



Ref. Certif. No.

DE 2-007771

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEMESYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC**CB TEST CERTIFICATE**
CERTIFICAT D'ESSAI OCProduct
Produit

Power Adapter

Name and address of the applicant
Nom et adresse du demandeurSinpro Electronics Co., Ltd. 2 Fl., No. 2, East Sec. Kung
Yeh 6th Road
Pingtung City, Pingtung County 900, TaiwanName and address of the manufacturer
Nom et adresse du fabricantSinpro Electronics Co., Ltd. 2 Fl., No. 2, East Sec. Kung
Yeh 6th Road
Pingtung City, Pingtung County 900, TaiwanName and address of the factory
Nom et adresse de l'usineSinpro Electronics Co., Ltd. 2 Fl., No. 2, East Sec. Kung
Yeh 6th Road
Pingtung City, Pingtung County 900, TaiwanRating and principal characteristics
Valeurs nominales et caractéristiques principalesAC 100-240V; 47-63Hz; 1.35A; Class I;
o/p: details refer to test report pages 2 and 3Trade mark (if any)
Marque de fabrique (si elle existe)

SINPRO

Model/type Ref.
Ref. de typeSPU45-x; SPU45E-x;
(x = 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110,
111, 200, 201, 202, 203, 204, 209, 210, 215, 216, 300, 301,
302, 303, 304, 305, 306 to denote different rated outputs)Additional information (if necessary)
Information complémentaire (si nécessaire)Models differ in model name, output ratings, components
and PCB layout.**PUBLICATION****EDITION**A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à laIEC 60950:1999
for national deviations see test reportAs shown in the Test Report Ref. No. which forms part
of this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue une partie de ce Certificat

21113826 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

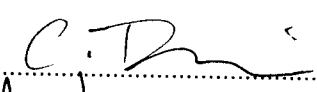
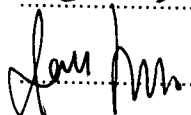
TÜV Rheinland Group

TÜV Rheinland Product Safety GmbH
Am Grauen Stein · D-51105 Köln
Phone + 49 221 806-1400
Fax + 49 221 806-2095
Mail: cert-validity@de.tuv.com
Web: www.tuv.com

Date: 29.09.2004

Signature:

Dipl.-Ing. H.-J. Beck

TEST REPORT IEC 60950 and/or EN 60950 Safety of information technology equipment	
Report reference No	<21113826 001>
Tested by (printed name and signature)	C. BENZIN 
Approved by (printed name and signature)	Ralf Knapp 
Date of issue	September 13, 2004
Testing Laboratory Name	TÜV Rheinland Product Safety GmbH
Address	Am Grauen Stein, Konstantin Wille-Str. 1, Cologne, Germany
Testing location	CBTL <input checked="" type="checkbox"/> CCATL <input type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address	Same as above.
Applicant's Name	Sinpro Electronics Co., Ltd.
Address	2Fl, No. 2, East Sec. Kung Yeh 6th Rd., Pingtung City, Pingtung County 900, Taiwan.
Test specification	
Standard	IEC 60950:1999 + Corr. Jan. 2000 EN 60950:2000 + Corr. Feb. 2002 AS/NZS 60950:2000, CAN/CSA C22.2 No. 60950/UL 60950 third edition, J60950 (H14), K60950, UL 60950
Test procedure	CB-scheme
Procedure deviation	Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Hungary, India, Ireland, Israel, Italy, Japan, Korea, Malaysia, The Netherlands, Norway, Poland, Portugal, Russian Federation, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States of America
Non-standard test method	N.A.
Test Report Form No.	IECEN60950A
TRF originator	SGS Fimko Ltd
Master TRF	dated 2003-03
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Test item description	Power Adapter
Manufacturer	Same as applicant
Trademark	Trademark of Sinpro
Model and/or type reference	SPU45-x, SPU45E-x (x = 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 200, 201, 202, 203, 204, 209, 210, 215, 216, 300, 301, 302, 303, 304, 305, 306)
Serial number	Pre-production samples without serial numbers.
Rating(s)	i/p: AC 100-240V, 47-63Hz, 1.35A o/p: see pages 2-3 for details

Particulars: test item vs. test requirements

Equipment mobility : Movable equipment (also tested as transportable equipment)

Operating condition : Continuous

Mains supply tolerance (%) : +10%, -10%

Tested for IT power systems : Yes

IT testing, phase-phase voltage (V) : IT, 230V for Norway

Class of equipment : Class I

Mass of equipment (kg)..... : 0.43

Protection against ingress of water : IPX0

Test case verdicts

Test case does not apply to the test object..... : **N**(.A.)

Test item does meet the requirement..... : **P**(ass)

Test item does not meet the requirement : **F**(ail)

Testing

Date of receipt of test item : July, 2004

Date(s) of performance of test : July-August, 2004

General remarks

"This report is not valid as a CB Test Report unless appended to a CB Test Certificate issued by a NCB, in accordance with IEC 60950-1".

This report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

"(see Annex #)" refers to an annex appended to the report.

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

Comments

Factory:

Sinpro Electronics Co., Ltd.

2Fl, No. 2, East Sec. Kung Yeh 6th Rd., Pingtung City, Pingtung County 900, Taiwan.

Brief description of the test sample:

Rating:

<u>Model-designation:</u>	<u>Input rating:</u>	<u>Output-rating:</u>
SPU45-100, SPU45E-100	AC 100-240V, 47-63Hz, 1.35A	DC 2-3V/8.0A
SPU45-101, SPU45E-101	AC 100-240V, 47-63Hz, 1.35A	DC 3-5V/8.0A
SPU45-102, SPU45E-102	AC 100-240V, 47-63Hz, 1.35A	DC 5-6V/8.0A
SPU45-103, SPU45E-103	AC 100-240V, 47-63Hz, 1.35A	DC 6-8V/7.0A
SPU45-104, SPU45E-104	AC 100-240V, 47-63Hz, 1.35A	DC 8-11V/5.63A
SPU45-105, SPU45E-105	AC 100-240V, 47-63Hz, 1.35A	DC 11-13V/4.0A
SPU45-106, SPU45E-106	AC 100-240V, 47-63Hz, 1.35A	DC 13-16V/3.46A
SPU45-107, SPU45E-107	AC 100-240V, 47-63Hz, 1.35A	DC 16-21V/2.75A
SPU45-108, SPU45E-108	AC 100-240V, 47-63Hz, 1.35A	DC 21-27V/2.3A
SPU45-109, SPU45E-109	AC 100-240V, 47-63Hz, 1.35A	DC 27-33V/1.85A
SPU45-110, SPU45E-110	AC 100-240V, 47-63Hz, 1.35A	DC 33-40V/1.51A
SPU45-111, SPU45E-111	AC 100-240V, 47-63Hz, 1.35A	DC 40-50V/1.25A

SPU45-200, SPU45E-200	AC 100-240V, 47-63Hz, 1.35A	DC 3.3V/5A, 12V/2A, 40W max.
SPU45-201, SPU45E-201	AC 100-240V, 47-63Hz, 1.35A	DC 5.0V/5A, 12V/2A, 42W max.
SPU45-202, SPU45E-202	AC 100-240V, 47-63Hz, 1.35A	DC 5.0V/5A, 15V/1.5A, 42W max.
SPU45-203, SPU45E-203	AC 100-240V, 47-63Hz, 1.35A	DC 5.0V/5A, 24V/1A, 42W max.
SPU45-204, SPU45E-204	AC 100-240V, 47-63Hz, 1.35A	DC 3.3V/5A, 5V/2A, 26.5W max.
SPU45-209, SPU45E-209	AC 100-240V, 47-63Hz, 1.35A	DC 12V/3A, -12V/1A, 42W max.
SPU45-210, SPU45E-210	AC 100-240V, 47-63Hz, 1.35A	DC 15V/2A, -15V/1A, 42W max.
SPU45-215, SPU45E-215	AC 100-240V, 47-63Hz, 1.35A	DC 5V/5A, -24V/1A, 42W max.
SPU45-216, SPU45E-216	AC 100-240V, 47-63Hz, 1.35A	DC 5.1V/1A, 7.2V/2.6A, 23.82W max.
SPU45-300, SPU45E-300	AC 100-240V, 47-63Hz, 1.35A	DC 3.3V/5A, 12V/2A, -12V/0.8A, 42W max.
SPU45-301, SPU45E-301	AC 100-240V, 47-63Hz, 1.35A	DC 5V/5A, 12V/2A, -5V/0.8A, 42W max.
SPU45-302, SPU45E-302	AC 100-240V, 47-63Hz, 1.35A	DC 5V/5A, 12V/2A, -12V/0.8A, 42W max.
SPU45-303, SPU45E-303	AC 100-240V, 47-63Hz, 1.35A	DC 5V/5A, 15V/2A, -15V/0.8A, 42W max.
SPU45-304, SPU45E-304	AC 100-240V, 47-63Hz, 1.35A	DC 5V/5A, 24V/1A, -24V/0.5A, 42W max.
SPU45-305, SPU45E-305	AC 100-240V, 47-63Hz, 1.35A	DC 5V/5A, 24V/1A, -12V/0.8A, 42W max.
SPU45-306, SPU45E-306	AC 100-240V, 47-63Hz, 1.35A	DC 3.3V/5A, 12V/2A, -5V/0.8A, 40W max.

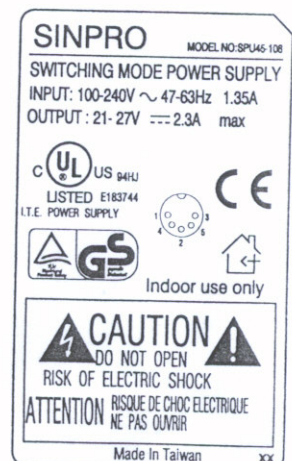
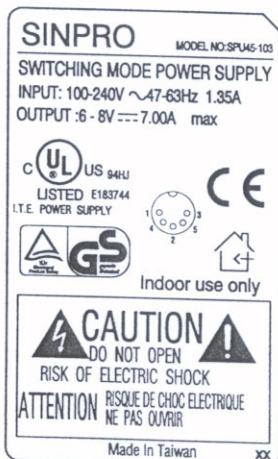
All models of SPU45-1XX are different only in components of C19, C20, C21, D5, D6 and T1. All models of SPU45-2XX are different only in components of C18, C19, C20, C21, C22, C23, C24, C25, C26, D5, D6, D7, D8 and T1. All models of SPU45-3XX are different only in components of C19, C20, C21, C23, C24, C25, C26, D5, D6, D7, D8 and T1. There are two types of PCB layout used, one for single output type, the other one for multiple outputs type. Both PCB layouts are similar except for secondary minor differences. Models SPU45E-x and models SPU45-x are identical except that SPU45-x are provided with IC3.

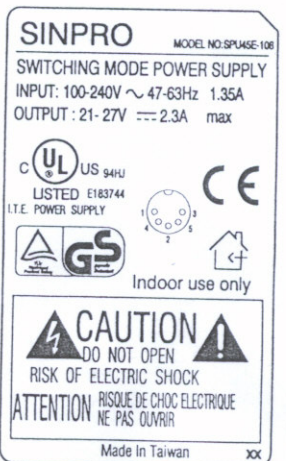
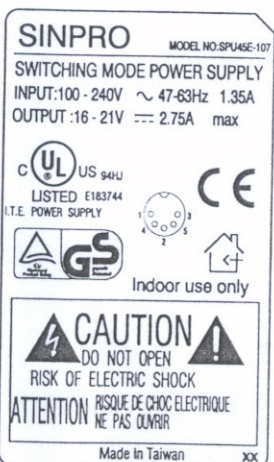
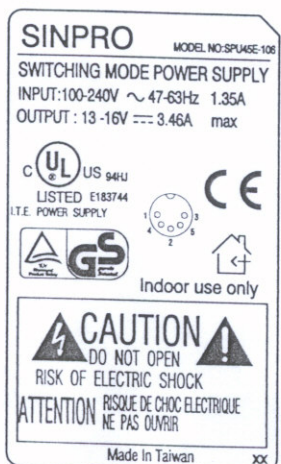
Unless otherwise specified, in model name, 'x' denotes different rated outputs.

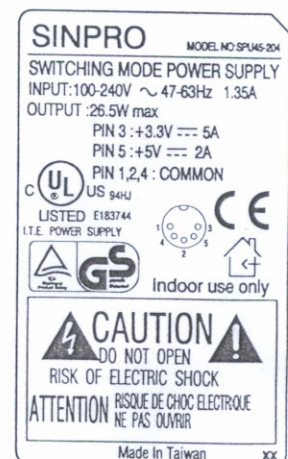
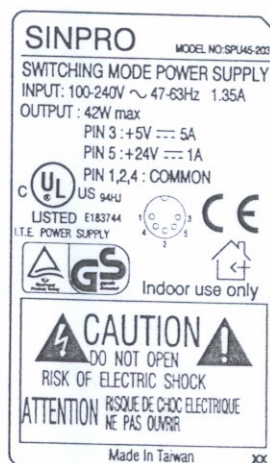
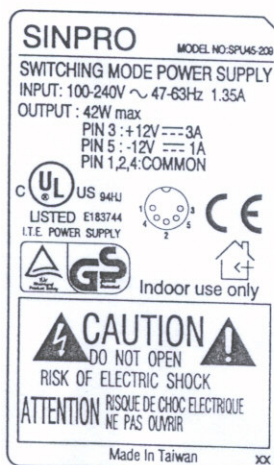
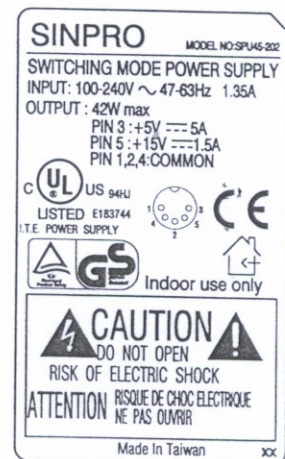
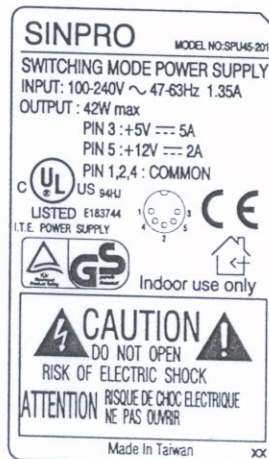
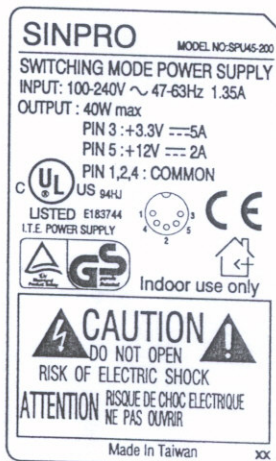
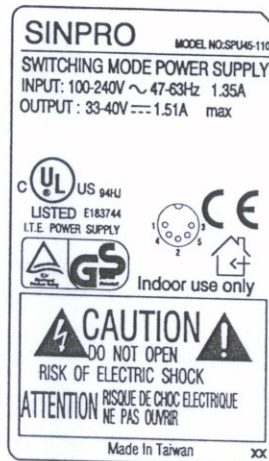
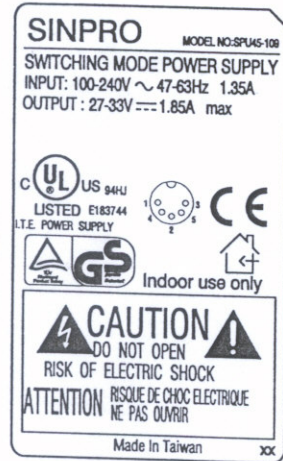
The adapter's top enclosure is secured to bottom enclosure by the use of 4 screws.

