
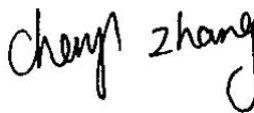





TEST REPORT IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements	
Report Reference No.	T1507212-891
Tested by (printed name and signature)	Samantha Xue 
Approved by (printed name and signature)	Cheryl Zhang 
Date of issue.	2018-01-08
Testing Laboratory Name	Cerpass Technology (Suzhou) Co., Ltd.
Address	No.66, Tangzhuang Road, Suzhou Industrial Park, Jiangsu, China.
Applicant's name	Zhejiang Dahua Vision Technology Co., Ltd.
Address	No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Test specification:	
Standard	IEC 60950-1:2005 (Second Edition) + A1:2009 + A2:2013 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
Test procedure	Service of CE Marking in LVD
Non-standard test method	N/A
Test item description	LED Strobe Lamp
Trade Mark	
Manufacturer	Zhejiang Dahua Vision Technology Co., Ltd. No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Model/Type reference	DHI-ITALE-060AA-P, ITALE-060AA-P, DHI-ITALE-080BA-IR7-P, ITALE-080BA-IR7-P, DHI-ITALE-080BA-IR8-P, ITALE-080BA-IR8-P, DHI-ITALF-300AC, ITALF-300AC, DHI-ITALF-300AC-IR, ITALF-300AC-IR, DHI-ITALE-040AA-P, ITALE-040AA-P, DHI-ITALE-040BA-IR7-P, ITALE-040BA-IR7-P, DHI-ITALE-040BA-IR8-P, ITALE-040BA-IR8-P, DHI-ITALF-300AD, ITALF-300AD, DHI-ITALF-300AD-IR, ITALF-300AD-IR
Ratings	Input: 110-240V~, 50/60Hz, 1.0-0.4A

**Particulars: test item vs. test requirements**

Equipment mobility.....	: Stationary Equipment
Connection to the mains	: Permanently connected
Operating condition.....	: Continuous
Access location	: Restricted Access Location
Over voltage category (OVC)	: OVCII
Mains supply tolerance (%) or absolute mains supply values	: +10%, -10%
Tested for IT power systems	: Yes
IT testing, phase-phase voltage (V)	: 230V (for Norway)
Class of equipment	: Class I
Considered current rating (A)	: 16A
Pollution degree (PD)	: PD2
IP protection class	: IPX0
Altitude during operation (m)	: < 2000 m
Altitude of test laboratory (m)	: < 2000 m
Mass of equipment (kg)	: Approx. 2.09Kg

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	: 2017-07-27
Date(s) of performance of tests	: 2017-07-27 to 2018-01-08

**General remarks:**

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

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

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

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

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

The instructions specified by the standard have to be in official language of each country, however, only English is checked for this report. It is the applicant responsibility to provide instruction in each official language of the EU.

This report is submitted for the exclusive use of the client to whom it is addressed. Its significance is subject to the adequacy and representative character of the sample(s) and to the comprehensiveness of the tests, examinations or surveys made.

This report justified only the submitted samples exclusively and not necessarily implies that all other samples are also to be found in same result.

The CE marking may only be used if all relevant and effective EC directives are complied with.

Factor(ies):

Zhejiang Dahua Vision Technology Co., Ltd.

Address: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

ZHEJIANG DAHUA ZHILIAN CO., LTD.

Address: No.28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou, P.R. China.

General product information:

1. The equipment is a LED Strobe Lamp which is intended to use within information technology equipment. All electrical components are mounted on V-1 PCB and housed in metal enclosure fixed by screws.
2. All models are similar except for model description for market purpose.
3. All ports complied with limited power source, see appended table 2.5.
4. According to the applicants' requirement, the equipment is only evaluated to vertical position.

Other comments:

1. The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 60 degree C.
2. Unless otherwise indicated, all tests were conducted on models DHI-ITALE-060AA- P to represent the other similar models.

**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.

Because information of importer has not been confirmed, the information of importer will be given on label by manufacturer prior to marketing in the EEC

Representative**LED Strobe Lamp****DHI-ITALE-060AA-P**

110-240V~,1.0-0.4A, 50/60Hz

Consumption: 40W MAX



P/N: 1.0.01.09.10318



S/N: 3J06492PCL00001

MADE IN CHINA

ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.




IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General	See below.	P
	Comply with IEC 60950-1 or relevant component standard	Components which were found to affect safety aspects comply with the requirements of this standard or with the safety aspects of the relevant IEC/EN component standards (See appended table 1.5.1).	P
1.5.2	Evaluation and testing of components	Components that are certified to IEC and /or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
1.5.3	Thermal controls	No thermal control.	N/A
1.5.4	Transformers	Transformers comply with the relevant requirements of this standard. See Annex C.	P
1.5.5	Interconnecting cables	Interconnection o/p cable to other device is carrying only SELV on an energy level below 240VA. Except for the insulation material, there are no further requirements for the o/p interconnection cable.	P
1.5.6	Capacitors bridging insulation	Between lines: X1 or X2 capacitors according to IEC 60384-14 with 21 days damp heat test. Between line and ground: Y1 or Y2 capacitors according to IEC 60384-14 with 21 days damp heat test. See tabel 1.5.1 for details.	P
1.5.7	Resistors bridging insulation	See below.	P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Functional Insulation	P



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		N/A
1.5.8	Components in equipment for IT power systems	See tabel 1.5.1 for details.	P
1.5.9	Surge suppressors	See below.	P
1.5.9.1	General	Approved Varistor comply with Annex Q used in primary circuit.	P
1.5.9.2	Protection of VDRs	A fuse is connected in series with VDR.	P
1.5.9.3	Bridging of functional insulation by a VDR	Approved varistor located between mains lines.	P
1.5.9.4	Bridging of basic insulation by a VDR	The unit is PERMANENTLY CONNECTED EQUIPMENT, It is bridged BASIC INSULATION by a VDR complying with the requirements of Annex Q.	P
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	Power interface		P
1.6.1	AC power distribution systems	TN power system and IT power system (for Norway).	P
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD. (See appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not a hand-held equipment.	N/A
1.6.4	Neutral conductor		P
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	See below.	P
	Multiple mains supply connections.....:		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated voltage(s) or voltage range(s) (V)	110-240V~	P
	Symbol for nature of supply, for d.c. only.....	Mains from AC Source.	N/A
	Rated frequency or rated frequency range (Hz) ...	50/60Hz	P
	Rated current (mA or A)	1.0-0.4A	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark	Trade-mark : 	P
	Model identification or type reference	See page 1.	P
	Symbol for Class II equipment only	Class I equipment.	N/A
	Other markings and symbols	Additional symbols or markings do not give rise to misunderstanding.	P
1.7.1.3	Use of graphical symbols		P
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	The user's manual contains information for operation, installation, servicing, transport, storage and technical data. The operation guide is provided to the user.	P
1.7.2.2	Disconnect devices	16A circuit breaker is required as disconnection device. The following sentence stated in the installation instruction. For permanently connected equipment, a readily accessible disconnect device shall be incorporated external to the equipment.	P
1.7.2.3	Overcurrent protective device	16A circuit breaker considered as overcurrent protective device.	P
1.7.2.4	IT power distribution systems	For Norway compliance has to be evaluated during the national approval.	N/A
1.7.2.5	Operator access with a tool	No tool is required to gain access to operator access area.	N/A
1.7.2.6	Ozone	No ozone produces within this equipment.	N/A
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.4	Supply voltage adjustment	No adjustment of supply voltage necessary.	N/A
	Methods and means of adjustment; reference to installation instructions		N/A
1.7.5	Power outlets on the equipment	No outlet provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	The fuse marking is on PCB near fuse: F1&F2: T4AL/250Vac	P
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals	A wiring terminal was provided, the symbol IEC 60417-5019 was located near protective bonding terminal.	P
1.7.7.2	Terminals for a.c. mains supply conductors	Marking adjacent to mains terminals indicates polarity.	P
1.7.7.3	Terminals for d.c. mains supply conductors	No connection to DC mains.	N/A
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking	The function of controls affecting safety is obvious regardless of language.	P
1.7.8.2	Colours		P
1.7.8.3	Symbols according to IEC 60417.....	No such switches provided in the equipment.	N/A
1.7.8.4	Markings using figures	No used.	N/A
1.7.9	Isolation of multiple power sources		N/A
1.7.10	Thermostats and other regulating devices	No such device provided.	N/A
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 s and then again for 15 s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was neither curling nor lifting of the label edge.	P
1.7.12	Removable parts	No removable part provided.	N/A
1.7.13	Replaceable batteries	No replaceable battery.	N/A
	Language(s)		—



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.14	Equipment for restricted access locations :	The installation instructions indicate use in a RESTRICTED ACCESS LOCATION only.	P

