| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |

| | | |
|---|---|---|
| | **IEC 950, 2nd ed. + Amds 1, 2, 3 and 4**<br><br>**GROUP DIFFERENCES, NATIONAL DEVIATIONS AND SPECIAL NATIONAL CONDITIONS IN THE CENELEC COUNTRIES**<br><br>**S = Special National Condition**<br>**D = National Deviation**<br>**C = CENELEC Common Modification**<br>**F = other information** | |

| | | | |
|---|---|---|---|
| | C: delete all the "country" notes that appear on the following pages of the reference document (IEC 60950:1991 and its amendments 1 to 4): 57a, 61, 89, 95a, 105a, 137, 139, 177, 185, 185a, 221, 225a, 225b, 227, 229a, 231, 235 and 237a<br>Corrections of typographical errors are required as follows: | | P |
| 1.2.4.1 | S (DK): certain types of Class I appliances (see 3.2.1) may be provided with a plug not establishing earthing continuity when inserted into Danish socket-outlets | | N |
| 1.5.1 | D (SE): add the following:<br>NOTE: Switches containing mercury such as thermostats, relays and level controllers are not allowed | | N |
| 1.6.4<br>NOTE2 | S (NO):In Norway, due to the IT power system used, capacitors are required to be rated for the applicable phase-to-phase voltage (230V). | | N |
| 1.7.2<br>NOTE4 | S (NO):In Norway, if separation between the mains and a communication system/network other than public telecommunication networks relies upon connection to safety earth, the equipment shall have a marking stating that it must be connected to an earthed mains socket-outlet.<br>NOTE: For requirements for equipment to be connected to a public telecommunication network see 6.2.1.4.<br>Text is: | | N |
| | "Apparatet måkun tilkoples jordet stikkontakt" or | | N |
| | "Jordet stikkontakt skal benyttes nåapparatet tilkoples datanett" | | N |
| | C: Delete note 4. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | S (SE): if the separation between the mains and a SELV terminal relies upon connection to the safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket-outlet when a SELV circuit is connected to a network passing both unearthed and earthed electrical environment.<br>The marking text shall be in Swedish and as follows:<br>"Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk." | | N |
| | D (DK): supply cords of Class I equipment, which is delivered without a plug must be provided with a visible tag with the following text:<br>"Vigtigt!<br>Lederen med grØn/gul isolation<br>Må kun tilsuttes en klemme mærket<br>If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text:<br>"For tilslutning af de vrige ledere, se medflgende installationsvejledning." | | N |
| 1.7.5 | S (DK): socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-DI, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment | | N |
| | D (DK): Class II equipment shall not be fitted with socket-outlets for providing power to other equipment | | N |
| 1.7.14 | D (DE): directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language.<br>NOTE: Of this requirement, rules for use even only by service personnel are not exempted | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 1.7.17 | D (CH): annex 4.10 of SR 814.013 (Ordinance on environmentally hazardous substances SR 814.013) applies for batteries | | N |
| | F (ALL): warning texts for lithium batteries | The Lithium battery for RTC is not replaceable (soldered in the main board), no safety warning is required<br>The warning for Battery Pack (Lithium type) is marked in both the operating and the service instruction | P |
| | Languages ..... : | English and local language to each country that would be marketed | P |
| 2.1.3.1 | Corrections of typographical errors are required as follows:<br>Table 0, first column, replace "Over 50" by "Over 350" | | N |
| 2.3.3 | C: Delete Method 4 and the line in note 1 relating to this method. | | N |
| 2.3.5 | S (NO):In Norway, marking and insulation requirements according to this annex, subclauses 1.7.2 and NOTE4, 6.2.1.4, NOTE2) apply | | N |
| 2.3.6 | S(FR):Method 3 is not acceptable. | | N |
| | C: Delete the note. | | N |
| 2.3.7 | C: Replace the text of this subclause by: Void. | | N |
| 2.5.2 | S (DK, NO):In Norway, add after the first paragraph: "The above exception is not acceptable in pluggable equipment type A" | | N |
| | C: Delete the note. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 2.7.1 | C: Replace the text of this subclause by:<br>Basic requirements:<br>To protect against excessive current, short-circuits and earth faults in primary circuits, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b), c) and d):<br>a) Except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.4 shall be included as integral parts of the equipment.<br>b) For components in series with the mains input to the equipment such as the supply cord, appliance coupler, RFI 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 with a rated current exceeding 16 A, which is pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instruction.<br>d) If reliance is placed on protection in the building installation, the installation instructions shall comply with 1.7.11 except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket-outlet and 1.7.11 does not apply | | N |
| 2.7.2 | C: Replace the text of this subclause by: Void | | N |
| 2.8.4 | C:Delete the note. | | N |
| 2.9.1 | S (NO):In Norway, due to the IT power systems used, the mains supply voltage is considered to be equal to phase-phase voltage (230 V) | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 2.9.4.1 | C: page 117, fourth dashed paragraph, replace "nominal" by "normal" | | P |
| 2.9.4.2 | C: amend the last line on page 117 as follows:<br>"Solvent-based enamel coating on winding wire is not considered to be insulation in thin sheet material."<br>Add a new sentence below the test on page 117 as follows:<br>"Requirements for wound components are given in 2.9.4.4" | | N |
| 2.9.4.4 | C: modify the title as follows:<br>2.9.4.4 Wound components<br>Replace the first paragraph and the two dashed paragraphs as follows:<br>"Unless one of the following situations apply, interleaved basic, supplementary or reinforces insulation complying with 2.9.4.1 or. 2.9.4.2 shall be provided between the windings.<br>- the insulation on the winding wire complies with 2.9.4.1, or<br>- the winding wire complies with Annex U, or<br>- the insulation between the windings is provided for separation between TNV circuits and other parts in compliance with 6.4.1.<br>- NOTE Examples of insulation of winding wire complying with annex U are polyamide and FEP" | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 2.11 | C: Delete notes 1, 2 and 3. | | N |
| 3.2.1 | S (CH): Supply cords of equipment having a rated current not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimensions sheets:<br>- SEV 6532-2:1991: plug type 15 3P+N+PE 250/400 V, 10 A<br>- SEV 6533-1:1991: plug type-11 L+N 250 V, 10 A<br>- SEV 6534-2:1991: plug type 12 L+N+PE 250 V, 10 A<br>- EN 60 309 applies for plugs for currents exceeding 10 A | | N |
| | S (GB): apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a "standard plug" in accordance with Statutory Instrument-1786: 1994 - the plug and sockets etc.<br>(Safety) Regulations: 1994, unless exempted by those regulations.<br>NOTE: "Standard plug" is defined in SI 1786:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | S (DK): supply cords of single- phase appliances having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.<br>Class I equipment provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with Standard Sheet DK 2-1a or DK 2-5a.<br>If poly-phase equipment and single-phase equipment having a rated current exceeding 10 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations Section 107-D1 or EN 60 309-2 | | N |
| 3.2.2 | C: delete the note and in Table 10, delete the values in parenthesis | | N |
| 3.2.4 | C: replace<br>"245 IEC 53" by "H05 RR-F",<br>"227 IEC 52" by "H03 VV-F or H03 VVH2-F" and "227 IEC 53" by "H05 VV-F or H05 VVH2-F"<br>In Table 11, replace the first four lines by the following:<br>Up to and including 6; (0,75) [1)]<br>Over 6; up to and including 10; 1,0; (0,75) [2)]<br>Over 10; up to and including 16; 1,5; (1,0) [3)]<br>In the conditions applicable to Table 11, delete the words "in some countries" in condition 1).<br>In the NOTE delete the second sentence | | N |
| | S (GB): a power supply cord with conductor of 1,25 mm² is allowed for equipment with a rated current over 10 A and up to and including 13 A | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 3.3.5 | S (GB): the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current of over 10 A and up to and including 13 A is:<br>- 1,25 mm² to 1,5 mm² nominal cross-sectional area | | N |
| | C: in Table 13, delete the fourth line - conductor sizes for 10 to 13 A, and replace with the following:<br>Over 10; up to and including 16; 1,5 to 2,5; 1,5 to 4. | | N |
| 4.3.18 | S (GB): this test should be performed using an appropriate socket-outlet with an earthing contact | | N |
| 4.4.4 | C: Delete note 2 | | P |
| 5.4.9 | S (NO):In Norway, the electric strength test includes testing of basic insulation in Class I pluggable equipment Type B and permanently connected equipment | | N |
| 6.1 | S (CH): Protective means in the equipment shall not prevent transient surge protection in the telecommunication network from operating properly (d.c. spark-over voltage of the surge suppressor installed in the telecommunication network: approx.245V). | | P |
| 6.2.1.2 | S (NO):In Norway, supplementary insulation for a primary circuit is required between any TNV circuit and any circuit that has a connection to protective earthing terminal.<br>This requirement does not apply to permanently connected equipment or to pluggable equipment Type B, installed in areas where equipotential bonding has been applied, e.g. a telecommunication Central Office | | P |
| | S (SE): supplementary insulation for a primary circuit is required between any TNV circuit and any circuit that has a connection to protective earthing terminal.<br>In Sweden, this requirement does not apply to permanently connected equipment or to pluggable equipment Type B | | P |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 6.2.1.2&6.2.1.3 | C: Add at the end of the sub-clause:<br>This sub-clause only applies to TNV circuits normally operating in excess of the limits of SELV circuits. | | P |
| 6.2.1.4 | C: Delete notes | | P |
| 6.2.1.4 b) | S (NO): In Norway, method b) is not permitted.<br>Insulation between parts conductively connected to the supply mains and parts connected to a public telecommunication network shall comply with the requirements for double or reinforced insulation | | N |
| | S (FI): method b) is permitted only for permanently connected equipment or for pluggable equipment type B | | N |
| 6.2.1.5 | S (NO):In Norway, requirements according to this subclause 6.2.1.4, NOTE 2, apply | | N |
| 6.3.3 | S (NO):In Norway, 6.3.3. is applicable for pluggable equipment Type A and B for permanently connected equipment. | | P |
| 6.3.3.1 | S (NO): In Norway, requirements according to subclause 6.2.1.2,national difference 6.2.1.4, NOTE2, and 6.3.3.2,NOTE1, apply | | P |
| | S (SE):In Sweden, requirements according to this Annex ZB, subclause 6.2.1.2 apply | | P |
| 6.3.3.2<br>NOTE1 | S (NO):In Norway, exclusions are applicable for permanently connected equipment and pluggable equipment type B only | | N |
| 6.4.1 | C: Delete note 2. | | P |
| 6.4.2.1 | D (AT): Equipment shall comply with Uc = 2,0 kV is used in cases b) and c) | Tested with 2000 V in case b) and c) | P |
| | C: Delete note 2. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| Annex C | C: in the paragraph below Table C.1, replace ".... power to the monitor is...." by ".... power to the transformer is...." | | N |
| J | C: page 317, in Table J.1 electrochemical potential between Zinc, zinc alloys and Magnesium, magnesium alloys, replace "0,05" by "0,5" | | N |
| N | C: page 317, in the title between parentheses, replace "2.9.9" by "2.9.1" | | P |
| P | Replace the text of this annex by:<br>See annex ZA. | | P |
| Q | C: Add for IEC 529:<br>NOTE: Endorsed by EN 60529:1991 (not modified)<br>Add for IEC 707:<br>NOTE: Endorsed by HD 441:1983 (not modified)<br>Add for IEC 1058-1<br>NOTE: Endorsed by EN 61058-1:1992 (not modified). | | P |
| V | C: Page 359, in the figure, replace "SLEV CIRCUIT" by "SELV CIRCUIT" | | P |
| | **Special National Conditions** | | |
| ZB<br>(Normative) | See under the national differences of the country in question (CH, DK, FL, GB, NO, SE) | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | **National differences Australia (AU)**<br>**IEC 60950, 2nd ed. + Amds 1, 2, 3 and 4** | | |
| 1.2.12.2 | *Add:* "TT Power systems are not in Australia." | | N |
| 1.2.12.3 | *Add*: "IT Power systems are not permitted in Australia".<br>NOTE: Australia principally uses multiple-earthed neutral (MEN) systems but allows TN-C for installations using metal-sheathed cables. | | N |
| 1.5.1 | *Add* to paragraph 1: "or the relevant Australian standard." | | P |
| 1.5.2 | *Add* to the first and third dashed items after the words "IEC component standard"; "or the relevant Australian ". | | P |
| 1.7.14 | *Add* to paragraph 1; "In Australia all safety instructions shall be in English". | | P |
| 2 | *Add* after Clause 2; "For the limit of direct current from a.c. appliances, refer to Appendix 3." | | N |
| 2.3.7 | *Add* to NOTE 2: Australia | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 3.2.2 | *Substitute* for table 10: "For sizes of cables and conduits in Australia, refer to AS 3000." | | N |
| 3.2.4 | *Substitute* for table 11: For sizes of conductors in power supply cords use the following Table 11:<br><br>TABLE 11<br><br>SIZES OF CONDUCTORS IN POWER SUPPLY CORDS<br><br>Rated current of appliance A — Nominal cross- section area mm²<br>Over 0.2 up to end including 3 — 0.5*<br>Over 3 up to and including 7.5 — 0.75<br>Over 7.5 up to and including 10 — 1<br>Over 10 up to and including 16 — 1.5<br>Over 16 up to and including 25 — 2.5<br>Over 25 up to and including 32 — 4<br>Over 32 up to and including 40 — 6<br>Over 40 up to and including 63 — 10<br><br>* This nominal cross-sectional area is only allowed for Class II appliance if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug, does not exceed 2 m (0.5 mm², three-core supply flexible cords are not permitted, *see* Note 2 to Table 2.17 of AS/NZS 3191). | | N |
| 4.4.1 | "For the Australian alternative resistance to fire test, refer to Appendix 2." | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 6.4.2 | *Replace* the first paragraph by: "In Australia, compliance with 6.4.1 is checked by the tests of both Clauses 6.4.2.1 and 6.4.2.2."<br>*Delete* the fourth paragraph "The choice of tests... manufacturer". | | P |
| 6.4.2.1 | *Replace* Clause 6.4.2.1 by:<br>*"Impulse test* The electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator of Annex N. The interval between successive impulses is 60 s and the initial voltage $U_c$ is:<br>- In case (a) of 6.4.1: 7 kV for hand-held telephones and for headsets, and 2,5 kV for other equipment; and<br>- In cases (b) and (c) : 1,5 kV.<br><br>Notes:<br>1 The 7 kV impulse is to simulate lightning surges on typical Australian rural and semi-rural network lines.<br>2 The values of 2,5 kV for case (a) has been chosen primarily to ensure adequacy of the insulation concerned, but not necessarily simulate likely overvoltages. | | P |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 6.4.2.2 | In Australia (this variation to IEC 60950 does not apply in New Zealand), the following electric strength test shall apply:<br>*Replace* Clause 6.4.2.2 by:<br>*"Electric strength test* The electrical separation is subjected for 60 s to a substantially sinusoidal voltage having a frequency of 50 Hz or 60 Hz, or to a d.c. voltage equal to the peak value of the prescribed a.c. voltage. The a.c. test voltage is:<br>- In case (a) of 6.4.1: 3 kV; and<br>- In case (b) and (c): 1,5 kV<br>The voltage is gradually raised from zero to the prescribed voltage and then held at that value for 60 s.<br>Notes:<br>1 Where there are capacitors across the insulation under test, it is recommended that d.c. test voltage are used.<br>2 The 3 kV and 1,5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system." | Tested with 4242 Vdc in case a); and<br><br>Tested with 2121 Vdc in case b) and c) | P |