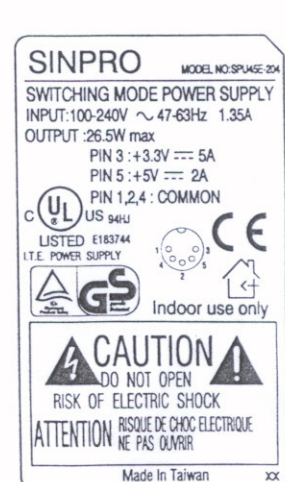
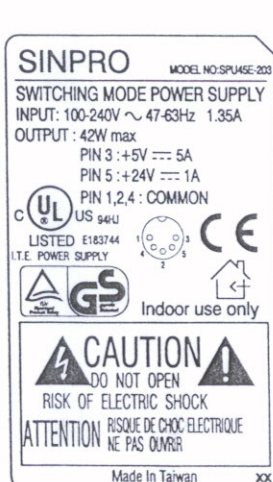
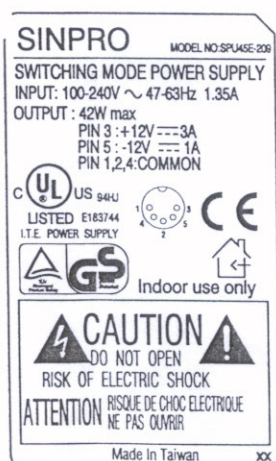
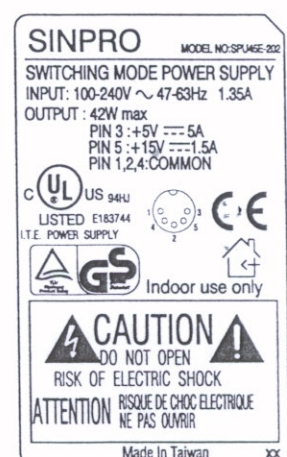
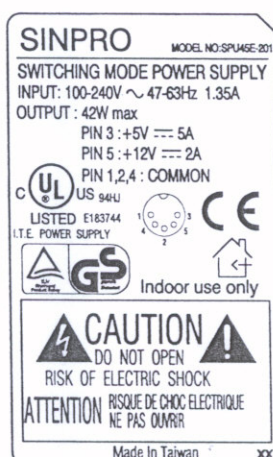
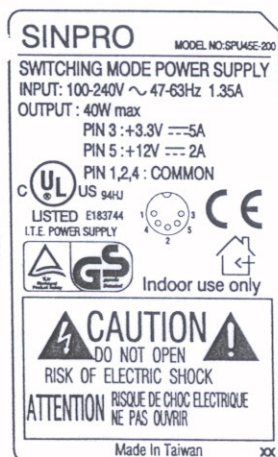
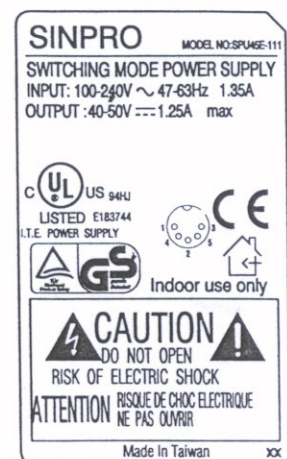
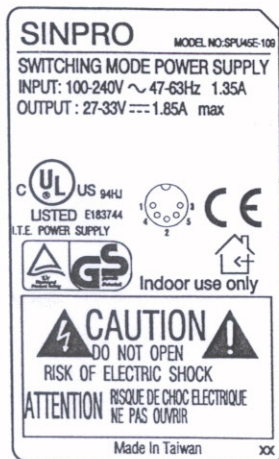
Unless otherwise stated, all tests were performed on model SPU45-306 to represent all other technical similar models. The test sample is pre-production without serial number.

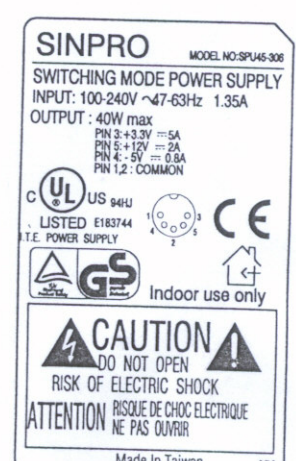
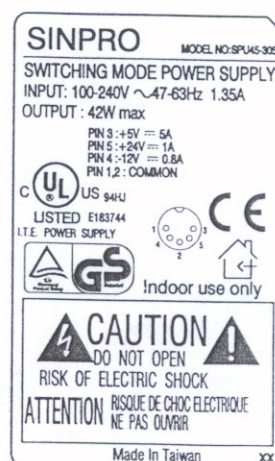
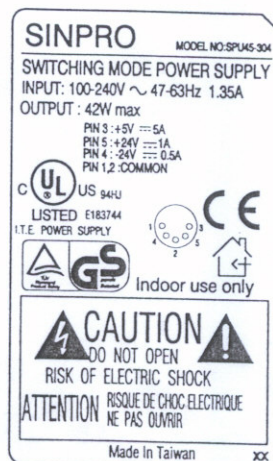
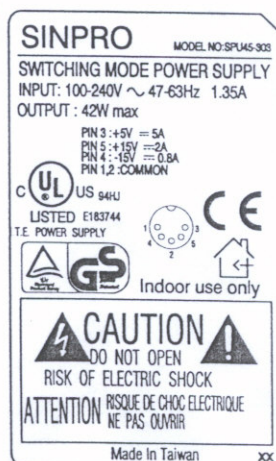
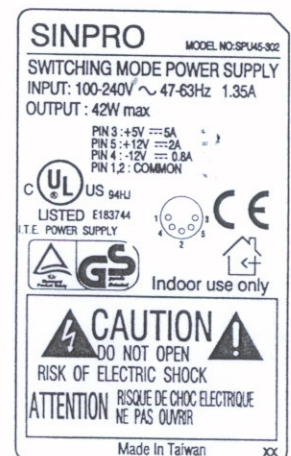
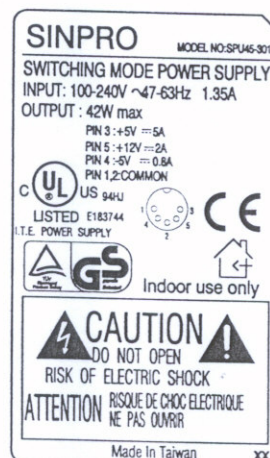
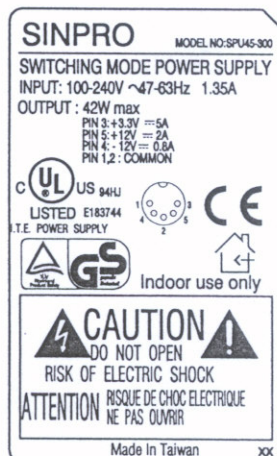
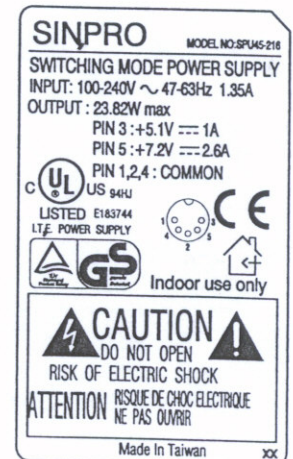
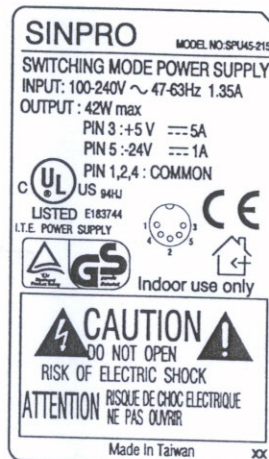
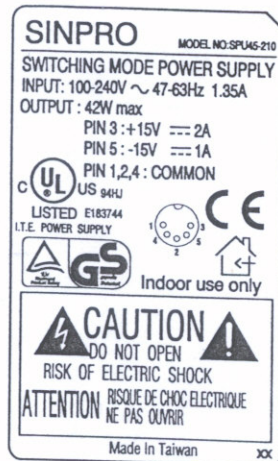
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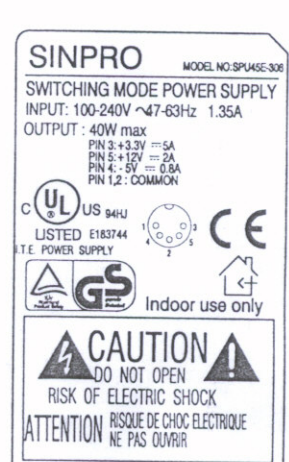
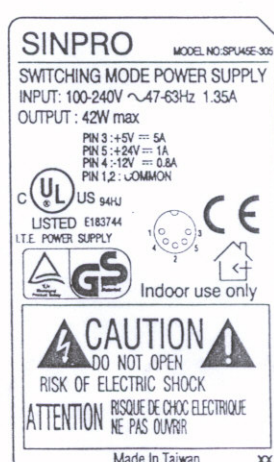
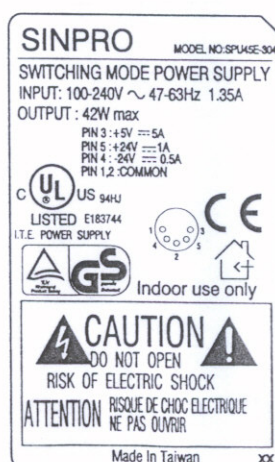
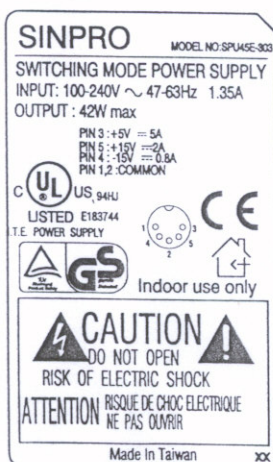
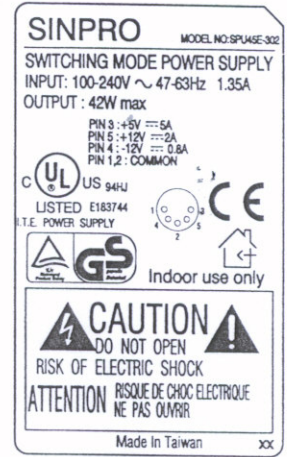
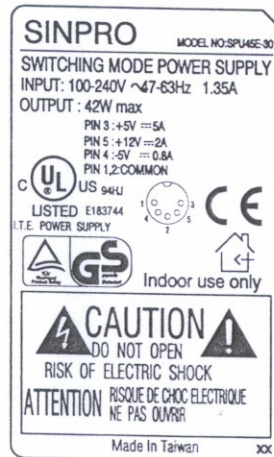
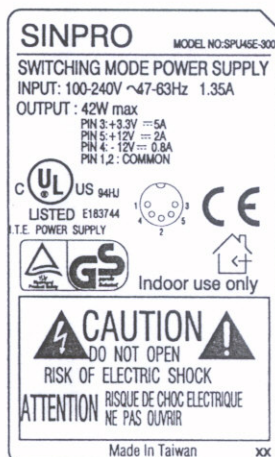
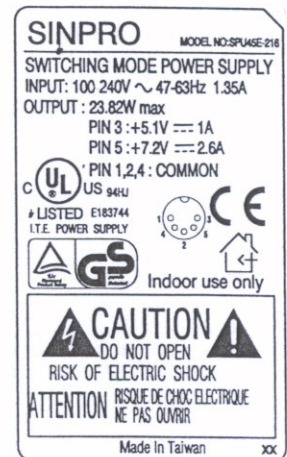
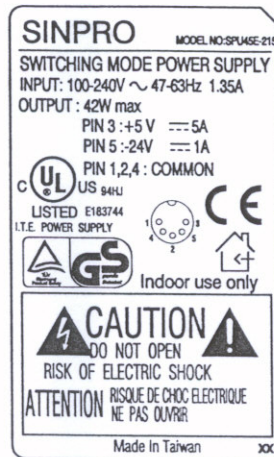
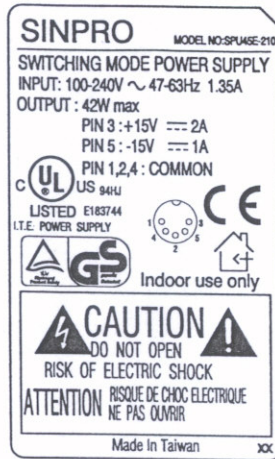












IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	Comply with IEC 60950 or relevant component standard	Components which were found to affect safety aspects comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see appended table 1.5.1)	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. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
	Dimensions (mm) of mains plug for direct plug-in :	Not direct plug in type.	N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N) :		N
1.5.3	Thermal controls		N
1.5.4	Transformers	Transformer used is suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C.	P
1.5.5	Interconnecting cables	Interconnection o/p cable to other device is carrying only SELV on an energy level below 240VA. Except the insulation material, there are no further requirements to the o/p interconnection cable.	P
1.5.6	Capacitors in primary circuits :	Between lines: X2 capacitor according to IEC 60384-14:1993 with 21 days damp heat test was used. Between line and PE: Y2 capacitor according to IEC 60384-14: 1993 with 21 days damp heat test.	P
1.5.7	Double or reinforced insulation bridged by components		N
1.5.7.1	Bridging capacitors		N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
1.5.7.2	Bridging resistors		N
1.5.7.3	Accessible parts		N
1.5.8	Components in equipment for IT power systems	Phase to PE designed in according to phase-to-phase working voltage. The Y2 type capacitor used between phase-to-PE.	P

1.6	Power interface		P
1.6.1	AC power distribution systems	See below	P
1.6.2	Input current	Highest load according to 1.2.2.1 for this equipment is the operation with the max. specified DC-load. Results see appended table	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not a hand-held equipment.	N
1.6.4	Neutral conductor	The neutral is not identified in the equipment. Basic insulation for rated voltage between earthed parts and primary phases.	P

1.7	Marking and instructions		P
1.7.1	Power rating	See below	P
	Rated voltage(s) or voltage range(s) (V)	See copy of marking plates.	P
	Symbol for nature of supply for d.c.	mains from AC source	N
	Rated frequency or frequency range (Hz)	See copy of marking plates.	P
	Rated current (A)	See copy of marking plates.	P
	Manufacturer's name/Trademark	See copy of marking plate	P
	Type/model	See copy of marking plate	P
	Symbol of Class II	Class I equipment	N
	Other symbols	Additional symbols or marking does not give rise to misunderstanding.	P
	Certification marks	See copy of marking plate.	N
1.7.2	Safety instructions	User manual provided.	P
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.4	Supply voltage adjustment	Full range circuit.	N
1.7.5	Power outlets on the equipment	No outlet.	N
1.7.6	Fuse identification	Marking adjacent to fuse on PCB as F1 T2A 250V	P
1.7.7	Wiring terminals	See below.	N
1.7.7.1	Protective earthing and bonding terminals	Appliance inlet used.	N
1.7.7.2	Terminal for a.c. mains supply conductors	The equipment with appliance inlet, which is intended to use the detachable type power supply cord.	N
1.7.8	Controls and indicators	No safety involved controls and indicators.	N
1.7.8.1	Identification, location and marking		N
1.7.8.2	Colours		N
1.7.8.3	Symbols according to IEC 60417		N
1.7.8.4	Markings using figures		N
1.7.9	Isolation of multiple power sources		N
1.7.10	IT power system	For Norway compliance has to be evaluated during the national approved.	N
1.7.11	Thermostats and other regulating devices	No adjustable thermostat.	N
1.7.12	Language	Equipment markings in English and user's manual in English and German. Versions in other languages will be provided when submitted for national approval.	P
1.7.13	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 s and then again for 15 s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	P
1.7.14	Removable parts	No removable part.	N

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Clause	Requirement – Test	Result – Remark	Verdict
1.7.15	Replaceable batteries	No battery.	N
	Language		—
1.7.16	Operator access with a tool	No operator accessible area with a tool.	N
1.7.17	Equipment for restricted access locations	The equipment is not limited for use in restricted access location.	N

