



2012002402H



检测
CNAS L1659

Report No. SET2014-14204

LVD TEST REPORT

Report No.: SET2014-14204

Product: Wireless Mouse

Model No. : MS-295OR

Brand Name: /

Applicant: Shenzhen Tianjie Electronic Co.,Ltd

Issued by: CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd

Lab Location: Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055, P. R. China

Tel: 86 755 26627338 **Fax:** 86 755 26627238



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查询码: U6Y7DYRX



Test Report

Product : Wireless Mouse

Model No. : MS-295OR

Brand Name : /

Applicant : SHENZHEN TIANJIE ELECTRONIC CO.,LTD

Applicant Address : Bld 18,3rd industry area,Xitian town,Gongming street,Guangming
new district, Shenzhen,Guangdong,China.

Manufacturer : Same As Applicant

Manufacturer Address..... : Same As Applicant

Rating : Receive:5V \equiv 25mA
Transmitter: 1.5V \equiv 8mA

Test Standards..... : EN 60950-1 : 2006+A11 : 2009+A1:2010+A12 : 2011
Information technology equipment - Safety - Part 1: General
requirements

Test Result : PASS

Tested by : Hu Hua Jun


Signature, Date

Reviewed by : Sun Shan


Signature, Date

Approved by : Wu Li An


Signature, Date





| | |
|---|---|
| Test item | |
| 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 |
| Operating condition | <input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time: |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV |
| Mains supply tolerance (%)..... | / |
| 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 |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 <input type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| Altitude during operation (m) | Below 2000m |
| Altitude of test laboratory (m) | Below 2000m |
| IP protection class | IPX0 |
| Testing | |
| Date of receipt of test item | December 12, 2014 |
| Date(s) of performance of test | December 12, 2014 |
| Date of report issue | December 12, 2014 to December 24, 2014 |
| Factory..... | SHENZHEN TIANJIE ELECTRONIC CO.,LTD |
| Address..... | Bld 18,3rd industry area,Xitian town,Gongming street,Guangming new district, Shenzhen,Guangdong,China. |
| Test case verdicts | |
| Test case does not apply to the test object..... | N/A |
| Test item does meet the requirement..... | P(ass) |
| Test item does not meet the requirement..... | F(ail) |
| | |
| General remarks: | Attached with: |
| This test report shall not be reproduced except in full without the written approval of the testing laboratory. | |
| The test results presented in this report relate only to the item tested. | |
| "(see remark #)" refers to a remark appended to the report. | |

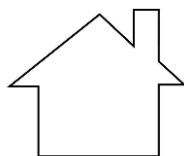
General product information:

Technical considerations :

- 1、 The product was submitted and evaluated for use at the maximum ambient temperature(Tma):25℃.
- 2、 Wireless Mouse can be power by AA battery.

Copy of marking plate

Wireless Mouse
Model: MS-295OR
Receive: 5V \equiv ,25mA,150mW
Transmitter: 1.5V \equiv ,8mA,50mW



SHENZHEN TIANJIE ELECTRONIC CO. , LTD.
Made In China



| EN 60950-1 | | | |
|------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---------|--|---|
| 1 | GENERAL | | P |
|---|---------|--|---|

| | | | |
|---------|--|---|-----|
| 1.5 | Components | | P |
| 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 | Components certified to IEC standards and/ or their harmonized standards, are used within their rating and are checked for correct application. | P |
| 1.5.3 | Thermal controls | No thermal controls | N/A |
| 1.5.4 | Transformers | | N/A |
| 1.5.5 | Interconnecting cables | | N/A |
| 1.5.6 | Capacitors bridging insulation | | N/A |
| 1.5.7 | Resistors bridging insulation | | N/A |
| 1.5.7.1 | Resistors bridging functional, basic or supplementary insulation | | N/A |
| 1.5.7.2 | Resistors bridging double or reinforced insulation between a.c. mains and other circuits | | N/A |
| 1.5.7.3 | Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable | | N/A |
| 1.5.8 | Components in equipment for IT power systems | | N/A |
| 1.5.9 | Surge suppressors | No such part | N/A |
| 1.5.9.1 | General | | N/A |
| 1.5.9.2 | Protection of VDRs | | N/A |
| 1.5.9.3 | Bridging of functional insulation by a VDR | | N/A |
| 1.5.9.4 | Bridging of basic insulation by a VDR | | N/A |
| 1.5.9.5 | Bridging of supplementary, double or reinforced insulation by a VDR | | N/A |

| | | | |
|-------|--------------------------------------|---|-----|
| 1.6 | Power interface | | N/A |
| 1.6.1 | AC power distribution systems | TN Power System | N/A |
| 1.6.2 | Input current | (see appended table 1.6.2) | N/A |
| 1.6.3 | Voltage limit of hand-held equipment | <250V | N/A |
| 1.6.4 | Neutral conductor | Neutral is insulated from earth with basic insulation throughout the equipment. | N/A |

| | | | |
|-------|--------------------------|--|---|
| 1.7 | Marking and instructions | | P |
| 1.7.1 | Power rating | | P |



| EN 60950-1 | | | |
|------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Rated voltage(s) or voltage range(s) (V): | The equipment is for d.c. supply | N/A |
| | Symbol for nature of supply, for d.c. only: | Receive: 5V== Transmitter: 1.5V= | P |
| | Rated frequency or rated frequency range (Hz): | | N/A |
| | Rated current (mA or A): | Receive: 25mA Transmitter: 8mA | P |
| | Manufacturer's name or trade-mark or identification mark: | SHENZHEN TIANJIE ELECTRONIC CO., LTD | P |
| | Model identification or type reference: | MS-295OR | P |
| | Symbol for Class II equipment only: | Not class II equipment. | N/A |
| | Other markings and symbols: | Other markings and symbols do not give rise to misunderstanding. | P |
| 1.7.2 | Safety instructions and marking | See below: | P |
| 1.7.2.1 | General | Instructions are available. | P |
| 1.7.2.2 | Disconnect devices | | N/A |
| 1.7.2.3 | Overcurrent protective device | | N/A |
| 1.7.2.4 | IT power distribution systems | | N/A |
| 1.7.2.5 | Operator access with a tool | | N/A |
| 1.7.2.6 | Ozone | | N/A |
| 1.7.3 | Short duty cycles | | N/A |
| 1.7.4 | Supply voltage adjustment | No voltage selector | N/A |
| | Methods and means of adjustment; reference to installation instructions | Same as above. | N/A |
| 1.7.5 | Power outlets on the equipment | No standard power outlets provided | N/A |
| 1.7.6 | Fuse identification (marking, special fusing characteristics, cross-reference) | | N/A |
| 1.7.7 | Wiring terminals | | N/A |
| 1.7.7.1 | Protective earthing and bonding terminals : | Class III appliances | N/A |
| 1.7.7.2 | Terminals for a.c. mains supply conductors | | N/A |
| 1.7.7.3 | Terminals for d.c. mains supply conductors | | N/A |
| 1.7.8 | Controls and indicators | See below. | P |
| 1.7.8.1 | Identification, location and marking | Indicators for power switch are located that indication of function is clearly. | N/A |
| 1.7.8.2 | Colors | | N/A |
| 1.7.8.3 | Symbols according to IEC 60417 | Marking for power switch is | P |



| EN 60950-1 | | | |
|------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | | according to IEC 60417, No. 5007 and No. 5008 (line and circle). | |
| 1.7.8.4 | Markings using figures | No controls. | N/A |
| 1.7.9 | Isolation of multiple power sources | Only one connection supplying hazardous voltages and energy levels to the equipment. | N/A |
| 1.7.10 | Thermostats and other regulating devices | Neither thermostats nor other regulating devices provided. | N/A |
| 1.7.11 | Durability | The marking plate was subjected to the permanence of marking test. The marking plate was rubbed with cloth soaked with water for 15s and then again for 15s with the cloth soaked with petroleum spirit. After this test there was no damage to the marking plate. The marking on the label did not fade. There was no curling of the marking plate. | P |
| 1.7.12 | Removable parts | No marking is placed on removable parts. | N/A |
| 1.7.13 | Replaceable batteries | Use AA battery | P |
| | Language(s) | Use English | P |
| 1.7.14 | Equipment for restricted access locations | The equipment is not intended to be use in restricted access locations | N/A |

