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Technical Compliance

No.: ACSS1811066

The following product has been tested by us with the listed standards and found in compliance with the council LVD directive 2014/35/EU. It is demonstrative for the compliance with this LVD Directive.

Submitter : Intracom Asia Co.,Ltd.
 4F., No. 77, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221,
 Taiwan

Product : 16-Port Gigabit Ethernet PoE+ Switch with 4 RJ45 Gigabit and 2 SFP Uplink Ports

Brand Name	Model No.
	561419

Test Standards :

IEC 60950-1: 2005(2nd Edition) +
 Am1: 2009 + Am2: 2013 &
 EN 60950-1: 2006 + A11: 2009 + A1:
 2010 + A12: 2011 + A2: 2013

Information technology equipment –
 Safety –
 Part 1: General requirements



信華科技(深圳)有限公司
 Audix Technology (Shenzhen) Co., Ltd.
 Safety 部門報告專用章
 Stamp only for Safety Dept. Report
 Signature: Jerry Liu

Jerry Liu
 Assistant Manager
 Date: November 26, 2018

The technical compliance is based on a single evaluation of one sample of above mentioned product. It does not imply an assessment of the whole production and does not permit the use of the test lab. logo.

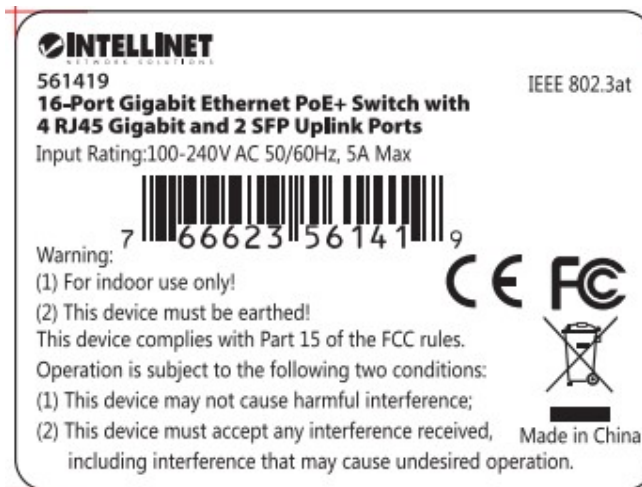


AUDIX TECHNOLOGY (SHENZHEN) CO., LTD

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TEST REPORT IEC/EN 60950-1 Information technology equipment – Safety – Part 1: General requirements	
Report Reference No.....:	ACSS1811066
Tested by (name + signature)	N/A N/A
Reported by (name + signature).....:	Catalina Catalina Qin
Reviewed by (name + signature).....:	Jerry Liu Jerry Liu
Approved by (name + signature)	Jerry Liu Jerry Liu
Date of issue.....:	November 26, 2018
Contents	Report: 65 pages Attachment A to E, 18 pages
Testing Laboratory	Audix Technology (Shenzhen) Co., Ltd.
Address.....:	No. 6, Kefeng Rd., Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China.
Testing location/ address.....:	Same as above
Applicant's name	Intracom Asia Co.,Ltd.
Address.....:	4F., No. 77, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan
Manufacturer's name:	Intracom Asia Co.,Ltd.
Address.....:	4F., No. 77, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan
Test specification:	
Standard	IEC 60950-1: 2005(2 nd Edition) + Am1: 2009 + Am2: 2013 EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013
Test procedure	CE-LVD
Procedure deviation.....:	N/A
Non-standard test method.....:	N/A
Test Report Form No.:	SRENIT-01V1.4
Test item description	16-Port Gigabit Ethernet PoE+ Switch with 4 RJ45 Gigabit and 2 SFP Uplink Ports
Trade Mark/Brand name.....:	
Model/Type reference.....:	561419
Ratings.....:	100-240V~, 50/60Hz, 5A max.

TRF No. SRENAV-01V1.4

Copy of marking plate

(Remark: Above label stuck on the outside of enclosure)

Note(s):

- The marking plate(s) artwork appended to this report may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.)
- The height of CE symbol should be 5.0 mm Min.

Summary of testing:

Following symbols and abbreviations may be used in this test report.

F= Function Insulation

B= Basic Insulation

S= Supplementary Insulation

D/R= Double or Reinforced Insulation

S/C= Short-Circuit

O/C= Open-Circuit

O/L= Over-Load

B/L= Block

IP= Internal protection operated (list component)

CT= Constant temperatures were obtained

CD= Components damaged (list damaged components)

NB= No indication of dielectric breakdown

NC= Cheesecloth remained intact

NT= Tissue paper remained intact

NH= No hazard occurred

Pri.= Primary

Sec.= Secondary

PCB= Printed Circuit Board

PSU= Power Supply Unit

EUT= Equipment Under Test

EPS= External Power Supply

Test item particulars:	
Equipment mobility.....:	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounted
Connection to the mains	<input checked="" type="checkbox"/> pluggable equipment: <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input checked="" type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains
Operation condition	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
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%, -10%
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
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)	Up to 2000m
Mass of equipment (kg)	3.4kg
Maximum operation ambient	50°C
Possible test case verdicts:	
- Test case does not apply to the test object.....:	N (Not Applicable)
- Test object does meet the requirement.....:	P (Pass)
- Test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item.....:	N/A
Date of receipt of test sample.....:	N/A
Status of test sample	N/A
Date(s) of performance of tests	N/A
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Attachment #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report, a point is used as the decimal separator. List of test equipment must be kept on file and available for review.</p>	

General product information:

1. The EUT is a 16-Port Gigabit Ethernet PoE+ Switch with 4 RJ45 Gigabit and 2 SFP Uplink Ports.
2. This amendment report shall be read in conjunction with original test report (ACSS1703016).
3. The updates concerned in this test report are as follows:
 - 1). Revise applicant's company name and address;
 - 2). Revise manufacturer's company name and address;
 - 3). Revise product's name and model;
 - 4). The RJ45 ports 1-20 must be available, 21-24 can be optional.
4. After technical review, no test is necessary. All the test data were fully reproduced from original report (ACSS1703016).

Report modify history

No.	Report No. / issue date	Modification to the appliances:
1	ACSS1703016/ April 6, 2017	Original test report

Additional information:

N/A


Attached enclosure(s):

- Attachment A: 5 pages of Photo-Documentation.
- Attachment B: 6 pages of Heatsink-Drawing.
- Attachment C: 3 pages of Schematic and layout for power board.
- Attachment D: 2 pages of Transformer T1 specification.
- Attachment E: 2 pages of Transformer T2 specification.

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(See appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.	P
1.5.3	Thermal controls	Thermal controller (TH5) meet the standard EN 60730-1.	P
1.5.4	Transformers	Comply with annex C	P
1.5.5	Interconnecting cables	Interconnection cables do not present a hazard.	P
1.5.6	Capacitors bridging insulation	X2 capacitors and Y1 capacitors are used to be according to IEC 60384-14.	P
1.5.7	Resistors bridging insulation	Refer to below:	P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Bleeder resistors are bridging function insulation.	P
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N
1.5.8	Components in equipment for IT power systems		N
1.5.9	Surge suppressors	Approved surge suppressors.	P
1.5.9.1	General	Comply with annex Q	P
1.5.9.2	Protection of VDRs	A fuse is connected in series with VDR.	P
1.5.9.3	Bridging of functional insulation by a VDR	Varistor(ZR1) located in line to neutral after fuse(F1)	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.4	Bridging of basic insulation by a VDR		N
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N

1.6	Power interface		P
1.6.1	AC power distribution systems	TN power systems.	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
1.6.4	Neutral conductor		P

1.7	Marking and instructions		P
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V)	100-240V	P
	Symbol for nature of supply, for d.c. only		N
	Rated frequency or rated frequency range (Hz) ...	50/60Hz	P
	Rated current (mA or A)	5A max	P
	Manufacturer's name or trade-mark or identification mark		P
	Model identification or type reference	561419	P
	Symbol for Class II equipment only	Class I equipment.	N
	Other markings and symbols	Other symbols do not affect safety.	P
1.7.2	Safety instructions and marking	Refer to below:	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Appliance inlet provided.	N
1.7.2.3	Overcurrent protective device	The unit is not pluggable equipment type B or permanently connected equipment.	N
1.7.2.4	IT power distribution systems		N
1.7.2.5	Operator access with a tool	All areas containing hazard(s) are inaccessible to the operator.	N
1.7.2.6	Ozone	The equipment not containing Ozone	N
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N
1.7.4	Supply voltage adjustment	No voltage selector.	N
	Methods and means of adjustment; reference to installation instructions		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5	Power outlets on the equipment	No standard power outlet.	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	"T8AL/250V" near F1	P
1.7.7	Wiring terminals	Refer to below	P
1.7.7.1	Protective earthing and bonding terminals	Appliance inlet was used	P
1.7.7.2	Terminals for a.c. mains supply conductors	The equipment power connection is detachable power supply cord.	N
1.7.7.3	Terminals for d.c. mains supply conductors		N
1.7.8	Controls and indicators	See below:	P
1.7.8.1	Identification, location and marking	The function of indicators affecting safety is obvious without knowledge of language.	P
1.7.8.2	Colours	Colors are used for functional indications, not involved safety.	P
1.7.8.3	Symbols according to IEC 60417		N
1.7.8.4	Markings using figures	No controls use figures.	N
1.7.9	Isolation of multiple power sources	Only one connection supplying hazardous voltages and energy levels to the equipment.	N
1.7.10	Thermostats and other regulating devices	No thermostats or other regulating devices.	N
1.7.11	Durability	The marking withstands required tests.	P
1.7.12	Removable parts	No removable parts.	N
1.7.13	Replaceable batteries	No battery in the equipment.	N
	Language(s)		—
1.7.14	Equipment for restricted access locations	Equipment not intended for installation in RAL.	N

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	No operator access to energized parts.	P
2.1.1.1	Access to energized parts		P
	Test by inspection	Operator access areas are protected from electric shock and energy hazards	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with test finger (Figure 2A)	Not touched to hazardous parts	P
	Test with test pin (Figure 2B)	Not touched to hazardous parts	P
	Test with test probe (Figure 2C)	No TNV circuits in the equipment.	N
2.1.1.2	Battery compartments	No battery compartments.	N
2.1.1.3	Access to ELV wiring	No internal wiring at ELV accessible to the operator.	N
	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.	P
2.1.1.5	Energy hazards	(see appended table 2.1.1.5)	P
2.1.1.6	Manual controls	No shafts of knobs etc.	N
2.1.1.7	Discharge of capacitors in equipment		P
	Measured voltage (V); time-constant (s)	(see appended table 2.1.1.7)	—
2.1.1.8	Energy hazards – d.c. mains supply		N
	a) Capacitor connected to the d.c. mains supply		N
	b) Internal battery connected to the d.c. mains supply		N
2.1.1.9	Audio amplifiers		N
2.1.2	Protection in service access areas	No unexpected hazards inside the unit and no unintentional contact to hazardous areas likely during service operations as considering the equipment disconnected from mains when servicing.	P
2.1.3	Protection in restricted access locations	Equipment not intended for installation in RAL.	N

2.2	SELV circuits		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V)	(see appended table 2.2.2)	P
2.2.3	Voltages under fault conditions (V)	(see appended table 2.2.3)	P
2.2.4	Connection of SELV circuits to other circuits	Connected to other SELV circuits.	P

2.3	TNV circuits <i>No TNV circuit.</i>		N
2.3.1	Limits		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Type of TNV circuits		—
2.3.2	Separation from other circuits and from accessible parts		N
2.3.2.1	General requirements		N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing		N
2.3.2.4	Protection by other constructions		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed		—
2.3.5	Test for operating voltages generated externally		N
2.4	Limited current circuits		P
2.4.1	General requirements		P
2.4.2	Limit values	(see appended table 2.4)	P
	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	Connected to SELV	P
2.5	Limited power sources		P
	a) Inherently limited output	(see appended table 2.5)	P
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition	(see appended table 2.5)	P
	d) Overcurrent protective device limited output		N
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) ..		—
2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.2	Functional earthing	Secondary functional earthing is separated to primary by reinforced or double insulation.	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 supply cord was not provided	N
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors	Protective bonding conductor which connects to inlet ground pin. See cl. 2.6.3.4 for ground continue test.	P
	Rated current (A), cross-sectional area (mm ²), AWG		—
	Protective current rating (A), cross-sectional area (mm ²), AWG.....		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min).....	(See appended table 2.6.3.4)	P
2.6.3.5	Colour of insulation.....		N
2.6.4	Terminals	See below	P
2.6.4.1	General		P
2.6.4.2	Protective earthing and bonding terminals	The earthing terminal in the appliance inlet is regarded as the main protective earthing terminal. The test of sub-clause 2.6.3.4 was performed for protective bonding conductor and their terminals.	P
	Rated current (A), type, nominal thread diameter (mm).....	The test of cl. 2.6.3.4 is complied.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	The equipment is provided with an appliance inlet.	P
2.6.5	Integrity of protective earthing	See below	P
2.6.5.1	Interconnection of equipment	No interconnection of equipment.	N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	There are no switches or overcurrent protective devices in the protective earthing / bonding conductor.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect protective earth without disconnecting mains; an appliance coupler will be used as disconnect device.	P
2.6.5.4	Parts that can be removed by an operator	Appliance couplers provided for the protective earthing connection is made before and broken after the hazardous voltage. No other operator removable parts.	P
2.6.5.5	Parts removed during servicing	Protective earthed parts cannot be removed in a way which impair safety.	P
2.6.5.6	Corrosion resistance	No risk of corrosion	P
2.6.5.7	Screws for protective bonding	Adequate connection of protective bonding.	P
2.6.5.8	Reliance on telecommunication network or cable distribution system	Neither TNV circuits nor cable distribution system in the equipment.	N

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Pluggable equipment type A primary fuse is used for protective device.	P
	Instructions when protection relies on building installation		N
2.7.2	Faults not simulated in 5.3.7	Considered	P
2.7.3	Short-circuit backup protection	The building installation is considered as providing short-circuit backup protection.	P
2.7.4	Number and location of protective devices	Number: 1 Location: line	P
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel		—

2.8	Safety interlocks <i>No safety interlocks provided.</i>		N
2.8.1	General principles		N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Moving parts		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.8.6	Overriding		N
2.8.7	Switches, relays and their related circuits		N
2.8.7.1	Separation distances for contact gaps and their related circuits (mm)		—
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test		N
2.8.8	Mechanical actuators		N

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Neither natural rubber, materials containing asbestos or hygroscopic materials are used as insulation. No driving belts or couplings used.	P
2.9.2	Humidity conditioning	120Hours	P
	Relative humidity (%), temperature (°C)	96% RH, 40 degree C.	—
2.9.3	Grade of insulation	Refer to cl.2.10 and appended table 5.2	P
2.9.4	Separation from hazardous voltages	For metal enclosure, basic insulation used; For output terminals, double or reinforced insulation used.	P
	Method(s) used	Method 1 and method 2	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General		P
2.10.1.1	Frequency	Considered	—
2.10.1.2	Pollution degrees	2	—
2.10.1.3	Reduced values for functional insulation	The function insulation complied with clause 5.3.4C	P
2.10.1.4	Intervening unconnected conductive parts		P
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements		N
2.10.1.7	Insulation in circuits generating starting pulses		N
2.10.2	Determination of working voltage	See appended table 2.10.2	P
2.10.2.1	General		P
2.10.2.2	RMS working voltage	See appended table 2.10.2	P
2.10.2.3	Peak working voltage	See appended table 2.10.2	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.3	Clearances		P
2.10.3.1	General	Refer to below	P
2.10.3.2	Mains transient voltages	Considered	P
	a) AC mains supply	Over voltage category II for primary circuit and transient voltage 2500Vpeak.	—
	b) Earthed d.c. mains supplies		—
	c) Unearthed d.c. mains supplies		—
	d) Battery operation		—
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	Function insulation, meet 5.3.4 method c).	P
2.10.3.5	Clearances in circuits having starting pulses	The circuit will not generate starting pulse.	N
2.10.3.6	Transients from a.c. mains supply		—
2.10.3.7	Transients from d.c. mains supply		—
2.10.3.8	Transients from telecommunication networks and cable distribution systems		—
2.10.3.9	Measurement of transient voltage levels		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		—
	For a d.c. mains supply		—
	b) Transients from a telecommunication network :		N
2.10.4	Creepage distances		P
2.10.4.1	General	Refer to below:	P
2.10.4.2	Material group and comparative tracking index	Material group IIIb is assumed.	P
	CTI tests		—
2.10.4.3	Minimum creepage distances	See appended table 2.10.3 and 2.10.4	P
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	See appended table 2.10.5	P
2.10.5.3	Insulating compound as solid insulation	See appended table 1.5.1	P
2.10.5.4	Semiconductor devices	See appended table 1.5.1	P
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material – General		P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.7	Separable thin sheet material	Insulation tape used wrapped on the transformer.	P
	Number of layers (pcs)	2 layers as reinforced insulation.	—
2.10.5.8	Non-separable thin sheet material		N
2.10.5.9	Thin sheet material – standard test procedure		N
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test	See appended table 5.2	—
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components	Primary winding on the transformer T2 in power board was used triple insulated wire.	P
	Working voltage		—
	a) Basic insulation not under stress		—
	b) Basic, supplementary, reinforced insulation	Wire complies to Annex U, three layers as reinforced insulation.	—
	c) Compliance with Annex U		—
	Two wires in contact inside wound component; angle between 45° and 90°	Protection against mechanical stress is provided by tube and insulation tape.	—
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		—
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage		—
	- Basic insulation not under stress		—
	- Supplementary, reinforced insulation		—
2.10.6	Construction of printed boards	Refer to 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		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board	Refer to below	P
	Distance through insulation	1.6mm	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of insulation layers (pcs)..... :	1	—
2.10.7	Component external terminations	(See appended table 2.10.3 and 2.10.4)	P
2.10.8	Tests on coated printed boards and coated components		N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling	Optical isolators approved See appended table 1.5.1	P
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11	Tests for semiconductor devices and cemented joints	Optical isolators approved See appended table 1.5.1	P
2.10.12	Enclosed and sealed parts		N