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	See below.	P
2.1.1.1	Access to energized parts	No acces with test finger and test pin to any parts with only basic insulation to hazardous voltage. Any hazardous parts accessible are unlikely.	P
	Test by inspection :	Same as above.	P
	Test with test finger (Figure 2A) :	Same as above.	P
	Test with test pin (Figure 2B) :	Same as above.	P
	Test with test probe (Figure 2C) :	No TNV circuits provided.	N/A
2.1.1.2	Battery compartments	No battery compartment.	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N/A
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N/A
2.1.1.5	Energy hazards :	No energy hazards circuit in user accessible parts.	P
2.1.1.6	Manual controls	No conductive shaft of operating knob and handle.	N/A
2.1.1.7	Discharge of capacitors in equipment	No risk of electric shock. Done in the approval of built-in switching power supply module.	N/A
	Measured voltage (V); time-constant (s) :	Same as above.	—
2.1.1.8	Energy hazards – d.c. mains supply	AC mains supply only.	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 provided.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.2	Protection in service access areas	Hazardous bare parts are guarded and unintentional contact with such parts is unlikely during servicing operations involving other parts of the equipment.	P
2.1.3	Protection in restricted access locations		P
2.2	SELV circuits		P
2.2.1	General requirements	See below, the secondary circuits were tested as SELV.	P
2.2.2	Voltages under normal conditions (V)	All accessible voltages are less than 42.4V _{peak} or 60V _{dc} and are classified as SELV. See appended table 2.2.2.	P
2.2.3	Voltages under fault conditions (V)	Under fault conditions voltages never exceed 71V _{peak} and 120V _{dc} and do not exceed 42.4V _{peak} or 60V _{dc} for more than 0.2 sec. See appended table 2.2.3.	P
2.2.4	Connection of SELV circuits to other circuits	See Sub-Clause 2.2.2 and 2.2.3	P
2.3	TNV circuits (No TNV circuits within the equipment.)		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



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

2.4	Limited current circuits		N/A
2.4.1	General requirements	The limits for LCC under normal and single fault condition were not exceeded.	P
2.4.2	Limit values	See table 2.4.2.	P
	Frequency (Hz).....:	See table 2.4.2	—
	Measured current (mA)	See table 2.4.2	—
	Measured voltage (V).....:	See table 2.4.2	—
	Measured circuit capacitance (nF or μ F).....:	C30=2200pF	—
2.4.3	Connection of limited current circuits to other circuits	The limited current circuits connected to other circuits comply with the requirements of Sub-clause 2.4.1	P

2.5	Limited power sources		P
	a) Inherently limited output	(see appended table 2.5)	P
	b) Impedance limited output		N/A
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition		N/A
	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		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth.	P
2.6.2	Functional earthing	Function earthing (secondary trace) connected to protective bonding and separated from Hazardous voltage by double and reinforced insulation.	P
	Use of symbol for functional earthing		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3	Protective earthing and protective bonding conductors	Protective earthing conductor provided.	P
2.6.3.1	General	See below.	P
2.6.3.2	Size of protective earthing conductors	Power supply cord earthing conductor complies with Table 3B.	P
	Rated current (A), cross-sectional area (mm ²), AWG.....:	Rated maximum 1.0A, minimum 18AWG	—
2.6.3.3	Size of protective bonding conductors	Complied with sub-clause 2.6.3.4.	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)	(see appended table 2.6.3.4)	P
2.6.3.5	Colour of insulation.....:	Green-and-yellow used only for protection earthing.	P
2.6.4	Terminals	See below.	P
2.6.4.1	General	See below.	P
2.6.4.2	Protective earthing and bonding terminals	See below.	P
	Rated current (A), type, nominal thread diameter (mm).....:	See appended table 2.6.3.4.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		P
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	The unit has its own earthing connection. Any other units connected via the output shall be provided SELV only.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductors.	P
2.6.5.3	Disconnection of protective earth	Disconnection of the protective earth at one assembly does not break the protective earthing connection to other assemblies.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.4	Parts that can be removed by an operator	Plug or inlet, earthing connected before and disconnected after hazardous voltage. No other operator removable parts.	P
2.6.5.5	Parts removed during servicing	It is not necessary to disconnect earthing except for the removing of the earthed parts itself.	P
2.6.5.6	Corrosion resistance	All protective earth connections in compliance with Annex J. Specifically no direct Al – Cu contacts.	P
2.6.5.7	Screws for protective bonding	No selftapping screws are used.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuits.	N/A

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements		P
	Instructions when protection relies on building installation		P
2.7.2	Faults not simulated in 5.3.7	Considered.	P
2.7.3	Short-circuit backup protection		P
2.7.4	Number and location of protective devices	The protective device is located adequately therefore able to interrupt the overcurrent flowing in any possible fault current path.	P
2.7.5	Protection by several devices	Only one fuse provided.	N/A
2.7.6	Warning to service personnel.....	<p>The following a statement is provided in the servicing instructions:</p>  <p>CAUTION</p> <p>DOUBLE POLE/NEUTRAL FUSING</p>	P

2.8	Safety interlocks (No such device within this equipment.)		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
2.8.8	Mechanical actuators		N/A

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation. Electric strength test was conducted after the humidity treatment. See below.	P
2.9.2	Humidity conditioning	See below.	P
	Relative humidity (%), temperature (°C)	95%, 30°C, 48hours.	—
2.9.3	Grade of insulation	Functional, basic, supplementary, double and reinforced insulation.	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used	Method 1 used.	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See below.	P
2.10.1.1	Frequency	The Frequency does not exceeding 30kHz.	P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	See subclause 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts	No such conductive parts.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.1.5	Insulation with varying dimensions	No reduction of distances considered.	N/A
2.10.1.6	Special separation requirements	No TNV circuit.	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 below.	P
2.10.2.1	General	See 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	See appended table 2.10.3 and 2.10.4.	P
2.10.3.1	General	Annex F is considered.	P
2.10.3.2	Mains transient voltages	See below.	P
	a) AC mains supply	Overvoltage Category II for primary circuit and transient voltage 2500V _{peak} .	P
	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	See appended table 2.10.3 and 2.10.4.	P
2.10.3.4	Clearances in secondary circuits	See sub-clause 5.3.4.	N/A
2.10.3.5	Clearances in circuits having starting pulses	No such circuit.	N/A
2.10.3.6	Transients from a.c. mains supply	1500V _{peak} assumed.	P
2.10.3.7	Transients from d.c. mains supply	Mains from AC source.	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems	No such circuits.	N/A
2.10.3.9	Measurement of transient voltage levels	See sub-clause 2.10.3.6.	N/A
	a) Transients from a mains supply	Same as above.	N/A
	For an a.c. mains supply	Same as above.	N/A
	For a d.c. mains supply	Same as above.	N/A
	b) Transients from a telecommunication network :	Same as above.	N/A
2.10.4	Creepage distances	See appended table 2.10.3 and 2.10.4.	P
2.10.4.1	General	See below.	P
2.10.4.2	Material group and comparative tracking index	See below.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	CTI tests	Material group IIIb assumed; 100<=CTI<175.	—
2.10.4.3	Minimum creepage distances	See appended table 2.10.3 and 2.10.4.	P
2.10.5	Solid insulation	Complied with 2.10.5.2 to 2.10.5.14 and 5.2.	P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	See appended table 2.10.5.	P
2.10.5.3	Insulating compound as solid insulation	Certified sources of photo couplers used. See sub-clause 2.10.5.2.	P
2.10.5.4	Semiconductor devices	For photo couplers see sub-clause 2.10.5.3.	P
2.10.5.5.	Cemented joints		N/A
2.10.5.6	Thin sheet material – General	Considered.	P
2.10.5.7	Separable thin sheet material	Reinforced insulation.	P
	Number of layers (pcs)	See measurement section table C.2 for detail applicable.	—
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	See below.	P
	Electric strength test	See appended table 5.2.2.	—
2.10.5.11	Insulation in wound components		P
2.10.5.12	Wire in wound components	Reinforced insulation	P
	Working voltage	See appended table 2.10.2	P
	a) Basic insulation not under stress		N/A
	b) Basic, supplementary, reinforced insulation	Reinforced insulation	P
	c) Compliance with Annex U	Triple insulated wire is used in secondary winding of T2 for reinforced insulation, also see annex U and appended table 1.5.1.	P
	Two wires in contact inside wound component; angle between 45° and 90°	Insulation tape and tubing provided.	P
2.10.5.13	Wire with solvent-based enamel in wound components		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards	See appended table 2.10.3 and 2.10.4.	P
2.10.6.2	Coated printed boards	No coated printed board.	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	All internal wires are UL recognized. Cross-sectional area of internal wiring is suitable for current intended to be carried.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges and heatsinks, which could damage the insulation and cause hazards.	P
3.1.3	Securing of internal wiring	The wires are secured by soldering and use of quick-connect termination, so that a loosening of the terminal connection is unlikely.	P
3.1.4	Insulation of conductors	The insulation of the individual conductors is suitable for the application and the working voltage. For the insulation material see 3.1.1.	P
3.1.5	Beads and ceramic insulators	No such insulators used.	N/A
3.1.6	Screws for electrical contact pressure	No screw used for electrical connection.	N/A
3.1.7	Insulating materials in electrical connections	All current carrying connections are metal to metal.	N/A
3.1.8	Self-tapping and spaced thread screws	No self-tapping or spaced thread screws used.	N/A
3.1.9	Termination of conductors	All conductors are reliably secured.	P
	10 N pull test	After test, no break away or pivot on its terminal.	P
3.1.10	Sleeving on wiring	No sleeving used as supplementary insulation.	N/A

