IEC IECEE CB SCHEME

Ref. Certif. No.

**SG-TN-02518M1**

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE)METHODE OC

# CB TEST CERTIFICATE
# CERTIFICAT D'ESSAI OC

| | |
|---|---|
| Product<br>Produit | Audio appliances<br>(Live Audio System) |
| Name and address of the applicant<br>Nom et adresse du demandeur | MUSIC Group Macao Commercial Offshore Limited<br>Rua de Pequim, n° 202-A, Macau Finance Centre, 9° andar J<br>em Macau, PEOPLE'S REPUBLIC OF CHINA |
| Name and address of the manufacturer<br>Nom et adresse du fabricant | MUSIC Group Macao Commercial Offshore Limited, Rua de Pequim, n° 202-A, Macau Finance Centre, 9° andar J, em Macau, PEOPLE'S REPUBLIC OF CHINA |
| Name and address of the factory<br>Nom et adresse de l'usine | Zhongshan Eurotec Electronics Ltd., EUROTEC Industrial Park #1 Junjing Rd., Minzhong Town, 528441 Zhongshan, Guangdong, PEOPLE'S REPUBLIC OF CHINA |
| Ratings and principal characteristics<br>Valeurs nominales et caractéristiques principales | Rated Input : 100-240VAC, 50-60Hz, 500W<br>Protection Class : I<br>Degree of Protection : IP20 |
| Trade mark (if any)<br>Marque de fabrique (si elle existe) | MIDAS |
| Model/type Ref.<br>Ref. de type | PRO 3, PRO 6, PRO 9, PRO X |
| Additional information (if necessary)<br>Information complémentaire (si nécessaire) | Certificate SG-TN-02518 issued 2012-12-06 is replaced by this version due to technical changes. |
| A sample of the product was tested and found to be in conformity with<br>Un échantillon de ce produit a été essayé et a été considéré conforme à la | IEC 60065/A2:2010 |
| as shown in the Test Report Ref. No. which forms part of this certificate<br>comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat | TÜV SÜD PSB Pte Ltd<br>211-2012046-100 |

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

Date, 2015-01-23
CBS 15 01 81802 098

( Johan Chung )

TÜV SÜD PSB Pte Ltd · 1 Science Park Drive · Singapore 118221

TÜV SÜD PSB Singapore

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|---|---|---|
| | **Test Report issued under the responsibility of:**<br><br>**NCB TÜV SÜD PSB**<br>**1 Science Park Drive, 118221 Singapore**<br>**Singapore** | |

# TEST REPORT
# IEC 60065
## Audio, video and similar electronic apparatus - Safety requirements

| | |
|---|---|
| **Report Number. .....:** | 211-2012046-100 |
| **Date of issue.....:** | 2015-01-19 |
| **Modification test report reference no .....:** | 211-2012046-000 |
| **Modification to the appliance .....:** | See General remarks on page 4 |
| **Modification to Clause .....:** | Clause 5.1, table 7.1 |
| **Pages Concerned .....:** | 1-6, 24, 27 |
| **Total number of pages .....:** | 45 |
| **Applicant's name.....:** | MUSIC Group Macao Commercial Offshore Limited |
| **Address .....:** | Rua de Pequim, n° 202-A, Macau Finance Centre, 9° andar J, em Macau, PEOPLE'S REPUBLIC OF CHINA |
| **Test specification:** | |
| **Standard .....:** | IEC 60065:2001 (Seventh Edition) + A1:2005 + A2:2010 |
| **Test procedure .....:** | CB Scheme |
| **Non-standard test method .....:** | N/A |
| **Test Report Form No.....:** | IEC60065K |
| **Test Report Form(s) Originator ....:** | **Intertek Semko AB** |
| **Master TRF .....:** | Dated 2010-10 |



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

**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 .....:** | Live Audio System |
| **Trade Mark.....:** | MIDAS |
| **Manufacturer .....:** | Same as applicant |
| **Model/Type reference.....:** | PRO 3, PRO 6, PRO 9, PRO X |
| **Ratings.....:** | 100-240VAC, 50-60Hz, 500W |

**Testing procedure and testing location:**

| | | |
|---|---|---|
| ☒ | **CB Testing Laboratory:** | TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch |
| | **Testing location/ address .....:** | Building12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, CHINA |
| | **Tested by (name + signature) .....:** | Andy Tong |
| | **Approved by (name + signature) ..:** | Nicole Yuan |

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

Attachment No. 1: 18 pages of European group differences and national differences according to EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011.
Attachment No. 2: 73 pages of National and Group Differences for IEC 60065 as per CB Bulletin according to IEC 60065/A2:2010.
Attachment No. 3: 17 pages of photo documentation.

**Summary of testing:**

| **Tests performed (name of test and test clause):** | **Testing location:** |
|---|---|
| The submitted samples were found to comply with the requirements of:<br>- IEC 60065:2001 (Seventh Edition) + A1:2005 + A2:2010;<br>- EN 60065:2002 + A1:2006 + A11:2008 + A2:2010 + A12:2011; | TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch<br>Building12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, CHINA |

**Summary of compliance with National Differences**

**List of countries addressed:**

National and group differences are considered as per CB Bulletin.

☒ **The product fulfils the requirements of** EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011.

This CB report also covers EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011, UL 60065/R: 2013 and CAN/CSA-C22.2 No. 60065/A2: 2012 for project 68.200.12.046.02.

**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 plates of other models are identical except only the model number.

**Back view of the marking**





These are representative labels; the other models are identical to them except for the model name

| | |
|---|---|
| **Test item particulars:** | |
| **Classification of installation and use .....:** | Transportable apparatus |
| **Supply Connection .....:** | Approved appliance inlet provided |
| **Degree of Protection.....:** | IP20 |
| **Possible test case verdicts:** | |
| **- test case does not apply to the test object .....:** | N/A (Not Applicable) |
| **- test object does meet the requirement.....:** | P (Pass) |
| **- test object does not meet the requirement .....:** | F (Fail) |
| **Testing:** | |
| **Date of receipt of test item .....:** | 2014-09-04 |
| **Date (s) of performance of tests.....:** | From 2014-09-19 to 2014-09-24 |
| **General remarks:** | |
| **The test results presented in this report relate only to the object tested.**<br>**This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.**<br>**"(see Enclosure #)" refers to additional information appended to the report.**<br>**"(see appended table)" refers to a table appended to the report.**<br>**Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**<br><br>According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.<br><br>The original Test Report Ref. No. 211-2012046-000, dated 2012-11-26 with CB Certificate Ref No. SG-TN-02518 was modified on 2015-01-19 to include changes/additions as following:<br>-- Add model PRO X with same size and lower input power contrast to PRO 9. | |
| **Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:** | |
| **The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....:** | ☐ **Yes**<br>☒ **Not applicable** |
| **When differences exist; they shall be identified in the General product information section.** | |
| **Name and address of factory (ies) .....:** | Zhongshan Eurotec Electronics Ltd.<br>EUROTEC Industrial Park #1 Junjing Rd., Minzhong Town, 528441 Zhongshan, Guangdong, PEOPLE'S REPUBLIC OF CHINA |

**General product information:**

Live Audio System, model No. PRO 3, PRO 6, PRO 9, PRO X manufactured by MUSIC Group Macao Commercial Offshore Limited.
The maximum operating temperature is 45°C.

All models are identical except for the following items:

- Model PRO 3 is an entry-level system. It has 56 input channels with remote controlled mic preamps, 27 buses and six stereo effects. It utilises the fixed forma, 5U I/O rack of the DL251 Audio System I/O.
- Model PRO 6 is a mid-range system. It has 64 simultaneous input processing channels with up to 35 discrete mixes in monitor mode. It is expandable to 288 inputs and 294 outputs,
all of which can be patched/routed on a scene-by-scene basis by the powerful snapshot automation system.
- Model PRO 9 is the top of the range system of the PRO series. It has 88 channel input count with 35 buses, and has dual stage boxes to give the flexibility of up to 200m apart and 500m from front of house (FOH).
- PRO X is live Digital Console Control Center with 168 Input Channels, 99 Mix Buses, 96 kHz Sample Rate and Touring Grade Road Case. PRO X using different control module and different supplier for motherboard and screen.

Unless otherwise specified, the model PRO 9 was chosen as representative model to perform all the tests.

There are two different power supply system used in this EUT, see below for details.
1: Model PWR04-DL3SUR which approved by intertek, refer to table 14 for details.
2: Model MKT-PSU-3 which tested in the EUT, refer to table 14 for details.

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **3** | **General requirements** | | |
| | Safety class of the apparatus .....: | Class I | P |
| **4** | **General test conditions** | | |
| 4.1.4 | Ventilation instructions require the use of the test box | According user manual | P |
| **5** | **Marking and instructions** | | |
| | Comprehensible and easily discernible | | P |
| | Permanent durability against water and petroleum spirit | | P |
| 5.1 | a) Identification, maker ..... : | MIDAS | P |
| | b) Model number or type reference ..... : | PRO 3, PRO 6, PRO 9, PRO X | P |
| | c) Class II symbol if applicable ..... : | Class I equipment | N/A |
| | d) Nature of supply..... : | ~ | P |
| | e) Rated supply voltage ..... : | 100-240VAC | P |
| | f) Mains frequency if safety dependant ..... : | 50-60Hz | P |
| | g) Rated current or power consumption for apparatus supplied by supply apparatus for general use ..... : | | N/A |
| | Measured current or power consumption ..... : | | N/A |
| | Deviation % (max 10%) ..... : | | N/A |
| | h) Rated current or power consumption for apparat-us intended for connection to an a.c. mains supply : | 500W | P |
| | Measured current or power consumption ..... : | 351W Max. | P |
| | Measured current or power consumption for Television set ..... : | | N/A |
| | Deviation % (max 10%) ..... : | -29.8% Max. | P |
| 5.2 | a) Earth terminal | Approved inlet used | P |
| | b) Hazardous live terminals | | N/A |
| | c) Markings on supply output terminals | | N/A |
| 5.3 | a) Use of triangle with exclamation mark | Provided in circuit diagram | P |
| | b) marking on loudspeaker grille, IEC 60417-5036 | | N/A |
| 5.4 | Instructions for use | Provided | P |
| 5.4.1 | a) Mains powered equipment not exposed to dripping or splashing. Warning concerning objects filled with liquid, etc. | | P |
| | b) Hazardous live terminals, instructions for wiring | No such terminals | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | c) Instructions for replacing lithium battery | | N/A |
| | d) Class I earth connection warning | | P |
| | e) Instructions for multimedia system connection | | N/A |
| | f) Special stability warning for attachment of the apparatus to the floor/wall | | N/A |
| | g) Warning: battery exposure to heat | | N/A |
| | h) Warning: protective film on CRT face | | N/A |
| 5.4.2 | a-b) Disconnect device: plug/coupler or all-pole mains switch location, accessibility and markings | Approved AC inlet used as disconnect device | P |
| | c) Instructions for permanently connected equipment | | N/A |
| | Marking, signal lamps or similar for completely disconnection from the mains | | N/A |
| **6** | **Hazardous radiation** | | |
| 6.1 | Ionizing radiation < 36 pA/kg (0,5 mR/h) | No ionizing radiation | N/A |
| | Ionizing radiation under fault condition | | N/A |
| 6.2 | Laser radiation, emission limits to IEC 60825-1:2007 .....: | | N/A |
| | Emission limits under fault conditions .....: | | N/A |
| **7** | **Heating under normal operating conditions** | | |
| 7.1 | Temperature rises not exceeding specified values; fuse links and other protective devices defeated | (see appended table) | P |
| 7.1.1 | Temperature rise of accessible parts | (see appended table) | P |
| 7.1.2 | Temperature rise of parts providing electrical insulation | (see appended table) | P |
| 7.1.3 | Temperature rise of parts acting as a support or as a mechanical barrier | (see appended table) | P |
| 7.1.4 | Temperature rise of windings | (see appended table) | P |
| 7.1.5 | Parts not subject to a limit under 7.1.1 to 7.1.4 | (see appended table) | P |
| 7.2 | Softening temperature of insulating material supporting parts conductively connected to the mains carrying a current > 0,2 A at least 150 °C | | N/A |
| **8** | **Constructional requirements with regard to the protection against electric shock** | | |
| 8.1 | Conductive parts covered by lacquer, paper, untreated textile oxide films and beads etc. considered to be bare | | P |
| 8.2 | No shock hazard when changing voltage setting device, fuse-links or handling drawers etc. | No such operations by hand | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.3 | Insulation of hazardous live parts not provided by hygroscopic material | No hygroscopic material used | N/A |
| 8.4 | No risk of electric shock from accessible parts or from parts rendered accessible following the removal of a cover which can be removed by hand | | P |
| 8.5 | Class I equipment | | P |
| | Basic insulation between hazardous live parts and earthed accessible parts | | P |
| | Resistors bridging basic insulation complying with 14.1 a) | | N/A |
| | Capacitors bridging basic insulation complying with 14.2.1 a) | | P |
| | Protective earthing terminal | Approved AC inlet used | P |
| 8.6 | Class II equipment and Class II constructions within Class I equipment | | P |
| | Double or reinforced insulation between hazardous live parts and accessible parts | | P |
| | Components bridging double or reinforced insulation complying with 14.1 a) or 14.3 | Isolating transformer TR1, TR3 used | P |
| | Basic insulation bridged by components complying with 14.3.4.3. | Approved Y2-Cap. C2, C3, C15, C23, C63 used. | P |
| | Basic and supplementary insulation each being bridged by a capacitor complying with 14.1 a) | | N/A |
| | Double or reinforced insulation being bridged with 2 capacitors in series complying with 14.2.1 a) | | N/A |
| | Double or reinforced insulation being bridged with a single capacitor complying with 14.2.1 b) | Approved Y1-cap. C10 used | P |
| 8.7 | This clause is void | | — |
| 8.8 | Basic or supplementary insulation > 0,4 mm (mm) : | | N/A |
| | Reinforced insulation > 0,4 mm (mm) ..... : | TR1 Bobbin: min. 0.9mm, TR3 Bobbin: min. 0.9mm | P |
| | Thin sheet insulation (excluding non-separable thin sheet insulation. See 8.22) | | P |
| | Basic or supplementary insulation, at least two layers, each meeting 10.3 | | N/A |
| | Basic or supplementary insulation, three layers any two of which meet 10.3 | | N/A |
| | Reinforced insulation, two layers each of which meet 10.3 | Insulation tape used in TR1, TR3. | P |
| | Reinforced insulation, three layers any two which meet 10.3 | | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.9 | Adequate insulation between internal hazardous live conductors and accessible parts | | P |
| | Adequate insulation between internal hazardous live parts and conductors connected to accessible parts | | P |
| 8.10 | Double insulation between conductors connected to the mains and accessible parts. | Class I equipment | N/A |
| | Double insulation between internal hazardous live parts and conductors connected to accessible parts. | | N/A |
| 8.11 | Detaching of wires | | P |
| | No undue reduction of creepages or clearance distances if wires become detached | | P |
| | Vibration test carried out ..... : | Considered | P |
| 8.12 | This clause is void | | — |
| 8.13 | Adequate fastening of windows, lenses, lamp covers etc. (pull test 20 N for 10 s) | | N/A |
| 8.14 | Adequate fastening of covers (push/pull test 50 N for 10 s) | | N/A |
| 8.15 | No risk of damage to the insulation of internal wiring due to hot parts or sharp edges | | P |
| 8.16 | Only special supply equipment can be used | | N/A |
| 8.17 | Insulated winding wire without additional interleaved insulation | | N/A |
| 8.18 | Endurance test as required by 8.17 | | N/A |
| 8.19 | Disconnection from the mains | | P |
| 8.19.1 | Disconnect device | Approved AC inlet used as disconnect device | P |
| | All-pole switch or circuit breaker with >3mm contact separation | | N/A |
| 8.19.2 | Mains switch ON indication | | N/A |
| 8.20 | Switch not fitted in the mains cord | | N/A |
| 8.21 | Bridging components comply with clause 14 | No such components | N/A |
| 8.22 | Non-separable thin sheet material | | N/A |

| **9** | **Electric shock hazard under normal operating conditions** | | |
|---|---|---|---|
| 9.1 | Testing on the outside | | P |
| 9.1.1 | For voltages >1000 V ac or >1500 V dc complies with clause 13.3.1 for basic insulation | <1000Vac or <1500Vdc | N/A |
| 9.1.1.1 | a) Open circuit voltages | | P |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | b) Touch current measured from terminal devices using the network in annex D .....: | U1: Max. 231mV,<br>U2: Max.189mV;<br>Limit: U1:35000mV,<br>U2:350mV<br>The r.m.s touch current to earth: Max.1.44mA,<br>Limit: 3.5mA. | P |
| | c) Discharge not exceeding 45 µC | | N/A |
| | d) Energy of discharge not exceeding 350 mJ | | N/A |
| 9.1.1.2 | Test with test finger and test probe | Can't touch hazardous parts | P |
| 9.1.2 | No hazardous live shafts of knobs, handles or levers | | P |
| 9.1.3 | Ventilation holes and other holes tested by means of 4 mm x 100 mm test pin | | P |
| 9.1.4 | Terminal devices tested with 1 mm x 20 mm test pin (10 N); test probe D of IEC 61032 | | P |
| | Terminal devices tested with 1 mm x 100 mm straight wire (1 N); test probe D of IEC 61032 | | P |
| 9.1.5 | Pre-set controls tested with 2.5 mm x 100 mm test pin (10 N); test probe C of IEC 61032 | No pre-set control | N/A |
| 9.1.6 | No shock hazard due to stored charge on withdrawal of the mains plug; voltage (V) after 2 s .....: | 38.0V after 2s | P |
| | If C is not greater than 0,1 µF no test needed | | N/A |
| 9.1.7 | Resistance to external forces | | P |
| | a) Test probe 11 of IEC 61032 for 10 s (50 N) | 50N | P |
| | b) Test hook of fig. 4 for 10 s (20 N) | 20N | P |
| | c) 30 mm diameter test tool for 5 s (100 or 250 N) | 250N | P |
| 9.2 | No hazard after removing a cover by hand | Cover cannot be removed by hand | N/A |

| **10** | **Insulation requirements** | | |
|---|---|---|---|
| 10.1 | Insulation resistance (MΩ) at least 2 MΩ min. after surge test for basic and 4 MΩ min. for reinforced insulation .....: | (see appended table) | P |
| 10.2 | Humidity treatment 48 h or 120 h .....: | 120 hour, 40°C, 93% | P |
| 10.3 | Insulation resistance and dielectric strength between mains terminals | (see appended table) | P |
| | Insulation Resistance and dielectric strength across BASIC or SUPPLEMENTARY insulation (Class I) | | P |
| | Insulation resistance and dielectric strength across REINFORCED insulation (Class II) | | P |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **11** | **Fault conditions** | | |
| 11.1 | No shock hazard under fault condition | | P |
| 11.2 | Heating under fault condition | | P |
| | Flames extinguish within 10 seconds | | P |
| | No hazard from softening solder | | P |
| | Soldered terminations not used as protective mechanism | | N/A |
| 11.2.1 | Measurement of temperature rises | (see appended table) | P |
| 11.2.2 | Temperature rise of accessible parts | (see appended table) | P |
| 11.2.3 | Temperature rise of parts, other than windings and printed boards, providing electrical insulation | (see appended table) | P |
| 11.2.4 | Temperature rise of parts acting as a support or mechanical barrier | (see appended table) | P |
| 11.2.5 | Temperature rise of windings | (see appended table) | P |
| 11.2.6 | Temperature rise of printed boards shall not exceed the limits of table 3 by max. 100 K for max. 5 min | | N/A |
| | Printed circuit boards (PCB) classified as V-0 according to 60695-11-10 or Clause G.1 may exceed the limit in table 3 in case a) and b): | | N/A |
| | a) Temperature rise of printed circuit boards exceeding the limits of table 3 by not more than 100 K for an area not greater than 2 cm² .....: | | N/A |
| | b) Temperature rise of printed circuit boards exceeding the limits of table 3 up to 300 K for an area not greater than 2 cm² for a maximum of 5 min | | N/A |
| | Meets all the special conditions if conductors on printed circuit boards are interrupted | | N/A |
| | Class I protective earthing maintained | | P |
| 11.2.7 | Temperature rise of parts not subject to the limits of 11.2.1 to 11.2.6 shall not exceed the limits in table 3, item e), "Fault conditions". | (see appended table) | P |

| | | | |
|---|---|---|---|
| **12** | **Mechanical strength** | | — |
| 12.1.1 | Bump test where mass >7 kg | Max. 93.74kg | P |
| 12.1.2 | Vibration test | | P |
| 12.1.3 | Impact hammer test | | P |
| | Steel ball test | | P |
| 12.1.4 | Drop test for portable apparatus where mass ≤ 7 kg | | N/A |
| 12.1.5 | Thermoplastic enclosures stress relief test | Metal enclosure | N/A |
| 12.2 | Fixing of knobs, push buttons, keys and levers | | P |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 12.3 | Remote controls with hazardous live parts | No containing hazardous live parts | N/A |
| 12.4 | Drawers (pull test 50 N, 10 s) | | N/A |
| 12.5 | Antenna coaxial sockets providing isolation | | N/A |
| 12.6 | Telescoping or rod antennas construction | | N/A |
| 12.6.1 | Telescoping or rod antennas securement | | N/A |
| **13** | **Clearances and creepage distances** | | |
| 13.1 | Clearances in accordance with 13.3 | | P |
| | Creepage distances in accordance with 13.4 | | P |
| 13.2 | Determination of working voltage | TR1: max.850Vp, max.423Vrms, TR3: max. 592Vp, max. 324Vrms. | P |
| 13.3 | Clearances | | P |
| 13.3.1 | General | | P |
| 13.3.2 | Circuits conductively connected to the mains comply with table 8 and, where applicable, table 9.....: | (see appended table) | P |
| 13.3.3 | Circuits not conductively connected to the mains comply with table 10 | | N/A |
| 13.3.4 | Measurement of transient voltages | | N/A |
| 13.4 | Creepage distances | | P |
| | Creepage distances greater than table 11 minimum values | (see appended table) | P |
| 13.5 | Printed boards | | N/A |
| 13.5.1 | Clearances and creepage distances between conductors on printed circuit boards, one of which may be conductively connected to the mains, as in fig. 10 | | N/A |
| 13.5.2 | Type B coated printed circuit boards complying with IEC 60664-3 (basic insulation only) | | N/A |
| 13.6 | Conductive parts along uncemented joints clearances and creepage distances comply with 13.3 and 13.4 | | N/A |
| | Conductive parts along reliably cemented joints comply with 8.8 | | N/A |
| | Temperature cycle test and dielectric strength test | | N/A |
| | 500V test for transformers, magnetic coupler and similar devices, if insulation is relied upon for safety | | N/A |
| 13.7 | Enclosed, enveloped or hermetically sealed parts not conductively connected to the mains, clearances and creepage distances as in table 12 | | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 13.8 | Parts filled with insulating compound, meeting the requirements of 8.8 | | N/A |
| **14** | **Components** | | |
| 14.1 | Resistors | No such resistors used | N/A |
| | a) Resistors between hazardous live parts and accessible metal parts | | N/A |
| | b) Resistors, other than between hazardous live parts and accessible parts | (see appended table 14) | N/A |
| | Resistors separately approved .....: | No | N/A |
| 14.2 | Capacitors and RC units | | P |
| | Capacitors separately approved : | | P |
| 14.2.1 | Y capacitors tested to IEC 60384-14, 2nd edition ……: | Approved Y-capacitor provided | P |
| 14.2.2 | X capacitors tested to IEC 60384-14, 2nd edition ……: | Approved X-capacitor provided | P |
| 14.2.3 | Capacitors operating at mains frequency but not connected to the mains: tests for X2 .....: | No such capacitors | N/A |
| 14.2.5 | Capacitors with volume exceeding 1750 mm³, where short-circuit current exceeds 0,2 A: compliance with IEC 60384-1, 4.38 category B or better .....: | Metal-case capacitor provided | N/A |
| | Capacitors with volume exceeding 1750 mm³, mounted closer to a potential ignition source than table 5 permits: compliance with IEC 60384-1, 4.38 category B or better .....: | | N/A |
| | Shielded by a barrier acc. to 20.1.4/ table 21 or metal .....: | | N/A |
| 14.3 | Inductors and windings | | P |
| | Comply with IEC 61558-1, IEC 61558-2 (as relevant) and clause 20.1.4 | | N/A |
| 14.3.1 | Transformers and inductors marked with manufacturer's name and type .....: | (see appended table) | P |
| | Transformers and inductors separately approved .: | No | N/A |
| 14.3.2 | General | | P |
| | Insulation material complies with clause 20.1.4 | | P |
| 14.3.3 | Constructional requirements | | P |
| 14.3.3.1 | Clearances and creepage distances comply with clause 13 | | P |
| 14.3.3.2 | Transformers meet the constructional requirements | | P |
| 14.3.4 | Separation between windings | | P |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 14.3.4.1 | Class II transformers have adequate separation between hazardous live parts and accessible parts (double or reinforced insulation).....: | Double or reinforced insulation between TR1, TR3 primary and secondary winding | P |
| | Coil formers and partition walls > 0,4 mm | TR1 Bobbin: min. 0.9mm, TR3 Bobbin: min. 0.9mm | P |
| 14.3.4.2 | Class I transformers, with basic insulation and protective screening only if all 7 conditions of 14.3.4.2 are met | | N/A |
| 14.3.4.3 | Separating transformers with at least basic insulation | | N/A |
| 14.3.5 | Insulation between HAZARDOUS LIVE parts and ACCESSIBLE parts | | P |
| 14.3.5.1 | Class II transformers have adequate insulation between hazardous live parts and accessible parts (double or reinforced insulation) | | P |
| | Coil formers and partition walls > 0,4 mm | TR1 Bobbin: min. 0.9mm, TR3 Bobbin: min. 0.9mm | P |
| 14.3.5.2 | Class I transformers have adequate insulation between hazardous live parts and accessible conductive parts or those conductive parts or protective screens connected to a protective earth terminal | | N/A |
| | Winding wires connected to protective earth have adequate current-carrying capacity | | N/A |
| 14.4 | High voltage components | No high voltage components | N/A |
| | High-voltage components and assemblies: U > 4 kV (peak) separately approved | | N/A |
| | Component meets category V-1 of IEC 60707 | | N/A |
| 14.4.1 | High voltage transformers and multipliers tested as part of the submission | | N/A |
| 14.4.2 | High voltage assemblies and other parts tested as part of the submission | | N/A |
| 14.5 | Protective devices | | P |
| | Protective devices used within their ratings | Fuse F1 provided in the power supply module. | P |
| | External clearances and creepage distances meet requirement of clause 13 for the voltage across the device when opened | | P |
| 14.5.1.1 | a) Thermal cut-outs separately approved | Approved thermal cut-out provided in the power supply module. | P |
| | b) Thermal cut-outs tested as part of the submission | | N/A |
| 14.5.1.2 | a) Thermal links separately approved | | N/A |
| | b) Thermal links tested as part of the submission | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 14.5.1.3 | Thermal devices re-settable by soldering | | N/A |
| 14.5.2.1 | Fuse-links in the mains circuit according to IEC 60127 | | P |
| 14.5.2.2 | Correct marking of fuse-links adjacent to holder ...: | 1) For power supply module model MKT-PSU-2: “F1 T8AH 250V” marked near fuse.<br>2) For power supply module model PWR04-DL3MODULE: Evaluated in the Intertek approved. | P |
| 14.5.2.3 | Not possible to connect fuses in parallel .....: | | N/A |
| 14.5.2.4 | Not possible to touch hazardous live parts when replacing fuse-links without the use of a tool .....: | Fuse soldered in apparatus, user can’t replaceable without tool. | N/A |
| 14.5.3 | PTC thermistors comply with IEC 60730-1:2007 | | N/A |
| | PTC devices (15 W) category V-1 or better | | N/A |
| 14.5.4 | Circuit protectors have adequate breaking capacity and their position is correctly marked | | N/A |
| 14.6 | Switches | Approved power switch provided | P |
| 14.6.1 a) | Separate testing to IEC 61058-1 including:<br>- 10 000 operations<br>- Normal pollution suitability<br>- Make and break speed independent of speed of actuation<br>V-0 compliance with annex G, G.1.1 | | P |
| 14.6.1 b) | Tested in the apparatus: | | N/A |
| | Switch controlling > 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.3, 14.6.4 and V-0 in annex G, G.1.1 | | N/A |
| | Switch controlling > 0.2A with open contact voltage < 35 V (peak)/24 V dc complying with 14.6.3 and V-0 in annex G, G.1.1 | | N/A |
| | Switch controlling < 0.2A with open contact voltage > 35 V (peak)/24 V dc complying with 14.6.4 and V-0 in annex G, G.1.1 | | N/A |
| 14.6.2 | Switch tested to 14.6.1 b) constructed to IEC 61058-1 subclause 13.1 and has making/breaking action independent of speed of actuation | | N/A |
| 14.6.3 | Switch tested to 14.6.1 b) compliant with IEC 61058-1 subclause 16.2.2 d) and m) not attaining excessive temperatures in use | | N/A |
| 14.6.4 | Switch tested to 14.6.1 b) has adequate dielectric strength | | N/A |
| 14.6.5 | Mains switch controlling mains socket outlets additional tests to IEC 61058-1 | No mains socket outlets used | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Socket outlet current marking correct | | N/A |
| 14.7 | Safety interlocks | No safety interlocks | N/A |
| | Safety interlocks to 2.8 of IEC 60950-1 | | N/A |
| 14.8 | Voltage setting devices and the like | No voltage setting devices | N/A |
| | Voltage setting device not likely to be changed accidentally | | N/A |
| 14.9 | Motors | Approved DC fan used in secondary circuit | P |
| 14.9.1 | Endurance test on motors | | N/A |
| | Motor start test | | N/A |
| | Dielectric strength test | | N/A |
| 14.9.2 | Not adversely affected by oil or grease etc. | | N/A |
| 14.9.3 | Protection against moving parts | | P |
| 14.9.4 | Motors with phase-shifting capacitors, three-phase motors and series motors meet clause. B.8, B.9 and B.10 of IEC 60950-1, Annex B | | N/A |
| 14.10 | Batteries | | N/A |
| 14.10.1 | Batteries mounted with no risk of accumulation of flammable gases | | N/A |
| 14.10.2 | No possibility of recharging non-rechargeable batteries | | N/A |
| 14.10.3 | Recharging currents and times within manufacturers limits | | N/A |
| | Lithium batteries discharge and reverse currents within the manufacturers limits | | N/A |
| 14.10.4 | Battery mould stress relief | | N/A |
| 14.10.5 | Battery drop test | | N/A |
| 14.11 | Optocouplers | Approved optocouplers used. Dti.≥0.4mm. | P |
| | a) Comply with 13.6 (jointed insulation) and N.2.1 | | N/A |
| | b) Comply with IEC 60747-5-5:2007 | | N/A |
| | Alternative to a) and b) optocoupler comply with 13.8 | | N/A |
| 14.12 | Surge suppression varistors | 1) For power supply module model MKT-PSU-2: Approved surge suppression varistor VT1 used.<br>2) For power supply module model PWR04-DL3MODULE: Evaluated in the Intertek approved. | P |
| | Comply with IEC 61051-2 | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Not connected between mains and accessible parts except for earthed parts of permanently connected apparatus | | P |
| | Complies with the current pulse, fire hazard and thermal stress requirements of 14.12 | | P |
| **15** | **Terminals** | | |
| 15.1.1 | Mains plug, appliance inlet, interconnection couplers and mains socket-outlet meet the appropriate standard | Approved appliance inlet | P |
| | Overloading of plugs or appliance inlets prevented if the apparatus has mains socket outlets | | N/A |
| | Overloading of internal wiring prevented if the apparatus has mains socket outlets | | N/A |
| 15.1.2 | Connectors for antenna, earth, audio, video or data | | P |
| | No risk of insertion in mains socket-outlets | | P |
| | No risk of insertion into audio- or video- outlets marked with the symbol of 5.2 | No such terminals used | N/A |
| 15.1.3 | Output terminals of a.c. adaptors or similar devices not compatible with household mains socket-outlets | | N/A |
| 15.2 | Provision for protective earthing | | P |
| | Accessible conductive parts of Class I equipment reliably connected to earth terminal, within equipment | | P |
| | Protective earth conductors correctly coloured | Green/yellow | P |
| | Equipment with non-detachable mains cord provided with separate protective earth terminal near mains input | | N/A |
| | Protective earth terminal resistant to corrosion | | P |
| | Earth resistance test: < 0,1 Ω at 25 A .....: | Max. 0.023Ω at 30A | P |
| 15.3 | Terminals for external flexible cords and for permanent connection to the mains supply | No such terminals | N/A |
| 15.3.1 | Adequate terminals for connection of permanent wiring | | N/A |
| 15.3.2 | Reliable connection of non-detachable cords | | N/A |
| | Not soldered to conductors of a printed circuit board | | N/A |
| | Adequate clearances and creepage distances between connections should a wire break away | | N/A |
| | Wire secured by additional means to the conductor | | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 15.3.3 | Screws and nuts clamping conductors have adequate threads: ISO 261, ISO 262 or similar | | N/A |
| 15.3.4 | Soldered conductors wrapped around terminal prior to soldering or held in place by additional means | | N/A |
| | Clamping of conductor and insulation if not soldered or held by screws | | N/A |
| 15.3.5 | Terminals allow connection of appropriate cross-sectional area of conductors, for the rated current of the equipment | | N/A |
| 15.3.6 | Terminals to 15.3.3 have sizes required by table 16 | | N/A |
| 15.3.7 | Terminals clamp conductors between metal and have adequate pressure | | N/A |
| | Terminals designed to avoid conductor slipping out when tightened or loosened | | N/A |
| | Terminals adequately fixed to avoid loosening when the clamping is tightened or loosened and stress on internal wiring is avoided | | N/A |
| 15.3.8 | Terminals carrying a current more than 0,2 A: contact pressure not transmitted by insulating material except ceramic | | N/A |
| 15.3.9 | Termination of non-detachable cords: wires terminated near to each other | | N/A |
| | Terminals located and shielded: test with 8 mm strand | | N/A |
| 15.4 | Devices forming a part of the mains plug | | N/A |
| 15.4.1 | No undue strain on mains socket-outlets | | N/A |
| 15.4.2 | Device complies with standard for dimensions of mains plugs | | N/A |
| 15.4.3 | Device has adequate mechanical strength (tests a,b,c) | | N/A |

