

C E R T I F I C A T E



of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AN 50397680 0001

Report No.: 50115076 001

Holder: Shenzhen Dicolor Optoelectronics
Co., Ltd.
Dicolor Industrial park, No. 18
Zhongtai Road, GongMing Town
GuangMing New District, Shenzhen
P. R. China

Product: Display Unit
(Full Color LED Display)

Identification: Type Designation : A-261, A-291, A-391 (Dicolor)
Serial No. : n.a.
Remark: Refer to test report 50115076 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive 2014/35/EU, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.



Certification Body

Date 16.01.2018

Tommy Chen

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90481 Nürnberg

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

Shenzhen Dicolor Optoelectronics
Co., Ltd.
Mr. Zhou Jie

Date : 16.01.2018
Our ref. : ZHUAND 02
Your ref.: Z.J.

-
Dicolor Industrial park, No.18
Zhongtai Road, GongMing Town
GuangMing New District, Shenzhen
P. R. China

Ref : AN Certificate of Conf. Low Voltage D.

Type of Equipment : Full Color LED Display
Model Designation : See Certificate
Certificate No. : AN 50397680 0001
Report No. : 50115076 001

Dear Mr. Zhou Jie,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.




We appreciate your kind support and would like to offer our assistance and continuous services in the future.

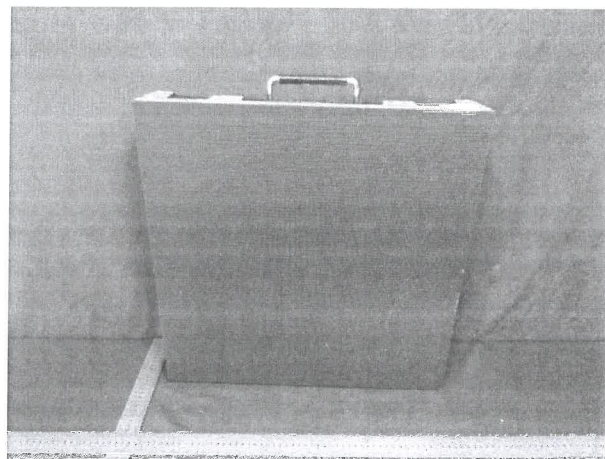
With kind regards,
EN,
Certification Body


Sommy Chen

Enclosure

证书的详细信息请登陆www.certipedia.com查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询

Prüfbericht-Nr.: Test Report No.:	50115076 001	Auftrags-Nr.: Order No.:	164114373	Seite 1 von 43 Page 1 of 43
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	Nov. 16, 2017	
Auftraggeber: Client:	Shenzhen Dicolor Optoelectronics Co., Ltd. Dicolor Industrial park, No.18 Zhongtai Road, GongMing Town, GuangMing New District, Shenzhen, P.R. China			
Prüfgegenstand: Test item:	Full Color LED Display			
Bezeichnung / Typ-Nr.: Identification / Type No.:	A-261, A-291, A-391 (Trade mark: 			
Auftrags-Inhalt: Order content:	TÜV Rheinland LVD CoC approval			
Prüfgrundlage: Test specification:	EN 60950-1:2006 + A11 + A1 + A12 + A2			
Wareneingangsdatum: Date of receipt:	Nov. 16, 2017			
Prüfmuster-Nr.: Test sample No.:	ES171017999S01			
Prüfzeitraum: Testing period:	Nov. 16, 2017 to Nov. 26, 2017			
Ort der Prüfung: Place of testing:	EMTEK (SHENZHEN) CO., LTD. Bldg. 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by: Jan. 10, 2018 Andy Zhu / Project Manager		kontrolliert von / reviewed by: Jan. 10, 2018 Michael Yang / Technical Certifier		
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
				
Sonstiges / Other:				
1. This report is for LVD CoC approval. 2. This report includes: - Test report (43 pages, include 1 page of cover page); National Difference (Attachment 1: 18 pages); EN 62471 test report (Attachment 2: 17 pages); Equipment list (Attachment 3: 2 pages); Photo Documentation (Attachment 4: 9 pages); EMF assessment report attached (1 page).				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				



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

Report Number: 50115076 001
Date of issue: See cover page
Total number of pages: See cover page

Applicant's name: See cover page
Address: See cover page

Test specification:

Standard: See cover page
Test procedure: TÜV Rheinland LVD CoC
Non-standard test method: N/A

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

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description	Full Color LED Display
Trade Mark	
Manufacturer	Same as applicant
Model/Type reference	A-261, A-291, A-391
Ratings	Input: 100-240Vac, 50/60Hz, 10A Output; 100-240Vac, 50/60Hz, 9A

Testing procedure and testing location:		
<input type="checkbox"/>	CB Testing Laboratory:	See cover page
Testing location/ address.....:		See cover page
<input type="checkbox"/>	Associated CB Testing Laboratory:	N/A
Testing location/ address.....:		N/A
Tested by (name + signature)		N/A
Approved by (name + signature).....:		N/A
<input checked="" type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address.....:		
Tested by (name + signature)		See cover page
Approved by (name + signature).....:		See cover page
<input type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	N/A
Testing location/ address.....:		N/A
Tested by (name + signature)		
Witnessed by (name + signature).....:		
Approved by (name + signature).....:		
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	N/A
Testing location/ address.....:		N/A
Tested by (name + signature)		
Witnessed by (name + signature).....:		
Approved by (name + signature).....:		
Supervised by (name + signature)		

Summary of testing:

The tests were carried out under the most unfavourable combination within the manufacturer's operating specifications of the following parameters:

- supply voltage, which ranged from AC100-240V;
- operating temperature, max. ambient temperature 40°C declared by the client;
- operating mode: continuous;
- operating load: full white screen, appliance outlet load with 9A.

Tests performed (name of test and test clause):

<u>Clause(s)</u>	<u>Test(s)</u>
1.6.2	Input Current Test
1.7.11	Durability of Marking Test
2.6.3.4	Resistance of Earthing Circuit
2.9.2	Humidity Conditioning
2.10.3 & 2.10.4	Clearance and creepage distance measurements
4.2.4	Steady Force Test, 250N
4.2.5	Impact Test (Steel Ball)
4.2.7	Stress Relief Test
4.5.2	Heating Test
4.5.5	Ball Pressure Test
5.1.6	Touch Current and PE current
5.2	Electric Strength Test
5.3	Fault Condition Test

Note:

1. For temperature test the thermocouples method used, regarding fault condition test simulated faults applied.
2. All tests were performed on the representative model A-261 if no other specified.

EUT pass all the tests.

Testing location:

All tests as described in Test Case and Measurement Sections were performed at the laboratory described on page 1

Summary of compliance with National Differences:

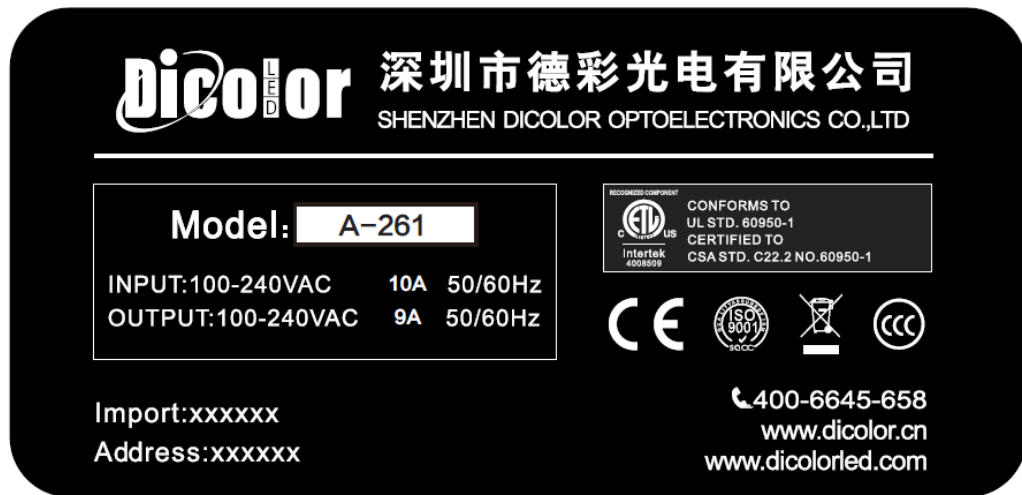
List of countries addressed:

EU Group Differences, EU Special National Conditions, EU A-Deviations

☒ The product fulfils the requirements of EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

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.



Note: Since the similar label used, only label for model above listed to represents other similar ones.

Test item particulars.....:	
Equipment mobility.....:	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains <input checked="" type="checkbox"/> built-in component, considered in end system
Operating condition.....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> built-in component, considered in end system
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
Mains supply tolerance (%) or absolute mains supply values	±10% (requested by client)
Tested for IT power systems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	16A or 13A (UK only)
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	IPX0
Altitude during operation (m)	Up to 2000m
Altitude of test laboratory (m)	Below 2000m
Mass of equipment (kg)	9.44kg
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	See cover page
Date (s) of performance of tests	See cover page
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	

Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60950-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : Same as manufacturer	

General product information:

Models A-261, A-291 and A-391 are Full Color LED Display, which are used as built-in component for building into the wall or frame. The equipment is for indoor use only and for the use in information technology equipment.

All models are identical except for model name and LED spacing (see below table A for details). All tests were performed on the representative model A-261 if no specified.

Table A: Model difference

Model name	A-261	A-291	A-391
LED spacing	2.604 mm	2.976 mm	3.906 mm

The EUT including below parts:

- Switching Power Supply (SPS unit), is approved by UL CB, details see appended table 1.5.1.
- Front plastic panel rated 5VA and rear metal enclosure were considered as fire enclosure.
- LED Panel according to EN 62471 were evaluated, detail see attachment 2.
- Maximum declared ambient: 40°C.
- The user manual specified the relevant information for installation instruction.
- No parts can be accessible by operator after the unit installed in the end product.
- Mains socket outlet will be used for connecting to another LED display and power for them.

