



**CENTRE OF TESTING SERVICE  
INTERNATIONAL**

**OPERATE ACCORDING TO ISO/IEC 17025**

# **LVD TEST REPORT**

**TEST REPORT NUMBER : CGZ3170330-00942-L**



CTS (Ningbo) Testing Service Technology Co., Ltd.  
Fl.1 & 8 West, Bldg. B, No. 66, Qingyi Rd., Hi-Tech Zone, Ningbo, Zhejiang, China

## Table of contents

<b>1.</b>	<b>General Information</b>	<b>2</b>
1.1	Notes	2
1.2	Tester	3
1.3	Testing laboratory	4
1.4	Application details	4
1.5	Test item description	5
1.6	Test standards	6
<b>2.</b>	<b>Technical test</b>	<b>7</b>
2.1	Summary of test results	7
2.2	Test environment	7
2.3	Conformity verification - Summary of inspection	8
<b>3.</b>	<b>Test Results</b>	<b>9</b>
3.1	Particulars: test item vs. test requirements	9
3.2	General requirements and results	11
3.3	Annex as stated in the standards	28
3.4	Tables	42
	<b>Manufacturer/ Approval holder Declaration</b>	<b>47</b>
	<b>Attachments</b>	<b>48</b>

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## 1 General Information

### 1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has Passed all the relevant tests conforms to a specification (only telecommunication products).

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.

The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

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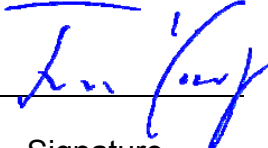
**1.2 Tester****Tested by:**

<u>03 July 2017</u>	<u>Kate Zhang</u>	<u></u>
Date	Name	Signature

**Reviewed by:**

<u>03 July 2017</u>	<u>Rock Weng</u>	<u></u>
Date	Name	Signature

**Approved by:**

<u>03 July 2017</u>	<u>Jun Yang</u>	<u></u>
Date	Name	Signature



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## 1.3 Testing laboratory

### 1.3.1 Location

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Telephone: + 86-574-87912121  
Telefax : + 86-574-87907993

### 1.3.2 Test location, where different from CTS:

Name: ./.  
Street: ./.  
Town: ./.  
Country: ./.  
Telephone: ./.  
Fax: ./.  
Teletex: ./.

## 1.4 Client details

### 1.4.1 Details of applicant

Name : CHROMATEQ  
Street : 191 Allée de Lauzard - Bat B, Rdc 1  
Town : 34980 St Gély du Fesc  
Country : France  
Telephone : +33 952210755  
Fax : ./.  
Teletex : ./.

Contact : BOURJOT  
Telephone : ./.

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**1.4.2 Details of manufacturer**

Name : CHROMATEQ  
Street : 191 Allée de Lauzard - Bat B, Rdc 1  
Town : 34980 St Gély du Fesc  
Country : France  
Telephone : +33 952210755  
Fax : ./.  
Teletex : ./.

Contact : BOURJOT  
Telephone : ./.

**1.4.3 Details of factory**

Name : CHROMATEQ  
Street : 191 Allée de Lauzard - Bat B, Rdc 1  
Town : 34980 St Gély du Fesc  
Country : France

**1.4.4 Dates of application**

Date of receipt of application : 30 March 2017  
Date of receipt of test item : 30 March 2017  
Date of test : 30 March – 03 July 2017

**1.5 Test item Description****1.5.1 Description of test item**

Type of product : DMX Controller  
Model/Type reference : LP32  
Serial number : ---

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### 1.5.2 Test item particulars

