



Test Report issued under the responsibility of:



TEST REPORT
IEC 60950-1
Information technology equipment – Safety –
Part 1: General requirements

Report Number.: T223-0401/17
Date of issue: 2017-11-21
Total number of pages..... 260 pages

Applicant's name.....: TDK-Lambda UK Ltd.
Address: Kingsley Avenue, Ilfracombe, Devon, EX34 8ES, UK

Test specification:

Standard: IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test procedure.....: CB Scheme
Non-standard test method.....: N/A

Test Report Form No.....: IEC60950_1F
Test Report Form(s) Originator.....: SGS Fimko Ltd
Master TRF: Dated 2014-02

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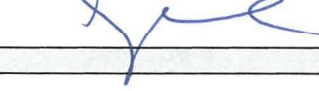
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General disclaimer:

The test results presented in this report relate only to the object tested.
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| | |
|------------------------------------|---|
| Test item description | DIN rail power supply |
| Trade Mark | TDK-Lambda |
| Manufacturer..... | TDK-Lambda UK Ltd. Kingsley Avenue, Ilfracombe, Devon, EX34 8ES, UK |
| Model/Type reference..... | DRL100-24-1-xyz, DRL100-24-1/C2-xyz (where x, y and z can be any alphanumeric character or blank and is non safety relevant information) |
| Ratings | Input: 100-240 Vac; 2,8 A; 50/60 Hz DRL100-24-1-xyz Output: 24-28 Vdc; 4,2-3,6 A (100,8 W) DRL100-24-1/C2-xyz Output: 24 Vdc; 3,67 A (88 W) |

| | | |
|--|---|--|
| Testing procedure and testing location: | | |
| <input checked="" type="checkbox"/> | CB Testing Laboratory: | SIQ Ljubljana SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing |
| Testing location/ address.....: | | Tržaška c. 2, SI-1000 Ljubljana Slovenia |
| <input type="checkbox"/> | Associated CB Testing Laboratory: | |
| Testing location/ address.....: | | |
| Tested by (name + signature) | | Luka Košir  |
| Approved by (name + signature) | | Boštjan Glavič  |
| <input type="checkbox"/> | Testing procedure: TMP/CTF Stage 1: | |
| Testing location/ address.....: | | |
| Tested by (name + signature) | | |
| Approved by (name + signature) | | |
| <input type="checkbox"/> | Testing procedure: WMT/CTF Stage 2: | |
| Testing location/ address.....: | | |
| Tested by (name + signature) | | |
| Witnessed by (name + signature).....: | | |
| Approved by (name + signature) | | |
| <input type="checkbox"/> | Testing procedure: SMT/CTF Stage 3 or 4: | |
| Testing location/ address.....: | | |
| Tested by (name + signature) | | |
| Witnessed by (name + signature).....: | | |
| Approved by (name + signature) | | |
| Supervised by (name + signature) | | |

List of Attachments:

1. Test Report (78 pages)
2. National Differences – Enclosure No. 1 (37 pages)
3. European Group Differences and National Differences according to EN 60950-1:2006 + A1:2010 + A2:2013 + A11:2009 + A12:2011 – Enclosure No. 1a (21 pages)
4. Pictures – Enclosure No. 2 (9 pages)
5. Schematics, Layouts, Transformer data - Enclosure No. 3 (59 pages)
6. Additional test data – Enclosure No. 4 (4 pages)
7. Additional testing and evaluation according to UL508 – Enclosure No. 5 (49 pages)
8. Additional testing and evaluation according to IEC 61010-1 (3rd Edition) – Enclosure No. 6 (3 pages)

Summary of testing:

Tests performed (name of test and test clause):

1.6.2 Input Test
 1.7.11 Durability
 2.1.1.5 Energy hazard Test
 2.1.1.7 Capacitance Discharge Test
 2.2.2 SELV: Hazard Voltage (Circuit) Measurement Test
 2.2.3 SELV Reliability testing
 2.4 Limited Current Circuit (Bridging components)
 2.9.2 Humidity Test
 2.10.2 Working Voltage measurement on PCB and Transformer
 2.10.3/2.10.4 Clearance and Creepage distance measurement
 2.10.5 Distance Through Insulation measurement
 2.10.5.6 Thin Sheet Material (barriers)
 4.2.2-4.2.4 Steady force test, 10N
 4.2.7 Stress relief test; heat test (°C/7 h)
 4.5.2 Heating (Temperature) Test
 4.5.5 Resistance to abnormal heat (Ball pressure test)
 5.1 Touch Current
 5.2 Electric Strength Test
 5.3 Abnormal Operating Tests foreseeable misuse:
 SELV reliability and failure in the voltage regulation
 Functional insulation,
 Component faults

Testing location:

SIQ Ljubljana, Tržaška c. 2, SI-1000 Ljubljana, Slovenia

| | |
|--|---|
| <p>Overload and short at the outputs Air holes closed</p> <p>Revision No. 3:</p> <p>1.6.2 Input Test</p> <p>2.1.1.5 Energy Hazard Test</p> <p>2.5 Limited Power Source</p> <p>5.3 Abnormal Operating Tests</p> | <p>SIQ Ljubljana Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia</p> |
| <p>Summary of compliance with National Differences</p> <p>List of countries addressed:</p> <p>Argentina**, Australia, Austria***, Bahrain**, Belarus**, Belgium***, Brazil**, Bulgaria***, Canada, China, Cyprus***, Colombia**, Croatia**, Czech Republic***, Denmark***, Finland***, France***, Germany***, Greece***, Hungary***, India**, Indonesia**, Iran**, Ireland***, Israel, Italy***, Japan*, Kazakhstan**, Kenya**, Korea, Libya**, Malaysia**, Mexico**, Netherlands***, New Zealand*, Norway***, Pakistan**, Poland***, Portugal***, Romania***, Russian Federation**, Saudi Arabia**, Serbia**, Singapore**, Slovakia***, Slovenia***, South Africa**, Spain***, Sweden, Switzerland, Thailand**, Turkey***, Ukraine**, United Arab Emirates**, United Kingdom, Uruguay**, USA, Vietnam**</p> <p>* No national differences to IEC 60950-1:2005 (2nd edition) (+ A1 + A2) declared</p> <p>** No national differences to IEC 60950-1:2005 (2nd edition) + A1 + A2 or IEC 60950-1:2001 (1st edition) declared</p> <p>*** EU group differences</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN 60950-1:2006 + A1:2010 + A2:2013 + A11:2009 + A12:2011 (see Enclosure No. 1a).</p> | |