3.2	Connection to a mains supply		P
3.2.1	Means of connection	The unit is provided with terminals for permanent connection.	P
3.2.1.1	Connection to an a.c. mains supply	A non-detachable power supply cord for permanent connection to the supply.	P
3.2.1.2	Connection to a d.c. mains supply	AC mains supply.	N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment	The equipment is provided with a non-detachable power supply cord for connection to the mains.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of conductors, diameter of cable and conduits (mm)	See table 1.5.1	—
3.2.4	Appliance inlets	The equipment does not use an appliance inlet.	N/A
3.2.5	Power supply cords	See below.	P
3.2.5.1	AC power supply cords	See below.	P
	Type	See table 1.5.1	—
	Rated current (A), cross-sectional area (mm ²), AWG	1.0A, 0.75 mm ² , 18AWG	—
3.2.5.2	DC power supply cords	AC power supply cords used.	N/A
3.2.6	Cord anchorages and strain relief	See below.	P
	Mass of equipment (kg), pull (N)	4.95kg, 100N	—
	Longitudinal displacement (mm)	Maximum 0.6mm.	—
3.2.7	Protection against mechanical damage		P
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		P
3.3	Wiring terminals for connection of external conductors		P
3.3.1	Wiring terminals		P
3.3.2	Connection of non-detachable power supply cords		P
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected	See below.	P
	Rated current (A), cord/cable type, cross-sectional area (mm ²)	1.0A, 0.75 mm ² , 18AWG	—
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
3.4	Disconnection from the mains supply		P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.4.1	General requirement	See below.	N/A
3.4.2	Disconnect devices	The circuit breaker is used as the disconnect device.	P
3.4.3	Permanently connected equipment	Provided with Installation Instructions per 1.7.2 indicating protection to be part of building installation.	P
3.4.4	Parts which remain energized	When power cord is removed from inlet no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords	No such components.	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	Single phase.	N/A
3.4.8	Switches as disconnect devices	Refer to 3.4.2.	N/A
3.4.9	Plugs as disconnect devices	Same as above.	N/A
3.4.10	Interconnected equipment	Interconnection of the power supply to the other equipment by secondary output connectors only.	N/A
3.4.11	Multiple power sources		N/A
3.5	Interconnection of equipment		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits	Interconnection circuits to SELV through the connectors.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A
3.5.4	Data ports for additional equipment	All data ports are comply with the requirements of L.P.S. See appended table 2.5.	P
4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N/A
	Angle of 10°		N/A
	Test force (N)		N/A
4.2	Mechanical strength		P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.2.1	General	See below. After tests, unit complies with the requirements of sub-clauses 2.1.1, 2.6.1, 2.10.	P
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N	10 N applied to all components other than enclosure.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A
4.2.4	Steady force test, 250 N	250N applied to outer enclosure. No energy or other hazards.	P
4.2.5	Impact test	No hazard as result from steel ball impact test.	P
	Fall test	Same as above.	P
	Swing test	Same as above.	P
4.2.6	Drop test; height (mm)	Not hand-held or direct plug-in equipment.	N/A
4.2.7	Stress relief test	Metal enclosure.	N/A
4.2.8	Cathode ray tubes	No CRTs provided.	N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps	No such lamps.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N)	No such equipment.	N/A
4.3	Design and construction		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.3.2	Handles and manual controls; force (N)..... :	No handles or controls provided.	N/A
4.3.3	Adjustable controls	No controls provided.	NA
4.3.4	Securing of parts	Mechanical fixings in such a way designed that they will withstand mechanical stress occurring in normal use.	P
4.3.5	Connection by plugs and sockets	No mismatch of connectors, plugs or sockets possible.	P
4.3.6	Direct plug-in equipment	Not direct plug-in type.	N/A
	Torque		—




IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance with the relevant mains plug standard		N/A
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N/A
4.3.8	Batteries	No battery provided.	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 in intended use not considered to be exposed to oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment in intended use not considered to be exposed to dust, powders, liquids and gases.	N/A
4.3.11	Containers for liquids or gases	No container for liquid or gas provided.	N/A
4.3.12	Flammable liquids	No flammable liquids provided.	N/A
	Quantity of liquid (l)		N/A
	Flash point (°C)		N/A
4.3.13	Radiation	See below.	P
4.3.13.1	General	See below.	P
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg)		N/A
	Measured high-voltage (kV)		N/A
	Measured focus voltage (kV)		N/A
	CRT markings		N/A
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	LEDs considered as Class I.	P
4.3.13.5.1	Lasers (including laser diodes)		N/A
	Laser class		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.5.2	Light emitting diodes (LEDs)	LED Module complied with IEC 62471. Other LEDS is far below Class 1 LED Limit.	P
4.3.13.6	Other types	No such consideration.	N/A
4.4	Protection against hazardous moving parts <i>(No hazard moving part within this equipment.)</i>		N/A
4.4.1	General		N/A
4.4.2	Protection in operator access areas		N/A
	Household and home/office document/media shredders		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		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	See below	P
4.5.2	Temperature tests	See appended table 4.5.1	P
	Normal load condition per Annex L	See Annex L.	P
4.5.3	Temperature limits for materials	See appended table 4.5.1	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.5.4	Touch temperature limits	<p>A temperature of 90°C is permitted for metal enclosure when equipment intended for installation in a restricted access location. The marking</p> <p> or WARNING HOT SURFACE DO NOT TOUCH should be show on the metal enclosure.</p>	P
4.5.5	Resistance to abnormal heat		N/A
4.6	Openings in enclosures		P
4.6.1	Top and side openings	See below.	P
	Dimensions (mm)	No openings.	P
4.6.2	Bottoms of fire enclosures	See below.	P
	Construction of the bottommm, dimensions (mm) ...:	No openings.	P
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment	The equipment is not transportable equipment.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm)		N/A
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	Adhesive is used for securing mylar sheet.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditioning temperature (°C), time (weeks):	<p>Condition the equipment in an oven at a temperature 100°C for one week:</p> <p>Upon completion of the temperature conditioning, subject the sample to the following:</p> <ul style="list-style-type: none"> – removed the sample from oven and leave it at 30 °C for a minimum of 1 h; – placed the sample in a freezer at -40 °C for a minimum of 4 h; – removed and allowed the sample to come to any convenient temperature between 30 °C for a minimum of 8 h; – placed the sample in a cabinet at 95 % relative humidity for 72 h at 30 °C; – removed the sample and leave it at 30 °C for a minimum of 1 h; – placed the sample in an oven at 100°C for a minimum of 4 h; – removed the sample and allow it to reach 30 °C for a minimum of 8 h. <p>After above test, the sample was immediately subjected to the tests of 4.2.</p> <p>Then, mylar sheet secured by adhesive did not fall off or partly dislodge.</p>	N/A

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classes.	P
	Method 1, selection and application of components wiring and materials	Method 1 used.	P
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure	See below.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.2.1	Parts requiring a fire enclosure	With having the following components: - Componets in primary - Insulated wirings The fire enclosre is required.	P
4.7.2.2	Parts not requiring a fire enclosure	See sub-clauses 4.7.2.1	N/A
4.7.3	Materials		P
4.7.3.1	General	Integrated circuits and small electrical parts mounted on a printed wiring board min. rated V-1.	P
4.7.3.2	Materials for fire enclosures	Use metal enclosure as fire enclosure.	P
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assembly within this equipment.	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		P
5.1	Touch current and protective conductor current		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	P
5.1.2	Configuration of equipment under test (EUT)	See below.	P
5.1.2.1	Single connection to an a.c. mains supply		P
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	Single phase equipment intended only for connection to TN system.	P
5.1.4	Application of measuring instrument	Tests are conducted using one of the measureing instruments in Annex D, or any other circuit giving the same results.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.5	Test procedure		P
5.1.6	Test measurements	See below.	P
	Supply voltage (V)	See appended table 5.1.6.	—
	Measured touch current (mA)	See appended table 5.1.6.	—
	Max. allowed touch current (mA)	See appended table 5.1.6.	—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)....		—
5.1.7	Equipment with touch current exceeding 3,5 mA	Touch current does not exceed 3.5mA.	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 circuit connection.	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		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	Tabel 5B used.	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		N/A
5.3.3	Transformers	See appended table 5.3	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.4	Functional insulation.....:	Functional insulation complies with the requirements.	P
5.3.5	Electromechanical components	No electromechanical component 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	None of the listed components was provided.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See appended table 5.3.	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	Electric Strength tests performed after abnormal and fault tests.	P
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		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		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A
6.3	Protection of the telecommunication wiring system from overheating		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

	Max. output current (A)		—
	Current limiting method		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
7.1	General		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		N/A
7.4.3	Impulse test		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



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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)		P
	Position	T2	—
	Manufacturer	See appended table 1.5.1.	—
	Type	See appended table 1.5.1.	—
	Rated values	See appended table 1.5.1.	—
	Method of protection.....	Protection by inherent impedance.	—
C.1	Overload test	See appended table 5.3	P
C.2	Insulation	See appended table C.2	P
	Protection from displacement of windings.....		P

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument	Figure D.1 used.	P
D.2	Alternative measuring instrument		N/A

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
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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

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal(s) used	Considered.	—



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		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	See appended table 1.6.2.	P
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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)		P
	- Preferred climatic categories	Approved varistor used.	P
	- Maximum continuous voltage		N/A
	- 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
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)		P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		Approved triple insulated wire used.	—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction	See below.	P
V.2	TN power distribution systems	Single-phase TN power system considered and used for the testing.	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)		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		—



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
CC.4	Test program 3.....:		N/A
CC.5	Compliance.....:		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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS			
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note		P
General (A2:2013)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P
1.1.1 (A1:2010)	Replace the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	<p>Add the following subclause:</p> <p>1.3.Z1 Exposure to excessive sound pressure</p> <p>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.</p> <p>NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.</p>		N/A
(A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete the addition of 1.3.Z1 / EN 60950-1:2006</p> <p>Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010</p>		P
1.5.1 (Added info*)	<p>Add the following NOTE:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC.</p> <p>New Directive 2011/65/11 *</p>		P
1.7.2.1 (A1:2010)	<p>In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.</p>		N/A
1.7.2.1 (A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete NOTE Z1 and the addition for Portable Sound System.</p> <p>Add the following clause and annex to the existing standard and amendments.</p>		N/A
	Zx Protection against excessive sound pressure from personal music players		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.1 General</p> <p>This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none"> is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use. <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none"> while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used. <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"> hearing aid equipment and professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p>	Not personal music players.	N/A




IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>	Not personal music players.	N/A
	<p>Zx.2 Equipment requirements</p> <p>No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none"> equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none"> a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and 	Not personal music players.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none"> 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. <p>For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>	Not personal music players.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: “To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p>  <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>	Not personal music players.	N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	<p>Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>	Not personal music players.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed "programme simulation noise" described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>	Not personal music players.	N/A
	<p>Zx.4.3 Wireless listening devices In wireless mode: with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>	Not personal music players.	N/A
	<p>Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>	Not personal music players.	N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		P
	<p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		P
2.7.2	This subclause has been declared 'void'.		P
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A



IEC 60950-1									
Clause	Requirement + Test	Result - Remark	Verdict						
3.2.5.1	<p>Replace “60245 IEC 53” by “H05 RR-F”; “60227 IEC 52” by “H03 VV-F or H03 VVH2-F”; “60227 IEC 53” by “H05 VV-F or H05 VVH2-F2”.</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6 </td><td>0,75 ^{a)} </td></tr><tr><td>Over 6 up to and including 10 (0,75) ^{b)}</td><td>1,0 </td></tr><tr><td>Over 10 up to and including 16 (1,0) ^{c)}</td><td>1,5 </td></tr></table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</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								
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N/A						
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <p>Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 </p> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>		N/A						
4.3.13.6 (A1:2010)	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).</p>		N/A						
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A						
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N/A						
Bibliography	Additional EN standards.		—						



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

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
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ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
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
1.2.13.14 (A11:2009)	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1 (A11:2009)	In Finland , Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test 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).		N/A
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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
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 suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N/A
1.7.2.1 (A11:2009)	<p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>"Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)."</p>		

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
	<p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		N/A
1.7.2.1 (A2:2013)	<p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in Denmark shall be as follows: In Denmark: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”</p>		N/A
1.7.5 1.7.5 (A11:2009)	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p> <p>For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
1.7.5 (A2:2013)	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011.</p> <p>For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a.</p> <p>Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N/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 16 A.		N/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> <p>SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
	<p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE .250 V, 16 A</p>		N/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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
3.2.1.1 (A2:2013)	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1.</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 a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N/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
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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
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	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: • 1,25 mm ² to 1,5 mm ² nominal cross-sectional area.		N/A
4.3.6	In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/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.		NA



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
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 equipotential bonding has been applied, for example, in a telecommunication centre; and 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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
6.1.2.1 (A1:2010)	<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>Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> - 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. 		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
	<p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. 		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	<p>In Finland, Norway and Sweden, for requirements see 6.1.2.1 and 6.1.2.2 of this annex.</p> <p>The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.</p>		N/A
7.3 (A11:2009)	<p>In Norway and Sweden, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.</p>		N/A



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

Annex ZD
(informative)

IEC and CENELEC code designations for flexible cords

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60277 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H



1.5.1	TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾	
AC Power Cord	Interchangeable	Interchangeable	3 x 0.75mm ² , 18AWG, 300Vac, min. 105°C	VDE 0281-5	VDE	
Metal Enclosure	--	--	Min. 2.0mm thickness	--	--	
Mylar (Used between power board and LED module control board, used in metal plate)	Sabic Innovative Plastic Us L L C	FR700(GG), FR765	V-0 or VTM-0, minimum 0.13mm thickness, 80°C	UL 94	UL (E121562)	
Adhesive (used in mylar)	Dongguan Yaxi Industrial Co., Ltd.	Acrylic acid (A)	130°C	--	--	
LED Module						
Cree Xlamp XT-E Series (LED1 – LED16)	Cree, Inc	XTEAWT	I _F : 1500 mA	IEC 62471: 2006	VDE by DEKRA	
PCB	Interchangeable	Interchangeable	Min. V-1, min. 105°C	UL 796, UL 94	UL	
LED Module Control board						
PCB	Guangzhou Fast-Print Circuit Technology Co., Ltd	D1	V-0, 130°C	UL 796, UL 94	UL	
	Interchangeable	Interchangeable	Min. V-1, min. 105°C	UL 796, UL 94	UL	
Power Board						
Fuse (F1, F2)	Littelfuse, Inc.	392	T4A, 250Vac	IEC 60127-1 IEC 60127-3	VDE	
Varistor (RV2)	Brightking Inc.	471KD14	300Vac, 385Vdc, comply with Annex Q, 85°C	IEC/EN 61051-1	VDE	
	Dong Guan Littelfuse Electronics Co., Ltd.	V14E300P	300Vac, 385Vdc, comply with Annex Q, 85°C	IEC/EN 61051-1	VDE	
Varistor (RV4)	Shaanxi Huaxing electronic group Co., Ltd.	MYG20G14K681	420Vac, 560Vdc, comply with Annex Q, 85°C	IEC/EN 61051-1	VDE	



Gas Tube (GDT1)	Shenzhen Bencent Electronic Co., Ltd	B5G3600	380Vac	UL 1449	UL (E337906)
X-Cap (C23)	Xiamen Faratronic Co., Ltd.	MKP62	Max. 0.47uF, min. 275Vac, X2 type, 110°C	IEC 60384-14	VDE
Bleeder Resistor (R82, R83, R85, R86)	Interchangeable	Interchangeable	Max. 1Mohm, Max. 1/4W	--	--
Y-Cap (C21, C26, C30)	TDK CORP.	CD	Max. 2200pF, min. 400Vac, Y1 type, min. 125°C	IEC 60384-14	VDE
Optical coupler (U7)	Lite-On Technology Corporation	LTV-1008	Dti \geq 0.4 mm, Int. cr \geq 8.0mm, Ext. cr = 8.0 mm, 125°C	IEC 60747-5-2 IEC 60950-1 IEC 60065, IEC 62368-1	VDE (138213), Demko
Bridge Diode (D3)	Interchangeable	Interchangeable	Min. 800V, max. 6A	--	--
Ripple Capacitance (C24)	Interchangeable	Interchangeable	82uF, min. 450V, 105°C	--	--
Transistor (M2)	Interchangeable	Interchangeable	Min. 600V, min. 10.2A	--	--
Sensor Resistor (R76, R77, R78)	Interchangeable	Interchangeable	Min. 0.68ohm, Min.1/4W	--	--
Line Choke (FIL1)	Multan Technology Limited	UU9.8-192	Min. 130°C	IEC/EN 60950-1	Test in equipment
Transformer (T2)	Zixing Hui Hua Electronics Co., Ltd	PQ2665DR	Class B	IEC/EN 60950-1	Test in equipment
– Insulation Tape	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	CT* I(g)	Min. 130°C	UL 510	UL (E165111)
– Bobbin	Chang Chun Plastics Co., Ltd	T375HF	Phenolic, Min V-0, min. 1.0 mm thickness, 150°C	UL 94	UL (E59481)
– Triple insulated Wire	Shanghai Lucky Trade Co., Ltd.	TIW-B	130°C	IEC/EN 60950-1	VDE (40033527)



	Shenzhen Darun Science and Technology Co., Ltd	DRTIW-B	130°C	IEC/EN 60950-1	VDE (40032470)
	Great Leoflon Industrial Co., Ltd.	TRW(B) Serie(s)	130°C	IEC/EN 60950-1	VDE (136581)
	E&B Technology Co., Ltd.	E&B-XXXB	130°C	IEC/EN 60950-1	VDE (40023473)
Insulation Tap for Heatsink of M2	3M COMPANY	1350F-1	130°C	UL 510	UL (E17385)
PCB	Shenzhen Xunjiexing Technology Co Ltd	JX01	V-0, 130°C	UL 796, UL 94	UL (E305654)
	Interchangeable	Interchangeable	Min. V-1, min. 130°C	UL 796, UL 94	UL

Supplementary information:

¹⁾ An asterisk indicates a mark that assures the agreed level of surveillance.

1.6.2	TABLE: Electrical data (in normal conditions)						P
U (V)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status	
99V/50Hz	0.496	--	29.5	F1, F2	0.496	Maximum normal load.	
99V/60Hz	0.491	--	29.5	F1, F2	0.491	Maximum normal load.	
110V/50Hz	0.452	1	29.5	F1, F2	0.452	Maximum normal load.	
110V/60Hz	0.448	1	29.5	F1, F2	0.448	Maximum normal load.	
240V/50Hz	0.245	0.4	29.8	F1, F2	0.245	Maximum normal load.	
240V/60Hz	0.244	0.4	29.8	F1, F2	0.244	Maximum normal load.	
254.4V/50 Hz	0.235	--	29.9	F1, F2	0.235	Maximum normal load.	
254.4V/60 Hz	0.234	--	29.9	F1, F2	0.234	Maximum normal load.	
264V/50Hz	0.229	--	30.0	F1, F2	0.229	Maximum normal load.	
264V/60Hz	0.228	--	30.0	F1, F2	0.228	Maximum normal load.	

Supplementary information: Maximum normal load: Unit operated normally.