Abbreviations used in the report:

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

Indicate used abbreviations (if any)

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	P
1.5.2	Evaluation and testing of components	<p>Components which are certified to IEC and/or national standards are used correctly within their ratings.</p> <p>Non-certified components are checked for correct application, used within their ratings, tested as part of the equipment and subjected to applicable tests of the component standard.</p> <p>Components not covered by IEC standards are tested under the conditions present in the equipment.</p>	P
1.5.3	Thermal controls		N/A
1.5.4	Transformers	Evaluated in approved power supply.	N/A
1.5.5	Interconnecting cables	Interconnection cables complied with the relevant requirements.	P
1.5.6	Capacitors bridging insulation	Evaluated in approved power supply.	N/A
1.5.7	Resistors bridging insulation		N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Evaluated in approved power supply.	N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors	Evaluated in approved power supply.	N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

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

1.6	Power interface		P
1.6.1	AC power distribution systems	TN power system	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not hand-held equipment.	N/A
1.6.4	Neutral conductor	The neutral conductor insulated from earth and from the body throughout the equipment as if it were a line conductor	P

1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	See below	P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections.....:	Single power source	P
	Rated voltage(s) or voltage range(s) (V)	100-240Vac	P
	Symbol for nature of supply, for d.c. only.....:	AC supply only.	N/A
	Rated frequency or rated frequency range (Hz) ...:	50/60Hz	P
	Rated current (mA or A)	10A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark	See copy of marking plate	P
	Model identification or type reference	A-261, A-291, A-391	P
	Symbol for Class II equipment only	Class I equipment	N/A
	Other markings and symbols	Additional symbol or marking does not give rise to misunderstanding.	P
1.7.1.3	Use of graphical symbols		N/A
1.7.2	Safety instructions and marking	English safety instruction provided.	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	External circuit breaker used as disconnect device. For built-in use, to be evaluated in the final system	N/A
1.7.2.3	Overcurrent protective device	Not such equipment.	N/A
1.7.2.4	IT power distribution systems	Not for IT system	N/A
1.7.2.5	Operator access with a tool	No such access required.	N/A
1.7.2.6	Ozone	Not such 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 voltage selector.	N/A
	Methods and means of adjustment; reference to installation instructions		N/A
1.7.5	Power outlets on the equipment	See copy of marking plate	P
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Evaluated in approved power supply.	N/A
1.7.7	Wiring terminals	See only below.	P
1.7.7.1	Protective earthing and bonding terminals	Protective bonding terminal marking is shown on metal chassis next to PE screw.	P
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors	No such terminals.	N/A
1.7.8	Controls and indicators	No safety relevant controls and indicators	N/A
1.7.8.1	Identification, location and marking	No safety relevant controls and indicators	N/A
1.7.8.2	Colours	No safety relevant controls and indicators	N/A
1.7.8.3	Symbols according to IEC 60417.....	No symbols used.	N/A
1.7.8.4	Markings using figures	No indicators for different positions	N/A
1.7.9	Isolation of multiple power sources	Single power source	N/A
1.7.10	Thermostats and other regulating devices	No such components.	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 sec. And then again for 15 sec. 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 no curling and lifting of the label edge.	P
1.7.12	Removable parts	No removable part	N/A
1.7.13	Replaceable batteries	No battery provided.	N/A
	Language(s)		—
1.7.14	Equipment for restricted access locations	Equipment not intended for installation in restricted access locations.	N/A

2	PROTECTION FROM HAZARDS	P
2.1	Protection from electric shock and energy hazards	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1	Protection in operator access areas	No access with test finger and test pin to any hazardous parts.	P
2.1.1.1	Access to energized parts	See below	P
	Test by inspection	Complied.	P
	Test with test finger (Figure 2A)	No contact.	P
	Test with test pin (Figure 2B)	No contact.	P
	Test with test probe (Figure 2C)	No TNV	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	For built-in use, should be evaluated in final system	N/A
2.1.1.6	Manual controls	No conductive shafts of operating knobs, handles, levers and the like.	N/A
2.1.1.7	Discharge of capacitors in equipment	Evaluated in approved power supply.	N/A
	Measured voltage (V); time-constant (s)		—
2.1.1.8	Energy hazards – d.c. mains supply	Connected to a.c. mains.	N/A
	a) Capacitor connected to the d.c. mains supply .:		N/A
	b) Internal battery connected to the d.c. mains supply .:		N/A
2.1.1.9	Audio amplifiers	Not such equipment.	N/A
2.1.2	Protection in service access areas	No operator accessible area that needs to be accessed by the use of a tool.	N/A
2.1.3	Protection in restricted access locations	Not intended for use in restricted access locations.	N/A

2.2	SELV circuits		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V)	Evaluated in approved power supply.	N/A
2.2.3	Voltages under fault conditions (V)	Evaluated in approved power supply SELV circuits.	N/A
2.2.4	Connection of SELV circuits to other circuits	SELV circuits in approved power supply only connected with SELV circuits in the	P

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

		equipment.	
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2.3	TNV circuits (<i>No such circuit</i>)		N/A
2.3.1	Limits		N/A
	Type of TNV circuits :		—
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions :		N/A
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed..... :		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed..... :		—
2.3.5	Test for operating voltages generated externally		N/A

2.4	Limited current circuits		N/A
2.4.1	General requirements	Evaluated in approved power supply.	N/A
2.4.2	Limit values	Evaluated in approved power supply.	N/A
	Frequency (Hz) :		—
	Measured current (mA)..... :		—
	Measured voltage (V) :		—
	Measured circuit capacitance (nF or μ F) :		—
2.4.3	Connection of limited current circuits to other circuits	Evaluated in approved power supply.	N/A

2.5	Limited power sources		N/A
	a) Inherently limited output		N/A
	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		—
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :		—

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

	Current rating of overcurrent protective device (A) :	No such IC used	N/A
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2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Earth terminal of appliance inlet and socket outlet provided as protective earthing terminal. The metal chassis reliably connected to earth pin of the AC Input connector by green/yellow wire, screw and spring washer.	P
2.6.2	Functional earthing	Functional earthing is in the secondary circuit and separated from the primary by reinforced insulation.	P
	Use of symbol for functional earthing		P
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General		P
2.6.3.2	Size of protective earthing conductors	Power cord not provided	N/A
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors	Protective bonding conductor has sufficient current carrying capacity, also see sub-clause 2.6.3.4.	P
	Rated current (A), cross-sectional area (mm ²), AWG	Refer to appended table 2.6.3.4	—
	Protective current rating (A), cross-sectional area (mm ²), AWG.....	See clause 2.6.3.4	—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min).....	Test current 32A, duration 2min. From earth pin of input connector to metal enclosure: 5m Ω , limit 100m Ω , From earth pin of input connector to earth pin of output connector: 6m Ω , limit 100m Ω	P
2.6.3.5	Colour of insulation	Yellow/Green.	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	AC Input connector with earth terminal used.	P
	Rated current (A), type, nominal thread diameter (mm).....	Protective current: Max. 10A. The earthing terminal in approved AC connector serves as main PE terminal. The screw	—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		connection to metal chassis, as the protective bonding terminal, $\Phi=3.0\text{mm}$, spring washer used. The test of 2.6.3.4 complied.	
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Separated PE and protective bonding conductor used.	N/A
2.6.5	Integrity of protective earthing	See below	P
2.6.5.1	Interconnection of equipment	Not depending on interconnection for protective earthing.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device in protective earthing or bonding conductor	P
2.6.5.3	Disconnection of protective earth	Evaluated in final system	N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance	All safety earthing connections comply with Annex J.	P
2.6.5.7	Screws for protective bonding	No self-tapping screws are used.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuit.	N/A

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	The equipment relies on fuse or circuit breaker rated 16A of the building installation in regard to L to N short-circuits and earth fault. A built-in fuse in power supply provided as overcurrent protection device (see 5.3)	P
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7	The protection devices are well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Building installation is considered as providing short-circuit backup protection.	P
2.7.4	Number and location of protective devices	Overcurrent protection by one built-in fuse in approved power supply. Against earth fault and fault before fuse shall be evaluated in final system.	P
2.7.5	Protection by several devices	Protection provided by one fuse only	N/A
2.7.6	Warning to service personnel	No service work necessary.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.8	Safety interlocks	<i>No safety interlocks used</i>	N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	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, asbestos or hygroscopic material not used.	P
2.9.2	Humidity conditioning	Performed at 40°C, 93% R.H. for 48h (requested by manufacturer).	P
	Relative humidity (%), temperature (°C)	See above.	—
2.9.3	Grade of insulation	See above.	
2.9.4	Separation from hazardous voltages	The adequate levels of safety insulation provided and maintained to comply with the requirements of this standard.	P
	Method(s) used	SELV separated from primary by reinforced or double insulation.	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See below	P
2.10.1.1	Frequency	Considered	P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	Considered	P
2.10.1.4	Intervening unconnected conductive parts	Considered	P
2.10.1.5	Insulation with varying dimensions	Insulation kept homogenous.	N/A
2.10.1.6	Special separation requirements	Not applied.	N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.2	Determination of working voltage	Evaluated in approved power supply board.	N/A
2.10.2.1	General		N/A
2.10.2.2	RMS working voltage		N/A
2.10.2.3	Peak working voltage		N/A
2.10.3	Clearances	Evaluated in approved power supply board and see appended table 2.10.3 and 2.10.4	P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply		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	Sub-clause 5.3.4 c) considered.	P
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply	Normal transient voltage considered (Overvoltage category II for primary circuit).	P
2.10.3.7	Transients from d.c. mains supply		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	Evaluated in approved power supply board and see appended table 2.10.3 and 2.10.4 for other parts.	P
2.10.4.1	General	Considered	P
2.10.4.2	Material group and comparative tracking index	Material group IIIb is assumed to be used.	P
	CTI tests.....	See above	—
2.10.4.3	Minimum creepage distances	Evaluated in approved power supply board and see appended table 2.10.3 and 2.10.4 for other parts.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5	Solid insulation	Evaluated in approved power supply board and see appended table 2.10.5 for other parts.	P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	Evaluated in approved power supply board and see appended table 2.10.5 for other parts.	P
2.10.5.3	Insulating compound as solid insulation	No such construction used.	N/A
2.10.5.4	Semiconductor devices	Approved optocoupler used in approved power supply board.	N/A
2.10.5.5	Cemented joints	No such construction.	N/A
2.10.5.6	Thin sheet material – General	Evaluated in approved power supply board	N/A
2.10.5.7	Separable thin sheet material	Evaluated in approved power supply board	N/A
	Number of layers (pcs) :		—
2.10.5.8	Non-separable thin sheet material	Not such 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	Evaluated in approved power supply board	N/A
	Electric strength test		—
2.10.5.11	Insulation in wound components	Evaluated in approved power supply board	N/A
2.10.5.12	Wire in wound components	Evaluated in approved power supply board	N/A
	Working voltage :		N/A
	a) Basic insulation not under stress :		N/A
	b) Basic, supplementary, reinforced insulation :		N/A
	c) Compliance with Annex U :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components	No such construction.	N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components	No such construction.	N/A
	Working voltage :		N/A
	- Basic insulation not under stress :		N/A
	- Supplementary, reinforced insulation :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 boards.	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	No multi-layer PCBs provided.	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board	No multi-layer PCBs provided.	N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs) :	Single layer PCB	N/A
2.10.7	Component external terminations		N/A
2.10.8	Tests on coated printed boards and coated components	No such boards and 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	No hermetically sealed component.	N/A

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Internal wires are UL recognized wiring which is PVC insulated, rated VW-1 or FT-1, min. 80°C, 300V and having gauge suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges which could damage the insulation and cause hazard.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.3	Securing of internal wiring	Internal wires are routed and secured so that adequate insulations are maintained. For wires connected to appliance inlet: The wires are secured by soldering additionally fixed by heat shrinkable tube wrapped around the wire. Output wires with only basic insulation are routed so that they are not close to any live bare components. Wires are secured by soldering method and additionally fixed by cable tie.	P
3.1.4	Insulation of conductors	The insulation of the individual conductors suitable for the application and the working voltage. For the insulation material see 3.1.1.	P
3.1.5	Beads and ceramic insulators	Not used.	N/A
3.1.6	Screws for electrical contact pressure	No such screws provided.	N/A
3.1.7	Insulating materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws	No self-tapping screws are used.	N/A
3.1.9	Termination of conductors	All terminations of conductors are reliable secured by use of solder-pins and other mechanical fixing means.	P
	10 N pull test		P
3.1.10	Sleeving on wiring		N/A

