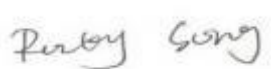




# SAFETY REPORT




Report No.: 17020741-CE-S

Applicant	SAHAB TECHNOLOGY	
Product Name	EXPANSION MODULE	
Model No.	XT-23EXP	
Test Standard	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	
Test Date	2016-07-27 to 2016-08-08	
Issue Date	2017-07-11	
Test Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Equipment complied with the specification	<input checked="" type="checkbox"/>	
Equipment did not comply with the specification	<input type="checkbox"/>	
		
Rocky Song Test By	Jams Xu Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

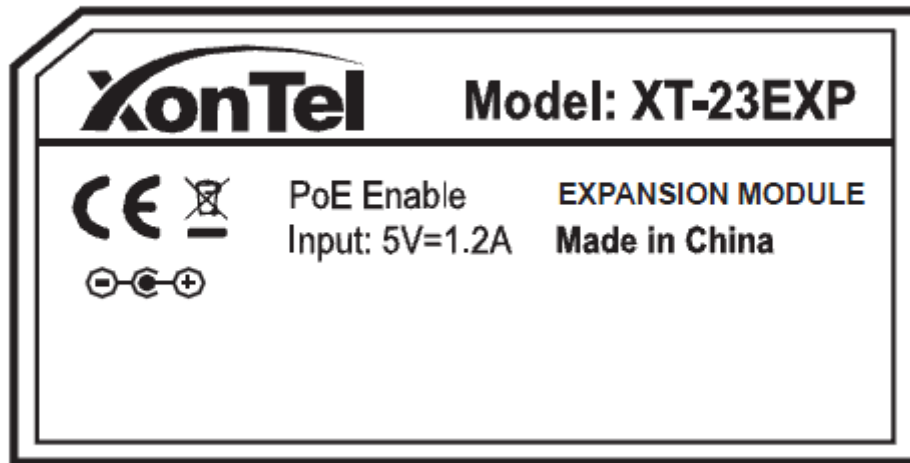
Issued by:

**SIEMIC (SHENZHEN-CHINA) LABORATORIES**

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park  
South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong China 518108  
Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

TEST REPORT	
EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	
Information technology equipment – Safety – Part 1: General requirements	
Report Reference No.....	17020741-CE-S
Tested by(+ signature) .....	Rocky Song..... <i>Rocky Song</i> .....
Approved by(+ signature).....	Jams. Xu..... <i>Jams. Xu</i> .....
Date of issue .....	2017-07-11
Testing Laboratory .....	SIEMIC (SHENZHEN-CHINA) LABORATORIES
Address.....	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong China
Testing location .....	518108 As above
Applicant's name .....	SAHAB TECHNOLOGY
Address .....	Office 21, Qibla Tower, Fahad Al Salem St., Qibla, State of KUWAIT
Manufacturer .....	SAHAB TECHNOLOGY
Address .....	Office 21, Qibla Tower, Fahad Al Salem St., Qibla, State of KUWAIT
Standard .....	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
Test procedure .....	type test
Procedure deviation .....	N/A
Non-standard test method .....	N/A
Date of receipt of test item.....	2016-07-27
Date(s) of performance of test.....	2016-07-27 to 2016-08-08
Test Report Form No. ....	IECEN60950_1E
Test Report Form(s) Originator .....	SGS Fimko Ltd
Master TRF.....	Date 2013-07
<b>Copyright © 2011 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.</b>	
Type of test equipment .....	EXPANSION MODULE
Trademark .....	
Model/Type .....	XT-23EXP
Rating(s) .....	5.0V --- 1.2A

Copy of marking plate(for example):



<b>Test item particulars</b>	
Equipment mobility.....:	Movable equipment
Connection to the mains.....:	No direct connection to the mains(by an approved adapter to the mains)
Operating condition.....:	Continuous
Mains supply tolerance (%).....:	N/A
Class of equipment.....:	Class III
Laser of classification.....:	Exempt Group(LED indicator)
Max. Specified ambient temperature (°C).....:	50
Pollution degree (PD).....:	PD2
Overvoltage category.....:	II
Altitude during operation (m).....:	<2000 m
Protection against class.....:	IP20
<b>Possible test case verdicts</b>	
Test case does not apply to the test object.....:	N/A
Test item does meet the requirement.....:	P(ass)
Test item does not meet the requirement.....:	F(ail)
<b>General remarks:</b> 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. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a comma is used as the decimal separator. Appendix A - EUT photos Remarks:	
<b>General product information:</b>	
1)Description of the product: 1. The EUT tested with model name XT-23EXP is a EXPANSION MODULE, supplied by an approval power adapter. For detailed information of power adapter, see appended table 1.5.1 for details.	

## **Nanjing Hanlong Technology Co., Ltd.**

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### **Statement**

**We Nanjing Hanlong Technology Co., Ltd. agree SAHAB TECHNOLOGY to use below information on file to apply a multiple-listing certification.**

*Original Information:*

Model name: UC46

Product Description: EXPANSION MODULE

Brand: Htek

Applicant name: Nanjing Hanlong Technology Co., Ltd.

Applicant address: 5th Floor, 1st Building, Huashen Tech Park, 10 Huashen Temple, Yuhuatai Dis, Nanjing China

Manufacturer name: Nanjing Hanlong Technology Co., Ltd.

Manufacturer address: 5th Floor, 1st Building, Huashen Tech Park, 10 Huashen Temple, Yuhuatai Dis, Nanjing China

*New Information:*

Model name: XT-23EXP

Product Description: EXPANSION MODULE

Brand: XonTel

Applicant name: SAHAB TECHNOLOGY

Applicant address: Office 21, Qibla Tower, Fahad Al Salem St., Qibla, State of KUWAIT

Manufacturer name: SAHAB TECHNOLOGY

Manufacturer address: Office 21, Qibla Tower, Fahad Al Salem St., Qibla, State of KUWAIT

**We hereby state that these models are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.**

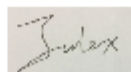
**Your assistance on this matter is highly appreciated.**

