

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

This List of Decisions is the outcome of the CENELEC Operational Staff Meeting for Electronic Equipment (OSM/EE). The decisions are designed to assist with common application of the Standard and not to change the meaning of the standard, which remains the definitive document

This list contains also items related to EN 60950-1 where specified under "comments". If other decisions can also be used for EN 60950-1 has to be verified.

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
	<p><b>Testing of an LCD TV with external power supply unit.</b></p> <p><i>The set needs to be certified according to IEC 60065 ed 6. The external power supply is already certified according to IEC 60950 another certification body</i></p> <p><i>The LCD TV may be used as a monitor as well.</i></p> <p><i>The intention of the manufacturer is to put the LCD screen/monitor and the power supply together on the market.</i></p> <p>Case 1: LCD multimedia screen with a built in PSU (pre-certified), The whole apparatus has to be tested to one standard either EN 60950 or EN 60065 together with IEC Guide 112 as the product is a multimedia equipment (having an antenna and a telecommunication connection). Is a part of the apparatus already certified ( for example, PSU) this part has to be reassessed to the standard used for the whole apparatus either EN 60065 or EN 60950. If there is sufficient detail available of the test results for the existing certification, it might not be necessary to carry out full testing to the second standard..</p> <p>Case 2: Multimedia screen with separate PSU (pre-certified): a) If the manufacturer intends to sell the combination (Screen plus PSU) together, the PSU has to be listed in the Test Report and both items of apparatus have to be assessed according the same Standard. b) If the manufacturer does not intend to sell the screen together with a specific PSU, it has to be mentioned in the test report what kind of PSU was used during the tests and the limits for voltage and current have to be specified.</p>		02/5	EE(Chm) 3/02	7.1
	<p>CCA certificate can be issued for separate power supply units for office machines and information technology equipment which are tested according to Publication EN 60950.</p>	<p>Sweden: The kind of information supplied with the unit shall include a statement that the unit is intended for office machines/equipment only. Germany: The above information has to be in the Users Manual.</p>	95/6	EA(FI) 3/91	4.14

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
	Products similar to previously certified products shall be covered by an Addendum to the base report. The CCA format shall be used where possible. The CCA cover page should always be used.	Addendum reports should be derived from a base report, not an already derived report.		EA(GB)3/93	5.1
	The primary testing laboratory may check National deviations in the case of the CCA. In the case of the CB scheme, the CB Bulletin provides the individual requirements of each Certification Body.			EA(GB)3/93	6.27
	Plug with integrated Power Supply The equipment has to have a complete marking as for a power supply. If the marking is on a part of the enclosure which is gripped while pulling/inserting the device from/into a wall socket outlet, additional requirements for the durability of the marking are necessary. For the time being the meeting decided to use the marking requirements of EN 50144-1 "Safety of hand-held electric motor operated appliances". Safety instructions shall state clearly that a replacement with a normal plug will be hazardous.		97/2	EE(Chm)5/97	7.5
	Where equipment tested to the current version of the standard incorporates a subassembly (e.g. a power supply unit ) certified to an earlier version of the standard (which is still valid for production ), the equipment test report shall clearly identify the version against which the subassembly was initially assessed. In determining any additional tests, consideration shall be given to the application, such as location and orientation. Also applicable changes in the standard shall be taken into consideration		97/9	EE(Chm)5/97	7.1
1. 2. 4.3	If the safety strategy of an equipment containing SELV and TNV circuits relies on Protective Earthing this equipment is considered to be Class I and not Class III.		97/4	EE(Chm)5/97	9.1
1. 5	RFI filters having components meeting IEC 60384-14 are accepted.			EA(GB)3/93	6.7
1. 5. 1	A resistors which is connected across the mains or between the mains and the safety earth do not need to comply with EN 60 065. If the resistor is accepted according to EN 60 065, it need not be short-circuited during fault condition tests in § 5.4.		96/14	EA(FI)1/91 EE(Chm)5/96	4.4 10.1
	This decision (96/14) does not apply to resistors bridging double or reinforced insulation. See 1.5.7.2		00/7		

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
1. 5. 1	<p>Capacitors which are connected after a rectifier in a primary circuit of a switch mode power supply unit need not be separately approved.</p> <p>"In a primary circuit before a rectifier there is installation category III for Permanently Connected equipment, therefore class X1 capacitors must be used. In a primary circuit before a rectifier there is installation category II for Pluggable equipment Type A and Pluggable equipment Type B, therefore minimum class X2 capacitors must be used. The use of a mains fuse, a mains filter or a varistor cannot be a method to reduce installation category."</p> <p>Secondary circuits are normally in installation category I when the primary is in installation category II. However, a floating secondary shall be subject to the requirements for primary circuit in table III unless separated from primary circuits by an earthed metal screen.</p>	<p>Changed acc. discussion by mail</p> <p>See also 2.10.3.4</p>		EA(FI) 1/91	4.1.2
1. 5. 1	<p><u>Varistors across the mains</u> Accepted by all countries (when the varistor is separately certified)</p> <p><u>Varistors across the mains with a protective device to guard against short-circuit.</u> Accepted by all countries (whether the varistor is separately certified or not)</p> <p><u>Varistors between the mains and the protective earth:</u></p> <p>1. For Pluggable equipment, type A: Accepted by all countries (when the varistor is separately certified) except Austria, Belgium, Denmark, Finland, <b>Germany</b>, Norway, Sweden, United Kingdom</p> <p>2. For pluggable equipment Type B and permanently connected equipment, connected to protective earth: Accepted by all countries(when the varistor is separately certified)</p> <p>A combination of a varistor(when the varistor is separately certified) in series with a spark gap /Gas-Tube (<b>the varistor need not be separately certified</b>) between the mains and the protective earth and with a protective device to guard against short-circuit:</p> <p>1. Pluggable equipment Type A: Accepted by all countries</p> <p>2. Pluggable equipment Type B and permanently connected equipment: accepted by all countries</p> <p>NB: Where the term "separately certified" is applied to a varistor in the above, this means that the varistor is separately certified according to Publications IEC 61051-1</p>			EA(FI) 1/91	4.3
				EE(Chm) 1/94	6.10 6.18
				EE(Chm) 3/03	6.2.1
			98/2	EE(Chm)5/ 98	9.5
				EE(Chm) 3/03	6.2.1
			95/10	EE(Chm)5/ 95	9.5

