Test Report issued under the responsibility of:

TEST REPORT

EN 60950-1
Information technology equipment – Safety – Part 1: General requirements

Report Number. ..... :	SA1703052L 01001
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Engineer by (name + signature) ..... :	Night Li ……
Approved by (+ signature) ..... :	Joe Long ……
Applicant's name…… :	SAHAB TECHNOLOGY.
Address ..... :	OFFICE 21-QIBLA TOWER-FAHAD AL SALEM ST.-QIBLA-STATE OF KUWAIT.
Manufacturer's name…… :	SAHAB TECHNOLOGY.
Address ..... :	OFFICE 21-QIBLA TOWER-FAHAD AL SALEM ST.-QIBLA-STATE OF KUWAIT.
First Factory's name…… … :	SAHAB TECHNOLOGY.
Address ..... :	OFFICE 21-QIBLA TOWER-FAHAD AL SALEM ST.-QIBLA-STATE OF KUWAIT.
Test specification:	
Standard ..... :	EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013
Test procedure ..... :	CE
Non-standard test method…….. :	N/A
Test Report Form No ..... :	IEC60950_1F
Test Report Form(s) Originator ..... :	SGS Fimko Ltd
Master TRF ..... :	Dated 2014-02

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Test item description .....:	POE Switch
Trade Mark .....:	XonTel
Manufacturer .....:	SAHAB TECHNOLOGY.
Model/Type reference .....:	XT-1600G, XT-2400G
Ratings .....:	Input rating: 100-240Vac, 50/60Hz , 3.5A
	Output rating: 52V ⎓ 4.8A

List of Attachments (including a total number of pages in each attachment):

-Attachment 1: National Different (19 pages)
-Attachment 2: Photo document (6 pages)

Summary of testing:

Tests performed (name of test and test clause):

1. Max. ambient temperature 35°C.
2. Following tests performed during evaluation

Clause(s)	Test(s)
1.6.2	Input Current Test
1.7.11	Durability of Marking Test
2.1.1.7	Discharge of Capacitors
2.2.2	SELV limits for Normal Conditions
2.2.3	SELV limits for Abnormal Conditions
2.4.2	Limited Current Circuits (Bridging components)
2.6.3.4	Resistance of Earthing Circuit
2.9.2	Humidity Conditioning
2.10.2	Working Voltage over Insulation
2.10.3 2.10.4	TABLE: clearance and creepage distance measurements
2.10.5	TABLE: distance through insulation measurements
4.2.4	Steady Force Test, 250N
4.2.5	Impact Test (Steel Ball)
4.2.6	Drop Test
4.5.2	Maximum Temperature Test
5.1.6	Touch Current and PE current
5.2	Electric Strength Test
5.3	Fault Condition Test

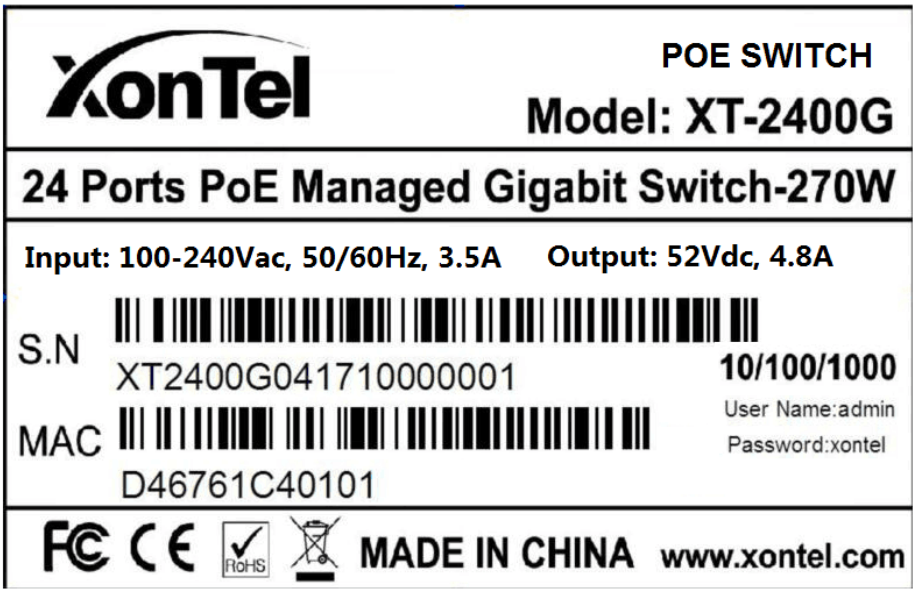
All tests was performed on model XT-2400G
The EUT passed the test.

Testing location:

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

Copy of marking plate :

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



Note:Since similar label used, only label for models above listed to represent other similar ones. The manufacture name or trademark would be remarked on label.

Remark:

- The above markings are the minimum requirements required by the safety standard. For the final productions samples, the additional markings which do not give rise to misunderstanding may be added.
- The height of CE marking should be minimum 5mm high and the height of WEEE directive symbol should be minimum 7mm high.

Test item particulars.....:	
Equipment mobility.....:	[x] movable [] hand-held [] transportable [] stationary [] for building-in [] direct plug-in
Connection to the mains .....:	[] pluggable equipment [] type A [] type B [] permanent connection [x] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition.....:	[x] continuous [] rated operating / resting time:
Access location .....:	[x] operator accessible [] restricted access location [] Built-in component, consider in end system
Over voltage category (OVC) .....:	[] OVC I [x] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	±10%
Tested for IT power systems .....:	[] Yes [x] No
IT testing, phase-phase voltage (V) .....:	N/A
Class of equipment .....:	[x] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A) .....:	16A
Pollution degree (PD) .....:	[] PD 1 [x] PD 2 [] PD 3
IP protection class .....:	IP20
Altitude during operation (m) .....:	≤2000
Altitude of test laboratory (m) .....:	<500m
Mass of equipment (kg) .....:	Approx. 2.94kg
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement .....:	P (Pass)
- test object does not meet the requirement .....:	F (Fail)
Testing.....:	
Date of receipt of test item.....:	2017-03-13
Date(s) of performance of tests.....:	2017-03-13 to 2017-03-21

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

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

General product information:

POE switch, Model No.: XT-2400G Intend to use as Information Technology Equipment.

1. The maximum operating temperature is 35°C.

2. The top enclosure is sealed with bottom enclosure are sealed together by screw fixed.

3. The models XT-1600G, XT-2400G are identical to each other ,except the model name different.

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		**P**
1.5	**Components**		**P**
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	Components, which were found to affect safety aspects, comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. See Critical Component Table for details.	P
1.5.2	Evaluation and testing of components	Components, which are certified to IEC and/or national standards, are used correctly within their ratings or had been evaluated during this approval.	P
1.5.3	Thermal controls	No thermal controls	N/A
1.5.4	Transformers	Transformer used is suitable for the intended application and complies with the relevant requirements of the standard and particularly with those of Annex C.	P
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of this standard. Interconnection cables is used to provide SELV/LPS/non-hazardous energy level power to other equipment.	N/A
1.5.6	Capacitors bridging insulation	Between primary and secondary: Y1 capacitor (CY6 and CY7) according to IEC 60384-14. primary capacitor X2 type (CX1 and CX2) according to IEC 60384-14.	P
1.5.7	Resistors bridging insulation		P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Functional only.	P
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.1	General		P
1.5.9.2	Protection of VDRs		P
1.5.9.3	Bridging of functional insulation by a VDR		P
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	**Power interface**		P
1.6.1	AC power distribution systems		P
1.6.2	Input current	Steady state input current of the equipment did not exceed the rated current by more than 10% under Maximum Normal Load. Maximum Normal Load is continuous operation at rated output load.	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not hand-held equipment.	N/A
1.6.4	Neutral conductor	Neutral conductor is treated as a line conductor for insulation purposes.	P
1.7	**Marking and instructions**		**P**
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections.....:		N/A
	Rated voltage(s) or voltage range(s) (V) .....:	100-240V~	P
	Symbol for nature of supply, for d.c. only .....:	AC source	N/A
	Rated frequency or rated frequency range (Hz) ...:	50/60Hz	P
	Rated current (mA or A) .....:	3.5A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....:	Copy of marking plate	P
	Model identification or type reference .....:	Copy of marking plate	P
	Symbol for Class II equipment only .....:		N/A
	Other markings and symbols .....:	Other symbols do not give rise to misunderstanding.	P
1.7.2	Safety instructions and marking	Operating/safety instructions made available to the user.	P
1.7.2.1	General	Sufficient information provide in the safety instruction.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.2	Disconnect devices		N/A
1.7.2.3	Overcurrent protective device		N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool		N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles		N/A
1.7.4	Supply voltage adjustment ..... :		N/A
	Methods and means of adjustment; reference to installation instructions ..... :		N/A
1.7.5	Power outlets on the equipment ..... :		N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) ..... :	Fuse (F1,F2,F3) on the primary circuit marking provided on PCB: F1: T6.3A/250V F2: T6.3A/250V F3: T3.15A/250V	P
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals ..... :		N/A
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		N/A
1.7.8.1	Identification, location and marking ..... :		N/A
1.7.8.2	Colours ..... :		N/A
1.7.8.3	Symbols according to IEC 60417 ..... :		N/A
1.7.8.4	Markings using figures ..... :		N/A
1.7.9	Isolation of multiple power sources ..... :		N/A
1.7.10	Thermostats and other regulating devices ..... :		N/A
1.7.11	Durability		P
1.7.12	Removable parts		N/A
1.7.13	Replaceable batteries ..... :	No battery provided.	N/A
	Language(s) ..... :		—
1.7.14	Equipment for restricted access locations ..... :		N/A