| **16** | **External flexible cords** | | |
|---|---|---|---|
| 16.1 | Mains cords sheathed type, complying with IEC 60227 for PVC or IEC 60245 for synthetic rubber cords .....: | Approved power cord used | P |
| | Non-detachable cords for Class I have green/yellow core for protective earth | | N/A |
| 16.2 | Mains cords conductors have adequate cross-sectional area for rated current consumption of the equipment | (See appended table 14) | P |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 16.3 | a) Flexible cords not complying with 16.1, used for interconnections between separate units of equipment used in combination and carrying hazardous live voltages, have adequate dielectric strength | | N/A |
| | b) Flexible cords not complying with 16.1, withstand bending and mechanical stress (3.2 of IEC 60227-2) | | N/A |
| 16.4 | Flexible cords used for connection between equipment have adequate cross-sectional areas to avoid temperature rise under normal and fault conditions | | N/A |
| 16.5 | Adequate strain relief on external flexible cords | Detachable power cord used | N/A |
| | Not possible to push cord back into equipment | | N/A |
| | Strain relief device unlikely to damage flexible cord | | N/A |
| | For mains cords of Class I equipment, hazardous live conductors become taut before earth conductor | | N/A |
| 16.6 | Apertures for external flexible cord: no risk of damage to the cord during assembly or movement in use | | N/A |
| 16.7 | Transportable musical instruments and amplifiers fitted with detachable cord set with appliance inlet to IEC 60320-1 | | N/A |
| | Transportable musical instruments and amplifiers fitted with detachable cord sets or with means of stowage to protect the cord | | N/A |
| **17** | **Electrical connections and mechanical fixings** | | |
| 17.1 | Torque test to table 20 | | P |
| | - screws into metal: 5 times | Screw diameter: 2.9mm<br>Torque: 0.5Nm;<br>Screw diameter: 3.9mm<br>Torque: 1.2Nm | P |
| | - screws into non-metallic material: 10 times | | N/A |
| 17.2 | Correct introduction into female threads in non-metallic material | | N/A |
| 17.3 | Cover fixing screws: captive | | N/A |
| | Non-captive fixing screws: no hazard when replaced by a screw whose length is 10 times its diameter | | P |
| 17.4 | No loosening of conductive parts carrying a current > 0,2 A | | P |
| 17.5 | Contact pressure not transmitted through plastic other than ceramic for connections carrying a current > 0,2 A | | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 17.6 | Stranded conductors of flexible supply cords carrying a current > 0,2 A with screw terminals not consolidated by solder | | N/A |
| 17.7 | Cover fixing devices other than screws have adequate strength and their positioning is unambiguous | | N/A |
| 17.8 | Fixing devices for detachable legs or stands provided | | N/A |
| 17.9 | Internal pluggable connections, affecting safety, unlikely to become disconnected | A pull of 2N considered | P |
| **18** | **Mechanical strength of picture tubes and protection against the effects of implosion** | | |
| 18.1 | Picture tube separately approved to IEC 61965 ....: | No picture tubes | N/A |
| | Picture tube separately approved to 18.2 .....: | | N/A |
| 18.2 | Non-intrinsically protected tubes tested to 18.2 | | N/A |
| **19** | **Stability and mechanical hazards** | | — |
| | Mass of the equipment exceeding 7 kg .....: | Max 93.74 kg | P |
| | Apparatus intended to be fastened in place – suitable instructions .....: | | N/A |
| 19.1 | Test on a plane, inclined at 10° to the horizontal | | P |
| 19.2 | 100 N force applied vertically downwards | | P |
| 19.3 | 100 N force, or 13% of weight, applied horizontally to point of least stability | | P |
| 19.4 | Edges or corners not hazardous | | P |
| 19.5 | Glass surfaces (exc. laminated) with an area exceeding 0,1 m² or maximum dimension > 450 mm, pass the test of 19.5.1 | | N/A |
| 19.6 | Wall or ceiling mountings adequate | | N/A |
| **20** | **Resistance to fire** | | |
| 20.1 | Electrical components and mechanical parts | | P |
| | a) Exemption for components contained in an enclosure of material V-0 to IEC 60695-11-10 with openings not exceeding 1 mm in width | | N/A |
| | b) Exemption for small components as defined in 20.1 | PCB: V-0 | P |
| 20.1.1 | Electrical components meet the requirements of Clause 14 or 20.1.4 | | P |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 20.1.2 | Insulation of internal wiring working at voltages > 4 kV or leaving an internal fire enclosure, or located within the areas mentioned in Table 21, not contributing to the spread of fire | PVC wiring provided | P |
| 20.1.3 | Material of printed circuit boards on which the available power exceeds 15 W at a voltage between 50 V and 400 V (peak) a.c. or d.c. meets V-1 or better to IEC 60707, unless used in a fire enclosure | | N/A |
| | Material of printed circuit boards on which the available power exceeds 15 W at a voltage >400 V (peak) a.c. or d.c. meets V-0 to IEC 60707 | PCB: V-0<br>Metal enclosure | P |
| 20.1.4 | Components and parts not covered by 20.1.1, 20.1.2 and 20.1.3 (other than fire enclosures) mounted nearer to a potential ignition source than the distances in Table 21 comply with the relevant flammability category in Table 21 | | P |
| | Components and parts as above but shielded from a potential ignition source, with the barrier area in accordance with Table 21 and fig. 13 | | N/A |
| | Apparatus with voltages >4kV under normal operating conditions and distances to the enclosure exceed those specified Table 21, flammability classification HB40 or better is required for the enclosure | | N/A |
| 20.2 | Fire enclosure | | N/A |
| 20.2.1 | Potential ignition sources with open circuit voltage > 4 kV (peak) a.c. or d.c. contained in a fire enclosure to V-1 | | N/A |
| 20.2.2 | Internal fire enclosures with openings not exceeding 1 mm in width and with openings for wires completely filled | | N/A |
| 20.2.3 | Requirements of 20.2.1 and 20.2.2 met by an internal fire enclosure | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **A** | **Annex A, Additional requirements for apparatus with protection against splashing water** | | |
| A.5 | Marking and instructions | | N/A |
| A.5.1 | j) Marked with IPX4 (IEC 60529), 5.4.1 a) does not apply | | N/A |
| A.10 | Insulation requirements | | N/A |
| A.10.2 | Splash and humidity treatment | | N/A |
| A.10.2.1 | Enclosure provides protection against splashing water | | N/A |
| A.10.2.2 | Humidity treatment carried out for 7 days | | N/A |
| **B** | **Annex B, Apparatus to be connected to the TELECOMMUNICATION NETWORKS** | | |
| | Complies with IEC 62151 clause 1 | | N/A |
| | Complies with IEC 62151 clause 2 | | N/A |
| | Complies with IEC 62151 clause 3 but with 3.5.4 modified to 2.4.10 of this standard | | N/A |
| | Complies with IEC 62151 clause 4 but with 4.1.2, 4.1.3 and 4.2.1.2 modified in accordance with annex B of this standard | | N/A |
| | Complies with IEC 62151 cause 5 but with 5.3.1 modified in accordance with annex B of this standard | | N/A |
| | Complies with IEC 62151 clause 6 | | N/A |
| | Complies with IEC 62151 clause 7 | | N/A |
| | Complies with IEC 62151 annex A, B and C | | N/A |
| **L** | **ANNEX L, Additional requirements for electronic flash apparatus for photographic purposes** | | |
| L. 5 | Marking and instructions | | N/A |
| L. 5.4 | Instructions for battery chargers and Supply apparatus indicating type or model number of flash apparatus with which it is to be used | | N/A |
| | Instructions for flash apparatus indicating type or model number of battery chargers or Supply apparatus with which it is to be used | | N/A |
| L. 7 | Heating under normal operating conditions | | N/A |
| L7.1.5 & L11.2.7 | Lithium batteries meet permissible temp rise in Table 3, unless comply with 6.2.2.1 or 6.2.2.2 of IEC 60086-4 | | N/A |
| L. 9 | Electric shock hazard under normal operating conditions | | N/A |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| L. 9.1.1 | Terminals to connection to synchroniser not HAZARDOUS LIVE | | N/A |
| L.10 | Insulation requirements | | N/A |
| L. 10.3.2 | High frequency pulse ignition | | N/A |
| L. 12 | Mechanical strength | | N/A |
| L. 12.1.3 | Windows for flash tubes are excluded from steel ball impact test | | N/A |
| L. 14 | Components | | N/A |
| L14.6.6 | Mains switch characteristics appropriate to its function under normal conditions | | N/A |
| L. 20 | Resistance to fire | | N/A |
| L. 20.1 c) | Trigger coil for discharge purpose is not considered to be a POTENTIAL IGNITION SOURCE | | N/A |

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

| 7.1 | TABLE: temperature rise measurements: | | P |
|---|---|---|---|
| | Power consumption in the OFF/Stand-by mode of the functional switch (W) .....: | -/- | — |

| Cond. | Un (V) | Hz | In (A) | Pn (W) | Uout (V) | Pout (W) | Operating Condition / Status |
|---|---|---|---|---|---|---|---|
| A1 | 90 | 50 | 4.043 | 356.1 | -- | -- | Model: PRO 9<br>Apparatus operated with 3 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B1 | 90 | 60 | 4.029 | 356.2 | -- | -- | |
| C1 | 100 | 50 | 3.604 | 351.0 | -- | -- | |
| D1 | 100 | 60 | 3.604 | 350.5 | -- | -- | |
| E1 | 240 | 50 | 1.566 | 340.9 | -- | -- | |
| F1 | 240 | 60 | 1.563 | 340.7 | -- | -- | |
| G1 | 264 | 50 | 1.475 | 336.8 | -- | -- | |
| H1 | 264 | 60 | 1.457 | 335.9 | -- | -- | |
| A2 | 90 | 50 | 3.913 | 347.8 | -- | -- | Model: PRO 6<br>Apparatus operated with 3 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B2 | 90 | 60 | 3.961 | 348.6 | -- | -- | |
| C2 | 100 | 50 | 3.522 | 343.6 | -- | -- | |
| D2 | 100 | 60 | 3.535 | 343.9 | -- | -- | |
| E2 | 240 | 50 | 1.550 | 341.0 | -- | -- | |
| F2 | 240 | 60 | 1.574 | 339.9 | -- | -- | |
| G2 | 264 | 50 | 1.460 | 339.2 | -- | -- | |
| H2 | 264 | 60 | 1.494 | 342.3 | -- | -- | |
| A3 | 90 | 50 | 3.845 | 345.4 | -- | -- | Model: PRO 3<br>Apparatus operated with 3 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B3 | 90 | 60 | 3.872 | 346.8 | -- | -- | |
| C3 | 100 | 50 | 3.416 | 334.2 | -- | -- | |
| D3 | 100 | 60 | 3.461 | 336.9 | -- | -- | |
| E3 | 240 | 50 | 1.384 | 330.7 | -- | -- | |
| F3 | 240 | 60 | 1.402 | 333.0 | -- | -- | |
| G3 | 264 | 50 | 1.314 | 325.2 | -- | -- | |
| H3 | 264 | 60 | 1.326 | 328.6 | -- | -- | |
| A4 | 90 | 50 | 3.857 | 352.0 | -- | -- | Model: PRO X<br>Apparatus operated with 3 power supply unit. Four USB port max. loaded is 5.0Vdc, 6A. |
| B4 | 90 | 60 | 3.879 | 351.6 | -- | -- | |
| C4 | 100 | 50 | 3.437 | 349.3 | -- | -- | |
| D4 | 100 | 60 | 3.451 | 349.0 | -- | -- | |
| E4 | 240 | 50 | 1.588 | 342.0 | -- | -- | |
| F4 | 240 | 60 | 1.620 | 342.3 | -- | -- | |
| G4 | 264 | 50 | 1.481 | 338.2 | -- | -- | |
| H4 | 264 | 60 | 1.528 | 339.2 | -- | -- | |

| | | | |
|---|---|---|---|
| | Loudspeaker impedance (Ω) .....: | — | — |
| | Several loudspeaker systems.....: | — | — |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| | Marking of loudspeaker terminals .....: | — | — |

| **Temperature Rise dT of Part:** | dT (K) | | Limit max dT (K) |
|---|---|---|---|
| Test Condition No. | Cond. B1 | Cond. G1 | |
| Appliances inlet | 23 | 20 | 25 |
| Input wire | 32 | 27 | 60 |
| Transformer TR1 winding | 32 | 30 | 65 |
| Transformer TR1 core | 38 | 37 | 65 |
| Transformer TR3 winding | 28 | 27 | 65 |
| Transformer TR3 core | 26 | 24 | 65 |
| Filter L15 coil | 39 | 30 | 85 |
| Filter L16 coil | 31 | 28 | 85 |
| Filter L3 coil | 49 | 40 | 85 |
| E-cap. C11 Body | 29 | 26 | 60 |
| Y-Cap. C10 Body | 31 | 30 | 40 |
| Opto-coupler OP1 body (on the small board) | 25 | 23 | 55 |
| Opto-coupler OP1 body (on the main power board) | 31 | 30 | 55 |
| X-Cap.C1 Body | 32 | 28 | 55 |
| Filter L5 coil near C35 | 28 | 27 | 85 |
| Heatsink Connect D43 (near Fan wire) | 22 | 21 | 60 |
| PWB near T1 | 36 | 28 | 85 |
| PWB near T3 | 32 | 27 | 85 |
| PWB near D11 | 29 | 28 | 85 |
| PWB near D40 | 27 | 25 | 85 |
| PWB near D32 | 25 | 24 | 85 |
| TR2 coil | 29 | 27 | 85 |
| Metal handle | 4 | 5 | 20 |
| VDR VT1 Body | 36 | 30 | 40 |
| X-Cap. C5 | 31 | 27 | 55 |
| Y-Cap. C3 | 28 | 27 | 40 |
| Filter L8 coil | 35 | 34 | 85 |
| Filter L12 coil | 28 | 26 | 85 |
| DC Fan | 30 | 25 | 30 |
| T1 winding(on DC-DC converter) | 25 | 25 | 85 |
| T1 core (on DC-DC converter) | 24 | 24 | 85 |
| L1 winding(on DC-DC converter) | 33 | 32 | 85 |
| L1 core(on DC-DC converter) | 29 | 29 | 85 |
| T3 coil(on DC-DC converter) | 12 | 12 | 85 |
| PWB near CPU | 15 | 15 | 85 |

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

| | | | |
|---|---|---|---|
| PWB near graphic card | 30 | 30 | 85 |
| PWB near U1 | 10 | 10 | 85 |
| LCD panel surface | 11 | 10 | 50 |
| Enclosure near PSU | 7 | 6 | 30 |
| Enclosure near Inlet | 22 | 18 | 30 |
| **Winding temperature rise measurements** | | | |
| Ambient temperature t1 ($^{o}$C) .....: | 45.0 | 45.0 | — |
| Ambient temperature t2 ($^{o}$C) .....: | 45.0 | 45.0 | — |

| Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$ | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | Limit max (K) | Insulation class |
|---|---|---|---|---|---|
| — | — | — | — | — | — |

Supplementary information: Max. operating temperature is 45°C. USB loading is the maximum load.
The test unit with DC fan: SANYO DENKI CO., LTD., model: 109P0412M.
Internal power supply module: MKT-PSU-2.

| 7.1 | TABLE: temperature rise measurements: | | P |
|---|---|---|---|
| | Power consumption in the OFF/Stand-by mode of the functional switch (W) .....: | -/- | — |

| Cond. | Un (V) | Hz | In (A) | Pn (W) | Uout (V) | Pout (W) | Operating Condition / Status |
|---|---|---|---|---|---|---|---|
| A1 | 90 | 50 | 3.902 | 350.5 | -- | -- | Model: PRO 9<br>Apparatus operated with 2 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B1 | 90 | 60 | 3.869 | 349.9 | -- | -- | |
| C1 | 100 | 50 | 3.460 | 341.3 | -- | -- | |
| D1 | 100 | 60 | 3.476 | 342.3 | -- | -- | |
| E1 | 240 | 50 | 1.480 | 331.0 | -- | -- | |
| F1 | 240 | 60 | 1.492 | 331.5 | -- | -- | |
| G1 | 264 | 50 | 1.379 | 331.2 | -- | -- | |
| H1 | 264 | 60 | 1.380 | 331.7 | -- | -- | |
| A2 | 90 | 50 | 3.819 | 341.2 | -- | -- | Model: PRO 6<br>Apparatus operated with 2 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B2 | 90 | 60 | 3.823 | 341.0 | -- | -- | |
| C2 | 100 | 50 | 3.433 | 337.3 | -- | -- | |
| D2 | 100 | 60 | 3.423 | 336.3 | -- | -- | |
| E2 | 240 | 50 | 1.462 | 328.7 | -- | -- | |
| F2 | 240 | 60 | 1.484 | 329.2 | -- | -- | |
| G2 | 264 | 50 | 1.372 | 327.0 | -- | -- | |
| H2 | 264 | 60 | 1.392 | 330.0 | -- | -- | |
| A3 | 90 | 50 | 3.731 | 331.8 | -- | -- | Model: PRO 3<br>Apparatus operated with 2 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B3 | 90 | 60 | 3.753 | 333.5 | -- | -- | |
| C3 | 100 | 50 | 3.370 | 330.6 | -- | -- | |
| D3 | 100 | 60 | 3.370 | 332.7 | -- | -- | |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| Cond. | Un (V) | Hz | In (A) | Pn (W) | Uout (V) | Pout (W) | Operating Condition / Status |
|---|---|---|---|---|---|---|---|
| E3 | 240 | 50 | 1.398 | 312.6 | -- | -- | |
| F3 | 240 | 60 | 1.413 | 312.7 | -- | -- | |
| G3 | 264 | 50 | 1.309 | 312.5 | -- | -- | |
| H3 | 264 | 60 | 1.330 | 312.8 | -- | -- | |
| A4 | 90 | 50 | 3.723 | 341.5 | -- | -- | Model: PRO X<br>Apparatus operated with 2 power supply unit. Four USB port max. loaded is 5.0Vdc, 6A. |
| B4 | 90 | 60 | 3.749 | 341.1 | -- | -- | |
| C4 | 100 | 50 | 3.355 | 337.9 | -- | -- | |
| D4 | 100 | 60 | 3.365 | 337.9 | -- | -- | |
| E4 | 240 | 50 | 1.484 | 334.2 | -- | -- | |
| F4 | 240 | 60 | 1.502 | 333.5 | -- | -- | |
| G4 | 264 | 50 | 1.391 | 330.9 | -- | -- | |
| H4 | 264 | 60 | 1.415 | 330.8 | -- | -- | |

| | | | |
|---|---|---|---|
| | Loudspeaker impedance (Ω) .....: | — | — |
| | Several loudspeaker systems.....: | — | — |
| | Marking of loudspeaker terminals .....: | — | — |

| **Temperature Rise dT of Part:** | dT (K) | | Limit max dT (K) |
|---|---|---|---|
| Test Condition No. | Cond. B1 | Cond. G1 | |
| Appliances inlet | 22 | 18 | 25 |
| Input wire | 35 | 28 | 60 |
| Transformer TR1 winding | 35 | 34 | 65 |
| Transformer TR1 core | 39 | 39 | 65 |
| Transformer TR3 winding | 26 | 26 | 65 |
| Transformer TR3 core | 24 | 25 | 65 |
| Filter L15 coil | 52 | 33 | 85 |
| Filter L16 coil | 32 | 28 | 85 |
| Filter L3 coil | 52 | 44 | 85 |
| E-cap. C11 Body | 28 | 26 | 60 |
| Y-Cap. C10 Body | 32 | 33 | 40 |
| Opto-coupler OP1 body (on the small board) | 22 | 22 | 55 |
| Opto-coupler OP1 body (on the main power board) | 31 | 31 | 55 |
| X-Cap.C1 Body | 37 | 30 | 55 |
| Filter L5 coil near C35 | 29 | 29 | 85 |
| Heatsink Connect D43 (near Fan wire) | 21 | 21 | 60 |
| PWB near T1 | 32 | 26 | 85 |
| PWB near T3 | 27 | 24 | 85 |
| PWB near D11 | 27 | 28 | 85 |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| PWB near D40 | 24 | 25 | 85 |
| PWB near D32 | 27 | 27 | 85 |
| TR2 coil | 31 | 31 | 85 |
| Metal handle | 7 | 6 | 20 |
| VDR VT1 Body | 38 | 33 | 40 |
| X-Cap. C5 | 32 | 27 | 55 |
| Y-Cap. C3 | 27 | 26 | 40 |
| Filter L8 coil | 36 | 36 | 85 |
| Filter L12 coil | 26 | 26 | 85 |
| DC Fan | 28 | 25 | 30 |
| T1 winding(on DC-DC converter) | 17 | 19 | 85 |
| T1 core (on DC-DC converter) | 15 | 16 | 85 |
| L1 winding(on DC-DC converter) | 23 | 24 | 85 |
| L1 core(on DC-DC converter) | 20 | 21 | 85 |
| T3 coil(on DC-DC converter) | 8 | 8 | 85 |
| PWB near CPU | 11 | 11 | 85 |
| PWB near graphic card | 21 | 21 | 85 |
| PWB near U1 | 7 | 6 | 85 |
| LCD panel surface | 8 | 8 | 50 |
| Enclosure near PSU | 5 | 4 | 30 |
| Enclosure near Inlet | 21 | 17 | 30 |
| **Winding temperature rise measurements** | | | |
| Ambient temperature t1 ($^{o}$C) .....: | 45.0 | 45.0 | — |
| Ambient temperature t2 ($^{o}$C) .....: | 45.0 | 45.0 | — |

| Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$ | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | Limit max (K) | Insulation class |
|---|---|---|---|---|---|
| — | — | — | — | — | — |

Supplementary information: Max. operating temperature is 45°C. USB loading is the maximum load.
The test unit with DC fan: SANYO DENKI CO., LTD., model: 109P0412M.
Internal power supply module: MKT-PSU-2.

| 7.1 | TABLE: temperature rise measurements: | | P |
|---|---|---|---|
| | Power consumption in the OFF/Stand-by mode of the functional switch (W) .....: | -/- | — |

| Cond. | Un (V) | Hz | In (A) | Pn (W) | Uout (V) | Pout (W) | Operating Condition / Status |
|---|---|---|---|---|---|---|---|
| A1 | 90 | 50 | 4.023 | 354.2 | -- | -- | Model: PRO 9<br>Apparatus operated with 3 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B1 | 90 | 60 | 4.000 | 353.9 | -- | -- | |
| C1 | 100 | 50 | 3.584 | 349.0 | -- | -- | |
| D1 | 100 | 60 | 3.579 | 348.6 | -- | -- | |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| Cond. | Un (V) | Hz | In (A) | Pn (W) | Uout (V) | Pout (W) | Operating Condition / Status |
|---|---|---|---|---|---|---|---|
| E1 | 240 | 50 | 1.524 | 338.9 | -- | -- | |
| F1 | 240 | 60 | 1.518 | 338.8 | -- | -- | |
| G1 | 264 | 50 | 1.320 | 328.6 | -- | -- | |
| H1 | 264 | 60 | 1.319 | 328.1 | -- | -- | |
| A2 | 90 | 50 | 3.876 | 341.6 | -- | -- | Model: PRO 6<br>Apparatus operated with 3 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B2 | 90 | 60 | 3.844 | 343.3 | -- | -- | |
| C2 | 100 | 50 | 3.678 | 339.0 | -- | -- | |
| D2 | 100 | 60 | 3.563 | 339.8 | -- | -- | |
| E2 | 240 | 50 | 1.489 | 334.5 | -- | -- | |
| F2 | 240 | 60 | 1.487 | 334.2 | -- | -- | |
| G2 | 264 | 50 | 1.376 | 334.7 | -- | -- | |
| H2 | 264 | 60 | 1.400 | 334.9 | -- | -- | |
| A3 | 90 | 50 | 3.796 | 342.1 | -- | -- | Model: PRO 3<br>Apparatus operated with 3 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B3 | 90 | 60 | 3.787 | 342.3 | -- | -- | |
| C3 | 100 | 50 | 3.340 | 329.2 | -- | -- | |
| D3 | 100 | 60 | 3.325 | 331.8 | -- | -- | |
| E3 | 240 | 50 | 1.299 | 327.6 | -- | -- | |
| F3 | 240 | 60 | 1.304 | 328.5 | -- | -- | |
| G3 | 264 | 50 | 1.214 | 322.7 | -- | -- | |
| H3 | 264 | 60 | 1.242 | 324.3 | -- | -- | |

| | | | |
|---|---|---|---|
| | Loudspeaker impedance (Ω) .....: | — | — |
| | Several loudspeaker systems.....: | — | — |
| | Marking of loudspeaker terminals .....: | — | — |

| **Temperature Rise dT of Part:** | dT (K) | | Limit max dT (K) |
|---|---|---|---|
| Test Condition No. | -- | -- | |
| -- | -- | -- | -- |
| -- | -- | -- | -- |
| -- | -- | -- | -- |

| **Winding temperature rise measurements** | | | |
|---|---|---|---|
| Ambient temperature t1 (°C) .....: | — | — | — |
| Ambient temperature t2 (°C) .....: | — | — | — |

| Temperature rise dT of winding:<br>$dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$ | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | Limit max (K) | Insulation class |
|---|---|---|---|---|---|
| — | — | — | — | — | — |

Supplementary information: Max. operating temperature is 45°C. USB loading is the maximum load.
The test unit with DC fan: SANYO DENKI CO., LTD., model: 109P0412M.
Internal power supply module: PWR04-DL3MODULE.