**Sincerely,**

**Name: Julex**

**Title: Marketing Director**

**Signature:**



EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
<b>1</b>	<b>GENERAL</b>		<b>P</b>
<b>1.5</b>	<b>Components</b>		<b>P</b>
1.5.1	General		<b>P</b>
	Comply with IEC 60950-1 or relevant component standard	Components that were found to affect safety aspects comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see appended table 1.5.1)	<b>P</b>
1.5.2	Evaluation and testing components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard. Components not certified are used in accordance with their ratings and they comply with IEC60950 and the relevant component Standard. Components, for which no relevant IEC Standard exists, have been tested under the condition occurring in the equipment, using applicable parts of IEC60950.	<b>P</b>
1.5.3	Thermal controls	No thermal controls.	<b>N</b>
1.5.4	Transformers	This equipment is powered by SELV power source, no transformer in this equipment.	<b>N</b>
1.5.5	Interconnecting cables	Comply with relevant requirements of this standard.	<b>P</b>
1.5.6	Capacitors bridging insulation	Class III equipment, no such capacitors	<b>N</b>
1.5.7	Resistors bridging insulation	Class III equipment, no such resistors.	<b>N</b>
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		<b>N</b>
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		<b>N</b>
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		<b>N</b>
1.5.8	Components in equipment for IT power systems		<b>N</b>
1.5.9	Surge suppressors		<b>N</b>
1.5.9.1	General		<b>N</b>
1.5.9.2	Protection of VDRs		<b>N</b>
1.5.9.3	Bridging of functional insulation by a VDR		<b>N</b>
1.5.9.4	Bridging of basic insulation by a VDR		<b>N</b>

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N
<b>1.6</b>	<b>Power interface</b>		P
1.6.1	AC power distribution systems		N
1.6.2	Input current	(See appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment		N
1.6.4	Neutral conductor	Class III equipment.	N
<b>1.7</b>	<b>Marking and instructions</b>		P
1.7.1	Power rating and identification markings	See below.	P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections		N
	Rated voltage(s) or voltage range(s) (V)	Use specific adapter, output 5.0Vdc	P
	Symbol for nature of supply, for d.c. only.	---	P
	Rated frequency or rated frequency range (Hz)		N
	Rated current (mA or A)	Use specific adapter, output 1.2A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark	See marking plate	P
	Model identification or type reference	See marking plate	P
	Symbol for Class II equipment only	Class III equipment.	N
	Other markings and symbols	The additional marking does not give rise to misunderstandings.	P
1.7.1.3	Use of graphical symbols		N
1.7.2	Safety instructions and marking	The user manual contains information for operation, installation and technic.	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices		N
	-for PERMANENTLY CONNECTED EQUIPMENT, a readily accessible disconnect device shall be incorporated external to the equipment		N
	-for PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.		N
1.7.2.3	Overcurrent protective device		N
1.7.2.4	IT power distribution system		N
1.7.2.5	Operator access with a tool		N
1.7.2.6	Ozone		N
1.7.3	Short duty cycles	Continuous operation.	N
1.7.4	Supply voltage adjustment		N

<b>EN 60950-1</b>			
Clause	Requirement – Test	Result - Remark	Verdict
	Methods and means of adjustment; reference to installation instructions		N
1.7.5	Power outlets on the equipment	No power outlet.	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Class III equipment	N
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals		N
1.7.7.2	Terminal for a.c. mains supply conductors		N
1.7.7.3	Terminals for d.c. mains supply conductors		N
1.7.8	Controls and indicators	It is obviously unnecessary	N
1.7.8.1	Identification, location and marking	LED indicators provided, but do not affect safety.	N
1.7.8.2	Colors	Safety is not involved.	N
1.7.8.3	Symbols according to IEC 60417		N
1.7.8.4	Markings using figures	No such markings.	N
1.7.9	Isolation of multiple power sources	Single DC source input.	N
1.7.10	Thermostats and other regulating devices	No thermostats or other regulating devices.	N
1.7.11	Durability	Rubbed with a piece of cloth soaked with water for 15s and then again for 15s with a piece of cloth soaked with petroleum spirit. After this test, the marking on the label did not fade. There is neither curling nor lifting of the label edge.	P
1.7.12	Removable parts	No marking located on removable parts.	P
1.7.13	Replaceable batteries		N
	Language(s)	English	—
1.7.14	Equipment for restricted access locations		N

<b>2</b>	<b>Protection from hazards</b>		<b>P</b>
2.1	Protection from electric shock and energy hazards		N
2.1.1	Protection in operator access areas		N
2.1.1.1	Access to energized parts		N
	Test by inspection		N
	Test with test finger(Figure 2A)		N
	Test with test pin(Figure 2B)		N
	Test with test probe(Figure 2C)	No TNV circuits.	N
2.1.1.2	Battery compartments	No TNV circuit inside of the equipment	N
2.1.1.3	Access to ELV wiring		N
	Working voltage (Vpeak or Vrms); minimum distance through insulation(mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N



<b>EN 60950-1</b>			
Clause	Requirement – Test	Result - Remark	Verdict
2.1.1.5	Energy hazards	No energy hazards in operator access area.	N
2.1.1.6	Manual controls	No manual controls.	N
2.1.1.7	Discharge of capacitors in equipment	Class III equipment	N
	Measured voltage(V); time-constant(s)		—
2.1.1.8	Energy hazard —d.c. mains supply	Not supplied by the d.c. mains supply.	N
	a) Capacitor connected to the d.c. mains supply		N
	b) Internal battery connected to the d.c. mains supply		N
2.1.1.9	Audio amplifiers	No audio amplifiers.	N
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N
<b>2.2</b>	<b>SELV circuits</b>		<b>P</b>
2.2.1	General requirements	Equipment supplied by SELV source.	P
2.2.2	Voltage under normal conditions (V)	All accessible voltages are less than 42.4 V peak or 60 V dc and are classified as SELV.	P
2.2.3	Voltage under fault conditions (V)	Under fault conditions voltages never exceed 71V <sub>peak</sub> and 120V dc and do not exceed 42.4 V <sub>peak</sub> or 60 V dc for more than 0.2 sec. See appended table 5.3.	P
2.2.4	Connection of SELV circuits to other circuits	These secondary circuit that SELV circuit connects is separated from a hazardous voltage circuit by reinforced insulation;	P
<b>2.3</b>	<b>TNV circuits</b>	<b>No TNV circuits</b>	<b>N</b>
2.3.1	Limits		N
	Type of TNV circuit		—
2.3.2	Separation from other circuits and from accessible parts		N
2.3.2.1	General requirements		N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing		N
2.3.2.4	Protection by other constructions		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed		—
2.3.5	Test for operating voltages generated externally		N
<b>2.4</b>	<b>Limited current circuits</b>	<b>No such circuits</b>	<b>N</b>
2.4.1	General requirements		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
2.4.2	Limit values		N
	Frequency (Hz)		—
	Measured current (mA)		—
	Measured voltage (V)		—
	Measured circuit capacitance (nF or $\mu$ F)		—
2.4.3	Connection of limited current circuits to other circuits		N
<b>2.5</b>	<b>Limited power source</b>		N
	a) Inherently limited output	Approved adapter output comply with LPS limit	N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		N
	Use of integrated circuit (IC) current limiters		N
	d) Overcurrent protective device limited output		N
	Max. Output voltage (V), max. Output current (A), max. apparent power (VA)		—
	Current rating of overcurrent protective device(A)		—
<b>2.6</b>	<b>Provisions for earthing and bonding</b>	Class III equipment	N
2.6.1	Protective earthing		N
2.6.2	Functional earthing		N
	Use of symbol for functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG		—
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG		—
	Protective current rating (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
2.6.3.4	Resistance of earthing conductors and their terminations, resistance ( $\Omega$ ), voltage drop (V), test current (A), duration (min)		N
2.6.3.5	Colour of insulation		N
2.6.4	Terminals		N
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		N
	Rated current (A), type nominal thread diameter (mm)		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing		N
2.6.5.1	Interconnection of equipment		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator		N
2.6.5.5	Parts removed during servicing		N
2.6.5.6	Corrosion resistance		N
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N
<b>2.7</b>	<b>Overcurrent and earth fault protection in primary circuits</b>	Class III equipment	N
2.7.1	Basic requirements		N
	Instruction when protection relies on building installation		N
2.7.2	Faults not simulated in 5.3.7		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices		N
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel		N
<b>2.8</b>	<b>Safety interlocks</b>		N
2.8.1	General principles	No safety interlocks.	N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
	Protection against extreme hazard		N
2.8.5	moving parts		N
2.8.6	Overriding		N
2.8.7	Switches and relays		N
2.8.7.1	Contact gaps (mm)		N
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) ..... :		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test (V)		N
2.8.8	Mechanical actuators		N
<b>2.9</b>	<b>Electrical insulation</b>		P
2.9.1	Properties of insulating materials	No natural rubber, hygroscopic material and material containing asbestos used as insulation.	P
2.9.2	Humidity conditioning		N
	Relative humidity (%), temperature (°C)		—
2.9.3	Grade of insulation	Function insulation only.	P