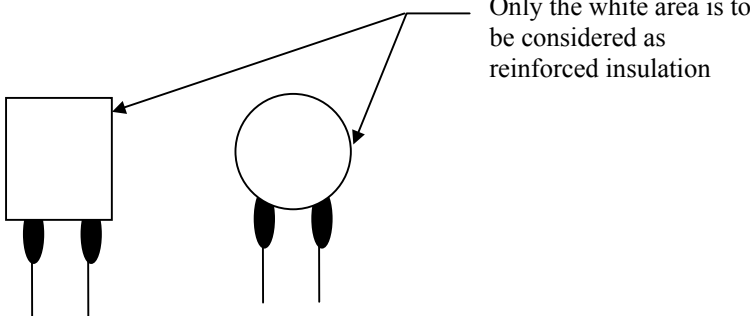
Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.												
	and IEC 61051-2 or according to CECC 42200. Varistors (VDR's) may burn or burst during life-time due to an increasing temperature stress caused by increase of leakage current with a number of switching cycles in the VDR. This is suitable protected where a gas-filled surgearrestor (gas tube) is in line with the VDR. In circuits where no gas tube is required a thermal interrupting device on the VDR connected in series with the VDR is to be provided. Compliance criteria ref. sub clause 5.3.8.1"																
1. 5. 1	The following table should be used as guidance when assessing the use of CSA and/or UL type fuses in equipment:	Table derived from CSA248.14/UL248 .14 Clause 5.5 Table A		EA(GB) 3/93	6.6												
	<table border="1"> <thead> <tr> <th>Fuse rating (A)</th> <th>Max S/C Current (A)</th> </tr> </thead> <tbody> <tr> <td>1 or less</td> <td>35</td> </tr> <tr> <td>1 to 3.5</td> <td>100</td> </tr> <tr> <td>3.5 to 10</td> <td>200</td> </tr> <tr> <td>10 to 15</td> <td>750</td> </tr> <tr> <td>15 to 30</td> <td>1500</td> </tr> </tbody> </table>	Fuse rating (A)	Max S/C Current (A)	1 or less	35	1 to 3.5	100	3.5 to 10	200	10 to 15	750	15 to 30	1500				
Fuse rating (A)	Max S/C Current (A)																
1 or less	35																
1 to 3.5	100																
3.5 to 10	200																
10 to 15	750																
15 to 30	1500																
1. 5. 1.	<p>We may accept resistors on the primary side to be used as "protective device", provided that they comply with all the following conditions</p> <p>-it shall operate satisfactory when the appliance is tested according to EN 60950. Compliance is checked by repeating at least 10 times, each case with a new resistor during worst case fault condition test, when the appliance is directly connected to the mains. The resistor may not interrupt with explosion or spark/flare which are not in compliance with the standard.</p> <p>-Not accepted in operator access area</p> <p>-The resistor is to be listed as critical component in the test report.</p> <p>-Identification using part number or the like is to be located adjacent to the resistor, or use of cross-reference in the service documentation as described in 1.7.6, last paragraph.</p> <p>-the component shall be available as spare part in the country where the appliance is sold.</p> <p>And in addition a data sheet is provided showing all the relevant data for the resistor</p>		99/1	EE(Chm)7/99	9.1												


Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
1. 5. 2	<p><i>Subject: acceptance of UL/CSA certified units in end-use racks/equipment</i></p> <p><i>When evaluating end-use equipment like large telecom racks composed by several units ("drawers") for building-in like computer machines, modems, routers etc., for national mark certification or ENEC or IECEE/CB, the separately approved units (computers, modems etc.) bearing a CCA mark are accepted with limited investigation (e.g. consisting in the check of compatibility of the certification Ambient temperature with the end-use equipment specified ambient; input voltage rating with the one of the end-use equipment etc.); they will then subjected to the end-use equipment tests (e.g. electric strength, total leakage current, capacitor discharge etc). Which is the delegate position in regard to the acceptance of UL Listed or CSA Certified drawers (no CCA mark, no CB report) in such racks when the certification Standard was UL 1950 3rd edition (based on IEC 950 2nd Ed) or UL 60950 (based on IEC 60950 3rd Ed) as long as all the differences between the UL requirements and the IEC based Standard and between the IEC based Standard and the current IEC Standard used for the end-use equipment have been checked and satisfied?</i></p> <p><b>All critical components have to be certified to the relevant EN or IEC component standard. Acceptance of components has to follow CCA /228-1 "Recognition of components" In the special case mentioned, we need a test-report and a certificate showing compliance to EN 60950</b></p>	<i>EN 60950:1999 and EN 60950-1:2000</i>	02/11	EE(Chm) 3/02	10.3
1. 5. 6.	<p>There is no need for a CCA approval for every single component. There should be sufficient documentation of the certification of the component and the IEC or CENELEC standards used. Nevertheless the appropriate use of the component has to be checked.</p> <p>For Capacitors the edition of the standard should be given</p>		95/1	EE/Chm) 5/95	5.1.2

