



Test Report issued under
the responsibility of:



TEST REPORT
IEC 60950-1
Information technology equipment - Safety -
Part 1: General requirements

Report Reference No: E169910-A11-CB-1

Date of issue: 2013-03-20

Total number of pages: 51

CB Testing Laboratory: UL San Jose

Address: 455 E. Trimble Rd., San Jose, CA, 95131-1230, USA

Applicant's name: TEXAS INSTRUMENTS INC
MS 8712

Address: 12500 TI BLVD
DALLAS TX 75243
UNITED STATES

Test specification:

Standard: IEC 60950-1:2005 (2nd Edition); Am 1:2009

Test procedure: CB Scheme

Non-standard test method: N/A

Test Report Form No.: IEC60950_1B

Test Report Form originator: SGS Fimko Ltd


Master TRF: 2010-04



Copyright © 2010 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

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.

If this test Report is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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.

| | |
|------------------------------------|--|
| Test item description | Component IC Current Limiter |
| Trade Mark |  |
| Manufacturer | TEXAS INSTRUMENTS INC MS 8712 12500 TI BLVD DALLAS TX 75243 UNITED STATES |
| Model/Type reference | TPS2020, TPS2021, TPS2022, TPS2023, TPS2024, TPS2030, TPS2031, TPS2032, TPS2033, and TPS2034. All models may be followed by any alphanumeric suffixes. |
| Ratings | Input Voltage - 2.7 Vdc to 5.5 Vdc Output Continuous Rating: TPS2020, TPS2030 - 0.2 A TPS2021, TPS2031 - 0.6 A TPS2022, TPS2032 - 1.0 A TPS2023, TPS2033 - 1.5 A TPS2024, TPS2034 - 2.0 A Output Current Limit: TPS2020, TPS2030 - 5 A TPS2021, TPS2031 - 5 A TPS2022, TPS2032 - 5 A TPS2023, TPS2033 - 5 A TPS2024, TPS2034 - 5 A Ambient = 25°C |

| | |
|--|---|
| Testing procedure and testing location: | |
| <input checked="" type="checkbox"/> | CB Testing Laboratory Testing location / address..... : UL San Jose 455 E. Trimble Rd., San Jose, CA, 95131-1230, USA <input type="checkbox"/> Associated CB Test Laboratory Testing location / address..... : Tested by (name + signature) : Manish Gupta  Approved by (name + signature) ... : Elicia M. Sosa  |
| <input type="checkbox"/> | Testing Procedure: TMP Tested by (name + signature) : _____ Approved by (+ signature) : _____ Testing location / address..... : _____ |
| <input type="checkbox"/> | Testing Procedure: WMT Tested by (name + signature) : _____ Witnessed by (+ signature)..... : _____ Approved by (+ signature) : _____ Testing location / address..... : _____ |
| <input type="checkbox"/> | Testing Procedure: SMT Tested by (name + signature) : _____ Approved by (+ signature) : _____ Supervised by (+ signature) : _____ Testing location / address..... : _____ |
| <input type="checkbox"/> | Testing Procedure: RMT Tested by (name + signature) : _____ Approved by (+ signature) : _____ Supervised by (+ signature) : _____ Testing location / address..... : _____ |

| |
|---|
| List of Attachments National Differences (41 pages) Enclosures (8 pages) |
|---|

| |
|---|
| Summary Of Testing Unless otherwise indicated, all tests were conducted at UL San Jose 455 E. Trimble Rd., San Jose, CA, 95131-1230, USA. |
|---|

| Tests performed (name of test and test clause) | Testing location / Comments |
|--|-----------------------------|
| Limited Power Source Measurements (2.5) | |
| Heating (4.5.1, 1.4.12, 1.4.13) | |

Abnormal Operation (5.3.1 - 5.3.9)

Evaluation of Intergrated Circuit (IC) Current Limiters
(Annex CC)

Summary of Compliance with National Differences:

Countries outside the CB Scheme membership may also accept this report.



List of countries addressed: AT, BE, BG, BY, CA, CH, CN, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IT, JP, KR, NL, NO, PL, PT, RO, SE, SG, SI, SK, UA, US

The product fulfills the requirements of: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011

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.

MARKING:

The Recognized Company trade name (Texas Instruments), or trademark , catalog number, and Recognized Component Mark  on the smallest package or reel.

Electrical ratings, including voltage range, maximum continuous current, protective current and operating temperatures shall be provided on the manufacturer's device specific datasheet. The datasheet may be web-based provided it is publicly accessible on the internet.

| | |
|---|--|
| Test item particulars : | |
| Equipment mobility | component for building-in |
| Connection to the mains | not directly connected to the mains |
| Operating condition | continuous |
| Access location | operator accessible |
| Over voltage category (OVC) | OVC I |
| Mains supply tolerance (%) or absolute mains supply values | N/A |
| Tested for IT power systems | No |
| IT testing, phase-phase voltage (V) | N/A |
| Class of equipment | Class III (supplied by SELV) |
| Considered current rating of protective device as part of the building installation (A) | N/A |
| Pollution degree (PD) | PD 2 |
| IP protection class | IP X0 |
| Altitude of operation (m) | maximum 2000 m |
| Altitude of test laboratory (m) | less than 2000 m |
| Mass of equipment (kg) | maximum 0.1 kg (component for building-in) |
| 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(s) of receipt of test item | 2013-01-17, 2013-03-01 |
| Date(s) of Performance of tests | 2013-01-30 to 2013-03-14 |
| General remarks: | |
| The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a point is used as the decimal separator. | |
| Manufacturer's Declaration per Sub Clause 6.25 of IEC60950-1: | |
| The application for obtaining a CB Test Certificate includes more than one factory and a declaration form the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided | |
| When differences exist, they shall be identified in the General Product Information section. | |
| Name and address of Factory(ies): | ASE ASSEMBLY & TEST (SHANGHAI) LTD #669 GUOSHOUJING RD ZHANGJIANG HI-TECH PARK |

PUDONG NEW AREA
SHANGHAI
201203 CHINA

UTAC THAI LTD
WELGROW INDUSTRIAL ESTATE, 73 MOO5
BANGNA-TRAD (KM 38) RD
A BANGPAKONG, T BANGSAMAK
CHACHOENGSARO 24180 THAILAND

NANTONG FUJITSU MICROELECTRONICS CO LTD
NO 288 CHONGCHUAN RD
CHONGCHUAN DEVELOPMENT ZONE
NANTONG
JIANGSU 226006 CHINA

TI (PHILIPPINES) INC
CLARK TI SPECIAL ECONOMIC ZONE
CLARK FREEPORT ZONE
ANGELES PAMPANGA PHILIPPINES

TEXAS INSTRUMENTS DE MEXICO S DE R L DE C V
JESUS RIVERA FRANCO # 507
CD INDUSTRIAL
20290 AGUASCALIENTES
AGS MEXICO

TEXAS INSTRUMENTS MALAYSIA SDN BHD
1 LORONG ENGGANG 33
AMPANG/ULU KLANG
54200 KUALA LUMPUR MALAYSIA

HANA SEMICONDUCTOR (AYUTTHAYA) CO LTD
HI-TECH IND ESTATE AUTH OF THAILAND
100 MOO1, T BAAN-LEN, A BANG PA-IN
KM 59 ASIA RD
AYUTTHAYA 13160 THAILAND

TEXAS INSTRUMENTS TAIWAN LTD
142 HSIN NAN RD, SEC 1
CHUNG HO
TAIPEI HSIEN
235 TAIWAN

GENERAL PRODUCT INFORMATION:

Report Summary

All applicable tests according to the referenced standard(s) have been carried out.

Product Description

The component power distribution switch (IC Current Limiter) limits the output current to within the specified output ratings. These devices provide current limiting and short-circuit protection when supplied by a power source (e.g., 250 VA) in accordance with those specified for LPS outputs in Table 2B. These devices are for use in SELV circuits only.

Enclosures Id. 3-01 and Id. 3-02 shows the IC Current Limiter (U1) on the Evaluation Board. The test circuit of the Evaluation Board is shown in Enclosure Id. 7-03 (Annex CC (IC Current Limiter Testing Results)).

Model Differences

Models TPS2020, TPS2021, TPS2022, TPS2023, TPS2024 are identical to Models TPS2030, TPS2031, TPS2032, TPS2033, TPS2034, respectively, except Models TPS2020, TPS2021, TPS2022, TPS2023, and TPS2024 are Active Low Enable and Models TPS2030, TPS2031, TPS2032, TPS2033, and TPS2034 are Active High Enable.

Additional Information

Manufacturer's specification sheet is available per request.

MARKING:

The Recognized Company, trade name (Texas Instruments), or trademark, catalog number, and Recognized Component Mark on the smallest package or reel.

Electrical ratings, including voltage range, maximum continuous current, protective current and operating temperatures shall be provided on the manufacturer's device specific datasheet. The datasheet may be web-based provided it is publicly accessible on the internet.

The manufacturer's name and model designation are etched on the IC Current Limiter (U1). See Enclosure Id. 3-01 and Id. 3-02 (Overall View (IC Current Limiter (U1) on the Evaluation Board)) for details.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 25°C
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 (which includes all European national differences, including those specified in this Test Report).
- These devices are integrated circuit (packages) and the spacings within the device meet functional insulation. The ICs are intended for installation in SELV circuits only. 2. These devices are entirely electronic in nature and have no means for manual operation or reset. 3. The terminals of these devices are for factory wiring only and intended to be mounted on a printed wiring board. 4. These devices have only been evaluated for supplementary overcurrent protection of secondary circuits supplied by the load side of a transformer or battery, and have not been evaluated for branch-circuit protection. 5. These devices have been investigated as electronic overcurrent protective devices in accordance with the requirements contained in UL 2367 – the Standard for Solid State Overcurrent Protectors. As a result, use is permitted only on the load-side of an isolating transformer, power supply or battery with maximum levels. 6. Use on secondary supply circuits with a higher power capability requires additional evaluation for reliability, such as are contained in the Standard for Safety-Related Controls Employing Solid-State Controls, UL 991. 7. These devices have not been subjected tests for telecom applications and their suitability for connection to telecommunication

networks with outside plant connections should be determined in the end product. 8. These devices were evaluated with respect to continuous current operation at the current levels shown in the electrical ratings section of this Test Report. 9. These devices have been subjected to environmental conditionings with respect to the following conditions (UL 2367): Shipping and Storage: -30°C to 70°C Temperature Range: 25°C Thermal Cycling Endurance Abnormal 10. These devices limit current to values less than the overcurrent protection rating of 5 Amperes. 11. These devices have been evaluated for use in a maximum 85C ambient. 12. These devices have not been subjected to tests for Telecom applications and their suitability for connection to telecommunication networks with outside plant connections should be determined in the end-use. 13. These devices were evaluated with respect to continuous current operation at the current levels shown in the electrical ratings section of this report. 14. These devices were tested in the circuit shown in Enclosure 7-03. 14. These devices have been evaluated for indoor and outdoor use only. --

Abbreviations used in the report:

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

Indicate used abbreviations (if any)