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
2.9.4	Separation from hazardous voltage		N
	Method (s) used		—
<b>2.10</b>	<b>Clearance, creepage distances and distances through insulation</b>		N
2.10.1	General	Class III equipment	N
2.10.1.1	Frequency		N
2.10.1.2	Pollution degrees		N
2.10.1.3	Reduced values for functional insulation		N
2.10.1.4	Intervening unconnected conductive parts		N
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements		N
2.10.1.7	Insulation in circuits generating Starting pulses		N
2.10.2	Determination of working voltage		N
2.10.2.1	General		N
2.10.2.2	RMS working voltage		N
2.10.2.3	Peak working voltage		N
2.10.3	Clearances		N
2.10.3.1	General		N
2.10.3.2	Main Transient voltage		N
	a)AC mains supply		N
	b)Earthed d.c. mains supplies		N
	c)Unearthed d.c. mains supply		N
	d)Battery operation		N
2.10.3.3	Clearance in primary circuits		N
2.10.3.4	Clearance in secondary circuits	Only the functional insulation in second circuits complied with 5.3.4 C.	N
2.10.3.5	Clearance in circuits having starting pulses		N
2.10.3.6	Transients from a.c. mains supply		N
2.10.3.7	Transients from d.c. mains supply		N
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9	Measurement of transient voltage levels		N
	a)Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b)Transients from a telecommunication network		N
2.10.4	Creepage distance		N
2.10.4.1	General		N
2.10.4.2	Material group and comparative tracking index		N
	CTI tests		—
2.10.4.3	Minimum creepage distances		N
2.10.5	Solid insulation		N
2.10.5.1	General		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
2.10.5.2	Distances through insulation		N
2.10.5.3	Insulating compound as solid insulation		N
2.10.5.4	Semiconductor devices		N
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material-General		N
2.10.5.7	Separable thin sheet material		N
	Number of layers (pcs)		—
2.10.5.8	Non-separable thin sheet material		N
2.10.5.9	Thin sheet material-standard test procedure		N
	Electric strength test		—
2.10.5.10	Thin sheet material-alternative test procedure		N
	Electric strength test		—
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components		N
	Working voltage		N
	a)basic insulation not under stress		N
	b)basic supplementary, reinforced insulation		N
	c)Compliance with Annex U		N
	Two wires in contact inside wound component; angle between 45° and 90°		N
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		—
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage		N
	-basic insulation not under stress		N
	-supplementary, reinforced insulation		N
2.10.6	Construction of printed boards		N
2.10.6.1	Uncoated printed boards		N
2.10.6.2	Coated printed boards		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board		N
	Distance through insulation		N
	Number of insulation layers (pcs)		N
2.10.7	Component external terminations		N
2.10.8	Test on coated printed boards and coated components		N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
2.10.10	Test for Pollution Degree 1 environment and insulation compound		N
2.10.11	Test for semiconductor devices and cemented joints		N
2.10.12	Enclosed and sealed parts		N
<b>3</b>	<b>WIRING, CONNECTIONS AND SUPPLY</b>		<b>P</b>
3.1	General		P
3.1.1	Current rating and overcurrent protection	All the interconnecting cable is adequate for the current they are intended to carry.	P
3.1.2	Protection against mechanical damage	Wireways are smooth and free from sharp edges.	P
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	P
3.1.4	Insulation of conductors	The insulation of individual conductors is suitable for the application and the working voltage.	P
3.1.5	Beads and ceramic insulators	Not used.	N
3.1.6	Screws for electrical contact pressure	No screws for electrical contact pressure.	N
3.1.7	Insulation materials in electrical connections	No insulating materials in electrical connections.	N
3.1.8	Self-tapping and spaced thread screws	No self-tapping and spaced thread screws for the connection of current-carrying.	N
3.1.9	Termination of conductors		N
	10N pull test		N
3.1.10	Sleeving on wiring	No sleeving used.	N
<b>3.2</b>	<b>Connection to a mains supply</b>	<b>Class III equipment</b>	<b>N</b>
3.2.1	Means of connection		N
3.2.1.1	Connection to an a.c. mains supply		N
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections		N
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter (mm) of cable and conduits		—
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N
3.2.5.1	AC Power supply cords		N
	Type		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG		—
3.2.5.2	DC Power supply cords		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	Diameter or minor dimension D (mm); test mass (g)		—
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space		N
<b>3.3</b>	<b>Wiring terminals for connection of external conductors</b>		N
3.3.1	Wiring terminals	No wiring terminals used	N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), type and nominal thread diameter (mm)		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter (mm)		—
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Standard wire		N
<b>3.4</b>	<b>Disconnection from the mains supply</b>		N
3.4.1	General requirement	No direct connection to mains.	N
3.4.2	Disconnect devices		N
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N
3.4.6	Number of poles-Single-phase and d.c. equipment		N
3.4.7	Number of poles -Three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power source		N
<b>3.5</b>	<b>Interconnection of equipment</b>		P
3.5.1	General requirements	Only SELV circuits are connected to SELV circuits.	P
3.5.2	Types of interconnection circuits	SELV circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N
3.5.4	Data ports for additional equipment	No such data ports	N
<b>4</b>	<b>Physical requirements</b>		P