| | | | |
|---------|--|----------------------|-----|
| 2 | PROTECTION FROM HAZARDS | | N/A |
| 2.1 | Protection from electric shock and energy hazards | | N/A |
| 2.1.1 | Protection in operator access areas | Class III appliances | N/A |
| 2.1.1.1 | Access to energized parts | | N/A |
| | Test by inspection : | | N/A |
| | Test with test finger (Figure 2A) : | | N/A |
| | Test with test pin (Figure 2B) : | | N/A |
| | Test with test probe (Figure 2C) : | | N/A |
| 2.1.1.2 | Battery compartments | | P |
| 2.1.1.3 | Access to ELV wiring | | N/A |
| | Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm) | | - |
| 2.1.1.4 | Access to hazardous voltage circuit wiring | | N/A |



| EN 60950-1 | | | |
|------------|---|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.1.1.5 | Energy hazards : | No energy hazards | N/A |
| 2.1.1.6 | Manual controls | | N/A |
| 2.1.1.7 | Discharge of capacitors in equipment | | N/A |
| | Measured voltage (V); time-constant (s)..... : | | - |
| 2.1.1.8 | Energy hazards – d.c. mains supply | | N/A |
| | a) Capacitor connected to the d.c. mains supply .. : | | N/A |
| | b) Internal battery connected to the d.c. mains supply .. : | | N/A |
| 2.1.1.9 | Audio amplifiers .. : | No audio amplifiers applied. | N/A |
| 2.1.2 | Protection in service access areas | | N/A |
| 2.1.3 | Protection in restricted access locations | | N/A |

| | | | |
|-------|--|---|-----|
| 2.2 | SELV circuits | | P |
| 2.2.1 | General requirements | The circuits inside equipment were SELV circuits. See sub-clauses 2.2.2 to 2.2.4. | P |
| 2.2.2 | Voltages under normal conditions (V) .. : | Between any conduct or of the SELV circuits, 42.4V peak or 60Vd.c. is not exceeded. | P |
| 2.2.3 | Voltages under fault conditions (V) .. : | | N/A |
| 2.2.4 | Connection of SELV circuits to other circuits .. : | Complied with 2.2.2, 2.2.3 | N/A |

| | | | |
|---------|--|--|-----|
| 2.3 | TNV circuits | | N/A |
| 2.3.1 | Limits | | N/A |
| | Type of TNV circuits..... : | | - |
| 2.3.2 | Separation from other circuits and from accessible parts | | N/A |
| 2.3.2.1 | General requirements | | N/A |
| 2.3.2.2 | Protection by basic insulation | | N/A |
| 2.3.2.3 | Protection by earthing | | N/A |
| 2.3.2.4 | Protection by other constructions .. : | | N/A |
| 2.3.3 | Separation from hazardous voltages | | N/A |
| | Insulation employed..... : | | - |
| 2.3.4 | Connection of TNV circuits to other circuits | | N/A |
| | Insulation employed..... : | | - |
| 2.3.5 | Test for operating voltages generated externally | | N/A |

| | | | |
|-----|--------------------------|--|-----|
| 2.4 | Limited current circuits | | N/A |
|-----|--------------------------|--|-----|



| EN 60950-1 | | | |
|------------|--|----------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.4.1 | General requirements | | N/A |
| 2.4.2 | Limit values | | N/A |
| | Frequency (Hz) | | - |
| | Measured current (mA) | | - |
| | Measured voltage (V)..... | | - |
| | Measured circuit capacitance (nF or μ F) | | - |
| 2.4.3 | Connection of limited current circuits to other circuits | | N/A |
| 2.5 | Limited power sources | | N/A |
| | a) Inherently limited output | | N/A |
| | b) Impedance limited output | | N/A |
| | c) Regulating network limited output under normal operating and single fault condition | | N/A |
| | d) Overcurrent protective device limited output | | N/A |
| | 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 | | N/A |
| 2.6.1 | Protective earthing | Class III appliances | N/A |
| 2.6.2 | Functional earthing | | N/A |
| 2.6.3 | Protective earthing and protective bonding conductors | | N/A |
| 2.6.3.1 | General | | N/A |
| 2.6.3.2 | Size of protective earthing conductors | | N/A |
| | Rated current (A), cross-sectional area (mm^2), AWG..... | | - |
| 2.6.3.3 | Size of protective bonding conductors | | N/A |
| | Rated current (A), cross-sectional area (mm^2), AWG..... | | - |
| | Protective current rating (A), cross-sectional area (mm^2), AWG..... | | - |
| 2.6.3.4 | Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... | | N/A |
| 2.6.3.5 | Colour of insulation | | N/A |
| 2.6.4 | Terminals | | N/A |
| 2.6.4.1 | General | | N/A |



| EN 60950-1 | | | |
|------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.6.4.2 | Protective earthing and bonding terminals | | N/A |
| | Rated current (A), type, nominal thread diameter (mm)..... : | | - |
| 2.6.4.3 | Separation of the protective earthing conductor from protective bonding conductors | | N/A |
| 2.6.5 | Integrity of protective earthing | | N/A |
| 2.6.5.1 | Interconnection of equipment | | N/A |
| 2.6.5.2 | Components in protective earthing conductors and protective bonding conductors | | N/A |
| 2.6.5.3 | Disconnection of protective earth | | N/A |
| 2.6.5.4 | Parts that can be removed by an operator | | N/A |
| 2.6.5.5 | Parts removed during servicing | | N/A |
| 2.6.5.6 | Corrosion resistance | | N/A |
| 2.6.5.7 | Screws for protective bonding | | N/A |
| 2.6.5.8 | Reliance on telecommunication network or cable distribution system | | N/A |
| 2.7 | Overcurrent and earth fault protection in primary circuits | | N/A |
| 2.7.1 | Basic requirements | | N/A |
| | Instructions when protection relies on building installation | | N/A |
| 2.7.2 | Faults not simulated in 5.3.7 | | N/A |
| 2.7.3 | Short-circuit backup protection | | N/A |
| 2.7.4 | Number and location of protective devices : | | N/A |
| 2.7.5 | Protection by several devices | | N/A |
| 2.7.6 | Warning to service personnel : | | N/A |
| 2.8 | Safety interlocks | | N/A |
| 2.8.1 | General principles | | N/A |
| 2.8.2 | Protection requirements | | N/A |
| 2.8.3 | Inadvertent reactivation | | N/A |
| 2.8.4 | Fail-safe operation | | N/A |
| 2.8.5 | Moving parts | | N/A |
| 2.8.6 | Overriding | | N/A |
| 2.8.7 | Switches and relays | | N/A |
| 2.8.7.1 | Contact gaps (mm) : | | N/A |
| 2.8.7.2 | Overload test | | N/A |
| 2.8.7.3 | Endurance test | | N/A |
| 2.8.7.4 | Electric strength test | | N/A |
| 2.8.8 | Mechanical actuators | | N/A |



| EN 60950-1 | | | |
|------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|-------|---|----------------------|-----|
| 2.9 | Electrical insulation | | N/A |
| 2.9.1 | Properties of insulating materials | Class III appliances | N/A |
| 2.9.2 | Humidity conditioning | | N/A |
| | Relative humidity (%), temperature (°C) | | - |
| 2.9.3 | Grade of insulation | | N/A |
| 2.9.4 | Separation from hazardous voltages | | N/A |
| | Method(s) used | | - |

| | | | |
|----------|---|--|-----|
| 2.10 | Clearances, creepage distances and distances through insulation | | N/A |
| 2.10.1 | General | | N/A |
| 2.10.1.1 | Frequency | | N/A |
| 2.10.1.2 | Pollution degrees | | N/A |
| 2.10.1.3 | Reduced values for functional insulation | | N/A |
| 2.10.1.4 | Intervening unconnected conductive parts | | N/A |
| 2.10.1.5 | Insulation with varying dimensions | | N/A |
| 2.10.1.6 | Special separation requirements | | N/A |
| 2.10.1.7 | Insulation in circuits generating starting pulses | | N/A |
| 2.10.2 | Determination of working voltage | | N/A |
| 2.10.2.1 | General | | N/A |
| 2.10.2.2 | RMS working voltage | | N/A |
| 2.10.2.3 | Peak working voltage | | N/A |
| 2.10.3 | Clearances | | N/A |
| 2.10.3.1 | General | | N/A |
| 2.10.3.2 | Mains transient voltages | | N/A |
| | a) AC mains supply | | N/A |
| | b) Earthed d.c. mains supplies | | N/A |
| | c) Unearthed d.c. mains supplies | | N/A |
| | d) Battery operation | | N/A |
| 2.10.3.3 | Clearances in primary circuits | | N/A |
| 2.10.3.4 | Clearances in secondary circuits | | N/A |
| 2.10.3.5 | Clearances in circuits having starting pulses | | N/A |
| 2.10.3.6 | Transients from a.c. mains supply | | N/A |
| 2.10.3.7 | Transients from d.c. mains supply | | N/A |
| 2.10.3.8 | Transients from telecommunication networks and cable distribution systems | | N/A |
| 2.10.3.9 | Measurement of transient voltage levels | | N/A |
| | a) Transients from a mains supply | | N/A |