3.2	Connection to a mains supply		P
3.2.1	Means of connection	See below.	P
3.2.1.1	Connection to an a.c. mains supply	For built-in use, to be evaluated in the final system	N/A
3.2.1.2	Connection to a d.c. mains supply	Only a.c. mains supply.	N/A
3.2.2	Multiple supply connections	Only for one mains connection.	N/A
3.2.3	Permanently connected equipment	Unit is not permanently connected equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm)		—
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords	See below.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1	AC power supply cords	Not provided	N/A
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC power supply cords	AC Source.	N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards	No 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	Not permanent connection or non-detachable power cord type.	N/A

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals		N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm ²)		—
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type, nominal thread diameter (mm)		—
3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

3.4	Disconnection from the mains supply		N/A
3.4.1	General requirement	For built-in use, to be evaluated in the final system	N/A
3.4.2	Disconnect devices	Evaluated in final system	N/A
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 equipment.	N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment	Not interconnected equipment.	N/A
3.4.11	Multiple power sources	Only one supply connection provided.	N/A

3.5	Interconnection of equipment		P
3.5.1	General requirements	This power supply is not considered for connection to TNV.	N/A
3.5.2	Types of interconnection circuits	Interconnection circuits of SELV through the connectors. No ELV interconnection circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection	N/A
3.5.4	Data ports for additional equipment		N/A

4	PHYSICAL REQUIREMENTS		P
4.1	Stability	<i>Buliding-in equipment</i>	N/A
	Angle of 10°		N/A
	Test force (N)		N/A

4.2	Mechanical strength		P
4.2.1	General	See below. After tests, unit complies with the requirements of sub-clauses 2.1.1, 2.6.1 and 2.10.	P
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N	10 N applied to all internal components. No components located such that distances according to 2.10 can be reduced.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A
4.2.4	Steady force test, 250 N	Applied on the rear metal enclosure. After tests, unit complies with 2.1.1, 2.6.1, 2.10.	P
4.2.5	Impact test	500g steel ball falls freely from 1.3m on rear metal enclosure, no access to hazardous parts.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Fall test	See above.	P
	Swing test	See above.	P
4.2.6	Drop test; height (mm)		N/A
4.2.7	Stress relief test	After the test at temperature of 70°C, no shrinkage, distortion or loosening of any enclosure part was noticeable on the equipment.	P
4.2.8	Cathode ray tubes	No CRT in the unit.	N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N)		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 such controls provided.	N/A
4.3.4	Securing of parts	All parts secured properly. Spring washers used for securing screws which are for earthing purpose.	P
4.3.5	Connection by plugs and sockets		N/A
4.3.6	Direct plug-in equipment	Not such equipment.	N/A
	Torque		—
	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		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	No heating elements provided.	N/A
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	N/A
4.3.11	Containers for liquids or gases	No container for liquid or gas.	N/A
4.3.12	Flammable liquids	No such flammable liquid.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		P
4.3.13.5.1	Lasers (including laser diodes)	No laser.	N/A
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	LEDs of display tested complying with exempt group according to IEC 62471.	—
4.3.13.6	Other types	Considered	P

4.4	Protection against hazardous moving parts		N/A
4.4.1	General	Not used	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

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	Thermal requirements		P
4.5.1	General	No exceeding temperature.	P
4.5.2	Temperature tests	(see appended table 4.5)	P
	Normal load condition per Annex L:	Equipment operated with maximum normal load.	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat:	(see appended table 4.5.5)	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings	No openings	P
	Dimensions (mm):		—
4.6.2	Bottoms of fire enclosures	No openings	P
	Construction of the bottom, dimensions (mm) ...:		—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment	Not transportable equipment.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm):		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes	No adhesives for constructional purposes.	N/A
	Conditioning temperature (°C), time (weeks).....:		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	No excessive temperatures. No easily burning material employed. Fire enclosure shall be provided in end product. Safety relevant components used within their specified temperature limits.	P
	Method 1, selection and application of components wiring and materials	(see appended table 4.7) and fire enclosure shall be provided in end product.	P
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure	See below	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.2.1	Parts requiring a fire enclosure	With having the following parts: • Components in primary • Components in secondary (not supplied by LPS). Built-in equipment, fire enclosure shall be evaluated in end product.	N/A
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures	Built-in equipment, fire enclosure shall be evaluated in end product.	N/A
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	PCB rated V-1 or better. Internal components except small parts are V-2, HF-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter.	N/A
4.7.3.6	Materials used in high-voltage components	No such high voltage components in this meaning.	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 5.1.7.	P
5.1.2	Configuration of equipment under test (EUT)	EUT has only one mains connection.	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	Equipment of figure 5A used.	P
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	P
5.1.5	Test procedure	Applied.	P
5.1.6	Test measurements	See appended table 5.1.	P
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
	Measured protective conductor current (mA)		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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.	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	(see appended table 5.2)	P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	No motor used	N/A
5.3.3	Transformers	Evaluated in approved power supply board.	N/A
5.3.4	Functional insulation	By short-circuited, results see appended table 5.3.	P
5.3.5	Electromechanical components	No electromechanical component.	N/A
5.3.6	Audio amplifiers in ITE	Audio amplifiers not used.	N/A
5.3.7	Simulation of faults	(see appended table 5.3.)	P
5.3.8	Unattended equipment	No such equipment.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	(see appended table 5.3.)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests	No reduction of clearance and creepage distance. Electric strength test is made on basic, supplementary and reinforced insulation after test.	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
	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

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Clause	Requirement + Test	Result - Remark	Verdict

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
A.2.1	Samples, material		—
	Wall thickness (mm).....		—
A.2.2	Conditioning of samples; temperature (°C)		
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

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

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	Not used	N/A
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V)		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V)		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V)		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N/A
	Position	Evaluated in approved power supply board.	—
	Manufacturer		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Type		—
	Rated values		—
	Method of protection		—
C.1	Overload test		N/A
C.2	Insulation		N/A
	Protection from displacement of windings		N/A
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument		P
D.2	Alternative measuring instrument		N/A
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
G.1	Clearances		N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply		N/A
G.2.2	Earthed d.c. mains supplies		N/A
G.2.3	Unearthed d.c. mains supplies		N/A
G.2.4	Battery operation		N/A
G.3	Determination of telecommunication network transient voltage (V)		N/A
G.4	Determination of required withstand voltage (V)		N/A
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

IEC 60950-1			
Clause	Requirement + Test		Verdict
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances		N/A
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal(s) used	The internal metal enclosure is made of mild steel, screw spring washer are made of Ni on steel, the combined electrochemical potential is below 0.6V according to Table J.1.	—
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N/A
K.1	Making and breaking capacity	No thermal control used	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)	No temperature limiter.	N/A
K.5	Thermal cut-out reliability	No thermal cut-out.	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 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)		—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3.1.3	Cadence; time (s), voltage (V)		—
M.3.1.4	Single fault current (mA)		—
M.3.2	Tripping device and monitoring voltage		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V)		N/A
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N/A
	- Preferred climatic categories	Evaluated in approved power supply board.	N/A
	- 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)		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		Evaluated in approved power supply board.	—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction		P
V.2	TN power distribution systems		P
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N/A
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		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)		P
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N/A
CC.1	General		N/A
CC.2	Test program 1.....		N/A
CC.3	Test program 2.....		N/A
CC.4	Test program 3.....		N/A
CC.5	Compliance.....		N/A

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

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

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⁾	
Metal enclosure	Interchangeable	Interchangeable	Metal, min. thickness 2.0mm	--	Test with appliance	
Built-in Switching Power Supply	Changsha Hangte Electronic Technology co., Ltd.	LPU200S5R6-DC	I/P: 100-109V~, 50/60Hz, 3.5A Max., Class I, O/P: 5.0Vdc, 30A; 110-240V~, 50/60Hz, 3.5A Max., Class I, O/P: 5.0Vdc, 40A Tma: 50°C	IEC/EN 60950-1	CB approved by UL (Test report No.: SA1703101 S 003, Cert. No.: DK-64758-UL; Test report No.: SA1703101 S 004, Cert. No.: DK-69707-UL	
Plastic material for enclosure	HUIZHOU WOTE ADVANCED MATERIALS CO LTD	3001	5VA, 80°C, min. thickness 2.0mm	UL94, UL746C	UL E310240	
AC input connector	NINGBO HAISHU DISTRICT SEETRONIC ELECTRONIC CO LTD	SAC3MPA-N-W	250V, 20A, 80°C	UL 1977	UL E359036	
(Alternate)	SHENZHEN LINKO ELECTRIC CO LTD	YF-24-C03PE-02	250V, 20A, 80°C	UL 1977	UL E365869	
(Alternate)	NINGBO HAISHU DISTRICT SEETRONIC ELECTRONIC CO LTD	SAC3FCA	250V, 20A, 80°C	UL 1977	UL E359036	
(Alternate)	SHENZHEN LINKO ELECTRIC CO LTD	YF-24-J03SX-02	250V, 20A, 80°C	UL 1977	UL E365869	
AC output connector	NINGBO HAISHU DISTRICT SEETRONIC ELECTRONIC CO LTD	SAC3MPB-N-W	250V, 20A, 80°C	UL 1977	UL E359036	

(Alternate)	NINGBO HAISHU DISTRICT SEETRONIC ELECTRONIC CO LTD	YF-24-J03SX-02	250V, 20A, 80°C	UL 1977	UL E359036
Input wire (used between AC input connector and Power supply)	Interchangeable	1672	VW-1, Min. 12AWG, 105°C, 600V Double insulation	UL 758	UL
Heat shrinkable tube on AC input/output wire	SHENZHEN WOER HEAT- SHRINKABLE MATERIAL CO LTD	RSFR-H	Min. 600V, 105°C, VW-1	UL 224	UL E203950
Protective earthing wire	Interchangeable	Interchangeable	VW-1, Min.12AWG, 105°C, 600V, green/yellow type	UL 758	UL
Internal secondary wire	Interchangeable	Interchangeable	VW-1, Min. 24AWG, 80°C, 300V	UL 758	UL
All PCB	Interchangeable	Interchangeable	V-1 or better, 130°C	UL 796	UL
LED lamp	FOSHAN NATIONSTAR OPTOELECTRO NICS CO., LTD	FM- B2020RGBA- HG	2.4V, 8mA for Red LED; 3.4V, 5mA for Green LED, 3.4V, 3mA for Blue LED	EN 60950-1 EN 62471	Test with appliance
(Alternate)	Shenzhen Kinglight Optoelectronics Co., Ltd	JT- KF0707QBZGS URW-BB-A1	2.3V/10mA for Red LED, 3.2V/5mA for Green LED, 3.2V/5mA for Blue LED	EN 60950-1 EN 62471	Test with appliance

Supplementary information:
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039

1.6.2		TABLE: Electrical data (in normal conditions)					P
U (V/Hz)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status	
For LED lamp: FM-B2020RGBA-HG							
90/50Hz	10.715	--	959.45	--	--	Normal load condition	
90/60Hz	10.717	--	960.53	--	--	Normal load condition	
100/50Hz	10.518	10	1046.38	--	--	Normal load condition	
100/60Hz	10.519	10	1046.94	--	--	Normal load condition	
240/50Hz	9.642	10	2309.32	--	--	Normal load condition	
240/60Hz	9.646	10	2310.54	--	--	Normal load condition	
264/50Hz	9.595	--	2528.26	--	--	Normal load condition	
264/60Hz	9.597	--	2529.47	--	--	Normal load condition	
For LED lamp: JT-KF0707QBZGSURW-BB-A1							
90/50Hz	10.701	--	958.56	--	--	Normal load condition	
90/60Hz	10.705	--	959.74	--	--	Normal load condition	
100/50Hz	10.507	10	1045.63	--	--	Normal load condition	
100/60Hz	10.509	10	1045.75	--	--	Normal load condition	
240/50Hz	9.636	10	2308.32	--	--	Normal load condition	
240/60Hz	9.638	10	2309.68	--	--	Normal load condition	
264/50Hz	9.585	--	2527.42	--	--	Normal load condition	
264/60Hz	9.587	--	2528.83	--	--	Normal load condition	
Supplementary information: Normal load condition: full white screen and 9A load. Deviation: 10.519-10/10=5.19%, limit: 10%.							