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Clause	Requirement – Test	Result - Remark	Verdict
4.1	Stability		N
	Angle of 10°	Equipment with mass is neither exceeding 7kg nor a floor-standing.	N
	Test force (N)		N
<b>4.2</b>	<b>Mechanical strength</b>		P
4.2.1	General		P
	Rack-mounted equipment		N
4.2.2	Steady force test, 10N		N
4.2.3	Steady force test, 30N		N
4.2.4	Steady force test, 250N	No hazards present	P
4.2.5	Impact test		N
	Fall test		N
	Swing test		N
4.2.6	Drop test; height (mm)		N
4.2.7	Stress relief test		N
4.2.8	Cathode ray tubes	No Cathode ray tubes.	N
	Picture tube separately certified		N
4.2.9	High pressure lamps	No high pressure lamp.	N
4.2.10	Wall or ceiling mounted equipment; force (N)	Not intended for wall or ceiling mounted.	N
4.2.11	Rotating solid media		N
	Test to cover on the door		N
<b>4.3</b>	<b>Design and construction</b>		P
4.3.1	Edges and corners	All edges and corners are rounded or smoothed.	P
4.3.2	Handles and manual controls; force (N)		N
4.3.3	Adjustable controls		N
4.3.4	Securing of parts	Mechanical fixing in such a way designed that they will withstand mechanical stress occurring in normal use.	P
4.3.5	Connection of plugs and sockets	IEC 60083 or IEC 60320 not be used for SELV CIRCUITS	P
4.3.6	Direct plug-in equipment	No direct plug-In equipment.	N
	Torque		—
	Compliance with the relevant mains plug standard		N
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries		N
	-Overcharging of a rechargeable battery		N
	-Unintentional charging of a non-rechargeable battery		N
	-Reverse charging of a rechargeable battery		N
	-Excessive discharging rate for any battery		N



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Clause	Requirement – Test	Result - Remark	Verdict
4.3.9	Oil and grease	No oil and grease.	N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases	No container for liquid or gases.	N
4.3.12	Flammable liquids	No flammable liquids.	N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation		P
4.3.13.1	General		P
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N
	Part, property, retention after test, flammability classification		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N
4.3.13.5	Lasers (including laser diodes) and LEDs		P
4.3.13.5.1	Lasers (including laser diodes)		N
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	LEDs comply with the requirements of exempt Group of IEC 62471.	P
4.3.13.6	Other types		N
<b>4.4</b>	<b>Protection against hazardous moving parts</b>		N
4.4.1	General	No moving parts.	N
4.4.2	Protection in operator access areas		N
	Household and home/office document/media shredders		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas	Unintentional contact is not likely in service access areas.	N
4.4.5	Protection against moving fan blades		N
4.4.5.1	General		N
	a) Not considered to cause pain or injury		N
	b) Is considered to cause pain, not injury		N
	c) Considered to cause injury		N
4.4.5.2	Protection for users		N
	Use of symbol or warning .....		N
4.4.5.3	Protection for service persons		N
	Use of symbol or warning .....		N

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Clause	Requirement – Test	Result - Remark	Verdict

<b>4.5</b>	<b>Thermal requirements</b>		P
4.5.1	General		P
4.5.2	Temperature rise	(See appended table 4.5)	P
	Normal load condition per Annex L	See annex L.	—
4.5.3	Temperature limits for materials	(See appended table 4.5)	P
4.5.4	Touch temperature limits	(See appended table 4.5)	P
4.5.5	Resistance to abnormal heat	No thermoplastic parts on which parts at hazardous voltage are directly mounted.	N

<b>4.6</b>	<b>Openings in enclosures</b>		P
4.6.1	Top and side openings		N
	Dimensions (mm)		—
4.6.2	Bottom of fire enclosures		N
	Construction of the bottom, dimensions (mm)		—
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment		N
4.6.4.1	Constructional design measures		N
	Dimensions(mm)		—
4.6.4.2	Evaluation measures for larger openings		N
4.6.4.3	Use of metalized parts		N
4.6.5	Adhesives for constructional purposes	No adhesives for constructional purpose.	N
	Conditioning temperature (°C),time (weeks)		—

<b>4.7</b>	<b>Resistance to fire</b>		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required Flammability classes. Method 1 used.	P
	Method 1, selection and application of components wiring and materials	(See appended table 1.5.1, 4.7 and 5.3)	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure	All components are mounted on min. V-1 PCB	P
4.7.2.1	Parts requiring a fire enclosure		N
4.7.2.2	Parts no requiring a fire enclosure		P
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures		N
4.7.3.3	Materials for components and other parts outside fire enclosures		N
4.7.3.4	Materials for components and other parts inside fire enclosures.	All the components mounted on rated V-1 PCB	P
4.7.3.5	Materials for air filter assemblies	No air filters assemblies.	N

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Clause	Requirement – Test	Result - Remark	Verdict
4.7.3.6	Materials used in high-components	No high voltage components.	N
<b>5</b>	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</b>		<b>P</b>
5.1	Touch current and protective conductor current		N
5.1.1	General	Class III equipment.	N
5.1.2	Configuration of equipment under test (EUT)		N
5.1.2.1	Single connection to an a.c. mains supply		N
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit		N
5.1.4	Application of measuring instrument		N
5.1.5	Test procedure		N
5.1.6	Test measurements		N
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)		—
5.1.7	Equipment with touch current exceeding 3.5 mA		N
5.1.7.1	General		N
5.1.7.2	Simultaneous multiple connections to the supply		N
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV circuit.	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch current from telecommunication networks		N
	a)EUT with earthed telecommunication ports		N
	b)EUT whose telecommunication ports have no reference to protective earth		N
<b>5.2</b>	<b>Electric strength</b>		<b>N</b>
5.2.1	General	Class III equipment.	N
5.2.2	Test procedure		N
<b>5.3</b>	<b>Abnormal operating and fault conditions</b>		<b>P</b>
5.3.1	Protection against overload and abnormal operation	(See appended table 5.3)	P
5.3.2	Motors		N
5.3.3	Transformers	Not applied.	N
5.3.4	Functional insulation	Method c) used.	N