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
1.. 5. 7.1	<p>Capacitors certified to IEC 60384-14 1.ed will be accepted for 5 years after DOW of EN 132400 .</p> <p>Capacitors certified to IEC 60384-14 2.ed and/or EN132400 are acceptable</p> <p>.</p> <p>Y1 and Y2 capacitors are accepted across basic insulation</p> <p>Y1 and Y2 capacitors are accepted across supplementary insulation</p> <p>.</p> <p>The enclosures of Y1 capacitors are considered to comply with the requirements for reinforced insulation with the exception of the area near to the leads where the insulation becomes thinner</p>		95/9	EE(Chm)5/95	9.3
		Only the white area is to be considered as reinforced insulation	97/1	EE(Chm)5/97	3.
1. 5. 7.2	<p><i>Is it possible to bridge a TNV barrier with one resistor/ two resistors?</i></p> <p><i>Subclause 1.5.7.2 establishes the principle that two resistors can be connected in series across a double / reinforced insulation provided they are the same value, they each comply with the creepage and clearance requirements and the accessible circuits comply with the Limited current circuits requirements.</i></p> <p><i>Subclause 6.1.2.1 indicates that components across the barrier can be removed during the electric strength test provided the circuit complies with the 10mA limit during the test described in figure 6A.</i></p> <p>One resistor across the TNV barrier is allowed provided that the tests of Scl. 6.1.2.1 and 6.2 are passed and the requirements for creepage distances and clearances and the requirements of Scl. 5.1.8 are fulfilled.</p>		02/12	EE(Chm)3/02	10.4
1. 7. 1	If the rated voltage marked on the equipment exceeds 250V then the components should also be suitable for this voltage.		96/2	EE(Chm)5/96	6.6
1. 7. 1	Laptop computers, which are supplied by SELV and in which hazardous voltages are generated, cannot be Class III and therefore must be Class I or Class II. If they are designated Class II, the double square symbol shall be required.	It was agreed that a lap-top or notebook computer supplied from SELV circuits and in which circuits at voltages which exceed 42.4 V peak or 60V DC complying as limited current circuits is considered to comply with the definition of Class III equipment		EA(FI)3/91 EE(Chm)1/94	4.11 6.12
1. 7. 1	Only the set one voltage of an internal voltage regulating device should be indicated on the outside			EE(Chm)1/94	10.3

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
1. 7. 1	Safety related components shall be marked with a trade mark (logo) and an identification number or code. For a component without independent certification that is dedicated for use in one or more specific models the identification may be in a form of a code		00/8	EE(Chm)5/00	10.5
1. 7. 2	Safety relevant documentation has to be as a hardcopy. The Users Manual may also be on a diskette		95/11	EE(Chm)5/95	9.7
1. 7. 2	A Class III equipment with an enclosure made of HB-material and using a non-special connector for the AC/DC input has to have a marking stating the following: <b>"For use only with power supply MANUFACTURER, MODEL"</b> This statement shall also be in the user-instructions. <u>Alternative marking:</u> <b>"Use only power supplies listed in the user-instructions"</b> <b>or</b> <b>"For applicable power supplies see user-instructions"</b> This statement shall also be in the user-instructions.  The user instructions must then have a listing of manufacturer and model of the relevant power supplies. Method 2 of 4.7.1 of EN 60950:2000 is recommended.		99/2	EE(Chm)7/99	9.3
1. 7. 6	The wording "special fusing characteristics" includes braking capacity. To be able to accept one fuse marking in Europe, in the USA and in Canada, markings "mA" and "A" can still be accepted. Therefore the following kind of markings are accepted:  T315mA L                  F4A H 250 V                          250 V			EA(FI) 1/91	4.5
1. 7. 8.3	It is not acceptable to mark "I" and "0" on a functional switch of a lap-top or notebook computer where for example the charging circuit is energised at all times.  If marked, it should be "I" and stand-by  No marking at all is acceptable. The marking "POWER" is not acceptable.		99/3	EA(GB)3/93 EE(Chm)	6.3 9.4
1. 7. 12	Testing houses shall put a note in the test report mentioning in which language the markings regarding safety has been checked.  Safety markings in all official languages of CENELEC countries need not be checked when the CCA certificate is issued.			EA(FI) 3/91	4.15
1. 7. 15	Lithium batteries included in integrated circuits are not considered as replaceable. There must be an advise in the service manual concerning the disposal of these parts.		95/13	EE(Chm)5/95	9.8.

