mm / 4.0mm / 5mm / 4mm / 4mm / >4mm / 5.3mm / 5.3mm / 5.0mm / 5.0mm / 5.0mm | |
| Distance through insulation | >0.4mm / 0.8mm / 0.6mm / 0.7mm / >0.4mm / >0.4mm / 0.8mm / 0.5mm / 0.5mm / >0.4mm / >0.4mm / >0.4mm | |
| Tested under the following conditions | Reinforced insulation | |
| Input..... | | |
| Output..... | | |
| supplementary information | | |
| | | |

| 1.6.2 | TABLE: Electrical data (in normal conditions) | | | | | | P |
|-------------------|---|------------|-------|--------|-----------|------------------|---|
| U (V) | I (A) | Irated (A) | P (W) | Fuse # | Ifuse (A) | Condition/status | |
| GT-41131-3015-3.0 | | | | | | | |
| 90V 50Hz | 0.67 | — | 36.98 | F1 | 0.67 | -- | |
| 90V 60Hz | 0.66 | — | 36.92 | F1 | 0.66 | -- | |
| 100V 50Hz | 0.61 | 1.0 | 36.64 | F1 | 0.61 | -- | |
| 100V 60Hz | 0.61 | 1.0 | 36.61 | F1 | 0.61 | -- | |
| 240V 50Hz | 0.32 | 1.0 | 36.50 | F1 | 0.32 | -- | |
| 240V 60Hz | 0.30 | 1.0 | 36.45 | F1 | 0.30 | -- | |
| 254V 50Hz | 0.30 | — | 36.53 | F1 | 0.30 | -- | |
| 254V 60Hz | 0.28 | — | 36.56 | F1 | 0.28 | -- | |
| 264V 50Hz | 0.29 | — | 36.62 | F1 | 0.29 | -- | |
| 264V 60Hz | 0.27 | — | 36.59 | F1 | 0.27 | -- | |
| GT-41131-3015 | | | | | | | |
| 90V 50Hz | 0.65 | — | 36.20 | F1 | 0.65 | -- | |
| 90V 60Hz | 0.65 | — | 36.15 | F1 | 0.65 | -- | |
| 100V 50Hz | 0.60 | 1.0 | 35.88 | F1 | 0.60 | -- | |
| 100V 60Hz | 0.59 | 1.0 | 35.86 | F1 | 0.59 | -- | |
| 240V 50Hz | 0.31 | 1.0 | 35.39 | F1 | 0.31 | -- | |
| 240V 60Hz | 0.29 | 1.0 | 35.35 | F1 | 0.29 | -- | |
| 254V 50Hz | 0.29 | — | 35.34 | F1 | 0.29 | -- | |
| 254V 60Hz | 0.27 | — | 35.32 | F1 | 0.27 | -- | |
| 264V 50Hz | 0.28 | — | 35.37 | F1 | 0.28 | -- | |
| 264V 60Hz | 0.26 | — | 35.34 | F1 | 0.26 | -- | |
| GT-41131-3024 | | | | | | | |
| 90V 50Hz | 0.64 | — | 35.55 | F1 | 0.64 | -- | |
| 90V 60Hz | 0.64 | — | 35.51 | F1 | 0.64 | -- | |
| 100V 50Hz | 0.59 | 1.0 | 35.51 | F1 | 0.59 | -- | |
| 100V 60Hz | 0.58 | 1.0 | 35.28 | F1 | 0.58 | -- | |
| 240V 50Hz | 0.30 | 1.0 | 35.36 | F1 | 0.30 | -- | |
| 240V 60Hz | 0.29 | 1.0 | 35.34 | F1 | 0.29 | -- | |
| 254V 50Hz | 0.29 | — | 35.55 | F1 | 0.29 | -- | |
| 254V 60Hz | 0.27 | — | 35.61 | F1 | 0.27 | -- | |
| 264V 50Hz | 0.28 | — | 35.76 | F1 | 0.28 | -- | |
| 264V 60Hz | 0.27 | — | 35.70 | F1 | 0.27 | -- | |
| GT-41131-3048 | | | | | | | |
| 90V 50Hz | 0.62 | — | 34.30 | F1 | 0.62 | -- | |
| 90V 60Hz | 0.62 | — | 34.29 | F1 | 0.62 | -- | |
| 100V 50Hz | 0.56 | 1.0 | 34.01 | F1 | 0.56 | -- | |
| 100V 60Hz | 0.56 | 1.0 | 33.96 | F1 | 0.56 | -- | |
| 240V 50Hz | 0.29 | 1.0 | 33.54 | F1 | 0.29 | -- | |
| 240V 60Hz | 0.27 | 1.0 | 33.50 | F1 | 0.27 | -- | |

| U (V) | I (A) | I _{rated} (A) | P (W) | Fuse # | I _{fuse} (A) | Condition/status |
|----------------------------|-------|------------------------|-------|--------|-----------------------|------------------|
| 254V 50Hz | 0.27 | — | 33.56 | F1 | 0.27 | -- |
| 254V 60Hz | 0.26 | — | 33.57 | F1 | 0.26 | -- |
| 264V 50Hz | 0.26 | — | 33.66 | F1 | 0.26 | -- |
| 264V 60Hz | 0.25 | — | 33.62 | F1 | 0.25 | -- |
| Supplementary information: | | | | | | |

| 2.1.1.5 c1) | TABLE: max. V, A, VA test | | | | P |
|--|---------------------------|-----------------------|-----------------------|----------------|----------|
| Voltage (rated) (V) | Current (rated) (A) | Voltage (max.) (V) | Current (max.) (A) | VA (max.) (VA) | |
| GT-41131-3015-3.0 | | | | | |
| 12 | 2.5 | 12.3 | 3.9 | 44.6 | |
| GT-41131-3015 | | | | | |
| 15 | 2 | 15.3 | 3.2 | 45.7 | |
| GT-41131-3024 | | | | | |
| 24 | 1.25 | 24.1 | 2.2 | 51.0 | |
| GT-41131-3048 | | | | | |
| 48 | 0.625 | 48.0 | 0.83 | 39.2 | |
| Supplementary information: | | | | | |
| The above measurements are the maximum values (max. V and max. A not obtained at the same time). | | | | | |

| 2.1.1.5 c) 2) | TABLE: stored energy | | N/A |
|----------------------------|----------------------|--------------|-----|
| Capacitance C (μF) | Voltage U (V) | Energy E (J) | |
| | | | |
| | | | |
| supplementary information: | | | |
| | | | |

| | | | | |
|---|---|---|--------|-----------------------------|
| 2.2 | TABLE: evaluation of voltage limiting components in SELV circuits | | | P |
| Component (measured between) | | max. voltage (V) (normal operation) | | Voltage Limiting Components |
| | | V peak | V d.c. | |
| GT-41131-3015-3.0 | | | | |
| T1 pin 5-6 | | 73 | | |
| T1 pin 5-6 after D3 | | | 13.2 | D3 |
| GT-41131-3015 | | | | |
| T1 pin 5-6 | | 127 | | |
| T1 pin 5-6 after D3 | | | 24.2 | D3 |
| GT-41131-3024 | | | | |
| T1 pin 5-6 | | 127 | | |
| T1 pin 5-6 after D3 | | | 25.8 | D3 |
| GT-41131-3048 | | | | |
| T1 pin 5-6 | | 322 | | |
| T1 pin 5-6 after D3 | | | 48.8 | D3 |
| Fault test performed on voltage limiting components | | Voltage measured (V) in SELV circuits (V peak or V d.c.) | | |
| GT-41131-3015-3.0 | | | | |
| T1 pin 5-6 after D3 | | 0 | | |
| GT-41131-3015 | | | | |
| T1 pin 5-6 after D3 | | 0 | | |
| GT-41131-3024 | | | | |
| T1 pin 5-6 after D3 | | 0 | | |
| GT-41131-3048 | | | | |
| T1 pin 5-6 after D3 | | 0 | | |
| Supplementary information: | | | | |
| s-c: short circuit | | | | |

| 2.4 | TABLE: Limited current circuits | | | | P |
|---|---------------------------------|----------------|-----------------|----------------|---------------|
| Location | | Voltage (V) | Current (mA) | Freq. (kHz) | Limit (mA) |
| CY1, CY2, CY3 | | 0.56 | 0.28 | 0.06 | 0.7 |
| supplementary information: | | | | | |
| Tested at 264V 60Hz | | | | | |
| Bridging cap CY1: 220pF, CY2 and CY3: 470pF | | | | | |

| 2.5 | TABLE: limited power sources | | | | P |
|----------------------------|------------------------------|--------------|-------|---------------------------|----------|
| | | I_{sc} (A) | | V A | |
| | | Meas. | Limit | Meas. | Limit |
| GT-41131-3015-3.0 | | | | | |
| Output (Uoc=12.3V) | | 3.89 | 8.0 | 44.54 (3.89A x 11.45V) | 100 |
| IC1 pin1-2 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin1-3 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin2-3 1) | | 0 | 8.0 | 0 | 100 |
| G T-41131-3015 | | | | | |
| Output (Uoc=15.3V) | | 3.12 | 8.0 | 45.70 (3.12A x 14.65V) | 100 |
| IC1 pin1-2 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin1-3 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin2-3 1) | | 0 | 8.0 | 0 | 100 |
| G T-41131-3024 | | | | | |
| Output (Uoc=24.1V) | | 2.16 | 8.0 | 50.97 (2.16A x 23.60V) | 100 |
| IC1 pin1-2 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin1-3 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin2-3 1) | | 0 | 8.0 | 0 | 100 |
| G T-41131-3048 | | | | | |
| Output (Uoc=48.0V) | | 0.83 | 8.0 | 39.15 (0.83A x 47.18V) | 100 |
| IC1 pin1-2 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin1-3 1) | | 0 | 8.0 | 0 | 100 |
| IC1 pin2-3 1) | | 0 | 8.0 | 0 | 100 |
| Supplementary information: | | | | | |
| 1) Unit shut down | | | | | |

| | | | | |
|-------------------|------------------------------------|-----------------|------------------|----------|
| 2.10.2 | Table: working voltage measurement | | | P |
| Location | | RMS voltage (V) | Peak voltage (V) | Comments |
| GT-41131-3015-3.0 | | | | |
| T1 pin 1-5 | 230 | 448 | -- | |
| T1 pin 1-6 | 245 | 464 | -- | |
| T1 pin 2-5 | 220 | 384 | -- | |
| T1 pin 2-6 | 216 | 364 | -- | |
| T1 pin 3-5 | 217 | 376 | -- | |
| T1 pin 3-6 | 219 | 436 | -- | |
| T1 pin 4-5 | 202 | 416 | -- | |
| T1 pin 4-6 | 202 | 346 | -- | |
| PC1 pin 1-3 | 186 | 352 | -- | |
| PC1 pin 1-4 | 187 | 354 | -- | |
| PC1 pin 2-3 | 187 | 354 | -- | |
| PC1 pin 2-4 | 188 | 358 | -- | |
| CY1 | 202 | 346 | -- | |
| CY2 | 240 | 340 | -- | |
| CY3 | 240 | 340 | -- | |
| GT-41131-3015 | | | | |
| T1 pin 1-5 | 252 | 480 | -- | |
| T1 pin 1-6 | 261 | 480 | -- | |
| T1 pin 2-5 | 201 | 352 | -- | |
| T1 pin 2-6 | 201 | 336 | -- | |
| T1 pin 3-5 | 201 | 366 | -- | |
| T1 pin 3-6 | 201 | 436 | -- | |
| T1 pin 4-5 | 221 | 422 | -- | |
| T1 pin 4-6 | 218 | 356 | -- | |
| PC1 pin 1-3 | 190 | 362 | -- | |
| PC1 pin 1-4 | 190 | 362 | -- | |
| PC1 pin 2-3 | 191 | 362 | -- | |
| PC1 pin 2-4 | 218 | 356 | -- | |
| CY1 | 218 | 356 | -- | |
| CY2 | 240 | 340 | -- | |
| CY3 | 240 | 340 | -- | |

| GT-41131-3024 | | | |
|----------------------------|------------|------------|----|
| T1 pin 1-5 | 231 | 458 | -- |
| T1 pin 1-6 | 250 | 468 | -- |
| T1 pin 2-5 | 204 | 366 | -- |
| T1 pin 2-6 | 202 | 342 | -- |
| T1 pin 3-5 | 203 | 368 | -- |
| T1 pin 3-6 | 203 | 422 | -- |
| T1 pin 4-5 | 213 | 454 | -- |
| T1 pin 4-6 | 210 | 350 | -- |
| PC1 pin 1-3 | 195 | 372 | -- |
| PC1 pin 1-4 | 195 | 372 | -- |
| PC1 pin 2-3 | 195 | 372 | -- |
| PC1 pin 2-4 | 195 | 372 | -- |
| CY1 | 210 | 350 | -- |
| CY2 | 240 | 340 | -- |
| CY3 | 240 | 340 | -- |
| GT-41131-3048 | | | |
| T1 pin 1-5 | 222 | 420 | -- |
| T1 pin 1-6 | 254 | 472 | -- |
| T1 pin 2-5 | 221 | 428 | -- |
| T1 pin 2-6 | 205 | 344 | -- |
| T1 pin 3-5 | 214 | 398 | -- |
| T1 pin 3-6 | 209 | 408 | -- |
| T1 pin 4-5 | 226 | 390 | -- |
| T1 pin 4-6 | 202 | 338 | -- |
| PC1 pin 1-3 | 194 | 410 | -- |
| PC1 pin 1-4 | 174 | 340 | -- |
| PC1 pin 2-3 | 182 | 342 | -- |
| PC1 pin 2-4 | 181 | 410 | -- |
| CY1 | 202 | 338 | -- |
| CY2 | 240 | 340 | -- |
| CY3 | 240 | 340 | -- |
| Supplementary information: | | | |
| | | | |

| 2.10.3 and 2.10.4 | TABLE: Clearance and creepage distance measurements | | | | | | P |
|--|---|------------|--------------|----------------------------|---------|------------------|------|
| | Clearance (cl) and creepage distance (cr) at/of/between: | U peak (V) | U r.m.s. (V) | Required cl (mm) 1) | cl (mm) | Required cr (mm) | |
| | Functional: L – N before fuse | 340 | 240 | 1.9 | 3.3 | 2.5 | 3.3 |
| | Functional: Fuse pin1-2 | 340 | 240 | 1.9 | 2.8 | 2.5 | 3.3 |
| | Reinforced: CY1 pin1-2 | 356 | 240 | 4.9 | 7.7 | 5.0 | 7.7 |
| | Reinforced: R2B – T1 pin6 | 480 | 261 | 5.2 | 8.0 | 6.4 | 8.0 |
| | Reinforced: T1 pin3 – R2 | 480 | 261 | 5.2 | 9.6 | 6.4 | 9.6 |
| | Reinforced: PC1 pri-sec | 480 | 261 | 5.2 | 6.7 | 6.4 | 6.7 |
| | Basic: Primary HS1 – T1 core (component side) | 480 | 261 | 2.6 | 4.1 | 3.2 | 4.1 |
| | Supplementary: T1 core – Secondary C6 (component side) | 480 | 261 | 2.6 | 5.0 | 3.2 | 5.0 |
| | Reinforced: Primary – Accessible parts of enclosure | 480 | 261 | 5.2 | 5.3 | 6.4 | 10.0 |
| | Reinforced: Metal contact of removable plug – Accessible parts of enclosure 2) | 340 | 240 | 4.9 | 5.4 | 5.0 | 5.4 |
| Supplementary information: | | | | | | | |
| <p>All models have the same PCB layout.</p> <p>Two layer of insulation tapes wrapped around T1 core.</p> <p>1)The equipment used at elevations < 3500m. Required clearance is 1.215 times under IEC60664-1 considering sea level 3500m.</p> <p>2)The distance is measured after test probe B, test probe 13 and test probe 19 of EN61032 applied.</p> | | | | | | | |

| | | | | | | |
|---|--|------------|-----------|------------------|-------------------|----------|
| 2.10.5 | TABLE: Distance through insulation measurements | | | | | P |
| Distance through insulation (DTI) at/of: | | U peak (V) | U rms (V) | Test voltage (V) | Required DTI (mm) | DTI (mm) |
| Enclosure | | 480 | 261 | 4242V DC | 0.4 | 1.8 |
| Sleeving (wrapped around the wire crossing primary, wrapped around primary heat sink) | | 480 | 261 | 4242V DC | 0.4 | 1.8 |
| Supplementary information: | | | | | | |

| | | | | | | | | | | | |
|---|----------------------------|---------------|-------------------------|------------------------|---------------|---------------|---------------|-------------------|---------------|---------|--|
| 4.3.8 | TABLE: Batteries | | | | | | | | N/A | | |
| The tests of 4.3.8 are applicable only when appropriate battery data is not available | | | | | | | | | | N/A | |
| Is it possible to install the battery in a reverse polarity position? | | | | | | | | | | N/A | |
| | Non-rechargeable batteries | | | Rechargeable batteries | | | | | | | |
| | Discharging | | Un-intentional charging | Charging | | Discharging | | Reversed charging | | | |
| | Meas. current | Manuf. Specs. | | Meas. current | Manuf. Specs. | Meas. current | Manuf. Specs. | Meas. current | Manuf. Specs. | | |
| Max. current during normal condition | | | | | | | | | | | |
| Max. current during fault condition | | | | | | | | | | | |
| | | | | | | | | | | | |
| Test results: | | | | | | | | | | Verdict | |
| - Chemical leaks | | | | | | | | | | N/A | |
| - Explosion of the battery | | | | | | | | | | N/A | |
| - Emission of flame or expulsion of molten metal | | | | | | | | | | N/A | |
| - Electric strength tests of equipment after completion of tests | | | | | | | | | | N/A | |
| Supplementary information: | | | | | | | | | | | |