| Annex A | Add after Annex title: "For an alternative resistance to fire test, refer to Appendix 2." | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| Appendix 2 | *Add* Appendix<br><br>ALTERNATIVE RESISTANCE TO FIRE TEST DETERMINATION OF IGNITABILITY AND COMBUSTION PROPAGATION<br><br>X2.0 GENERAL<br>This test is an alternative to the tests in annex A to allow approval of equipment which has inadequate documentation to verify having been tested to Annex A.<br><br>X2.1 SOLID INSULATING MATERIALS AND NON-METALLIC ENCLOSURES<br><br>X2.1.1 General requirements: Parts of non-metallic material shall be resistant to ignition and spread of fire.<br>This requirement does not apply to decorative trims, knobs wiring insulation and other parts not likely to be ignited or to propagate flames from inside the equipment.<br>Compliance is checked by the tests of Clauses X2.1.2, X2.1.3 and X2.1.4 as applicable and if necessary by the test of Clause X2.2.<br><br>X2.1.2 Non-metallic material: Relevant parts of non-metallic material are subjected to a glow-wire test of AS/NZS 3350.1, the test being made at a temperature of 550 °C.<br>The 550 °C glow-wire test need not be carried out on parts which are made of material classified as FH 3-40mm/min or better according to IEC 707. The sample of material submitted to the test of IEC 60707 shall be no thicker than the relevant part.<br>Insulating material of winding bobbins and formers are subjected to the glow-wire test of AS/NZS 3350.1, the test being made at a temperature of 650 °C. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | Base material of printed circuit boards together with any coating or encapsulation is subject to the needle-flame test of AS/NZS 3350.1, however, flames shall have extinguished within 15 s of removal of the test flame. The flame shall be applied to an edge of the board having the lowest heat sink effect, with the board orientated in its normal position of use and at a point, if possible, not less than 10 mm from a corner.<br><br>The needle-flame test is not carried out on base material which is made of material classified as FV-0 according to IEC 707. The sample of material submitted to the test of IEC 707 shall be no thicker than that of the relevant printed circuit board.<br><br>Notes:<br><br>1 The test is not carried out on printed circuit boards contained in a metal enclosure that prevents flames or burning droplets from escaping.<br><br>2 If the printed circuit board is tested with components mounted and a component ignites during the test, this would not constitute a failure of the board material unless it is ignited by the component.<br><br>X2.1.3 Attended equipment: For equipment which is operated while attended, parts of insulating material supporting, in contact with or in close proximity to current-carrying connections, other than those in safety extra-low voltage circuits are subject to the glow-wire test of AS/NZS 3350.1, the test being made at a temperature of 650 °C.<br><br>However, parts of insulating material supporting, in contact with or in close proximity to screw connections which carry a current exceeding 0.5 A during normal operation and which are likely to be made or remade during installation, user maintenance or when replacing a supply cord assembled with the appliance to Type X attachment, are subject to the glow-wire test of AS/NZS 3350.1, the test being made at a temperature of 750 °C. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | Notes:<br>1 The test is not carried out on parts supporting welded connections.<br>2 "In close proximity" is considered to be a distance not exceeding 3 mm.<br>X2.1.4 Unattended equipment For equipment which is operated while unattended, parts of insulating material supporting, in contact with or in close proximity to current-carrying connections, other than those in safety extra-low voltage circuits are subject to the glow-wire test of AS/NZS 3350.1 the test being made at a temperature of 750°C.<br>However, parts of insulating material supporting, in contact with or in close proximity to screw connections which carry a current exceeding 0.5 A during normal operation and which are likely to be made or remade during installation, user maintenance or when replacing a supply cord assembled with the appliance by Type X Attachment, are subject to the glow-wire test of AS/NZS 3350.1, the test being made at a temperature of 850°C.<br>NOTES:<br>1 The test is not carried cut on parts supporting welded connections.<br>2 'In close proximity is considered to be a distance not exceeding 3 mm.<br>During the application of the glow-wire, the height and duration of flames are measured.<br>In addition, for parts which withstand the glow-wire test but which flame during the application of the glow-wire, the surrounding parts are subjected to the needle-flame test of AS/NZS 3350.1 for the measured duration of the flame after or 30 s, whichever is the least if:<br>(a) they am positioned within a distance equal to the height of the flame; and<br>(b) they are likely to be impinged upon by the flame. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | However, surrounding parts shielded by a separate barrier which meets the needle-flame test are not tested.<br><br>The needle-flame test is not carried out on parts which are made of material classified as FV-O or FV-1 according to IEC 60707. The sample of material submitted to the test of IEC 60707 shall be no thicker than the relevant part.<br><br>NOTE: 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 10mm 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.<br><br>X2.2 ADDITIONAL TEST REQUIREMENTS If parts, other than enclosures, do not withstand the test of Clauses X2.1.3 or X2.1.4, by failure to extinguish within 30 s after removal of the glow wire tip, the needle-flame test of AS/NZS 3350.1 is 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 test of Clauses X2.1.3 or X2.1.4. Parts shielded by a separate banner which meets needle-flame test are not tested.<br><br>NOTES:<br><br>1 If the enclosure does not withstand the glow-wire test the appliance is considered to have failed to meet the requirement of Appendix 2 without the need for consequential testing.<br>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 appliance, the appliance is considered to have failed to meet the requirement of Appendix 2 without the need for consequential testing.<br>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 |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | The needle-flame test need not be carried out on parts which are made of material classified as FV-0 or FV-1 according to IEC 60707. The sample of material submitted to the test of<br>IEC 60707 shall be no thicker than the relevant part. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| **Appendix** 3 | **Appendix** 3: *Add* Appendix.<br><br>D.C. COMPONENT FROM A.C. EQUIPMENT<br><br>Equipment shall be designed so that in normal use the value of any direct current in the equipment neutral will not contribute unduly to the failure of the installation earth electrode by corrosion.<br>Any device such as an isolating transformer intended to prevent direct current in the supply shall be an integral part of the equipment.<br>Compliance is checked by inspection and by operating the equipment -<br>(a) at the rated voltage under the conditions specified in Clause 5. 1;<br>(b) on a supply free from any d.c. component; and<br>(c) in the maximum d.c. producing mode, if any, but not exceeding normal load;<br>and measuring the d.c. component in the supply neutral caused by the equipment as described below.<br><br>If it is evident from the design of the equipment that there will be no d.c. component, e.g. equipment provided with a full-wave mains power supply or a mains isolating transformer, this test is not conducted.<br><br>The permissible direct current in the equipment neutral shall not exceed -<br>(i) for equipment considered as operating continuously ..... 5 mA; or<br>(ii) for other than continuously operated equipment, where *t* is the assessed daily average operating time, in hours<br><br>$\frac{5x24}{t}$ mA | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | For equipment which is not continuously operated but includes a component or a device which is continuously energised, e.g. stand-by control or remote switching device, the summation of the products of the direct current from the control device over 24 h and the direct current from the equipment for its assessed daily average operating time in hours shall not exceed 120 mA.h per day.<br>The maximum value of direct current permitted in the neutral is 1.44 A which could be applicable to equipment with an assessed average daily operating time of 5 min or less.<br>NOTES:<br>1 When determining the assessed daily average operating time the approvals authority may accept evidence supplied by the manufacturer.<br>2 The d.c. peak value due to transient starting effects is ignored.<br>The measuring system used to measure any direct current produced shall have a sufficiently high normal (series) mode rejection ratio, by the use of a low pass filter if necessary, to ensure that an overall uncertainty of less than 10% can be achieved (see Figure A in the CB Bulletin). | | N |
| | For differences concerning Amendment 4 contact Standards Australia.<br>Legend:<br>V = voltmeter to measure rated voltage<br>T = appliance under test<br>S = shunt. Value of shunt to be compatible with the meter used.<br>Taking into account the series mode rejection ratio of greater than 80 db ($10^4$) would normally be required. To obtain the necessary resolution, an electronic type voltmeter would be necessary.<br>F = filter. If necessary a low pass filter should be taken into account.<br>FIGURE A TYPICAL D.C COMPONMENT MEASURING CIRCUIT | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | **National differences CHINA (CN)**<br>**IEC 60950, 2nd ed. + Amds 1, 2, 3 and 4** | | |
| | 1) IEC 60950 sub-clause 1.4.5 and 1.6.5: The minimum supply tolerance is –10%, +6%; GB4943 sub-clause 1.4.5 and 1.65: The minimum supply tolerance is – 10%, +10% according to Chinese situation. | | N |
| | 2) IEC standard for plug is IEC 60083; The Chinese National standard for Plugs is GB1002-1996, which is not equivalent with IEC 60083 | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | **National differences Japan (JP)**<br>**IEC 60950, 2nd. ed. + Amds 1 , 2, 3 and 4** | | |
| 2.9.2.1 | Delete entire column headed by "National mains supply voltage ≤ 150 V (Transient rating 1500V)" in Table 3.<br>Delete " > 150V" from column headed by "National mains supply voltage >1500 V ≤ 300 V (Transient rating voltage 2500V)" in Table 3. | | N |
| 2.9.2.2 | Delete entire column headed by "National mains supply voltage ≤ 150 V (Maximum transient in secondary circuit 800 V see condition 6)" in table 5. | | N |
| 2.9.4.4 | Replacement:<br>The following shall replace the entire existing paragraphs:<br>Title:<br>Wound components<br>BASIC, SUPPLEMENTARY, DOUBLE or REINFORCED INSULATION is permitted in a wound component using one of the following a), B), or c) constructions or the wound component must interleaved insulation which complies with 2.9.4.1 or 2.9.4.2:<br>a) the winding wire is insulated with insulation complying with 2.9.4.1 other than solution based type enamel coatings:<br>b) the winding wire is insulated with extruded multi-layers or wrapped layers of tape (each layer can be tested for electric strength) which complies with 2.9.4.1 and complies with annex U.<br>c) the winding wire is insulated with extruded multi-layers or wrapped layers of tape (test can be performed on finished winding wire) and complies with annex U.<br>Note1 – See also 6.4.1.<br>As to c), the number of constructional layers applied to the conductor to determine grade of insulation of the winding wire shall not be less than as follows: | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 2.9.4.4 cont. | - if BASIC INSULATION is required, a minimum of two layers or one extruded layer<br>- if SUPPLEMENTARY INSULATION is required, a minimum of two layers or two extruded layers<br>- if REINFORCED INSULATION is required, a minimum of three layers or three extruded layers<br>As to b) and c), in case the CREEPAGE DISTANCES between wrapped layers of layers of tape are less than Table 6 under pollution degree 1, the distances between layers must be reliably cemented together with insulation compound complying with 2.9.7 and with the test voltage in annex U.2 (Type tests) increased to 1.6 times.<br>Notes 2 – In case one layer of material is overlapped 50% or more, it is considered as two layers.<br>Where two insulated wires or one bare wire and one insulated wire are contacted inside the component and cross each other at an angle between 45° and 90°,physical separation shall be provided, for example in the form of insulating sleeving or sheet material, or by applying 2 times of the specified insulation layer(s), to relieve mechanical stress at the crossover point.<br>The finished component shall pass ROUTINE TESTING for electric strength using the values of test voltage in 5.3.<br>Compliance is checked by visual inspection and measurement, and as specified in annex U. However, the tests are not repeated if the material data sheets confirm compliance with annex U | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 5.1 | Addition:<br>Add the following to 5) as specified in "Conditions applicable to table 16, part1 and 2"<br>With regards to 1), insulating materials complying with Japanese requirement (Refer to Japanese difference for current IEC 60335-1 (3rd Edition) in CB Bulletin 94B), can be taken of data for that material to determine the appropriate maximum temperature rise. | | N |
| Annex U | Replacement:<br>Annex U<br>(Normative)<br>Insulating winding wires for use without interleaved insulation<br>(see 2.9.4.4)<br>This annex specifies winding wire whose insulation may be used to provid BASIC SUPPLEMENTARY or REINFORCED INSULATION in wound components without interleaved insulation.<br>This annex applies to round winding wire whose diameter is between 0.2 mm and 1.0 mm. With regard to other size, refer to IEC 60851. | | N |
| U.1 | Wire construction<br>If the wire is insulated with two or more spirally wrapped layers of tape, the overlap of layers shall be adequate to ensure continued overlap during manufacturer of the wound component. In order to maintain the overlap of layers, wire insulation layer of wrapped layers of tape must be adequately secured. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| U.2 | Type tests<br>Unless it specifies, the wire shall pass the following six TYPE TESTS U.2.1 to U.2.4, carried out at temperature between 15°C and 35°C and a relative humidity between 45 % and 75 %. Refer to the IEC 60851 first edition. | | N |
| U.2.1 | Electric strength<br>Test 13 of IEC 60851-1 (1988), 4.3.1 (test for twisted wire pairs), with a test voltage 2 times of appropriate voltage in Table 18 of this standard or 6 KV r.m.s. whichever is the greater. | | N |
| U.2.2 | Adherence and flexibility<br>Test 8 of IEC 60851-3, with a test voltage not les than the appropriate voltage in Table 18 of this standard or 3 KV r.m.s. whichever is the greater.<br><br>Table U.2.2.2-Mandrel<br>Normal diameter of conductor (mm) / Mandrel diameter (mm ± 0.2 mm)<br>0.20-0.34 — 4.0<br>0.35-0.49 — 6.0<br>0.50-0.74 — 8.0<br>0.75-1.00 — 10.0<br>The tension of winding wire while wire is wrapped around the mandrel, should be calculated so that it is equivalent to 118 Mpa ±10% (118 N/square mm ±10%) from winding wire radial. | | N |

| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| U.2.3 | Heat Shock<br>Test 9 of IEC 60851-6, 3.1 and IEC 851-3, 5.1.1.1, with a test voltage not less than the appropriate voltage in Table 18 this standard or 3 KV r.m.s. whichever is the greater.<br>The temperature of oven is specified in the following Table U.2.3.<br>Table U.2.2 shows and explains required mandrel diameter and tension.<br>Test must perform at room ambient after taking out from oven.<br>Table U.2.3-Oven Temperature<br>Class A (105) E (120) B (130) F (155) H (180)<br>Oven Temperature (°C ± 2 °C) 200 215 225 240 260 | | N |
| U.2.4 | Retention of electric strength after bending<br>Table 13 of IEC 60851-5 (1998), 4.6.1 c, with a test voltage not less than the appropriate voltage in Table 18 of this standard or 3 KV r.m.s. whichever is the greater.<br>Table U.2.2 shows and explains required mandrel diameter and tension. | | N |
| U.3 | Routine test<br>Winding wire is subjected to electric strength test during the production in according with U.3.1 and U.3.2 by wire manufacturer. | | N |
| U.3.1 | Full length test<br>Winding wire is subjected to electric strength test during the production for full wire length, with a test voltage not less than the appropriate voltage in Table 18 of this standard or 3 kV r.m.s. or 4.2 kV peak minimum. | | N |
| U.3.2 | Test must be carried out according to IEC 6085-5(1988) for twisted sire pairs. Electric strength test, with a test voltage 2 times of appropriate voltage in Table 18 of this standard or 6 KV r.m.s or 8.4 KV peak minimum. | | N |