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	See 2.1.1.1	P
2.1.1.1	Access to energized parts	See below	—
	Test by inspection	No access with test finger and test pin to any parts with only basic insulation to ELV or hazardous voltage. Any hazardous parts accessible are unlikely.	P
	Test with test finger	Dto	P
	Test with test pin	Dto	P
	Test with test probe		N
2.1.1.2	Battery compartments	No battery compartment.	N
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N
	Working voltage (V); distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N
2.1.1.5	Energy hazards	Energy does not exceed 240VA between any two points in accessible parts (o/p connector of secondary circuit).	P
2.1.1.6	Manual controls	No conductive shafts of operating knobs and handles.	N
2.1.1.7	Discharge of capacitors in the primary circuit	No risk of electric shock, see below.	P
	Time-constant (s); measured voltage (V)	(See appended table)	—
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
2.1.3	Protection in restricted access locations	The unit is not intended to be used in restricted locations	N
2.2	SELV circuits		P
2.2.1	General requirements	See below.	P
2.2.2	Voltages under normal conditions (V)	Between any SELV circuits 42.4V peak or 60VDC are not exceeded	P
2.2.3	Voltages under fault conditions (V)	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120V DC were not exceed and SELV limits not for longer than 0.2 seconds.	P
2.2.3.1	Separation by double or reinforced insulation (method 1)	Method 1	P
2.2.3.2	Separation by earthed screen (method 2)		N
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N
2.2.4	Connection of SELV circuits to other circuits	See 2.2.2 and 2.2.3. No direct connection between SELV and any primary circuits.	P
2.3	TNV circuits		N
2.3.1	Limits		N
	Type of TNV circuits		—
2.3.2	Separation from other circuits and from accessible parts		N
	Insulation employed.....		—
2.3.3	Separation from hazardous voltages		N
	Insulation employed.....		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed.....		—
2.3.5	Test for operating voltages generated externally		N
2.4	Limited current circuits		N

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Clause	Requirement – Test	Result – Remark	Verdict
2.4.1	General requirements		N
2.4.2	Limit values		N
	Frequency (Hz)		—
	Measured current (mA).....		—
	Measured voltage (V)		—
	Measured capacitance (μF).....		—
2.4.3	Connection of limited current circuits to other circuits		N
2.5	Limited power sources		N
	Inherently limited output		N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault condition		N
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output voltage (V), output current (A), apparent power (VA).....		—
	Current rating of overcurrent protective device (A)		—
2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Accessible parts that might assume a hazardous voltage in the event of a single fault are earthed.	P
2.6.2	Functional earthing	Secondary functional earthing is connected to protectively earthed conductive part which part is separated from primary by basic insulation.	P
2.6.3	Protective earthing and protective bonding conductors	PE conductors comply with 2.6.3.3.	P
2.6.3.1	Size of protective earthing conductors	Power cord not provided.	N
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.2	Size of protective bonding conductors	See 2.6.3.3.	N

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Clause	Requirement – Test	Result – Remark	Verdict
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Rated current (A), type and nominal thread diameter (mm)	See below.	P
	Resistance (Ω) of earthing conductors and their terminations, test current (A)	See appended table 2.6.3.3.	P
2.6.3.4	Colour of insulation	Green/yellow wire from inlet to PCB. Green/Yellow wire to PCB reliable fixed with solder pin.	P
2.6.4	Terminals	Appliance inlet used.	P
2.6.4.1	Protective earthing and bonding terminals	Appliance inlet used.	P
	Rated current (A), type and nominal thread diameter (mm)		—
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors	Separate PE and protective bonding conductor used.	P
2.6.5	Integrity of protective earthing	See below	P
2.6.5.1	Interconnection of equipment	This unit has its own earthing connection. Any other units connected via the output wires to other unit shall provide SELV only. The equipment does not comprise class I and class II.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device in protective earthing or bonding conductor.	P
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect earth without disconnecting mains as an appliance inlet is used.	P
2.6.5.4	Parts that can be removed by an operator	Appliance inlet with PE conductor connect first and disconnect last.	P
2.6.5.5	Parts removed during servicing	It is not necessary to disconnect earthing except for the removing of the earthed parts itself.	P
2.6.5.6	Corrosion resistance	All part comprising the connections are plated and metal to metal which comply with annex J.	P
2.6.5.7	Screws for protective bonding	Not such screw used.	P

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict

2.6.5.8	Reliance on telecommunication network	No TNV.	N
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2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Equipment relies on 16A rated fuse or circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short circuit. Over current protection is provided by the built-in fuse.	P
	Instructions when protection relies on building installation	Pluggable type A equipment.	P
2.7.2	Faults not covered in 5.3 (EN 60950: Void)	The protection devices are well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the building installation is considered as providing short circuit backup protection.	P
2.7.4	Number and location of protective devices :	Over current protection by one built-in fuse.	P
2.7.5	Protection by several devices	Only one fuse.	N
2.7.6	Warning to service personnel :	No service works.	N

2.8	Safety interlocks		N
2.8.1	General principles		N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Interlocks with moving parts		N
2.8.6	Overriding an interlock		N
2.8.7	Switches and relays in interlock systems		N
2.8.7.1	Contact gaps (mm) :		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test (V)		N
2.8.8	Mechanical actuators		N

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Clause	Requirement – Test	Result – Remark	Verdict

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic material is not used.	P
2.9.2	Humidity conditioning	Required is a test at 40 °C, 91-95% R.H. for 120h.	P
2.9.3	Requirements for insulation	Insulation complies with sub-clauses 5.2, 2.10 and 4.5.1.	P
2.9.4	Insulation parameters	Both parameters were considered.	P
2.9.5	Categories of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	P

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See 2.10.3, 2.10.4, 2.10.5.	P
2.10.2	Determination of working voltage	The rms and the peak voltage of the appliance is mains voltage 240V max. The unit was connected to a 240V TN power system.	P
2.10.3	Clearances	See below and advantage of annex G is not considered.	P
2.10.3.1	General	Considered.	P
2.10.3.2	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.3	Clearances in secondary circuits	See 5.3.4.	N
2.10.3.4	Measurement of transient levels	No transient voltage across the clearance lower than due or normal.	N
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P
	CTI tests		—
2.10.5	Solid insulation	See below.	P
2.10.5.1	Minimum distance through insulation	(see appended table 2.10.5)	P
2.10.5.2	Thin sheet material	Thin sheet materials used inside of T1 transformer such as polyester tape	P
	Number of layers (pcs)	3	—

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Clause	Requirement – Test	Result – Remark	Verdict
	Electric strength test	3000Va.c. applied onto any combination of to layers	—
2.10.5.3	Printed boards		N
	Distance through insulation		N
	Electric strength test for thin sheet insulating material		—
	Number of layers (pcs)		N
2.10.5.4	Wound components.....	No wound component without interleaved insulation.	N
	Number of layers (pcs)		N
	Two wires in contact inside component; angle between 45° and 90°		N
2.10.6	Coated printed boards		N
2.10.6.1	General		N
2.10.6.2	Sample preparation and preliminary inspection . :		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing (°C)		N
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		N
	Electric strength test		—
2.10.7	Enclosed and sealed parts	No hermetically sealed component.	N
	Temperature $T_1=T_2 = T_{mra} - T_{amb} + 10K$ (°C).....		N
2.10.8	Spacings filled by insulating compound	Photo-couplers are an approved components. Other components not applied for. (see appended table 2.10.5)	P
	Electric strength test	(see appended table 5.2)	—
2.10.9	Component external terminations	(see appended table 2.10.3 and 2.10.4)	P
2.10.10	Insulation with varying dimensions	Insulation kept homogenous.	N
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P

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Clause	Requirement – Test	Result – Remark	Verdict
3.1.1	Current rating and overcurrent protection	Secondary output cable is UL recognized wiring which is PVC insulated, rated VW-1, min. 80 °C. Internal wiring gauge is suitable for current intended to be carried. No internal wire for primary power distribution.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges and heatsinks which could damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	The wires are secured by soldering and mechanical clamping so that a loosening of the terminal connection is unlikely.	P
3.1.4	Insulation of conductors	The insulation of the individual conductors is suitable for the application and the working voltage. For the insulation material see 3.1.1.	P
3.1.5	Beads and ceramic insulators	Not used.	N
3.1.6	Screws for electrical contact pressure	No screws used for electrical connections. No screws of insulating material for electrical connections, or where supplementary or reinforced insulation could be impaired by a metal replacement.	N
3.1.7	Non-metallic materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws	No self tapping screws are used.	P
3.1.9	Termination of conductors	All conductors are reliably secured.	P
	10 N pull test	Force of 10 N applied to the termination points of the conductors.	P
3.1.10	Sleeving on wiring	Not used.	N
3.2	Connection to a.c. mains supplies		P
3.2.1	Means of connection	Appliance inlet.	P
3.2.2	Multiple supply connections		N

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Clause	Requirement – Test	Result – Remark	Verdict
3.2.3	Permanently connected equipment	Not a permanently connected equipment.	N
	Number of conductors, diameter (mm) of cable and conduits	Dto	—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320-1. The power cord can be inserted without difficulties and does not support the unit.	P
3.2.5	Power supply cords	Not provided.	N
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. No sharp edge.	N
3.2.8	Cord guards	No cord guard.	N
	D (mm); test mass (g)		—
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space		N
3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals		N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Rated current (A), cord/cable type, cross-sectional area (mm ²)		N
3.3.5	Rated current (A), type and nominal thread diameter (mm)		N
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N

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Clause	Requirement – Test	Result – Remark	Verdict
3.4	Disconnection from the a.c. mains supply		P
3.4.1	General requirement	Disconnect device provided.	P
3.4.2	Disconnect devices	Appliance coupler.	P
3.4.3	Permanently connected equipment	Not a permanently connected equipment.	N
3.4.4	Parts which remain energized	When plug or inlet is disconnected no remaining parts with hazardous voltage in the equipment	P
3.4.5	Switches in flexible cords		N
3.4.6	Single-phase equipment	The power cord plug or inlet disconnects both poles simultaneously.	P
3.4.7	Three-phase equipment	Single phase.	N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment	Interconnection to other devices by secondary output cable only.	N
3.4.11	Multiple power sources	Only one supply connection provided.	N
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 sec o/p cable. No ELV interconnection circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N
4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P
	Angle of 10°	Length and width exceed the height.	P
	Test: force (N)		N
4.2	Mechanical strength		P
4.2.1	General	See below.	P

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Clause	Requirement – Test	Result – Remark	Verdict
4.2.2	Steady force test, 10 N	10N applied to components other than parts serving as an enclosure.	P
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N	250N applied to outer enclosure. No energy or other hazards.	P
4.2.5	Impact test	No hazard as result from steel sphere ball impact test.	P
4.2.6	Drop test	No hazard as result after drop test.	P
4.2.7	Stress relief	After the test of A.10 no shrinkage, distortion or loosening of any enclosure part was noticeable on the equipment.	P
4.2.8	Cathode ray tubes		N
	Picture tube separately certified		N
4.2.9	High pressure lamps		N
4.2.10	Wall or ceiling mounted equipment; force (N) ... :		N

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).....:		N
4.3.3	Adjustable controls	No control device.	N
4.3.4	Securing of parts	No connection likely to be exposed to mechanical stress are provided in unit.	P
4.3.5	Connection of plugs and sockets	No mismatch connector, plug or socket possible.	P
4.3.6	Direct plug-in equipment	Not direct plug in type.	N
	Torque (Nm)		—
4.3.7	Heating elements in earthed equipment		N
4.3.8	Batteries	No battery.	N
4.3.9	Oil and grease	No insulation is exposed to grease where used on plastic type gears.	P

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Clause	Requirement – Test	Result – Remark	Verdict
4.3.10	Dust, powders, liquids and gases	The equipment in intended use not considered to be exposed to dust, powers, liquids and gases.	N
4.3.11	Containers for liquids or gases	No container for liquid or gas.	N
4.3.12	Flammable liquids	No flammable liquid.	N
	Quantity of liquid (l)	Dto	N
	Flash point (°C)	Dto	N
4.3.13	Radiation; type of radiation	No radiation.	N
	Equipment using lasers	No ionizing radiation or laser or flammable liquids presents.	N
4.4	Protection against hazardous moving parts		N
4.4.1	General		N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas		N
4.5	Thermal requirements		P
4.5.1	Temperature rises	See appended table 4.5.1.	P
	Normal load condition per Annex L.....	Operated according to operating instruction.	P
4.5.2	Resistance to abnormal heat	Phenolic material used is accepted without tests.	P
4.6	Openings in enclosures		P
4.6.1	Top and side openings	No top and side opening.	P
	Dimensions (mm)		—
4.6.2	Bottoms of fire enclosures	No bottom openings.	P
	Construction of the bottom		—
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment	The adaptor is also considered to be a transportable equipment if it used together with notebook PC. However, there are no any openings in whole enclosure.	P

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Clause	Requirement – Test	Result – Remark	Verdict
4.6.5	Adhesives for constructional purposes		N
	Conditioning temperature/time :		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classes.	P
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	With having the following parts: <ul style="list-style-type: none"> · components in primary · components in secondary (not supplied by LPS) · components having unenclosed arcing parts at hazardous voltage or energy level · insulated wiring the fire enclosure is required.	P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General	See below.	P
4.7.3.2	Materials for fire enclosures	See appended table 1.5.1 for enclosure material.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	See sub-clause 4.7.2	N
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter.	N
4.7.3.6	Materials used in high-voltage components	No high voltage component.	N

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.	P
5.1.2	Equipment under test (EUT)	EUT has only one mains connection.	P
5.1.3	Test circuit	Using figure 5A.	P
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	P

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Clause	Requirement – Test	Result – Remark	Verdict
5.1.5	Test procedure	The touch current was measured from primary to accessible parts and output connector.	P
5.1.6	Test measurements	See below.	P
	Test voltage (V)	See appended table 5.1.6.	—
	Measured current (mA)	See appended table 5.1.6.	—
	Max. allowed current (mA)	See appended table 5.1.6.	—
5.1.7	Equipment with touch current exceeding 3.5 mA		N
5.1.8	Touch currents to and from telecommunication networks	No TNV.	N
5.1.8.1	Limitation of the touch current to a telecommunication network	dto	N
	Test voltage (V)	dto	—
	Measured current (mA)	dto	—
	Max. allowed current (mA)	dto	—
5.1.8.2	Summation of touch currents from telecommunication networks	No TNV.	N
5.2	Electric strength		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	(see appended table 5.2)	P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	See below.	P
5.3.2	Motors	No motor.	N
5.3.3	Transformers	With the shorted o/p of the transformer, no high temp. of the transformer are to be observed or to be expected. Result of the short tests see 5.3 appended table and Annex C.	P
5.3.4	Functional insulation.....	By short-circuited, test results see appended table 5.3.	P

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Clause	Requirement – Test	Result – Remark	Verdict
5.3.5	Electromechanical components	No electromechanical component other than motor provided.	N
5.3.6	Simulation of faults	Results see appended table.	P
5.3.7	Unattended equipment	None of them are used.	N
5.3.8	Compliance criteria for abnormal operating and fault conditions	After the tests, no fire propagated beyond the equipment. No molten metal was emitted. Electric strength test primary / secondary and PE, user accessible area were passed.	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
6.1	Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements		N
	Test voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions.....		N

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

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

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		P
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

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
A.1.1	Samples		—
	Wall thickness (mm).....:		—
A.1.2	Conditioning of samples; temperature (°C).....:		N
A.1.3	Mounting of samples.....:		N
A.1.4	Test flame		N
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s).....:		—
	Sample 2 burning time (s).....:		—
	Sample 3 burning time (s).....:		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		P
A.2.1	Samples		—
	Wall thickness (mm).....:		—
A.2.6	Compliance criteria		N
	Sample 1 burning time (s).....:		—
	Sample 2 burning time (s).....:		—
	Sample 3 burning time (s).....:		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N
	Sample 1 burning time (s).....:		—
	Sample 2 burning time (s).....:		—
	Sample 3 burning time (s).....:		—
A.3	High current arcing ignition test (see 4.7.3.2)		N
A.3.1	Samples		—
	Wall thickness (mm).....:		—
A.3.5	Compliance criteria		N
	Sample 1 number of arcs to ignition (pcs)		—
	Sample 2 number of arcs to ignition (pcs)		—
	Sample 3 number of arcs to ignition (pcs)		—
	Sample 4 number of arcs to ignition (pcs)		—
	Sample 5 number of arcs to ignition (pcs)		—
A.4	Hot wire ignition test (see 4.7.3.2)		N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
A.4.1	Samples		—
	Wall thickness (mm).....:		—
A.4.5	Compliance criteria		N
	Sample 1 ignition time (s)		—
	Sample 2 ignition time (s)		—
	Sample 3 ignition time (s)		—
	Sample 4 ignition time (s)		—
	Sample 5 ignition time (s)		—
A.5	Hot flaming oil test (see 4.6.2)		N
A.6	Flammability tests for classifying materials V-0, V-1 or V-2		N
A.6.1	Samples		—
	Wall thickness (mm).....:		—
A.6.5	Compliance criteria		N
A.6.6	Permitted retest		N
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HFB		N
A.7.1	Sample		—
	Wall thickness (mm).....:		—
A.7.4	Compliance criteria		N
A.7.5	Compliance criteria, HF-2		N
A.7.6	Compliance criteria, HF-1		N
A.7.7	Compliance criteria, HBF		N
A.7.8	Permitted retest, HF-1 or HF-2		N
A.7.9	Permitted retest, HBF		N
A.8	Flammability test for classifying materials HB		N
A.8.1	Samples		—
	Sample thickness (mm)		—
A.8.2	Conditioning of samples; temperature (°C).....:		N
A.8.4	Test procedure		N
A.8.5	Compliance criteria		N
A.8.6	Permitted retest		N
A.9	Flammability test for classifying materials 5V		N
A.9.1	Samples		—
	Sample thickness (mm)		—