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
2. 1. 1	A modem-card if it is separately sold and intended for use in operator access areas, has to be tested for the relevant protection of TNV-circuits		99/4	EE(Chm)7/99	9.5
2. 1. 1.4	Double or reinforced insulation shall also be required between wires in SELV circuits and metal parts with hazardous voltages inside the equipment.			EA(FI) 3/91	4.1.5
				EE(Chm)1/94	6.13
2. 1. 2	Products which are considered completely hazardous when covers are removed do not need additional protection e.g. monitors. Opening of an enclosure of a monitor is considered to be intentional because inside the equipment there are not parts which need servicing, but repairing.			EA(FI) 3/91	4.5
2. 2. 4	SELV circuits can be connected to non-SELV circuit if the equipment still complies with the requirement of Scl. 2.2 in case of single fault condition.			EA(FI) 1/91	4.10
2. 2. 4.	<b>DC centralized battery systems Voltage in Telecommunication Central offices:</b>  Following the IEC TR 62102, Annex B, a 75 V dc stationary battery system is considered TNV 2 and double or reinforced insulation from the mains is required. The installation instructions should provide guidance on how to ensure that the system will not become hazardous after a single fault according to 1.7.2."	Confirmed by WG7 of TC108	03/5	EE(Chm) 3/03	5.1.9
2. 2. 5	Until the standard is changed condition 2 to table 9 should be read as follows: Overcurrent protective devices within the equipment shall be bypassed in turn.	TO BE RECONSIDERED	95/19	EE(Chm)5/95	9.17
2. 4. 2	When checking the frequency and for the calculation of the maximum peak current the frequency measured when the circuit is loaded with a 2000 Ohms resistor is considered to be the value to be used.	IEC-TC74/WG8 is of the same opinion.		EE(Chm)1/94	10.7
2. 4. 2	As already covered in the above decision 2.4.2 from 1994 the maximum peak current and the frequency measured when the circuit is loaded with the 2 kOhm resistor has to be considered. If there is still a second frequency (envelope waveform) the most unfavourable value has to be taken into account . In the case mentioned 330 Hz is the decisive frequency.	The chairman of TC74WG5 advised to use the measuring network of Annex D Figure D.1 which takes all frequency-problems into account. He is preparing a paper on the problems of different frequencies in touch currents. I will circulate that paper as soon as it is available.	00/9	EE(Chm)5/00	10.9
2. 5	Higher voltages are not allowed (Tables 2B and 2C to be followed). Behind a limited power source higher voltages can be created within secondary circuits out of the low voltage output of the limited power source. HB material is possible, even if there is for example a 1000V back-light source. However, an assessment has to be made to ensure that there is no fire or ignition hazard.		98/5	EE(Chm)5/98	9.14



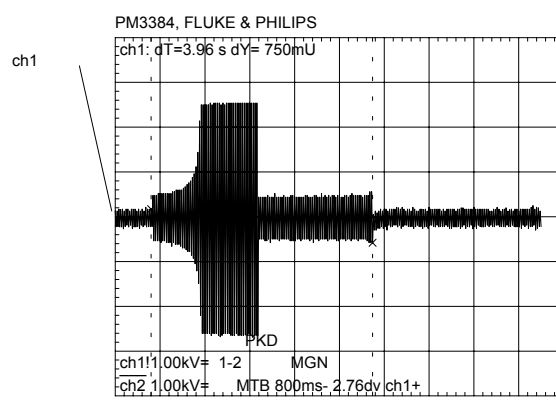
Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
2. 5	<p><b><u>Limited Power Source (Battery supplied equipment)</u></b>  <i>Battery supplied equipment with an enclosure of HB-material shall only be used with batteries that are in compliance with LPS. Alternative batteries on the market may not comply with LPS limits, and shall therefore not be used with such equipment.</i>  <i>With reference to the decision 99/2 to 1.7.2 for use of alternative Power Supplies (ref. below), it is proposed to consider a similar decision for alternative batteries for battery supplied equipment with an enclosure of HB-material.</i></p> <p>Battery supplied equipment with an enclosure of HB-material has to have a marking stating the following, as the battery is to comply with the requirements for LPS:  <b>"For use only with battery MANUFACTURER, MODEL"</b>  This statement shall also be in the user-instructions.</p> <p><u>Alternative marking:</u>  <b>"Use only batteries listed in the user-instructions"</b>  <b>or</b>  <b>"For batteries see user-instructions"</b>  This statement shall also be in the user-instructions.</p> <p>The user instructions must then have a listing of manufacturer and model of the relevant batteries.</p>		02/13	EE(Chm) 3/02	10.7
2. 6	<p>It is acceptable to use a track on a PCB as the safety earth path, provided it meets the requirements of the relevant tests.</p>			EA(GB)3/9 3	6.10
2. 6. 3.3	<p><i>Subject: protective bonding conductor test current and duration for DC powered equipment rated in excess of 16 A</i>  <i>Sub clause: 2.6.3.3/2.6.3.3/2.6.3.4</i>  <b>Question:</b>  <i>The referenced Standards indicate that the protective bonding conductor test current and its duration for DC powered equipment are specified by the manufacturer when the current rating exceeds 16 A.</i>  <i>Which are the minimum current and time values we should accept for such test ?</i></p> <p>The current rating of the circuit means the current rating of the protective device (See meeting of WG8 of IEC TC74 in Helsinki).</p> <p>When the manufacturer specifies a test current and duration, that current and duration shall first be used to check that the protective device will operate in this condition. If the protective device does operate, the test current and duration specified by the manufacturer shall be used to test the protective bonding conductor. If the protective device does not operate, the testing laboratory shall ask the manufacturer to specify a more suitable combination of test current and duration.</p>	IEC60950:1999 and IEC60950-1:2000	02/14	EE(Chm) 3/02	10.8
2. 6 5.7	<p>Internal connections for earthing continuity purpose achieved by one rivet in combination with a lock washer are acceptable.</p>			EE(Chm)1/ 94	10.8