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring.	P
3.1.2	Protection against mechanical damage	Wireways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	P
3.1.3	Securing of internal wiring	Wireways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	P
3.1.4	Insulation of conductors	Insulation on terminal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5	Beads and ceramic insulators	Not provided.	N
3.1.6	Screws for electrical contact pressure	At least two complete threads into the metal plate.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.7	Insulating materials in electrical connections	All connections are metal to metal, or where contact pressure is transmitted through PCB material for earthing purposes a combination of screw.	P
3.1.8	Self-tapping and spaced thread screws	Not use self-tapping and spaced thread screws	N
3.1.9	Termination of conductors	Terminations cannot become displaced so that clearances and creepage distances can be reduced.	P
	10 N pull test	Considered	P
3.1.10	Sleeving on wiring	Sleeving could not slip	P

3.2	Connection to a mains supply		P
3.2.1	Means of connection	Appliance inlet	P
3.2.1.1	Connection to an a.c. mains supply		P
3.2.1.2	Connection to a d.c. mains supply	The equipment is not for connection to a d.c. mains supply.	N
3.2.2	Multiple supply connections	Single phase supply.	N
3.2.3	Permanently connected equipment	Not permanently connected equipment.	N
	Number of conductors, diameter of cable and conduits (mm)		—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320-1 and is properly placed to avoid hazards after insertion of the appliance coupler.	P
3.2.5	Power supply cords	No power cord provided.	N
3.2.5.1	AC power supply cords		N
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC power supply cords	Not connected to DC supply.	N
3.2.6	Cord anchorages and strain relief	Equipment provided with an appliance inlet.	N
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage	No sharp points of cutting edges on the equipment surfaces.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.8	Cord guards		N
	Diameter or minor dimension D (mm); test mass (g):		—
	Radius of curvature of cord (mm).....:		—
3.2.9	Supply wiring space		N

3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals	No wiring terminals.	N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), cord/cable type, cross-sectional area (mm ²).....:		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type, nominal thread diameter (mm)		—
3.3.6	Wiring terminal design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N

3.4	Disconnection from the mains supply		P
3.4.1	General requirement		P
3.4.2	Disconnect devices	Appliance coupler	P
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords	No such switches used.	N
3.4.6	Number of poles - single-phase and d.c. equipment	Disconnect device disconnects all poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single phase equipment.	N
3.4.8	Switches as disconnect devices	No such switches used.	N
3.4.9	Plugs as disconnect devices	The appliance coupler will be regarded as disconnect device, no warning is required.	N
3.4.10	Interconnected equipment	No interconnection of hazardous voltages or energy levels.	N
3.4.11	Multiple power sources	One power source only.	N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.5	Interconnection of equipment		P
3.5.1	General requirements	Considered.	P
3.5.2	Types of interconnection circuits	SELV circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N
3.5.4	Data ports for additional equipment	(see appended table 2.5)	P

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N
	Angle of 10°	≤7kg	N
	Test force (N)	The unit is not floor-standing.	—

4.2	Mechanical strength		P
4.2.1	General		P
4.2.2	Steady force test, 10 N	No hazard as a result of the 10N test.	P
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N	No hazard. The test is performed at top, bottom and sides of metal enclosure.	P
4.2.5	Impact test	Carried out to top side, lateral-sides and bottom side of Enclosure.	P
	Fall test	No hazard as result of the impact test.	P
	Swing test		N
4.2.6	Drop test; height (mm)		N
4.2.7	Stress relief test	Metal enclosure.	N
4.2.8	Cathode ray tubes	No CRT provided.	N
	Picture tube separately certified		N
4.2.9	High pressure lamps	No high pressure lamp provided.	N
4.2.10	Wall or ceiling mounted equipment; force (N)		N
4.2.11	Rotating solid media		N
	Test to cover on the door.....		—

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.2	Handles and manual controls; force (N)	No knobs, grips, handles, lever etc.	N
4.3.3	Adjustable controls	No hazardous adjustable controls.	N
4.3.4	Securing of parts	All hazardous parts are fixed to retain position in event of termination failure.	P
4.3.5	Connection by plugs and sockets	SELV connector does not comply with IEC 60320 or IEC 60083.	P
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N
	Torque		—
	Compliance with the relevant mains plug standard		N
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N
4.3.8	Batteries		N
	- Overcharging of a rechargeable battery		N
	- Unintentional charging of a non-rechargeable battery		N
	- Reverse charging of a rechargeable battery		N
	- Excessive discharging rate for any battery		N
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N
4.3.10	Dust, powders, liquids and gases	The equipment does not contain flammable liquids or gases.	N
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N
4.3.12	Flammable liquids	The equipment does not contain flammable liquid.	N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation	See below	P
4.3.13.1	General		P
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce significant UV radiation.	N
	Part, property, retention after test, flammability classification		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation	The equipment does not produce significant UV radiation.	N
4.3.13.5	Lasers (including laser diodes) and LEDs		P
4.3.13.5.1	Lasers (including laser laser diodes)		N
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	Diffusive LED only, the energy of the indicator LED is far below the limit for class I LED products.	P
4.3.13.6	Other types	The equipment does not generate other types of radiation.	N

4.4	Protection against hazardous moving parts		P
4.4.1	General	Approved DC fan.	P
4.4.2	Protection in operator access areas	No possible to access the DC fan blades through the openings on right cover.	P
4.4.3	Protection in restricted access locations	No such locations.	N
4.4.4	Protection in service access areas		N
4.4.5	Protection against moving fan blades	See below	P
4.4.5.1	General	m=0.008kg, r=20mm, N=5500r/min	P
	Not considered to cause pain or injury. a).....	Complied. (See appended table 4.4.5)	—
	Is considered to cause pain, not injury. b)		—
	Considered to cause injury. c)		—
4.4.5.2	Protection for users		N
	Use of symbol or warning		—
4.4.5.3	Protection for service persons		N
	Use of symbol or warning		—
4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests	(See appended table 4.5.2)	P
	Normal load condition per Annex L		—
4.5.3	Temperature limits for materials	Not exceed the values.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.5.4	Touch temperature limits	Not exceed the values.	P
4.5.5	Resistance to abnormal heat	Complying. (See appended table 1.5.1)	P

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

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	In accordance with method 1.	P
	Method 1, selection and application of components wiring and materials	Materials with the required flammability classes are used.	P
	Method 2, application of all of simulated fault condition tests	Method 1 used.	N
4.7.2	Conditions for a fire enclosure	Refer to below:	P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts.	P
4.7.2.2	Parts not requiring a fire enclosure	The fire enclosure is required to cover all parts.	N
4.7.3	Materials	Refer to below:	P
4.7.3.1	General	Components and material have adequate flammability classification. (See appended table 1.5.1)	P
4.7.3.2	Materials for fire enclosures	Metallic	P
4.7.3.3	Materials for components and other parts outside fire enclosures	Fire enclosures cover all parts	N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components and other parts inside fire enclosure are rated min. V-2.	P
4.7.3.5	Materials for air filter assemblies	No air filters in the equipment.	N
4.7.3.6	Materials used in high-voltage components	No high-voltage components.	N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	Test conducted in accordance with cl.5.1.2 to cl.5.1.7	P
5.1.2	Configuration of equipment under test (EUT)	No interconnected equipment or multiple power sources	N
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
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit	Figure 5A used	P
5.1.4	Application of measuring instrument	Measuring circuit in annex D.1 used	P
5.1.5	Test procedure		P
5.1.6	Test measurements	See below	P
	Supply voltage (V)	264Vac, 60Hz	—
	Measured touch current (mA)	See appended table 5.1.6	—
	Max. allowed touch current (mA)	Unearthed accessible parts: 0.25mA; Earthed accessible parts: 3.5mA	—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA) ..		—
5.1.7	Equipment with touch current exceeding 3,5 mA	The touch current does not exceed 3.5mA	N
5.1.7.1	General		N
5.1.7.2	Simultaneous multiple connections to the supply		N
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	Not connected to a telecommunication network or cable distribution systems	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks		N
	a) EUT with earthed telecommunication ports		N
	b) EUT whose telecommunication ports have no reference to protective earth		N

5.2	Electric strength		P
5.2.1	General	See appended table 5.2	P
5.2.2	Test procedure		P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	See appended table 5.3	P
5.3.2	Motors	See appended annex B	P
5.3.3	Transformers	See appended annex C	P
5.3.4	Functional insulation.....	Complies with method c).	P
5.3.5	Electromechanical components	No electromechanical components in secondary circuits.	N
5.3.6	Audio amplifiers in ITE	The equipment does not contain audio amplifies.	N
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	No thermostats, temperature limiters or thermal cut-outs	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	Refer to below:	P
5.3.9.1	During the tests	No fire propagated beyond the equipment. No molten metal was emitted. No any hazard.	P
5.3.9.2	After the tests	Not reduction of clearance and creepage distances. Electric Strength tests performed after abnormal and fault tests.	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS The equipment is not connected to a TELECOMMUNICATION NETWORKS		N
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements		N
	Supply voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions		N

6.2	Protection of equipment users from overvoltages on telecommunication networks		N
6.2.1	Separation requirements		N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N

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

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS The equipment is not connected to a CABLE DISTRIBUTION SYSTEMS.		N
7.1	General		N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N
A.1.1	Samples		—
	Wall thickness (mm).....		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
A.1.2	Conditioning of samples; temperature (°C)		N
A.1.3	Mounting of samples		N
A.1.4	Test flame (see IEC 60695-11-3)		N
	Flame A, B, C or D		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material		—
	Wall thickness (mm).....		—
A.2.2	Conditioning of samples; temperature (°C)		N
A.2.3	Mounting of samples		N
A.2.4	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.3	Hot flaming oil test (see 4.6.2)		N
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N
B.1	General requirements		N
	Position		—
	Manufacturer		—
	Type		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated values		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		N
B.6.1	General		N
B.6.2	Test procedure		N
B.6.3	Alternative test procedure		N
B.6.4	Electric strength test; test voltage (V)		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	General		N
B.7.2	Test procedure		N
B.7.3	Alternative test procedure		N
B.7.4	Electric strength test; test voltage (V)		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V)		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)	P
	Position	See appended table 1.5.1
	Manufacturer	See appended table 1.5.1
	Type	See appended table 1.5.1
	Rated values	See appended table 1.5.1
	Method of protection	
C.1	Overload test	See appended table 5.3
C.2	Insulation	See appended table 5.2
	Protection from displacement of windings	Fixed by insulation tape and tube.

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)	P
D.1	Measuring instrument	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
D.2	Alternative measuring instrument		N

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Clearances		N
G.1.1	General		N
G.1.2	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.2.1	AC mains supply		N
G.2.2	Earthed d.c. mains supplies		N
G.2.3	Unearthed d.c. mains supplies		N
G.2.4	Battery operation		N
G.3	Determination of telecommunication network transient voltage (V)		N
G.4	Determination of required withstand voltage (V)		N
G.4.1	Mains transients and internal repetitive peaks		N
G.4.2	Transients from telecommunication networks		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient voltages (V)		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network		N
G.6	Determination of minimum clearances		N

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

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N
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IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
K.1	Making and breaking capacity		N
K.2	Thermostat reliability; operating voltage (V)		—
K.3	Thermostat endurance test; operating voltage (V)		—
K.4	Temperature limiter endurance; operating voltage (V)		—
K.5	Thermal cut-out reliability		N
K.6	Stability of operation		N

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

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)	N
M.1	Introduction	N
M.2	Method A	N
M.3	Method B	N
M.3.1	Ringling signal	N
M.3.1.1	Frequency (Hz)	—
M.3.1.2	Voltage (V)	—
M.3.1.3	Cadence; time (s), voltage (V)	—
M.3.1.4	Single fault current (mA)	—
M.3.2	Tripping device and monitoring voltage	N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage	N
M.3.2.2	Tripping device	N
M.3.2.3	Monitoring voltage (V)	—

N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)	N
N.1	ITU-T impulse test generators	N
N.2	IEC 60065 impulse test generator	N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
P	ANNEX P, NORMATIVE REFERENCES		—

Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		P
	a) Preferred climatic categories		—
	b) Maximum continuous voltage		—
	c) Pulse current		—

R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N
R.2	Reduced clearances (see 2.10.3)		N

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
	Not protected against ingress of water.		—

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
	Triple insulation wire was used. (See appended table 1.5.1)		—

V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction		P
V.2	TN power distribution systems	Single-phase. TN power system considered and used for testing	P
V.3	TT power distribution systems		N
V.4	IT power distribution systems		N

W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N
W.1	Touch current from electronic circuits		N
W.1.1	Floating circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	Isolation		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N

X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		P
X.1	Determination of maximum input current	See annex C.1	P
X.2	Overload test procedure	Electronic protection mode is used.	P

Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus		N
Y.2	Mounting of test samples		N
Y.3	Carbon-arc light-exposure apparatus		N
Y.4	Xenon-arc light exposure apparatus		N

Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
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BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
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CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N
CC.1	General		N
CC.2	Test program 1.....		—
CC.3	Test program 2.....		—

DD	ANNEX DD, Requirements for the mounting means of rack-mounted equipment		N
DD.1	General		N
DD.2	Mechanical strength test, variable N.....		—
DD.3	Mechanical strength test, 250N, including end stops.....		—
DD.4	Compliance.....		—

EE	ANNEX EE, Household and home/office document/media shredders		N
EE.1	General		N
EE.2	Markings and instructions		N
	Use of markings or symbols.....		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Information of user instructions, maintenance and/or servicing instructions.....:		—
EE.3	Inadvertent reactivation test.....:		—
EE.4	Disconnection of power to hazardous moving parts:		N
	Use of markings or symbols.....:		—
EE.5	Protection against hazardous moving parts		N
	Test with test finger (Figure 2A)		—
	Test with wedge probe (Figure EE1 and EE2) :		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS			
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		—
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. 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		—
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		—
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.		—
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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	<p>Add the following subclause:</p> <p>1.3.Z1 Exposure to excessive sound pressure</p> <p>The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones.</p> <p>NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.</p>		N
(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>		N
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>		N
1.7.2.1 (A1:2010)	<p>In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.</p>		N
1.7.2.1 (A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete NOTE Z1 and the addition for Portable Sound System.</p> <p>Add the following clause and annex to the existing standard and amendments.</p>		N
	<p>Zx Protection against excessive sound pressure from personal music players</p>		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.1 General 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 <input type="checkbox"/> for personal use, that:</p> <ul style="list-style-type: none"> <input type="checkbox"/> is designed to allow the user to listen to recorded or broadcast sound or video; and <input type="checkbox"/> primarily uses headphones or earphones that can be worn in or on or around the ears; and <input type="checkbox"/> 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"> <input type="checkbox"/> while the personal music player is connected to an external amplifier; or <input type="checkbox"/> 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"> <input type="checkbox"/> hearing aid equipment and professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p>	Not personal music player	N
	<p><input type="checkbox"/> 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

IEC/EN 60950-1			
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 <ul style="list-style-type: none"> 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 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>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> <ul style="list-style-type: none"> d) have a warning as specified in Zx.3; and e) not exceed the following: <ul style="list-style-type: none"> 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed “programme simulation noise” described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” described in EN 50332-1. 		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<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>		N
	<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"> <input type="checkbox"/> the symbol of Figure 1 with a minimum height of 5 mm; and <input type="checkbox"/> the following wording, or similar: <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <p style="text-align: center;">/</p> <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>		N
	Zx.4 Requirements for listening devices (headphones and earphones)		N
	<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>		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N
	<p>Zx.4.3 Wireless listening devices In wireless mode: with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and <input type="checkbox"/> respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N
	<p>Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N
2.7.1	<p>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):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		P

IEC/EN 60950-1									
Clause	Requirement + Test	Result - Remark	Verdict						
	<p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N						
2.7.2	This subclause has been declared 'void'.		N						
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N						
3.2.5.1	<p>Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table border="0"> <tr> <td>Up to and including 6 </td> <td>0,75^{a)} </td> </tr> <tr> <td>Over 6 up to and including 10 </td> <td>(0,75)^{b)} 1,0 </td> </tr> <tr> <td>Over 10 up to and including 16 </td> <td>(1,0)^{c)} 1,5 </td> </tr> </table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 ^{a)}	Over 6 up to and including 10	(0,75) ^{b)} 1,0	Over 10 up to and including 16	(1,0) ^{c)} 1,5		N
Up to and including 6	0,75 ^{a)}								
Over 6 up to and including 10	(0,75) ^{b)} 1,0								
Over 10 up to and including 16	(1,0) ^{c)} 1,5								
3.2.5.1 (A2:2013)	NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD		N						
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <p>Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 </p> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>		N						
4.3.13.6 (A1:2010)	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).</p>		N						
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N						

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 μSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N
Bibliography	Additional EN standards.		—

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
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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
1.2.13.14 (A11:2009)	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N
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
1.5.8	In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		P
1.5.9.4	In Finland, Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No such construction.	N
1.7.2.1	<p>In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1 (A11:2009)	<p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”</p>		N
	<p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkøplet utstyr – og er tilkøplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1 (A2:2013)	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. 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."		N
1.7.5	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		N
1.7.5 (A11:2009)	For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N
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		N
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		N
2.7.1	In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.13	In Finland, Norway and Sweden , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N
3.2.1.1	<p>In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <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, 10A</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>		N
3.2.1.1	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N