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Clause	Requirement – Test	Result – Remark	Verdict

A.9.4	Test procedure, test bars		N
A.9.5	Test procedure, test plaques		N
A.9.6	Compliance criteria		N
A.9.7	Permitted retest		N
A.10	Stress relief conditioning (see 4.2.7)		P
	Temperature (°C)	84	—

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS		N
B.1	General requirements		N
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for DC motors in secondary circuits		N
B.7	Locked-rotor overload test for DC motors in secondary circuits		N
B.7.1	Test procedure		N
B.7.2	Alternative test procedure; test time (h).....		N
B.7.3	Electric strength test		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V)		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position	T1	—
	Manufacturer	See appended table 1.5.1.	—

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict

	Type	See appended table 1.5.1.	—
	Rated values	See appended table 1.5.1.	—
	Method of protection	Protection by inherent impedance.	—
C.1	Overload test	See appended table 5.3.	P
C.2	Insulation	(see table C.2 transformer construction check)	P
	Protection of displacement of windings	Considered.	P



G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.3	Determination of telecommunication network transient voltage (V)		N
G.4	Determination of required withstand voltage (V) .:		N
G.5	Measurement of transient levels (V)		N
G.6	Determination of minimum clearances		N

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N
	Ionizing radiation		N
	Measured radiation (mR/h)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—

J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal used		—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		N
K.1	Making and breaking capacity		N
K.2	Thermostat reliability; operating voltage (V)		N
K.3	Thermostat endurance test; operating voltage (V)		N

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Clause	Requirement – Test	Result – Remark	Verdict
K.4	Temperature limiter endurance; operating voltage (V)		N
K.5	Thermal cut-out reliability		N
K.6	Stability of operation		N
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz)		N
M.3.1.2	Voltage (V)		N
M.3.1.3	Cadence; time (s), voltage (V)		N
M.3.1.4	Single fault current (mA).....		N
M.3.2	Tripping device and monitoring voltage		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V)		N
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4).		N
	Separate test report		N

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Clause	Requirement – Test	Result – Remark	Verdict
	SPECIAL NATIONAL CONDITIONS AND NATIONAL DEVIATIONS S = Special National Condition, A = National Deviation (A-deviation), C = CENELEC Common Modification, F = other information		P
	C: delete all the "country" notes that appear on the following pages of the reference document (IEC 60950:1999): 85, 91, 99, 103, 117, 119, 123, 125, 149, 171, 213, 215, 219, 251, 283, 325, 327, 331, 333 and 407	Deleted.	P
1.2.4.1	S (DK): certain types of Class I appliances (see subclause 3.2.1) may be provided with a plug not establishing earthing continuity when inserted into Danish socket-outlets	No power cord provided.	N
1.5.1	A (CH, SE): add the following: NOTE: Switches containing mercury such as thermostats, relays and level controllers are not allowed	No such switches or components provided.	N
1.5.8	S (NO): due to the IT power system used (see annex V, figure V.7), capacitors are required to be rated for the applicable phase-to phase voltage (230 V)	See IEC 60950 test report.	P
1.7.2	S (NO): class I pluggable equipment type A intended for connection to other equipment or a communication network shall, if safety relies on connection to protective earth, require a marking stating that the equipment must be connected to an earthed mains socket outlet	No power cord provided.	N
	S (SE): if the separation between the mains and SELV terminal relies upon connection to the safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket-outlet. The marking text shall be in Swedish and as follows: "Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk."	Ditto.	N
	A (DK): supply cords of Class I equipment, which are delivered without a plug must be provided with a visible tag with the following text: "Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket  eller  (IEC 417, No. 5019 eller IEC 417, No. 5017)." If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."	Ditto.	N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.5	S (DK): 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	Equipment not provided with socket-outlets.	N
	A (DK): Class II equipment shall not be fitted with socket-outlets for providing power to other equipment	Dto.	N
1.7.12	A (DE): (Gesetz über technische Arbeitsmittel (Gerätesicherheitsgesetz) [Law on technical labour equipment {Equipment safety law}], of 23 rd October 1992, Article 3, 3 rd paragraph, 2 nd sentence, together with the "Allgemeine Verwaltungsvorschrift zur Durchführung des Zweiten Abschnitts des Gerätesicherheitsgesetzes" [General administrative regulation on the execution of the Second Section of the Equipment safety law], of 10 th January 1996, article 2, 4 th paragraph item 2) Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language. NOTE: Of this requirement, rules for use even only by service personnel are not exempted	User's manual will be provided German language when the product is shipping to the German marketings.	P
1.7.15	A (CH): (Ordinance on environmentally hazardous substances SR 814.013) Annex 4.10 of SR 814.013 applies for batteries	No batteries provided.	N
	F (ALL): warning texts for lithium batteries	Dto.	N
	Languages		—
2.2.4	S (NO): requirements according to this annex, sub-clauses 1.7.2 and 6.1.2.1 apply	Equipment not intended to be connected to TNV circuits.	N
2.3.2	S (NO): requirements according to this annex, sub-clause 6.1.2.1 apply	Dto.	N
2.3.3	S (NO): requirements according to this annex, sub-clause 6.1.2.1 apply	Dto.	N
2.3.4	S (NO): requirements according to this annex, sub-clauses 1.7.2 and 6.1.2.1 apply	Dto.	N
2.7.1	C: 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		N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>requirements of 5.3 shall be included as integral parts of the equipment.</p> <p>b) For components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short circuit and earth fault protection may be provided by protective devices in the building installation.</p> <p>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 instruction.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet</p>		
2.7.2	C: This subclause has been declared 'void'		N
2.10.3.1	S (NO): due to the IT power distribution system used (see annex V, figure V.7), the a.c. mains supply voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault	Considered.	P
3.2.1	<p>S (CH): supply cords of equipment having a rated current not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 884-1 and one of the following dimensions sheets:</p> <ul style="list-style-type: none"> - 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 <p>In general, EN 60 309 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</p>	No power cord provided.	N
	S (DK): supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.	Dto.	N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>Class I equipment provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with Standard Sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a rated current exceeding 10 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations Section 107-D1 or EN 60309-2</p>		
	<p>S (ES): supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993</p> <p>Class I equipment provided with socket-outlets with earth contacts, or which are intended to be used locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2</p>	Dto.	N
	<p>S (GB): apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a "standard plug" in accordance with Statutory Instrument 1768:1994 – The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE: "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug</p>	Dto.	N
	<p>S (IE): apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug shall be fitted with a 13 A plug in accordance with Statutory Instrument 525: 1997 – National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997</p>	Dto.	N
3.2.3	C: delete note 1, and in table 3A delete the	Deleted.	N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
	conduit sizes in parentheses		
3.2.5	C: replace "60245 IEC 53" by "H05 RR-F", "60227 IEC 52" by "H03 VV-F or H03 VVH2-F" and "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 ¹⁾ Over 6; up to and including 10 (0,75) ²⁾ 		

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
	class number, then a laser warning label or other laser warning statement is not required (see 1.1 of EN 60825-1) Renummer the NOTE below the third compliance paragraph as NOTE 2		
6.1.2.1	<p>S (NO, SE): add the following text between the first and second paragraph:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>If this insulation forms part of a semiconductor component e.g. an optocoupler, there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition:</p> <ul style="list-style-type: none"> - passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV); and - is subjected to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2</p>	Added.	N
6.1.2.2	S (FI, NO, SE): the exclusions are applicable for permanently connected equipment and pluggable equipment type B only	Not permanently connected equipment.	N
G.2	S (NO): due to the IT power distribution system used (see annex V, figure V.7), the a.c. mains supply voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault	The alternative method is not used.	N
Annex H	C: 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 Sv/h (0,1 mR/h) (see note). Account is taken of the background level	Replaced.	N
	C: replace the NOTE as follows: NOTE – These values appear in Directive 96/29/Euratom	Replaced.	N
	A (DE):		N

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Clause	Requirement – Test	Result – Remark	Verdict
	<p>(Regulation on protection against hazards by X-ray, of 8th January 1987, Article 5 [Operation of X-ray emission source], clauses 1 to 4)</p> <p>a) A licence is required by those who operate an X-ray emission source.</p> <p>b) A licence in accordance with Cl. 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 kV if</p> <p>1) the local dose rate at a distance of 0,1 m from the surface does not exceed 1 µSv/h and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-rays are generated and</p> <p>ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>c) A licence in accordance with Cl. 1 is also not required by persons who operate an X-ray emission source on which the electron acceleration voltage exceeds 20 kV if</p> <p>1) the X-ray emission source has been granted a type approval and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-rays are generated</p> <p>ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded and</p> <p>iii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>d) Furthermore, a licence in accordance with Cl. 1 is also not required by persons who operate X-ray emission sources on which the electron acceleration voltage does not exceed 30 kV if</p> <p>1) the X-rays are generated only by intrinsically safe CRTs complying with Enclosure III, No. 6,</p> <p>2) the values stipulated in accordance with Enclosure III, No. 6.2 are limited by technical measures and specified in the device and</p> <p>3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT</p>		
Annex P	C: replace the text of this annex by: See Annex ZA	Replaced.	N
Annex Q	C: Add the following notes for the standards indicated:	Added.	P

IEC 60950 / EN 60950																																							
Clause	Requirement – Test	Result – Remark	Verdict																																				
	IEC 60127 series NOTE: Harmonized as EN 60127 series (not modified) IEC 60269-2-1 NOTE: Harmonized as HD 630.2.1 S2:1997 (modified) IEC 60529 NOTE: Harmonized as EN 60529:1991 (not modified) IEC 61032 NOTE: Harmonized as EN 61032:1998 (not modified)																																						
Annex ZA	<p>C: This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.</p> <p>NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.</p> <table><tr><td>EN 60065¹⁾:1993 + corr. Nov. 1993</td><td>IEC 60050-151:1978</td></tr><tr><td>EN 60073:1996</td><td>IEC 60050-195:1998</td></tr><tr><td>HD 566 S1:1990</td><td>IEC 60065 (mod):1985</td></tr><tr><td>HD 214 S2:1980</td><td>IEC 60073:1996</td></tr><tr><td>HD 21²⁾ Series</td><td>IEC 60085:1984</td></tr><tr><td>HD 22³⁾ Series</td><td>IEC 60112:1979</td></tr><tr><td>EN 60309 Series</td><td>IEC 60227 (mod) Series</td></tr><tr><td>EN 60320 Series</td><td>IEC 60245 (mod) Series</td></tr><tr><td>HD 384.3 S2:1995</td><td>IEC 60309 Series</td></tr><tr><td>HD 384.4.41 S2:1996</td><td>IEC 60320 (mod) Series</td></tr><tr><td></td><td>IEC 60364-3 (mod):1993</td></tr><tr><td></td><td>IEC 60364-4-41 (mod):1992</td></tr><tr><td></td><td>IEC 60384-14:1993</td></tr><tr><td>EN 60417-1:1999</td><td>IEC 60417-1:1998</td></tr><tr><td>EN 60417-2:1999</td><td>IEC 60417-2:1998</td></tr><tr><td>HD 625.1 S1:1996 + corr. Nov. 1996</td><td>IEC 60664-1 (mod):1992</td></tr><tr><td>EN 60695-2-1/1:1996</td><td>IEC 60695-2-1/1:1994 + corr. May 1995</td></tr><tr><td>EN 60695-2-2:1994</td><td>IEC 60695-2-2:1991</td></tr></table>	EN 60065 ¹⁾ :1993 + corr. Nov. 1993	IEC 60050-151:1978	EN 60073:1996	IEC 60050-195:1998	HD 566 S1:1990	IEC 60065 (mod):1985	HD 214 S2:1980	IEC 60073:1996	HD 21 ²⁾ Series	IEC 60085:1984	HD 22 ³⁾ Series	IEC 60112:1979	EN 60309 Series	IEC 60227 (mod) Series	EN 60320 Series	IEC 60245 (mod) Series	HD 384.3 S2:1995	IEC 60309 Series	HD 384.4.41 S2:1996	IEC 60320 (mod) Series		IEC 60364-3 (mod):1993		IEC 60364-4-41 (mod):1992		IEC 60384-14:1993	EN 60417-1:1999	IEC 60417-1:1998	EN 60417-2:1999	IEC 60417-2:1998	HD 625.1 S1:1996 + corr. Nov. 1996	IEC 60664-1 (mod):1992	EN 60695-2-1/1:1996	IEC 60695-2-1/1:1994 + corr. May 1995	EN 60695-2-2:1994	IEC 60695-2-2:1991		P
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IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
	EN 60730-1:1995 EN 60825-1:1994 + corr. Feb. 1995 + A11:1996 + corr. July 1997 EN 60851-3:1996 EN 60851-5:1996 EN 60851-6:1996 EN 60990:1999 ITU-T Recommendation K.17:1988, Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference ITU-T Recommendation K.21:1996, Resistibility of subscribers' terminals to overvoltages and overcurrents ¹⁾ EN 60065:1993 is superseded by EN 60065:1998 + corrigendum June 1999, which is based on IEC 60065:1998, mod. ²⁾ The HD 21 series is related to, but not directly equivalent with the IEC 60227 series. ³⁾ The HD 22 series is related to, but not directly equivalent with the IEC 60245 series.	IEC 60695-10-2:1995 IEC 60730-1 (mod):1993 IEC 60825-1:1993 IEC 60851-3:1995 IEC 60851-5:1996 IEC 60851-6:1996 IEC 60885-1:1987 IEC 60990:1999 IEC 61058-1:1996 ISO 261:1973 ISO 262:1973 ISO 3864:1984 ISO 4046:1978 ISO 7000:1989	

1.5.1	TABLE: list of critical components					P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹ .	
Enclosure material	GE Plastics Japan Ltd.	940, 940A, SE100	V-0 or better	UL 94	UL	
	GE Plastics	SE1	V-1 or better, 2.46 mm thickness.	UL94	UL	
PCB	various	various	V-0 or better, min. 105°C	UL 94	UL	
Appliance inlet	Supercom	SC-9R	10A, 250V	IEC 60320	VDE, S, UL, CSA	
	Rong Feng	SS-7B-1	10A, 250V	IEC 60320	VDE, S, UL, CSA	
Fuse (F1)	Wickmann- Werke	TR5 T 382	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Wickmann Werke	19372	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Bel	MRT	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Littelfuse	52S	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Sleek	36EF	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Sleek	36ES	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Walter	2000	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Cooper Industries	S506	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Wickmann- Werke	TR5 372 (19372)	T2A, 250V	IEC 60127-3	VDE, S, UL	
	Tai Shi An	2000+	T2A, 250V	IEC 60127-3	VDE, S, UL	
X-capacitor (C1, C2)	Cheng Tung	CTX	0.22µF max., 300V, 100 °C	IEC 60384-14: 1993	VDE, S, FI, UL	
(optional)	Arcotronics	R.41, R.46, R.49	0.22µF max., 275V, 110 °C	IEC 60384-14: 1993	ENEC, S, FI, UL	
	Pilkor	PCX2 339	max. 0.22uF, min. 250Vac, 105°C	IEC 60384-14: 1993	VDE, S, FI, UL	
	Philips	MKP 336 2..., MKP 3361, MKP 3382	max. 0.22uF, min. 250Vac, 100°C	IEC 60384-14: 1993	VDE, S, FI, UL	
	Okaya	PA..., RE	0.22µF max., 275V, 100 °C	IEC 60384-14: 1993	VDE, S, FI, UL	

