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Certificate of Compliance

No.: ACSS1407139-01

The following products have been tested by us with the listed standards and found in compliance with the council LVD directive 2006/95/EC. It is possible to use CE marking to demonstrate the compliance with this LVD Directive.

Submitter : Intracom Asia Co., Ltd.

Address : 4F., No.77, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan

Product : 24-Port Gigabit Ethernet Switch with 2 SFP Ports

Model No. : 561044

Test Standards :

EN 60950-1: 2006 + A11: 2009 +
A1: 2010 + A12: 2011 + A2: 2013

Information technology equipment – Safety –
Part 1: General requirements



Carolyn Kang
Manager

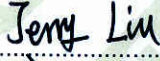



Date: Aug. 11, 2015

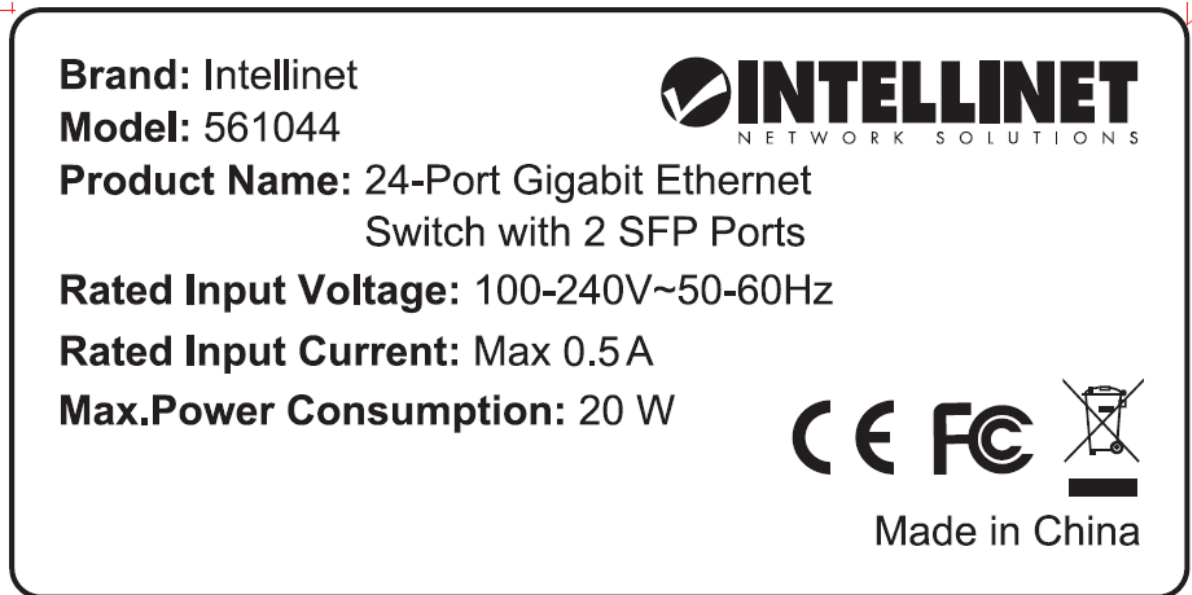
The certificate is based on a single evaluation of sample of above mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. logo.



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TEST REPORT EN 60950-1 Information technology equipment – Safety – Part 1: General requirements	
Report Reference No.:	ACSS1407139-01
Tested by (name + signature)	N/A
Reported by (name + signature)	Jerry Liu 
Reviewed by (name + signature)	Ditto Yu 
Approved by (name + signature)	Carolyn Kang 
Date of issue.....:	August 11, 2015
Contents	Report: 71 pages, Attachment: A, B and C, 21 pages
Testing Laboratory	Audix Technology (Shenzhen) Co., Ltd.
Address	No. 6, Kefeng Rd., 52 Block Shenzhen Science & Industry Park, Nantou, 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	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-01V1.3
Test item description	24-Port Gigabit Ethernet Switch with 2 SFP Ports
Trade Mark/Brand name.....:	
Model/Type reference.....:	561044
Ratings.....:	100-240V AC, 50/60Hz, Max. 0.5A

Copy of marking plate**1. Artwork of Marking Label.****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., the height of WEEE symbol should be 7.0mm 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)
NCD= No 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	+6%, -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	IP20
Altitude during operation (m)	Up to 2000m
Altitude of test laboratory (m)	Up to 2000m
Mass of equipment (kg)	Approx. 2.42kg
Maximum operation ambient	40°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(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.</p> <p>List of test equipment must be kept on file and available for review.</p>	

GENERAL PRODUCT INFORMATION:**Report summary**

1. The EUT is a 24-Port 10/100/1000Mbps + 2 SFP Green Ethernet Switch, this model used two power boards (Power board models: G0682 or TPT18S12A), electronic components mounted on Min. V-1 PCB and enclosed in metal enclosure..
2. The original test report (ACSS1407139) was amended on August 11, 2015 with the following modifications:
 - 1) Revise product name and model name;
 - 2) Revise applicant's name and address;
 - 3) Revise Manufacturer's name and address;
 - 4) Revise trademark;
 - 5) Change the current of rating from 0.31A max. to Max. 0.5A.
3. Since above reasons, no test is necessary. All the test data were fully reproduced from original report (ACSS1407139).
4. This amendment report shall be read in conjunction with original test report (ACSS1407139).

Report modify history

No.	Report No. / issued date	Model No.	Modification to the appliances:
1.	ACSS1407139/ August 27, 2014	FR-S1026GF-C	Original test report.

Additional information

N/A

Attached enclosure(s)

- Attachment A: 11 pages of Photo-Documentation.
Attachment B: 4 pages of Circuit Diagram and PCB Layout.
Attachment C: 6 pages of Transformer Specification.

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	No thermal controls.	N
1.5.4	Transformers	Transformers are used suitable for their intended application and comply with the relevant requirements of the standard and particularly with these of Annex C.	P
1.5.5	Interconnecting cables	Interconnection cables do not present a hazard.	P
1.5.6	Capacitors bridging insulation	Power board (model G0682): X2 capacitors and Y1 capacitors are used to be according to IEC 60384-14. Power board (model TPT18S12A): X2 capacitors and Y1 capacitors and Y2 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	Power board (model G0682): Bleeder resistors are bridging function insulation. Power board (model TPT18S12A): Bleeder resistors are bridging function insulation.	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N
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		P
1.5.9.1	General	For Power board (model G0682): approved Varistor (MOV1) comply with Annex Q used in primary circuit. For Power board (model TPT18S12A): approved Varistor (MOV1) comply with Annex Q used in primary circuit.	P
1.5.9.2	Protection of VDRs	A fuse is connected in series with VDR.	P
1.5.9.3	Bridging of functional insulation by a VDR	Approved Varistor located between mains lines.	P
1.5.9.4	Bridging of basic insulation by a VDR		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 System	P
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD. (see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not hand-held equipment.	N
1.6.4	Neutral conductor	Components connected between phases and earth are rated certified for a working voltage: 250V.	P

1.7	Marking and instructions		P
1.7.1	Power rating	Rating marking readily visible to operator.	P
	Rated voltage(s) or voltage range(s) (V)	Refer to page 2	P
	Symbol for nature of supply, for d.c. only		N
	Rated frequency or rated frequency range (Hz) ...	Refer to page 2	P
	Rated current (mA or A)	Refer to page 2	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Manufacturer's name or trade-mark or identification mark	Refer to page 2	P
	Model identification or type reference	Refer to page 2	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 coupler as disconnect devices.	N
1.7.2.3	Overcurrent protective device	Pluggable equipment type A	N
1.7.2.4	IT power distribution systems	Shall be provided when submitted for national approval (for Norway).	N
1.7.2.5	Operator access with a tool	All areas containing hazards are inaccessible to the operator.	N
1.7.2.6	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
1.7.5	Power outlets on the equipment	No standard power outlet.	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Power board (model G0682): "F1 T3.15A, 250V~" is marked adjacent to fuse on PCB. Power board (model TPT18S12A): "F1 T2A 250VAC" is marked adjacent to fuse on PCB.	P
1.7.7	Wiring terminals	Refer to below:	P
1.7.7.1	Protective earthing and bonding terminals	Appliance inlet is provided. The symbol (IEC 60417-5019) was marked on the appliance inlet.	P
1.7.7.2	Terminals for a.c. mains supply conductors		N
1.7.7.3	Terminals for d.c. mains supply conductors		N
1.7.8	Controls and indicators	Refer to below:	P
1.7.8.1	Identification, location and marking	The function of indicators affecting safety is obvious without knowledge of language.	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8.2	Colours	Colours are used for functional indications, not involved safety.	P
1.7.8.3	Symbols according to IEC 60417	No such controls.	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 was subjected to the permanence of marking test. After the test, there was no damage to the marking. The marking did not fade.	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		P
2.1.1.1	Access to energized parts	All accessible circuits are SELV circuits.	P
	Test by inspection	Complies.	P
	Test with test finger (Figure 2A)	The test finger was unable to contact bare hazardous parts.	P
	Test with test pin (Figure 2B)	The test pin was unable to contact bare hazardous parts.	P
	Test with test probe (Figure 2C)	No TNV circuit 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.	N
2.1.1.5	Energy hazards	No energy hazard in operator access area. Checked by means of test finger.	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.6	Manual controls	No shafts of knobs etc.	N
2.1.1.7	Discharge of capacitors in equipment	The capacitance of the input circuit exceed 0.1 μ F, the measurement was performed in the fuse-in condition.	P
	Measured voltage (V); time-constant (s) :	Power board (model G0682): Time constant is measured, Max. 220ms, 358.3Vpk (37% of Vpk is 132.6V), C4=0.22 μ F and resistor R1=R2=R8=R31=1M Ω , no load (Vin=254.4V). Power board (model TPT18S12A): Time constant is measured, Max. 160ms, 358.3Vpk (37% of Vpk is 132.6V), C2=0.22 μ F and resistor R1=R2=R4=R5=750K Ω , no load (Vin=254.4V).	—
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 instored for installation in RAL.	N

2.2	SELV circuits		P
2.2.1	General requirements	SELV limits are not exceeded under normal condition and after a single fault.	P
2.2.2	Voltages under normal conditions (V) :	Between any SELV circuit, 42.4V peak or 60Vdc were not exceeded. (See appended table 2.2.2)	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.2.3	Voltages under fault conditions (V)	Limits of 71V peak or 120Vdc were not exceeded within 0.2 seconds and limits of 42.4V peak or 60Vdc were not exceeded for longer than 0.2 seconds. (See appended table 2.2.3)	P
2.2.4	Connection of SELV circuits to other circuits	SELV circuits are only connected to other SELV circuits.	P

2.3	TNV circuits <i>No TNV circuit.</i>		N
2.3.1	Limits		N
	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	Limits are not exceeded.	P
2.4.2	Limit values	(See appended table 2.4.2)	P
	Frequency (Hz).....		—
	Measured current (mA)		—
	Measured voltage (V).....		—
	Measured circuit capacitance (nF or μF).....		—
2.4.3	Connection of limited current circuits to other circuits	Connected to SELV	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.5	Limited power sources		N
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		N
	d) Overcurrent protective device limited output		N
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :		—
	Current rating of overcurrent protective device (A) .:		—

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth.	P
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	Refer to below:	P
2.6.3.1	General		P
2.6.3.2	Size of protective earthing conductors	No power supply cord provided.	N
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors	Protective bonding conductor which connect to ground pin of AC inlet. 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.....	No green-and-yellow wire used.	N
2.6.4	Terminals	Refer to below:	P
2.6.4.1	General		P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	Refer to 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
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 coupler 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	Protective device of building installation used as against earth faults, protective device of integral parts in equipment used as against excessive current and short-circuits.	P
	Instructions when protection relies on building installation		N

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	One protective device (fuse) used in 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
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 nor hygroscopic materials are used as insulation. No driving belts or couplings used.	P
2.9.2	Humidity conditioning	48Hours.	P
	Relative humidity (%), temperature (°C)	95% RH, 30°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 earthed metal enclosure, basic insulation used; For output terminals, double or reinforced insulation used.	P
	Method(s) used	Method 1 and method 2.	—

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	Refer to below:	P
2.10.1.1	Frequency	Considered.	P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	The function insulation complied with clause 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts		N
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
2.10.3	Clearances		P
2.10.3.1	General	Refer to below:	P
2.10.3.2	Mains transient voltages	Normal transient voltage considered.	P
	a) AC mains supply	Overvoltage category II for primary circuit and transient voltage 2500Vpeak.	P
	b) Earthed d.c. mains supplies		N
	c) Unearthed d.c. mains supplies		N
	d) Battery operation		N
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	Functional insulation, comply with 5.3.4 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		N
2.10.3.7	Transients from d.c. mains supply		N
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9	Measurement of transient voltage levels		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

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	Approved optocouplers (see appended table 1.5.1).	P
2.10.5.4	Semiconductor devices	Approved optocouplers (see appended table 1.5.1).	P
2.10.5.5.	Cemented joints		N
2.10.5.6	Thin sheet material – General		P
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)	P
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components	For power board (model: G0682): secondary winding on transformer T1 used triple insulated wire.	P
	Working voltage		P
	a) Basic insulation not under stress		N
	b) Basic, supplementary, reinforced insulation	Wire complies to Annex U, three layers as reinforced insulation.	P
	c) Compliance with Annex U		P
	Two wires in contact inside wound component; angle between 45° and 90°	Protection against mechanical stress is provided by tube and insulation tape.	P
2.10.5.13	Wire with solvent-based enamel in wound components		N

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test		—
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage		N
	- Basic insulation not under stress		N
	- Supplementary, reinforced insulation		N
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		N
	Distance through insulation		N
	Number of insulation layers (pcs)		N
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		N
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11	Tests for semiconductor devices and cemented joints		N
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	All wires/conductors possess adequate cross-sectional areas for their intended application and internal wiring are adequately insulated.	P
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage insulation.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	P
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltages 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
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, washer and spring-washer is provided.	N
3.1.8	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	No sleeving used.	N

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

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Clause	Requirement + Test	Result - Remark	Verdict
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	AC supply, 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
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 <i>Appliance inlet used</i>		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

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Clause	Requirement + Test	Result - Remark	Verdict
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

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		N

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

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		P
4.2.6	Drop test; height (mm)		N
4.2.7	Stress relief test	Metal enclosure.	N

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Clause	Requirement + Test	Result - Remark	Verdict
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 judged to be sufficiently well rounded so as not to constitute a hazard.	P
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	No batteries in the equipment.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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	Refer to 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		—
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		N
4.4.1	General		N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations	Not intended for installation in RAL.	N
4.4.4	Protection in service access areas		N
4.4.5	Protection against moving fan blades		N
4.4.5.1	General		N
	Not considered to cause pain or injury. a).....		—
	Is considered to cause pain, not injury. b)		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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
4.5.4	Touch temperature limits	Not exceed the values.	P
4.5.5	Resistance to abnormal heat		N

4.6	Openings in enclosures		P
4.6.1	Top and side openings	Refer to below:	P
	Dimensions (mm)	Top and front sides: no openings. Reae side: Numerous circular holes, diameter is maximum 1.8 mm, each cover an area 145 mm x 26 mm. Left side: Numerous circular holes, diameter is maximum 1.8 mm, each cover an area 145 mm x 26 mm. Right side: Numerous trapezoid holes, maximum 27.8 mm x 6.9 mm, cover two circular areas, diameter is maximum 37.7 mm. Hazardous parts are not located within 5° vertical projection of openings.	—
4.6.2	Bottoms of fire enclosures	No openings.	P
	Construction of the bottomm, dimensions (mm) .. :		—
4.6.3	Doors or covers in fire enclosures	No doors or covers in fire enclosure.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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 enclosure cover all parts.	N
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-1.	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		N
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

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.5	Test procedure		P
5.1.6	Test measurements	Refer to below:	P
	Supply voltage (V)	254.4Vac, 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
	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	(See appended table 5.2)	P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(See appended table 5.3)	P
5.3.2	Motors	Approved system fans used.	N
5.3.3	Transformers	See Annex C	P
5.3.4	Functional insulation	Complies with method a), c), and see appended table 2.10.3 & 2.10.4 and appended table 5.3.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.5	Electromechanical components	No electromechanical components.	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		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 <i>The equipment is not connected to a TELECOMMUNICATION NETWORKS</i>		N
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
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 :		—