IEC/EN 60950-1			
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
3.2.1.1	<p>In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N
3.2.1.1	<p>In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N
3.2.1.1	<p>In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p>		N
3.2.4	<p>In Switzerland, for requirements see 3.2.1.1 of this annex.</p>		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
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
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
4.3.6	In Ireland , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N
5.1.7.1	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.		N

IEC/EN 60950-1			
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. 		N
	<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

IEC/EN 60950-1			
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.		N
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N
7.3 (A11:2009)	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N

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

**Annex ZD
(informative)**

IEC and CENELEC code designations for flexible cords

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

1.5.1	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
PCB	Interchangeable	Interchangeable	V-0, Min. 130°C	UL 796	UL
Metal enclosure	Interchangeable	Interchangeable	Min. 1.0mm	--	--
AC inlet (CON1)	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A01-001L	AC 250V ,10A	EN60320-1	VDE 40013388
(Alternative)	TECX-UNIONS TECHNOLOGY CORP	TU-301-AL	AC 250V ,10A	EN60320-1	ENEC-00647-A1 UL E220004
Fuse F1	Dongguan Better Electronics Technology Co., Ltd.	522	T8AL, AC250V	IEC/EN 60127-1 IEC/EN 60127-3	VDE 40019022
(Alternative)	Dongguan Hongda Electronic Technology Co., Ltd.	52FD 52FDP	T8AL, AC250V	IEC/EN 60127-1 IEC/EN 60127-3	VDE 40034179
(Alternative)	Zhongshan Lanbao Electrical Appliances Co., Ltd.	RTI-20	T8AL, AC250V	IEC/EN 60127-1 IEC/EN 60127-3	VDE 40012120
(Alternative)	Suzhou Littelfuse OVS Ltd.	218-series	T8AL, AC250V	IEC/EN 60127-1 IEC/EN 60127-3	VDE 40013496
(Alternative)	XC Electronics (Shen Zhen) Corp. Ltd.	5F-Series	T8AL, AC250V	IEC/EN 60127-1 IEC/EN 60127-3	VDE 40009609
Heat shrinkable Tube used on F1	DONGGUAN QUANTAI INDUSTRIAL CO LTD	T-2	VW-1, 600V, 125°C	UL224	UL E227336
(Alternative)	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CB-HFT, CB-HFT(XY), CYG-MT	VW-1, 600V, 125°C	UL224	UL E180908
(Alternative)	DONG GUAN HUANG FENG INSULATION MATERIAL CO LTD	HFT-2	VW-1, 600V, 125°C	UL224	UL E236485
(Alternative)	DONGGUAN GINO PLASTIC PRODUCTS CO LTD	GINO S-901-600	600V 125°C	UL224	UL E472166
Varistor (ZR1) (optional)	Joyin Co., Ltd.	14N471K 14N821K	Min. AC 300V, Min. 85°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 005937
(Alternative)	Joyin Co., Ltd.	10S471K 10S821K 14S471K 14S821K	Min. AC 300V, Min. 85°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 40004658

(Alternative)	JYA-NAY Co., Ltd.	10D471K 10D821K 14D471K 14D821K	Min. AC 300V, Min. 105°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 40023949
(Alternative)	Centra Science Corp.	CNR-14D471K CNR-14D821K	Min. AC 300V, Min. 105°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 40008220
(Alternative)	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	14D471K 14D821K	Min. AC 300V, Min. 105°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 40023049
(Alternative)	Lien Shun Electronics Co., Ltd.	10D471K 10D821K 14D471K 14D821K	Min. AC 300V, Min. 105°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 40005858
(Alternative)	Success Electronics Co., Ltd.	SVR10D471K SVR10D821K SVR14D471K SVR14D821K	Min. AC 300V, Min. 105°C Min. 3000A	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE 40030401
Y1-cap: (CY4, CY5) (optional)	Dongguan Easy-gather Electronic Co., Ltd.	DCF	Max.2200pF. Min AC 400 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40022942
(Alternative)	Haohua Electronic Co.,	CT7	Max.2200pF. Min AC 400 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40003902
(Alternative)	Welson Industrial Co., Ltd.	WD	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40016157
(Alternative)	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	CD-Series	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40025754
(Alternative)	GUANGDONG SOUTH HONGMING ELECTRONIC SCIENCE & TECHNOLOGY CO LTD	F	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40036393
(Alternative)	Hsuan Tai Electronic Co. Ltd.	CY	Max.2200pF. Min AC 400 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40008912
(Alternative)	JYA-NAY Co., Ltd.	JN	Max.2200pF. AC 400 Vac, 125°C, subclass Y1	EN 60384-14	TUV R50232059
(Alternative)	Success Electronics Co., Ltd.	SB SE	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40020001 VDE 40020002

(Alternative)	Shenzhen Teruixiang Electronic Co., Ltd.	TY-Series	Max.2200pF. Min AC 400 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40031733
(Alternative)	DongGuan City Jiankun Electronics Technology Co. Ltd	JT-Series	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40041534
(Alternative)	Kunshan Micro Capacitors Electronic Co., Ltd.	B-Series, E-Series	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 40016537
(Alternative)	Yinan Don's Electronic Component Co., Ltd.	CT81	Max.2200pF. Min AC 250 Vac, 125°C, subclass Y1	IEC 60384-14	VDE 135256
Y2-cap: (CY1, CY2) (optional)	Dongguan Easy-gather Electronic Co., Ltd.	DCF	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	<u>UL 60384-14</u>	UL E252221
(Alternative)	HAOHUA ELECTRONIC CO	CT7	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 40013601
(Alternative)	Hongzhi Enterprises Ltd.	Y	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 40038461
(Alternative)	Jyh Chung Electronic Co., Ltd.	JY	Max.1000pF. Min AC 300 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 123326
(Alternative)	JYA-NAY Co.,Ltd	JY	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	TUV R50232061
(Alternative)	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	CE Series	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 40025748
(Alternative)	Kunshan Micro Capacitors Electronic Co., Ltd.	F-Series	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 40016130
(Alternative)	Hsuan Tai Electronic Co. Ltd.	CY	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 118413
(Alternative)	DongGuan City Jiankun Electronics Technology Co. Ltd	JK series	Max.1000pF. Min AC 250 Vac, 125°C, subclass Y2	IEC 60384-14	VDE 40041536
X-cap: (CX1, CX2, CX3) (optional)	Dain Electronics Co., Ltd.	MPX	AC 275 Vac; Max.0.47uF; Min.100°C, subclass X2	EN 60384-14	VDE 40018798

(Alternative)	Carli Electronics Co., Ltd.	MPX	AC 275 Vac; Max.0.47uF; Min.100°C, subclass X2	EN 60384-14	VDE 40008520
(Alternative)	Dongguan Easy-gather Electronic Co., Ltd.	MKP	AC 300 Vac; Max.0.47uF; Min.105°C, subclass X2	EN 60384-14	VDE 40022258
(Alternative)	Joey Electronics (Dong Guan) Co., Ltd.	MPX	AC 275 Vac; Max.0.47uF; Min.105°C, subclass X2	EN 60384-14	VDE 40032481
(Alternative)	Hongzhi Enterprises Ltd.	MPX	AC 275 Vac; Max.0.47uF; Min.100°C, subclass X2	EN 60384-14	VDE 40023936
(Alternative)	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	MPX	AC 275 Vac; Max.0.47uF; Min.85°C, subclass X2	EN 60384-14	TUV R 50136379
(Alternative)	Shenzhen Su Rong Capacitors Co., Ltd.	MKP/MPX	AC 280 Vac; Max.0.47uF; Min.100°C, subclass X2	EN 60384-14	VDE 40008924
(Alternative)	Xiamen Wanming Electronics Co., Ltd.	WPX/ MPX/ HQX/ UTX	AC 275 Vac; Max.0.47uF; Min.110°C, subclass X2	EN 60384-14	VDE 40023119
(Alternative)	SURETOP TECHNOLOGY Co. Ltd.	MPX	AC 275 Vac; Max.0.47uF; Min.105°C, subclass X2	EN 60384-14	VDE 40034508
(Alternative)	Jenn Fu Electronics Corporation	MPX	AC 275 Vac; Max.0.47uF; Min.110°C, subclass X2	EN 60384-14	VDE 40023085
(Alternative)	ACEWIN Electric Industrial Co. Ltd.	MEX	AC 275 Vac; Max.0.47uF; Min.100°C, subclass X2	EN 60384-14	VDE 40008614
Resistor(R17, R17A, R18, R18A)	Interchangeable	Interchangeable	1M ohm, 1/4W	EN 60950-1	Test with appliance
Electrolytic capacitor (C11)	Interchangeable	Interchangeable	330uFmax ; 450V,105□	--	Test with appliance
DB1 Bridge diode	Interchangeable	Interchangeable	Min600V; Min 6A	--	Test with appliance
Line Filter (LF1)	Dongguanshi PuHang Electronic Co.,Ltd.	T14*9*5C	Min105°C	--	Test with appliance
-Magnet wire	Interchangeable	Interchangeable	Copper wire, min130°C	UL1446	UL
-Core	--	--	Ferrite	--	--

-Triple wire	GREAT leoflon industrial co ltd	TRW(B)	Copper wire, Min. 130°C	UL2353	UL E211989
-Varnish	Interchangeable	Interchangeable	Minimum 130°C.	UL1446	UL
- Alt. -					
Line Filter (LF1)	Dongguan Ju Rong Electronics Co., Ltd.	T14*9*5C	Min105°C	--	Test with appliance
-Magnet wire	Interchangeable	Interchangeable	Copper wire, min130°C	UL1446	UL
-Core	--	--	Ferrite	--	--
-Triple wire	Young Chang Silicone Co., Ltd	STW-B	Copper wire, Min. 130°C	UL2353	UL E242198
-Varnish	Interchangeable	Interchangeable	Minimum 130°C.	UL1446	UL
Line Filter (LF2, LF3)	Dongguanshi PuHang Electronic Co.,Ltd.	T25*15*10C	Min105°C	--	Test with appliance
-Magnet wire	Interchangeable	Interchangeable	Copper wire, min130°C	UL1446	UL
-Core	--	--	Ferrite	--	--
-Clapboard	Interchangeable	Interchangeable	PBT, V-0, 130°C	UL 94	UL
-Varnish	Interchangeable	Interchangeable	Minimum 130°C.	UL1446	UL
- Alt. -					
Line Filter (LF2, LF3)	Dongguan Ju Rong Electronics Co., Ltd.	T20*12*8C	Min105°C	--	Test with appliance
-Magnet wire	Interchangeable	Interchangeable	Copper wire, min130°C	UL1446	UL
-Core	--	--	Ferrite	--	--
-Clapboard	Interchangeable	Interchangeable	PBT, V-0, 130°C	UL 94	UL
-Varnish	Interchangeable	Interchangeable	Minimum 130°C.	UL1446	UL
Q1, Q2, Q4, Q5, Q6	Interchangeable	Interchangeable	Min500V. Q1, Q2, Q4, Q5 is min10A, Q6 is min2A	--	--
Optocoupler (OP1, OP2, OP3)	SHARP CORP ELECTRONIC COMPONENTS AND DEVICES GROUP	PC817/PC123	double isolation, 100°C, dTi measured>0.4 mm minimum	IEC 60747-5-5 : 2011	VDE 40008087
(Alternative)	Everlight Electronics Co., Ltd.	EL817	double isolation, 100°C, dTi measured>0.4 mm minimum	IEC 60747-5-5 : 2011	VDE 132249
(Alternative)	Bright Led Electronics Corp.	BPC817	double isolation, 100°C, dTi measured>0.4 mm minimum	EN 60747-5-5 : 2011	VDE 40007240

(Alternative)	Lite-On Technology Corporation	LTV-817	double isolation, 100°C, dTi measured>0.4 mm minimum	EN 60747-5-5: 2011	VDE 40015248
(Alternative)	COSMO Electronics Corporation	C1010	double isolation, 100°C, dTi measured>0.4 mm minimum	EN 60747-5-5: 2011	VDE 40010469
(Alternative)	COSMO Electronics Corporation	KPC817	double isolation, 100°C, dTi measured>0.4 mm minimum	EN 60747-5-5: 2011	VDE 101347
(Alternative)	China Resources Semiconductor (ShenZhen) Ltd.	PC817	double isolation, 100°C, dTi measured>0.4 mm minimum	EN 60747-5-5: 2011	VDE 40039266
(Alternative)	Fairchild Semiconductor Pte Ltd	H11A817	double isolation, 100°C, dTi measured>0.4 mm minimum	EN 60747-5-5: 2011	VDE 40026857
Transformer (T1)	SHENZHEN FORD ELECTRONIC CO LTD	GQ330W-T-1A	Class B	EN 60950-1	Tested with appliance
-Wire	Interchangeable	Interchangeable	Copper wire, Min. 130°C.	UL1446	UL
-Bobbin	CHANG CHUN PLASTICS CO.,LTD	T200NA,	Phenolic, V-0, Min. 150°C thickness: 0.8mm	UL94 UL746C	UL E59481
-Insulation Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ, CT	Polyethy lene tercphtalate film tape. Min. 130°C	UL510	UL E165111
-Varnish	Interchangeable	Interchangeable	Minimum 130°C.	UL1446	UL
-Tube	Interchangeable	Interchangeable	Minimum 150°C.	UL 224	UL
Transformer (T2)	SHENZHEN FORD ELECTRONIC CO LTD	GQ330W-LLC-T1	Class B	EN 60950-1	Tested with appliance
-Bobbin	Chang chun plastics Co Ltd	T200NA,	Phenolic, V-0, Min. 150°C thickness: 0.8mm	UL94	UL E59481
-Insulation Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT280	Flame retardant film insulating tape. Min. 130°C	UL510	UL E165111
-Varnish	Interchangeable	Interchangeable	Minimum 130°C.	UL1446	UL

-Triple insulated wire	SHENZHEN KAIZHONG HEDONG NEW MATERIAL CO LTD	TIW- B	Triple insulated wire, Min.130°C	UL2353	UL E357240
-Wire	Interchangeable	Interchangeable	Copper wire, Min. 130°C.	UL1446	UL
-Tube	Interchangeable	Interchangeable	Minimum 150°C.	UL 224	UL
Inductance (L21)	SHENZHEN FORD ELECTRONIC CO LTD	GQ330W-LLC-T2	Min.130°C	EN 60950-1	Tested with appliance
-Wire	Interchangeable	Interchangeable	Copper wire, Min.130°C.	UL1446	UL
-varnish	Interchangeable	Interchangeable	Min.130°C.	UL1446	UL
-bobbin	CHANG CHUN PLASTICS CO.,LTD	T200NA	Phenolic, V-0, Min.150°C	UL94 UL746C	UL (E59481)
-insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280	Min.130°C	UL510	UL (E165111)
-tube	Interchangeable	Interchangeable	Min.150 °C, VW-1	UL 224	UL
Inductance (T3)	SHENZHEN FORD ELECTRONIC CO LTD	GQ330W-PFC-T1	Min.130°C	EN 60950-1	Tested with appliance
-Wire	Interchangeable	Interchangeable	Copper wire, Min.130°C.	UL1446	UL
-varnish	Interchangeable	Interchangeable	Min.130°C.	UL1446	UL
-bobbin	CHANG CHUN PLASTICS CO.,LTD	T200NA	Phenolic, V-0, Min.150°C	UL94 UL746C	UL (E59481)
-insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280	Min.130°C	UL510	UL (E165111)
-tube	Interchangeable	Interchangeable	Min.150 °C, VW-1	UL 224	UL
Insulation sheet Between plug pin and PCB trace	Interchangeable	Interchangeable	V-0, 125°C. Min.thickness 0.25mm	UL 94	UL

DC fan (two provide)	DONGGUAN YIN HAI PLASTIC ELECTRONICS CO.,LTD	YH4020L05L- CF50N	DC5V, 0.13A	EN 60950-1: 2006/A2:2013	CE by Shenzhen Tian Hai test technology Co.,Ltd (Report No.: TH16FR- 392S. Certificate No.: TH16FR- 392S.)
Heat shrinkable tubing for Internal Wiring	SHENZHEN WOLIDA TRADING CO LTD	RSFR-H	Min.125 °C, 0.4mm. Rated VW-1.	UL 224	UL E329530
Thermal controller (TH5)	Changzhou Ainuo Electronics Technical Co., Ltd.	KW-***	250Vac, 0~165°C	EN 60730-1, EN 60730-2	VDE 40030067
Heatsink(HS1)	--	--	Metal, see attachment B for details	--	--
Heatsink(HS2)	--	--	Metal, see attachment B for details	--	--
Heatsink(HS3)	--	--	Metal, see attachment B for details	--	--
Heatsink(HS4)	--	--	Metal, see attachment B for details	--	--
Heatsink(HS5)	--	--	Metal, see attachment B for details	--	--
Heatsink(HS6)	--	--	Metal, see attachment B for details	--	--
Heatsink for U3 on the mainboard	--	--	Metal, 34.6mm x 35.0mm x 20mm	--	--
Heatsink for U7 and U8 on the mainboard	--	--	Metal, 28.0mm x 28.0mm x 11.0mm	--	--
supplementary information:--					

1.7.11	TABLE: Marking durability test			P
Marking type	Checked by	Duration	Result	
<input checked="" type="checkbox"/> stick on EUT	Water	15s	Curling: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; Legibility: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> printed on EUT <input type="checkbox"/> molded on EUT	Petroleum spirit	15s	Curling: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No; Legibility: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Note(s): --				

1.6.2	TABLE: Input test					P
Fuse #	I rated (A)	U (V)	F (Hz)	I (A)	P (W)	Condition/status
F1	--	90	50/60	3.632/3.631	325.29/325.21	Max normal load
F1	5.0	100	50/60	3.237/3.229	322.83/322.79	Max normal load
F1	5.0	240	50/60	1.323/1.334	307.30/307.23	Max normal load
F1	--	264	50/60	1.254/1.260	306.54/306.44	Max normal load
Note(s): The measured steady input current at rated supply voltage shall not exceed the rated current by more than 10% under normal load. Max. normal load: All the output ports pull load to maximum rating.						