	Iskra	KNB 1530 KNB 1532, KNB 1533	0.22µF max., 275V, 100 °C	IEC 60384-14: 1993	VDE, SEV, S, FI, UL
	Teapo	XG-HS, XG-HP	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14: 1993	VDE, S, FI, UL
	Taishing	MPX	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14: 1993	VDE, S, FI, UL
	Nitsuko	CFJC, CFJH	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14: 1993	VDE, S, FI, UL
	Nitsuko	CFJC	0.22µF max., 275V, 100 °C	IEC 60384-14: 1993	VDE, S, FI, UL
	Carli Electronics Co Ltd	MPX	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Cheng Tung Industrial Co Ltd	CTX	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Roederstein Electronics Inc	F1772 series	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Ultra Tech Xiphi Enterprise Co Ltd	HQX	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Pan Oversea	AH	max. 0.22µF, min. 250Vac, 100°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
Y-capacitor (C3, C4) (optional)	Murata	KH, KX	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Pan Overseas	AG, AH	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	TDK	CD, CS	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Success	SE, SB, SF	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Jya-Nay	JN	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Welson	WD	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Welson	KL	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Matsushita	TS	max. 2200pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA

Y-capacitor (C6) (optional)	Murata	KX	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Pan Overseas	AH	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	TDK	CD	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Success	SE, SB, SF	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Jya-Nay	JN	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Welson	WD	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Welson	KL	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
	Matsushita	TS	max. 4700pF, 250Vac, 125°C	IEC 60384-14/ 1993	VDE, S, FI, UL, CSA
Ripple capacitor (C7)	--	electrolytic can type	100-120µF, 400V, 105°C	--	--
Photo-coupler (IC2, IC3)	Lite-On	LTV817A	di = 0.8 mm Ext.=7.8mm Int.=5.2mm	VDE 0884 IEC 60950	VDE, TÜV, S, FI, UL, CSA
	Lite-On	LTV817D	di = 0.8 mm Ext.=7.8mm Int.=5.2mm	VDE 0884 IEC 60950	VDE, TÜV, S, FI, UL, CSA
	Vishay	TCET1101	di = 0.6 mm Ext.=8.4mm Int.=4.7mm	VDE 0884 IEC 60950	VDE, TÜV, S, FI, UL, CSA
	Vishay	TCET1109	di = 0.6 mm Ext.=8.4mm Int.=4.7mm	VDE 0884 IEC 60950	VDE, TÜV, S, FI, UL, CSA
	Sharp	PC 123	di = 0.4 mm Ext.=8mm Int.=4mm	VDE 0884 IEC 60950	VDE, S, UL, CSA, FI,
	Sharp	PC 817	di = 0.4 mm Ext.=8mm Int.=4mm	VDE 0884 IEC 60950	VDE, S, UL, CSA, FI,
Varistor (MOV1)	Pan Overseas	PVR-10D471K	300Vac, 385Vdc	--	UL
(optional)	Uppermost	V10K300	300Vac, 385Vdc	CECC 42000 CECC 42200 CECC 42201	VDE, UL, CSA
	Thinking	TVR10471	300Vac, 385Vdc	--	UL
Bleeder resistor (R1, R2)	various	carbon type	470kΩ, 0.25W	--	--

Transformer (T1) - for x=100, 101	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00204-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
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- for x=105	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00208-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=106	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00209-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=107	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00210-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=108	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00211-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland

- for x=109	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00212-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=110	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00213-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=111	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00214-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=200	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00215-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland

- for x=201	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00216-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=202	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00217-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=203	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00218-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=204	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00219-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland

- for x=209	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00220-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=210	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00221-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=215	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00222-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=216	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00223-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland

- for x=300	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00224-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=301	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00225-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=302	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00226-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=303	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00227-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland

- for x=304	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00228-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=305	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00229-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
- for x=306	Sinpro, Xepex, Horng Wie, Cormex, Long Sail, Gain South, Newline Universal, Wenhao, Yu Jing	XFR-00230-01	Class B	Acc. to IEC 60085 and IEC 60950	Acc. by TÜV Rheinland
Line Filter (L1)	Sinpro Xepex, Horng Wei, Wenhao Thousand Hundred	CHO-00027-01	130° C	--	--
Line Choke (L2)	Sinpro Xepex, Horng Wei, Wenhao Thousand Hundred	CHO-00008-01	130° C	--	--

Note(s):

1. An asterisk indicates a mark that assures the agreed level of surveillance.

1.6.2		TABLE: electrical data (in normal conditions)					P
Fuse #	Irated (A)	U (V)	P (W)	I (A)	Ifuse (A)	Condition/status	
Model SPU45-100:							
F1	--	90V/47Hz	45	0.82	0.82	Full load (3V/8A)	
F1	--	90V/63Hz	45	0.83	0.83	dto	
F1	1.35	100V/47Hz	45	0.74	0.74	dto	
F1	1.35	100V/63Hz	44	0.76	0.76	dto	
F1	1.35	240V/47Hz	44	0.37	0.37	dto	
F1	1.35	240V/63Hz	44	0.38	0.38	dto	
F1	--	264V/47Hz	45	0.35	0.35	dto	
F1	--	264V/63Hz	45	0.36	0.36	dto	
Model SPU45-111:							
F1	--	90V/47Hz	75	1.27	1.27	Full load (50V/1.25A)	
F1	--	90V/63Hz	75	1.30	1.30	dto	
F1	1.35	100V/47Hz	74	1.18	1.18	dto	
F1	1.35	100V/63Hz	74	1.21	1.21	dto	
F1	1.35	240V/47Hz	74	0.62	0.62	dto	
F1	1.35	240V/63Hz	74	0.61	0.61	dto	
F1	--	264V/47Hz	75	0.57	0.57	dto	
F1	--	264V/63Hz	75	0.56	0.56	dto	
Model SPU45-200:							
F1	--	90V/47Hz	53	0.95	0.95	Full load (condition A: +3.3V/5A, +12V/1.96A)	
F1	--	90V/63Hz	53	0.95	0.95	dto	
F1	1.35	100V/47Hz	53	0.86	0.86	dto	
F1	1.35	100V/63Hz	53	0.87	0.87	dto	
F1	1.35	240V/47Hz	53	0.45	0.45	dto	
F1	1.35	240V/63Hz	53	0.43	0.43	dto	
F1	--	264V/47Hz	54	0.42	0.42	dto	
F1	--	264V/63Hz	54	0.41	0.41	dto	
F1	--	90V/47Hz	53	0.95	0.95	Full load (condition B: +3.3V/4.85A, +12V/2A)	
F1	--	90V/63Hz	53	0.95	0.95	dto	
F1	1.35	100V/47Hz	52	0.87	0.87	dto	
F1	1.35	100V/63Hz	52	0.87	0.87	dto	

F1	1.35	240V/47Hz	53	0.44	0.44	dto
F1	1.35	240V/63Hz	53	0.43	0.43	dto
F1	--	264V/47Hz	53	0.42	0.42	dto
F1	--	264V/63Hz	53	0.41	0.41	dto
Model SPU45-201:						
F1	--	90V/47Hz	59	1.03	1.03	Full load (condition A: +5V/5A, +12V/1.42A)
F1	--	90V/63Hz	59	1.03	1.03	dto
F1	1.35	100V/47Hz	58	0.93	0.93	dto
F1	1.35	100V/63Hz	57	0.95	0.95	dto
F1	1.35	240V/47Hz	57	0.46	0.46	dto
F1	1.35	240V/63Hz	57	0.45	0.45	dto
F1	--	264V/47Hz	58	0.43	0.43	dto
F1	--	264V/63Hz	57	0.43	0.43	dto
F1	--	90V/47Hz	58	1.03	1.03	Full load (condition B: +5V/3.6A, +12V/2A)
F1	--	90V/63Hz	58	1.03	1.03	dto
F1	1.35	100V/47Hz	57	0.94	0.94	dto
F1	1.35	100V/63Hz	57	0.94	0.94	dto
F1	1.35	240V/47Hz	56	0.47	0.47	dto
F1	1.35	240V/63Hz	56	0.46	0.46	dto
F1	--	264V/47Hz	57	0.44	0.44	dto
F1	--	264V/63Hz	57	0.44	0.44	dto
Model SPU45-203:						
F1	--	90V/47Hz	55	0.98	0.98	Full load (condition A: +5V/5A, +24V/0.71A)
F1	--	90V/63Hz	55	0.98	0.98	dto
F1	1.35	100V/47Hz	54	0.90	0.90	dto
F1	1.35	100V/63Hz	55	0.89	0.89	dto
F1	1.35	240V/47Hz	55	0.45	0.45	dto
F1	1.35	240V/63Hz	55	0.45	0.45	dto
F1	--	264V/47Hz	56	0.43	0.43	dto
F1	--	264V/63Hz	56	0.42	0.42	dto
F1	--	90V/47Hz	54	0.96	0.96	Full load (condition B: +5V/3.6A, +24V/1A)
F1	--	90V/63Hz	54	0.97	0.97	dto

F1	1.35	100V/47Hz	53	0.88	0.88	dto
F1	1.35	100V/63Hz	53	0.89	0.89	dto
F1	1.35	240V/47Hz	54	0.45	0.45	dto
F1	1.35	240V/63Hz	54	0.45	0.45	dto
F1	--	264V/47Hz	55	0.42	0.42	dto
F1	--	264V/63Hz	55	0.42	0.42	dto
Model SPU45-301:						
F1	--	90V/47Hz	59	1.09	1.09	Full load (condition A: +5V/5A, +12V/1.09A,-5V/0.8A)
F1	--	90V/63Hz	59	1.10	1.10	dto
F1	1.35	100V/47Hz	58	0.99	0.99	dto
F1	1.35	100V/63Hz	59	0.99	0.99	dto
F1	1.35	240V/47Hz	59	0.52	0.52	dto
F1	1.35	240V/63Hz	58	0.50	0.50	dto
F1	--	264V/47Hz	59	0.48	0.48	dto
F1	--	264V/63Hz	59	0.47	0.47	dto
F1	--	90V/47Hz	58	1.06	1.06	Full load (condition B: +12V/2A,+5V/2.8A,-5V/0.8A)
F1	--	90V/63Hz	57	1.11	1.11	dto
F1	1.35	100V/47Hz	58	0.96	0.96	dto
F1	1.35	100V/63Hz	57	1.02	1.02	dto
F1	1.35	240V/47Hz	57	0.50	0.50	dto
F1	1.35	240V/63Hz	57	0.51	0.51	dto
F1	--	264V/47Hz	58	0.47	0.47	dto
F1	--	264V/63Hz	57	0.47	0.47	dto
Model SPU45-304:						
F1	--	90V/47Hz	56	1.04	1.04	Full load (condition A: +5V/5A, +24V/0.21A,-24V/0.5A)
F1	--	90V/63Hz	56	1.05	1.05	dto
F1	1.35	100V/47Hz	56	0.95	0.95	dto
F1	1.35	100V/63Hz	56	0.92	0.92	dto
F1	1.35	240V/47Hz	56	0.51	0.51	dto
F1	1.35	240V/63Hz	56	0.47	0.47	dto
F1	--	264V/47Hz	57	0.48	0.48	dto
F1	--	264V/63Hz	57	0.44	0.44	dto

F1	--	90V/47Hz	53	0.96	0.96	Full load (condition B: +5V/1.2A, +24V/1A, -24V/0.5A)
F1	--	90V/63Hz	53	0.98	0.98	dto
F1	1.35	100V/47Hz	52	0.88	0.88	dto
F1	1.35	100V/63Hz	52	0.91	0.91	dto
F1	1.35	240V/47Hz	53	0.47	0.47	dto
F1	1.35	240V/63Hz	53	0.47	0.47	dto
F1	--	264V/47Hz	54	0.45	0.45	dto
F1	--	264V/63Hz	54	0.44	0.44	dto
Model SPU45-306:						
F1	--	90V/47Hz	55	0.97	0.97	Full load (condition A: +3.3V/5A, +12V/1.625A, -5V/0.8A)
F1	--	90V/63Hz	54	0.98	0.98	dto
F1	1.35	100V/47Hz	54	0.88	0.88	dto
F1	1.35	100V/63Hz	53	0.90	0.90	dto
F1	1.35	240V/47Hz	53	0.43	0.43	dto
F1	1.35	240V/63Hz	53	0.43	0.43	dto
F1	--	264V/47Hz	54	0.41	0.41	dto
F1	--	264V/63Hz	54	0.41	0.41	dto
F1	--	90V/47Hz	53	0.95	0.95	Full load (condition B: +3.3V/3.64A,+12V/2A, - 5V/0.8A)
F1	--	90V/63Hz	52	0.95	0.95	dto
F1	1.35	100V/47Hz	52	0.86	0.86	dto
F1	1.35	100V/63Hz	52	0.87	0.87	dto
F1	1.35	240V/47Hz	52	0.44	0.44	dto
F1	1.35	240V/63Hz	52	0.43	0.43	dto
F1	--	264V/47Hz	52	0.41	0.41	dto
F1	--	264V/63Hz	52	0.40	0.40	dto
Model SPU45E-100:						
F1	--	90V/47Hz	40	0.72	0.72	Full load (3V/8A)
F1	--	90V/63Hz	39	0.71	0.71	dto
F1	1.35	100V/47Hz	39	0.64	0.64	dto
F1	1.35	100V/63Hz	39	0.66	0.66	dto
F1	1.35	240V/47Hz	39	0.33	0.33	dto
F1	1.35	240V/63Hz	39	0.34	0.34	dto

F1	--	264V/47Hz	40	0.32	0.32	dto
F1	--	264V/63Hz	40	0.32	0.32	dto
Model SPU45-111:						
F1	--	90V/47Hz	75	1.26	1.26	Full load (50V/1.25A)
F1	--	90V/63Hz	75	1.28	1.28	dto
F1	1.35	100V/47Hz	74	1.17	1.17	dto
F1	1.35	100V/63Hz	75	1.17	1.17	dto
F1	1.35	240V/47Hz	74	0.58	0.58	dto
F1	1.35	240V/63Hz	74	0.58	0.58	dto
F1	--	264V/47Hz	74	0.54	0.54	dto
F1	--	264V/63Hz	74	0.54	0.54	dto
Model SPU45-200:						
F1	--	90V/47Hz	52	0.95	0.95	Full load (condition A: +3.3V/5A, +12V/1.96A)
F1	--	90V/63Hz	52	0.95	0.95	dto
F1	1.35	100V/47Hz	52	0.86	0.86	dto
F1	1.35	100V/63Hz	53	0.86	0.86	dto
F1	1.35	240V/47Hz	52	0.45	0.45	dto
F1	1.35	240V/63Hz	53	0.43	0.43	dto
F1	--	264V/47Hz	54	0.41	0.41	dto
F1	--	264V/63Hz	54	0.41	0.41	dto
Model SPU45-201:						
F1	--	90V/47Hz	58	1.03	1.03	Full load (condition A: +5V/5A, +12V/1.42A)
F1	--	90V/63Hz	58	1.03	1.03	dto
F1	1.35	100V/47Hz	57	0.93	0.93	dto
F1	1.35	100V/63Hz	57	0.94	0.94	dto
F1	1.35	240V/47Hz	56	0.46	0.46	dto
F1	1.35	240V/63Hz	57	0.47	0.47	dto
F1	--	264V/47Hz	57	0.43	0.43	dto
F1	--	264V/63Hz	57	0.43	0.43	dto
Model SPU45-203:						
F1	--	90V/47Hz	54	0.98	0.98	Full load (condition A: +5V/5A, +24V/0.71A)
F1	--	90V/63Hz	54	0.98	0.98	dto
F1	1.35	100V/47Hz	54	0.89	0.89	dto