| EN 60950-1 | | | |
|------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | For an a.c. mains supply | | N/A |
| | For a d.c. mains supply | | N/A |
| | b) Transients from a telecommunication network : | | N/A |
| 2.10.4 | Creepage distances | | N/A |
| 2.10.4.1 | General | | N/A |
| 2.10.4.2 | Material group and comparative tracking index | | N/A |
| | CTI tests | | - |
| 2.10.4.3 | Minimum creepage distances | | N/A |
| 2.10.5 | Solid insulation | | N/A |
| 2.10.5.1 | General | | N/A |
| 2.10.5.2 | Distances through insulation | | N/A |
| 2.10.5.3 | Insulating compound as solid insulation | | N/A |
| 2.10.5.4 | Semiconductor devices | | N/A |
| 2.10.5.5 | Cemented joints | | N/A |
| 2.10.5.6 | Thin sheet material – General | | N/A |
| 2.10.5.7 | Separable thin sheet material | | N/A |
| | Number of layers (pcs) | | - |
| 2.10.5.8 | Non-separable thin sheet material | | N/A |
| 2.10.5.9 | Thin sheet material – standard test procedure | | N/A |
| | Electric strength test | | - |
| 2.10.5.10 | Thin sheet material – alternative test procedure | | N/A |
| | Electric strength test | | - |
| 2.10.5.11 | Insulation in wound components | | N/A |
| 2.10.5.12 | Wire in wound components | | N/A |
| | Working voltage | | N/A |
| | a) Basic insulation not under stress | | N/A |
| | b) Basic, supplementary, reinforced insulation | | N/A |
| | c) Compliance with Annex U | | N/A |
| | Two wires in contact inside wound component; angle between 45° and 90° | | N/A |
| 2.10.5.13 | Wire with solvent-based enamel in wound components | | N/A |
| | Electric strength test | | - |
| | Routine test | | N/A |
| 2.10.5.14 | Additional insulation in wound components | | N/A |
| | Working voltage | | N/A |
| | - Basic insulation not under stress | | N/A |
| | - Supplementary, reinforced insulation | | N/A |



| EN 60950-1 | | | |
|------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.6 | Construction of printed boards | | N/A |
| 2.10.6.1 | Uncoated printed boards | | N/A |
| 2.10.6.2 | Coated printed boards | | N/A |
| 2.10.6.3 | Insulation between conductors on the same inner surface of a printed board | | N/A |
| 2.10.6.4 | Insulation between conductors on different layers of a printed board | | N/A |
| | Distance through insulation | | N/A |
| | Number of insulation layers (pcs) : | | N/A |
| 2.10.7 | Component external terminations | | N/A |
| 2.10.8 | Tests on coated printed boards and coated components | | N/A |
| 2.10.8.1 | Sample preparation and preliminary inspection | | N/A |
| 2.10.8.2 | Thermal conditioning | | N/A |
| 2.10.8.3 | Electric strength test | | N/A |
| 2.10.8.4 | Abrasion resistance test | | N/A |
| 2.10.9 | Thermal cycling | | N/A |
| 2.10.10 | Test for Pollution Degree 1 environment and insulating compound | | N/A |
| 2.10.11 | Tests for semiconductor devices and cemented joints | | N/A |
| 2.10.12 | Enclosed and sealed parts | | N/A |
| 3 | WIRING, CONNECTIONS AND SUPPLY | | P |
| 3.1 | General | | P |
| 3.1.1 | Current rating and overcurrent protection | | N/A |
| 3.1.2 | Protection against mechanical damage | Wires do not touch sharp edges which could damage the insulation and cause hazard. | P |
| 3.1.3 | Securing of internal wiring | | N/A |
| 3.1.4 | Insulation of conductors | | N/A |
| 3.1.5 | Beads and ceramic insulators | No such insulators used | N/A |
| 3.1.6 | Screws for electrical contact pressure | | N/A |
| 3.1.7 | Insulating materials in electrical connections | | N/A |
| 3.1.8 | Self-tapping and spaced thread screws | | N/A |
| 3.1.9 | Termination of conductors | | N/A |
| | 10 N pull test | | N/A |
| 3.1.10 | Sleeving on wiring | | N/A |
| 3.2 | Connection to a mains supply | | N/A |



| EN 60950-1 | | | |
|------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.2.1 | Means of connection | Use AA battery | N/A |
| 3.2.1.1 | Connection to an a.c. mains supply | | N/A |
| 3.2.1.2 | Connection to a d.c. mains supply | | N/A |
| 3.2.2 | Multiple supply connections | | N/A |
| 3.2.3 | Permanently connected equipment | | N/A |
| | Number of conductors, diameter of cable and conduits (mm) | | - |
| 3.2.4 | Appliance inlets | | N/A |
| 3.2.5 | Power supply cords | | N/A |
| 3.2.5.1 | AC power supply cords | | N/A |
| | Type | | - |
| | Rated current (A), cross-sectional area (mm ²), AWG | | - |
| 3.2.5.2 | DC power supply cords | | N/A |
| 3.2.6 | Cord anchorages and strain relief | | N/A |
| | Mass of equipment (kg), pull (N) | | - |
| | Longitudinal displacement (mm) | | - |
| 3.2.7 | Protection against mechanical damage | | N/A |
| 3.2.8 | Cord guards | | N/A |
| | Diameter or minor dimension D (mm); test mass (g) | | - |
| | Radius of curvature of cord (mm) | | - |
| 3.2.9 | Supply wiring space | | N/A |
| 3.3 | Wiring terminals for connection of external conductors | | N/A |
| 3.3.1 | Wiring terminals | | N/A |
| 3.3.2 | Connection of non-detachable power supply cords | | N/A |
| 3.3.3 | Screw terminals | | N/A |
| 3.3.4 | Conductor sizes to be connected | | N/A |
| | Rated current (A), cord/cable type, cross-sectional area (mm ²) | | - |
| 3.3.5 | Wiring terminal sizes | | N/A |
| | Rated current (A), type, nominal thread diameter (mm) | | - |
| 3.3.6 | Wiring terminal design | | N/A |
| 3.3.7 | Grouping of wiring terminals | | N/A |
| 3.3.8 | Stranded wire | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.4 | Disconnection from the mains supply | | N/A |
| 3.4.1 | General requirement | | N/A |
| 3.4.2 | Disconnect devices | | N/A |
| 3.4.3 | Permanently connected equipment | | N/A |
| 3.4.4 | Parts which remain energized | | N/A |
| 3.4.5 | Switches in flexible cords | | N/A |
| 3.4.6 | Number of poles - single-phase and d.c. equipment | | N/A |
| 3.4.7 | Number of poles - three-phase equipment | | N/A |
| 3.4.8 | Switches as disconnect devices | | N/A |
| 3.4.9 | Plugs as disconnect devices | | N/A |
| 3.4.10 | Interconnected equipment | | N/A |
| 3.4.11 | Multiple power sources | | N/A |

| | | | |
|-------|---|--|-----|
| 3.5 | Interconnection of equipment | | N/A |
| 3.5.1 | General requirements | | N/A |
| 3.5.2 | Types of interconnection circuits : | | N/A |
| 3.5.3 | ELV circuits as interconnection circuits | | N/A |
| 3.5.4 | Data ports for additional equipment | | N/A |

| | | | |
|-----|------------------------|--|-----|
| 4 | PHYSICAL REQUIREMENTS | | P |
| 4.1 | Stability | | N/A |
| | Angle of 10° | | N/A |
| | Test force (N) : | | N/A |