2.1.1.5	TABLE: Max. V, A, VA measurement				P
Output tested	Output current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	HAZ/EL (Yes / No)
POE port #1 55Vdc	--	53.64	0.221	11.69	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Note(s): Input voltage: <u>264 V</u> / <u>60 Hz</u> Output which exceeds 240 VA is considered to be at hazardous energy level (HAZ/EL).					

2.1.1.7	TABLE: Discharge test				P
Location	Condition	V peak	37% V peak	V peak at tc	Comment
L-N	Standby	370	136.9	705ms	Pluggable equipment type A
Note(s): Input voltage: <u>264 V</u> / <u>60 Hz</u> ; X capacitor: X capacitor: CX1= CX2= CX3=0.47uF, discharge resistor(s): R17=R17A=R18=R18A=1M ohm The voltage at the external point of disconnection shall decay to less than 37% of its original value in 1.0 second.					

2.2.2	TABLE: Hazardous voltage measurement			P
Component	Location	Max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
T1	Pin 5– GND	26.6	--	--
T2	Pin 7–GND	5.3	--	--

	Pin 9-GND	55	--	--
	Pin 10-GND	55	--	--
	After D6	--	55.8	D7
	After D7	--	55.8	D8
Note(s): Input voltage: <u> 264 </u> V/ <u> 60 </u> Hz				

2.2.3	TABLE: SELV reliability test				P
Accessible Part From - To	Component	Fault	Max. voltage (V) (fault condition)		Comment
			V peak	V d.c.	
After D7 -GND	D7	S/C	--	0	Shutdown
After D8 -GND	D8	S/C	--	0	Shutdown
Note(s): Input voltage: <u> 264 </u> V/ <u> 60 </u> Hz					

2.4	TABLE: Limited current circuits test				P
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	
CY4 secondary Pin to "GND"	3.56	1.78	64.7	45.29	
CY5 secondary Pin to "GND"	4.82	2.41	64.1	44.87	
Note(s): Input voltage: <u> 264 </u> V/ <u> 60 </u> Hz; Y Capacitor: CY4=CY5=2200pF					

2.5	TABLE: Limited power sources test						P	
Output tested	Location		Single fault	Measured Maximum			Limited	
	From	To		Uoc (V)	Isc (A)	VA	Isc (A)	VA
POE ports #1	Pins(3,6)	Pin (7,8)	Normal	53.64	0.221	11.69	2.79	100
POE ports #1	Pins(3,6)	Pin (7,8)	D7 S/C	53.66	0.221	11.69	2.79	100
POE ports #1	Pins(3,6)	Pin (7,8)	J7 (1-7) S/C	0	0	0	8	100
RJ45 ports	All pins	GND	Normal	0	0	0	8	100
SFP ports	Pins (15,16)	GND	Normal	3.30	0	0	8	100
Note(s): Input voltage: <u> 264 </u> V/ <u> 60 </u> Hz								

2.6.3.4	TABLE: Earthing test				P
Test point between	Current (A)	Duration (min)	Measured resistance or voltage drops (ohms or V)	Limited resistance or voltage drops (ohms or V)	

AC inlet earth pin to furthest metal enclosure	32	2	0.003 ohms	0.1ohms
AC inlet earth pin to CY1 secondary pin	32	2	0.003 ohms	0.1ohms
AC inlet earth pin to CY2 secondary pin	32	2	0.004 ohms	0.1ohms
Note(s):--				

2.9.2	TABLE: Humidity conditioning test		P
Test condition		Actual condition	After humidity conditioning
<input type="checkbox"/> 20-30°C at 90-96% R.H. for 48h <input checked="" type="checkbox"/> 40±2°C at 90-96%R.H. for 120h (tropical)		40°C at 96% R.H. for 120h	Unit <input checked="" type="checkbox"/> DID <input type="checkbox"/> DID NOT no breakdown See table 5.2
Note(s):			

2.10.2	TABLE: Working voltage measurement				
Component	Location		Peak Voltage (Vac)	RMS Voltage (Vac)	Comments
	From	To			
T1	Pin 1	Pin 6, 7	200	117	--
		Pin 8, 9	158	117	--
	Pin 3	Pin 6, 7	250	124	--
		Pin 8, 9	241	124	--
	Pin 4	Pin 6, 7	550	162	*
		Pin 8, 9	533	155	--
	Pin 5	Pin 6, 7	191	117	--
		Pin 8, 9	200	117	--
T2	Pin 1	Pin 7	250	154	--
		Pin 8, 9	283	157	--
		Pin 10, 11	300	168	--
		Pin 12	283	163	--
	Pin 5	Pin 7	400	214	--
		Pin 8, 9	458	251	*
		Pin 10, 11	358	189	--
		Pin 12	416	213	--

OP1	Pin 1	Pin 3	300	145	--
		Pin 4	300	144	--
	Pin 2	Pin 3	300	145	--
		Pin 4	300	145	--
OP2	Pin 1	Pin 3	275	139	--
		Pin 4	275	140	--
	Pin 2	Pin 3	275	139	--
		Pin 4	275	139	--
OP3	Pin 1	Pin 3	241	172	--
		Pin 4	241	171	--
	Pin 2	Pin 3	241	172	--
		Pin 4	241	171	--
CY1	Pri	Sec	350	240	--
CY2	Pri	Sec	350	240	--
CY4	Pri	Sec	200	121	--
CY5	Pri	Sec	287	140	--
Note(s): Input: <u>240 V</u> / <u>60 Hz</u> . The * indicate the maximum Peak voltage or RMS voltage.					

2.10.3 and 2.10.4	TABLE: Clearances and creepage distances measurement						P
Rated supply voltage:	100-240V	Pollution degree:	2	Material Group:	IIIb		
Location	Operating Voltage		Clearance (mm)		Creepage (mm)		CTI
	V peak	V rms	Min	Actual	Min	Actual	--
Between primary and protective earth near ac inlet, as basic	<420	<250	2.0	3.3	2.5	3.3	< 175
Opposite pattern traces before fuse (F1) on PCB, as basic	<420	<250	2.0	3.6	2.5	3.6	< 175
Primary fuse (F1), pattern traces on PCB, as basic	<420	<250	2.0	4.5	2.5	4.5	< 175
Pattern traces, between Primary and Secondary (OP3) on PCB, as reinforced	<420	<250	4.0	6.7	5.0	6.7	< 175
Pattern traces, between Primary and Secondary (CY4) on PCB, as reinforced	<420	<250	4.0	7.5	5.0	7.5	< 175
Between primary and secondary (T1) on traces side, as reinforced	550	240	4.4	7.5	4.8	7.5	< 175

Between primary and secondary (T1), as reinforced	550	240	4.4	7.5	4.8	7.5	< 175
Between primary and core(T1), as basic	550	240	2.2	3.9	2.4	3.9	< 175
Between secondary and core (T1), as basic	550	240	2.2	3.9	2.4	3.9	< 175
Between primary and secondary (T2) on traces side, as reinforced	458	251	4.0	20.9	4.8	20.9	< 175
Between primary and secondary (T2), as reinforced	458	251	4.0	10.8	4.8	10.8	< 175
Between primary and core(T2), as reinforced	458	251	2.0	12.8	2.4	14.1	< 175

Note(s):

B=Basic insulation, D/R= double insulation or reinforce insulation.

- No components reduce distance after 10N steady force applied.
- One Mylar sheet is cover power board both sides to isolate metal enclosure.
- T2 primary wire used triple insulation wire, core as secondary.

2.10.5	TABLE: Distance through insulation measurement					P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required dti (mm)	dti (mm)	
1. Insulation tape wrapped on transformer (T1), Reinforced, 2 layers (one layer tested)	550	240	3000Vac	At least 2 layers	2layers	
2. Insulation tape wrapped on transformer (T2), Reinforced, 2 layers (one layers tested)	458	251	3000Vac	At least 2 layers	2layers	
3. Mylar sheet (for power board)	550	240	1820Vac	--	0.25mm	
4. Heat shrinkable tubing for Internal Wiring	550	240	3000Vac	--	0.40mm	
Note(s):--						

4.2.2, 4.2.3, 4.2.4	TABLE: Steady force test			P
Location	Force	duration	Result	
Components	10N± 1N	5 s	Unit <input type="checkbox"/> DID <input checked="" type="checkbox"/> DID NOT show damage Unit <input type="checkbox"/> DID <input checked="" type="checkbox"/> DID NOT breakdown	
Location	Force	duration	Result	
--	30N± 1N	--	Unit <input type="checkbox"/> DID <input type="checkbox"/> DID NOT show damage Unit <input type="checkbox"/> DID <input type="checkbox"/> DID NOT breakdown	
Location	Force	duration	Result	
Metal enclosure	250N± 10N	5 s	Unit <input type="checkbox"/> DID <input checked="" type="checkbox"/> DID NOT show damage Unit <input type="checkbox"/> DID <input checked="" type="checkbox"/> DID NOT breakdown	
Note(s): --				

4.2.5	TABLE: Impact test	P
-------	--------------------	---

Location	Vertical distance	Result
Metal enclosure outside, top and sides of power supply	1.3 m	Unit <input type="checkbox"/> DID <input checked="" type="checkbox"/> DID NOT show damage Unit <input type="checkbox"/> DID <input checked="" type="checkbox"/> DID NOT breakdown
Note(s): --		

4.4.5	TABLE: protection against moving fan blades				P
Fan location	Mass of fan assembly (m) (kg)	Radius of fan blade (r) (mm)	Rotational speed (N) (r/min)	K factor calculated	
Left side of enclosure	0.008	20	5500	58.08	
Classification of fan **)			Result		
<input checked="" type="checkbox"/> a). not likely to cause pain or injury <input type="checkbox"/> b). likely to cause pain, but not likely to cause injury <input type="checkbox"/> c). does not comply with a) or b), likely to cause injury			<input checked="" type="checkbox"/> fan of classification a): <u>0.39</u> <input type="checkbox"/> fan of classification b): <input type="checkbox"/> fan of classification c):		
Note(s): *) K factor calculation: $K = 6 \times 10^{-7} (mr^2N^2)$ **) classification of fan calculation: classification a): $\frac{r/min}{15000} + \frac{K\ factor}{2400} \leq 1$ classification b): $\frac{r/min}{22000} + \frac{K\ factor}{3600} \leq 1$					

4.5.2	TABLE: Thermal requirements				P
Supply voltage (V)	90V, 60Hz		264V, 60Hz		—
Test times	3hrs 07mins		1hr 50mins		--
Tam a1(°C)	See below		See below		--
Tam a2(°C)	See below		See below		--
Maximum measured temperature T of part/at:	Measured T (°C)	Calculate T (50°C)	Measured (°C)	Calculated T (50°C)	Allowed Tmax (°C)
1. AC inlet, inside	40.7	66.1	32.0	57.0	70
2. CY2 body	37.0	62.4	31.1	56.1	125
3. ZR1 body	40.2	65.6	31.5	56.5	85
4. LF1 winding	47.0	72.4	32.5	57.5	105
5. LF3 winding	51.7	77.1	36.2	61.2	105
6. LF2 winding	53.9	79.3	36.7	61.7	105
7. CX3 body	48.7	74.1	35.7	60.7	85
8. PCB near BD1	61.3	86.7	40.7	65.7	130
9. PCB near Q1	87.1	112.5	55.5	80.5	130
10. PCB near Q2	82.5	107.9	52.2	77.2	130
11. PCB near Q4	69.6	95.0	52.1	77.1	130

12. PCB near Q5	60.5	85.9	47.4	72.4	130
13. PCB near D2	81.9	107.3	54.9	79.9	130
14. L21 winding	55.3	80.7	48.9	73.9	105
15. T3 winding	71.1	96.5	48.4	73.4	105
16. T2 winding	61.7	87.1	58.6	83.6	110
17. RT1 body	83.0	108.4	52.2	77.2	130
18. CY5 body	61.5	86.9	57.0	82.0	125
19. DP2 body	59.7	85.1	55.6	80.6	100
20. C11 body	51.7	77.1	42.4	67.4	85
21. T1 winding	52.2	77.6	50.1	75.1	110
22. PCB near D3	56.8	82.2	49.9	74.9	130
23. PCB near D7	63.5	88.9	61.8	86.8	130
24. PCB near D8	63.9	89.3	62.6	87.6	130
25. PCB near D5	49.9	75.3	47.8	72.8	130
26. Mylar sheet bottom under T2	51.5	76.9	49.6	74.6	125
27. Mylar sheet top under T2	54.1	79.5	51.7	76.7	125
28. Heat sink for U7	47.4	72.8	47.4	72.4	130
29. Heat sink for U3	53.0	78.4	53.7	78.7	130
30. U21 body	42.7	68.1	43.0	68.0	130
31. J4 body	30.9	56.3	31.3	56.3	130
32. Fan body	53.0	78.4	40.4	65.4	--
33. Panel	32.3	57.7	31.8	56.8	80
34. BD2 body	57.7	83.1	48.2	73.2	130
35. Metal enclosure outside top of T2	35.7	61.1	31.7	56.7	70
36. Heat sink for U8	52.2	77.6	52.6	77.6	130
37. Ambient	24.6	50.0	25.0	50.0	--
Note(s): --					

4.6.1, 4.6.2		TABLE: opening in enclosure	P
Opening position	dimension(mm)	remark	
Front	--	No openings.	
Top	--	No openings.	
Left	Height: 3.85mm Length: 2.85mm, 2.45mm Height: 3.85mm Length: 2.05mm, 1.70mm	Trapezoid. Cover three circle areas for DC fan: ϕ 37.85mm; ϕ 37.85mm; ϕ 37.85mm.	
Right	ϕ 2.25mm	Circle. Cover a rectangular area: 22.4mm x 102.4mm.	
Rear	--	No openings.	

Bottom	--	No openings.
--------	----	--------------

5.1.6 – 5.1.8		TABLE: Touch current measurement		P
Measured between:		Measured (mA)	Limit (mA)	Comments/conditions
Line & neutral and output terminal		0.105	0.25	Fuse in, "e" closed
Line & neutral and metal enclosure		0.630	3.5	Fuse in, "e" opened
Note(s): --				

5.2		TABLE: Electric strength test		P
Test voltage applied between:		Test voltage (V)	Breakdown	
- Unit: Between main poles (Pri.fuse-link disconnected)		1500Vac	No	
Between parts separated by basic or supplementary insulation		--	--	
- Unit: Primary to metal enclosure		1820Vac	No	
- T1: Primary to Core		1820Vac	No	
- T1: Secondary to Core		1820Vac	No	
Between parts separated by double or reinforced insulation		--	--	
- T1: Primary to Secondary		3000Vac	No	
- T2: Core to Primary		3000Vac	No	
- T2: Primary to Secondary		3000Vac	No	
- Unit: Primary to Secondary output terminals		3000Vac	No	
Note(s):				

5.3		TABLE: Fault condition test					P
		Ambient temperature (°C)			See below		—
		Power source for EUT: Manufacturer, model/type, output rating			--		—
No.	Component	Fault	Test voltage (V/Hz)	Test time	Fuse #	Fuse. current (A)	Result
1	Ventilation openings	Blocked	240V/60Hz	2hours 24mins	F1	1.334	Unit operated normally, Max temperature measured on: T1 winding:52.1°C; T2 winding: 70.0°C; Ambient: 25.0°C. Recoverable when fault removed, NCD, NC, NT, NB, NH.

2	System Fan (1&2)	Stalled	240V/ 60Hz	2hour 37mins	F1	1.334	Unit operated normally, Max temperature measured on: T1 winding:54.3°C; T2 winding: 78.6°C; Ambient: 23.7°C. Recoverable when fault removed, NCD, NC, NT, NB, NH.
3	(After D5) 5V	O/L	240V/ 60Hz	3hours 33mins	F1	1.390→ 1.440→ 1.473→ 0.3	Unit shut down when overloaded to 5.4A.No damaged,nohazardous. T1 winding:75.7°C; T2 winding: 65.3°C; Ambient: 24.0°C.. Recoverable when fault removed, NCD, NC, NT, NB, NH.
4	(After D6,D7) 55V	O/L	240V/ 60Hz	3hours 21mins	F1	1.797→ 1.847→ 1.870→ 0.34	Unit shut down when overloaded to 2.4A.No damaged,nohazardous. T1 winding:57.2°C; T2 winding:75.2°C; Ambient: 25.6°C.. Recoverable when fault removed, NCD, NC, NT, NB, NH.
5	DB1	S/C	240V/ 60Hz	1 Sec	F1	0	Unit shutdown immediately, Fuse F1opened. NB, NH, NT,NC.
6	C11	S/C	240V/ 60Hz	1 Sec	F1	0	Unit shutdown immediately, Fuse F1 opened. NB, NH,NT,NC.
7	U9 Pin12 –pin14	S/C	240V/ 60Hz	10mins	F1	0.105	Unit shutdown immediately, CD(U9), NT,NC,NB,NH.
8	U9 Pin12 –Pin10	S/C	240V/ 60Hz	10mins	F1	0.133	Unit shutdown immediately. Recoverable when fault removed, NCD, NC, NT, NB, NH.
9	Q1 PinG- PinS	S/C	240V/ 60Hz	10mins	F1	1.323	Normal operation, NCD, NC, NT, NB, NH.
10	Q1 PinG- PinD	S/C	240V/ 60Hz	1 Sec	F1	0	Unit shutdown immediately, F1 opened CD(Q2,Q1) NB, NH NC,NT.
11	Q1 PinS- PinD	S/C	240V/ 60Hz	1 Sec	F1	0	Unit shutdown immediately, Fuse F1 opened. NB, NH NT,NC.
12	Q2 PinG- PinS	S/C	240V/ 60Hz	10mins	F1	1.323	Normal operation, NCD, NC, NT, NB, NH.
13	Q2 PinG- PinD	S/C	240V/ 60Hz	1 Sec	F1	0	Unit shutdown immediately, Fuse F1 opened. NB, NH NT,NC.
14	Q2 PinS- PinD	S/C	240V/ 60Hz	1 Sec	F1	0	Ditto.
15	Q4 PinG- PinS	S/C	240V/ 60Hz	10mins	F1	0.140	Unit shutdown immediately. Recoverable when fault removed, NCD, NC, NT, NB, NH.
16	Q4 PinG- PinD	S/C	240V/ 60Hz	10mins	F1	0.140	Ditto.