2	**PROTECTION FROM HAZARDS**		**P**
2.1	**Protection from electric shock and energy hazards**		**P**
2.1.1	Protection in operator access areas	No access with test finger and test pin to any hazardous parts.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.1	Access to energized parts	See above.	P
	Test by inspection ..... :	See above.	P
	Test with test finger (Figure 2A) ..... :	See above.	P
	Test with test pin (Figure 2B) ..... :	See above.	P
	Test with test probe (Figure 2C) ..... :	No TNV.	N/A
2.1.1.2	Battery compartments		N/A
2.1.1.3	Access to ELV wiring		N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards ..... :		N/A
2.1.1.6	Manual controls	No manual controls.	N/A
2.1.1.7	Discharge of capacitors in equipment	Capacity: CX1=CX2=0.47μF Discharge resistor: R15=R16=0.6MΩ	P
	Measured voltage (V); time-constant (s)..... :	L to N (power switch ON): Vpeak=396V, 37% of Vpeak=146.52V. 0.042s. L to PE (power switch ON) Vpeak=312V, 37% of Vpeak=131.72V. 0.042s. L to N (power switch OFF): Vpeak=388V, 37% of Vpeak=143.56V. 0.044s. L to PE (power switch OFF): Vpeak=320V, 37% of Vpeak=119.41V. 0.046s.	—
2.1.1.8	Energy hazards – d.c. mains supply	Connected to a.c. mains.	N/A
	a) Capacitor connected to the d.c. mains supply .. :		N/A
	b) Internal battery connected to the d.c. mains supply ..... :		N/A
2.1.1.9	Audio amplifiers ..... :	Not such equipment.	N/A
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations		N/A

2.2	**SELV circuits**		**P**
2.2.1	General requirements	SELV levels are maintained after single fault condition.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.2.2	Voltages under normal conditions (V) ..... :	Between any conductors of the SELV circuit 42.4 V PK or 60 V DC are not exceeded.	P
2.2.3	Voltages under fault conditions (V) ..... :	Single fault did not cause excessive voltage in accessible SELV circuit. Limits of 71 V PK and 120 V DC were not exceed.	P
2.2.4	Connection of SELV circuits to other circuits ..... :	SELV circuits are only connected to other secondary circuits. SELV circuit and all interconnected circuits separated from primary by reinforced or double insulation. SELV circuit does not exceed the SELV limits under normal and fault conditions.	P
2.3	**TNV circuits**	*No TNV circuits used*	**N/A**
2.3.1	Limits		N/A
	Type of TNV circuits..... :		—
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions ..... :		N/A
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed..... :		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed..... :		—
2.3.5	Test for operating voltages generated externally		N/A
2.4	**Limited current circuits**		**P**
2.4.1	General requirements	See below.	P
2.4.2	Limit values	20.16mA	P
	Frequency (Hz) ..... :	28.8KHz	—
	Measured current (mA)..... :	8.6mA	—
	Measured voltage (V)..... :	17.2V	—
	Measured circuit capacitance (nF or µF) ..... :	CY6=CY7=2200pF	—
2.4.3	Connection of limited current circuits to other circuits	Output circuit as limited current circuit connected to	P

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Clause	Requirement + Test	Result - Remark	Verdict
		primary via one bridging capaictor	

2.5	**Limited power sources**		**N/A**
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output under normal operating and single fault condition	The output comply with table 2B, both under normal operating conditions and after single fault in the regulating network.	N/A
	d) Overcurrent protective device limited output		N/A
	Max. Output voltage (V), max. Output current (A), max. Apparent power (VA) ..... :	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) .:		—
	Use of integrated circuit (IC) current limiters		—

2.6	**Provisions for earthing and bonding**		**P**
2.6.1	Protective earthing		P
2.6.2	Functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General		P
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm^2), AWG..... :		—
2.6.3.3	Size of protective bonding conductors		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)..... :	0.0186Ω 32A/2min	P
2.6.3.5	Colour of insulation ..... :		N/A
2.6.4	Terminals		P
2.6.4.1	General		P
2.6.4.2	Protective earthing and bonding terminals		P
	Rated current (A), type, nominal thread diameter (mm)..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth	Appliance inlet used for disconnection of protective earth.	P
2.6.5.4	Parts that can be removed by an operator	Appliance inlet used for disconnection of protective earth.	P
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		P
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		**P**
2.7.1	Basic requirements	Protective devices are integrated in the equipment.	P
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7	The protection devices are well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Building installation is considered as providing short-circuit backup protection.	P
2.7.4	Number and location of protective devices .....:	One protective device in the "LIVE" phase.	P
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel .....:		N/A
2.8	**Safety interlocks**	*No safety interlocks used*	**N/A**
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) ..... :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A
2.9	**Electrical insulation**		**P**
2.9.1	Properties of insulating materials		P
2.9.2	Humidity conditioning	48 h	P
	Relative humidity (%), temperature (°C) ..... :	95%RH, 30°C	—
2.9.3	Grade of insulation	Functional, basic, supplementary, double or reinforced insulation	P
2.9.4	Separation from hazardous voltages		P
	Method(s) used ..... :	Method 1	—
2.10	**Clearances, creepage distances and distances through insulation**		**P**
2.10.1	General	See 2.10.3, 2.10.4 and 2.10.5	P
2.10.1.1	Frequency ..... :	Considered	P
2.10.1.2	Pollution degrees ..... :	2	P
2.10.1.3	Reduced values for functional insulation	Considered	P
2.10.1.4	Intervening unconnected conductive parts	Considered	P
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage		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		N/A
2.10.3.2	Mains transient voltages		P
	a) AC mains supply ..... :	240V a.c. and Overvoltage Category II	P
	b) Earthed d.c. mains supplies ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) Unearthed d.c. mains supplies ..... :		N/A
	d) Battery operation ..... :		N/A
2.10.3.3	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Clearances in secondary circuits	Sub-clause 5.3.4 considered.	P
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply ..... :		N/A
2.10.3.7	Transients from d.c. mains supply ..... :		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :		N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply ..... :		N/A
	For a d.c. mains supply ..... :		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	See appended table 2.10.3 and 2.10.4.	P
2.10.4.1	General	CTI rating for all materials of minimum 100.	P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests..... :	Material group IIIb; 100 <= CTI < 175.	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation		P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation	No such construction used.	N/A
2.10.5.4	Semiconductor devices	Approved opto-coupler used	P
2.10.5.5.	Cemented joints	No such construction.	N/A
2.10.5.6	Thin sheet material – General		P
2.10.5.7	Separable thin sheet material	Used in and around transformer T1.	P
	Number of layers (pcs) ..... :	2 layers	—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	(see appended table 5.2)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test		N/A
2.10.5.11	Insulation in wound components	Approved triple insulated wire used in T1	P
2.10.5.12	Wire in wound components		P
	Working voltage ..... :		P
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation ..... :		N/A
	c) Compliance with Annex U ..... :	.	P
	Two wires in contact inside wound component; angle between 45° and 90° ..... :	Physical separation provided by insulating tube and insulation tape	P
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage ..... :		N/A
	- Basic insulation not under stress ..... :		N/A
	- Supplementary, reinforced insulation ..... :		N/A
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs) ..... :	Single layer PCB	N/A
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/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints	Approved opto-coupler used	P
2.10.12	Enclosed and sealed parts		N/A
3	**WIRING, CONNECTIONS AND SUPPLY**		**P**
3.1	**General**		**P**
3.1.1	Current rating and overcurrent protection	Internal wires are UL recognized wiring which is PVC insulated, rated VW-1 or FT-1, and having gauge suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges which could damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	The wires are secured by soldering and additional fixed by glue so that a loosening of the terminal connection is unlikely.	P
3.1.4	Insulation of conductors	The insulation of the individual conductors suitable for the application and the working voltage. For the insulation Material see 3.1.1.	P
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors	All conductors are reliably secured.	P
	10 N pull test		N/A
3.1.10	Sleeving on wiring		N/A
3.2	**Connection to a mains supply**		**P**
3.2.1	Means of connection	See below.	P
3.2.1.1	Connection to an a.c. mains supply	Appliance inlet	P
3.2.1.2	Connection to a d.c. mains supply	Only a.c. mains supply.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.2.2	Multiple supply connections	Only for one mains connection.	N/A
3.2.3	Permanently connected equipment	Unit is not a permanently connected equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm) .....:		—
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type .....:		—
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) .....:		—
	Longitudinal displacement (mm) .....:		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) .....:		—
	Radius of curvature of cord (mm) .....:		—
3.2.9	Supply wiring space	Not permanent connection or non-detachable power cord type.	N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
3.4	**Disconnection from the mains supply**		**P**
3.4.1	General requirement	See below.	P
3.4.2	Disconnect devices	Appliance inlet used.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	When inlet is disconnected no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords	None	N/A
3.4.6	Number of poles – single-phase and d.c. equipment	The inlet disconnects both poles simultaneously.	P
3.4.7	Number of poles – three-phase equipment	Single phase equipment.	N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment	Not interconnected equipment.	N/A
3.4.11	Multiple power sources	Only one supply connection provided.	N/A
3.5	**Interconnection of equipment**		P
3.5.1	General requirements	See below for details.	P
3.5.2	Types of interconnection circuits .....:	SELV interconnection circuits via secondary output connector.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection	N/A
3.5.4	Data ports for additional equipment	No such ports	N/A
4	**PHYSICAL REQUIREMENTS**		**N/A**
4.1	Stability		N/A
	Angle of 10°		N/A
	Test force (N) .....:		N/A
4.2	**Mechanical strength**		**P**
4.2.1	General	See below for details.	N/A
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N		N/A
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.2.4	Steady force test, 250 N	Location: Outside enclosure	P
4.2.5	Impact test	Location: Outside enclosure	P
	Fall test		P
	Swing test		P
4.2.6	Drop test; height (mm) .....:	Location:Top enclosure/ Side enclosure/ Bottom enclosure	P
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes	No CRT in the unit.	N/A
	Picture tube separately certified .....:		N/A
4.2.9	High pressure lamps	No high pressure lamp provided.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....:	Not wall or ceiling mounted equipment.	N/A
4.3	**Design and construction**		**P**
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.3.2	Handles and manual controls; force (N) .....:	No handles or controls provided.	N/A
4.3.3	Adjustable controls		N/A
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		P
4.3.6	Direct plug-in equipment		N/A
	Torque .....:		—
	Compliance with the relevant mains plug standard .....:		N/A
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N/A
4.3.8	Batteries	No batteries provided.	N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids .....:		N/A
	Quantity of liquid (l) .....:		N/A
	Flash point (°C) .....:		N/A
4.3.13	Radiation	No radiation	N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) .....:		—
	Measured high-voltage (kV) .....:		—
	Measured focus voltage (kV) .....:		—
	CRT markings .....:		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification .....:		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....:		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		N/A
4.3.13.5.1	Lasers (including laser diodes)		N/A
	Laser class .....:		—
4.3.13.5.2	Light emitting diodes (LEDs)		—
4.3.13.6	Other types .....:		N/A