Test item..... :	DMX Controller
Trade Mark .....	---
Rated Frequency .....	<input type="checkbox"/> 50Hz; <input type="checkbox"/> 60Hz; <input type="checkbox"/> 50/60Hz; <input checked="" type="checkbox"/> DC; <input type="checkbox"/> Other:
Rated Power(Current) .....	5V dc
Mains supply tolerance (%) .....	---
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"/> 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;
Degree of Protection..... :	<input checked="" type="checkbox"/> IP20
Pollution degree (PD) .....	<input type="checkbox"/> PD 1; <input checked="" type="checkbox"/> PD 2; <input type="checkbox"/> PD 3
Equipment mobility .....	<input checked="" type="checkbox"/> movable; <input type="checkbox"/> Hand-held; <input 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"/> 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; <input type="checkbox"/> other:
Operating condition .....	<input checked="" type="checkbox"/> continuous; <input type="checkbox"/> rated operating / resting time:
Tested for IT power systems .....	<input type="checkbox"/> Yes; <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	---
Altitude during operation (m) .....	< 2000 m
Mass of Equipment..... :	0.05 kg.
Instructions language .....	<input checked="" type="checkbox"/> English; <input type="checkbox"/> French; <input type="checkbox"/> Other:

(all informations was provided by the applicant or detected at the sample)  
Please see also attachment

### 1.6 Test standards

**EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013**  
Information technology equipment – Safety –  
Part 1: General requirements  
(IEC 60950-1: 2005 + A1: 2009 + A2: 2013 )

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## 2 Technical test

### 2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



### 2.2 Test environment

Temperature:	0 ... 40 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Details of power supply:	AC 1-300V / DC 0-30V
Other parameters:	---

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## 2.3 Conformity verification - Summary of inspection

Clause	Summary of inspection	Test result		
		N.A.	Pass	Fail
1	General	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Protection from hazards	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Wiring, connections and supply	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Physical requirements	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Electrical requirements and simulated abnormal conditions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Connection to telecommunication networks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Connection to cable distribution systems	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annexes		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test case verdicts

N.A.: Test case does not apply to the test object

Pass: Test item does meet the requirement

Fail: Test item does not meet the requirement

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### 3 Test results basic standard(s)

### 3.1 Particulars: test item vs. Test requirements

<p align="center"><b>IEC 60950-1 and/or EN 60950-1</b>  <b>Information technology equipment – Safety –</b>  <b>Part 1: General requirements</b></p>	
<p><b>Possible test case verdicts:</b></p> <p>- test case does not apply to the test object .....: N(N/A)</p> <p>- test object does meet the requirement .....: P(Pass)</p> <p>- test object does not meet the requirement .....: F(Fail)</p>	
<p><b>Test specification:</b></p> <p>Standard .....: <input type="checkbox"/> IEC 60950-1: 2005 + A1: 2009 + A2: 2013  <input checked="" type="checkbox"/> EN 60950-1: 2006 + A11: 2009 + A1: 2010+ A12: 2011 + A2: 2013</p> <p>Test procedure .....: LVD COC approval.</p> <p>Non-standard test method.....: N/A</p>	
<p><b>Test Report Form No.....:</b> EN 60950_1D</p> <p>Test Report Form(s) Originator .....: Centre of Testing Service</p> <p>Master TRF.....: Dated Mar 2014</p> <p>Copyright blank test report .....: Centre of Testing Service</p>	

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**General remarks:**

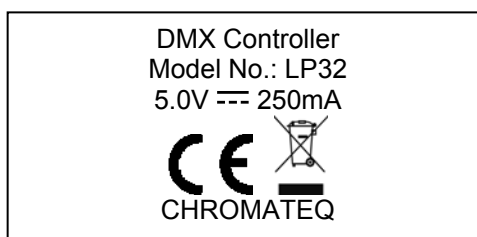
“(see remark #)” refers to a remark appended to the report.

“(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.

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

- The above markings are the minimum requirements required by safety standard. For the final production, the additional markings which do not give rise to misunderstanding may be added.