| | | | |
|-------|---|--|-----|
| 4.2 | Mechanical strength | | N/A |
| 4.2.1 | General | | N/A |
| 4.2.2 | Steady force test, 10 N | | N/A |
| 4.2.3 | Steady force test, 30 N | | N/A |
| 4.2.4 | Steady force test, 250 N | | N/A |
| 4.2.5 | Impact test | | N/A |
| | Fall test | | N/A |
| | Swing test | | N/A |
| 4.2.6 | Drop test; height (mm) : | | N/A |
| 4.2.7 | Stress relief test | | N/A |
| 4.2.8 | Cathode ray tubes | | N/A |
| | Picture tube separately certified : | | N/A |
| 4.2.9 | High pressure lamps | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.2.10 | Wall or ceiling mounted equipment; force (N) : | | N/A |
| 4.3 | Design and construction | | P |
| 4.3.1 | Edges and corners | No sharp edges that would present a hazard in normal use. End use needs to be checked for additional requirements | P |
| 4.3.2 | Handles and manual controls; force (N) : | | N/A |
| 4.3.3 | Adjustable controls | | N/A |
| 4.3.4 | Securing of parts | | N/A |
| 4.3.5 | Connection by plugs and sockets | | N/A |
| 4.3.6 | Direct plug-in equipment | | N/A |
| | Torque : | | - |
| | Compliance with the relevant mains plug standard : | | N/A |
| 4.3.7 | Heating elements in earthed equipment | | N/A |
| 4.3.8 | Batteries | | P |
| | - Overcharging of a rechargeable battery | | N/A |
| | - Unintentional charging of a non-rechargeable battery | Use AA battery . non-rechargeable battery. | P |
| | - Reverse charging of a rechargeable battery | | N/A |
| | - Excessive discharging rate for any battery | | N/A |
| 4.3.9 | Oil and grease | | N/A |
| 4.3.10 | Dust, powders, liquids and gases | | N/A |
| 4.3.11 | Containers for liquids or gases | | N/A |
| 4.3.12 | Flammable liquids : | | N/A |
| | Quantity of liquid (l) : | | N/A |
| | Flash point (°C) : | | N/A |
| 4.3.13 | Radiation | | P |
| 4.3.13.1 | General | | N/A |
| 4.3.13.2 | Ionizing radiation | | N/A |
| | 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/A |
| | Part, property, retention after test, flammability classification : | | N/A |
| 4.3.13.4 | Human exposure to ultraviolet (UV) radiation : | | N/A |
| 4.3.13.5 | Laser (including LEDs) | LED as indicator lamp | P |



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| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
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| | Laser class | Class I | - |
| 4.3.13.6 | Other types | | N/A |

| | | | |
|-------|---|--|-----|
| 4.4 | Protection against hazardous moving parts | | N/A |
| 4.4.1 | General | | N/A |
| 4.4.2 | Protection in operator access areas | Operator can not access any hazardous moving parts | N/A |
| 4.4.3 | Protection in restricted access locations | | N/A |
| 4.4.4 | Protection in service access areas | | N/A |

| | | | |
|---------|--|---|-----|
| 4.5 | Thermal requirements | | P |
| 4.5.1 | General | Equipment loaded with rated output current. | P |
| 4.5.2 | Temperature tests | (see appended table 4.5) | P |
| | Normal load condition per Annex L | (see appended table 4.5) | - |
| 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/A |
| 4.6 | Openings in enclosures | | N/A |
| 4.6.1 | Top and side openings | | N/A |
| | Dimensions (mm) | | - |
| 4.6.2 | Bottoms of fire enclosures | No openings. | N/A |
| | Construction of the bottom, dimensions (mm) .. | | - |
| 4.6.3 | Doors or covers in fire enclosures | No doors or covers in fire enclosure. | N/A |
| 4.6.4 | Openings in transportable equipment | The equipment is not such equipment | N/A |
| 4.6.4.1 | Constructional design measures | | N/A |
| | Dimensions (mm) | | - |
| 4.6.4.2 | Evaluation measures for larger openings | | N/A |
| 4.6.4.3 | Use of metallized parts | | N/A |
| 4.6.5 | Adhesives for constructional purposes | | N/A |
| | Conditioning temperature (°C), time (weeks)..... | | - |

| | | | |
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| 4.7 | Resistance to fire | | P |
|-----|--------------------|--|---|



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.7.1 | Reducing the risk of ignition and spread of flame | No excessive temperatures. No easily burning materials employed. Fire enclosure provided. | P |
| | Method 1, selection and application of components wiring and materials | (see appended table 4.7) | P |
| | Method 2, application of all of simulated fault condition tests | Not applicable (see appended table 5.3) | N/A |
| 4.7.2 | Conditions for a fire enclosure | | N/A |
| 4.7.2.1 | Parts requiring a fire enclosure | | N/A |
| 4.7.2.2 | Parts not requiring a fire enclosure | | N/A |
| 4.7.3 | Materials | | P |
| 4.7.3.1 | General | The PCBs have material of flammability class V-1 or better. | P |
| 4.7.3.2 | Materials for fire enclosures | | P |
| 4.7.3.3 | Materials for components and other parts outside fire enclosures | HB fire enclosure provided. | P |
| 4.7.3.4 | Materials for components and other parts inside fire enclosures | PCB rated V-1 or better. See appended table 1.5.1 for details. Internal components except small parts are V-2 or better. | P |
| 4.7.3.5 | Materials for air filter assemblies | No air filters provided.P | N/A |
| 4.7.3.6 | Materials used in high-voltage components | No high voltage components provided. | N/A |