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

| | | | |
|---------|--|--|------|
| 1 | GENERAL | | Pass |
| 1.5 | Components | | Pass |
| 1.5.1 | General | | Pass |
| | Comply with IEC 60950-1 or relevant component standard | | N/A |
| 1.5.2 | Evaluation and testing of components | | N/A |
| 1.5.3 | Thermal controls | | N/A |
| 1.5.4 | Transformers | | N/A |
| 1.5.5 | Interconnecting cables | | N/A |
| 1.5.6 | Capacitors bridging insulation | | N/A |
| 1.5.7 | Resistors bridging insulation | | N/A |
| 1.5.7.1 | Resistors bridging functional, basic or supplementary insulation | | N/A |
| 1.5.7.2 | Resistors bridging double or reinforced insulation between a.c. mains and other circuits | | 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 | | N/A |
| 1.5.9 | Surge suppressors | | N/A |
| 1.5.9.1 | General | | N/A |
| 1.5.9.2 | Protection of VDRs | | N/A |
| 1.5.9.3 | Bridging of functional insulation by a VDR | | N/A |
| 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 | | N/A |
| 1.6.1 | AC power distribution systems | | N/A |
| 1.6.2 | Input current | | N/A |
| 1.6.3 | Voltage limit of hand-held equipment | | N/A |
| 1.6.4 | Neutral conductor | | N/A |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.7 | Marking and instructions | | Pass |
| 1.7.1 | Power rating and identification markings | | Pass |
| 1.7.1.1 | Power rating mark | | N/A |
| | Multiple mains supply connections.....: | | N/A |
| | Rated voltage(s) or voltage range(s) (V) ...: | | N/A |
| | Symbol for nature of supply, for d.c. only .: | | N/A |
| | Rated frequency or rated frequency range (Hz) | | N/A |
| | Rated current (mA or A) | | N/A |
| 1.7.1.2 | Identification markings | | Pass |
| | Manufacturer's name or trademark or identification mark | TEXAS INSTRUMENTS INC | Pass |
| | Model identification or type reference | TPS2020, TPS2021, TPS2022, TPS2023, TPS2024, TPS2030, TPS2031, TPS2032, TPS2033 or TPS2034 | Pass |
| | Symbol for Class II equipment only | | N/A |
| | Other markings and symbols.....: | | N/A |
| 1.7.2 | Safety instructions and marking | | N/A |
| 1.7.2.1 | General | | N/A |
| 1.7.2.2 | Disconnect devices | | N/A |
| 1.7.2.3 | Overcurrent protective device | | N/A |
| 1.7.2.4 | IT Power distribution systems | | N/A |
| 1.7.2.5 | Operator access with a tool | | N/A |
| 1.7.2.6 | Ozone | | N/A |
| 1.7.3 | Short duty cycles | | N/A |
| 1.7.4 | Supply voltage adjustment | | N/A |
| | Method and means of adjustment; reference to installation instructions | | N/A |
| 1.7.5 | Power outlets on the equipment.....: | | N/A |
| 1.7.6 | Fuse identification (marking, special fusing | | N/A |

| IEC 60950-1 | | | |
|-------------|---|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | characteristics, cross-reference): | | |
| 1.7.7 | Wiring terminals | | N/A |
| 1.7.7.1 | Protective earthing and bonding terminals: | | N/A |
| 1.7.7.2 | Terminals for a.c. mains supply conductors | | N/A |
| 1.7.7.3 | Terminals for d.c. mains supply conductors | | N/A |
| 1.7.8 | Controls and indicators | | N/A |
| 1.7.8.1 | Identification, location and marking: | | N/A |
| 1.7.8.2 | Colours.....: | | N/A |
| 1.7.8.3 | Symbols according to IEC 60417: | | N/A |
| 1.7.8.4 | Markings using figures: | | N/A |
| 1.7.9 | Isolation of multiple power sources: | | N/A |
| 1.7.10 | Thermostats and other regulating devices: | | N/A |
| 1.7.11 | Durability | Marking is etched on IC. | Pass |
| 1.7.12 | Removable parts | | N/A |
| 1.7.13 | Replaceable batteries.....: | | N/A |
| | Language(s): | | - |
| 1.7.14 | Equipment for restricted access locations : | | N/A |

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

| | | | |
|---------|--|--|------|
| 2 | PROTECTION FROM HAZARDS | | Pass |
| 2.1 | Protection from electric shock and energy hazards | | N/A |
| 2.1.1 | Protection in operator access areas | | N/A |
| 2.1.1.1 | Access to energized parts | | N/A |
| | Test by inspection | | N/A |
| | Test with test finger (Figure 2A) | | N/A |
| | Test with test pin (Figure 2B) | | N/A |
| | Test with test probe (Figure 2C)..... | | N/A |
| 2.1.1.2 | Battery compartments | | N/A |
| 2.1.1.3 | Access to ELV wiring | | N/A |
| | Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm) | | - |
| 2.1.1.4 | Access to hazardous voltage circuit wiring | | N/A |
| 2.1.1.5 | Energy hazards | | N/A |
| 2.1.1.6 | Manual controls | | N/A |
| 2.1.1.7 | Discharge of capacitors in equipment | | N/A |
| | Measured voltage (V); time-constant (s) ... | | - |
| 2.1.1.8 | Energy hazards - d.c. mains supply | | N/A |
| | a) Capacitor connected to the d.c. mains supply..... | | N/A |
| | b) Internal battery connected to the mains supply..... | | N/A |
| 2.1.1.9 | Audio amplifiers..... | | N/A |
| 2.1.2 | Protection in service access areas | | N/A |
| 2.1.3 | Protection in restricted access locations | | N/A |

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

| | | | |
|-------|---|--|-----|
| 2.2 | SELV circuits | | N/A |
| 2.2.1 | General requirements | | N/A |
| 2.2.2 | Voltages under normal conditions (V) | | N/A |
| 2.2.3 | Voltages under fault conditions (V) | | N/A |
| 2.2.4 | Connection of SELV circuits to other circuits | | N/A |

| | | | |
|---------|--|--|-----|
| 2.3 | TNV circuits | | N/A |
| 2.3.1 | Limits | | 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 |
| | Insulation employed | | - |
| 2.3.5 | Test for operating voltages generated externally | | N/A |

| | | | |
|-------|--|--|-----|
| 2.4 | Limited current circuits | | N/A |
| 2.4.1 | General requirements | | N/A |
| 2.4.2 | Limit values | | N/A |
| | Frequency (Hz) | | - |
| | Measured current (mA) | | - |
| | Measured voltage (V) | | - |
| | Measured circuit capacitance (nF or uF) .. | | - |
| 2.4.3 | Connection of limited current circuits to other circuits | | N/A |

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

| | | | |
|-----|--|---------------------------|------|
| 2.5 | Limited power sources | | Pass |
| | a) Inherently limited output | | N/A |
| | b) Impedance limited output | | N/A |
| | c) Regulating network limited output under normal operating and single fault condition | See Annex CC for details. | Pass |
| | d) Overcurrent protective device limited output | | N/A |
| | Max. output voltage (V), max. output current (A), max. apparent power (VA).....: | See Annex CC for details. | - |
| | Current rating of overcurrent protective device (A) | | - |
| | Use of integrated circuit (IC) current limiters.....: | See Annex CC for Details | - |

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

| | | | |
|---------|--|--|-----|
| 2.6 | Provisions for earthing and bonding | | N/A |
| 2.6.1 | Protective earthing | | 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 | | - |
| 2.6.3.4 | Resistance of earthing conductors and their terminations; resistance (ohm), 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 |

| IEC 60950-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.6.5.6 | Corrosion resistance | | N/A |
| 2.6.5.7 | Screws for protective bonding | | N/A |
| 2.6.5.8 | Reliance on telecommunication network or cable distribution system | | N/A |
| 2.7 | Overcurrent and earth fault protection in primary circuits | | N/A |
| 2.7.1 | Basic requirements | | N/A |
| | Instructions when protection relies on building installation | | N/A |
| 2.7.2 | Faults not covered in 5.3.7 | | N/A |
| 2.7.3 | Short-circuit backup protection | | N/A |
| 2.7.4 | Number and location of protective devices: | | N/A |
| 2.7.5 | Protection by several devices | | N/A |
| 2.7.6 | Warning to service personnel.....: | | N/A |
| 2.8 | Safety interlocks | | N/A |
| 2.8.1 | General principles | | 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 |

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

| | | | |
|-------|---|---|------|
| 2.9 | Electrical insulation | | Pass |
| 2.9.1 | Properties of insulating materials | | Pass |
| 2.9.2 | Humidity conditioning | | N/A |
| | Relative humidity (%), temperature (°C)...: | | - |
| 2.9.3 | Grade of insulation | Functional Insulation only. See sub-clause 5.3.4. | Pass |
| 2.9.4 | Separation from hazardous voltages | | N/A |
| | Method(s) used | | - |

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

| | | | |
|----------|--|--|-----|
| 2.10 | Clearances, creepage distances and distances through insulation | | N/A |
| 2.10.1 | General | | N/A |
| 2.10.1.1 | Frequency | | N/A |
| 2.10.1.2 | Pollution degrees | | N/A |
| 2.10.1.3 | Reduced values for functional insulation | | N/A |
| 2.10.1.4 | Intervening unconnected conductive parts | | N/A |
| 2.10.1.5 | Insulation with varying dimensions | | N/A |
| 2.10.1.6 | Special separation requirements | | N/A |
| 2.10.1.7 | Insulation in circuits generating starting pulses | | N/A |
| 2.10.2 | Determination of working voltage | | N/A |
| 2.10.2.1 | General | | N/A |
| 2.10.2.2 | RMS working voltage | | N/A |
| 2.10.2.3 | Peak working voltage | | N/A |
| 2.10.3 | Clearances | | N/A |
| 2.10.3.1 | General | | N/A |
| 2.10.3.2 | Mains transient voltages | | N/A |
| | a) AC mains supply | | N/A |
| | b) Earthed d.c. mains supplies | | N/A |
| | c) Unearthed d.c. mains supplies | | N/A |
| | d) Battery operation..... | | N/A |
| 2.10.3.3 | Clearances in primary circuits | | N/A |
| 2.10.3.4 | Clearances in secondary circuits | | N/A |
| 2.10.3.5 | Clearances in circuits having starting pulses | | N/A |
| 2.10.3.6 | Transients from a.c. mains supply..... | | N/A |
| 2.10.3.7 | Transients from d.c. mains supply..... | | N/A |
| 2.10.3.8 | Transients from telecommunication networks and cable distribution systems .. | | N/A |
| 2.10.3.9 | Measurement of transient voltage levels | | N/A |
| | a) Transients from a mains supply | | N/A |
| | For an a.c. mains supply | | N/A |

| IEC 60950-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | For a d.c. mains supply | | N/A |
| | b) Transients from a telecommunication network | | N/A |
| 2.10.4 | Creepage distances | | N/A |
| 2.10.4.1 | General | | N/A |
| 2.10.4.2 | Material group and comparative tracking index | | N/A |
| | CTI tests..... | | - |
| 2.10.4.3 | Minimum creepage distances | | N/A |
| 2.10.5 | Solid insulation | | N/A |
| 2.10.5.1 | General | | N/A |
| 2.10.5.2 | Distances through insulation | | N/A |
| 2.10.5.3 | Insulating compound as solid insulation | | N/A |
| 2.10.5.4 | Semiconductor devices | | N/A |
| 2.10.5.5 | Cemented joints | | N/A |
| 2.10.5.6 | Thin sheet material - General | | N/A |
| 2.10.5.7 | Separable thin sheet material | | N/A |
| | Number of layers (pcs) | | - |
| 2.10.5.8 | Non-separable thin sheet material | | 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 | | N/A |
| | Electric strength test..... | | - |
| 2.10.5.11 | Insulation in wound components | | N/A |
| 2.10.5.12 | Wire in wound components | | 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 |

| IEC 60950-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.5.13 | 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 | | N/A |
| | Working voltage | | N/A |
| | - Basic insulation not under stress | | N/A |
| | - Supplementary, reinforced insulation | | N/A |
| 2.10.6 | Construction of printed boards | | N/A |
| 2.10.6.1 | Uncoated printed boards | | N/A |
| 2.10.6.2 | Coated printed boards | | N/A |
| 2.10.6.3 | Insulation between conductors on the same inner surface of a printed board | | N/A |
| 2.10.6.4 | Insulation between conductors on different layers of a printed board | | N/A |
| | Distance through insulation | | N/A |
| | Number of insulation layers (pcs) | | N/A |
| 2.10.7 | Component external terminations | | N/A |
| 2.10.8 | Tests on coated printed boards and coated components | | 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 | | N/A |
| 2.10.11 | Tests for semiconductor devices and cemented joints | | N/A |
| 2.10.12 | Enclosed and sealed parts | | N/A |