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 7.1 | TABLE: temperature rise measurements: | | P |
|---|---|---|---|
| | Power consumption in the OFF/Stand-by mode of the functional switch (W) .....: | -/- | — |

| Cond. | Un (V) | Hz | In (A) | Pn (W) | Uout (V) | Pout (W) | Operating Condition / Status |
|---|---|---|---|---|---|---|---|
| A1 | 90 | 50 | 3.877 | 348.9 | -- | -- | Model: PRO 9<br>Apparatus operated with 2 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B1 | 90 | 60 | 3.824 | 347.8 | -- | -- | |
| C1 | 100 | 50 | 3.421 | 339.6 | -- | -- | |
| D1 | 100 | 60 | 3.418 | 339.1 | -- | -- | |
| E1 | 240 | 50 | 1.396 | 328.7 | -- | -- | |
| F1 | 240 | 60 | 1.404 | 328.9 | -- | -- | |
| G1 | 264 | 50 | 1.318 | 329.3 | -- | -- | |
| H1 | 264 | 60 | 1.316 | 328.9 | -- | -- | |
| A2 | 90 | 50 | 3.765 | 338.4 | -- | -- | Model: PRO 6<br>Apparatus operated with 2 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B2 | 90 | 60 | 3.749 | 338.7 | -- | -- | |
| C2 | 100 | 50 | 3.389 | 334.1 | -- | -- | |
| D2 | 100 | 60 | 3.384 | 333.7 | -- | -- | |
| E2 | 240 | 50 | 1.410 | 326.7 | -- | -- | |
| F2 | 240 | 60 | 1.414 | 325.9 | -- | -- | |
| G2 | 264 | 50 | 1.326 | 326.4 | -- | -- | |
| H2 | 264 | 60 | 1.320 | 327.6 | -- | -- | |
| A3 | 90 | 50 | 3.648 | 327.5 | -- | -- | Model: PRO 3<br>Apparatus operated with 2 power supply unit. Four USB port max. Loaded is 5.0VDC, 4.0A. |
| B3 | 90 | 60 | 3.652 | 328.6 | -- | -- | |
| C3 | 100 | 50 | 3.234 | 325.3 | -- | -- | |
| D3 | 100 | 60 | 3.246 | 326.7 | -- | -- | |
| E3 | 240 | 50 | 1.314 | 310.1 | -- | -- | |
| F3 | 240 | 60 | 1.315 | 310.6 | -- | -- | |
| G3 | 264 | 50 | 1.267 | 309.4 | -- | -- | |
| H3 | 264 | 60 | 1.264 | 308.9 | -- | -- | |

| | | | |
|---|---|---|---|
| | Loudspeaker impedance (Ω) .....: | — | — |
| | Several loudspeaker systems.....: | — | — |
| | Marking of loudspeaker terminals .....: | — | — |

| Temperature Rise dT of Part: | dT (K) | | Limit max dT (K) |
|---|---|---|---|
| Test Condition No. | Cond. B1 | Cond. G1 | |
| Appliances inlet | 20.4 | 17.6 | 25 |
| T1 core | 37.9 | 37.6 | 65 |
| T2 winding | 25.5 | 24.3 | 65 |
| T2 core | 23.1 | 23.1 | 65 |
| LCD panel surface | 7.7 | 7.5 | 50 |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| Enclosure near PSU | 4.1 | 3.7 | 30 |
| Enclosure near Inlet | 19.3 | 15.8 | 30 |
| **Winding temperature rise measurements** | | | |
| Ambient temperature t1 (°C) .....: | 45.0 | 45.0 | — |
| Ambient temperature t2 (°C) .....: | 45.0 | 45.0 | — |

| Temperature rise dT of winding: $dT = \frac{(R_2 - R_1)}{R_1} \times (234.5 + t1) - (t2 - t1)$ | $R_1$ (Ω) | $R_2$ (Ω) | dT (K) | Limit max (K) | Insulation class |
|---|---|---|---|---|---|
| — | — | — | — | — | — |

Supplementary information: Max. operating temperature is 45°C. USB loading is the maximum load.
The test unit with DC fan: SANYO DENKI CO., LTD., model: 109P0412M.
Internal power supply module: PWR04-DL3MODULE.

| 7.2 | TABLE: softening temperature of thermoplastics | N/A |
|---|---|---|

| Temperature T of part | T - normal conditions (°C) | T - fault conditions (°C) | Min T softening (°C) |
|---|---|---|---|
| -- | -- | -- | -- |

| 10.3 | TABLE: insulation resistance measurements | P |
|---|---|---|

| Insulation resistance R between: | R (MΩ) | Required R (MΩ) |
|---|---|---|
| Different poles of L/N (disconnect fuse F1) | 100 | 2 |
| L, N to secondary terminals | 100 | 4 |
| L, N to metal enclosure | 100 | 2 |
| TR1: pri. to sec. | 100 | 4 |
| TR1: sec. to core | 100 | 2 |
| TR1: pri. to core | 100 | 2 |
| TR3: pri. to sec. | 100 | 4 |
| TR3: sec. to core | 100 | 2 |
| TR3: pri. to core | 100 | 2 |

Supplementary information:
Internal power supply module: PWR04-DL3MODULE. certified by Intertek, no evaluated.

| 10.3 | TABLE: electric strength measurements | P |
|---|---|---|

| Test voltage applied between: | Test voltage (Vpeak) | Breakdown |
|---|---|---|
| Different poles of L/N (disconnect fuse F1) | 2121VDC | No |
| L, N to secondary terminals | 2121VDC | No |
| L, N to metal enclosure | 2121VDC | No |
| TR1: pri. to sec. | 4242VDC | No |
| TR1: sec. to core | 3150VDC | No |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | |
|---|---|---|
| TR1: pri. to core | 3150VDC | No |
| TR3: pri. to sec. | 4242VDC | No |
| TR3: sec. to core | 2680VDC | No |
| TR3: pri. to core | 2680VDC | No |
| Insulation sheet under power board (for each type) | 2121VDC | No |
| 2 layer of insulation tape (for each type) | 4242VDC | No |
| Silicon rubber under power board | 2121VDC | No |
| Supplementary information:<br>Internal power supply module: PWR04-DL3MODULE. certified by Intertek, no evaluated. | | |

| **11.2** | **TABLE: summary of fault condition tests** | | **P** |
|---|---|---|---|
| | Voltage (V) 0,9 or 1,1 times rated voltage ..... : | 264V | — |
| | Frequency (Hz) ..... : | 50Hz | — |
| | Ambient temperature ($^{o}$C) ..... : | 45.0 | — |

| No. | Component | Fault | dT (K) / Component | Other results (include description and test duration) |
|---|---|---|---|---|
| For power supply module model MKT-PSU-2 | | | | |
| 1 | Output (+ 3.3V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 5.1 to 118W; input current bouncing from 0.30 to 1.18A. No hazard, No damage. Duration: 10 min. |
| 2 | Output (+ 5V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 5.0 to 116W; input current bouncing from 0.30 to 1.16A. No hazard, No damage. Duration: 10 min. |
| 3 | Output (+ 12V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 5.0 to 116W; input current bouncing from 0.30 to 1.17A. No hazard, No damage. Duration: 10 min. |
| 4 | Output (- 12V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 5.5 to 117W; input current bouncing from 0.31 to 1.18A. No hazard, No damage. Duration: 10 min. |
| 5 | Output (+5.3VSB) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.9 to 113W; input current bouncing from 0.29 to 1.12A. No hazard, No damage. Duration: 10 min. |
| 6 | D38 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal. No hazard, No damage. Duration: 10 min. |
| 7 | D32 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal. No hazard, No damage. Duration: 10 min. |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | |
|---|---|---|---|---|
| 8 | D40 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 9 | D34 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 10 | D11 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 11 | IC1 pin 1-3 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 12 | OP1 pin (1-2) on the small board | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 13 | OP1 pin (3-4) on the small board | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 14 | OP1 pin (1) on the small board | O-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 15 | OP2 pin (1-2) on the small board | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 16 | OP2 pin (3-4) on the small board | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 17 | OP2 pin (1) on the small board | O-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage.. Duration: 10 min. |
| 18 | OP1 pin (1-2) on the main power board | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 19 | OP1 pin (3-4) on the main power board | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 20 | OP1 pin (1) on the main power board | O-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 21 | R19 | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal.<br>No hazard, No damage. Duration: 10 min. |
| 22 | * IC2 pin (D-C) | S-C | -- | After short circuit, one power supply unit damaged (F1 opened immediately, IC2 damaged), the others still working normal.<br>No hazard. Duration: 10 min. |

| IEC 60065 | | | | | |
|---|---|---|---|---|---|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| 23 | * IC2 pin (D-S) | S-C | -- | After short circuit, one power supply unit damaged (F1 opened immediately, IC2 damaged), the others still working normal. No hazard. Duration: 10 min. | |
| 24 | IC2 pin (C-S) | S-C | -- | After short circuit, one power supply unit shutdown, the others still working normal. No hazard, No damage. Duration: 10 min. | |
| 25 | * T4 pin (D-G) | S-C | -- | After short circuit, one power supply unit damaged (F1 opened immediately, T4 damaged), the others still working normal. No hazard. Duration: 10 min. | |
| 26 | * T3 pin (D-G) | S-C | -- | After short circuit, one power supply unit damaged (F1 opened immediately, T3 damaged), the others still working normal. No hazard. Duration: 10 min. | |
| 27 | * C11 | S-C | -- | After short circuit, one power supply unit damaged (F1 opened immediately, D1 damaged), the others still working normal. No hazard. Duration: 10 min. | |
| 28 | * D51 | S-C | -- | After short circuit, one power supply unit damaged (F1 opened immediately), the others still working normal. No hazard. Duration: 10 min. | |
| 29 | DC fan of internal power supply unit | Blocked | TR1: 64, TR3: 55, Enclosure: 38. | Unit worked as normal, no damaged, no hazard, input current: 1.38A Duration: 6 hour. | |
| 30 | DC fan of unit | Blocked | TR1: 44, TR3: 33, Enclosure: 20. | Unit worked as normal, no damaged, no hazard, input current: 1.38A Duration: 5 hour 30 min. | |
| 31 | Ventilation openings | Blocked | TR1: 50, TR3: 41, Enclosure: 38. | Unit worked as normal, no damaged, no hazard, input current: 1.38A Duration: 4 hour 40 min. | |
| 32 | USB port | S-C | -- | The USB port output shut down. The power supply unit working normal. No hazard, No damage. Duration: 10 min. | |
| For internal DC-DC convertor | | | | | |
| 33 | T1 Pin 2- 5 | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.0 to 114W; input current bouncing from 0.24 to 1.10A. No hazard, No damage. Duration: 10 min. | |
| 34 | T1 Pin 3-4 | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.5 to 113W; input current bouncing from 0.27 to 1.12A. No hazard, No damage. Duration: 10 min. | |

| IEC 60065 | | | | | |
|---|---|---|---|---|---|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| 35 | T1 Pin 9-10 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 5.6 to 118W; input current bouncing from 0.26 to 1.18A.<br>No hazard, No damage. Duration: 10 min. | |
| 36 | T1 Pin 9-11 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 4.8 to 115W; input current bouncing from 0.28 to 1.15A.<br>No hazard, No damage. Duration: 10 min. | |
| 37 | T1 Pin 12-14 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 4.5 to 113W; input current bouncing from 0.27 to 1.13A.<br>No hazard, No damage. Duration: 10 min. | |
| 38 | T1 Pin 13-14 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 4.7 to 114W; input current bouncing from 0.26 to 1.14A.<br>No hazard, No damage. Duration: 10 min. | |
| 39 | T1 Pin 4-9 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 5.0 to 116W; input current bouncing from 0.29 to 1.16A.<br>No hazard, No damage. Duration: 10 min. | |
| 40 | T2 Pin 1-3 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 6.1 to 119W; input current bouncing from 0.30 to 1.19A.<br>No hazard, No damage. Duration: 10 min. | |
| 41 | T2 Pin 4-6 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 4.4 to 112W; input current bouncing from 0.23 to 1.12A.<br>No hazard, No damage. Duration: 10 min. | |
| 42 | C34 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 4.3 to 114W; input current bouncing from 0.22 to 1.15A.<br>No hazard, No damage. Duration: 10 min. | |
| 43 | D1 Pin 2-3 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 5.9 to 118W; input current bouncing from 0.30 to 1.19A.<br>No hazard, No damage. Duration: 10 min. | |
| 44 | C17 | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 5.1 to 118W; input current bouncing from 0.27 to 1.17A.<br>No hazard, No damage. Duration: 10 min. | |
| For power supply module model PWR04-DL3MODULE | | | | | |
| 45 | Output (+ 3.3V) | S-C | -- | After short circuit, The product oscillated.<br>The input power bouncing from 4.2 to 103W; input current bouncing from 0.28 to 1.04A.<br>No hazard, No damage. Duration: 10 min. | |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | |
|---|---|---|---|---|
| 46 | Output (+ 5V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.3 to 102.9W; input current bouncing from 0.29 to 1.06A. No hazard, No damage. Duration: 10 min. |
| 47 | Output (+ 12V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.0 to 102.9W; input current bouncing from 0.27 to 1.02A. No hazard, No damage. Duration: 10 min. |
| 48 | Output (- 12V) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.4 to 105.3W; input current bouncing from 0.30 to 1.11A. No hazard, No damage. Duration: 10 min. |
| 49 | Output (+5.3VSB) | S-C | -- | After short circuit, The product oscillated. The input power bouncing from 4.1 to 101.8W; input current bouncing from 0.27 to 1.03A. No hazard, No damage. Duration: 10 min. |

Supplementary information:
1) S-C: short circuit, O-C: open circuit;
2) The Hi-pot test conducted successfully after the completion of fault condition test;
3) *: Test repeated on all alternate Fuse sources and results were same.
4) TR1, TR3 winding and/or core limited: 130K, Enclosure limited: 55K.
Four USB port max. Loaded is 5.0VDC, 4.0A.

| **13** | **TABLES: clearances and creepage distances** | | | | | **P** |
|---|---|---|---|---|---|---|
| Rated supply voltage: | 100-240V | Pollution degree.. : | 2 | Material Group....: | IIIb | |
| 2 N force on internal parts applied: | | | Yes | | | P |
| 30 N force on outside of conductive enclosure applied: | | | -- | | | N/A |

| Location | Working Voltage | | Clearance (mm) | | Creepage (mm) | |
|---|---|---|---|---|---|---|
| | V rms | V peak | Min | Actual | Min | Actual |
| L to N before fuse | 240 | 340 | 2.0 | 4.0 | 2.4 | 4.0 |
| Across F1 terminals | 240 | 340 | 2.0 | 2.5 | 2.4 | 4.0 |
| Y-Cap. C2, C3, C15, C23 primary to metal screw | 240 | 340 | 2.0 | 2.0 | 2.4 | 3.0 |
| Optocopuler primary to secondary | 240 | 388 | 2.0 | 5.7 | 2.4 | 5.7 |
| Y-Cap. C10 primary to secondary | 240 | 384 | 2.0 | 7.0 | 2.4 | 7.0 |
| TR1 primary to secondary under PCB trace | 423 | 850 | 5.2 | 10.0 | 8.6 | 10.0 |
| TR1 primary to secondary | 423 | 850 | 5.2 | 8.6 | 8.6 | 8.6 |
| TR1 primary to core | 423 | 850 | 2.6 | 4.5 | 4.3 | 4.5 |
| TR1 secondary to core | 423 | 850 | 2.6 | 4.5 | 4.3 | 4.5 |
| TR3 primary to secondary under PCB trace | 324 | 592 | 4.6 | 9.2 | 6.8 | 9.2 |
| TR3 primary to secondary | 324 | 592 | 4.6 | 7.5 | 6.8 | 7.5 |
| TR3 primary to core | 324 | 592 | 2.3 | 3.5 | 3.4 | 3.5 |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | | |
|---|---|---|---|---|---|---|
| TR3 secondary to core | 324 | 592 | 2.3 | 4.0 | 3.4 | 4.0 |
| Primary components to accessible parts(earthed) | 240 | 340 | 2.0 | 3.0 | 2.4 | 3.0 |

Supplementary information:
Internal power supply module: PWR04-DL3MODULE. certified by Intertek, no evaluated.

Circuits conductively connected to the mains (use Tables 8, 9 and 11): see note below.

Notes:
1. Secondary circuits of Class II apparatus which have connector terminals that could be earthed (e.g. antenna signal input), are subjected to the requirements for circuits conductively connected to the mains in Tables 8 and 9.
2. Floating secondary circuits of Class I apparatus which have connector terminals that could be earthed (e.g. antenna signal input), are subjected to the requirements for circuits conductively connected to the mains in Tables 8 and 9 unless the floating secondary circuit is separated from the primary circuits by an earthed metal screen (e.g. in the power transformer), or the floating secondary circuit is connected to earth via a component such as a capacitor.
3. For insufficient clearances and creepage distances from secondary to secondary circuits and from secondary circuits to earth, see Cl. 4.3.1, 4.3.2 and 11.2.
4. If the minimum creepage distance in Table 11 is less than the minimum required clearance in Tables 8, 9 or 10 as required, then the value for clearance is used as the minimum creepage distance.

"Min" = minimum required. "Actual = Actual dimensions measured.

| 14 | TABLE: list of critical components and materials | P |
|---|---|---|

| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity1) |
|---|---|---|---|---|---|
| Approved power supply system | Sunpower Technology Corp. | PWR04-DL3SUR (3 x PWR04-DL3MODULE) | Rated Input: 100-240V~, 47-63Hz, 7.8 A; Rated DC output: +3.3V, 30A; +5V, 20A; +12V, 29A; -12V, 1.0A; +5Vsb, 3.0A. Output power: 480W, Class I. | IEC 60065 | Intertek CB |
| Approved power supply module | Sunpower Technology Corp. | PWR04-DL3MODULE | Rated Input: 100-240V~, 47-63Hz, 7.8 A; Rated DC output: +3.3V, 20A; +5V, 20A; +12V, 20A; -12V, 1.0A; +5Vsb, 3.0A. Output power: 280W, Class I. | IEC 60065 | Intertek CB |
| Power supply system (Alternative) | MUSIC Group Macao Commercial Offshore Limited | MKT-PSU-3 (3 x MKT-PSU-2) | -- | IEC 60065 | Test in appliance |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| Power supply module | MUSIC Group Macao Commercial Offshore Limited | MKT-PSU-2 | -- | IEC 60065 | Test in appliance |
| Components use in power supply module MKT-PSU-2 | | | | | |
| Appliance inlet | Schurter | 1061 | AC 250V, 10A(IEC)/ 15A(UL/CSA), C14 | IEC/EN 60320-1, UL 498 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | AC 250V, 10A(IEC)/ 15A(UL/CSA), C14 | IEC/EN 60320-1, UL 498 | VDE, UL |
| Mains fuse-link (F1) | Cooper Bussmann | S505 | AC250V, T8AH | IEC/EN 60127, UL 248 | VDE, UL |
| (Alternative) | Littelfuse Inc | 215 | AC250V, T8AH | IEC/EN 60127, UL 248 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | AC250V, T8AH | IEC/EN 60127, UL 248 | VDE, UL |
| X2 capacitor (C1) | Shenzhen Jinghao Capacitor Co., Ltd. | CBB62B | AC300V, Max. 1μF, 100°C | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Xiamen Wanming Electronics Co., Ltd. | MPX | AC300V, Max. 1μF, 100°C | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Carli Electronics Co Ltd | MPX | AC 300V, Max. 1μF, 100°C | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Cheng Tung Industrial Co Ltd | CTX | AC 300V, Max. 1μF, 100°C | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | AC 300V, Max. 1μF, 100°C | IEC 60384-14, UL 1414 | VDE, UL |
| X2 capacitor (C5) | Shenzhen Jinghao Capacitor Co., Ltd. | CBB62B | AC 300V, 100°C, Max. 0.47μF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Xiamen Wanming Electronics Co., Ltd. | MPX | AC 300V, 100°C, Max. 0.47μF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Carli Electronics Co Ltd | MPX | AC 300V, 100°C, Max. 0.47μF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Cheng Tung Industrial Co Ltd | CTX | AC 300V, 100°C, Max. 0.47μF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | AC 300V, 100°C, Max. 0.47μF | IEC 60384-14, UL 1414 | VDE, UL |
| Y capacitor (C2,C3,C15,C23,) | Xiamen Wanming Electronics Co., Ltd. | HM | Y2, AC250V, 85°C, Max. 2200 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Vishay Electronic GmbH | WYO | Y2, AC250V, 85°C, Max. 2200 pF | IEC 60384-14, UL 1414 | VDE, UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| (Alternative) | Dongguan Easy-gather Electronic Co., Ltd. | DCF | Y2, AC250V, 85°C, Max. 2200 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Welson Industrial Co., Ltd. | KL | Y2, AC250V, 85°C, Max. 2200 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | Y2, AC250V, 85°C, Max. 2200 pF | IEC 60384-14, UL 1414 | VDE, UL |
| Y capacitor (C63) | Xiamen Wanming Electronics Co., Ltd. | HM | Y2, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Vishay Electronic GmbH | WYO | Y2, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Dongguan Easy-gather Electronic Co., Ltd. | DCF | Y2, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Welson Industrial Co., Ltd. | KL | Y2, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | Y2, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| Y capacitor (C10) | Xiamen Wanming Electronics Co., Ltd. | HM | Y1, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Vishay Electronic GmbH | WYO | Y1, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Dongguan Easy-gather Electronic Co., Ltd. | DCF | Y1, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Welson Industrial Co., Ltd. | KL | Y1, AC250V, 85°C, Max. 1000 pF | IEC 60384-14, UL 1414 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | Y1, AC250V, 85°C, Max. 1000pF | IEC 60384-14, UL 1414 | VDE, UL |
| PCB | Interchangeable | Interchangeable | V-0, 130°C | UL 796, UL 94 | UL |
| Transformer (TR1) | Shenzhen Click Technology Co., Ltd | BCK4001-537 | Class B | IEC 60065 | Tested in appliance |
| - Bobbin | Chang Chun Plastics Co., Ltd | T375J | V-0, 150°C | UL 94 | UL |
| - Magnet wire | Pacific Electric Wire&Cable Co.,Ltd | UEW/U | 130°C | UL 1446 | UL |
| (Alternative) | Tai-I Electric Wire &Cable Co.,Ltd | UEW/U | 130°C | UL 1446 | UL |
| - Insulation tape | 3m Company Electrical Markets Div(Emd) | 1350F-1 | 130°C | UL 510 | UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| (Alternative) | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | CT-280 | 130°C | UL 510 | UL |
| - Margin tape | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | WF-2902 | 130°C | UL 510 | UL |
| - Tube | Great Holding Industrial Co Ltd | TFT | 200°C, 300V, Min. Thickness=0.4mm | UL 224 | UL |
| Transformer (TR1) (Alternative) | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0864 | Class B | IEC 60065 | Tested in appliance |
| - Bobbin | Chang Chun Plastics Co., Ltd | T375J | V-0, 150°C | UL 94 | UL |
| - Magnet wire | Tai-I Electric Wire &Cable Co.,Ltd | UEW | 130°C | UL 1446 | UL |
| (Alternative) | Huizhou City Denggaoda Electrotech Co Ltd | UEW | 130°C | UL 1446 | UL |
| - Insulation tape | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | PZ-280 | 130°C | UL 510 | UL |
| - Margin tape | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | WF-2902 | 130°C | UL 510 | UL |
| - Tube | Fluo Tech Industries Co Ltd | TFT | 200°C, 300V, Min. Thickness=0.4mm | UL 224 | UL |
| Filter (TR2) | Shenzhen Click Technology Co., Ltd | LC14-285 | 130°C | IEC 60065 | Tested in appliance |
| Filter (TR2) (Alternative) | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0872 | 130°C | IEC 60065 | Tested in appliance |
| Transformer (TR3) | Shenzhen Click Technology Co., Ltd | BCK1601-1297 | Class B | IEC 60065 | Tested in appliance |
| - Bobbin | Chang Chun Plastics Co., Ltd | T375J | V-0, 150°C | UL 94 | UL |
| - Magnet wire | Pacific Electric Wire&Cable Co.,Ltd | UEW/U | 130°C | UL 1446 | UL |
| (Alternative) | Tai-I Electric Wire &Cable Co.,Ltd | UEW/U | 130°C | UL 1446 | UL |
| - Insulation tape | 3m Company Electrical Markets Div(Emd) | 1350F-1 | 130°C | UL 510 | UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| (Alternative) | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | CT-280 | 130°C | UL 510 | UL |
| - Margin tape | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | WF-2902 | 130°C | UL 510 | UL |
| - Tube | Great Holding Industrial Co Ltd | TFT | 200°C, 300V, Min. Thickness=0.4mm | UL 224 | UL |
| Transformer (TR3) (Alternative) | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0865 | Class B | IEC 60065 | Tested in appliance |
| - Bobbin | Chang Chun Plastics Co., Ltd | T375J | V-0, 150°C | UL 94 | UL |
| - Magnet wire | Tai-I Electric Wire &Cable Co.,Ltd | UEW | 130°C | UL1446 | UL |
| (Alternative) | Huizhou City Denggaoda Electrotech Co Ltd | UEW | 130°C | UL1446 | UL |
| - Insulation tape | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | PZ-280 | 130°C | UL 510 | UL |
| - Margin tape | Jingjiang Yahua Pressure Sensitive Glue Co Ltd | WF-2902 | 130°C | UL 510 | UL |
| - Tube | Fluo Tech Industries Co Ltd | TFT | 200°C, 300V, Min. Thickness=0.4mm | UL 224 | UL |
| Filter L15 | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0876 | 130°C | IEC 60065 | Tested in appliance |
| - Bobbin | Changchun Plastics Co., Ltd | T375J | V-0, 150°C | UL 94 | UL |
| - Magnet wire | Tai-I Electric Wire & Cable Co., Ltd | UEW | 130°C | UL1446 | UL |
| (Alternative) | Huizhou City Denggaoda Electrotech Co Ltd | UEW | 130°C | UL1446 | UL |
| Filter L15 (Alternative) | Shenzhen Click Technology Co., Ltd | BCK2501-1274 | 130°C | IEC 60065 | Tested in appliance |
| - Bobbin | Changchun Plastics Co., Ltd | PBT 4115 (a) | V-0, 120°C | UL94 | UL |
| - Magnet wire | Pacific Electric Wire & Cable Co., Ltd | UEW/U | 130°C | UL1446 | UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| Filter L16 | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0877 | 130°C | IEC 60065 | Tested in appliance |
| - Magnet wire | Tai-I Electric Wire&Cable Co Ltd | UEW | 130°C | UL1446 | UL |
| Filter L16 (Alternative) | Shenzhen Click Technology Co., Ltd | LC28-143 | 130°C | IEC 60065 | Tested in appliance |
| - Magnet wire | Pacific Electric Wire & Cable Co., Ltd | UEW/U | 130°C | UL1446 | UL |
| Filter L3 | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0866 | 130°C | IEC 60065 | Tested in appliance |
| - Magnet wire | Tai-I Electric Wire & Cable Co Ltd | UEW | 130°C | UL1446 | UL |
| (Alternative) | Huizhou City Denggaoda Electrotech Co Ltd | UEW | 130°C | UL1446 | UL |
| Filter L3 (Alternative) | Shenzhen Click Technology Co., Ltd | LC106-552 | 130°C | IEC 60065 | Tested in appliance |
| - Magnet wire | Pacific Electric Wire & Cable Co., Ltd | UEW | 130°C | UL1446 | UL |
| (Alternative) | Tai-I Electric Wire & Cable Co., Ltd | UEW | 130°C | UL1446 | UL |
| Opto-coupler OP1 (on the main power board), OP1, OP2 (on the small board) | Everlight Electronics Co., Ltd. | EL817 | Reinforced insulation, 5000 Vrms, Dti≥ 0.4 mm, 100°C | IEC/ EN60747-5-2, UL 1577 | VDE, UL |
| (Alternative) | Avago Technologies Pte Ltd. | CNY17-3 | Reinforced insulation, 5000 Vrms, Dti≥ 0.4 mm, 110°C | IEC/ EN60747-5-2, UL 1577 | VDE, UL |
| (Alternative) | Fairchild Semiconductor Corp. | CNY17-3, 4N35 | Reinforced insulation, 5000 Vrms, Dti≥ 0.4 mm, 100°C | IEC/ EN60747-5-2, UL 1577 | VDE, UL |
| (Alternative) | Vishay Semiconductor Gmbh | CNY17-3 | Reinforced insulation, 5000 Vrms, Dti≥ 0.4 mm, 100°C | IEC/ EN60747-5-2, UL 1577 | VDE, UL |
| NTC (R18,R19) | Thinking Electronic Industrial Co., Ltd | SCK | 10 ohm, 3.6W at 25°C | UL 1434 | UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| (Alternative) | Interchangeable | Interchangeable | 10 ohm, 3.6W at 25°C | UL 1434 | UL |
| Varistor (VT1) | Joyin Co., Ltd. | 14N471K | Min. 300V, 14 mm, 85°C , coating: V-0 (comply with 6KV/3KA, Combination pulse test) | IEC 61051-1, IEC 61051-2, UL 1449 | VDE, UL |
| (Alternative) | Thinking Electronic Industrial Co ltd | TVR14471 | Min. 300V, 14 mm, 85°C , coating: V-0 (comply with 6KV/3KA Combination pulse test) | IEC 61051-1, IEC 61051-2, UL 1449 | VDE, UL |
| (Alternative) | Interchangeable | Interchangeable | Min.300V, Min. 14mm, 85°C, coating: V-0 (comply with 6KV/3KA Combination pulse test) | IEC 61051-1, IEC 61051-2, UL 1449 | VDE, UL |
| DC Fan | Nidec Servo Corp | V40S12BMA5 | DC12V, 0.121A, min 5.71CFM | UL 507 | UL |
| (Alternative) | Sanyo Denki Co., Ltd. | 109P0412M | DC12V, 0.045A, min 4.64CFM | UL 507 | UL |
| (Alternative) | Interchangeable | Interchangeable | DC12V, Min. 0.045A, min 4.64CFM | UL 507 | UL |
| Insulation sheet (Between PCB and metal enclosure) | Mianyang Longhua Film Co Ltd | PP-WT17 | V-0, 80°C, thickness 0.5mm, min. | UL 94 | UL |
| (Alternative) | Suzhou Omay Optical Materials Co Ltd | SE11 | V-0, 80°C, thickness 0.5mm, min. | UL 94 | UL |
| (Alternative) | Skc Co., Ltd | SR53 | V-0, min. 80°C, min. thickness 0.5mm | UL 94 | UL |
| Silicon sheet (Between PCB and metal enclosure) | Shenzhen Nuode Site Technology Co Ltd | NDST Series | V-0, 150°C, Dimession: 84mm*22mm | UL94 | UL |
| Insulation sheet near TR3 and TR1 | Mianyang Longhua Film Co Ltd | PC-870 | V-0, 150°C, Thickness: 0.4mm. | UL 94 | UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| Shrinkable tube on Fan wire | Interchangeable | Interchangeable | VW-1, min. 125°C, min. thickness 0.4 mm | UL 224 | UL |
| DC fan lead wire | Interchangeable | 1007 | VW-1, min. 105°C, min. 300Vac, min. 24AWG | UL 758 | UL |
| Input wire | Interchangeable | 1672 | VW-1, min. 105°C, min. 300Vac, min. 18AWG | UL 758 | UL |
| Earthing wire | Interchangeable | 1015 | VW-1, min. 105°C, min. 600Vac, min. 18AWG | UL 758 | UL |
| Wire connected Thermal cut-out | Interchangeable | 1007 | VW-1, min. 105°C, min. 600Vac, min. 22AWG | UL 758 | UL |
| Wire through TR2 | Interchangeable | 1007 | VW-1, min. 105°C, min. 600Vac, min. 18AWG | UL 758 | UL |
| Bleed resistor (R1, R15) | Interchangeable | Interchangeable | 470Kohm, 1/4W | IEC 60065 | Tested in appliance |
| Storage Capacitor (C11) | Interchangeable | Interchangeable | Max. 270 µF, min. 400 V, min. 105°C | IEC 60065 | Tested in appliance |
| Thermal cut-out (R77) | Foshan Jihui Electrical Appliances Co Ltd | BW series | 5A, 250V | UL 1434 | UL |
| Components used in DC-DC converter | | | | | |
| Fuse (FS4) | Sun Electric Co | 4F | 15A, 125V | UL 248 | UL |
| (Alternative) | Interchangeable | Interchangeable | 15A, 125V | UL 248 | UL |
| T1 | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0901 | 130°C | IEC 60065 | Test in appliance |
| (Alternative) | Shenzhen Click Technology Co., Ltd | BCK4201-1032 | 130°C | IEC 60065 | Test in appliance |
| T2 | Hui Zhou Show-Grand Electronics Co., Ltd. | SG-0899 | 130°C | IEC 60065 | Test in appliance |
| (Alternative) | Shenzhen Click Technology Co., Ltd | BCK1601-1366 | 130°C | IEC 60065 | Test in appliance |
| Componentes use for EUT | | | | | |
| Fan of CPU | Delta Electronics. INC | AFB0712HHB | 12Vdc, 0.28A, 33.80CFM min | UL 507 | UL |

| IEC 60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | |
|---|---|---|---|---|---|
| (Alternative) | Protecnic Eleatric CO.,LTD | MGT7012ZB-O15 | 12Vdc, 0.41A, 33.32CFM min | UL 507 | UL |
| (Alternative) | Interchangeable | Interchangeable | 12Vdc, 0.28A, 33.32CFM min | UL 507 | UL |
| Fan for system Ventilation | Nidec Servo Corporation | D1225C12B5AZ | 12Vdc, 0.083A, 51.9CFM min | UL507 | UL |
| (Alternative) | Interchangeable | Interchangeable | 12Vdc, 0.083A, 51.9CFM min | UL 507 | UL |
| LCD panel | Nlt Technologies Ltd | NL10276BC30-18C | 15.0 inch | UL 60950-1 | UL |
| DC 48V switch | Interchangeable | Interchangeable | 250Vac, 6A | UL 61058-1 | UL |
| Mains Cord (For US, CSA) | Interchangeable | Interchangeable | Type NISPT-2 or better, 18 AWG, 250 V, min. 3 A, 60 ºC, max 4.5 m long; One end with NEMA 1-15P. Other end with polarized type appliance coupler | UL817, CSA C22.2 No.21 | UL, CSA |

END OF REPORT

# Attachment No. 1

| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

## ATTACHMENT TO TEST REPORT IEC 60065
## EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Audio, video and similar electronic apparatus – Safety requirements

| | |
|---|---|
| **Differences according to** .....: | EN 60065:2002 + A1:2006 + A11:2008 + A2:2010 + A12:2011 |
| **Attachment Form No**. .....: | EU_GD_IEC60065K_II |
| **Attachment Originator .....**: | Intertek Semko AB |
| **Master Attachment** .....: | Date (2011-08) |



| | **IEC 60065, GROUP DIFFERENCES (CENELEC common modifications (EN))** | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Contents | **Add** the following annexes:<br>**Annex ZA** (normative) Other international publications quoted in this standard with the references of the relevant European publications (See the CB Bulletin)<br>**Annex ZB** (nominative) Special national conditions<br>**Annex ZC** (informative) A-deviations | | P |
| Definition 2.2.Z1 (A11:2008) | **Add** after the definition 2.2.12 the following new definition:<br>**PORTABLE SOUND SYSTEM**<br>small battery powered audio equipment:<br>• whose prime purpose is to listen to recorded or broadcasted sound; and<br>• that uses headphones or earphones that can be worn in or on or around the ears; and<br>• that allows the user to walk around<br>NOTE Examples are mini-disc or CD players, MP3 audio players or similar equipment. | | N/A |
| 2.2 (A12:2011) | In EN 60065:2002/A11:2008<br>Delete the definition 2.2.Z1 | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.1 | **Add** the following indent at the end of the list<br>- Exposure to excessive sound pressures from headphones or earphones<br>NOTE A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment<br>– Maximum sound pressure level measurement methodology and limit considerations – Part 1: General method for ”one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment – Maximum sound pressure level measurement methodology and limit considerations – Part 2: Guidelines to associate sets with headphones coming from different manufacturers. | | N/A |
| 3.1<br>(A12:2011) | In EN 60065:2002<br>Delete the addition of indent regarding sound pressure excessive | | N/A |
| **3.Z1**<br>(A2:2010) | After 3.2 **add** a new clause 3.Z1:<br>To protect against excessive current, short-circuits and earth faults in MAINS, 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):<br>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 11 shall be included as parts of the equipment;<br>b) for components in series or parallel 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;<br>c) it is permitted for equipment supplied via an industrial mains plug or for PERMANENTLY CONNECTED APPARATUS, to rely on dedicated over current 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.<br>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for not via an industrial mains plug or for PERMANENTLY CONNECTED APPARATUS the building installation shall be regarded | | P |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.1.1 | **Replace** the text of the note by: NOTE For ROUTINE TEST reference is made to EN 50514. | | P |
| 5.4.1<br>za)<br>(A11:2008) | **Modify** indent za) as follows:<br>za) For a PORTABLE SOUND SYSTEM, a warning that excessive sound pressure from earphones and headphones can cause hearing loss. | | N/A |
| 5.4.1<br>(A12:2011) | In EN 60065:2002/A1:2006 and EN 60065;2002/A11:2008<br>Delete the modification in indent za)<br>Add the following clause and annex to the excisting standard and amendments | | N/A |
| | **Zx Protection against excessive sound pressure from personal music players** | | |