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
2. 7. 1	The maximum rated current in different CENELEC countries for fuse-links inside the equipment are as follows: Pluggable Equipment Type A Denmark 16 A Finland 16 A Norway 16 A Sweden 16 A Switzerland 10 A United Kingdom 16 A			EA(FI) 3/91	3.4
2. 7. 4	Two protective devices may be required in equipment intended to be connected to an IT power system.	In Norway IT power system is used. However, only one protective device can be accepted there.		EA(FI) 1/91	4.7.1
2. 7. 4	One fuse is acceptable based on the judgement that the installation fuse could protect the appliance in every earth fault case			EE(Chm)1/ 94	10.8
2. 10.	Partial discharge test, VDE 0884, is not accepted for the time being.			EA(FI) 3/91	4.1.1
2. 10.	The insulation of an accessible LED which is connected to hazardous voltage shall fulfil the requirements of Clause 2.10, but is not tested with the steel sphere. The foil of a membrane switch is allowed to be used as insulation against hazardous voltages if the mechanical construction provides sufficient strength and lifetime.			EE(Chm)1/ 94	10.10
2. 10.	The insulation between the heat sink and the current carrying parts of an electronic component (oxide layer) can only be considered as functional insulation.			EE(Chm)1/ 94	10.11
2. 10.	The insulation of the outside of a capacitor according to IEC 60384-14 2.ed. fulfils the requirements for basic insulation. For reinforced insulation the distance requirements of EN 60065 and EN 60950 must be fulfilled		95/8	EE(Chm)5 (95)	8.2
2. 10	Insulation between parts directly connected to the mains in front of a fuse has to fulfil the requirements for operational insulation or pass the test of 5.3.4 b).		95/14	EE(Chm)5/ 95	9.12
2. 10.	For judging distances (combination of creepage and clearance) from the high voltage connection of a CRT table 2Kor, according to subclause 2.1.1.1 (Paragraph after Note 4) the dielectric strength test is to be used. Reinforced insulation is required to the outer surface of an enclosure (when of insulating material) and operational insulation is required to an internal, earthed part.		95/15	EE(Chm)5/ 95	9.12
2. 10	According to 3.1.4 the insulation of primary and secondary lead outs need only to fulfil the dielectric strength test.		95/16	EE(Chm)5/ 95	9.13
2. 10. 1	Force of 10 N shall be applied to all internal parts whether they are accessible or not. (See 4.2.2)			EA(FI) 3/91	4.1.6

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
2. 10. 2	In a transformer the highest occurring working voltage is the basis for insulation requirements. Outside the transformer the actually measured voltage is used . If two or more secondary windings are connected together even outside the transformer the actually measured voltage on each winding is the basis for insulation requirements provided that the relevant windings are insulated from each other inside the transformer. If the secondary voltage is not accessible only functional insulation is necessary.			EE(Chm)1/94	10.5 10.6
2. 10. 2	<i>There is an LC ignitor for a high pressure lamp. The open output voltage of the ignitor is as indicated in the figure.</i>  <i>One ignition cycle takes approx. 4 seconds. During these 4 seconds U<sub>pp</sub> is approx. 5 KV during max. 1 second. after 1 second the voltage decreases to approx 500 V<sub>pp</sub> and after the 4 seconds the cycle stops (no output). If a lamp is connected and ignites the cycle will stop immediately, the normal lamp output voltage is approx. 160 V square wave.</i>	The ongoing work in TC74 WG6 (now TC108-74TT-WG6) will be monitored. The latest paper will be distributed for information.	02/18	EE(Chm)3/02	12.4
	 <p>PM3384, FLUKE &amp; PHILIPS ch1: dT=3.96 s dY= 750mU ch1: 1,00kV+ 1-2 MGN ch2: 1,00kV+ MTB 800ms- 2.76dv ch1+</p>				
	<p><b>Question:</b> Do delegates agree with the proposal for Amd 1 of IEC 60950-1 and therefore see the described signal as a starting pulse and its rms value not taken into account when determine the minimum creepage distance. If so, what about the pulse duration? Is e.g a pulse duration of 5 seconds acceptable or 10 seconds ?</p> <p>“At the moment it is advised to use the table of IEC/EN 60926.” We have to take into account repeatable high voltage if the lamp does not conduct (during start or in fault conditions)”</p>				
2. 10. 4	Table 2L stops at 1kV working voltage for Pollution degree 2 and 3. For higher voltages Table 4 of HD 625.1 S1 (IEC 60664-1) has to be used		98/4	EE(Chm)5/98	9.9
2. 10. 4	In a 5V circuit on the primary side of a switched mode power supply, having a direct connection to the mains (230 V ac), the working voltage to be used for table 6 is 250V ac. If the working voltage is lower than 250V it is seen as 250V. If it is higher, distances have to be calculated according to 2.10 and where a higher working voltage than the mains voltage (250V) is present, higher requirements for creepage distances, clearances and insulation (high-pot) tests have to be taken into account.			EA(GB)3/93	6.11
			97/10	EE(Chm)5/97	9.8