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

| | | | |
|----------|--|--|-----|
| 3 | WIRING, CONNECTIONS AND SUPPLY | | N/A |
| 3.1 | General | | N/A |
| 3.1.1 | Current rating and overcurrent protection | | N/A |
| 3.1.2 | Protection against mechanical damage | | N/A |
| 3.1.3 | Securing of internal wiring | | N/A |
| 3.1.4 | Insulation of conductors | | N/A |
| 3.1.5 | Beads and ceramic insulators | | N/A |
| 3.1.6 | Screws for electrical contact pressure | | N/A |
| 3.1.7 | Insulating materials in electrical connections | | N/A |
| 3.1.8 | Self-tapping and spaced thread screws | | N/A |
| 3.1.9 | Termination of conductors | | N/A |
| | 10 N pull test | | N/A |
| 3.1.10 | Sleeving on wiring | | N/A |

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

| | | | |
|------------|---|--|-----|
| 3.2 | Connection to mains supply | | N/A |
| 3.2.1 | Means of connection | | N/A |
| 3.2.1.1 | Connection to an a.c. mains supply | | N/A |
| 3.2.1.2 | Connection to a d.c. mains supply | | N/A |
| 3.2.2 | Multiple supply connections | | N/A |
| 3.2.3 | Permanently connected equipment | | N/A |
| | Number of conductors, diameter of cable and conduits (mm) | | - |
| 3.2.4 | Appliance inlets | | N/A |
| 3.2.5 | Power supply cords | | N/A |
| 3.2.5.1 | AC power supply cords | | N/A |
| | Type | | - |
| | Rated current (A), cross-sectional area (mm ²), AWG | | - |
| 3.2.5.2 | DC power supply cords | | N/A |
| 3.2.6 | Cord anchorages and strain relief | | N/A |
| | Mass of equipment (kg), pull (N) | | - |
| | Longitudinal displacement (mm) | | - |
| 3.2.7 | Protection against mechanical damage | | N/A |
| 3.2.8 | Cord guards | | N/A |
| | Diameter of minor dimension D (mm); test mass (g) | | - |
| | Radius of curvature of cord (mm) | | - |
| 3.2.9 | Supply wiring space | | N/A |

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

| | | | |
|------------|---|--|-----|
| 3.3 | Wiring terminals for connection of external conductors | | N/A |
| 3.3.1 | Wiring terminals | | 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 and nominal thread diameter (mm) | | - |
| 3.3.6 | Wiring terminals 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 | | N/A |
| 3.4.1 | General requirement | | N/A |
| 3.4.2 | Disconnect devices | | N/A |
| 3.4.3 | Permanently connected equipment | | N/A |
| 3.4.4 | Parts which remain energized | | N/A |
| 3.4.5 | Switches in flexible cords | | N/A |
| 3.4.6 | Number of poles - single-phase and d.c. equipment | | N/A |
| 3.4.7 | Number of poles - three-phase equipment | | N/A |
| 3.4.8 | Switches as disconnect devices | | N/A |
| 3.4.9 | Plugs as disconnect devices | | N/A |
| 3.4.10 | Interconnected equipment | | N/A |
| 3.4.11 | Multiple power sources | | N/A |

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

| | | | |
|------------|--|--|-----|
| 3.5 | Interconnection of equipment | | N/A |
| 3.5.1 | General requirements | | N/A |
| 3.5.2 | Types of interconnection circuits | | N/A |
| 3.5.3 | ELV circuits as interconnection circuits | | N/A |
| 3.5.4 | Data ports for additional equipment | | N/A |

| | | | |
|----------|------------------------------|--|------|
| 4 | PHYSICAL REQUIREMENTS | | Pass |
| 4.1 | Stability | | N/A |
| | Angle of 10° | | N/A |
| | Test force (N) | | N/A |

| | | | |
|------------|--|--|-----|
| 4.2 | Mechanical strength | | N/A |
| 4.2.1 | General | | N/A |
| | Rack-mounted equipment | | N/A |
| 4.2.2 | Steady force test, 10 N | | N/A |
| 4.2.3 | Steady force test, 30 N | | N/A |
| 4.2.4 | Steady force test, 250 N | | N/A |
| 4.2.5 | Impact test | | N/A |
| | Fall test | | N/A |
| | Swing test | | N/A |
| 4.2.6 | Drop test; height (mm)..... | | N/A |
| 4.2.7 | Stress relief test | | N/A |
| 4.2.8 | Cathode ray tubes | | N/A |
| | Picture tube separately certified | | N/A |
| 4.2.9 | High pressure lamps | | N/A |
| 4.2.10 | Wall or ceiling mounted equipment; force (N) | | N/A |
| 4.2.11 | Rotating solid media | | N/A |
| | Test to cover on the door | | N/A |

| IEC 60950-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.3 | Design and construction | | N/A |
| 4.3.1 | Edges and corners | | N/A |
| 4.3.2 | Handles and manual controls; force (N) ...: | | N/A |
| 4.3.3 | Adjustable controls | | N/A |
| 4.3.4 | Securing of parts | | N/A |
| 4.3.5 | Connection by plugs and sockets | | N/A |
| 4.3.6 | Direct plug-in equipment | | N/A |
| | Torque.....: | | N/A |
| | Compliance with the relevant mains plug standard.....: | | N/A |
| 4.3.7 | Heating elements in earthed equipment | | N/A |
| 4.3.8 | Batteries | | 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 |
| 4.3.9 | Oil and grease | | N/A |
| 4.3.10 | Dust, powders, liquids and gases | | N/A |
| 4.3.11 | Containers for liquids or gases | | N/A |
| 4.3.12 | Flammable liquids.....: | | N/A |
| | Quantity of liquid (l).....: | | N/A |
| | Flash point (°C).....: | | N/A |
| 4.3.13 | Radiation | | N/A |
| 4.3.13.1 | General | | N/A |
| 4.3.13.2 | Ionizing radiation | | N/A |
| | Measured radiation (pA/kg).....: | | - |
| | Measured high-voltage (kV).....: | | - |
| | Measured focus voltage (kV).....: | | - |
| | CRT markings.....: | | - |

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

| | | | |
|------------|---|--|-----|
| 4.3.13.3 | Effect of ultraviolet (UV) radiation on materials | | N/A |
| | Part, property, retention after test, flammability classification | | N/A |
| 4.3.13.4 | Human exposure to ultraviolet (UV) radiation | | N/A |
| 4.3.13.5 | Lasers (including laser diodes) and LEDs | | N/A |
| 4.3.13.5.1 | Lasers (including laser diodes) | | N/A |
| | Laser class | | - |
| 4.3.13.5.2 | Light emitting diodes (LEDs) | | N/A |
| 4.3.13.6 | Other types..... | | N/A |

| | | | |
|---------|--|--|-----|
| 4.4 | Protection against hazardous moving parts | | N/A |
| 4.4.1 | General | | 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 |
| 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 |

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

| | | | |
|-------|--|--|------|
| 4.5 | Thermal requirements | | Pass |
| 4.5.1 | General | | Pass |
| 4.5.2 | Temperature tests | | Pass |
| | Normal load condition per Annex L: | Thermal Requirements Test complies with Normal Load. | - |
| 4.5.3 | Temperature limits for materials | (see appended table 4.5) | Pass |
| 4.5.4 | Touch temperature limits | | N/A |
| 4.5.5 | Resistance to abnormal heat.....: | | N/A |

| | | | |
|---------|---|--|-----|
| 4.6 | Openings in enclosures | | N/A |
| 4.6.1 | Top and side openings | | N/A |
| | Dimensions (mm): | | - |
| 4.6.2 | Bottoms of fire enclosures | | N/A |
| | Construction of the bottom, dimensions (mm).....: | | - |
| 4.6.3 | Doors or covers in fire enclosures | | N/A |
| 4.6.4 | Openings in transportable 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 | | N/A |
| | Conditioning temperature (°C), time (weeks).....: | | - |

| IEC 60950-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.7 | Resistance to fire | | N/A |
| 4.7.1 | Reducing the risk of ignition and spread of flame | | N/A |
| | Method 1, selection and application of components wiring and materials | | N/A |
| | Method 2, application of all of simulated fault condition tests | | N/A |
| 4.7.2 | Conditions for a fire enclosure | | N/A |
| 4.7.2.1 | Parts requiring a fire enclosure | | N/A |
| 4.7.2.2 | Parts not requiring a fire enclosure | | N/A |
| 4.7.3 | Materials | | N/A |
| 4.7.3.1 | General | | N/A |
| 4.7.3.2 | Materials for fire enclosures | | N/A |
| 4.7.3.3 | Materials for components and other parts outside fire enclosures | | N/A |
| 4.7.3.4 | Materials for components and other parts inside fire enclosures | | N/A |
| 4.7.3.5 | Materials for air filter assemblies | | N/A |
| 4.7.3.6 | Materials used in high-voltage components | | N/A |

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

| | | | |
|---------|---|--|------|
| 5 | ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS | | Pass |
| 5.1 | Touch current and protective conductor current | | N/A |
| 5.1.1 | General | | N/A |
| 5.1.2 | Configuration of equipment under test (EUT) | | 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 | | N/A |
| 5.1.4 | Application of measuring instrument | | N/A |
| 5.1.5 | Test procedure | | N/A |
| 5.1.6 | Test measurements | | N/A |
| | Supply voltage (V) | | - |
| | Measured touch current (mA)..... | | - |
| | Max. allowed touch current (mA)..... | | - |
| | Measured protective conductor current (mA) | | - |
| | Max. allowed protective conductor current (mA) | | - |
| 5.1.7 | Equipment with touch current exceeding 3,5 mA | | 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 | | 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 | | N/A |