4.4	**Protection against hazardous moving parts**		**N/A**
4.4.1	General		N/A
4.4.2	Protection in operator access areas .....:		N/A
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations .....:		N/A
4.4.4	Protection in service access areas		N/A
4.4.5	Protection against moving fan blades		N/A
4.4.5.1	General		N/A
	Not considered to cause pain or injury. A)…….:		N/A
	Is considered to cause pain, not injury. B) …….:		N/A
	Considered to cause injury. C) …….:		N/A
4.4.5.2	Protection for users		N/A
	Use of symbol or warning ……:		N/A
4.4.5.3	Protection for service persons		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Use of symbol or warning ……:		N/A
4.5	**Thermal requirements**		**P**
4.5.1	General	The equipment and its component parts did not attain excessive temperatures during normal operation. See Table 4.5 for details.	P
4.5.2	Temperature tests	See Table 4.5 for details.	P
	Normal load condition per Annex L .....:	Maximum Normal Load is continuous operation at rated output load.	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat .....:		P
4.6	**Openings in enclosures**		**P**
4.6.1	Top and side openings		P
	Dimensions (mm) .....:	No openings provided.	—
4.6.2	Bottoms of fire enclosures		P
	Construction of the bottomm, dimensions (mm) ..:	No openings provided.	—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) .....:		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks).....:		—
4.7	**Resistance to fire**		**P**
4.7.1	Reducing the risk of ignition and spread of flame	See below for details.	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		N/A
4.7.2	Conditions for a fire enclosure	Fire enclosure is not necessary	N/A
4.7.2.1	Parts requiring a fire enclosure	·	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General	See below for details.	P
4.7.3.2	Materials for fire enclosures	Minimum V-1.	P
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated minimum V-2 or are mounted on a PWB rated minimum V-1.	P
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		**P**
5.1	**Touch current and protective conductor current**		**P**
5.1.1	General	See Sub-clauses 5.1.2 to 5.1.6 for details.	P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply	Equipment has only one mains connection.	P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Single phase equipment intended only for connection to star TN system.	P
5.1.4	Application of measuring instrument	Test made to 10 by 20 cm metal foil in contact with accessible non-conductive part. Annex D.1 used.	P
5.1.5	Test procedure		P
5.1.6	Test measurements	see appended table 5.1	P
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. Allowed touch current (mA) ..... :		—
	Measured protective conductor current (mA) ..... :		—
	Max. Allowed protective conductor current (mA).. :		—
5.1.7	Equipment with touch current exceeding 3,5 mA		N/A
5.1.7.1	General ..... :		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. Allowed touch current (mA) ..... :		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports ..... :		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A
5.2	**Electric strength**		**p**
5.2.1	General	See below for details.	p
5.2.2	Test procedure	See Table 5.2 for details.	p
5.3	**Abnormal operating and fault conditions**		**P**
5.3.1	Protection against overload and abnormal operation	See Table 5.3 for details.	P
5.3.2	Motors		N/A
5.3.3	Transformers	Transformers are constructed in accordance with the applicable Sub-clauses and Annex C.	P
5.3.4	Functional insulation ..... :	By short circuit	P
5.3.5	Electromechanical components		N/A
5.3.6	Audio amplifiers in ITE ..... :		N/A
5.3.7	Simulation of faults	See Table 5.3 for details.	P
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See Table 5.3 for details.	P
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests	No reduction of clearance and creepage distance. Electric strength test is made on basic, supplementary and reinforced insulation after test.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		**N/A**
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Supply voltage (V) ..... :		—
	Current in the test circuit (mA) ..... :		—
6.1.2.2	Exclusions ..... :		N/A
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		**N/A**
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A
6.3	**Protection of the telecommunication wiring system from overheating**		**N/A**
	Max. Output current (A) ..... :		—
	Current limiting method ..... :		—
7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		**N/A**
7.1	General		N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A
A	**ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE** *UL Recognized material used*		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples ..... :		—
	Wall thickness (mm)..... :		—
A.1.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.1.3	Mounting of samples ..... :		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D ..... :		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N/A
A.2.1	Samples, material ..... :		—
	Wall thickness (mm)..... :		—
A.2.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.2.3	Mounting of samples ..... :		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C ..... :		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.2.7	Alternative test acc. To IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		**N/A**
B.1	General requirements		N/A
	Position ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
	Electric strength test: test voltage (V) ..... :		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V) ..... :		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V) ..... :		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V) ..... :		—

C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		**N/A**
	Position ..... :	Transformer (T1)	—
	Manufacturer ..... :	See appended table 1.5.1	—
	Type ..... :	See appended table 1.5.1	—
	Rated values ..... :	See appended table 1.5.1	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Method of protection ..... :	Inherent	—
C.1	Overload test	See Table 5.3 for details.	P
C.2	Insulation	See Table 5.2 for details.	P
	Protection from displacement of windings ..... :	Fixing by insulation tape and bobbin	P
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		**P**
D.1	Measuring instrument		P
D.2	Alternative measuring instrument		N/A
E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**		**N/A**
F	**ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)**		**P**
G	**ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES**		**N/A**
G.1	Clearances		N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply ..... :		N/A
G.2.2	Earthed d.c. mains supplies ..... :		N/A
G.2.3	Unearthed d.c. mains supplies ..... :		N/A
G.2.4	Battery operation ..... :		N/A
G.3	Determination of telecommunication network transient voltage (V) ..... :		N/A
G.4	Determination of required withstand voltage (V)		N/A
G.4.1	Mains transients and internal repetitive peaks .... :		N/A
G.4.2	Transients from telecommunication networks ..... :		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient voltages (V)		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances ..... :		N/A
H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		**N/A**
J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		**N/A**
	Metal(s) used ..... :		—
K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)**		**N/A**
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V) ..... :		N/A
K.3	Thermostat endurance test; operating voltage (V) ..... :		N/A
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A
L	**ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)**		**P**
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	Maximum Normal Load is continuous operation at rated output load.	P
M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		**N/A**
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) ..... :		—
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
M.3.1.4	Single fault current (Ma) ..... :		—
M.3.2	Tripping device and monitoring voltage ..... :		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) ..... :		N/A
N	**ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)**		**N/A**
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	**ANNEX P, NORMATIVE REFERENCES**		—
Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		**P**
	a) Preferred climatic categories ..... :		P
	b) Maximum continuous voltage ..... :		P
	c) Pulse current ..... :		P
R	**ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES**		**N/A**
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		**N/A**
R.2	Reduced clearances (see 2.10.3)		**N/A**
S	**ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		**N/A**
S.1	Test equipment		**N/A**
S.2	Test procedure		**N/A**
S.3	Examples of waveforms during impulse testing		**N/A**
T	**ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)**		**N/A**
			—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		**P**
		Approved triple insulation wire used (see appended table 1.5.1)	—

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

V	**ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)**		**P**
V.1	Introduction		P
V.2	TN power distribution systems		P

W	**ANNEX W, SUMMATION OF TOUCH CURRENTS**		**N/A**
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A

X	**ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)**		**N/A**
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A

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

Z	**ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)**	**P**

AA	**ANNEX AA, MANDREL TEST (see 2.10.5.8)**	**N/A**

BB	**ANNEX BB, CHANGES IN THE SECOND EDITION**	**N/A**

CC	**ANNEX CC, Evaluation of integrated circuit (IC) current limiters**		**N/A**
CC.1	General		N/A
CC.2	Test program 1……..:		N/A
CC.3	Test program 2……..:		N/A