# Attachment No. 1

| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | **Zx.1 General**<br>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.<br><br>A personal music player is a portable equipment for personal use, that:<br>– is designed to allow the user to listen to recorded or broadcast sound or video; and<br>– primarily uses headphones or earphones that can be worn in or on or around the ears; and<br>– allows the user to walk around while in use.<br>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.<br><br>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.<br><br>The requirements in this sub-clause are valid for music or video mode only.<br><br>The requirements do not apply:<br>– while the personal music player is connected to an external amplifier; or<br>– while the headphones or earphones are not used.<br>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.<br><br>The requirements do not apply to:<br>– hearing aid equipment and professional equipment;<br>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.<br>– 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.<br>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.<br><br>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Cont. | **Zx.2 Equipment requirements**<br>No safety provision is required for equipment that complies with the following:<br>– equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and<br>– 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.<br>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.<br><br>All other equipment shall:<br>a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and<br>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<br>c) provide a means to actively inform the user of the ncreased 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<br>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.<br>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. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Cont. | d) have a warning as specified in Zx.3; and<br>e) not exceed the following:<br>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<br>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 $L_{Aeq,T}$) 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.<br>NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) 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.<br>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. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | **Zx.3 Warning**<br>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:<br>– the symbol of Figure 1 with a minimum height of 5 mm; and<br>– the following wording, or similar:<br>"To prevent possible hearing damage, do not listen at high volume levels for long periods."<br>  <br>**Figure 1 – Warning label (IEC 60417-6044)**<br>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. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Cont. | **Zx.4 Requirements for listening devices (headphones and earphones)** | | |
| | **Zx.4.1 Wired listening devices with analogue input**<br>With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV.<br>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).<br>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV. | | N/A |
| | **Zx.4.2 Wired listening devices with digital input**<br>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 $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.<br>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.).<br>NOTE An example of a wired listening device with digital input is a USB headphone. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| · | **Zx.4.3 Wireless listening devices**<br>In wireless mode:<br>– with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and<br>– respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and<br>– 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 above-mentioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.<br>NOTE An example of a wireless listening device is a Bluetooth headphone. | | N/A |
| | **Zx.5 Measurement methods**<br>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.<br>Unless stated otherwise, the time interval T shall be 30 s.<br>NOTE Test method for wireless equipment provided without listening device should be defined. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.1<br><br>(A11:2008) | **Replace** the entire subclause in EN 60065:2002 and EN 60065:2002/A1:2006 by:<br>**Ionizing radiation**<br>Apparatus including a potential source of ionizing radiation shall be so constructed that personal protection against ionizing radiation is provided under normal operating conditions and under fault conditions.<br>*Compliance is checked by measurement under the following conditions*:<br>*In addition to the normal operating conditions, all controls adjustable from the outside BY HAND, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.*<br>NOTE 1 Soldered joints and paint lockings are examples of adequate locking.<br>*The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus.*<br>*Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.*<br>*The dose-rate shall not exceed 1µSv/h (0,1 mR/h) taking account of the background level.*<br>NOTE 2 These values appear in Directive 96/29/Euratom of 13th May 1996.<br>*A picture is considered to be intelligible if the following conditions are met*:<br>*- a scanning amplitude of at least 70 % of the usable screen width;*<br>*- a minimum luminance of 50 cd/m² with locked blank raster provided by a test generator;*<br>*- a horizontal resolution corresponding to at least 1,5 MHz in the centre, with a similar vertical degradation;*<br>*- not more than one flashover per 5 min.* | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Z1<br>(A11:2008) | **Add** the following new clause after Clause 20:<br>**Z1 Resistance to candle flame ignition**<br>A television set shall be so designed that the likelihood of ignition and the spread of fire caused by a candle flame is reduced.<br>NOTE 1 An apparatus with a viewing screen is not regarded to be a television set if it is declared not to be so by the manufacturer.<br>This requirement does not apply to the display screen of rear projection TV's.<br>NOTE 2 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.<br>NOTE 3 The frame around the screen is not exempted from the requirements.<br>Wood and WOOD-BASED MATERIAL with a thickness of at least 6 mm is considered to fulfil the V-1 requirement when applying CLC/TS 62441.<br>*Compliance is checked according to CLC/TS 62441.*<br>NOTE 4 The term vertical, as used in the first dash of clause 5.2 of CLC/TS 62441, does not mean a perfectly vertical position. It should be interpreted as any surface that can be touched by the flame of a candle of 150 mm height and 20mm diameter while the candle is still touching the supporting surface. A typical candle used in the home is assumed to be 20 mm diameter.<br>NOTE 5 It is expected that CLC/TS 62441 will in the future be replaced by a standard, at which time that standard will become applicable, subject to a vote by National Committees at the time. | | N/A |
| General | 13.3.1 **Delete** note 4.<br>14 **Delete** note 4 and note 5.<br>15.1.1 **Delete** notes 1 and 2.<br>15.2 **Delete** note 2.<br>16.1 **Delete** note 1.<br>16.2 **Delete** the note.<br>20 **Delete** note 2.<br>Annex B **Replace** note 1 by: In the CENELEC countries listed in IEC 62151, special national conditions apply.<br>Annex G **Delete** the note.<br>Annex J.2 **Delete** the notes of Table J.1.<br>Annex N **Add** after the introduction: For ROUTINE TEST reference is made to EN 50333. (Replaced by EN 50514) | | **P** |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| General<br>(A2:2010) | In IEC 60065:2001/A2<br>**Delete** all the "country" notes according to the following list:<br>5.3 Note<br>5.4.1 Note<br>20 Note<br>For special national conditions, see Annex ZB. | | **P** |
| Bibliography | Additional EN standards. | | **P** |

| | | |
|---|---|---|
| **ZA** | **Normative references to international publications with their corresponding European publications** | **--** |

| **ZB** | **ANNEX ZB TO EN 60065, SPECIAL NATIONAL CONDITIONS (EN)** | | |
|---|---|---|---|
| 2.6.1 | DK: The following is **added**:<br>Certain types of CLASS I apparatus, see 15.1.1, may be provided with a plug not establishing earthing continuity when inserted in Danish socket-outlets<br>J*ustification:* Heavy Current Regulations, Section 107. | | N/A |
| 3.Z1<br>(A2:2010) | **Denmark**<br>**Add** to the end of the subclause<br>Due to many existing installations where the socket-outlets can be protected with<br>fuses with higher rating than the rating of the socket-outlets the protection for<br>pluggable equipment type A shall be an integral part of the equipment.<br>*Justification*:<br>In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.3<br>(A2:2010) | **Finland, Norway and Sweden**<br>To the end of the subclause the following is **added**:<br>CLASS I apparatus which is intended for connection to the building installation wiring<br>via a plug or an appliance coupler, or both and in addition is intended for connection<br>to other apparatus or a network shall, if safety relies on connection to protective earth<br>or if surge suppressors are connected between the network TERMINALS and<br>ACCESSIBLE parts, have a marking stating that the apparatus must be connected to an<br>earthed MAINS socket-outlet.<br>The marking text in the applicable countries shall be as follows:<br>In **Finland**: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"<br>In **Norway**: “Apparatet må tilkoples jordet stikkontakt”<br>In **Sweden**: “Apparaten skall anslutas till jordat uttag” | | N/A |
| 5.4<br>(A11:2008) | **Finland, Norway and Sweden**<br>To the end of 5.4 the following is **added**:<br>CLASS I apparatus which is intended for connection to the building installation wiring via a plug or an appliance coupler, or both and in addition is intended for connection to other apparatus 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 apparatus must be connected to an MAINS socket-outlet with protective earth.<br>The marking text in the applicable countries shall be as follows:<br>In Finland: “Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan”<br>In Norway: “Apparatet må tilkoples jordet stikkontakt”<br>In Sweden: "Apparaten skall anslutas till jordat uttag" | | N/A |

# Attachment No. 1

| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.1<br>(A11:2008) | **Norway and Sweden**<br>To the end of 5.4.1 (after the compliance statement) the following is **added**:<br>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.<br>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.<br>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:<br>“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)”<br>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.<br>Translation to Norwegian (the Swedish text will also be accepted in Norway):<br>“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.” | | N/A |

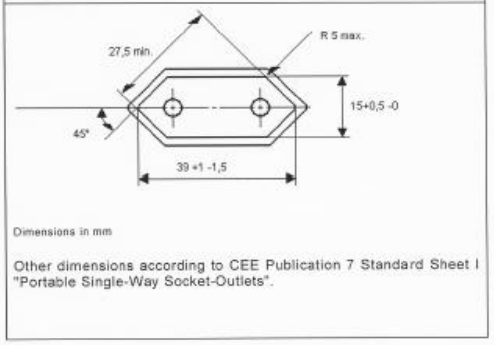
# Attachment No. 1

| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Translation to Swedish:<br>”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.<br>För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.” | | N/A |
| 13.3.1 | NO: To the second paragraph the following is **added:**<br>In Norway, due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault.<br>J*ustification:* Based on a use in Norway of an IT power distribution system where the neutral is not provided. | | N/A |

# Attachment No. 1

| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 15.1.1<br>(A11:2008) | **Denmark**<br>The text of the Danish SNC in EN 60065:2002 has been **modified** as follows:<br>To the first paragraph the following is added:<br>In Denmark, supply cords of single-phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.<br>Appliances of CLASS I 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 the Heavy Current Regulations, Section 107-2-D1 standard sheet DK 2-1a.<br>To the second paragraph the following is added:<br>Socket outlets intended for providing power to CLASS II apparatus with a rated current of 2,5 A shall be in accordance with the Heavy Current Regulation, Section 107-2-D1 standard sheet DKA 1-4a.<br>Other current ratings socket outlets shall be in compliance with the Heavy Current Regulation, Section 107-2-D1 standard sheet DKA 1-3a or DKA 1-3b.<br>To the third paragraph the following is added:<br>Mains socket-outlets with earthing contact shall be in compliance with the Heavy Current Regulation, Section 107-2-D1 standard sheet DK 1-3a, DK 1-5a or DK 1-7a.<br>Justification: Heavy Current Regulations, Section 107-2-D1 | | N/A |
| 15.1.1 | IE: Apparatus which is fitted with a flexible cable or cord shall be provided with a 13 A plug in accordance with Statutory Instrument 525:97, “13 A Plugs and Conversion Adapters for Domestic Use Regulations:1997.<br>*Justification:* SI 525: 1997 | | N/A |

# Attachment No. 1

| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 15.1.1 | NO: Mains socket-outlets mounted on CLASS II apparatus shall comply with the specifications given in CEE Publ. 7 as far as a applicable, with the following amendments:<br>§ 8 Dimensions<br>a 2.5 A 250 V two-pole socket-outlets for electronic apparatus shall comply with the enclosed Standard Sheet I.<br>Mains socket-outlets mounted on CLASS II apparatus shall comply with the specifications given in CEE Publ. 7 as fas as a Applicable, with the following amendments:<br>§ 8 Dimensions<br>a 2,5 A 250 V two-pole socket-outlets for electronic apparatus shall comply with the enclosed Standard Sheet I.<br>STANDARD SHEET I<br>2,5 A/250 V SOCKET-OUTLET FOR ELECTRONIC APPLIANCES OF CLASS II<br>  <br><br>Dimensions in mm<br>Other dimensions according to CEE Publication 7 Standard Sheet I "Portable Single-Way Socket-Outlets".<br>§ 24 Mechanical strength<br>a 2,5 A, 250 V socket-outlets for CLASS II electronic apparatus are tested as specified in 12.1.3 of EN 60065. Also the protecting rim shall be tested.<br>§ 24 Mechanical strength<br>A 2,5 A 250 V socket-outlets for CLASS II electronic apparatus are tested as specified in 12.1.3 of EN 60065. Also the protecting rim shall be tested<br>*Justification:* Act of 24 May 1929 relating to supervision of electrical installation (TEA 1929/FEL 1998). | | N/A |
| 15.1.1 | UK: Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug shall be fitted with a ”standard plug” in accordance with Statutory Instrument 1768: 1994: The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those Regulations.<br>NOTE ”Standard plug” is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.<br>*Justification*: SI 1768: 1994 | | N/A |

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| IEC60065K - ATTACHMENT | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| J.2 | NO: After Table J.1 the following is added:<br>In Norway, due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault.<br>*Justification*: Based on a use in Norway of an IT power distribution system where the neutral is not provided. | | N/A |

| **ZC** | **ANNEX ZC TO EN 60065, A-DEVIATIONS (EN)** | | **--** |
|---|---|---|---|
| 5.1 | IT: Additional markings on the outside of the TV receiver in Italian language | | N/A |
| | IT: User instructions in Italian language including a conformity declaration | | N/A |
| | IT: Certification number on the back cover | | N/A |
| 6.1 | DE: The following requirement applies:<br>For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.<br>*Justification*: German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.<br>NOTE Contact address:<br>Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de | | N/A |
| 14 | SE: Switches containing mercury such as thermostats, relays and level controllers are not allowed.<br>*Justification*: Ordinance (1990:944) on Prohibition in Connection with handling. Importation and exportation of Chemical Products (Certain Cases) | | N/A |

# Attachment No. 2

National and Group Differences for IEC 60065 7th Ed. +A1:2005 +A2:2010 as per CB Bulletin

| National Differences covered by this report | | | | | |
|---|---|---|---|---|---|
| Country | CENELEC Group differ. (see separate attachment) | National differ. | Base standard | National standard | Tested |
| AT Austria | Yes | - | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| AR Argentina | - | Yes | IEC 60065 ed7+A1 | | Yes |
| AU Australia | - | Yes | IEC 60065 ed7+A1+A2 | AS/NZS 60065:2012 | Yes |
| Belarus | - | - | IEC 60065 ed7+A1+A2 | STB IEC 60065:2004 | Yes |
| BE Belgium | Yes | - | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| CA Canada | - | Yes | IEC 60065 ed7+A1+A2 | CSA 60065-03+A1:2006+A2:2012 | Yes |
| CH Switzerland | Yes | Yes | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| CN China | - | - | IEC 60065 ed7+A1+A2 | GB 8898-2011 | Yes |
| CZ Czech Republic | Yes | - | IEC 60065 ed7+A1 | EN 60065/A2:2010 | Yes |
| DE Germany | Yes | Yes | IEC 60065 ed7+A1+A2 | DIN EN 60065 (VDE 0860) | Yes |
| DK Denmark | Yes | Yes | IEC 60065 ed7+A1+A2 | DS/EN 60065/A2:2010 | Yes |
| ES Spain | Yes | - | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| FI Finland | Yes | Yes | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| FR France | Yes | - | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| GB United Kingdom | Yes | Yes | IEC 60065 ed7+A1+A2 | EN 60065/A2:2010 | Yes |
| GR Greece | Yes | - | IEC 60065 ed5+A1+A2+A3 | | Yes |
| HU Hungary | Yes | - | IEC 60065 ed7+A1 | EN 60065/A2:2010 | Yes |
| IT Italy | Yes | - | IEC 60065 ed7+A1 | EN 60065/A2:2010 | Yes |
| JP Japan | - | Yes | IEC 60065 ed7+A1+A2 | J3000 (H21), J60065(H23) | Yes |
| KR Korea | - | Yes | IEC 60065 ed7+A1+A2 | K60065 | Yes |
| MY Malaysia | - | Yes | IEC 60065 ed7+A1+A2 | MS IEC 60065 | Yes |
| NO Norway | Yes | Yes | IEC 60065 ed7+A1+A2 | NEK-EN 60065/A2:2010 | Yes |
| NL Netherlands | Yes | - | IEC 60065 ed7+A1 | EN 60065/A2:2010 | Yes |
| NZ New Zealand | - | Yes | IEC 60065 ed7+A1+A2 | AS/NZS 60065:2012 | Yes |
| PL Poland | Yes | - | IEC 60065 ed7+A1+A2 | PN-EN 60065:2004 +A1:2010+A2:2011 | Yes |
| SE Sweden | Yes | Yes | IEC 60065 ed7+A1+A2 | SS-EN 60065:2002+A1:2006+A2:2010+A11:2008+A12:2011 | Yes |
| SG Singapore | - | - | IEC 60065 ed7+A1+A2 | | Yes |
| Slovakia | - | - | IEC 60065 ed7+A1+A2 | EN 60065/A1:2006 | Yes |
| SI Slovenia | Yes | - | IEC 60065 ed7+A1 | SIST EN 60065 Amd. 2 | Yes |
| US United States of America | - | Yes | IEC 60065 ed7+A1+A2 | UL 60065 | Yes |

# Attachment No. 2

**General remarks:**

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Throughout this report a point is used as the decimal separator.

See attachment 1 for European Group Differences and National Differences.

Note: Before placing the products in the different countries, the manufacturer must ensure that:

1. Operating Instructions, Ratings Labels and Warnings Labels written in an Accepted or Official Language of the county in question.
2. The equipment complies with the National Standards and/or Electrical Codes of the country in question.
3. Mains plugs and internal wirings should be assessed to the national standard.

**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)

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **AR Argentina** | | | **AR** |
| | Ratings shall cover 220 Vac - 50 Hz | 100-240VAC, 50-60Hz | P |
| | Class 0 and Class 0I appliances are not allowed | Class I appliance | P |
| | Safety instructions and manuals shall be written in Spanish language (Resolution 92/98) | Should be evaluated during the national approval | N/A |
| | Country of origin shall be shown on the marking plate or, if not possible, in the primary packaging (Resolution 92/98) | Marked on marking plate | P |
| | Address of the importer in Argentina shall be shown on the product or on the primary packaging (Resolution 92/98) | Should be evaluated during the national approval | N/A |
| | Class I appliances provided with plugs shall be provided with the label specified in sheet "Class I" (Disposition 731/87) | Should be evaluated during the national approval | N/A |
| | Class II appliances provided with plugs shall be provided with the label specified in sheet "Class II" (Disposition 731/87) | | N/A |
| | Plugs shall be in conformity with IRAM 2063 Standard for Class II appliances and IRAM 2073 Standard for Class I appliances (Resolution 524/98) | Should be evaluated during the national approval | N/A |
| | Adaptors/Transformers provided with integrated plugs shall be provided with blades which shall meet the geometry of IRAM 2063 standard for Class II appliances or IRAM 2073 standard for Class I appliances (Resolution 524/98) | | N/A |
| | Appliances certified under System Nº 4 (Type Certification scheme) shall be marked with the symbol specified in sheet "St Mark" (Resolution 197/04) | | N/A |
| | Appliances certified under System Nº5 (Mark of Conformity Certification scheme) shall be marked with the symbols specified in sheet "S Mark" (Resolution 799/99) | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **AU Australia** | | | **AU** |
| Table 3 | In Table 3 under item c) add an 201) in both columns against 'thermoplastic materials' and add the following new footnote:<br>201) As an alternative to the method described in footnote f) the following variation may be used where there is any doubt about the suitability of the material:<br>The ball-pressure test described in AS/NZS 60695.10.2 may be carried out.<br>To assess compliance under normal operating conditions, the test shall be made in a heating cabinet at a temperature of 40°C ±2°C plus the maximum temperature rise determined under normal operating conditions but, it shall be at least<br>- for external parts…75°C ±2°C<br>- for materials supporting parts conductively connected to the mains…125°C ±2°C | | N/A |
| 7.2 | After the second paragraph, add the following:<br>The alternative method described in footnote 201) of Table 3 may be used. | | N/A |
| 15.1.1 | After the second paragraph, add the following:<br>Plugs for the connection of apparatus to mains-powered socket-outlets shall comply with AS/NZS 3112 or AS/NZS 3123. Apparatus with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements of AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. | Should be evaluated during the national approval | N/A |
| Table 15 | In the second and third rows of the first column replace '6' with '7.5'. | | N/A |
| Table 18 | In the second and third rows of the first column replace '6' with '7.5'. | | N/A |
| 16.3 | In item (b), add the following:<br>A flexible cord complying with AS/NZS 3191 need not undergo this test. | Should be evaluated during the national approval | N/A |
| 19 | Add the following new Clauses after 19.6 | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| **AU Australia** | | | **AU** |
| 19.201 | Additional stability requirements for television receivers<br>Television receivers and display devices that may be used for television purposes, with a mass of 7kg or more, shall have additional stability requirements.<br>Compliance is checked by inspection and by the tests of 19.201.2.2 and 19.201.3 as applicable.<br>Apparatus designed for only fixing to a wall, ceiling or equipment rack are not required to be subjected to these additional requirements if the marking of 5.4.1 f) is provided on or with the apparatus. | | N/A |
| 19.201.1 | Warning notice<br>Television receivers and display devices that may be used for television purposes, shall be provided with information in the instructions for installation for use, containing the following information or similar:<br>**IMPORTANT INFORMATION**<br>If a television is not positioned in a sufficiently stable location, it can be potentially hazardous due to falling. Many injuries, particularly to children, can be avoided by taking simple precautions such as:<br>• Using cabinets or stands recommended by the manufacturer of the television.<br>• Only using furniture that can safely support the television.<br>• Ensuring the television is not overhanging the edge of the supporting furniture.<br>• Not placing the television on tall furniture (for example, cupboards or bookcases) without anchoring both the furniture and the television to a suitable support.<br>• Not standing the televisions on cloth or other materials placed between the television and supporting furniture.<br>• Educating children about the dangers of climbing on furniture to reach the television or its controls.<br>Such information should also be provided as a label on the apparatus. | | N/A |
| 19.201.2 | Restraining device | | N/A |
| 19.201.2.1 | Television receivers should be provided with a restraining device such as a fixing point to facilitate restraining the television from toppling forward. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **AU Australia** | | | **AU** |
| 19.201.2.2 | Where a restraining device is provided in accordance with 19.201.2.1 information shall be provided in the instructions for installation or use, to ensure correct and safe installation. Such information should also be provided as a label on the television receiver. Any such restraining device shall be capable of withstanding a pull of 100 N in all directions without damage. | | N/A |
| 19.201.3 | Glass slide test‡<br>Television receivers and display devices that may be used for television purposes, with a mass of 18 kg or more, are placed on a clean, dry, glass covered horizontal surface such that only the supporting feet are in contact with the glass. The glass-covered surface is then tilted in the most unfavourable direction through an angle of 10°. During the tests, the equipment shall not slide.<br>‡Clause 19.201.3 forms part of the Standard on 31 January 2013 | | N/A |
| 20 | Delete the following paragraph:<br>'The requirements are considered to be fulfilled if the apparatus complies with the requirement of 20.1 and 20.2'<br>and replace with<br>'The requirements are considered to be fulfilled if the apparatus complies with the requirements of 20.1 and 20.2. Alternatively the requirements are considered to be fulfilled if the apparatus complies with the requirements of Clause 20.201. | | P |
| Table 21 | In the third and fourth columns change both 'HB75' and 'No requirement' to 'V-1'. | | P |
| 20.2.3 | After this Clause, add the following variation: | | N/A |
| 20.201 | Resistance to fire—Alternative tests | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **AU Australia** | | | **AU** |
| 20.201.1 | General<br><br>Parts of non-metallic material shall be resistant to ignition and the spread of fire.<br><br>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following:<br><br>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.<br><br>b) The following parts which would contribute negligible fuel to a fire:<br><br>- small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings;<br><br>- small electrical components, such as capacitors with a volume not exceeding 1 750 $mm^3$, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1 or better according to AS/NZS 60695.11.10.<br><br>NOTE – In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another.<br><br>Compliance shall be checked by the tests of 20.201.2.1, 20.201.2.2. and 20.201.2.3<br><br>For the base material of printed boards, compliance shall be checked by the test of 20.201.2.4.<br><br>The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, they are placed in the same orientation as they would be in normal use.<br><br>These tests are not carried out on internal wiring. | | N/A |
| 20.201.2 | Tests | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**AU Australia** **AU**

| | | | |
|---|---|---|---|
| 20.201.2.1 | Testing of non-metallic parts<br>Part of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.<br>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall not be carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part. | | N/A |
| 20.201.2.2 | Testing of insulated parts<br>Part of insulating material supporting potential ignition sources shall be subject to the glow-wire test of AS/NZS 64695.2.11 which shall be carried out at 750°C.<br>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection<br>NOTE – Contacts in components such as switch contacts are considered to be connections.<br>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test need not be tested.<br>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications: | | N/A |

| Clause of AS/NZS 60695.11.5 | Change |
|---|---|
| **9 Test Procedure** | |
| **9.2 Application of needle-flame** | *Replace* the second sentence of the first paragraph with:<br>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1.<br>*Add* to the end of the first paragraph:<br>If possible, the flame shall be applied at least 10 mm from a corner.<br>*Replace* the second paragraph with:<br>The duration of application of the test flame shall be 30 ±1 s. |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**AU Australia** **AU**

N/A

| Clause of AS/NZS 60695.11.5 | Change |
|---|---|
| 9.3 Number of specimens | *Replace* with:<br>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test |
| 11 Evaluation of test results | *Replace* with:<br>The duration of burning ($t_b$) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. |

The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10 provided that the sample tested was not thicker than the relevant part.

| | | | |
|---|---|---|---|
| 20.201.2.3 | Testing by needle-flame test<br>If parts, other than enclosures, do not withstand the glow wire tests of 20.201.2.2, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 20.201.2.2 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 20.201.2.2. Parts shielded by a separate barrier which meets the needle-flame test shall not be tested. | | N/A |
| | NOTE 1 – If the enclosure does not withstand the glow-wire test the appliance is considered to have failed to meet the requirements of Clause 21.201 without the need for consequential testing.<br>NOTE 2 – If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the apparatus, the apparatus is considered to have failed to meet the requirements of Clause 21.201 without the need for consequential testing<br>NOTE 3 – Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **AU Australia** | | | **AU** |
| 20.201.2.4 | Testing of printed boards<br>The base material of printed boards shall be subject to the needle-flame test of Clause 21.201.2.3. The flame shall be applied to the edge of the board where the heatsink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.<br>The test is not carried out if the-<br>- printed board does not carry any potential ignition source;<br>- base material of printed boards, on which the available power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or<br>- base material of printed boards, on which the available power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely.<br>Compliance shall be determined using the smallest thickness of the material.<br>NOTE – Available power is the maximum power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the power for more than 2 min when the circuit supplied is disconnected. | | N/A |
| 20.201.3 | For open circuit voltages greater than 4 kV<br>Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a fire enclosure which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **AU Australia** | | | **AU** |
| Annex B | After the heading add:<br>For Australia only, this Annex is replaced by the requirements of the Telecommunications Labelling Notice issued under the Telecommunications Act.<br>NOTE – The Telecommunications Act 1997 is administered by the Australian Communications Authority. | | N/A |
| **CA Canada** | | | **CA** |
| 1.1.1 | Add the following paragraph and note:<br>This Standard applies to the safety of such equipment designed to be installed and used in accordance with the rules of the Canadian Electrical Code (CEC), Part I.<br>Note 4A: Manufacturers designing products for use in Canada may find a helpful summary of the equipment-related requirement of the CEC, Part I, in CSA SPE-2000. | | P |
| 1.2 | Normative references<br>Where reference is made to CSA Publications, such reference shall be considered to refer to the latest edition and all amendments published to that edition. This Standard refers to the following Standards, and the years shown indicate the latest editions available at the time of printing.<br>ANSI/IEEE Standard<br>C62.1-1984, Surge Arresters for Alternating-Current Power Circuits<br>CSA Standards<br>C22.1-02, Canadian Electrical Code, Part 1<br>CAN/CSA-C22.2 No. 0-M91 (R2001), General Requirements - Canadian Electrical Code, Part II<br>C22.2 No. 0.4-M1982 (R1999), Bonding and Grounding of Electrical Equipment (Protective Grounding)<br>C22.2 No. 0.15-01, Adhesive Labels<br>CAN/CSA-C22.2 No. 1-98, Audio, Video and Similar Electronic Equipment<br>CAN/CSA-C22.2 No. 21-95 (R1999), Cord Sets and Power Supply Cords<br>C22.2 No. 39-M1987 (R1999), Fuseholder Assemblies<br>C22.2 No. 42-99, General Use Receptacles, Attachment Plugs, and Similar Wiring Devices<br>CAN/CSA-C22.2 No. 49-98, Flexible Cords and | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CA Canada** | | | **CA** |
| | Cables<br>CAN/CSA-C22.2 No. 94-M91 (R2001), Special Purpose Enclosures<br>C22.2 No. 127-99, Equipment and Lead Wires<br>C22.2 No. 209-M1985 (R1999), Thermal Cut-Offs<br>CAN/CSA-C22.2 No. 210.2-M90 (R2001), Appliance Wiring Material Products<br>CAN/CSA-C22.2 No. 223-M91 (1999), Power Supplies with Extra-Low-Voltage Class 2 Outputs<br>CAN/CSA-C22.2 No. 228-92 (1999), Cathode Ray Tubes<br>CAN/CSA-C22.2 No. 248.14-00, Low Voltage Fuses - Part 14<br>Spe-2000-94, Guide for Electrical Equipment for Installation and Use in Canada<br>IEC Standards<br>60038:2002, IEC standard voltages<br>60083:1975, Plug and socket-outlets for domestic and similar general use.<br>60173:1964, Colours of the cores of flexible cables and cords.<br>60320 (all parts), Appliance couplers for household and similar general purposes.<br>60707:1981, Methods of test for the determination of the flammability of solid electrical insulating materials.<br>60884 (all parts), Plugs and socket-outlets for household and similar purposes.<br>60906-1:1986, IEC System of plugs and socket-outlets for household and similar purposes - Part 1: Plugs and socket-outlets 16A 250V ac.<br>60906-2:1997, IEC System of plugs and socket-outlets for household and similar purposes - Part 2: Plugs and socket-outlets 15A 125V ac.<br>60906-3:1994, IEC System of plugs and socket-outlets for household and similar purposes - Part 3: SELV plugs and socket-outlets 16A 6V, 12V, 24V, 48V ac and dc. | | |
| 3.2A | Add the following clause:<br>A component power supply complying with CAN/CSA-C22.2 No. 60950 is considered to comply with this construction and fault conditions of this Standard after taking into account any relevant conditions of acceptability. | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **CA Canada** | | | **CA** |
|---|---|---|---|
| 4.2.1 | Add the following after the fifth paragraph:<br>For apparatus intended for use at nominal 120V ac, the apparatus shall comply with this standard at supply voltages between 108V and 125V. For apparatus intended for use at nominal 240V ac the apparatus shall comply with this standard at supply voltages between 216V and 250V. | | P |
| 4.2.10 | Add the following after the second paragraph:<br>As an alternative, a supply apparatus for general use complying with CSA/CSA-C22.2 No. 223 or CAN/CSA-C22.2 No. 60950 shall be acceptable. | | N/A |
| 5 | Markings and instructions – adhesive nameplates<br>Add the following paragraph:<br>Adhesive nameplates on commercial products shall comply with CSA C22.2 No 0.15. | | N/A |
| 5.1 | Add the following item:<br>j) Date of manufacture: a date or code identifying the period of manufacture shall be marked on the apparatus; | XXYY: XX stands for year, YY stands for month. | P |
| 5.3A | Add the following clause:<br>Where a loudspeaker grille, removable from the outside, is relied on as part of the enclosure (see Clause 9.2), the following marking or equivalent shall be visible on the enclosure after removal of the grille:<br>"Caution - To prevent electric shock hazard, replace grille."<br>Alternatively, the symbol in Clause 5.2 b) shall be visible after removal of the grille, and the caution wording above shall appear in the user instructions, accompanied by the symbol.<br>Compliance is checked by inspection. | | N/A |
| 8.9 | Add the following title to this clause:<br>Mains Wiring<br>Add the following paragraph:<br>Wiring in circuits with voltages higher than 42V peak shall comply with CSA C22.2 No 127 or CAN/CSA C22.2 No. 210.2. | | P |
| 9.1.1A | Class I Apparatus Leakage<br>Add the following Clause:<br>For cord-connected Class I apparatus, the leakage current through the safety earthing conductor expressed as voltages U1 and U2 shall not exceed U1 = 105V (peak) and U2 = 1.05V (peak) (1.5mA). | U1: 231mV, U2: 189mV | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CA Canada** | | | **CA** |
| | Apparatus having a leakage current between 0.75 mA and 1.5 mA shall be provided with a caution label on the mains cord with the following, or equivalent:<br>"CAUTION - TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE CENTRE PIN OF THIS PLUG MUST BE MAINTAINED". | 1.44 mA. The label will stick on the mains cord. | P |
| 9.1.1.2 | Determination of accessible parts – loudspeaker enclosure parts<br>Add the following after the fourth paragraph:<br>Moving parts of loudspeaker systems, such as dust caps or cones of drivers or passive radiators are not regarded as preventing accessibility.<br>NOTE 1A: See also Clause 13.3.1 | | N/A |
| 9.2 | Removal of protective covers – loudspeaker grilles<br>Add the following after the second paragraph:<br>This requirement applies also to internal parts of loudspeaker systems that become accessible by removal of a loudspeaker grille from the outside either by hand or with the use of a tool, coin, or other object. In such cases, the apparatus shall be marked according to Clause 5.3A.<br>Replace the third paragraph with the following:<br>Compliance is checked by inspections and by application of the tests of Clause 9.1.1, except that the measurements are made 2s after removal of the cover or grille. | | N/A |
| 10.2A | Enclosure type designation and use – outdoor enclosure<br>Add the following clause:<br>If equipment is installed in environments where the enclosure is required to prevent ingress of water or dust, the enclosure shall be classified as a type recognized by the Canadian Electrical Code, Part I, and shall comply with the requirements of CSA/CSA-C22.2 No. 94. | | N/A |
| 11.2 | Heating – flammable gases<br>Add the following clause:<br>Flammable gases shall not be emitted from a component for more than 10 secs. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CA Canada** | | | **CA** |
| 12.3A.1 | Television Impact Test: For television sets and similar apparatus using a cathode ray tube larger than 160mm diagonally, the top, sides, front and rear of the enclosure, including the safety screen where provided, shall be capable of withstanding a single impact of 7J in accordance with Clause 12.3A.2 without developing any opening larger than 130mm2 in the enclosure of the cathode ray tube unless the minor dimension of any opening is not more than 7mm.<br>When applied to a safety screen, the impact shall neither result in damage to its mounting to the extent it is mechanically unsuitable for reuse nor shall tempered glass, if used, be cracked.<br>When applied to the face of a directly viewed cathode ray tube, the impact shall not develop any opening in the face of the tube. Scaling and cracking of the glass is permissible. A cathode ray tube that has been shown to comply with CAN/CSA-C22.2 No 228 or CAN/CSA-E61965 shall be considered acceptable with no further tests. | | N/A |
| 12.3A.2 | Television Impact Object:<br>The impact specified in Clause 12.3A.1 shall be caused by allowing a solid, smooth, steel sphere 51mm in diameter and weighing approximately 0.5kg to strike the enclosure with the specified impact in a direction perpendicular to the enclosure surface. If deemed necessary, the enclosure shall be tested with the proper cathode ray tube mounted. | | N/A |
| 13.3.1 | General – loudspeaker voice coil<br>Add the following after the third paragraph:<br>CLEARANCES between a loudspeaker voice coil and adjacent conductive parts shall be disregarded. | | N/A |
| 14.2.1 | (Y-Capacitors)<br>Add the following paragraph:<br>As an alternative an isolating capacitor complying with applicable requirements of CSA C22.2 No 1, shall be acceptable for bridging BASIC or SUPPLEMENTARY INSULATION. | C3, C7, C17 | P |
| 14.2.2 | (X-Capacitors)<br>Add the following paragraph:<br>As an alternative an across-line capacitor complying with applicable requirements of CSA C22.2 No 1, shall be acceptable. | C9, C13 | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CA Canada** | | | **CA** |
| 14.5.1.2 | Thermal releases<br>Add the following paragraph:<br>As an alternative a THERMAL LINK complying with CSA C22.2 No 209 shall be acceptable. | | N/A |
| 14.5.2<br>14.5.2.1 | Fuse-links and fuse holders<br>Add the following paragraph:<br>As an alternative, a fuse-link complying with CSA C22.2 No 248.14 shall be acceptable. | | P |
| 14.5.2.4 | Add the following paragraph:<br>As an alternative a Fuseholder Assembly complying with CSA C22.2 No 39 shall be acceptable. | | N/A |
| 14.6.1 to 14.6.5 | Switches:<br>Add the following to each of the Clauses:<br>As an alternative, a TV-Rated Switch complying with CSA C22.2 No 1-98, Cl 9 shall be acceptable. | | P |
| 14.11 | Optocouplers<br>Add the following paragraph:<br>As an alternative, an optocoupler complying with CSA C22.2 No. 1 shall be acceptable. | | P |
| 14.12 | Surge suppression varistors<br>Add the following paragraph:<br>As an alternative, a varistor complying with CSA C22.2 No. 1 shall be acceptable. | | N/A |
| 14.12A | Gas discharge tubes<br>Add New Clause 14.12A:<br>Gas discharge tubes complying with the following tests may be connected to bridge BASIC or REINFORCED INSULATION.<br>Ten samples of gas discharge tubes isolating the ac supply from exposed parts shall be subjected to the varistor pulse tests of Clause 14.12. Following the pulses, the device shall be allowed to return to room temperature. The dielectric breakdown voltage of the gas tube shall not decrease by more than 50% and the gas discharge tube shall comply with the electric strength test of Clause 10.3, with the test voltage reduced to twice the mains voltage. | | N/A |