17	Q4 PinS- PinD	S/C	240V/ 60Hz	10mins	F1	0.152	Ditto.
18	Q5 PinG- PinS	S/C	240V/ 60Hz	10mins	F1	0.149	Ditto.
19	Q5 PinG- PinD	S/C	240V/ 60Hz	10mins	F1	0.152	Ditto.
20	Q5 PinS- PinD	S/C	240V/ 60Hz	10mins	F1	0.152	Ditto.
21	OP1 Pin1- Pin 2	S/C	240V/ 60Hz	10mins	F1	0.126	Ditto.
22	OP1 Pin3- Pin 4	S/C	240V/ 60Hz	10mins	F1	0.127	Ditto.
23	OP1 Pin1	O/C	240V/ 60Hz	10mins	F1	0.126	Ditto.
24	OP1 Pin3	O/C	240V/ 60Hz	10mins	F1	0.126	Ditto.
25	OP2 Pin1- Pin 2	S/C	240V/ 60Hz	10mins	F1	1.323	Normal operation, NCD,NT,NC,NB, NH.
26	OP2 Pin3- Pin 4	S/C	240V/ 60Hz	10mins	F1	0.127	Unit shutdown immediately. Recoverable when fault removed, NCD, NC, NT, NB, NH.
27	OP2 Pin1	O/C	240V/ 60Hz	10mins	F1	1.320	Normal operation, NCD,NT,NC,NB, NH.
28	OP2 Pin3	O/C	240V/ 60Hz	10mins	F1	0.127	Unit shutdown immediately. Recoverable when fault removed, NCD, NC, NT, NB, NH.
29	OP3 Pin1- Pin 2	S/C	240V/ 60Hz	10mins	F1	0.107↔ 0.243	Unit shut down and cycle, 0.14W↔10.89W, Recoverable NCD, NH
30	OP3 Pin3- Pin 4	S/C	240V/ 60Hz	10mins	F1	0.107	Unit shutdown immediately. Recoverable when fault removed, NCD, NC, NT, NB, NH.
31	OP3 Pin1	O/C	240V/ 60Hz	10mins	F1	0.107↔ 0.243	Unit shut down and cycle, 0.14W↔10.89W, Recoverable NCD, NH
32	OP3 Pin3	O/C	240V/ 60Hz	10mins	F1	0.107↔ 0.243	Unit shut down and cycle, 0.14W↔10.89W, Recoverable NCD, NH
Note(s):--							



Fig. 1 - Overview (1)



Fig. 2 - Overview (2)

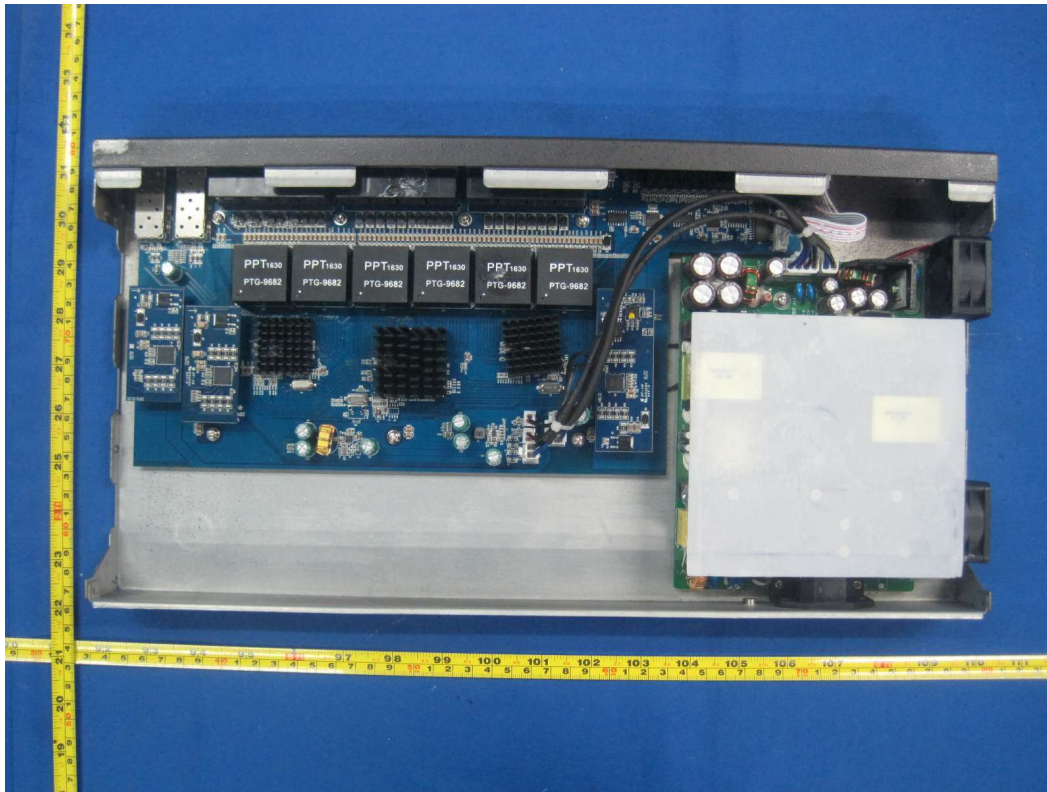


Fig. 3 - Internal view (1)

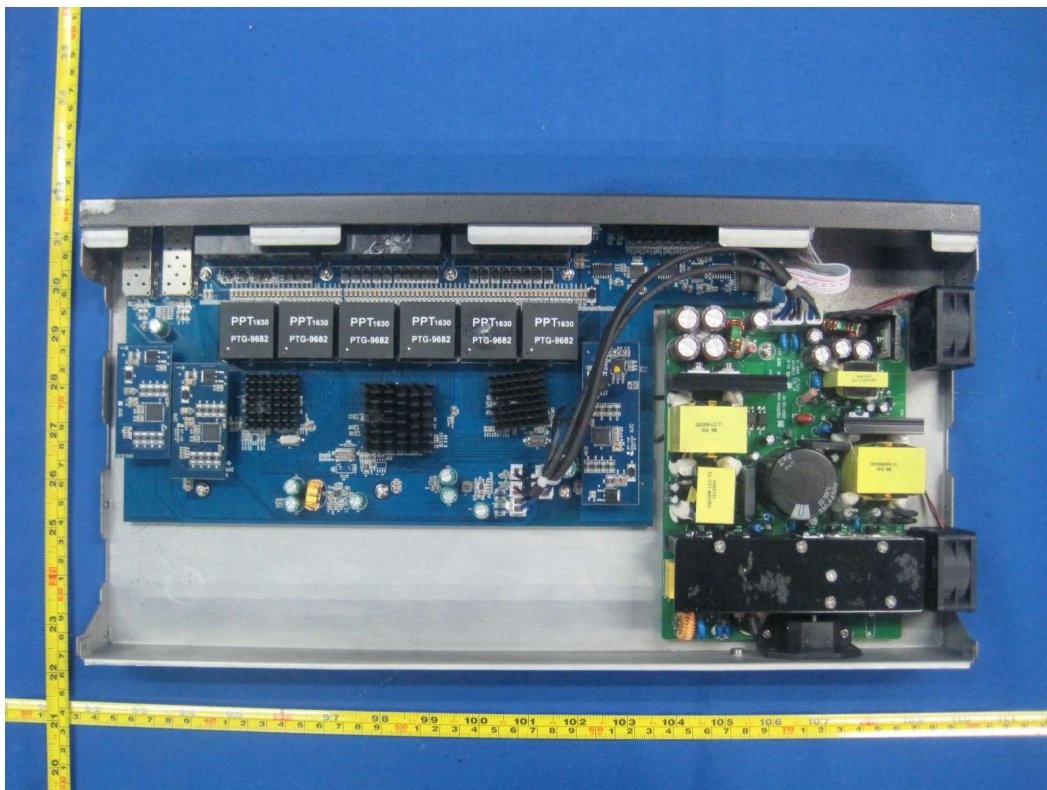


Fig. 4 - Internal view (2)

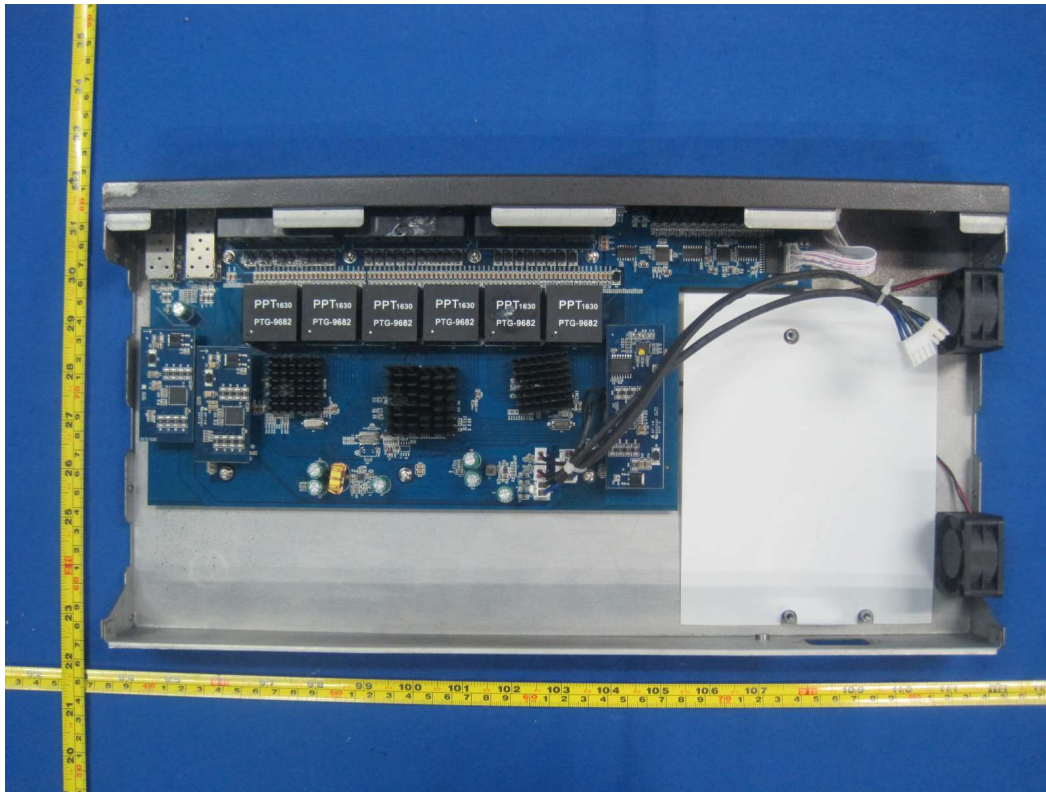


Fig. 5 - Internal view (3)