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

| | | | |
|--|--|--|-----|
| | telecommunication networks | | |
| | 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 | | N/A |
| 5.2.1 | General | | N/A |
| 5.2.2 | Test procedure | | N/A |

| | | | |
|---------|---|---|------|
| 5.3 | Abnormal operating and fault conditions | | Pass |
| 5.3.1 | Protection against overload and abnormal operation | | N/A |
| 5.3.2 | Motors | | N/A |
| 5.3.3 | Transformers | | N/A |
| 5.3.4 | Functional insulation | Intended to be mounted on Printed Wiring Board rated V-1. | Pass |
| 5.3.5 | Electromechanical components | | N/A |
| 5.3.6 | Audio amplifiers in ITE | | N/A |
| 5.3.7 | Simulation of faults | IC Current Limiter was subjected to additional fault testing. Information is available from manufacturer upon request. (see appended table 5.3) | Pass |
| 5.3.8 | Unattended equipment | | N/A |
| 5.3.9 | Compliance criteria for abnormal operating and fault conditions | | N/A |
| 5.3.9.1 | During the tests | | N/A |
| 5.3.9.2 | After the tests | | N/A |

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

| | | | |
|---------|---|--|-----|
| 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 | | 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 | | 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).....: | | - |
| | Current limiting method.....: | | - |

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

| | | | |
|-------|---|--|-----|
| 7 | CONNECTION TO CABLE DISTRIBUTION SYSTEMS | | N/A |
| 7.1 | General | | N/A |
| 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) | | 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 | | N/A |
| 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 |

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

| | | | |
|-------|----------------------------------|--|-----|
| | 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 | | 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) | | - |

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

| | | | |
|----------|--|--|------------|
| C | ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3) | | N/A |
| | Position | | - |
| | Manufacturer | | - |
| | Type | | - |
| | Rated values | | - |
| | Method of protection | | - |
| C.1 | Overload test | | N/A |
| C.2 | Insulation | | N/A |
| | Protection from displacement of windings : | | N/A |

| | | | |
|----------|---|--|------------|
| D | ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4) | | N/A |
| D.1 | Measuring instrument | | N/A |
| 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) | | N/A |
|----------|---|--|------------|

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

| | | | |
|----------|--|--|-----|
| G | ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES | | N/A |
| G.1 | Clearances | | 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 supply | | N/A |
| G.2.3 | Unearthed d.c. mains supply | | 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 |
| | 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) | | N/A |
| | Metal(s) used | | - |

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

| | | | |
|-----|--|--|-----|
| K | ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8) | | N/A |
| K.1 | Making and breaking capacity | | 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) | | N/A |
| 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 | | N/A |

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

| | | | |
|----------|--|--|-----|
| 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 | Ringng 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)..... | | - |
| 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 | | N/A |
|----------|--------------------------------------|--|-----|

| | | | |
|----------|--|--|-----|
| Q | ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1) | | N/A |
| | a) Preferred climatic categories..... | | N/A |
| | b) Maximum continuous voltage..... | | N/A |
| | c) Pulse current | | N/A |

| | | | |
|----------|---|--|-----|
| 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 |

| IEC 60950-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| |: | | - |
| V | ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) | | N/A |
| V.1 | Introduction | | N/A |
| V.2 | TN power distribution systems | | N/A |
| 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 |

| IEC 60950-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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) | | N/A |
| AA | ANNEX AA, MANDREL TEST (see 2.10.5.8) | | N/A |
| BB | ANNEX BB, CHANGES IN THE SECOND EDITION | | N/A |
| CC | ANNEX CC, EVALUATION OF INTEGRATED CIRCUIT (IC) CURRENT LIMITERS | | Pass |
| CC.1 | General | | Pass |
| CC.2 | Test program 1 | | N/A |
| CC.3 | Test program 2 | See Enclosure Id. 7-03 (Annex CC (IC Current Limiter Testing Results)) for details. | Pass |
| DD | ANNEX DD, REQUIREMENTS FOR THE MOUNTING MEANS OF RACK-MOUNTED EQUIPMENT | | N/A |
| DD.1 | General | | N/A |
| DD.2 | Mechanical strength test, variable N | | N/A |
| DD.3 | Mechanical strength test, 250 N, including end stops..... | | N/A |
| DD.4 | Compliance | | N/A |

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

| | | | |
|------|--|--|-----|
| EE | ANNEX EE, HOUSEHOLD AND HOME/OFFICE DOCUMENT/MEDIA SHREDDERS | | N/A |
| EE.1 | General | | 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 |

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

| 1.5.1 | TABLE: list of critical components | | | | | Pass |
|--|---|-----------------|----------------|----------------------------|-------------------------------------|------|
| object/part or Description | manufacturer/ trademark | type/model | technical data | standard (Edition or year) | mark(s) of conformity ¹⁾ | |
| Models TPS202X/TPS203X Series Housing | Henkel Corp. | GR825-73B | 130°C | UL 746C (6th) | -, - | |
| Models TPS202X/TPS203X Series Housing | Interchangeable | Interchangeable | 130°C | UL 746C (6th) | -, - | |
| Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. | | | | | | |

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

| 1.5.1 | TABLE: Opto Electronic Devices | | | N/A |
|---|--------------------------------|--|--|-----|
| Manufacturer.....: | | | | |
| Type.....: | | | | |
| Separately tested.....: | | | | |
| Bridging insulation.....: | | | | |
| External creepage distance.....: | | | | |
| Internal creepage distance.....: | | | | |
| Distance through insulation.....: | | | | |
| Tested under following conditions.....: | | | | |
| Input.....: | | | | |
| Output.....: | | | | |
| supplementary information: | | | | |
| - | | | | |

| 1.6.2 | TABLE: electrical data (in normal conditions) | | | | | N/A |
|----------------------------|---|-------------|-------|--------|------------|------------------|
| U (V) | I (A) | I rated (A) | P (W) | Fuse # | I fuse (A) | condition/status |
| | | | | | | |
| supplementary information: | | | | | | |

| 2.1.1.5 c) 1) | TABLE: Max. V, A, VA test | | | | N/A |
|----------------------------|---------------------------|--------------------|--------------------|----------------|-----|
| Voltage(rated) (V) | Current(rated) (A) | Voltage (max.) (V) | Current (max.) (A) | VA (max.) (VA) | |
| | | | | | |
| supplementary information: | | | | | |

| 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 | | | N/A |
|------------------------------|---|--------|-----------------------------|-----|
| Component (measured between) | max. voltage (V) (normal operation) | | Voltage Limiting Components | |
| | V Peak | V d.c. | | |
| | | | | |

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

| | |
|---|--|
| Fault test performed on voltage limiting components | Voltage measured (V) in SELV circuits (V peak or V d.c.) |
| supplementary information: | |

| | | |
|--|-------------------------------------|-------------|
| 2.5 | TABLE: limited power sources | Pass |
| Circuit output tested: | - | |
| Measured Uoc (V) with all load circuits disconnected: | - | |
| | Isc (A) | VA |
| | Meas. Limit | Meas. Limit |
| - | - | - |
| supplementary information: See Annex CC for Details | | |

| | | | |
|----------------------------|---|------------------|----------|
| 2.10.2 | TABLE: working voltage measurement | N/A | |
| Location | RMS Voltage (V) | Peak voltage (V) | Comments |
| supplementary information: | | | |

| | | | | | | |
|--|--|--------------|------------------|---------|------------------|---------|
| 2.10.3 and 2.10.4 | TABLE: clearance and creepage distance measurements | N/A | | | | |
| Clearance (cl) and creepage distance (cr) at/of/between: | U peak (V) | U r.m.s. (V) | Required cl (mm) | cl (mm) | Required cr (mm) | cr (mm) |
| Functional: | | | | | | |
| Clearance (cl) and creepage distance (cr) at/of/between: | U peak (V) | U r.m.s. (V) | Required cl (mm) | cl (mm) | Required cr (mm) | cr (mm) |
| Basic/supplementary: | | | | | | |
| Clearance (cl) and creepage distance (cr) at/of/between: | U peak (V) | U r.m.s. (V) | Required cl (mm) | cl (mm) | Required cr (mm) | cr (mm) |
| Reinforced: | | | | | | |
| Clearance (cl) and creepage distance (cr) at/of/between: | U peak (V) | U r.m.s. (V) | Required cl (mm) | cl (mm) | Required cr (mm) | cr (mm) |
| supplementary information: | | | | | | |

| | | | | | |
|--|--|----------|------------------|-------------------|----------|
| 2.10.5 | TABLE: distance through insulation measurements | N/A | | | |
| Distance through insulation (DTI) at/of: | U peak (V) | Urms (V) | Test voltage (V) | Required DTI (mm) | DTI (mm) |
| supplementary information: | | | | | |

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

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. | | | | | | | | | |
| Is it possible to install the battery in a reverse polarity position? | | | | | | | | | |
| | | 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 |
| Max. current during normal operation | | | | | | | | | |
| Test results: | | | | | | | | Verdict | |
| - Chemical leaks | | | | | | | | | |
| - Explosion of the battery | | | | | | | | | |
| - Emission of flame or expulsion of molten metal | | | | | | | | | |
| - Electric strength tests of equipment after completion of tests | | | | | | | | | |
| supplementary information: | | | | | | | | | |

| 4.3.8 | TABLE: Batteries | | | N/A |
|--|-------------------------|--|--|-----|
| Battery Category (Lithium, NiMh, NiCad, Lithium ion, etc.).....: | | | | |
| Manufacturer.....: | | | | |
| Type/Model.....: | | | | |
| Voltage.....: | | | | |
| Capacity (mAh).....: | | | | |
| Tested and Certified by (incl. Ref. No.).....: | | | | |
| Circuit protection diagram (Refer indicated supplement of Enclosure-Miscellaneous).....: | | | | |
| | | | | |

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

| MARKINGS AND INSTRUCTIONS (1.7.12, 1.7.15) | | | |
|--|--|--|--|
| Location of replaceable battery.....: | | | |
| Language(s).....: | | | |
| Close to the battery.....: | | | |
| In the servicing instructions.....: | | | |
| In the operating instructions.....: | | | |
| supplementary information: | | | |
| - | | | |

| 4.5 TABLE: Thermal requirements | | | | | | | Pass |
|--|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| Supply voltage (V)..... : | 2.7 Vdc | 5.5 Vdc | - | - | - | - | — |
| Ambient Tmin (°C) | 25°C | 25°C | - | - | - | - | — |
| Ambient Tmax (°C) | - | - | - | - | - | - | — |
| Maximum measured temperature T of part/at: | T (°C) | | | | | allowed Tmax (°C) | |
| Model TPS2024 | 33.0°C | 33.7°C | - | - | - | - | |
| Model TPS2020 | 23.1°1 | 24.3°C | - | - | - | - | |
| temperature T of winding: | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | allowed T _{max} (°C) | insulation class |
| - | - | - | - | - | - | - | - |
| supplementary information: | | | | | | | |
| - | | | | | | | |

| 4.5.5 TABLE: Ball pressure test of thermoplastic parts | | | N/A |
|--|---------------------------|--------------------------|-----|
| allowed impression diameter (mm) | less than or equal to 2.0 | | — |
| part | test temperature (°C) | impression diameter (mm) | |
| | | | |
| supplementary information: | | | |
| | | | |

| 4.7 TABLE: resistance to fire | | | | | N/A |
|-------------------------------|--------------------------|------------------|----------------|--------------------|----------|
| part | manufacturer of material | type of material | thickness (mm) | flammability class | Evidence |
| | | | | | |
| supplementary information: | | | | | |
| | | | | | |