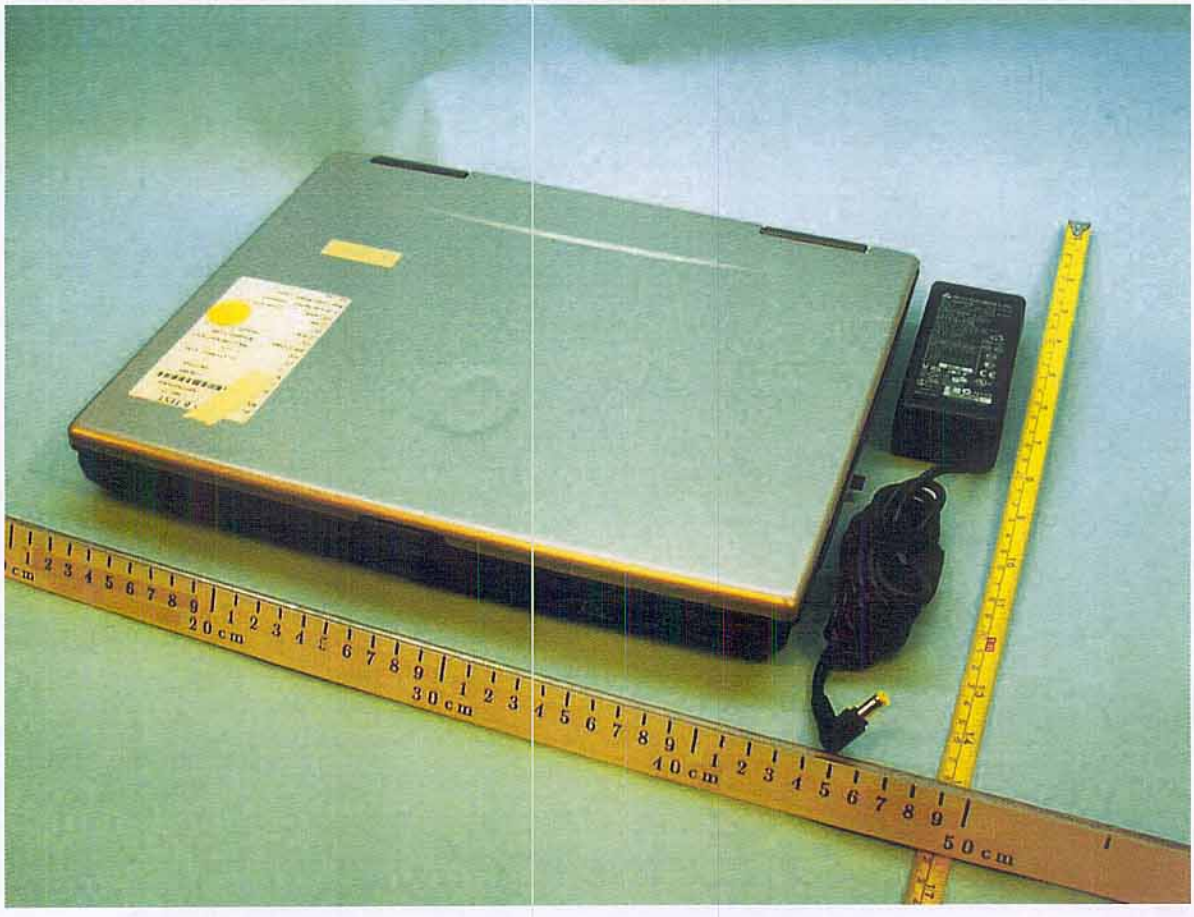
| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | **National differences Korea (KR)**<br>**IEC 60950, 2nd ed. + Amds 1, 2, 3 and 4** | | |
| | LIMITATIONS<br>Voltage ratings<br>As national supply voltage is subject to be increased to 220 V, an appliance rated 220 V only is to be allowed to obtain type approval in Korea. Either an appliance rated 110 V or 220/110 V is not allowed. When an appliance is supplied in Korea, it shall be set to and marked with 220 V.<br>But free voltage appliance by SMPS (Switching Mode Power Supply) is allowed and it shall be marked with "100 - 220V".<br>Frequency<br>Only appliances having supply frequency of 60 Hz or a frequency range including 60 Hz are accepted. When an appliance is supplied in Korea, it shall be set to and marked with 60 Hz.<br>Instruction<br>Instruction manuals and appliance markings related to safety, including nameplate shall be in Korean or graphical symbols in IEC Publication 417.<br>More details are available from IECEE-KR (c/o KAITECH) on request. | | P |
| | **DEVIATIONS** | | |
| 1.5.101 | Addition<br>Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305 and 8305). | | N |
| 7 | Addition<br>EMC<br>The apparatus shall comply with the relevant CISPR stardards. | | P |