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Marking provided on the left or right side of enclosure:

DRL100-24-1-xyz

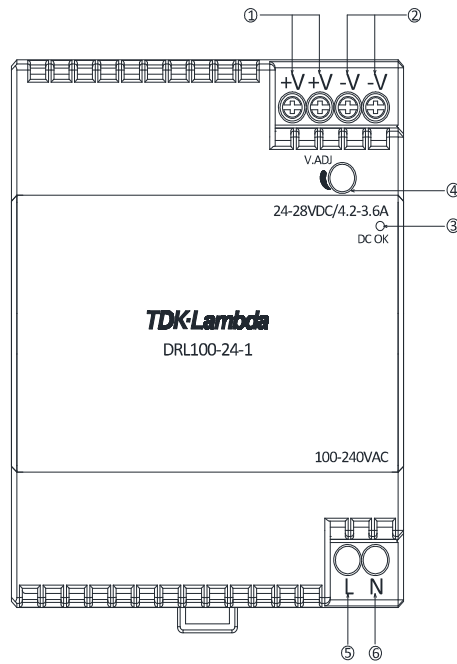


DRL100-24-1/C2-xyz (Rev. No. 3)



Marking provided on the front side of enclosure:

DRL100-24-1-xyz



DRL100-24-1/C2-xyz



| | |
|--|--|
| Test item particulars | |
| Equipment mobility | <input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in |
| Connection to the mains | <input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains |
| Operating condition | <input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time: |
| Access location | <input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> service access area |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: |
| Mains supply tolerance (%) or absolute mains supply values | 85-264 Vac |
| Tested for IT power systems | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| IT testing, phase-phase voltage (V) | 230 V phase-phase (Norway) |
| Class of equipment | <input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input checked="" type="checkbox"/> Not classified (unit for building-in) |
| Considered current rating of protective device as part of the building installation (A) | 16 A (for Europe), 20 A (for Canada and US) |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| IP protection class | IPX0 |
| Altitude during operation (m) | Up to 3000 |
| Altitude of test laboratory (m) | 300 |
| Mass of equipment (kg) | 0,270 |

| | |
|---|---|
| Possible test case verdicts: | |
| - test case does not apply to the test object | N/A |
| - test object does meet the requirement | P (Pass) |
| - test object does not meet the requirement | F (Fail) |
| Testing | |
| Date of receipt of test item | 2014-12-22, 2015-09-03, 2016-05-04, 2017-07-17, 2017-10-27 |
| Date(s) of performance of tests | From 2015-01-30 to 2015-09-24, 2016-05-04 From 2016-05-06 to 2016-05-17 (Revision No. 1) From 2017-08-09 to 2017-11-06 (Revision No. 3) |

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a comma / point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IEC60950-1:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... : **Yes**
 Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) : Panyu Trio Microtronics Co. Ltd
 Shiji Industrial Estate, Dongyong, Nansha, Guangzhou, 511453 Guangdong, P.R.C

General product information:

The equipment is a switching power supply (DIN rail type) for the use in Information Technology Equipment. The unit is intended for building-in. Units DRL100-24-1-xyz and DRL100-24-1/C2-xyz are identical in mechanical and electrical construction. Difference exist only in lower output power declared for DRL100-24-1/C2-xyz unit and with additional output power derating >250Vac on the input due to increased over current/over voltage protection (see also charts below). Output voltage is fixed (24Vdc) for DRL100-24-1/C2-xyz and can not be adjusted (enclosure is blinded).

Connection to the supply mains:

AC input connection is provided by means of 2-way terminal block and DC output is provided by means of 4-way terminal block, where two are used for output + and the other two for output – pole.

Circuit characteristics:

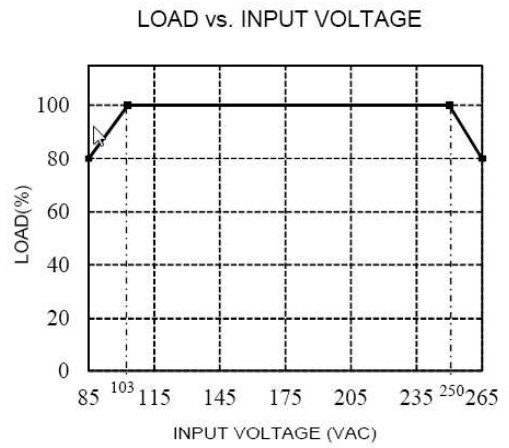
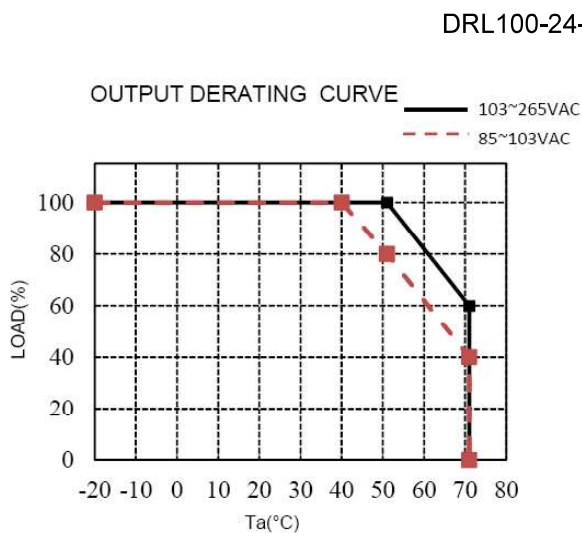
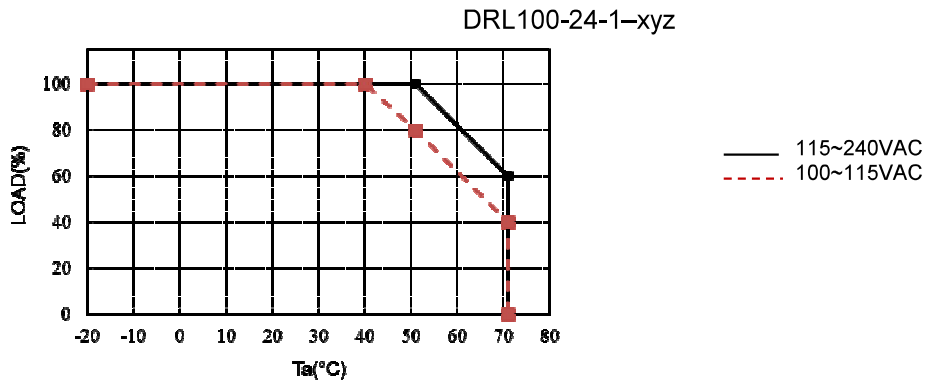
The EUT contains primary circuit and secondary SELV circuit which does not represent hazardous energy circuit.