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### 3.2 General requirements and results

IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
<b>1</b>	<b>GENERAL</b>		<b>P</b>
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950 or relevant component standard	Components to be used complied either with the requirements of this standard or with the safety aspects of the relevant IEC component standards. (see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components		P
1.5.3	Thermal controls		N
1.5.4	Transformers		N
1.5.5	Interconnecting cables	No such parts	N
1.5.6	Capacitors bridging insulation		N
1.5.7	Resistors bridging insulation		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
1.5.7.4	Accessible parts		N
1.5.8	Components in equipment for IT power systems		N
1.5.9	Surge suppressors		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
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N
1.6	Power interface		N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.6.1	AC power distribution systems	Class III	N
1.6.2	Input current		N
1.6.3	Voltage limit of hand-held equipment		N
1.6.4	Neutral conductor		N

1.7	Marking and instructions		P
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V) .....	See marking plate	P
	Symbol for nature of supply, for d.c. only .....	See marking plate	P
	Rated frequency or rated frequency range (Hz) ..	See marking plate	N
	Rated current (mA or A) .....	See marking plate	P
	Manufacturer's name or trade-mark or identification mark .....	See marking plate	P
	Model identification or type reference .....	LP32	P
	Symbol for Class II equipment only .....	Class III	N
	Other markings and symbols .....	See marking plate	P
1.7.2	Safety instructions and marking	See manual	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices		N
1.7.2.3	Overcurrent protective 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	No such parts	N
1.7.3	Short duty cycles	Continuous operation	N
1.7.4	Supply voltage adjustment .....	No such parts	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) .....		N
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals .....		N
1.7.7.2	Terminals 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		P

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.7.8.1	Identification, location and marking .....		P
1.7.8.2	Colours .....		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 such parts	N
1.7.11	Durability	After this test, the marking remained legible and without curling.	P
1.7.12	Removable parts		P
1.7.13	Replaceable batteries .....		N
	Language(s) .....		—
1.7.14	Equipment for restricted access locations .....		N

<b>2</b>	<b>PROTECTION FROM HAZARDS</b>		—
2.1	Protection from electric shock and energy hazards		—
2.1.1	Protection in operator access areas	Class III equipment	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) .....		N
2.1.1.2	Battery compartments		N
2.1.1.3	Access to ELV wiring		N
	Working voltage (V <sub>peak</sub> or V <sub>rms</sub> ); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring		N
2.1.1.5	Energy hazards .....		N
2.1.1.6	Manual controls		N
2.1.1.7	Discharge of capacitors in equipment		N
	Measured voltage (V); time-constant (s) .....		—
2.1.1.8	Energy hazards – 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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
2.1.1.9	Audio amplifiers .....		N
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N

2.2	SELV circuits		—
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V) .....		P
2.2.3	Voltages under fault conditions (V) .....		P
2.2.4	Connection of SELV circuits to other circuits .....		N

2.3	TNV circuits		—
2.3.1	Limits		N
	Type of TNV circuits .....		—
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

2.4	Limited current circuits		—
2.4.1	General requirements		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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
2.5	Limited power sources		—
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		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)		—
2.6	Provisions for earthing and bonding		—
2.6.1	Protective earthing	Class III equipment	N
2.6.2	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 ..... :		—
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

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IEC/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	No such parts	N

2.7	Overcurrent and earth fault protection in primary circuits		—
2.7.1	Basic requirements	Class III equipment	N
	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

2.8	Safety interlocks		—
2.8.1	General principles	No such parts	N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		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
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test		N
2.8.8	Mechanical actuators		N

2.9	Electrical insulation	—
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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
2.9.1	Properties of insulating materials		N
2.9.2	Humidity conditioning		N
	Relative humidity (%), temperature (°C) ..... :		—
2.9.3	Grade of insulation		N
2.9.4	Separation from hazardous voltages		N
	Method(s) used ..... :		—

2.10	Clearances, creepage distances and distances through insulation		—
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	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		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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
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
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
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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	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		P
2.10.6.1	Uncoated printed boards		P
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	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		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>		—
3.1	General		—
3.1.1	Current rating and overcurrent protection	Class III equipment, internal wires complied with the requirements of this standard.	P
3.1.2	Protection against mechanical damage		P
3.1.3	Securing of internal wiring		P

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators		N
3.1.6	Screws for electrical contact pressure		N
3.1.7	Insulating materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws		N
3.1.9	Termination of conductors		N
	10 N pull test		N
3.1.10	Sleeving on wiring		N

3.2	Connection to a mains supply		—
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 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