| | | | |
|---------|---|---|-----|
| 5 | ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS | | N/A |
| 5.1 | Touch current and protective conductor current | | N/A |
| 5.1.1 | General | Test conducted in accordance with 5.1.2 to 5.1.6 | N/A |
| 5.1.2 | Configuration of equipment under test (EUT) | See below. | N/A |
| 5.1.2.1 | Single connection to an a.c. mains supply | | N/A |
| 5.1.2.2 | Redundant multiple connections to an a.c. mains supply | | N/A |
| 5.1.2.3 | Simultaneous multiple connections to an a.c. mains supply | | N/A |
| 5.1.3 | Test circuit | The test circuit as in figure 5A is used. | N/A |
| 5.1.4 | Application of measuring instrument | The measuring instrument as in Annex D.1 is used. | N/A |
| 5.1.5 | Test procedure | The touch current was measured from mains to | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| | | earthed part, metal enclosure. | |
| 5.1.6 | Test measurements | | N/A |
| | 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/A |
| 5.1.7.1 | General | | N/A |
| 5.1.7.2 | Simultaneous multiple connections to the supply | | N/A |
| 5.1.8 | Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks | No TNV circuits within the equipment. | N/A |
| 5.1.8.1 | Limitation of the touch current to a telecommunication network or to a cable distribution system | | N/A |
| | 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 |
| | a) EUT with earthed telecommunication ports | | N/A |
| | b) EUT whose telecommunication ports have no reference to protective earth | | N/A |
| 5.2 | Electric strength | | N/A |
| 5.2.1 | General | | N/A |
| 5.2.2 | Test procedure | | N/A |
| 5.3 | Abnormal operating and fault conditions | | P |
| 5.3.1 | Protection against overload and abnormal operation | (see appended table 5.3) | N/A |
| 5.3.2 | Motors | | N/A |
| 5.3.3 | Transformers | No such part | N/A |
| 5.3.4 | Functional insulation | Complies with a) and c). | P |
| 5.3.5 | Electromechanical components | No electromechanical Components provided | N/A |
| 5.3.6 | Audio amplifiers in ITE | | N/A |
| 5.3.7 | Simulation of faults | (see appended table 5.3) | P |
| 5.3.8 | Unattended equipment | No thermostats, temperature limiters or | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| | | thermal cut-outs. | |
| 5.3.9 | Compliance criteria for abnormal operating and fault conditions | | N/A |
| 5.3.9.1 | During the tests | | N/A |
| 5.3.9.2 | After the tests | | N/A |
| 6 | CONNECTION TO TELECOMMUNICATION NETWORKS | | N/A |
| 6.1 | Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment | | N/A |
| 6.1.1 | Protection from hazardous voltages | | N/A |
| 6.1.2 | Separation of the telecommunication network from earth | | N/A |
| 6.1.2.1 | Requirements | No TNV circuits within the equipment. (see appended table 5.2) | N/A |
| | Supply voltage (V) | | - |
| | Current in the test circuit (mA) | | - |
| 6.1.2.2 | Exclusions | | N/A |
| 6.2 | Protection of equipment users from overvoltages on telecommunication networks | | N/A |
| 6.2.1 | Separation requirements | No TNV circuits within the equipment. | N/A |
| 6.2.2 | Electric strength test procedure | | N/A |
| 6.2.2.1 | Impulse test | (see appended table 5.2) | N/A |
| 6.2.2.2 | Steady-state test | (see appended table 5.2) | N/A |
| 6.2.2.3 | Compliance criteria | | N/A |
| 6.3 | Protection of the telecommunication wiring system from overheating | | N/A |
| | Max. output current (A) | No TNV circuits within the equipment. | - |
| | Current limiting method | | - |
| 7 | CONNECTION TO CABLE DISTRIBUTION SYSTEMS | | N/A |
| 7.1 | General | The equipment is not connected to the distribution systems. | N/A |
| 7.2 | Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment | See subclause 7.1. | N/A |
| 7.3 | Protection of equipment users from overvoltages on the cable distribution system | See subclause 7.1. | N/A |
| 7.4 | Insulation between primary circuits and cable distribution systems | See subclause 7.1. | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 7.4.1 | General | See subclause 7.1. | N/A |
| 7.4.2 | Voltage surge test | (see appended table 5.2) | N/A |
| 7.4.3 | Impulse test | (see appended table 5.2) | N/A |
| A | Annex A, TESTS FOR RESISTANCE TO HEAT AND FIRE | | N/A |
| 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 |
| A.1.1 | Samples | | - |
| | Wall thickness (mm)..... | | - |
| A.1.2 | Conditioning of samples; temperature (°C) | | N/A |
| A.1.3 | Mounting of samples | | N/A |
| A.1.4 | Test flame (see IEC 60695-11-3) | | N/A |
| | Flame A, B, C or D | | - |
| A.1.5 | Test procedure | | N/A |
| A.1.6 | Compliance criteria | | N/A |
| | 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 |
| A.2.1 | Samples, material | | - |
| | Wall thickness (mm)..... | | - |
| A.2.2 | Conditioning of samples; temperature (°C) | | N/A |
| A.2.3 | Mounting of samples | | N/A |
| A.2.4 | Test flame (see IEC 60695-11-4) | | N/A |
| | Flame A, B or C | | - |
| A.2.5 | Test procedure | | N/A |
| A.2.6 | Compliance criteria | | N/A |
| | 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/A |
| | Sample 1 burning time (s)..... | | - |
| | Sample 2 burning time (s)..... | | - |
| | Sample 3 burning time (s)..... | | - |
| A.3 | Hot flaming oil test (see 4.6.2) | | N/A |
| A.3.1 | Mounting of samples | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| A.3.2 | Test procedure | | N/A |
| A.3.3 | Compliance criterion | | N/A |

| | | | |
|-------|--|--|-----|
| B | Annex B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2) | | N/A |
| B.1 | General requirements | | N/A |
| | Position | | - |
| | Manufacturer | | - |
| | Type | | - |
| | Rated values | | - |
| B.2 | Test conditions | | N/A |
| B.3 | Maximum temperatures | | N/A |
| B.4 | Running overload test | | N/A |
| B.5 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | - |
| | Electric strength test: test voltage (V) | | - |
| B.6 | Running overload test for d.c. motors in secondary circuits | | N/A |
| B.6.1 | General | | N/A |
| B.6.2 | Test procedure | | N/A |
| B.6.3 | Alternative test procedure | | N/A |
| B.6.4 | Electric strength test; test voltage (V) | | N/A |
| B.7 | Locked-rotor overload test for d.c. motors in secondary circuits | | N/A |
| B.7.1 | General | | N/A |
| B.7.2 | Test procedure | | N/A |
| B.7.3 | Alternative test procedure | | N/A |
| B.7.4 | Electric strength test; test voltage (V) | | N/A |
| B.8 | Test for motors with capacitors | | N/A |
| B.9 | Test for three-phase motors | | N/A |
| B.10 | Test for series motors | | N/A |
| | Operating voltage (V) | | - |

| | | | |
|---|---|----------------------------|-----|
| C | Annex C, TRANSFORMERS (see 1.5.4 and 5.3.3) | | N/A |
| | Position | (see appended table 1.5.1) | - |
| | Manufacturer | | - |
| | Type | | - |
| | Rated values | | - |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Method of protection | | - |
| C.1 | Overload test | (see appended table 5.3) | N/A |
| C.2 | Insulation | (see appended table 5.2) | N/A |
| | Protection from displacement of windings | (see appended table 1.5.1) | N/A |
| D | Annex D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4) | | N/A |
| D.1 | Measuring instrument | Figure D.1 used. | N/A |
| D.2 | Alternative measuring instrument | | N/A |
| E | Annex E, TEMPERATURE RISE OF A WINDING (see 1.4.13) | | N/A |
| F | Annex F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G) | | N/A |
| G | Annex G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES | | N/A |
| G.1 | Clearances | | N/A |
| G.1.1 | General | | N/A |
| G.1.2 | Summary of the procedure for determining minimum clearances | | N/A |
| G.2 | Determination of mains transient voltage (V) | | N/A |
| G.2.1 | AC mains supply | | N/A |
| G.2.2 | Earthed d.c. mains supplies | | N/A |
| G.2.3 | Unearthed d.c. mains supplies | | N/A |
| G.2.4 | Battery operation | | N/A |
| G.3 | Determination of telecommunication network transient voltage (V) | | N/A |
| G.4 | Determination of required withstand voltage (V) | | N/A |
| G.4.1 | Mains transients and internal repetitive peaks | | N/A |
| G.4.2 | Transients from telecommunication networks | | N/A |
| G.4.3 | Combination of transients | | N/A |
| G.4.4 | Transients from cable distribution systems | | N/A |
| G.5 | Measurement of transient voltages (V) | | N/A |
| | a) Transients from a mains supply | | N/A |
| | For an a.c. mains supply | | N/A |
| | For a d.c. mains supply | | N/A |
| | b) Transients from a telecommunication network | | N/A |
| G.6 | Determination of minimum clearances | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |

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| H | Annex H, IONIZING RADIATION (see 4.3.13) | | N/A |
|---|--|--|-----|

| | | | |
|---|--|--|-----|
| J | Annex J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6) | | N/A |
| | Metal(s) used | | - |

| | | | |
|-----|--|--------------------------|-----|
| K | Annex K, THERMAL CONTROLS (see 1.5.3 and 5.3.8) | | N/A |
| K.1 | Making and breaking capacity | | N/A |
| K.2 | Thermostat reliability; operating voltage (V) | | N/A |
| K.3 | Thermostat endurance test; operating voltage (V) | | N/A |
| K.4 | Temperature limiter endurance; operating voltage (V) | | N/A |
| K.5 | Thermal cut-out reliability | | N/A |
| K.6 | Stability of operation | (see appended table 5.3) | N/A |

| | | | |
|-----|---|--|-----|
| L | Annex L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2) | | N/A |
| L.1 | Typewriters | | N/A |
| L.2 | Adding machines and cash registers | | N/A |
| L.3 | Erasers | | N/A |
| L.4 | Pencil sharpeners | | N/A |
| L.5 | Duplicators and copy machines | | N/A |
| L.6 | Motor-operated files | | N/A |
| L.7 | Other business equipment | | N/A |