F1	1.35	100V/63Hz	54	0.89	0.89	dto
F1	1.35	240V/47Hz	54	0.44	0.44	dto
F1	1.35	240V/63Hz	55	0.45	0.45	dto
F1	--	264V/47Hz	55	0.42	0.42	dto
F1	--	264V/63Hz	55	0.42	0.42	dto
Model SPU45-301:						
F1	--	90V/47Hz	60	1.06	1.06	Full load (condition A: +5V/5A, +12V/1.09A,-5V/0.8A)
F1	--	90V/63Hz	60	1.06	1.06	dto
F1	1.35	100V/47Hz	59	0.95	0.95	dto
F1	1.35	100V/63Hz	59	0.95	0.95	dto
F1	1.35	240V/47Hz	58	0.47	0.47	dto
F1	1.35	240V/63Hz	58	0.46	0.46	dto
F1	--	264V/47Hz	58	0.44	0.44	dto
F1	--	264V/63Hz	59	0.44	0.44	dto
Model SPU45-304:						
F1	--	90V/47Hz	57	1.00	1.00	Full load (condition A: +5V/5A, +24V/0.21A,-24V/0.5A)
F1	--	90V/63Hz	57	0.99	0.99	dto
F1	1.35	100V/47Hz	56	0.91	0.91	dto
F1	1.35	100V/63Hz	56	0.90	0.90	dto
F1	1.35	240V/47Hz	56	0.45	0.45	dto
F1	1.35	240V/63Hz	56	0.45	0.45	dto
F1	--	264V/47Hz	57	0.43	0.43	dto
F1	--	264V/63Hz	57	0.42	0.42	dto
Model SPU45-306:						
F1	--	90V/47Hz	55	0.97	0.97	Full load (condition A: +3.3V/5A, +12V/1.625A, -5V/0.8A)
F1	--	90V/63Hz	55	0.98	0.98	dto
F1	1.35	100V/47Hz	54	0.88	0.88	dto
F1	1.35	100V/63Hz	54	0.89	0.89	dto
F1	1.35	240V/47Hz	53	0.43	0.43	dto
F1	1.35	240V/63Hz	54	0.44	0.44	dto
F1	--	264V/47Hz	54	0.41	0.41	dto
F1	--	264V/63Hz	54	0.41	0.41	dto

Notes:

2.1.1.5	TABLE: max. V, A, VA test				P
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
Model SPU45-100:					
2-3	8	3.03	16.88	29.65	
Model SPU45-111:					
40-50	1.25	51.18	1.65	55.14	
Model SPU45-200:					
3.3	5	3.47	19.10	31.25	
12	2	18.87	5.64	49.30	
Model SPU45-201					
5	5	5.26	14.96	49.55	
12	2	14.70	4.15	26.63	
Model SPU45-203:					
5	5	5.32	12.54	36.94	
24	1	31.10	2.96	56.84	
Model SPU45-301:					
5	5	5.21	20.03	62.99	
12	2	16.52	9.14	82.22	
-5	0.8	-5.6	2.22	10.43	
Model SPU65-304:					
5	5	5.26	12.0	44.27	
24	1	29.93	2.64	50.65	
-24	0.5	-23.93	1.87	38.11	
Model SPU65-306:					
3.3	5	3.65	16.41	35.90	
12	2	15.65	5.87	54.31	
-5	0.8	-5.55	1.69	6.79	
Note(s):					

2.1.1.7	TABLE: discharge test				P
Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments	

No load	0.41	0.36	--	Vo=369V, 37%Vo=124V, V (at 1 sec.)=16V
Overall capacity :	0.44μF (C1=0.22μF, C2=0.22μF)			
Discharge resistor:	0.94MΩ (R1=R2=0.47MΩ)			

2.2.2	TABLE: Hazardous voltage measurement				P
Transformer	Location	max. Voltage		Voltage Limitation Component	
		V peak	V d.c.		
Model SPU45-100:					
T1	(7/8-9/10)	17	--	--	
Model SPU45-111:					
T1	(7/8-9/10)	150	--	--	
T1		--	49	D6	
Model SPU45-200:					
T1	(10-7)	18	--	--	
Model SPU45-200:					
T1	(8-7)	22	--	--	
Model SPU45-201:					
T1	(10-7)	16	--	--	
Model SPU45-201:					
T1	(7-8)	20	--	--	
Model SPU45-203:					
T1	(10-7)	27	--		
Model SPU45-203:					
T1	(8-7)	20	--		
Model SPU45-301:					
T1	(12-7)	53	--	--	
T1		--	26	D8	
Model SPU45-301:					
T1	(10-7)	14	--	--	
Model SPU45-301:					
T1	(8-7)	21	--	--	
Model SPU45-304:					
T1	(12-7)	166	--	--	
T1		--	24	D8	

Model SPU45-304:				
T1	(10-7)	26	--	--
Model SPU45-304:				
T1	(8-7)	21	--	--
Model SPU45-306:				
T1	(12-7)	43	--	--
T1		--	17	D8
Model SPU45-306:				
T1	(10-7)	13	--	--
Model SPU45-306:				
T1	(8-7)	14	--	--
Note(s):				

2.2.3	TABLE: SEL voltage measurement			P
Location		Voltage measured (V)	Comments	
Model SPU45-111: T1 (7/8-9/10)		0	After fault-introduction (s-c of D6) the output shut down in less than 200ms.	
Model SPU45-301: T1 (12-7)		0	After fault-introduction (s-c of D8) the output shut down in less than 200ms.	
Model SPU45-304: T1 (12-7)		0	After fault-introduction (s-c of D8) the output shut down in less than 200ms.	
Model SPU45-306: T1 (12-7)		0	After fault-introduction (s-c of D8) the output shut down in less than 200ms.	
Note(s):				

2.4.2	TABLE: limited current circuit measurement					N
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
Note(s):						

2.5	TABLE: limited power source measurement					N
-----	---	--	--	--	--	----------

	Limits	Measured	Verdict
According to Table 2B/2C (normal condition)			
current (in A)			
apparent power (in VA)			
According to Table 2B/2C (single fault condition)			
current (in A)			
apparent power (in VA)			
Note(s):			

2.6.3.3	TABLE: ground continue test		P
Location	Resistance measured (mΩ)	Comments	
Earth pin of inlet to C22 sec.	5.9	Test current: 25A for 1min.	
Earth pin of inlet to C22 sec.	10.9	Test current: 40A for 2min.	

2.10.2	Table: working voltage measurement			P
Location		RMS voltage (V)	Peak voltage (V)	Comments
Model SPU45-100:				
T1 (1-7/8)	278	512	*: highest peak voltages of T1	
T1 (1-9/10)	282	344	*: highest rms voltages of T1	
T1 (1) - C7 (-)	528	382		
T1 (1) - PE	282	520		
Model SPU45-111:				
T1 (1-9/10)	289	488	*: highest voltages of T1	
T1 (1) - C7 (-)	261	576		
T1 (1) - C7 (-)	336	352		
T1 (1) - PE	292	496		
Model SPU45-200:				
T1 (1-9)	268	440	*: highest rms voltage of T1	
T1 (6-9)	229	480	*: highest peak voltage of T1	
T1 (1) - C7 (-)	364	448		
T1 (1) - PE	269	448		
Model SPU45-201:				
T1 (1-7)	286	480	*: highest voltages of T1	

Model SPU45-203:			
T1 (1-9)	291	456	*: highest rms voltages of T1
T1 (6-9)	240	488	*: highest peak voltages of T1
T1 (1) - C7 (-)	382	472	
T1 (1) - PE	279	464	
Model SPU45-301:			
T1 (1-7)(1-9)(1-11)	284	472	*: highest voltages of T1
T1 (1) - C7 (-)	380	480	
T1 (1) - PE	282	472	
Model SPU45-304:			
T1 (1-9)	292	456	*: highest rms voltages of T1
T1 (6-9)	242	504	*: highest peak voltages of T1
T1 (1) - C7 (-)	383	472	
T1 (1) - PE	281	472	
Model SPU45-306:			
T1 (1-11)	293	504	*: highest voltages of T1
T1 (1) - C7 (-)	387	496	
T1 (1) - PE	292	488	
Input voltage: 240Vac, 63Hz			
An asterisk indicates the highest gained working voltages.			

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					P
Clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	dcr (mm)
primary components (with 10N) → secondary components (with 10N)	420	250	4.0	5.0	5.0	5.0
primary → secondary traces under T1	512	291	4.4	8.6	6.4	8.6
primary → secondary traces (others)	420	250	4.0	7.9	5.0	7.9
primary components → enclosure outside	420	250	4.0	5.0	5.0	5.0
primary components (with 10N) → earthed components (with 10N)	420	250	2.0	↓	2.5	↓

L1 to HS1				6.4		6.4
C8 to HS2				2.7		2.7
C6 to HS2				4.1		4.1
primary → PE traces	420	250	2.0	4.5	2.5	4.5
C10				4.4		4.4
C6				5.1		5.1

Note:

1. Operational insulation shorted, see sub-clause 5.3.4.
2. Tubed components (safety relevant): C6, C7, TH1, C3, L2.
3. Glued component (safety relevant): all wires (alternatively use of soldering pin), C10, C29.
4. One layer of insulation tape is provided on HS1.
5. 2 layers of insulation tape is adhered on L1 near the PE ferrite core to prevent L1 winding from touching the PE ferrite core.

2.10.5	TABLE: distance through insulation measurements				P
Distance through insulation di at/of:		U r.m.s. (V)	Test voltage (V)	Required di (mm)	di (mm)
Photo-coupler (reinforced insulation)		250	AC 3000	0.4	approved comp.
Enclosure		250	AC 3000	0.4	2.46

Note: See appended table 1.5.1 for internal distance through insulation.

4.5.1	TABLE: temperature rise measurements			P
	test voltage (V)	100V-10%/240V+10%		—
	t1 (°C)	--		—
	t2 (°C)	--		—
Rise ΔT of part/at:		ΔT (K)		Allowed ΔT (K)
Model SPU45-100:				
C7 body		36	40	65
L1 coil		35	35	90
T1 coil		47	57	70
T1 core		41	44	70
L2 core		47	56	90
PCB near HS2		32	40	65
PCB near HS1		34	41	65
Bottom enclosure		28	34	55

Top enclosure	26	29	65
Ambient	25 °C	24 °C	--
Model SPU45-111:			
L1 coil	56	39	90
C7 body	50	41	65
L2 coil	65	51	90
C2 body	55	41	60
T1 coil	59	58	70
T1 core	52	52	70
IC3 body	47	47	60
C3 body	44	40	60
PCB near HS1	40	37	65
PCB near HS2	48	44	65
Enclosure inside	23	23	--
Enclosure outside	7	14	55
Pin of AC inlet	20	15	30
Ambient	40	40	--
Model SPU45-200 (condition A *):			
C7 body	52	45	65
L1 coil	54	42	90
T1 coil	60	67	70
T1 core	58	64	70
L2 core	58	51	90
PCB near HS2	41	45	65
PCB near HS1	44	46	65
Bottom enclosure	35	37	55
Top enclosure	33	36	65
Ambient	24 °C	27 °C	--
Model SPU45-201 (condition A *):			
L1 coil	56	43	90
C7 body	48	42	65
L2 coil	52	45	90
C2 body	58	48	60
T1 coil	63	67	70
T1 core	51	54	70

IC3 body	47	47	60
C3 body	57	50	60
PCB near HS1	55	53	65
PCB near HS2	50	50	65
Enclosure inside	32	34	--
Enclosure outside	14	13	55
Pin of AC inlet	21	17	30
Ambient	41 °C	40 °C	--
Model SPU45-203 (condition A *):			
L1 coil	53	40	90
C7 body	45	40	65
L2 coil	49	42	90
C2 body	55	46	60
T1 coil	61	65	70
T1 core	52	55	70
IC3 body	48	49	60
C3 body	54	48	60
PCB near HS1	52	51	65
PCB near HS2	49	49	65
Enclosure inside	15	15	--
Enclosure outside	31	33	55
Ambient	40 °C	40 °C	--
Model SPU45-301 (condition A *):			
C7 body	62	49	65
L1 coil	62	44	90
T1 coil	66	64	70
T1 core	65	61	70
L2 core	66	57	90
PCB near HS2	52	50	65
PCB near HS1	50	46	65
Bottom enclosure	42	40	55
Top enclosure	38	36	65
Ambient	25 °C	25 °C	--
Model SPU45-304 (condition A *):			
L1 coil	49	40	90

C7 body	48	42	65		
L2 coil	56	50	90		
C2 body	51	47	60		
T1 coil	59	68	70		
T1 core	55	65	70		
IC3 body	51	58	60		
C3 body	52	50	60		
PCB near HS1	51	55	65		
PCB near HS2	48	52	65		
Enclosure inside	27	32	--		
Enclosure outside	11	11	55		
Pin of AC inlet	14	13	30		
Ambient	42 °C	41 °C	--		
Model SPU45-306 (condition A *):					
L1 coil	54	40	90		
C7 body	50	42	65		
L2 coil	53	43	90		
C2 body	52	42	60		
T1 coil	63	62	70		
T1 core	64	64	70		
IC3 body	54	54	60		
C3 body	57	48	60		
PCB near HS1	54	52	65		
PCB near HS2	56	55	65		
Enclosure inside	30	30	--		
Enclosure outside	22	12	55		
Pin of AC inlet	19	17	30		
Ambient	42 °C	41 °C	--		
Temperature rise ΔT of winding:	R ₁ (Ω)	R ₂ (Ω)	ΔT (K)	allowed ΔT (K)	insulation class

Comments:

The maximum rated temperature stated in the installation instructions is 40 °C, the max. Temperature rise is calculated as follows:

Winding components:

- class B → $\Delta T_{\max} (K) = 95 - 10 - (40 - 25) = 70$

Electrolyte capacitor or components with:

- max. absolute temperature of 70 °C → $\Delta T_{\max} (K) = (70 - 40) = 30$

- max. absolute temperature of 100 °C → $\Delta T_{\max} (K) = (100 - 40) = 60$

- max. absolute temperature of 105 °C → $\Delta T_{\max} (K) = (105 - 40) = 65$

- max. absolute temperature of 130 °C → $\Delta T_{\max} (K) = (130 - 40) = 90$

Touchable surfaces with:

- max. temp. rise 70K → $\Delta T_{\max} = 70K - (40 - 25) K = 55K$

* for load condition, refer to table 1.6.

4.5.2	TABLE: ball pressure test of thermoplastic parts			N
	allowed impression diameter (mm) :	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
Note(s):				

4.6.1, 4.6.2	Table: enclosure openings		P
Location	Size (mm)	Comments	
Top	--	No openings	
Sides	--	No openings	
Bottom	--	No openings	
Note(s):			

5.1.6	TABLE: touch current measurement				P
Condition	L → terminal A (mA)	N → terminal A (mA)	Limit (mA)	Comments	
System on	0.62	0.61	3.5	Earth	
System on	0.01	0.01	0.25	Output connector	
System on	0.01	0.01	0.25	Plastic enclosure(wrapped foil)	

Input voltage	:	264V		
Input frequency	:	63Hz		
Overall capacity	:	C3=C4= 2200pF, C6=4700pF		

5.2	TABLE: electric strength tests and impulse tests		P
Test voltage applied between:		Test voltage (V)	Breakdown
primary and secondary		4242Vd.c.	No
primary and enclosure		4242Vd.c.	No
primary coil and secondary coil of T1		3000Va.c.	No
primary coil and core of T1		2677Vd.c.	No
secondary coil and core of T1		2677Vd.c.	No
insulation tape, two layers (used in T1)		3000Va.c.	No
primary to PE		2677Vd.c.	No

5.3	TABLE: fault condition tests						P
	ambient temperature (°C)					25 °C, unless specified.	—
	model/type of power supply					--	—
	manufacturer of power supply					--	—
	rated markings of power supply					--	—
No.	Component no.	Fault	Test voltage (V)	Test time	Fuse no.	Fuse current (A)	Result
Model SPU45-306:							
1	DB1 (~ - +)	s-c	240	1s	F1	--*	Fuse opened, MOV1 damaged, no hazards.
2	C7	s-c	240	1s	F1	--	Fuse opened, MOV1 damaged, no hazards.
3	Q1 (D-S)	s-c	240	1s	F1	--	Fuse opened, Q1, R9, ZD1, IC1 damaged, no hazards.
4	Q1 (D-G)	s-c	240	1s	F1	--	Fuse opened, Q1, R9, ZD1, IC1 damaged, no hazards.
5	IC2 (3-4)	s-c	240	55 min	F1	0.04 - 0.09	Cycle protection mode, T1 max. 46 °C, no hazards.