3.3	Wiring terminals for connection of external conductors		—
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IEC/EN 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

3.4	Disconnection from the mains supply		—
3.4.1	General requirement		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 sources		N

3.5	Interconnection of equipment		—
3.5.1	General requirements	No electrically connection to another equipment	N
3.5.2	Types of interconnection circuits .....		N
3.5.3	ELV circuits as interconnection circuits		N
3.5.4	Data ports for additional equipment		N

<b>4</b>	<b>PHYSICAL REQUIREMENTS</b>		—
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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
4.1	Stability		—
	Angle of 10°		N
	Test force (N) ..... :		N

4.2	Mechanical strength		—
4.2.1	General		N
4.2.2	Steady force test, 10 N		N
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N		N
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 such parts	N
	Picture tube separately certified ..... :		N
4.2.9	High pressure lamps	No such parts	N
4.2.10	Wall or ceiling mounted equipment; force (N) .... :		N

4.3	Design and construction		—
4.3.1	Edges and corners	No hazards	P
4.3.2	Handles and manual controls; force (N).....:		N
4.3.3	Adjustable controls		N
4.3.4	Securing of parts		N
4.3.5	Connection by plugs and sockets		N
4.3.6	Direct plug-in equipment		N
	Torque .....:		—
	Compliance with the relevant mains plug standard .....:		N
4.3.7	Heating elements in earthed equipment	No such parts	N
4.3.8	Batteries		P
	- Overcharging of a rechargeable battery	No charging circuits, don't charging, no hazard.	N
	- Unintentional charging of a non-rechargeable battery	No applicable	N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	- Reverse charging of a rechargeable battery	No applicable	N
	- Excessive discharging rate for any battery	Short-circuited resistance/diode from battery circuit: no damage, no hazard.	P
4.3.9	Oil and grease	No such parts	N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases		N
4.3.12	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	Laser (including LEDs)		N
	Laser class .....		—
4.3.13.6	Other types .....		N

4.4	Protection against hazardous moving parts		—
4.4.1	General	No such parts	N
4.4.2	Protection in operator access areas .....		N
4.4.3	Protection in restricted access locations .....		N
4.4.4	Protection in service access areas		N

4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests		P

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Normal load condition per 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 .....		N

4.6	Openings in enclosures		N
4.6.1	Top and side openings	No openings	N
	Dimensions (mm) .....		—
4.6.2	Bottoms 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	No openings	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
	Conditioning temperature (°C), time (weeks) .....		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials	fire enclosure applied.	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure		P
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	See appended table 1.5.1	P
4.7.3.3	Materials for components and other parts outside fire enclosures		P
4.7.3.4	Materials for components and other parts inside fire enclosures		P
4.7.3.5	Materials for air filter assemblies		N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
4.7.3.6	Materials used in high-voltage components		N

<b>5</b>	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</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
	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		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 currents from telecommunication networks		N
	a) EUT with earthed telecommunication ports ...		N
	b) EUT whose telecommunication ports have no reference to protective earth		N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict

5.2	Electric strength		—
5.2.1	General	Class III equipment	N
5.2.2	Test procedure		N

5.3	Abnormal operating and fault conditions		N
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	N
5.3.2	Motors		N
5.3.3	Transformers		N
5.3.4	Functional insulation .....		P
5.3.5	Electromechanical components		N
5.3.6	Audio amplifiers in ITE .....		N
5.3.7	Simulation of faults		N
5.3.8	Unattended equipment		N
5.3.9	Compliance criteria for abnormal operating and fault conditions	(see appended table 5.3)	N
5.3.9.1	During the tests	No hazards	N
5.3.9.2	After the tests	No hazards	N

<b>6</b>	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</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

6.2	Protection of equipment users from overvoltages on telecommunication networks		—
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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
6.2.2.3	Compliance criteria		N

6.3	Protection of the telecommunication wiring system from overheating		N
	Max. output current (A) .....		—
	Current limiting method .....		—

<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b>		—
7.1	General		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

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### 3.3 Annex as stated in the standards

IEC/EN 60950-1			
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 .....		—
	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).....		—