2.1.1.5 c) 1)	TABLE: max. V, A, VA test				N/A
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
--	--	--	--	--	
supplementary information:					

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			N/A
Component (measured between)		max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
--		--	--	--
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)		
--		--		
supplementary information:				

2.5	TABLE: Limited power sources					N/A
Circuit output tested:						
Note: Measured Uoc (V) with all load circuits disconnected:						
Compone nts	Test condition (Single fault)	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
--	--	--	--	--	--	--
supplementary information:						
Supplementary information:						

2.10.2	Table: working voltage measurement			N/A
Location		Peak voltage (V)	RMS voltage (V)	Comments
--		--	--	--
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)	
Different polarities of L/N in terminal block (F)	420	250	1.5	3.1	2.5	3.1	
L/N to protective earthing terminal in terminal block (B)	420	250	2.0	3.5	2.5	3.5	
Supplementary information:							
1. Other functional insulation according to sub-clause 5.3.4 item c).							
2. Internal wire was cut shortly enough in order to not touch the primary parts.							
3. Cl. and Cr. distance inside the power supply unit has been evaluated during its approval.							
4. F=Functional insulation, B=Basic insulation.							

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)	
Internal primary wire *	420	250	3000Vac	0.4	*	
Supplementary information:						
* One layer min. 0.4mm thick.						

4.5	TABLE: Thermal requirements			P
	Supply voltage (V) :	90V/60Hz	264V/60Hz	—
	Ambient T _{min} (°C) :	--	--	—
	Ambient T _{max} (°C) :	--	--	—
Maximum measured temperature T of part/at:		T (°C)		Allowed T _{max} (°C)
AC input connector		47.6	43.7	80-(40-23.5)=63.5
Input wire		57.5	49.9	105-(40-23.5)=88.5
CY2 body(Power supply)		67.7	55.0	125-(40-23.5)=108.5
CX1 body(Power supply)		74.5	59.2	100-(40-23.5)=83.5
LF1 coil(Power supply)		71.7	56.4	130-(40-23.5)=113.5
L1 coil(Power supply)		79.4	60.0	130-(40-23.5)=113.5
CX2 body(Power supply)		82.2	62.4	100-(40-23.5)=83.5
L2 coil(Power supply)		92.1	64.0	130-(40-23.5)=113.5
PCB near RT1(Power supply)		109.2	71.6	130-(40-23.5)=113.5
L3 coil(Power supply)		85.3	64.2	130-(40-23.5)=113.5
T1 coil(Power supply)		80.4	74.3	110-(40-23.5)=93.5
T1 core(Power supply)		78.1	71.0	110-(40-23.5)=93.5
U1 body(Power supply)		73.2	67.9	100-(40-23.5)=83.5
Output wire(Power supply)		58.1	55.2	105-(40-23.5)=88.5
AC output connector		47.5	43.2	80-(40-23.5)=63.5
PCB near D5(Main board)		61.4	54.9	130-(40-23.5)=113.5

PCB near U1(Main board)			57.9	52.5	130-(40-23.5)=113.5			
PCB near U20(Main board)			59.3	54.3	130-(40-23.5)=113.5			
PCB near U57(Main board)			53.5	50.0	130-(40-23.5)=113.5			
Metal enclosure			49.9	45.8	Ref.			
Button body			46.6	42.7	95-(40-23.5)=78.5			
Plastic enclosure outside			42.1	40.7	95-(40-23.5)=78.5			
Screen			50.0	52.2	95-(40-23.5)=78.5			
Ambient			23.7	23.5	--			
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:

The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described above.

With a rated maximum ambient temperature of 40°C.

Winding components providing safety isolation:

- Class B → Tmax = 120°C-10°C = 110°C (10°C decreased by thermocouple method)

4.5.5	TABLE: Ball pressure test of thermoplastic parts			P
	Allowed impression diameter (mm):	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
AC input connector for model SAC3MPA-N-W		125	1.1	
AC input connector for model YF-24-C03PE-02		125	1.2	
AC output connector for model SAC3MPB-N-W		125	1.2	
AC output connector for model YF-24-J03SX-02		125	1.1	
Supplementary information:				

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
--	--	--	--	--	--	
Supplementary information: See table 1.5.1						

5.1	TABLE: touch current measurement			P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
L/N to earthed metal part	0.72/0.72(Normal/Reverse)	3.5	System ON (switch "e" opened)	

L/N to plastic enclosure with metal foil	0.005/0.005 (Normal/ Reverse)	0.25	System ON (switch “e” closed)
L/N to secondary terminal	0.007/0.007 (Normal/ Reverse)	0.25	System ON (switch “e” closed)
Supplementary information: Supplied with 264V/60Hz.			

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
L/N to Metal enclosure		AC	2048	No
Primary circuit to secondary circuit		AC	3000	No
Primary circuit to front plastic enclosure wrapped by metal foil		AC	3000	No
Supplementary information:				

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C)		25.2			—
	Power source for EUT: Manufacturer, model/type, output rating		--			—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Input current (A)	Observation
Output terminal (Power supply)	s-c	240	10mins	--	0.18	Unit shut down, recoverable, no hazard, no damage.
CC1 body (main board)	s-c	240	10mins	--	0.077	Unit shut down, recoverable, no hazard, no damage.
Supplementary information: In fault column, where s-c=short-circuited.						

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Information technology equipment – Safety – Part 1: General requirements	
Differences according to.....:	EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013
Attachment Form No.....:	EU_GD_IEC60950_1F
Attachment Originator	SGS Fimko Ltd
Master Attachment	Date 2014-02
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EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"		--
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


IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
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>	Not such equipment.	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>	Deleted.	N/A
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>	Added.	P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.	Added.	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>	Not portable sound system	N/A
	Zx Protection against excessive sound pressure from personal music players		N/A

IEC60950_1F - ATTACHMENT

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 such equipment.	N/A
	<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>		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<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 such equipment.	N/A

IEC60950_1F - ATTACHMENT			
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> <p>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</p> <p>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> <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 such equipment.	N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.3 Warning</p> <p>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <ul style="list-style-type: none"> -the symbol of Figure 1 with a minimum height of 5 mm; and -the following wording, or similar: <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <div data-bbox="568 638 831 898" data-label="Image">  </div> <p style="text-align: center;">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 such equipment.	N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	<p>Zx.4.1 Wired listening devices with analogue input</p> <p>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.</p> <p>This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control).</p> <p>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>	Not such equipment.	N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.2 Wired listening devices with digital input</p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ 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 such equipment.	N/A
	<p>Zx.4.3 Wireless listening devices</p> <p>In wireless mode:</p> <ul style="list-style-type: none"> - 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>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>	Not such equipment.	N/A
	<p>Zx.5 Measurement methods</p> <p>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 such equipment.	N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	Replace the subclause as follows: Basic requirements 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): 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; 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;	Replaced	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. 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.	Built-in equipment, shall be evaluated in end system	N/A
2.7.2	This subclause has been declared 'void'.		N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	Deleted.	N/A
3.2.5.1	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". In Table 3B, replace the first four lines by the following: 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 In the conditions applicable to Table 3B delete the words "in some countries" in condition a). In NOTE 1, applicable to Table 3B, delete the second sentence.	Replaced.	N/A
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

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 Delete the fifth line: conductor sizes for 13 to 16 A	Deleted.	N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 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).	Added.	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	Replace the last paragraph of this annex by: 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. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.	Replaced	N/A
Bibliography	Additional EN standards.		—

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
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Clause	Requirement + Test	Result - Remark	Verdict
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ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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).	Considered	P
1.5.9.4	In Finland , Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A
1.7.2.1	<p>In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. 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

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1 (A11:2009)	<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 isa I koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV is, kan forårsake brannfare. For å unngå dette isa lle ved tilkopling av utstyret til kabel-TV nettet isa llers 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 isa 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
1.7.2.1 (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

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.5 1.7.5 (A11:2009)	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. For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.	Evaluated during national approval	N/A
1.7.5 (A2:2013)	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. 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. 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. Justification the Heavy Current Regulations, 6c	Evaluated during national approval	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.	No TNV.	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.	No TNV.	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.	No TNV.	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.		P
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.	Not direct plug in equipment	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.	No TNV.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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> <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:</p> <p>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>	Evaluated during national approval	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>	Evaluated during national approval	N/A

IEC60950_1F - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
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
3.2.1.1	<p>In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p>		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.	Not direct plug in equipment	N/A
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that 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.	Not exceed 3.5mA	N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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. 	No TNV.	N/A
	<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

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	No TNV	N/A
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Not connected to cable distribution system.	N/A
7.3 (A11:2009)	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	Not connected to cable distribution system.	N/A

IEC60950_1F - ATTACHMENT			
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

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
4	EXPOSURE LIMITS		P
4.1	General		P
	The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and should be used as guides in the control of exposure		P
	Detailed spectral data of a light source are generally required only if the luminance of the source exceeds $10^4 \text{ cd}\cdot\text{m}^{-2}$	see clause 4.3	P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
	The exposure limit for effective radiant exposure is $30 \text{ J}\cdot\text{m}^{-2}$ within any 8-hour period		P
	To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broad-band source, the effective integrated spectral irradiance, E_s , of the light source shall not exceed the levels defined by:		P
	$E_s \cdot t = \sum_{200}^{400} E_{\lambda}(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 30 \quad \text{J}\cdot\text{m}^{-2}$		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by:		P
	$t_{\max} = \frac{30}{E_s} \quad \text{s}$		P
4.3.2	Near-UV hazard exposure limit for eye		P
	For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed $10000 \text{ J}\cdot\text{m}^{-2}$ for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, E_{UVA} , shall not exceed $10 \text{ W}\cdot\text{m}^{-2}$.		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:		P
	$t_{\max} \leq \frac{10\,000}{E_{UVA}} \quad \text{s}$		P
4.3.3	Retinal blue light hazard exposure limit		P
	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, $B(\lambda)$, i.e., the blue-light weighted radiance, L_B , shall not exceed the levels defined by:		P

IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	$L_B \cdot t = \sum_{300}^{700} \sum_t L_\lambda(\lambda, t) \cdot B(\lambda) \cdot \Delta\lambda \cdot \Delta t \leq 10^6 \quad \text{J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	for $t \leq 10^4 \text{ s}$ $t_{\max} = \frac{10^6}{L_B}$	N/A
	$L_B = \sum_{300}^{700} L_\lambda \cdot B(\lambda) \cdot \Delta\lambda \leq 100 \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	for $t > 10^4 \text{ s}$	P
4.3.4	Retinal blue light hazard exposure limit - small source		N/A
	Thus the spectral irradiance at the eye E_λ , weighted against the blue-light hazard function $B(\lambda)$ shall not exceed the levels defined by:	see table 4.2	N/A
	$E_B \cdot t = \sum_{300}^{700} \sum_t E_\lambda(\lambda, t) \cdot B(\lambda) \cdot \Delta\lambda \cdot \Delta t \leq 100 \quad \text{J} \cdot \text{m}^{-2}$	for $t \leq 100 \text{ s}$	N/A
	$E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta\lambda \leq 1 \quad \text{W} \cdot \text{m}^{-2}$	for $t > 100 \text{ s}$	N/A
4.3.5	Retinal thermal hazard exposure limit		P
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_λ , weighted by the burn hazard weighting function $R(\lambda)$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:		P
	$L_R = \sum_{380}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{50\,000}{\alpha \cdot t^{0,25}} \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	$(10 \mu\text{s} \leq t \leq 10 \text{ s})$	P
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		P
	For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, L_{IR} , as viewed by the eye for exposure times greater than 10 s shall be limited to:		P
	$L_{IR} = \sum_{780}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{6\,000}{\alpha} \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	$t > 10 \text{ s}$	P
4.3.7	Infrared radiation hazard exposure limits for the eye		P
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, E_{IR} , over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:		N/A
	$E_{IR} = \sum_{780}^{3000} E_\lambda \cdot \Delta\lambda \leq 18\,000 \cdot t^{-0,75} \quad \text{W} \cdot \text{m}^{-2}$	$t \leq 1000 \text{ s}$	N/A
	For times greater than 1000 s the limit becomes:		P
	$E_{IR} = \sum_{780}^{3000} E_\lambda \cdot \Delta\lambda \leq 100 \quad \text{W} \cdot \text{m}^{-2}$	$t > 1000 \text{ s}$	P

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Clause	Requirement + Test	Result – Remark	Verdict
4.3.8	Thermal hazard exposure limit for the skin		P
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:		P
	$E_H \cdot t = \sum_{380}^{3000} \sum_i E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta \lambda \leq 20\,000 \cdot t^{0,25} \quad \text{J} \cdot \text{m}^{-2}$		P

5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		P
5.1	Measurement conditions		P
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.		P
5.1.1	Lamp ageing (seasoning)		N/A
	Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.		N/A
5.1.2	Test environment		P
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations.	Temperature maintained at 25±1 °C, Relative humidity shall be maintained to less than 65%; Airflow shall be minimized when measuring	P
5.1.3	Extraneous radiation		P
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.		P
5.1.4	Lamp operation		N/A
	Operation of the test lamp shall be provided in accordance with:		N/A
	– the appropriate IEC lamp standard, or		N/A
	– the manufacturer's recommendation		N/A
5.1.5	Lamp system operation		P
	The power source for operation of the test lamp shall be provided in accordance with:		P
	– the appropriate IEC standard, or		N/A
	– the manufacturer's recommendation		P
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
	Minimum aperture diameter 7mm.		P
	Maximum aperture diameter 50 mm.		P
	The measurement shall be made in that position of the beam giving the maximum reading.		P

	The measurement instrument is adequate calibrated.		P
5.2.2	Radiance measurements		P
5.2.2.1	Standard method		P
	The measurements made with an optical system.		P
	The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument.		P
5.2.2.2	Alternative method		N/A
	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements.		N/A
5.2.3	Measurement of source size		P
	The determination of α , the angle subtended by a source, requires the determination of the 50% emission points of the source.	$\alpha=0.1000\text{rad}$	P
5.2.4	Pulse width measurement for pulsed sources	Continuous wave lamps	N/A
	The determination of Δt , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.	see table 4.1	P
5.3.2	Calculations		P
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.		P
5.3.3	Measurement uncertainty		P
	The quality of all measurement results must be quantified by an analysis of the uncertainty.	Wavelength accuracy:1 nm	P

6	LAMP CLASSIFICATION		P
	For the purposes of this standard it was decided that the values shall be reported as follows:	see table 6.1-6.3	P
	– for lamps intended for general lighting service, the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm		N/A
	– for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm	200.0 mm	P
6.1	Continuous wave lamps		P

6.1.1	Except Group		P
	In the except group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:		P
	– an actinic ultraviolet hazard (E_s) within 8-hours exposure (30000 s), nor		P
	– a near-UV hazard (E_{UVA}) within 1000 s, (about 16 min), nor		P
	– a retinal blue-light hazard (L_B) within 10000 s (about 2,8 h), nor		P
	– a retinal thermal hazard (L_R) within 10 s, nor		P
	– an infrared radiation hazard for the eye (E_{IR}) within 1000 s		P
6.1.2	Risk Group 1 (Low-Risk)		N/A
	In this group are lamps, which exceeds the limits for the except group but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_s) within 10000 s, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 300 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 100 s, nor		N/A
	– a retinal thermal hazard (L_R) within 10 s, nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 100 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 100 s are in Risk Group 1.		N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_s) within 1000 s exposure, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 100 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 0,25 s (aversion response), nor		N/A
	– a retinal thermal hazard (L_R) within 0,25 s (aversion response), nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 10 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 10 s are in Risk Group 2.		N/A
6.1.4	Risk Group 3 (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		N/A
6.2	Pulsed lamps		N/A

	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.		N/A
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.		N/A
	The risk group determination of the lamp being tested shall be made as follows:		N/A
	– a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)		N/A
	– for single pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance does is below the EL shall be classified as belonging to the Exempt Group		N/A
	– for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission		N/A

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Clause	Requirement + Test	Result – Remark	Verdict

Table 4.1		Spectral weighting function for assessing ultraviolet hazards for skin and eye		P
Wavelength ¹ λ , nm	UV hazard function $S_{uv}(\lambda)$	Wavelength λ , nm	UV hazard function $S_{uv}(\lambda)$	
200	0,030	313*	0,006	
205	0,051	315	0,003	
210	0,075	316	0,0024	
215	0,095	317	0,0020	
220	0,120	318	0,0016	
225	0,150	319	0,0012	
230	0,190	320	0,0010	
235	0,240	322	0,00067	
240	0,300	323	0,00054	
245	0,360	325	0,00050	
250	0,430	328	0,00044	
254*	0,500	330	0,00041	
255	0,520	333*	0,00037	
260	0,650	335	0,00034	
265	0,810	340	0,00028	
270	1,000	345	0,00024	
275	0,960	350	0,00020	
280*	0,880	355	0,00016	
285	0,770	360	0,00013	
290	0,640	365*	0,00011	
295	0,540	370	0,000093	
297*	0,460	375	0,000077	
300	0,300	380	0,000064	
303*	0,120	385	0,000053	
305	0,060	390	0,000044	
308	0,026	395	0,000036	
310	0,015	400	0,000030	
¹ Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.				
* Emission lines of a mercury discharge spectrum.				

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Clause	Requirement + Test	Result – Remark	Verdict

Table 4.2	Spectral weighting functions for assessing retinal hazards from broadband optical sources		P
Wavelength nm	Blue-light hazard function B (λ)	Burn hazard function R (λ)	
300	0,01		
305	0,01		
310	0,01		
315	0,01		
320	0,01		
325	0,01		
330	0,01		
335	0,01		
340	0,01		
345	0,01		
350	0,01		
355	0,01		
360	0,01		
365	0,01		
370	0,01		
375	0,01		
380	0,01	0,1	
385	0,013	0,13	
390	0,025	0,25	
395	0,05	0,5	
400	0,10	1,0	
405	0,20	2,0	
410	0,40	4,0	
415	0,80	8,0	
420	0,90	9,0	
425	0,95	9,5	
430	0,98	9,8	
435	1,00	10,0	
440	1,00	10,0	
445	0,97	9,7	
450	0,94	9,4	
455	0,90	9,0	
460	0,80	8,0	
465	0,70	7,0	
470	0,62	6,2	
475	0,55	5,5	
480	0,45	4,5	
485	0,40	4,0	
490	0,22	2,2	
495	0,16	1,6	
500-600	$10^{[(450-\lambda)/50]}$	1,0	
600-700	0,001	1,0	
700-1050		$10^{[(450-\lambda)/50]}$	
1050-1150		0,2	
1150-1200			
1200-1400		0,02	

Table 5.4 Summary of the ELs for the surface of the skin or cornea (irradiance based values)						P
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Limiting aperture rad (deg)	EL in terms of constant irradiance $W \cdot m^{-2}$	
Actinic UV skin & eye	$E_S = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	200 – 400	< 30000	1,4 (80)	30/t	
Eye UV-A	$E_{UVA} = \sum E_\lambda \cdot \Delta\lambda$	315 – 400	≤ 1000 >1000	1,4 (80)	10000/t 10	
Blue-light small source	$E_B = \sum E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	≤ 100 >100	< 0,011	100/t 1,0	
Eye IR	$E_{IR} = \sum E_\lambda \cdot \Delta\lambda$	780 – 3000	≤ 1000 >1000	1,4 (80)	18000/t ^{0,75} 100	
Skin thermal	$E_H = \sum E_\lambda \cdot \Delta\lambda$	380 – 3000	< 10	2π sr	20000/t ^{0,75}	

Table 5.5 Summary of the ELs for the retina (radiance based values)						P
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Field of view radians	EL in terms of constant radiance $W \cdot m^{-2} \cdot sr^{-1}$	
Blue light	$L_B = \sum L_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	0,25 – 10 10-100 100-10000 ≥ 10000	$0,011 \cdot \sqrt{(t/10)}$ 0,011 $0,0011 \cdot \sqrt{t}$ 0,1	$10^6/t$ $10^6/t$ $10^6/t$ 100	
Retinal thermal	$L_R = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 $0,011 \cdot \sqrt{(t/10)}$	$50000/(\alpha \cdot t^{0,25})$ $50000/(\alpha \cdot t^{0,25})$	
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	780 – 1400	> 10	0,011	6000/α	

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Clause	Requirement + Test	Result – Remark	Verdict

Table 6.1 Emission limits for risk groups of continuous wave lamps									N/A
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_s	$W \cdot m^{-2}$	0,001	--	0,003	--	0,03	--
Near UV		E_{UVA}	$W \cdot m^{-2}$	10	--	33	--	100	--
Blue light	$B(\lambda)$	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	--	10000	--	4000000	
Blue light, small source	$B(\lambda)$	E_B	$W \cdot m^{-2}$	0.01*	--	1,0	--	400	--
Retinal thermal	$R(\lambda)$	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	$28000/\alpha$	--	$28000/\alpha$	--	$71000/\alpha$	--
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	$6000/\alpha$	--	$6000/\alpha$	--	$6000/\alpha$	--
IR radiation, eye		E_{IR}	$W \cdot m^{-2}$	100	--	570	--	3200	--
*Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian. **Involves evaluation of non-GLS source									

Annex 1: European group differences and national differences.

ATTACHMENT TO TEST REPORT IEC 62471
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Photobiological safety of lamps and lamps systems

Differences according to.....: EN 62471:2008

Attachment Form No.....: EU_GD_IEC62471A

Attachment Originator IMQ S.p.A.