| MARKINGS AND INSTRUCTIONS (1.7.13) | |
|-------------------------------------|--|
| Location of replaceable battery | |
| Language(s) | |
| Close to the battery | |
| In the servicing instructions | |
| In the operating instructions | |

| | | | | | | | | | |
|--|---|--|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| 4.5 | TABLE: Thermal requirements | | | | | | | P | |
| | Supply voltage (V): | | | 90V, 60Hz | | 264V, 50Hz | | — | |
| | Ambient T _{amb1} (°C) : | | | 40.0 | | 40.0 | | — | |
| | Ambient T _{amb2} (°C) : | | | 40.0 | | 40.0 | | — | |
| Maximum measured temperature T of part/at:: | | | | T (°C) | | | | Allowed Tmax (°C) | |
| GT-41131-3015-3.0 | | | | | | | | | |
| T1 coil | | | | 91.9 | | 90.8 | | 110 | |
| T1 core | | | | 91.1 | | 89.6 | | 110 | |
| PCB under T1 | | | | 91.1 | | 89.6 | | 130 | |
| XC1 | | | | 89.1 | | 79.2 | | 100 | |
| PC1 | | | | 86.5 | | 81.1 | | 100 | |
| Q1 body | | | | 106.0 | | 89.3 | | -- | |
| NF1 coil | | | | 93.4 | | 81.3 | | 120 | |
| L3 coil | | | | 79.6 | | 78.7 | | -- | |
| CY2/CY3 | | | | 80.9 | | 71.0 | | 85 | |
| CY1 | | | | 91.7 | | 88.7 | | 105 | |
| PCB under DA1 | | | | 106.8 | | 90.1 | | 130 | |
| C7 | | | | 76.7 | | 75.4 | | 105 | |
| C1 | | | | 90.5 | | 79.6 | | 105 | |
| Enclosure inside near T1 | | | | 77.1 | | 75.5 | | -- | |
| Enclosure outside near T1 | | | | 53.5 | | 52.5 | | 95 | |
| Contract surface of removable plug and EUT | | | | 55.6 | | 55.0 | | 110 | |
| Contract surface of EUT enclosure and PCB assembly | | | | 70.3 | | 70.2 | | 110 | |
| Temperature T of winding: | | | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | Allowed T _{max} (°C) | Insulation class |
| No 'Rise of Resistance' measurements. | | | | | | | | | |
| Supplementary information: | | | | | | | | | |

T_{ma}: 40°C. If no limit is provided, then the monitored location temperature result is for information only.

Temperature limits were reduced 10°C, for inductors and transformer windings monitored by thermocouple method.

| | | | | | | | | | |
|--|---|--|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| 4.5 | TABLE: Thermal requirements | | | | | | | P | |
| | Supply voltage (V): | | | 90V, 60Hz | | 264V, 50Hz | | – | |
| | Ambient T _{amb1} (°C) : | | | 40.0 | | 40.0 | | – | |
| | Ambient T _{amb2} (°C) : | | | 40.0 | | 40.0 | | – | |
| Maximum measured temperature T of part/at:: | | | | T (°C) | | | | Allowed Tmax (°C) | |
| GT-41131-3015 | | | | | | | | | |
| T1 coil | | | | 88.2 | | 86.8 | | 110 | |
| T1 core | | | | 87.1 | | 85.1 | | 110 | |
| PCB under T1 | | | | 87.1 | | 85.1 | | 130 | |
| XC1 | | | | 80.8 | | 71.8 | | 100 | |
| PC1 | | | | 81.6 | | 76.8 | | 100 | |
| Q1 body | | | | 97.2 | | 89.8 | | -- | |
| NF1 coil | | | | 85.5 | | 74.6 | | 120 | |
| L3 coil | | | | 78.4 | | 77.6 | | -- | |
| CY2/CY3 | | | | 72.1 | | 64.2 | | 85 | |
| CY1 | | | | 91.5 | | 88.4 | | 105 | |
| PCB under DA1 | | | | 104.2 | | 88.1 | | 130 | |
| C7 | | | | 75.1 | | 74.2 | | 105 | |
| C1 | | | | 87.8 | | 77.4 | | 105 | |
| Enclosure inside near T1 | | | | 74.3 | | 72.8 | | -- | |
| Enclosure outside near T1 | | | | 52.2 | | 51.5 | | 95 | |
| Contract surface of removable plug and EUT | | | | 55.4 | | 55.1 | | 110 | |
| Contract surface of EUT enclosure and PCB assembly | | | | 70.1 | | 68.7 | | 110 | |
| Temperature T of winding: | | | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | Allowed T _{max} (°C) | Insulation class |
| No 'Rise of Resistance' measurements. | | | | | | | | | |
| Supplementary information: | | | | | | | | | |

T_{ma}: 40°C. If no limit is provided, then the monitored location temperature result is for information only.

Temperature limits were reduced 10°C, for inductors and transformer windings monitored by thermocouple method.

| | | | | | | | | | |
|--|---|--|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| 4.5 | TABLE: Thermal requirements | | | | | | | P | |
| | Supply voltage (V): | | | 90V, 60Hz | | 264V, 50Hz | | – | |
| | Ambient T _{amb1} (°C) : | | | 40.0 | | 40.0 | | – | |
| | Ambient T _{amb2} (°C) : | | | 40.0 | | 40.0 | | – | |
| Maximum measured temperature T of part/at:: | | | | T (°C) | | | | Allowed Tmax (°C) | |
| GT-41131-3024 | | | | | | | | | |
| T1 coil | | | | 81.5 | | 88.5 | | 110 | |
| T1 core | | | | 88.0 | | 96.7 | | 110 | |
| PCB under T1 | | | | 88,0 | | 96.7 | | 130 | |
| XC1 | | | | 84.1 | | 86.4 | | 100 | |
| PC1 | | | | 82.8 | | 88.9 | | 100 | |
| Q1 body | | | | 97.9 | | 108.9 | | -- | |
| NF1 coil | | | | 85.5 | | 83.0 | | 120 | |
| L3 coil | | | | 67.0 | | 71.2 | | -- | |
| CY2/CY3 | | | | 69.6 | | 66.6 | | 85 | |
| CY1 | | | | 80.9 | | 86.7 | | 105 | |
| PCB under DA1 | | | | 96.6 | | 88.9 | | 130 | |
| C7 | | | | 70.8 | | 76.5 | | 105 | |
| C1 | | | | 84.9 | | 80.6 | | 105 | |
| Enclosure inside near T1 | | | | 71.7 | | 76.7 | | -- | |
| Enclosure outside near T1 | | | | 51.8 | | 53.6 | | 95 | |
| Contract surface of removable plug and EUT | | | | 54.9 | | 55.5 | | 110 | |
| Contract surface of EUT enclosure and PCB assembly | | | | 68.7 | | 68.2 | | 110 | |
| Temperature T of winding: | | | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | Allowed T _{max} (°C) | Insulation class |
| No 'Rise of Resistance' measurements. | | | | | | | | | |
| Supplementary information: | | | | | | | | | |

T_{ma}: 40°C. If no limit is provided, then the monitored location temperature result is for information only.

Temperature limits were reduced 10°C, for inductors and transformer windings monitored by thermocouple method.

| | | | | | | | | | |
|--|---|--|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| 4.5 | TABLE: Thermal requirements | | | | | | | P | |
| | Supply voltage (V): | | | 90V, 60Hz | | 264V, 50Hz | | – | |
| | Ambient T _{amb1} (°C) : | | | 40.0 | | 40.0 | | – | |
| | Ambient T _{amb2} (°C) : | | | 40.0 | | 40.0 | | – | |
| Maximum measured temperature T of part/at:: | | | | T (°C) | | | | Allowed Tmax (°C) | |
| GT-41131-3048 | | | | | | | | | |
| T1 coil | | | | 79.9 | | 82.7 | | 110 | |
| T1 core | | | | 81.4 | | 84.5 | | 110 | |
| PCB under T1 | | | | 81.4 | | 84.5 | | 130 | |
| XC1 | | | | 74.8 | | 70.5 | | 100 | |
| PC1 | | | | 73.3 | | 73.0 | | 100 | |
| Q1 body | | | | 85.0 | | 84.7 | | -- | |
| NF1 coil | | | | 75.8 | | 69.3 | | 120 | |
| L3 coil | | | | 62.3 | | 63.4 | | -- | |
| CY2/CY3 | | | | 66.0 | | 60.0 | | 85 | |
| CY1 | | | | 73.5 | | 74.5 | | 105 | |
| PCB under DA1 | | | | 84.9 | | 75.8 | | 130 | |
| C7 | | | | 64.0 | | 65.8 | | 105 | |
| C1 | | | | 72.3 | | 66.2 | | 105 | |
| Enclosure inside near T1 | | | | 65.9 | | 66.8 | | -- | |
| Enclosure outside near T1 | | | | 52.1 | | 52.5 | | 95 | |
| Contract surface of removable plug and EUT | | | | 54.9 | | 55.0 | | 110 | |
| Contract surface of EUT enclosure and PCB assembly | | | | 61.2 | | 61.3 | | 110 | |
| Temperature T of winding: | | | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | Allowed T _{max} (°C) | Insulation class |
| No 'Rise of Resistance' measurements. | | | | | | | | | |
| Supplementary information: | | | | | | | | | |

T_{ma}: 40°C. If no limit is provided, then the monitored location temperature result is for information only.

Temperature limits were reduced 10°C, for inductors and transformer windings monitored by thermocouple method.

| | | | | |
|---------------------------------|--|-----------------------|--------------------------|---|
| 4.5.5 | TABLE: Ball pressure test of thermoplastic parts | | | P |
| | Allowed impression diameter (mm) | ≤ 2 mm | | — |
| Part | | Test temperature (°C) | Impression diameter (mm) | |
| Plug holder, material type SE1X | | 125 | 1.4 | |
| | | | | |
| Supplementary information: | | | | |

| | | | | | | |
|--------------------------------|----------------------------------|--------------------------|------------------|----------------|--------------------|----------|
| 4.7 | TABLE: Resistance to fire | | | | | P |
| Part | | Manufacturer of material | Type of material | Thickness (mm) | Flammability class | Evidence |
| | | | | | | |
| | | | | | | |
| Supplementary information: | | | | | | |
| Refer to appended table 1.5.1. | | | | | | |

| | | | | |
|----------------------------|---|---------------|------------|---------------------|
| 5.1 | TABLE: touch current measurement | | | P |
| Measured between: | | Measured (mA) | Limit (mA) | Comments/conditions |
| Neutral – Secondary output | | 0.07 | 0.25 | Operation |
| Line – Secondary output | | 0.07 | 0.25 | Operation |
| Neutral – Enclosure (foil) | | 0.01 | 0.25 | Operation |
| Line – Enclosure (foil) | | 0.01 | 0.25 | Operation |
| supplementary information: | | | | |
| Vin=264V, 60Hz | | | | |

| 5.2 | TABLE: Electric strength tests, impulse tests and voltage surge tests | | | P |
|---|---|--|---------------------|-----------------------|
| Test voltage applied between: | | Voltage shape (AC, DC, impulse, surge) | Test voltage (V) | Breakdown Yes / No |
| Primary to Enclosure (foil) | | AC | 3000 | No |
| Primary to Secondary | | AC | 3000 | No |
| Insulation tape wrapped around T1 (1 layer) | | DC | 4242 | No |
| T1 primary to secondary | | DC | 4242 | No |
| T1 primary to core | | AC | 1707 | No |
| T1 core to secondary | | AC | 1707 | No |
| Supplementary information: | | | | |

| 5.3 | TABLE: Fault condition tests | | | | | P |
|--------------------------|---|------------------------|-----------|--------|------------------|---|
| | Ambient temperature (°C) | 25°C, if no mentioned. | | | | — |
| | Power source for EUT: Manufacturer, model/type, output rating | | | | | — |
| Component No. | Fault | Supply voltage (V) | Test time | Fuse # | Fuse current (A) | Observation |
| GT-41131-3015-3.0 | | | | | | |
| DA1 ~ - + | s-c | 264 | <1s | F1 | 1) | Fuse open, no hazard. |
| C1 | s-c | 264 | <1s | F1 | 1) | Fuse open, no hazard. |
| PC1 pin1-2 | s-c | 264 | 10 min | F1 | 0.164~0.042 | Unit shut down, no damage, no hazard. |
| PC1 pin3-4 | s-c | 264 | 10 min | F1 | 0.033 | Unit shut down, no damage, no hazard. |
| IC1 pin1-2 | s-c | 264 | 10 min | F1 | 0.033 | Unit shut down, no damage, no hazard. |
| IC1 pin1-3 | s-c | 264 | 10 min | F1 | 0.033 | Unit shut down, no damage, no hazard. |
| IC1 pin2-3 | s-c | 264 | 10 min | F1 | 0.033 | Unit shut down, no damage, no hazard. |
| U1 pin1-5 | s-c | 264 | 10 min | F1 | 0.028 | Unit shut down, no damage, no hazard. |
| D3 | s-c | 264 | 10 min | F1 | 0.048 | Unit shut down, no damage, no hazard. |
| Q1 G-S | s-c | 264 | 10 min | F1 | 0.028 | Unit shut down, no damage, no hazard. |
| Q1 G-D | s-c | 264 | < 1s | F1 | 1) | Fuse open, Q1 and U1 damaged, no hazard. |
| Q1 S-D | s-c | 264 | < 1s | F1 | 1) | Fuse open, Q1 and U1 damaged, no hazard. |
| T1 pin 5-6 after D3 | s-c | 264 | 10 min | F1 | 0.032 | Unit shut down, no damage, no hazard. |
| T1 pin 5-6 after D3 | o-l | 264 | 8h | F1 | 0.348 | Output loaded to 3.4A. Max temperature measured on T1 coil = 109.5°C Amb = 25°C No damage, no hazard. |
| +12V output | s-c | 264 | 10 min | F1 | 0.028 | Unit shut down, no damage, no hazard. |
| +12V output | o-l | 264 | 8h | F1 | 0.318 | Output loaded to 3.0A. Max temperature measured on T1 coil = 127.9°C Amb = 25°C No damage, no hazard. |
| GT-41131-3015 | | | | | | |
| T1 pin 5-6 after D3 | s-c | 264 | 10 min | F1 | 0.042 | Unit shut down, no damage, no hazard. |

| Component No. | Fault | Supply voltage (V) | Test time | Fuse # | Fuse current (A) | Observation |
|---|-------|--------------------|-----------|--------|------------------|---|
| T1 pin 5-6 after D3 | o-l | 264 | 11.5h | F1 | 0.346 | Output loaded to 2.75A. Max temperature measured on T1 coil = 135.5°C Amb = 25°C No damage, no hazard. |
| +15V output | s-c | 264 | 10 min | F1 | 0.028 | Unit shut down, no damage, no hazard. |
| +15V output | o-l | 264 | 10.5h | F1 | 0.318 | Output loaded to 2.4A. Max temperature measured on T1 coil = 136.4°C Amb = 25°C No damage, no hazard. |
| GT-41131-3024 | | | | | | |
| T1 pin 5-6 after D3 | s-c | 264 | 10 min | F1 | 0.037 | Unit shut down, no damage, no hazard. |
| T1 pin 5-6 after D3 | o-l | 264 | 8.5h | F1 | 0.309 | Output loaded to 1.55A. Max temperature measured on T1 coil = 126.8°C Amb = 25°C No damage, no hazard. |
| +24V output | s-c | 264 | 10 min | F1 | 0.029 | Unit shut down, no damage, no hazard. |
| +24V output | o-l | 264 | 8.5h | F1 | 0.309 | Output loaded to 1.45A. Max temperature measured on T1 coil = 127.5°C Amb = 25°C No damage, no hazard. |
| GT-41131-3048 | | | | | | |
| T1 pin 5-6 after D3 | s-c | 264 | 10 min | F1 | 0.036 | Unit shut down, no damage, no hazard. |
| T1 pin 5-6 after D3 | o-l | 264 | 8h | F1 | 0.262 | Output loaded to 0.825A. Max temperature measured on T1 coil = 113.4°C Amb = 25°C No damage, no hazard. |
| +48V output | s-c | 264 | 10 min | F1 | 0.028 | Unit shut down, no damage, no hazard. |
| +48V output | o-l | 264 | 9.5h | F1 | 0.225 | Output loaded to 0.775A. Max temperature measured on T1 coil = 92.0°C Amb = 25°C No damage, no hazard. |
| Supplementary information: s-c=short circuit, o-l=overload 1) Fuse current > fuse rating x 2.1 and repeated three times with same result. | | | | | | |