Unit output:
 DRL100-24-1-xyz
 Output: 24-28 Vdc ; 4,2-3,6 A (100,8 W)
 Unit is provided with trimmer potentiometer for fine output adjustment.

DRL100-24-1/C2-xyz
 Output: 24 Vdc; 3,67 A (88 W)

Engineering considerations:

- operating temperature range: -20°C to +51°C full load for input voltage range 115-240Vac
- operating temperature range: +51°C to +71°C, derate linearly to 60% load at +71°C (output power: 60W) for input voltage range 115-240Vac
- operating temperature range: -20°C to +40°C full load for input voltage range 100-115Vac
- operating temperature range: +40°C to +51°C, derate linearly from 100% to 80% load and for temperature range +51°C to +71°C output power derates from 80% to 40% of rated load for input voltage range 100-115Vac
- DRL100-24-1/C2-xyz have additional derating. For input voltage >250Vac to 265Vac output load is linearly derated to 80%.



Explanation of the test program:

The component was tested according to the standard IEC 60950-1:2005 (2nd Edition) + A1:2009 + A2:2013 and/or EN 60950-1:2006 + A1:2010 + A2:2013 + A11:2009 + A12:2011.

Additionally the component was also evaluated according to the standards CSA C22.2 No. 60950-1:2007 + A1:2011 + A2:2014 and UL60950-1:2007 (2nd Edition) + A1:2011 + A2:2014 and fulfils the requirements of these standards.

1. The products were tested to be suitable for connection to 20 A branch circuit. The unit is approved for TN mains star connections and IT mains with 230 Vac phase to phase voltage.
2. The unit provides internally one fuse F1 in line.
3. Secondary output is separated from mains by reinforced insulation and rated SELV and is non-hazardous energy levels. Unit is intended for building-in.
4. The disconnect device is end product consideration.
5. The input and output terminals and connectors are suitable for factory and field wiring.
6. The transformer T1 provides reinforced insulation. This transformer is built up to fulfil the requirement of insulation class F and provides in addition an UR (OBJY3) insulation system (see also list of safety critical components).
7. The equipment has been evaluated for use in a Pollution Degree 2 and overvoltage category II environment and a maximum altitude of 3000 m.
8. A suitable Electrical and Fire enclosure shall be provided in the end equipment.
9. The product was evaluated for rated load operation for temperatures up to 51°C and for derated output load for temperature range from 51°C to 71°C, where output power linearly derates from 100% to 60% of rated load. Additional derating was used for supply input voltages below 115Vac. The temperature test was performed 25 mm above bench, 25mm below top surface without forced air cooling.

History Sheet:

| Date | Report No. | Change/Modification | Rev. No. |
|------------|--------------|--|----------|
| 2015-11-06 | T223-0396/15 | Initial report issued. | - |
| 2016-07-14 | T223-0360/16 | Unit enclosure was modified (blinding of airholes on top cover chassis). Thermal tests & electric strength tests were performed. List of critical components, photos & documentation was updated. | 1.0 |
| 2016-11-30 | T223-0718/16 | Administrative update of test report only – factory location was updated. | 2.0 |
| 2017-11-21 | T223-0401/17 | Additional model DRL100-24-1/C2 was added which is almost identical as DRL100-24-1-xyz. Difference exist only in declared lower output: Maximum output current reduced to 3.67A Maximum output power reduced to 88W Over current and overvoltage protection was improved. Output voltage range is fixed at 24V (blinded enclosure) Additional tests were performed on DRL100-24-1/C2 – xyz unit: 1.6.2 Input Test 2.1.1.5 Energy hazard Test 2.5 Limited Power Source 5.3 Abnormal Operating Tests No additional tests were considered necessary. | 3.0 |

Abbreviations used in the report:

- | | | | |
|--------------------------------------|-------------|----------------------------|--------------|
| - normal conditions | N.C. | - single fault conditions | S.F.C |
| - functional insulation | OP | - basic insulation | BI |
| - double insulation | DI | - supplementary insulation | SI |
| - between parts of opposite polarity | BOP | - reinforced insulation | RI |
| - Equipment under test EUT | | | |

Indicate used abbreviations (if any)

| IEC 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 tables 1.5.1) | P |
| 1.5.2 | Evaluation and testing of components | <p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component standard.</p> <p>Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.</p> | P |
| 1.5.3 | Thermal controls | No thermal controls. | N/A |
| 1.5.4 | Transformers | (see list of safety critical components table 1.5.1 and the transformer drawings in the Enclosure No. 3) | P |
| 1.5.5 | Interconnecting cables | No interconnecting cables. | N/A |
| 1.5.6 | Capacitors bridging insulation | <p>Double / reinforced insulation is bridged by a single capacitor C4. Circuit complies with 2.4; capacitor C4 complies with IEC60384-14 2nd ed., class Y1.</p> <p>Line to Neutral is bridged by capacitor C1, type X2 min., complying with IEC 60384-14.</p> | P |
| 1.5.7 | Resistors bridging insulation | <p>No resistors are bridging basic, double/reinforced insulation.</p> <p>Resistors R101, R102, R103 are bridging functional insulation.</p> | P |
| 1.5.7.1 | Resistors bridging functional, basic or supplementary insulation | Only functional insulation bridged by resistors. No special precaution required. | N/A |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | No such resistors are bridging double/reinforced insulation. | N/A |
| 1.5.8 | Components in equipment for IT power systems | No earth connections provided. | N/A |
| 1.5.9 | Surge suppressors | No surge suppressors are used. | 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 | No VDR bridging double or reinforced insulation. | N/A |

| | | | |
|------------|--------------------------------------|--|-----|
| 1.6 | Power interface | | P |
| 1.6.1 | AC power distribution systems | TN and IT for 230 Vac. | P |
| 1.6.2 | Input current | (see appended table 1.6.2) | P |
| 1.6.3 | Voltage limit of hand-held equipment | The equipment is not hand-held. | N/A |
| 1.6.4 | Neutral conductor | No earth connections provided and no accessible parts. | N/A |