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Sample 3 burning time (s)..... :		—
A.3	Hot flaming oil test (see 4.6.2)		N
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		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 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		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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Operating voltage (V) .....		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection .....		—
C.1	Overload test		N
C.2	Insulation		N
	Protection from displacement of windings .....		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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
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 voltages (V)		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
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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
L.7	Other business equipment	Maximum nominal load condition specified by the manufacturer instruction.	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	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

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 generator		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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
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
			—
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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
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	—
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EN 60950-1: 2006 – 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 Annex ZC (informative) A-deviations		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
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		N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	<p>conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones.</p> <p>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.</p>		
1.5.1	<p>Add the following NOTE:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC</p>		P
1.7.2.1	<p>Add the following NOTE:</p> <p>NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss</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
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>		N

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IEC/EN 60950-1															
Clause	Requirement - Test	Result - Remark	Verdict												
	<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></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		
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	<p>Add the following NOTE:</p> <p>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. Standards taking into account this Recommendation 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 Denmark, 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
1.5.7.1	In Finland, Norway and Sweden, 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 Norway, 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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.5.9.4	In Finland, Norway and Sweden, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N
1.7.2.1	<p>In Finland, Norway and Sweden, 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>		N

1.7.5	In Denmark, 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 Norway, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N																				
2.3.2	In Finland, Norway and Sweden 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 Norway, 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 United Kingdom, the current rating of the circuit shall be taken as 13 A, not 16 A.		N																				
2.7.1	In the United Kingdom, 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 Finland, Norway and Sweden, 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 Switzerland, 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> </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		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																				
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																				

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	SEV 5934-2:1998 Plug Type 23 L+N+PE 250 V, 16 A		
3.2.1.1	<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 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

3.2.1.1	<p>In Spain, 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 United Kingdom, 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 Ireland, 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 Switzerland, for requirements see 3.2.1.1 of this annex.		N
3.2.5.1	In the United Kingdom, 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 United Kingdom, 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	In the United Kingdom, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003		N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	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.		
4.3.6	In Ireland, 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

5.1.7.1	<p>In Finland, Norway and Sweden 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	<p>In Finland, Norway and Sweden, 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>		N

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
	<p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p> <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>		
6.1.2.2	In Finland, Norway and Sweden, 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 Finland, Norway and Sweden, 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 Norway and Sweden, 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 Norway, for installation conditions see EN 60728-11:2005.		N
ZC	A-DEVIATIONS (informative)		N
1.5.1	Sweden (Ordinance 1990:944)  Add the following:  NOTE In Sweden, switches containing mercury are not permitted.		N
1.5.1	Switzerland (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

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.7.2.1	<p>Denmark (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>Germany (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>Denmark (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>Switzerland (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>Denmark (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

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### 3.4 Tables

IEC/EN 60950-1					
Clause	Requirement - Test		Result - Remark		Verdict
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>
Enclosure	TEIJIN CHEMICALS PLASTIC COMPOUNDS SHANGHAI LTD	L-1225LD	V-2; 80°C	---	UL E244324 Tested with appliance
PCB	HAIMEN JIANHE PCB CO LTD	YG 01	V-0; 105°C	---	UL E200705 Tested with appliance
1) An asterisk indicates a mark which assures the agreed level of surveillance					
Supplementary information:---					

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IEC/EN 60950-1						
Clause	Requirement - Test				Result - Remark	
1.6.2	TABLE: Electrical data (in normal conditions)					N
U (V)	I (A)	I rated (A)	P (W)	Fuse #	I fuse (A)	Condition/status
---	---	---	---	---	---	---
---	---	---	---	---	---	---
---	---	---	---	---	---	---
---	---	---	---	---	---	---
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: TR=Transformer							

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

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IEC/EN 60950-1									
Clause	Requirement - Test					Result - Remark			Verdict
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?									N
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	---	---	---	---	---	---	---	---	---
Max. current during fault condition	---	---	---	---	---	---	---	---	---
- Chemical leaks						---			N
- Explosion of the battery						---			N
- Emission of flame or expulsion of molten metal						---			N
- Electric strength tests of equipment after completion of tests						---			N
Supplementary information:---									