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Clause	Requirement + Test	Result - Remark	Verdict
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS <i>The equipment is not connected to a CABLE DISTRIBUTION SYSTEMS.</i>		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)		—
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

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Clause	Requirement + Test	Result - Remark	Verdict
	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		—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
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 :	Primary to Secondary.	—
	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 :	Inherent impedance.	—
C.1	Overload test	(See appended table 5.3)	P
C.2	Insulation	(See appended table 2.10.3 and 2.10.4)	P
	Protection from displacement of windings :	Secured by insulation tape.	P

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

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

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Clause	Requirement + Test	Result - Remark	Verdict
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)	P
	Metal(s) used :	—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)	N
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

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Clause	Requirement + Test	Result - Remark	Verdict
M.3	Method B		N
M.3.1	Ringing 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

P	ANNEX P, NORMATIVE REFERENCES		—
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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.		—

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Clause	Requirement + Test	Result - Remark	Verdict
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N
	No such insulated winding wires for use without interleave.		—

V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction	Refer to below:	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
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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EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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.....:		—
	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) :		—

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 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		—
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

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. 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

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 for personal use, that: is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use.</p> <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: while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used.</p> <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: hearing aid equipment and professional equipment;</p> <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>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

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T} \leq 85$ 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> <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: 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> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and e) not exceed the following: 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed “programme simulation noise” described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” described in EN 50332-1.</p>		N

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"> the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <div style="text-align: center;">  </div> <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N
	Zx.4 Requirements for listening devices (headphones and earphones)		N

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV.</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
	<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 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

EN 60950-1									
Clause	Requirement + Test	Result - Remark	Verdict						
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		P						
	<p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		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 style="margin-left: 40px;"> <tr> <td>Up to and including 6 </td> <td>0,75 ^{a)} </td> </tr> <tr> <td>Over 6 up to and including 10 (0,75) ^{b)}</td> <td>1,0 </td> </tr> <tr> <td>Over 10 up to and including 16 (1,0) ^{c)}</td> <td>1,5 </td> </tr> </table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 ^{a)}	Over 6 up to and including 10 (0,75) ^{b)}	1,0	Over 10 up to and including 16 (1,0) ^{c)}	1,5		N
Up to and including 6	0,75 ^{a)}								
Over 6 up to and including 10 (0,75) ^{b)}	1,0								
Over 10 up to and including 16 (1,0) ^{c)}	1,5								
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N						

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 Delete the fifth line: conductor sizes for 13 to 16 A		N
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).		N
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.		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

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	In Finland, Norway and Sweden , CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland : "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway : "Apparatet må tilkoples jordet stikkontakt" In Sweden : "Apparaten skall anslutas till jordat uttag"		N
1.7.2.1 (A11:2009)	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. 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. 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: "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)."		N

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<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): "Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplede utstyr – og er tilkoplede 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." Translation to Swedish: "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
1.7.2.1 (A2:2013)	<p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in Denmark shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord."</p>		N
1.7.5	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p>		N
1.7.5 (A11:2009)	<p>For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p>		N

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5 (A2:2013)	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011.</p> <p>For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a.</p> <p>Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N
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.		P
2.7.1	In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N
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

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <p>SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A</p> <p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A</p>		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

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

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

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

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

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 (on main board)	Various	Various	V-1, Min. 130°C	UL	UL	
The following components located on power board (model: G0682)						
AC Inlet	Zhejiang LECI Electronics Co.,LTD	DB-14	250Vac, 10A	EN 60320-1	VDE 40032137	
PCB	Various	Various	Min. V-1, 130°C	UL	UL	
Mylar sheet (under the power board)	SABIC INNOVATIVE PLASTICS US L L C	FR60 (GG)	Min. V-0, 125°C	UL	UL E121562	
(Alternative)	SUZHOU OMAY OPTICAL MATERIALS CO LTD	SE11	Min. V-0, 80°C	UL	UL E249605	
(Alternative)	MIANYANG LONGHUA FILM CO LTD	PC-860-60B	Min. V-0, 80°C	UL	UL E254551	
Fuse (F1)	Conquer Electronics Co., Ltd.	MST series	T3.15A, 250Vac,	EN 60127-1 EN 60127-3	VDE 40017118	
(Alternative)	Honghu Bluelight Electronic Co.,Ltd.	6ET	T3.15A, 250Vac	EN 60127-1 EN 60127-3	VDE 40034107	
(Alternative)	XC Electronics (Shenzhen) Co., Ltd.	5TE	T3.15A, 250Vac	EN 60127-1 EN 60127-3	VDE 40029550	
Electrolytic capacitor (C38)	--	--	400V, 47uF, 105°C	EN 60950-1	Test with appliance	
Internal output wire	SHENZHEN JILI DIANYE CO LTD	1007	80°C, VM-1, 20AWG	UL	UL E317675	
(Alternative)	SHENZHEN LINKOL WIRE&CABL E CO LTD	1007	80°C, VM-1, 20AWG	UL	UL E320450	
(Alternative)	Linoya Electronic Technology Co., Ltd	1007	80°C, VM-1, 20AWG	UL	UL E315619	

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
Varistor (MOV1)	Thinking Electronic Industrial Co., Ltd	TVR10561-D	Min. 300Vac, 85°C	IEC 61051-2	VDE 40021243
(Alternative)	Cerglass MFG Inc	10D561K	Min. 300Vac, 85°C	IEC 61051-2	VDE 40028836
(Alternative)	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	STE-10D561K	Min. 300Vac, 85°C	IEC 61051-2	VDE 40023049
(Alternative)	Joyin Company Ltd.	10S561K	Min. 300Vac, 85°C	IEC 61051-2	VDE 40004658
(Alternative)	Brightking (Shenzhen) Co., Ltd.	10D561K	Min. 300Vac, 85°C	IEC 61051-2	VDE 40027827
Discharge resistor (R1, R2, R8, R31)	--	--	Rated of each resistor: 1Mohm, 0.25W	EN 60950-1	Test with appliance
X2 capacitor (C4)	Shenzhen Su Rong Capacitors Co., Ltd.	MPX	0.22uF, 275Vac	EN 60384-14	VDE 40008924
(Alternative)	Shantou High-new Technology Development Zone Songtian	MPX	0.22uF, 275Vac	EN 60384-14	TUV R 50136379
(Alternative)	Dain Electronic Co., Ltd.	MPX	0.22uF, 275Vac	EN 60384-14	VDE 40018798
(Alternative)	Shenzhen Yimanfeng Science And Technology Co., Ltd	MPX/MKP	0.22uF, 280Vac	EN 60384-14	VDE 40028516
(Alternative)	Xiangtai Electronic (Shenzhen) Co.,Ltd.	MPX, MKP	0.22uF, 275Vac	EN 60384-14	VDE 40036065
(Alternative)	HSUAN TAI ELECTRONIC CO LTD	MCY	0.22uF, 275Vac	EN 60384-14	VDE 125205
Inductor (L3)	SHENZHEN WZY TECHNOLOGY CO., LTD	LL00118V00	--	EN 60950-1	Test with appliance

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
- Winding	TONGLING NONFERRO US COPPER CROWN ELECTRICAL CO., LTD	UEW	130°C	UL	UL E217937
- Bobbin	Changchun Co Ltd	T375J			
Y1 capacitor (C3, C9, C10)	Shantou High-New Technology	CD-series	Max. 1000pF, Min. 250Vac, 125°C	IEC 60384-14	VDE 40025754
(Alternative)	JYH CHUNG ELECTRONI CS CO LTD	JD	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14	VDE 137027
(Alternative)	XIAMEN WANMING ELECTRONI CS CO LTD	HJ	Max. 1000pF, Min. 250Vac, 85°C	IEC 60384-14	VDE 40000353
(Alternative)	Shaanxi Huaxing Electronic Development Co., Ltd	CT7Y1	Max. 1000pF, Min. 250Vac, 125°C	IEC 60384-14	VDE 40015542
(Alternative)	DONGGUAN EASY- GATHER ELECTRONI C CO LTD	DCF	Max. 1000pF, Min. 250Vac, 125°C	IEC 60384-14	VDE 40015758
(Alternative)	SHENZHEN TERUIXIANG ELECTRONI C CO, LTD.	TY	Max. 1000pF, Min. 250Vac, 125°C	IEC 60384-14	VDE 40023136
Optocouplers (OT1)	BRIGHT LED ELECTRONI CS CORP	BPC-817C	Reinforced Insulation	EN 60747-5-2	VDE 40007240
(Alternative)	Cosmo Electronic Corp	K1010	Reinforced Insulation	EN 60747-5-2	VDE 101347
(Alternative)	COSMO	KPC 817	Reinforced Insulation	EN 60747-5-2	VDE 101347
(Alternative)	Everlight Electronics Co., Ltd.	EL817	Reinforced Insulation	EN 60747-5-2	VDE 132249
(Alternative)	LITE-ON Technology Corporation	LTV-817	Reinforced Insulation	EN 60747-5-2	VDE 40015248
(Alternative)	Fairchild Semiconducto r Corp	H11A817(A; B; C; D; X)	Reinforced Insulation	EN 60747-5-2	VDE 104801

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
Transformer (T1)	SHENZHEN HENGSIDA INDUSTRY CO LTD	LT00672V01	--	EN60950-1	Test with the appliance
- Winding (primary winding)	TA YA ELECTRIC WIRE & CABLE CO LTD	MW75-C	130°C	UL	UL E201757
- Triple wire (secondary (N2) winding)	Furukawa Electric Co., Ltd.	TEX-E	130°C	UL	UL E206440
- Bobbin	SUMITOMO BAKELITE CO LTD	PM-9820	Phenolic.	UL	UL E41429
- Insulation tape	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350-1(b)	130°C	UL	UL E17385
- Tube	GREAT HOLDING INDUSTRIAL CO., LTD	TFL	200°C	UL	UL E156256
Transformer (T1) (Alternative)	SHENZHEN XINDAHUI ELECTRONI CS CO., LTD	LT00672V01	--	EN60950-1	Test with the appliance
- Winding (primary winding)	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO., LTD	MW75-C	155°C	UL	UL E84201
- Triple wire (secondary winding)	Totoku Electronic	TIW-E	130°C	UL	UL E166483
- Bobbin	CHANG CHUN PLASTIC CO LTD	T200NA	Phenolic.	UL	UL E59481
- Insulation tape	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350-1(b)	130°C	UL	UL E17385
- Tube	GREAT HOLDING INDUSTRIAL CO., LTD	TFL	200°C	UL	UL E156256

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
The following components located on power board (model: TPT18S12A)					
AC Inlet	TECX- UNIONS Technology Corporation	TU-301-S	15A/250Vac Max. 70°C	EN 60320-1	VDE 40014528
(Alternative)	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A01-003JTA	10A/250Vac Max. 70°C	EN 60320-1	VDE 40027359
PCB	Various	Various	Min. V-1, 130°C	UL	UL
Fuse (F1)	Shenzhen Lanson Electronics Co. Ltd.	3K	T2AL, 250Vac	EN 60127-1 EN 60127-3	VDE 40010682
(Alternative)	Dongguan Better Electronic Technology Co., Ltd.	332	T2AL, 250Vac	EN 60127-1 EN 60127-3	TUV J50158950
(Alternative)	Dongguan Hongda Electronic Technology Co., Ltd.	31TD	T2AL, 250Vac	EN 60127-1 EN 60127-3	VDE 40030816
Electrolytic capacitor (C3)	--	--	400V, 47uF, 105°C	EN 60950-1	Test with appliance
Bleeder resistors (R1, R2, R4, R5)	--	--	750KΩ, 1/4W	EN 60950-1	Test with appliance
Varistor (MOV1)	Thinking Electronic Industrial Co., Ltd.	TVR10471-V TVR10471	470V	IEC 61051-1 IEC 61051-2	VDE 005944
(Alternative)	Thinking Electronic Industrial Co., Ltd.	TVR14471	470V	IEC 61051-1 IEC 61051-2	VDE 40031391
(Alternative)	Brightking (Shenzhen) Co., Ltd	471KD14	470V	IEC 61051-1 IEC 61051-2	VDE 40027827
(Alternative)	Lien Shun Electronics Co., Ltd	10D471K	470V	IEC 61051-1 IEC 61051-2	VDE 40005858
(Alternative)	Centra Science Corp.	CNR-10D471K	470V	IEC 61051-1 IEC 61051-2	VDE 40008220
X2 capacitor (C2)	Tenta Electric Industrial Co. Ltd.	MEX	0.22uF, 275Vac	EN 60384-14	VDE 119119

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
(Alternative)	Dain Electronics Co., Ltd.	MPX/ NPX/ MEX	0.22uF, 275Vac	EN 60384-14	VDE 40018798
(Alternative)	Shantou High-new Technology Development Zone Songtian	MPX	0.22uF, 275Vac	EN 60384-14	TUV R50136379
(Alternative)	Dongguan Easy-gather Electronic Co., Ltd.	MKP-X2	0.47uF, 300Vac	EN 60384-14	VDE 40022258
(Alternative)	Shenzhen Su Rong Capacitors Co., Ltd.	MPX/ MKP	0.47uF, 280Vac	EN 60384-14	VDE 40008924
Inductor (L1)	SHENZHEN TOPOW ELECTRRON ICS CO. , LTD	UU10.5	--	EN 60950-1	Test with appliance
- Winding	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD	UEW/U	130°C	UL1446	UL E201757
Y1 capacitor (CY3)	Guangdong South Hongming Electronic Science and Technology Co., Ltd.	F	2200pF, 250Vac, Min. 125°C	IEC 60384-14	VDE 40036393
(Alternative)	Shantou High-new Technology Dev. Zone Songtian Enterprise Co., Ltd.	CE-Series	2200pF, 250Vac, Min. 125°C	IEC 60384-14	VDE 40025754
(Alternative)	Shaanxi Huaxing Electronic Development Co., Ltd	CT7Y1	2200pF, 400Vac, Min. 125°C	IEC 60384-14	VDE 40015542
(Alternative)	Jya-nay Co., Ltd.	JN	2200pF, 250Vac, Min. 125°C	IEC 60384-14	TUV R50232059

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
(Alternative)	Shenzhen Teruixiang Electronic Co,Ltd	TY-Series (TYB,TYE,TYF)	2200pF, 400Vac, Min. 125°C	IEC 60384-14	VDE 40023136
(Alternative)	Dongguan Easy-gather Electronic Co., Ltd.	DCF	2200pF, 400Vac, Min. 125°C	IEC 60384-14	VDE 40022942
Y2 capacitor (CY1, CY2, CY4, CY5)	Guangdong South Hongming Electronic Science and Technology Co., Ltd.	F	1000pF, 250Vac, Min. 125°C	IEC 60384-14	VDE 40036246
(Alternative)	Shantou High-new Technology Dev. Zone Songtian Enterprise Co., Ltd.	CE-Series	1000pF, 250Vac, Min. 125°C	IEC 60384-14	VDE 40025748
(Alternative)	Shaanxi Huaxing Electronic Development Co., Ltd	CT7Y2	1000pF, 400Vac, Min. 125°C	IEC 60384-14	VDE 40032125
(Alternative)	Dongguan Easy-gather Electronic Co., Ltd.	DCF	2200pF, 250Vac, Min. 125°C	IEC 60384-14	VDE 40015758
Optocouplers (U2)	Everlight Electronics Co., LTD	EL817(blank;V)	Reinforced Insulation	EN 60747-5-2	VDE 132249
(Alternative)	Bright Led Electronics Corp.	BPC-817 Series	Reinforced Insulation	EN 60747-5-2	VDE 40007240
Transformer (T1)	SHENZHEN TOPOW ELECTRRON ICS CO. , LTD	EF2525	--	EN 60950-1	Tested with appliance
- Winding	Pacific Electric Wire & Cable (Shenzhen) Co., Ltd.	UEW/U	130°C	UL	UL E201757
- Bobbin	Chang Chun Plastics Co., Ltd.	T375J	150°C, Phenolic	UL	UL E59481

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
- Insulation tape	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd	WF	130°C	UL	UL E165111
- Varnish	John C Dolph Co	BC-346A	200°C	UL	UL E317427
Mylar sheet (uunder power supply)	Various	Various	Min. V-2, Min. 105°C	UL	UL
Secondary lead wire	Various	Various	VM-1, 18AWG, Max. 80°C	UL	UL
supplementary information:--					

1.6.2		TABLE: Input test						P
Fuse #	U (V)	F (Hz)	I _{rated} (A)	I (A)	P (W)	I _{fuse} (A)	Condition/status	
Tested with power board (model: G0682)								
F1	90	50	--	0.290	16.31	0.290	Maximum Normal Load	
F1	100	50	0.31	0.262	16.33	0.262	Maximum Normal Load	
F1	240	50	0.31	0.150	16.38	0.150	Maximum Normal Load	
F1	254.4	50	--	0.146	16.52	0.146	Maximum Normal Load	
F1	90	60	--	0.290	16.14	0.290	Maximum Normal Load	
F1	100	60	0.31	0.262	16.29	0.262	Maximum Normal Load	
F1	240	60	0.31	0.149	16.30	0.149	Maximum Normal Load	
F1	254.4	60	--	0.144	16.32	0.144	Maximum Normal Load	
Tested with power board (model: TPT18S12A)								
F1	90	50	--	0.278	16.04	0.278	Maximum Normal Load	
F1	100	50	0.31	0.253	15.98	0.253	Maximum Normal Load	
F1	240	50	0.31	0.151	16.97	0.151	Maximum Normal Load	
F1	254.4	50	--	0.147	17.14	0.147	Maximum Normal Load	
F1	90	60	--	0.278	15.93	0.278	Maximum Normal Load	
F1	100	60	0.31	0.253	15.88	0.253	Maximum Normal Load	
F1	240	60	0.31	0.149	16.80	0.149	Maximum Normal Load	
F1	254.4	60	--	0.144	17.09	0.144	Maximum 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 transfer data continuously.								