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

| 5.1 | TABLE: touch current measurement | | | N/A |
|----------------------------|----------------------------------|------------|---------------------|-----|
| Measured between: | Measured (mA) | Limit (mA) | Comments/Conditions | |
| supplementary information: | | | | |

| 5.2 | TABLE: electric strength tests, impulse tests and voltage surge tests | | | N/A |
|-------------------------------|---|------------------|--------------------|-----|
| Test voltage applied between: | Voltage shape (AC, DC, impulse, surge) | Test voltage (V) | Breakdown Yes / No | |
| Functional: | | | | |
| Test voltage applied between: | Voltage shape (AC, DC, impulse, surge) | Test voltage (V) | Breakdown Yes / No | |
| Basic/supplementary: | | | | |
| Test voltage applied between: | Voltage shape (AC, DC, impulse, surge) | Test voltage (V) | Breakdown Yes / No | |
| Reinforced: | | | | |
| Test voltage applied between: | Voltage shape (AC, DC, impulse, surge) | Test voltage (V) | Breakdown Yes / No | |
| supplementary information: | | | | |

| 5.3 | TABLE: fault condition tests | | | | | Pass | |
|-------------------------------------|---|--------------------|-----------|--------|------------------|--|---|
| | ambient temperature (° C) | | | | | - | — |
| | Power source for EUT: Manufacturer, model/type, output rating | | | | | - | — |
| Component No. | Fault | Supply voltage (V) | Test time | Fuse # | Fuse current (A) | Observation | |
| Model TPS2024 Short Circuit | Output Short | 2.7 to 5.5 Vdc | N/A | N/A | N/A | Open Immediately. There was no fire or shock hazard. | |
| Model TPS2024 – Half Wave Rectifier | Power On with Output Open Circuited - Short/Open Output | 2.7 to 5.5 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. | |
| Model TPS2024 – | Output Short Circuited Power | 2.7 to 5.5 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock | |

| IEC 60950-1 | | | | | | |
|-------------------------------------|--|-----------------|-----------|-----|-----|--|
| Clause | Requirement + Test | Result - Remark | | | | Verdict |
| Half Wave Rectifier | to Circuit Off – Power On/Power Off | | | | | hazard. |
| Model TPS2024 – Half Wave Rectifier | Power On Circuit Loaded to Maximum Rated Load - Short Output / Remove Short | 2.7 to 5.5 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 – Half Wave Rectifier | Power Off Output Open-Circuited - Power On / Short Output Power Off / Power On Remove Short / Power Off | 2.7 to 5.5 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Overvoltage | Power On with Output Open Circuited - Short/Open Output | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Overvoltage | Output Short Circuited Power to Circuit Off – Power On/Power Off | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Overvoltage | Power On Circuit Loaded to Maximum Rated Load - Short Output / Remove Short | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Overvoltage | Power Off Output Open-Circuited - Power On / Short Output Power Off / Power On Remove Short / Power Off | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Undervoltage | Power On with Output Open Circuited - Short/Open Output | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |

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

| | | | | | | |
|------------------------------------|--|---------|-----------|-----|-----|--|
| Model TPS2024 - Undervoltage | Output Short Circuited Power to Circuit Off – Power On/Power Off | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Undervoltage | Power On Circuit Loaded to Maximum Rated Load - Short Output / Remove Short | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |
| Model TPS2024 - Undervoltage | Power Off Output Open- Circuited - Power On / Short Output Power Off / Power On Remove Short / Power Off | 6.0 Vdc | 50 cycles | N/A | N/A | 50 cycles completed. There was not fire or shock hazard. |

supplementary information:

Results Key: IP = Internal protection operated (component indicated) CT = Constant temperatures were obtained TW = Transformer winding opened CD = Components damaged (damaged components indicated) NB = No indication of dielectric breakdown YB = Dielectric breakdown (time and location indicated) NC = Cheesecloth remained intact YC = Cheesecloth charred or flamed NT = Tissue paper remained intact YT = Tissue paper charred or flamed

| C.2 | TABLE: transformers | | | | | | N/A |
|----------------------------|----------------------|---|--|---|---|--|--|
| 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) |
| Loc. | Tested insulation | | | Test voltage / V | Measured clearance / mm | Measured creepage dist./mm | Measured distance thr. insul / mm; number of layers |
| Transformer type number | | | | Enclosure - Miscellaneous ID | | | |
| supplementary information: | | | | | | | |

Enclosure

National Differences

Austria**
Belarus*
Belgium**
Bulgaria**
China*
Czech Republic**
Denmark
Finland
France**
Germany
Greece**
Group
Hungary**
Ireland
Israel
Italy**
Japan*
Korea
Netherlands**
Norway
Poland**
Portugal**
Romania**
Singapore*
Slovakia**
Slovenia**
Spain
Sweden
Switzerland
USA / Canada
Ukraine*
United Kingdom

* No National Differences Declared

** Only Group Differences

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Denmark - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|--|--|-----|
| 1.2.4.1 | In Denmark, certain types of Class I appliances (see sub-clause 3.2.1.1) may be provided with plug not establishing earthing continuity when inserted into Danish socket-outlets. | | N/A |
| 1.7.5 | 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. | | N/A |
| 1.7.5 | For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a. (Heavy Current Regulations, Section 107-2-D1) | | N/A |
| 3.2.1.1 | <p>Supply cord 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 contact 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> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Finland - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|---|--|-----|
| 1.5.7.1 | 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. | | N/A |
| 1.5.9.4 | The third dashed sentence is applicable only to equipment as defined by annex, 6.1.2.2. | | N/A |
| 1.7.2.1 | 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. The marking text shall be: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" | | N/A |
| 2.3.2 | Requirements according to this annex 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 2.10.5.13 | Requirements according to this annex 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 5.1.7.1 | Touch current measurement results exceeding 3,5 mA r.m.s are permitted only for the following equipment: - STATIONARY PLUGGABLE EQUIPMENT TYPE A that: (1) is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and (2) has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and (3) is provided with instructions for the installation | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <p>of that conductor by a SERVICE PERSON; - STATIONARY PLUGGABLE EQUIPMENT TYPE B - STATIONARY PERMANENTLY CONNECTED EQUIPMENT</p> | | |
| 6.1.2.1 | <p>Add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - 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> <p>Alternatively for components, there is no distance through insulation requirement 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 - 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.</p> <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 132400:1994 (EN 60384-14:2005), subclass Y2. A capacitor classified Y3 according to EN 132400 [EN 60384-14:2005], may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400 [EN 60384-14], which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV</p> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | 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 132400 [EN 60384-14]; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400 [EN 60384-14], in the sequence of tests as described in EN 132400 [EN 60384-14]. | | |
| 6.1.2.2 | 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 center, 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 | Requirements according to this annex 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM. | | N/A |

| Germany - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|---|--|-----|
| 1.7.2.1 | According to GPSG, section 2, clause 4: If certain rules on the use, supplementation or maintenance of an item of technical work equipment or ready-to-use commodity must be observed in order to guarantee safety and health, instructions for use in German must be supplied when it is brought into circulation. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Group - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|---|--|-----|
| 1.1.1 | <p>Replace the text of NOTE 3 by the following: NOTE 3 The requirements of EN60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the Safety of Multimedia Equipment. For television sets, EN60065 applies.</p> | | N/A |
| 1.2.3 | <p>Add the following definition. 1.2.3.Z1 Portable Sound System Small battery powered audio equipment -whose prime purpose is to listen to recorded or broadcasted sound; and -that uses headphones or earphones that can be worn in or on or around the ears; and -that allows the user to walk around NOTE: Examples are mini-disk or CD players, MP3 audio players or similar equipment.</p> | | N/A |
| 1.5.1 | <p>Add the following NOTE Z1: The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC</p> | | N/A |
| 1.7.2.1 | <p>Delete NOTE Z1 and add the following paragraph at the end of the subclause: In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a a warning that excessive sound pressure from earphones and headphones can cause hearing loss.</p> | | N/A |
| 2.7.1 | <p>Replace the subclause as follows: Basic requirements 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): a) except as detailed in b) and c), protective</p> | | N/A |

| IEC 60950-1:2005 | | | | | | | | | |
|--------------------------------|--|-----------------------|---------|-------------------------------|-------------|--------------------------------|------------|--|-----|
| SubClause | Difference + Test | Result - Remark | Verdict | | | | | | |
| | <p>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> <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 | Void | | N/A | | | | | | |
| 3.2.3 | Delete the NOTE and conduit sizes in parentheses in Table 3A | | N/A | | | | | | |
| 3.2.5.1 | <p>Replace:</p> <p>"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-F"</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</td> <td>0.75 b) 1.0</td> </tr> <tr> <td>Over 10 up to and including 16</td> <td>1.0 c) 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 Table 3B, to 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 | | 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 | | | | | | | | |
| 3.3.4 | | | N/A | | | | | | |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <p>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 by 4"</p> <p>Delete the fifth line: conductor sizes for 13 to 16A.</p> | | |
| 4.3.13.6 | <p>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). Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p> | | N/A |
| H | <p>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.</p> | | N/A |
| Zx | <p>Protection against excessive sound pressure from personal music players</p> | | N/A |
| Zx.1 | <p>General - 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> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <p>- is designed to allow the user to listen to recorded or broadcast sound or video; and</p> <p>- primarily uses headphones or earphones that can be worn in or on or around the ears; and</p> <p>- allows the user to walk around while in use.</p> <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> <ul style="list-style-type: none"> - 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>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</p> | | |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | intended for use by young children, the limits of EN 71-1 apply. | | |
| Zx.2 | <p>Equipment Requirements - No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none"> - equipment provided as a package (personal music player with its listening device), where the acoustic output LAeq,T is ≤ 85 dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and - 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>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level LAeq,T is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none"> a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and 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 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>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <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> <p>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</p> <p>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. 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. 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> | | |
| Zx.3 | <p>Warning - 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 (IEC 60417-6044) with a minimum height of 5 mm; and | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | - the following wording, or similar: "To prevent possible hearing damage, do not listen at high volume levels for long periods." 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 | | |
| Zx.4 | Requirements for Listening devices (headphones and earphones) | | N/A |
| Zx.4.1 | <p>Wired listening devices with analogue input 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> | | N/A |
| Zx.4.2 | <p>Wired listening devices with digital input 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> | | N/A |
| Zx.4.3 | Wireless listening devices | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <p>In wireless mode:</p> <ul style="list-style-type: none"> - with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and - respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and - 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>NOTE An example of a wireless listening device is a Bluetooth headphone.</p> | | |
| Zx.5 | <p>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> | | N/A |