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

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

EE	**ANNEX EE, Household and home/office document/media shredders**		**N/A**
EE.1	General		N/A
EE.2	Markings and instructions		N/A
	Use of markings or symbols……:		N/A
	Information of user instructions, maintenance and/or servicing instructions……:		N/A
EE.3	Inadvertent reactivation test……:		N/A
EE.4	Disconnection of power to hazardous moving parts:		N/A
	Use of markings or symbols……:		N/A
EE.5	Protection against hazardous moving parts		N/A
	Test with test finger (Figure 2A) ……:		N/A
	Test with wedge probe (Figure EE1 and EE2) ……:		N/A

1.5.1	TABLE: List of critical components				P
Object/part No.	ManuFacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
Metal Enclosure	Various	Various	Metallic, min. 0.6mm thickness	IEC/EN 60950-1	Tested in equipment
Power Switch	NINGBO YINZHOU LIHE ELECTRONIC CO LTD	RL3	250Vac,6A,85°C	IEC/EN 61058-1, UL1054	UL E208316
(Alternate)	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	PS8A Series	250Vac,6A,85°C	EC/EN 61058-1, UL1054	VDE 40027141 UL E236875
AC Connector (CN1)	HUIZHOU CITY TAIJI ELECTROINCS INDUSTRIAL CO LTD	TA3963-3P	250VAC, 85°C.	UL 1977	UL E305281
DC FAN	SHENZHEN BAODIKAI ELECTRONIC CO LTD	BDM12025S	DC 12V 0.3A, min. 66 CFM, min. 1400 RPM	UL 507	UL E363706
PCB	Various	Various	V-1 or better, 130°C	UL 796 UL 60950-1	UL
Fuse (F1,F2)	SHENZHEN LANSON ELECTRONICS CO LTD	SMT	T6.3A, 250V	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40012592 UL E221465
(Alternate)	XC ELECTRONICS (SHENZHEN) CORP LTD	5TE	T6.3A, 250V	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40029550 UL E249609
Fuse (F3)	XC ELECTRONICS (SHENZHEN) CORP LTD	32F	T3.15A 250V	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40019636 UL E249609
(Alternate)	Honghu Bluelight Electronic Co., Ltd.	6TE	T3.15A 250V	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40034107 UL E324232
Mylar sheet around PCB	BOLUO EVERSUN ELECTRONICS PLANT	YY-CK11	V-0, 130°C, Min. Thickness 0.25mm	UL 94, UL746C	UL E250664
(Alternate)	Jiangsu Yuxing Film Technology Co.,Ltd	6021	VTM-2, 105°C, Min. Thickness 0.25mm	UL 94, UL746C	UL E212271

Varistor (MOV1, MOV2, MOV3)	THINKING ELECTRONIC INDUSTRIAL CO LTD	TVR14471	Min.300V AC 85 °C,V-0 (test by UL for 6KV/3KA combination pulse)	IEC/EN 61051-1 IEC/EN 61052-2 UL 1449	VDE 005944 UL E314979
(Alternate)	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	14D471K	Min.300V AC 105 °C,V-0 (test by UL for 6KV/3KA combination pulse)	IEC/EN 61051-1 IEC/EN 61052-2 UL 1449	VDE 40023049 UL E330837
(Alternate)	Cerglass MFG Inc	14D471K	Min.300V AC 85 °C,V-0 (test by UL for 6KV/3KA combination pulse)	IEC/EN 61051-1 IEC/EN 61052-2 UL 1449	VDE 40028836 UL E317616
Thermistor (RT1)	Various	Various	Min.2A, 2.5ohm	UL1434	UL
X-Capacitor (CX1,CX2)	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	MPX	Max. 0.47uF, 275Vac, 100 °C, X2 Type	IEC/EN/UL 60384-14	UL E208107 VDE 40034679
(Alternate)	SHENZHEN HAOTIAN ELECTRONIC CO LTD	MPX	Max. 0.47uF, 275Vac, 100 °C, X2 Type	IEC/EN/UL 60384-14	UL E326483 VDE 40041688
Bleeder Resistor (R15, R16)	Various	Various	Rated 0.6M ohm, Min. 1/2W.	IEC/EN 60950-1	Tested in appliance
Line choke (LF1)	Various	Various	130°C	IEC/EN 60950-1	Test with appliance
--Magnet wire	Various	Various	130°C	UL 1446	UL
Line choke (L1)	Various	Various	130°C	IEC/EN 60950-1	Test with appliance
--Magnet wire	Various	Various	130°C	UL 1446	UL
Line filter (L2)	Various	Various	130°C	IEC/EN 60950-1	Test with appliance
--Bobbin	Chang Chun Plastics Co Ltd	T375J	(PMC), V-0, 150°C, minimum thickness 0.75mm	UL 94, UL 746C	UL E59412

--Magnet wire	Various	Various	130°C	UL 1446	UL
Transistor (Q2)	Various	Various	Min. 5A, Min. 600V	IEC/EN 60950-1	Test with appliance
Diode bridge (BD1)	Various	Various	Min. 2A, Min. 600V	IEC/EN 60950-1	Test with appliance
E-Capacitor (C17)	Various	Various	450V, 180μF, 105°C	IEC/EN 60950-1	Test in appliance
Y-Capacitor (CY2,CY3)	JYA-NAY CO., LTD.	JN	Max. 2200 pF, min. 250Vac, 125°C, Y1 type	IEC/EN/UL 60384-14	UL E201384 VDE 40023949
(Alternate)	Dong Guan City DaFu Electronic Co., Ltd.	CT7 Y2 Series	Min. 250 V, max. 2200 pF min. 85 °C .Y2 type	IEC/EN/UL 60384-14	UL E465278 VDE 40041521
(Alternative)	MURATA MFG CO LTD	KX	Maximum 2200pF, minimum 250Vac, 125 °C, Y1 type,	IEC/EN/UL 60384-14	UL E37921 VDE 40002831
(Alternative)	YINAN DON'S ELECTRONIC COMPONENT CO LTD	CT81	Maximum 2200pF, minimum 250Vac, 125 °C, Y2 type,	IEC/EN/UL 60384-14	ULE145038 VDE 135256
Y-Capacitor (CY6,CY7) (optional)	JYA-NAY CO., LTD.	JN	Max. 2200 pF, min. 250Vac, 125°C, Y1 type	IEC/EN/UL 60384-14	UL E201384 VDE 40023949
(Alternate)	Dong Guan City DaFu Electronic Co., Ltd.	CT7	Max. 2200 pF, min. 250Vac, 125°C, Y1 type	IEC/EN/UL 60384-14	UL E465278 VDE 40041521
Optocoupler (U5, U7)	EVERLIGHT ELECTRONICS CO LTD	EL817	Dti=0.5mm, int. dcr=6.0mm, ext. dcr=8.0mm, 100°C	IEC/EN 60747-5-5, UL1577	VDE 40039590 UL E214129
(Alternate)	Bright Led Electronics Corp.	BPC-817C	Dti＞0.4mm, int. dcr≥7.6mm, ext. dcr≥8.0mm,100°C	EN 60747-5-2, IEC/EN 60950-1, UL1577	VDE 40007240 UL E236324
Transformer (T1)	Shenzhen Hi-Net Technology Company Limited	XT-2400G	Class B	IEC/EN 60950-1	Tested with appliance
--Insulation tape	Chang Shu Liang Yi Tape Industry Co Ltd	LY-02	130 °C	UL 510	UL E246820
--Bobbin	Chang Chun Plastics Co Ltd	T375J	(PMC), V-0, 150°C, minimum thickness 0.75mm	UL 94, UL 746C	UL E59412

--Magnet wire	SHENZHEN EASTLIGHT CHEMICAL CO LTD	DFL-8033-(a)	130°C	UL 1446	UL E359418
-Triple insulation wire	Shanghai Xiangxiang Electron Co., Ltd	TKW-B	130°C	UL 2353	UL E308908 VDE 40026588
(Alternate)	Hui Zhou Golden Ocean Magnet Wire Factory	XYW-B	130°C	UL 2353	VDE 40017563 UL E251775
-Varnish	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC	468-2(X)	130°C	UL 1446	UL E75225
Transformer (T2)	Shenzhen Hi-Net Technology Company Limited	XT-2400G	Class B	IEC/EN 60950-1	Tested with appliance
--Insulation tape	Chang Shu Liang Yi Tape Industry Co Ltd	LY-02	130 °C	UL 510	UL E246820
--Bobbin	Chang Chun Plastics Co Ltd	T375J	(PMC), V-0, 150°C, minimum thickness 0.75mm	UL 94, UL 746C	UL E59412
--Magnet wire	SHENZHEN EASTLIGHT CHEMICAL CO LTD	DFL-8033-(a)	130°C	UL 1446	UL E359418
-Triple insulation wire	Shanghai Xiangxiang Electron Co., Ltd	TKW-B	130°C	UL 2353	UL E308908 VDE 40026588
(Alternate)	Hui Zhou Golden Ocean Magnet Wire Factory	XYW-B	130°C	UL 2353	VDE 40017563 UL E251775
-Varnish	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC	468-2(X)	130°C	UL 1446	UL E75225

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V/Hz)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
For model: XT-2400G	--	--	--	--	--	--
90V/50Hz	3.449	--	311.8	F1/F2/F3	3.449	Load with 52V/4.8A
90V/50Hz	3.453	--	321.3	F1/F2/F3	3.453	Load with 52V/4.8A
100V/50Hz	3.063	3	307.3	F1/F2/F3	3.063	Load with 52V/4.8A
100V/60Hz	3.063	3	307.7	F1/F2/F3	3.063	Load with 52V/4.8A
240V/50Hz	1.223	3	290.7	F1/F2/F3	1.223	Load with 52V/4.8A
240V/60Hz	1.231	3	291.1	F1/F2/F3	1.231	Load with 52V/4.8A
264V/50Hz	1.124	--	290.8	F1/F2/F3	1.124	Load with 52V/4.8A
264V/60Hz	1.123	--	290.9	F1/F2/F3	1.123	Load with 52V/4.8A
Supplementary information:						

