

# TEST REPORT

Test Report Number: CQASZ20190400111S



**Shenzhen Huaxia Testing Technology Co., Ltd.**

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# TEST REPORT

IEC/EN 60950-1

## Information technology equipment – Safety – Part 1: General requirements

Reference No. ....: CQASZ20190400111S

Compiled by (name + signature) .....: Betty Mo

Reviewed by (name + signature).....: Iverson Chen

Approved by (name + signature) .....: Jack Ai

Date of issue.....: 2019-05-13

Contents .....: 53 pages



### Testing Laboratory

Name .....: Shenzhen Huaxia Testing Technology Co., Ltd

Address.....: 1F., Block A of Tongsheng Technology Building, Huahui Road,  
Dalang Street, Longhua District, Shenzhen, China

Testing location.....: Same as above

### Applicant

Name.....:

Address.....:

### Test specification:

Standard.....: EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011+A2: 2013

Test procedure .....: CE

Procedure deviation.....: N.A.

Non-standard test method.....: N.A.

### Test item

Description.....: Smart Bracelet

Trademark.....: /

Model and/or type reference.....:

Model difference.....: All models are identical expect for model name, if no other  
requirement, all test conducted on model G20.

Manufacturer.....: Same as applicant

Rating(s).....: Input: DC 5V

**Copy of marking plate (s):**

Smart Bracelet  
Model No: G20



**Note:**

- The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
- The CE marking and WEEE symbol should be at least 5.0mm and 7.0mm respectively in height.

**Summary of testing:**

Sample Identification and Verification System was found to satisfactory in accordance with EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011+A2: 2013

### Test item particulars

Equipment mobility.....:	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input checked="" type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains
Operating condition.....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location .....	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other
Mains supply tolerance (%) or absolute mains supply values .....	N/A
Tested for IT power systems .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	N.A.
Class of equipment .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating (A) .....	N.A.
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Altitude during operation (m) .....	N/A
Altitude of test laboratory (m) .....	N/A
Mass of equipment (kg) .....	0.03kg

### Possible test case verdicts:

- test case does not apply to the test object.....: N (N/A)
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

### Testing

Date of receipt of test item.....: May. 06, 2019

Date(s) of performance of tests.....: May. 07, 2019 –May. 10, 2019

### General remarks:

"(see remark #)" refers to a remark 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.

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

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

**Remark :**

Factory' name: Deeray Global Co., Ltd.

Factory' address: 56th, Feng Tang Road, Shajing Street, Bao'an District, Shenzhen, China

**General product information:**

The test sample is a class III equipment, instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.

The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tma) of 45 °C.

IEC 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		P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of 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 applicable parts of IEC 60950-1 and the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.	P
1.5.3	Thermal controls	No such component.	N
1.5.4	Transformers	No Transformers	N
1.5.5	Interconnecting cables		N
1.5.6	Capacitors bridging insulation	No such component.	N
1.5.7	Resistors bridging insulation	No such components.	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N
1.5.8	Components in equipment for IT power systems		N
1.5.9	Surge suppressors	No such components.	N
1.5.9.1	General		N
1.5.9.2	Protection of VDRs		N
1.5.9.3	Bridging of functional insulation by a VDR		N
1.5.9.4	Bridging of basic insulation by a VDR		N

IEC 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>		<b>N</b>
1.6.1	AC power distribution systems	No direct mains connection.	N
1.6.2	Input current	See appended table 1.6.2	N
1.6.3	Voltage limit of hand-held equipment		N
1.6.4	Neutral conductor	No neutral conductor.	N
<b>1.7</b>	<b>Marking and instructions</b>		<b>P</b>
1.7.1	Power rating	See copy of marking plate	P
	Rated voltage(s) or voltage range(s) (V) .....		N
	Symbol for nature of supply, for d.c. only.....		N
	Rated frequency or rated frequency range (Hz) ..		N
	Rated current (mA or A) .....		N
	Manufacturer's name or trademark or identification mark .....	See copy of marking plate	P
	Type/model or type reference .....	G20	P
	Symbol for Class II equipment only .....	Class III equipment	N
	Other marking and symbols .....	See copy of marking plate	P
1.7.2	Safety instructions and marking	See the user manual	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	No such devices	N
1.7.2.3	Overcurrent protective device	No such device	N
1.7.2.4	IT power distribution systems		N
1.7.2.5	Operator access with a tool		N
1.7.2.6	Ozone		N
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Supply voltage adjustment .....	No such devices used.	N
	Methods and means of adjustment; reference to installation instructions .....		N
1.7.5	Power outlets on the equipment .....		N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	No such component.	N

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals .....	No such component.	N
1.7.7.2	Terminals for a.c. mains supply conductors	No such component.	N
1.7.7.3	Terminals for d.c. mains supply conductors	No such component.	N
1.7.8	Controls and indicators		N
1.7.8.1	Identification, location and marking .....		N
1.7.8.2	Colours :	The colours used for LED are indicating function. No safety consideration.	N
1.7.8.3	Symbols according to IEC 60417.....		N
1.7.8.4	Markings using figures .....		N
1.7.9	Isolation of multiple power sources .....		N
1.7.10	Thermostats and other regulating devices .....	No thermostats or other regulating devices used inside battery pack are not adjustable during normal use.	N
1.7.11	Durability	Rubbing the marking by hand for 15 s with piece of cloth soaked with water and, at a different place for on a second sample. For 15 s with a piece of cloth soaked with petroleum spirit .after this test, marking is legible and can not be easily possible to remove marking and show no curling .	P
1.7.12	Removable parts	No such parts.	N
1.7.13	Replaceable batteries .....	No such parts.	N
	Language(s) .....		—
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		P
2.1.1	Protection in operator access areas	No hazardous parts in operator access areas.	P
2.1.1.1	Access to energized parts	No energized parts.	N
	Test by inspection .....		N
	Test with test finger (Figure 2A) .....		N