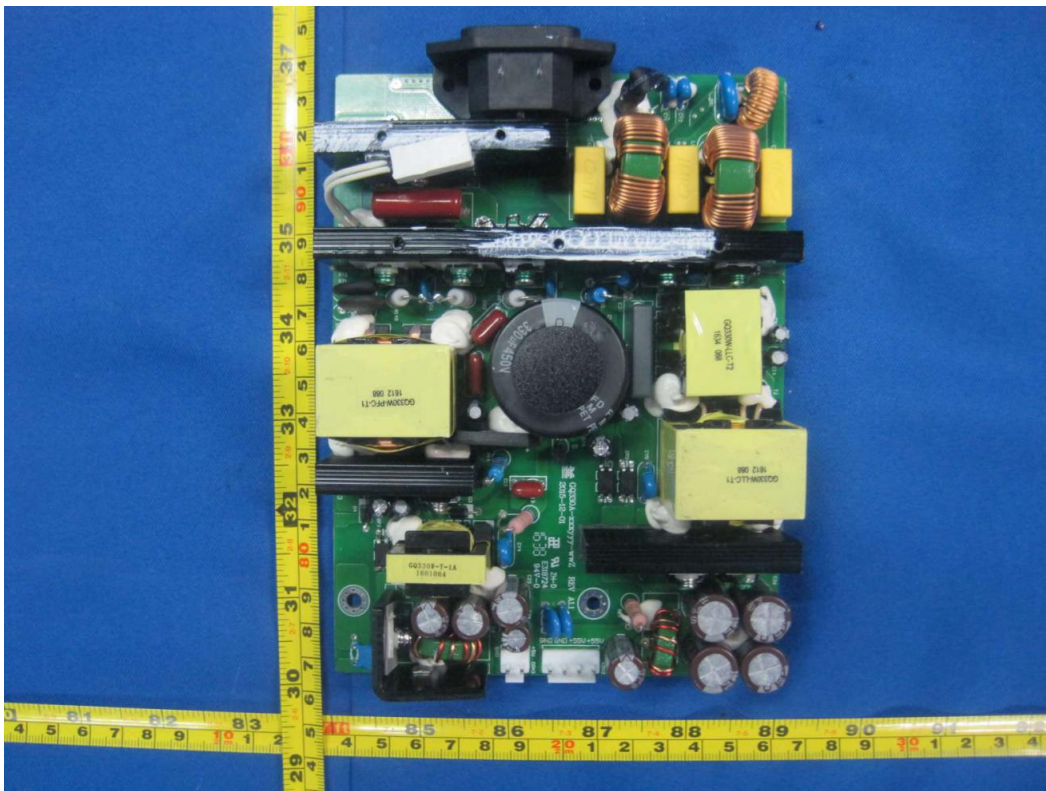


Fig. 6 - Power board overview 1

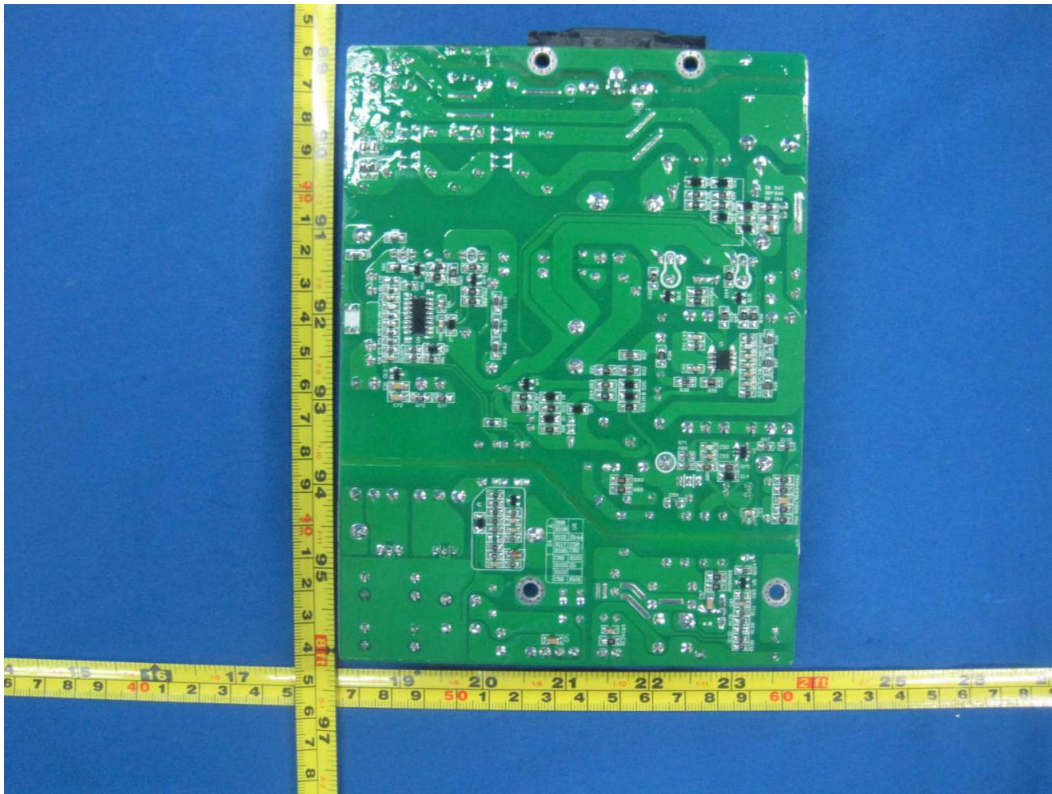


Fig. 7 - Power board overview 2

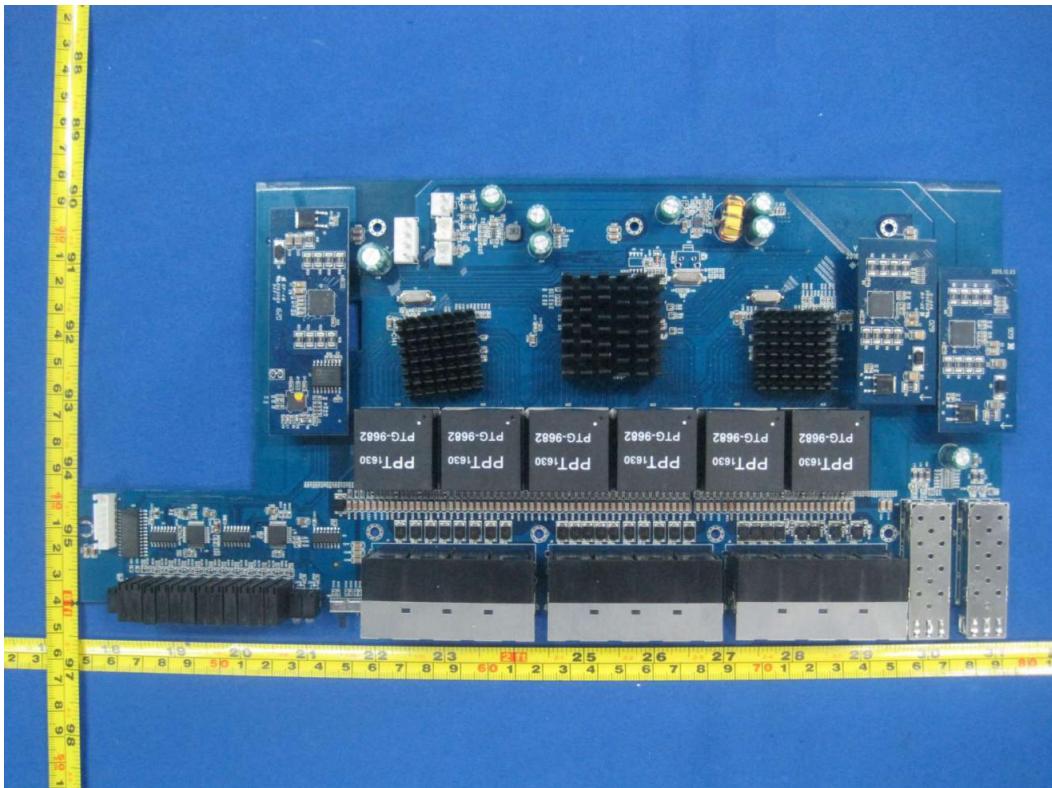


Fig. 8 - Main board overview 1

Attachment A: Photo-documentation

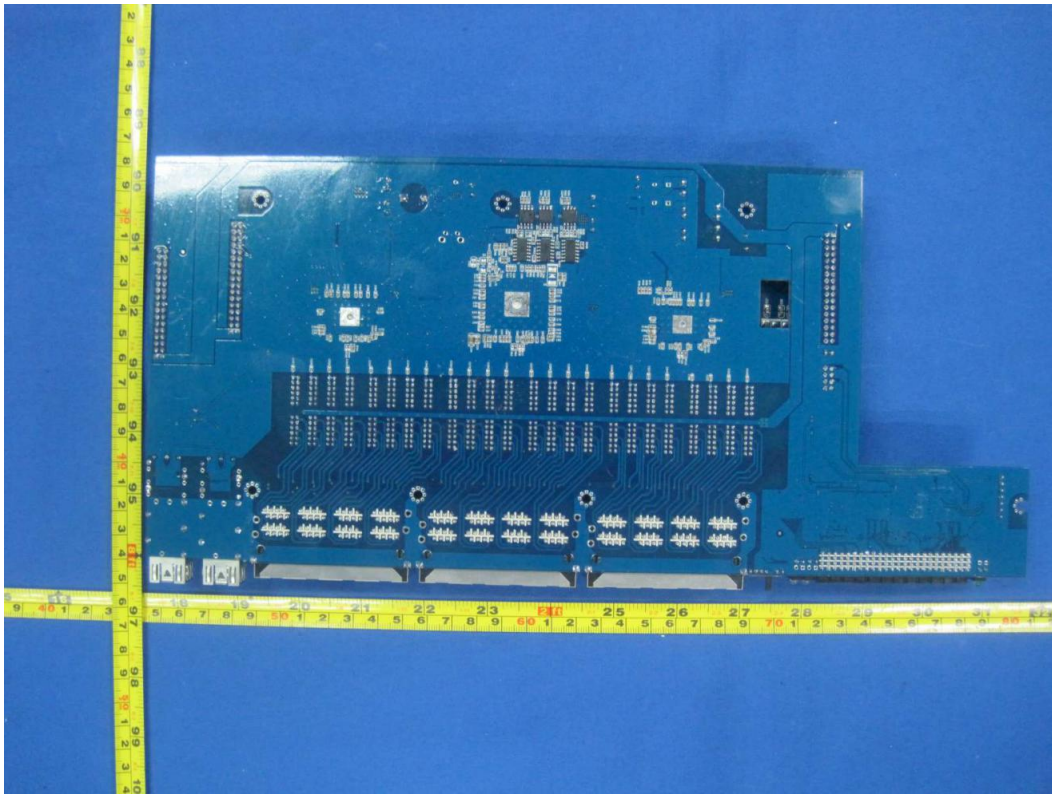
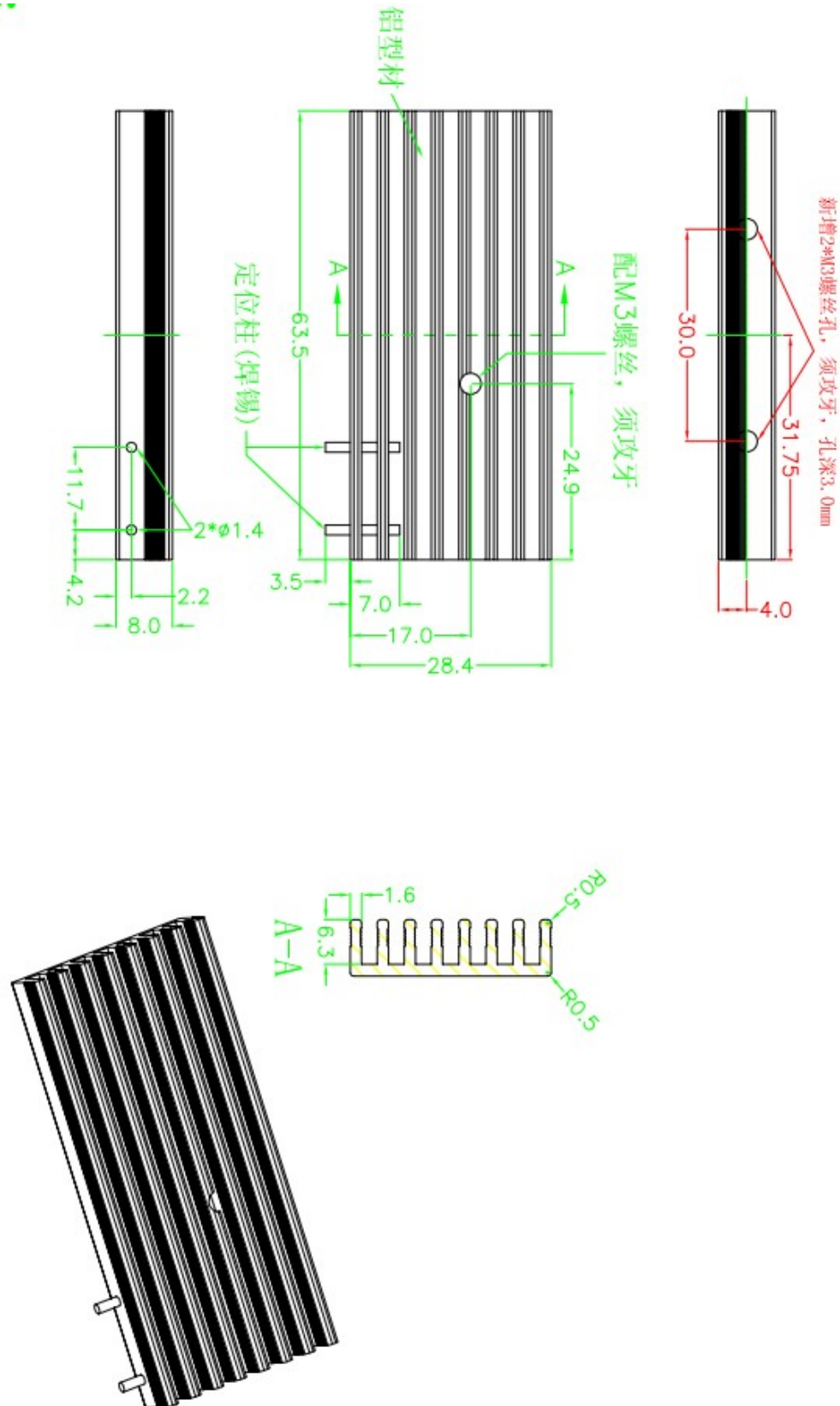


Fig. 9 –Main board overview 2

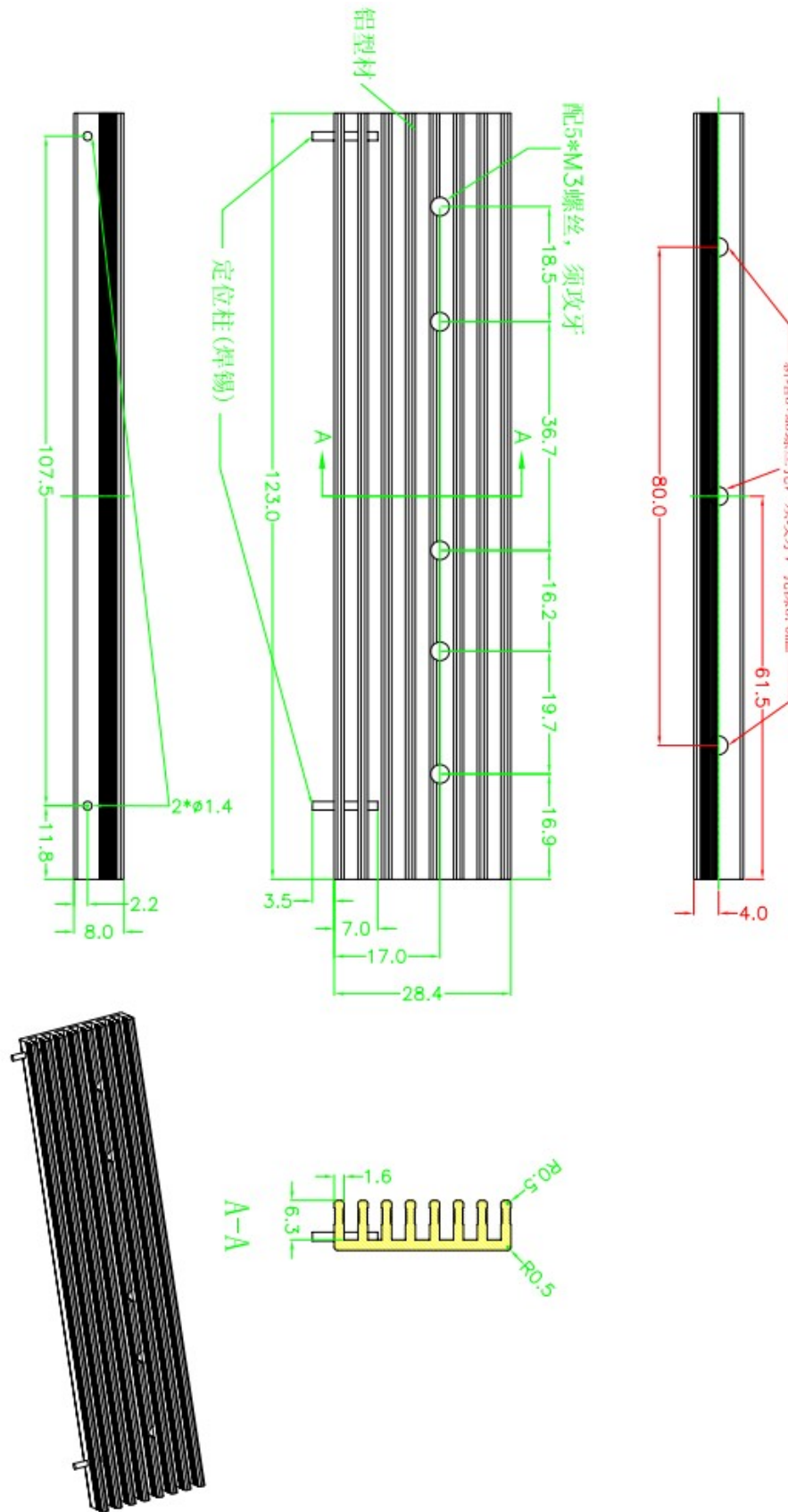


Fig. 10 –terminals

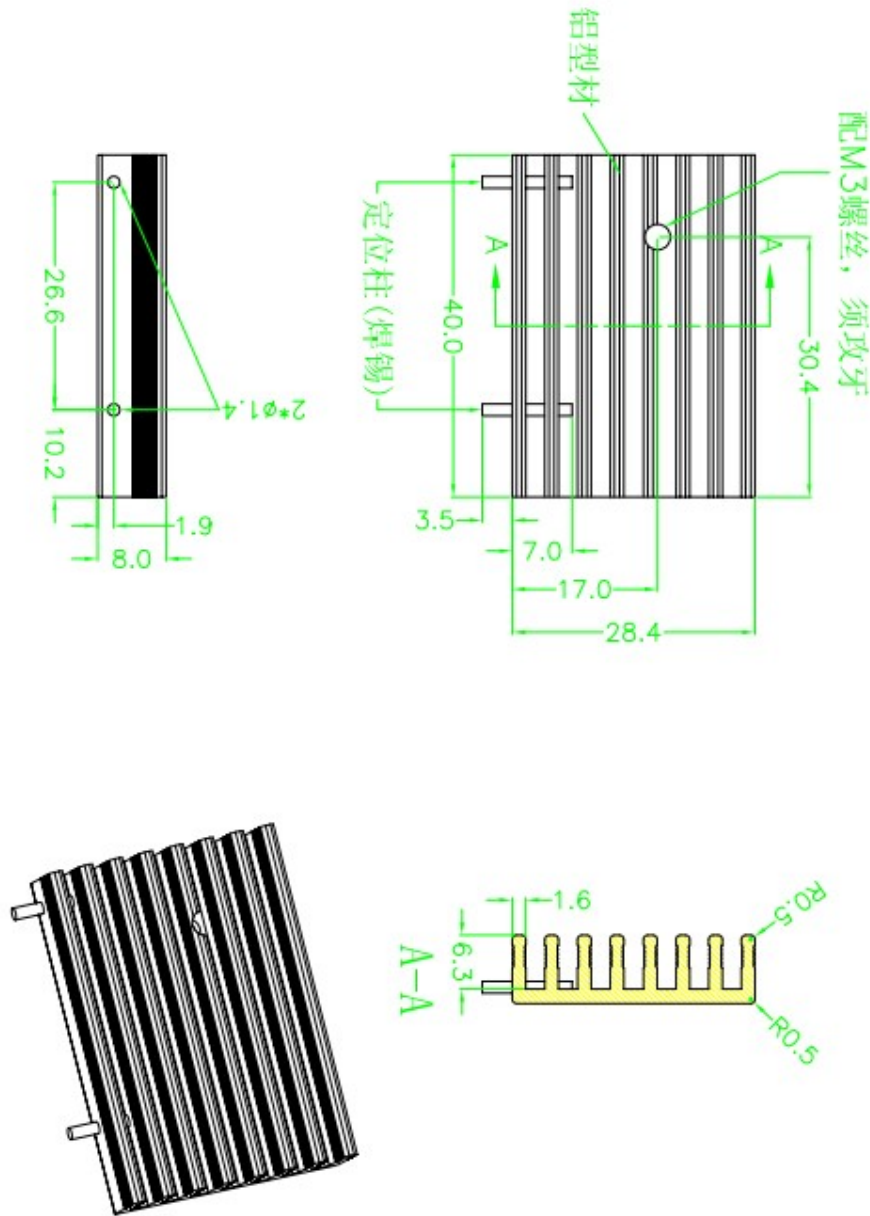
Attachment B: Drawing of Heatsink(HS1)