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

2.2	TABLE: evaluation of voltage limiting components in SELV circuits		P
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	
For model: XT-2400G	--	--	--
T1 pin A to B	103.2	--	--
T1 pin B to Q4	--	56.2	Q4
T1 pin A to C	122.2	--	--
T1 pin C to Q5	--	55.6	Q5
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)		
For model: XT-2400G			
With Q4 Pin D to S short-circuit #	Output terminal: 0Vpeak		

With Q5 Pin D to S short-circuit #	Output terminal: 0Vpeak
supplementary information:	
#=Unit shut down, no hazard; Supplied by 240Vac/60Hz	

2.5	**TABLE: Limited power source measurement**		**N/A**
	Limits	Measured	Comments
--	--	--	--
--	--	--	--
Note(s):			

2.10.2	**Table: working voltage measurement**		**P**
Location	RMS voltage (V)	Peak voltage (V)	Comments
For model: XT-2400G	--	--	--
T2 Pin1 to Pin A	191	428	--
T2 Pin2 to Pin A	197	452	--
T2 Pin3 to Pin A	184	396	--
T2 Pin4 to Pin A	**309**	**476**	Vpeak and Vrms
T2 Pin1 to Pin B	181	368	--
T2 Pin2 to Pin B	181	388	--
T2 Pin3 to Pin B	182	344	--
T2 Pin4 to Pin B	258	412	--
T2 Pin1 to Pin C	192	432	--
T2 Pin2 to Pin C	186	412	--
T2 Pin3 to Pin C	198	404	--
T2 Pin4 to Pin C	231	460	--
T1 Pin1 to Pin A	60.3	100	--
T1 Pin2 to Pin A	67.5	412	--
T1 Pin3 to Pin A	50.4	92	--
T1 Pin4 to Pin A	47.8	212	--
T1 Pin1 to Pin B	49.3	116	--
T1 Pin2 to Pin B	56.0	404	--
T1 Pin3 to Pin B	45.8	92	--
T1 Pin4 to Pin B	45.9	204	--
CY7	180	372	--
CY6	43	84	--

U5 Pin 1to 2	193	388	--
U5 Pin 1to 3	192	384	--
U5 Pin 2to 3	193	388	--
U5 Pin 2to 4	192	384	--
U4 Pin 1to 2	45.5	88	--
U4 Pin 1to 3	44	84	--
U4 Pin 2to 3	45.5	88	--
U4 Pin 2to 4	44	84	--
Note: Input 240Vac/60Hz *The maximum value measured for representing all models.			

2.10.3 and 2.10.4	**TABLE: Clearance and creepage distance measurements**					**P**
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Basic:						
Line to neutral before fuse	420	250	2.0	3.9	2.5	3.8
Different polarities of fuse F1	420	250	2.0	2.3	2.5	3.6
Different polarities of fuse F2	420	250	2.0	2.2	2.5	4.2
Different polarities of fuse F3	420	250	2.0	4.1	2.5	4.1
Pri. trace to earth trace of PCB under LF1	420	250	2.0	3.9	2.5	3.9
Pri. F2 trace to earth trace	420	250	2.0	3.5	2.5	3.5
Core of T1 to Primary winding	412	67.5	2.0	3.4	2.5	3.4
Core of T1 to secondary winding	412	67.5	2.0	3.5	2.5	3.5
Core of T2 to Primary winding	476	309	2.1	6.3	3.1	6.3
Core of T2 to secondary winding	476	309	2.1	7.6	3.1	7.6
Reinforced:						
Primary winding to Secondary winding of T1	412	67.5	4.0	5.3	5.0	5.3
Primary winding to Secondary winding of T2	476	309	4.2	5.4	6.2	5.4
Primary trace to secondary trace of bottom PCB under CY7	372	180	4.0	7.7	5.0	7.7
Primary trace to secondary trace of bottom PCB under U5	388	193	4.0	7.7	5.0	7.7
Primary trace to secondary trace of bottom PCB under T1	412	67.5	4.0	7.7	5.0	7.7
Primary trace to secondary trace of bottom PCB under T2	476	309	4.2	7.7	6.2	7.7
Notes: 1) Core of transformer T1 is considered as Pri. part.						

2.10.5	TABLE: Distance through insulation measurements				P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test volt-age(V)	Required DTI(mm)	DTI (mm)
Bobbin of transformer	476	309	3000Vac	0.4	0.75
Optcoupler U5	388	193	3000Vac	0.4	0.5
Note(s): .					

4.5	TABLE: Thermal requirements						P
	Supply voltage (V) ..... :	Test A: 90V/60 Hz Lable up	Test A: 90V/60 Hz Lable up	Test B : 264V/ 60 lable down	Test B : 264V/6 0 lable down	-	—
	Ambient Tmin (°C) ..... :	Tma=35 degree C (shifted)	Tma=35 degree C (shifted)	Tma=35 degre e C (shifted)	Tma=5 degree C (shifted)	-	—
	Ambient Tmax (°C) ..... :	--	--	--	--	-	—
Maximum measured temperature T of part/at:		T (°C)					allowed Tmax (°C)
Location		A	A	B	B	--	

For model: XT-2400G	--	--	--	--	--	--
1 CX1	55.6	--	38.8	--	--	100
2 L1	57.5	--	37.4	--	--	120
3 LF1	49.9	--	36.0	--	--	120
4 CX2	39.7	--	35.1	--	--	100
5 MOV2	82.7	--	51.6	--	--	85
6 PCB under Q2	77.6	--	46.5	--	--	130
7 PCB under BD1	75.2	--	46.3	--	--	130
8 L2 winding	59.1	--	41.5	--	--	120
9 C17	51.1	--	42.0	--	--	105
10 PCB under Q3	44.0	--	41.0	--	--	130
11 PCB under Q1	38.8	--	37.5	--	--	130
12 T2 winding	56.8	--	56.2	--	--	110
13 T2 core	54.8	--	53.8	--	--	110
14 T1 winding	67.5	--	42.7	--	--	120
15 CY6	49.7	--	49.7	--	--	125
16 C29	37.8	--	37.5	--	--	105
17 C12	67.5	--	43.2	--	--	105
18 L3	50.4	--	50.4	--	--	120
19 LF3	45.8	--	45.7	--	--	120
20 LF2	39.9	--	39.8	--	--	120
21 Input wire	47.5	--	37.2	--	--	105
22 Output wire	37.5	--	37.2	--	--	105
23 PCB under U3	46.6	--	42.0	--	--	130
24 PCB under Q3	51.7	--	51.6	--	--	130
25 PCB under U10	42.1	--	40.6	--	--	130
26 Ambient	35.0	--	35.0	--	--	--

Note(s):

1. The temperatures were measured under worst normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described above.
2. The maximum ambient temperature permitted by the manufacturer's specification is 35°C.

All values for allowed Tmax (°C) are re-calculated from actual ambient respectively.

temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	allowed T_{max} (°C)	insulation class
-	-	-	-	-	-	-	-
supplementary information:							

4.5.5	TABLE: Ball pressure test of thermoplastic parts		N/A
	allowed impression diameter (mm)..... :	less than or equal to 2.0	—
part		test temperature (°C)	impression diameter (mm)
--		--	--
supplementary information:			
-- Bobbin material of transformer T1 is made of Phenolic materials, no other parts necessary to test.			

4.7	TABLE: resistance to fire				P
part	manufacturer of material	type of material	thickness (mm)	flammability class	Evidence
--	--	--	--	--	--
supplementary information:					
See critical component list for details.					

5.1	TABLE: touch current measurement		P
Measured between:	Measured (mA)	Limit (mA)	Comments/Conditions
L/N → Output terminal	0.06	0.25	To output terminal
L/N → plastic enclosure	0.004	0.25	To accessible plastic part (with metal foil)
supplementary information:			
-- Supplied with 264Vac/60Hz			
Overall capacitor:. CY6=CY7=2200pF			

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Line & neutral and Enclosure(plastic) for unit		AC	3000	No
Line & neutral and output for unit		AC	3000	No
T1: primary and secondary		AC	3000	No
T1: secondary and core		AC	3000	No
One layer insulation type wrapped around T1		AC	3000	No
Note(s):				

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) .....:	--	—

	Power source for EUT: ManuFacturer, model/type, output rating .....:	--	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
For model: XT-2400G	--	--	--	--	--	--
BD1	s-c	240	1s	F3	1.223 to 0A	F3 opened, NB/NT/NC, no hazards.
C17	s-c	240	1s	F3	1.223 to 0A	F3 opened, NB/NT/NC, no hazards.
Q2 Pin G to D	s-c	240	1s	F3	1.223 to 0A	F3 opened,Q1 damage, NB/NT/NC, no hazards.
Q2 Pin D to S	s-c	240	1s	F3	1.223 to 0A	F3 opened,Q1 damage, NB/NT/NC, no hazards.
Q2 Pin G to S	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T2 Pin 1 to 2	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T2 Pin 3 to 4	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T2 Pin A to B	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T2 Pin A to C	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T2 Pin B to C	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T1 Pin 1 to 2	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T1 Pin 3 to 4	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
T1 Pin A to B	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
U4 Pin 1 to 2	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
U4 Pin 3 to 4	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
U4 Pin 1	o-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
U5 Pin 1 to 2	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
U5 Pin 3 to 4	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
U5 Pin 1	o-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.