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Clause	Requirement + Test	Result - Remark	Verdict
	Test with test pin (Figure 2B) .....		N
	Test with test probe (Figure 2C) .....		N
2.1.1.2	Battery compartments		N
2.1.1.3	Access to ELV wiring		N
	Working voltage ( $V_{peak}$ or $V_{rms}$ ); minimum distance through insulation (mm)		---
2.1.1.4	Access to hazardous voltage circuit wiring		N
2.1.1.5	Energy hazards .....	No energy hazard in operator access area.	P
2.1.1.6	Manual controls	No such part.	N
2.1.1.7	Discharge of capacitors in equipment	Not intended to connect to mains supply directly. External power adapter has been certified separately.	N
	Measured voltage (V); time-constant (s).....		---
2.1.1.8	Energy hazards – d.c. mains supply	Not directly connect to 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 amplifier.	N
2.1.2	Protection in service access areas	No hazardous voltage or energy levels exist.	N
2.1.3	Protection in restricted access locations	Not intended to be used in RAL.	N

<b>2.2</b>	<b>SELV circuits</b>		<b>P</b>
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V) .....	Under SELV limit.	P
2.2.3	Voltages under fault conditions (V) .....	Under SELV limit.	P
2.2.4	Connection of SELV circuits to other circuits .....		P

<b>2.3</b>	<b>TNV circuits</b>		<b>N</b>
2.3.1	Limits	No TNV circuits.	N
	Type of TNV circuits.....		N
2.3.2	Separation from other circuits and from accessible parts		N

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Clause	Requirement + Test	Result - Remark	Verdict
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.....		N
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed.....		N
2.3.5	Test for operating voltages generated externally		N
<b>2.4</b>	<b>Limited current circuits</b>		<b>N</b>
2.4.1	General requirements	No limited current circuits to be evaluated.	N
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 sources</b>		<b>p</b>
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		P
	d) Overcurrent protective device limited output		N
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) ..		N
	Use of integrated circuit (IC) current limiters		N
<b>2.6</b>	<b>Provisions for earthing and bonding</b>		<b>N</b>
2.6.1	Protective earthing	Class III equipment.	N
2.6.2	Functional earthing		N

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Clause	Requirement + Test	Result - Remark	Verdict
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.....:		N
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....:		N
	Protective current rating (A), cross-sectional area (mm <sup>2</sup> ), AWG.....:		N
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).....:		N
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
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>		<b>N</b>
2.7.1	Basic requirements		N

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Clause	Requirement + Test	Result - Remark	Verdict

	Instructions 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>		<b>N</b>
2.8.1	General principles	No safety interlocks used.	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, relays and their related circuits		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	(see appended table 5.2)	N
2.8.8	Mechanical actuators		N

<b>2.9</b>	<b>Electrical insulation</b>		<b>N</b>
2.9.1	Properties of insulating materials		N
2.9.2	Humidity conditioning		N
	Relative humidity (%), temperature (°C) .....		N
2.9.3	Grade of insulation	Class III equipment. Only functional insulation.	N
2.9.4	Separation from hazardous voltages		N
	Method(s) used .....		N

<b>2.10</b>	<b>Clearances, creepage distances and distances through insulation</b>		<b>N</b>
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.1	General	Class III equipment. Only functional insulation inside.	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	Mains transient voltages		N
	a) AC mains supply .....		N
	b) Earthed d.c. mains supplies .....		N
	c) Unearthed d.c. mains supplies .....		N
	d) Battery operation .....		N
2.10.3.3	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	N
2.10.3.4	Clearances in secondary circuits		N
2.10.3.5	Clearances 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 distances		N

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Clause	Requirement + Test	Result - Remark	Verdict
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	(see appended table 2.10.3 and 2.10.4)	N
2.10.5	Solid insulation	No solid insulation external to power supply unit.	N
2.10.5.1	General		N
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	N
2.10.5.3	Insulating compound as solid insulation		N
2.10.5.4	Semiconductor devices		N
2.10.5.5.	Cemented joints	(see appended table 2.10.3 and 2.10.4)	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	(see appended table 2.10.5)	—
2.10.5.10	Thin sheet material – alternative test procedure		N
	Electric strength test	(see appended table 2.10.5)	—
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	(see appended table 2.10.5)	—
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage .....		N
	- Basic insulation not under stress .....		N

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Clause	Requirement + Test	Result - Remark	Verdict

	- 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	(see appended table 2.10.5)	N
	Number of insulation layers (pcs).....		N
2.10.7	Component external terminations	(see appended table 2.10.3 and 2.10.4)	N
2.10.8	Tests 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	(see appended table 5.2)	N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling		N
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11	Tests 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>N</b>
3.1	General		N
3.1.1	Current rating and overcurrent protection		N
3.1.2	Protection against mechanical damage		N
3.1.3	Securing of internal wiring		N
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators	No such component.	N
3.1.6	Screws for electrical contact pressure	No electrical screw connections.	N
3.1.7	Insulating materials in electrical connections	Class III equipment.	N

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Clause	Requirement + Test	Result - Remark	Verdict

3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections.	N
3.1.9	Termination of conductors	Class III equipment.	N
	10 N pull test		N
3.1.10	Sleeving on wiring	No safety relevant sleeve external to power supply unit.	N

<b>3.2</b>	<b>Connection to a mains supply</b>		<b>N</b>
3.2.1	Means of connection	Not intended to connect to mains supply.	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 of cable and conduits (mm) .....		—
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
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>		<b>N</b>
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.1	Wiring terminals		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), cord/cable type, cross-sectional area (mm <sup>2</sup> ).....:		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type, nominal thread diameter (mm) .....		—
3.3.6	Wiring terminal design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N

