SPORTON LAB.

Certificate No：L3O2440L529

CERTIFICATE

- **EQUIPMENT：** Managed Switch, 24-port Gigabit PoE+, 4-port 1G/10G SFP+
- **MODEL NO. ：** SM24TAT4XA
- **APPLICANT：** Transition Networks, Inc.

  10900 Red Circle Drive Minnetonka, MN 55343 USA

SPORTON LAB.

I HEREBY

CERTIFY THAT：

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN ACCORDANCE WITH THE PROCEDURES GIVEN IN **EUROPEAN COUNCIL DIRECTIVE 2006/95/EC.** THE EQUIPMENT **PASSED** THE TEST PERFORMED ACCORDING TO

European Standard:

IEC 60950-1:2005 (2nd Edition) Am 1:2009; and/or
EN 60950-1:2006+A11:2009+A1:2010+A12:2011

This evaluation was carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to relieve the sellers from their contractual obligations.

THE CERTIFICATE WAS CARRIED OUT ON November 12, 2013 AT SPORTON INTERNATIONAL INC. LAB.

Hans Hsieh
Director

SPORTON INTERNATIONAL INC. EMC & SAFETY GROUP
14 Fl-2, No. 186, Jianyi Road, Zhonghe District, New Taipei City, Taiwan

LOW VOLTAGE DIRECTIVE TEST REPORT

IEC 60950-1:2005 (2nd Edition) Am 1:2009 and/or EN 60950-1:2006

Information technology equipment – Safety – Part 1: General requirements

Report Reference No. ..... :	L3O2440L529
Compiled by (+ signature)..... :	Eric Lai Project Engineer
Approved by (+ signature) ..... :	Hans Hsieh Reviewer
Date of issue ..... :	2013-11-12
Testing Laboratory ..... :	Sporton International Inc.
Address..... :	14 Fl-2, No. 186, Jianyi Road, Zhonghe District, New Taipei City, Taiwan
Testing location..... :	Taiwan
Applicant's name..... :	**Transition Networks, Inc.**
Address..... :	10900 Red Circle Drive Minnetonka, MN 55343 USA
Standard ..... :	IEC 60950-1:2005 (2nd Edition) Am 1:2009; and/or EN 60950-1:2006+ A11:2009+ A1:2010+ A12:2011
Test Report Form No ..... :	LVD 60950-1
Test procedure..... :	Sporton LVD type test approval
Procedure deviation ..... :	N/A
Non-standard test method..... :	N/A
Test of test object ..... :	Managed Switch, 24-port Gigabit PoE+, 4-port 1G/10G SFP+
Trade Mark ..... :	TRANSITION NETWORKS®
Manufacturer..... :	Same as applicant
Model/Type reference ..... :	SM24TAT4XA
Ratings ..... :	100-240VAC, 50-60Hz, 8-4A

Test item particulars .....:	
Equipment mobility.....:	[**X**] movable [] hand-held [] transportable [] stationary [] for building-in [] direct plug-in
Connection to the mains.....:	[**X**] pluggable equipment [**X**] 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
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 or 20A
Pollution degree (PD) .....:	[] PD 1 [**X**] PD 2 [] PD 3
IP protection class .....:	IPX0
Altitude during operation (m) .....:	Up to 2000 m
Altitude of test laboratory (m) .....:	Not over 2000 m
Mass of equipment (Kg) .....:	3.68 Kg
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 .....:	2013-11-05
Date(s) of performance of tests .....:	2013-11-05
General remarks:	
The test result presented in this report relate only to the object(s) tested.	
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.	
"(see appended table)" refers to a table appended to the report.	
Throughout this report a comma (point) is used as the decimal separator.	

Comments:

The test results are true for the test sample(s) only.

A part of this test report or certificate should not be duplicated in any way; however, the duplication of the whole document is allowed.

This test-report includes the following documents:

Test report – (50 pages)

Appendix – Photo (11 pages)

Appendix – Drawing (6 pages)

General product information:

The equipment is a Switch which is intended for used with information technology equipment.

The equipment is consisted of an approved power supply (open frame type), DC fan(s) and electronic components mounted on PWB then housed with metallic enclosure which was secured together by screw.

Metallic enclosure is considered of Fire, Electrical and Mechanical enclosure.

The equipment was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40ºC.

The equipment provided PoE port x24 and the total output power of PoE ports up to 370W (15.4W for each one).

The test sample was a pre-production sample without serial number.

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.

(Additional requirements for markings. See 1.7 NOTE)

1	GENERAL	P

1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(See appended Table 1.5.1).	P
1.5.2	Evaluation and testing of components	Components certified to IEC harmonized standard and checked for correct application. Components, for which no relevant IEC-Standard existed, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1. Components not certified are used in accordance with their ratings and they complied with applicable parts of IEC 60950-1 and the relevant component Standard.	P
1.5.3	Thermal controls		N/A
1.5.4	Transformers	Evaluated under power supply certification.	N/A
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors bridging insulation	Evaluated under power supply certification.	N/A
1.5.7	Resistors bridging insulation	Evaluated under power supply certification.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors	Evaluated under power supply certification.	N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

1.6	**Power interface**		**P**
1.6.1	AC power distribution systems		P
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD. (See appended Table 1.6.2).	P
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor	The neutral is not identified in the equipment. Basic Insulation for rated voltage between earthed parts and primary phases. Reinforced Insulation for rated voltage between secondary parts and primary phases.	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) ..... :	100-240VAC.	P
	Symbol for nature of supply, for d.c. only..... :		N/A
	Rated frequency or rated frequency range (Hz) .. :	50-60Hz.	P
	Rated current (mA or A) ..... :	8-4A.	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark ..... :	TRANSITION NETWORKS.	P
	Model identification or type reference ..... :	Managed Switch, 24-port Gigabit PoE+, 4-port 1G/10G SFP+ / SM24TAT4XA.	P
	Symbol for Class II equipment only ..... :		N/A
	Other markings and symbols ..... :	Additional symbols or marking do not give rise to misunderstandings. See **Copy of marking plate**.	P
1.7.2	Safety instructions and marking		P
1.7.2.1	General	English language reviewed. Versions in other languages will be provided when national certificate approval.	P

1.7.2.2	Disconnect devices	The appliance inlet is considered as disconnect device.	P
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
1.2.7.6	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) ..... :	Evaluated under power supply certification.	N/A
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals ..... :	The symbol which according to IEC 60417-2, No.: 5019  is provided.	P
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		P
1.7.8.1	Identification, location and marking ..... :		N/A
1.7.8.2	Colours ..... :	Only functional indicators used.	P
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	The marking is durable and legible. After test, the marking has no curling and is not able to be removed easily and withstood the required test.	P
1.7.12	Removable parts	No removable parts.	N/A
1.7.13	Replaceable batteries .....:		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	See below.	P

2.1.1.1	Access to energized parts	No operator access to energized parts. The operator has access to bare parts of SELV CIRCUITS.	P
	Test by inspection ..... :	No operator access to energized parts. The operator has access to bare parts of SELV CIRCUITS only, no hazardous part.	P
	Test with test finger (Figure 2A) ..... :	The test finger was unable to contact bare hazardous parts, basic insulation, or ELV CIRCUITS.	P
	Test with test pin (Figure 2B) ..... :	The test pin was unable to contact bare hazardous parts.	P
	Test with test probe (Figure 2C) ..... :		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 ..... :	No energy hazardous in operator access area.	P
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment	Evaluated under power supply certification.	N/A
	Measured voltage (V); time-constant (s) ..... :		—
2.1.1.8	Energy hazards – d.c. mains supply		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 ..... :		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	See below.	P
2.2.2	Voltages under normal conditions (V) ..... :	All accessible voltages are less than 42.4Vpk or 60Vdc and are classified as SELV CIRCUITS.	P
2.2.3	Voltages under fault conditions (V) ..... :	Under fault conditions voltage never exceed 71Vpk and 120Vdc and do not exceed 42.4Vpk or 60Vdc for more than 0.2 sec.	P

2.2.4	Connection of SELV circuits to other circuits .....:	SELV CIRCUITS are connected to other SELV CIRCUITS only.	P

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

2.4	**Limited current circuits**		**N/A**
2.4.1	General requirements	No limited current circuits.	N/A
2.4.2	Limit values		N/A
	Frequency (Hz)..... :		—
	Measured current (mA)..... :		—
	Measured voltage (V) ..... :		—
	Measured circuit capacitance (nF or µF)..... :		—
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	**Limited power sources**		**P**
	a) Inherently limited output	Tested for data ports.	P
	b) Impedance limited output		N/A
	c) Regulating network limited output under normal operating and single fault condition		P
	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		N/A

2.6	**Provisions for earthing and bonding**	**P**

2.6.1	Protective earthing	Green/yellow wire from the appliance inlet to chassis. The wire is reliably fixed by double-crimp terminal, screw and star-washer.	P
2.6.2	Functional earthing	The Functional earthing is Double/Reinforced insulated from Primary parts or connected to Basic insulated protective bonding connection.	P
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General	See Sub-Clause 2.6.3.4.	P
2.6.3.2	Size of protective earthing conductors	See Sub-Clause 2.6.3.4.	N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
2.6.3.3	Size of protective bonding conductors	See Sub-Clause 2.6.3.4.	N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
	Protective current rating (A), cross-sectional area (mm^2), AWG..... :		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... :	Resistance = 20mΩ, voltage drop = 0.64V, test current = 32A, duration = 2 min. Resistance = 18mΩ, voltage drop = 0.72V, test current = 40A, duration = 2 min.	P
2.6.3.5	Colour of insulation..... :	Green / Yellow used only for protection earthing.	P
2.6.4	Terminals		P
2.6.4.1	General	Protective earth terminal as part of appliance inlet.	P
2.6.4.2	Protective earthing and bonding terminals		P
	Rated current (A), type, nominal thread diameter (mm) ..... :	Appliance inlet is used. Screw constriction for bonding terminals. See Sub-Clause 2.6.4.3.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Evaluated under power supply certification.	P
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	This equipment has its own earthing connection. Any other units connected via the interconnecting cable to other unit shall provide SELV only.	P