Master Attachment 2009-07

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	CENELEC COMMON MODIFICATIONS (EN)	P
4	EXPOSURE LIMITS	P
	Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB	—
	Clause 4 replaced by the following:	P
	Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in IEC 62471:2006	P
	See appended Table 6.1	
4.1	General	P
	First paragraph deleted	—

Table 6.1	Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)								P
Risk	Action spectrum	Symbol	Units	Emission Measurement (red light for JT-KF0707QBZGSURW-BB-A1)					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S _{UV} (λ)	E _s	W•m ⁻²	0,001	6.6e-08	0.003	--	--	--
Near UV		E _{UVA}	W•m ⁻²	0.33	9.1e-05	33	--	--	--
Blue light	B(λ)	L _B	W•m ⁻² •sr ⁻¹	100	9.62e-02	10000	--	--	--
Blue light, small source	B(λ)	E _B	W•m ⁻²	0,01*	--	1,0	--	--	--
Retinal thermal	R(λ)	L _R	W•m ⁻² •sr ⁻¹	28000/α	1.1e+01	28000/α	--	--	--
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W•m ⁻² •sr ⁻¹	545000 0,0017≤ α ≤ 0,011	--	--			
				6000/α 0,011≤ α ≤ 0,1	2.0e-01				
IR radiation, eye		E _{IR}	W•m ⁻²	100	2.7e-02	570	--	3200	--

*Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.

**Involves evaluation of non-GLS source

Test under white colour

NOTE The action functions: see Table 4.1 and Table 4.2
 The applicable aperture diameters: see 4.2.1
 The limitations for the angular subtenses: see 4.2.2
 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

[illegible]

Table 6.1	Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)								P
Risk	Action spectrum	Symbol	Units	Emission Measurement (white light for JT-KF0707QBZGSURW-BB-A1)					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S _{UV} (λ)	E _s	W•m ⁻²	0,001	2.6e-07	0.003	--	--	--
Near UV		E _{UVA}	W•m ⁻²	0,33	4.1e-04	33	--	--	--
Blue light	B(λ)	L _B	W•m ⁻² •sr ⁻¹	100	3.04e+00	10000	--	--	--
Blue light, small source	B(λ)	E _B	W•m ⁻²	0,01*	--	1,0	--	--	--
Retinal thermal	R(λ)	L _R	W•m ⁻² •sr ⁻¹	28000/α	4.1e+01	28000/α	--	--	--
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W•m ⁻² •sr ⁻¹	545000 0,0017≤ α ≤ 0,011	--	--			
				6000/α 0,011≤ α ≤ 0,1	2.4e-01				
IR radiation, eye		E _{IR}	W•m ⁻²	100	2.8e-02	570	--	3200	--

*Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.
**Involves evaluation of non-GLS source

Test under blue colour

NOTE The action functions: see Table 4.1 and Table 4.2
 The applicable aperture diameters: see 4.2.1
 The limitations for the angular subtenses: see 4.2.2
 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

[illegible]

Table 6.1	Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)								P
Risk	Action spectrum	Symbol	Units	Emission Measurement (blue light for FM-B2020RGBA-HG)					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S _{UV} (λ)	E _s	W•m ⁻²	0,001	7.0e-07	0.003	--	--	--
Near UV		E _{UVA}	W•m ⁻²	0,33	1.3e-03	33	--	--	--
Blue light	B(λ)	L _B	W•m ⁻² •sr ⁻¹	100	5.39e+00	10000	--	--	--
Blue light, small source	B(λ)	E _B	W•m ⁻²	0,01*	--	1,0	--	--	--
Retinal thermal	R(λ)	L _R	W•m ⁻² •sr ⁻¹	28000/α	6.7e+01	28000/α	--	--	--
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W•m ⁻² •sr ⁻¹	545000 0,0017≤ α ≤ 0,011	--	--			
				6000/α 0,011≤ α ≤ 0,1	2.7e-02				
IR radiation, eye		E _{IR}	W•m ⁻²	100	9.7e-03	570	--	3200	--

*Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.

**Involves evaluation of non-GLS source

Test under red colour

NOTE The action functions: see Table 4.1 and Table 4.2

 The applicable aperture diameters: see 4.2.1

 The limitations for the angular subtenses: see 4.2.2

 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

Table 6.1	Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)								P
Risk	Action spectrum	Symbol	Units	Emission Measurement (white light for FM-B2020RGBA-HG)					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S _{UV} (λ)	E _s	W•m ⁻²	0,001	1.3e-07	0.003	--	--	--
Near UV		E _{UVA}	W•m ⁻²	0,33	2.1e-04	33	--	--	--
Blue light	B(λ)	L _B	W•m ⁻² •sr ⁻¹	100	2.58e+00	10000	--	--	--
Blue light, small source	B(λ)	E _B	W•m ⁻²	0,01*	--	1,0	--	--	--
Retinal thermal	R(λ)	L _R	W•m ⁻² •sr ⁻¹	28000/α	6.9e+01	28000/α	--	--	--
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W•m ⁻² •sr ⁻¹	545000 0,0017≤ α ≤ 0,011	--	--			
				6000/α 0,011≤ α ≤ 0,1	1.6e+00				
IR radiation, eye		E _{IR}	W•m ⁻²	100	4.3e-02	570	--	3200	--

*Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.

**Involves evaluation of non-GLS source

Test under blue colour

NOTE The action functions: see Table 4.1 and Table 4.2

 The applicable aperture diameters: see 4.2.1

 The limitations for the angular subtenses: see 4.2.2

 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

EMF Assessment report

Applicant: SHENZHEN DICOLOR OPTOELECTRONICS CO., LTD

Dicolor Industrial park, No.18 Zhongtai Road, GongMing Town, GuangMing New District, Shenzhen, China.

Product name: Full Color LED Display

Model name: A-261, A-291, A-391

Test report No.: 50115076 001

The equipment is a Low Voltage Full Color LED Display it does incorporate only non-intentional radiators, but does not contain radio transmitters; the typical usage, installation and physical characteristics make the equipment inherently compliant with all applicable EMF exposure levels (EN 62479:2010 clause 4.1 Route A).