<b>3.4</b>	<b>Disconnection from the mains supply</b>		<b>N</b>
3.4.1	General requirement	Not intended to connect to mains supply.	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		P
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources		N

<b>3.5</b>	<b>Interconnection of equipment</b>		<b>P</b>
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits .....	SELV circuit only.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N
3.5.4	Data ports for additional equipment		N

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

<b>4</b>	<b>PHYSICAL REQUIREMENTS</b>		<b>P</b>
4.1	Stability		P
	Angle of 10°	Mass of the equipment < 7 kg.	N
	Test force (N) .....	Not floor-standing equipment.	N

4.2	Mechanical strength		<b>P</b>
4.2.1	General		P
	Rack-mounted equipment	(see Annex DD)	N
4.2.2	Steady force test, 10 N	No hazard.	P
4.2.3	Steady force test, 30 N	Class III equipment, no hazardous part inside.	N
4.2.4	Steady force test, 250 N	250N applied to outer enclosure. No energy or other hazards.	P
4.2.5	Impact test		N
	Fall test		N
	Swing test		N
4.2.6	Drop test; height (mm) .....	1m; No damage of the enclosure, no energy hazards or damage to enclosure integration after the test.	P
4.2.7	Stress relief test		N
4.2.8	Cathode ray tubes	No cathode ray tube.	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 to be mounted on a wall or ceiling.	N
4.2.11	Rotating solid media		N
	Test to cover on the door.....		N

<b>4.3</b>	<b>Design and construction</b>		<b>P</b>
4.3.1	Edges and corners	All edges and corners are rounded and smoothed.	P
4.3.2	Handles and manual controls; force (N).....		N
4.3.3	Adjustable controls	No adjustable control.	N

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.4	Securing of parts		P
4.3.5	Connection by plugs and sockets	SELV connectors do not comply with IEC 60320-1 or IEC 60083.	N
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N
	Torque .....		N
	Compliance with the relevant mains plug standard:		N
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries		P
	- Overcharging of a rechargeable battery	See table 4.3.8	P
	- Unintentional charging of a non-rechargeable battery		N
	- Reverse charging of a rechargeable battery		N
	- Excessive discharging rate for any battery		P
4.3.9	Oil and grease	No oil and grease.	N
4.3.10	Dust, powders, liquids and gases	Not intend to product dust, or using powders, liquids and gases.	N
4.3.11	Containers for liquids or gases	No such containers used.	N
4.3.12	Flammable liquids .....	No flammable liquids.	N
	Quantity of liquid (l) .....		N
	Flash point (°C) .....		N
4.3.13	Radiation		N
4.3.13.1	General		N
4.3.13.2	Ionizing radiation	No 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	No UV lamp used.	N
	Part, property, retention after test, flammability classification .....		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....	No UV radiation.	N
4.3.13.5	Laser (including LEDs)		P
4.3.13.5.1	Lasers (including laser diodes)		N

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Clause	Requirement + Test	Result - Remark	Verdict

	Laser class .....		—
4.3.13.5.2	Light emitting diodes (LEDs)	Exempt group product	P
4.3.13.6	Other types .....		N

<b>4.4</b>	<b>Protection against hazardous moving parts</b>		<b>N</b>
4.4.1	General		N
4.4.2	Protection in operator access areas .....	No risk of personal injury from moving parts.	N
	Household and home/office document/media shredders	See above.	N
4.4.3	Protection in restricted access locations .....	Not intended for installation in RAL.	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
	Not considered to cause pain or injury. a).....:		N
	Is considered to cause pain, not injury. b) .....		N
	Considered to cause injury. c) .....		N
4.4.5.2	Protection for users	Comform to 4.4.5.1 a).	N
	Use of symbol or warning .....		N
4.4.5.3	Protection for service persons	Comform to 4.4.5.1 a).	N
	Use of symbol or warning .....		N

<b>4.5</b>	<b>Thermal requirements</b>		<b>P</b>
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L .....		—
4.5.3	Temperature limits for materials		P
4.5.4	Touch temperature limits		P
4.5.5	Resistance to abnormal heat .....		N

<b>4.6</b>	<b>Openings in enclosures</b>		<b>N</b>
4.6.1	Top and side openings	No openings.	N
	Dimensions (mm) .....		—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.6.2	Bottoms of fire enclosures	No fire enclosure required.	N
	Construction of the bottom, dimensions (mm) ...:		—
4.6.3	Doors or covers in fire enclosures	No doors and covers	N
4.6.4	Openings in transportable equipment	Not 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 metallized 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>		<b>P</b>
4.7.1	Reducing the risk of ignition and spread of flame	Use of plastic enclosure with the required flammability classes.	P
	Method 1, selection and application of components wiring and materials	Method 1 used	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure	See appended table 1.5.1	P
4.7.2.1	Parts requiring a fire enclosure		N
4.7.2.2	Parts not 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	PCB used V-0	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies	N
4.7.3.6	Materials used in high-voltage 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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.1	General	Class III equipment, not direct connect to AC mains.	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) .....		N
	Measured touch current (mA) .....		N
	Max. allowed touch current (mA) .....		N
	Measured protective conductor current (mA) .....		N
	Max. allowed protective conductor current (mA)...		N
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.	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N
	Supply voltage (V) .....		N
	Measured touch current (mA) .....		N
	Max. allowed touch current (mA) .....		N
5.1.8.2	Summation of touch currents 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>

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

5.2.1	General		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	See appended table 5.3 Complies with B)	P
5.3.3	Transformers		N
5.3.4	Functional insulation.....:	See appended table 5.3. Complies with c)	N
5.3.5	Electronic mechanical components	No such components.	N
5.3.6	Audio amplifiers in ITE .....	No audio amplifier.	N
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	No thermostats, temperature limiters or thermal cut-outs.	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests	No fire, no danger.	P