2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches, overcurrent protective devices or fuses in the protective earthing / bonding conductors.	P
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect protective earth without disconnecting mains; an appliance coupler is used as disconnect device.	P
2.6.5.4	Parts that can be removed by an operator	No operator removable parts with protective earth connection except power supply cord.	P
2.6.5.5	Parts removed during servicing	Protective earthed parts cannot be removed in a way which impaired safety.	P
2.6.5.6	Corrosion resistance	No risk of corrosion. Complied with Annex J.	P
2.6.5.7	Screws for protective bonding	At least two screws used or Metal thickness at least twice the pitch of the screw.	P
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	Equipment relies on 16 A or 20 A rated fuse or circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short circuit. Overcurrent protection is provided by the built-in device fuse inside the approved power supply.	P
	Instructions when protection relies on building installation		P
2.7.2	Faults not simulated in 5.3.7	Protection from faults not covered in 5.3 are provided by installation.	P
2.7.3	Short-circuit backup protection	The building installation is considered as providing short-circuit backup protection.	P
2.7.4	Number and location of protective devices ..... :	Evaluated under power supply certification.	N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel ..... :		N/A

2.8	**Safety interlocks**	**N/A**

2.8.1	General principles	No safety interlocks.	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) ..... :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

2.9	**Electrical insulation**		**P**
2.9.1	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation.	P
2.9.2	Humidity conditioning	Electric Strength Test was conducted after the humidity treatment. Humidity treatment performed to 120 hours.	P
	Relative humidity (%), temperature (°C) ..... :	93%, 40ºC.	—
2.9.3	Grade of insulation	Electric Strength Test conducted after the humidity treatment. No flash over or breakdown of insulation. (See Sub-Clause 2.10 and 5.2).	P
2.9.4	Separation from hazardous voltages	Evaluated under power supply certification.	N/A
	Method(s) used ..... :		—

2.10	**Clearances, creepage distances and distances through insulation**		**P**
2.10.1	General	See Sub-Clause 2.10.3, 2.10.4 and 2.10.5.	P
2.10.1.1	Frequency ..... :	The frequency does not exceeding 30KHz.	P
2.10.1.2	Pollution degrees ..... :	Pollution degree 2 applicable.	P
2.10.1.3	Reduced values for functional insulation	See Sub-Clause 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts	Complied.	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	Evaluated under Power Supply certification.	N/A
2.10.2.1	General		N/A
2.10.2.2	RMS working voltage		N/A
2.10.2.3	Peak working voltage		N/A
2.10.3	**Clearances**		**P**
2.10.3.1	General	See below.	P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply ..... :	2500Vpk considered.	P
	b) Earthed d.c. mains supplies ..... :		N/A
	c) Unearthed d.c. mains supplies ..... :		N/A
	d) Battery operation ..... :		N/A
2.10.3.3	Clearances in primary circuits	See appended Table 2.10.3 and 2.10.4.	P
2.10.3.4	Clearances in secondary circuits		N/A
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply ..... :	1500Vpk assumed.	P
2.10.3.7	Transients from d.c. mains supply ..... :		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :		N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply ..... :		N/A
	For a d.c. mains supply ..... :		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	**Creepage distances**		**P**
2.10.4.1	General	See appended Table 2.10.3 and 2.10.4.	P
2.10.4.2	Material group and comparative tracking index	Material group IIIb assumed.	P
	CTI tests..... :	CTI rating for all materials of min. 100.	—
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	Considered as mylar sheet.	P

2.10.5.2	Distances through insulation	Mylar sheet used for BASIC INSULATION, and there is no minimum distance through insulation required. (See appended Table 2.10.5).	P
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints		N/A
2.10.5.6	Thin sheet material – General		N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs) ..... :		—
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		N/A
	Electric strength test		—
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage ..... :		N/A
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation .... :		N/A
	c) Compliance with Annex U ..... :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		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**		**N/A**
2.10.6.1	Uncoated printed boards		N/A
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)..... :		N/A

2.10.7	**Component external terminations**		**N/A**
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A

3	**WIRING, CONNECTIONS AND SUPPLY**		**P**
3.1	General		P
3.1.1	Current rating and overcurrent protection	All wires/conductors possess adequate cross-sectional areas for their intended application and internal wiring are adequately insulated.	P
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage insulation.	P
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	P
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltages involved.	P
3.1.5	Beads and ceramic insulators		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	Compliance.	P
3.1.10	Sleeving on wiring		N/A

3.2	**Connection to a mains supply**		**P**
3.2.1	Means of connection		P
3.2.1.1	Connection to an a.c. mains supply	An certified appliance inlet provided for connection of a detachable power supply cord.	P
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter of cable and conduits (mm) ..... :		—
3.2.4	Appliance inlets	The appliance inlet complied with IEC/EN 60320-1. The power cord can be inserted without difficulties and is not intended to support the equipment.	P
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		N/A

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

3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

3.4	**Disconnection from the mains supply**		**P**
3.4.1	General requirement		P
3.4.2	Disconnect devices	The appliance inlet is considered as disconnect device.	P
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment	It is a single-phase equipment and disconnect device disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-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		N/A
3.4.11	Multiple power sources		N/A

3.5	**Interconnection of equipment**		**P**
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits ..... :	Interconnection circuits of SELV through the connectors.	P
3.5.3	ELV circuits as interconnection circuits		N/A
3.5.4	Data ports for additional equipment	See Sub-Clause 2.5.	P

4	**PHYSICAL REQUIREMENTS**		**P**
4.1	Stability		N/A
	Angle of 10°	The mass of equipment is approx. 3.68 Kg less than 7 Kg.	N/A
	Test force (N) ..... :		N/A

4.2	**Mechanical strength**		**P**
4.2.1	General	After the tests, the equipment was complied with the requirements of Sub-Clause 2.1.1, 2.6.1, 2.10 and 4.4.	P
	Rack-mounted equipment.		N/A

4.2.2	Steady force test, 10 N	10 N were applied to all components other than parts serving as an enclosure.	P
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N	250 N were applied to the outer enclosure. No hazards as a result of the 250 N test.	P
4.2.5	Impact test	See below.	P
	Fall test	No hazards and indication of dielectric breakdown after steel sphere ball impact test.	P
	Swing test		N/A
4.2.6	Drop test; height (mm) ..... :		N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified ..... :		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ..... :		N/A

4.3	**Design and construction**		**P**
4.3.1	Edges and corners	No edges or corners represent hazard to operator.	P
4.3.2	Handles and manual controls; force (N)..... :		N/A
4.3.3	Adjustable controls		N/A
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress.	P
4.3.5	Connection by plugs and sockets		N/A
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		N/A
4.3.8	Batteries		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A

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		P
4.3.13.1	General		P
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/Kg) ..... :		—
	Measured high-voltage (KV) ..... :		—
	Measured focus voltage (KV) ..... :		—
	CRT markings ..... :		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification ..... :		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .... :		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		P
4.3.13.5.1	Lasers (including laser diodes)	Certified Optical Transceiver used. (See appended Table 1.5.1).	P
	Laser class ..... :	Laser Class 1.	—
4.3.13.5.2	Light emitting diodes (LEDs)	LEDs used as indicating lights.	P
4.3.13.6	Other types ..... :		N/A

4.4	**Protection against hazardous moving parts**		**P**
4.4.1	General	The DC fans were considered as non-hazardous.	P
4.4.2	Protection in operator access areas ..... :	The DC fans of equipment are adequately enclosed.	P
	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		P
4.4.5	Protection against moving fan blades		P
4.4.5.1	General	See below.	P
	Not considered to cause pain or injury. a)…….:	K = 285.9; m = approx. 24g; r = 19.3mm; N = 7300rpm. Calculated: 7300/15000+285.9/2400≒ 0.61 < requirement value 1.	P
	Is considered to cause pain, not injury. b)……:		N/A
	Considered to cause injury. c)……:		N/A

4.4.5.2	Protection for users		N/A
	Use of symbol or warning……:		N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning……:		N/A

4.5	**Thermal requirements**		**P**
4.5.1	General		P
4.5.2	Temperature tests	(See appended Table 4.5).	P
	Normal load condition per Annex L ..... :	(See appended Annex L).	—
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 ..... :		N/A

4.6	**Openings in enclosures**		**P**
4.6.1	Top and side openings	Foreign objects entering the enclosure will not contact bare parts at hazardous voltage or energy. (No hazardous parts within 5º projection).	P
	Dimensions (mm) ..... :	(See attachments Supplement ID 3-02 for details).	—
4.6.2	Bottoms of fire enclosures	No openings in bottom.	N/A
	Construction of the bottomm, dimensions (mm) . :		—
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	Method 1 used.	P
	Method 1, selection and application of components wiring and materials	Used of material with the required flammability classes.	P
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure		P