2.2.2		TABLE: Hazardous voltage measurement			P
Component	Location	Max. voltage (V) (normal operation)		Voltage Limiting Components	
		V peak	V dc		
Tested with power board (model: G0682)					
T1	Pin8 – Pin9	64.5	--	--	
	After C20 to GND	55.0	--	C20	
	After R30/R21/D4 to GND	--	12.3	R21, R30, C20, D4	
Tested with power board (model: TPT18S12A)					
T2	Pin7, 8to pin9, 10	65.0	--	--	
	After R31 to GND	56.3	--	R31, R33, R38	
	After D6 to GND	--	12.2	R31, R33, R38, D6	
Note(s): --					

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.		
Tested with power board (model: G0682)						
After D4 to GND	R30	S/C	--	12.3	--	
After D4 to GND	C20	S/C	--	12.3	--	
After D4 to GND	D4	S/C	--	0	Unit shutdown	
Tested with power board (model: TPT18S12A)						
After D6 to GND	R31	S/C	--	0	Unit shutdown	
After D6 to GND	D6	S/C	--	0	Unit shutdown	
Note(s):--						

2.4.2		TABLE: Limited current circuits test			P
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	
Tested with power board (model: G0682)					
C10 secondary pin to "GND"	4.5	2.3	109.5	70	
Tested with power board (model: TPT18S12A)					
CY3 secondary Pin to "GND"	27.0	13.5	65.0	45.5	
Note(s): --					

2.5		TABLE: Limited power sources test					N	
Output tested	Location		Single fault	Measured Maximum			Limited	
	From	To		Uoc (V)	Isc (A)	VA	Isc (A)	VA
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--
Note(s): --								

2.6.3.4		TABLE: Earthing test				P
Test point	Current (A)	Duration (min)	Measured resistance or voltage drops (ohms or V)	Limited resistance or voltage drops (ohms or V)		
Tested with power board (model: G0682)						
Between earth pin of AC inlet and metal enclosure	32	2	0.012	0.1 ohms		
Between polarity of N and earth pin of metal enclosure	32	2	0.007	0.1 ohms		
Tested with power board (model: TPT18S12A)						
Between earth pin of AC inlet and metal enclosure	32	2	0.007	0.1 ohms		
Note(s): --						

2.10.2		TABLE: Working voltage measurement			
Component	Location		Peak Voltage (Vac)	RMS Voltage (Vac)	Comments
	From	To			
Tested with power board (model: G0682)					
T1	Pin 1	Pin8	166	128	--
		Pin 9	217	129	--
	Pin 3	Pin8	475	165	*
		Pin 9	433	155	--
	Pin 4	Pin8	275	133	--
		Pin 9	245	129	--
Pin 5	Pin8	175	129	*	
	Pin 9	204	130	--	
OT1	Pin 3	Pin 1	175	129	--
		Pin 2	175	129	--
	Pin 4	Pin 1	175	129	--
		Pin 2	175	129	--
C3	Pri.	Sec.	0	0	--
C9	Pri.	Sec.	350	243	--
C10	Pri.	Sec.	165	128	--
Tested with power board (model: TPT18S12A)					
T1	Pin 1	Pin 7, 8	175	120	--
		Pin 9, 10	226	123	--
	Pin 2	Pin 7, 8	458	178	*
		Pin 9, 10	417	162	--
	Pin 4	Pin 7, 8	241	126	--
		Pin 9, 10	204	123	--
Pin 5	Pin 7, 8	175	124	--	
	Pin 9, 10	195	124	--	
U2	Pin 3	Pin 1	179	124	--
		Pin 2	179	125	--
	Pin 4	Pin 1	179	125	--
		Pin 2	179	125	--
CY1	Pri.	Sec.	350	243	--
CY2	Pri.	Sec.	350	243	--
CY3	Pri.	Sec.	175	122	--
Note(s): Test condition: 240V/50Hz.					
The * indicate the maximum peak voltage and 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	--	
Tested with power board (model: G0682)										
Different polarity of L and GND (B)		339	240	2.0	7.4	2.4	7.4	<175		
Different polarity of N and GND (B)		339	240	2.0	4.5	2.4	6.4	<175		
Different polarity of L and N before fuse (B)		339	240	2.0	4.5	2.4	5.5	<175		
Different polarity of fuse (F1) on PCB (F)		339	240	1.5	3.2	2.4	3.2	<175		
Different polarity of Y2 capacitor (C9) on PCB (B)		339	240	2.0	6.5	2.4	6.5	<175		
Different component D8 and polarity of GND on PCB (B)		339	240	2.0	7.4	2.4	7.4	<175		
Pattern traces, between Primary and Secondary traces (OT1) on PCB (D/R)		<420 (175)	<240 (129)	4.0	7.4	4.8	7.4	<175		
Different polarity of Y1 capacitor (C10) on PCB (D/R)		<420 (165)	<240 (128)	4.0	7.7	4.8	7.7	<175		
Mains transformer T1, core as primary										
Secondary pin to Core of transformer T1 (D/R)		475	<240 (165)	4.2	6.4	4.8	6.4	<175		
Primary winding to secondary pin of transformer T2 (D/R)		475	<240 (165)	4.2	6.0	4.8	6.0	<175		
Primary to secondary of transformer T1 on PCB trace (D/R)		475	<240 (165)	4.2	7.8	4.8	7.8	<175		
Tested with power board (model: TPT18S12A)										
Different polarity of L and N before fuse (B)		339	240	2.0	4.3	2.4	4.3	<175		
Different polarity of fuse (F1) on PCB (F)		339	240	1.5	4.4	2.4	4.4	<175		
Primary PCB traces to protective earth on PCB (B)		339	240	2.0	5.2	2.4	5.2	<175		
Metallic enclosure top to T1 core (B)		339	240	2.0	12.4	2.4	>12.4	<175		
Different polarity of Y2 capacitor (CY2) on PCB (B)		339	240	2.0	4.6	2.4	4.6	<175		
Different polarity of Y1 capacitor (CY3) on PCB (D/R)		<420 (175)	<240 (122)	4.0	7.2	4.8	7.2	<175		
Pattern traces, between Primary and Secondary traces (U2) on PCB (D/R)		<420 (346)	<240 (170)	4.0	7.3	4.8	7.3	<175		
Mains transformer T1, core as floating										

Pri. coil to Core (B)	458	<240 (178)	2.1	3.0	2.4	3.0	<175
Sec. coil to Core (B)	458	<240 (178)	2.1	3.0	2.4	3.0	<175
Primary coil to secondary coil (D/R)	458	<240 (178)	4.2	6.0	4.8	6.0	<175
Primary to secondary of transformer T1 on PCB trace (D/R)	458	<240 (178)	4.2	6.8	4.8	6.8	<175
<p>Note(s):</p> <p>B=Basic insulation, D/R= double insulation or reinforce insulation.</p> <ul style="list-style-type: none"> - No components reduce distance after 10N steady force applied. - One mylar sheet is under power board and fixed on metal enclosure. <p>On Power board (model: G0682):</p> <ul style="list-style-type: none"> - With 8.1mm length 1.4mm width gap on PCB below between different polarity of L and GND; - With 7.6mm length 1.4mm width gap on PCB below between different polarity of N and GND; - Transformer (Model: T1) secondary winding is triple insulated wire, transformer core is regarded as integral with transformer primary. <p>On Power board (model: TPT18S12A):</p> <ul style="list-style-type: none"> - Transformer (Model: T1) secondary winding is triple insulated wire, transformer core is regarded as floating. 							

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 or layers)	dti (mm or layers)	
Tested with power board (model: G0682)						
1. Insulation tape wrapped on transformer T1, Reinforced, 2 layers (each layer tested)	475	165	3000Vac	At least 2 layers	2 layers	
2. Bobbin of transformer T1	475	165	1699Vac	--	0.80mm	
3. Mylar sheet (under power board)	475	165	1699Vac	--	0.28mm	
Tested with power board (model: TPT18S12A)						
1. Insulation tape wrapped on transformer T1, Reinforced, 2 layers (each layer tested)	458	178	3000Vac	At least 2 layers	2 layers	
2. Bobbin of transformer T1	458	178	1671Vac	--	0.90mm	
3. Mylar sheet (under power board)	458	178	1671Vac	--	0.28mm	
Note(s): --						

4.3.8	TABLE: Batteries								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available	--								--
Is it possible to install the battery in a reverse polarity position?	--								--
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	--	--	--	--	--	--	--	--	--
Max. current during fault condition	--	--	--	--	--	--	--	--	--
Test results:								Verdict	
- Chemical leaks								--	--
- Explosion of the battery								--	--
- Emission of flame or expulsion of molten metal								--	--
- Electric strength tests of equipment after completion of tests								--	--
Supplementary information:									
Battery category				(Lithium, NiMh, NiCad, Lithium Ion ...)					
Manufacturer				--					
Type / model				--					
Voltage				--					
Capacity				mAh					
Tested and Certified by (incl. Ref. No.).....				--					
Circuit protection diagram:				--					
Note(s):									

4.5.2	TABLE: Heating test under normal operation <i>Tested with power board (model: G0682)</i>				P
Test voltage (V) :	90V/50Hz		254.4V/50Hz		—
Test times	3hours16minutes		1hour 37minutes		—
Tam a1 (°C)	27.1		27.1		—
Tam a2 (°C)	27.1		26.9		—
maximum temperature T of part/at:	Measured T	Calculated T (40°C)	Measured T	Calculated T (40°C)	allowed Tmax
1. AC inlet, inside	37.8	50.7	37.4	50.5	70
2. J1 body	40.3	53.2	39.7	52.8	--
3. C4 body	47.9	60.8	45.2	58.3	100
4. L3 winding	57.0	69.9	47.9	61.0	130
5. PCB near D5	59.7	72.6	50.3	63.4	130
6. C38 body	56.2	69.1	51.7	64.8	105
7. PCB near Q1	61.3	74.2	59.4	72.5	130
8. C10 body	57.9	70.8	58.2	71.3	85
9. T1 winding	69.5	82.4	71.1	84.2	110
10. T1 core	67.6	80.5	69.1	82.2	110
11. PCB under T1	54.9	67.8	56.1	69.2	130
12. OT1 body	45.7	58.6	46.5	59.6	100
13. C8 body	62.7	75.6	65.0	78.1	130
14. Output wire	49.2	62.1	50.3	63.4	130
15. Mylar sheet under T1	42.2	55.1	42.6	55.7	130
16. L5 winding	80.9	93.8	81.0	94.1	105
17. C25 body	74.5	87.4	74.6	87.7	105
18. Heatsink of U4	81.1	94.0	81.0	94.1	105
19. X4 body	58.7	71.6	58.8	71.9	105
20. Metal enclosure top of T1, inside	39.7	52.6	40.2	53.3	105
21. Metal enclosure top of T1, outside	36.3	49.2	36.3	49.4	105
22. Ambient	27.1	40.0	26.9	40.0	105

4.5.2	TABLE: Heating test under normal operation (cont.) <i>Tested with power board (model: TPT18S12A)</i>				P
Test voltage (V) :	90V/50Hz		254.4V/50Hz		—
Test times	3hours 21minutes		1hour 14minutes		—
Tam a1 (°C)	25.3		26.4		—
Tam a2 (°C)	26.4		26.3		—
maximum temperature T of part/at:	Measured T	Calculated T (40°C)	Measured T	Calculated T (40°C)	allowed Tmax
1. AC inlet, inside	37.8	50.7	37.4	50.5	70
2. CON1 body	40.3	53.2	39.7	52.8	--
3. C3 body	47.9	60.8	45.2	58.3	105
4. PCB near D4	57.0	69.9	47.9	61.0	130
5. L1 winding	59.7	72.6	50.3	63.4	130
6. C2 body	56.2	69.1	51.7	64.8	100
7. PCB near Q1	61.3	74.2	59.4	72.5	130
8. CY3 body	57.9	70.8	58.2	71.3	125
9. T1 winding	69.5	82.4	71.1	84.2	110
10. T1 core	67.6	80.5	69.1	82.2	110
11. PCB near T1	54.9	67.8	56.1	69.2	130
12. OT1 body	45.7	58.6	46.5	59.6	100
13. C8 body	62.7	75.6	65.0	78.1	130
14. Output wire	49.2	62.1	50.3	63.4	130
15. Mylar sheet under T1	42.2	55.1	42.6	55.7	130
16. L5 winding	80.9	93.8	81.0	94.1	105
17. C25 body	74.5	87.4	74.6	87.7	105
18. Heatsink against U4	81.1	94.0	81.0	94.1	105
19. X4 body	58.7	71.6	58.8	71.9	105
20. Metal enclosure top of T1, inside	39.7	52.6	40.2	53.3	105
21. Metal enclosure top of T1, outside	36.3	49.2	36.3	49.4	--
22. Ambient	27.1	40.0	26.9	40.0	--
<p>Note(s):</p> <ol style="list-style-type: none"> The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described in sub-clause 1.4.5. Thermocouple method used for measuring the temperatures Unit specified with maximum of 40°C ambient temperature and all temperatures were calculated for a maximum ambient temperature of 40°C. 					

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N
	Allowed impression diameter (mm):	≤ 2 mm		—
Part	Test temperature (°C)		Impression diameter (mm)	
--	--		--	
Note(s): --				

5.1.6	TABLE: Touch current measurement			P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
Tested with power board (model: G0682)				
Output terminal and Line & neutral	0.005	0.25	Fuse in, "e" closed	
Metal enclosure and Line & neutral	0.13	3.5	Fuse in, "e" opened	
Tested with power board (model: TPT18S12A)				
L&N and Output terminal	0.005	0.25	Fuse in, "e" closed	
L&N and Metal enclosure	0.21	3.5	Fuse in, "e" opened	
Note(s): --				

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (Vrms)	Breakdown Yes / No	
Tested with power board (model: G0682)				
Line & neutral and output terminal (D/R)	AC	3000V	No	
Line & neutral and metal enclosure (B)	AC	1699V	No	
Mains transformer T1				
Primary and secondary of transformer (D/R)	AC	3000V	No	
Secondary and core of transformer (D/R)	AC	3000V	No	
One layer of Mylar sheet (under power board) (B)	AC	1699V	No	
Tested with power board (model: TPT18S12A)				
Line & neutral and output terminal (D/R)	AC	3000V	No	
Line & neutral and metal enclosure (B)	AC	1671V	No	
Mains transformer T1				
Primary and secondary of transformer (D/R)	AC	3000V	No	
Primary and core of transformer (B)	AC	1671V	No	
Secondary and core of transformer (B)	AC	1671V	No	
One layer of Mylar sheet (under power board) (B)	AC	1671V	No	
Note(s): --				

5.3		TABLE: Fault condition test					P
		Ambient temperature (°C)	25°C, if not specify.			—	
		Power source for EUT: Manufacturer, model/type, output rating	--			—	
No.	Component	Fault	Test voltage (V)	Test time	Fuse #	Fuse (mA)	Result
Tested with power board (model: G0682)							
1	D6	S/C	240V/50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD (D5), NT, NC, NB, NH.
2	C38	S/C	240V/50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD (D5, D8), NT, NC, NB, NH.
3	Q1 (pinG to pinS)	S/C	240V/50Hz	10mins	F1	20	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
4	Q1 (pinG to pinD)	S/C	240V/50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD (R22, R27, U4, D6, D7, Q1), NT, NC, NB, NH.
5	Q1 (pinD to pinS)	S/C	240V/50Hz	1sec.	F1	0	Fuse(F1) opened, CD (R22, R27, U4, D6, D7, Q1), NT, NC, NB, NH.
6	Q1 (pinD to pinS)	S/C	240V/60Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(R22, R27, R16, R26, U4, D6, D7, D5, D6, Q1), NT, NC, NB, NH.
7	U4 (pin1 to pin5)	S/C	240V/50Hz	10mins	F1	19	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
8	U4 (pin2 to pin5)	S/C	240V/50Hz	10mins	F1	19	Unit shutdown immediately, CD(U4, C1, C26), NC, NT, NB, NH.
9	U4 (pin2 to pin4)	S/C	240V/50Hz	10mins	F1	18	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
10	U4 (pin3 to pin5)	S/C	240V/50Hz	10mins	F1	19	Unit shutdown immediately, CD(U4, C1, C26), NC, NT, NB, NH.
11	D4	S/C	240V/50Hz	10mins	F1	150	Unit similar normal operation, NCD, NC, NT, NB, NH.
12	T1 (pin1 to pin3)	S/C	240V/50Hz	10mins	F1	154↔19	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.