| | | | |
|------------|--|--|-----|
| 1.7 | Marking and instructions | | P |
| 1.7.1 | Power rating and identification markings | The required marking is located on the outside surface of the equipment. | P |
| 1.7.1.1 | Power rating marking | | P |
| | Multiple mains supply connections.....: | One rated voltage only. | N/A |
| | Rated voltage(s) or voltage range(s) (V) | 100-240 V~ | P |
| | Symbol for nature of supply, for d.c. only | | N/A |
| | Rated frequency or rated frequency range (Hz) | 50/60 Hz | P |
| | Rated current (mA or A) | 2,8 A | P |
| 1.7.1.2 | Identification markings | | P |
| | Manufacturer's name or trade-mark or identification mark | TDK-Lambda | P |
| | Model identification or type reference | DRL100-24-1, DRL100-24-1/C2 | P |

| IEC 60950-1 | | | |
|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Symbol for Class II equipment only | | N/A |
| | Other markings and symbols | Symbol for electric shock hazard and general danger provided on the marking plate. These symbols do not give rise to miss-understanding. | P |
| 1.7.1.3 | Use of graphical symbols | | P |
| 1.7.2 | Safety instructions and marking | Instruction manual provided. | P |
| 1.7.2.1 | General | See manual enclosed. | P |
| 1.7.2.2 | Disconnect devices | External disconnect device required. | N/A |
| 1.7.2.3 | Overcurrent protective device | Unit provided with internal protective device (Fuse F1 in Line). | N/A |
| 1.7.2.4 | IT power distribution systems | No warning required for Norway. | N/A |
| 1.7.2.5 | Operator access with a tool | No operator access area. | N/A |
| 1.7.2.6 | Ozone | Unit does not produce ozone. | N/A |
| 1.7.3 | Short duty cycles | The equipment is intended for continuous operation. | N/A |
| 1.7.4 | Supply voltage adjustment | No voltage selector. | N/A |
| | Methods and means of adjustment; reference to installation instructions | | N/A |
| 1.7.5 | Power outlets on the equipment | No standard power outlet. | N/A |
| 1.7.6 | Fuse identification (marking, special fusing characteristics, cross-reference) | Fuse located in power supply, designated: F1 and marked T4,0AH 250V on the PCB near fuse | P |
| 1.7.7 | Wiring terminals | | P |
| 1.7.7.1 | Protective earthing and bonding terminals | No protective earthing or bonding terminals provided. | N/A |
| 1.7.7.2 | Terminals for a.c. mains supply conductors | DIN Rail power supply, terminal for neutral conductor marked with letter N and for live conductor marked with letter L. | P |
| 1.7.7.3 | Terminals for d.c. mains supply conductors | | N/A |
| 1.7.8 | Controls and indicators | There are no controls affecting safety. LEDs are only used for indicating the status of the unit. | P |
| 1.7.8.1 | Identification, location and marking | There are no switches in the equipment. | N/A |

| IEC 60950-1 | | | |
|--------------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.7.8.2 | Colours | For functional indication a Green LED is lit when the output voltage is ON. | P |
| 1.7.8.3 | Symbols according to IEC 60417 | There are no switches in the equipment. | N/A |
| 1.7.8.4 | Markings using figures | No controls in the sense of this clause. | 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 | No thermostats or other regulating devices. | N/A |
| 1.7.11 | Durability | The marking withstands required tests. | P |
| 1.7.12 | Removable parts | No removable parts. | N/A |
| 1.7.13 | Replaceable batteries | No lithium battery in the equipment. | N/A |
| | Language(s) | | — |
| 1.7.14 | Equipment for restricted access locations..... | Equipment not intended for installation in RAL. | N/A |

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

| | | | |
|------------|---|--|-----|
| 2 | PROTECTION FROM HAZARDS | | P |
| 2.1 | Protection from electric shock and energy hazards | | P |
| 2.1.1 | Protection in operator access areas | Unit is intended for building-in, not intended to be used in operator access area. The output from the power supply does not present hazardous energy level. | P |
| 2.1.1.1 | Access to energized parts | This is a component level power supply. Protection must be checked in the end product. | 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 | No battery compartment. | N/A |
| 2.1.1.3 | Access to ELV wiring | No 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 |
| 2.1.1.5 | Energy hazards | Output of the unit does not represent an energy hazard. | P |
| 2.1.1.6 | Manual controls | No shafts of knobs etc. at ELV or hazardous voltage. | N/A |
| 2.1.1.7 | Discharge of capacitors in equipment | The capacitance of the input circuit is $> 0,1\mu F$. The measurements were performed in worst-case condition. | P |
| | Measured voltage (V); time-constant (s) | See appended table 2.1.1.7. | — |
| 2.1.1.8 | Energy hazards – d.c. mains supply | Unit not connected to DC mains. | 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 amplifier within the unit. | N/A |

| IEC 60950-1 | | | |
|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.1.2 | Protection in service access areas | Unit is for built in use. Unintentional contact with hazardous voltages is unlikely during servicing. See also clause 2.1.1.7. | P |
| 2.1.3 | Protection in restricted access locations | Equipment not intended for installation in RAL. | N/A |

| 2.2 SELV circuits | | | P |
|--------------------------|---|---|---|
| 2.2.1 | General requirements | SELV limits (at output) are not exceeded under normal condition and after a single fault. | P |
| 2.2.2 | Voltages under normal conditions (V) | Within SELV limits. (See appended table 2.2) | P |
| 2.2.3 | Voltages under fault conditions (V) | Within SELV limits. (See appended table 2.2 and 5.3) | P |
| 2.2.4 | Connection of SELV circuits to other circuits | SELV circuits are only connected to other SELV circuits and protective earth. | P |

| 2.3 TNV circuits | | | N/A |
|-------------------------|--|-----------------------------------|-----|
| 2.3.1 | Limits | No TNV circuits in the equipment. | 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 | | | P |
|-------------------------------------|----------------------|--------------|---|
| 2.4.1 | General requirements | Refer below: | P |