| | | | |
|---------|---|--|-----|
| M | Annex M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1) | | N/A |
| M.1 | Introduction | | N/A |
| M.2 | Method A | | N/A |
| M.3 | Method B | | N/A |
| M.3.1 | Ringling signal | | N/A |
| 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/A |
| M.3.2.1 | Conditions for use of a tripping device or a monitoring voltage | | N/A |
| M.3.2.2 | Tripping device | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| M.3.2.3 | Monitoring voltage (V) | | N/A |
| 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/A |
| N.1 | ITU-T impulse test generators | | N/A |
| N.2 | IEC 60065 impulse test generator | | N/A |
| P | Annex P, NORMATIVE REFERENCES | | - |
| Q | Annex Q, Voltage dependent resistors (VDRs) (see 1.5.9.1) | | N/A |
| | a) Preferred climatic categories | | N/A |
| | b) Maximum continuous voltage | | N/A |
| | c) Pulse current | | N/A |
| R | Annex R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES | | N/A |
| R.1 | Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2) | | N/A |
| R.2 | Reduced clearances (see 2.10.3) | | N/A |
| S | Annex S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3) | | N/A |
| S.1 | Test equipment | | N/A |
| S.2 | Test procedure | | N/A |
| S.3 | Examples of waveforms during impulse testing | | N/A |
| T | Annex T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2) | | N/A |
| | | | - |
| U | Annex U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4) | | N/A |
| | | | - |
| V | Annex V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) | | N/A |
| V.1 | Introduction | | N/A |
| V.2 | TN power distribution systems | | N/A |
| W | Annex W, SUMMATION OF TOUCH CURRENTS | | N/A |
| W.1 | Touch current from electronic circuits | | N/A |
| W.1.1 | Floating circuits | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| W.1.2 | Earthed circuits | | N/A |
| W.2 | Interconnection of several equipments | | N/A |
| W.2.1 | Isolation | | N/A |
| W.2.2 | Common return, isolated from earth | | N/A |
| W.2.3 | Common return, connected to protective earth | | N/A |
| X | Annex X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1) | | N/A |
| X.1 | Determination of maximum input current | | N/A |
| X.2 | Overload test procedure | | N/A |
| Y | ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3) | | N/A |
| Y.1 | Test apparatus : | | N/A |
| Y.2 | Mounting of test samples : | | N/A |
| Y.3 | Carbon-arc light-exposure apparatus : | | N/A |
| Y.4 | Xenon-arc light exposure apparatus : | | N/A |
| Z | ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2) | | N/A |
| AA | ANNEX AA, MANDREL TEST (see 2.10.5.8) | | N/A |
| BB | ANNEX BB, CHANGES IN THE SECOND EDITION | | - |



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|--|--|--|--|--|--|-----|
| 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 | | | | | - |
| 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/A |
| 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/A |
| 1.7.2.1 | Add the following NOTE: 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 | | | | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict | | | | | | | | | | | | |
| 2.7.1 | <p>Replace the subclause as follows: 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</p> | | P | | | | | | | | | | | | |
| 2.7.2 | This subclause has been declared 'void'. | | - | | | | | | | | | | | | |
| 3.2.3 | Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses. | | - | | | | | | | | | | | | |
| 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^{a)}</td><td></td></tr><tr><td>Over 6 up to and including 10</td><td>(0,75)^{b)}</td><td>1,0</td><td></td></tr><tr><td>Over 10 up to and including 16</td><td>(1,0)^{c)}</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^{a)}.</p> | Up to and including 6 | | 0,75 ^{a)} | | Over 6 up to and including 10 | (0,75) ^{b)} | 1,0 | | Over 10 up to and including 16 | (1,0) ^{c)} | 1,5 | | | N/A |
| Up to and including 6 | | 0,75 ^{a)} | | | | | | | | | | | | | |
| Over 6 up to and including 10 | (0,75) ^{b)} | 1,0 | | | | | | | | | | | | | |
| Over 10 up to and including 16 | (1,0) ^{c)} | 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</p> | Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | | N/A | | | | | | | | | |
| 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/A | | | | | | | | | | | | |



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| 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 iSv/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/A |
| Bibliography | Additional EN standards. | | - |
| ZA | NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS | | - |
| ZB | SPECIAL NATIONAL CONDITIONS | | P |
| 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/A |
| 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/A |
| 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). | | P |
| 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/A |
| 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" In Sweden: "Apparaten skall anslutas till</p> | | P |
| 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 | | N/A |
| 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/A |
| 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/A |
| 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/A |
| 2.6.3.3 | In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not | | P |



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| | 16 A. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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/A | | | | | | | | | | | | | | | | | | | | | | | | |
| 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/A | | | | | | | | | | | | | | | | | | | | | | | | |
| 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</td></tr> <tr> <td>A 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</td></tr> <tr> <td>A 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/A |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| 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/A | | | | | | | | | | | | | | | | | | | | | | | | |
| 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/A | | | | | | | | | | | | | | | | | | | | | | | | |



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| 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/A |
| 3.2.1.1 | 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. | | N/A |
| 3.2.4 | In Switzerland , for requirements see 3.2.1.1 of this annex. | | N/A |
| 3.2.5.1 | In the United Kingdom , a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A. | | N/A |
| 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"> • 1,25 mm² to 1,5 mm² nominal cross-sectional area. | | N/A |
| 4.3.6 | <p>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 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be</p> <p>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.</p> | | N/A |
| 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/A |
| 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"> • STATIONARY PLUGGABLE EQUIPMENT TYPE A that <ul style="list-style-type: none"> ○ is intended to be used in a RESTRICTED ACCESS LOCATION where <p>equipotential bonding has been applied, for example, in a telecommunication centre; and</p> ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT. | | N/A |



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| 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"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <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"> - 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 - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. <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"> - 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; - the additional testing shall be performed on all the test specimens as described in EN 132400; - 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. | N/A |
| 6.1.2.2 | <p>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.</p> | N/A |
| 7.2 | In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. | N/A |



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| | The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM. | | |
| 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/A |
| 7.3 | In Norway , for installation conditions see EN 60728-11:2005. | | N/A |





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| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.5.1 | Sweden (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted. | | N/A |
| 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/A |
| 1.7.2.1 | Denmark (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text: Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket  eller  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: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning." | | N/A |
| 1.7.2.1 | 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). 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. Of this requirement, rules for use even only by SERVICE PERSONS are | | N/A |
| 1.7.5 | Denmark (Heavy Current Regulations) 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. | | N/A |
| 1.7.13 | Switzerland (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries. | | N/A |
| 5.1.7.1 | Denmark (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B. | | N/A |



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| 1.5.1 | TABLE: List of critical components | | | | | P |
|-------------------|------------------------------------|----------------|----------------------------|------------------------------|----------------------------|---|
| Object/part No. | Type/model | Technical data | Manufacturer/ trademark | Standard (Edition / year) | Mark(s) of conformity1) | |
| PWB | Various | V-1 | Various | UL 94 UL796 | UL | |
| Plastic enclosure | Various | HB | Various | UL 94 UL796 | UL | |

| 1.6.2 | TABLE: Electrical data (in normal conditions) | | | | | | N/A |
|------------------------------|---|-------------|-------|--------|------------|------------------|-----|
| 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/A |
|---|---|-----------------|---------------------|------------|---------------------|------------|-----|
| 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: / | | | | | | | |



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

| | | | | | | | | | |
|---|----------------------------|---------------|-------------------------|------------------------|---------------|---------------|---------------|-------------------|---------------|
| 4.3.8 | TABLE: Batteries | | | | | | | | N/A |
| The tests of 4.3.8 are applicable only when appropriate battery data is not available | | | | | | -- | | -- | |
| Is it possible to install the battery in a reverse polarity position? | | | | | | -- | | -- | |
| | 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 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | |
| Test results: | | | | | | | | | Verdict |
| - Chemical leaks | | | | | | | | | |
| - Explosion of the battery | | | | | | | | | |
| - Emission of flame or expulsion of molten metal | | | | | | | | | |
| - Electric strength tests of equipment after completion of tests | | | | | | | | | |
| Supplementary information: | | | | | | | | | |



| EN 60950-1 | | | |
|------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | | | |
|--|-----------------------------|----------------------|---------------------|-------------------------------|--------|-------------------------------|------------------|
| 4.5 | TABLE: Thermal requirements | | | | | P | |
| | Supply voltage (V) | -- | -- | -- | | | |
| Maximum measured temperature T of part/at: | | T (°C) | | Allowed T _{max} (°C) | | | |
| | | / | | / | | | |
| PCB near U1 | | 22.8 | | 130 | | | |
| PCB near U2 | | 26.0 | | 130 | | | |
| Enclosure | | 20.5 | | 95 | | | |
| Ambient | | 17.7 | | / | | | |
| Supplementary information: | | | | | | | |
| Temperature T of winding: | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | Allowed T _{max} (°C) | Insulation class |
| — | — | — | — | — | — | — | — |
| Supplementary information | | | | | | | |
| 1) The temperatures were measured under worst normal mode defined in 1.2.2.1 and as described in sub1clause 1.6.2 and at voltages as described above | | | | | | | |
| 2) Manufacturer declared the product max operating temperature is 25°C. | | | | | | | |
| 3) POWER By AA battery . | | | | | | | |