4.7.2.1	Parts requiring a fire enclosure	With having the following parts: - components in Primary Circuits; - Insulated wiring; The fire enclosure is required.	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures	Metallic used.	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 of flammability class V-2 or better or components are mounted on a PWB rated of flammability class V-1 or better.	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		P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply	The equipment designed for connection to one power source only.	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	Using figure 5A.	P
5.1.4	Application of measuring instrument	Using measuring instrument in Annex D.	P
5.1.5	Test procedure	Considered.	P
5.1.6	Test measurements	See below.	P
	Supply voltage (V) .....:	(See appended Table 5.1).	—
	Measured touch current (mA) .....:	(See appended Table 5.1).	—
	Max. allowed touch current (mA) .....:	(See appended Table 5.1).	—
	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
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) .....:		—
	Measured touch current (mA) .....:		—
	Max. allowed touch current (mA) .....:		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports .....:		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

5.2	**Electric strength**		**P**
5.2.1	General	(See appended Table 5.2).	P
5.2.2	Test procedure	(See appended Table 5.2).	P

5.3	**Abnormal operating and fault conditions**		**P**
5.3.1	Protection against overload and abnormal operation	(See appended Table 5.3).	P
5.3.2	Motors		N/A
5.3.3	Transformers	Evaluated under Power Supply certification.	N/A
5.3.4	Functional insulation.....:	Function Insulation complied with the requirements c).	P
5.3.5	Electromechanical components		N/A
5.3.6	Audio amplifiers in ITE .....:		N/A
5.3.7	Simulation of faults	(See appended Table 5.3).	P
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	No fire occurred. No molten metal was emitted during the tests.	P
5.3.9.2	After the tests	Electric Strength Test performed after abnormal and fault tests.	P

6	**CONNECTION TO TELECOMMUNICATION NETWORKS**	**N/A**

6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Supply voltage (V) ..... :		—
	Current in the test circuit (mA) ..... :		—
6.1.2.2	Exclusions ..... :		N/A

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

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

7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		**N/A**
7.1	General		N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A

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

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N/A
B.1	General requirements		N/A
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) .....:		—
	Electric strength test: test voltage (V) .....:		—
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 ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
	Method of protection..... :		—
C.1	Overload test		N/A
C.2	Insulation		N/A
	Protection from displacement of windings..... :		N/A

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

E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**	**N/A**

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
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances ..... :		N/A

H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**	**N/A**

J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		**P**
	Metal(s) used .....:	Compliance.	—

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

K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V) ..... :		N/A
K.3	Thermostat endurance test; operating voltage (V) ..... :		N/A
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

L	**ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)**		**P**
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	(See appended Table 1.6.2).	P

M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		**N/A**
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	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) .....:		—
M.3.1.4	Single fault current (mA) .....:		—
M.3.2	Tripping device and monitoring voltage .....:		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) .....:		N/A

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

P	**ANNEX P, NORMATIVE REFERENCES**	—

Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		**N/A**
	a) Preferred climatic categories .....:		N/A
	b) Maximum continuous voltage .....:		N/A
	c) Pulse current .....:		N/A

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

S	**ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		**N/A**
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A

T	**ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)**		**N/A**
			—

U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		**N/A**
			—

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

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

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

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

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

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

BB	**ANNEX BB, CHANGES IN THE SECOND EDITION**	—

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

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, 250 N, 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	--	--	Metallic, min. 1.0 mm thickness. Overall see attachments Supplement ID 3-01 for details.	--	--
Power Supply (Open frame type)	Delta Electronics, Inc. (DELTA)	DPSN-525AP XX (X=0-9, A-Z or blank)	I/P: AC100-240V, 8-4A, 50-60Hz; O/P: +12Vdc/11.25A, -50Vdc/7.8A or -53Vdc/7.35A or -54Vdc/7.22A, total output power 525W max., 50ºC, Class I.	IEC 60950-1: 2005+A1:2009	CB by TUV (Ref. Certif. No.: JPTUV-037972-M1)
PWB	--	--	V-1 or better, min. 105ºC.	UL 796	UL
DC Fan (Three provided)	Yen Sun Technology Corporation (Y.S. TECH)	FD124015MB	DC12V, 0.12A, 7.5CFM, 7300rpm.	EN 60950-1: 2006+A11: 2009+A1:2010 +A12:2011	TUV
Optical Transceiver (Max. four provided) (Optional)	Axcen Photonics Corp. (AXCEN) or equivalent	AXGE-5854-0511 or equivalent	Rated DC3.3V, Laser Class 1.	EN 60950-1: 2006+A11: 2009+A1:2010 +A12:2011 EN 60825-1: 2007	TUV
(Alternate)	--	--	Rated DC3.3V, Laser Class 1.	IEC 60950-1: 2005+A1:2009 EN 60950-1:2006+A11+ A1+A12:2011 EN 60825-1: 2007	CB by certified by CBTL/NCB
Mylar Sheet (between power supply and the bottom side of metal chassis)	--	--	V-2 or better, 0.25 mm thickness. Overall see attachments Supplement ID 3-03 for details.	UL 94	UL

Mylar Sheet (provided on the top side of metal chassis)	--	--	V-2 or better, 0.25 mm thickness. Overall see attachments Supplement ID 3-04 for details.	UL 94	UL
* Additional testing and evaluation may be required based on auditing agency's discretion.					

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90V/50Hz	4.95	--	435	F1	4.95	Maximum normal load
90V/60Hz	4.92	--	435	F1	4.92	Maximum normal load
100V/50Hz	4.41	8	430	F1	4.41	Maximum normal load
100V/60Hz	4.39	8	430	F1	4.39	Maximum normal load
240V/50Hz	1.83	4	415	F1	1.83	Maximum normal load
240V/60Hz	1.83	4	415	F1	1.83	Maximum normal load
254V/50Hz	1.73	--	415	F1	1.73	Maximum normal load
254V/60Hz	1.74	--	415	F1	1.74	Maximum normal load
264V/50Hz	1.68	--	414	F1	1.68	Maximum normal load
264V/60Hz	1.68	--	414	F1	1.68	Maximum normal load
Supplementary information: The **Maximum normal load** was defined as below: The equipment simulated full load for the output of PoE ports x24 by loading 370W max., linked up LAN ports and Optical Transceivers then operated continuously.						

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

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

2.2	TABLE: evaluation of voltage limiting components in SELV circuits		N/A
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	

Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)
supplementary information:	

2.5	TABLE: Limited power sources	P

Circuit output tested: ***See below.***

Note: Measured Uoc (V) with all load circuits disconnected: ***See below.***

Components	Sample No.	Uoc (V)	I_{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
Circuit output tested: ***Console port***						
Pin 1-9 to RTN	1	0	0	8	0	100
Circuit output tested: ***PoE port x24***						
Pin 1-8 to RTN [1)]	1	0	0	8	0	100
Pin 3, 6 to Pin 1, 2 [1)]	1	54.06	0.4	8	21.34	100
Pin 3, 6 to Pin 1, 2 Single fault condition: U10 Pin 42-33 shorted [1)]	1	54.06	0.4	8	21.34	100

supplementary information:

[1)] Due to same protective circuit designed, the worst test results were recorded.

Sc=Short circuit, Oc=Open circuit

2.10.2	Table: working voltage measurement	N/A

Location	RMS voltage (V)	Peak voltage (V)	Comments
supplementary information:			

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements	P

Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Functional:						

--	--	--	--	--	--	--
Basic/supplementary:						
Primary to Earth (Power Supply to the top side of metal chassis)	420	250	2.0	1)	2.5	1)
Primary to Earth (Power Supply to the bottom side of metal chassis)	420	250	2.0	2)	2.5	2)
Reinforced:						
Primary to SELV (Power Supply to main board)	420	250	4.0	5.2	5.0	5.2
Primary to SELV (Power Supply to secondary wires)	420	250	4.0	3)	5.0	3)
Supplementary information: 1) There is one mylar sheet provided between power supply and the top side of metal chassis. 2) There is one mylar sheet provided between power supply and the bottom side of metal chassis. 3) The wires of DC fan were placed under the mylar sheet which between power supply and the bottom side of metal chassis and were fixed by cable tie.						