Q4 Pin D to S	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
Output	s-c	240	10mins	F3	1.223 to 0.06A	Unit shut down, NB/NC, no hazards.
Output	o-l	240	4hrs22mins	F3	1.223 to 1.456 to 1.523 to 0.04A	Overload to 5.66A, NB/NT/NC, unit shut down, no hazards. Maximum temperature were measured: T1 winding: 56.3°C T1 core: 53.2°C U4: 46.3°C U5:45.6°C Ambient: 25.3°C
Transformer	o-l	240	4hrs36mins	F3	1.225 to 1.466 to 1.532 to 0.04A	Overload to 5.68A, NB/NT/NC, unit shut down, no hazards. Maximum temperature were measured: T1 winding:58.4°C T1 core: 55.7°C U4: 47.4°C U5:46.1°C Ambient: 25.5°C
Blocked ventilation openings	b-v	240	1hrs30mins	F3	1.223	Maximum temperature were measured: T1 winding: 48.2°C T1 core: 45.6°C U4: 42.4°C U5:41.3°C Ambient: 25.3°C
Blocked the fans	b-v	240	1hrs36mins	F3	1.223	Maximum temperature were measured: T1 winding: 49.6°C T1 core: 46.2°C U4: 42.9°C U5:42.2°C Ambient: 25.4°C

Notes: The unit passed 3000V hi-pot test between primary and accessible output connector after single fault test above.

1. In fault column, s-c=Short-Circuited, o-l=Over-Loaded.
2. For transformer winding overload, each winding was individually loaded after the rectifier.
3. Each fault where R1 opened was repeated 1 times with each fuse source and with same result.
4. Transformer winding and core temperature limit is 155 °C (175-10)-(35-25), test where components damaged, the test repeated three times with the same result.
5. -Results Key:

IP = Internal protection operated (component indicated)

CT = Constant temperatures were obtained

TW = Transformer winding opened

CD = Components damaged (damaged components indicated)

NB = No indication of dielectric breakdown

YB= Dielectric breakdown (time and location indicated)

NC = Cheesecloth remained intact

YC = Cheesecloth charred or flamed

NT = Tissue paper remained intact

YT = Tissue paper charred or flamed.

C.2	TABLE: transformers						P
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
Transformer T1:Primary winding to secondary winding	Reinforced insulation	412	67.5	3000Vac	4.0	5.0	*
Transformer T1: core to primary winding	Basic insulation	412	67.5	3000Vac	2.0	2.5	*
Transformer T1: core to secondary winding	Basic insulation	412	67.5	3000Vac	2.0	2.5	*
Transformer T2:Primary winding to secondary winding	Reinforced insulation	476	309	3000Vac	4.2	6.2	*
Transformer T2: core to primary winding	Basic insulation	476	309	3000Vac	2.1	3.1	*
Transformer T2: core to secondary winding	Basic insulation	476	309	3000Vac	2.1	3.1	*

Loc.	Tested insulation	Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
Transformer T1:Primary winding to secondary winding	Reinforced insulation	3000Vac	5.3	5.3	2 layer insulation type

Transformer T1: core to primary winding	Basic insulation	3000Vac	3.4	3.4	N/A
Transformer T1: core to secondary winding	Basic insulation	3000Vac	3.5	3.5	N/A
Transformer T2:Primary winding to secondary winding	Reinforced insulation	3000Vac	5.4	5.4	2 layer insulation type
Transformer T2: core to primary winding	Basic insulation	3000Vac	6.3	6.3	N/A
Transformer T2: core to secondary winding	Basic insulation	3000Vac	7.6	7.6	N/A
Supplementary information:					

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Information technology equipment – Safety –

PART 1: GENERAL REQUIREMENTS

Differences according to.....:	EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013
Attachment Form No.....:	EU_GD_IEC60950_1F
Attachment Originator.....:	SGS Fimko Ltd
Master Attachment.....:	Date 2014-02

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EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it´s amendmets are prefixed “Z”		
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) — Normative references to international publications with their corresponding European publications Annex ZB (normative) — Special national conditions Annex ZD (informative) — IEC and CENELEC code designations for flexible cords		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1Note 2; 5.1.7.1 Note 3 & 4; 5.3.7 Note 1 6 Note 2 & 5; 6.1.2.1 Note 2; 6.1.2.2 Note 6.2.2 Note; 6.2.2.1 Note 2; 6.2.2.2 Note 7.1 Note 3; 7.2 Note; 7.3 Note 1 & 2 G.2.1 Note 2; Annex H Note 2		P
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note; 6.1.2.1 Note 2 6.2.2.1 Note 2; EE.3 Note		N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
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.		
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure 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. 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.	Not such equipment.	N/A
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010	Deleted.	N/A
1.5.1 (Added info*)	Add the following NOTE: 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 *	Added.	P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.	Added.	N/A
1.7.2.1 (A12.2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.	Replaced.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	Zx Protection against excessive sound pressure from personal music players		N/A
	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. 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. 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. 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. The requirements in this sub-clause are valid for music or video mode only. 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. 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. The requirements do not apply to: -hearing aid equipment and professional equipment; 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.	Not such equipment.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	-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. 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. For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		N/A
	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 LAeq,T is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and -a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. 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. 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	Not such equipment.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	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 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. 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. For music where the average sound pressure (long term LAeq,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. 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. 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.	Not such equipment.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: -the symbol of Figure 1 with a minimum height of 5 mm; and -the following wording, or similar: "To prevent possible hearing damage, do not listen at high volume levels for long periods." **Figure 1 – Warning label (IEC 60417-6044)** 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.	Not such equipment.	N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output LAeq,T, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.	Not such equipment.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	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. 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.). NOTE An example of a wired listening device with digital input is a USB headphone.	Not such equipment.	N/A
	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 LAeq,T of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.	Not such equipment.	N/A
	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. NOTE Test method for wireless equipment provided without listening device should be defined.	Not such equipment.	N/A

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

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

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
Bibliography	Additional EN standards.		—
ZA	**NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		—

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.	Class II equipment.	N/A
1.2.13.14 (A11:2009)	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1 (A11:2009)	In **Finland, Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N/A
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No such construction.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
1.7.2.1 1.7.2.1 (A11:2009)	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” 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).”	Class II equipment	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	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. Translation to Norwegian (the Swedish text will also be accepted in Norway): "Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet." 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."		
1.7.2.1 (A2:2013)	In **Denmark**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in **Denmark** shall be as follows: In **Denmark**: "Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord."		N/A
1.7.5 1.7.5 (A11:2009)	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.	No socket-outlet provided.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
1.7.5 (A2:2013)	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c		N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	Model with UK plug not applied for.	N/A
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
3.2.1.1	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: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998:Plug Type 21, L+N, 250 V, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V,		N/A
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. 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. 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.		N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
3.2.1.1 (A2:2013)	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. 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. 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. Justification the Heavy Current Regulations, 6c		
3.2.1.1	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. 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. 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. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		N/A
3.2.1.1	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. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N/A
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.		N/A
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	Not applied for	N/A
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Not exceed 3.5mA.	N/A
6.1.2.1 (A1:2010)	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - 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. 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 - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.	No TNV.	N/A

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - 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.		
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	No TNV.	N/A
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Not connected to cable distribution system.	N/A
7.3 (A11:2009)	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	Not connected to cable distribution system.	N/A

Annex ZD

(informative)