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|-------------|--|-------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.4.2 | Limit values | (see appended Table 2.4) | P |
| | Frequency (Hz) | (see appended Table 2.4) | — |
| | Measured current (mA)..... | (see appended Table 2.4) | — |
| | Measured voltage (V) | (see appended Table 2.4) | — |
| | Measured circuit capacitance (nF or μF)..... | (see appended Table 2.4) | — |
| 2.4.3 | Connection of limited current circuits to other circuits | LCC only connected to SELV circuit. | P |

| | | | |
|------------|--|---|-----|
| 2.5 | Limited power sources | | P* |
| | a) Inherently limited output | | N/A |
| | b) Impedance limited output | | N/A |
| | c) Regulating network limited output under normal operating and single fault condition | (see appended table 2.5) *For DRL100-24-1/C2-xyz model only. | P* |
| | Use of integrated circuit (IC) current limiters | | N/A |
| | d) Overcurrent protective device limited output | | N/A |
| | Max. output voltage (V), max. output current (A), max. apparent power (VA)..... | (see appended table 2.5) | — |
| | Current rating of overcurrent protective device (A) .. | | — |

| | | | |
|------------|---|--|-----|
| 2.6 | Provisions for earthing and bonding | | N/A |
| 2.6.1 | Protective earthing | The unit is for built in. No protective earthing provided. The enclosure is not intended for operator contact. Enclosure is made of insulating material. | N/A |
| 2.6.2 | Functional earthing | No functional earthing is provided. | N/A |
| | Use of symbol for functional earthing | | N/A |
| 2.6.3 | Protective earthing and protective bonding conductors | No protective earthing or protective bonding conductors provided. | 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 |

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|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | 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 |
| 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 | | P |
| 2.7.1 | Basic requirements | Protective device (Fuse F1) is integrated in the EUT. The EUT is rated to be connected to a mains with 20 A rating. | P |
| | Instructions when protection relies on building installation | End product consideration. | N/A |
| 2.7.2 | Faults not simulated in 5.3.7 | Considered. | P |
| 2.7.3 | Short-circuit backup protection | Adequate protective device. | P |
| 2.7.4 | Number and location of protective devices | One fuse provided in “Live” phase. | P |
| 2.7.5 | Protection by several devices | Only one protective device. See Sub-clause 2.7.4. | N/A |

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

| | | | |
|-------|------------------------------------|--|-----|
| 2.7.6 | Warning to service personnel.....: | | N/A |
|-------|------------------------------------|--|-----|

| | | | |
|------------|---|--------------------------|-----|
| 2.8 | Safety interlocks | | N/A |
| 2.8.1 | General principles | No safety interlock. | N/A |
| 2.8.2 | Protection requirements | | N/A |
| 2.8.3 | Inadvertent reactivation | | N/A |
| 2.8.4 | Fail-safe operation | | N/A |
| | Protection against extreme hazard | | N/A |
| 2.8.5 | Moving parts | | N/A |
| 2.8.6 | Overriding | | N/A |
| 2.8.7 | Switches, relays and their related circuits | | N/A |
| 2.8.7.1 | Separation distances for contact gaps and their related circuits (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 | (see appended table 5.2) | N/A |
| 2.8.8 | Mechanical actuators | | N/A |

| | | | |
|------------|---|---|---|
| 2.9 | Electrical insulation | | P |
| 2.9.1 | Properties of insulating materials | Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation. No driving belts or couplings used. | P |
| 2.9.2 | Humidity conditioning | | P |
| | Relative humidity (%), temperature (°C) | Humidity treatment performed for 48h at 93%. | — |
| 2.9.3 | Grade of insulation | Insulation is considered to be functional, basic, supplementary, reinforced or double. | P |
| 2.9.4 | Separation from hazardous voltages | | P |
| | Method(s) used | Accessible conductive parts, SELV circuits or TNV circuits are separated from parts at hazardous voltage by double or reinforced insulation (Method 1). | — |

| | | | |
|-------------|--|--|---|
| 2.10 | Clearances, creepage distances and distances through insulation | | P |
|-------------|--|--|---|

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|--------------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.1 | General | | P |
| 2.10.1.1 | Frequency | 50/60 Hz; switching frequency >30kHz | P |
| 2.10.1.2 | Pollution degrees | Pollution degree 2 | P |
| 2.10.1.3 | Reduced values for functional insulation | Functional insulation Line to Neutral before fuse complies with 2.10.3 & 2.10.4. Other functional insulations comply with 5.3.4 c). | P |
| 2.10.1.4 | Intervening unconnected conductive parts | Distance to unconnected conductive parts considered during evaluation of clearances and creepage distances. | P |
| 2.10.1.5 | Insulation with varying dimensions | No such transformer used. | N/A |
| 2.10.1.6 | Special separation requirements | No TNV circuits. | N/A |
| 2.10.1.7 | Insulation in circuits generating starting pulses | No such circuit. | N/A |
| 2.10.2 | Determination of working voltage | (see appended table 2.10.2) | P |
| 2.10.2.1 | General | Refer below: | P |
| 2.10.2.2 | RMS working voltage | (see appended table 2.10.2) | P |
| 2.10.2.3 | Peak working voltage | (see appended table 2.10.2) | P |
| 2.10.3 | Clearances | Refer below: | P |
| 2.10.3.1 | General | See the following clauses. | P |
| 2.10.3.2 | Mains transient voltages | Refer below: | P |
| | a) AC mains supply | Overvoltage Category II (2500V _{peak}) | P |
| | b) Earthed d.c. mains supplies | | N/A |
| | c) Unearthed d.c. mains supplies | | N/A |
| | d) Battery operation | No battery. | N/A |
| 2.10.3.3 | Clearances in primary circuits | (see appended table 2.10.3 and 2.10.4) | P |
| 2.10.3.4 | Clearances in secondary circuits | (see appended table 2.10.3 and 2.10.4) | P |
| 2.10.3.5 | Clearances in circuits having starting pulses | | N/A |
| 2.10.3.6 | Transients from a.c. mains supply | Secondary circuit is not earthed therefore 2500V _{a.c.} transients are considered. | P |
| 2.10.3.7 | Transients from d.c. mains supply | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.3.8 | Transients from telecommunication networks and cable distribution systems | Unit not intended for connection to telecommunication network or cable distribution system. | N/A |
| 2.10.3.9 | Measurement of transient voltage levels | Measurement not relevant. | 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 |
| 2.10.4 | Creepage distances | (see appended table 2.10.3 and 2.10.4) | P |
| 2.10.4.1 | General | Refer below: | P |
| 2.10.4.2 | Material group and comparative tracking index | | P |
| | CTI tests | Material group IIIb is assumed to be used. | — |
| 2.10.4.3 | Minimum creepage distances | (see appended table 2.10.3 and 2.10.4) | P |
| 2.10.5 | Solid insulation | | P |
| 2.10.5.1 | General | | P |
| 2.10.5.2 | Distances through insulation | (see appended table 2.10.5) | P |
| 2.10.5.3 | Insulating compound as solid insulation | No such potted components. | N/A |
| 2.10.5.4 | Semiconductor devices | Approved optical insulators are used. See list of critical components. | P |
| 2.10.5.5. | Cemented joints | No cemented joints. | N/A |
| 2.10.5.6 | Thin sheet material – General | | P |
| 2.10.5.7 | Separable thin sheet material | Used inside transformer T1. | P |
| | Number of layers (pcs) | T1: min. one layer of insulation between primary TIW and secondary winding. | — |
| 2.10.5.8 | Non-separable thin sheet material | No such insulation. | 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 | Isolating thin sheet material used solely for mechanical purpose | — |
| 2.10.5.11 | Insulation in wound components | Transformers provided with triple insulated wire complying with 2.10.5.12. | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.10.5.12 | Wire in wound components | Approved triple insulated wire is used inside transformer T1. See list of critical components. | P |
| | Working voltage | See appended table 2.10.2. | P |
| | a) Basic insulation not under stress | | N/A |
| | b) Basic, supplementary, reinforced insulation | Primary winding wire is approved according to Annex U – reinforced isolation. | P |
| | c) Compliance with Annex U | Approved triple insulated wires used. See list of critical components. | P |
| | Two wires in contact inside wound component; angle between 45° and 90° | No contact between 45° and 90°. | P |
| 2.10.5.13 | Wire with solvent-based enamel in wound components | No TNV circuits. | N/A |
| | Electric strength test | (see appended table 2.10.5) | — |
| | 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 |
| 2.10.6 | Construction of printed boards | | P |
| 2.10.6.1 | Uncoated printed boards | See below. | P |
| 2.10.6.2 | Coated printed boards | No special coating provided in lieu of reducing distances. | N/A |
| 2.10.6.3 | Insulation between conductors on the same inner surface of a printed board | Two sided PCB laminate provided without inner layers | N/A |
| 2.10.6.4 | Insulation between conductors on different layers of a printed board | Primary and secondary traces do not overlap. | N/A |
| | Distance through insulation | (see appended table 2.10.5) | N/A |
| | Number of insulation layers (pcs)..... | | N/A |
| 2.10.7 | Component external terminations | Coatings not used over terminations to increase effective creepage and clearance distances. | 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 | (see appended table 5.2) | N/A |