| C.2 | TABLE: transformers | | | | | | P |
|--|---|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---|--|
| Loc. | Tested insulation | Working voltage peak / V (2.10.2) | Working voltage rms / V (2.10.2) | Required electric strength (5.2) | Required clearance / mm (2.10.3) | Required creepage distance / mm (2.10.4) | Required distance thr. insul. (2.10.5) |
| For transformer type XF00399 | | | | | | | |
| T1 | Reinforced: Primary windings - Secondary windings | 480 | 261 | 3000Vac | 5.2 2) | 5.3 3) | 1) |
| T1 | Basic: Primary windings - Core | 480 | 261 | 1707Vac | 2.6 2) | 2.7 3) | 1) |
| T1 | Supplementary: Core - Secondary windings | 480 | 261 | 1707Vac | 2.6 2) | 2.7 3) | 1) |
| Loc. | Tested insulation | | | Test voltage/ V | Measured clearance / mm | Measured creepage dist./ mm | Measured distance thr. insul. / mm; number of layers |
| T1 | Reinforced: Primary windings - Secondary windings | | | 3000Vac | 6.0 | 6.0 | 2 or 3 layers |
| T1 | Basic: Primary windings - Core | | | 1707Vac | 3.0 | 3.0 | 2 or 3 layers |
| T1 | Supplementary: Core - Secondary windings | | | 1707Vac | 3.0 | 3.0 | 2 or 3 layers |
| supplementary information: | | | | | | | |
| 1)2 or 3 layers / 0.4 mm / Annex U | | | | | | | |
| 2) The equipment used at elevations < 3500m. Required clearance is 1.215 times under IEC60664-1 considering sea level 3500m. | | | | | | | |
| 3)Linear interpolation is used. | | | | | | | |

| C.2 | TABLE: transformers | | | | | | P |
|--|---|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---|--|
| Loc. | Tested insulation | Working voltage peak / V (2.10.2) | Working voltage rms / V (2.10.2) | Required electric strength (5.2) | Required clearance / mm (2.10.3) | Required creepage distance / mm (2.10.4) | Required distance thr. insul. (2.10.5) |
| For transformer type XF00435 and XF00436 | | | | | | | |
| T1 | Reinforced: Primary windings - Secondary windings | 472 | 254 | 3000Vac | 5.2 2) | 5.2 3) | 1) |
| T1 | Basic: Primary windings - Core | 472 | 254 | 1707Vac | 2.6 2) | 2.6 3) | 1) |
| T1 | Supplementary: Core - Secondary windings | 472 | 254 | 1707Vac | 2.6 2) | 2.6 3) | 1) |
| Loc. | Tested insulation | | | Test voltage/ V | Measured clearance / mm | Measured creepage dist./ mm | Measured distance thr. insul. / mm; number of layers |
| T1 | Reinforced: Primary windings - Secondary windings | | | 3000Vac | 6.0 | 6.0 | 2 or 3 layers |
| T1 | Basic: Primary windings - Core | | | 1707Vac | 3.0 | 3.0 | 2 or 3 layers |
| T1 | Supplementary: Core - Secondary windings | | | 1707Vac | 3.0 | 3.0 | 2 or 3 layers |
| supplementary information: | | | | | | | |
| 1)2 or 3 layers / 0.4 mm / Annex U | | | | | | | |
| 2) The equipment used at elevations < 3500m. Required clearance is 1.215 times under IEC60664-1 considering sea level 3500m. | | | | | | | |
| 3)Linear interpolation is used. | | | | | | | |

| | | |
|---|---------------------|---|
| C.2 | TABLE: transformers | P |
| Construction/Winding diagram/Component part No.:T1 Type XF00399 | | |

| C.2 | TABLE: transformers | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------------------|--------------------|--------------------------------|---------------|--------------------------------|----------------------|---------------------------|----------------------|--------------|----|-------------|-----|----------|------|----|----|-----------|----|-------------|----|-----------|-------|----|----|--------|----|-------------|-----|----------|------|----|----|-----------|----|-------------|----|-----------|-------|----|----|--------|----|-------------|-----|----------|------|----|----|-----------|----|-------------|-----|----------|------|----|----|-----------|-------------|-------------|--------------|---------|------|-----------|
| Construction/Winding diagram/Component part No.:T1 Type XF00399 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div>2. SCHEMATIC:</div> <div><div><div>PRI</div><div><div>1</div><div>4</div><div>3</div><div>2</div></div><div><div>N2</div><div>N4</div><div>E1, E2</div></div></div><div><div>SEC</div><div><div>5</div><div>6</div></div><div><div>N1, N3</div></div><div><div>● START</div><div>TF TUBE(透明)</div><div>3M 44# 3.0mm</div></div></div></div> <div><div>3. WINDING SEQUENCE:</div><div><div><div>PIN1~4</div><div><div>MARGIN TAPE</div><div>3.0mm</div><div>3M 44#</div><div>3.0mm</div><div>N4</div><div>N3</div><div>E2</div><div>N2</div><div>N2</div><div>E1</div><div>N1</div><div>BOBBIN</div><div>GAP 研磨</div></div></div><div><div>PIN5~8</div><div><div>TAPE LAYER</div><div>3L</div><div>3L</div><div>3L</div><div>1L</div><div>1L</div><div>1L</div><div>1L</div><div>2L</div></div></div></div></div> <div><div>4. WINDING TABLE</div><table><tr><th>Winding No (組別)</th><th>Margin Tape (擋牆膠帶)</th><th>PIN (腳位)</th><th>Wire&Wire Copper (線徑X股數)</th><th>Turns (圈數)</th><th>Winding Tape (繞線方式)</th><th>Tape Layer (膠帶層次)</th><th>Tube (套管)</th></tr><tr><td>N1</td><td>3.0mm/3.0mm</td><td>5~6</td><td>0.32ΦX2P</td><td>12Ts</td><td>密繞</td><td>2L</td><td>22*9/22*9</td></tr><tr><td>E1</td><td>3.0mm/3.0mm</td><td>~2</td><td>0.025x8mm</td><td>1.1Ts</td><td>背膠</td><td>1L</td><td>0/26*9</td></tr><tr><td>N2</td><td>3.0mm/3.0mm</td><td>1~4</td><td>0.37ΦX1P</td><td>63Ts</td><td>密繞</td><td>1L</td><td>24*9/24*9</td></tr><tr><td>E2</td><td>3.0mm/3.0mm</td><td>~2</td><td>0.025x8mm</td><td>1.1Ts</td><td>背膠</td><td>3L</td><td>0/26*9</td></tr><tr><td>N3</td><td>3.0mm/3.0mm</td><td>5~6</td><td>0.32ΦX2P</td><td>12Ts</td><td>密繞</td><td>3L</td><td>22*9/22*9</td></tr><tr><td>N4</td><td>3.0mm/3.0mm</td><td>3~2</td><td>0.20ΦX1P</td><td>15Ts</td><td>疏繞</td><td>3L</td><td>26*9/26*9</td></tr></table></div> <div><div>NOTE:</div><div><div>1. N1, N3均為密繞各占一層</div><div>2. N2 為密繞占三層餘,層間必須層隔,餘圈直接密繞其上,不須層隔.</div><div>3. N4 為疏繞占一層.</div><div>4. E1, E2 為內銅(背膠),從無線端起繞,接引線0.3Φx1P.</div></div></div> <tr><td>DESCRIPTION</td><td>TRANSFORMER</td><td>Customer P/N</td><td>XF00399</td><td>DATE</td><td>2008/1/17</td></tr> | | Winding No (組別) | Margin Tape (擋牆膠帶) | PIN (腳位) | Wire&Wire Copper (線徑X股數) | Turns (圈數) | Winding Tape (繞線方式) | Tape Layer (膠帶層次) | Tube (套管) | N1 | 3.0mm/3.0mm | 5~6 | 0.32ΦX2P | 12Ts | 密繞 | 2L | 22*9/22*9 | E1 | 3.0mm/3.0mm | ~2 | 0.025x8mm | 1.1Ts | 背膠 | 1L | 0/26*9 | N2 | 3.0mm/3.0mm | 1~4 | 0.37ΦX1P | 63Ts | 密繞 | 1L | 24*9/24*9 | E2 | 3.0mm/3.0mm | ~2 | 0.025x8mm | 1.1Ts | 背膠 | 3L | 0/26*9 | N3 | 3.0mm/3.0mm | 5~6 | 0.32ΦX2P | 12Ts | 密繞 | 3L | 22*9/22*9 | N4 | 3.0mm/3.0mm | 3~2 | 0.20ΦX1P | 15Ts | 疏繞 | 3L | 26*9/26*9 | DESCRIPTION | TRANSFORMER | Customer P/N | XF00399 | DATE | 2008/1/17 |
| Winding No (組別) | Margin Tape (擋牆膠帶) | PIN (腳位) | Wire&Wire Copper (線徑X股數) | Turns (圈數) | Winding Tape (繞線方式) | Tape Layer (膠帶層次) | Tube (套管) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N1 | 3.0mm/3.0mm | 5~6 | 0.32ΦX2P | 12Ts | 密繞 | 2L | 22*9/22*9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 | 3.0mm/3.0mm | ~2 | 0.025x8mm | 1.1Ts | 背膠 | 1L | 0/26*9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N2 | 3.0mm/3.0mm | 1~4 | 0.37ΦX1P | 63Ts | 密繞 | 1L | 24*9/24*9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E2 | 3.0mm/3.0mm | ~2 | 0.025x8mm | 1.1Ts | 背膠 | 3L | 0/26*9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N3 | 3.0mm/3.0mm | 5~6 | 0.32ΦX2P | 12Ts | 密繞 | 3L | 22*9/22*9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N4 | 3.0mm/3.0mm | 3~2 | 0.20ΦX1P | 15Ts | 疏繞 | 3L | 26*9/26*9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DESCRIPTION | TRANSFORMER | Customer P/N | XF00399 | DATE | 2008/1/17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

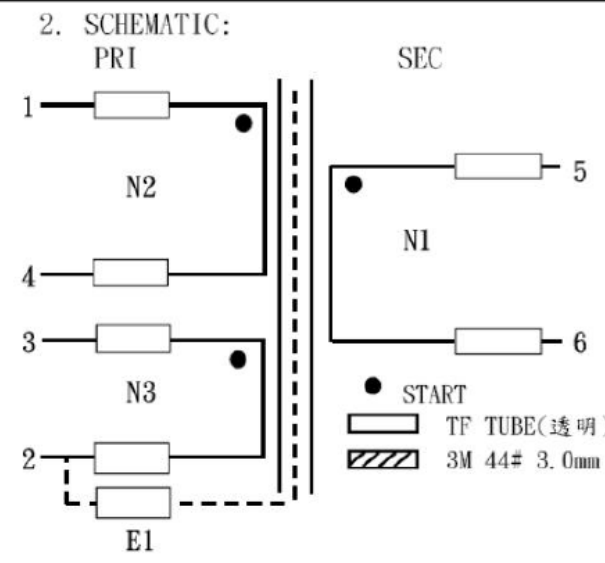
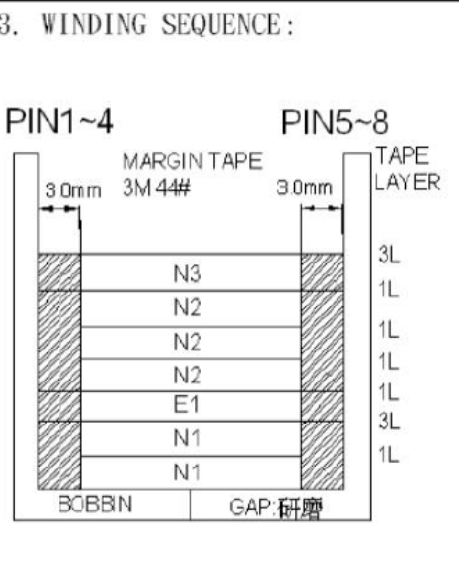
| | | |
|---|---------------------|---|
| C.2 | TABLE: transformers | P |
| Construction/Winding diagram/Component part No.:T1 Type XF00435 | | |

C.2

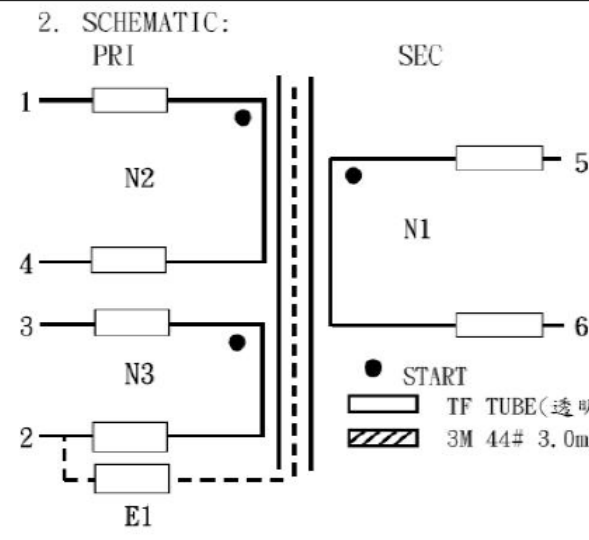
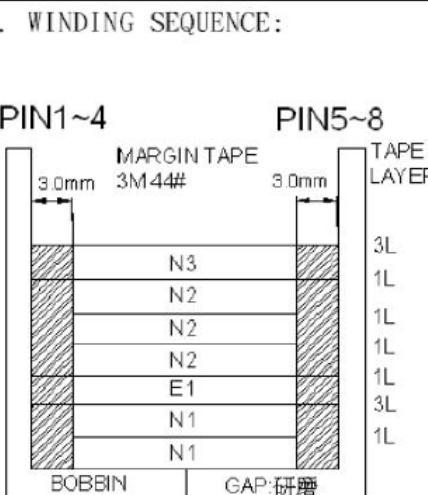
TABLE: transformers

P

Construction/Winding diagram/Component part No.:T1 Type XF00435

| | | | | | | | |
|---|-----------------------|--|-----------------------------|---------------|------------------------|----------------------|--------------|
| 2. SCHEMATIC: | | 3. WINDING SEQUENCE: | | | | | |
|  | |  | | | | | |
| 4. WINDING TABLE | | | | | | | |
| Winding No (組別) | Margin Tape (擋牆膠帶) | PIN (腳位) | Wire&Wire Copper (線徑X股數) | Turns (圈數) | Winding Tape (繞線方式) | Tape Layer (膠帶層次) | Tube (套管) |
| N1 | 3.0mm/3.0mm | 5~6 | 0.45ΦX2P | 15Ts | 密繞 | 3L | 19*11/19*11 |
| E1 | 3.0mm/3.0mm | ~2 | 0.025x8mm | 1.1Ts | 背膠 | 1L | 0/26*10 |
| N2 | 3.0mm/3.0mm | 1~4 | 0.45ΦX1P | 51Ts | 密繞 | 1L | 24*11/24*11 |
| N3 | 3.0mm/3.0mm | 3~2 | 0.3ΦX1P | 11Ts | 疏繞 | 3L | 26*11/26*11 |
| | | | | | | | |
| NOTE: | | | | | | | |
| 1. N1為密繞占兩層,層間必須層隔. | | | | | | | |
| 2. N2 為密繞占三層,層間必須層隔. | | | | | | | |
| 3. N3 為疏繞占一層. | | | | | | | |
| 4. E1 為內銅(背膠),從無線端起繞,接引線0.3Φx1P. | | | | | | | |
| DESCRIPTION | TRANSFORMER | Customer P/N | XF00435 | DATE | 2008/1/17 | | |

| | | |
|---|---------------------|---|
| C.2 | TABLE: transformers | P |
| Construction/Winding diagram/Component part No.:T1 Type XF00436 | | |