IEC and CENELEC code designations for flexible cords

National Differences			
Clause	Requirement + Test	Result – Remark	Verdict

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

Figure 1. Overall view of unit

Figure 2. Overall view of unit

Figure 3. Inside view of unit

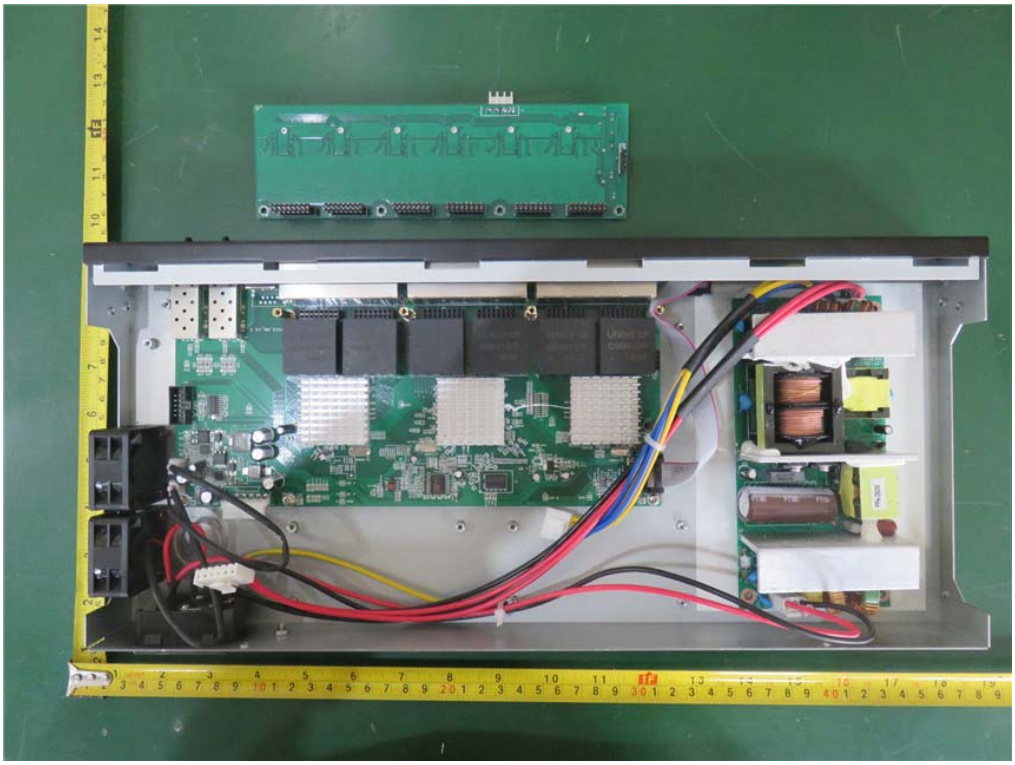

Figure 4. Inside view of unit

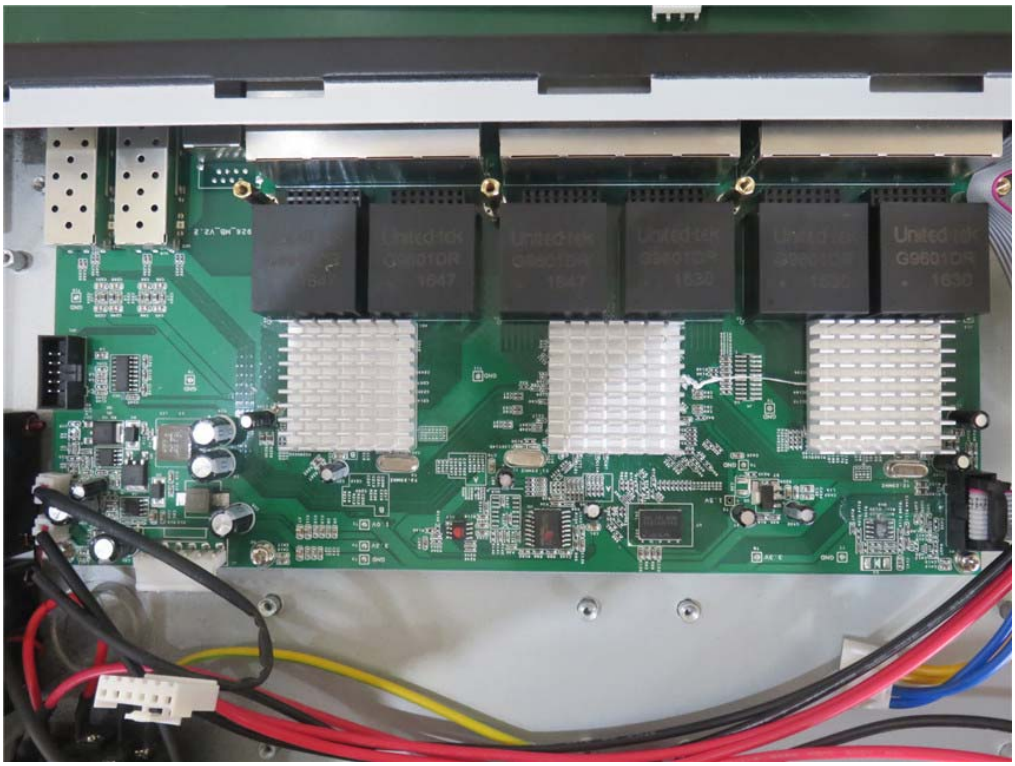

Figure 5. Inside view of unit

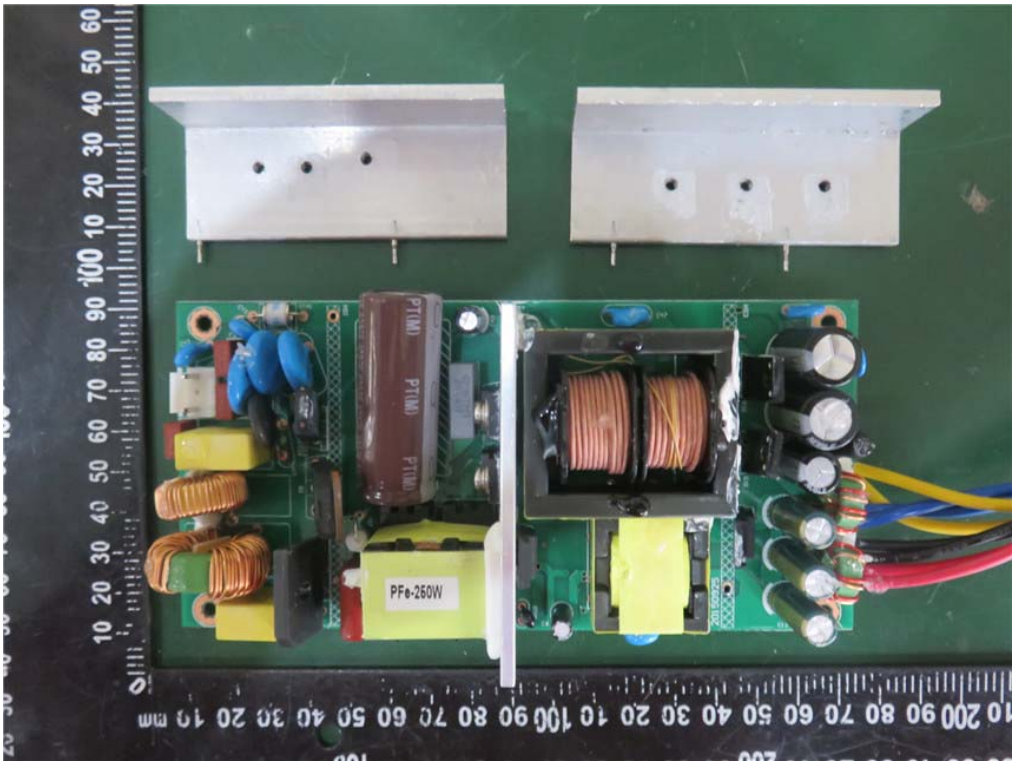