| Ireland - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|--|--|-----|
| 4.3.6 | <p>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.</p> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Israel - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|--|--|--|-----|
| 1.6.1 | Add Note: This clause is applicable subject to the Electricity Law, 1954, its regulations and revisions. | | N/A |
| 1.7 | Add: Sub-clause 1.7.201 shall be added at the beginning of the clause. | | N/A |
| 1.7.2.1 | Add: All the instructions and warnings related to safety shall also be written in the Hebrew language. | | N/A |
| 1.7.201 | <p>The marking in the Hebrew language shall be in accordance with the Consumer Protection Order (Marking of goods), 1983. In addition, the marking required by clause 1.7.1, the following details shall be marked in the Hebrew language. The details shall be marked on the apparatus or on its package, or on a label properly attached to the apparatus or on the package, by bonding or sewing, in a manner that the label cannot be easily removed.</p> <ol style="list-style-type: none"> 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 manufacturer | | N/A |
| 2.9.4 | <p>Add: Seven means of protection against electrocution are permitted according to the Electricity Law, 1954, and the Electricity Regulations (Earthing and means of protection against electricity of voltages up to 1,000V) 1991. The seven are</p> <ol style="list-style-type: none"> 1) TN-S or TN-C-S 2) TT 3) IT | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | 4) Isolated Transformer 5) Safety extra low voltage (SELV or ELV) 6) Residual current circuit breaker (30 ma = 1delta) 7) reinforced insulation; double insulation (Class II) | | |
| 2.201 | Add: Prior to carrying out the tests in accordance with the clauses of this Standard, the compliance of the apparatus with the relevant requirements specified in the appropriate part of the standard series SI 961, shall be checked. The apparatus shall meet the requirements in the appropriate part of the standard series SI 961. If there are components of the apparatus for the prevention of electromagnetic interference, these components shall not reduce the safety level of the apparatus as required by this standard. | | N/A |
| 3.2.1.1 | Add after the note: The feed plug shall comply with the requirements of Israel Standard SI 32 Part 1.1. | | N/A |
| 3.2.1.2 | Add: At the end of the first paragraph add the following note: At the time of issue of the standard, there is no Israel Standard for connection accessories to d.c. | | N/A |

| Korea - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|---|--|-----|
| 1.5.101 | Plugs for the connection of the apparatus to the mains supply shall comply with the Korean requirement (KSC 8305) | | N/A |
| 8 | EMC - The apparatus shall comply with the relevant CISPR standards | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Norway - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|--|---|--|-----|
| 1.2.13.14 | Requirements according to this annex 1.7.2.1 and 7.3 apply. | | N/A |
| 1.5.7.1 | Resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2. | | N/A |
| 1.5.8 | 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). | | N/A |
| 1.5.9.4 | The third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex. | | N/A |
| 1.7.2.1 | 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. The marking text shall be: "Apparatet må tilkoples jordet stikkontakt" | | N/A |
| 1.7.2.1 | In Norway, 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. 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. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <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> <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): "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> | | |
| 2.2.4 | Requirements according to this annex, 1.7.2.1, 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 2.3.2 | Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 2.3.4 | Requirements according to this annex, 1.7.2.1, 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 2.10.5.13 | Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 5.1.7.1 | <p>TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s are permitted only for the following equipment:</p> <ul style="list-style-type: none"> - STATIONARY PLUGGABLE EQUIPMENT TYPE A that: <ul style="list-style-type: none"> (1) is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and (2) has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and (3) is provided with instructions for the installation of that conductor by a SERVICE PERSON; - STATIONARY PLUGGABLE EQUIPMENT TYPE B - STATIONARY PERMANENTLY CONNECTED EQUIPMENT | | N/A |
| 6.1.2.1 | <p>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 requirement 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. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <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 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 123400 [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 132400 [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 132400 [EN 60384-14]; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400 [EN 60384-14], in the sequence of tests as described in EN 132400 [EN 60384-14.] | | |
| 6.1.2.2 | <p>The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and 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.</p> | | N/A |
| 7.2 | <p>Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.</p> | | N/A |
| 7.3 | <p>Refer to EN 60728-11:2005 for installation conditions</p> | | N/A |

| IEC 60950-1:2005 | | | |
|--|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 7.3 | Requirements according to this annex 1.2.13.14 and 1.7.2.1 apply. | | N/A |
| Spain - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
| 3.2.1.1 | Supply cords of single-phase equipment having a rated current not exceeding 10A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2.5A shall be provided with a plug according to UNE-EN 50075:1993. CLASS 1 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. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Sweden - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|--|---|--|-----|
| 1.2.13.14 | Requirements according to this annex 1.7.2.1 and 7.3 apply. | | N/A |
| 1.5.7.1 | Resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2. | | N/A |
| 1.5.9.4 | The third dashed sentence is applicable only to equipment as defined by this annex, 6.1.2.2 | | N/A |
| 1.7.2.1 | 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. The marking text shall be: "Apparaten skall anslutas till jordat uttag" | | N/A |
| 1.7.2.1 | In 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. 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. 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: "Equipment connected to the protective earthing of the building installation through the mains | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <p>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> <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 Swedish: "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> | | |
| 2.3.2 | Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 2.10.5.13 | Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply. | | N/A |
| 5.1.7.1 | <p>TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s are permitted only for the following equipment:</p> <p>STATIONARY PLUGGABLE EQUIPMENT TYPE A that:</p> <p>(1) is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and</p> <p>(2) has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and</p> <p>(3) is provided with instructions for the installation of that conductor by a SERVICE PERSON;</p> <p>- STATIONARY PLUGGABLE TYPE B</p> <p>- STATIONARY PERMANENTLY CONNECTED EQUIPMENT</p> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 6.1.2.1 | <p>Add the following text between the first and second paragraph of the compliance clause: 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 requirement 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. <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 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 132400 [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 132400 [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 132400 [EN 60384-14]; - the impulse test of 2,5 kV is to be performed | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | before the endurance test in EN 132400 [EN 60384-14], in the sequence of tests as described in EN 132400 [EN 60384-14.] | | |
| 6.1.2.2 | The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and 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 | Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM. | | N/A |
| 7.3 | Requirements according to this annex 1.2.13.14 and 1.7.2.1 apply. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| Switzerland - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|---|---|--|-----|
| 3.2.1.1 | <p>Supply cords of equipment having a RATED CURRENT not exceeding 10A 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 SEV 6533-2 1991 Plug Type 11 L+N SEV 6534-2 1991 Plug Type 12 L+N+PE</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10A. However, a 16A 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 SEV 5933-2 1998:Plug Type 21 L+N SEV 5934-2 1998:Plug Type 23 L+N+PE</p> | | N/A |
| 3.2.4 | <p>Requirements according to this annex 3.2.1.1 apply.</p> | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| USA / Canada - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|--|---|--|-----|
| 1.1 | Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70 and the Canadian Electrical Code, Part1, and when applicable, the National Electrical Safety Code, IEEE C2. | | N/A |
| 1.1.1 | Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions. | | N/A |
| 1.1.2 | Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded. | | N/A |
| 1.1.2 | Special requirements apply to equipment intended for use outdoors. | | N/A |
| 1.4.14 | For PLUGGABLE EQUIPMENT TYPE A, the protection in the installation is assumed to be 20 A. | | N/A |
| 1.5.1 | All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of CSA and UL component standards in Annex P.1. | | N/A |
| 1.5.1 | All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of CSA and UL component standards in Annex P.2. | | N/A |
| 1.5.5 | Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 1.5.5 | For other than limited power and TNV circuits, the type of output circuit identified for output connector. | | N/A |
| 1.5.5 | External cable assemblies that exceed 3.05 m in length to be types specified in the NEC and CEC. | | N/A |
| 1.5.5 | Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable. | | N/A |
| 1.5.5 | Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope. | | N/A |
| 1.5.5 | Telephone line and extension cords and the like comply with UL 1863 and CSA C22.2 No. 233. | | N/A |
| 1.6.1.2 | Equipment intended for connection to a d.c. power (mains) distribution system is subject to special circuit classification requirements (e.g., TNV-2) | | N/A |
| 1.6.1.2 | Earthing of d.c. powered equipment provided. | | N/A |
| 1.7 | Lamp replacement information indicated on lampholder in operator access area. | | N/A |
| 1.7.1 | Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | conductor. | | |
| 1.7.1 | Equipment voltage rating not higher than rating of the plug except under special conditions. | | N/A |
| 1.7.6 | Special fuse replacement marking for operator accessible fuses. | | N/A |
| 1.7.7 | Identification of terminal connection of the equipment earthing conductor. | | N/A |
| 1.7.7 | Connectors and field wiring terminals for external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used. | | N/A |
| 1.7.7 | Marking located adjacent to terminals and visible during wiring. | | N/A |
| 2.1.1.1 | Bare TNV conductive parts in the interior of equipment normally protected against contact by a cover intended for occasional removal are exempt provided instructions include directions for disconnection of TNV prior to removal of the cover. | | N/A |
| 2.3.1.b | Other telecommunication signaling systems (e.g., message waiting) than described in 2.3.1(b) are subject to M.4. | | N/A |
| 2.3.1.b | For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the maximum current limit through a 2000 Ohm or greater resistor with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 2.3.1.b | Limits for measurements across 5000 ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4. | | N/A |
| 2.3.2.1 | In the event of a single fault, the limits of 2.2.3 apply to SELV circuits and accessible conductive parts. | | N/A |
| 2.3.2.4 | Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications when subjected to special construction requirements and routine testing. | | N/A |
| 2.5 | Overcurrent protection device required for Class 2 and Class 3 limiting in accordance with the NEC, or for a Limited Power Source, not interchangeable with devices of higher ratings if operator replaceable. | | N/A |
| 2.6 | Equipment having receptacles for output a.c. power connectors generated from an internal separately derived source have the earthed (grounded) circuit conductor suitably bonded to earth. | | N/A |
| 2.6.3.3 | For PLUGGABLE EQUIPMENT TYPE A, if a) b) or c) are not applicable, the current rating of the circuit is taken as 20 A | | N/A |
| 2.6.3.3 | The first column on Table 2D requirement: "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration." | | N/A |
| 2.6.3.4 | Capacity of connection between earthing terminal and parts required to be earthed subject to | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | special conditions based on the current rating of the circuit. | | |
| 2.6.3.4 | Protective bonding conductors and their terminals of non-standard constructions (e.g. PWB traces) evaluated to limited short-circuit test of CSA C22.2 No.0.4. | | N/A |
| 2.6.4.1 | Field wiring terminals for earthing conductors suitable for wire sizes (gauge) used in US and Canada. | | N/A |
| 2.7.1 | Data for selection of special external branch circuit overcurrent devices marked on the equipment. | | N/A |
| 2.7.1 | Standard supply outlets protected by overcurrent device in accordance with the NEC, and CEC, Part 1. | | N/A |
| 2.7.1 | Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring. | | N/A |
| 2.7.1 | Additional requirements for overcurrent protection apply to equipment provided with panelboards. | | N/A |
| 2.7.1 | Non-motor-operated equipment requiring special overcurrent protective device marked with device rating. | | N/A |
| 2.10.5.12 | Multi-layer winding wire subject to UL component wire requirements in addition to 2.10.5.12 and Annex U. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 3.1.1 | Permissible combinations of internal wiring/external cable sizes for overcurrent and short circuit protection. | | N/A |
| 3.1.1 | All interconnecting cables protected against overcurrent and short circuit. | | N/A |
| 3.2 | Wiring methods permit connection of equipment to primary power supply in accordance with the NEC and CEC, Part 1. | | N/A |
| 3.2.1 | Permitted use for flexible cords and plugs. | | N/A |
| 3.2.1 | Flexible cords provided with attachment plug rated 125% of equipment current rating. | | N/A |
| 3.2.1 | Any Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug. | | N/A |
| 3.2.1.2 | Equipment intended for connection to DC mains supply power systems complies with special wiring requirements (e.g., no permanent connection to supply by flexible cord). | | N/A |
| 3.2.1.2 | Equipment with one pole of the DC mains supply connected to both the equipment mains input terminal and the main protective earthing terminal provided with special instructions and construction provisions for earthing. | | N/A |
| 3.2.1.2 | Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | connection and earthing electrode connection. | | |
| 3.2.1.2 | Special markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to earthing conductor at the equipment. | | N/A |
| 3.2.1.2 | Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the earthing conductor at the equipment. | | N/A |
| 3.2.1.2 | Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard. | | N/A |
| 3.2.3 | Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC and CEC, Part 1. | | N/A |
| 3.2.3 | Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm ²) and not less than 150 mm in length for connection of field installed wiring. | | N/A |
| 3.2.3 | If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate. | | N/A |
| 3.2.3 | Equipment compatible with suitable trade sizes of conduits and cables. | | N/A |
| 3.2.5 | Power supply cords are required to be no longer than 4.5 m in length. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | <p>Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement.</p> <p>Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.</p> | | |
| 3.2.5 | Conductors in power supply cords sized according to NEC and CEC, Part I. | | N/A |
| 3.2.5 | Power supply cords and cord sets incorporate flexible cords suitable for the particular application. | | N/A |
| 3.2.6 | Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source. | | N/A |
| 3.2.9 | Adequate wire bending space and volume of field wiring compartment required to properly make the field connections. | | N/A |
| 3.2.9 | Equipment intended solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system. A method of securing wiring or instructions provided to ensure the wiring is protected from abuse. | | N/A |
| 3.3 | Field wiring terminals provided for interconnection of units for other than LPS or Class 2 circuits also comply with 3.3. | | N/A |
| 3.3 | Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | than those specified in 3.3 if wiring is reliably separated. | | |
| 3.3.1 | Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means. | | N/A |
| 3.3.3 | Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm ²) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention. | | N/A |
| 3.3.4 | Terminals accept wire sizes (gauge) used in the U.S. and Canada. | | N/A |
| 3.3.4 | Terminals accept current-carrying conductors rated 125% of the equipment current rating. | | N/A |
| 3.3.5 | First column of Table 3E requirement: "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration." | | N/A |
| 3.3.6 | Field wiring terminals marked to indicate the material(s) of the conductor appropriate for the terminals used. | | N/A |
| 3.3.6 | Connection of an aluminum conductor not permitted to terminal for equipment earthing conductor. | | N/A |
| 3.3.6 | Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 3.4.2 | Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V. | | N/A |
| 3.4.8 | Vertically mounted disconnect devices oriented so up position of handle is "on". | | N/A |
| 3.4.11 | For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 min require battery disconnect means. | | N/A |
| 4.2.8.1 | Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more. | | N/A |
| 4.2.9 | Compartment housing high-pressure lamp marked to indicate risk of explosion. | | N/A |
| 4.2.11 | For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails. | | N/A |
| 4.3.2 | Loading test for equipment with handle(s) used to support more than 9 kg tested at four times the weight of the unit. | | N/A |
| 4.3.6 | In addition to the IEC requirements, Direct Plug-in Equipment complies with UL 1310 or CSA 223 mechanical assembly requirements. | | N/A |
| 4.3.12 | | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | The maximum quantity of flammable liquid stored in equipment complies with ANSI/NFPA 30(Table NAE.6). | | |
| 4.3.12 | Equipment using replenishable liquids marked to indicate type of liquid to be used. | | N/A |
| 4.3.13.2 | Equipment that produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation where readily visible. | | N/A |
| 4.3.13.5 | Requirements contained in the applicable national codes and regulations apply to lasers (21 CFR 1040 and REDR C1370). | | N/A |
| 4.7 | Automated information storage equipment intended to contain more than 0.76 m ³ of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system. | | N/A |
| 4.7.3.1 | Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics. Low smoke-producing characteristics evaluated according to UL 2043. Equipment for installation in space used for environmental air as described in Sec. 300-22(c) of the NEC provided with instructions indicating suitability for installation in such locations. | | N/A |
| 4.7.3.1 | Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m ² or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| 4.7.3.4 | Wire marked "VW-1" or "FT-1" considered equivalent. | | N/A |
| 5.1.8.2 | Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections. | | N/A |
| 5.1.8.3 | Touch current due to ringing voltage for equipment containing telecommunication network leads. | | Pass |
| 5.3.7 | Overloading of SELV connectors and printed wiring board receptacles accessible to the operator. | | N/A |
| 5.3.7 | Tests interrupted by opening of a component repeated two additional times. | | N/A |
| 5.3.9.1 | Test interrupted by opening of wire or trace subject to certain conditions. | | N/A |
| 6 | Specialized instructions provided for telephones that may be connected to a telecommunications network. | | N/A |
| 6 | Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network. | | N/A |
| 6.3 | Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection. | | N/A |
| 6.3 | Overcurrent protection incorporated into | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable. | | |
| 6.4 | Additional requirements for equipment intended for connection to a telecommunication network using cable subject to overvoltage from power line failures (Fig. 6C). | | N/A |
| 6.4 | Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions. | | N/A |
| 7 | Equipment associated with the cable distribution system may need to be subjected to applicable parts of Chapter 8 of the NEC. | | N/A |
| H | Ionizing radiation measurements made under single fault conditions in accordance with the requirements of the Code of Federal Regulations 21 CFR 1020 and the Canadian Radiation Emitting Devices Act, REDR C1370. | | N/A |
| M.2 | Continuous ringing signals evaluated to Method A subjected to special accessibility considerations. | | N/A |
| M.4 | Special requirements for message waiting and similar telecommunications signals. | | N/A |
| NAC | Equipment intended for use with a generic secondary protector marked with suitable instructions. | | N/A |
| NAC | Equipment intended for use with a specific | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|--|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | primary or secondary protector marked with suitable instructions. | | |
| NAD | Acoustic pressure from an ear piece less than 140 dBA for short duration disturbances, and less than 125 dBA for handsets, 118 dBA for headsets and insert earphones, for long duration disturbances. | | N/A |
| NAD | Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements. | | N/A |
| EE.5 | UL articulated accessibility probe (Fig. EE.3) required for assessing accessibility to document/media shredders, instead of Figure 2A test finger. | | N/A |