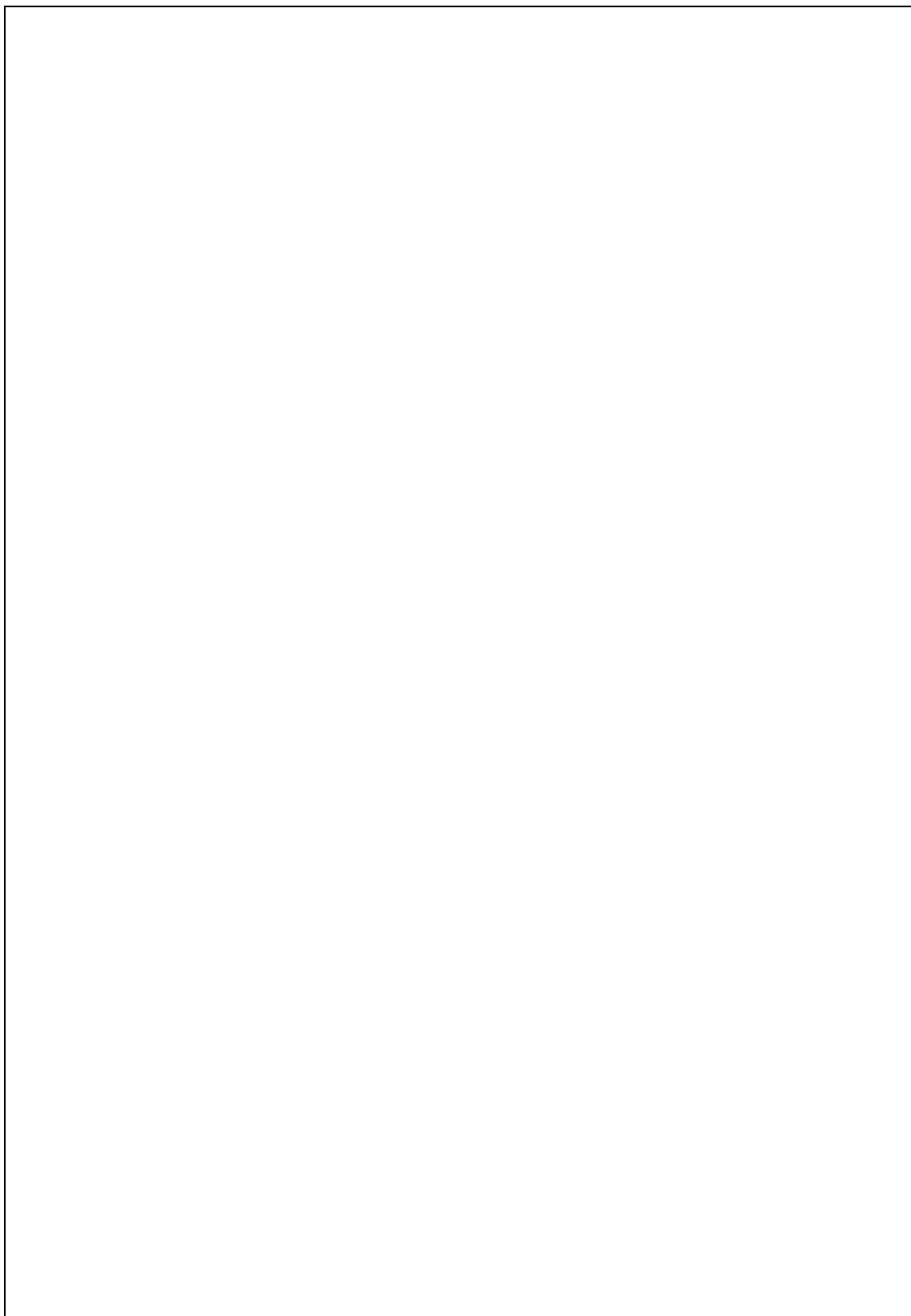
| | | | | | | | |
|---|-----------------------|--|--------------------------------|---------------|---------------------------|----------------------|--------------|
| C.2 | TABLE: transformers | P | | | | | |
| Construction/Winding diagram/Component part No.:T1 Type XF00436 | | | | | | | |
| 2. SCHEMATIC: | | 3. WINDING SEQUENCE: | | | | | |
|  | |  | | | | | |
| 4. WINDING TABLE | | | | | | | |
| Winding No (組別) | Margin Tape (檔牆膠帶) | PIN (腳位) | Wire&Wire Copper (線徑X股數) | Turns (圈數) | Winding Tape (繞線方式) | Tape Layer (膠帶層次) | Tube (套管) |
| N1 | 3.0mm/3.0mm | 5~6 | 0.50ΦX1P | 30Ts | 密繞 | 3L | 22*12/22*12 |
| E1 | 3.0mm/3.0mm | ~2 | 0.025x8mm | 1.1Ts | 背膠 | 1L | 0/26*9 |
| N2 | 3.0mm/3.0mm | 1~4 | 0.45ΦX1P | 51Ts | 密繞 | 1L | 24*11/24*11 |
| N3 | 3.0mm/3.0mm | 3~2 | 0.3ΦX1P | 10Ts | 疏繞 | 3L | 26*10/26*10 |
| | | | | | | | |
| NOTE: | | | | | | | |
| 1. N1為密繞占兩層,層間必須層隔. | | | | | | | |
| 2. N2 為密繞占三層,層間必須層隔. | | | | | | | |
| 3. N3 為疏繞占一層. | | | | | | | |
| 4. E1 為內銅(背膠),從無線端起繞,接引線0.3Φx1P. | | | | | | | |
| DESCRIPTION | TRANSFORMER | Customer P/N | XF00436 | DATE | 2008/1/17 | | |

Representative of all models









| IEC60950_1F - ATTACHMENT | | | |
|--------------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| ATTACHMENT TO TEST REPORT IEC 60950-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Information technology equipment – Safety – PART 1: GENERAL REQUIREMENTS | | | |
|---|--|--|--|
| Differences according to: EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 | | | |
| Attachment Form No.: EU_GD_IEC60950_1F | | | |
| Attachment Originator: SGS Fimko Ltd | | | |
| Master Attachment: Date (2014-02) | | | |
| Copyright © 2014 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved. | | | |

| EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS | | | |
|--|--|--|--|
|--|--|--|--|


| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z" | | P |
| Contents | Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions (A2:2013) Annex ZD (informative) IEC and CENELEC code designations for flexible cords | | P |
| General | Delete all the "country" notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2 | | P |
| General (A1:2010) | Delete all the "country" notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note | | P |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| General (A2:2013) | Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged. | | P |
| 1.3.Z1 | Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers. | No headphones or earphones connectors in the equipment. | N/A |
| (A12:2011) | In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010 | Considered | — |
| 1.5.1 (Added info*) | Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 * | Considered | — |
| 1.7.2.1 (A1:2010) | In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss. | No Portable Sound System | N/A |
| 1.7.2.1 (A12:2011) | In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments. | No Portable Sound System | N/A |
| | Zx Protection against excessive sound pressure from personal music players | | N/A |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|--|-----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>Zx.1 General</p> <p>This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none"> is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use. <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none"> while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used. <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"> hearing aid equipment and professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p> | Not a personal music player | N/A |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|--|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p> | Not a personal music players | N/A |
| | <p>Zx.2 Equipment requirements</p> <p>No safety provision is required for equipment that complies with the following:</p> <p>equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and</p> <p>a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1.</p> <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <p>a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and</p> <p>b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and</p> | Not a personal music players | N/A |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|---|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none"> 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. <p>For music where the average sound pressure (long term LAeq,T) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term LAeq,T) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p> | Not a personal music players | N/A |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|---|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>Zx.3 Warning</p> <p>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <ul style="list-style-type: none"> the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <div style="text-align: center;">  </div> <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p> | Not a personal music players | N/A |
| | Zx.4 Requirements for listening devices (headphones and earphones) | | |
| | <p>Zx.4.1 Wired listening devices with analogue input</p> <p>With 94 dBA sound pressure output LAeq,T, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV.</p> <p>This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control).</p> <p>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p> | Not a personal music players | N/A |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|---|-------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>Zx.4.2 Wired listening devices with digital input</p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output LAeq,T of the listening device shall be ≤ 100 dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p> | Not a personal music players | N/A |
| | <p>Zx.4.3 Wireless listening devices</p> <p>In wireless mode:</p> <p style="padding-left: 40px;">with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and</p> <p style="padding-left: 40px;">respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and</p> <p style="padding-left: 40px;">with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output LAeq,T of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p> | No wireless listening devices | N/A |
| | <p>Zx.5 Measurement methods</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p> | No wireless listening devices | N/A |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | | | | | | | |
|--|--|---|--------------------|--|-----|--|-----|--------------------------|-----|
| Clause | Requirement + Test | Result - Remark | Verdict | | | | | | |
| 2.7.1 | <p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> | The equipment is provided with fuses and complies with a). | P | | | | | | |
| | <p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p> | | | | | | | | |
| 2.7.2 | This subclause has been declared 'void'. | Considered | P | | | | | | |
| 3.2.3 | Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses. | The equipment is not intended for permanent connection to the mains | N/A | | | | | | |
| 3.2.5.1 | <p>Replace "60245 IEC 53" by "H05 RR-F";</p> <p>"60227 IEC 52" by "H03 VV-F or H03 VVH2-F";</p> <p>"60227 IEC 53" by "H05 VV-F or H05 VVH2-F2".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6 </td><td>0,75 ^{a)} </td></tr><tr><td>Over 6 up to and including 10 (0,75) ^{b)}</td><td>1,0 </td></tr><tr><td>Over 10 up to and including 16 (1,0) ^{c)}</td><td>1,5 </td></tr></table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p> | Up to and including 6 | 0,75 ^{a)} | Over 6 up to and including 10 (0,75) ^{b)} | 1,0 | Over 10 up to and including 16 (1,0) ^{c)} | 1,5 | Direct plug-in equipment | N/A |
| Up to and including 6 | 0,75 ^{a)} | | | | | | | | |
| Over 6 up to and including 10 (0,75) ^{b)} | 1,0 | | | | | | | | |
| Over 10 up to and including 16 (1,0) ^{c)} | 1,5 | | | | | | | | |
| 3.2.5.1 (A2:2013) | NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD | | N/A | | | | | | |

| IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN) | | | |
|--|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.3.4 | In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 Delete the fifth line: conductor sizes for 13 to 16 A | Rated current is <10A. | N/A |
| 4.3.13.6 (A1:2010) | Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation). | | N/A |
| | Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC. | | N/A |
| Annex H | Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2. | The unit does not emit X-ray radiation. | N/A |
| Bibliography | Additional EN standards. | Considered | — |

| | | |
|----|---|---|
| ZA | NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS | — |
|----|---|---|

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|--|--------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.2.4.1 | In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets. | Class II equipment | N/A |
| 1.2.13.14 | In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex. | | N/A |

| ZB ANNEX (normative) | | | |
|----------------------------------|---|--------------------|---------|
| SPECIAL NATIONAL CONDITIONS (EN) | | | |
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.5.7.1 | In Finland, Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2. | No such Resistors. | N/A |
| 1.5.8 | In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V). | | P |
| 1.5.9.4 | In Finland, Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex. | No such component. | N/A |

| ZB ANNEX (normative) | | | |
|----------------------------------|---|--------------------|---------|
| SPECIAL NATIONAL CONDITIONS (EN) | | | |
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.7.2.1 | <p>In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p> <p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>"Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)."</p> | Class II equipment | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p> | | |
| 1.7.2.1 (A2:2013) | <p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in Denmark shall be as follows: In Denmark: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”</p> | Class II equipment | N/A |
| 1.7.5 | <p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p> <p>For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p> | There are no socket outlets providing power to other appliances. | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|---|----------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.7.5 (A2:2013) | <p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011.</p> <p>For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a.</p> <p>Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b.</p> <p>Justification the Heavy Current Regulations, 6c</p> | No such socket-outlets provided. | N/A |
| 2.2.4 | In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex. | No TNV circuits. | N/A |
| 2.3.2 | In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex. | No TNV circuits. | N/A |
| 2.3.4 | In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex. | No TNV circuits. | N/A |
| 2.6.3.3 | In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A. | | N/A |
| 2.7.1 | In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met. | Considered | P |
| 2.10.5.13 | In Finland, Norway and Sweden , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex. | No TNV circuit | N/A |
| 3.2.1.1 | <p>In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <p>SEV 6532-2:1991 Plug Type 15 3P+N+PE 250/400 V, 10 A</p> | Direct plug-in equipment | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|--|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE .250 V, 16 A</p> | | |
| 3.2.1.1 | <p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p> | Direct plug-in equipment | N/A |
| 3.2.1.1 (A2:2013) | <p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p> | Direct plug-in equipment | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|--|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.2.1.1 | <p>In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p> | Direct plug-in equipment | N/A |
| 3.2.1.1 | <p>In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p> | Direct plug-in equipment | N/A |
| 3.2.1.1 | <p>In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p> | Direct plug-in equipment | N/A |
| 3.2.4 | <p>In Switzerland, for requirements see 3.2.1.1 of this annex.</p> | | N/A |
| 3.2.5.1 | <p>In the United Kingdom, a power supply cord with conductor of 1,25 mm² is allowed for equipment with a rated current over 10 A and up to and including 13 A.</p> | Direct plug-in equipment | N/A |
| 3.3.4 | <p>In the United Kingdom, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is:</p> <ul style="list-style-type: none"> • 1,25 mm² to 1,5 mm² nominal cross-sectional area. | Direct plug-in equipment | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.3.6 | In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply. | Must be checked when market into the country | -- |
| 4.3.6 | In Ireland , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997. | EU plug has been checked | P |
| 5.1.7.1 | In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: <ul style="list-style-type: none"> • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT. | Touch current does not exceed 3.5 mA r.m.s. | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|--|------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.1.2.1 (A1:2010) | <p>In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. | No TNV circuits. | N/A |
| | <p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. | | N/A |

| ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN) | | | |
|--|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.1.2.2 | In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON. | | N/A |
| 7.2 | In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM. | | N/A |
| 7.3 | In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex. | | N/A |
| 7.3 | In Norway , for installation conditions see EN 60728-11:2005. | | N/A |

Annex ZD
(informative)

IEC and CENELEC code designations for flexible cords

| Type of flexible cord | Code designations | |
|--|-------------------|----------------------|
| | IEC | CENELEC |
| PVC insulated cords | | |
| Flat twin tinsel cord | 60227 IEC 41 | H03VH-Y |
| Light polyvinyl chloride sheathed flexible cord | 60227 IEC 52 | H03VV-F H03VVH2-F |
| Ordinary polyvinyl chloride sheathed flexible cord | 60277 IEC 53 | H05VV-F H05VVH2-F |
| Rubber insulated cords | | |
| Braided cord | 60245 IEC 51 | H03RT-F |
| Ordinary tough rubber sheathed flexible cord | 60245 IEC 53 | H05RR-F |
| Ordinary polychloroprene sheathed flexible cord | 60245 IEC 57 | H05RN-F |
| Heavy polychloroprene sheathed flexible cord | 60245 IEC 66 | H07RN-F |
| Cords having high flexibility | | |
| Rubber insulated and sheathed cord | 60245 IEC 86 | H03RR-H |
| Rubber insulated, crosslinked PVC sheathed cord | 60245 IEC 87 | H03RV4-H |
| Crosslinked PVC insulated and sheathed cord | 60245 IEC 88 | H03V4V4-H |

ATTACHMENT: AUSTRALIAN / NEW ZEALAND DIFFERENCES

Test results according to CB BULLETIN

| Clause | Requirements – Test | Result – Remark | Verdict | | | | | | | | | | | | | | | | | | | |
|--|--|---|--|--|------------------------------|--|-----|--|--------------------------------|------------------|----------|--------------------------------|------|----------|---------------------------------|---------------------|----------|--------------------------------|--------------------|--------|--------------------------|-----|
| ZZ.1 Introduction | | | | | | | | | | | | | | | | | | | | | | |
| This Appendix sets out variations and additional requirements to cover issues which have not been addressed by the International Standard. These variations indicate national variations for purposes of the IECEE CB System and will be published in the IECEE CB Bulletin. | | | | | | | | | | | | | | | | | | | | | | |
| ZZ.2 Variations | | | | | | | | | | | | | | | | | | | | | | |
| The following variations apply to the source text.: | | | | | | | | | | | | | | | | | | | | | | |
| 1.2.12.20 1 | Add the definition of “POTENTIAL IGNITION SOURCE” | Considered. | P | | | | | | | | | | | | | | | | | | | |
| 1.5.1 | 1. Add the following to the end of the first paragraph: ‘or the relevant Australian/New Zealand Standard.’ 2. In NOTE 1, add the following after the word ‘standard’: ‘or an Australian/New Zealand Standard’. | All critical components are IEC and UL certified. | P | | | | | | | | | | | | | | | | | | | |
| 1.5.2 | Add the following to the end of first and third dash items: ‘or the relevant Australian/New Zealand Standard’. | All critical components are IEC and UL certified. | P | | | | | | | | | | | | | | | | | | | |
| 3.2.5.1 | Modify Table 3B as follows: Delete the first four rows and replace with the following: <table><tr><th rowspan="3">RATED CURRENT of equipment A</th><th colspan="2">Minimum conductor sizes</th></tr><tr><th>Nominal cross-sectional area</th><th>AWG or kcmil [cross-sectional area in mm²] see Note 2</th></tr><tr><th>mm²</th><th></th></tr><tr><td>Over 0.2 up to and including 3</td><td>0,5 ^a</td><td>18 [0,8]</td></tr><tr><td>Over 3 up to and including 7.5</td><td>0,75</td><td>16 [1,3]</td></tr><tr><td>Over 7.5 up to and including 10</td><td>(0,75) ^b</td><td>16 [1,3]</td></tr><tr><td>Over 10 up to and including 16</td><td>(1,0) ^c</td><td>14 [2]</td></tr></table> Delete Note 1. Delete Footnote a and replace with the following: a This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0,5 mm² three-core supply flexible cords are not permitted; see AS/NZS 3191). | RATED CURRENT of equipment A | Minimum conductor sizes | | Nominal cross-sectional area | AWG or kcmil [cross-sectional area in mm²] see Note 2 | mm² | | Over 0.2 up to and including 3 | 0,5 ^a | 18 [0,8] | Over 3 up to and including 7.5 | 0,75 | 16 [1,3] | Over 7.5 up to and including 10 | (0,75) ^b | 16 [1,3] | Over 10 up to and including 16 | (1,0) ^c | 14 [2] | Direct plug in equipment | N/A |
| RATED CURRENT of equipment A | Minimum conductor sizes | | | | | | | | | | | | | | | | | | | | | |
| | Nominal cross-sectional area | | AWG or kcmil [cross-sectional area in mm²] see Note 2 | | | | | | | | | | | | | | | | | | | |
| | mm² | | | | | | | | | | | | | | | | | | | | | |
| Over 0.2 up to and including 3 | 0,5 ^a | 18 [0,8] | | | | | | | | | | | | | | | | | | | | |
| Over 3 up to and including 7.5 | 0,75 | 16 [1,3] | | | | | | | | | | | | | | | | | | | | |
| Over 7.5 up to and including 10 | (0,75) ^b | 16 [1,3] | | | | | | | | | | | | | | | | | | | | |
| Over 10 up to and including 16 | (1,0) ^c | 14 [2] | | | | | | | | | | | | | | | | | | | | |