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IEC/EN 60950-1								
Clause	Requirement - Test			Result - Remark			Verdict	
4.5	TABLE: Thermal requirements						P	
	Supply voltage (V) .....	DC 5V		---		---		
	Ambient T <sub>min</sub> (°C) .....	24,4		---		---		
	Ambient T <sub>max</sub> (°C) .....	24,6		---		---		
Maximum measured temperature T of part/at::		T (°C)					Allowed T <sub>max</sub> (°C)	
Enclosure		29,6		---		70		
Button		26,0		---		85		
PCB		31,7		---		105		
Supplementary information:								
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
---		---	---	---	---	---	---	---
Supplementary information:								

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N
	Allowed impression diameter (mm) .....	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
---		---	---	
Supplementary information:				

4.7	TABLE: Resistance to fire					P
Part		Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
PCB		HAIMEN JIANHE PCB CO LTD	YG 01	---	V-0	---
Supplementary information: see table 1.5.1 for details						

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IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict

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					N
	Ambient temperature (°C) .....:			25 °C		—
	Power source for EUT: Manufacturer, model/type, output rating : ---					—
Com- ponent No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
---	---	---	---	---	---	---
Supplementary information: ---						

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## Manufacturer/ Approval holder Declaration

The following identical model(s):

**LP128.**

belong to the tested device:

Product description: **DMX Controller**  
Model name: **LP32**

**No additional models were tested.**

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## Attachments

- ☒ Photo document
- ☐ BOM
- ☐ CDF (critical data form)
- ☐ Copies of certificates of certified components
- ☐ Instruction manual
- ☐ Circuit diagram
- ☐ Explosion block
- ☐ Other if necessary

-----end of report-----

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Attachment

Page 1 of 4

**Type Designation:** DMX Controller, LP32  
**Report Number:** CGZ3170330-00942-L



Figure 1 (External view- side 1)



Figure 2 (External view- side 2)

Attachment

Page 2 of 4

**Type Designation:** DMX Controller, LP32  
**Report Number:** CGZ3170330-00942-L



Figure 3 (External view- side 3)



Figure 4 (External view- base)

Attachment

Page 3 of 4

**Type Designation:** DMX Controller, LP32  
**Report Number:** CGZ3170330-00942-L



Figure 5 (Internal view - 1)



Figure 6 (Internal view - 2)

Attachment

Page 4 of 4

**Type Designation:**  
**Report Number:**

**DMX Controller, LP32**  
**CGZ3170330-00942-L**



Figure 7 (PCB – side 1)

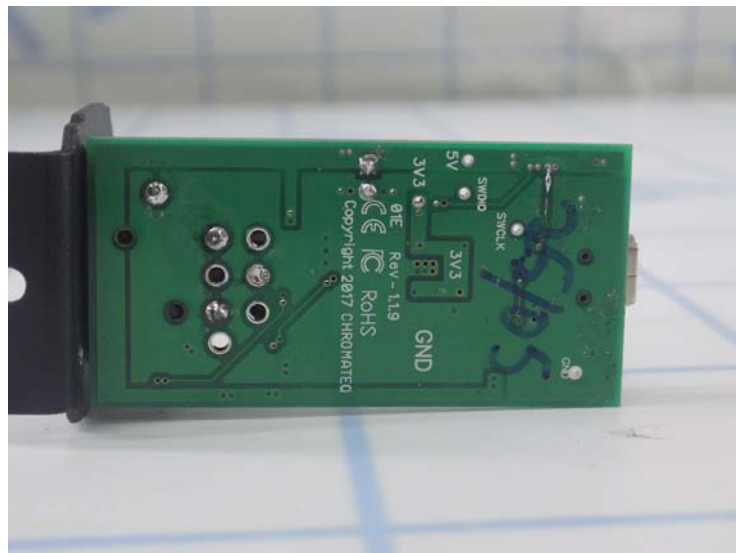


Figure 8 (PCB – side 2)