2.10.5	**TABLE: Distance through insulation measurements**				**P**
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Mylar sheet	420	250	AC1922V	--	0.25 mm
Supplementary information:					

4.3.8	**TABLE: Batteries**									**N/A**
The tests of 4.3.8 are applicable only when appropriate battery data is not available										N/A
Is it possible to install the battery in a reverse polarity position?										N/A
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										

4.3.8	TABLE: Batteries								N/A
The tests of 4.3.8 are applicable only when appropriate battery data is not available									N/A
Is it possible to install the battery in a reverse polarity position?									N/A
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during fault condition:									
Test results:									Verdict
- Chemical leaks									N/A
- Explosion of the battery									N/A
- Emission of flame or expulsion of molten metal									N/A
- Electric strength tests of equipment after completion of tests									N/A
Supplementary information:									

4.5	TABLE: Thermal requirements					P
	Supply voltage (V) ..... :	90V / 50Hz	264V / 50Hz	--	--	—
	Ambient T_{min} (°C) ..... :	--	--	--	--	—
	Ambient T_{max} (°C) ..... :	--	--	--	--	—
Maximum measured temperature T of part/at::		T (°C)				Allowed T_{max} (°C)
Ambient		40 (26.4)	40 (26.4)	--	--	--
AC Inlet Body		53.3	50.8	--	--	70
FL1 Body (Power Supply)		50.7	48.8	--	--	130
FL2 Body (Power Supply)		66.7	63.2	--	--	130
L3 Coil (Power Supply)		63.0	60.0	--	--	130
CT1 Coil (Power Supply)		55.4	53.2	--	--	130
CT2 Coil (Power Supply)		57.2	54.4	--	--	130
T901 Coil (Power Supply)		72.0	71.1	--	--	130
CT61 Coil (Power Supply)		51.8	50.9	--	--	130
T601 Coil (Power Supply)		53.5	53.0	--	--	130
T61 Coil (Power Supply)		76.4	75.7	--	--	110

T61 Core (Power Supply)	73.7	73.1	--	--	110
L601 Body (Power Supply)	63.5	63.0	--	--	130
FL601 Body (Power Supply)	52.4	51.9	--	--	130
CT51 Coil (Power Supply)	45.9	45.2	--	--	130
T501 Coil (Power Supply)	46.0	45.3	--	--	130
T51 Coil (Power Supply)	53.3	52.7	--	--	110
T51 Core (Power Supply)	48.9	48.3	--	--	110
L12 Body	53.3	52.8	--	--	105
PWB near U21 heatsink	51.9	51.4	--	--	105
PWB near U24 heatsink	48.1	47.5	--	--	105
LY1 Body	46.0	45.4	--	--	105
PWB near U3	45.5	44.9	--	--	105
Metal enclosure outside near power supply	46.5	45.8	--	--	70

Supplementary information:

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class

Supplementary information:

The temperatures were measured under worst case defined in 1.2.2.1 and described in 1.6.2 at voltages as described in 1.4.5.

With specified ambient temperature in user's manual, therefore the ambient temperature assumed as 40ºC.

Winding components:
- transformer - Class B (T61, T51): Tmax = 120-10 = 110ºC

Components with:
- maximum temperature of 105ºC (PWB)

User accessible area:
- external surfaces of equipment which may be touched, material is metal: Tmax = 70ºC

4.5.5	TABLE: Ball pressure test of thermoplastic parts		N/A
	Allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)

Supplementary information:

4.7	TABLE: Resistance to fire	N/A

Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Supplementary information:					

5.1	TABLE: touch current measurement	P

Measured between:	Measured (mA)	Limit (mA)	Comments/conditions
L / N to SELV (unearth)	0.017	0.25	Normal; “e” closed.
L / N to SELV (unearth)	0.017	0.25	Reverse; “e” closed.
L / N to earth (metal enclosure)	0.84	3.5	Normal; “e” opened.
L / N to earth (metal enclosure)	0.82	3.5	Reverse; “e” opened.
supplementary information:			
Test voltage: AC264V/60Hz.			

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests	P

Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:			
-	--	--	--
Basic/supplementary:			
- Primary to earth (metal enclosure)	DC	2719	No
Reinforced:			
- Primary to SELV	DC	4242	No

Supplementary information:

Electric Strength Test duration last 60 seconds.

The test voltage for Electric Strength (in Table 5B) was based on the working voltage measured on: T61 of Power Supply: DPSN-525AP XX (X=0-9, A-Z or blank) / Delta Electronics, Inc. (DELTA): 612pk, 311Vrms.

Electric Strength Test was conducted while the equipment was still a well-heated condition immediately following the test in 4.5.1.

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

Com-ponent No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Ventilation openings	Blocked	AC240V	3hr30m	F1	1.83 → 1.84	Unit normal operation. No components damaged. No hazardous. No breakdown. Max. temperature: T61 Coil = 112.4ºC, T61 Core = 93.0ºC, T51 Coil = 59.8ºC, T51 Core = 59.8ºC, Ambient = 26.7ºC.
DC Fan #1	Stalled	AC240V	2hr	F1	1.83 → 1.82	Unit normal operation. No components damaged. No hazardous. No breakdown. Max. temperature: T61 Coil = 73.4ºC, T61 Core = 55.2ºC, T51 Coil = 38.4ºC, T51 Core = 36.4ºC, Ambient = 27.9ºC.
DC Fan #2	Stalled	AC240V	2hr	F1	1.83 → 1.82	Unit normal operation. No components damaged. No hazardous. No breakdown. Max. temperature: T61 Coil = 76.8ºC, T61 Core = 57.6ºC, T51 Coil = 37.7ºC, T51 Core = 35.6ºC, Ambient = 26.0ºC.
DC Fan #3	Stalled	AC240V	2hr	F1	1.83 → 1.82	Unit normal operation. No components damaged. No hazardous. No breakdown. Max. temperature: T61 Coil = 78.5ºC, T61 Core = 64.0ºC, T51 Coil = 40.0ºC, T51 Core = 38.2ºC, Ambient = 25.7ºC.
Supplementary information:						

EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS		
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations	P
General	Delete all the "country" notes in the reference document according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1 Note 2; 5.1.7.1 Note 3 & 4; 5.3.7 Note 1 6 Note 2 & 5; 6.1.2.1 Note 2; 6.1.2.2 Note 6.2.2 Note 6.; 2.2.1 Note 2; 6.2.2.2 Note 7.1 Note 3; 7.2 Note; 7.3 Note 1 & 2 G.2.1 Note 2; Annex H Note 2	P
General	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A1) according to the following list: 1.5.7.1 Note; 6.1.2.1 Note 2 6.2.2.1 Note 2; EE.3 Note	P
1.1.1	Replace the text of NOTE 3 by the following NOTE3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.	N/A
1.5.1	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	N/A

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; 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.	N/A
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: | Up to and including 6 | 0,75 [a)] | | Over 6 up to and including 10 | (0,75) [b)] 1,0 | | Over 10 up to and including 16 | (1,0) [c)] 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition [a)]. In NOTE 1, applicable to Table 3B, delete the second sentence.	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.	N/A

4.3.13.6	Add the following NOTE: 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). Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.	N/A
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µ Sv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.	N/A
Biblio-graphy	Additional EN standards. Add the following note for the standard indicated: IEC 60908 NOTE Harmonized as EN 60908	—

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—

ZB	SPECIAL NATIONAL CONDITIONS	N/A
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	N/A
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.	N/A
1.5.7.1	In **Finland**, **Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7. 1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.	N/A
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	N/A
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	N/A

1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojamaadoituskoskettimilla 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 therfore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)." 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 1min. 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 utrusningen och kabel-TV nätet."	N/A

1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.	N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.	N/A
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	N/A
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	N/A
3.2.1.1	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, 16 A SEV 5934-2.1998 Plug Type 23 L+ N+ PE 250 V, 16 A	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

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
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.	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

5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	N/A
6.1.2.1	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. 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.	N/A

6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	N/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.	N/A
7.3	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	N/A

ZC	A-DEVIATIONS (informative)	N/A
1.5.1	**Switzerland** (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.	N/A
1.7.2.1	**Germany** (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.	N/A
1.7.13	**Switzerland** (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.	N/A

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. - 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 L Aeq,T is 5 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 5 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 LAeq, 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 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 5 100 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 5 150 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 L Aeq ,T) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.	N/A

	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.	
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.	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.	N/A

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 LAeq,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.	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 above-mentioned 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.	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.	N/A