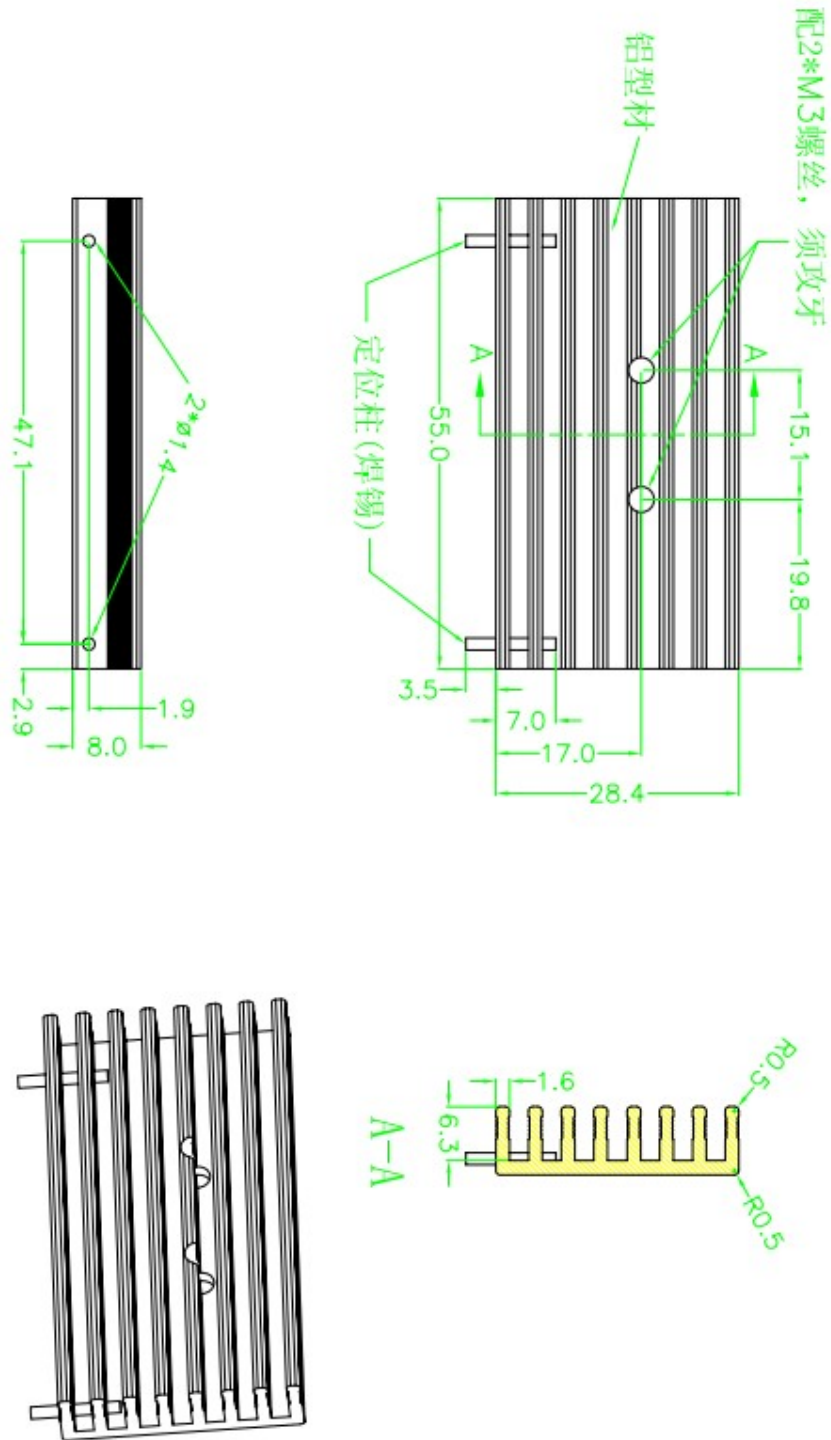
Attachment B: Drawing of Heatsink(HS2)



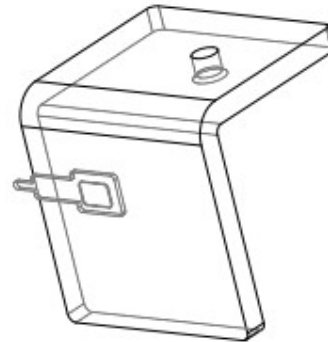
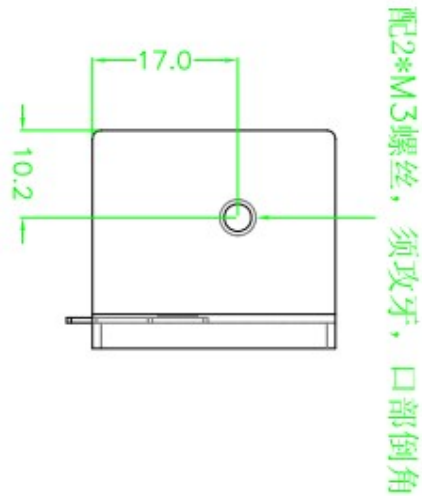
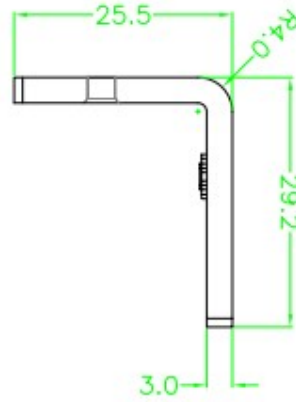
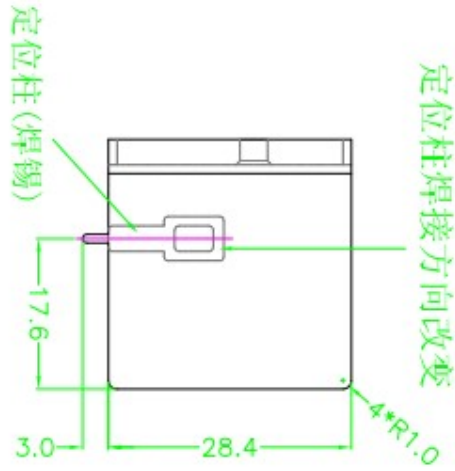
Attachment B: Drawing of Heatsink(HS3)



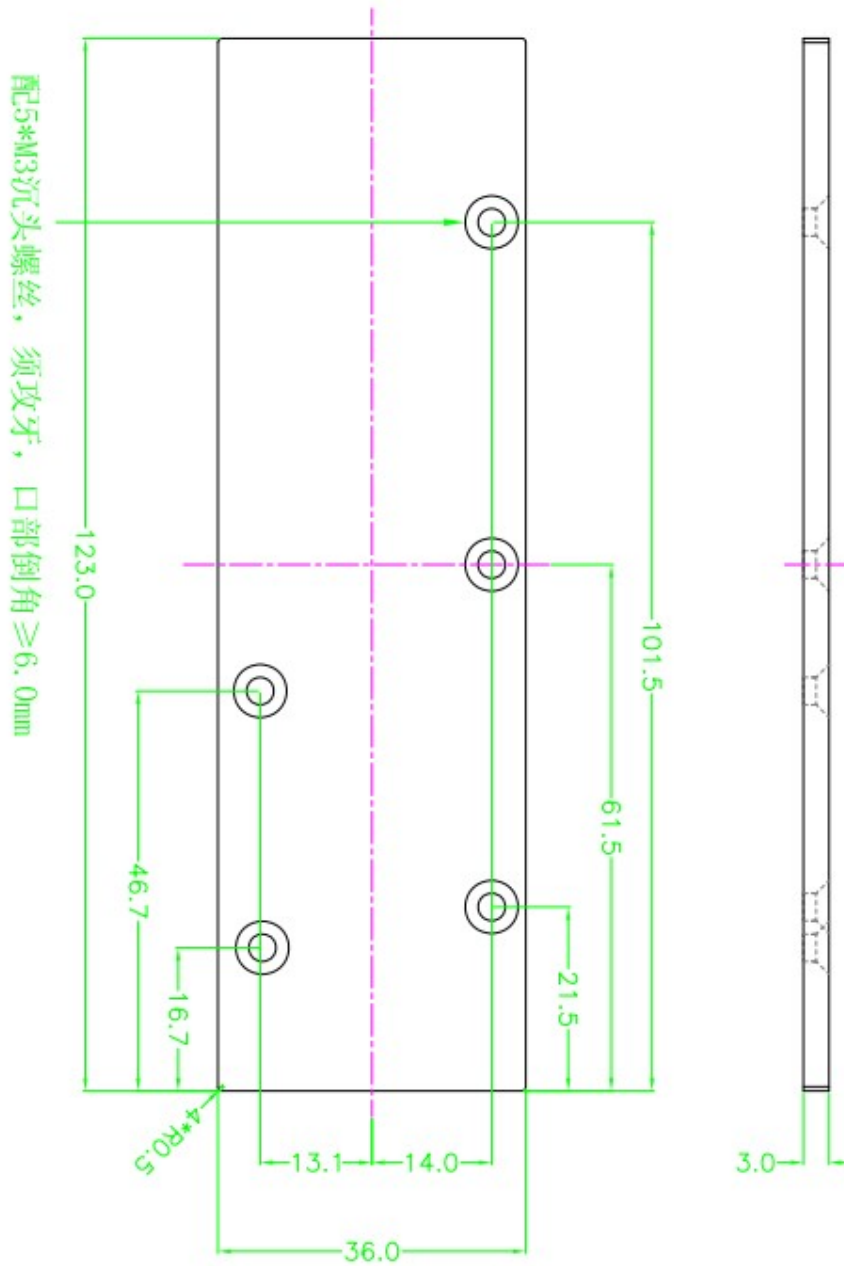
Attachment B: Drawing of Heatsink(HS4)



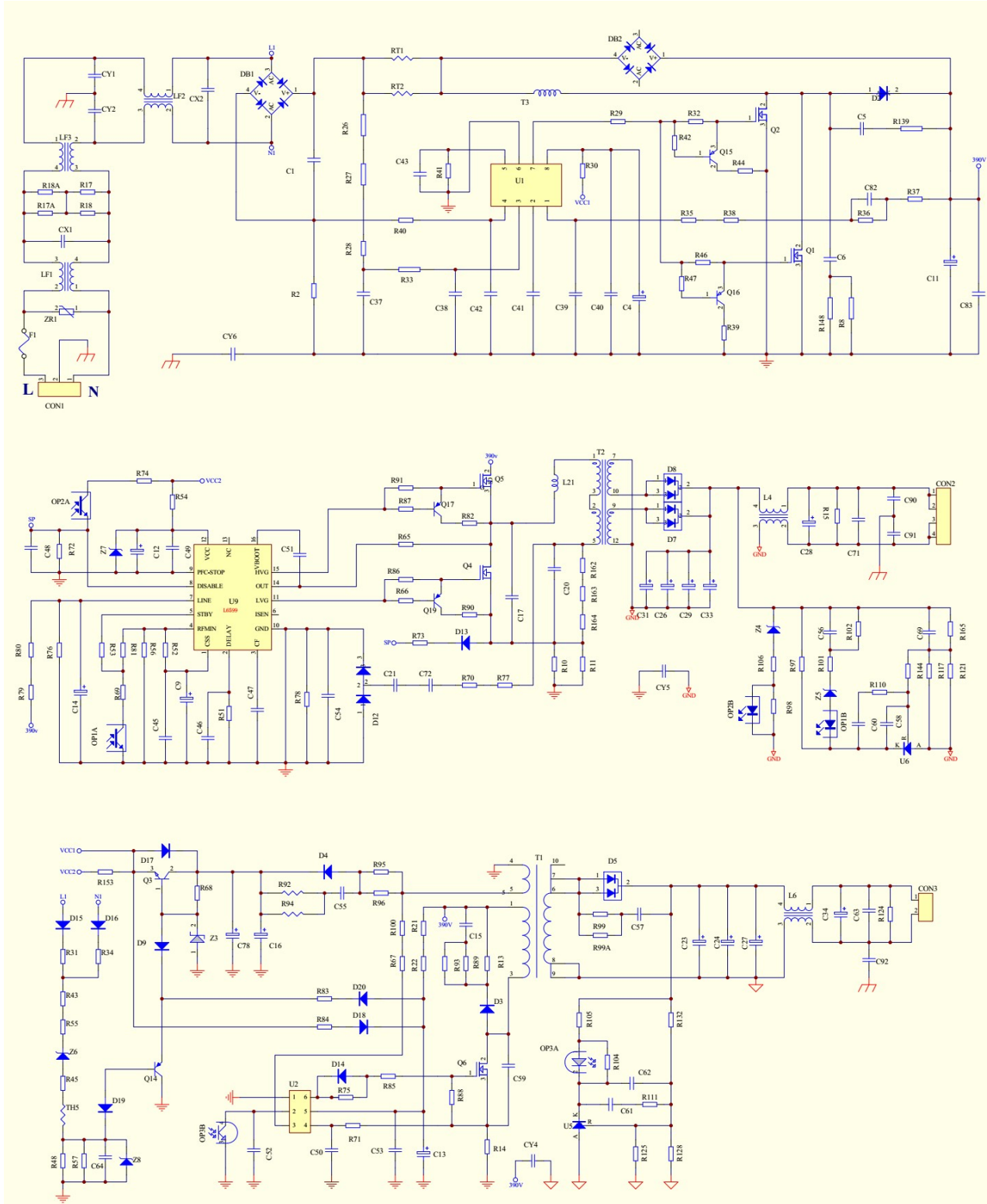
Attachment B: Drawing of Heatsink(HS5)



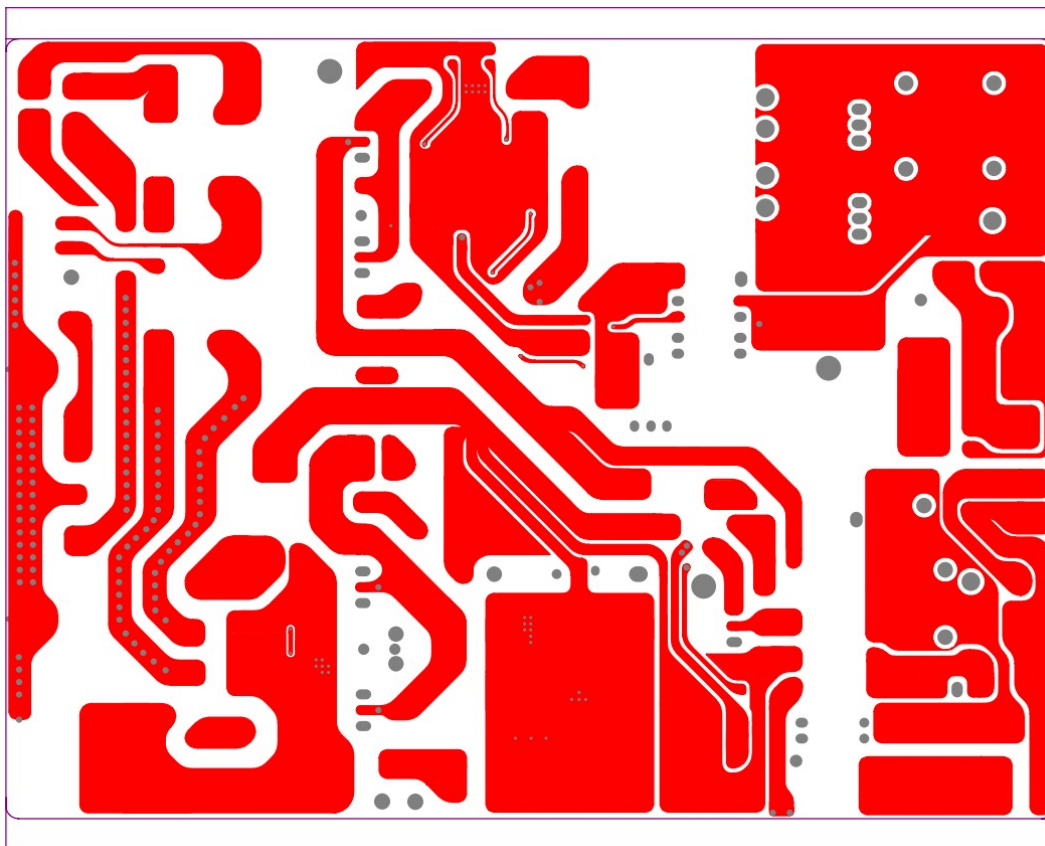
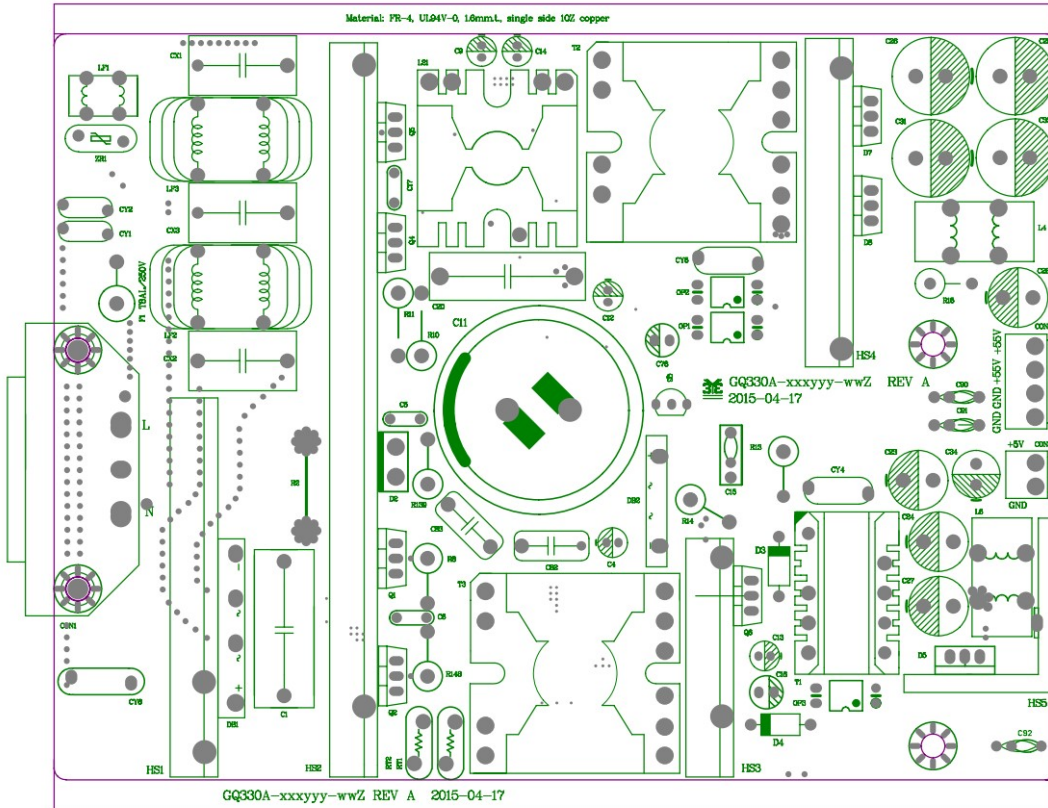
Attachment B: Drawing of Heatsink on the Power board