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
2. 10. 3.2	Table 2J stops at 1300V repetitive voltage. For higher voltages extrapolation of the table is possible.		98/3	EE/Chm)5/98	9.8
2. 10. 5	The plastic enclosure of a semiconductor can be considered as basic insulation. These components including alternatives must be listed in the list of critical components and there must be a remark in the service documentation		95/17	EE(Chm)5/95	9.14
2. 10. 5.	<b>Requirements for a tape for insulation:</b> <b>Based on cl 1.3.4, when an adhesive is required to maintain a level of safety (e.g. adhesive tape), then it is recommended to apply the cl 4.6.5.</b>	Provisional, waiting for TC108/MT2 confirmation	03/7	EE(Chm)3/03	12.4
2. 10. 5.1	Insulation between semiconductors (mains) and heat sinks Either a second sheet is required or it must be checked whether the distance through insulation has to be increased to comply with the requirements of clauses 4 and 5.		95/7	EE(Chm)5/95	8.1
2. 10. 5.2	2.10.5.2 is not to be used for winding wires only 2.10.5.4. applies.		96/15	EE(Chm)5/96	10.2
2. 10. 5.2	The tests on non-separable 3-layer foils are done on a separate sample using a test voltage of 4,5 kV (3*1,5 kV) for reinforced insulation	Decision made in the 37.meeting of TC74 WG6 in Stuttgart		EE(Chm)5/00 TC74/WG6(Secretary) 25	12.3 37.9.1
2. 10. 8.	The requirements for distances through insulation are to be applied to lateral separation between layers provided that the thermal cycling test is passed		95/2	EE(Chm)5/95	5.1.7
2. 10. 5.4	2.10.5.4 could also be used for similar insulation materials than polyimide as long as they comply with the tests of Annex U.		96/16	EE(Chm)5/96	10.2
3. 4. 2	In a pluggable equipment the mains plug can be considered as a disconnect device. Disconnect device shall either be a double pole mains switch (IT power system: all-pole mains switch) or a mains plug. Therefore in a pluggable equipment a single pole mains switch or a micro switch can be accepted. In a pluggable equipment a semiconductor or a combination of semiconductors can perform functional switching for stand-by operation.			EA(FI)1/91	4.8 and 4.9
4. 3. 4	Force of 10 N shall not be used for testing the compliance of § 4.3.4 . Securing of wires is important. The natural movement of the components shall be taken into account.			EA(FI)3/91	4.8
4. 3. 4	A heat shrinkable tubing is an acceptable means for additional securement to single clamping or soldering of internal wiring, but not for the termination of the mains cord.		95/4	EE(Chm)5/95	5.1.11
4. 3. 5	If there is a possibility of mis-mating of modular connectors (e.g. RJ-11, RJ-12 etc.) accessible for the user, tests have to be made to verify that the SELV limits remain.  If the voltage of the TNV-circuit is known this value is used, otherwise the test generator of 2.3.5 (Figure 2E) is used for testing.		98/6	EE(Chm)5/98	9.14

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
4. 3. 6	Every NTR concerning an equipment with plugs as part of the enclosure shall have additional information about the tests made on the plug. The circulated 2 pages gives an example, for class II plugs. Class I plugs shall be handled accordingly.		96/10	EE(Chm)5/96	8.1
4. 3. 8	The requirements for lithium cells apply to separate devices such as memory cards, remote control units etc.			EA(GB)3/93	6.18
4. 3. 8	When calculating the reverse current the voltage of the battery is considered to be zero.		95/13	EE(Chm)5/95	9.8.
4. 3. 13	If one type of display tube has been tested for ionising radiation, similar types can be accepted without test. The ionisation test shall be carried out under normal operating conditions.			EA(GB)3/93	6.16
4. 3. 13	For apparatus comprising a laser product the class, the laser-data and the relevant warning marking shall be stated in the test report		96/4	EE(Chm)5/95	10.12
				EE(Chm)5/96	6.22
4. 4.	If it is clearly evident that there are no hazardous moving parts, then marking detailed in this clause is not required.			EA(GB)3/93	6.32
4. 4. 2	<u>Protection in Operator Access area</u>  <i>Small spinning fans (typically 5-8 cm size), in User Accessible area may be evaluated different due to 4.4.2, consideration of hazardous moving parts. The access to the fan may be directly from the outside, or when opening a door or cover.</i>  <i>What should be the criteria for when access to such a small spinning fan is considered as hazardous moving part, requiring a guard? (Speed, sharpness of blades etc. causing possible injury to e.g. fingers)</i> EN 60335-2-80 specifies the following: Scl.: 20.101: Fan blades, other than those of fans for mounting at high level, shall be guarded unless their leading edges and tips are rounded and - they have a hardness less than D 60 Shore, or - they have a peripheral speed less than 15 m/s when the fan is supplied at rated voltage, or - the fan has a power output not exceeding 2W when supplied at rated voltage. NOTE: An edge with a radius of not less than 0,5 mm is considered rounded. <i>Compliance is checked by inspection and by measurement</i>		02/20	EE(Chm)3/02	10.10
4. 5	The original, not a copy, of CCITT test form No 3 shall be used at the heating test in normal use of telefaxes. An alternative means is the Test Form Nr.4 named "Black-White facsimile test chart BW01 (ITU-T test chart No.: 4)		98/1	EA(FI)3/91	5.2
				EE(Chm)5/98	
4. 5	A thin plastic coating (spraying) on the external surface of the metal enclosure is not taken into account when determining the temperature rise on touchable metal parts.			EA(FI)3/91	4.3.2
4. 5	For the heating test requirements of optocouplers, reference should be made to manufacturer's data for maximum operating temperature as well as manufacturer's data for input and output currents. It should be ensured that the optocoupler is operating within it's design parameters.			EA(GB)3/93	6.24