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

| **CA Canada** | | | **CA** |
|---|---|---|---|
| 15.1<br>15.1.1 | Plugs and sockets<br>(Convenience Receptacle Type)<br>Add the Following Clause:<br>A receptacle provided for general purpose mains output shall comply with the requirements of CSA Standard C22.2 No 42 (dimensional requirements are also specified in IEC 60906-2). The attachment plug cap shall be polarized type when the apparatus is provided with a manually operated, MAINS connected single pole switch for apparatus on-off operation, a socket screwshell lampholder, or a 15 or 20 A socket outlet. | | P |
| 15.1.2 | (Audio Terminals)<br>Add the following paragraph:<br>Banana plugs shall be acceptable. | | N/A |
| 15.1.3 | Adapter output connectors<br>Replace the first paragraph with the following:<br>Terminals and connectors used in output circuits of supply apparatus, whose output is not a standard nominal mains voltage according to IEC 60038, Table 1, shall not be compatible with those specified for household and similar general purposes, for example those described in IEC 60083[1], IEC 60320, IEC 60884, IEC 60906 (parts 1, 2, and 3), and CSA C22.2 No 42. | | N/A |
| 15.2 | Provisions for protective earthing - Bond Impedance<br>Replace the third paragraph with the following:<br>Earthing connections shall comply with the test requirements of CSA C22.2 No 0.4. | 0.023Ω at 30A | P |
| 15.3<br>15.3.1A | Terminals for external flexible cords and permanent connections to the mains supply<br>(Permanent Wiring)<br>Add the following clauses:<br>Equipment intended for permanent connection to the mains shall have provisions for connection to the wiring system in accordance with the Canadian Electrical Code, Part I. | | N/A |
| | The terminal parts and all other provisions for permanent connection to fixed wiring shall comply with CSA Standard CAN/CSA-C22.2 No 0. | | N/A |

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

| **CA Canada** | | | **CA** |
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| 15.4.2 | (Mains Plugs – Type)<br>Add the following paragraphs:<br>Mains plugs of non-permanently installed equipment shall comply with:<br>a) CSA C22.2 No 21 for moulded-on type attachment plugs; and<br>b) CSA C22.2 No 42 for disassembly type attachment plugs (dimensional requirements are also specified in IEC 60906-2). | | N/A |
| | Class II equipment provided with a general purpose mains outlet, or lampholder, shall be provided with a polarized-type plug. | | N/A |
| | If the plug is a polarized type, single pole switches or over current protectors shall not be connected in the identified conductor. | | N/A |
| 16<br>16.1 | External flexible cords<br>Replace this clause with the following:<br>Flexible cord used for mains supply shall comply with the requirements of CSA C22.2 No 49. The cord type shall be in accordance with Table 4 of CSA C22.2 No 1.<br>The attachment plug shall be rated not less than 125% of the apparatus rated current.<br>Cord sets shall comply with the requirements of CSA C22.2 No 21.<br>Non-detachable flexible cables and cords of Class I apparatus shall be provided with a green/yellow core connected to the protective earthing terminal of the apparatus and, if a plug is provided, to the protective earthing contact of the plug.<br>Compliance is checked by inspection.<br>Note: The colour of cores of flexible mains cords is contained in IEC 60173[4]. | | P |

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

| **CA Canada** | | | **CA** |
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| 17.9A<br>17.9A.1 | Adhesive securement and conductive coatings<br>Add the following clause:<br>Adhesive securement<br>The following parts, the displacement of which may result in a fire or shock hazard, shall not be secured solely by adhesive, unless the adhesive system complies with the resistance to external forces test of Clause 9.1.7, the bump test of Clause 12.1.1, and the impact test of Clause 12.1.3, after conditioning in accordance with Clause 17.9A.2:<br>a) internal metal parts/conductive coatings;<br>b) barriers; and<br>c) required enclosure parts.<br>Note: Cathode ray tubes are excluded from this test. | | N/A |
| 17.9A.2<br>17.9A.2.1 | Adhesive and conductive coating securement conditioning<br>General:<br>Where required by Clause 17.9A.1, one sample of the apparatus or enclosure section shall be conditioned in accordance with the requirements of Clause 17.9A.2.2. Equivalent ageing test data supplied by the manufacturer will be considered in lieu of ageing. | | N/A |

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

| **CA Canada** | | | **CA** |
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| 17.9A.2.2 | Ageing<br>Day 1: Place in oven at 100 ± 1ºC for 1 week, or 82 ± 1ºC for 8 weeks at the manufacturer's option.<br>Day 8 or Day 57:<br>1. Remove from oven and leave at room temperature for 1 h.<br>2. Place in freezer at –35ºC for 2 h.<br>3. Remove from freezer and allow to reach room temperature overnight.<br>Day 9 or Day 58:<br>1. Place in a compartment at 96% relative humidity for 3 h.<br>2. Remove and leave at room temperature and humidity for 1 h.<br>3. Place in over at a temperature selected in the first cycle for 3 h.<br>4. Remove and allow to come to room temperature overnight.<br>Day 10 or Day 59:<br>1. Place in freezer at –35ºC for 2 h.<br>2. Remove and leave at room temperature for 1 h.,<br>3. Place in humidity chamber at 96% relative humidity for 3 h.<br>4. Remove and allow to come to room temperature overnight.<br>Day 11 or Day 60:<br>1. Place in oven at the temperature selected in the first cycle for 3 h.<br>2. Remove for 1 h.<br>3. Place in freezer at –35ºC for 2 h.<br>4. Remove and allow to come to room temperature overnight.<br>Day 12 or Day 61:<br>1. Place in humidity chamber at 96% relative humidity for 3 h.<br>2. Remove and perform mechanical tests as required by Clause 17.9A.1 as applicable. | | N/A |

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

| **CA Canada** | | | **CA** |
|---|---|---|---|
| 18<br>18.1A | Mechanical strength of picture tubes and protection against the effects of implosion<br>(Cathode Ray Tubes)<br>Add the following clause:<br>A picture tube with a maximum face dimensions exceeding 75mm either shall be intrinsically protected with respect to effects of implosion and to mechanical impact, in accordance with CAN/CSA C22.2 No 228 or CAN/CSA E61965, or the enclosure of the apparatus shall provide adequate protection against the effects of an implosion of the tube (see Clause 12). | | N/A |
| 19 | Stability and Mechanical Hazards<br>Add the following after the second paragraph:<br>The test of 19.3 is only required for:<br>Apparatus with a mass of 25 kg or more; or<br>Apparatus, excluding loudspeaker systems, with a height of 1m or more; or<br>Apparatus, including loudspeaker systems, in combination with a supplied or recommended cart of stand with a total height of 1m or more. | | N/A |
| | Add the following paragraph:<br>Apparatus not tested because it is intended to be fastened in place shall be provided with the following warning, marked on the apparatus or on a durable label attached to the mains cord:<br>“WARNING: This apparatus must be securely attached to the floor /wall per installation instructions. Tipping, shaking, or rocking the machine may cause injury / death” | | N/A |
| 20<br>20.2.1A | Fire enclosure<br>(Projector Lamp Enclosure)<br>Add the following clause:<br>Enclosures of apparatus containing high voltage or projection lamps shall have a minimum flammability rating of category FV1 according to IEC 60707 at the minimum thickness used. | | N/A |
| Annex B | Apparatus to be connected to the telecommunications networks<br>Replace this annex with the following:<br>Apparatus intended for direct connection to a TELECOMMUNICATION NETWORK shall comply with:<br>a) Clause 19 of CSA C22.2 No 1; or<br>b) CAN/CSA C22.2 No. 60950. | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CH Switzerland** | | | **CH** |
| 21 | Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7,<br>Mercury - Annex 1.7 of SR 814.81 applies for mercury.<br>Switches containing mercury such as thermostats, relays and level controllers are not allowed.<br>Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15<br>Batteries<br>Annex 2.15 of SR 814.81 applies for batteries containing cadmium and mercury.<br>Note: Ordinance relating to environmentally hazardous substances, SR 814.013 of 1986-06-09 is not longer in force and superseded by SR 814.81 of 2009-02-01 (ChemRRV). | | P |
| 24 | Supply cords of portable electrical appliances having a rated current<br>not exceeding 10 A shall be provided with a plug complying with IEC 60884-1(3.ed.) + am1, SEV 1011 and one of the following dimension sheets:<br>- SEV 6533-2:2009 Plug type 11, L + N, 250V 10A<br>- SEV 6534-2:2009 Plug type 12, L + N + PE, 250V 10A<br>- SEV 6532-2:2009 Plug type 15, 3L + N + PE, 250/400V 10A<br>Supply cords of portable electrical appliances having a rated current not exceeding 16 A shall be provided with a plug complying with IEC 60884-1(3.ed.) + am1, SEV 1011 and one of the following dimension sheets:<br>- SEV 5933-2:2009 Plug type 21 L + N, 250 V, 16A<br>- SEV 5934-2:2009 Plug type 23 L + N + PE, 250 V, 16A<br>- SEV 5932-2:2009 Plug type 25 3L + N + PE, 250/400V 16A<br>NOTE 16 A plugs are not often used in Swiss domestic installation system. | Should be evaluated during the national approval | N/A |

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| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CN China** | | | **CN** |
| 1.1.3 | Amended the first paragraph:<br>This standard applies to apparatus intended to be used basically at altitudes not exceeding 5 000 m, dry climate at warm temperate zone or tropical climates. | | N/A |
| | The fourth paragraph replaced by following:<br>For apparatus intended to be used in vehicles, ships or aircraft, or at altitudes exceeding<br>5 000m, additional requirements may be necessary. | | N/A |
| 5 | At the end of the first paragraph ,added following:<br>For apparatus intended to be used at altitude not exceeding 2000m, a warning label containing the following or a similar appropriate wording or a symbol as in annex R(see following) shall fixed to the equipment at readily visible place.<br>"Only used at altitude not exceeding 2000m."<br>  <br><br>If only symbol used, the explanation of the symbol shall be contained in the instruction manual.<br><br>For apparatus intended to be used in not-tropical climate regions, a warning label containing the following or a similar appropriate wording or a symbol as in annex R shall fixed to the equipment at readily visible place.<br>"Only used in not-tropical climate regions."<br>  <br>If only symbol used, the explanation of the symbol shall be contained in the instruction manual. | Should be evaluated during the national approval | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **CN China** | | | **CN** |
| | The statements above shall be given in a language acceptable to the regions where the apparatus is intended to be used. | | |
| 5.1 e) | After the last paragraph, added:<br>…….For single rated voltage, “220 V” or three-phase “380V” shall be marked only. For a rating range, 220 V or three-phase 380V shall be covered. For multiple rated voltages, one of them shall be 220 V or three-phase 380V and which default setting from manufacture shall be 220 V or three-phase 380V as well. | 100-240VAC | P |
| 5.1 f） | After the first sentence, Added:<br>……for Rated MAINS frequency or frequency range shall be 50Hz or covered 50Hz. | 50-60Hz | P |
| 5.4 | Replaced the second sentence of the first paragraph：<br>This information shall be given in normative Chinese. | Should be evaluated during the national approval | N/A |
| 5.4.1i) | Added new paragraph i),after the h) paragraph:<br>i) For apparatus incorporating antenna coaxial sockets witch is non-separated with CATV network, a warning wording or a similar shall be given in the instructions manual:<br>“The CATV network connecting to this apparatus shall separate from protective earth, otherwise it may cause fire or other hazard.” | | N/A |
| 7 ,Table3 | Note a) of table 3 replaced:<br>This standard applies to apparatus intended to be used in tropical climates, permissible temperature rises are 10 K less than those specified in the table. For apparatus intended to be used in non-tropical climates the limits in Table 3 are satisfactory. | | N/A |
| 7.1 | Added Note 3:<br>For apparatus intended to be operated at altitudes between 2 000m and 5 000m, temperature measuring | Should be evaluated during the national approval | N/A |

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

| **CN China** | | | **CN** |
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| | conditions and maximum temperature limits are under consideration. | | |
| 9.1.1.1 | Delete the note 3 and renumber the existing note 4 as 3. | | N/A |
| 9.1.1.1 | After the paragraph of d), added a paragraph:<br>For apparatus intended to be used in tropical climates, the limits should be halved than the values given in a) and b) above. | | N/A |
| 10 | Added a paragraph after the second paragraph :<br>The Insulation resistance between CATV antenna coaxial sockets and protective earth of apparatus shall comply with BASIC INSULATION. If it's possible that CLASS II apparatus with CATV antenna coaxial sockets connect with protective earth of another CLASS I apparatus by other terminals, the insulation resistance between them shall comply with BASIC INSULATION as well.<br>Added Note:<br>if antenna cable separated from the protective earth before connection to the apparatus, there is no requirements of Insulation resistance between them but 5.4.1i) requirements shall be meet. | | N/A |
| 10.1 | Delete "on CLASS II apparatus" in the first paragraph. | | N/A |
| 10.2 | Replaced the fifth to seventh paragraphs by the following:<br>The humidity treatment is carried out in a chamber containing air with a relative humidity of 93%±3 %.<br>For apparatus, temperature of 40ºC± 2ºC and a relative humidity of 93%±3% shall be subjected.<br>Apparatus intended to be used in non-tropical climates are subjected to a relative humidity of 93%±3%.<br>The temperature in the chamber, at all places where samples located, shall be | 120 hour, 40°C, 93% | P |

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| **CN China** | | | **CN** |
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| | maintained within 2ºC of any convenient value between 20ºC and 30ºC , as long as no condensation occur. | | |
| | Added Note 4: For apparatus intended to be operated at altitudes between 2 000m and 5 000m , the requirements for treatment of the insulating material are under consideration. | Should be evaluated during the national approval | N/A |
| 11.1 | Delete note 2. | | N/A |
| 11.1 | After the ninth paragraph added a paragraph:<br>For apparatus intended to be used in tropical climates, halve the values given above. | | N/A |
| 12.5 | Amended the first paragraph :<br>Antenna coaxial sockets to be mounted on the apparatus shall subject to mechanical stress caused in use, and the sockets incorporate with parts or components which isolated HAZARDOUS LIVE parts from ACCESSIBLE parts or protective earth from other terminals. | | N/A |
| 13.3.2<br><br><br><br>Table 8, Table 9, Table1 0 | After the first paragraph, added a paragraph:<br>The requirements apply to apparatus intended to be used at altitude not exceeding 2 000 m . For apparatus intended to be operated at altitudes between 2 000m and 5 000m , Minimum CLEARANCE limits shall multiply with multiplication factor 1.48 in table A.2 of GB/T 16935.1. For apparatus intended to be operated at altitude more than 5 000m , Minimum CLEARANCES limit shall multiply with relevant multiplication factor in table A.2 of GB/T 16935.1. | | N/A |
| | Bellow the headings of Table 8 Table 9 and Table 10 ,added :<br>“（Applicable for altitude up to 2000m）” . | | N/A |
| | Amended Table 9 Note 2:<br>For operating voltage values exceeding | | N/A |

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| **CN China** | | | **CN** |
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| | of table 8, extrapolation is permitted. | | |
| 13.3.3 | After the first paragraph, added a paragraph:<br>The requirements in table 10 apply to apparatus intended to be used at altitude not exceeding 2 000 m. For apparatus intended to be operated at altitudes between 2 000m and 5 000m , Minimum CLEARANCE limits shall multiply with multiplication factor 1.48 in table A.2 of GB/T 16935.1. For apparatus intended to be operated at altitude more than 5 000m , Minimum CLEARANCES limit shall multiply with corresponding multiplication factor in table A.2 of GB/T 16935.1. | | N/A |
| 15.1.1 | After the first paragraph, added a paragraph:<br>Plugs connected to the MAINS in apparatus shall comply with GB 1002 or GB 1003. | Should be evaluated during the national approval | N/A |
| 18 | Delete the first paragraph except the first sentence. | | N/A |
| 18.1 | Replaced contents of two dashes in the fourth paragraph:<br>——for intrinsically protected tubes, including those having integral protective screens, compliance is checked according to GB27701.<br>——for tubes non-intrinsically protected checked by 18.2. | | N/A |
| 18.2 | Delete clause 18.2 and renumber the existing clause 18.3 as 18.2. | | N/A |
| Annex J.6 | After the first paragraph, added a paragraph:<br>For apparatus intended to be operated at altitudes between 2 000m and 5 000m, the Minimum CLEARANCES in table J.2 shall multiply with multiplication factor 1.48 in table A.2 of GB/T 16935.1. For apparatus intended to be operated at altitude more than 5 000m, Minimum CLEARANCES shall | | N/A |

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| **CN China** | | | **CN** |
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| | multiply with corresponding multiplication factor in table A.2 of GB/T 16935.1. | | |
| | Delete note 3 of table J.6. | | N/A |
| Annex R (normative) | Added annex R:<br>Instructions for the new safety warning labels.<br><br>R.1 Altitude warning label<br>  <br><br>Meaning of the label: Evaluation for apparatus only based on altitude not exceeding 2000m, therefor it's the only operating condition applied for the equipment .There may be some potential safety hazard if the equipment is used at altitude above 2000m.<br><br>R.2 Climate warning label<br>  <br>Meaning of the label: Evaluation for apparatus only based on temperate climate condition, therefor it's the only operating condition applied for the equipment .There may be some potential safety hazard if the equipment is used in tropical climate region. | Should be evaluated during the national approval | N/A |
| Annex S (informative) | Added annex S:<br>Illustration relative to safety explanation in normative Chinese、Tibetan、Mongolian、Zhuang Language and Uighur. | Should be evaluated during the national approval | N/A |

# Attachment No. 2

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **DE Germany** | | | **DE** |
| 5 | The following markings are required:<br>a) In case of intrinsically ionizing radiation safe cathode-ray tubes with accelerating voltages between 20 Kv and 30 Kv:<br>- On the cathode-ray tube itself the wording:<br>Eigensicheere Kathodenstrahlröhre nach Anlage III Röntgen-verordnung.<br>- Inside the apparatus:<br>the maximum allowed accelerating voltage in Kv, and the maximum allowed beam current in Ma.<br>- On the outer of the apparatus:<br>a notice in German language that produced X-rays are sufficiently shielded by the intrinsically safe cathode-ray tube.<br>b) In case of approval of the whole TV receiver with an accelerating voltage exceeding 20 Kv:<br>- On the outer of the apparatus:<br>the licence number …/…/…/Rö, and the following text:<br>Die in diesem Gerät entstehende Röntgenstrahlung ist ausreichend abgeschirmt.<br>Beschleunigungsspannung: max: … Kv.<br>- Supplied with the apparatus:<br>a copy of “Zulassungsschein”, together with the notices required there.<br>c) In case of TV receivers with accelerating voltages not exceeding 20 Kv:<br>Die in diesem Gerät entstehende Röntgenstrahlung ist ausreichend abgeschirmt.<br>Beschleunigungsspannung: max: … Kv.<br>Justification:<br>German ministerial decree against ionizing radiation (Röntgenverordnung), dated 1987-01-08.<br>NOTE The German nimisterial decree (Röntgenverordnung) is under revision. | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| **DE Germany** | | | **DE** |
| Annex ZC | Delete the A-deviation for Clause 5 for Germany and add the following new A-deviation:<br>Clause National deviation<br>Germany<br>6.1 The following requirement applies:<br>For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.<br>Justification:<br>German ministerial decree against ionizing radiaton (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.<br>NOTE Contact address:<br>Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig,<br>Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de | | N/A |
| **DK Denmark** | | | **DK** |
| 3.Z1 | A new Danish national deviation has been introduced by EN 60065/A2:2010:<br>Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment.<br>*Justification*:<br>In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse. | | N/A |
| **FI Finland** | | | **FI** |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| **FI Finland** | | | **FI** |
| 5.3 | Amendment A2 (2010)<br>To the end of the subclause the following is added:<br>CLASS I apparatus which is intended for connection to the building installation wiring via a plug or an appliance coupler, or both and in addition is intended for connection to other apparatus 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 apparatus must be connected to an earthed MAINS socket-outlet. The marking text in the applicable countries shall be as follows:<br>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"<br>"Apparaten skall anslutas till jordat uttag" | Should be evaluated during the national approval | N/A |
| **GB United Kingdom** | | | **GB** |
| 15.1.1 | 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 1768: 1994: The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those Regulations.<br>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.<br>Justification:<br>SI 1768: 1994 | | N/A |

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|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **1.1.3** | **Addition:**<br>**Add the following as a NOTE after the first sentence.**<br>**NOTE 1 In Japan, the requirements for regions with moderate apply.** | | P |
| **2.4.9** | **Replacement:**<br>**In NOTE 1, replace "see 4.2.2 of IEC 62151" by "see 4.2.2 of IEC 62151 [27]".** | | N/A |
| **2.6.2A** | **Addition:**<br>Add this sub clause.<br>CLASS 0I EQUIPMENT: Equipment which has, as for protection against electric shock,<br>- at least using BASIC INSULATION, and<br>- providing a means of connecting to the protective earthing conductor in the building wiring those conductive parts that are otherwise capable of assuming HAZARDOUS VOLTAGES if the BASIC INSULATION fails, and<br>- using a supply cord without earthing conductor or a plug without earthing pin.<br>Apparatus provided with a cord set having a two-pin type plug with a lead wire for earthing or having three pin - tow pin adaptor is also regarded as Class 0I.<br>NOTE Class 0I equipment may have a part constructed with Double Insulation or Reinforced Insulation. | Class I equipment | N/A |
| **3.2** | **Addition:**<br>Add the "Class 0I equipment" in the first sentence of this sub-clause. | Class I equipment | N/A |
| **3.2** | **Addition:**<br>Add the following after the first sentence of this sub-clause.<br>NOTE Equipment often transported and used should not be Class I equipment nor Class 0I equipment. | | N/A |
| **4.2.8** | **Deletion:**<br>Delete this clause. | | N/A |
| **4.3.4, b)** | **Replacement:**<br>Replace IEC 60730-1 by JIS C 9730-1 (corresponding to IEC 60730-1). | Should be evaluated during the national approval | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **4.3.12** | **Deletion:**<br>Delete this clause. | | N/A |
| **4.3.13** | **Replacement:**<br>Replace “250 V a.c.” by “the maximum of the variable range”. | | N/A |
| **5.4.2A** | **Addition:**<br>For CLASS 0I EQUIPMENT, the following instruction shall be indicated where readily visible on the mains plug or the product:<br>“WARNING: Provide an earthing connection”<br>*Example in Japanese:*<br>警告<br>必ず接地接続を行ってください。<br>Moreover, for CLASS 0I EQUIPMENT, the following instruction shall be indicated where readily visible on the product or written in the operating instructions:<br>“WARNING: Provide an earthing connection before the mains plug is connected to the mains. And, when disconnecting the earthing connection, be sure to disconnect after pulling out the mains plug from the mains.”<br>*Example in Japanese:*<br>警告<br>接地接続は必ず、主電源プラグを主電源につなぐ前に行って下さい。また、接地接続を外す場合は、必ず主電源プラグを主電源から切り離してから行って下さい。 | Class I equipment | N/A |
| **6.2** | **Replacement:**<br>In NOTE 1, replace IEC 61040 [10] by JIS C 6181:1995 [10]. | | N/A |
| **7.1.5** | **Addition:**<br>Add the words, “without dimensions restrictions” after the figure, “65 K” in the first sentence of Condition “b” in Table 3 as follows.<br>For parts not likely to be touched during intended use, temperature rises up to 65 K without dimensions restrictions are allowed under normal operating conditions. | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| | **Addition:**<br>Add the following paragraph as 2nd paragraph of Condition “d “in Table 3.<br>For materials which are not listed in Table 3, temperature rises in the normal operating conditions are considered satisfactory if these materials comply with item 3 of detailed regulations, 1.(1),b, Appendix 4 in the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance and Material. Permissible temperature rise of “Supply cords and wiring insulation” is applicable only to the materials used in supply cords complying with JIS C 3662 (corresponding to IEC 60227) or JIS C 3663 (corresponding to IEC 60245). Materials used in other wiring shall comply with item 3 of detailed regulations, 1.(1).b, Appendix 4 in the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance and Material. | | P |
| | **Addition:**<br>In the first paragraph of Condition “f” of Table 3, add ”JIS K 7206:1999 or” before the reference, ISO 306. | | P |
| | **Addition:**<br>In Condition “f,” 1) of Table 3, add ”JIS K 7206:1999 or” before the reference, ISO 306. | | P |
| **7.2** | **Addition:**<br>In NOTE 2, add ”or JIS standard (identical to or modified IEC)” after the word, IEC standard. | | N/A |
| **8.5** | **Addition:**<br>In the first paragraph, add “and Class 0I Equipment” after the words, Class I Equipment. | Class I equipment | N/A |
| **8.5** | **Addition:**<br>In the six paragraph (before NOTE 3), add the following to the end of the first sentence.<br>CLASS 0I EQUIPMENT shall be provided with a protective earthing terminal at any point outside the apparatus where easily visible or a protective external earth wire from mains plug. | Class I equipment | N/A |
| **8.11** | **Addition:**<br>In NOTE 2, c), add “or JIS C 2107, JIS C 2336, JIS C 2338” after the reference, IEC 60454. | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **JP Japan (H23)** | | | **JP** |
|---|---|---|---|
| **9.1.1.1** | **Addition:**<br>In the last paragraph, add the following sentence after the first sentence.<br>For CLASS 0I EQUIPMENT, the r.m.s. TOUCH-CURRENT to earth shall not be more than 1.0 mA. | Class I equipment | N/A |
| **10** | **Replacement:**<br>In NOTE, replace “IEC 60664-1 and IEC 60664-4 [9]” by “JIS C 0664:2003 and IEC/TR3 60664-4 [8]” | | P |
| **10.1** | **Addition:**<br>Add “CLASS 0I EQUIPMENT and” to the head of the first paragraph. | Class I equipment | N/A |
| **10.3.2** | **Addition:**<br>In Table 5, add the following values to the sub-table of NOTE. | | P |
| | <table><tr><td rowspan="2">Operating Voltage *U* (peak)</td><td colspan="2">Test voltage (peak)</td></tr><tr><td>Curve A</td><td>Curve B</td></tr><tr><td>142 V</td><td>1 414 V</td><td>2 828 V</td></tr></table> | | P |
| **11.2.1** | **Addition:**<br>Add the following after the original NOTE.<br>NOTE 2 Fuses except for the ones according to IEC 60127 shall be tested in consideration of the characteristic. | | P |
| **11.2.3** | **Addition:**<br>Add “and CLASS 0I” after the words, CLASS I. | Class I equipment | N/A |
| **13.4** | **Replacement:**<br>In NOTE 2 of Table 11, replace “IEC 60664-1” by “JIS C 0664:2003” (corresponding to IEC 60664-1). | | P |
| **14.3.3.2** | **Addition:**<br>In the second sentence of the first paragraph, add “or JIS C 2107, JIS C 2336 and JIS C 2338” after the reference, IEC 60454. | | P |
| **14.5.1.1** | **Addition:**<br>In item a), add “JIS C 9730 series or” before the reference, IEC 60730 series. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **14.5.1.2** | **Replacement:**<br>In the first sentence of item a), replace “IEC 60691” by “IEC 60691, JIS C 6691:2003 or Appendix 3 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance and Material”. | | N/A |
| | **Replacement:**<br>After the second sentence of item a), replace “IEC 60691” by “JIS C 6691:2003 or IEC 60691”. | | N/A |
| **14.5.2.1** | **Replacement:**<br>Replace the first and the second sentence as follows:<br>Fuse-links, DIRECTLY CONNECTED TO THE MAINS, used in order to prevent the apparatus from becoming unsafe within the sense of this standard shall comply with<br>- the relevant part of IEC 60127 or JIS C 6575, unless they have a rated current outside the range specified in that standard. In the latter case, they shall comply with the relevant part of IEC 60127 or JIS C 6575 as far as applicable, or<br>- Appendix 3 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance and Material (limited to Fuses with the rated current of 1 A or more). | | P |
| **14.5.2.2** | **Addition:**<br>Add the following sentence before the last paragraph.<br>For fuses according to Appendix 3 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance and Material, all that needs to be marked is the rated current. | | P |
| **14.5.3** | **Replacement:**<br>Replace “IEC 60730-1” by “JIS C 9730-1” (corresponding to IEC 60730-1). | | N/A |
| **14.5.4** | **Replacement:**<br>Replace “IEC 60127” by “IEC 60127 or JIS C 6575 ”. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **14.6.1** | **Addition:**<br>Add the following paragraph after NOTE.<br>The following manually operated mechanical switches shall meet the requirements specified in item a) or b) below.<br>- the controlling current exceeds 0.2 A r.m.s a.c. or d.c.<br>- the voltage across the open switch contacts exceeds 35 Vpeak ac or 24 Vdc. | | P |
| **14.6.1** | **Replacement:**<br>In item a), replace “IEC 61058-1” by “IEC 61058-1 or JIS C 4526-1:1999”. | | P |
| **14.6.2** | **Replacement:**<br>Replace “IEC 61058-1” by “IEC 61058-1 or JIS C 4526-1:1999”. | | N/A |
| **14.6.3** | **Replacement:**<br>Replace “IEC 61058-1” by “ IEC 61058-1 or JIS C 4526-1:1999”. | | N/A |
| **14.6.5** | **Replacement:**<br>Replace “IEC 61058-1” by “ IEC 61058-1 or JIS C 4526-1:1999”. | | N/A |
| **14.7** | **Replacement:**<br>Replace “IEC 60950” by “JIS C 6950:2006”. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **15.1.1** | **Replacement:**<br><br>Replace the first and second paragraph by the following.<br><br>Plugs and appliance couplers for the connection of the apparatus to the MAINS and socket-outlets and interconnection couplers for providing MAINS power to other apparatus shall comply with the relevant JIS standards for plugs, socket-outlets, appliance couplers or interconnection couplers. If there is no appropriate JIS standard, they shall comply with the relevant IEC standards.<br><br>Appliance connectors, interconnection outlets and interconnection plug-connectors compiled with Appendix 3 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance and Material are accepted. In that case, if due to the shape the contact parts are connectable to those specified in standard sheets of IEC 60320-1, they shall comply with dimensions and ratings specified in the relevant standard sheets of IEC 60320-1.<br><br>Examples of relevant specifications and standards:<br><br>- Plugs / Socket-outlets: Appendix 4 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance. Article 2 (corresponding to IEC 60884) of the Ordinance.<br><br>- Appliance couplers: Appendix 4 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance. Article 2 (corresponding to IEC 60320-1) of the Ordinance.<br><br>- Appliance inlets: IEC 60320-1<br><br>- Appliance outlets: Appendix 4 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance. IEC 60320-2-2.<br><br>- Plug connectors: Appendix 4 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance.<br><br>Delete NOTE 1 and NOTE 2. | Should be evaluated during the national approval | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **15.1.1** | **Replacement:**<br>Replace the paragraph after NOTE 2 by the following.<br>MAINS socket-outlets and interconnection couplers mounted on CLASS 0I and CLASS II apparatus shall not permit connection of CLASS I apparatus. | | N/A |
| **15.1.1** | **Replacement:**<br>Replace the paragraph before NOTE 3 by the following.<br>MAINS socket-outlets and interconnection couplers mounted on CLASS I apparatus shall be provided with protective earthing contacts which are reliably connected to the PROTECTIVE EARTHING TERMINAL or contact of the apparatus. If not, it shall not permit connection of CLASS I apparatus. | | P |
| | **Replacement:**<br>Replace NOTE 4 by the following.<br>NOTE 4 Socket-outlets not allowing the connection of CLASS I apparatus can be designed, for instance, similar to IEC 60906-1, standard sheets 3-1 or 3-2, or according to IEC 60320-2-2, standard sheets D or H. | | N/A |
| **15.1.2** | **Deletion:**<br>Delete the following sentence in NOTE.<br>An example of a connector not meeting the requirements of this sub clause is the so-called "banana" plug. | | N/A |
| **15.1.3** | **Replacement:**<br>Replace the references, “IEC 60083 [1], IEC 60320, IEC 60884, IEC 60906” by “JIS C 8282 (corresponding to IEC 60884), JIS C 8303, IEC 60320 and IEC 60906”. | | N/A |
| **15.2** | **Addition:**<br>Add “and CLASS 0I EQUIPMENT” after the words, “CLASS I EQUIPMENT” | Class I equipment | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **JP Japan (H23)** | | | **JP** |
|---|---|---|---|
| **15.2** | **Addition:**<br>Add the following paragraphs after the first paragraph.<br>The external earth wire of plug with an external earth wire shall not be earthed by a clip.<br>Rated voltage of plug with an protective external earth wire shall be less 150 Vac. | | P |
| | **Deletion:**<br>Delete the following paragraph.<br>In SUPPLY APPARATUS of CLASS I with non-HAZARDOUS LIVE output voltage, output circuits shall not be connected to the protective earthing conductor. | | P |
| **15.3.1** | **Replacement:**<br>In the first paragraph, replace “IEC 60998-2-2” by “ IEC 60998-2-2 or JIS C 2814-2-2:2001”. | | N/A |
| | **Replacement:**<br>In the first paragraph, replace “IEC 60999” by “IEC 60999-1”. | | N/A |
| | **Replacement:**<br>In the third paragraph, replace “IEC 60335-1” by “JIS C 9335-1:2003 (corresponding to IEC 60335-1)”. | | N/A |
| **15.3.3** | **Replacement:**<br>Replace “ISO 261 or ISO 262” by “JIS B 0205-2:2001 or JIS B 0205-3:2001”. | | N/A |
| **15.3.5** | **Replacement:**<br>In the second paragraph, replace “IEC 60950” by “JIS C 6950:2006”. | | N/A |
| **15.3.5** | **Replacement:**<br>Replace Table 15 by the following. | | N/A |