| | | | |
|----------|---|--|-----|
| 4.1.201 | <p>Insert a new Clause 4.1.201 after Clause 4.1 as follows:</p> <p>4.1.201 Display devices used for television Purposes</p> <p>Display devices which may be used for television purposes, with a mass of 7 kg or more, shall comply with the requirements for stability and mechanical hazards, including the additional stability requirements for television receivers, specified in AS/NZS 60065.</p> | | N/A |
| 4.3.6 | <p><i>Delete</i> the third paragraph and replace with the following:</p> <p>Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.</p> | Not intended to plug directly into a wall socket-outlet. | N/A |
| 4.3.13.5 | <p><i>Add</i> the following to the end of first paragraph: 'or AS/NZS 2211.1'.</p> | No laser used, LEDs provided are diffuse. | N/A |
| | <p>Add the following after "IEC 60825-2" in line two of the first paragraph:</p> <p>Or AS/NZS 60825.2</p> | | N/A |
| 4.7 | <p>Add the following new paragraph to the end of the clause:</p> <p>For alternative tests refer to Clause 4.7.201.</p> | Alternative tests not performed. | N/A |

| | | | |
|---------|---|--|-----|
| 4.7.201 | <p><i>Insert a new Clause 4.7.201 after Clause 4.7.3.6 as follows:</i></p> <p>4.7.201 Resistance to fire – Alternative tests</p> <p>4.7.201.1 General</p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> - small mechanical parts, the mass of which does not exceed 4g, such as mounting parts, gears, cams, belts and bearings; - small electrical components, such as capacitors with a volume not exceeding 1,750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. <p>NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p> <p>Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5.</p> <p>For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5.</p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p> <p>4.7.201.2 Testing of non-metallic materials</p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> | All materials have suitable flame class. Alternative tests are not required. | N/A |
|---------|---|--|-----|

| 4.7.201 | <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall not be carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part.</p> <p>4.7.201.3 Testing of insulating materials</p> <p>Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C</p> <p>The test shall also be carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE: Contacts in components such as switch contacts are considered to be connections.</p> <p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested.</p> <p>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:</p> <table><tr><th>Clause of AS/NZS 60695.11.5</th><th>Change</th></tr><tr><td>9 Test procedure</td><td></td></tr><tr><td>9.2 Application of needle-flame</td><td><p>Replace the first paragraph with:</p><p>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner</p><p>Replace the second paragraph with:</p><p>The duration of application of the test flame shall be 30 s ± 1 s.</p></td></tr><tr><td>9.3 Number of test specimens</td><td><p>Replace with:</p><p>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</p></td></tr><tr><td>11 Evaluation of test results</td><td><p>Replace with:</p><p>The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</p></td></tr></table> | Clause of AS/NZS 60695.11.5 | Change | 9 Test procedure | | 9.2 Application of needle-flame | <p>Replace the first paragraph with:</p> <p>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner</p> <p>Replace the second paragraph with:</p> <p>The duration of application of the test flame shall be 30 s ± 1 s.</p> | 9.3 Number of test specimens | <p>Replace with:</p> <p>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</p> | 11 Evaluation of test results | <p>Replace with:</p> <p>The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</p> | All materials have suitable flame class. Alternative tests are not required. | N/A |
|---------------------------------|---|-----------------------------|--------|------------------|--|---------------------------------|--|------------------------------|---|-------------------------------|--|--|-----|
| Clause of AS/NZS 60695.11.5 | Change | | | | | | | | | | | | |
| 9 Test procedure | | | | | | | | | | | | | |
| 9.2 Application of needle-flame | <p>Replace the first paragraph with:</p> <p>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner</p> <p>Replace the second paragraph with:</p> <p>The duration of application of the test flame shall be 30 s ± 1 s.</p> | | | | | | | | | | | | |
| 9.3 Number of test specimens | <p>Replace with:</p> <p>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</p> | | | | | | | | | | | | |
| 11 Evaluation of test results | <p>Replace with:</p> <p>The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</p> | | | | | | | | | | | | |

| | | | |
|---------|--|--|-----|
| 4.7.201 | <p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10, provided that the sample tested was not thicker than the relevant part.</p> <p>4.7.201.4 Testing in the event of non-extinguishing material</p> <p>If the parts, other than enclosures, do not withstand the glow-wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested.</p> <p>NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p> | All materials have suitable flame class. Alternative tests are not required. | N/A |
|---------|--|--|-----|

| | | | |
|---------|--|--|-----|
| 4.7.201 | <p>4.7.201.5 Testing of printed boards</p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE.</p> <p>The test is not carried out if the –</p> <ul style="list-style-type: none"> - Printed board does not carry any POTENTIAL IGNITION SOURCE; - Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category FV-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or - Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category FV-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <p>Compliance shall be determined using the smallest thickness of the material.</p> <p>NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power from more than 2 min when the circuit supplied is disconnected.</p> | All materials have suitable flame class. Alternative tests are not required. | N/A |
| 6.2.2 | <p><i>For Australia only, delete the first paragraph and Note, and replace with the following:</i></p> <p>In Australia only, compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2.</p> | No TNV circuitry. | N/A |

| | | | |
|---------|--|-------------------|-----|
| 6.2.2.1 | <p>For Australia only, delete the first paragraph including the Notes, and replace with the following:</p> <p>In Australia only, the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator reference 1 of Table N.1. The interval between successive impulses is 60 s and the initial voltage, U_c, is:</p> <ul style="list-style-type: none"> - for 6.2.1 a): 7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and - for 6.2.1 b) and 6.2.1 c): 1.5 kV. <p>NOTE 201: The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines.</p> <p>NOTE 202: The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</p> | No TNV circuitry. | N/A |
| 6.2.2.2 | <p>For Australia only, delete the second paragraph including the Note, and replace with the following:</p> <p>In Australia only, the a.c. test voltage is:</p> <ul style="list-style-type: none"> - for 6.2.1 a): 3 kV; and - for 6.2.1 b) and 6.2.1 c): 1.5 kV. <p>NOTE 201: Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.</p> <p>NOTE 202: The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.</p> | No TNV circuitry. | N/A |
| 7.3 | <p>Add the following before the first paragraph:</p> <p>Equipment providing functions that fall only within the scope of AS/NZS 60065 and that incorporate a PSTN interface, are not required to comply with this Clause where the only ports provided on the equipment, in addition to a coaxial cable connection and a PSTN interface, are audio or video ports and analogue or data ports not intended to be used for telecommunications purposes.</p> | No TNV circuitry. | N/A |
| Annex P | <p>Add the following Normative References:</p> <p>AS/NZS 3191, Electric flexible cords</p> <p>AS/NZS 3112, Approval and test specification—Plugs and socket-outlets</p> | Considered. | P |

| | | | |
|-------|---|-------------|---|
| Index | <div>1. <i>Insert the following between 'asbestos, not to be used as insulation' and 'attitude see orientation':</i></div> <div>ASINZS 3112 4.3.6</div> <div>ASINZS 3191 3.2.5.1 (Table 3B)</div> <div>ASINZS 60064 4.1.201</div> <div>ASINZS 60695.2.11 4.7.201.2, 4.7.201.3</div> <div>ASINZS 60695.11.10 4.7.201.1, 4.7.201.5</div> <div>ASINZS 60695.11.5 4.7.201.3</div> <div>ASINZS 60825.1 4.3.13.5.1</div> <div>ASINZS 60825.2 4.3.13.5.1'</div> <div>2. <i>Insert the following between 'positive temperature coefficient (PTC) device' and 'powder':</i></div> <div>potential ignition source 1.2.201, 4.7.201.3, 4.7.201.5</div> | Considered. | — |
|-------|---|-------------|---|

| National Differences for Canada | | | |
|--|--|--|-----|
| <p>Canada and the United States of America have adopted a single, bi-national standard, CAN/CSA-C22.2 NO. 60950-1-07+Amendment 1:2011, which is based on IEC 60950-1, Second Edition +Amendment 2. This bi-national standard should be consulted for further details on the national conditions and differences summarized below.</p> | | | |
| <p>SPECIAL NATIONAL CONDITIONS</p> <p>The following is a summary of the key national differences based on national regulatory requirements, such as the Canadian Electrical Code (CEC) Part and the Canadian Building Code, which are referenced in legislation and which form the basis for the rules and practices followed in electrical and building installations.</p> | | | |
| | Special national conditions | | |
| 1.1.1 | All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. | Direct plug in equipment | P |
| | Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75. | Equipment acceptable for connect to 20A Protection. | P |
| 1.1.2 | Baby monitors are required to comply with ASTM F2951, Consumer Safety Specification for Baby Monitors | | N/A |
| 1.4.14 | For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A. | Equipment acceptable for connect to 20A Protection. | P |
| 1.5.5 | For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the CEC/NEC. | No external interconnecting flexible cord or cable assemblies. | N/A |
| | For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC are required to have special construction features and identification markings. | | N/A |
| 1.7.1 | Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. | Only one phase conductor. | N/A |
| | A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and | | N/A |
| | - if it is part of a range that extends into the Table 2 "Normal Operating Conditions." | | N/A |
| | A voltage rating is not be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions." | | N/A |
| 1.7.7 | Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC are marked with the voltage rating and "Class 2" or equivalent. | No connectors and field wiring terminal for external Class 2 circuits. | N/A |

| | | | |
|---------|---|---|-----|
| | - Marking is located adjacent to the terminals | | N/A |
| | - Marking is visible during wiring | | N/A |
| 2.5 | Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable. | No such component. | N/A |
| 2.6 | Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-112 and 10-906(8). | Class II equipment | N/A |
| 2.7.1 | Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. | No standard supply outlets, receptacles, lamp holders or such transformers. | N/A |
| | Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection. | | N/A |
| 3.2 | Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC. | Direct plug in equipment | N/A |
| 3.2.1 | Attachment plugs of power supply cords are rated not less than 125 percent of the rated current of the equipment. | Direct plug in equipment | N/A |
| 3.2.1.2 | Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment comply with special earthing, wiring, marking and installation instruction requirements. | The Equipment not connected to DC power system. | N/A |
| 3.2.3 | Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs. | The equipment is not permanently connected to the mains. | N/A |
| 3.2.5 | Power supply cords are no longer than 4.5 m in length. | Direct plug in equipment | N/A |
| | Minimum cord length is 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. | | N/A |
| | Flexible power supply cords are compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC. | | N/A |
| 3.2.9 | Permanently connected equipment have a suitable wiring compartment and wire bending space. | The equipment is not permanently connected to the mains. | N/A |
| 3.3 | Wiring terminals and associated spacings for field wiring connections comply with CSA C22.2 No. 0. | Direct plug in equipment | N/A |
| 3.3.3 | Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²). | Direct plug in equipment | N/A |
| 3.3.4 | Terminals for permanent wiring, including protective earthing terminals, are suitable for Canadian/US wire gauge sizes, are | Direct plug in equipment | N/A |

| | | | |
|------------|---|--|-----|
| | - rated 125 percent of the equipment rating, and | | N/A |
| | - are specially marked when specified (1.7.7). | | N/A |
| 3.4.2 | Motor control devices are provided for cord-connected equipment with a motor if the equipment is rated more than 12 A, | No such motors in the equipment. | N/A |
| | - or if the motor has a nominal voltage rating greater than 120 V | | N/A |
| | - or is rated more than 1/3 hp (locked rotor current over 43 A) | | N/A |
| 3.4.8 | Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position. | No disconnect switch in the equipment. | N/A |
| 3.4.11 | For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the computer room remote power-off circuit. | No such battery. | N/A |
| 4.3.12 | The maximum quantity of flammable liquid stored in equipment complies with NFPA 30. | No flammable liquids within the equipment. | N/A |
| 4.3.13.5.1 | Equipment with lasers meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable. | No laser is used. | N/A |
| 4.7 | For computer room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge. | The equipment has no combustible area greater than 27 cubic feet. | N/A |
| 4.7.3.1 | For computer room applications, enclosures with combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less. | The equipment has no combustible material greater than 0.93m ² or single dimension greater than 1.8m. | N/A |
| | For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less. | | N/A |
| Annex H | Equipment that produces ionizing radiation comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable. | No such part. | N/A |
| | Other National Differences | | |

| | | | |
|---------|---|---|-----|
| 1.5.1 | Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables. | Critical components are IEC certified. See list of critical components in main CB report (§ 1.5.1). There may be additional requirements for components in CSA. | — |
| 1.6.1.2 | A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. | The Equipment not connected to DC power system. | N/A |
| | This maximum operating voltage includes consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment. | | N/A |
| 2.3.1 | For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions. | No TNV circuitry. | N/A |
| 2.3.2.1 | In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts. | No TNV circuitry. | N/A |
| 2.6.3.4 | Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified. | Class II equipment | N/A |
| 4.2.8.1 | Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT. | No CRTs in the equipment. | N/A |
| 4.3.2 | Equipment with handles complies with special loading tests. | The equipment has no handles. | N/A |
| 4.3.8 | Battery packs for both portable and stationary applications are required to comply with special component requirements. | | N/A |

| | | | |
|-----------|---|--|-----|
| 5.1.8.3 | Equipment intended to receive telecommunication ringing signals comply with a special touch current measurement tests. | No TNV circuitry. | N/A |
| 5.3.7 | Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are overloaded. | See main test report table 5.3. | P |
| | During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary | | P |
| 6.4 | Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC. | No TNV circuitry. | N/A |
| Annex EE | Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger. | This equipment is not Document shredding machines. | N/A |
| M.2 | Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions. | No TNV circuitry. | N/A |
| Annex NAD | Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear comply with special acoustic pressure requirements. | No TNV circuitry. | N/A |

ATTACHMENT: KOREAN DIFFERENCES
Test results according to CB BULLETIN

| Clause | Requirements – Test | Result – Remark | Verdict |
|---------|---|--|---------|
| 1.5.101 | Addition Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305 and 8305). | Direct plug in equipment | — |
| 7 | Addition EMC The apparatus shall comply with the relevant CISPR standards. | Compliance with EMC must be considered when marketed in Korea. | — |