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

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 3 | WIRING, CONNECTIONS AND SUPPLY | | P |
| 3.1 | General | | P |
| 3.1.1 | Current rating and overcurrent protection | Adequate cross sectional areas on internal wiring (PCB traces and internal winding wires of wound components were considered as internal wiring). | P |
| 3.1.2 | Protection against mechanical damage | Wire ways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors. | P |
| 3.1.3 | Securing of internal wiring | Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation. | P |
| 3.1.4 | Insulation of conductors | No insulated wires used inside the unit. | N/A |
| 3.1.5 | Beads and ceramic insulators | Ferrite beads are suitably fixed on components | N/A |
| 3.1.6 | Screws for electrical contact pressure | Approved terminals provided. | P |
| 3.1.7 | Insulating materials in electrical connections | No contact pressure through insulating material. | P |
| 3.1.8 | Self-tapping and spaced thread screws | Thread-cutting or space thread screws are not used for electrical connections. | N/A |
| 3.1.9 | Termination of conductors | Terminations cannot become displaced so that clearances and Creepage distances can be reduced. | P |
| | 10 N pull test | Considered. | P |
| 3.1.10 | Sleeving on wiring | No sleeveings used. | N/A |
| 3.2 | Connection to a mains supply | | N/A |
| 3.2.1 | Means of connection | The EUT is for building-in. Connection to mains supply is to be determined within the end product. | N/A |
| 3.2.1.1 | Connection to an a.c. mains supply | See above. | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | No appliance inlet is used. | 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 | | P |
| 3.3.1 | Wiring terminals | DIN Rail PS with pillar type terminals for fixed connection of mains conductors. | P |
| 3.3.2 | Connection of non-detachable power supply cords | Not equipment with special non-detachable power supply cord. | N/A |
| 3.3.3 | Screw terminals | Pillar type terminals used. | P |
| 3.3.4 | Conductor sizes to be connected | See below: | P |
| | Rated current (A), cord/cable type, cross-sectional area (mm ²) | Terminals allow connection of appropriate conductors. Rated current of the unit: 2,8 A max.; Terminal allows connection of conductors up to 2,5 mm ² (24-12AWG). | — |
| 3.3.5 | Wiring terminal sizes | See below: | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Rated current (A), type, nominal thread diameter (mm) | Approved Input & Output terminals provided and rated min. 12A. (see list of critical components) | — |
| 3.3.6 | Wiring terminal design | Adequate connection, checked by inspection. | P |
| 3.3.7 | Grouping of wiring terminals | Terminals located in proximity to each other. | P |
| 3.3.8 | Stranded wire | Statement in manual provided – wire strip length 5 mm max. Unit was tested according to the specification. | P |

| 3.4 Disconnection from the mains supply | | | N/A |
|---|---|--|-----|
| 3.4.1 | General requirement | The unit is a Power Supply for building-in and does not provide a disconnect device. Should be determined in the end product installation. | 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 | One power source only. | N/A |

| 3.5 Interconnection of equipment | | | P |
|----------------------------------|--|------------------------------------|-----|
| 3.5.1 | General requirements | | P |
| 3.5.2 | Types of interconnection circuits | SELV circuit. | P |
| 3.5.3 | ELV circuits as interconnection circuits | No ELV circuits. | N/A |
| 3.5.4 | Data ports for additional equipment | No data ports provided in the EUT. | N/A |