| RATED CURRENT CONSUMPTION of the apparatus [a]<br>A | Nominal cross-sectional area<br>mm² |
|---|---|
| Up to and including 6 | 0.75 to 1 |
| Over 6 up to and including 10 | 1 to 1.5 |
| Over 10 up to and including 16 | 1.5 to 2.5 |
| [a] The RATED CURRENT CONSUMPTION includes currents which can be drawn from socket-outlets providing MAINS power for other apparatus. | |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **15.3.9** | **Addition:**<br>Add the following to the last of the first paragraph.<br>This does not apply to CLASS 0I EQUIPMENT with a protective earthing terminal separately. | | N/A |
| **15.4.1** | **Replacement:**<br>In NOTE 1, replace “IEC 60884-1” by “JIS C 8282 (corresponding to IEC 60884-1)”. | | N/A |
| | **Replacement:**<br>In NOTE 2, replace “IEC 60083 [1]” by “JIS C 8303”. | | N/A |
| **15.4.2** | **Replacement:**<br>In NOTE, replace “IEC 60083 [1]” by “JIS C 8303:1993 [1]”. | | N/A |
| **15.4.3** | **Addition:**<br>Add the following NOTE to Table 17.<br>NOTE If mains plug is parallel blade, a pull force as given in “Over 10 A up to and including 16 A, 130/250 V” of Table 17 is applied. | | N/A |
| **16.1** | **Addition:**<br>Add the following to the last of first paragraph.<br>Or mains cords shall be of the sheathed type complying with Appendix 1 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance..<br>**Replacement:**<br>**<u>Replace the second paragraph by the following.</u>**<br>Compliance is checked by testing MAINS supply flexible cords in accordance with JIS C 3662 (corresponding to IEC60227) or JIS C 3663 (corresponding to IEC 60245), or Appendix 1 of Article 1 of the Ministerial Ordinance on stipulating technical requirements for the Electrical Appliance. | Should be evaluated during the national approval | N/A |
| | **Replacement:**<br>In this sub-clause, replace “IEC 60227” by “JIS C 3662 (corresponding to IEC 60227)”.<br>In this sub-clause, replace “IEC 60245” by “JIS C 3663 (corresponding to IEC 60245)”. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **JP Japan (H23)** | | | **JP** |
|---|---|---|---|
| | **Addition:**<br>Add the following paragraph after the third paragraph.<br>An external earth wire of Class 0I equipment shall be green/yellow, and the length of external earth wire of plug with an external earth wire shall be equal or more than 10 cm from the plug. | Class I equipment | N/A |
| **16.2** | **Replacement:**<br>Replace the first paragraph by the following.<br>Power supply cord conductors complied with JIS C 3662 (corresponding to IEC 60227) or JIS C 3663 (corresponding to IEC 60245) shall have a nominal cross-sectional area not less than those shown in table 18. If power supply cord conductors comply with other standards, it shall comply with relevant wiring requirements. | | N/A |
| **16.2** | **Replacement:**<br>Replace Table 18 by the following.<br>RATED CURRENT CONSUMPTION of the apparatus [a] A / Nominal cross-sectional area mm²<br>up to and including 6 — 0,75<br>Over 6 up to and including 10 — 1<br>Over 10 up to and including 16 — 1,5<br>[a] The RATED CURRENT CONSUMPTION includes currents which can be drawn from the socket-outlets providing MAINS power for other apparatus. | | N/A |
| **16.3** | **Replacement:**<br>In item a), replace “IEC 60885-1” by “JIS C 3661-1:1998”. | | N/A |
| | **Replacement:**<br>In item b), replace “IEC 60227-2” by “JIS C 3662-2 (corresponding to IEC 60227-2)”. | | N/A |
| **16.5** | **Addition:**<br>Add “or CLASS 0I EQUIPMENT used a plug with an external earth wire” after the words, CLASS I EQUIPMENT. | Class I equipment | N/A |
| **Annex B** | **Replacement:**<br>Replace normative by Informative. | | N/A |
| **Annex G** | **Replacement:**<br>Replace IEC 60707 by JIS C 0066:2001<br>Replace IEC 60695-2-2 by JIS C 60695-2-2:2000.<br>Replace IEC 60695-11-10 by JIS Z 2391:1999. | | N/A |

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| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **JP Japan (H23)** | | | **JP** |
| **Annex N** | **Addition:**<br>Add "- protective earthing lead wire, protective earthing contact of appliance inlet or external protective earthing terminal in case of Class 0I apparatus." after the second dash of N.1.3. | Class I equipment | N/A |
| | **Replacement:**<br>Replace the first sentence and two dashes of N.2.2, as follows:<br>The continuity of the protective earthing conecction between<br>- the ACCESSIBLE conductive parts, including TERMINALS regarded as ACCESSIBLE (see 8.4), which should be connected to the PROTECTIVE EARTHING TERMINAL, and<br>- the protective earthing contact of socket-outlets respectively, if provided to deliver power to other apparatus<br>should be checked between<br>- the protective earthing contact of the MAINS plug or appliance inlet, or the PROTECTIVE EARTHING TERMINAL in case of a PERMANENTLY CONNECTED APPARATUS, for CLASS I apparatus, and<br>- the protective earthing lead wire, the protective earthing contact of appliance inlet, or external protective earthing terminal, for CLASS 0I apparatus. | | N/A |
| **14.6.1** | **Replacement:**<br>In item a), replace IEC 61058-1 by "IEC 61058-1 or JIS C 4526-1:2005". | | N/A |
| **14.6.2** | **Replacement:**<br>In item a), replace IEC 61058-1 by "IEC 61058-1 or JIS C 4526-1:2005". | | N/A |
| **14.6.3** | **Replacement:**<br>In item a), replace IEC 61058-1 by "IEC 61058-1 or JIS C 4526-1:2005". | | N/A |
| **14.6.5** | **Replacement:**<br>In item a), replace IEC 61058-1 by "IEC 61058-1 or JIS C 4526-1:2005". | | N/A |
| **20.1** | **Replacement:**<br>In Note 3, replace each IEC 60065 and IEC 60707 by "JIS C 6065" and "JIS C 0066:2001 (IEC 60707). | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| **APPENDIX** | **J3000 (H21)**<br>Special National conditions, National deviation and other information according to MITI Ordinance No. 85. | | -- |
| **1** | General requirement<br>When equipment provides with appliance inlet complying with JIS-C 8283-1(2008), soldered parts of appliance inlet is not applied by force during insert or removal of connector.<br>This is not applied when inlet body is fixed itself and not fixed by solder. | | P |
| **2** | Requirement for equipment | | N/A |
| **2.1** | Electric heater<br>When diode is used in parallel for adjustment of power, the equipment shall remain safe for operation under open condition of one diode. | | N/A |
| | The current rating of one diode shall be more than main current. The diodes connected in parallel are same type. | | N/A |
| | The heating test specified by clause 11 of JIS C9335-2-30(2006) under open condition of one diode shall comply with the requirements. | | N/A |
| **2.2** | Electronic heater with glowing heating elements | | N/A |
| | Surface treatment by paint or adhesive on protective frame or protective mesh shall not be used. | | N/A |
| | Caution marking like below shall be on<br>-easily visible place of the equipment or<br>-Instruction manual | | N/A |
| **3** | Components used in equipment | | N/A |
| **3.1** | Motor capacitors used in air conditioner, electronic washing machine, refrigerator or electronic freezer shall be comply with<br>-capacitors with protective elements or protective mechanism complying with JIS C4908(2007)<br>-P2 capacitor complying with IEC 60252-1(2001)<br>Capacitor complying with below is acceptable | | N/A |
| | Enclosed by metal or ceramic | | N/A |
| | No non-metallic materials within 50 mm from capacitor surface | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| **APPENDIX** | **J3000 (H21)**<br>Special National conditions, National deviation and other information according to MITI Ordinance No. 85. | | -- |
| | Non-metallic material with 50 mm from capacitor surface comply with needle frame test of JIS 9335-1(2003), Annex E | | N/A |
| | Non-metallic material with 50 mm from capacitor surface comply with V-1 test of JIS C 60965-11-10(2006) | | N/A |
| **3.2** | Plug directly inserted to outlet used refrigerator or electric freezer.<br>Shall comply with<br>- Face contact with outlet shall have CTI with more than 400 according to JIS C 2134(2007) or<br>- Supporting material of blades shall comply with glow wire test by temperature of 750°C according to JIS C 60695-2-11(2004) or JIS C 60695-2-12(2004).<br>Materials having glow wire frame temperature of 775°C are acceptable. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

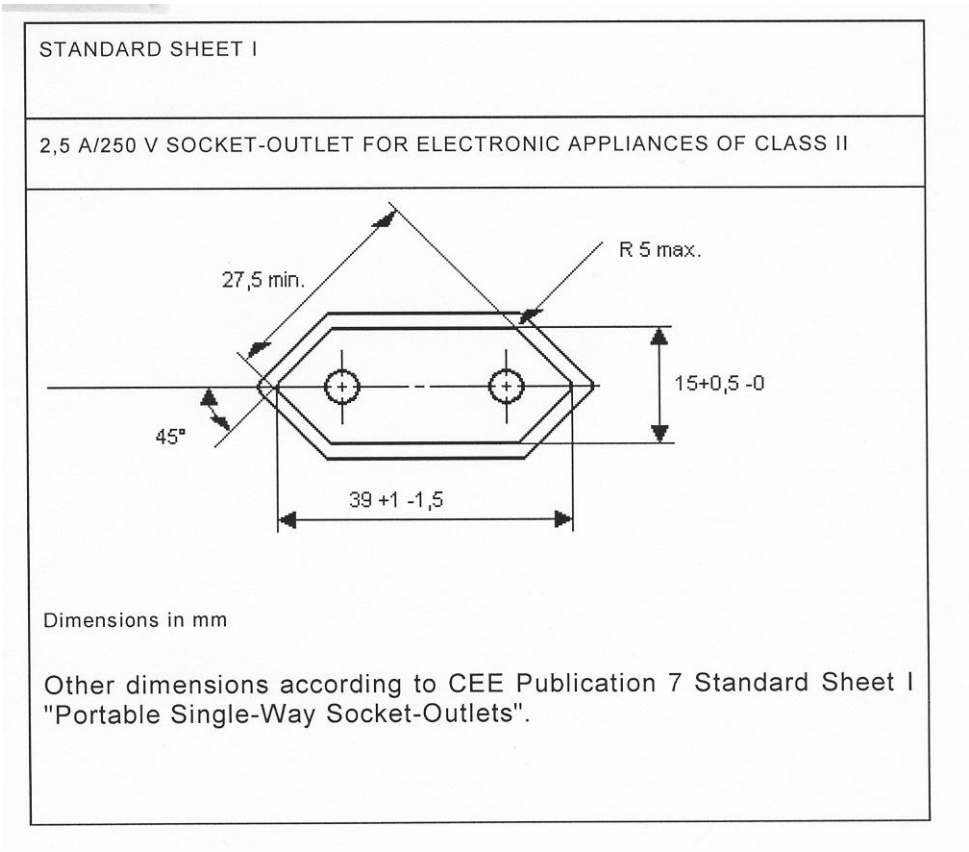
| **KR Republic of Korea** | | | **KR** |
|---|---|---|---|
| 5.101 | Other Marking: Wording 고압주의 or an information regulated in IEC Publication 417 giving high voltage warning to layman shall be marked, if an apparatus contains a part more than 600 volts. | | N/A |
| 15.1.1 | Plugs for the connection of the apparatus to the supply mains and socket outlets for providing mains power to other apparatus shall comply with the Korean requirement (KSC8300 and 8305) | Should be evaluated during the national approval | N/A |
| 31. | Radio frequency interference<br>The apparatus shall comply with the relevant CISPR requirements (EMC=EMI+EMS) | Should be evaluated during the national approval | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **MY Malaysia** | | | **MY** |
| | Energy Commission circular no.1 year 2003 (no.1/2003)<br>States that a Certificate of Approval is required for manufacturing, selling, Advertising, displaying or importing into Malaysia, electrical/electronic products Listed in Annex A.<br>- The supply voltage in Malaysia is 240 Vac, at 50Hz.<br>- Class 0 and 01 appliances are not allowed<br>- 13A fused plug-tops shall comply to Malaysian standard (MS 589:Part1:1997), if applicable.<br>- 2-pin plug tops shall comply to Malaysian standard (MS 1578:2003) if applicable. | | N/A |
| **NO Norway** | | | **NO** |
| 13.3.1 | To the second paragraph the following is added:<br>In Norway, due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault.<br>Justification:<br>Based on a use in Norway of an IT power distribution system where the neutral is not provided. | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **NO Norway** | | | **NO** |
|---|---|---|---|
| 15.1.1 | Mains socket-outlets mounted on CLASS II apparatus shall comply with the specifications given in CEE Publ. 7 as fas as applicable, with the following amendments:<br>§ 8 Dimensions<br>a 2,5 A 250 V two-pole socket-outlets for electronic apparatus shall comply with the enclosed Standard Sheet I.<br>  <br><br>§ 24 Mechanical strength<br>a 2,5 A, 250 V socket-outlets for CLASS II electronic apparatus are tested as specified in 12.1.3 of EN 60065.<br>Also the protecting rim shall be tested.<br>Justification:<br>Act of 24 May 1929 relating to supervision of electrical installation (TEA 1929/FEL 1998). | | N/A |
| J2 | After Table J.1 the following is added:<br>In Norway, due to the IT power distribution system used, the a.c. MAINS supply voltage is considered to be equal to the line-to-line voltage, and will remain 230 V in case of a single earth fault.<br>Justification:<br>Based on a use in Norway of an IT power distribution system where the neutral is not provided. | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **NO Norway** | | | **NO** |
| Annex B | Replace NOTE 1 by<br>In the CENELEC countries listed in IEC 62151, special national conditions apply.<br>Add the following:<br>All subclauses given below are subclauses of IEC 62151:2000 (ref. Corrigendum 1 and 2 to IEC 62151).<br>Subclause 4.1.1 (Corrigendum 2):<br>Add after the first paragraph:<br>NOTE - In Norway, CLASS I equipment which is intended for connection to the building installation via a non-industrial plug or a non-industrial appliance coupler, or both and in addition is 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.<br>The marking text shall be as follows:<br>"Apparatet skal tilkoples jordet stikkontakt" | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **NO Norway** | | | **NO** |
| 5.3.1 | Add after the first test specifications paragraph:<br>NOTE 1 In Finland, Norway and Sweden, there are additional requirements for the insulation.<br>Renumber the existing note as note 2.<br>For additional requirements for the insulation in Sweden in the NOTE 1 the following text is added between the first and second paragraph (this text is identical to the text in EN 60950-1:2001):<br>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either<br>- two layers of thin sheet material, each of which shall pass the electric strength test below, or<br>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric<br>strength test below.<br>If this insulation forms part of a semiconductor component (e.g. an optocoupler), 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 the accordance with the compliance clause below and in addition:<br>- passes the test and inspection criteria of 13.6 with an electric strength test of 10.3 using the test voltage of 1,5 kV multiplied by 1,6, and<br>- is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV (for performance of the test see N.2.1).<br>It is permitted to bridge this insulation with a capacitor complying with IEC 60384-14:1993, subclass Y2.<br>A capacitor classified Y3 according to IEC 60384-14:1993, may bridge this insulation under the following conditions:<br>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by IEC 60384-14, which in addition to the Y3 testing, is tested with an Impulse test of 2.5kV defined in IEC 62151, subclause 6.2.1;<br>- the additional testing shall be performed on all the test specimens as described in IEC 60384-14; | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **NO Norway** | | | **NO** |
|---|---|---|---|
| | - the Impulse test of 2.5kV is to be performed before the Endurance Test in IEC 60384-14 in the sequence of tests as described in IEC 60384-14.<br>Subclause 5.3.2 (Corrigendum 1):<br>Add after the fourth dash:<br>NOTE - In Norway, exclusions are applicable for equipment which is intended for connection to the building installation wiring using screw terminals or other reliable means, and for equipment which is intended for connection to the building installation wiring via an industrial plug and socket -outlet or an appliance coupler, or both, complying with IEC 60309 or with a comparable national standard. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **NZ New Zealand** | | | **NZ** |
|---|---|---|---|
| Table 3 | In Table 3 under item c) add an 201) in both columns against 'thermoplastic materials' and add the following new footnote:<br>201) As an alternative to the method described in footnote f) the following variation may be used where there is any doubt about the suitability of the material:<br>The ball-pressure test described in AS/NZS 60695.10.2 may be carried out.<br>To assess compliance under normal operating conditions, the test shall be made in a heating cabinet at a temperature of 40°C ±2°C plus the maximum temperature rise determined under normal operating conditions but, it shall be at least<br>- for external parts…75°C ±2°C<br>- for materials supporting parts conductively connected to the mains…125°C ±2°C | | P |
| 7.2 | After the second paragraph, add the following:<br>The alternative method described in footnote 201) of Table 3 may be used. | | N/A |
| 15.1.1 | After the second paragraph, add the following:<br>Plugs for the connection of apparatus to mains-powered socket-outlets shall comply with AS/NZS 3112 or AS/NZS 3123. Apparatus with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements of AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. | | N/A |
| Table 15 | In the second and third rows of the first column replace '6' with '7.5'. | | N/A |
| Table 18 | In the second and third rows of the first column replace '6' with '7.5'. | | N/A |
| 16.3 | In item (b), add the following:<br>A flexible cord complying with AS/NZS 3191 need not undergo this test. | | N/A |
| 19 | Add the following new Clauses after 19.6 | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **NZ New Zealand** | | | **NZ** |
|---|---|---|---|
| 19.201 | Additional stability requirements for television receivers<br>Television receivers and display devices that may be used for television purposes, with a mass of 7kg or more, shall have additional stability requirements.<br>Compliance is checked by inspection and by the tests of 19.201.2.2 and 19.201.3 as applicable.<br>Apparatus designed for only fixing to a wall, ceiling or equipment rack are not required to be subjected to these additional requirements if the marking of 5.4.1 f) is provided on or with the apparatus. | | N/A |
| 19.201.1 | Warning notice<br>Television receivers and display devices that may be used for television purposes, shall be provided with information in the instructions for installation for use, containing the following information or similar:<br>**IMPORTANT INFORMATION**<br>If a television is not positioned in a sufficiently stable location, it can be potentially hazardous due to falling. Many injuries, particularly to children, can be avoided by taking simple precautions such as:<br>• Using cabinets or stands recommended by the manufacturer of the television.<br>• Only using furniture that can safely support the television.<br>• Ensuring the television is not overhanging the edge of the supporting furniture.<br>• Not placing the television on tall furniture (for example, cupboards or bookcases) without anchoring both the furniture and the television to a suitable support.<br>• Not standing the televisions on cloth or other materials placed between the television and supporting furniture.<br>• Educating children about the dangers of climbing on furniture to reach the television or its controls.<br>Such information should also be provided as a label on the apparatus. | | N/A |
| 19.201.2 | Restraining device | | N/A |
| 19.201.2.1 | Television receivers should be provided with a restraining device such as a fixing point to facilitate restraining the television from toppling forward. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **NZ New Zealand** | | | **NZ** |
| 19.201.2.2 | Where a restraining device is provided in accordance with 19.201.2.1 information shall be provided in the instructions for installation or use, to ensure correct and safe installation. Such information should also be provided as a label on the television receiver. Any such restraining device shall be capable of withstanding a pull of 100 N in all directions without damage. | | N/A |
| 19.201.3 | Glass slide test‡<br>Television receivers and display devices that may be used for television purposes, with a mass of 18 kg or more, are placed on a clean, dry, glass covered horizontal surface such that only the supporting feet are in contact with the glass. The glass-covered surface is then tilted in the most unfavourable direction through an angle of 10°. During the tests, the equipment shall not slide.<br>‡Clause 19.201.3 forms part of the Standard on 31 January 2013 | | N/A |
| 20 | Delete the following paragraph:<br>'The requirements are considered to be fulfilled if the apparatus complies with the requirement of 20.1 and 20.2'<br>and replace with<br>'The requirements are considered to be fulfilled if the apparatus complies with the requirements of 20.1 and 20.2. Alternatively the requirements are considered to be fulfilled if the apparatus complies with the requirements of Clause 20.201. | | P |
| Table 21 | In the third and fourth columns change both 'HB75' and 'No requirement' to 'V-1'. | | P |
| 20.2.3 | After this Clause, add the following variation: | | N/A |
| 20.201 | Resistance to fire—Alternative tests | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **NZ New Zealand** | | | **NZ** |
|---|---|---|---|
| 20.201.1 | General<br><br>Parts of non-metallic material shall be resistant to ignition and the spread of fire.<br><br>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following:<br><br>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.<br><br>b) The following parts which would contribute negligible fuel to a fire:<br><br>- small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings;<br><br>- small electrical components, such as capacitors with a volume not exceeding 1 750 $mm^3$, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1 or better according to AS/NZS 60695.11.10.<br><br>NOTE – In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another.<br><br>Compliance shall be checked by the tests of 20.201.2.1, 20.201.2.2. and 20.201.2.3<br><br>For the base material of printed boards, compliance shall be checked by the test of 20.201.2.4.<br><br>The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, they are placed in the same orientation as they would be in normal use.<br><br>These tests are not carried out on internal wiring. | | N/A |
| 20.201.2 | Tests | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**NZ New Zealand** **NZ**

| | | | |
|---|---|---|---|
| 20.201.2.1 | Testing of non-metallic parts<br>Part of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.<br>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall not be carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part. | | N/A |
| 20.201.2.2 | Testing of insulated parts<br>Part of insulating material supporting potential ignition sources shall be subject to the glow-wire test of AS/NZS 64695.2.11 which shall be carried out at 750°C.<br>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection<br>NOTE – Contacts in components such as switch contacts are considered to be connections.<br>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test need not be tested.<br>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications: | | N/A |

| Clause of AS/NZS 60695.11.5 | Change |
|---|---|
| **9 Test Procedure** | |
| **9.2 Application of needle-flame** | *Replace* the second sentence of the first paragraph with:<br>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1.<br>*Add* to the end of the first paragraph:<br>If possible, the flame shall be applied at least 10 mm from a corner.<br>*Replace* the second paragraph with:<br>The duration of application of the test flame shall be 30 ±1 s. |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

**NZ New Zealand** **NZ**

N/A

| Clause of AS/NZS 60695.11.5 | Change |
|---|---|
| 9.3 Number of specimens | *Replace* with:<br>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test |
| 11 Evaluation of test results | *Replace* with:<br>The duration of burning ($t_b$) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. |

The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10 provided that the sample tested was not thicker than the relevant part.