6	IC2 (1-2)	s-c	240	50 min	F1	0.04-0.09	Cycle protection mode, T1 max. 45°C, no hazards.
7	IC3 (3-4)	s-c	240	1.5h	F1	0.43	Normal operation, T1 max. 102°C, no hazards.
8	IC3 (1-2)	s-c	240	50 min	F1	0.05-0.09	Cycle protection mode, T1 max. 44°C, no hazards.
9	T1 (11-12)	s-c	240	1h	F1	0.05-0.10	Cycle protection mode, T1 max. 62°C, no hazards.
10	T1 (10-9)	s-c	240	1h	F1	0.04-0.09	Cycle protection mode, T1 max. 61°C, no hazards.
11	T1 (8-7)	s-c	240	1h	F1	0.08-0.09	Cycle protection mode, T1 max. 63°C, no hazards.
12	T1 (8-7)	over-load	240	3h	F1	0.51	Max. temperature of T1 was 110°C when winding loaded with 9.82A. Ambient 25°C. No Hazards.
13	T1 (10-7)	over-load	240	3h	F1	0.50	Max. temperature of T1 was 107°C when winding loaded with 4.27A. Ambient 25°C. No Hazards.
14	T1 (12-7)	over-load	240	3h	F1	0.49	Max. temperature of T1 was 106°C when winding loaded with 1.53A. Ambient 25°C. No Hazards.
15	+3.3V-output	over-load	240	3h	F1	0.51	Max. temperature of T1 was 108°C when loaded with 9.46A. Ambient 25°C. No Hazards.
16	+12V-output	over-load	240	2.5h	F1	0.50	Max. temperature of T1 was 105°C when loaded with 4.21A. Ambient 25°C. No Hazards.
17	-5V-output	over-load	240	1.5h	F1	0.48	Max. temperature of T1 was 104°C when loaded with 1.46A. Ambient 25°C. No Hazards.
18	+3.3V-output	s-c	240	1h	F1	0.03-0.06	Cycle protection mode, T1 max. 43°C at ambient 25°C, no hazards.
19	+12V-output	s-c	240	1h	F1	0.03-0.06	Cycle protection mode, T1 max. 46°C at ambient 25°C, no hazards.

20	-5V-output	s-c	240	1.5h	F1	0.41	-5V output shut down, with +12V & +3.3V of normal operation. T1 max. 93 °C at ambient of 25 °C, no hazards.
Model SPU45-201:							
20	T1 (8-7)	over-load	240	3.5h	F1	0.42	Max. temperature of T1 was 117 °C when winding loaded with 11.62A. Ambient 25 °C. No Hazards.
21	T1 (10-7)	over-load	240	3h	F1	0.41	Max. temperature of T1 was 115 °C when winding loaded with 6.32A. Ambient 25 °C. No Hazards.
22	+5V	over-load	240	3h	F1	0.43	Max. temperature of T1 was 112 °C when loaded with 11.23A. Ambient 25 °C. No Hazards.
23	+12V	over-load	240	3h	F1	0.42	Max. temperature of T1 was 101 °C when loaded with 4.96A. Ambient 25 °C. No Hazards.
24	+5V	s-c	240	50 min	F1	0.01-0.03	Cycle protection mode, T1 max. 44 °C at ambient 25 °C, no hazards.
25	+12V	s-c	240	55 min	F1	0.03-0.05	Cycle protection mode, T1 max. 46 °C at ambient 25 °C, no hazards.
Model SPU45-111:							
26	T1 (7/8-9/10)	over-load	240	2.5h	F1	0.66	Max. temperature of T1 was 104 °C when winding loaded with 1.78A. Ambient 25 °C. No Hazards.
27	+5V	over-load	240	2h	F1	0.64	Max. temperature of T1 was 95 °C when loaded with 1.55A. Ambient 25 °C. No Hazards.
28	output	s-c	240	1h	F1	0.02-0.04	Cycle protection mode, T1 max. 53 °C at ambient 25 °C, no hazards.

Notes:

1. Used abbreviations: s-c = short-circuit.
2. Items where the fuse-link opened had been repeated 10 times for sources which are not tested according to IEC 60127.

A.6.5	TABLE: flammable test for classifying materials V-0, V-1 or V-2		N
Sample no./ref.	After flame time (s) t_1 or t_2	After flame + afterglow (s) after 2nd flame application $t_2 + t_3$	
1/A			
2/A			
3/A			
4/A			
5/A			
6/B			
7/B			
8/B			
9/B			
10/B			
Supplementary information:			
Total after flame time (s) for any condition set $t_1 + t_2$ for five (5) specimens:			

A.6.6	TABLE: flammable test for classifying materials V-0, V-1 or V-2		N
Sample no.	After flame time (s) t_1 or t_2	After flame + after glow (s) after 2nd flame application $t_2 + t_3$	
11			
12			
13			
14			
15			
Supplementary information:			
Total after flame time (s) for any condition set $t_1 + t_2$ for five (5) specimens:			

A.7.4, A.7.5, A.7.6 and A.7.7	TABLE: flammability test for classifying foam materials HF-1, HF-2 or HBF			N
Sample no./ref.	Flame time (s)	Glow time (s)	Flaming/glowing distance from the end (mm)	Comment (for A.7.7 burning rate mm/min)

1/A				
2/A				
3/A				
4/A				
5/A				
6/B				
7/B				
8/B				
9/B				
10/B				
Supplementary information:				

A.7.8	TABLE: flammability test for classifying foam materials HF-1 or HF-2				N
Sample no.	Flame time (s)	Glow time (s)	Flaming/glowing distance from the end (mm)	Comment	
11					
12					
13					
14					
15					
supplementary information:					

A.7.9	TABLE: flammability test for classifying foam materials HBF				N
Sample no.	Flame time (s)	Glow time (s)	Flaming/glowing distance from the end (mm)	Comment (for A.7.7 burning rate mm/min)	
11					
12					
13					
14					
15					
Supplementary information:					

A.8.5	TABLE: flammable test for classifying materials HB		N
Sample no.	Flaming/glowing rate (mm/min)	Flaming/glowing distance from reference mark (mm)	
1			
2			
3			
Supplementary information:			

A.8.6	TABLE: flammable test for classifying materials HB		N
Sample no.	Flaming/glowing rate (mm/min)	Flaming/glowing distance from reference mark (mm)	
4			
5			
6			
Supplementary information:			

A.9.6	TABLE: flammability test for classifying materials 5V			N
Sample no./ ref.	Test bars		Test plaques	
	Flaming + glowing time (s)	Burning distance (mm)	Flaming + glowing time (s)	Burning distance (mm)
1/A				
2/A				
3/A				
4/A				
5/A			—	—
6/B				
7/B				
8/B				
9/B				
10/B			—	—
Supplementary information:				

A.9.7	TABLE: flammability test for classifying materials 5V			N
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Sample no.	Test bars		Test plaques	
	Flaming + glowing time (s)	Burning distance (mm)	Flaming + glowing time (s)	Burning distance (mm)
11				
12				
13				
14				
15			—	—
Supplementary information:				

C.2	Safety isolation transformer		P
Construction details:			
Transformer part name: T1			
Manufacturer: See appended table 1.5.1			
Type: 22-03187-01, 22-03188-01, 22-03189-01, 22-03190-01, 22-03191-01, 22-03192-01, 22-03193-01, 22-03194-01, 22-03195-01, 22-03196-01, 22-03971-01, 22-03197-01, 22-03198-01, 22-03199-01, 22-03200-01, 22-03618-01, 22-03967-01, 22-03968-01, 22-03969-01, 22-03201-01.			
All sources of transformer are similar except for model number and the secondary turns.			
Recurring peak voltage		max. 512V 0-p	
Required clearance for reinforced			
insulation (from table 2H and 2J)		4.0mm + 0.4mm	
Effective voltage rms		max. 289V	
Required creepage distance for reinforced			
insulation (from table 2L)		6.4mm	
Measured min. creepage distance			
Location		inside (mm)	outside (mm)
prim-sec		6.6	6.6
prim-core		3.3	3.3
sec-core		3.3	3.3
prim-prim		%	%
Measured min. clearances			
Location		inside (mm)	outside (mm)
prim-sec		6.6	6.6

prim-core	3.3	3.3
sec-core	3.3	3.3
prim-prim	%	%
Construction:		
Concentric windings on ERL-28 type bobbin. Tubing used for winding exits. Outer winding is primary. Margin tapes on top and bottom of all windings, width is 3.3mm. Two copper shields connected to pin 3. Copper band around the core connected to PE, kept by tape in middle position.		
Pin numbers		
Prim.	1-3, 5-6	
Sec.	7/8-9/10	
Bobbin		
Material	Chang Chun, phenolic, type T373J	
Thickness	min. 0.40mm	
Electric strength test		
With AC 3000V after humidity treatment		
Result	Pass	
With AC 3000V after humidity treatment		
Result	Pass	

C.2	Safety isolation transformer	P
Construction details:		
Transformer part name: T1		
Manufacturer: See appended table 1.5.1		
Type: 22-03197-01, 22-03198-01, 22-03199-01, 22-03200-01, 22-03618-01, 22-03967-01, 22-03968-01, 22-03969-01, 22-03201-01.		
All sources of transformer are similar except for model number and the secondary turns.		
Recurring peak voltage	max. 488V 0-p	
Required clearance for reinforced		
insulation (from table 2H and 2J)	4.0mm + 0.2mm	
Effective voltage rms	max. 291V	
Required creepage distance for reinforced		
insulation (from table 2L)	6.4mm	

Measured min. creepage distance		
Location	inside (mm)	outside (mm)
prim-sec	6.6	6.6
prim-core	3.3	3.3
sec-core	3.3	3.3
prim-prim	%	%
Measured min. clearances		
Location	inside (mm)	outside (mm)
prim-sec	6.6	6.6
prim-core	3.3	3.3
sec-core	3.3	3.3
prim-prim	%	%
Construction:		
Concentric windings on ERL-28 type bobbin. Tubing used for winding exits. Outer winding is primary. Margin tapes on top and bottom of all windings, width is 3.3mm. Two copper shields connected to pin 3. Copper band around the core connected to PE, kept by tape in middle position.		
Pin numbers		
Prim.	1-2-3, 5-6	
Sec.	Winding #3 led to outside as tubed wires. 10-9,8-7	
Bobbin		
Material	Chang Chun, phenolic, type T373J	
Thickness	min. 0.40mm	
Electric strength test		
With AC 3000V after humidity treatment		
Result	Pass	

C.2	Safety isolation transformer	P
Construction details:		
Transformer part name: T1		
Manufacturer: See appended table 1.5.1		
Type: 22-03202-01, 22-03203-01, 22-03204-01, 22-03205-01, 22-03206-01, 22-03207-01, 22-04010-01		
All sources of transformer are similar except for model number and the secondary turns.		
Recurring peak voltage	max. 504V 0-p	

Required clearance for reinforced insulation (from table 2H and 2J)	4.0mm + 0.4mm	
Effective voltage rms	max. 295V	
Required creepage distance for reinforced insulation (from table 2L)	6.4mm	
Measured min. creepage distance		
Location	inside (mm)	outside (mm)
prim-sec	6.6	6.6
prim-core	3.3	3.3
sec-core	3.3	3.3
prim-prim	%	%
Measured min. clearances		
Location	inside (mm)	outside (mm)
prim-sec	6.6	6.6
prim-core	3.3	3.3
sec-core	3.3	3.3
prim-prim	%	%
Construction:		
Concentric windings on ERL-28 type bobbin. Tubing used for winding exits. Outer winding is primary. Margin tapes on top and bottom of all windings, width is 3.3mm. Two copper shields connected to pin 3. Copper band around the core connected to PE, kept by tape in middle position.		
Pin numbers		
Prim.	1-2-3, 5-6	
Sec.	Winding #3 led to outside as tubed wires. 10-9,8-7,12-11	
Bobbin		
Material	Chang Chun, phenolic, type T373J	
Thickness	min. 0.40mm	
Electric strength test		
With AC 3000V after humidity treatment		
Result	Pass	

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
APPENDIX	Australian National Differences according to CB Bulletin No. 107A, May 2004 (AS/NZS 60950:2000) (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
Annex ZZ Variations			
1.2	Between the definitions for "frequency, rated" and "insulation, basic" insert the following variation: Ignition, source potential 1.2.12.11	Inserted.	P
1.2.12.10	After definition 1.2.12.10, add the following variation. 1.2.12.11 Potential ignition source Possible fault which can start a fire if the open circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s. current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in conductive patterns on printed boards. NOTE 201: An electronic protection circuit may be used to prevent such a fault from becoming a potential ignition source. NOTE 202: This definition is identical to that used in AS/NZS 60065:2001.	Added.	P
1.5.1	Add the following variation to the first paragraph: "or the relevant Australian/New Zealand Standard."		P
1.5.2	Add the following variation after the words “IEC component standard” in the first or third dash items: "or the relevant Australian/New Zealand Standard."	Added.	P
1.6.1	Add the following variation: AC power distribution systems classified as TT or IT are not allowed.	Added.	P
1.7.12	Add the following variation to the first paragraph: All safety instructions and safety markings shall be in English.	Added.	N
3.2.5	Replace Table 3B with the following variation:	Replaced.	N

National Differences					
Clause	Requirement – Test			Result – Remark	Verdict
	Rated current of equipment A	Nominal cross-sectional area mm ²	AWG or kcmil (cross-sectional area in mm ²) see Note 1		
	Over 0.2 up to and including 3	0.5 ¹⁾	18 [0.8]		
	Over 3 up to and including 7.5	0.75	16 [1.3]		
	Over 7.5 up to and including 10	(0.75) 1.00	16 [1.3]		
	Over 10 up to and including 16	(1.0) 1.5	14 [2]		
	¹⁾ This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliances, and the entry to the plug does not exceed 2 m (0.5 mm ² three-core supply flexible cords are not permitted; see Note 2 to Table 2.17 of AS/NZS 3191). NOTE 1 – AWG and kcmil sizes are provided for information only. The associated cross-sectional areas, in square brackets, have been rounded to show significant figures only. AWG refers to the American Wire Gage and the term “cmil” refers to circular mils where one circular mil is equal to the area of a circle having a diameter of one mil (one thousandth of an inch). These items are commonly used to designate wire sizes in North America.				
4.3.6	Replace the third paragraph with the following variation: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.			Replaced.	N
4.3.13	After the third paragraph insert the following variation: NOTE – For the purpose of this standard compliance with AS/NZS 2211.1 is deemed to be in compliance with IEC 60825.1.			Inserted.	N
4.7	Add After Clause 4.7 the following variation: For alternative tests refer to Annex YY.			Added.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
6.2.1	Delete item c) and replace with the following: c) An SELV circuit, a TNV-2 circuit or a limited current circuit provided for connection of other equipment. The requirement for separation applies whether or not this circuit is accessible.	Added.	N
6.2.2	Replace the first paragraph with the following variation: In Australia (this variation does not apply in New Zealand), compliance with 6.2.2 is checked by the tests of both 6.2.2.1 and 6.2.2.2.	Added.	N
6.2.2.1	Replace Clause 6.2.2.1 with the following variation: In Australia (this variation does not apply in New Zealand), the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator of annex N for 10/700 μ s impulses. The interval between successive impulses is 60 s and the initial voltage, U_c , is: - for 6.2.1 a): 7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and - for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 1 - The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 2 – The 2.5 kV impulse for 6.2.1 a) was chosen to ensure adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.	Added.	N
6.2.2.2	Replace the first and second paragraph of Clause 6.2.2.2 with the following variation: In Australia (this variation does not apply in New Zealand), the electrical separation is subjected to an electric strength test according to 5.2.2. The a.c. test voltage is: - for 6.2.1a): 3 kV; and - for 6.2.1b) and 6.2.1c): 1.5 kV. NOTE 1 – Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 2 – The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.	Added.	N
Annex YY Variations			

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
YY.1	<p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following:</p> <p>(a) Components that are contained in an enclosure having a flammability category of FV-0 according to AS/NSZ 4695.707 and having openings only for the connecting wires filling the openings completely, and for the ventilation not exceeding 1 mm in width regardless of the length.</p> <p>(b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> - small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; - small electrical components, such as capacitors with a volume not exceeding 1750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material flammability category FV-1 or better according to AS/NZS 4695.707 <p>NOTE - In considering how to minimize propagation of fire and what "small parts" are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another.</p> <p>Compliance is checked by the tests of YY.1.1 and YY.1.2.</p> <p>For the base materials of printed boards, compliance is checked by the test of YY.1.3.</p> <p>The tests are carried out on parts of non-metallic material, which have been removed from the apparatus. When the glow-wire test is carried out, they are placed in the same orientation, as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p>	Only UL approved plastic materials with suitable flammability classes applied.	P