Name of SV: Andy Zhu

Date: 10.01.2018



Product: Full Color LED Display

Type Designation: A-261, A-291, A-391



Figure 1. Front panel view



Figure 2. Rear view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391



Figure 3. Side view 1



Figure 4 Side view 2

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391



Figure 5 Internal view

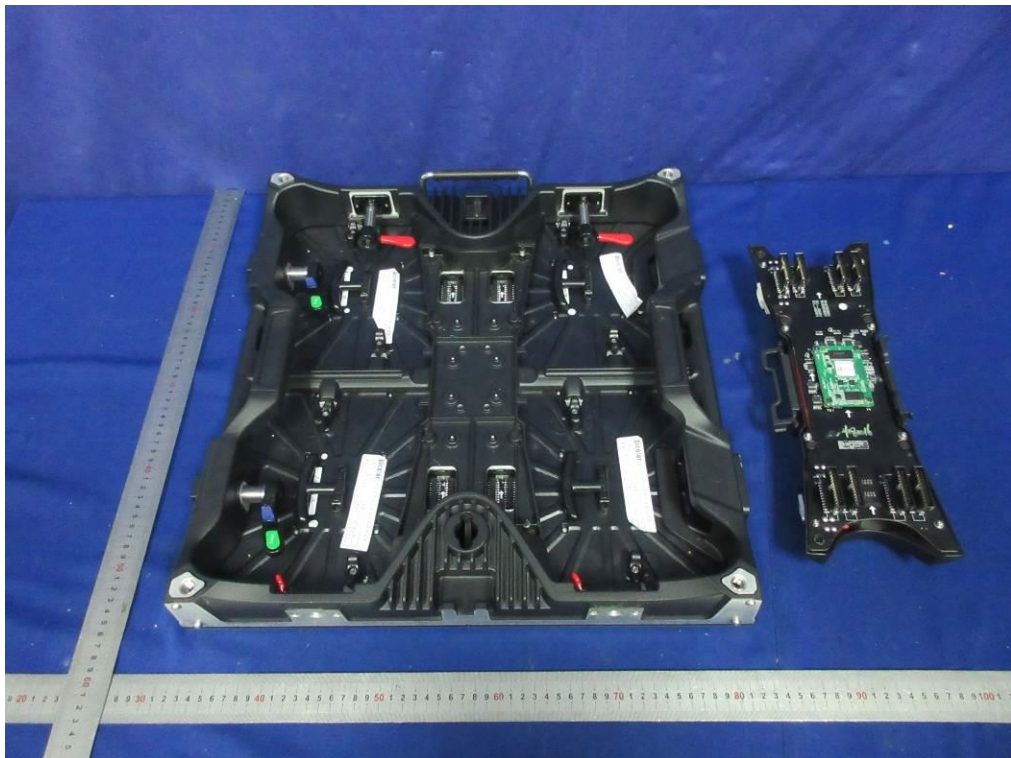


Figure 6 Internal view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391

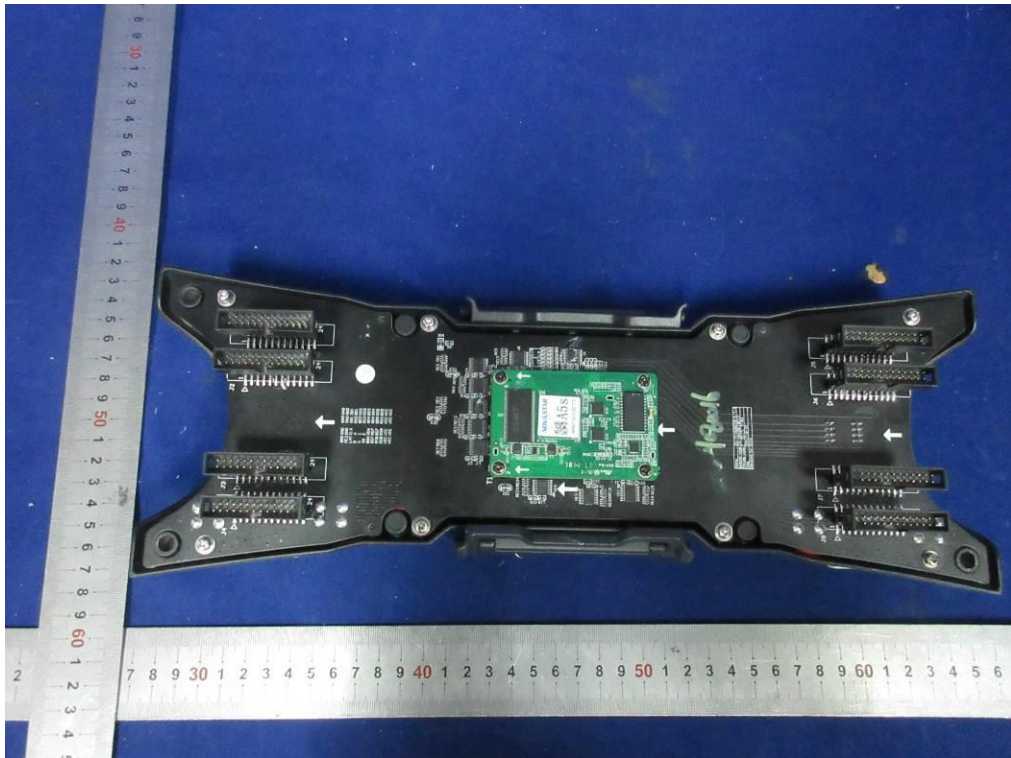


Figure 7 Internal view

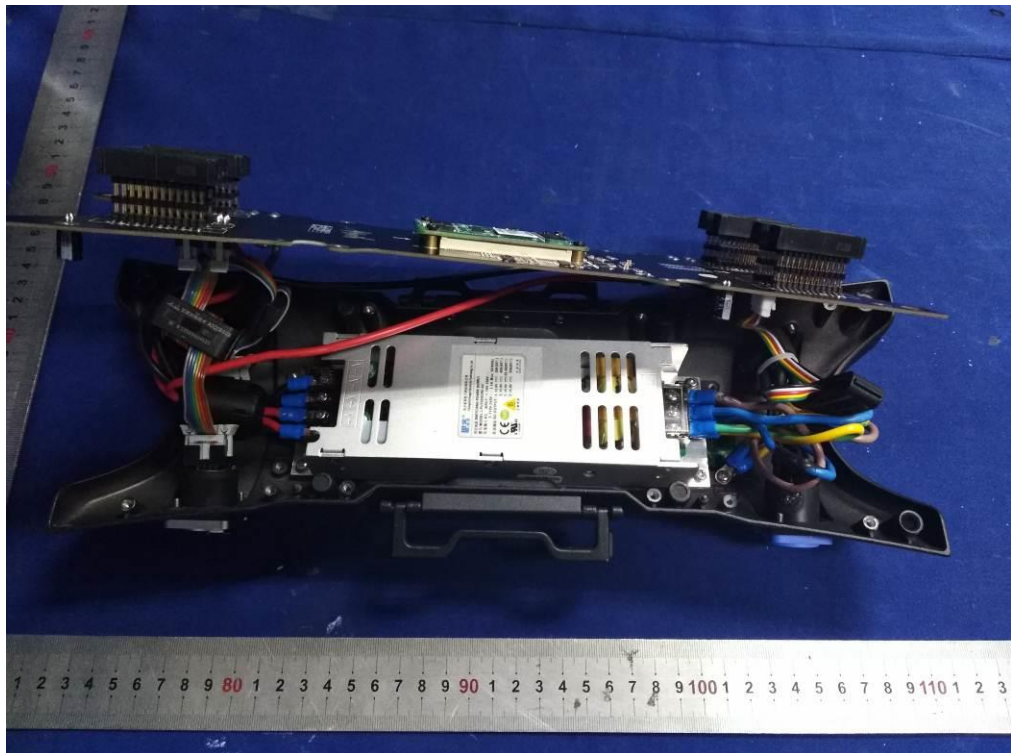


Figure 8 Internal view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391

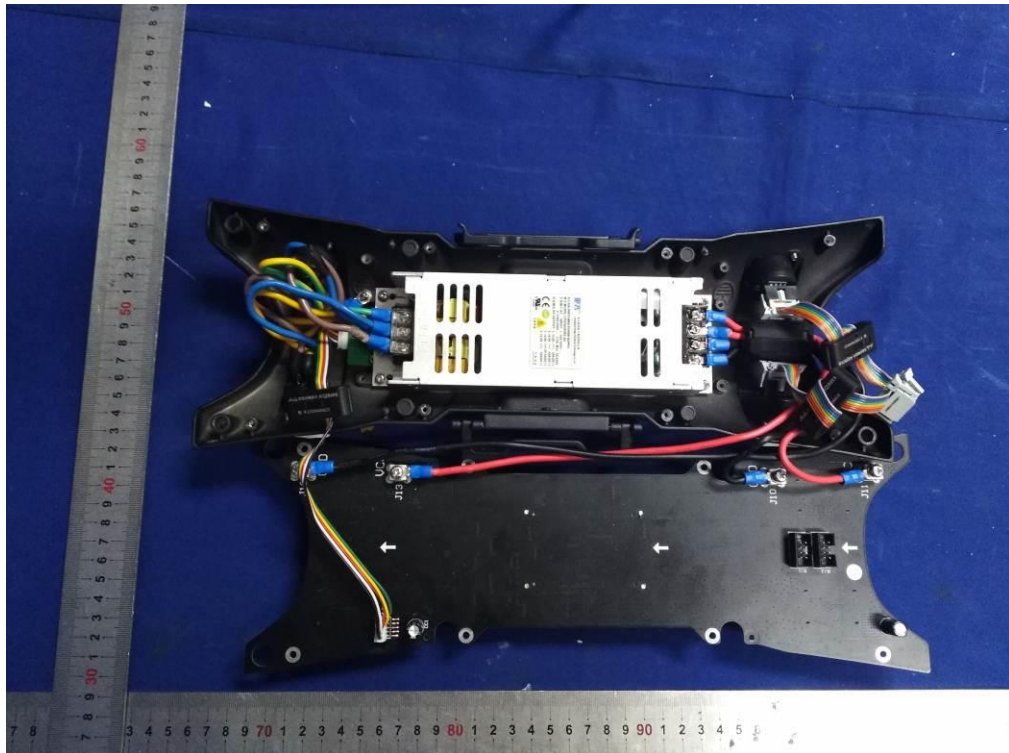


Figure 9 Internal view

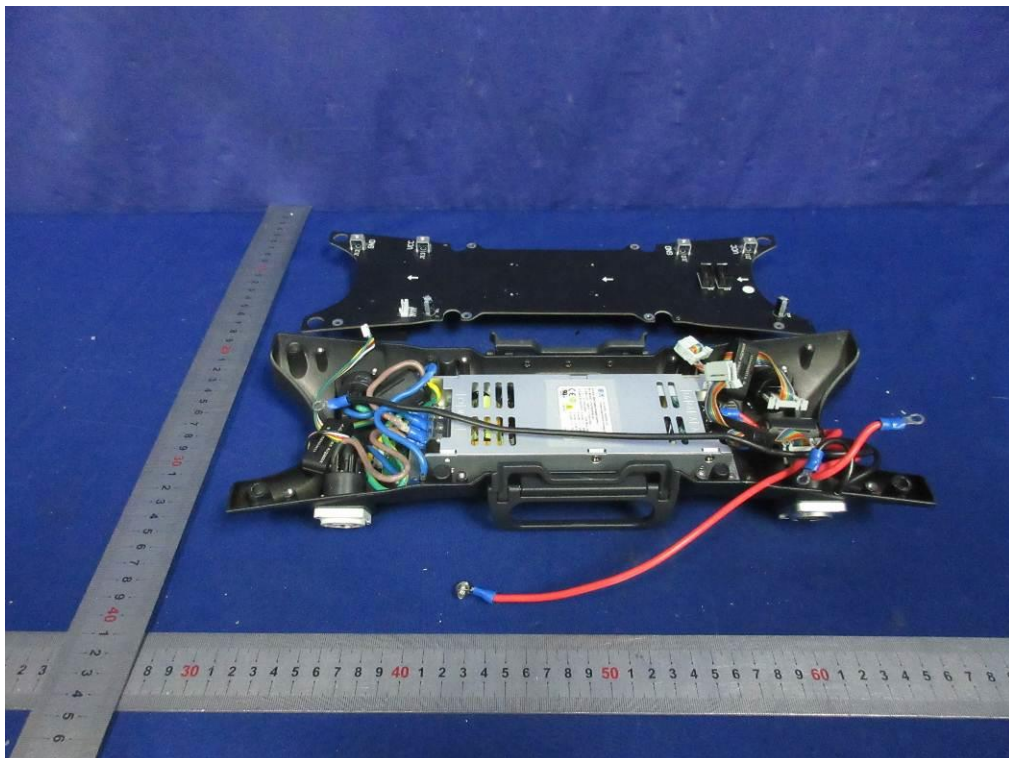


Figure 10 Internal view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391

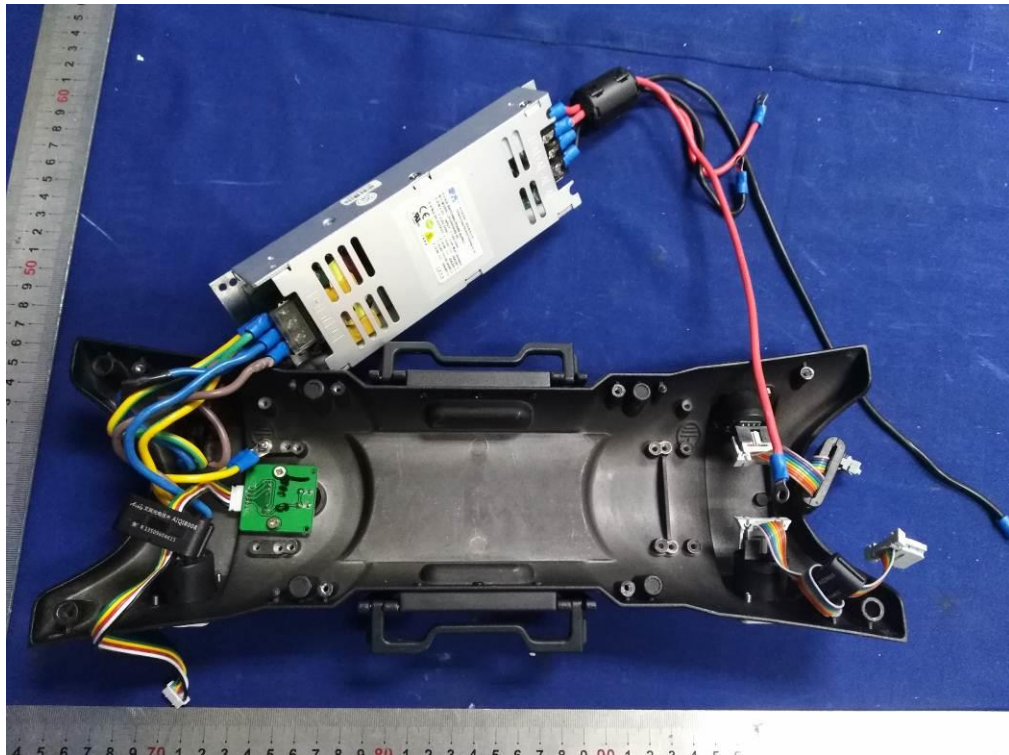


Figure 11 Internal view

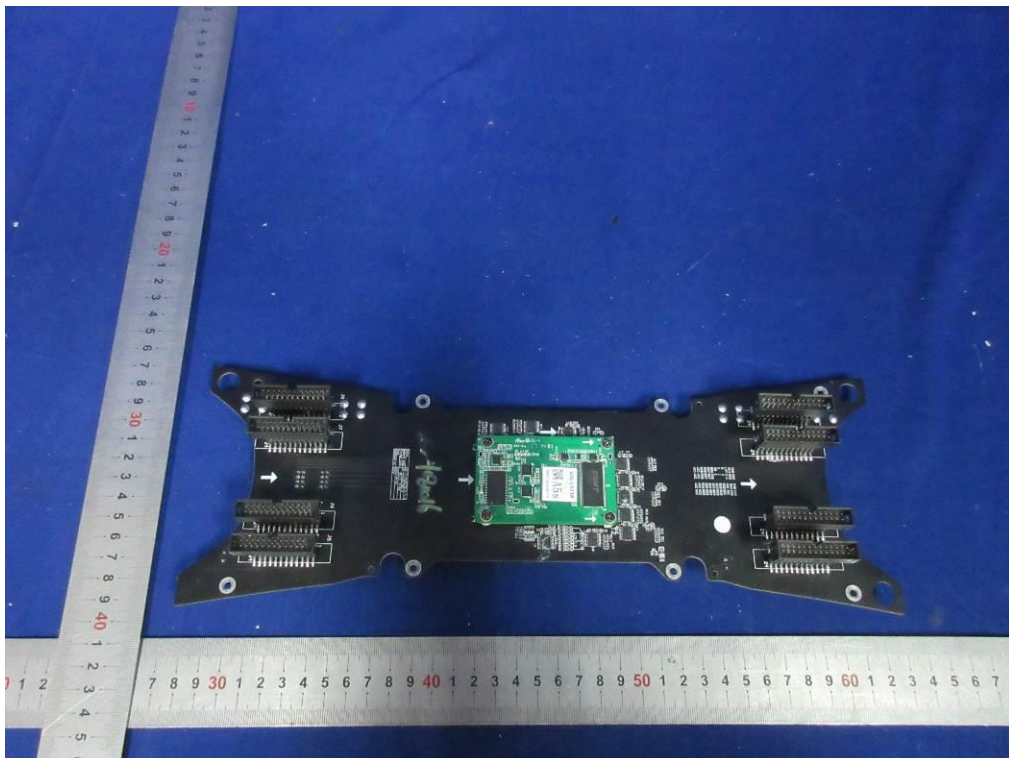


Figure 12. Main board view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391