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



60Vdc (J1)	--	56.6	0.2	5.6
12Vdc (J17)	--	11.6	3.9	17.2
5Vdc (J17)	--	5.0	1.9	6.1
supplementary information:				

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

2.1.1.7	TABLE: Discharge test				P
Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments	
Line and Neutral of AC Inlet	0.47	0.196	--	Vo = 384Vpeak, 37% Vo = 142.08Vpeak.	
Supplementary information:					
Test voltage: 264Vac, 60Hz;					
Overall capacity: C23 = 0.47uF;					
Discharge resistor: R82 = R83 = R85 = R86=1Mohm (Total: 1Mohm)					

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			P
Component (measured between)		max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
T2 Pin 10 to Pin 12		302	--	--
After D4 to T2 Pin 12		--	56.4	D4
T2 Pin 7 to Pin 8		59.6	--	
After D2 to T2 Pin 8		--	11.7	D2
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)		
D4 shorted		0		
D2 shorted		0		



supplementary information:

2.4.2	TABLE: Limited current circuit measurement					P
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
C30 Secondary Pin to Earth	0.22	0.44	0.060	0.7	C30=2200pF	
Supplementary information: Test Voltage: 264Vac, 60Hz						

2.5	TABLE: limited power sources					P
Circuit output tested: See below.						
Note: Measured Uoc (V) with all load circuits disconnected: See below.						
Components	Sample No.	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
J2						
According to table 2B, Normal condition, Pin 1 to GND	1	4.66	0	8.0	0	100
According to table 2B, Normal condition, Pin 2 to GND	1	0.06	0	8.0	0	100
According to table 2B, Normal condition, Pin 4, 6,7 to GND	1	10.44	0	8.0	0	100
supplementary information:						

2.6.3.4	TABLE: Resistance of earthing measurement		P
Location	Resistance measured (mΩ)	Comments	
Power cord earthed pin to the farthest metal parts	21	32A, 2 minutes	
Power cord earthed pin to C22	4	32A, 2 minutes	
Power cord earthed pin to C25	4	32A, 2 minutes	
Supplementary information:			



2.10.2	Table: working voltage measurement			P
Location	RMS voltage (V)	Peak voltage (V)	Comments	
T2 pin 1- pin 7	264	484		
T2 pin 1- pin 8	270	532		
T2 pin 1- pin 10	246	424		
T2 pin 1- pin 12	273	540	Max Vr.m.s	
T2 pin 3 – pin 7	244	440		
T2 pin 3 – pin 8	243	392		
T2 pin 3 – pin 10	254	660	Max. Vpeak	
T2 pin 3 – pin 12	241	392		
T2 pin 6 – pin 7	239	392		
T2 pin 6 – pin 8	238	384		
T2 pin 6 – pin 10	247	440		
T2 pin 6 – pin 12	236	380		
T2 pin 5 – pin 7	237	382		
T2 pin 5 – pin 8	238	432		
T2 pin 5 – pin 10	242	416		
T2 pin 5 – pin 12	237	436		
U7 pin 1- 3	246	416		
U7 pin 1- 4	244	408		
U7 pin 2- 3	245	412		
U7 pin 2- 4	248	420		
C30 primary pin to secondary pin	239	388		
supplementary information:				

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements						P
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)	
Functional:							
Under Fuse (F1, F2)	420	250	1.5	2.8	2.5	2.8	
Line to Neutral (on PCB)	420	250	1.5	5.0	2.5	5.0	
Line to Neutral (on primary connector)	420	250	1.5	5.0	2.5	5.0	



Basic/supplementary:						
Neutral to Screw (earthed)	420	250	2.0	6.5	2.5	6.5
Under C21	420	250	2.0	6.0	2.5	6.0
Under C26	420	250	2.0	6.0	2.5	6.0
C24 to metal enclosure	420	250	2.0	10.6	2.5	10.6
power board solder side to LED module control board component side	660	273	2.4	>2.4 ¹⁾	2.8	>2.8 ¹⁾
Metal enclosure to Heatsink of M2	420	250	2.0	>2.0 ²⁾	2.5	>2.5 ²⁾
Reinforced:						
Under C30	420	250	4.0	6.3	5.0	6.3
Under U7	420	250	4.0	7.5	5.0	7.5
Supplementary information:						
1. ¹⁾ There is a mylar sheet provided between power board and LED module control board to keep sufficient basic insulation.						
2. ²⁾ There is a tape covered heatsink of M2 to keep sufficient basic insulation.						
3. Glued components (safety relevant): C24.						

2.10.5	TABLE: Distance through insulation measurements					P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Mylar (Used between power board and LED module control board, used in metal plate)	420	250	AC 1979	--	1)	
Insulation tape for Heatsink of M2	420	250	AC 1979	--	1)	
Optocoupler (U7)	420	250	AC 3000	0.4	1)	
Supplementary information:						
1) See table 1.5.1 for the details.						

4.3.8	TABLE: Batteries								N/A
The tests of 4.3.8 are applicable only when appropriate battery data is not available									N/A
Is it possible to install the battery in a reverse polarity position?									N/A
	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.



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

4.3.8	TABLE: Batteries	N/A
Battery category:		
Manufacturer:		
Type / model.....:		
Voltage:		
Capacity:		
Tested and Certified by (incl. Ref. No.).....:		
Circuit protection diagram:		

MARKINGS AND INSTRUCTIONS (1.7.13)



Location of replaceable battery	N/A
Language(s)	N/A
Close to the battery	N/A
In the servicing instructions	N/A
In the operating instructions	N/A

4.5	TABLE: Thermal requirements				P		
	Supply voltage (V)	81Vac/50Hz	290.4Vac/50Hz	—			
	Ambient T _{min} (°C)	See below	See below	—			
	Ambient T _{max} (°C)	See below	See below	—			
Maximum measured temperature T of part/at::		T (°C)		Allowed T _{max} (°C)			
1. PCB near U1		77.3	77.7	130			
2. PCB near U4		76.4	77.0	130			
3. U7 body (on power board)		81.0	83.1	125			
4. Input wire		77.2	77.1	105			
5. RV2 body (on power board)		78.7	79.5	85			
6. C23 body (on power board)		78.5	79.3	110			
7. PCB near D3 (on power board)		88.0	86.7	130			
8. PCB near M2 (on power board)		92.4	100.4	130			
9. FIL1 coil (on power board)		84.9	85.5	130			
10. C24 body (on power board)		83.0	82.5	125			
11. T2 coil (on power board)		88.5	93.5	110			
12. T2 core (on power board)		86.0	90.5	110			
13. PCB near D4 (on power board)		87.5	88.8	130			
14. C30 body (on power board)		83.6	86.2	125			
15. C29 body (on power board)		83.0	84.0	105			
16. C21 body (on power board)		83.9	88.6	125			
17. J1 connector		81.2	81.9	--			
18. Panel surface		78.5	78.2	80			
19. Metal enclosure near LED		69.6	69.9	90			
20. Ambient		60.8	60.7	--			
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 temperature were measured under the worse case normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 at voltage as described above. 2. The maximum ambient temperature (Tma) permitted by the manufacturer's specification is 60°C. 3. The maximum permitted temperature rises are calculated as follows: Components with: - Metal enclosure (for restricted access location) → Tmax = 90°C - PCB (Power Board) → Tmax = 130°C							

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:				

4.6.1, 4.6.2	Table: enclosure openings		P
Location	Size (mm)	Comments	
Top / Front / Left / Right / Bottom / Rear side	--	No opening.	
Note(s):			

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
PCB	--	--	-	1)	Pass	
Metal Enclosure	--	metallic	1)	1)	Pass	
Supplementary information:						
1) For details refer to table 1.5.1.						

5.1	TABLE: touch current measurement				P
Measured between:		Measured (mA)	Limit (mA)	Comments/conditions	
Metal Enclosure		0.96	3.5	Switch "e" opened, Polarity Switch P1 Normal	
Metal Enclosure		0.96	3.5	Switch "e" opened, Polarity Switch P1 Reverse	



Earthed SELV terminal	0.96	3.5	Switch “e” opened, Polarity Switch P1 Normal
Earthed SELV terminal	0.96	3.5	Switch “e” opened, Polarity Switch P1 Reverse
Glass Panel	0.005	0.25	Switch “e” opened, Polarity Switch P1 Normal
Glass Panel	0.005	0.25	Switch “e” opened, Polarity Switch P1 Reverse
supplementary information:			
Test Voltage 264Vac, 63Hz			

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:				
Line to Neutral		AC	1500	No
Basic/supplementary:				
Line and Neutral to Metal enclosure		DC	2799	No
Mylar (Used between power board and LED module control board, used in sheetmetal)		AC	1979	No
Insulation tape for Heatsink of M2		AC	1979	No
Reinforced:				
Line and Neutral to SELV terminal		DC	4242	No
Line and Neutral to Glass Panel		AC	3000	No
T2				
T2 Primary winding to secondary winding		AC	3000	No
T2 core to secondary winding		AC	3000	No
One layer insulation tape of T2		AC	3000	No
Supplementary information:				
- All electrical strength test durations last at least 60s.				
- All applied test voltages for electric strength (In table 5B) are based on the working voltage measured on T2: 273Vr.m.s, 660Vpeak.				
- T2 Secondary winding used triple wire, Core considered as Primary side.				