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

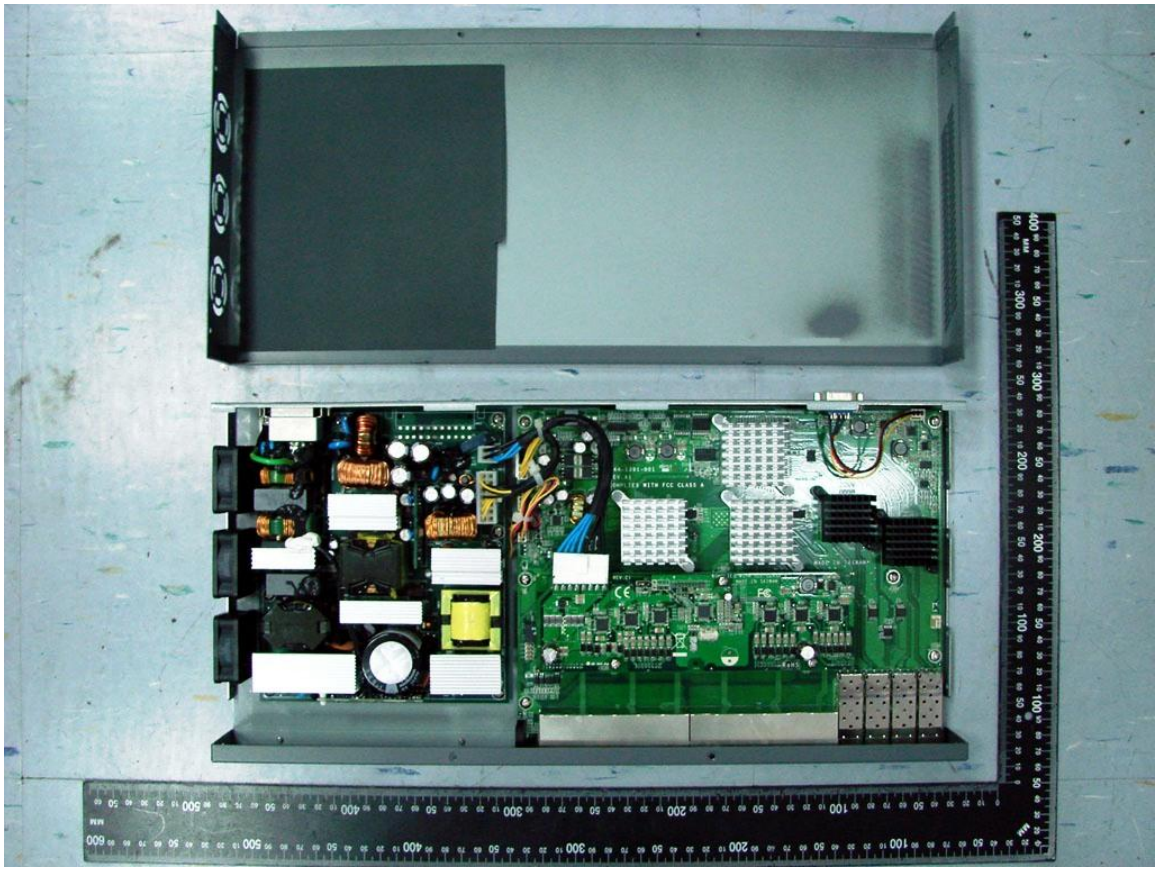
Appendix - Photo

Appendix - Photo

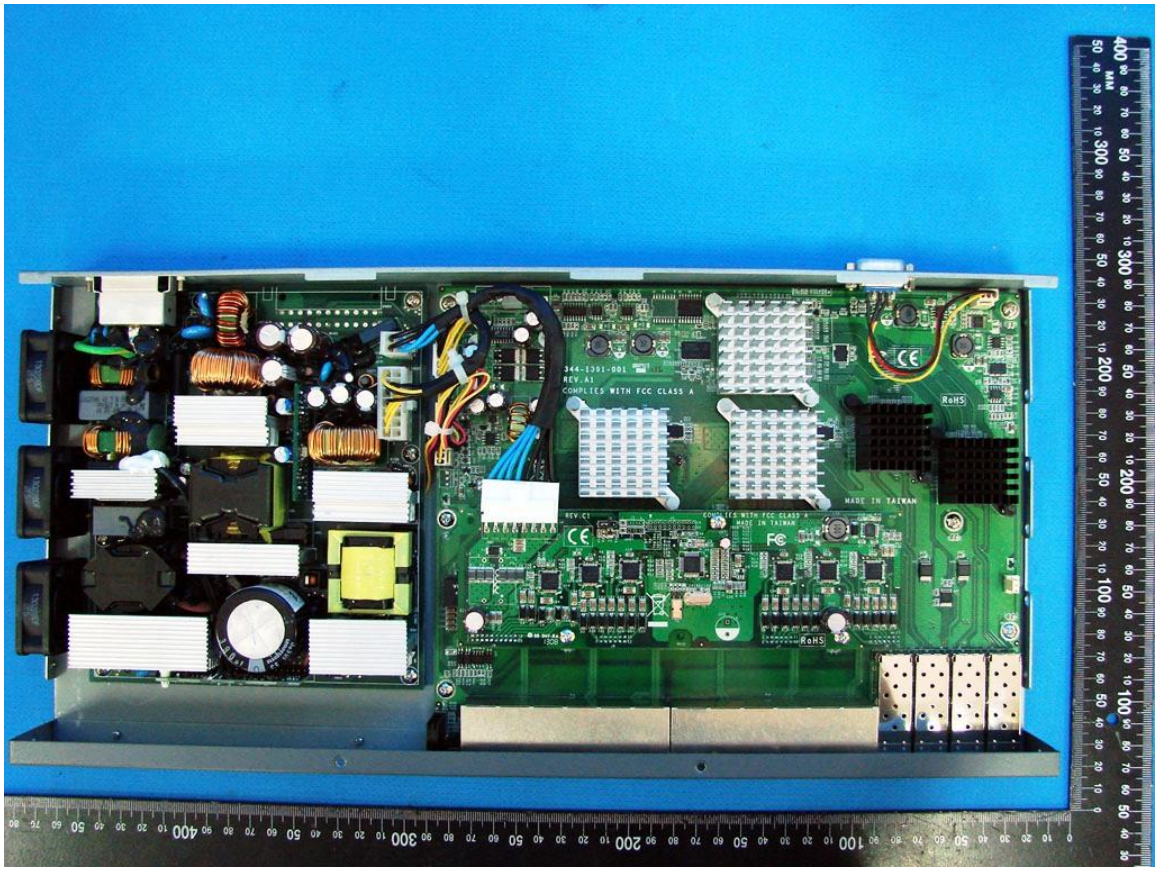
Appendix - Photo

Appendix - Photo

Appendix - Photo



Appendix - Photo



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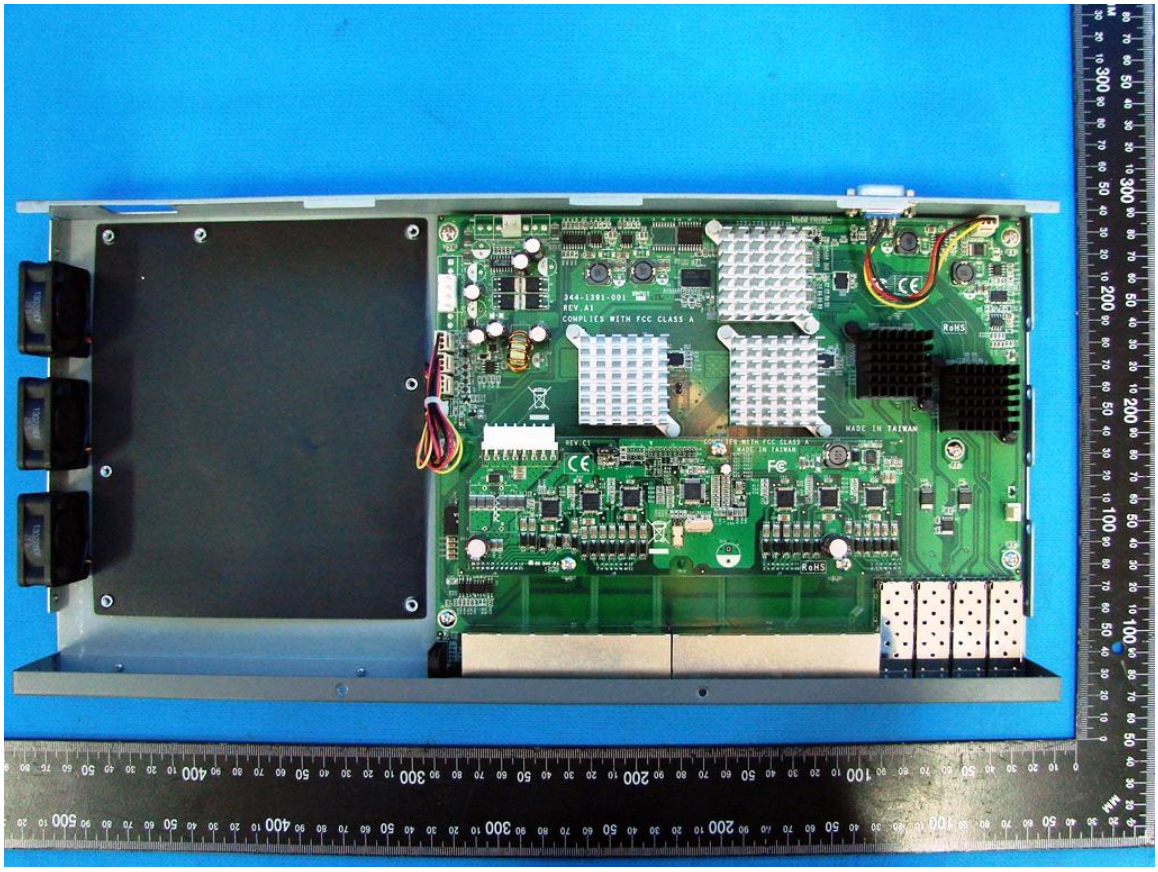
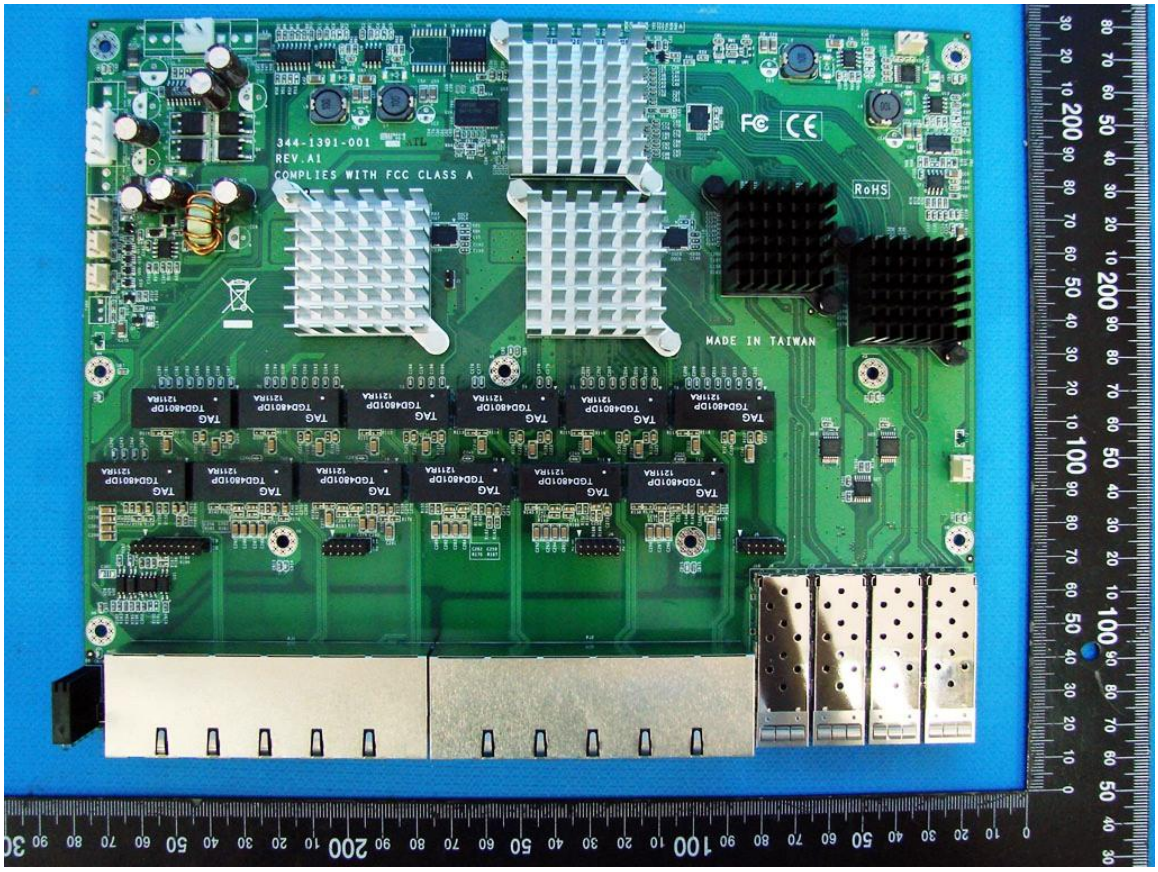