| | | | |
|---|---|---|---|
| 20.201.2.3 | Testing by needle-flame test<br>If parts, other than enclosures, do not withstand the glow wire tests of 20.201.2.2, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 20.201.2.2 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 20.201.2.2. Parts shielded by a separate barrier which meets the needle-flame test shall not be tested. | | N/A |
| | NOTE 1 – If the enclosure does not withstand the glow-wire test the appliance is considered to have failed to meet the requirements of Clause 21.201 without the need for consequential testing.<br>NOTE 2 – If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the apparatus, the apparatus is considered to have failed to meet the requirements of Clause 21.201 without the need for consequential testing<br>NOTE 3 – Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **NZ New Zealand** | | | **NZ** |
|---|---|---|---|
| 20.201.2.4 | Testing of printed boards<br>The base material of printed boards shall be subject to the needle-flame test of Clause 21.201.2.3. The flame shall be applied to the edge of the board where the heatsink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.<br>The test is not carried out if the-<br>- printed board does not carry any potential ignition source;<br>- base material of printed boards, on which the available power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or<br>- base material of printed boards, on which the available power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely.<br>Compliance shall be determined using the smallest thickness of the material.<br>NOTE – Available power is the maximum power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the power for more than 2 min when the circuit supplied is disconnected. | | N/A |
| 20.201.3 | For open circuit voltages greater than 4 kV<br>Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a fire enclosure which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **SE Sweden** | | | **SE** |
| Annex B | Replace NOTE 1 by<br>In the CENELEC countries listed in IEC 62151, special national conditions apply.<br>Add the following:<br>All subclauses given below are subclauses of IEC 62151:2000 (ref. Corrigendum 1 and 2 to IEC 62151).<br>Subclause 4.1.1 (Corrigendum 2):<br>Add after the first paragraph:<br>NOTE - In Sweden, CLASS I equipment which is intended for connection to the building installation via a non-industrial plug or a non-industrial appliance coupler, or both and in addition is 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.<br>The marking text shall be as follows:<br>"Apparaten skall anslutas till jordat uttag"<br>Subclause 5.3.1 (Corrigendum 1):<br>Add after the first test specifications paragraph:<br>NOTE 1 In Finland, Norway and Sweden, there are additional requirements for the insulation.<br>Renumber the existing note as note 2.<br>For additional requirements for the insulation in Sweden in the NOTE 1 the following text is added between the first and second paragraph (this text is identical to the text in EN 60950-1:2001):<br>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either<br>- two layers of thin sheet material, each of which shall pass the electric strength test below, or<br>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.<br>If this insulation forms part of a semiconductor component (e.g. an optocoupler), 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 the accordance with the compliance clause below and in addition:<br>- passes the test and inspection criteria of 13.6 with an electric strength test of 10.3 using the test voltage of 1,5 kV multiplied by 1,6, and<br>- is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV (for performance of the test see N.2.1). | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **SE Sweden** | | | **SE** |
| | It is permitted to bridge this insulation with a capacitor complying with IEC 60384-14:1993, subclass Y2.<br>A capacitor classified Y3 according to IEC 60384-14:1993, may bridge this insulation under the following conditions:<br>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by IEC 60384-14, which in addition to the Y3 testing, is tested with an Impulse test of 2.5kV defined in IEC 62151, subclause 6.2.1;<br>- the additional testing shall be performed on all the test specimens as described in IEC 60384-14;<br>- the Impulse test of 2.5kV is to be performed before the Endurance Test in IEC 60384-14 in the sequence of tests as described in IEC 60384-14.<br>Subclause 5.3.2 (Corrigendum 1):<br>Add after the fourth dash:<br>NOTE - In Sweden, exclusions are applicable for equipment which is intended for connection to the building installation wiring using screw terminals or other reliable means, and for equipment which is intended for connection to the building installation wiring via an industrial plug and socket -outlet or an appliance coupler, or both, complying with IEC 60309 or with a comparable national standard. | | |
| 5.3 | To the end of the subclause the following is added:<br><br>CLASS I apparatus which is intended for connection to the building installation wiring via a plug or an appliance coupler, or both and in addition is intended for connection to other apparatus 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 apparatus must be connected to an earthed MAINS socket-outlet.<br><br>The marking text in the applicable countries shall be as follows:<br><br>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"<br>In Norway: “Apparatet må tilkoples jordet stikkontakt”<br>In Sweden: “Apparaten skall anslutas till jordat uttag” | | N/A |
| 5.4.1 | Norway and Sweden<br>Secretary Note: Modification at the end of 5.4.1 | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **SE Sweden** | | | **SE** |
|---|---|---|---|
| | (after the compliance statement)<br>already part of A11 (This note will be deleted from the final text) | | |

| **US United States of America** | | | **US** |
|---|---|---|---|
| 1.1.1 | Delete reference to Annex L: Electronic flash apparatus for photographic purposes. Replace this with reference to UL 122.<br>Mains connected apparatus intended for field installation complies with the National Electrical Code, ANSI, NFPA 70. | | P |
| 1.1.3 | Requirements of apparatus intended for outdoor use comply with applicable clause of Annex A | | N/A |
| 1.1.5 | Some apparatus covered by these requirements may also be required to comply with applicable requirements in other appropriate standards. | | P |
| 1.1.6 | Apparatus with nonmetallic enclosures intended to be installed in air-handling spaces shall additionally comply with UL 2043 | | N/A |
| 4.2.1 | The rated supply voltage for single phase apparatus is assumed to be 120V or 120/240V | | P |
| 4.2.4 | a) Minimum audio output is not less than 0.5 W per channel unless the maximum audio output is less than 0.5 W per channel. | | P |
| 4.2.4.1 | An apparatus with multiple modes of operation, multiple signal input sources, or both, is operated according to the manufacturer's instructions to produce the maximum power input | | N/A |
| 4.2.11 | Table 2 - External supply sources are assumed to be capable of delivering 30 A, unless otherwise specified (UL 60065 no-load voltage and internal resistance values) | | N/A |
| 4.3.4 | As an alternative, PTC thermistors may also comply with UL 1434. | | N/A |
| 5 | Test for conductive labels secured in place by adhesive | | N/A |
| 5.1 | Component power supplies and adapters complying with UL 1310, UL 1950, UL 60950, or UL 60950-1 are considered to fulfill items "a" through "i" of this clause. | | P |
| 5.1f | Rated mains frequency marking on apparatus | | P |
| 5.1j | Date of Manufacture marking | XXYY: XX stands for year, YY stands for month. | P |
| 5.1k | Factory origin identification marking | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **US United States of America** | | | **US** |
|---|---|---|---|
| 5.1l | Combination of two graphical symbols and supplementary marking and/or single graphical symbol marking | | P |
| 5.1m | Equipment rack marking for audio/video systems | | N/A |
| 5.1n | Class I apparatus having touch current levels greater than 0.75 MIU and equal to or less than 3.5 MIU must be marked with a high touch current marking. | 1.44 MIU. The warning label will stick on the mains cord. | P |
| 5.1o | Marking on apparatus having grille/ventilation areas of the top surface that are permitted to have higher temperature rises according to Note b of Table 3 | | N/A |
| 5.1p | Marking for apparatus intended to be installed in air-handling spaces | | N/A |
| 5.2c | Output terminals are marked with voltage, frequency and current or power; output terminals installed or interconnected in the field must be marked with the class of wiring | | N/A |
| 5.2d | Speaker terminals are marked "Class 1 Wiring", "Class 2 Wiring" or "Class 3 Wiring".<br>Operation manual explains risks and proper connecting and insulating techniques when connecting a speaker | | N/A |
| 5.3c | An explanation and illustration of safety related graphical symbols used on the apparatus are included in the user instructions preceding any operating instructions | | P |
| 5.4 | Important safety instructions are packed with each apparatus | | P |
| 5.4.1 | Outdoor use marking for apparatus having no protection against exposure to water | | N/A |
| 5.4.1e | Deleted | | N/A |
| 5.4.1h | Reference to IEC 61695 is replaced by UL 61965 | | N/A |
| 5.4.3 | When user operation and installation instructions contains instructions for use by skilled persons, the instructions are separate in format and preceded by a precautionary warning statement | | N/A |
| 6.1 | Compliance is checked in accordance with the requirements in the U.S. Code of Federal Regulations, Title 21, Chapter 1, Subchapter J, Sections 1010.2, 1010.3, and 1020.10 by measuring the radiation produced by the apparatus employing a production chassis. | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **US United States of America** | | | **US** |
| 6.2 | References to IEC 60825-1 are deleted.<br>Apparatus is classified and labeled according to the Code of Federal Regulations, Title 21, Chapter 1, Subchapter J, Sections 1010.2, 1010.3, 1040.10 and 1040.11. | | N/A |
| 6.2.2 | Deleted | | N/A |
| Table 3 | Delete reference to conditions h and i under Table item e for lithium batteries. | | P |
| | Temperature limits for various classes of insulation systems according to UL 60065 | | P |
| | Note a: Materials rated in accordance with UL 746B may be used within their rated temperature | | P |
| | Note b: For grille/ventilation areas in the top surface directly above internal heatsinks, a temperature rise up to 65 K is allowed | | P |
| 7.2 | Applies to thermoplastic materials only. A material temperature rating can be accepted in lieu of the softening temperature.<br>The softening test need not be performed on materials used in UL Listed or Recognized components | | N/A |
| 8.1 | Metal parts are corrosion resistant | | N/A |
| 8.9.1 | Sleeving, tape, tubing, and wire insulation comply with UL 224, UL 510, or UL 1441 | | P |
| 8.10 | Component power supplies and their internal insulation complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause | | P |
| 8.17 | As an option, winding wire insulation complies with the requirements in UL 2353 | | P |
| 8.19.1 | Modification: An all-pole switch or circuit breaker is not required to have contact separation of 3 mm | | N/A |
| 8.23 | Printed wiring boards involved with the risk of electric shock comply with the requirements in UL 796 | | P |
| 9.1.1.1a | For audio signals of professional and commercial apparatus, 120 V r.m.s.<br>For audio signals other than professional and commercial apparatus, 71 V r.m.s. | | N/A |
| 9.1.1.1b | Touch current carried out in accordance with UL 101 with the measuring instrument described in Annex D shall not exceed 0.5 MIU.<br>Delete Note 2. | 1.44 MIU | P |

# Attachment No. 2

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

| **US United States of America** | | | **US** |
|---|---|---|---|
| 9.1.1.2 | UL articulated finger (figure 18) used instead of the test probe B (IEC 61032).<br>Reference to test probes 18 and 19 of IEC 61032 are deleted | | P |
| 10 | Table 5, Note 1: With respect to mains voltages in the range of 105-130 V (r.m.s.), the test voltages are considered to be 1414 V peak for basic and supplementary insulation and 2828 V peak for reinforced insulation | | P |
| 11 | Component power supplies and their power transformers complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause | | P |
| 11.1 | The permissible touch current for terminal contacts has been increased to twice the value given in 9.1.1.1. | | P |
| 11.2.1 | Additional fuse testing is not required if the temperature is limited by fuses | | N/A |
| 12 | Component power supply adaptors and their enclosures complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause. | | N/A |
| 12.1.3 | Impact test uses the 50 mm steel sphere only.<br>Table 6 - Impact test criteria detailing impact location, impact energy and additional pass/fail results applied according to UL 60065. | | P |
| 12.1.4 | As an alternative, any number from one to three samples are permitted to be used in any combination that results in a total of three drops. | | N/A |
| 12.1.6 | Handle strength test. When polymeric materials are involved, testing is to be conducted before and after the sub-clause 12.1.5 stress relief test. | 2780N | P |
| 12.8 | Test for enclosures, barriers, components and leads that rely on adhesive | | N/A |
| 13 | Component power supplies and their power transformers complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause. | | P |
| 13.4 | The material group is verified according to UL 746A.<br>Reference to the IEC 60112 PTI test is deleted | | P |
| 13.5.1 | Reference to IEC 60249-2 is replaced by UL 796 | | N/A |
| 13.5.2 | Coated printed wiring boards comply with UL 746C | | N/A |
| 13.5.3 | Multilayer printed boards comply with relevant requirements in UL 60950-1 | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **US United States of America** | | | **US** |
|---|---|---|---|
| 14 | Annex Y and additional component requirements applied according to UL 60065 | | P |
| 14.1 | Component power supplies and their resistors complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause | | N/A |
| 14.2 | Component power supplies and their capacitors complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause. | | N/A |
| 14.2.1 | As an alternative, a component such as a capacitor, a combination capacitor and resistor, or a suppressor may comply with UL 1414 | | P |
| 14.2.2 | As an alternative, a capacitor, a combination capacitor and resistor, or a varistor, or a suppressor may comply with UL 1414. | | P |
| 14.2.4 | Components subjected to the requirements in 14.2.1 and 14.2.2 also comply with UL 1414 enclosure requirements | | N/A |
| 14.3 | Component power supplies and their inductors and windings complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are considered to fulfill the clause | | N/A |
| 14.3.2 | Planar transformers comply with the requirements for multilayer printed boards | | N/A |
| 14.4 | High voltage materials are rated V-2 minimum | | N/A |
| 14.4.1 | High voltage arcing test replaces the High voltage transformers and multipliers test | | N/A |
| 14.4.2 | Deleted | | N/A |
| 14.4.3 | High voltage component part flame test | | N/A |
| 14.4.4 | High voltage isolating component test | | N/A |
| 14.5.1.1 | Thermal cut-outs comply with UL 873 or UL 60730-2-9 | | N/A |
| 14.5.1.2 | Thermal links comply with UL 60691 | | N/A |
| 14.5.1.3 | Delete | | N/A |
| 14.5.2.1 | Fuse links comply with UL 248-14 | | P |
| 14.5.2.2 | Reference to IEC 60127 is deleted. Pre-arcing time/current characteristic and breaking capacity marking requirements are deleted | | P |
| 14.5.3 | As an alternative, a PTC thermistor may comply with requirements of UL 1434 | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **US United States of America** | | | **US** |
| 14.5.3A | Other protective devices directly connected to the mains have adequate breaking capacity and comply with UL 873, UL 1416, UL 1417 or UL 2111 | | N/A |
| 14.5.4 | Reference to fuse-links is deleted | | N/A |
| 14.6.1 | Switches and relays comply with UL 1054, UL 61058-1 or UL 508.<br>Mains switch or relay are rated for the total rated current consumption of the apparatus.<br>Rating of a mains switch or relay in audio apparatus intended for commercial use. | | P |
| 14.6.2 | Deleted | | N/A |
| 14.6.5 | A Switch or relay that controls a mains socket-outlet have a rating equal to the rated current consumption of the apparatus plus the<br>current rating of the socket-outlet | | N/A |
| 14.6.6 | Mains switches comply with (a), (b) or (c). The contacts of a mains relay complies with (a), (b) or (d). A switch that controls a mains receptacle complies with (b) and a relay that controls a mains receptacle complies with (b) or (d) | | P |
| 14.6.6a | Switch or relay contacts have an rms current rating equal to or greater than the peak inrush current of the apparatus divided by 1.414.<br>Switch or relay contacts have an rms current rating equal to or greater than the peak inrush current of the apparatus divided by 10, when:<br>- the rms current during normal operation controlled by the switch is less than or equal to ½ the rms rating of the switch, and<br>- the switch has double or multiple poles controlling the mains current, either in series or switching each mains line | | N/A |
| 14.6.6b | Switch or relay is TV rated | | N/A |
| 14.6.6c | Switch is located on the back of apparatus and is not operable from a remote control | | N/A |
| 14.6.6d | Relay is to be subjected to the Relay endurance test | | N/A |
| 14.6.6.1 | Peak Inrush current test | | N/A |
| 14.6.6.2 | Relay endurance test | | N/A |
| 14.6.7 | Double pole switch controlling a.c. and d.c. circuits | | N/A |
| 14.7 | The jointed test finger (figure 18) is used to determine accessibility and operation of the interlock | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **US United States of America** | | | **US** |
| 14.10.1 | Internal rechargeable and non-rechargeable batteries that are replaceable by the user or skilled persons shall additionally comply with 14.10.2 – 14.10.5.<br>Test requirements from UL 2054 are added for special battery packs that are removable by the user from the apparatus and may be carried separately from the apparatus – Short circuit test, Abnormal charging test, Forced-discharge test, and 250-N steady force test.<br>Note: Consumer grade, non-rechargeable carbon-zinc or alkaline batteries are not subjected to the tests specified in 14.10.2 – 14.10.5. | | N/A |
| 14.10.5 | As an alternative, one sample may be subjected to three drops | | N/A |
| 14.10.6 | Location of overcurrent protective device.<br>As an alternative, the overcurrent protective device in the apparatus battery-supply circuit is not required if the apparatus is intended to be connected to a vehicle power outlet using a UL 2089 vehicle battery adapter | | N/A |
| 14.11 | Component power supplies and their optocouplers complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 are<br>considered to fulfill the clause | | N/A |
| | Optocouplers comply with UL 1577.<br>Optocouplers bridging reinforced insulation comply with requirements for double protection as specified in UL 1577.<br>External clearances and creepage distances of optocouplers comply with 13.1. | | P |
| 14.12 | Reference to IEC 61051-2 replaced by UL 1449 | | P |
| | Reference to IEC 60695-11-10 replaced by UL 94. | | P |
| | All references to IEC 60151 are deleted | | N/A |
| 15.1.1 | Attachment plug current rating (no less than 125% of the current drawn under normal operating conditions) and voltage rating.<br>Configuration and electrical rating of an attachment plug for apparatus designed to be used on more than one supply voltage by means of a voltage selector.<br>Polarized attachment plug.<br>Wire gauge of conductors and internal wiring connecting mains socket-outlets | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **US United States of America** | | | **US** |
| 15.1.3.1 | Means of output connections on an audio amplifier having an open-circuit audio output voltage not limited to 120 V that is permanently connected to the mains.<br>Quick Connect Terminals:<br>a) Male tabs firmly mounted in place;<br>b) Mating female connectors provided with the apparatus;<br>c) Strain Relief Test of Clause 16.5;<br>d) Installation instructions provided for assembly of terminal to a conductor and strain relief<br>e) Terminals are appropriate for use with the size and type of wire specified | | N/A |
| 15.1.3.2 | Audio amplifiers having an audio output not limited to 120 V that are connected to the mains by a flexible cord | | N/A |
| 15.2 | Protective earthing conductor termination construction.<br>Cross-sectional area of the earthing conductor in a supply cord or in an interconnecting cable.<br>Earthing conductors may have green or green/yellow insulation. | Green/yellow | P |
| 15.3.5 | Reference to IEC 60950 is replaced by Article 310 of the National Electrical Code, ANSI/NFPA 70<br>Table 15 - "AWG" replace $mm^2$ values | | N/A |
| 15.4 | Component power supply adaptors complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 fulfill the clause | | N/A |
| 15.4.2 | NOTE – include references to UL 498 and ANSI/NEMA WD6 for mains plug dimensions | | N/A |
| 15.4.2.1 | Construction of the mains plug blade assembly complies with UL 1310.<br>Direct plug-in units designed for use by travelers comply with UL 1310. | | N/A |
| 16.1 | Reference in the first paragraph to “sheathed” flexible cords is deleted.<br>References to IEC 60227 and IEC 60245 are deleted.<br>Ampacity and VW-1 marking of mains supply flexible cords.<br>Table 17A - Cords for apparatus<br>Table 17A: Certain supply apparatus may be provided with a supply cord having 0,5 m minimum length | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **US United States of America** | | | **US** |
| 16.2 | Power supply cord earthing conductor size.<br>Reference to IEC 60950, Table 3B is replaced by Article 400 of the National Electrical Code.<br>Table 18 - Upper current limit in column 1 increased from 16 to 30 A and "AWG" wire sizes used. | | P |
| 16.3 | c) Flexible cords not complying with 16.1, used as connection between the apparatus and other apparatus are marked VW-1 | | N/A |
| 16.5 | When polymeric materials are involved, strain and twist testing is to be conducted before and after the sub-clause 12.1.5 stress relief test. | | N/A |
| 17.8 | Expanded to include all cart/stand parts supplied by the manufacturer, such as casters and brackets. Suitable assembly instructions are required.<br>Relevant fixing means are not required when installation is to be done by a skilled person | | N/A |
| 17.10 | Termination of aluminum conductors used as internal wiring | | N/A |
| 17.11 | An accessory was investigated to determine that:<br>a) The accessory, and the combination of the accessory and the apparatus presents no hazard in the sense of this standard, and<br>b) The accessory is provided with installation instructions | | N/A |
| 17.11.1 | Installation of an accessory by a skilled person:<br>a) The mechanical positioning is accomplished by means of tools normally available or by means of special tools provided as part of the installation kit,<br>b) The electrical connections are made by using existing terminals and connections in the apparatus or the building wiring | | N/A |
| 18 | Non-intrinsically protected picture tubes shall comply with 18.1, 18.2.2 and 18.3. Intrinsically protected picture tubes with a maximum face dimension exceeding 7.5 cm shall comply with UL 61965.<br>A bulb of a picture tube having a face diameter of 7.5 cm or more shall be mounted in an enclosure.<br>Enclosure opening dimensions. | | N/A |
| 18.1 | All tubes are mounted such that the enclosure of the apparatus protects the tube against the effects of implosion.<br>Reference to IEC 61965 replaced by UL 61965 | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **US United States of America** | | | **US** |
|---|---|---|---|
| 19 | The tests in 19.1, 19.2 and 19.3 do not cause the apparatus to overturn | | P |
| | The test in 19.2.1 does not cause the apparatus to slide | | P |
| | When polymeric materials are involved, testing is to be conducted before and after the sub-clause 12.1.5 stress relief test | | N/A |
| 19.1 | References to an apparatus in combination with a supplied cart or recommended stand are deleted | | P |
| 19.2 | References to an apparatus in combination with a supplied cart or recommended stand are deleted | | P |
| 19.2.1 | Glass Slide test | | N/A |
| 19.3 | Horizontal force stability test using Table 20A values from UL 60065 | | N/A |
| 19.5 | Reference to the impact hammer in the first compliance paragraph is deleted | | N/A |
| 19.6 | Includes Equipment rack mounting test | | N/A |
| 20.1a | Delete | | N/A |
| 20.1b | Exception for parts such as protection TV lenses, loudspeaker parts, external accessories, and fibrous materials.<br>Reference to IEC 60695-11-10 is replaced by UL 94 | | N/A |
| 20.1.2 | Sleeving, extruded tubing and insulation on wiring are rated VW-1:<br>a) wiring located in a circuit that is considered a potential ignition source, or<br>b) wiring not located in a circuit that is a potential ignition source but is in contact with wiring located in a circuit that is a potential ignition source.<br>Tape in contact with parts of circuits that are potential ignition sources is flame retardant. | | P |
| 20.1.3 | Printed wiring boards, on which the available power as the connection exceeds 15 W or the operating voltage exceeds 50 V a.c. or d.c under normal operating conditions, is of flammability category V-1 or better.<br>Reference to IEC 60695-11-10 replaced by UL 94.<br>Exception for printed boards housed in metal enclosures is deleted.<br>Option to use Clause G.1 of Annex G is deleted. | | P |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **US United States of America** | | | **US** |
| 20.1.4 | Components and parts comply with the relevant flammability category according to UL 94 as specified in table 21.<br>Component power supplies complying with UL 1310, UL 1950 Third Edition, UL 60950, or UL 60950-1 fulfill the clause.<br>Table 21 - Flammability categories for components and parts. | | P |
| 20.2.1 | Fire enclosure required:<br>1) circuits and components where the available power exceeds 15 W,<br>2) inductors and windings conductively connected to the mains, and<br>3) high-voltage products.<br>The fire enclosure complies with the flammability requirements of Table 22 according to UL 94 and 746C.<br>Reference to IEC 60695-11-10 or clause G.1 of annex G replaced by UL 94 or UL 746C.<br>Table 22 - Flammability categories for fire enclosures | | P |
| 20.2.2 | Internal fire enclosures openings and material requirements.<br>Compliance is checked by inspection and measurement and using the articulated finger probe, figure 18 | | N/A |
| 20.2.3 | Outer enclosures have a minimum flammability rating of HB when an internal fire enclosure is provided | | N/A |
| Annex A | Apparatus intended for outdoor use or for wet locations has any of the following attributes:<br>a) provided with a means to be transportable,<br>b) has a mass less than 35 kg,<br>c) can be battery operated, or<br>d) associated literature states or implies such use.<br>An apparatus as described in a), b), or c) above that is marked as specified in 5.4.1 a) is not intended for outdoor or wet location use.<br>Apparatus permanently installed outdoors is considered to be for permanent outdoor use | | N/A |
| A.5 | Clauses A.5, A.5.1 and A.5.4.1 are deleted | | N/A |
| A.9.1.1 | Touch current test after the water spray test described in A.11.1.1 | | N/A |
| A.10 | Clauses A.10, A.10.2 and A.10.2.1-2 are deleted | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **US United States of America** | | | **US** |
|---|---|---|---|
| A.11.1.1 | Apparatus subjected to the water spray test specified in UL 1598 | | N/A |
| A.16.1 | Flexible cords are suitable for outdoor use | | N/A |
| A.20.2.1 | Enclosures for an apparatus intended for permanent outdoor location comply with requirements for Type 3 enclosures in UL 50 | | N/A |
| Annex B | IEC 62151 Clause 4 applies except for 4.1.2, 4.1.3, 4.2.1.1 and 4.2.1.2 | | N/A |
| | The requirements of 4.2.1.1 are replaced by the requirements or 2.3.1 of UL 60950, Third Edition or UL 60950-1. | | N/A |
| | Voltages on the TNV-0 circuits, TNV-1 circuits and accessible conductive parts in the event of a single insulation fault. | | N/A |
| | Apparatus intended to be connected to telecommunication networks and having ringing voltages applied to the apparatus is subjected to touch current limits in accordance with clause 5.1.8.1.1 of UL 60950, Third Edition or 5.1.8.3 of UL 60950-1. | | N/A |
| | Telecommunication network that uses outside cable complies with the requirements for protection against overvoltage from power line crosses per 6.4 of UL 60950, Third Edition or UL 60950-1. | | N/A |
| | UL 60950, Third Edition or UL 60950-1 Acoustic tests for apparatus containing an earphone held against the ear. | | N/A |
| | Apparatus provided with appropriate markings and instructions as described in Annex NAA of UL 60950, 3rd Edition or UL 60950-1. | | N/A |
| Annex D | Reference to IEC 60990 replaced by UL 101.<br>Add touch current value in MIU where MIU = U2 x 2 (r.m.s. value) | | P |
| Annex G | Deleted | | N/A |
| Annex I | Safety requirements for coin/button cell batteries | | N/A |
| Annex L | Deleted | | N/A |
| Annex Q | Safety requirements for video apparatus for use in health care facilities | | N/A |
| Annex R | Safety requirements for under-cabinet apparatus | | N/A |
| Annex S | Safety requirements for in-wall mounted apparatus | | N/A |
| Annex T | Safety requirements for apparatus with projection lamps | | N/A |

# Attachment No. 2

| IEC60065 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **US United States of America** | | | **US** |
|---|---|---|---|
| Annex U | Safety requirements for permanently connected apparatus | | N/A |
| Annex V | Safety requirements for carts, stands, and similar apparatus for use with specific apparatus covered by this standard | | N/A |
| Annex W | Construction details for a 0.02-ohm shunt for use in the peak inrush-current measurement | | N/A |
| Annex X | Manufacturing and production-line tests and verification | | P |
| Annex Y | Standards for components | | P |