<b>6</b>	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</b>		<b>N</b>
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 overvoltages on telecommunication networks</b>		<b>N</b>
6.2.1	Separation requirements	No TNV circuit.	N

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test	(see appended table 5.2)	N
6.2.2.2	Steady-state test	(see appended table 5.2)	N
6.2.2.3	Compliance criteria	Compliance	N
<b>6.3</b>	<b>Protection of the telecommunication wiring system from overheating</b>		<b>N</b>
	Max. output current (A) .....		—
	Current limiting method .....		—
<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b>		<b>N</b>
7.1	General	Not connected to cable distribution system.	N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>A</b>	<b>ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE</b> (UL Recognized material used)		<b>N</b>
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.....:		—
	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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N
<b>B</b>	<b>ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)</b>		<b>P</b>
B.1	General requirements		P
	Position .....		—
	Manufacturer .....	Shenzhen New Ocean Electronics Co.,Ltd	—
	Type .....	XDY-0830	—
	Rated values .....	3VDC	—
B.2	Test conditions		P
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 d.c. 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 d.c. motors in secondary circuits		P
B.7.1	General		P
B.7.2	Test procedure		N
B.7.3	Alternative test procedure	After tested 7h, Packing tissue paper or gauze shall not be ignited	P
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) .....		—

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Clause	Requirement + Test	Result - Remark	Verdict

<b>C</b>	<b>ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)</b>		<b>N</b>
	Position .....	No transformer.	—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection.....		---
C.1	Overload test		N
C.2	Insulation		N
	Protection from displacement of windings.....		N

<b>D</b>	<b>ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)</b>		<b>N</b>
D.1	Measuring instrument		N
D.2	Alternative measuring instrument		N

<b>E</b>	<b>ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)</b>		<b>N</b>
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<b>F</b>	<b>ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)</b>		<b>N</b>
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<b>G</b>	<b>ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES</b>		<b>N</b>
G.1	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	DC mains supply		N
G.3	Determination of telecommunication network transient voltage (V).....		N
G.4	Determination of required withstand voltage (V) ...		N
G.5	Measurement of transient levels (V) .....		N
G.6	Determination of minimum clearances .....		N

<b>H</b>	<b>ANNEX H, IONIZING RADIATION (see 4.3.13)</b>		<b>N</b>
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Clause	Requirement + Test	Result - Remark	Verdict

<b>J</b>	<b>ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)</b>		<b>N</b>
	Metal(s) used .....		—
<b>K</b>	<b>ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)</b>		<b>N</b>
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

<b>L</b>	<b>ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)</b>		<b>N</b>
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		N

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Clause	Requirement + Test	Result - Remark	Verdict

<b>M</b>	<b>ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)</b>		<b>N</b>
M.1	Introduction	No telephone ringing signal.	N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz) .....		—
M.3.1.2	Voltage (V) .....		—
M.3.1.3	Cadence; time (s), voltage (V) .....		—
M.3.1.4	Single fault current (mA) .....		—
M.3.2	Tripping device and monitoring voltage .....		N
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

<b>N</b>	<b>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)</b>		<b>N</b>
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N

<b>P</b>	<b>ANNEX P, NORMATIVE REFERENCES</b>		<b>P</b>
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<b>Q</b>	<b>ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)</b>		<b>N</b>
	a) Preferred climatic categories .....		N
	b) Maximum continuous voltage .....		N
	c) Pulse current .....		N

<b>R</b>	<b>ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES</b>		<b>N</b>
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

<b>S</b>	<b>ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)</b>		<b>N</b>
S.1	Test equipment		N

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Clause	Requirement + Test	Result - Remark	Verdict
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N
<b>T</b>	<b>ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)</b>		<b>N</b>
			—
<b>U</b>	<b>ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)</b>		<b>N</b>
			—
<b>V</b>	<b>ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)</b>		<b>N</b>
V.1	Introduction		N
V.2	TN power distribution systems		N
V.3	TT power systems		N
V.4	IT power systems		N
<b>W</b>	<b>ANNEX W, SUMMATION OF TOUCH CURRENTS</b>		<b>N</b>
W.1	Touch current from electronic circuits		N
W.1.1	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
<b>X</b>	<b>ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)</b>		<b>N</b>
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N
<b>Y</b>	<b>ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3) (no UV Light)</b>		<b>N</b>
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


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Clause	Requirement – Test	Result - Remark	Verdict
<b>Z</b>	<b>ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)</b>		<b>N</b>
<b>AA</b>	<b>ANNEX AA, MANDREL TEST (see 2.10.5.8)</b>		<b>N</b>
<b>BB</b>	<b>ANNEX BB, CHANGES IN THE SECOND EDITION</b>		—
<b>CC</b>	<b>ANNEX CC, Evaluation of integrated circuit (IC) current limiters</b>		<b>N</b>
CC.1	General		N
CC.2	Test program 1.....:		N
CC.3	Test program 2.....:		N
<b>DD</b>	<b>ANNEX DD, Requirements for the mounting means of rack-mounted equipment</b>		<b>N</b>
DD.1	General		N
DD.2	Mechanical strength test, variable N.....:		N
DD.3	Mechanical strength test, 250N, including end stops.....:		N
DD.4	Compliance.....:		N
<b>EE</b>	<b>ANNEX EE, Household and home/office document/media shredders</b>		<b>N</b>
EE.1	General		N
EE.2	Marking and instructions		N
	Compliance .....		N
	Use of markings or symbols.....:		N
	Information of user instructions, maintenance and/or servicing instructions.....:		N
EE.3	Compliance .....		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) .....		N
	Test with wedge probe (Figure EE1 and EE2) ...:		N