Appendix - Photo



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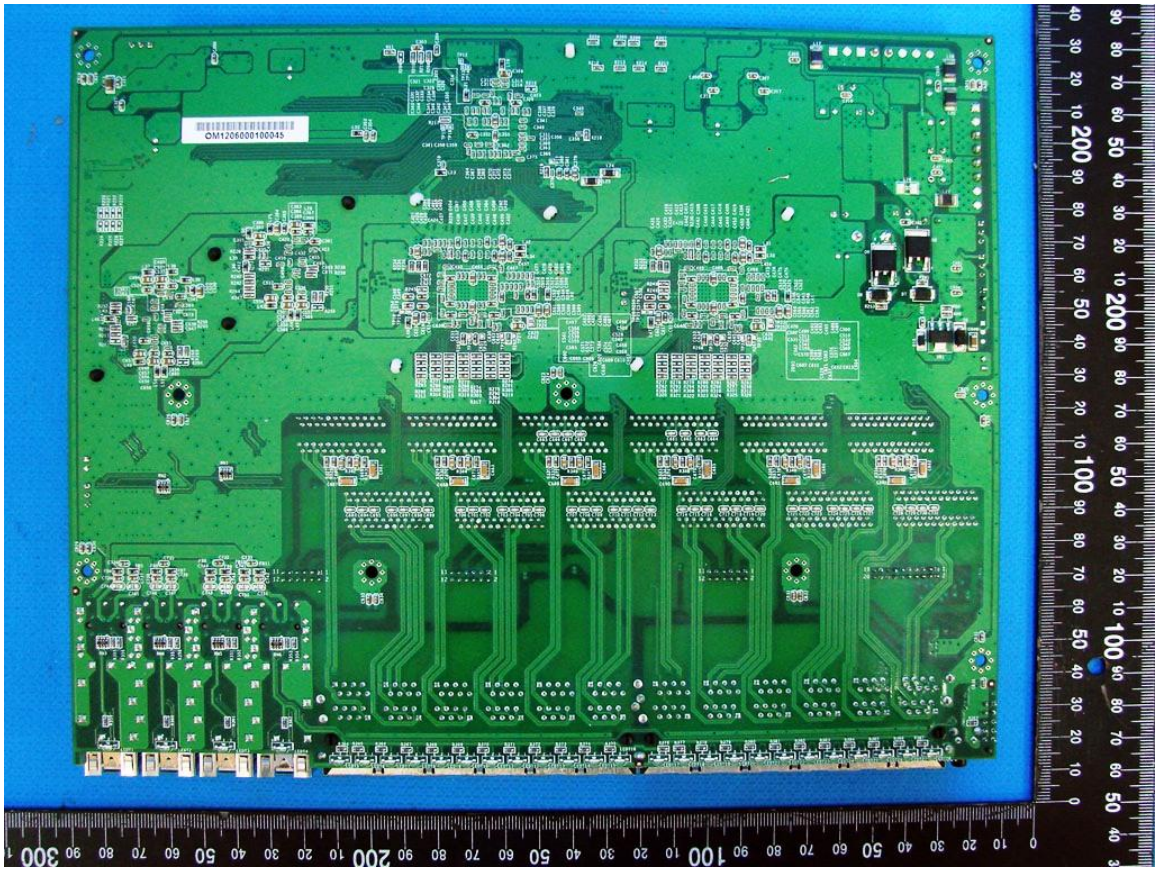

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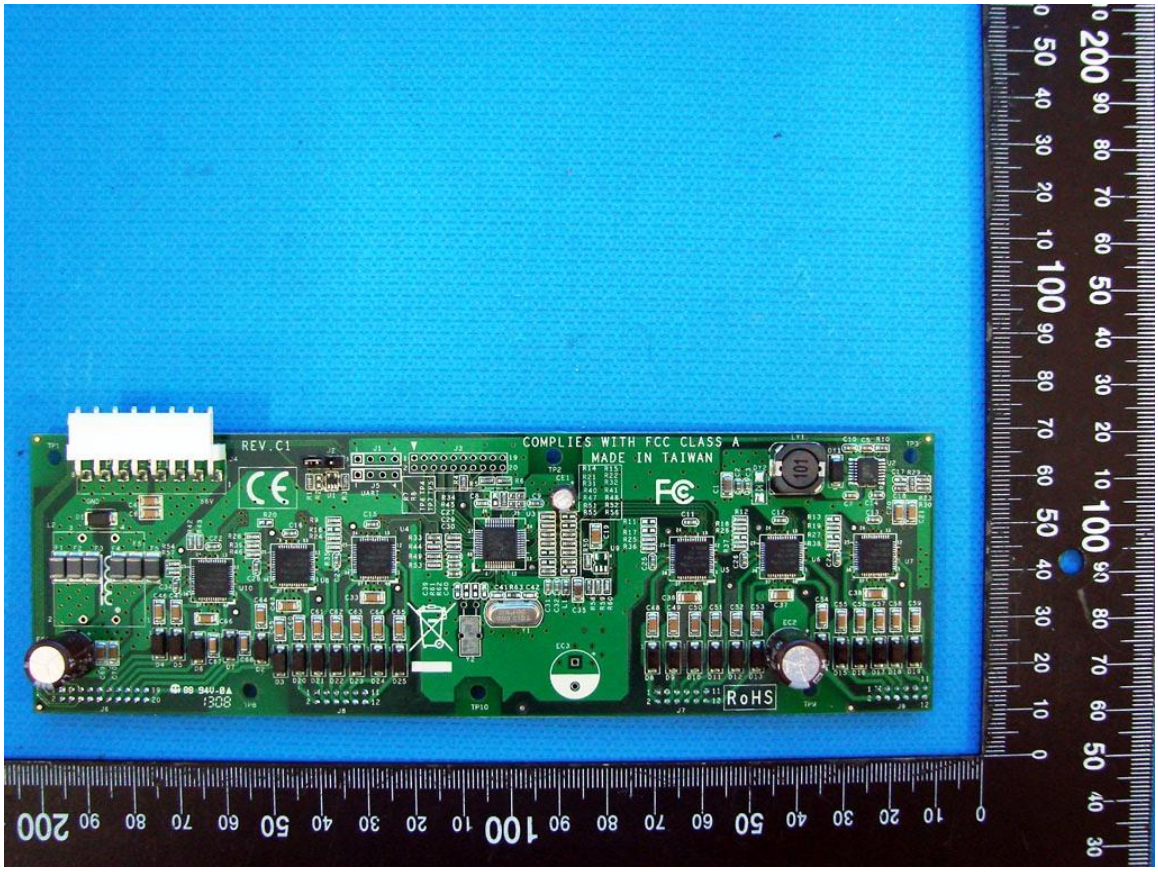