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C)	See below	—
	Power source for EUT: Manufacturer, model/type, output rating	See table 1.5.1.	—



Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
D3 pin2-3	s-c	240Vac/60Hz	10s	F1, F2	0.245→0	Fuse F1, F2 opened immediately. No hazards. NC, NT, NB.
C24	s-c	240Vac/60Hz	10s	F1, F2	0.245→0	Fuse F1, F2 opened immediately. D3 damaged, No hazards. NC, NT, NB.
M2 pinG-S	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shutdown. No hazards. No damage, NC, NT, NB.
M2 pinD-S	s-c	240Vac/60Hz	10s	F1, F2	0.245→0	Fuse F1, F2 opened immediately. M2, R76, R77, R78 damaged, No hazards. NC, NT, NB.
M2 pinG-D	s-c	240Vac/60Hz	10s	F1, F2	0.245→0	Fuse F1, F2 opened immediately. M2, R76, R77, R78 damaged, No hazards. NC, NT, NB.
U7 pin1-2	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
U7 pin3-4	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
U7 pin1	o-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
U7 pin3	o-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shutdown. No hazards. No damage, NC, NT, NB.
U8 pin5-2	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
U8 pin5-3	s-c	240Vac/60Hz	10s	F1, F2	0.245→0	U8 damaged, No hazards. NC, NT, NB.
U8 pin5-6	s-c	240Vac/60Hz	10s	F1, F2	0.245→0	U8 damaged, No hazards. NC, NT, NB.
D2	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
D4	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
T2						
T2 pin1-3	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
T2 pin5-6	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
T2 pin7-8	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shut down. No hazards. No damage, NC, NT, NB.
T2 pin10-12	s-c	240Vac/60Hz	10mins	F1, F2	0.245→0.002	Unit shutdown. No hazards. No damage, NC, NT, NB.



T2 pin7-8	o-l	240Vac/ 60Hz	7hrs.	F1, F2	0.245→ 0.610→ 0.598→ 0.556→ 0.03	Maximum temperature: T2 coil= 110.7°C, T2 core= 108.4°C, Ambient= 28.8°C, Maximum output current: from 3.6A increase to 3.7A, unit shut down, No hazards. No damaged. NC, NT, NB.
T2 pin10-12	o-l	240Vac/ 60Hz	8hrs. 20mins.	F1, F2	0.245→ 0.604→ 0.570→ 0.498→ 0.03	Maximum temperature: T2 coil= 106.2°C, T2 core= 104.7°C, Ambient= 26.2°C, Maximum output current: from 1.3A increase to 1.4A, unit shut down, No hazards. No damaged. NC, NT, NB.
Supplementary information: s-c: shorted circuit; o-c: opened circuit; o-l: overload; NB - No indication of dielectric breakdown; NC - Cheesecloth remained intact; NT - Tissue paper remained intact. Repeat*: Repeat three times with the same result.						

C.2	TABLE: transformers						P
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
T2	Reinforced: Primary winding to Secondary winding	512	250	3000Vac	4.8	5.6	Triple wire
	Reinforced: Primary winding to Secondary Pin	512	250	3000Vac	4.8	5.6	--
	Reinforced: Primary Pin to Secondary winding	512	250	3000Vac	4.8	5.6	Triple wire
	Reinforced: Primary Pin to Secondary Pin	512	250	3000Vac	4.8	5.6	--
	Reinforced: Core to Secondary winding	512	250	3000Vac	4.8	5.6	2 layers
	Reinforced: Core to Secondary Pin	512	250	3000Vac	4.8	5.6	2 layers
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers



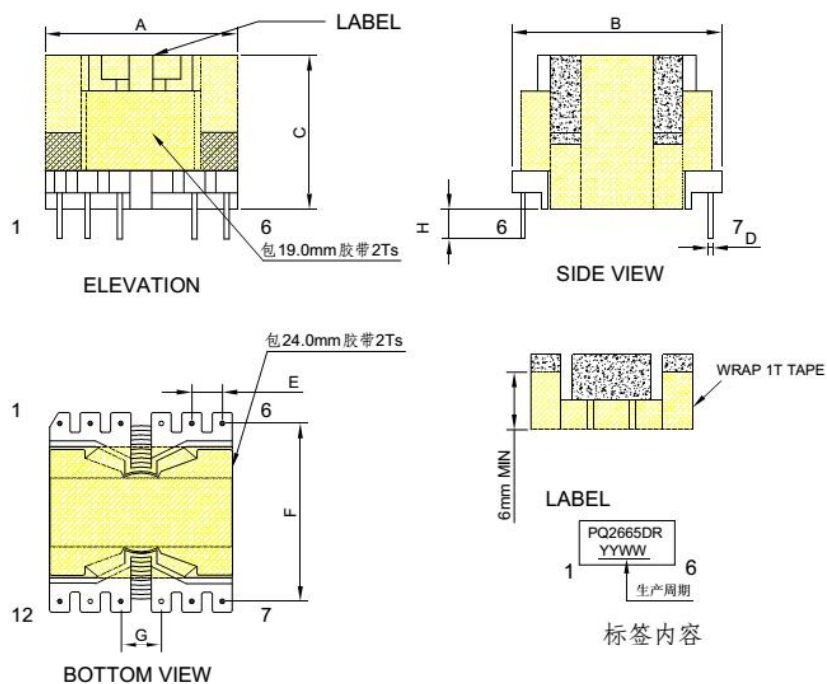
	Primary winding to Secondary winding	3000	Secondary used triple wire	Secondary used triple wire	--
	Primary winding to Secondary Pin	3000	5.3	6.3	--
	Primary Pin to Secondary winding	3000	Secondary use triple wire	Secondary use triple wire	--
	Primary Pin to Secondary Pin	3000	24.9	24.9	--
	Core to Secondary winding	3000	Secondary use triple wire	Secondary use triple wire	2 layers
	Core to Secondary Pin	3000	6.4	6.4	2 layers
supplementary information:					
T2 Secondary winding used triple wire, Core considered as Primary side.					

C.2	TABLE: transformers	P
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1. OUTLINE DIMENSION:(UNIT:mm)/外形尺寸 (单位: mm)



A	B	C	D	E	F	G	H
29.5MAX	32.5MAX	28.0MAX	0.8±0.1	3.8±0.3	25.4±0.5	7.6±0.5	3.6±0.5

NOTE:

- 1.N1进出线交叉.
- 2.空PIN4、9、11脚.
- 3.所有进出线须加白色铁氟龙套管.
- 4.所有绝缘胶带为淡黄色.
- 5.底部磁芯背胶带1层.
- 6.磁芯单边开气隙(装于PIN侧),磁芯中柱须点胶,外包11mm胶带2Ts.
- 7.成品后先沿线包方向包19.0mm胶带2Ts,然后再沿磁芯方向包24.0mm胶带2Ts,.
- 8.产品须真空含浸.
- 9.标签如上图所示,印字内容中YYWW代表年份与周期.

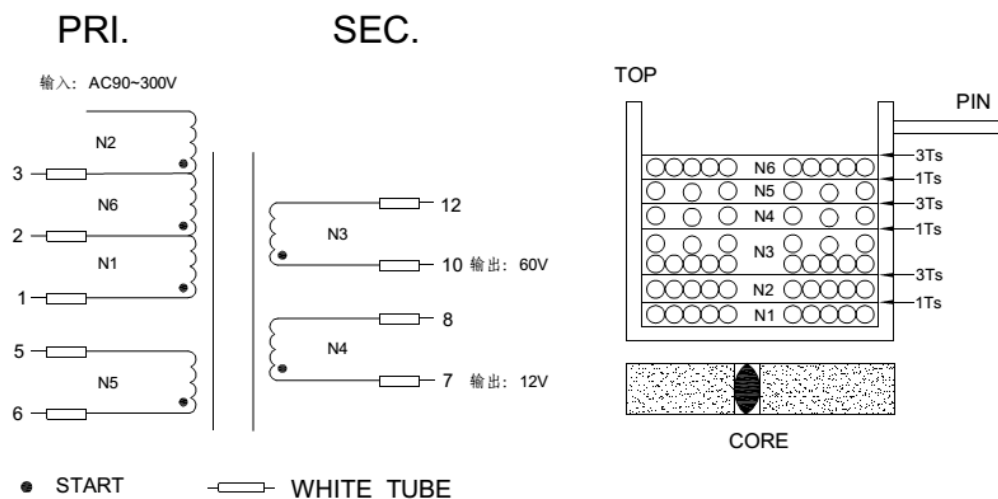
DRAWING	CHECKED	APPROVED	CUSTOMER	大 华
周江平	陈祖生	肖果	PRODUCT NAME	TRANSFORMER
			DESCRIPTION	PQ26/25
			REV.	1.0
			DATE:	2016-12-28



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2. CIRCUIT DIAGRAM/电原理图

3. CONSTRUCTION DIAGRAM/内部结构图



4. WINDING INFORMATION TABLE/绕线明细表

绕组 WINDING	绝缘胶带 MARGIN TAPE		起始-收尾 S - F	线材 WIRE	圈数 TURNS	绝缘胶带 TAPE	备注 REMARK
	TOP	PIN					
N1	/	/	1-2	2UEW $\varnothing 0.35 \times 3P$	11Ts	1Ts	密绕/CLOSE
N2	/	/	3--	2UEW $\varnothing 0.20 \times 2P$	27Ts(REF)	3Ts	密绕/CLOSE
N3	/	/	10-12	TIW-B $\varnothing 0.45 \times 2P$	14Ts	1Ts	密绕+疏绕 CLOSE+SPARSE
N4	/	/	7-8	TIW-B $\varnothing 0.25$	3Ts	3Ts	疏绕/SPARSE
N5	/	/	6-5	2UEW $\varnothing 0.20$	3Ts	1Ts	疏绕/SPARSE
N6	/	/	2-3	2UEW $\varnothing 0.35 \times 3P$	10Ts	3Ts	密绕/CLOSE

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5. CHARACTERISTIC / 电气性能

NO. 序号	ITEM 项目	TERT POINT 测试点	TECHNICAL CRITERION 技术标准	TEST CONDITION & INSTRUMENT 测试条件&仪器
5.1	INDUCTANCE 电感	L(1-3)	170uH±10%	CHROMA3250(100Ω) 40KHz/1V AT 25℃
5.2	LEAKAGE INDUCTANCE 漏感	LK(1-3) SHORT SEC	8.0uH MAX	CHROMA3250(100Ω) 40KHz/1V AT 25℃
5.3	DCR 直流电阻	R(1-3)	105mΩ MAX	TH2511 AT25℃
5.4	HI-POT 抗电强度	PRI-SEC	AC2000V	CHROMA19053 2mA 3SEC 50Hz
		PRI-CORE	AC1000V	
		SEC-CORE	AC1000V	
5.5	INSULATION RESISTANCE 绝缘电阻	PRI-SEC	100MΩ MIN	CHROMA19053 DC 500V
		PRI-CORE	100MΩ MIN	
		SEC-CORE	100MΩ MIN	
5.6	RATED POWER 额定功率	额定功率 80W		

Between -20℃ to 80℃ test inductance and resistance on the basis of 25℃,
The variation shall not exceed 20%.