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Clause	Requirement – Test				Result - Remark	Verdict
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS						
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions					P
General	Delete all the “country” notes in the reference document 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 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 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 4.7.3.1 Note 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 (A1:2010)	Delete all the “country” notes in the reference document (EN 60950-1:2006/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note					P
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
A12:2011	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010					N
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC					N



EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
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.		N
1.7.2.1 (A12:2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.		N
	Zx Protection against excessive sound pressure from personal music players		N
	<p><b>Zx.1 General</b></p> <p>This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none"> <li>– is designed to allow the user to listen to recorded or broadcast sound or video; and</li> <li>– primarily uses headphones or earphones that can be worn in or on or around the ears; and</li> <li>– allows the user to walk around while in use.</li> </ul> <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none"> <li>– while the personal music player is connected to an external amplifier; or</li> <li>– while the headphones or earphones are not used.</li> </ul> <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"> <li>– hearing aid equipment and professional equipment;</li> </ul> <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> <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>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<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
	<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;</li> </ul> <p>and</p> <ul style="list-style-type: none"> <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> <ol style="list-style-type: none"> <li>protect the user from unintentional acoustic outputs exceeding those mentioned above; and</li> <li>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> <li>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</li> </ol> <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> <ol style="list-style-type: none"> <li>have a warning as specified in Zx.3; and</li> <li>not exceed the following: <ol style="list-style-type: none"> <li>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</li> <li>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.</li> </ol> </li> </ol> <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>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<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
	<p><b>Zx.3 Warning</b></p> <p>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <ul style="list-style-type: none"> <li>- the symbol of Figure 1 with a minimum height of 5 mm; and</li> <li>- the following wording, or similar:</li> </ul> <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p>  <p><b>Figure 1 – Warning label (IEC 60417-6044)</b></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
	<b>Zx.4 Requirements for listening devices (headphones and earphones)</b>		N
	<p><b>Zx.4.1 Wired listening devices with analogue input</b></p> <p>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></p> <p>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

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<p><b>Zx.4.3 Wireless listening devices</b></p> <p>In wireless mode:</p> <ul style="list-style-type: none"> <li>– with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and</li> <li>– respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and</li> <li>– 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.</li> </ul> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N
	<p><b>Zx.5 Measurement methods</b></p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.</p> <p>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
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> <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

EN 60950-1															
Clause	Requirement – Test	Result - Remark	Verdict												
3.2.5.1	<p>Replace “60245 IEC 53” by “H05 RR-F”; “60227 IEC 52” by “H03 VV-F or H03 VVH2-F”; “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></td><td>0,75 <sup>a)</sup></td><td> </td></tr><tr><td>  Over 6 up to and including 10</td><td>(0,75) <sup>b)</sup></td><td>1,0</td><td> </td></tr><tr><td>  Over 10 up to and including 16</td><td>(1,0) <sup>c)</sup></td><td>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													
3.3.4	<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></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													
4.3.13.6 (A1:2010)	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>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).</p>		N												
	<p>Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p>		N												
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N												
Bibliography	Additional EN standards.		—												
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—												
ZB	SPECIAL NATIONAL CONDITIONS		N												
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												

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
1.2.13.14	In Norway and Sweden, for requirements see 1.7.2.1 and 7.3 of this annex.		N
1.5.7.1	In <b>Finland, Norway</b> and <b>Sweden</b> , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.		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, 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
1.7.2.1	<p>In <b>Finland, Norway and 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 liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p> <p>In <b>Norway and 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.</p> <p>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.</p> <p>Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728- 11)."</p> <p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>"Utstyr nstalt koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet nstalleres en galvanisk isolator mellom utstyret og kabel- TV nettet."</p>		N
	<p>Translation to Swedish:</p> <p>"Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet."</p>		N





EN 60950-1																											
Clause	Requirement – Test	Result - Remark	Verdict																								
1.7.5	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.		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 and 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 and Sweden</b> , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N																								
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> <table> <tr> <td>SEV 6532-2.1991</td><td>Plug Type 15</td><td>3P+N+PE</td><td>250/400 V, 10 A</td></tr> <tr> <td>SEV 6533-2.1991</td><td>Plug Type 11</td><td>L+N</td><td>250 V, 10 A</td></tr> <tr> <td>SEV 6534-2.1991</td><td>Plug Type 12</td><td>L+N+PE</td><td>250 V, 10 A</td></tr> </table> <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> <table> <tr> <td>SEV 5932-2.1998</td><td>Plug Type 25</td><td>3L+N+PE</td><td>230/400 V, 16 A</td></tr> <tr> <td>SEV 5933-2.1998</td><td>Plug Type 21</td><td>L+N</td><td>250 V, 16 A</td></tr> <tr> <td>SEV 5934-2.1998</td><td>Plug Type 23</td><td>L+N+PE</td><td>250 V, 16 A</td></tr> </table>	SEV 6532-2.1991	Plug Type 15	3P+N+PE	250/400 V, 10 A	SEV 6533-2.1991	Plug Type 11	L+N	250 V, 10 A	SEV 6534-2.1991	Plug Type 12	L+N+PE	250 V, 10 A	SEV 5932-2.1998	Plug Type 25	3L+N+PE	230/400 V, 16 A	SEV 5933-2.1998	Plug Type 21	L+N	250 V, 16 A	SEV 5934-2.1998	Plug Type 23	L+N+PE	250 V, 16 A		N
SEV 6532-2.1991	Plug Type 15	3P+N+PE	250/400 V, 10 A																								
SEV 6533-2.1991	Plug Type 11	L+N	250 V, 10 A																								
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SEV 5933-2.1998	Plug Type 21	L+N	250 V, 16 A																								
SEV 5934-2.1998	Plug Type 23	L+N+PE	250 V, 16 A																								
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
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-EN 60309-2.</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
3.2.1.1	<p>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.</p>		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	<p>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:</p> <ul style="list-style-type: none"> <li>• 1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> nominal cross-sectional area.</li> </ul>		N
4.3.6	<p>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.</p> <p>Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N
4.3.6	<p>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.</p>		N