ATTACHMENT: SINGAPORE DIFFERENCES to IEC 60950-1 (ed.2)

| No | Item | Requirement | Result - Remark | Verdict |
|--|---|--|---|---------|
| <p>The following is the national differences in accordance with safety authority website www.safety.org.sg/ , ref. Singapore Consumer Protection (Safety Requirements) - Information booklet - chapter 7 (page 20 - 21). Based on information by Singapore NCB – PSB Corp.</p> | | | | |
| <p>7 SAFETY AUTHORITY'S REQUIREMENTS</p> <p>The Safety Authority monitors the safety of the controlled goods sold in Singapore by investigating all complaints, incidents and accidents reported to the authority. Experiences gained are translated into the Safety Authority's Requirements. These requirements are to be fulfilled in addition to the applicable safety standards.</p> | | | | |
| <p>Applicable to all electrical products</p> | | | | |
| 3 | All appliances | All appliances must be tested to 230 VAC. | AC Input: Tested within the range 100-240V~ | P |
| 4 | Voltage selector (voltage mis-match test) | Appliance fitted with voltage selector shall be tested as follows: Connect appliance to 230 VAC mains with voltage selector switch to settings not suitable for operation at 230 VAC. | No voltage selector | N/A |
| 5 | Tropical condition test | All appliances (with tropical test requirements in applicable Standards) shall comply with the tropical condition test as stated in the relevant IEC Standards. | Complied with requirement, refer to main test report. | P |
| 6 | Class I appliances (3-pin mains plug) | All Class I appliances must be fitted with 3-pin mains plugs complied with SS 145/SS 472 that are registered with the Safety Authority. | Direct plug in equipment | N/A |
| 7 | Class II appliances (mains plug) | a) All Class II appliances must be fitted with 2-pin mains plug (Appendix W) complied with IEC 83: 1975 (Standard C5, Version II) or EN 50075: 1991. b) Class II appliances that are fitted with 3-pin mains plugs must use plugs that are complied with SS 145 and registered with the Safety Authority. | Must considered when market into Singapore. | -- |

| | | | | |
|---------------------------------|--|--|--|-----|
| 8 | Appliances rated \geq 3 kW or connected to fixed wiring | Electric appliance \geq 3 kW must be connected to fixed wiring. All connection to fixed wiring must be in accordance with Code of Practice CP5. | The rated power is less than 3kW. | N/A |
| 9 | Detachable power cord set (consists of mains plug, mains cord and appliance connector) | Detachable power cord set must be listed in the test report critical component list. | Direct plug in equipment | N/A |
| 10 | Circuit diagrams | Circuit diagrams must be indicated with component's values for products tested to IEC 60065 and IEC 60950. | Must be checked when market to Singapore. | — |
| 11 | Circuit diagrams of electronic modules in electrical appliances | Circuit diagrams of the electronic modules in the electrical appliances must be provided. | Provided. | P |
| 12 | Controlled goods likely to be treated as toy by children | Controlled goods, having an enclosure, which is shaped and decorated so that it is likely to be treated as a toy by children, shall not be accepted for certification and registration. | The equipment is not treated as toy by children. | N/A |
| 13 | Controlled goods with rated voltage that are not suitable for local supply voltage | a) Controlled goods with rated voltage that are not suitable for local supply voltage will not be allowed for registration unless they are supplied with step-down isolating transformer and are tested together with the transformer as a complete set. b) A test to ensure that the controlled goods shut-down/fail safely should the consumer accidentally plugs the product directly into the 230 V mains supply socket outlet without using the isolating stepdown transformer shall be conducted. | | N/A |
| Applicable to AC adaptor | | | | |
| 15 | 3-pin AC adaptor | Test report showing that the 3-pin complied with sub-clauses 12.1 & 12.3 of SS 246 must be submitted. | Direct plug in equipment | N/A |
| 16 | 2-pin AC adaptor | The 2-pin (Appendix W) shall comply with IEC 83: 1975 (Standard C5, Version II) or EN 50075 | Direct plug in equipment | N/A |
| 17 | Detachable power supply cord set not supplied by Registered Supplier | Registered Supplier who is not supplying the detachable power supply cord set together with the AC Adaptor must provide written instruction to its customer on the type of approved detachable power | Direct plug in equipment | N/A |

| | | | | |
|---|--|--|---|-----|
| | | cord set to use. | | |
| 18 | AC Adaptor incorporated with 13A socket-outlet | Additional tests clauses to 13, 17 and 18 of SS 246 would be required. | | N/A |
| Applicable to computer products | | | | |
| 19 | CD/DVD ROM (used in personal computer) | Test certificate showing that CD/DVD ROM has complied with IEC 825 must be provided. | The equipment does not consist of CD/DVD ROM. | N/A |
| 20 | Modem Card (used in personal computer) | Modem card incorporated in the personal computer must be tested at set level (sub-clauses 5.1 & 6 of IEC 60950) or at component level. | The equipment does not consist of Modem Card. | N/A |
| 21 | Powerline Ethernet Adaptor incorporated with 13A socket-outlet | Additional tests to clauses 13, 17 and 18 of SS 246 would be required. | Not used | N/A |
| Applicable to plasma/LCD display monitor | | | | |
| 42 | Plasma/LCD display monitor with TV tuner | Plasma/LCD display monitor tested to IEC 60950 would require additional test to clauses 9 (related to antenna only), 10.1, 10.2, 10.3 and 12.5 of IEC 60065. | No TV tuner provided. | N/A |

| | |
|--|------------------------------------|
| <p align="center">ATTACHMENT TO TEST REPORT IEC 60950-1 United State NATIONAL DIFFERENCES Information technology equipment – Safety –</p> <p align="center">Part 1: General requirements</p> | |
| Differences according to | UL 60950-1, edition 2, Amendment 2 |
| Attachment Form No. | US_ND_IEC60950_1F |
| Attachment Originator..... | UL |
| Master Attachment | Date (2014-01) |
| Copyright © 2014 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved. | |

| | Special national conditions | | |
|--------|--|--|-----|
| 1.1.1 | All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. | Must be evaluated when market in to country. | — |
| | Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75. | Must be evaluated when market in to country. | — |
| 1.4.14 | For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A. | Considered. | P |
| 1.5.5 | For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the CEC/NEC. | No interconnecting cables. | N/A |
| | For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC are required to have special construction features and identification markings. | | N/A |
| 1.7.1 | Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. | Single phase only. | N/A |
| | A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and | | N/A |
| | - if it is part of a range that extends into the Table 2 "Normal Operating Conditions." | | N/A |

| | | | |
|---------|---|---|-----|
| | A voltage rating is not to be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions." | | N/A |
| 1.7.7 | Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC are marked with the voltage rating and "Class 2" or equivalent. | No connectors and field wiring terminal for external Class 2 or Class 3 circuits. | N/A |
| | - Marking is located adjacent to the terminals | | N/A |
| | - Marking is visible during wiring | | N/A |
| 2.5 | Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable. | No such fuse. | N/A |
| 2.6 | Equipment with isolated ground (earthing) receptacles are required to comply with NEC 250.146(D) and CEC 10-112 and 10-906(8). | Class II equipment | N/A |
| 2.7.1 | Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. | No special external branch circuit overcurrent devices provided. | N/A |
| | Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection. | | N/A |
| 3.2 | Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC. | Direct plug in equipment | N/A |
| 3.2.1 | Attachment plugs of power supply cords are rated not less than 125 per cent of the rated current of the equipment. | Direct plug in equipment | N/A |
| 3.2.1.2 | Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment comply with special earthing, wiring, marking and installation instruction requirements. | Not connection to DC mains supply. | N/A |
| 3.2.3 | Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs. | The equipment is not permanently connected to the mains. | N/A |
| 3.2.5 | Power supply cords are no longer than 4.5 m in length. | Direct plug in equipment | N/A |
| | Minimum cord length is 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. | | N/A |
| | Flexible power supply cords are compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC. | | N/A |
| 3.2.9 | Permanently connected equipment have a suitable wiring compartment and wire bending space. | The equipment is not permanently connected to the mains. | N/A |

| | | | |
|----------|---|---|-----|
| 3.3 | Wiring terminals and associated spacings for field wiring connections comply with CSA C22.2 No. 0. | Direct plug in equipment | N/A |
| 3.3.3 | Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²). | Direct plug in equipment | N/A |
| 3.3.4 | Terminals for permanent wiring, including protective earthing terminals, are suitable for Canadian/US wire gauge sizes, are | Direct plug in equipment | N/A |
| | - rated 125 per cent of the equipment rating, and | | N/A |
| | - are specially marked when specified (1.7.7). | | N/A |
| 3.3.5 | Revise first column of Table 3E to "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration." | | N/A |
| 3.4.2 | Motor control devices are provided for cord-connected equipment with a motor if the equipment is rated more than 12 A, | No such motor. | N/A |
| | - or if the motor has a nominal voltage rating greater than 120 V | | N/A |
| | - or is rated more than 1/3 hp (locked rotor current over 43 A) | | N/A |
| 3.4.8 | Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position. | No switch acting as disconnect device | N/A |
| 3.4.11 | For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the computer room remote power-off circuit. | No battery in the equipment. | N/A |
| 4.3.12 | The maximum quantity of flammable liquid stored in equipment complies with NFPA 30. | No flammable liquids within the equipment. | N/A |
| 4.3.13.5 | Equipment with lasers meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable. | No laser product used. | N/A |
| 4.7 | For computer room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge. | The equipment has no combustible area greater than 0.76 m ³ . | N/A |
| 4.7.3.1 | For computer room applications, enclosures with combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less. | The equipment has no combustible material greater than 0.9m ² or single dimension greater than 1.8m. | N/A |
| | For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less. | | N/A |



| | | | |
|---------|--|---|-----|
| Annex H | Equipment that produces ionizing radiation complies with U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370). | The equipment does not produce ionizing radiation | N/A |
| | Other National Differences | | |
| 1.5.1 | Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, surge protective devices, tubing, vehicle battery adapters, wire connectors, and wire and cables. | Critical components are IEC certified. See list of critical components in main CB report (§1.5.1). There may be additional requirements for components in US. | — |
| 1.6.1.2 | A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. | Not connection to DC mains supply. | N/A |
| | This maximum operating voltage includes consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment. | | N/A |
| 2.3.1 | For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions. | No TNV Circuit. | N/A |
| 2.3.2.1 | In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts. | No TNV Circuit. | N/A |
| 2.6.3.4 | Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified. | Class II equipment | N/A |

| | | | |
|-----------|---|--------------------------------------|-----|
| 4.2.8.1 | Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT. | No CRT used. | N/A |
| 4.3.2 | Equipment with handles complies with special loading tests. | No handle used. | N/A |
| 4.3.8 | Battery packs for both portable and stationary applications are required to comply with special component requirements. | | N/A |
| 5.1.8.3 | Equipment intended to receive telecommunication ringing signals comply with a special touch current measurement tests. | No TNV Circuitry. | N/A |
| 5.3.7 | Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are overloaded. | See table 5.3 in main test report | P |
| | During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary | | P |
| 6.4 | Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC. | No TNV Circuitry. | N/A |
| Annex EE | Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger. | No document/media shredders provide. | N/A |
| Annex M.2 | Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions. | No TNV circuit. | N/A |
| Annex NAD | Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear comply with special acoustic pressure requirements. | No TNV circuit. | N/A |

ATTACHMENT: CHINESE DIFFERENCES **Test results according to CB BULLETIN**



| Clause | Requirement - Test | Result - Remark | Verdict |
|----------|---|--|---------|
| 1.1.2 | <p>GB 4943.1-2011 applies to equipment for use at altitudes not exceeding 5000m above sea level, primarily in regions with moderate or tropical climates.</p> <p>Amend the third dashed paragraph of 1.1.2 as:</p> <p>—equipment intended to be used in vehicles, on board ships or aircraft, at altitudes greater than 5000m;</p> | Must check with marketing China. | — |
| 1.4.5 | <p>After the third paragraph, add a paragraph:</p> <p>If the equipment is intended for direct connection to an AC mains supply, the tolerances on RATED VOLTAGE shall be taken as +10%,-10% unless a wider tolerance is declared by the manufacturer. The first dash paragraph "-the RATED VOLTAGE is 230V single -phase or 400V three-phase, in which case the tolerance shall be taken as +10% and -10%" of IEC 60950-1:2005 is deleted in GB 4943.1-2011</p> | See main test report | P |
| 1.4.12.1 | <p>Tma in clause 1.4.12.1 amended as: Tma: is the maximum ambient temperature permitted by the manufacturer's specification, or 35 °C, whichever is greater.</p> <p>Add note 1: For equipment not to be operated at tropical climatic conditions, Tma: is the maximum ambient temperature permitted by the manufacturer's specification, or 25 °C, whichever is greater.</p> <p>Add note 2: For equipment is to be operated at 2000m-5000m above sea level, its temperature test conditions and temperature limits are under consideration.</p> | Must be checked when market to China. | — |
| 1.5. 2 | <p>Add a note behind the first break off section in Clause 1.5.2: A component used shall comply with related requirements corresponding altitude of 5000m.</p> | Must check with marketing China. | — |
| 1.7 | <p>Add one paragraph before the last paragraph: The required marking and instruction should be given in normative Chinese unless otherwise specified.</p> | Must be considered when market to China. | — |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------|--|--|---------|
| 1.7.1 | <p>Based on the AC mains supply of China, the RATED VOLTAGE should be 220V (single phase) or 380V (three-phases) for single rated voltage, for RATED VOLTAGE RANGE, it should cover 220V or 380V (three-phases), for multiple RATED VOLTAGES, one of them should be 220V or 380V (three-phases) and set on 220V or 380V (three-phases) when manufactured.</p> <p>And the RATED FREQUENCY or RATED FREQUENCY RANGE should be 50Hz or include.</p> | Rated voltage include 220V single phase. | P |

| Clause | Requirement - Test | Result - Remark | Verdict |
|---------|---|--|---------|
| 1.7.2.1 | <p>Add requirements of warning for equipment intended to be used at altitudes not exceeding 2000m or at non-tropical climate regions:</p> <p>For equipment intended to be used at altitude not exceeding 2000m, a warning label containing the following or a similar appropriate wording, or a symbol as in annex DD shall fixed to the equipment at readily visible place.</p> <p>"Only used at altitude not exceeding 2000m."</p>  <p>For equipment intended to be used in not-tropical climate regions, a warning label containing the following or a similar appropriate wording, or a symbol as in annex DD shall fixed to the equipment at readily visible place.</p> <p>"Only used in not-tropical climate regions."</p>  <p>If only the symbol used, the explanation of the symbol shall be contained in the instruction manual.</p> <p>The above statements shall be given in a language acceptable to the regions where the apparatus is intended to be used.</p> <p>If only the symbol used, the explanation of the symbol shall be contained in the instruction manual.</p> <p>The above statements shall be given in a language acceptable to the regions where the apparatus is intended to be used.</p> | 3500m used, must be checked when market to China. | -- |
| 2.7.1 | <p>Amended the first paragraph as:</p> <p>Protection in PRIMARY CIRCUITS against overcurrent short-circuits and earth faults shall be provided as an integral part of the equipment except special provisions. And the protective device shall meet the requirement of Clause 5.3.</p> <p>Delete note of Clause 2.7.1.</p> | Protective device is integrated in the equipment, see also Sub-clause 5.3. | P |

| Clause | Requirement - Test | Result - Remark | Verdict |
|----------|---|----------------------------------|---------|
| 2.9.2 | <p>First section of Clause 2.9.2 amended as two sections:</p> <p>Where required by 2.9.1, 2.10.8.3, 2.10.10 or 2.10.11, humidity conditioning is conducted for 120 h in a cabinet or room containing air with ambient temperature $40\pm 2^{\circ}\text{C}$ and a relative humidity of $(93\pm 3)\%$. During this conditioning the component or subassembly is not energized.</p> <p>For equipment not to be operated at tropical climatic conditions, Where required by 2.9.1, 2.10.8.3, 2.10.10 or 2.10.11, humidity conditioning is conducted for 48 h in a cabinet or room containing air with a relative humidity of $(93\pm 3)\%$. The temperature of the air, at all places where samples can be located, is maintained within 2°C of any convenient value between 20°C and 30°C such that condensation does not occur.</p> <p>Due to pretreatment of equipment operated at high altitude area is humidity conditioning withstand hot shock, specific requirements are to be considered.</p> <p>Add note: For equipment to be operated at 2000 m - 5000m above sea level, assessment and requirement of humidity conditioning for Insulation material properties are considered.</p> | Considered | P |
| 2.10.3.1 | <p>Amend the third paragraph of Clause 2.10.3.1 to be:</p> <p>These requirements apply for equipment to be operated up to 2000 m above sea level. For equipment to be operated at more than 2000 m above sea level and up to 5000m above sea level, the minimum CLEARANCE shall be multiplied by the factor 1.48 corresponding altitude of 5000m given in Table A.2 of IEC 60664-1. For equipment to be operated at more than 5000 m above sea level, the minimum CLEARANCE shall be multiplied by the factor given in Table A.2 of IEC 60664-1. Linear interpolation is permitted between the nearest two points in Table A.2. The calculated minimum CLEARANCE using this multiplication factor shall be rounded up to the next higher 0,1 mm increment.</p> | Must check with marketing China. | — |

| Clause | Requirement - Test | Result - Remark | Verdict |
|---------------------------|--|----------------------------------|---------|
| 2.10.3.3 & 2.10.3.4 | Add "(applicable for altitude up to 2000m)" in header of Table 2K、2L and 2M. | Considered. | P |
| 2.10.3.4 | Add a new section above Table 2K and in Clause 2.10.3.4: Minimum CLEARANCES determined by above rules apply for equipment to be operated up to 2000m above sea level. For equipment to be operated at 2000 m - 5000m above sea level, the minimum CLEARANCE shall be multiplied by the factor 1.48 corresponding altitude of 5000m given in Table A.2 of GB/T16935.1 (IEC 60664-1) . For equipment to be operated at more than 5000 m above sea level, the minimum CLEARANCE shall be multiplied by the factor given in Table A.2 of GB/T16935.1. | Must check with marketing China. | — |
| 3.2.1.1 | Add a paragraph before the last paragraph: Plugs connected to AC mains supply shall comply with GB 1002 or GB 1003 or GB/T 11918 as applicable. | Direct plug in equipment | N/A |
| 4.2.8 | Clause 4.2.8 cathode ray tubes quoted Clause 18 of GB8898-2011. Delete note of Clause 4.2.8. | No such equipment. | N/A |
| Annex E | Last section of Annex E amended as: For comparison of winding temperatures determined by the resistance method of this annex with the temperature limits of Table 4B, 35 °C shall be added to the calculated temperature rise. And add note: for equipment not to be operated at tropical climatic conditions, 25 °C shall be added to the calculated temperature rise to compare with the temperature of Table 4B. | Thermocouple measurement method | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict |
|---------------------------|--|--|---------|
| Annex G.6 | Change the second section of Clause G.6 to be: For equipment to be operated at 2000 m - 5000m above sea level, the minimum CLEARANCE shall be multiplied by the factor 1.48 corresponding altitude of 5000m given in Table A.2 of GB/T16935.1. For equipment to be operated at more than 5000 m above sea level, the minimum CLEARANCE shall be multiplied by the factor given in Table A.2 of IEC 60664-1. Linear interpolation is permitted between the nearest two points in Table A.2. The calculated minimum CLEARANCE using this multiplication factor shall be rounded up to the next higher 0,1 mm increment. | Must check with marketing China. | — |
| Annex BB (informative) | Amended as : The differences between Chinese national standards GB 4943.1-2011 and GB 4943-2001. | Considered. | P |
| Annex DD (normative) | Added annex DD: Instructions for the new safety warning labels. DD.1 Altitude warning label  Meaning of the label: Evaluation for apparatus only based on altitude not exceeding 2000m, therefore it's the only operating condition applied for the equipment. There may be some potential safety hazard if the equipment is used at altitude above 2000m. DD.2 Climate warning label  Meaning of the label: Evaluation for apparatus only based on temperate climate condition, therefore it's the only operating condition applied for the equipment. There may be some potential safety hazard if the equipment is used in tropical climate region. | 3500m used | N/A |
| Annex EE (informative) | Added annex EE: Illustration relative to safety explanation in normative Chinese, Tibetan, Mongolian, Zhuang Language and Uighu. | Must be considered when market to China. | — |