Figure 6. Top view of PCB

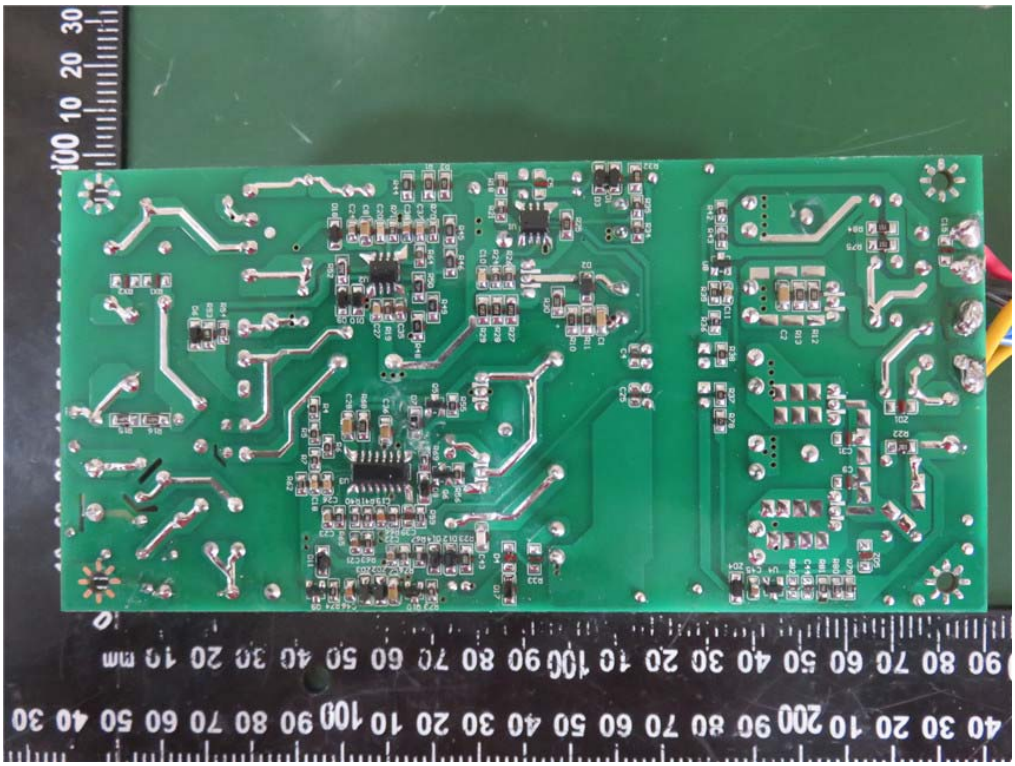

Figure 7. Bottom view of PCB

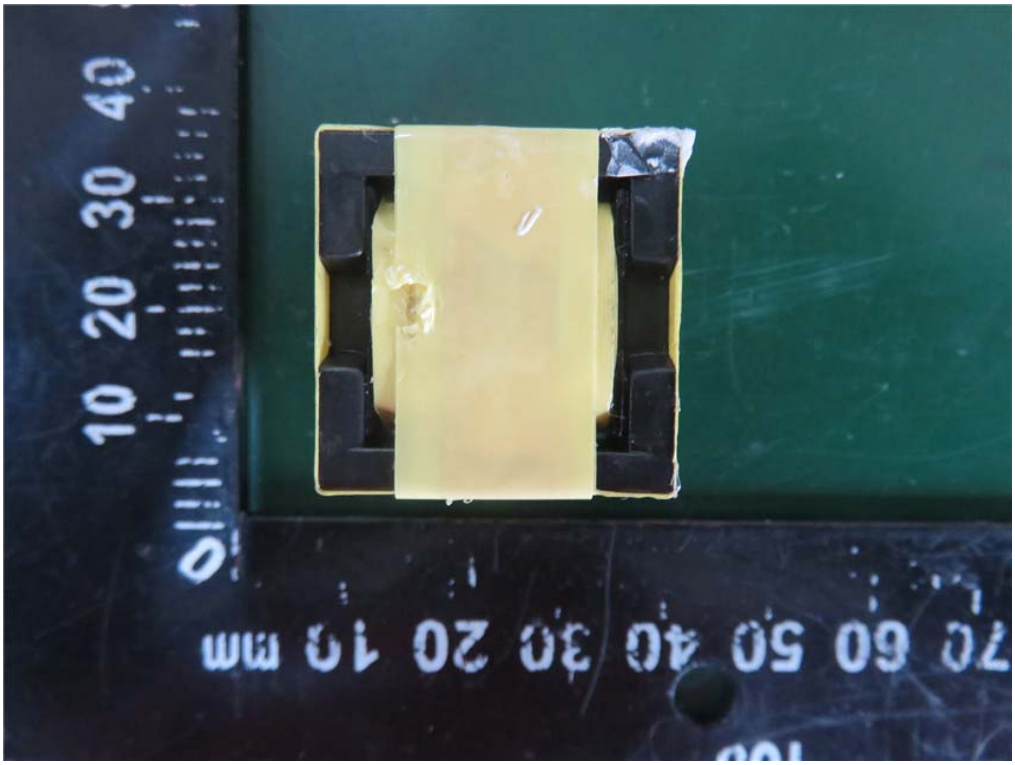

Figure 8. Top view of transformer(T1)

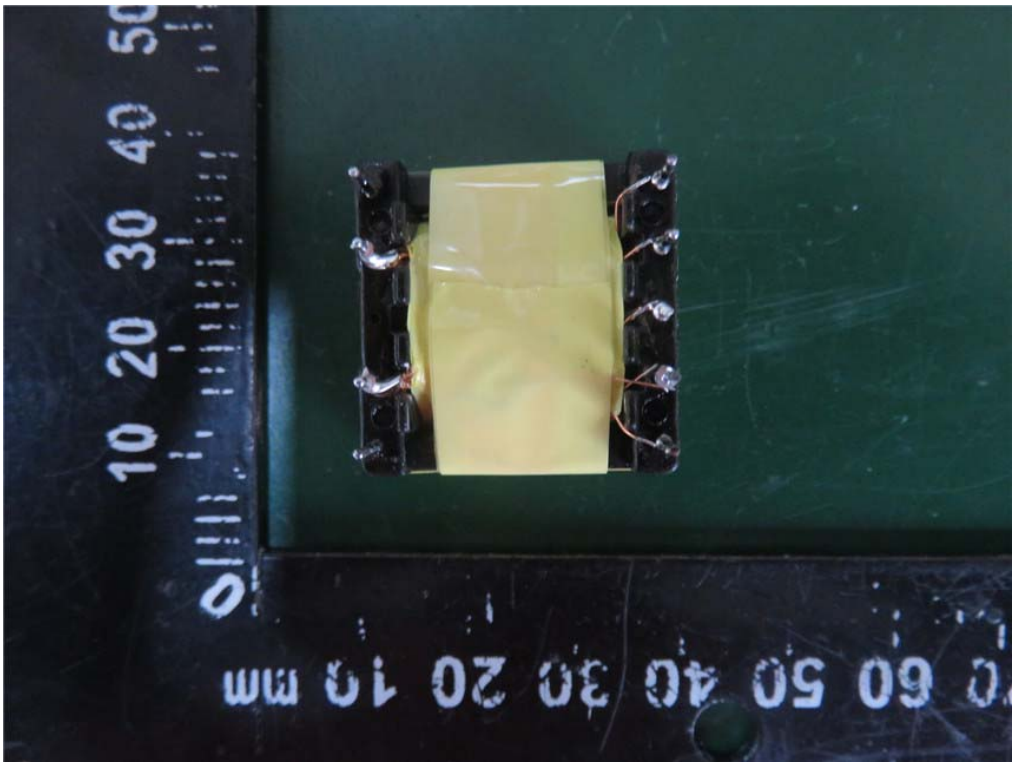

Figure 9. Bottom view of transformer (T1)

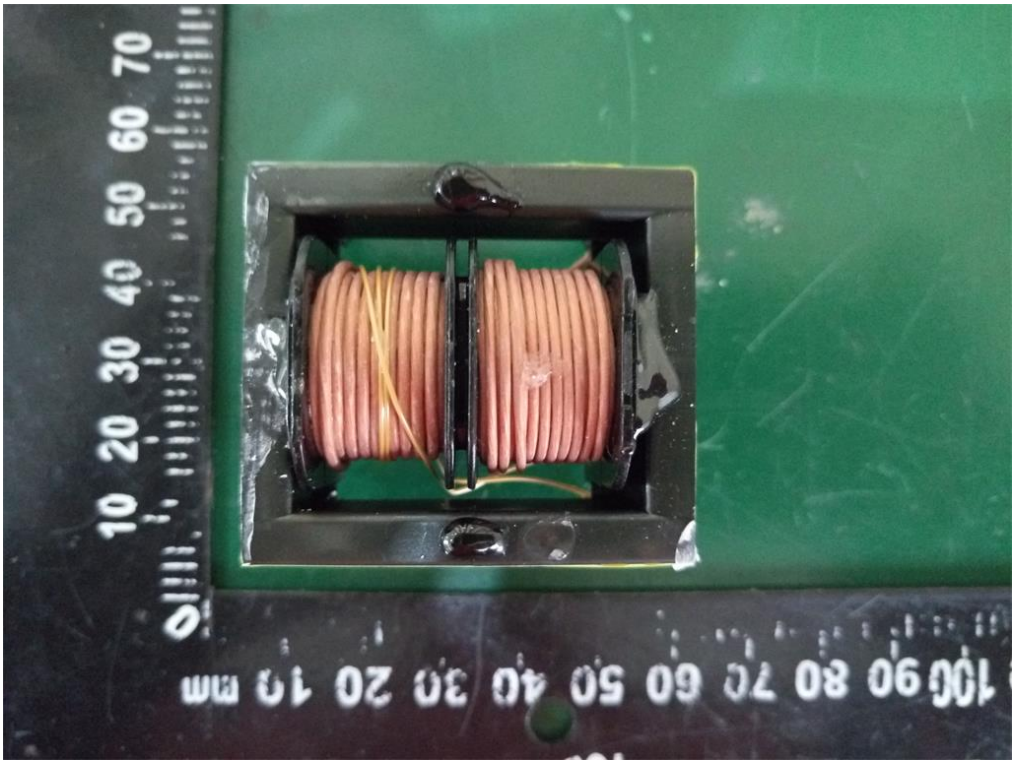

Figure 10. Top view of transformer(T2)

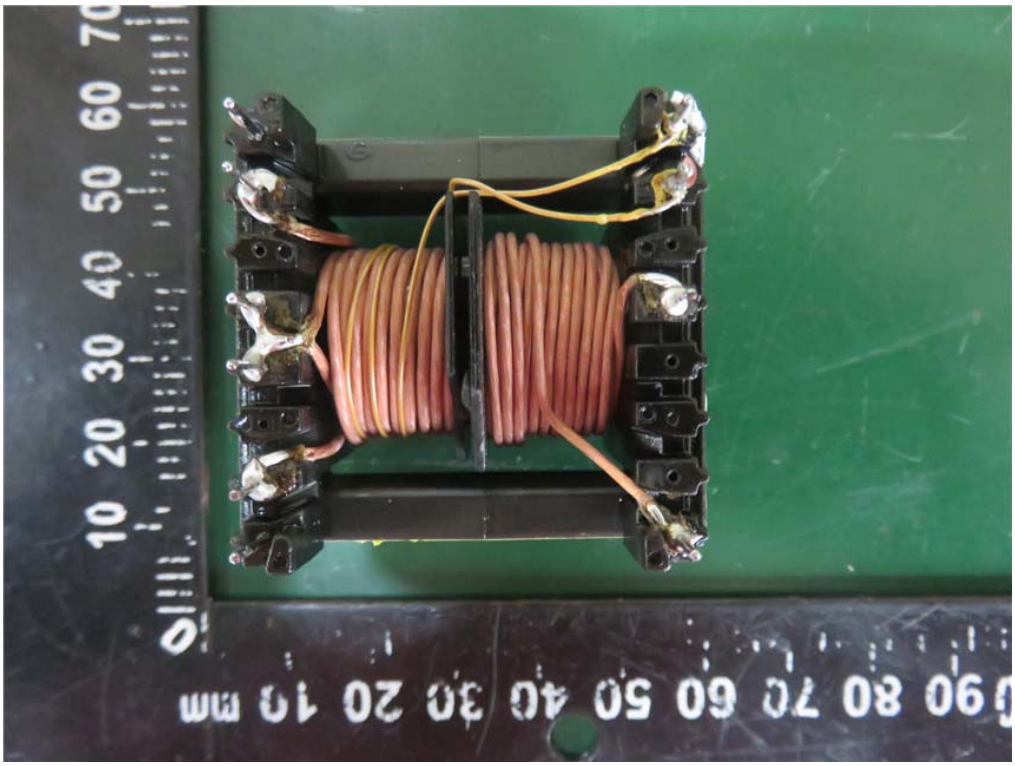

Figure 11. Bottom view of transformer(T2)