EN 60950-1			
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>○ EARTHING has provision for a permanently connected PROTECTIVE CONDUCTOR; and</li> <li>○ a 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>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in 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> <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p>		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
	<p>A capacitor classified Y3 according to EN 132400:1994, 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 132400, 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 132400;</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.</li> </ul>		N
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> , there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.		N
7.3	In <b>Norway</b> , for installation conditions see EN 60728-11:2005.		N
ZC	A-DEVIATIONS (informative)		N
1.5.1	<b>Sweden</b> (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.		N
1.5.1	<b>Switzerland</b> (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury – Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.		N

EN 60950-1			
Clause	Requirement – Test	Result - Remark	Verdict
1.7.2.1	<p><b>Denmark</b> (Heavy Current Regulations)</p> <p>Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text:</p> <p style="text-align: center;">Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket</p> <p style="text-align: center;"> eller </p> <p>If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text:</p> <p>“For tilslutning af de øvrige ledere, se medfølgende installationsvejledning.”</p>		N
1.7.2.1	<p><b>Germany</b> (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2).</p> <p>If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market.</p> <p>Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.</p>		N
1.7.5	<p><b>Denmark</b> (Heavy Current Regulations)</p> <p>With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.</p>		N
1.7.13	<p><b>Switzerland</b> (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries)</p> <p>Annex 2.15 of SR 814.81 applies for batteries.</p>		N
5.1.7.1	<p><b>Denmark</b> (Heavy Current Regulations, Chapter 707, clause 707.4)</p> <p>TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.</p>		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 <sup>1)</sup>	
Lithium-ion Polymer Battery	Shenzhen Yongqi Hongye Technology Co., Ltd	392121	3.7V 180mAh, 0.666Wh	IEC 62133- 2:2017	Shenzhen TCT Testing Technology Co., Ltd. (Repotr No.: TCT190116B 026)	
Enclosure	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AC2300N	HB, 60 °C	UL 94	E162823	
PCB	DONGGUAN XIANGHUI (GREATTA) ELECTRONICS CO LTD	LX004	V-0, 130 °C	UL 796	E306427	
Motor	Shenzhen New Ocean Electronics Co.,Ltd	XDY-0830	3VDC, 60°C	/	Test with appliance	
<sup>1)</sup> An asterisk indicates a mark which assures the agreed level of surveillance						

1.6.2	TABLE: electrical data (in normal conditions)						P
Fuse #	I rated (A)	U (V)	P (W)	I (A)	I fuse (A)	Condition/status	
--	--	5	0.80	0.160	--	Only charge	
--	--	4.2	0.105	0.025	--	Battery discharge	
Note(s):							

2.1.1.5 c) 1)	TABLE: max. V, A, VA test				N
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
---	---	---	---	---	
Note(s): Test bases on battery.					

2.1.1.5 c) 2)	TABLE: stored energy		N
Capacitance C (μF)	Voltage U (V)	Energy E (J)	
---	---	---	
supplementary information:			
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2.2	TABLE: evaluation of voltage limiting components in SELV circuits			N
Component (measured between)		Max. Voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
---		---	---	---
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (Vpeak or V d.c.)		
---		---		
supplementary information:				
SELV circuits, supplied by limited power source				

2.5	TABLE: limited power source measurement			P
		Limits	Measured	Verdict
According to Table 2B/2C (normal condition) Battery overload				
Current (in A)		8	1.48	---
Apparent power (in VA)		100	4.13	
According to Table 2B/2C (single fault condition) Battery short circuit				
Current (in A)		8	0	---
Apparent power (in VA)		100	0	---
Note(s): See table 1.5.1. Approved power supplies.				

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					<b>N</b>
Clearance cl and creepage distance dcr at/of:	U <sub>p</sub> (V)	U <sub>r.m.s.</sub> (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	dcr (mm)
---	---	---	---	---	---	---
Supplementary information:						
SELV circuits, supplied by limited power source						

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: * See appended table 1.5.1						

4.3.8	TABLE: Batteries								P		
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?					Customized connector used for battery pack.					P	
	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	--	--	--	160 mA	180mA	25 mA	180mA	--	--		
Max. current during fault condition	--	--	--	0 mA	180mA	81 mA	180mA	--	--		
Test results:										Verdict	
- Chemical leaks					--					P	
- Explosion of the battery					--					P	
- Emission of flame or expulsion of molten metal					--					P	
- Electric strength tests of equipment after completion of tests					--					P	
Supplementary information:											

4.5	TABLE: thermal requirements						<b>P</b>	
	Supply voltage (V) .....		5V				—	
Maximum measured temperature T of part/at::			T (°C)				T (°C)	
			Charge(5V)		Battery discharge(4.2V)			
Ambient			25.0		25.0		--	
Outside plastic enclosure			28.3		25.5		95-20	
Inside plastic enclosure			29.4		27.8			
PCB near U6			38.6		30.2		130-20	
PCB near U7			42.8		28.3		130-20	
Battery surface			28.6		28.4		--	
Temperature T of winding		t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation Class
--		--	--	--	--	--	--	--
Note : Having a specified maximum ambient temperature of 45°C								

4.5.5	TABLE: ball pressure test of thermoplastic parts			N
	Allowed impression diameter (mm) .....			—
Part		Test temperature (°C)	Impression diameter (mm)	
---		---	---	
Supplementary information: SELV circuits, supplied by limited power source				