13	T1 (pin4 to pin5)	S/C	240V/ 50Hz	10mins	F1	89↔19	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
14	T1 (pin8 to pin9)	S/C	240V/ 50Hz	10mins	F1	65↔19	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
15	OT1 (pin1 to pin2)	S/C	240V/ 50Hz	10mins	F1	105↔20	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
16	OT1 (pin3 to pin4)	S/C	240V/ 50Hz	10mins	F1	19	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
17	OT1 (pin1)	O/C	240V/ 50Hz	10mins	F1	99	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
18	OT1 (pin3)	O/C	240V/ 50Hz	10mins	F1	104	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
19	D4	S/C	240V/ 50Hz	10mins	F1	70↔20	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
20	R30	S/C	240V/ 50Hz	10mins	F1	150	Unit similar normal operation, NCD, NC, NT, NB, NH.
21	C20	S/C	240V/ 50Hz	2hrs 11mins	F1	165	Unit power increased to 18.73W, CD(R21,R30), Measured maximum temperature: T1 winding: 64.8Ⅲ; T1 core: 62.9Ⅲ; Ambient: 27.2Ⅲ. NT, NC, NB, NH.
22	J2 (+12V to GND)	S/C	240V/ 50Hz	10mins	F1	84↔20	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
23	Ventilation openings	Blocked	240V/ 50Hz	1hr 8mins	F1	150	Unit similar normal operation, measured maximum temperature: T1 winding: 71.3℃; T1 core: 69.3℃; Ambient: 27.1℃. NT, NC, NB, NH.

24	T1 output	O/L	240V/ 50Hz	7hrs 15mins	F1	226↗ 285↗ 362↗ 18	Unit shut down when loaded additional 1.7A, recoverable when fault removed, measured maximum temperature: T1 winding:105.3Ⅲ; T1 core:102.8Ⅲ; Ambient: 27.7Ⅲ. NT, NC, NB, NH.
Tested with power board (model: TPT18S12A)							
1	D1	S/C	240V/ 50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(D4), NT, NC, NB, NH.
2	C3	S/C	240V/ 50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(D1, D3), NT, NC, NB, NH.
3	Q1 (pinG to pinS)	S/C	240V/ 50Hz	10mins	F1	18	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
4	Q1 (pinG to pinD)	S/C	240V/ 50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(R7, R8, R9, R10, D2, D4, U1), NT, NC, NB, NH.
5	Q1 (pinD to pinS)	S/C	240V/ 50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(R7, R8, R9, R10, D1, D3, U1), NT, NC, NB, NH.
6	U1 (pin1 to pin5)	S/C	240V/ 50Hz	10mins	F1	17	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
7	U1 (pin2 to pin5)	S/C	240V/ 50Hz	10mins	F1	17	Unit shutdown immediately, CD(C4), NC, NT, NB, NH.
8	U1 (pin1 to pin4)	S/C	240V/ 50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(R7, R8, R9, R10, Q1, D1, D3, U1), NT, NC, NB, NH.
9	U1 (pin5 to pin6)	S/C	240V/ 50Hz	1sec.	F1	0	Unit shutdown immediately, Fuse(F1) opened, CD(R7, R8, R9, R10, Q1, D1, D3, U1), NT, NC, NB, NH.
10	D5	S/C	240V/ 50Hz	1hr 55mins	F1	170	Unit power increased to 20.22W, Measured maximum temperature: T1 winding: 71.3Ⅲ; T1 core: 67.3Ⅲ; Ambient: 26.7Ⅲ. NT, NC, NB, NH.
11	T1 (Pin1 to Pin2)	S/C	240V/ 50Hz	10mins	F1	140↔17	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.

12	T1 (Pin4 to Pin5)	S/C	240V/ 50Hz	10mins	F1	76↔17	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
13	T1 (Pin7,8 to Pin9,10)	S/C	240V/ 50Hz	10mins	F1	89↔17	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
14	D6	S/C	240V/ 50Hz	10mins	F1	125↔17	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
15	C8	S/C	240V/ 50Hz	10mins	F1	88↔17	Unit shutdown and cycled, recoverable when fault removed, NCD, NC, NT, NB, NH.
16	R31	S/C	240V/ 50Hz	10mins	F1	146	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
17	U2 (pin1 to pin2)	S/C	240V/ 50Hz	10mins	F1	89↔17	Unit shut down immediately, recoverable when fault removed, NCD, NT, NC, NB, NH.
18	U2 (pin3 to pin4)	S/C	240V/ 50Hz	10mins	F1	17	Unit shutdown immediately, recoverable when fault removed, NCD, NC, NT, NB, NH.
19	U2 (pin1)	O/C	240V/ 50Hz	10mins	F1	75↔18	Unit shut down immediately, recoverable when fault removed, NCD, NT, NC, NB, NH.
20	U2 (pin3)	O/C	240V/ 50Hz	10mins	F1	78↔17	Unit shut down immediately, recoverable when fault removed, NCD, NT, NC, NB, NH.
21	CON2 (+12V to GND)	S/C	240V/ 50Hz	10mins	F1	75↔17	Unit shut down immediately, recoverable when fault removed, NCD, NT, NC, NB, NH.
22	Ventilation openings	Blocked	240V/ 50Hz	2hrs 39mins	F1	151	Unit similar normal operation, NCD, NC, NT, NB, NH. Measured max. temperature on: T2 winding: 72.8III; T3 winding: 69.0III; Ambient: 27.1III.

23	T1 output	O/L	240V/ 50Hz	7hrs 12mins	F1	228↗ 274↗ 323↗ 81	Unit shut down and cycled when loaded additional 1.60A, recoverable when fault removed, measured maximum temperature: T1 winding: 101.7 III; T1 core: 92.8 III; Ambient: 28.0 III. NT, NC, NB, NH.
Note(s): --							

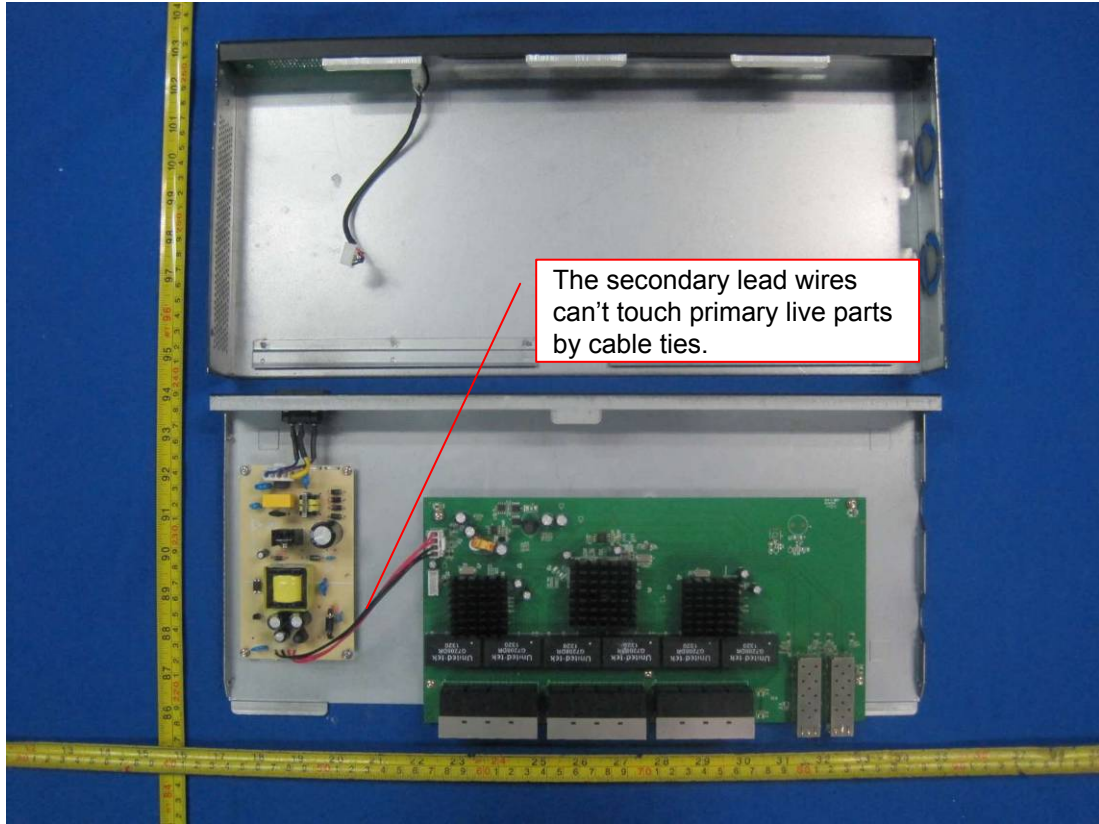
6.2.2.2	TABLE: Electric strength tests (Steady-state)			N
Test voltage applied between:		Test voltage (V)	Breakdown	
--		--	--	
--		--	--	
Note(s): --				



Fig. 1 - Overview (1)
(Dimensions: Approx. 440 mm x 205 mm x 43 mm)

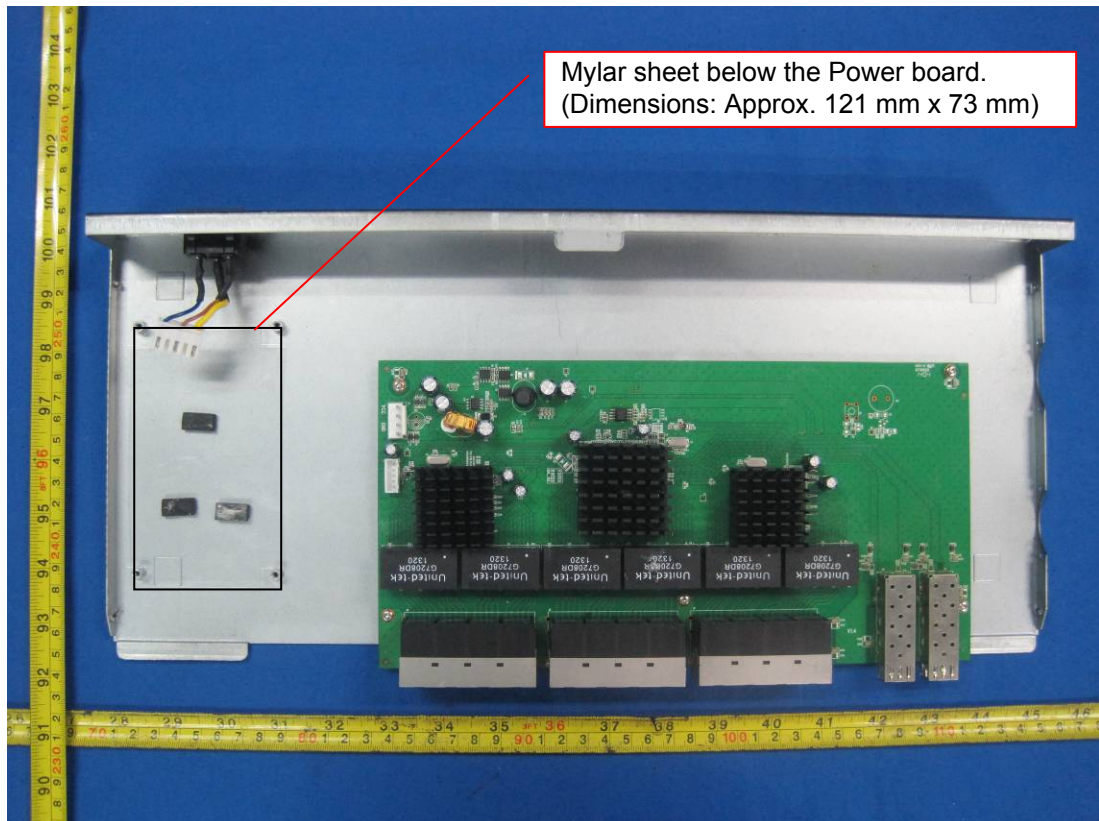


Fig. 2 – Overview (2)



The secondary lead wires can't touch primary live parts by cable ties.

Fig. 3 - Internal view with Power board (model: G0682)



Mylar sheet below the Power board.
(Dimensions: Approx. 121 mm x 73 mm)

Fig. 4 - Mylar sheet below the power supply board overview

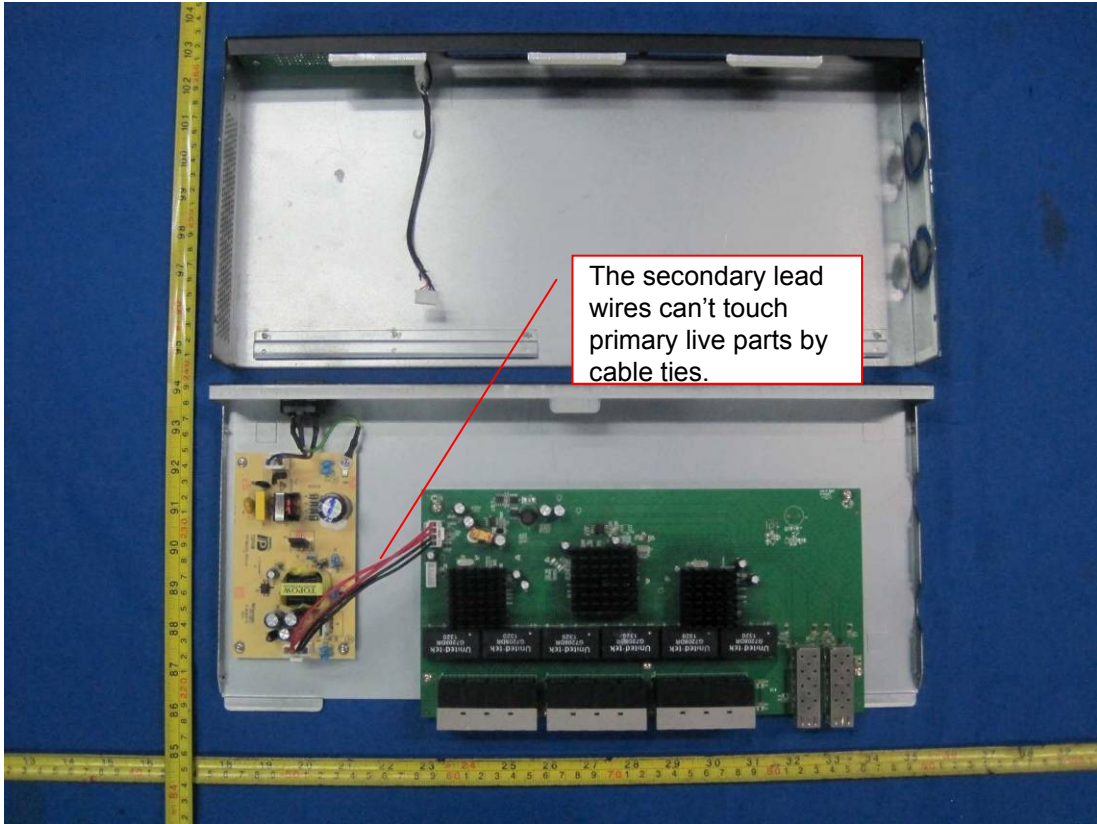


Fig. 5 - Internal view with power board (model: TPT18S12A)