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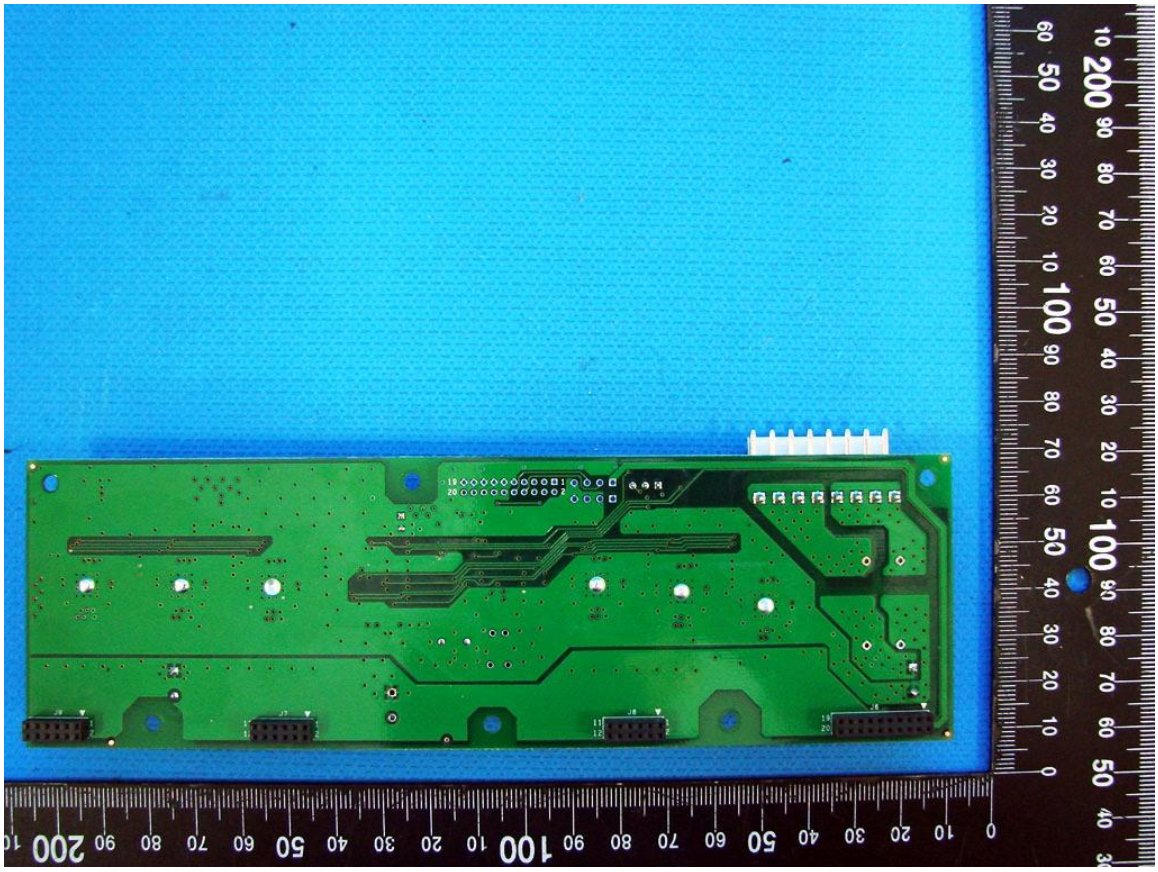
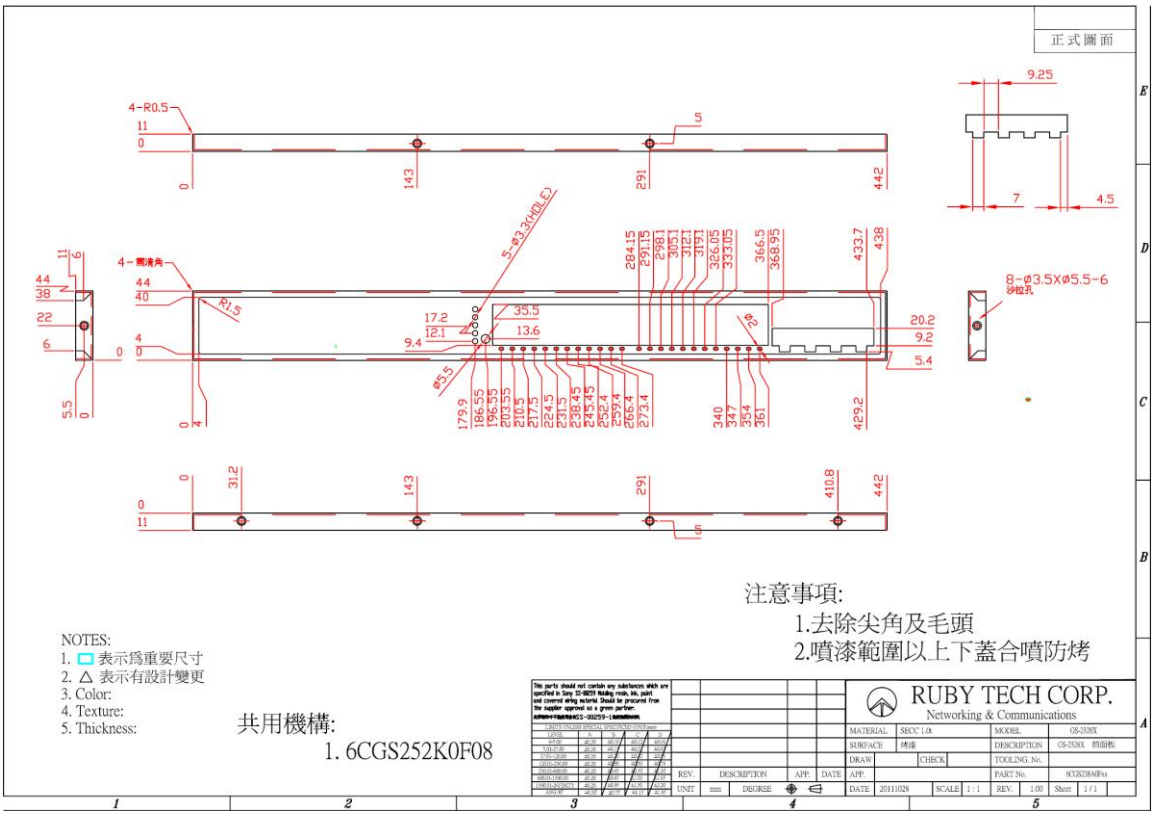


Appendix - Drawing



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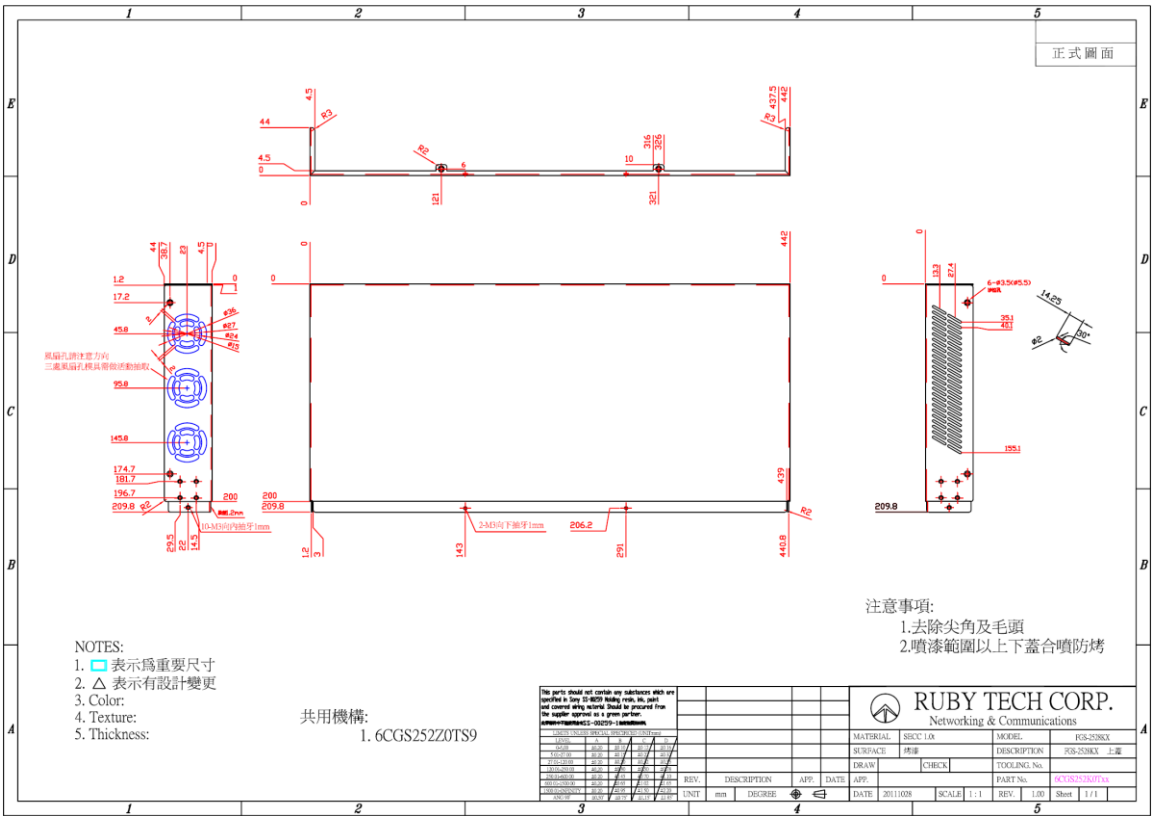