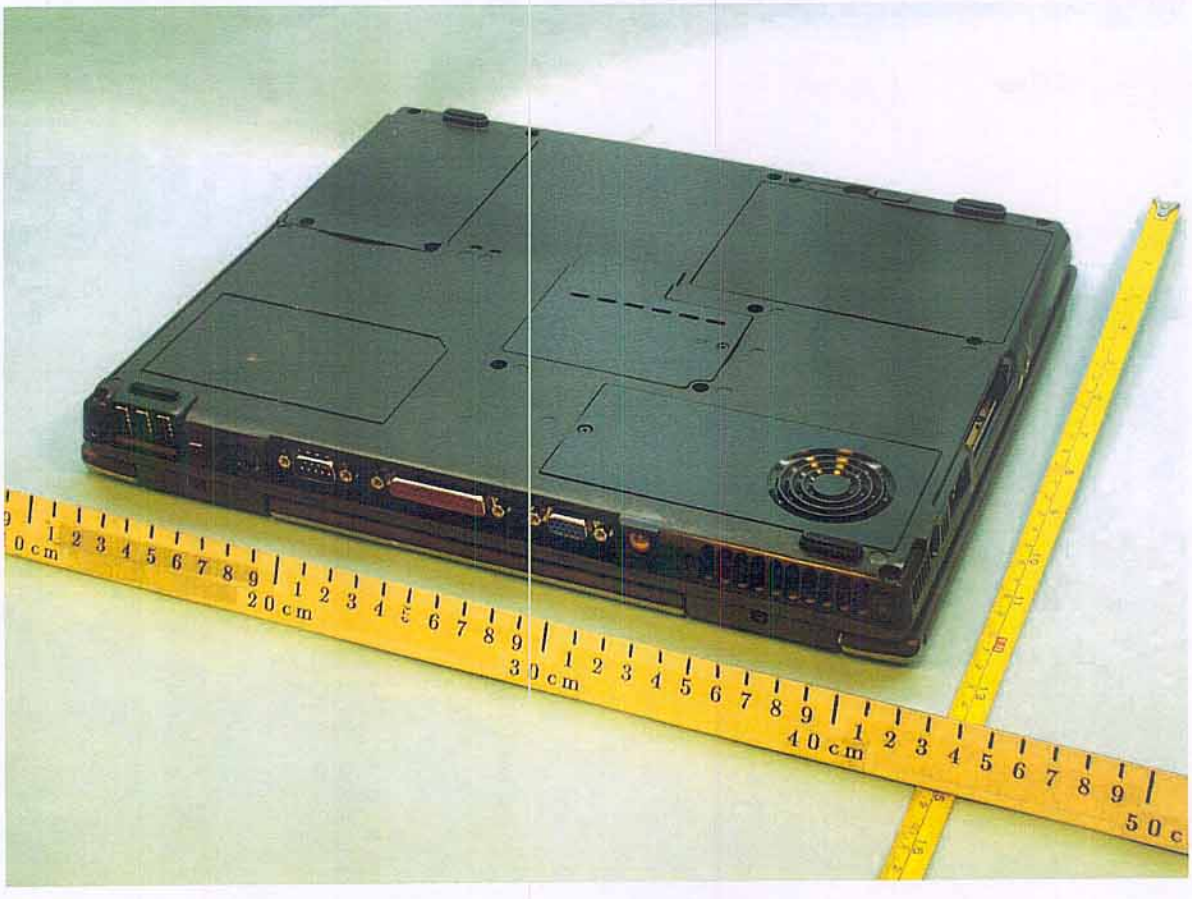
| IEC 60950 | | | |
|---|---|---|---|
| Clause | Requirement – Test | Result - Remark | Verdict |