| IEC 60950-1:2005 | | | |
|------------------|-------------------|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |

| United Kingdom - Differences to IEC 60950-1:2005 (2nd Edition); Am 1:2009 | | | |
|--|---|--|-----|
| 2.6.3.3 | The current rating of the circuit shall be taken as 13 A, not 16 A. | | N/A |
| 2.7.1 | 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. | | N/A |
| 3.2.1.1 | 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 1786: 1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE: "Standard plug" is defined in SI 1786: 1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug. | | N/A |
| 3.2.5.1 | A power supply cord with conductor of 1.25 mm ² is allowed for equipment with a rated current over 10A and up to and including 13A. | | N/A |
| 3.3.4 | 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 1.25 mm ² to 1.5 mm ² nominal cross-sectional area. | | N/A |
| 4.3.6 | The torque test is performed using a socket | | N/A |

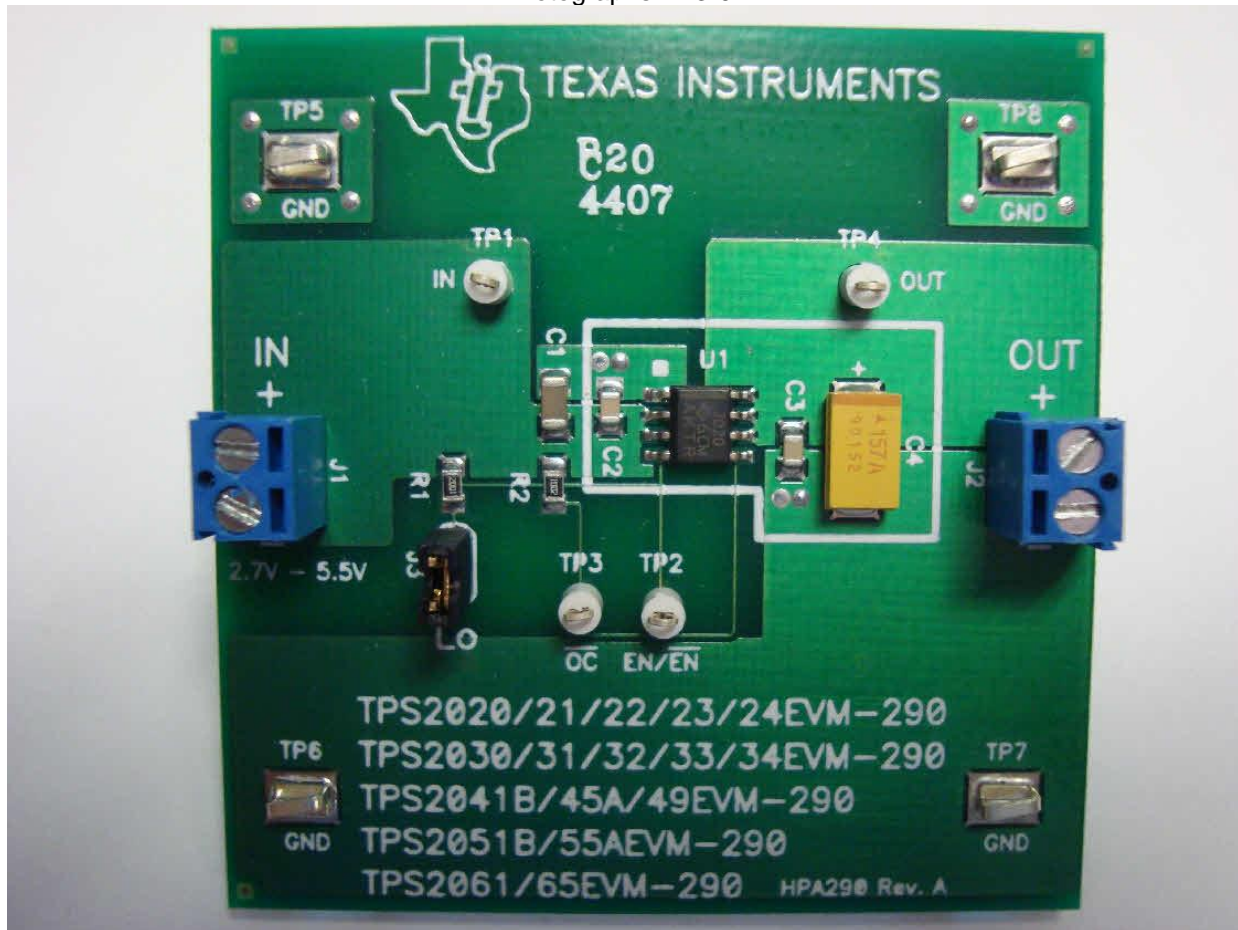
| IEC 60950-1:2005 | | | |
|------------------|---|-----------------|---------|
| SubClause | Difference + Test | Result - Remark | Verdict |
| | outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed 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. | | |