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6. MATERIAL LITS: 材料表

NO.	ITEM	MATERIAL	MANUFACTURE	UL FILE NO
1	CORE 磁芯	PQ27/25 HE4 Tc > 215℃	DONG YANG GUANG CO.,LTD 东阳光电子有限公司	
		PQ27/25 JF40 Tc > 215℃	WUXI SPINEL MAGNETIC CO., LTD 无锡斯贝尔磁性材料有限公司	
		PQ27/25 DMR40 Tc > 215℃	HENGDIAN GROUP DMEGC MAGNETICS CO.,LTD 横店集团东磁股份有限公司	
2	BOBBIN 骨架	T375HF PQ26 PHENOLIC / 94V-0 150℃	CHANG CHUN PLASTICS CO.,LTD 长春人造树脂股份有限公司	E59481
3	WIRE 漆包线	2UEW 130℃	SHENZHEN CITY CHENGWEI INDUSTRIAL CO.,LTD 深圳市威成实业有限公司	E227475
			SHENZHEN JIAZHENGXIN INDUSTRIAL CO.,LTD 深圳市嘉正欣实业有限公司	E334055
4	TRIPLE INSULATED WIRE 三层绝缘线	DRTIW-B 130℃	SHENZHEN DARUN SCIENCE AND TECHNOLOGY CO.,LTD 深圳市大润科技有限公司	UL:E335841 VDE:40032470
		TRW(B) 130℃	GREAT LEOFLOIN INDUSTRIAL CO.,LTD 蓝菱电子有限公司	UL:E211989 VDE:136581
		E&B-XXXB 130℃	E&B TECHNOLOGY CO.,LTD 东莞市广鼎电子科技有限公司	UL:E315265 VDE:40023473
		TIW-B 130℃	SUZHOU YUSHEG ELECTRONIC CO., LTD 苏州宇盛电子有限公司	UL:E332529 VDE:40033527
5	INSULATING TAPE 绝缘胶带	CT* (c)(g) 130℃	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD 靖江亚华压敏胶有限公司	E165111
6	TUBE 套管	CB-TT-L (150V/200℃)	CHANGYUAN ELECTRONICS GROUP CO.,LTD 长园电子集团有限公司	E180908
		WF (600V/200℃)	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO.,LTD 深圳市沃尔核材股份有限公司	E203950
7	VARNISH 凡立水	8562* 155℃	HANG CHEUNG PETROCHEMICAL LTD 恒昌涂料有限公司	E200154
		SD-1182 130℃	SHENZHEN XINGSHIDA SCIEN TECH PROD CO.,LTD 深圳兴时达科技产品有限公司	E327170
8	EPOXY 环氧树脂胶	E-500(xx) 130℃	DONGGUAN EATTO ELECTRONICS MATERIALS CO.,LTD 东莞市力多电子材料有限公司	E218090

The transformer must be manufactured to comply with the ROHS directive,
use only pb-free solder.

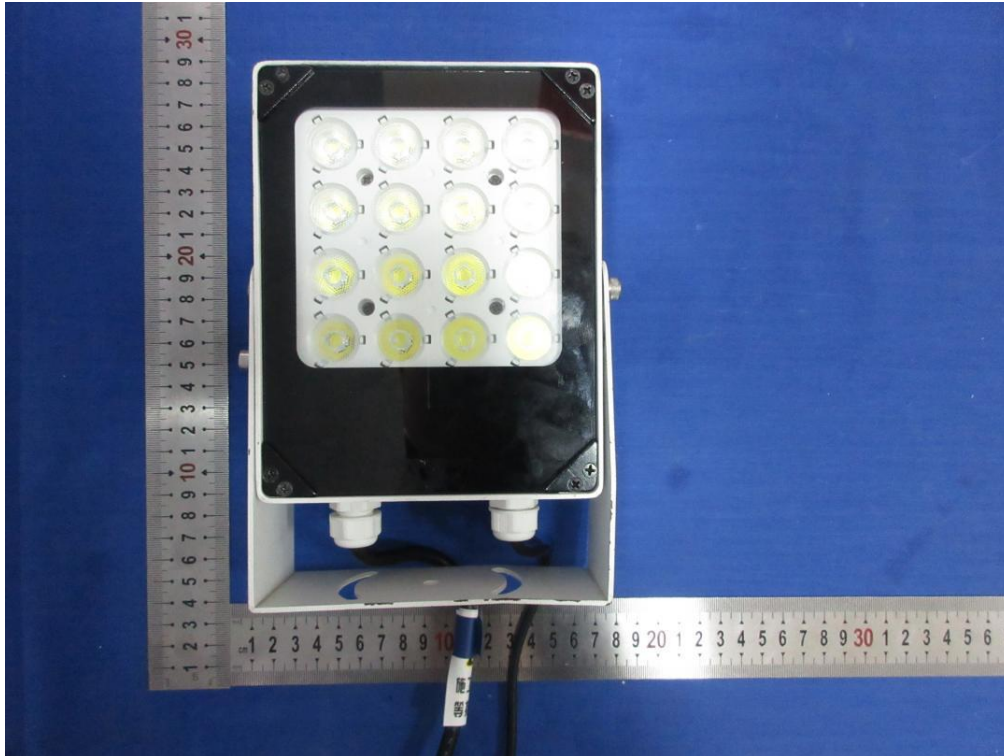
7. WEIGHT/重量

Net Weight/重量: About 48.3g/PCS

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Photo(s)



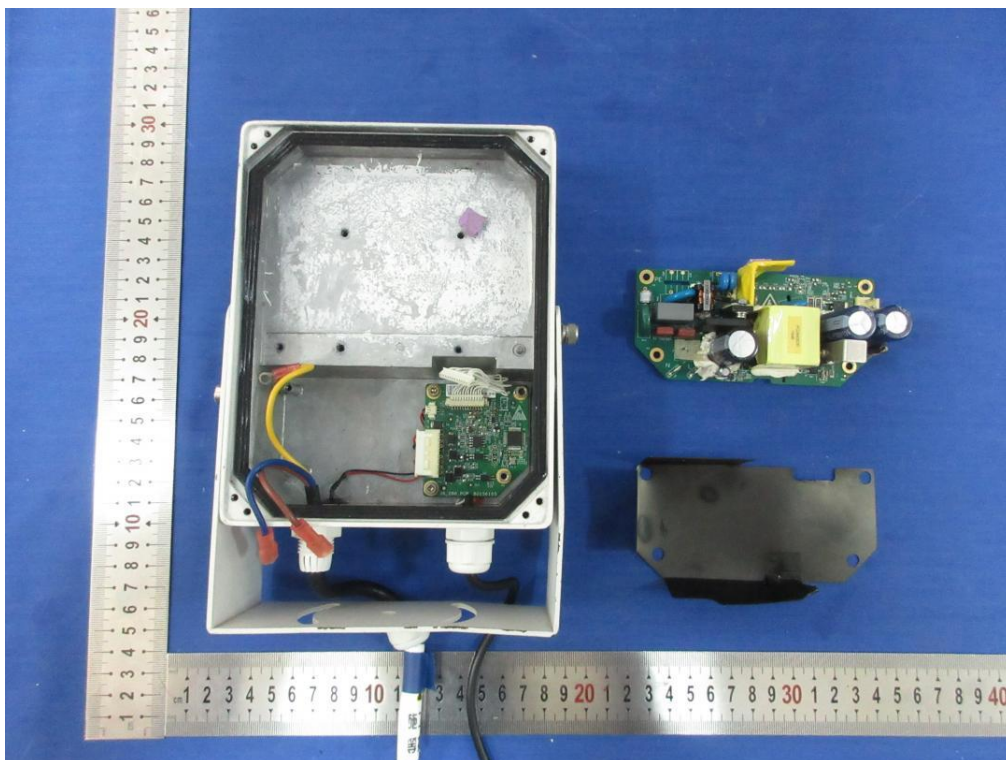
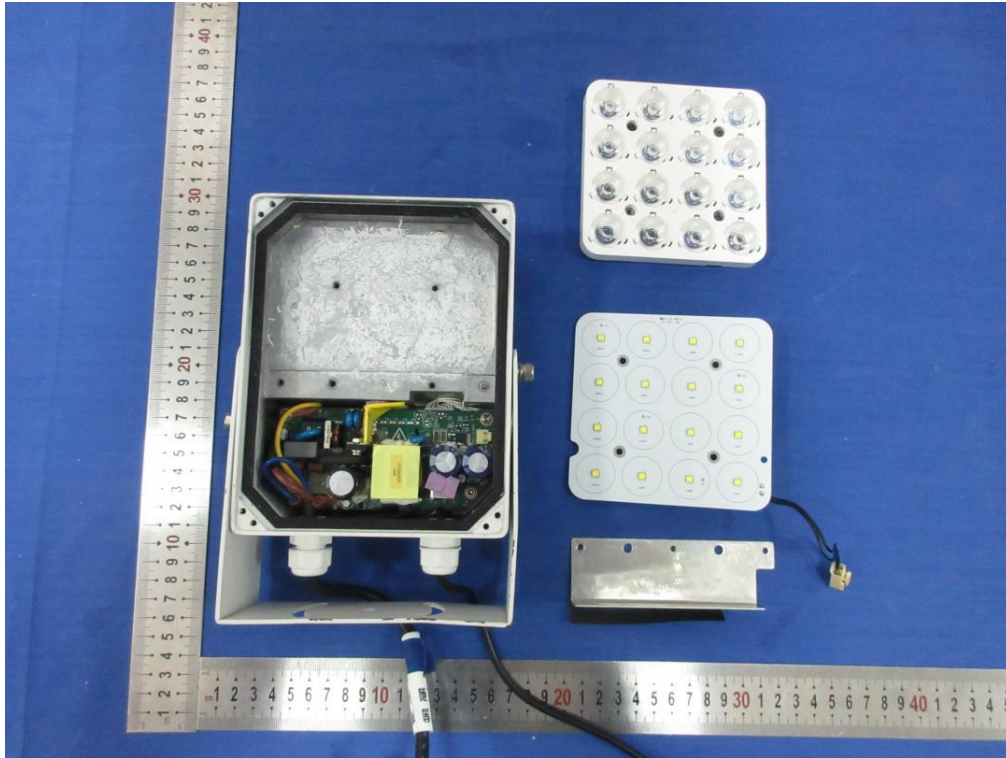