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
4. 5	<p>a) A declaration with adequate information from the equipment manufacturer is accepted to classify insulating materials.</p> <p>b) Information from the UL-Yellow-Book may be taken into account.</p> <p>c) In the case of different insulating systems the material with the lowest operating temperature is governing the total operating temperature of the system</p>		95/22	EE(Chm)5/95	9.21
4. 5	<p>For the acceptance of coils of RFI filters Table 16 condition 5 should be taken into account.</p> <p>With reference to Condition 5 of Table 4A temperature limits on individual coils, being part of RFI filters, can be accepted according to component rating.</p>		98/7	EE(Chm)5/98	9.15
4. 6. 1	The requirements of this Sub-clause are applicable to the fire enclosure <u>and</u> the electrical enclosure.			EA(GB)3/93	6.17
4. 6. 2	<p>Following construction is accepted:</p> <p>There are openings in the bottom of a fire enclosure which are larger than 40 mm<sup>2</sup>. Above these openings there is a printed board which is horizontally mounted. The components are on the upper side of the printed board. The printed board fulfils the requirement of V-1 material.</p>	This decision is applicable to equipment with a mass exceeding 18 kg. Compliance clause in 4.6.2 covers this problem		EA(FI)1/91	4.12.3
4. 6. 2	It is acceptable to have a printed circuit board (above a fire enclosure having holes greater than 40mm <sup>2</sup> ) having holes of less than 40mm <sup>2</sup> , if the components close to the holes comply with flammability class V1.			EA(GB)3/93	6.21
4. 6. 5	<p><i>Compliance is checked by examination of the construction and of the available data. If such data is not available, compliance is checked by the following tests.</i></p> <p>1. <i>What documentation is required? E.g. description of the materials from which the adhesive is composed + test results of a cyclic test of 600 hours at -30°C to +70°C.</i></p> <p><i>Is this sufficient for parts not subject to heat?</i></p> <p>2. <i>Is a UL 746C (Polymeric Materials - use in electrical evaluation) approved adhesive acceptable?</i></p> <p>3. <i>Is a prove as resistance to heat at 90°C (UL RTI 90, QMFZ2) sufficient?</i></p> <p><i>Other</i></p> <p>We do not have sufficient experience to be sure that any of the suggested conditions or tests in item 1,2 or 3 above are equal to or better than the requirements in 4.6.5 or 4.3.22. Available data have to prove compliance with the requirements of 4.3.22 or 4.6.5. If not the relevant tests have to be applied.</p>		02/17	EE(Chm)3/02	12.1

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
4. 7	Declaration of used materials with adequate information from the equipment manufacturer is acceptable. Furthermore, the flame resistance of plastic materials listed in the UL Yellow Book can be taken into account when checking the compliance with § 4.7.3 In the flammability assessment of PCB's a declaration that the manufacturer uses V0 or V1 rated PCB's as required is acceptable. The test report should detail material manufacturer, type reference and flammability rating as a minimum for other materials In cases where the equipment manufacturer is unable to obtain the appropriate information, due to the unwillingness of the component manufacturer to divulge proprietary data, acceptance may be based on a Certificate of Conformity, or written declaration, from the component manufacturer, detailing the flammability rating of the plastic materials. Note: This exception is not allowed for enclosure materials, which must also meet the requirements of clause 4.2 (Mechanical strength and stress relief)			EA(FI) 1/91 EA(GB) 3/93 EE(Chm) 1/94	4.12.1 6.39 6.16
4. 7	Components may be considered to have individual fire enclosures. Thin tape can be used to provide a fire enclosure for transformer windings etc, provided the tape meets V1 minimum or the complete transformer including the tape meets Appendix A2 test.	<b>A2 will be deleted with Amendment 1</b>	95/3 96/5	EE(Chm)5/95 EE(Chm)5/96	5.1.9 6.23
4. 7	Small openings in small electromagnets, motors etc should meet the requirements of 4.6			EA(GB)3/93	6.35
4. 7	Small parts of HB materials in a fire enclosure can be accepted based on the judgement that they have adequate spacings from ignition sources		95/20	EE(Chm)5/95	9.19
4. 7	If the product enclosure is made of HB material there have to be internal fire enclosures for parts where the limited power source output criteria is not met.		95/21	EE(Chm)5/95	9.20
4. 7.	If the battery is within a fire enclosure we could accept a material HB or better, based on the experience in EN 50091-1-1 Sect. 4.4.3.3.		99/5	EE(Chm)7/99	9.13a
4. 7. 2.1	<i>Parts requiring a fire enclosure</i>  <i>Some apparatus powered only by batteries are not required to have a fire enclosure because beyond the batteries the power is limited by PTC's or other devices according to 2.5. However the batteries are not power limited therefore fire enclosure is needed.</i> <i>Do you agree to consider the metal can of the battery acting as fire enclosure?</i> The metal case of the battery can be considered as fire enclosure, but the battery has also to comply with 4.3.8.		02/15	EE(Chm) 3/02	10.13
4. 7. 3	Materials of coil formers and partition walls shall fulfil the requirement of V-2 material.			EA(FI) 1/91 EE(Chm)1/94	4.12.3 6.14
4. 7. 3.2	Liquid crystal display (LCD) is tested as a "sandwich" and it shall fulfil the requirement of a fire enclosure.			EA(FI) 1/91	4.12.3

Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
4. 7. 3.2	Enclosures of a keyboard or similar devices (e.g. mouse, trackball) can be accepted to be made of material class HB based on abnormal test.		95/24	EE(Chm)5/95	9.27
4. 7. 3.2	The 13mm requirement of clause 4.7.3.2 is not relevant to the requirements of clause 4.6.			EA(GB)3/93	6.22
4. 7. 3.2	Thin metal foil may be used in the construction of a fire enclosure (on HB material) provided: 1. The complete enclosure shall be tested to Appendix A1 or A2. 2. The foil covers all areas where there is a source of ignition. The use of metalised coating sprayed on the inside of an enclosure made of HB-material is also acceptable provided the tests according to Appendix A1 or A2 are met	There is no mechanical strength requirement on the foil other than that for the enclosure.		EA(GB)3/93	6.23
4. 7. 3.2	<b><u>Materials of Fire Enclosure</u></b> <i>LCD projectors (typical weight 1 - 5 Kg, intended for ceiling mounting and/or transportable use together with notebook computers) being evaluated, offers a ceiling mount accessory kit. The kit has two major parts: one piece mounts to the ceiling with permanent fasteners, the other piece attaches to the projector with screws. Both halves go together by aligning each half to a specified feature and twisting them into position. The halves are locked into place by turning knurled screws with finger pressure. Mounting and un-mounting the units do not require the use of tools.</i>  <i>Do the delegates agree that if the projector can be fixed to the ceiling by any manner, even without requiring the use of tools, the product must be considered as Fixed and therefore the fire enclosure must be rated 94-5V?</i>  For projectors specified by the manufacturer for ceiling mounting, with or without a tool, the fire enclosure must be rated 5V or better.		02/16	EE(Chm)1/94	6.15
5. 3	Fault condition tests shall be carried out with 16 A installation fuses.			EA(FI)1/91	4.11.1
5. 3	Fault condition tests shall be considered and they have to be done even in the secondary circuit, if there is a risk of damage to supplementary or reinforced insulation.			EA(FI)3/91	3.5
5. 3	According to EN 60127 a fuse will not break within 30 minutes at less than 2.1 times the rated current. Therefore, if the current through the fuse does not exceed this value after the failure is introduced, the fuse will not blow and the test is run until steady state conditions are obtained		95/5	EE(Chm)5/95	5.1.17
5. 3	PTC resistors which are certified according to Publ. IEC 60738-1 need not be short circuited under fault conditions		97/7	EE(Chm)5/97	9.19
5. 3	Components can be short-circuited whether they are separately approved or not. However, if a component complies with requirements for reinforced insulation, it shall not be short-circuited.			EA(FI)1/91	4.11.1
5. 3. 8	Higher temperature rises than 300°C can be accepted if the manufacturer has proved that the material in question withstands the temperature.			EA(FI)3/91	3.5



Standard EN 60 950 3<sup>rd</sup> Edition and EN 60950-1

Clause	Decision	Comments	Dec. No.	Ref. Doc.	Item of Doc.
6. 1 6. 2.	The figure shows a circuitry which is connected to a Telecommu-nication network.		Confirmed by TC108-WG7	03/4	EE(Chm) 5.1.8 3/03
	<p>Based on the network a TNV 1 situation applies.</p> <p>T1 is a separation transformer which withstands 1500 Vac ES test. This transformer is due to a functional concept bridged by a resistor of 38 Kohm to earth and by another resistor of 38 kohm to a 48 Vdc circuit which only has functional insulation to SELV (e.g. a RS 232 communication port) The equipment is pluggable type-A but will only be installed by a Service Person and the installation instructions require it to be connected to an earthed socket outlet.</p> <p>So for the protection of Telecom network users from hazards in the equipment the exclusions of 6.1.2.2 applies. which means the resistor of 38 Kohm to earth is allowed for this application and can be accepted without ES test</p> <p>For the resistor to the 48 Vdc circuitry cl 6.2 applies (protection of equipment users from overvoltages on telecom networks )</p> <p>In this case there is only functional insulation to SELV and the circuit does not withstand the ES test between the connection for telecom network and RS-232 connector (SELV)</p> <p>Cl. 6.2.1 says the following equipment shall provide adequate electrical separation between a TNV-1 CIRCUIT or a TNV-3 CIRCUIT and the following parts of the equipment.</p> <ol style="list-style-type: none"> <li>Unearthed conductive parts and non-conductive parts of the equipment expected to be held or touched during normal use (for example, a telephone handset or a keyboard).</li> <li>Parts and circuitry that can be touched by the test finger, figure 2A (see 2.1.1.1), except contacts of connectors that cannot be touched by the test probe, figure 2C (see 2.1.1.1).</li> <li>An SELV CIRCUIT, a TNV-2 CIRCUIT or a LIMITED CURRENT CIRCUIT provided for connection of other equipment. The requirement for separation applies whether or not this circuit is accessible.</li> </ol> <p>These requirements do not apply where circuit analysis and equipment investigation indicate that safety is assured by other means, for example, between two circuits each of which has a permanent connection to protective earth.</p> <p><b>Question:</b> Is it necessary for compliance to perform the test acc to 6.2.2.1 (impulse test) or 6.2.2.2 (steady state ES test), or can we accept this situation without testing if the following applies: Separate approved surge suppressors are provided which limit an incoming transient voltage to a level of max 70 V before the resistor. Circuit analysis shows that this will never result in a hazardous voltage on the RS 232 port (SELV).</p> <p><b>If it is obvious that the product will fulfil the requirements no test is necessary.</b> <b>Otherwise the tests have to be performed due to the requirements of 6.2.2.3.</b></p>				