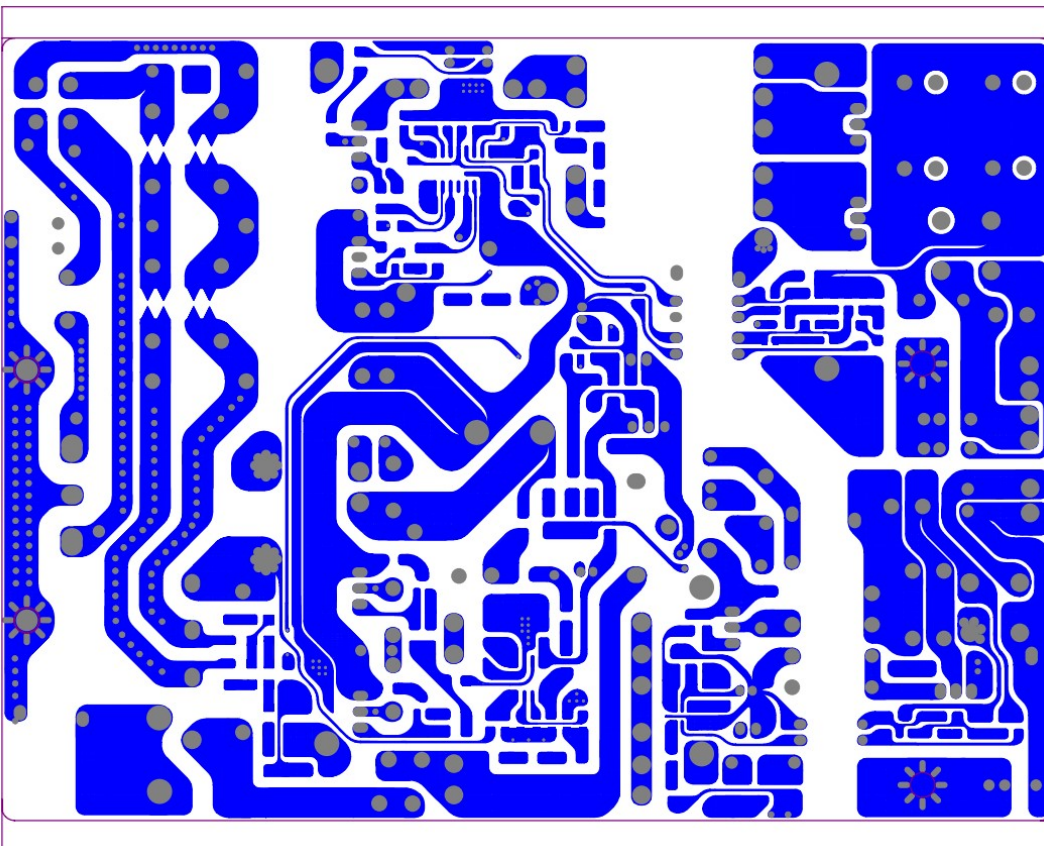
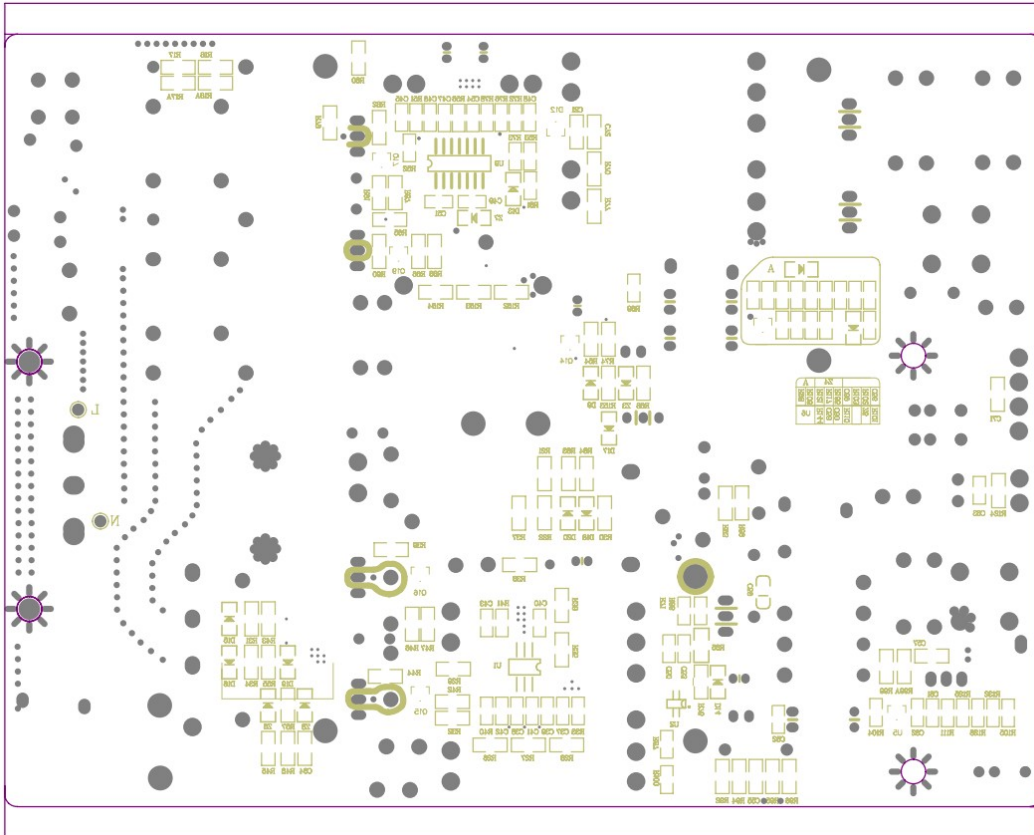
Attachment C: Schematic diagram and layout for power board



Attachment C: Schematic diagram and layout for power board

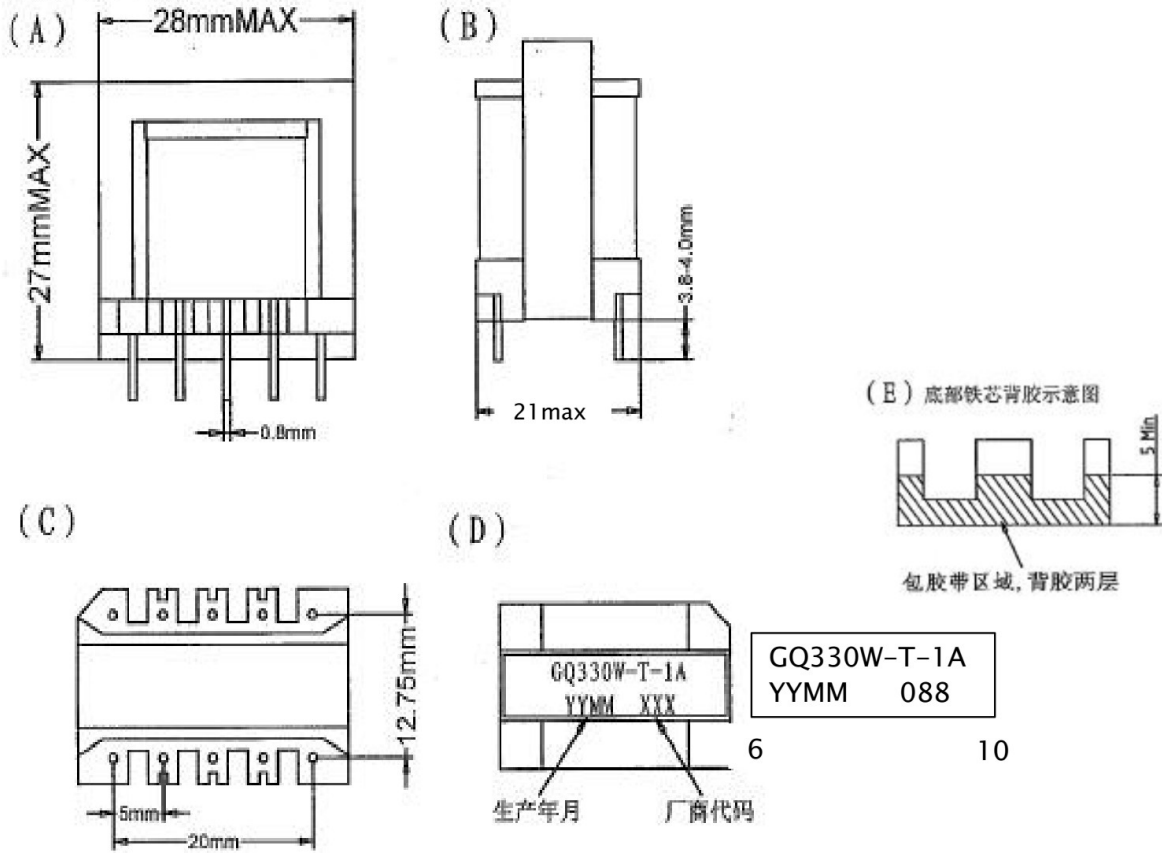


Attachment C: Schematic diagram and layout for power board



Attachment D: Transformer T1 specification

一、外观图 (单位: mm) /DIMENSION



Attachment D: Transformer T1 specification

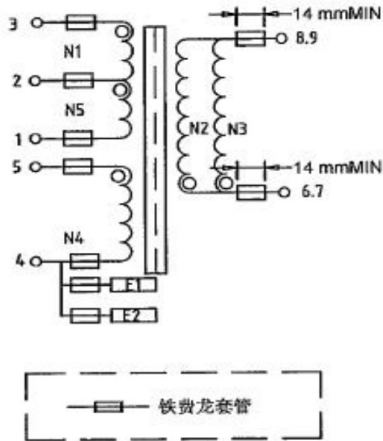
二、绕线表:

序号 NO.	起头 START	收尾 FINISH	圈数 TURNS	漆包线 WIRE	档墙、胶带圈数规格 MARGIN TAPE TURNS			绕制方式 WINDING CONDITION
							TAPE 黄色	
N1	3	2	51TS	2UEW-B 0.27mm*1P	3.5mm*2L	3.5mm*2L	2TS	密绕
E1	4	NC	0.9TS	COPPER 0.025*8mm背胶	3.5mm*1L	3.5mm*1L	3TS	居中
N2	6	8	5TS	2UEW-B 0.27mm*5P	3.5mm*2L	3.5mm*2L	2TS	密绕
N3	7	9	5TS	2UEW-B 0.27mm*5P	3.5mm*2L	3.5mm*2L	3TS	密绕
E2	4	NC	0.9TS	COPPER 0.025*8mm背胶	3.5mm*1L	3.5mm*1L	2TS	居中
N4	5	4	19TS	2UEW-B 0.19mm*2P	3.5mm*2L	3.5mm*2L	2TS	密绕
N5	2	1	25TS	2UEW-B 0.27mm*1P	3.5mm*2L	3.5mm*2L	3TS	密绕

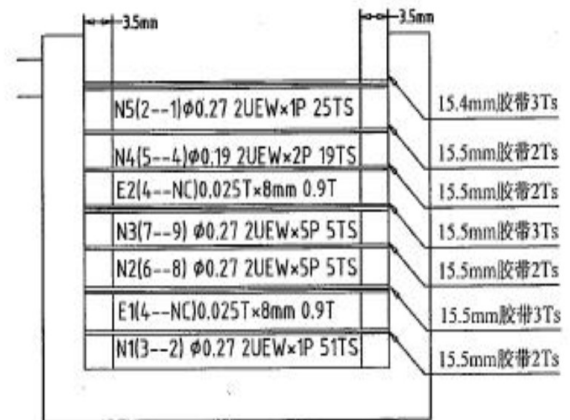
备注:

- 1.骨架为EF25 5+5，产品来料缺PIN10脚；
2. 所有绕组需套套管；

三、电原理图/CIRCUIT DIAGRAM

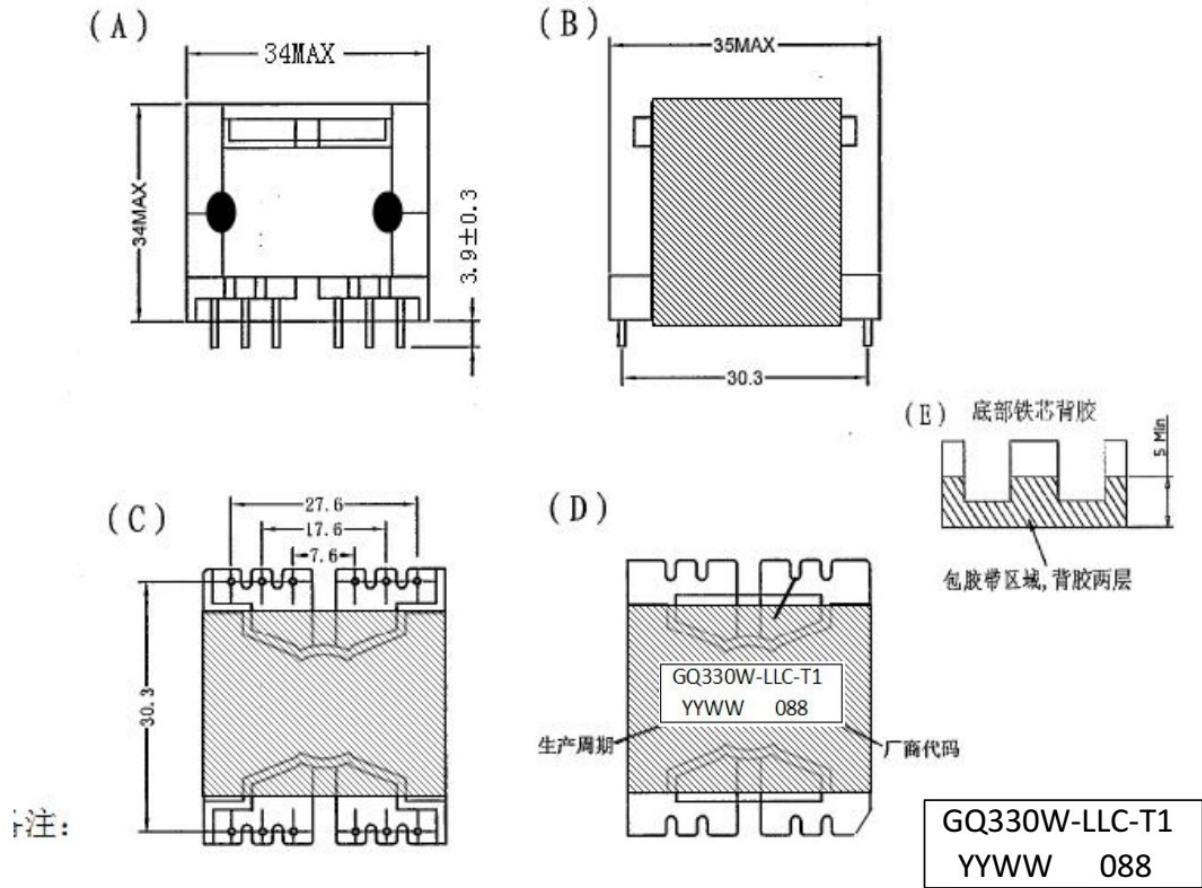


四、绕组结构图/CONSTRUCTION DIAGRAM



Attachment E: Transformer T2 specification

一、外观图 (单位: mm) / DIMENSION



Attachment E: Transformer T2 specification

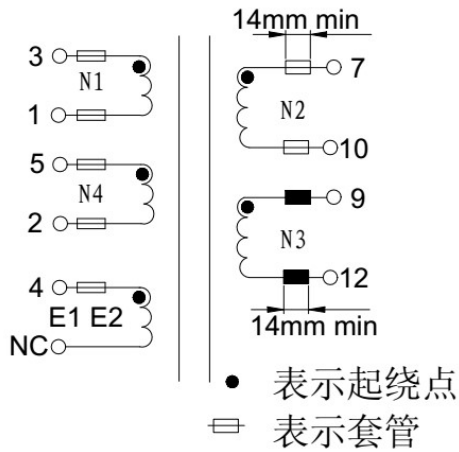
二、绕线表： 骨架顶部朝左绕制 ※表示套管

序号 NO.	起头 START	收尾 FINISH	圈数 TURNS	漆包线 WIRE	档墙、胶带圈数规格 MARGIN、TAPE TURNS			绕制方式 WINDING CONDITION
					PIN端	TOP端	TAPE 黄色	
N1	3※	1※	21TS	TEX-E Φ0.55*2P	/	/	2TS	密绕
E1	4※	NC	0.9TS	0.025*15mm 铜箔	/	/	3TS	居中绕制
N2	7※ 透明	10※ 透明	9TS	2UEW Φ0.1*100P 绞合线	/	/	3TS	同层并绕
N3	9※ 黑色	12※ 黑色	9TS	2UEW Φ0.1*100P 绞合线				
E2	4※	NC	0.9TS	0.025*15mm 铜箔	/	/	2TS	居中绕制
N4	5※	2※	9TS	TEX-EΦ 0.55*2P	/	/	3TS	密绕

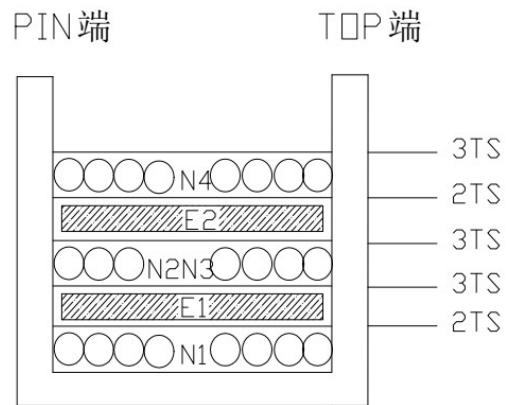
备注：

- 1.骨架来料缺PIN6脚，所有绕组需穿套管作业。
- 2.浸锡时，次级套管长度20mm套管大于8mm不可烫伤。
3. PIN2与PIN3脚理线时连焊。

三、电原理图/CIRCUIT DIAGRAM



四、绕组结构图/CONSTRUCTION DIAGRAM



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