END OF REPORT

# Attachment No. 3

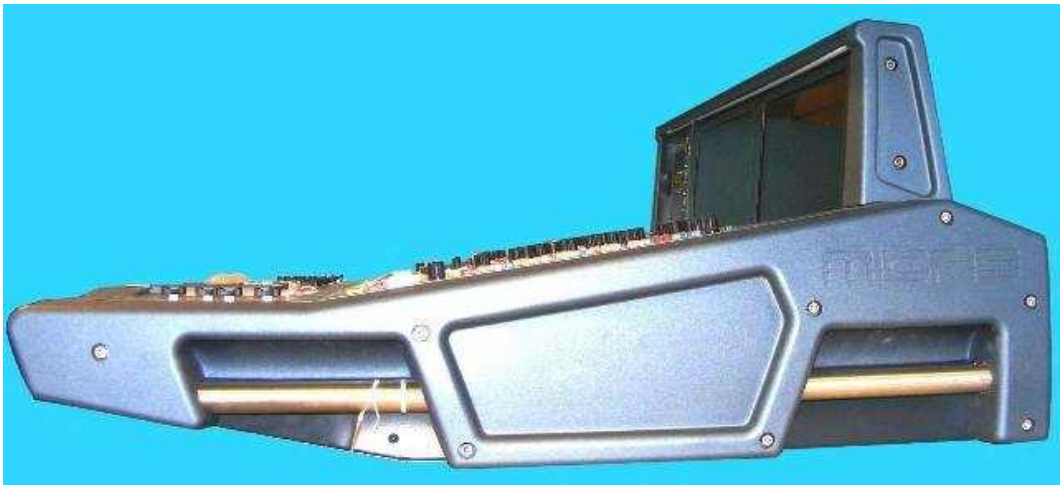
Details of: Overall view 1


Details of: Overall view 2

# Attachment No. 3

Details of: Overall view 3

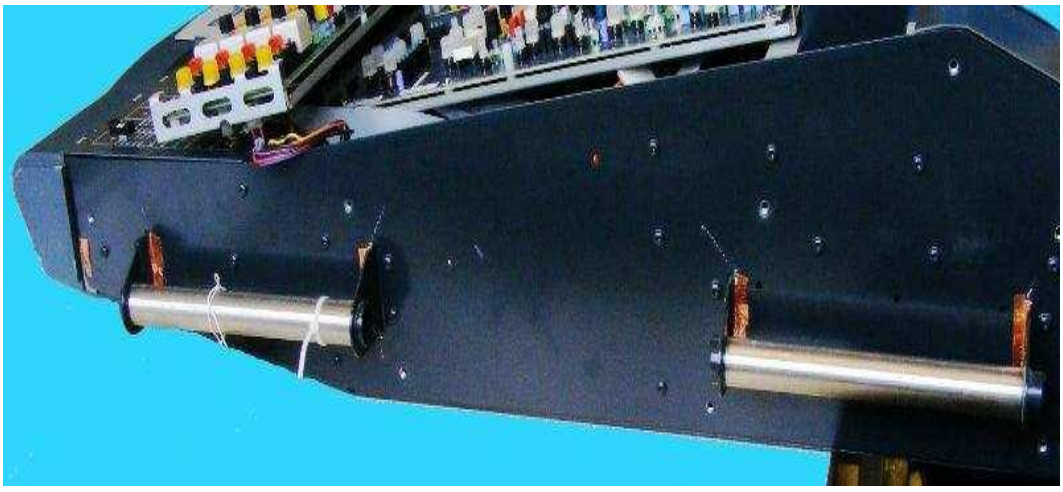
Details of: Overall view 4



# Attachment No. 3

Details of: Overall view 5

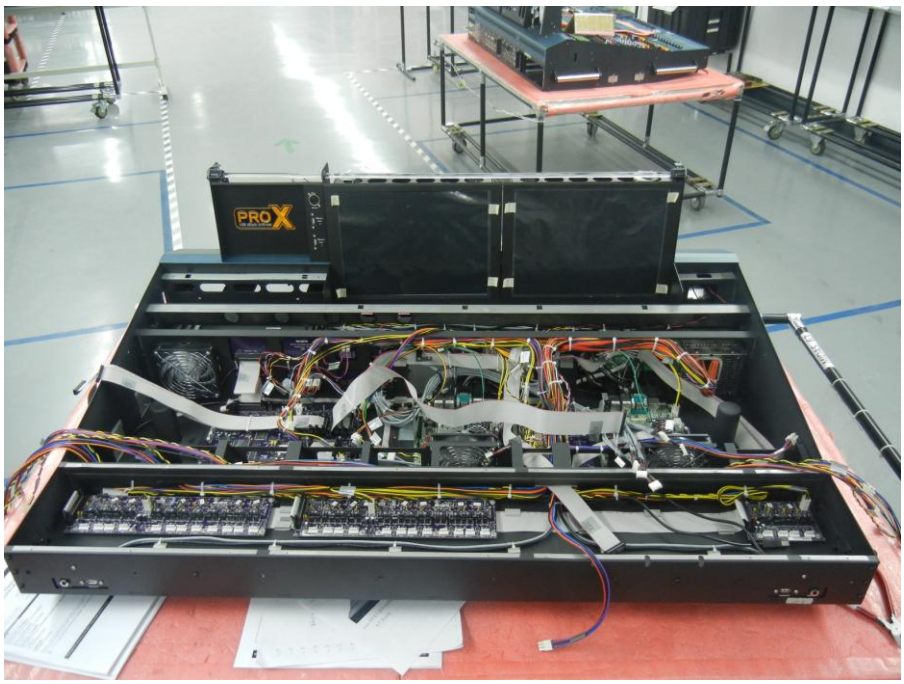

Details of: Internal view 1



# Attachment No. 3

Details of: Internal view 2

Details of: Internal view 3



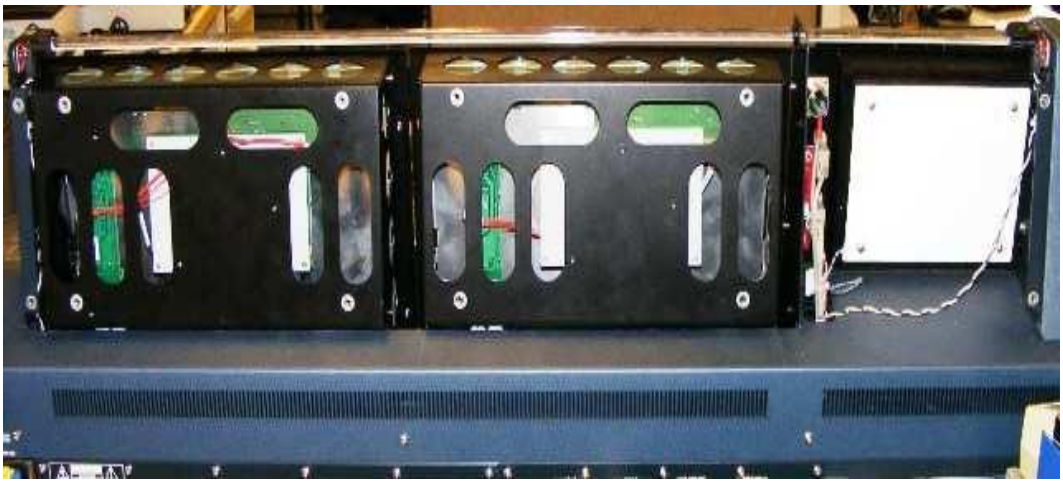
# Attachment No. 3

Details of: Internal view 4

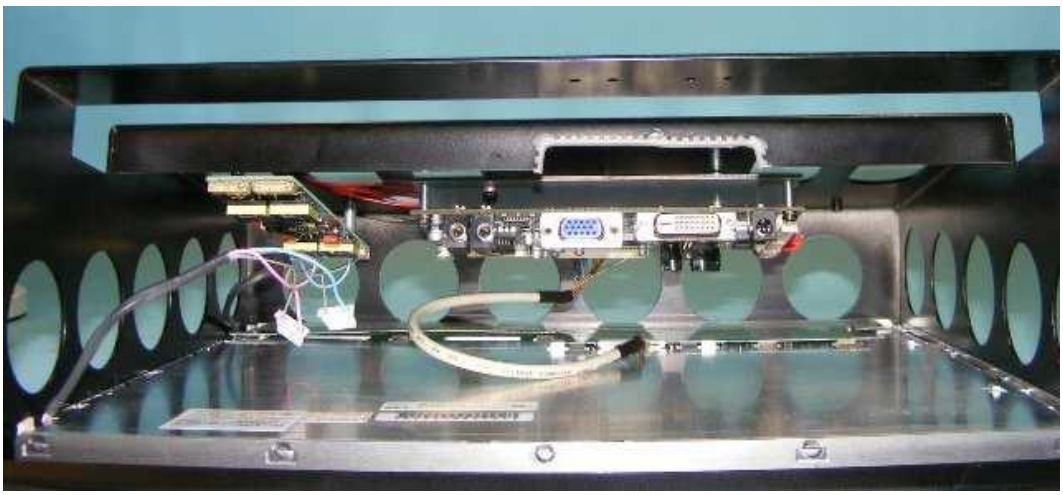
Details of: Internal View 5

# Attachment No. 3

Details of: Internal View 6



Details of: Internal View 7



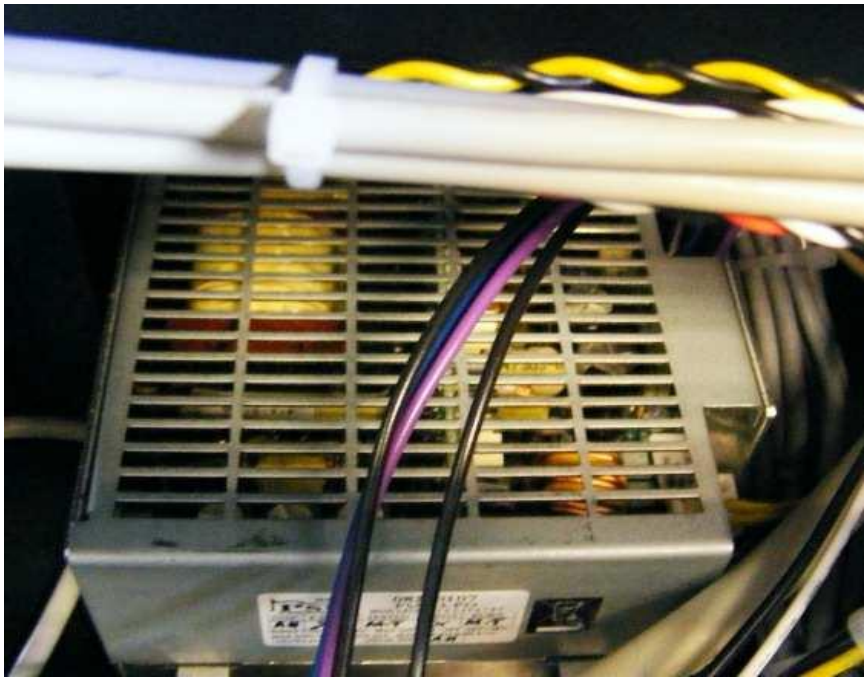
# Attachment No. 3

Details of: Internal View 8

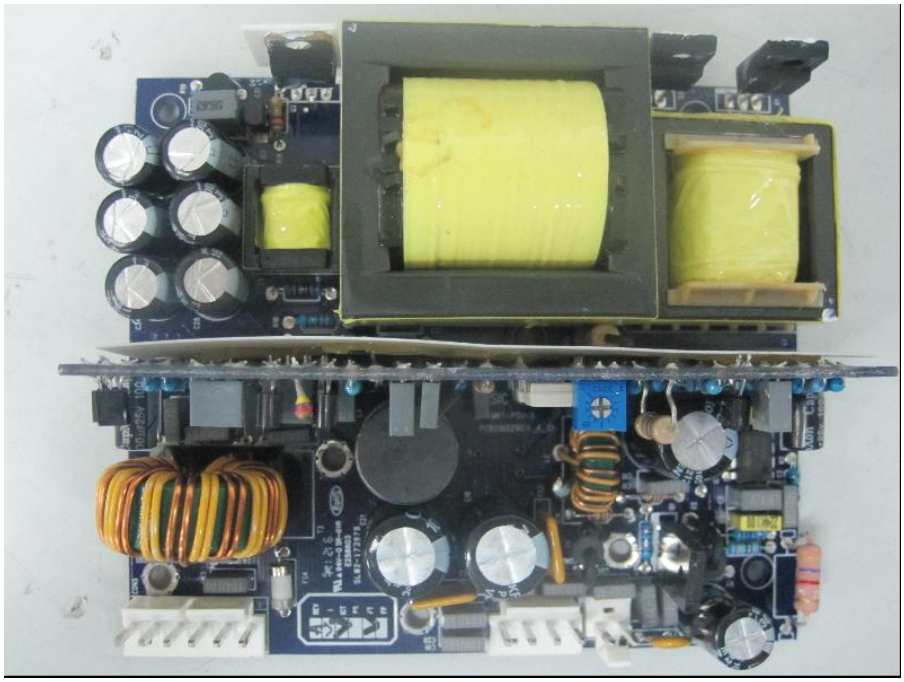
Details of: Internal View 9 – CPU Panel

# Attachment No. 3

Details of: Internal View 10 – DC-DC Converter



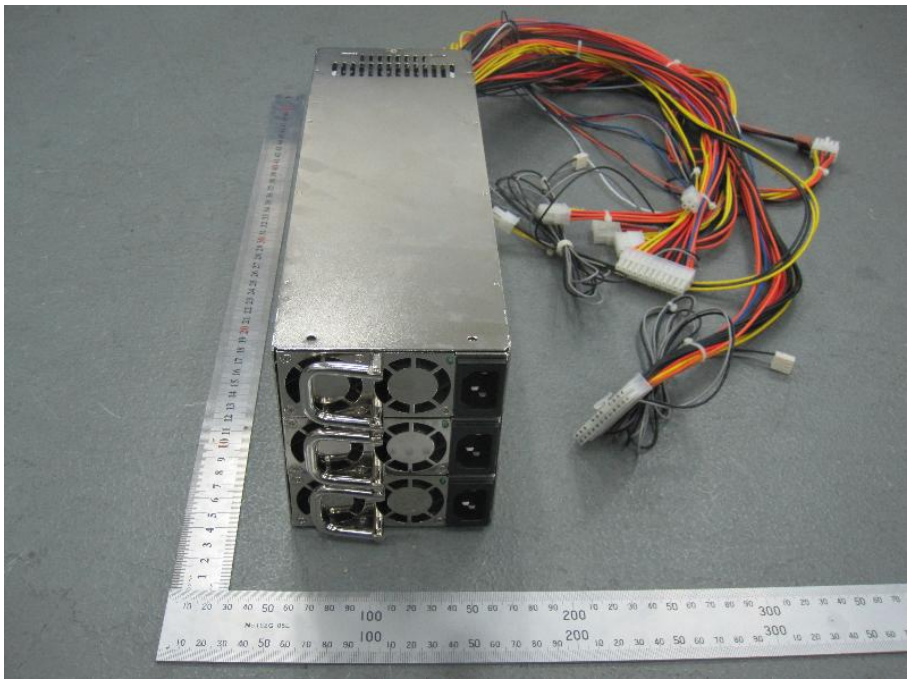
Details of: Internal View 11 -- DC-DC Converter



Details of: Internal View 12 – LCD Panel inverter

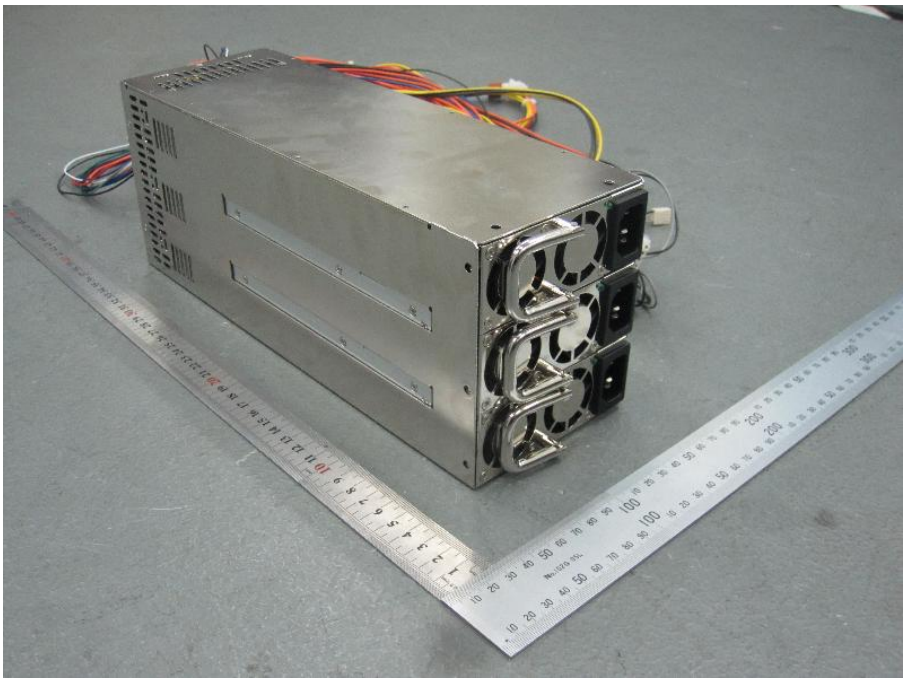
# Attachment No. 3

Details of: Internal View 13 – Power supply overview 1 (MKT-PSU-3)

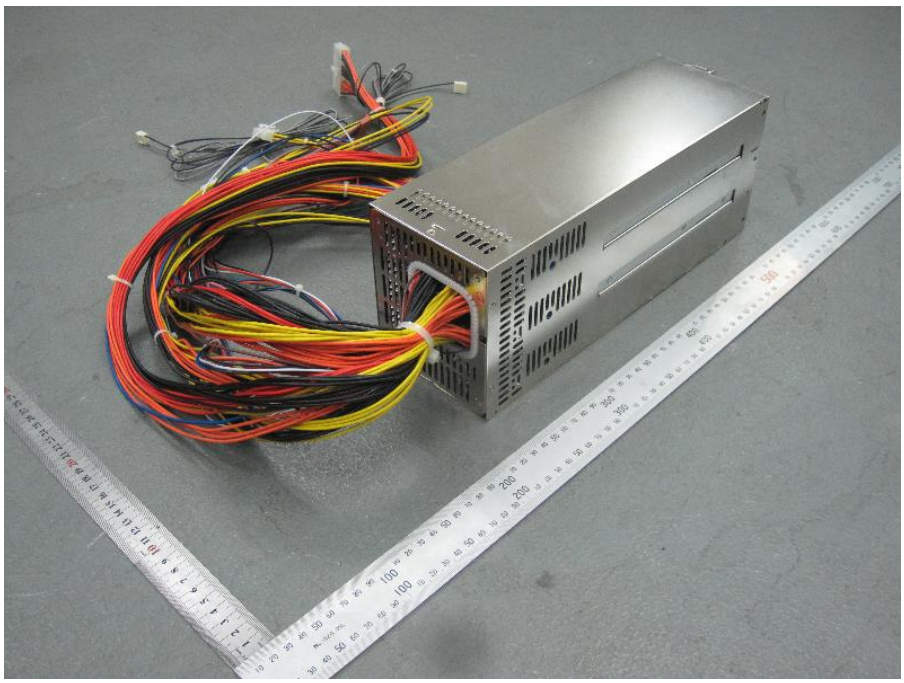


# Attachment No. 3

Details of: Internal View 14 – Power supply overview 2 (MKT-PSU-3)

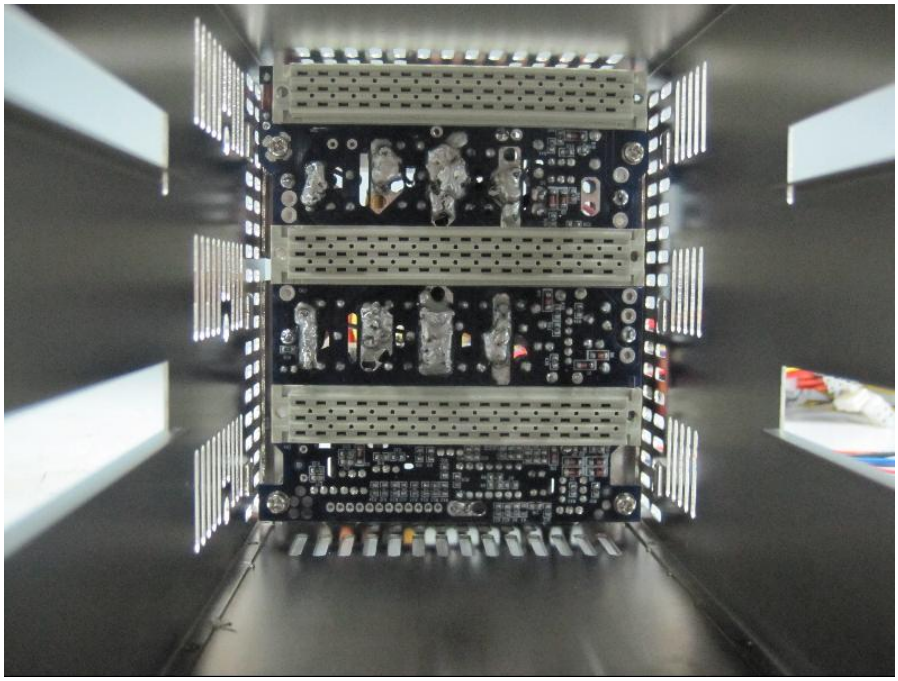


Details of: Internal View 15 – Power supply overview 3 (MKT-PSU-3)

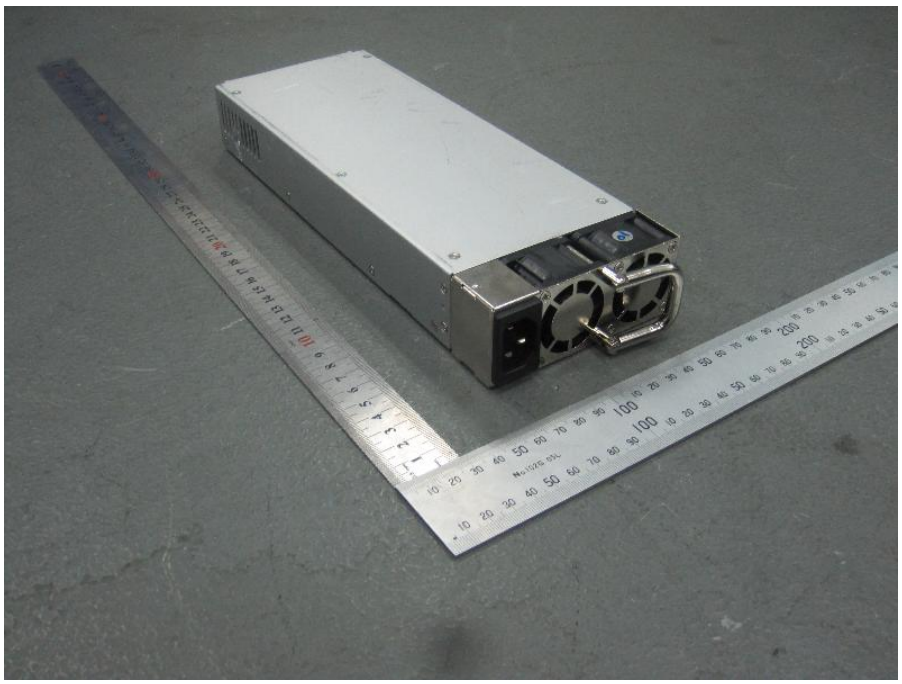


# Attachment No. 3

Details of: Internal View 16 – Power supply overview 4

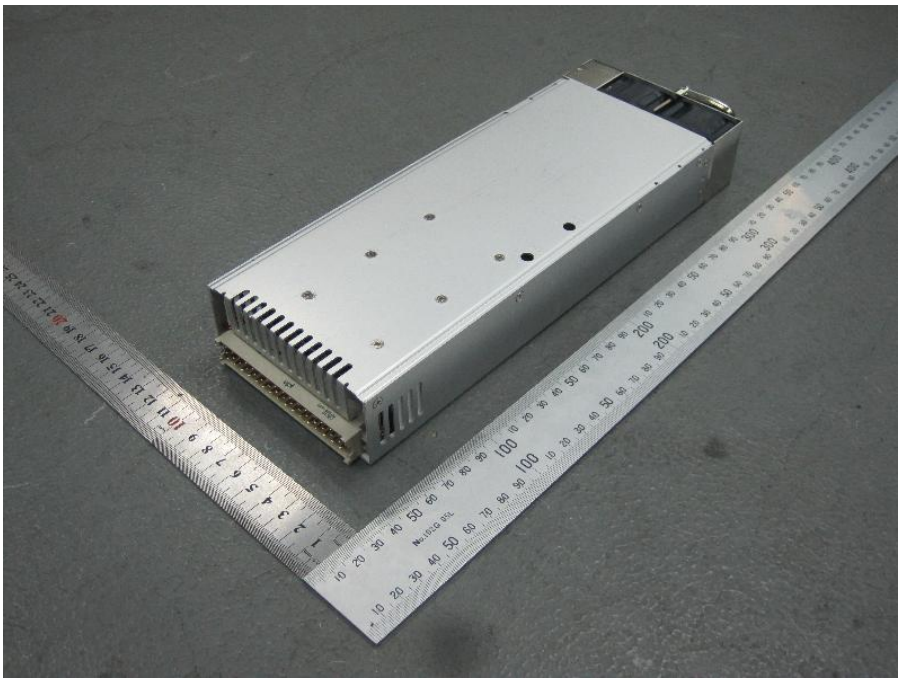


Details of: Power supply unit overview 1 (MKT-PSU-2)

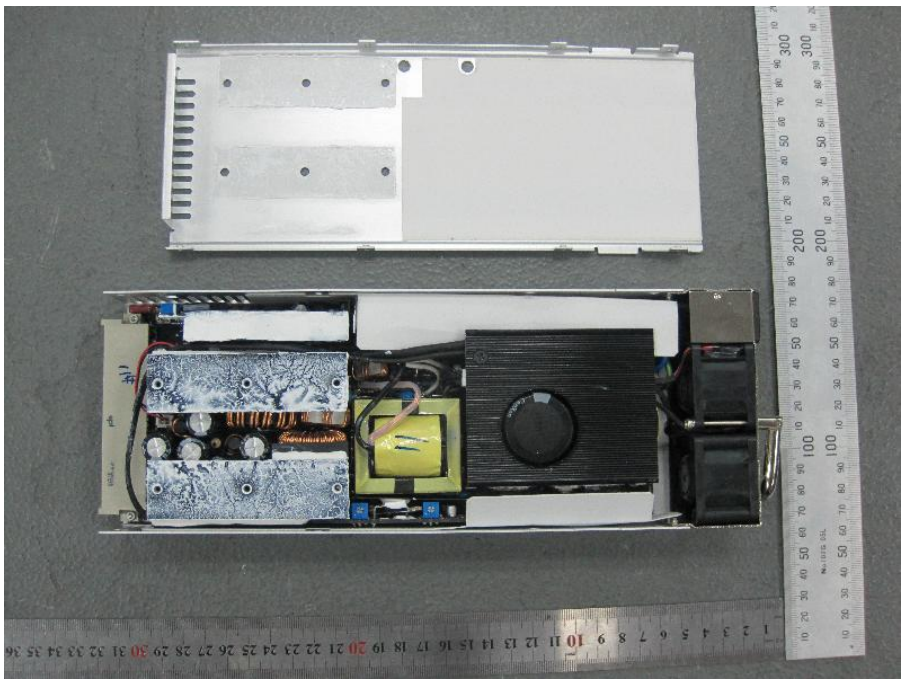


# Attachment No. 3

Details of: Power supply unit overview 2 (MKT-PSU-2)

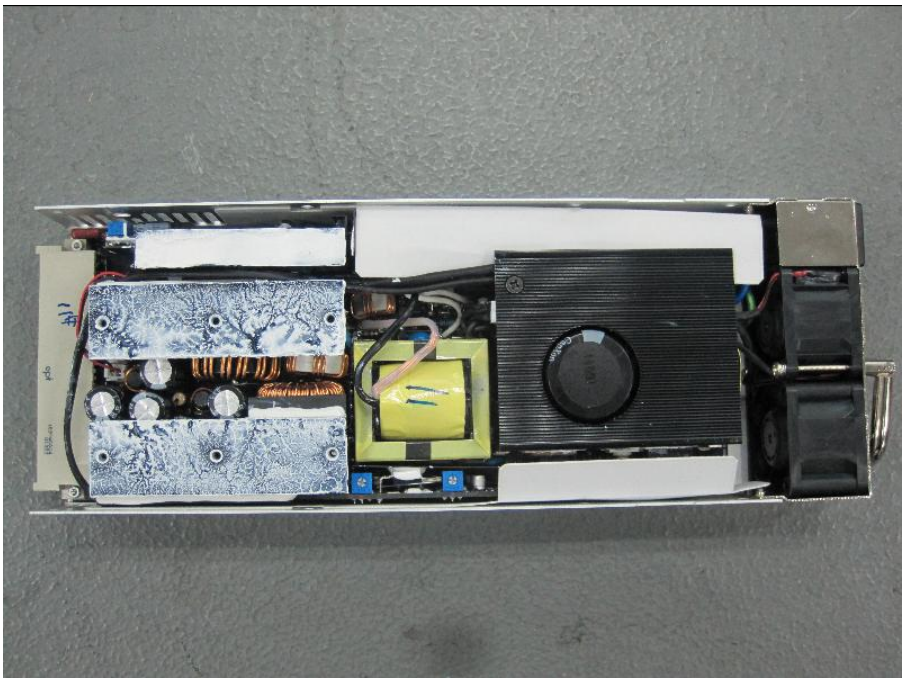


Details of: Power supply unit internal view 1 (MKT-PSU-2)

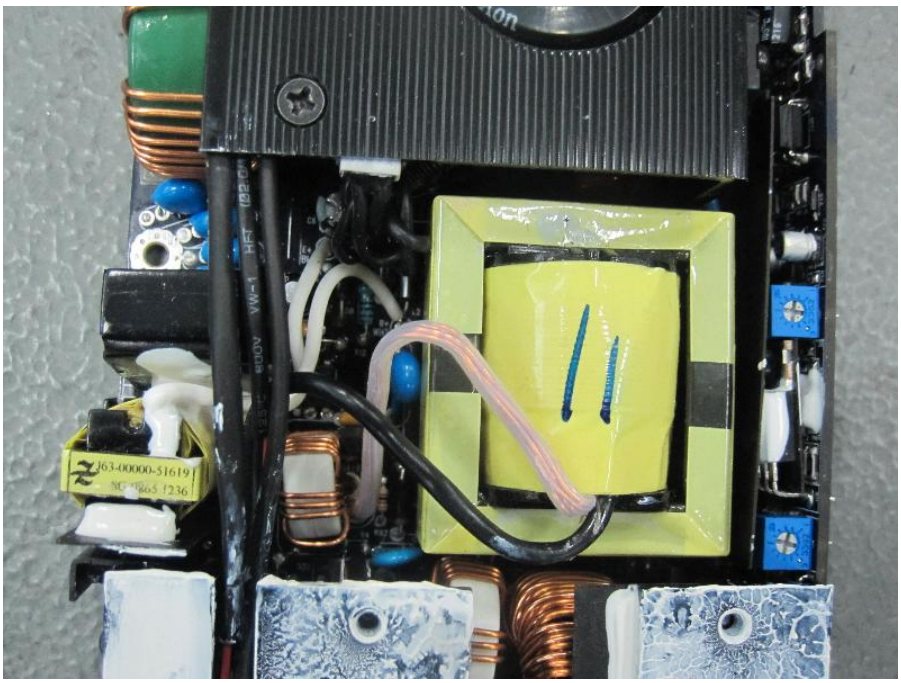


# Attachment No. 3

Details of: Power supply unit internal view 2

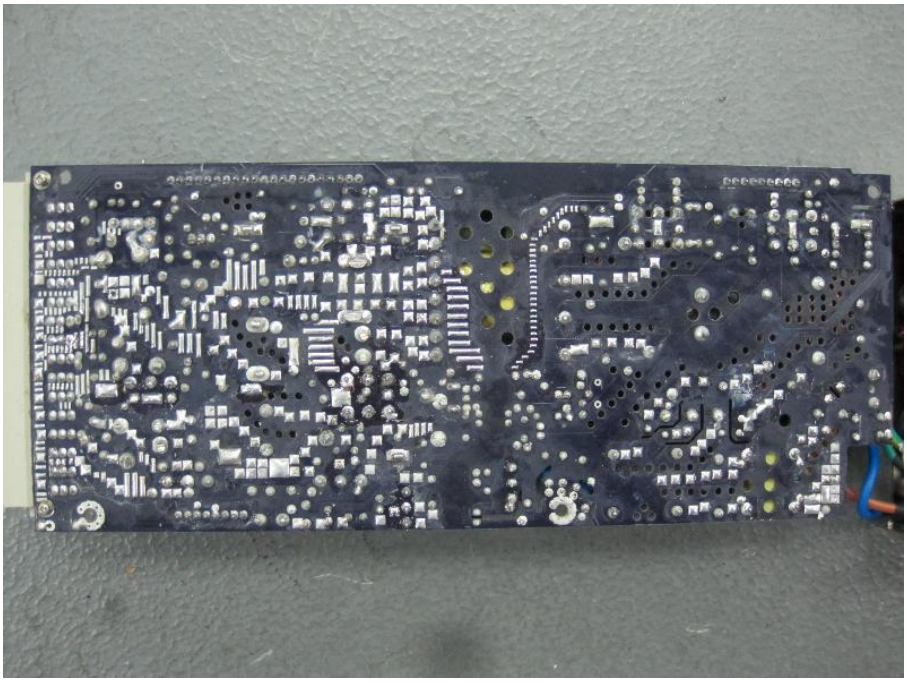


Details of: Power supply unit internal view 3

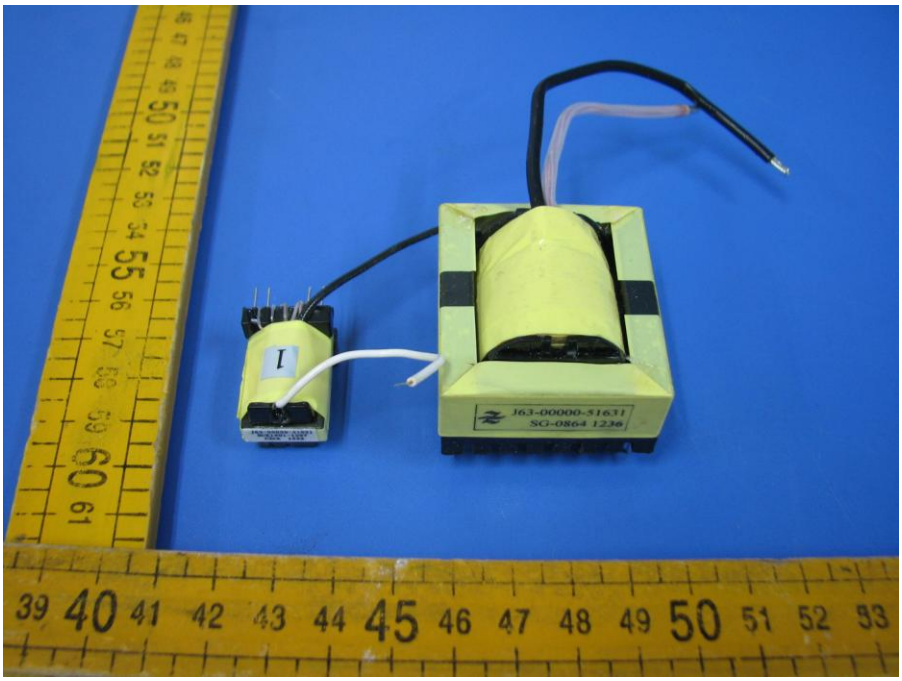


# Attachment No. 3

Details of: Power supply unit internal view 4 (solder side)

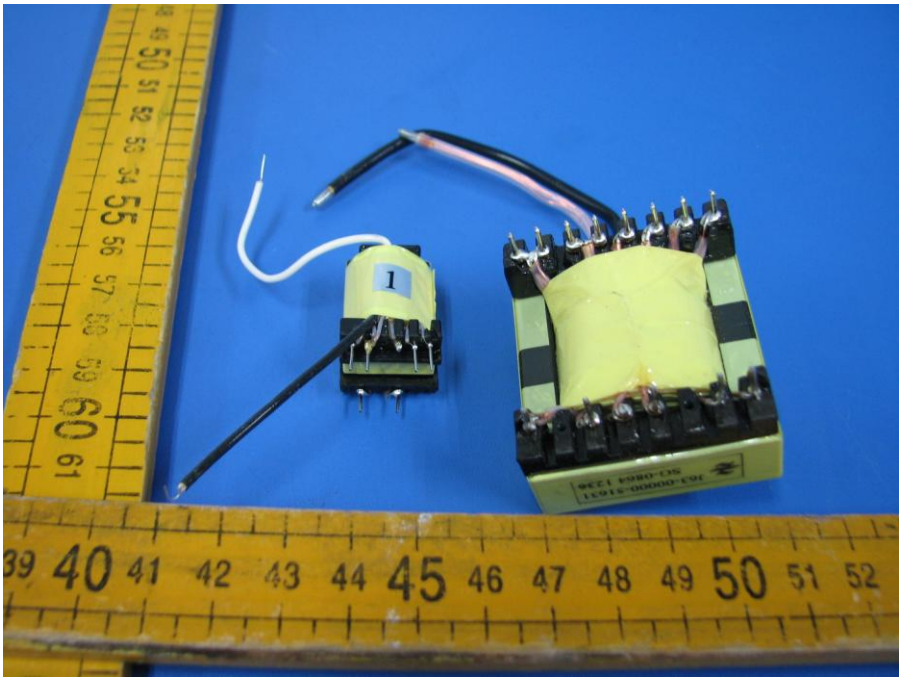


Details of: Transformer view 1



# Attachment No. 3

Details of: Transformer view 2

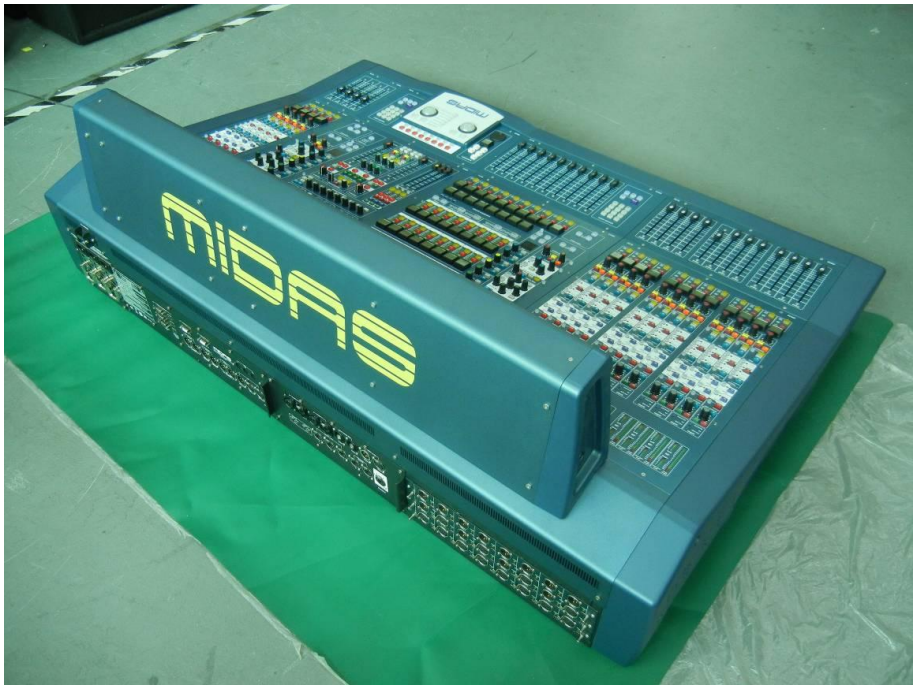



Details of: PRO X View 1

# Attachment No. 3

Details of: PRO X View 2


Details of: PRO X View 3



# Attachment No. 3

Details of: PRO X View 4