| Clause | Requirement - Test | Result - Remark | Verdict |
|------------------|--|-----------------|---------|
| Other amendments | In accordance with the relevant CTL decisions and the amendments of IEC 60950-1, the specific requirements or mistakes in IEC standard are corrected or editorially modified in this part, Including clause 1.7, 2.1.1.7, 2.9.2, Table 2H, Figure 2H, F.8, F.9, M.3 and Annex U. | Considered. | P |

| Clause | Requirement - Test | Result - Remark | Verdict |
|---|---|-----------------|---------|
| Quoting standards and reference documents | <p>The principles of quoting and referring to other standards in Annex P and reference documents of IEC 60950-1 are as follows:</p> <p>If the date of the reference document is given, only that edition applies, excluding any subsequent corrigenda and amendments. However, parties to agreements based on this part are encouraged to investigate the possibility of applying the most recent editions of the reference documents. For undated references, the latest edition of the referenced document applies, including any corrigenda and amendments.</p> <p>For the usage of international standards in Chinese national standards and industry standards is various, in the aim of achieving easy operation and based on the requirements of GB/T 1.1 and GB/T 20000.2, when quoting an entire international standard in the normative quoting files and reference documents of Annex P of this part, the principles of quotation are as follows:</p> <ul style="list-style-type: none"> - If there is no national standard or industry standard corresponding to the international standard, then the international standard is quoted; - If there is national standard or industry standard corresponding to the international standard, then either the national or industry standard is quoted; - If the date of the national standard or industry standard is not given, the latest edition of the standard applies; - The national standard or industry standard number, corresponding international standard number and the consistency level code should be identified in parentheses behind the listed national standard or industry standard. <p>When quoting several chapters or clauses of the international standard, the principles of quotation are as follows:</p> <ul style="list-style-type: none"> - If there is no national standard or industry standard corresponding to the international standard, then the international standard is quoted; | Considered. | P |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------|--|-----------------|---------|
| | <p>- If there is national standard or industry standard corresponding to the international standard, then either the national or industry standard is quoted.</p> <p>Meanwhile, in order to retain the relevant information on international standards, informative annex CC is increased, which gives the table about the comparison of the normative quoting files and reference documents in IEC 60950-1: 2005 and GB4943.1-2011.</p> | | |

**ATTACHMENT: JAPANESE DIFFERENCES
to IEC 60950-1**


| Clause | Requirement - Test | Result - Remark | Verdict |
|----------|--|---|---------|
| 1.2.4.1 | Add the following new notes. Note: Even if the equipment is designed as Class I, the equipment is regarded as Class 0I equipment when 2-pin adaptor with earthing lead wire or cord set having 2-pin plug with earthing lead wire is provided or recommended. | Must be check when marketed into the country. | — |
| 1.2.4.3A | Add the following new clause. 1.2.4.3A CLASS 0I EQUIPMENT Equipment having attachment plug without earthing blade, where protection against electric shock is achieved by: - using BASIC INSULATION, and - providing externally an earth terminal or a lead wire for earthing in order to connect those conductive parts that might assume a HAZARDOUS VOLTAGES in the event of BASIC INSULATION fault to the PROTECTIVE EARTHING CONDUCTOR in the building wiring. NOTE – Class 0I equipment may have a part constructed with Double Insulation or Reinforced Insulation circuit. | Class II equipment | N/A |
| 1.3.2 | Add the following notes after first paragraph: Note 1 Transportable or similar equipment that are relocated frequently for intended usage should not be designed as Class I or Class 0I equipment unless it is intended to be installed by service personnel. Note 2 Considering wiring circumstance in Japan, equipment intended to be installed where the provision for earthing connection is unlikely should not be designed as Class I or Class 0I equipment unless it is intended to be installed by service personnel. | Must be considered when market to Japan. | — |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------|---|--|---------|
| 1.5. 1 | <p>Replace the first paragraph with the follows:</p> <p>Where safety is involved, components shall comply either with the requirements of this standard, with the safety aspects of the relevant JIS component standard, or IEC component standards in case there is no applicable JIS component standard is available. However, a component that falls within the scope of METI Ministerial ordinance No. 85 is properly used in accordance with its marked ratings, requirements of 1.5.4, 2.8.7 and 3.2.5 apply, and in addition, a cord connector of power supply cord set mating with appliance inlet complying with the standard sheet of IEC 60320-1, shall comply with relevant standard sheet of IEC 60320-1.</p> <p>Replace Note 1 with the following: Note 1 A JIS or an IEC component standard is considered relevant only if the component in question clearly falls within its scope.</p> | The component fulfils the relevant IEC standard. | N/A |
| 1.5.2 | <p>Replace first sentence in the first dashed paragraph with the following:</p> <p>- a component that has been demonstrated to comply with a JIS component standard harmonized with the relevant IEC component standard, or where such JIS component standard is not available, a component that has been demonstrated to comply with the relevant IEC component standard shall be checked for correct application and use in accordance with its rating.</p> <p>Add a note after the first dashed paragraph as follows:</p> <p>Note 1 See 1.7.5A when Type C.14 appliance coupler rated 10 A per IEC 60320-1 is used with an equipment rated not more than 125 V and rated more than 10 A.</p> <p>Replace first sentence in the third dashed paragraph as follows:</p> <p>- where no relevant IEC component standard or JIS component standard harmonized with the relevant IEC component standard exists, or where components are used in circuits not in accordance with their specified rating, the components shall be tested under the conditions occurring in the equipment.</p> | The component fulfils the relevant IEC standard. | N/A |
| 1.7.1 | <p>Replace fifth dashed paragraph with the following:</p> <p>- manufacturer's or responsible company's name or trade-mark or identification mark;</p> | Comply with requirement. | P |

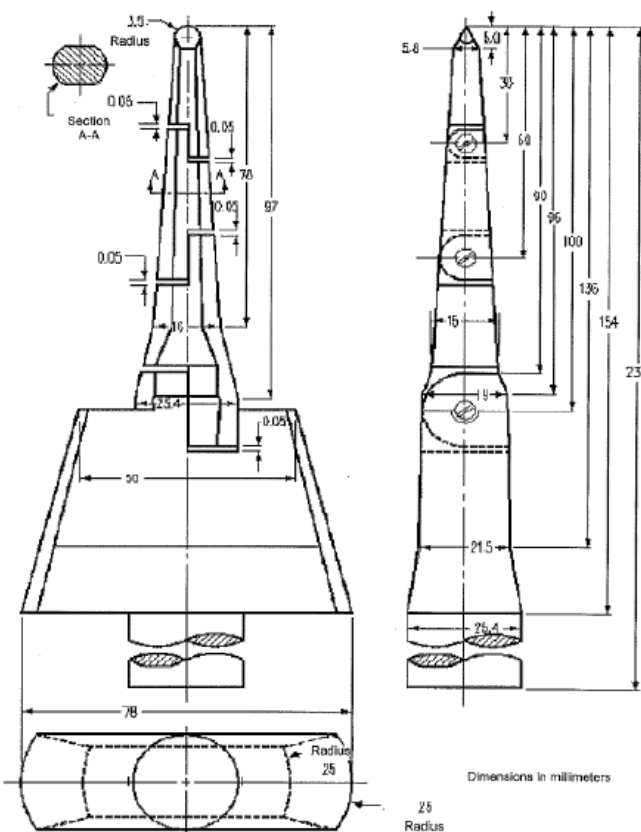
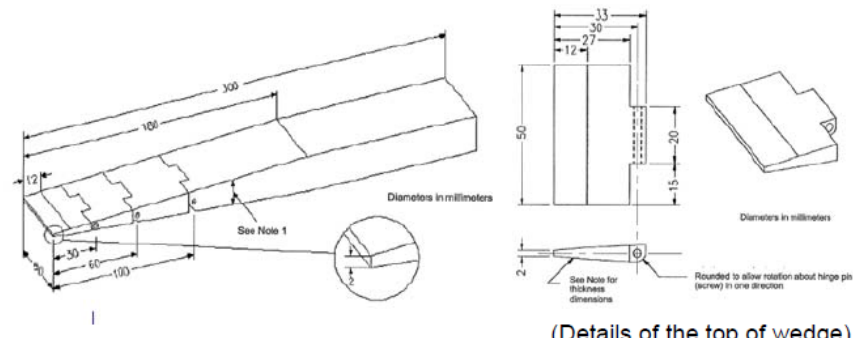
| Clause | Requirement - Test | Result - Remark | Verdict |
|---------|--|---------------------------------------|---------|
| 1.7.5A | Add the following new clause. after 1.7.5 1.7.5A Appliance Coupler If appliance coupler according to IEC60320-1, C.14(rated current: 10A)is used in equipment whose rated voltage is less than 125V and rated current is over 10A, the following instruction or equivalent shall be described in the user instruction. “ Use only designated cord set attached in this equipment” | The rated current is <10A. | N/A |
| 1.7.12 | Replace first sentence with the following: Instructions and equipment marking related to safety shall be in Japanese. | Must be checked when market to Japan. | — |
| 1.7.17A | Add the following new clause. after 1.7.17 1.7.17A Marking for CLASS 0I EQUIPMENT For CLASS 0I EQUIPMENT, the following instruction shall be marked on the visible place of the mains plug or the main body: “Provide an earthing connection” Moreover, for CLASS 0I EQUIPMENT, the following or equivalent instruction shall be indicated on the visible place of the main body or written in the operating instructions: “Provide an earthing connection before the mains plug is connected to the mains. And, when disconnecting the earthing connection, be sure to disconnect after pulling out the mains plug from the mains.” | Class II equipment | N/A |
| 2.6.3.2 | Add the following after 1st paragraph. This also applies to the conductor of lead wire for protective earthing of CLASS 0I EQUIPMENT. | Class II equipment. | N/A |
| 2.6.4.2 | Replace 1st paragraph with the following. Equipment required to have protective earthing shall have a main protective earthing terminal. For equipment with a DETACHABLE POWER SUPPLY CORD, the earthing terminal in the appliance inlet is regarded as the main protective earthing terminal except for CLASS 0I EQUIPMENT providing separate main protective earthing terminal other than appliance inlet. | Class II equipment. | N/A |
| 2.6.5.4 | Replace 1st sentence with the following. Protective earthing connections of CLASS I EQUIPMENT shall make earlier and break later than the supply connections in each of the following: | Class II equipment. | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict |
|----------|---|--|---------|
| 2.6.5.8A | <p>Add the following new clause. after 2.6.5.8A</p> <p>2.6.5.8A Earthing of CLASS 0I EQUIPMENT Plugs with a lead wire for earthing shall not be used for equipment having a rated voltage exceeding 150V. For plugs with a lead wire for earthing, the lead wire shall not be earthed by a clip.</p> <p>CLASS 0I EQUIPMENT shall be provided with an earthing terminal or lead wire for earthing in the external location where easily visible.</p> | Class II equipment. | N/A |
| 3.2.3 | <p>Add the following after Table 3A:</p> <p>Table 3A applies when cables complying JIS C 3662 or JIS C 3663 are used. In case of other cables, cable entries shall be so designed that a conduit suitable for the cable used can be fitted.</p> | The equipment is not intended for permanent connection to the mains. | N/A |
| 3.2.5.1 | <p>Add the following to the last of first dashed paragraph. Or mains cords shall be of the sheathed type complying with Appendix 1 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance.</p> <p>Add the following to the last of second dashed paragraph. Or mains cords shall be of the sheathed type complying with Appendix 1 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance.</p> <p>Delete 1) in Table 3B</p> | Must be considered when market to Japan. | — |
| 3.3.4 | <p>Add the following note to Table 3D:</p> <p>Note For cables other than those complying with JIS C 3662 or JIS C 3663, terminals shall be suitable for the size of the intended cables.</p> | The equipment is not intended for permanent connection to the mains. | N/A |
| 3.3.7 | <p>Add the following after the first sentence:</p> <p>This requirement is not applicable to the external earthing terminal of Class 0I equipment.</p> | Class II equipment | N/A |
| 4.3.4 | <p>Add the following after the first sentence:</p> <p>This requirement also applies to those connections in Class 0I equipment, where CLEARANCE or CREEPAGE DISTANCES over BASIC INSULATION would be reduced to less than the values specified in 2.10.</p> | Considered. | N/A |
| 5.1.3 | <p>Add a note after the first paragraph as follows:</p> <p>Note – Attention should be drawn to that majority of three-phase power system in Japan is of delta connection, and therefore, in that case, test is conducted using the test circuit from IEC 60990, figure 13.</p> | Single phase connection. | N/A |
| 5.1.6 | Replacement: Replace Table 5A. | | |