Enclosures

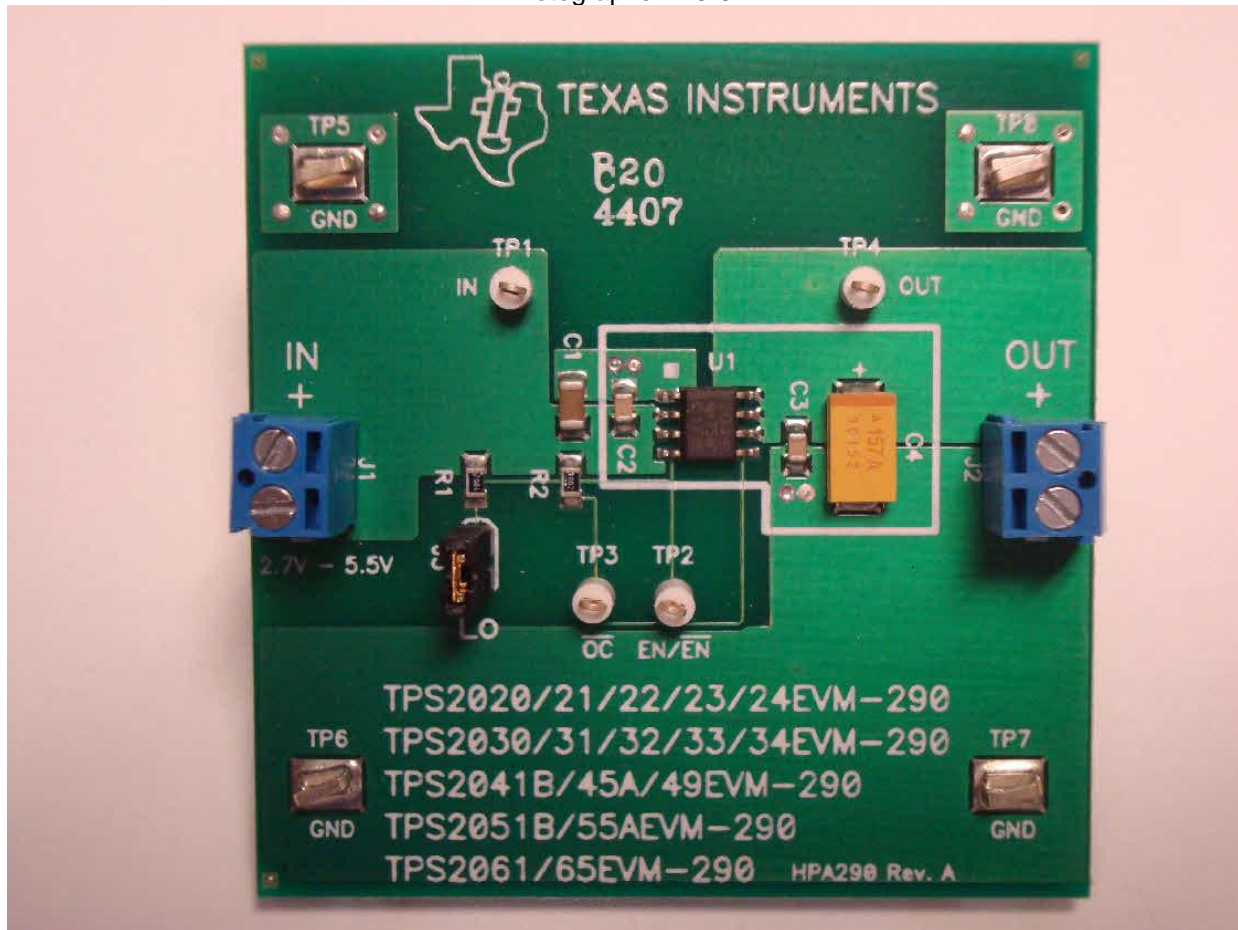
Enclosures

| <u>Type</u> | <u>Supplement Id</u> | <u>Description</u> |
|------------------|----------------------|---|
| Marking Plate | | |
| Photographs | 3-01 | Picture of Model TPS2020 |
| Photographs | 3-02 | Picture of Model TPS2034 |
| Diagrams | | |
| Schematics + PWB | | |
| Manuals | | |
| Miscellaneous | 7-01 | Annex CC (IC Current Limiter Testing Results) |
| Miscellaneous | 7-02 | Draft CB Test Certificate Information |
| Licenses | | |

Photographs ID 3-01



Photographs ID 3-02



Enclosures

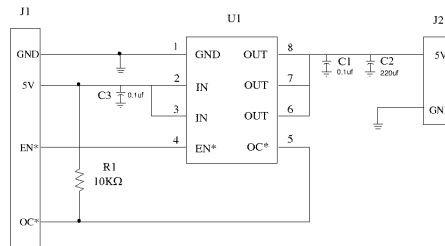
Misc ID 7-01

| Annex CC – IC Current Limiter Testing Results | |
|--|-----------------------------|
| Condition Description | Result [State Pass or Fail] |
| 50 cycles with the enable pin held active with the output open-circuited; each cycle consisting of shorting the output and then opening the output | Pass |
| 50 cycles with the enable pin held active while applying a short to the output; each cycle consisting of turning the power on and off | Pass |
| 50 cycles with the enable pin held active with the output loaded to maximum power, each cycle consisting of turning the power on and off | Pass |
| 50 cycles with the enable pin held active while power is applied, each cycle consisting of shorting the output, removing power, reapplying power, removing the short, followed by removal of power | Pass |
| 3 cycles of exposing the device (not energized) to 70 °C ± 2 °C for 24 hours; followed by at least 1 hour at room ambient; followed by at least 3 h at -30 °C ± 2 °C; followed by 3 hours at room ambient | Pass |
| 10 cycles of exposing the device (while energized) to 50 °C ± 2 °C for 10 min; followed by 10 minutes at 0 °C ± 2 °C with a 5 minute period of transition from one state to the other | Pass |
| 7 days with the output short-circuited and the device wrapped in a double layer of cheesecloth. A fast blow 5 A fuse kept in series with the output shall not open and a current meter shall not show a current lower of more than 5 A | Pass |

Misc ID 7-01

These devices were tested in the circuit shown below. If different bypass capacitors are used in the end product, then the end product engineer shall determine suitability of different values or re-testing shall be conducted.

TPS2023 Schematic/Layout



Enclosures


Misc ID 7-02

DRAFT CB TEST CERTIFICATE INFORMATION

Generated by ULtraLink on: 2013/03/14

| | |
|--------------------------------------|---|
| Product | Component IC Current Limiter |
| Name and address of the Applicant | |
| Name and address of the Manufacturer | TEXAS INSTRUMENTS INC MS 8712 12500 TI BLVD DALLAS TX 75243 UNITED STATES |
| Name and address of the Factory(ies) | ASE ASSEMBLY & TEST (SHANGHAI) LTD #669 GUOSHOUJING RD ZHANGJIANG HI-TECH PARK PUDONG NEW AREA SHANGHAI 201203 CHINA UTAC THAI LTD WELGROW INDUSTRIAL ESTATE, 73 MOOS BANGNA-TRAD (KM 38) RD A BANGPAKONG, T BANGSAMAK CHACHOENSAO 24180 THAILAND NANTONG FUJITSU MICROELECTRONICS CO LTD NO 288 CHONGCHUAN RD CHONGCHUAN DEVELOPMENT ZONE NANTONG JIANGSU 226006 CHINA TI (PHILIPPINES) INC CLARK TI SPECIAL ECONOMIC ZONE CLARK FREEPORT ZONE ANGELES PAMPANGA PHILIPPINES TEXAS INSTRUMENTS DE MEXICO S DE R L DE C V JESUS RIVERA FRANCO # 507 CD INDUSTRIAL 20290 AGUASCALIENTES AGS MEXICO TEXAS INSTRUMENTS MALAYSIA SDN BHD 1 LORONG ENGGANG 33 AMPANG/ULU KLANG 54200 KUALA LUMPUR MALAYSIA HANA SEMICONDUCTOR (AYUTTHAYA) CO LTD HI-TECH IND ESTATE AUTH OF THAILAND 100 MOO1, T BAAN-LEN, A BANG PA-IN KM 59 ASIA RD AYUTTHAYA 13160 THAILAND |

Misc ID 7-02

| | |
|---|--|
| | TEXAS INSTRUMENTS TAIWAN LTD 142 HSIN NAN RD. SEC 1 CHUNG HO TAIPEI HSIEN 235 TAIWAN |
| Rating and principal characteristics | Input Voltage - 2.7 Vdc to 5.5 Vdc Output Continuous Rating: TPS2020, TPS2030 - 0.2 A TPS2021, TPS2031 - 0.6 A TPS2022, TPS2032 - 1.0 A TPS2023, TPS2033 - 1.5 A TPS2024, TPS2034 - 2.0 A Output Current Limit: TPS2020, TPS2030 - 5 A TPS2021, TPS2031 - 5 A TPS2022, TPS2032 - 5 A TPS2023, TPS2033 - 5 A TPS2024, TPS2034 - 5 A Ambient = 25°C |
| Trademarks (if any) |  |
| Model / Type ref. | TPS2020, TPS2021, TPS2022, TPS2023, TPS2024, TPS2030, TPS2031, TPS2032, TPS2033, TPS2034. All models may be followed by any alphanumeric suffixes. |
| Additional information (if necessary) | |
| A sample of the product was tested and found to be in conformity with | IEC 60950-1:2005 (2nd Edition); Am 1:2009. EN 60950-1:2006 + A11:2009 + A1:2010+A12:2011. See Test Report for National Differences. |
| As shown in the Test Report Ref. No. which forms part of this Certificate | E169910-A11 |

| | |
|-----------------------|---------------------|
| Client Representative | Mr. Vikram Hegde |
| Client email (or fax) | vikram.hegde@ti.com |

Misc ID 7-02

This form is to acknowledge that the above information has been reviewed and the material has been found to be accurate as stated. This is also to record client's confirmation that above factories manufacture product(s) that are equal to those submitted for testing and certification. (Refer to IECEE 02, Sub-clause 6.2.5: "When the application covers more than one factory, the address of each factory shall be stated in the CB Test Certificate and the NCB shall take steps to ensure that the products from all the factories are equal. That shall be confirmed in the Test Report.")

Signed:  Dated: 03/15/2013

*Definitions per IECEE 02 (<http://www.iecee.com/cbscheme/pdf/IECEE02.pdf>):

Applicant: A firm or a person who applies to an NCB for obtaining a CB Test Certificate.

Manufacturer: An organization, situated at a stated location or locations, that carries out or controls such stages in the manufacture, assessment, handling and storage of a product that enables it to accept responsibility for continued compliance of the product with the relevant requirements and undertakes all obligations in that connection.

Factory: The location(s) at which the product is produced or assembled and follow-up service is established by the NCB.