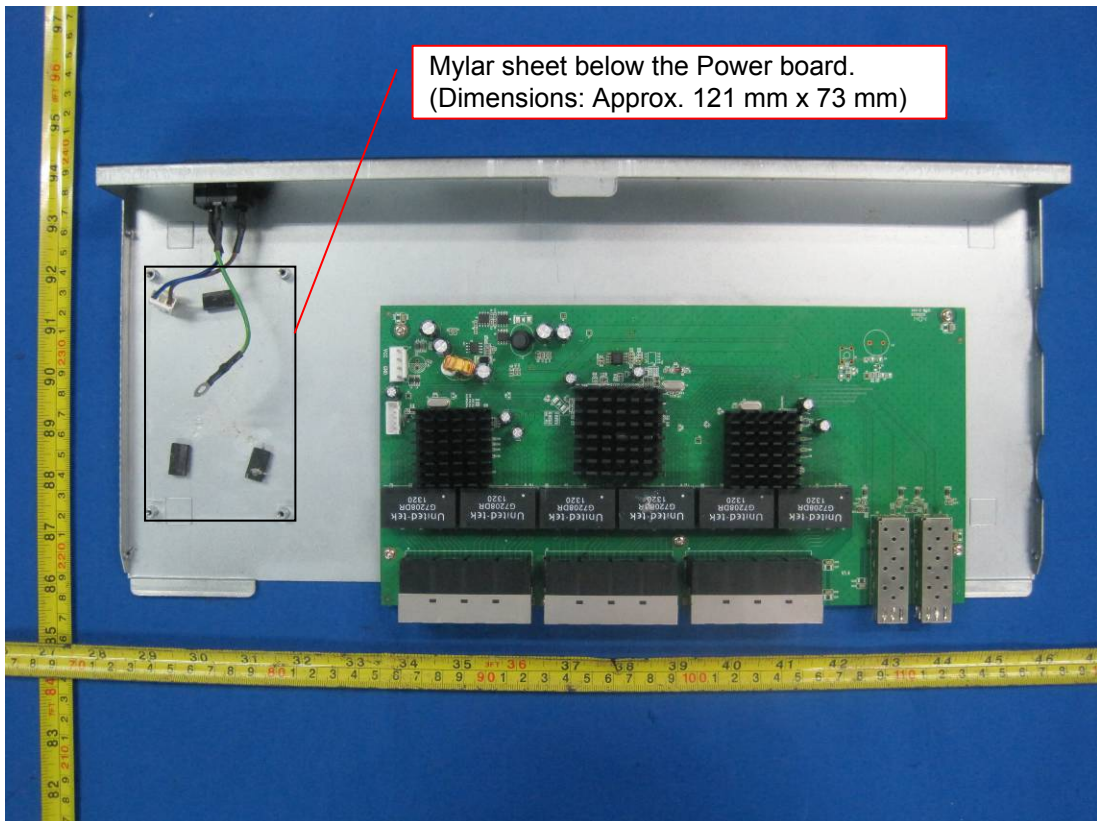


Fig. 6 - Mylar sheet below the power supply board overview

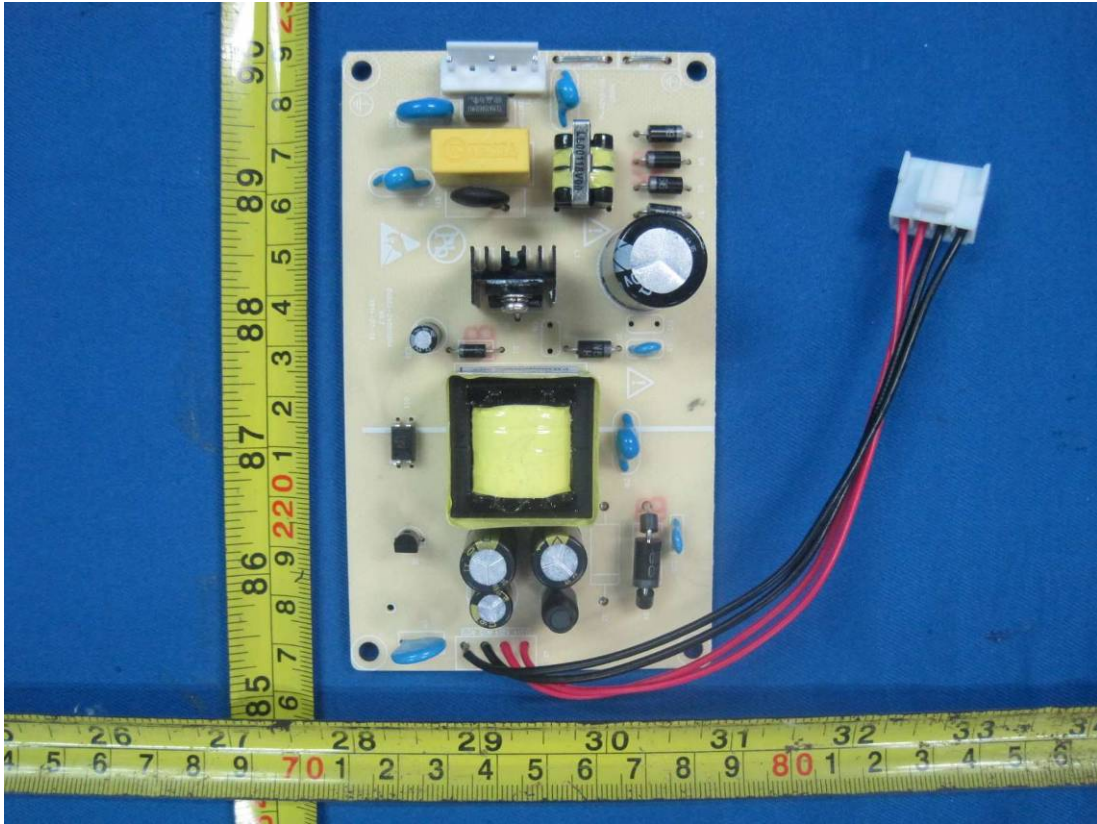


Fig. 7 – Top view of the power board (model: G0682)

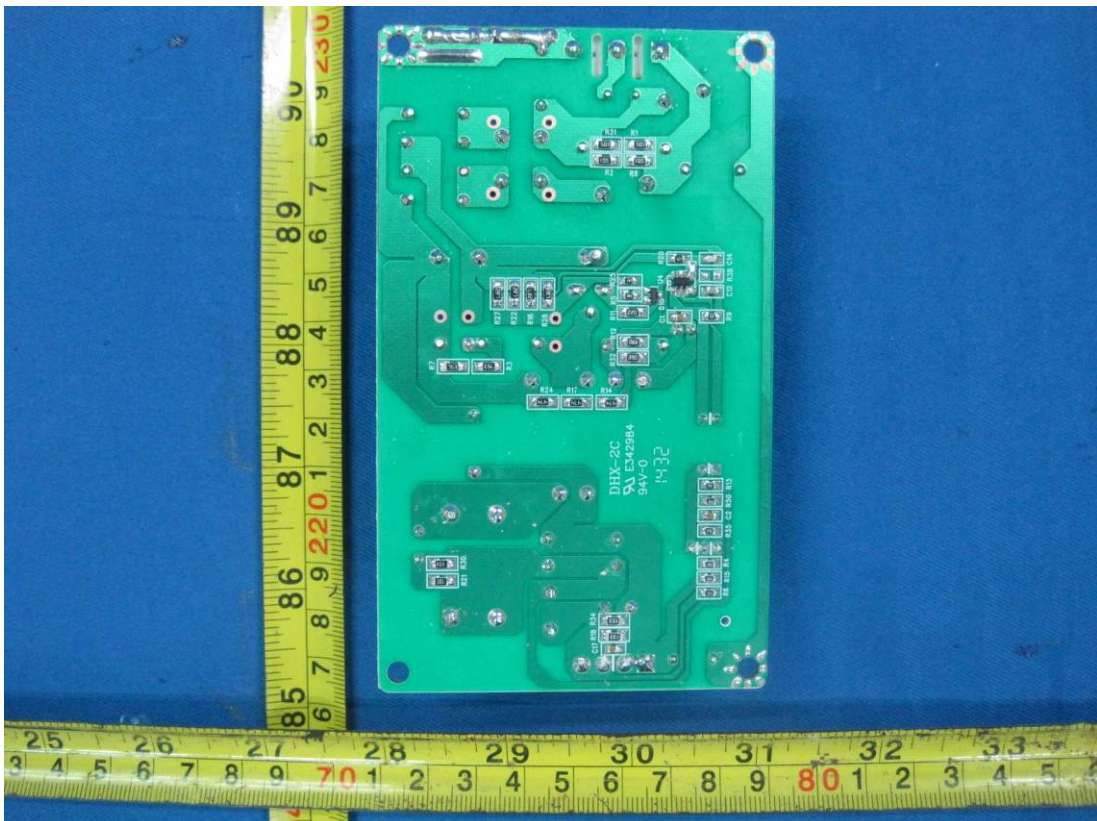


Fig. 8 – Bottom view of the power board (model: G0682)



Fig. 9 – Top view of power board (model: TPT18S12A)

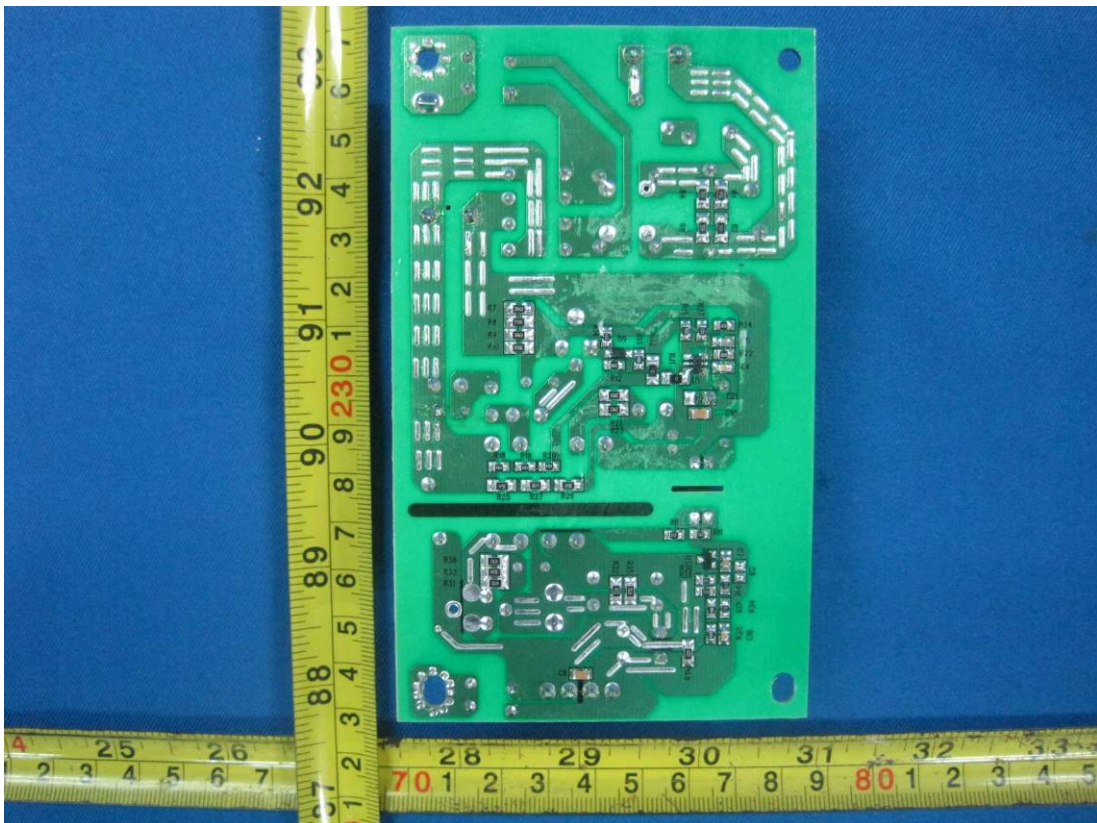


Fig. 10 – Bottom view of the power board (model: TPT18S12A)

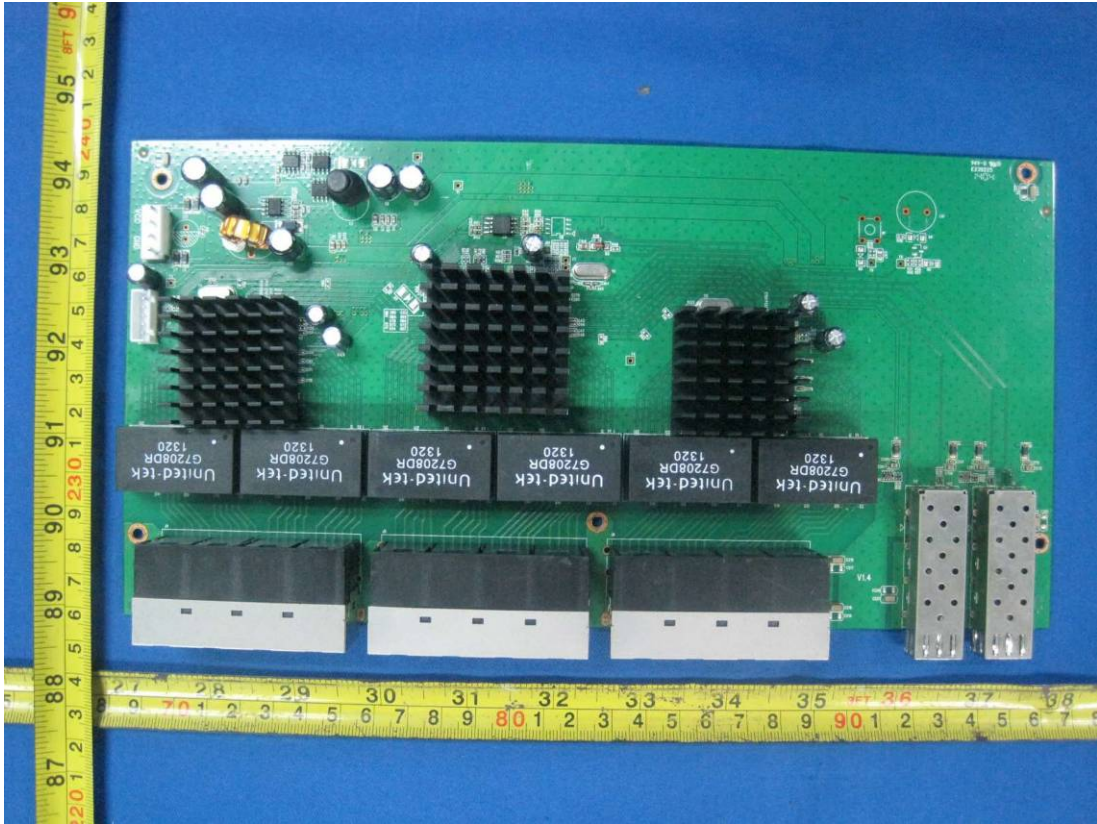


Fig. 11 – Top view of main board

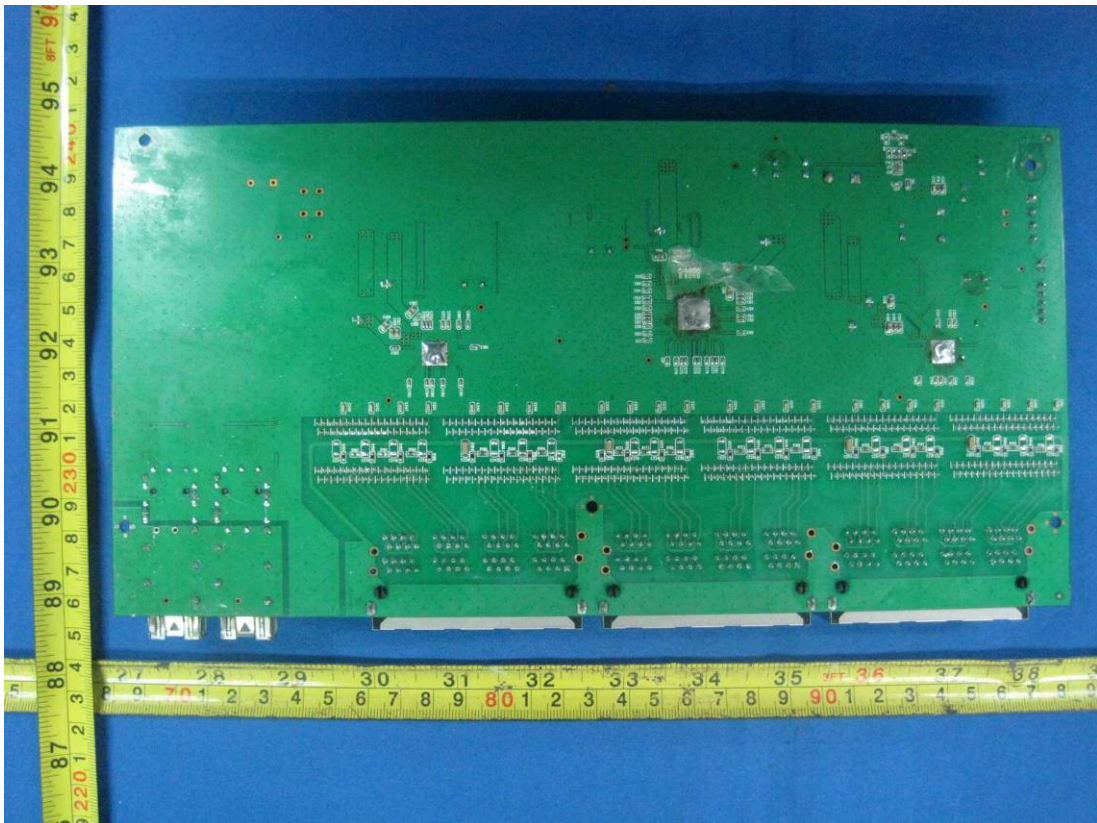


Fig. 12 – Bottom view of the main board

Two layers of insulation tape wrapped on transformer.