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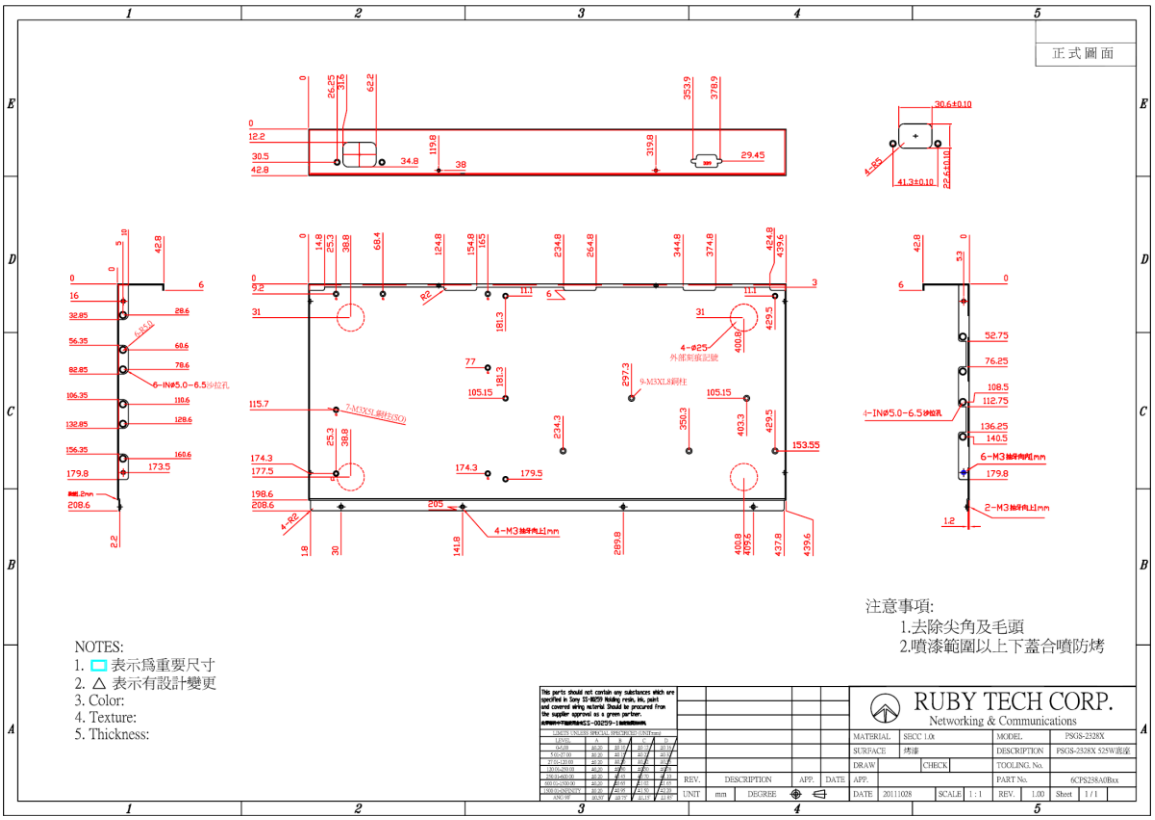

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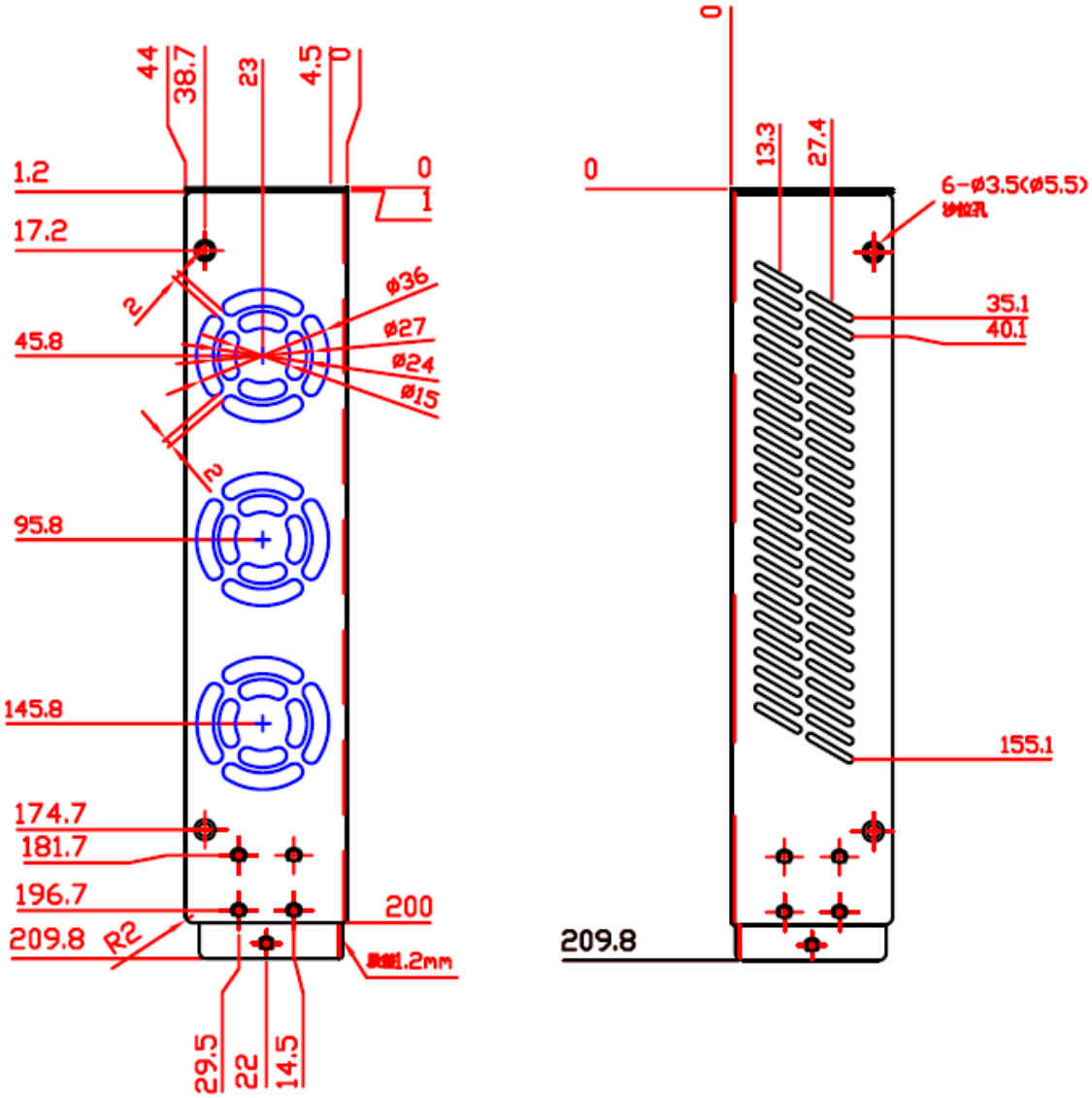

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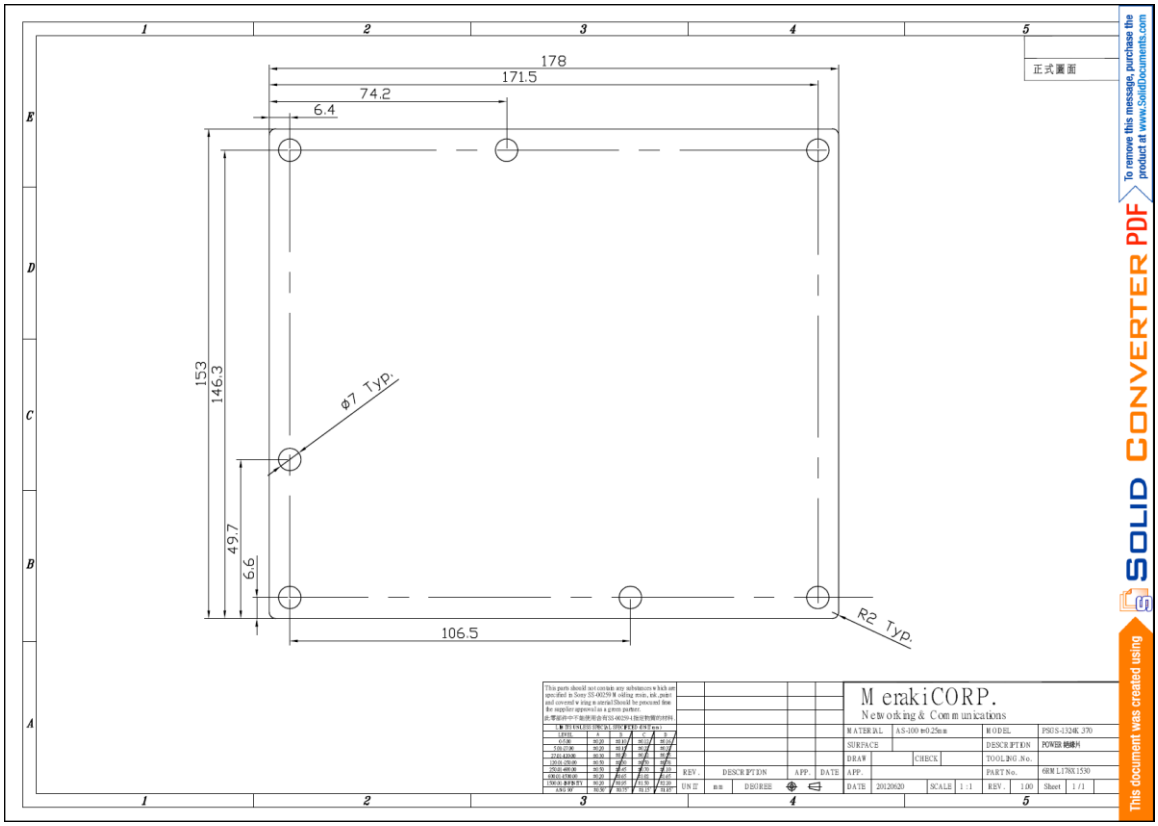

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