| Clause | Requirement - Test | Result - Remark | Verdict | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|--|---|--------------------------------------|---------------|---|------|---|-----------|--|------|---|--|-----|---|------------------------------|-----|---|--|----------|---------------------------|-----------|---|-----|---|--------|-----|---|--|--|
| | <table><tr><th>Type of equipment</th><th>Terminal A of measuring instrument connected to:</th><th>Maximum TOUCH CURRENT mA r.m.s. ¹⁾</th><th>Maximum PROTECTIVE CONDUCTOR CURRENT</th></tr><tr><td>ALL equipment</td><td>Accessible parts and circuits not connected to protective earth</td><td>0,25</td><td>-</td></tr><tr><td>HAND-HELD</td><td rowspan="4">Equipment main protective earthing terminal (if any) CLASS I EQUIPMENT</td><td>0,75</td><td>-</td></tr><tr><td>MOVABLE (other than HAND_HELD, but including TRANSPORTABLE EQUIPMENT</td><td>3,5</td><td>-</td></tr><tr><td>STATIONARY, PLUGGABLE TYPE A</td><td>3,5</td><td>-</td></tr><tr><td>ALL other STATIONARY EQUIPMENT - not subject to the conditions of 5.1.7 - subject to the conditions of 5.1.7</td><td>3,5 -</td><td>- 5 % of input current</td></tr><tr><td>HAND-HELD</td><td rowspan="2">Equipment main protective earthing terminal (if any) CLASS 0I EQUIPMENT</td><td>0,5</td><td>-</td></tr><tr><td>Others</td><td>1,0</td><td>-</td></tr></table> | Type of equipment | Terminal A of measuring instrument connected to: | Maximum TOUCH CURRENT mA r.m.s. ¹⁾ | Maximum PROTECTIVE CONDUCTOR CURRENT | ALL equipment | Accessible parts and circuits not connected to protective earth | 0,25 | - | HAND-HELD | Equipment main protective earthing terminal (if any) CLASS I EQUIPMENT | 0,75 | - | MOVABLE (other than HAND_HELD, but including TRANSPORTABLE EQUIPMENT | 3,5 | - | STATIONARY, PLUGGABLE TYPE A | 3,5 | - | ALL other STATIONARY EQUIPMENT - not subject to the conditions of 5.1.7 - subject to the conditions of 5.1.7 | 3,5 - | - 5 % of input current | HAND-HELD | Equipment main protective earthing terminal (if any) CLASS 0I EQUIPMENT | 0,5 | - | Others | 1,0 | - | | |
| Type of equipment | Terminal A of measuring instrument connected to: | Maximum TOUCH CURRENT mA r.m.s. ¹⁾ | Maximum PROTECTIVE CONDUCTOR CURRENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALL equipment | Accessible parts and circuits not connected to protective earth | 0,25 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HAND-HELD | Equipment main protective earthing terminal (if any) CLASS I EQUIPMENT | 0,75 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MOVABLE (other than HAND_HELD, but including TRANSPORTABLE EQUIPMENT | | 3,5 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STATIONARY, PLUGGABLE TYPE A | | 3,5 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALL other STATIONARY EQUIPMENT - not subject to the conditions of 5.1.7 - subject to the conditions of 5.1.7 | | 3,5 - | - 5 % of input current | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HAND-HELD | Equipment main protective earthing terminal (if any) CLASS 0I EQUIPMENT | 0,5 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | | 1,0 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ¹⁾ If peak values of TOUCH-CURRENT are measured, the maximum values obtained by multiplying the r.m.s. values by 1,414. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.2 | <p>Add the following after the paragraph:</p> <p>However, the separation requirements and tests of 6.2.1 a), b) and c) do not apply to a CABLE DISTRIBUTION SYSTEM if all of the following apply:</p> <ul style="list-style-type: none">– the circuit under consideration is a TNV-1 CIRCUIT; and– the common or earthed side of the circuit is connected to the screen of the coaxial cable and to all accessible parts and circuits (SELV, accessible metal parts and LIMITED CURRENT CIRCUITS, if any); and– the screen of the coaxial cable is intended to be connected to earth in the building installation. | No CDS and TNV circuit. | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W.1 | <p>Replace second and third sentence in the first paragraph with the following:</p> <p>This distinction between earthed and unearthed (floating) circuit is not the same as between CLASS I EQUIPMENT, CLASS 0I EQUIPMENT and CLASS II EQUIPMENT. Floating circuits can exist in CLASS I EQUIPMENT or CLASS 0I EQUIPMENT and earthed circuits in CLASS II EQUIPMENT.</p> | Considered. | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Clause | Requirement - Test | Result - Remark | Verdict |
|----------|--|----------------------------------|---------|
| Annex JA | <p>Addition: Add a new annex with the following contents.</p> <p>Annex JA (normative) Document shredding machines</p> <p>Document shredding machines shall also comply with the requirements of this annex except those of STATIONARY EQUIPMENT used by connecting directly to an AC MAINS SUPPLY of three-phase 200V or more.</p> | Not Document shredding machines. | N/A |
| JA.1 | <p>Markings and instructions In the easily visible part near the document-slot, by a method capable to make out clearly and not easily disappeared, and by easily understandable wording, shall indicate the symbol of;</p>  <p>and, also the following precautions for use;</p> <ul style="list-style-type: none"> - that use by an infant/child may cause a hazard of injury etc.; - that a hand can be drawn into the mechanical section for shredding when touching the document-slot; - that clothes can be drawn into the mechanical section for shredding when touching the document-slot; - that hairs can be drawn into the mechanical section for shredding when touching the document-slot; <p>in case of equipment incorporating a commutator motor, that equipment may catch fire or explode by spraying of flammable gas.</p> | Not Document shredding machines. | N/A |
| JA.2 | <p>Inadvertent reactivation</p> <p>Any safety interlock which can be operated by means of the test finger, Figure JA.1, is considered to cause reactivation of the hazard.</p> <p>Compliance is checked by inspection and, where necessary, by a test with the test finger, Figure JA.1.</p> | Not Document shredding machines. | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------|---|----------------------------------|---------|
| JA.3 | <p>Isolating switch</p> <p>Document shredding machines shall incorporate an isolating switch complying with sub-clause 3.4.2 as the device disconnecting the power of hazardous moving parts. For this switch, two-position (single-use) switch or multi-position (multifunction) switch (e.g., slide switch) may be used.</p> <p>If two-position switch, the positions for "ON" and "OFF" shall be indicated in accordance with sub-clause 1.7.8. If multi-position switch, the position for "OFF" shall be indicated in accordance with sub-clause 1.7.8 and other positions shall be indicated with proper terms or symbols.</p> <p>Compliance is checked by inspection.</p> | Not Document shredding machines. | N/A |
| JA.4 | <p>Protection in operator access areas</p> <p>Any warning shall not be used instead of the structure for preventing access to hazardous moving parts. Document shredding machines shall comply with the following requirements.</p> <p>Push the test finger, Figure JA.1, into all openings in MECHANICAL ENCLOSURES without applying additional force. It shall not be possible to touch hazardous moving parts with the test finger. The document shredding machine is installed as intended, and all face of MECHANICAL ENCLOSURES are subjected to this test. Before testing with the test finger, remove the parts detachable without a tool.</p> <p>Push the wedge-probe, Figure JA.2, into the document-slot. And, against all directions of openings, if straight-cutting type, a force of 45 N shall apply to the probe, and 90 N if cross-cutting type. In this case, the weight of the probe shall not influence the test. Before testing with the test finger, remove the parts detachable without a tool.</p> <p>It shall not be possible to touch any hazardous moving parts, including the shredding roller or the mechanical section for shedding, with the probe.</p> | Not Document shredding machines. | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict | | | | | | | | |
|-----------------------|---|-----------------------|--------------------|---|---|----|---|-----|----|--|-----|
| | <div></div> <p>Figure JA.1 Test finger</p> | | N/A | | | | | | | | |
| | <div><table><thead><tr><th>Distance from the top</th><th>Thickness of probe</th></tr></thead><tbody><tr><td>0</td><td>2</td></tr><tr><td>12</td><td>4</td></tr><tr><td>180</td><td>24</td></tr></tbody></table><p>Note 1 - The probe shall be of changing the thickness linearly. However, the slope shall be changed at the respective points shown in the table. Note 2 -The allowable dimensional tolerance of the probe is +/- 0.127 mm.</p></div> <p>Figure JA.2 Wedge-probe</p> | Distance from the top | Thickness of probe | 0 | 2 | 12 | 4 | 180 | 24 | | N/A |
| Distance from the top | Thickness of probe | | | | | | | | | | |
| 0 | 2 | | | | | | | | | | |
| 12 | 4 | | | | | | | | | | |
| 180 | 24 | | | | | | | | | | |

| ATTACHMENT: NATIONAL DIFFERENCES – ISRAEL Test results according to Online CB BULLETIN (Last modified date of 2012-02) | | | |
|---|---|---|---|
| 1.6 | Power interface The clause is applicable with the following addition: | | — |
| 1.6.1 | AC Power distribution systems - At the end of the clause, the following note shall be added: Note: In Israel, the clause is subject to the Electricity law, 1954, its Regulations and updates. | | — |
| 1.7 | Marking and instructions The clause is applicable with the following additions: | | — |
| 1.7.1 | Power rating - Subclause 1.7.201 shall be added at the beginning of the clause as follows: | | — |
| 1.7.201 | Marking in the Hebrew language The marking in the Hebrew language shall be in accordance with the Consumer Protection Order (Marking of goods), 1983. In addition to the marking required by clause 1.7.1, the following items shall be marked in the Hebrew language: 1. Name of the apparatus and its commercial designation; 2. Manufacturer's name and address. If the apparatus is imported, the importer's name and address; 3. Manufacturer's registered trademark, if any; 4. Name of the model and serial number, if any; 5. Country of manufacture. The items shall be marked on the apparatus or on its package, or on a label well attached to the apparatus or its package, by bonding or sewing, such that the label cannot be easily removed. | Must be considered before marketed in Israel. | — |
| 1.7.2 | Safety instructions and Marking 1.7.2.1 General The following shall be added to the clause: All the instruction and all the warnings related to safety shall also be written in the Hebrew language. | Must be considered before marketed in Israel. | — |
| 1.201 | Power consumption in standby mode The equipment shall comply with the requirements of the Energy Sources Regulations (Maximum electrical power in standby mode for domestic and office electrical appliances), 2011, with a permitted deviation of up to 10%. | Must be considered before marketed in Israel. | — |
| 2. | Protection from Hazards The clause is applicable with the following additions: | | |

| | | | |
|---------|---|--|-----|
| 2.9.4 | Separation from hazardous voltages - The following shall be added at the beginning of the clause: According to the Electricity Law, 1954, and the Electricity Regulations (Earthing and protection means from electricity at voltages up to 1,000V), 1991, seven means of protection from electricity are permitted, as follows: 1) Network system earthing - (TN-C-S; TN-S); 2) Network system earthing - (TT); 3) Network Insulation Terre - (IT); 4) Isolated transformer; 5) Safety extra low voltage; 6) Residual current circuit breaker; 7) Reinforced insulation; Double insulation. - Clause 2.201 shall be added at the end of the clause, as follows: | Considered. | P |
| 2.201 | Prevention of electromagnetic interference The device shall meet the requirement of the relevant part of the Israeli Standard series, SI 961. If the device contains components for prevention of electromagnetic interference, the devices shall not lower the safety level of the device, as required by this standard. | Must be checked in end product when marketing in Israel. | — |
| 3. | Wiring, connections and supply The clause is applicable with the following additions: | | — |
| 3.2 | Connection to a mains supply | | — |
| 3.2.1 | Means of connection | | — |
| 3.2.1.1 | Connection to an a.c. mains supply After the note, the following note shall be added: Note: In Israel, the supply plug shall comply with the requirements in Israeli Standard.SI 32 Part 1.1. | Direct plug in equipment | N/A |
| 3.2.1.2 | Connection to a d.c. mains supply After the first paragraph, the following note shall be added: Note: As of the date of publication of this Standard, there is no Israeli Standard for connection accessories to d.c. | Not connection to DC mains supply. | N/A |

| ANNEX P | <p>Normative references</p> <p>The annex is applicable with the following modifications and additions: In place of some of the International Standards cited in the Standard and noted in this annex, the following Israeli Standards shall apply:</p> <table border="1"> <thead> <tr> <th data-bbox="347 392 555 472">The referenced International Standard</th><th data-bbox="555 392 922 472">The substituted Israeli Standard</th><th data-bbox="922 392 1334 472">Comments</th></tr> </thead> <tbody> <tr> <td data-bbox="347 472 555 577">IEC 60065: 2001</td><td data-bbox="555 472 922 577">SI 60065^(a) – Audio, video and similar electronic apparatus safety requirements</td><td data-bbox="922 472 1334 577">The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60065 – Edition 7.1: 2005-12.</td></tr> <tr> <td data-bbox="347 577 555 712">IEC 60083</td><td data-bbox="555 577 922 712">SI 32 Part 1.1^(a) – Plugs and socket-outlets for household and similar purposes: Plugs and socket-outlets for single phase up to 16A – General requirements</td><td data-bbox="922 577 1334 712">The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60884-1 – Third edition: 2002-06.</td></tr> <tr> <td data-bbox="347 712 555 817">IEC 60227 (all parts)</td><td data-bbox="555 712 922 817">SI 60227 (all parts) – Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V</td><td data-bbox="922 712 1334 817">The Israeli Standard series, excluding national modifications and additions noted, is identical to the Standard series, IEC 60227 (all parts).</td></tr> <tr> <td data-bbox="347 817 555 922">IEC 60245 (all parts)</td><td data-bbox="555 817 922 922">SI 60245 Part 1 – Rubber insulated cables - Rated voltages up to and including 450/750 V: General requirements</td><td data-bbox="922 817 1334 922">The Israeli Standard series, excluding national modifications and additions noted, is identical to the Standard series, IEC 60245 (all parts).</td></tr> <tr> <td data-bbox="347 922 555 1167" rowspan="2">IEC 60309 (all parts)^(b)</td><td data-bbox="555 922 922 1030">SI 1109 Part 1 – Plugs, socket-outlets and couplers for industrial purposes: General requirements</td><td data-bbox="922 922 1334 1030">The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60309-1 – Fourth edition: 1999-2.</td></tr> <tr> <td data-bbox="555 1030 922 1167">SI 1109 Part 2 – Plugs, socket-outlets and couplers for industrial purposes: Dimensional interchangeability requirements for pin and contact-tube accessories</td><td data-bbox="922 1030 1334 1167">The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60309-2 – Fourth edition: 1999-4.</td></tr> </tbody> </table> | The referenced International Standard | The substituted Israeli Standard | Comments | IEC 60065: 2001 | SI 60065 ^(a) – Audio, video and similar electronic apparatus safety requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60065 – Edition 7.1: 2005-12. | IEC 60083 | SI 32 Part 1.1 ^(a) – Plugs and socket-outlets for household and similar purposes: Plugs and socket-outlets for single phase up to 16A – General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60884-1 – Third edition: 2002-06. | IEC 60227 (all parts) | SI 60227 (all parts) – Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V | The Israeli Standard series, excluding national modifications and additions noted, is identical to the Standard series, IEC 60227 (all parts). | IEC 60245 (all parts) | SI 60245 Part 1 – Rubber insulated cables - Rated voltages up to and including 450/750 V: General requirements | The Israeli Standard series, excluding national modifications and additions noted, is identical to the Standard series, IEC 60245 (all parts). | IEC 60309 (all parts) ^(b) | SI 1109 Part 1 – Plugs, socket-outlets and couplers for industrial purposes: General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60309-1 – Fourth edition: 1999-2. | SI 1109 Part 2 – Plugs, socket-outlets and couplers for industrial purposes: Dimensional interchangeability requirements for pin and contact-tube accessories | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60309-2 – Fourth edition: 1999-4. | — |
|---------------------------------------|--|---|----------------------------------|----------|-----------------|---|---|-----------|---|---|-----------------------|--|--|-----------------------|--|--|--------------------------------------|---|---|---|---|---|
| The referenced International Standard | The substituted Israeli Standard | Comments | | | | | | | | | | | | | | | | | | | | |
| IEC 60065: 2001 | SI 60065 ^(a) – Audio, video and similar electronic apparatus safety requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60065 – Edition 7.1: 2005-12. | | | | | | | | | | | | | | | | | | | | |
| IEC 60083 | SI 32 Part 1.1 ^(a) – Plugs and socket-outlets for household and similar purposes: Plugs and socket-outlets for single phase up to 16A – General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60884-1 – Third edition: 2002-06. | | | | | | | | | | | | | | | | | | | | |
| IEC 60227 (all parts) | SI 60227 (all parts) – Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V | The Israeli Standard series, excluding national modifications and additions noted, is identical to the Standard series, IEC 60227 (all parts). | | | | | | | | | | | | | | | | | | | | |
| IEC 60245 (all parts) | SI 60245 Part 1 – Rubber insulated cables - Rated voltages up to and including 450/750 V: General requirements | The Israeli Standard series, excluding national modifications and additions noted, is identical to the Standard series, IEC 60245 (all parts). | | | | | | | | | | | | | | | | | | | | |
| IEC 60309 (all parts) ^(b) | SI 1109 Part 1 – Plugs, socket-outlets and couplers for industrial purposes: General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60309-1 – Fourth edition: 1999-2. | | | | | | | | | | | | | | | | | | | | |
| | SI 1109 Part 2 – Plugs, socket-outlets and couplers for industrial purposes: Dimensional interchangeability requirements for pin and contact-tube accessories | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Standard, IEC 60309-2 – Fourth edition: 1999-4. | | | | | | | | | | | | | | | | | | | | |

| ANNEX P | Continued | — |
|--|---|---|
| The referenced International Standard | The substituted Israeli Standard | Comments |
| IEC 60317 (all parts) ^(b) | SI 1067 Part 1 – Enamelled ^(c) round copper wires with high mechanical properties | The Israeli Standard is identical to the International Electrotechnical Commission Standard, IEC 317-1: 1980-02. |
| | SI 1067 Part 2 – Self-fluxing enamelled ^(c) round copper wires | The Israeli Standard is identical to the International Electrotechnical Commission Standard, IEC 307-4: 1980-02. |
| | SI 1067 Part 3 – Enamelled ^(c) round copper wires with a temperature index of 180 °C | The Israeli Standard is identical to the International Electrotechnical Commission Standard, IEC 317-8: 1980-02. |
| IEC 60320 (all parts) ^(b) | SI 60320 Part 1 – Appliance couplers for household and similar general purposes: General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60320-1: Second edition: 2001-06. |
| | SI 60320 Part 2.1 – Appliance couplers for household and similar general purposes: Sewing machine couplers | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60320-2-1: Second edition: 2000-07. |
| | SI 60320 Part 2.2 – Appliance couplers for household and similar general purposes: Interconnection couplers for household and similar equipment | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60320-2-2: Second edition: 1998-08. |
| | SI 60320 Part 2.3 – Appliance couplers for household and similar general purposes: appliance coupler with a degree of protection higher than IPXO | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60320-2-3: First edition: 1998-09. |
| IEC 60364-1: 2001 | Electricity Law, 1954, with its Regulations and updates | — |
| IEC 60730-1: 1999 Amendment 1 (2003) | SI 60730 Part 1 – Automatic electrical controls for household and similar use: General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60730-1: Edition 3.2: 2007-03. |

ANNEX P

Continued.

| The referenced International Standard | The substituted Israeli Standard | Comments |
|---|---|---|
| IEC 60825-1 | SI 60825 Part 1 – Safety of products: Equipment classification and requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60825-1: Second edition: 2007-03. |
| IEC 60947-1: 2004 | SI 60947 Part 1 – Low-voltage switchgear and controlgear: General rules | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 60947-1: Edition 5.0: 2007-06. |
| IEC 61058-1: 2000 | SI 61058 Part 1 – Switches for appliances: General requirements | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Electrotechnical Commission Standard, IEC 61058-1: Edition 3.1: 2001. |
| ISO 3864 (all parts) ^(b) | SI 3864 Part 1 ^(a) – Graphic symbols - | The Israeli Standard, excluding national modifications and additions noted, is identical to the International Organization for Standardization Standard, ISO 3864-1: First edition: 2002-05-15. |
| Notes: (a) The Standard is being revised. (b) In the International Standard series, there are parts not yet adopted as Israeli Standards. This table notes the relevant Israeli Standards, and in the Comments column, the corresponding parts of the International Standard series. (c) Not relevant to the translation. | | |

The following shall be added to the annex:

Israeli Standards

SI 961 (all parts) – Electromagnetic compatibility

Israeli Laws, Regulations and documents

Electricity Law, 1954, with its Regulations an updates.

Consumer Protection Order (Marking of goods), 1983, Kovetz HaTakanot 4465 dated 1983-02-24.

Energy Sources Regulations (Maximum electrical power in standby mode for domestic and office electrical appliances), 2011