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Clause	Requirement – Test	Result - Remark	Verdict
5.3.5	Electromechanical components	No electromechanical components.	N
5.3.6	Audio amplifiers in ITE	No audio amplifiers.	N
5.3.7	Simulation of faults	(See appended table 5.3)	P
5.3.8	Unattended equipment	No unattended equipment.	N
5.3.9	Compliance criteria for abnormal operating and fault conditions		P
5.3.9.1	During the tests	No fire, no molten metal and no distortion of enclosure.	P
5.3.9.2	After the tests	No danger.	P
<b>6</b>	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</b>		N
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment.		N
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements		N
	Supply voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions		N
<b>6.2</b>	<b>Protection of equipment users from over voltages on telecommunication networks</b>		N
6.2.1	Separation requirements		N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N
<b>6.3</b>	<b>Protection of telecommunication wiring system from overheating</b>		N
	Max. output current (A)		—
	Current limiting method		—
<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b>		N
7.1	General		N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazards voltages in the equipment.		N
7.3	Protection of equipment users from over voltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution system		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N

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Clause	Requirement – Test	Result - Remark	Verdict
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment(see 4.7.3.2)		N
A.1.1	Samples		N
	Wall thickness (mm) ..... :		—
A.1.2	Conditioning of samples; temperature (°C) ..... :		N
A.1.3	Mounting of samples ..... :		N
A.1.4	Test flame(see IEC 60695-11-3)		N
	Flame A, B, C or D		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time(s) ..... :		—
	Sample 2 burning time(s) ..... :		—
	Sample 3 burning time(s) ..... :		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples material		—
	Wall thickness(mm) ..... :		—
A.2.2	Conditioning of samples; temperature(°C) ... :		N
A.2.3	Mounting of samples ..... :		N
A.2.4	Test flame(see IEC 60695-11-4)		N
	Flame A, B or C ..... :		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time(s) ..... :		—
	Sample 2 burning time(s) ..... :		—
	Sample 3 burning time(s) ..... :		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N
	Sample 1 burning time(s) ..... :		—
	Sample 2 burning time(s) ..... :		—
	Sample 3 burning time(s) ..... :		—
A.3	Hot flaming oil test(see 4.6.2)		N
A.3.1	Mounting of Samples		N

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Clause	Requirement – Test	Result - Remark	Verdict
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS		N
B.1	General requirements		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days) .....		—
	Electric strength test: test voltage (V) .....		—
B.6	Running overload test for DC motors in secondary circuits		N
B.6.1	General		N
B.6.2	Test procedure		N
B.6.3	Alternative test procedure		N
B.6.4	Electric strength test; test voltage (V)		N
B.7	Locked-rotor overload test for DC motors in secondary circuits		N
B.7.1	General		N
B.7.2	Test procedure		N
B.7.3	Alternative test procedure		N
B.7.4	Electric strength test; test voltage (V)		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V) .....		—
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N
	Position .....		—

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Clause	Requirement – Test	Result - Remark	Verdict
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection.....		—
C.1	Overload test		N
C.2	Insulation		N
	Protection from displacement of winding		N
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		N
D.1	Measuring instrument		N
D.2	Alternative measuring instrument		N
E	ANNEX E, TEMPERATURE RISE OF A WINDING(see 1.4.13)		N
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		N
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Clearances		N
G.1.1	General		N
G.1.2	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V) .....		N
G.2.1	AC mains supply		N
G.2.2	Earthed d.c. mains supplies		N
G.2.3	Unearthed d.c. mains supplies		N
G.2.4	Battery operation		N
G.3	Determination of telecommunication network transient voltage (V) .....		N
G.4	Determination of required withstand voltage(V) .....		N
G.4.1	Mains transients and internal repetitive peaks		N
G.4.2	Transients from telecommunication networks		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient levels (V) .....		N

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Clause	Requirement – Test	Result - Remark	Verdict
	a)transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b)transients from a telecommunication network		N
G.6	Determination of minimum clearances ..... :		N
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal(s) used ..... :		—
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N
K.1	Making and breaking capacity		N
K.2	Thermostat reliability; operating voltage(V).. :		N
K.3	Thermostat endurance test; operating voltage(V) ..... :		N
K.4	Temperature limiter endurance; operating voltage(V) ..... :		N
K.5	Thermal cut-out reliability		N
K.6	Stability of operation		N
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		P
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment		P
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.1	Introduction		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringling signal		N
M.3.1.1	Frequency(Hz) ..... :		—



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Clause	Requirement – Test	Result - Remark	Verdict
M.3.1.2	Voltage(V) ..... :		—
M.3.1.3	Cadence; time(s), voltage(V) ..... :		—
M.3.1.4	Single fault current (mA) ..... :		—
M.3.2	Tripping device and monitoring voltage ...:		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V) ..... :		N
N	ANNEX N, IMPULSE TEST GENERATORS(see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		N
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generators		N
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs)(see 1.5.9.1)		N
	a)preferred climatic categories		N
	b)Maximum continuous voltage		N
	c)Pulse current		N
	- Combination pulse current :		N
	Body of the VDR Test according to IEC60695-11-5.....:		N
	Body of the VDR. Flammability class of material ( min V-1).....:		N
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards(see 2.10.6.2)		N
R.2	Reduced clearances (see 2.10.3)		N
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING(see 6.2.2.3)		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER(see 1.1.2)		N
			—

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Clause	Requirement – Test	Result - Remark	Verdict
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N
			—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS(see 1.6.1)		N
V.1	Introduction		N
V.2	TN power distribution systems		N
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N
W.1	Touch current from electronic circuits		N
W.1.1	Floating circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS(see clause c.1)		N
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus .....		N
Y.2	Mounting of test samples .....		N
Y.3	Carbon-arc light-exposure apparatus .....		N
Y.4	Xenon-arc light exposure apparatus .....		N
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N
CC.1	Integrated circuit (IC) current limiters		N
CC.2	Test program 1.....		—