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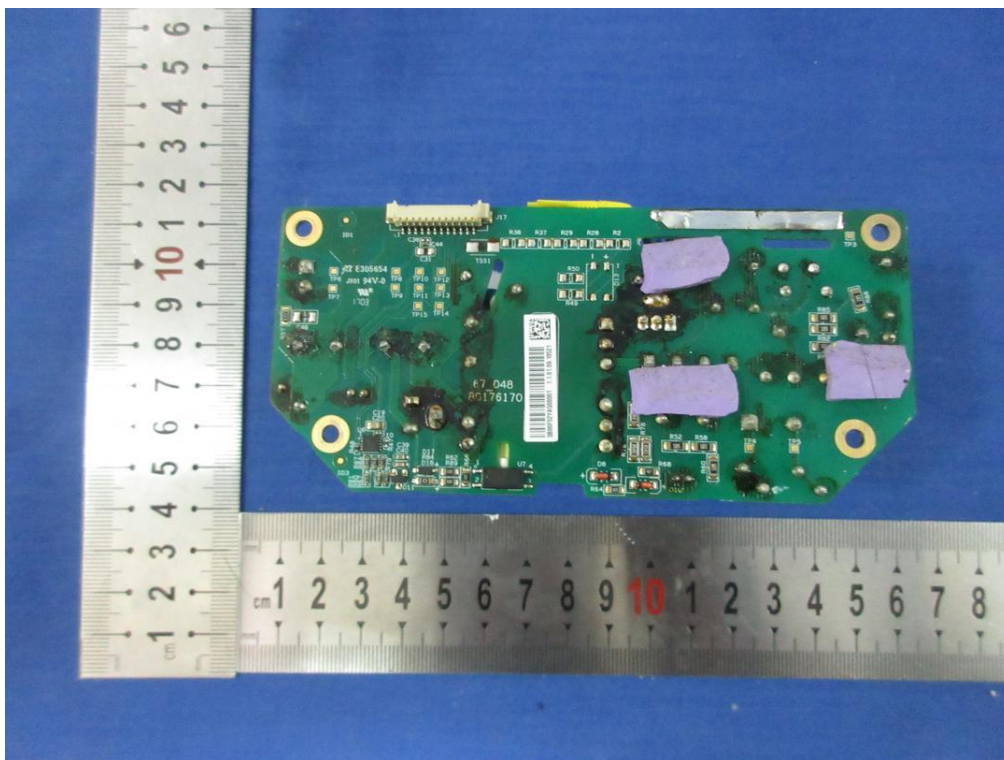


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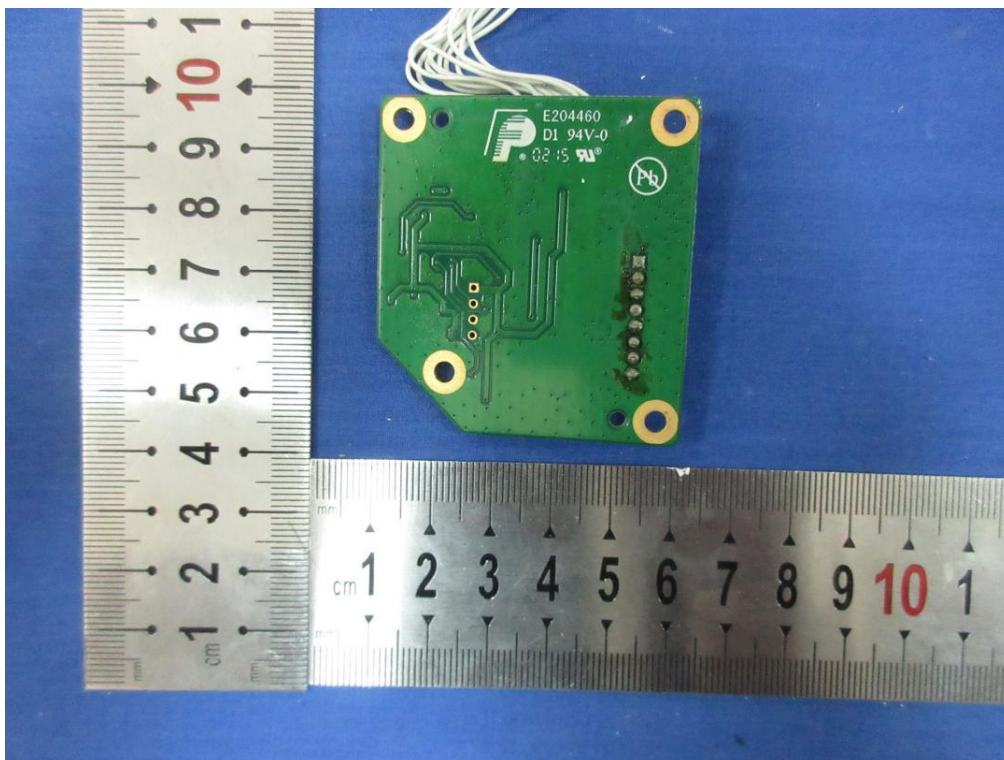
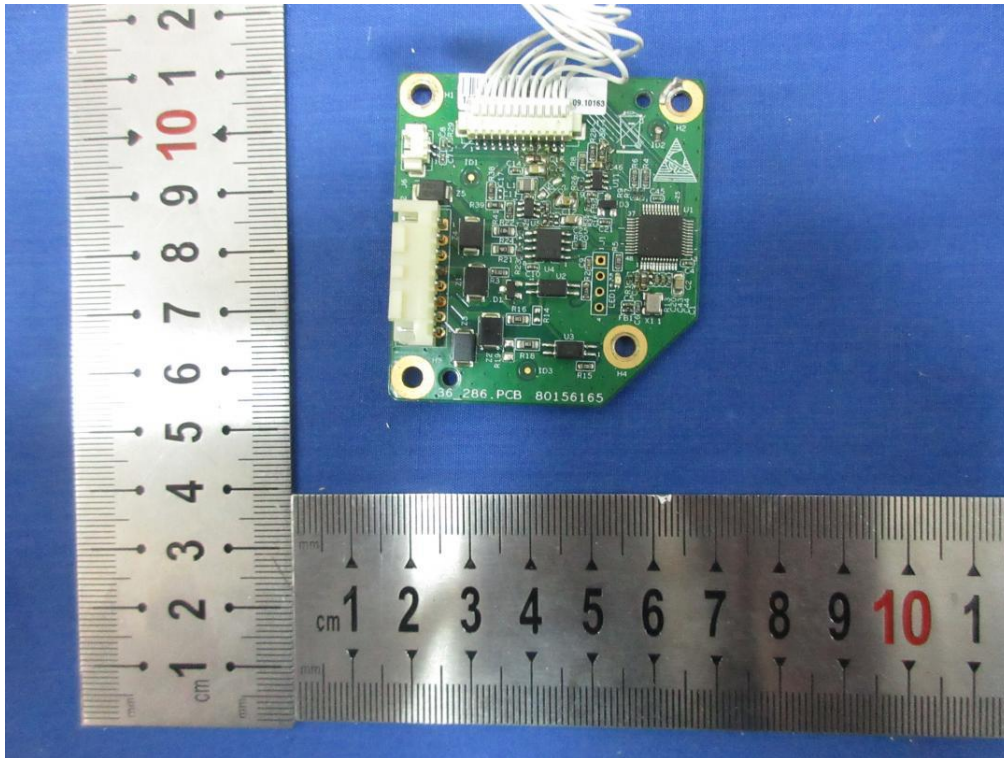


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