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

| | | | | | | |
|----------------------------|---------------------------|--------------------------|------------------|----------------|--------------------|----------|
| 4.7 | TABLE: Resistance to fire | | | | | N/A |
| Part | | Manufacturer of material | Type of material | Thickness (mm) | Flammability class | Evidence |
| -- | | -- | -- | -- | -- | -- |
| -- | | -- | -- | -- | -- | -- |
| Supplementary information: | | | | | | |



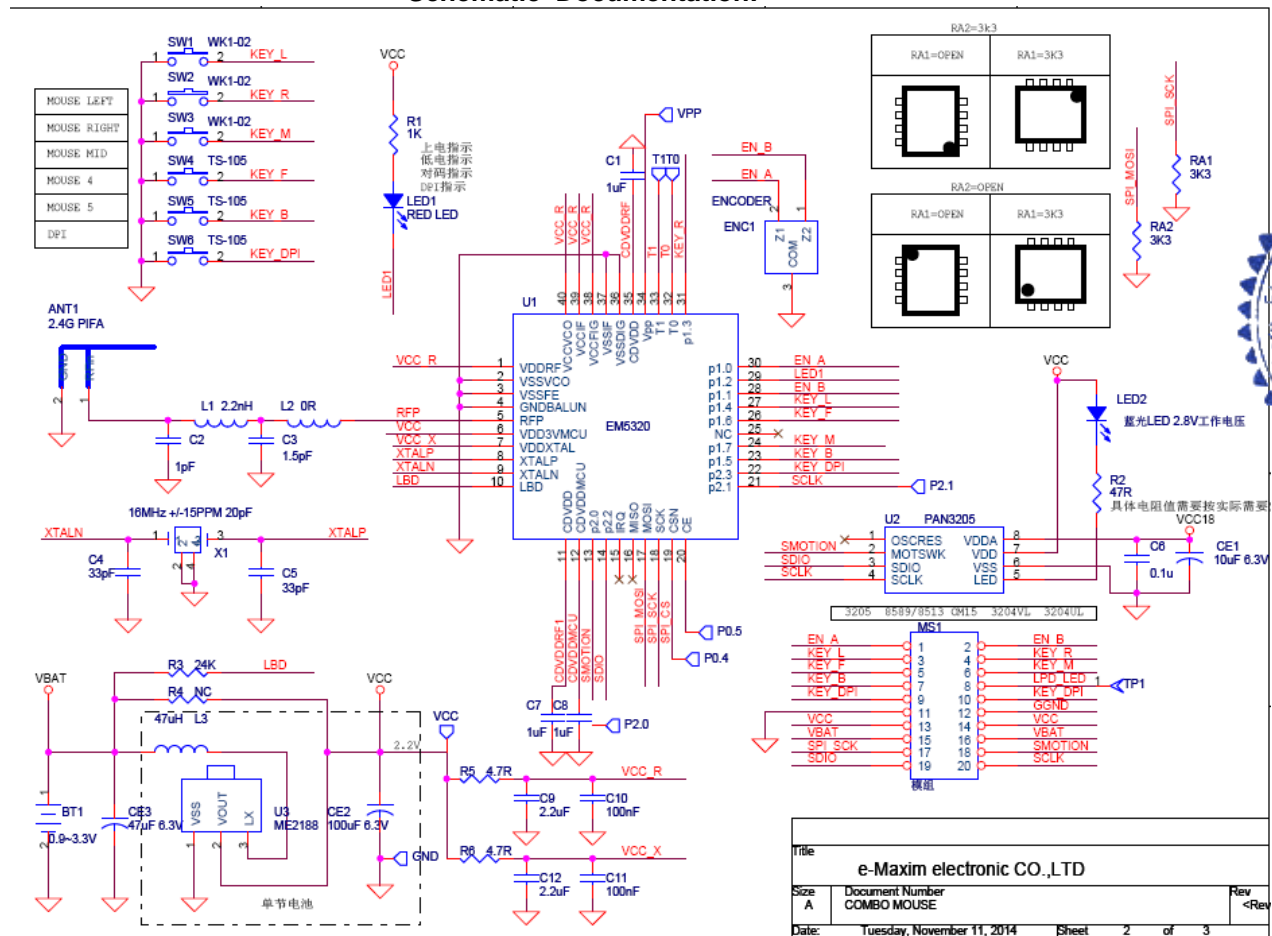
| EN 60950-1 | | | |
|------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

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

| 5.3 | TABLE: Fault condition tests | | | | | P |
|--|---|--------------------|-----------|--------|-------------------|--|
| | Ambient temperature (°C) | | | | | / |
| | Power source for EUT: Manufacturer, model/type, output rating | | | | | POWER BY AA battery |
| Component No. | Fault | Supply voltage (V) | Test time | Fuse # | Fuse current (mA) | Observation |
| Ventilation holes blocked: | / | 1.5Vdc | 2h | / | / | Unit operated until thermal stabilized. Test time: 2 h enclosure:22.7°C; PCB near of U1 :23.1°C; PCB near of U1 : 27.9°C; ambient: 22.5°C. |
| Supplementary information: | | | | | | |
| Note(s):In Fault column, s-c= short circuit, o-c=open circuit, o-l= overload | | | | | | |
| 1. If the circuit was interrupted by the opening of a component of unknown reliability, the test was repeated twice (three times total) using new components as necessary. | | | | | | |



Schematic Documentation:





PCB Layout Documentation:

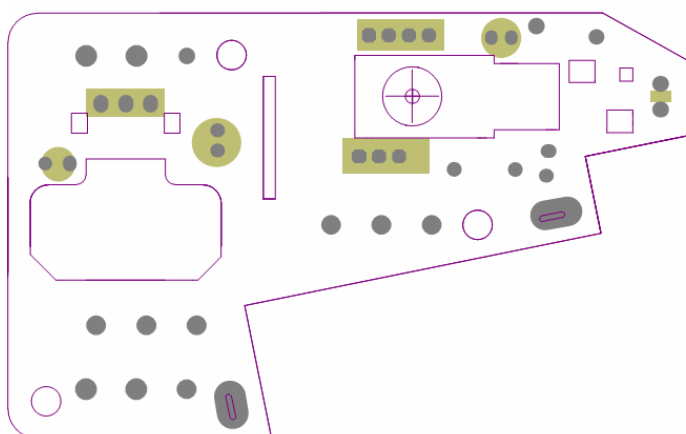
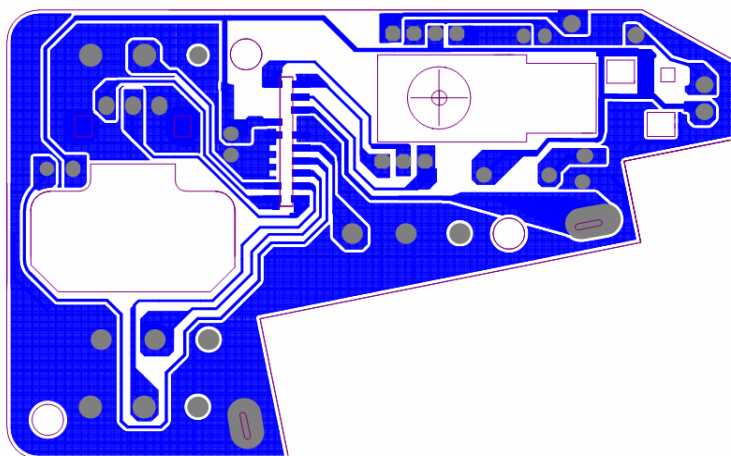
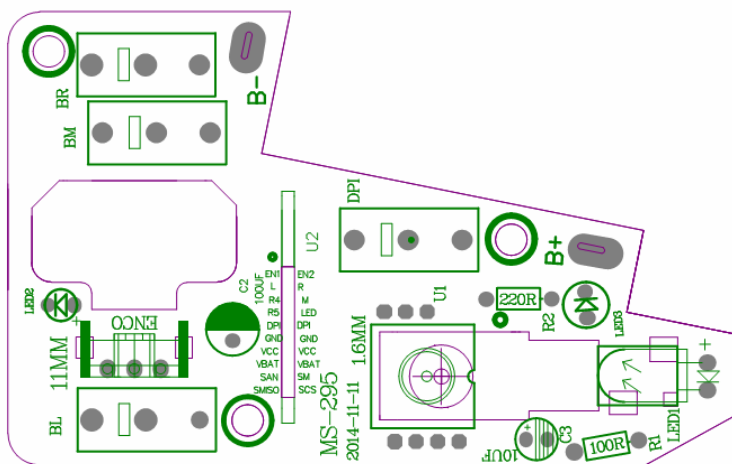