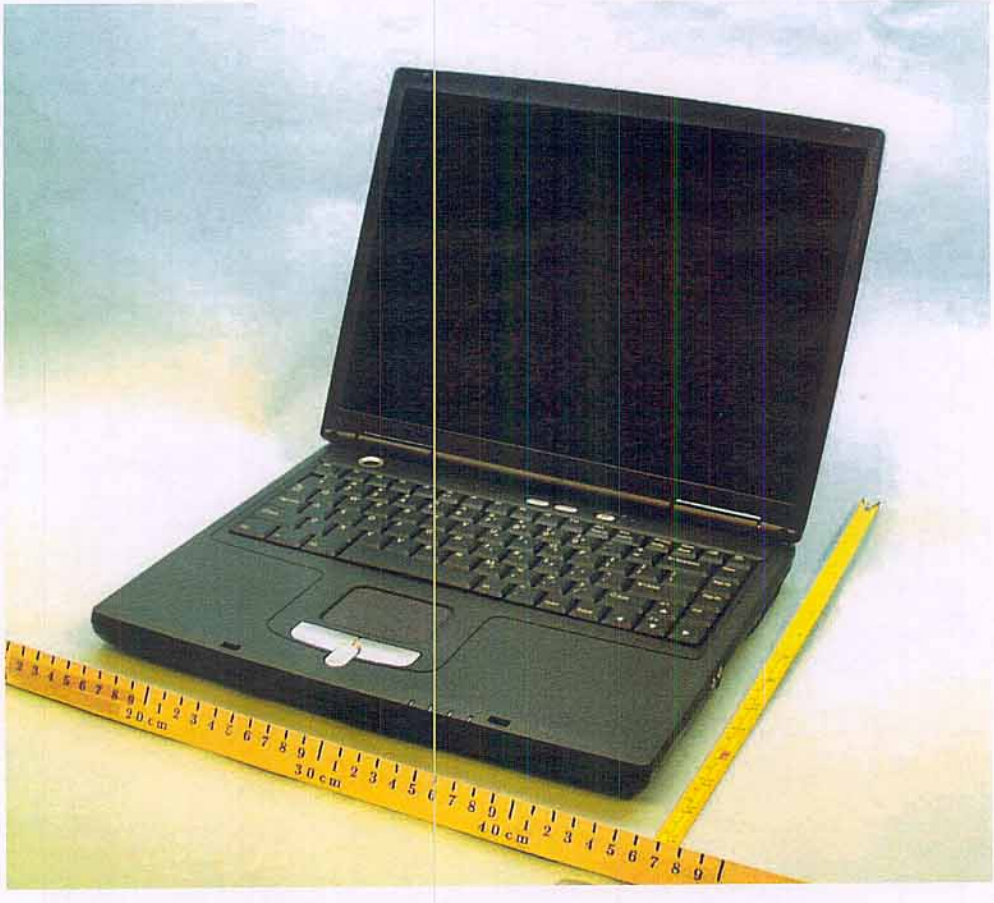
| | | | |
|---|---|---|---|
| | **National differences Singapore (SG)**<br>**IEC 60950, 2nd. ed. + Amds 1,2, 3 and 4** | | |
| | IT Power Systems are not allowed in the Republic of Singapore and all clauses related to IT Power Systems are not applicable. | Class III equipment | N |
| 2.2.3 | (a) After the first paragraph, insert the following: | | |
| | Conditions described in IEC Publications 68-2-3: Test Ca: Damp Heat, Steady State (temperature: 40±2°C, relative humidity: 90% to 95%) shall apply to insulation to be used under tropical conditions. The duration of the humidity conditioning is 5 days (120h) under tropical conditions. | | N |
| | (b) At the end of the last paragraph, insert the following note:<br><br>Note. The additional requirement on humidity conditioning is drawn from Clause 10.2 of IEC 65:1985. | | N |