Fig. 13 – Transformer T1 on power board (model: G0682) overview(1)



Fig. 14 – Transformer T1 on power board (model: G0682) overview (2)

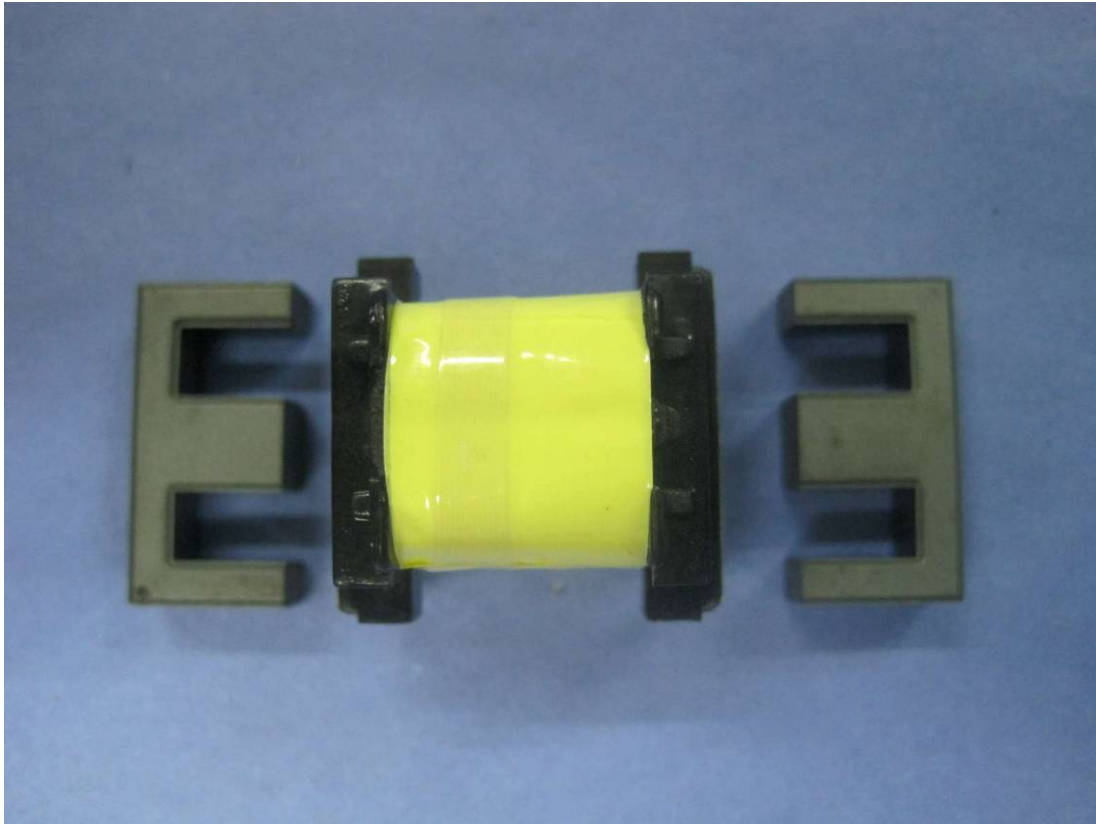


Fig. 15 – Transformer T1 on power board (model: G0682) overview (3)

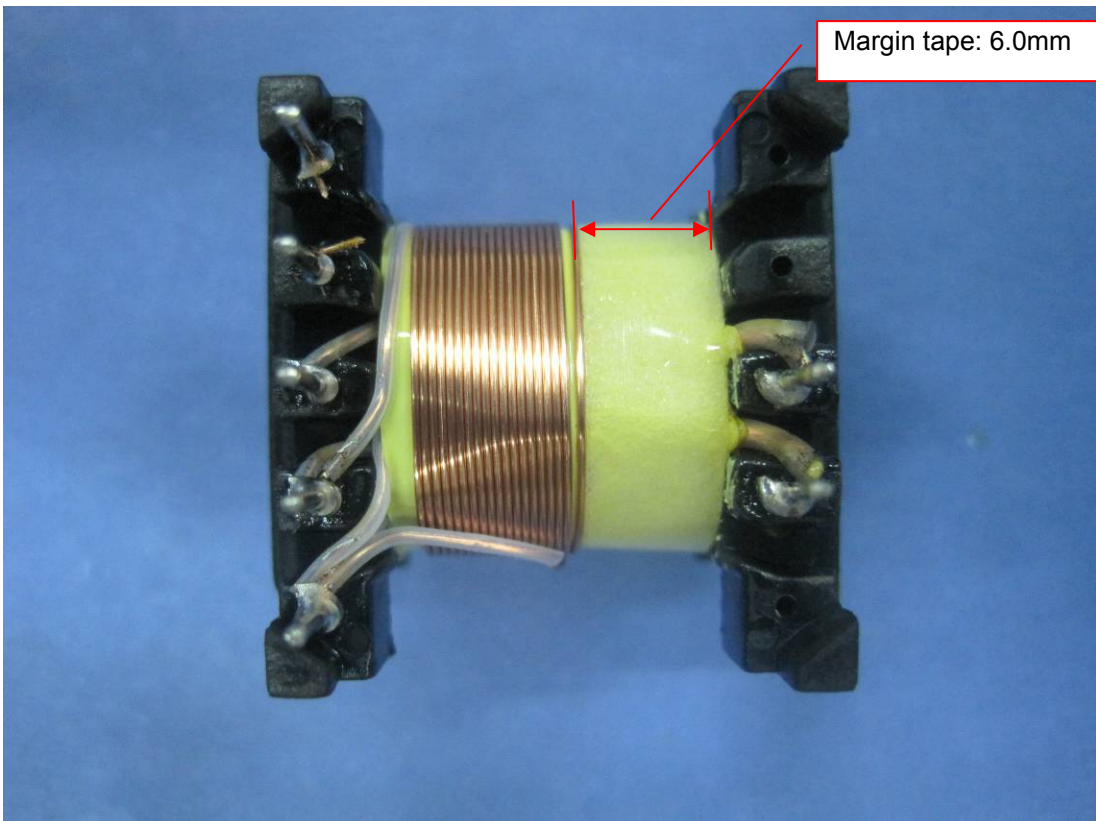


Fig. 16 – Transformer T1 on power board (model: G0682) overview (4)

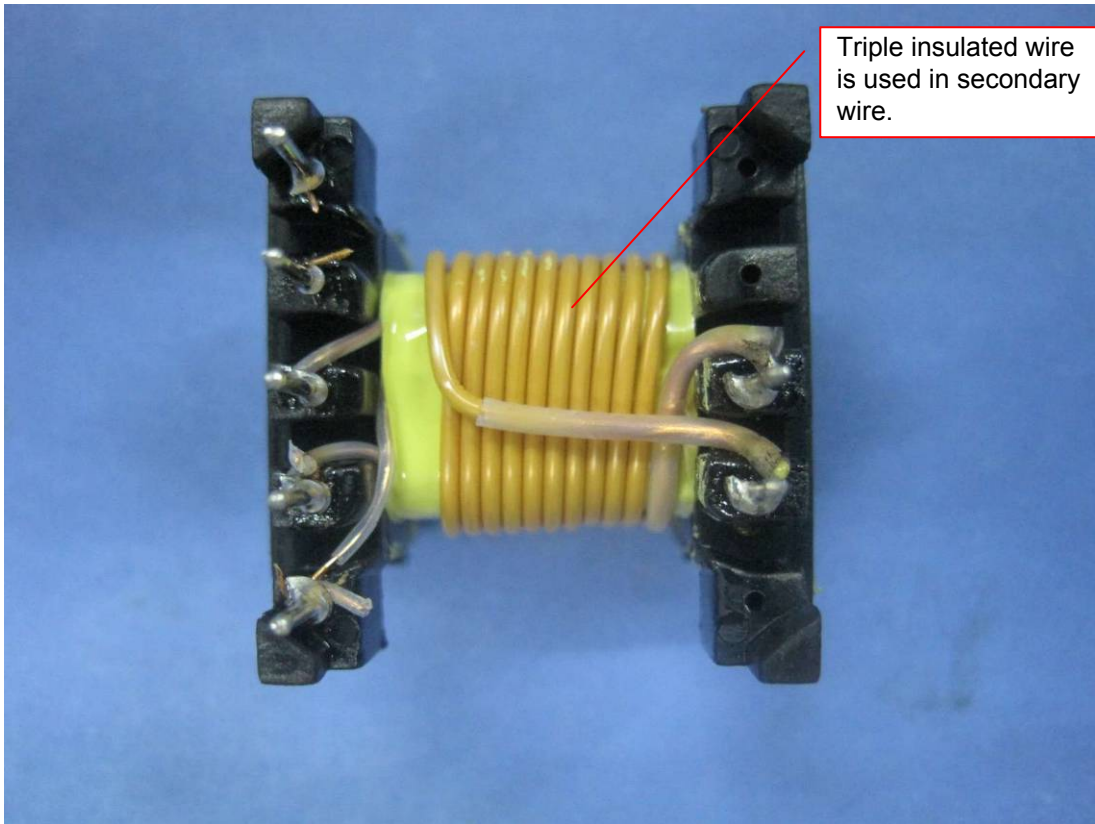


Fig. 17 – Transformer T1 on power board (model: G0682) overview (5)

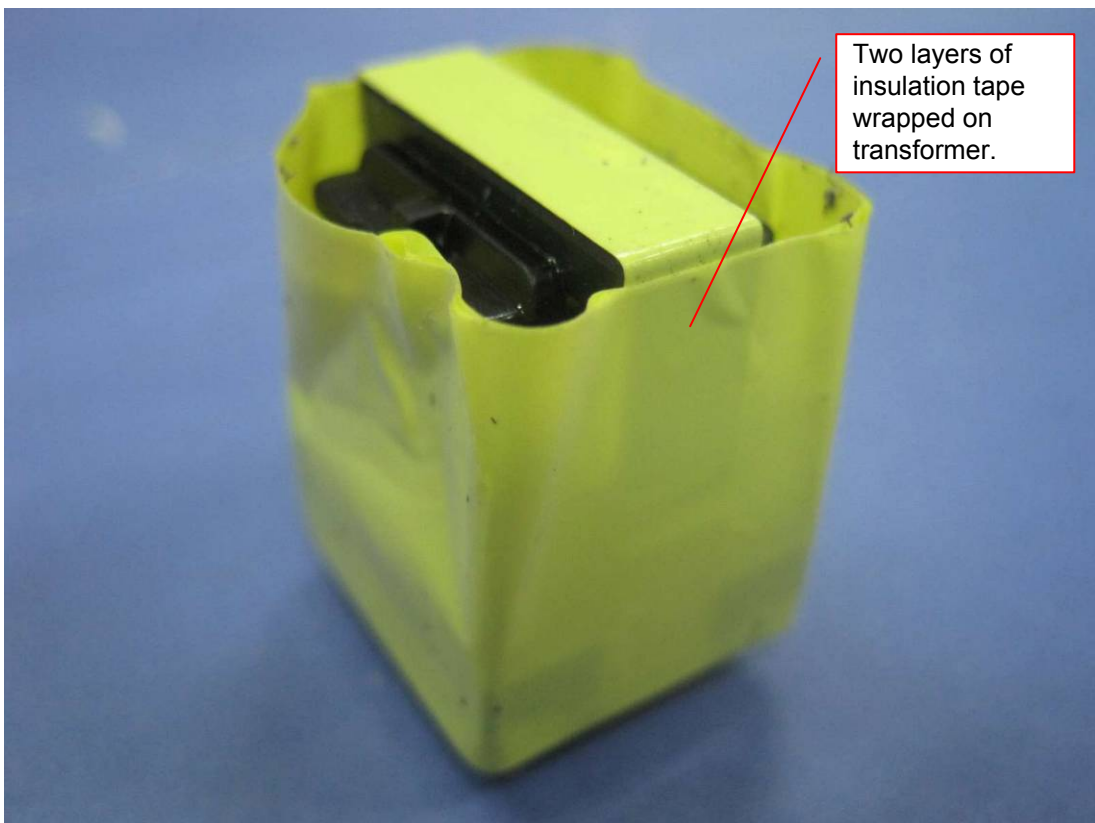


Fig. 18 – Transformer T1 on power board (model: TPT18S12A) overview(6)

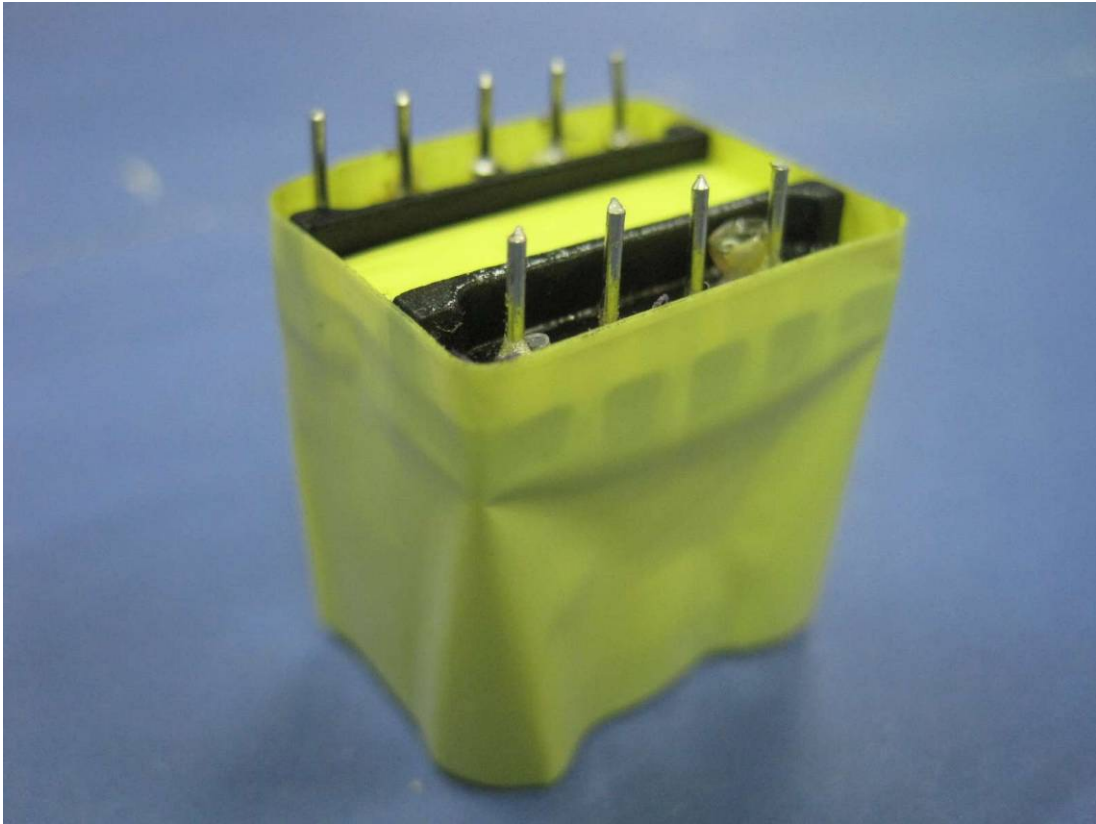


Fig. 19 – Transformer T1 on power board (model: TPT18S12A) overview(7)