Photo Documentation:



Picture 1 : External view



Picture 2 : External view



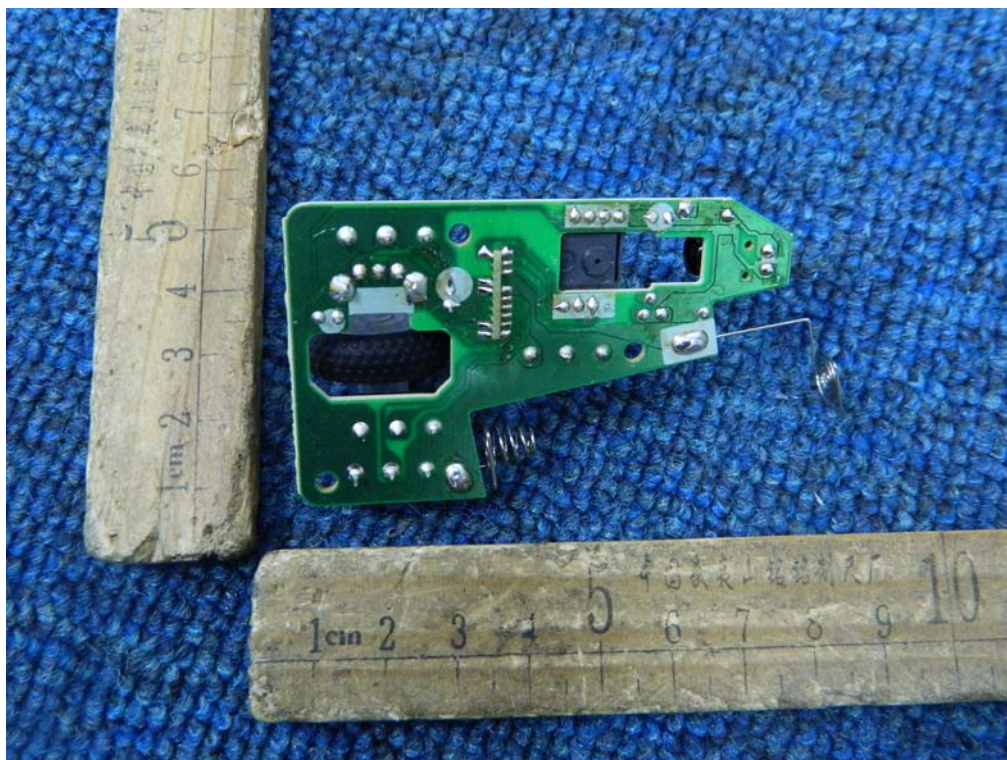
Picture 3: External view



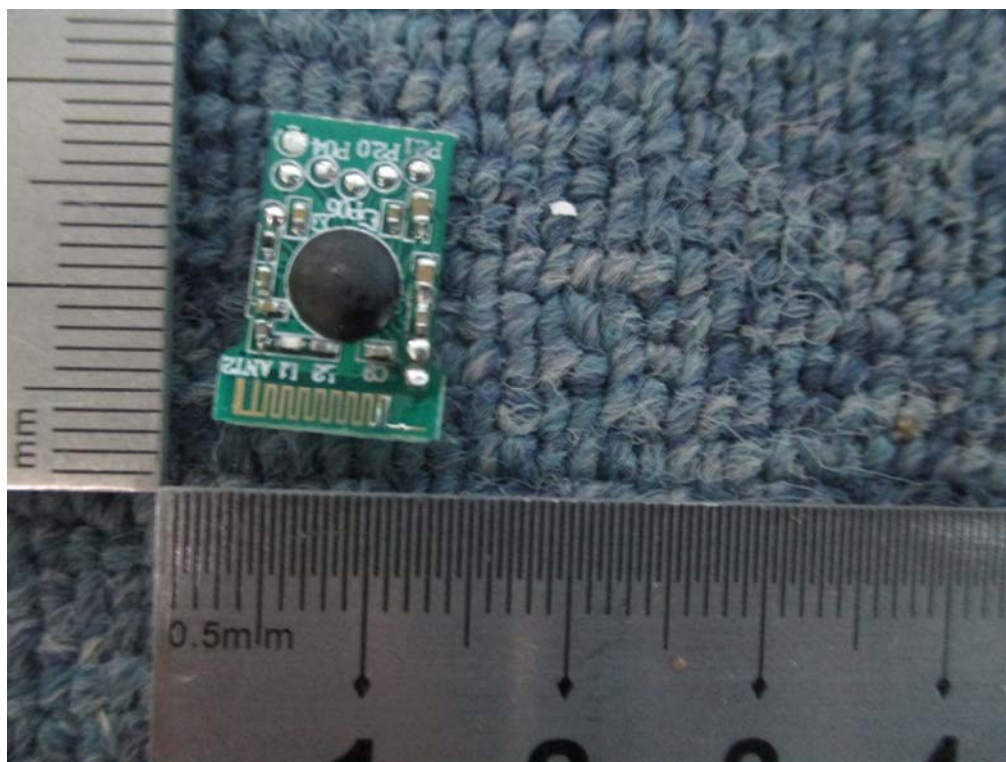
Picture 4 : Internal view



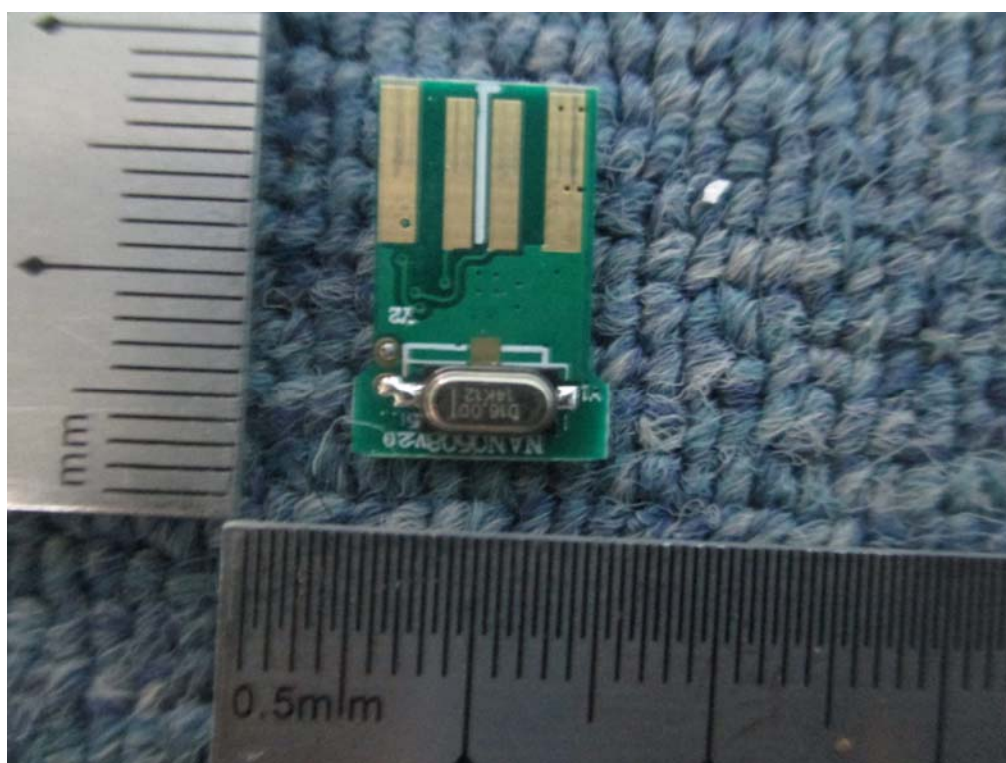
Picture 5: Front view of the main board



Picture 6: Back view of the main board



Picture 7: Front view of the main board



Picture8: Back view of the main board