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Clause	Requirement – Test	Result - Remark	Verdict
CC.3	Test program 2.....:		—
CC.4	Test program 3.....:		—
CC.5	Compliance.....:		—
DD	ANNEX DD, Requirements for the mounting means of rack-mounted		N
DD.1	General		N
DD.2	Mechanical strength test, variable (N)		—
DD.3	Mechanical strength test, 250N, including end stops		—
DD.4	Compliance		N
EE	ANNEX EE, Household and home/office document/media shredders		N
EE.1	General		N
EE.2	Markings and instructions		N
	Use of markings or symbols.....:		N
	Information of user instructions, maintenance and/or servicing instructions.....:		N
EE.3	Inadvertent reactivation test		N
EE.4	Disconnection of power to hazardous moving parts:		N
	Use of markings or symbols		N
EE.5	Protection against hazardous moving parts		N
	Test with test finger (Figure 2A)		—
	Test with wedge probe (Figure EE1 and EE2):		—

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Clause	Requirement – Test	Result - Remark	Verdict

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD(informative) IEC and CENELEC code designations for flexible cords		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
General (A2:2013)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note 2.10.3.1 Note2 6.2.2 Note		P
1.1.1 (A1:2010)	Replace the text of NOTE 3 by the following. NOTE 3 The requirements of IEC 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		N
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.		N


EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
(A2:2013)	In EN 60950-1:2006/A2:2013 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010		P
1.5.1	Add the following NOTE: <b>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC</b>		P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		P
1.7.2.1 (A2:2013)	In EN 60950-1:2006/A2:2013 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.		P

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<p><b>Zx Protection against excessive sound pressure from personal music players</b></p> <p><b>Zx.1 General</b> This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:  is designed to allow the user to listen to recorded or broadcast sound or video; and  primarily uses headphones or earphones that can be worn in or on or around the ears; and  allows the user to walk around while in use.</p> <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:  while the personal music player is connected to an external amplifier; or  while the headphones or earphones are not used.</p> <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:  hearing aid equipment and professional equipment;</p> <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p>		N
	<p>analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<p><b>Zx.2 Equipment requirements</b></p> <p>No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none"> <li>equipment provided as a package (personal music player with its listening device), where the acoustic output <math>L_{Aeq,T}</math> is <math>\leq 85</math> dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and</li> <li>a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is <math>\leq 27</math> mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” as described in EN 50332-1.</li> </ul> <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level <math>L_{Aeq,T}</math> is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none"> <li>a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and</li> <li>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</li> </ul>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <p>1) equipment provided as a package (player with its listening device), the acoustic output shall be <math>\leq 100</math> dBA measured while playing the fixed “programme simulation noise” described in EN 50332-1; and</p> <p>2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be <math>\leq 150</math> mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” described in EN 50332-1.</p> <p>For music where the average sound pressure (long term <math>L_{Aeq,T}</math>) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term <math>L_{Aeq,T}</math>) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>		N



EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<p><b>Zx.3 Warning</b> The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: “To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <p style="text-align: center;">/</p>  <p style="text-align: center;">Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<b>Zx.4 Requirements for listening devices (headphones and earphones)</b>		N
	<p><b>Zx.4.1 Wired listening devices with analogue input</b> With 94 dBA sound pressure output <math>L_{Aeq,T}</math>, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be <math>\geq 75</math> mV.</p> <p>This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control).</p> <p>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>		N
	<p><b>Zx.4.2 Wired listening devices with digital input</b> 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 <math>L_{Aeq,T}</math> of the listening device shall be <math>\leq 100</math> dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N
	<p><b>Zx.4.3 Wireless listening devices</b> In wireless mode:  with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and  respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and  with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output <math>L_{Aeq,T}</math> of the listening device shall be <math>\leq 100</math> dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N
	<p><b>Zx.5 Measurement methods</b> Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N

EN 60950-1												
Clause	Requirement – Test	Result - Remark	Verdict									
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		N									
	<p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N									
2.7.2	This subclause has been declared ‘void’.		N									
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N									
3.2.5.1	<p>Replace “60245 IEC 53” by “H05 RR-F”;</p> <p>“60227 IEC 52” by “H03 VV-F or H03 VVH2-F”;</p> <p>“60227 IEC 53” by “H05 VV-F or H05 VVH2-F2”.</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6  </td><td>0,75 <sup>a)</sup>  </td><td>Over</td></tr><tr><td>6 up to and including 10  </td><td>(0,75) <sup>b)</sup> 1,0  </td><td>Over 10 up</td></tr><tr><td>to and including 16  </td><td>(1,0) <sup>c)</sup> 1,5  </td><td></td></tr></table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition <sup>a)</sup>.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 <sup>a)</sup>	Over	6 up to and including 10	(0,75) <sup>b)</sup> 1,0	Over 10 up	to and including 16	(1,0) <sup>c)</sup> 1,5			N
Up to and including 6	0,75 <sup>a)</sup>	Over										
6 up to and including 10	(0,75) <sup>b)</sup> 1,0	Over 10 up										
to and including 16	(1,0) <sup>c)</sup> 1,5											
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD.		N									
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table><tr><td>Over 10 up to and including 16  </td><td>1,5 to 2,5  </td><td>1,5 to 4</td></tr><tr><td colspan="3"> </td></tr></table> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>	Over 10 up to and including 16	1,5 to 2,5	1,5 to 4					N			
Over 10 up to and including 16	1,5 to 2,5	1,5 to 4										

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).		N
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.		N
Bibliography	Additional EN standards.		—

<b>ZA</b>	<b>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</b>	—
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ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In <b>Denmark</b> , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N
1.2.13.14	In <b>Norway</b> and <b>Sweden</b> , for requirements see 1.7.2.1 and 7.3 of this annex.		N
1.5.7.1	In <b>Finland</b> , <b>Norway</b> and <b>Sweden</b> , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N
1.5.8	In <b>Norway</b> , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N
1.5.9.4	In <b>Finland</b> , <b>Norway</b> and <b>Sweden</b> , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

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

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyrsomerkoplettilbeskyttelsesjord via nettpluggog/eller via annetjordtilkoplet utstyr – ogertilkoplet et kabel-TV nett, kanforårsakebrannfare. For å unngådetteskaldetvedtilkoplingavutstyrettilkabel-TV nettetinstalleres en galvanisk isolator mellomutstyretogkabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustningsomärkopplad till skyddsjord via jordatvägguttagoch/eller via annan utrustningochsamtidigtärkopplad till kabel-TV nätkan i vissa fall medföra risk för brand. Förattundvikadettaskall vid anslutningavutrustningen till kabel-TV nät galvanisk isolator finnas mellanutrustningen ochkabel-TV nätet.”</p>		N
1.7.2.1 (A2:2013)	<p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark: “Apparatetsstikproppskalttilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”</p>		N
1.7.5	<p>In <b>Denmark</b>, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p> <p>For <b>CLASS II EQUIPMENT</b> the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5 (A2:2013)	<p>In <b>Denmark</b>, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011.</p> <p>For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N
2.2.4	In <b>Norway</b> , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.2	In <b>Finland, Norway</b> and <b>Sweden</b> there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.4	In <b>Norway</b> , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.6.3.3	In the <b>United Kingdom</b> , the current rating of the circuit shall be taken as 13 A, not 16 A.		N
2.7.1	In the <b>United Kingdom</b> , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N
2.10.5.13	In <b>Finland, Norway</b> and <b>Sweden</b> , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In <b>Switzerland</b>, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <p>SEV 6532-2.1991      Plug Type 15    3P+N+PE 250/400 V, 10 A</p> <p>SEV 6533-2.1991      Plug Type 11    L+N 250 V, 10 A</p> <p>SEV 6534-2.1991      Plug Type 12    L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A</p>		N
3.2.1.1	<p>In <b>Denmark</b>, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N



EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1 (A2:2013)	<p>In Denmark, supply cords of single- phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATEDCURRENT exceeding 13 A or if a poly phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N
3.2.1.1	<p>In <b>Spain</b>, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN60309-2.</p>		N
3.2.1.1	<p>In the <b>United Kingdom</b>, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
<p align="center"><b>ZB ANNEX (normative)</b></p> <p align="center"><b>SPECIAL NATIONAL CONDITIONS (EN)</b></p>			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In <b>Ireland</b> , apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N
3.2.4	In <b>Switzerland</b> , for requirements see 3.2.1.1 of this annex.		N
3.2.5.1	In the <b>United Kingdom</b> , a power supply cord with conductor of 1,25 mm <sup>2</sup> is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N
3.3.4	In the <b>United Kingdom</b> , the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm <sup>2</sup> to 1,5 mm <sup>2</sup> nominal cross-sectional area.		N
4.3.6	In the <b>United Kingdom</b> , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N
4.3.6	In <b>Ireland</b> , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	<p>In <b>Finland, Norway</b> and <b>Sweden</b> TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment:</p> <ul style="list-style-type: none"> <li>• STATIONARY PLUGGABLE EQUIPMENT TYPE A that <ul style="list-style-type: none"> <li>is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and</li> <li>has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and</li> <li>is provided with instructions for the installation of that conductor by a SERVICE PERSON;</li> </ul> </li> <li>• STATIONARY PLUGGABLE EQUIPMENT TYPE B;</li> <li>• STATIONARY PERMANENTLY CONNECTED EQUIPMENT.</li> </ul>		N
6.1.2.1 (A1:2010)	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>-two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>-one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>-passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and</li> <li>-is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>-the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1;</li> <li>-the additional testing shall be performed on all the test specimens as described in EN 60384-14;</li> <li>-the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</li> </ul>		
6.1.2.2	In <b>Finland, Norway and Sweden</b> , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N
7.2	In <b>Finland, Norway and Sweden</b> , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N
7.3	In <b>Norway and Sweden</b> , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N
7.3	In <b>Norway</b> , for installation conditions see EN 60728-11:2005.		N

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity
PCB	Various	Various	V-1, 105 °C	UL94/UL 796	UL
Enclosure	Various	Various	HB	UL94	UL
Adapter Power	SHENZHEN RUIDE ELECTRONIC INDUSTRIAL CO., LTD	RD0501200 -C55-KOG	Input: AC100- 240V,50/60Hz 0.25A Output: 5.0V, 1.2A	EN 60950-1	Report No.ES1312 19203S
Note(s): 1) An asterisk indicates a mark that assures the agreed level of surveillance.					
Supplementary information:					

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

1.6.2	Input Test					P
Fuse #	Irated (A)	U (V)	P (W)	I (mA)	Ifuse (mA)	Condition/status
Supplied by power adapter						
--	1.2	5	2.68	537	--	Max. Normal condition
Supplementary information:						

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

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

2.5	limited power source measurement			N
		Limits	Measured	Verdict
For data ports				
According to Table 2B				
current (in A)	8	--	N	
apparent power (in VA)	100	--	N	
According to Table 2B				
current (in A)	8	--	N	
apparent power (in VA)	100	--	N	
Supplementary information:				
2.10.2	Table: working voltage measurement			N
Location		RMS voltage (V)	Peak voltage (V)	Comments
supplementary information:				

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements						N
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl(mm)	cl (mm)	Required cr (mm)	Cr (mm)	
Supplementary information:							

2.10.5	TABLE: Distance through insulation measurements					N
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Supplementary information:						

4.3.8	TABLE: Batteries								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available					---				N
Is it possible to install the battery in a reverse polarity position?					NO				N
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging mA		Discharging mA		Reversed charging	
	Meas. Current	Manuf. Specs.		Meas. Current	Manuf. Specs.	Meas. Current	Manuf. Specs.	Meas. Current	Manuf. Specs.
Max. current during normal condition	---	---	---	---	---	---	---	---	---
Fault condition Max. current during over charging 7 hours	---	---	---	---	---	---	---	---	---
Test results:									Verdict
- Chemical leaks						No			N
- Explosion of the battery						No			N
- Emission of flame or expulsion of molten metal						No			N
- Electric strength tests of equipment after completion of tests						Not applied			N
Supplementary information:									

4.5	TABLE: Thermal requirements					P		
	Supply voltage (V) .....	5.0Vdc	---	--	---	—		
	Ambient T <sub>min</sub> (°C) .....	24.0	Shift to T <sub>ma</sub>	--	Shift to T <sub>ma</sub>	—		
	Ambient T <sub>max</sub> (°C) .....	25.8		--		—		
Maximum measured temperature T of part/at::		T (°C)				Allowed T <sub>max</sub> (°C)		
Ambient		24.0	50.0	--	--	---		
PCB		55.0	81.0	--	--	105		
Plastic enclosure		29.7	55.7	--	--	80		
LCD		30.3	56.3	--	--	70		
Supplementary information:								
1.The measure were measured under worst case normal mode as described in 1.2.2.1 and described in 1.6.2 at voltage.T <sub>ma</sub> is 50°C.								
Temperature T of winding:		t1 (°C)	R1 (Ω)	t2 (°C)	R2 (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
Supplementary information:								

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N
	Allowed impression diameter (mm) .....			—
Part		Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

4.7	TABLE: Resistance to fire					N
Part		Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
-		-	-	-	-	-
Supplementary information: See appendix Table 1.5.1						

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests				N
Test voltage applied between:			Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes/No
Supplementary information:					

5.3	TABLE: Fault condition tests						P
	Ambient temperature (°C).....			25.5°C			—
	Power source for EUT: Manufacturer, model/type, output rating .....			See appended 1.5.1			—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (mA)	Observation	
VD4	S-C	5Vdc	1h	---	---	NCD, NFG,NHT No hazards	



C137	S-C	5Vdc	1h	---	---	NCD, NFG,NHT No hazards
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Supplementary information:

Abbreviation "S-C,NCD,NHT,NFG" stand for short circuit, NOT COMPONENT DAMAGE,NO HIGH TEMPERATURE AND NO FIRE GENERATION".