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

| | | | |
|------------|------------------------------|--|-----|
| 4 | PHYSICAL REQUIREMENTS | | P |
| 4.1 | Stability | | N/A |
| | Angle of 10° | The unit is for built in use. Therefore, the test is not applicable. | N/A |
| | Test force (N) | The unit is not floor standing. | N/A |

| | | | |
|------------|--|--|-----|
| 4.2 | Mechanical strength | | P |
| 4.2.1 | General | EUT complies with the requirement after tests described below were applied. | P |
| | Rack-mounted equipment. | (see Annex DD) | N/A |
| 4.2.2 | Steady force test, 10 N | No hazard. See appended table 4.2.2. | P |
| 4.2.3 | Steady force test, 30 N | The unit is for built in use. | N/A |
| 4.2.4 | Steady force test, 250 N | Unit is intended for building-in. Enclosure is end product consideration. | N/A |
| 4.2.5 | Impact test | Unit is intended for building-in. Enclosure is end product consideration. | 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 | Enclosure conditioned for 7 hours at 110°C. No cracks or enclosure deformation occurred. | P |
| 4.2.8 | Cathode ray tubes | No cathode ray tubes. | N/A |
| | Picture tube separately certified | | N/A |
| 4.2.9 | High pressure lamps | | N/A |
| 4.2.10 | Wall or ceiling mounted equipment; force (N) | EUT is not intended to be mounted on a wall or ceiling. | N/A |

| | | | |
|------------|--|--|-----|
| 4.3 | Design and construction | | P |
| 4.3.1 | Edges and corners | All edges and corners are rounded and/or smoothed. | P |
| 4.3.2 | Handles and manual controls; force (N) | No knobs, grips, handles, lever, etc. | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.3.3 | Adjustable controls | No hazardous adjustable controls. | N/A |
| 4.3.4 | Securing of parts | No loosening of parts impairing creepage distances or clearances over basic, supplementary or reinforced insulation is likely to occur. | P |
| 4.3.5 | Connection by plugs and sockets | No interchangeable plugs or sockets provided. | N/A |
| 4.3.6 | Direct plug-in equipment | The EUT is not direct plug-in equipment. | N/A |
| | Torque | | — |
| | Compliance with the relevant mains plug standard | | N/A |
| 4.3.7 | Heating elements in earthed equipment | The equipment does not have any heating elements. | N/A |
| 4.3.8 | Batteries | No batteries in the equipment. | N/A |
| | - Overcharging of a rechargeable battery | | N/A |
| | - Unintentional charging of a non-rechargeable battery | | N/A |
| | - Reverse charging of a rechargeable battery | | N/A |
| | - Excessive discharging rate for any battery | | N/A |
| 4.3.9 | Oil and grease | Insulation is not exposed to oil, grease etc. | N/A |
| 4.3.10 | Dust, powders, liquids and gases | The equipment does not generate dust, powder, does not contain liquid or gas. The unit is specified for office environment. | N/A |
| 4.3.11 | Containers for liquids or gases | No containers for liquids or gases in the equipment. | N/A |
| 4.3.12 | Flammable liquids | | N/A |
| | Quantity of liquid (l) | | N/A |
| | Flash point (°C) | | N/A |
| 4.3.13 | Radiation | | N/A |
| 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 | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | Lasers (including laser diodes) and LEDs | The visible indicator is diffuse type LED with low energy. | N/A |
| 4.3.13.5.1 | Lasers (including laser diodes) | | N/A |
| | Laser class | | — |
| 4.3.13.5.2 | Light emitting diodes (LEDs) | The visible indicator is diffuse type LED with low energy. | N/A |
| 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 | No hazardous moving parts. | N/A |
| | Household and home/office document/media shredders | (see Annex EE) | N/A |
| 4.4.3 | Protection in restricted access locations | | N/A |
| 4.4.4 | Protection in service access areas | | N/A |
| 4.4.5 | Protection against moving fan blades | No fans provided in the EUT. | N/A |
| 4.4.5.1 | General | | N/A |
| | Not considered to cause pain or injury. a)..... | | N/A |
| | Is considered to cause pain, not injury. b) | | N/A |
| | Considered to cause injury. c) | | N/A |
| 4.4.5.2 | Protection for users | | N/A |
| | Use of symbol or warning | | N/A |
| 4.4.5.3 | Protection for service persons | | N/A |
| | Use of symbol or warning | | N/A |

| | | | |
|------------|---|---|---|
| 4.5 | Thermal requirements | | P |
| 4.5.1 | General | | P |
| 4.5.2 | Temperature tests | | P |
| | Normal load condition per Annex L | Rated load, as specified by Manufacturer. | — |
| 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 | (see appended table 4.5.5) | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.6 | Openings in enclosures | | N/A |
| 4.6.1 | Top and side openings | Equipment for building-in. This clause should be evaluated for the final system. | N/A |
| | Dimensions (mm) | | — |
| 4.6.2 | Bottoms of fire enclosures | Must be considered in the end product. | N/A |
| | Construction of the bottom, dimensions (mm) | | — |
| 4.6.3 | Doors or covers in fire enclosures | No doors or covers in the enclosure. | N/A |
| 4.6.4 | Openings in transportable equipment | The unit is not regarded as transportable equipment. | N/A |
| 4.6.4.1 | Constructional design measures | See sub-clause 4.6.4.1 | N/A |
| | Dimensions (mm) | | — |
| 4.6.4.2 | Evaluation measures for larger openings | See sub-clause 4.6.4.1 | N/A |
| 4.6.4.3 | Use of metallized parts | See sub-clause 4.6.4.1 | N/A |
| 4.6.5 | Adhesives for constructional purposes | | N/A |
| | Conditioning temperature (°C), time (weeks)..... | | — |
| 4.7 | Resistance to fire | | P |
| 4.7.1 | Reducing the risk of ignition and spread of flame | Method 1 is used. | 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 | Method 1 is used. | N/A |
| 4.7.2 | Conditions for a fire enclosure | See below: | P |
| 4.7.2.1 | Parts requiring a fire enclosure | Component power supply for building-in, fire enclosure must be considered for the end product. | P |
| 4.7.2.2 | Parts not requiring a fire enclosure | The fire enclosure is required to cover all parts. Must be considered for the end product installation. | P |
| 4.7.3 | Materials | | P |
| 4.7.3.1 | General | Components and materials have adequate flammability classification. Refer to "List of Critical Components". | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.7.3.2 | Materials for fire enclosures | Enclosure of EUT is made of plastic material with flammability rating V-0. EUT is component level power supply for building-in. Fire enclosure must be considered within the end product. | N/A |
| 4.7.3.3 | Materials for components and other parts outside fire enclosures | EUT for building-in, must be considered in the end product. | N/A |
| 4.7.3.4 | Materials for components and other parts inside fire enclosures | Other materials inside fire enclosure are minimum V-2 material or mounted on PCB rated minimum V-1. | P |
| 4.7.3.5 | Materials for air filter assemblies | No air filters in the equipment. | N/A |
| 4.7.3.6 | Materials used in high-voltage components | No parts exceeding 4kV. | N/A |