5.1	TABLE: touch current measurement				N
Condition	L terminal A (mA)	N terminal A (mA)	Limit (Peak mA)	Comments	
---	---	---	---	---	
Supplementary information: SELV circuits, supplied by limited power source					

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: SELV circuits, supplied by limited power source				



5.3	TABLE: fault condition tests				P
	Ambient temperature (°C).....:	25.0			—
	Power source for EUT: ManuFacterer, model/type, output rating .....	--			—
Component no.	Fault	Test voltage (V)	Test time	Fuse no.	Result
Battery output (Battery over discharge)	S-C	4.2Vd.c.	7h	--	Battery protected immediately, no components damaged, no hazard.
Unit	Normal	5V	7h	--	Unit work nomal ,no damaged, no hazard.
U3(pin 3-4)	S-C	5V	1h40mins.	--	Unit work nomal ,no damaged, no hazard. The current of battery (mA): 25mA-81mA
Motor	locked-rotor	4.2Vd.c.	7h	--	After tested 7h, Packing tissue paper or gauze shall not be ignited
Fault: S-C = short circuit, O-C = open circuit					
Note: --					



All view



External view

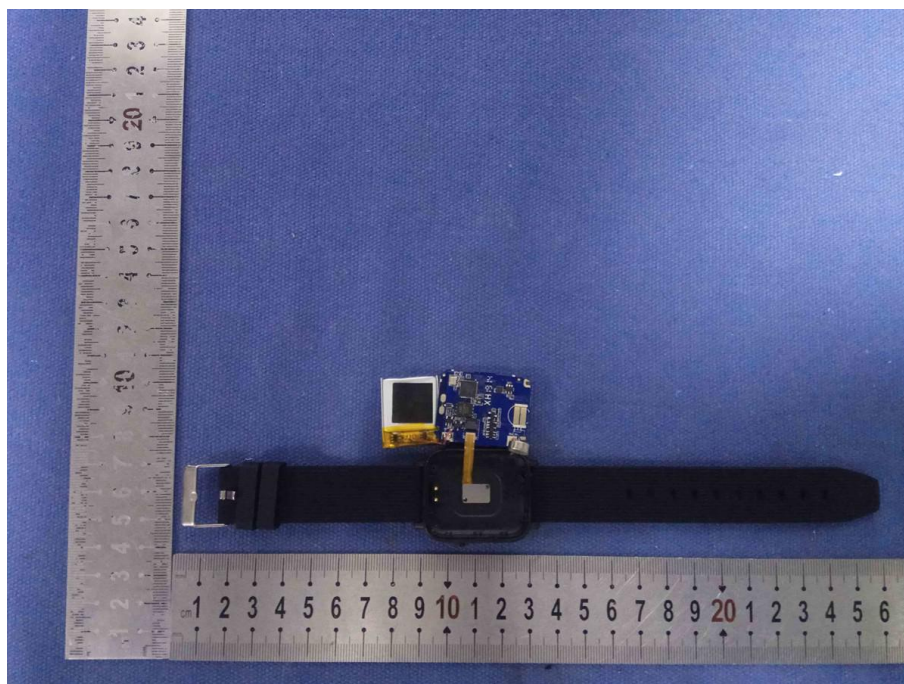


External view

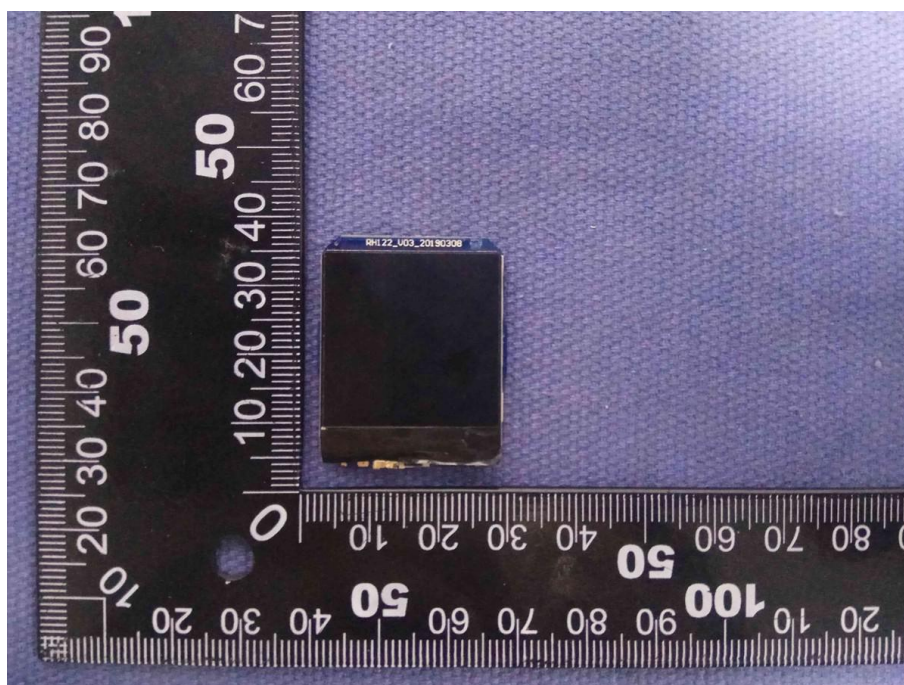


Internal view

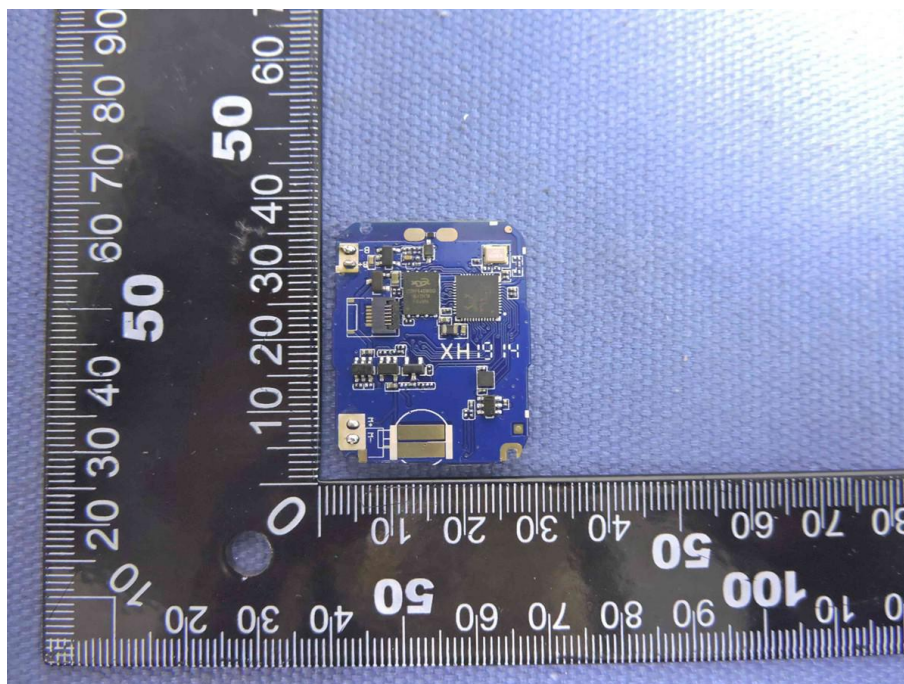




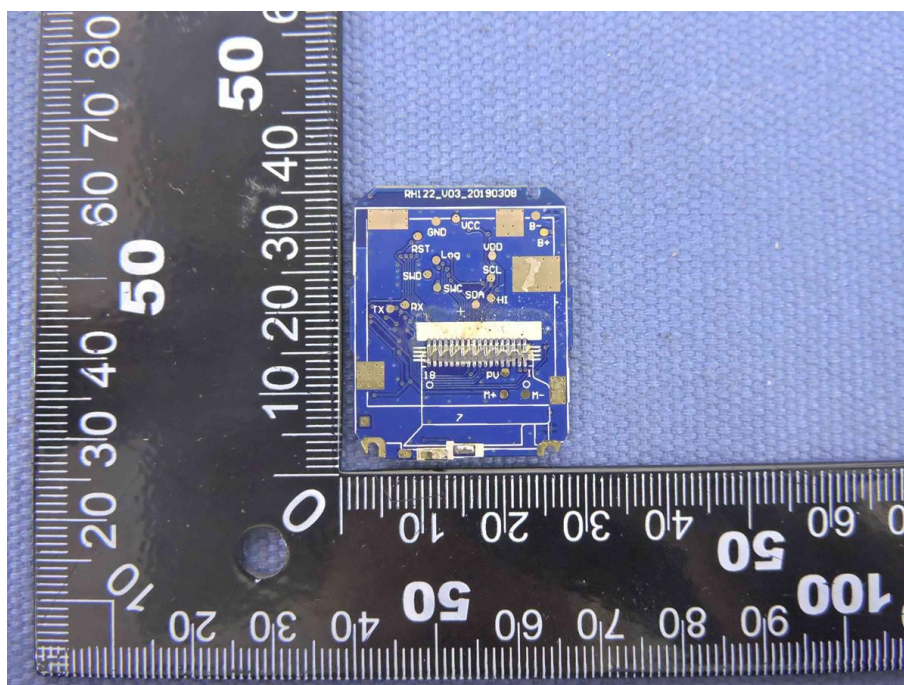
Internal view



Internal view

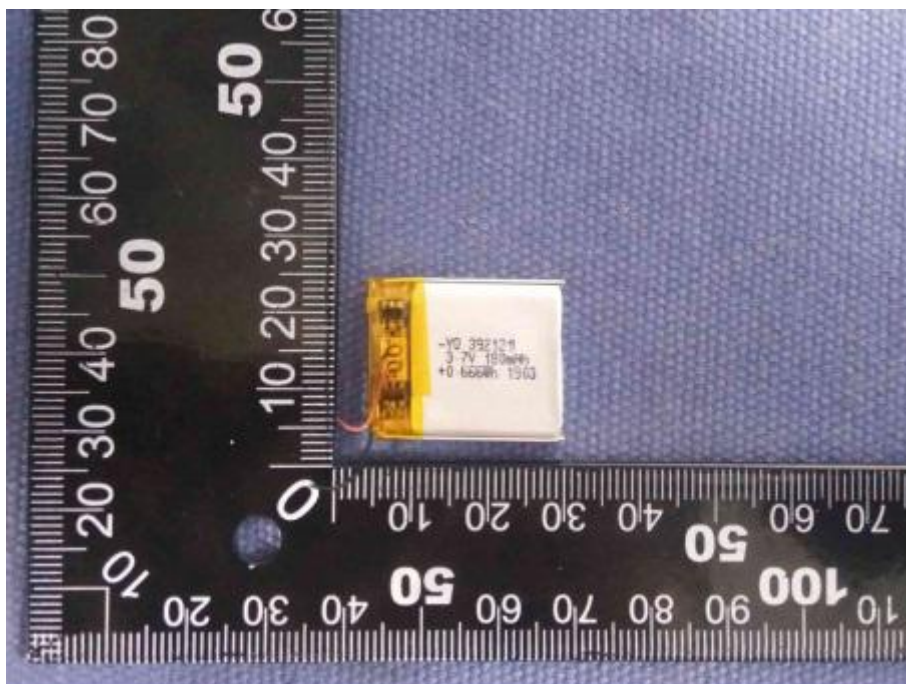


PCB view



PCB view





Battery view

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