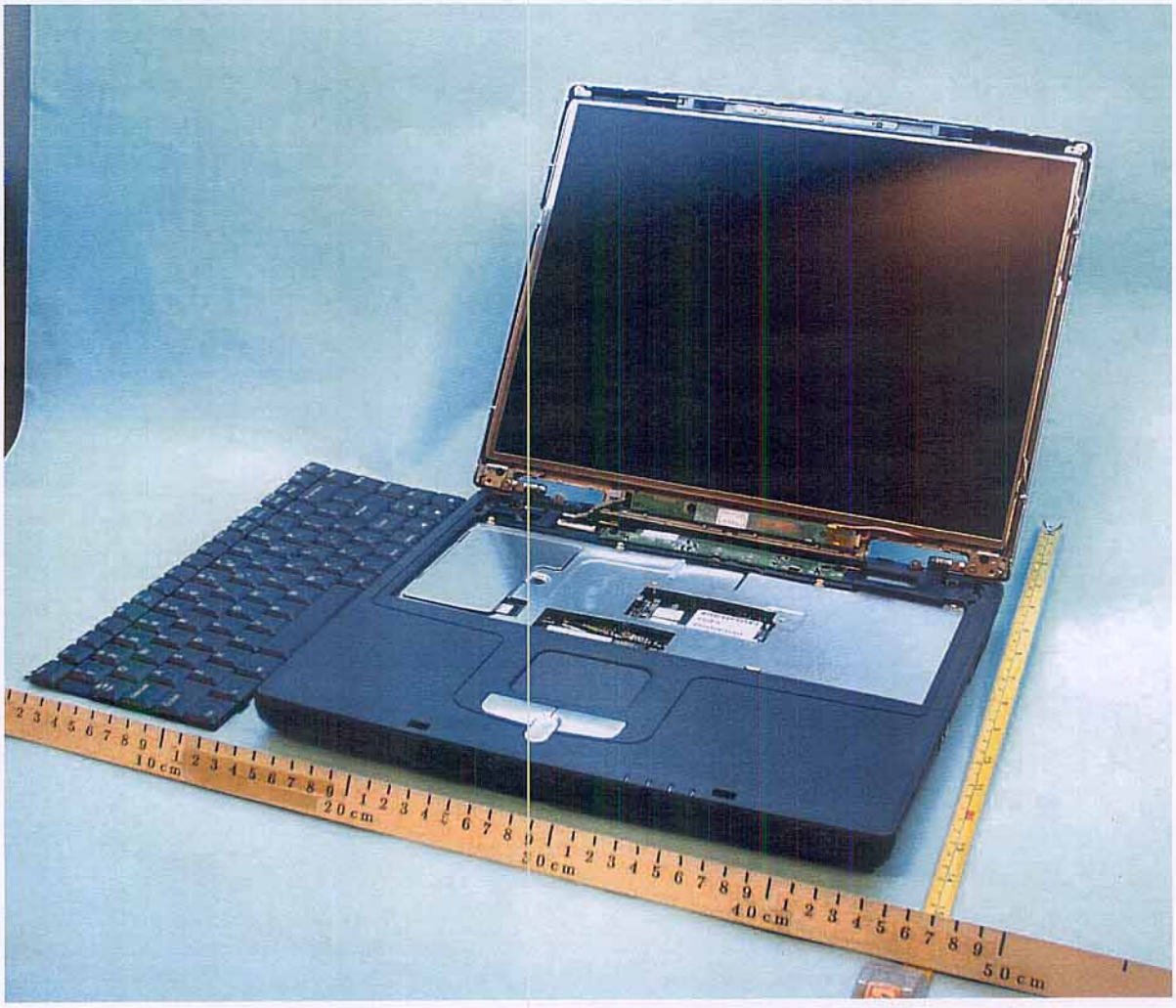
Remarks

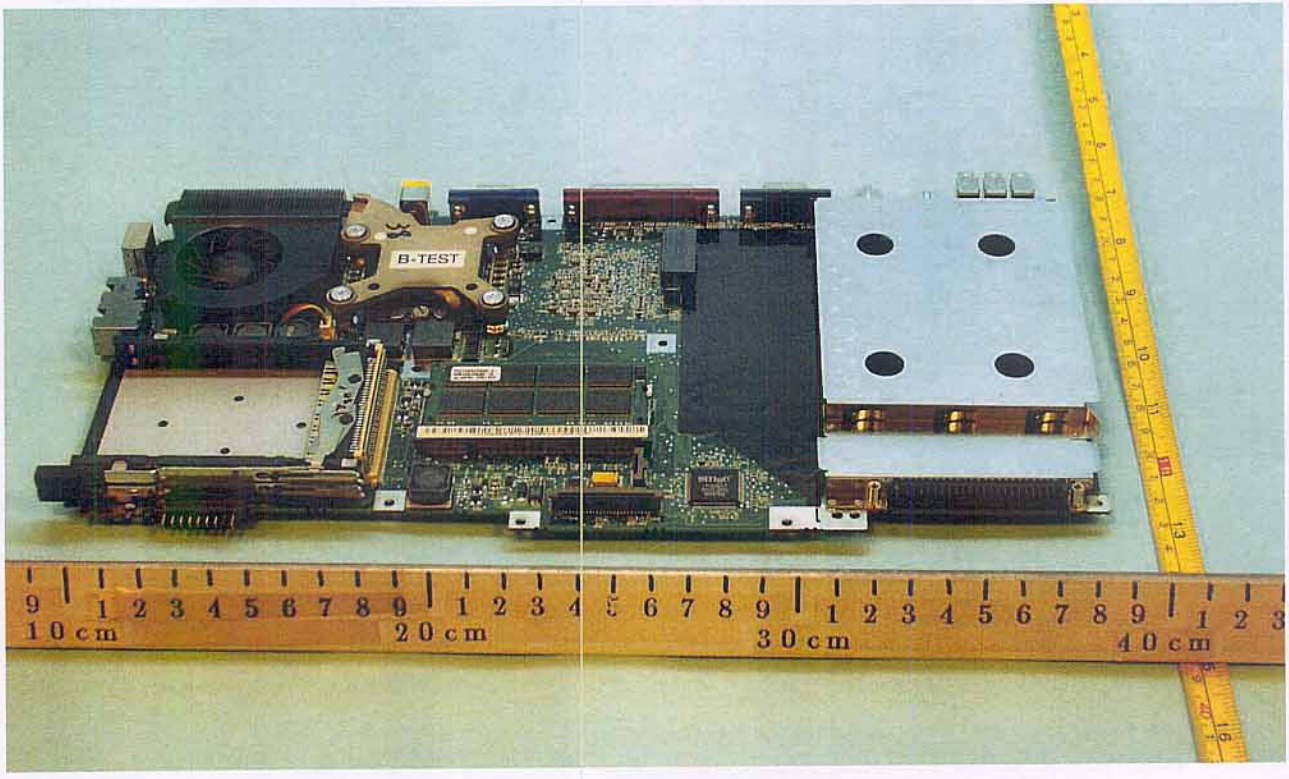
None.