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

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| 5 | ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS | | P |
| 5.1 | Touch current and protective conductor current | | P |
| 5.1.1 | General | Test conducted in accordance with 5.1.2 to 5.1.7. | P |
| 5.1.2 | Configuration of equipment under test (EUT) | Refer below: | P |
| 5.1.2.1 | Single connection to an a.c. mains supply | Considered. | P |
| 5.1.2.2 | Redundant multiple connections to an a.c. mains supply | Single connection to the mains. | N/A |
| 5.1.2.3 | Simultaneous multiple connections to an a.c. mains supply | No multiple connections to the mains. | N/A |
| 5.1.3 | Test circuit | According to Fig. 5A | P |
| 5.1.4 | Application of measuring instrument | Measuring instrument D1 was used. | P |
| 5.1.5 | Test procedure | | P |
| 5.1.6 | Test measurements | | P |
| | Supply voltage (V) | 264 Va.c.; 60 Hz | — |
| | Measured touch current (mA) | (see appended table 5.1) | — |
| | Max. allowed touch current (mA) | (see appended table 5.1) | — |
| | Measured protective conductor current (mA) | No protective earthing provided. | — |
| | 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 | EUT not connected to a telecommunication network nor a cable distribution system. | 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 |

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

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|--|--|--|-----|
| | b) EUT whose telecommunication ports have no reference to protective earth | | N/A |
|--|--|--|-----|

| | | | |
|------------|--------------------------|--------------------------|---|
| 5.2 | Electric strength | | P |
| 5.2.1 | General | (see appended table 5.2) | P |
| 5.2.2 | Test procedure | | P |

| | | | |
|------------|---|---|-----|
| 5.3 | Abnormal operating and fault conditions | | P |
| 5.3.1 | Protection against overload and abnormal operation | (see appended table 5.3) | P |
| 5.3.2 | Motors | No motors in the power supply. | N/A |
| 5.3.3 | Transformers | See Annex C and appended Table C.2. | P |
| 5.3.4 | Functional insulation | Complies with a), b) and c) | P |
| 5.3.5 | Electromechanical components | No electromechanical components. | N/A |
| 5.3.6 | Audio amplifiers in ITE | No audio amplifiers. | N/A |
| 5.3.7 | Simulation of faults | (see appended table 5.3) | P |
| 5.3.8 | Unattended equipment | The unit is intended for continuous operation. There is no thermal sensor or cut-off for operational condition. | N/A |
| 5.3.9 | Compliance criteria for abnormal operating and fault conditions | | P |
| 5.3.9.1 | During the tests | No fire, emission of molten metal or deformation was noted during the tests. | P |
| 5.3.9.2 | After the tests | The tested units passed the dielectric strength test. | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | (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 | | 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) | | — |
| | Current limiting method | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 7 | CONNECTION TO CABLE DISTRIBUTION SYSTEMS | | N/A |
| 7.1 | General | EUT not intended for connection to cable 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 | | N/A |
| 7.3 | Protection of equipment users from overvoltages on the cable distribution system | | N/A |
| 7.4 | Insulation between primary circuits and cable distribution systems | | N/A |
| 7.4.1 | General | | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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) | Approved materials are used. See list of critical components. | 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 | No fans or other motors are used in the EUT. | N/A |
| | Position | | — |
| | Manufacturer | | — |
| | Type | | — |
| | Rated values | | — |
| B.2 | Test conditions | | N/A |
| B.3 | Maximum temperatures | (see appended table 5.3) | N/A |
| B.4 | Running overload test | (see appended table 5.3) | 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 | (see appended table 5.3) | N/A |
| B.9 | Test for three-phase motors | (see appended table 5.3) | 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) | | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Position | Primary to secondary transformer T1. | — |
| | Manufacturer | Trio | — |
| | Type | CA81902 | — |
| | Rated values | See list of critical components. | — |
| | Method of protection | Primary current regulation. | — |
| C.1 | Overload test | (see appended table 5.3) | P |
| C.2 | Insulation | (see appended tables 5.2 and C2) | P |
| | Protection from displacement of windings | Triple insulated wire is used. No special precaution is required. | P |
| D | ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4) | | P |
| D.1 | Measuring instrument | Measuring instrument D1 was used. | P |
| 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) | | P |
| 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| 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) | | P |
| 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 | Rated load, as specified by Manufacturer. | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| 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) Combination pulse current | | N/A |
| | Body of the VDR Test according to IEC60695-11-5..... | | N/A |
| | Body of the VDR. Flammability class of material (min V-1)..... | | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| | | See separate test report | — |
| U | ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4) | | N/A |
| | | See list of critical components. All used triple insulated wires are already approved to Annex U. No additional tests considered required. | — |
| V | ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) | | P |
| V.1 | Introduction | | P |
| V.2 | TN power distribution systems | | P |
| 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 |
| 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) | | P |
| X.1 | Determination of maximum input current | Input current was measured and recorded (see appended table 5.3). | P |
| X.2 | Overload test procedure | | P |
| Y | ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3) | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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) | | P |
| AA | ANNEX AA, MANDREL TEST (see 2.10.5.8) | | N/A |
| BB | ANNEX BB, CHANGES IN THE SECOND EDITION | | — |
| CC | ANNEX CC, Evaluation of integrated circuit (IC) current limiters | | N/A |
| CC.1 | General | | N/A |
| CC.2 | Test program 1..... | | N/A |
| CC.3 | Test program 2..... | | N/A |
| DD | ANNEX DD, Requirements for the mounting means of rack-mounted equipment | | N/A |
| DD.1 | General | | N/A |
| DD.2 | Mechanical strength test, variable N..... | | N/A |
| DD.3 | Mechanical strength test, 250N, including end stops..... | | N/A |
| DD.4 | Compliance..... | | N/A |
| EE | ANNEX EE, Household and home/office document/media shredders | | N/A |
| EE.1 | General | | N/A |
| EE.2 | Markings and instructions | | N/A |
| | Use of markings or symbols..... | | N/A |
| | Information of user instructions, maintenance and/or servicing instructions..... | | N/A |
| EE.3 | Inadvertent reactivation test..... | | N/A |
| EE.4 | Disconnection of power to hazardous moving parts: | | N/A |
| | Use of markings or symbols..... | | N/A |
| EE.5 | Protection against hazardous moving parts | | N/A |
| | Test with test finger (Figure 2A) | | N/A |
| | Test with wedge probe (Figure EE1 and EE2) | | N/A |