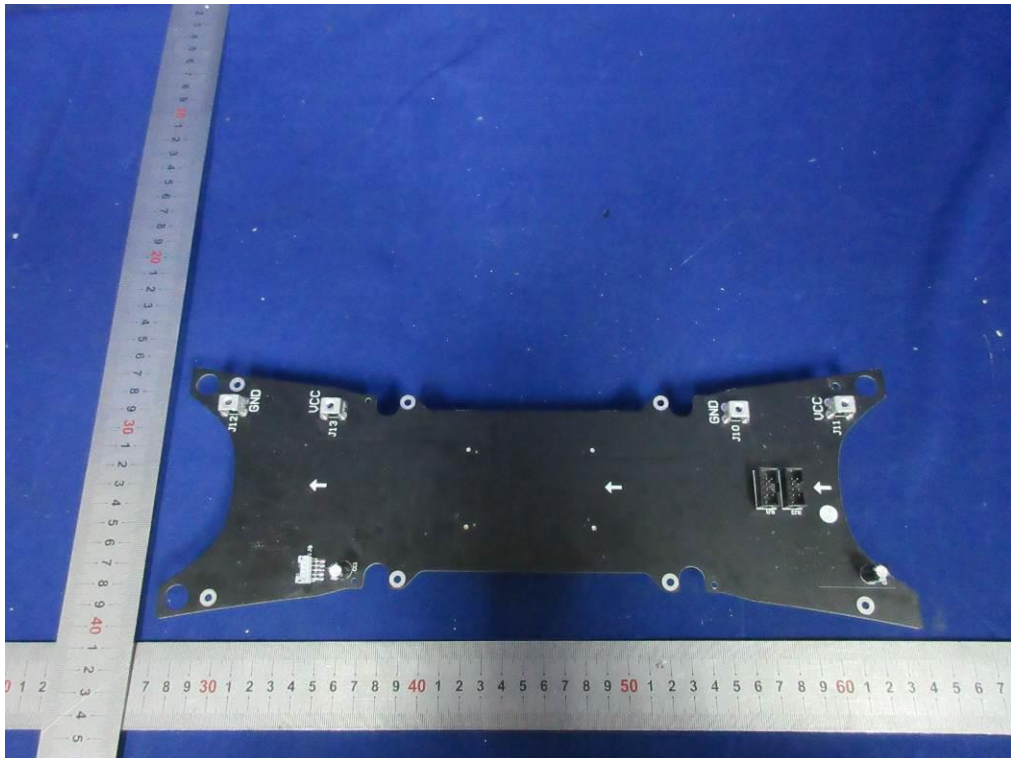


Figure 13. Main board view

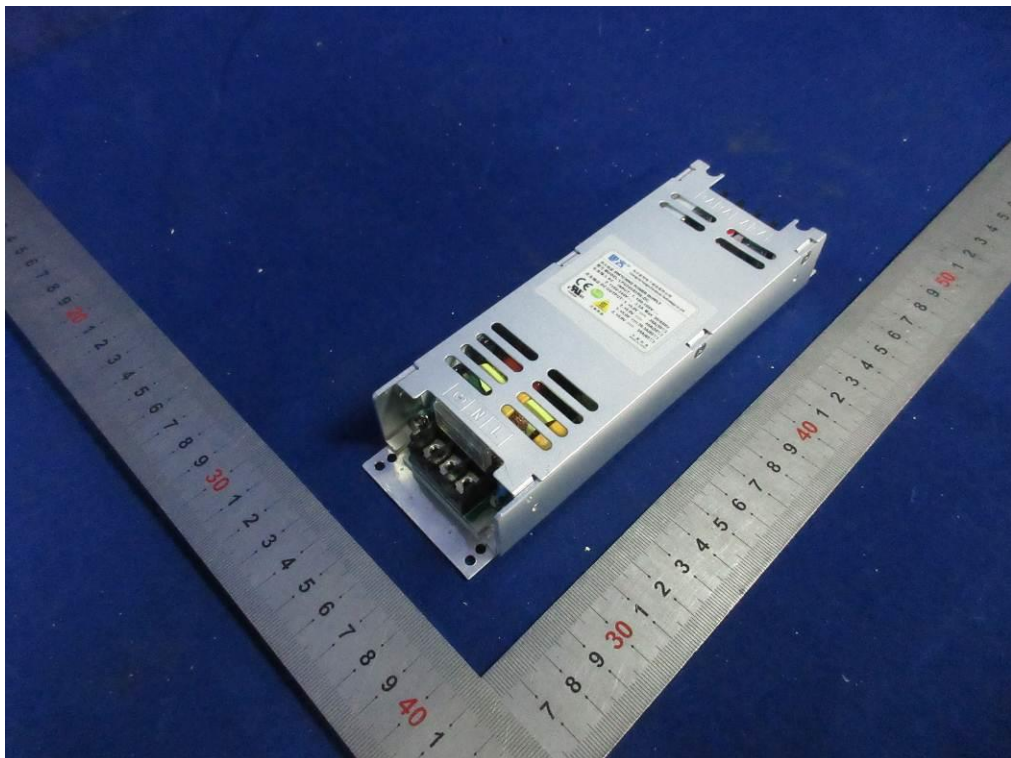


Figure 14. Power supply overall view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391

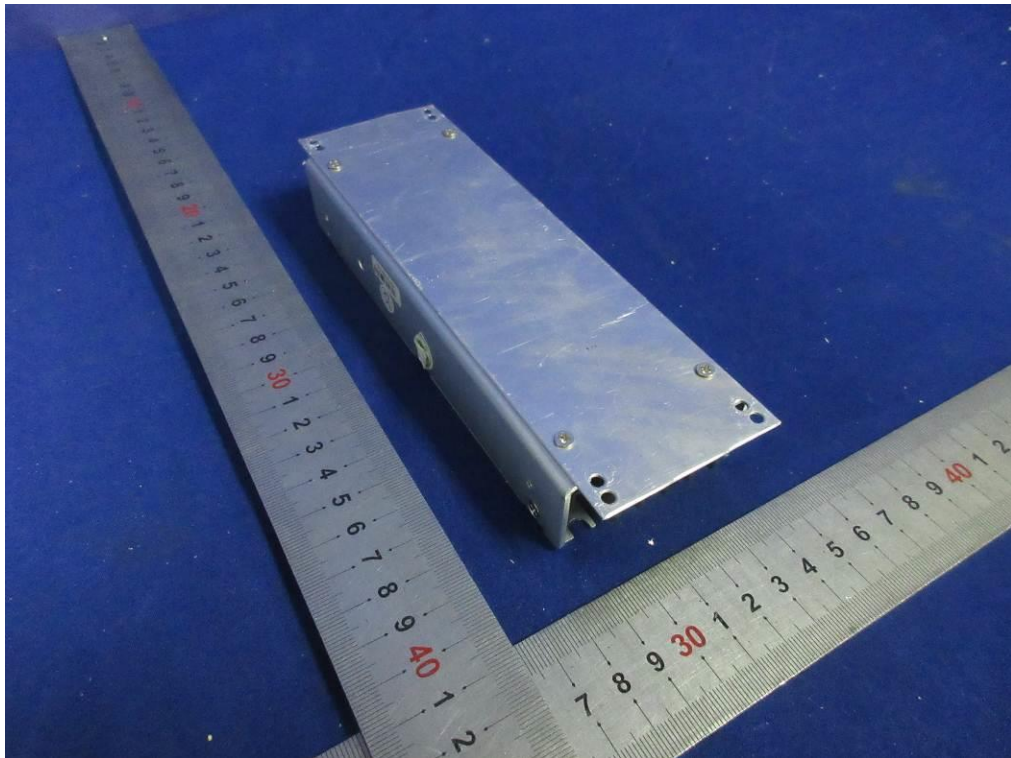


Figure 15. Power supply overall view



Figure 16. AC input connector view

Product: Full Color LED Display

Type Designation: A-261, A-291, A-391

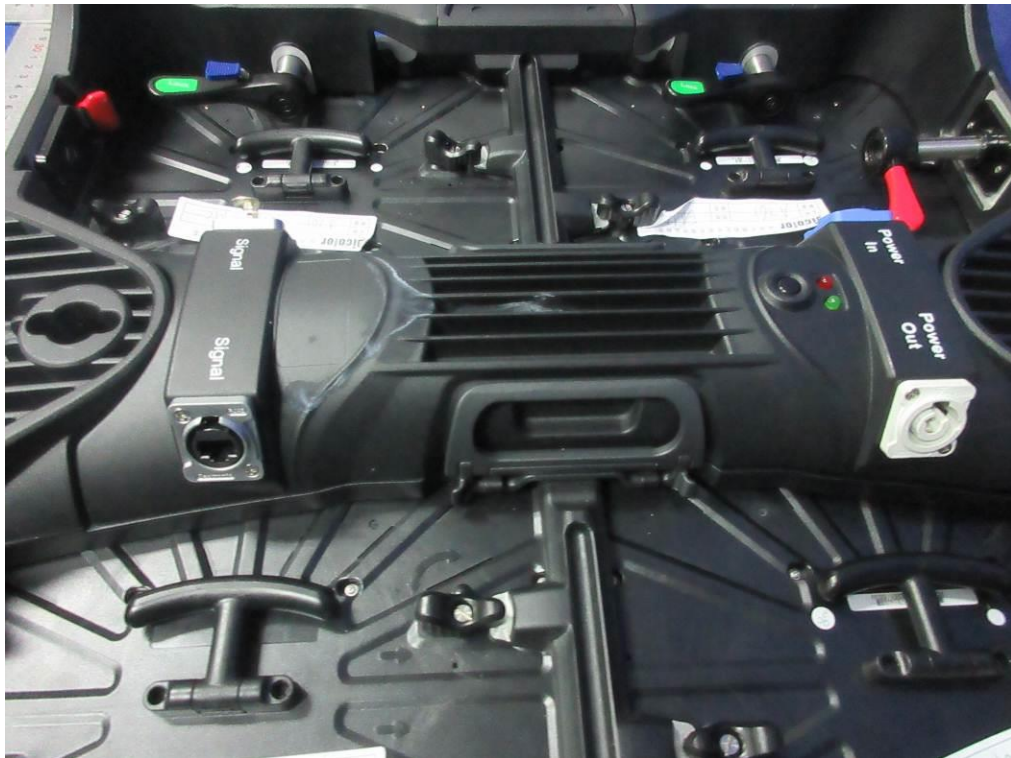


Figure 17. AC output connector view