C.2	TABLE: transformers	N
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Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)

Loc.	Tested insulation	Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers

supplementary information:

## Test Equipment List

SIEMIC#	Equipment Description	Serial No	Model No	Last Cal	Cal Due
CSSB-SF003	Data Acquisition Unit	3#	34970A	2015-09-10	2016-09-09
CSSB-SF073	Power meter	1223	PA2200	2015-09-10	2016-09-09
CSSB-SF004	Digital Multimeter	17961914	15B	2015-09-10	2016-09-09
CSSB-SF081	Digital Caliper	N/A	SF2000	2015-09-10	2016-09-09
CSSB-SF007	Electronic load	N/A	ALH	2015-11-10	2016-11-09
CSSB-SF001	AC POWER SUPPLY	0003380	HPC3145	N/A	N/A

## APPENDIX AEUT PHOTOS

Photo #1 Front View of EUT



Photo #2 Rear View of EUT



Photo #3 Uncover View of EUT

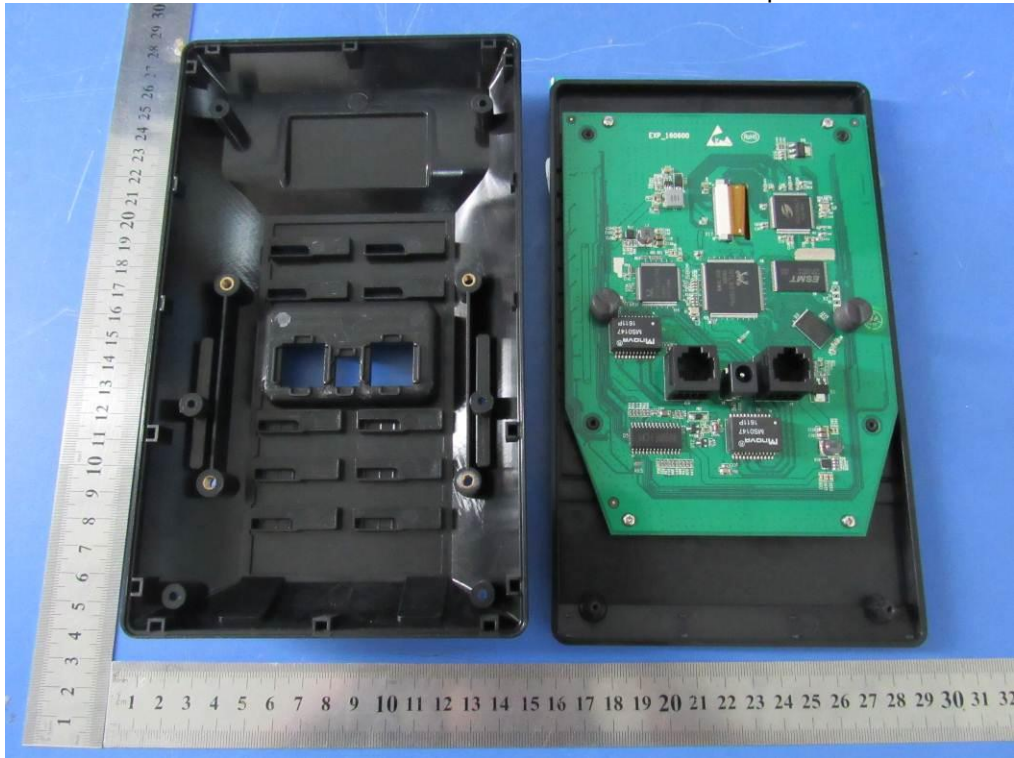


Photo #4 PCB View 1 of EUT

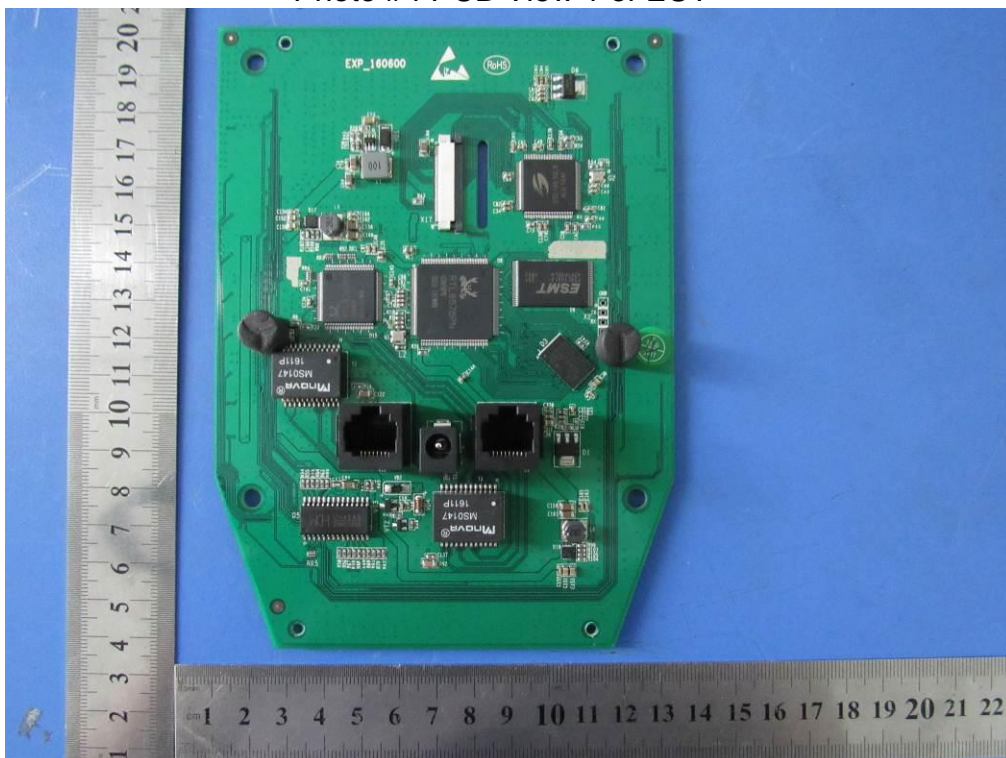


Photo #5 Adapter View 2 of EUT