Lenght: approx. 45.0mm,
Width: approx. 13.0mm

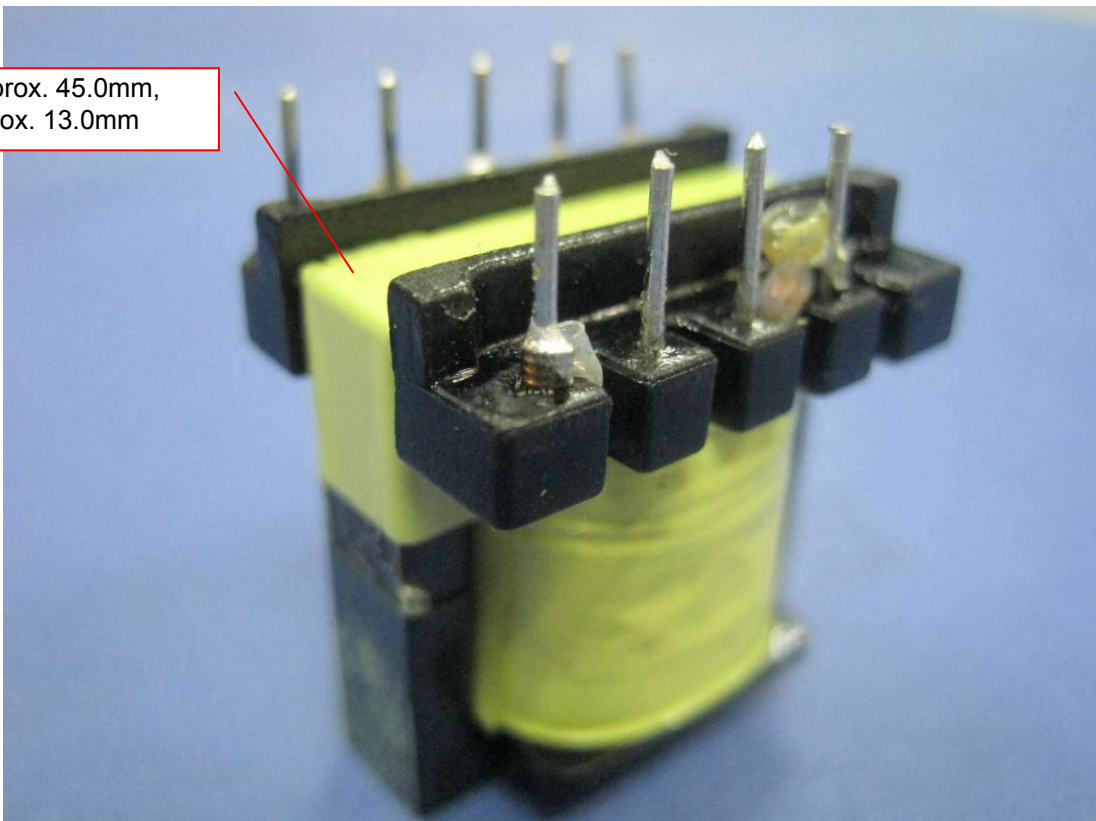


Fig. 20 – Transformer T1 on power board (model: TPT18S12A) overview(8)

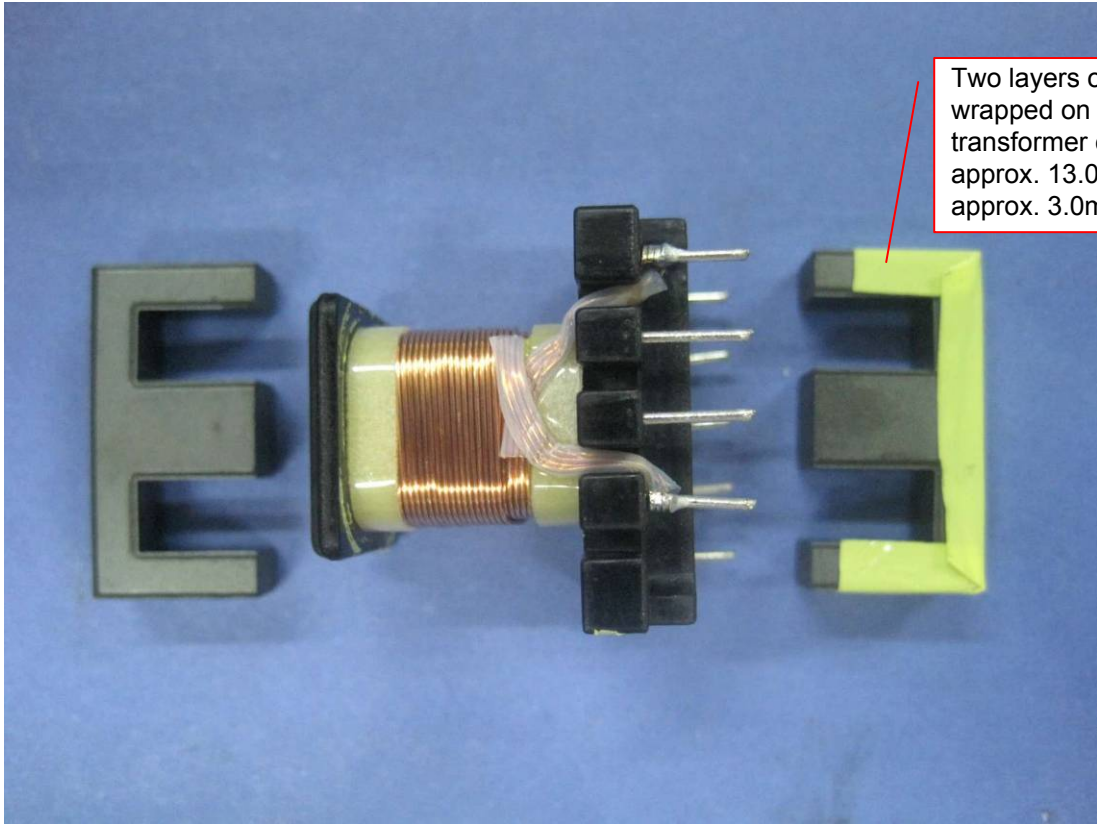


Fig. 21 – Transformer T1 on power board (model: TPT18S12A) overview(9)

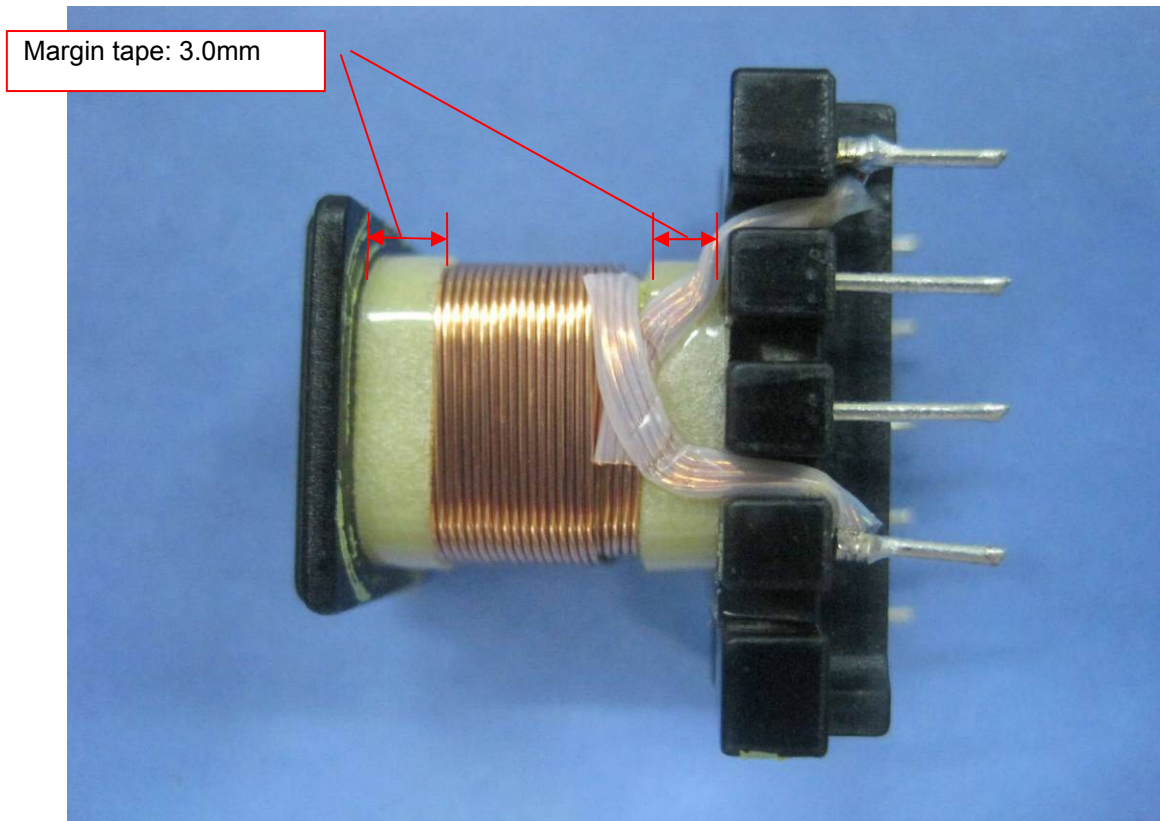
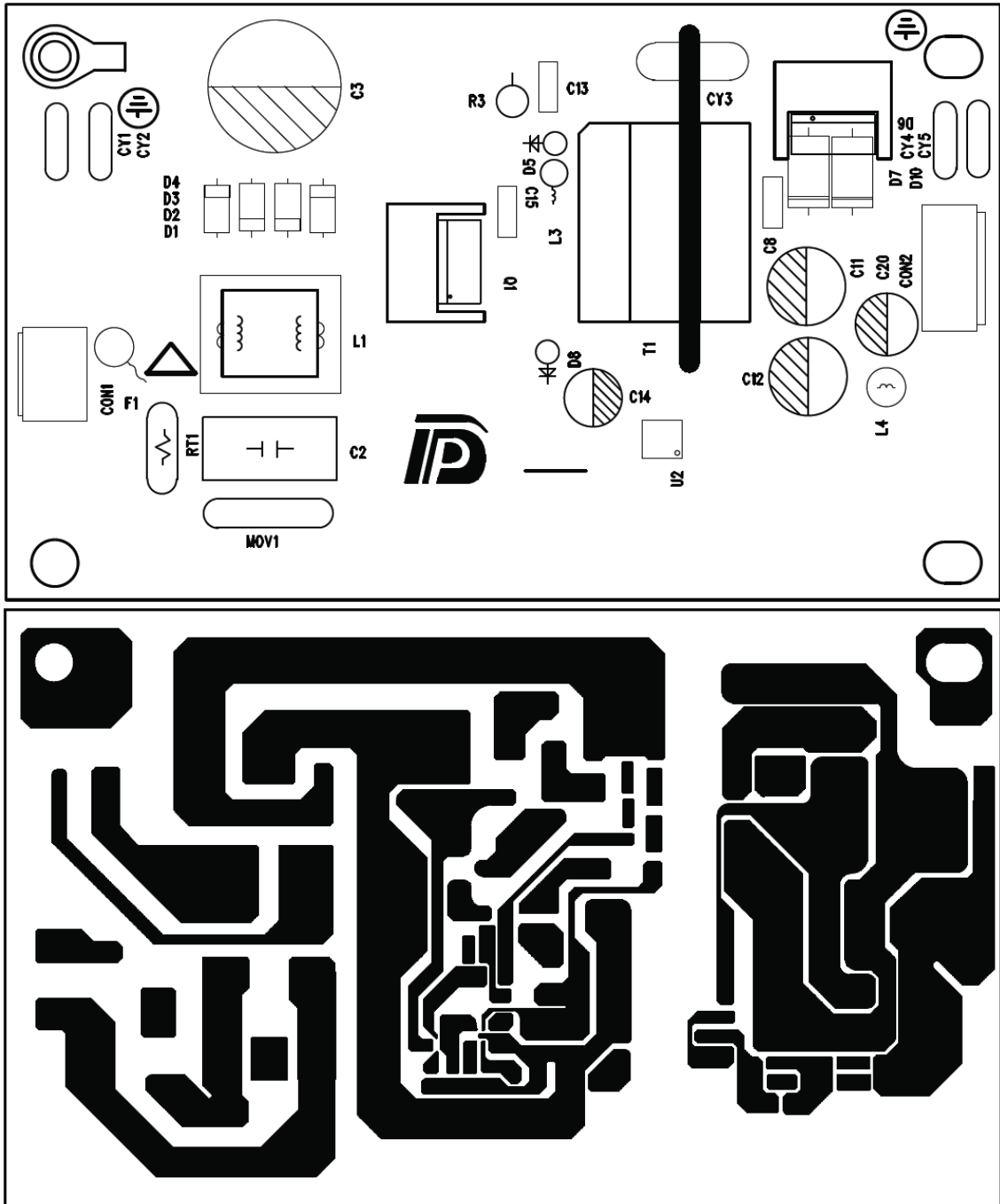


Fig. 22 – Transformer T1 on power board (model: TPT18S12A) overview(10)

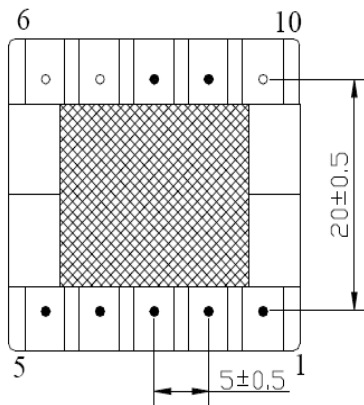
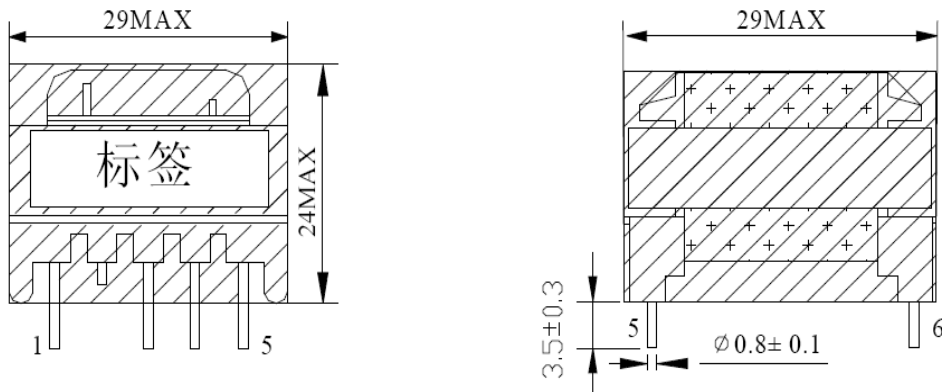
Attachment B: Circuit Diagram and PCB Layout for power board (model: TPT18S12A) Page 4 of 4



Attachment C: Transformer T1 Specification for G0682 (model:LT00672V01)

CUSTOMER	高斯贝尔	HSD NO	HQ19-2503-0307
PART NO	LT00672V01	ISSUE DATE	2013-4-16
PART NAME	EF25 Transformer	REF NO	S1407013

1. CONFIGURATION & DIMENSIONS: (UNIT:mm)



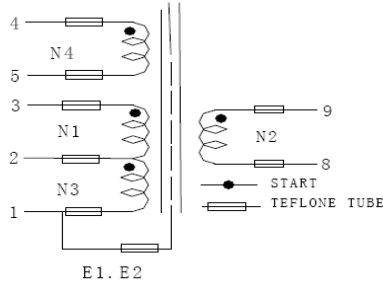
NOTE:

1. PIN6.7.10 CUT OFF,PIN2 CUT OFF 2/3.
2. CORE FIXED BY MYLAR TAPE 3TS.
3. 磁芯中柱磨气隙.
4. 产品包外围胶带3TS*22mm.
5. 产品真空含浸.
6. 标签朝 PIN1-5 侧贴, 标签如图所示:

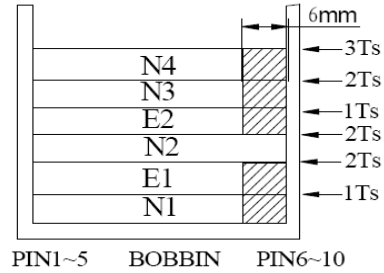
LT00672V01 P.D.George/Ripley B-19 HSD E240087

REPORTED BY	CHECKED BY	APPROVED BY	3	
郑丹		罗小华	2	
			REV.1	

2. SEQUENCE:



3. WINDING SCHEMATIC:



4.WINDING SPEC: PIN1-5 朝右



WINDING	WIRE/COPPER FOIL	S — F	TURNS	TAPE	REMARK
N1	MW75 ϕ 0.35 \times 1P	3 — 2	40Ts	1TS	密 绕
E1	COPPER 0.05 \times 8 mm	1 —	1.1Ts	2TS	居 中
N2	TEX-E ϕ 0.8 \times 1P	9 — 8	10Ts	2TS	密 绕
E2	COPPER 0.05 \times 8 mm	1 —	1.1Ts	1TS	居 中
N3	MW75 ϕ 0.35 \times 1P	2 — 1	20Ts	2TS	密 绕
N4	MW75 ϕ 0.3 \times 1P	4 — 5	14Ts	3TS	密 绕

- 注： 1. SCREEN 层用 0.05mm \times 8mm 铜箔绕 1.1Ts 后用 ϕ 0.25 \times 1 漆包线引至第 1 脚，铜箔要求用宽胶带包好。
 2. 所有加铁氟龙套管绕组的进、出线,铁氟龙套管须穿过安全挡墙 1—2mm;

8. MATERIAL LIST:

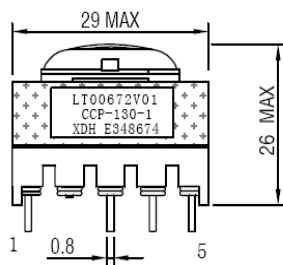
ITEM	MATERIAL	SUPPLIER OF THE MATERIAL	TEMP RATING
1	BOBBIN PM-9820 WJJ 2511-01	SUMITOMO BAKELITE CO.,LTD UL NO: E41429	150 $^{\circ}$ C
2	CORE EF25A	HUA CI ELECTRONIC CO.,LTD	
3	WIRE MW75-C	PACIFIC ELECTRIC WIRE&CABLE (SHENZHEN) CO.,LTD UL NO: E201757	130 $^{\circ}$ C
4	TAPE 1350F-1(b)	3M COMPANY ELECTRICAL MARKETS DIV (EMD) UL NO: E17385	130 $^{\circ}$ C
5	VARNISH 468-2(x)	ELANTAS ELEC TRICAL INSNLAT10N ELANTA PDG INC UL NO: E75225	155 $^{\circ}$ C
6	SHIELD COPPER	BOTONG COPPER INDUSTRY (SHEN ZHEN) CO.,LTD	
7	TUBE TFL	GREAT HOLDING INDUSTRIAL CO LTD UL NO: E156256	200 $^{\circ}$ C
8	TRIPLE WIRE TEX-E	FURUKAWA ELECTRIC CO.,LTD UL NO: E206440	130 $^{\circ}$ C
9	BARRIER TAPE 44D	3M COMPANY ELECTRICAL MARKETS DIV (EMD) UL NO : E17385	130 $^{\circ}$ C



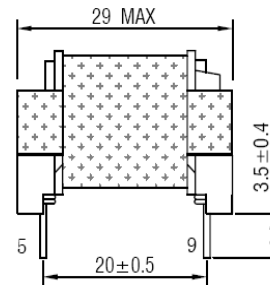
深圳市欣达汇电子有限公司
SHENZHEN XINDAHUI ELECTRONICS CO., LTD

CUSTOMER/客户: 高斯宝	CUSTOMER NO/客户料号: LT00672V01	VER/版本: A0
MODELNO/我司料号: XDH001281	MODELSPEC/产品规格: EF25卧式(5+5)	PAGE/页码: 3/6

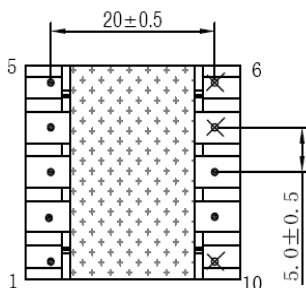
一. MECHANICAL DIMENSION/外观尺寸图: 单位: mm



(正视图)

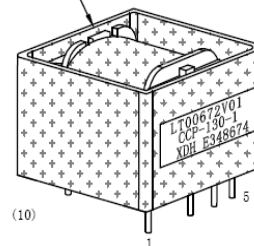


(侧视图)



(底视图)

22mm外围胶带2TS



(立体图)

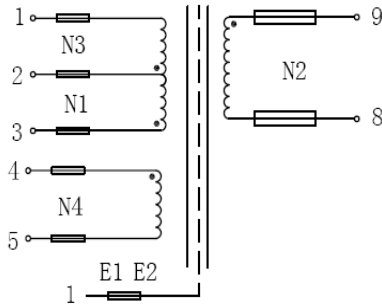
产品说明:

1. 产品空PIN6, 7, 10脚. 成品减去PIN2之2 / 3.
2. 整幅磁芯用7mm的胶带包2TS.
3. 成品包外围胶带22mm*2TS.
4. 产品需真空浸油, 烘干, 浸锡.

客户承认签印/CUSTOMER APPROVED	APPROVED	CHECKED	DRAW
		唐云	何凌君

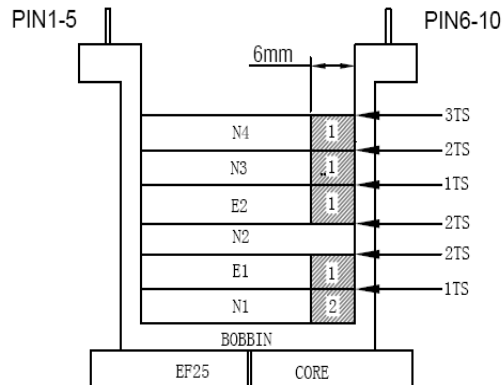
Attachment C: Transformer T1 Specification for G0682 (model: LT00672V01)

二. SCHEMATIC DRAWING/原理结构图:



□ 铁氟龙套管 (TUBING)
● 仅表示同名端, 不表示起绕点

三. WINDING ORDER/绕制结构图:



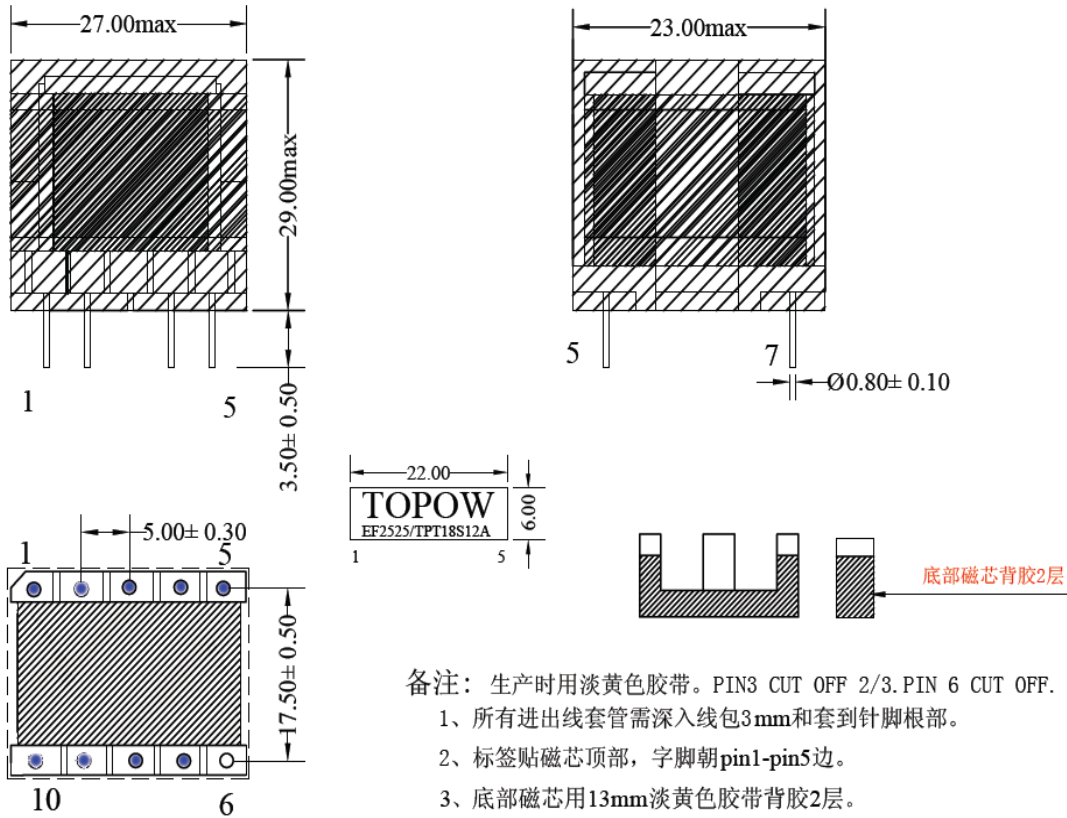
六. MATERIAL LIST/材料列表:

NO	PART NAME	TYPE	SUPPLIERS	UL, NO
1	TRANSFORMER	LT00672V01	SHENZHENSHI XINDAHUI ELECTRONICS CO LTD	--
2	INSULATION SYSTM	Type CCP-130-1, OBJY2, OBJY8	SHENZHENSHI XINDAHUI ELECTRONICS CO LTD	E348674
3	BOBBIN	T200NA , Rated 150°C	CHANG CHUN PLASTICS CO LTD	E59481
4	CORE	EF25A SP40	JINGZHOU SUPER-MAGNET CO., LTD	--
5	WIRE	MW75-C, Rated 130°C	TA YA ELECTRIC WIRE & CABLE CO LTD	E84201
6	COPPER FOIL	0.025T*8mmW(背胶)	ASN PING/TONG BO	--
7	TAPE	1350T-1(3layer), Rated 130°C	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	E17385
8	MARGIN TAPE	WF, Rated 130°C	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD	E165111
9	TUBING	TFL, Rated 200°C	GREATG HOLDING INDUSTRIAL CO LTD	E156256
10	TRIPLE INSULATION WIRE	TIW-E, Rated 155°C	Totoku ELECTRIC	E166483
11	SOLDER (LEDER FREE)	Sn99.3Cu0.7	SHENZHEN MINGWEI SOLDERING Tin PRODUCTS CO., LTD	--
12	VARNISH	BC-359, Rated 130°C	JOHN C. DOLPH CO LTD	E317427

客户承认签印/CUSTOMER APPROVED	APPROVED	CHECKED	DRAW
		唐云	何凌君

Attachment C: Transformer T1 Specification for TPT18S12A (model: EF2525)

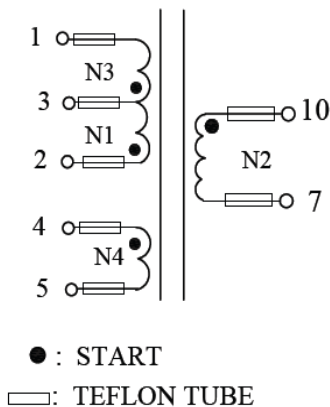
OUTLINE DIMENSION(UNIT:mm):



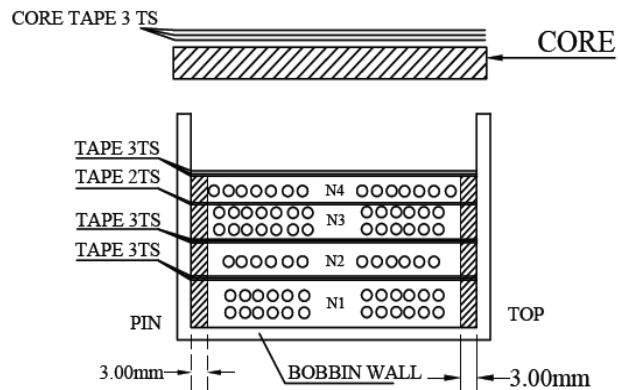
备注：生产时用淡黄色胶带。PIN3 CUT OFF 2/3. PIN 6 CUT OFF.

- 1、所有进出线套管需深入线包3mm和套到针脚根部。
- 2、标签贴磁芯顶部，字脚朝pin1-pin5边。
- 3、底部磁芯用13mm淡黄色胶带背胶2层。
- 4、最后需沿整个变压器外包3层26.5mm淡黄色胶带，底部与骨架支点平齐。

SCHEMATIC:




WINDING CONSTRUCTION:



<p>SHENZHEN TOPOW ELECTRONICS CO., LTD. 深圳市博源电子有限公司</p>	DRAWN BY	CHECKED BY	APPROVED BY	CUSTOMER P/N	EF2525/TPT18S12A	
				DATE	2014.2.27	REV
				SHEET OF	1 / 2	A/0

Attachment C: Transformer T1 Specification for TPT18S12A (model: EF2525)

CUSTOMER					DESCRIPTION	EF2525 Transformer	
WINDING:							
WDG	TERMINAL	WIRE SIZE	TURNS	TAPES	TUBE	REMARK	
N1	2~3	UEW/UΦ0.40*1P	38TS	3TS	24L/32mm	均匀密绕	
N2	10~7	UEW/UΦ0.35*4P	10TS	3TS	17L/32mm	均匀密绕	
N3	3~1	UEW/UΦ0.40*1P	34TS	2TS	24L/32mm	均匀密绕	
N4	4~5	UEW/UΦ0.17*3P	13TS	3TS	24L/32mm	均匀密绕	
TECHNICAL PARAMETER:							
NO.	ITEM	MEASURED POINT	TECHNICAL DATA	TEST CONDITION & INSTRUMENT			
1	INDUCTANCE	L 2~1	1.1mH± 10%	CH 1062(f=1KHz,V=0.3V)			
		LK 2~1	25μH max	CH 1062(f=10KHz,V=0.3V)			
2	HI-POT TEST	PRI TO SEC	AC 50Hz 4.1KV / 5mA 2s	CH CWI-903			
	工程检验标准	P.S TO CORE	AC 50Hz 2.1KV / 5mA 2s				
3	HI-POT TEST	PRI TO SEC	AC 50Hz 3.75KV / 5mA 60s				
	出货检验标准	P.S TO CORE	AC 50Hz 1.75KV / 5mA 60s				
MATERIAL LIST:							
NO.	ITEM	MATERIALS		SUPPLIERS			
1	BOBBIN	PHENOLIC T375J UL RATING:94V-0 THERMAL RATING: 150℃ FILE NO.: E59481		CHANG CHUN PLASTICS CO LTD			
2	CORE	PC40 EF2525		TDK			
3	TAPE	POLYESTER TAPE TYPE:PZ Rating Thermal 130℃ E165111		JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD			
4	WIRE	POLYURETHANE ENAMELED TYPE NO UEW/U THERMAL RATING: 130℃ FILE NO.: E201757		PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN)CO.,LTD			
5	TAPE	TYPE:WF Rating Thermal 130℃ E165111		JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD			
6	TUBE	TYPE NO.:TFL THERMAL RATING:200℃ FILE NO.:E156256		GREAT HOLDING INDUSTRIAL CO.,LTD			
7	VARNISH	TYPE NO.:BC-346A FILE NO.:E317427 THERMAL RATING:200℃		JOHN C DOLPH CO			
 SHENZHEN TOPOW ELECTRONICS CO., LTD. 深圳市博源电子有限公司		DRAWN BY	CHECKED BY	APPROVED BY	CUSTOMER P/N	EF2525/TPT18S12A	
					DATE	2014.2.27	REV
					SHEET OF	2 / 2	A/0