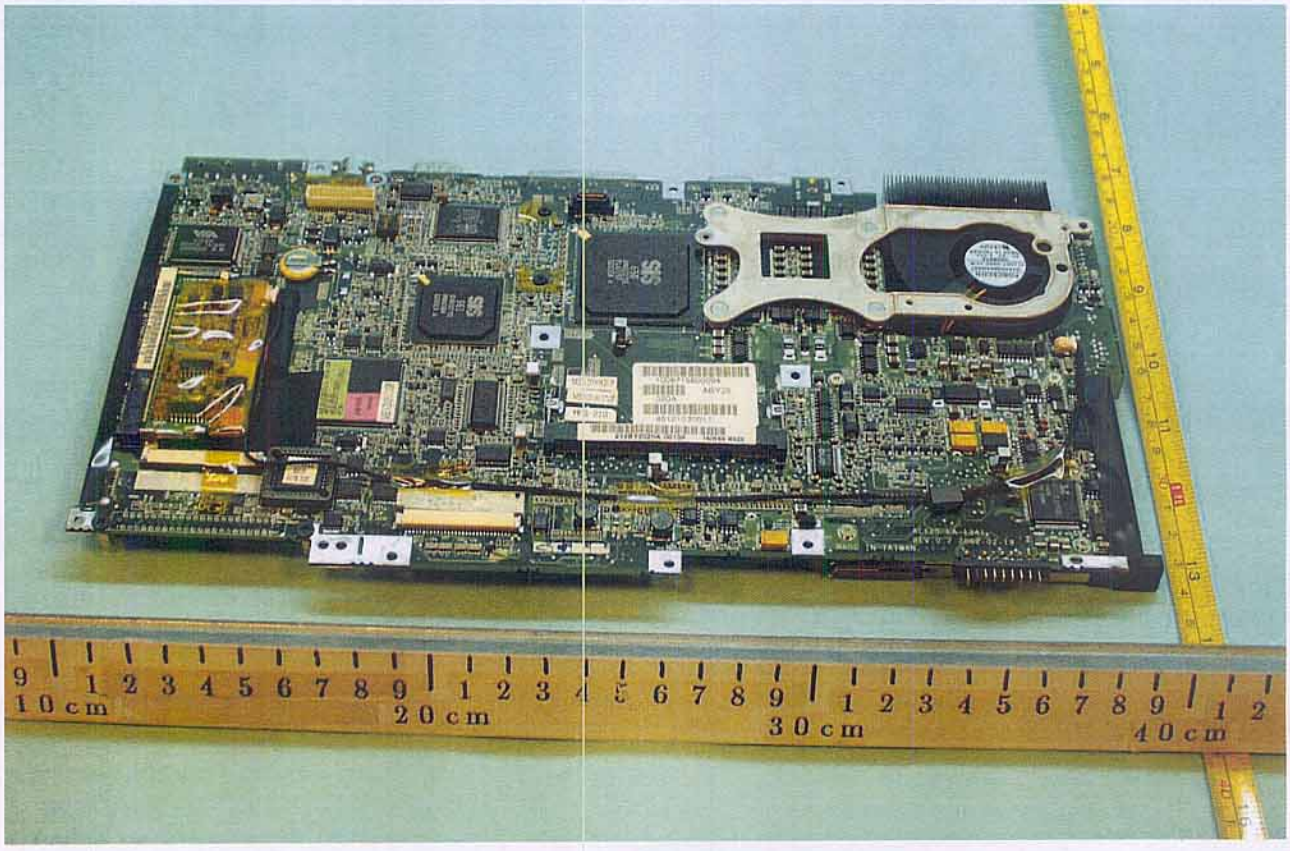


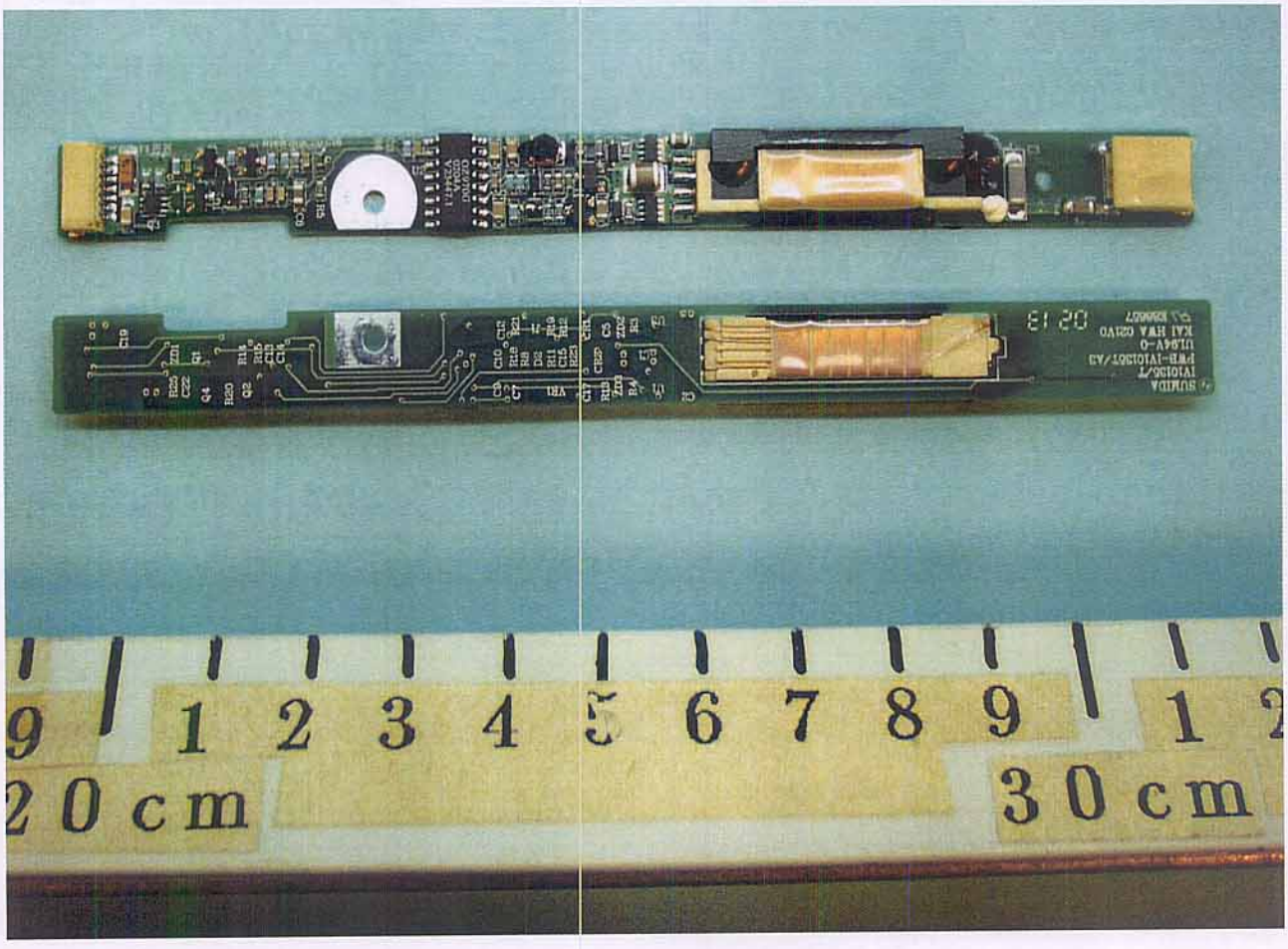


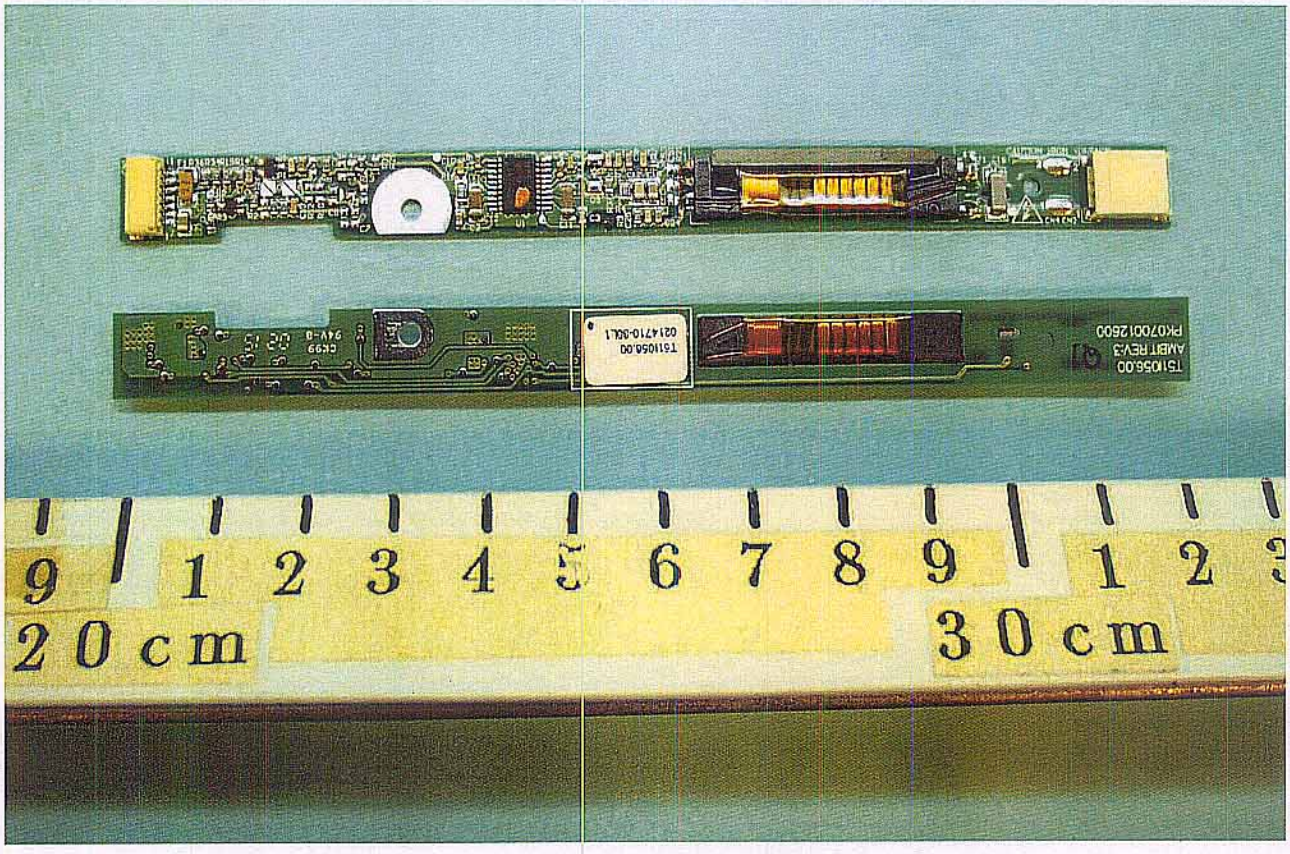





B-TEST


10 cm
20 cm
30 cm
40 cm


20 cm
30 cm


T51056.00
AMBIT REV:3
PK07001260D
T51056.00
021471-00L1
20cm
30cm