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
YY.1.1	<p>Parts of non-metallic material are subjected to glow wire test of AS/NZS 4695.2.11, which is carried out at 550 °C.</p> <p>Part for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test is not carried out on parts of materials classified at least FH-3 according to ISO 9772 provided that the sample was not thicker than the relevant part.</p>	Dto.	P
YY.1.2	<p>Testing of insulating materials</p> <p>Parts of insulating material supporting potential ignition sources shall be subject to the glow-wire test of AN/NZS 4695.2.11, which is carried out at 750 °C.</p> <p>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE - Contacts in components such as switch contacts are considered to be connections.</p> <p>The test is not applicable to parts supporting welded connections;</p> <p>For parts, which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested.</p> <p>The needle-flame test shall be made in accordance with AS/NZS 4695.2.2 with the following modifications:</p> <p>5 Severities</p> <p>Replace with:</p> <p>The duration of application of the test flame shall be 30 s \pm 1 s.</p> <p>8 Test procedure</p> <p>8.2 Modification:</p> <p>Replace the first sentence with:</p> <p>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1.</p> <p>8.4 Modification:</p> <p>The first paragraph does not apply.</p> <p>Addition:</p> <p>If possible, the flame shall be applied at least</p>	Dto.	P

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>10 mm from a corner.</p> <p>8.5 Replacement:</p> <p>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test.</p> <p>10 Evaluation of test results</p> <p>Replace with:</p> <p>The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</p> <p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10, provided that the sample tested was not thicker than the relevant part.</p>		
YY.1.3	<p>If parts, other than enclosures, do not withstand to glow-wire tests of YY.1.2, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in YY.1.2 is made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of YY.1.2. Parts shielded by a separate barrier which meets the needle-flame test are not tested.</p> <p>NOTE 1 - If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirement of Annex YY without the need for consequential testing.</p> <p>NOTE 2 - If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burring or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirement of Annex YY without the need for consequential testing.</p> <p>NOTE 3 - Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting in contact with or in close proximity to connections.</p>	Dto.	P
YY.2	<p>The base material of printed boards is subjected to needle-flame test to Clause YY.1.2. The flame is applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not</p>	Dto.	P

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.</p> <p>The test is not carried out if the –</p> <ul style="list-style-type: none"> - Printed board does not carry any potential ignition source; - Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category FV-1 or better according to AS/NZS 4695.707, or the printed boards are protected by an enclosure meeting the flammability category FV-0 according to AS/NZS 4695.707, or made of metal, having openings only for connecting wires which fill the opening completely, or - Base material of printed boards, on which the available apparatus power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material printed boards supporting spark gaps which provide protection against overvoltages, is of flammability category FV-0 according to AS/NSZ 4695.707 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <p>Compliance is determined using the smallest thickness of the material.</p> <p>NOTE - Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.</p>		

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
APPENDIX	Canadian National Differences according to CB Bulletin No. 107A, May 2004 (CAN/CSA C22.2 No. 60950/UL60950, Third edition) (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
Special National Conditions			
1.1.1	All equipment design and installations are required to be in accordance with the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and with National Electrical Code (NEC), ANSI/NFPA 70, and, unless marked or otherwise identified, the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Complies.	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the CEN/NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies which are not types specified in the CEN/NEC are required to have special construction features and identification markings.	No supply cord provided.	N
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 “Normal Operating Conditions.” Likewise, a voltage rating shall not be lower than the specified “Normal Operating Conditions,” unless it is part of a range that extends into the “Normal Operating Conditions.”	Single phase.	N
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	Fuse not used for LPS.	N
2.7.1	Suitable CEC/NEC branch circuit protection is required for all standard supply outlets, receptacles and medium-base or smaller lampholders if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require transformer overcurrent protection.		N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the CEC/NEC.	Pluggable equipment type A.	N
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	No supply cord provided.	N
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Pluggable equipment type A.	N
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Flexible power supply cords are required to be compatible with Table 11 & 12 of the CEC, and Article 400 of the NEC.	No supply cord provided.	N
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	No permanently connected equipment.	N
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CAN/CSA C22.2 No. 0.	Neither wiring terminal nor associated spacings.	N
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).	No wire binding screws.	N
3.3.4	Terminals for permanent wiring, including protective earthing terminals are required to be suitable for Canadian/U.S. wire gauge sizes, rated 125 percent of the equipment rating, and specially marked when specified (1.7.7).	No terminals for permanent wiring.	N
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a normal voltage rating greater than 120 V or is rated more than 1/3 hp (locked rotor current over 43 A).	No motor.	N
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No switch.	N
3.4.10	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No battery.	N
4.3.12	The maximum quantify of flammable liquid stored in equipment is required to comply with NFPA 30.	No flammable liquid.	N
4.3.13	Equipment with lasers is required to meet Code of Federal Regulations 21 CFR 1040 and/or Canadian Radiation Emitting Devices Act, REDR C1370, as applicable.	No laser.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
4.7.1	For computer room applications, automated information storage systems with combustible media greater than 27 cubic feet are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	Not information storage systems.	N
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m ² or a single dimension greater than 1.8 m, are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N
Annex H	Equipment that produces ionizing radiation is required to comply with Code of Federal Regulations, 21 CFR 1020 and/or Canadian Radiation Emitting Devices Act, REDR C1370, as applicable.	No ionizing radiation.	N
Other Differences			
1.5.2	<p>Components of equipment must be suitable for the application, and must comply with the requirements of the equipment standard and the applicable national (Canadian and/or U.S.) component or material standards, as far as they may apply.</p> <p>The acceptance will be based on the following:</p> <p>A) A component Certified by a Canadian or U.S. National Certification Body (NCB) to a Canadian or U.S. component standard will be checked for correct application and use in accordance with its specified rating. Where necessary, it will also be subject to the applicable tests of the equipment standard.</p> <p>B) A component which has a CB Test Certificate for compliance with a relevant IEC component standard will be checked for correct application and use in accordance with its specified ratings. Where necessary, it will also be subject to the applicable tests of the equipment standard, and to the applicable tests of the Canadian and/or U.S. component or material standard, under the conditions occurring in the equipment.</p> <p>C) A component, which has no approval as in A) or B) above or which is used not in accordance with its specified ratings, will be subject to the applicable tests of the equipment standard, and to the applicable tests of the Canadian and/or U.S. component or material standard, under the conditions occurring in the equipment.</p>	For component, see table 1.5.1 of report IEC 60950.	P

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	D) Some components may require annual re-testing, which may be carried out by the manufacturer, CSA International or another laboratory.		
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mAd.c. under normal operating conditions.	No TNV.	N
2.6.3.3	When subject to impedance testing, protective earthing and bonding are required to be tested to the additional test conditions that originate in CAN/CSA C22.2 No. 0.4.	See IEC 60950 report.	P
4.2.8.1	Enclosures around CRTs having a diagonal dimension of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT.	N
4.3.2	Equipment with handles is required to comply with special loading tests.	No handle.	N
5.1.8.1.1	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV.	N
6.2.1	Enamel coating on winding wire not considered electrical separation unless subject to special investigation.	No TNV.	N
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV.	N
6.5	Equipment connected to a telecommunications network and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure tests.	No TNV.	N
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subject to special installation and performance restrictions.	No TNV.	N
Annex NAB	Equipment connected to centralized d.c. power systems is required to comply with special earthing, wiring, marking and insulation requirements in accordance with Annex NAB and 3.6.1.	Supplied from a.c. mains.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
APPENDIX	Chinese National Differences according to CB Bulletin No. 107A, May 2004 (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
1	Supply tolerance Item 1.4.5 of IEC 60950 stipulates the tolerance of rated voltage is +6% and -10%, while GB4943-2001 makes a specification of tolerance of +10% and -10%.	Considered.	P
2	Power rating marking Item 1.7.1 of IEC 60950 does not specify concrete figures for supply voltage and frequency, instead, descriptions are given by examples. But the examples do not include China's main voltage. GB4943-2001 stipulates that: - A single rated voltage shall be expressed as 220 V - When a rated voltage range is given, the range shall cover 220 V - When a variety of rated voltages or rated voltage ranges are given, one of them shall be 220 V, and shall be set as 220 V when dispatched from the factory - Rated frequency or rated frequency range shall be 50 Hz or include 50 Hz If a unit is not provided with a means for direct connection to the AC mains supply, it need not be marked with any electrical rating	Marked 100-240V~, 47-63Hz.	P
3	Plate and warning marking in Chinese Item 1.7.12 of GB4943-2001 stipulates: instructions and equipment markings related to safety shall be in standardized Chinese.	Shall be evaluated when in national approval.	N
4	Power supply plug According to China's particular standards for power supply plug, it is added in article 3.2.1 of GB4943-2001 that plug connecting equipment with AC mains supply shall be in accordance with requirements of GB1002.	No power supply plug provided.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
APPENDIX	Japanese National Differences according to CB Bulletin No. 107A, May 2004 (J60950(H14)) (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
1.2	Addition: Add the following terms. Equipment, Class 0I 1.2.4.101 Material, VTM 1.2.12.101	Added.	N
1.2.4.101	Addition: CLASS 0I EQUIPMENT: Equipment where protection against electric shock is achieved by: a) using BASIC INSULATION, and b) providing a means of connecting to the protective earthing conductor in the building wiring those conductive parts that are otherwise capable of assuming HAZARDOUS VOLTAGES if the BASIC INSULATION fails, and c) using a supply cord without earthing conductor and a plug without earthing wire although the equipment has externally an earth terminal or a lead wire for earthing. Equipment provided with a cord set having a two-pin type plug with a lead wire for earthing is also regarded as Class 0I. NOTE – Class 0I equipment may have a part constructed with Double Insulation or Reinforced Insulation as well as an operating part as SELV circuit.	Added.	N
1.2.12.1	Replacement: FLAMMABILITY CLASSIFICATION OF MATERIALS: The recognition of the burning behaviour of materials and their ability to extinguish if ignited. Materials are classified as in 1.2.12.2 to 1.2.12.9, and 1.2.12.101 when tested in accordance with annex A. NOTE 1 - When applying the requirements in this standard, HF-1 CLASS FOAMED MATERIALS are regarded as better than those of CLASS HF-2, and HF-2 better than HBF. NOTE 2 - Similarly, other MATERIALS, including rigid (engineering structural) foam of CLASSES 5V or V-0 are regarded as better than those of CLASS V-1, V-1 better than V-2, and V-2 better than HB.	Replaced.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	NOTE 3 - Similarly, for thin MATERIALS, VTM-0 Class materials are regarded as better than those of VTM-1 Class, and VTM-1 better than VTM-2.		
1.2.12.101	<p>Addition:</p> <p>VTM CLASS MATERIAL: Thin MATERIALS fulfil the specified conditions during the test of clause A.101 applied for materials that the test and evaluation of clauses A.6 to A.10 is difficult to enforce. Materials are classified to three classifications as VTM-0, VTM-1 and VTM-2 according to the conditions after the removal of the test flame.</p>	Added.	N
1.7.101	<p>Addition:</p> <p>Marking for CLASS 0I EQUIPMENT</p> <p>For CLASS 0I EQUIPMENT, the following instruction shall be indicated on the visible place of the mains plug or the main body:</p> <p>“Provide an earthing connection”</p> <p>Moreover, for CLASS 0I EQUIPMENT, the following instruction shall be indicated on the visible place of the main body or written in the operating instructions:</p> <p>“Provide an earthing connection before the mains plug is connected to the mains. And, when disconnecting the earthing connection, be sure to disconnect after pulling out the mains plug from the mains.”</p>	Added.	N
2.1.1.1	<p>Replacement:</p> <p>Replace “IEC 60083” to “IEC 60083 or JIS C 8303” in 2.1.1.1 b).</p>	Replaced.	N
2.6.3.1	<p>Addition:</p> <p>Add the following after 1st paragraph.</p> <p>This also applies to the conductor of lead wire for protective earthing of CLASS 0I EQUIPMENT.</p>	Class I equipment.	N
2.6.4.1	<p>Replacement:</p> <p>Replace 2nd sentence in 1st paragraph.</p> <p>For CLASS I EQUIPMENT with a DETACHABLE POWER SUPPLY CORD, the earthing terminal in the appliance inlet is regarded as the main protective earthing terminal.</p>	Replaced.	P
2.6.5.4	<p>Replacement:</p> <p>Replace 1st sentence.</p> <p>Protective earthing connections of CLASS I EQUIPMENT shall make earlier and break later than the supply connections in each of the following:</p>	Replaced. Appliance inlet is earth connected before and disconnected after hazardous voltage.	P

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
2.6.101	<p>Addition:</p> <p>Earthing of CLASS 0I EQUIPMENT</p> <p>Plugs with a lead wire for earthing shall not be used for equipment having a rated voltage exceeding 150 V.</p> <p>For plugs with a lead wire for earthing, the lead wire shall not be earthed by a clip.</p> <p>CLASS 0I EQUIPMENT shall be provided with an earthing terminal or lead wire for earthing in the external where easily visible.</p>		N
3.2.5	Delete 1) in Table 3B.	Deleted.	N
4.2.8	<p>Addition:</p> <p>Add the following informative remark after the last sentence.</p> <p>Remark - IEC 61965 is also applicable instead of IEC 60065.</p>	Added.	N
4.5.1	<p>Addition:</p> <p>Add the following to suffix 5) as specified in “Conditions applicable to Table 4A, Parts 1 and 2”.</p> <p>With regard to Table 4A, insulating materials complying with Japanese requirements (refer to Japanese differences for the current IEC 60335-1 (3rd Edition) in CB Bulletin 101B) are also acceptable.</p> <p>Add a suffix 7) in “Conditions applicable to Table 4A, Parts 1 and 2”.</p> <p>In the right column of Table 4A, Part 1, add suffix 7) to “50” (K), corresponding to “- without T – marking” in the left column so as to become “50⁷⁾”.</p> <p>Add 7) to Table 4A, Part 2 as follows.</p> <p>7) This value shall apply only to wiring or cords complying with relevant IEC standards. Others shall comply with Japanese requirements (refer to Japanese differences for the current IEC 60335-1 (3rd Edition) in CB Bulletin 101B).</p>	Added.	N
4.7.3.2	<p>Addition:</p> <p>Add the following in 7th paragraph.</p> <p>for thin materials, e.g., flexible printed boards, etc., used inside equipment, be of FLAMMABILITY CLASS VTM-2 or better.</p>	Added.	N
5.1.6	<p>Replacement:</p> <p>Replace Table 5A.</p>		P

National Differences				
Clause	Requirement – Test		Result – Remark	Verdict
	Type of equipment	Terminal A of measuring instrument connected to:	Maximum TOUCH CURRENT mA r.m.s. ¹⁾	Maximum PROTECTIVE CONDUCTOR CURRENT
	ALL equipment	Accessible parts and circuits not connected to protective earth	0,25	–
	HAND-HELD	Equipment main protective earthing terminal (if any)	0,75	–
	MOVABLE (other than HAND_HELD, but including TRANSPORTABLE EQUIPMENT		3,5	–
	STATIONARY, PLUGGABLE TYPE A		3,5	–
	ALL other STATIONARY EQUIPMENT		3,5	–
	not subject to the conditions of 5.1.7			
	subject to the conditions of 5.1.7		–	5 % of input current
	HAND-HELD	Equipment main protective earthing terminal (if any) CLASS 0I EQUIPMENT	0,5	–
	Others		1,0	–
¹⁾ If peak values of TOUCH-CURRENT are measured, the maximum values obtained by multiplying the r.m.s. values by 1,414.				
5.3.8.2	Replacement: Replace 3rd item as follows. BASIC INSULATION between the PRIMARY CIRCUIT and accessible conductive parts of CLASS I or 0I EQUIPMENT;		Replaced.	N
Annex A	Addition: Add the subclause A.101 with the title “Flammability tests for classifying materials VTM” and the following: Thin sheet materials shall comply with ISO 9773.		Added.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
Annex G	<p>Addition:</p> <p>Add the following to the Note for Table G.1.</p> <p>2. In Japan, MAINS TRANSIENT VOLTAGE for equipment with a Nominal AC MAINS SUPPLY VOLTAGE of 100 V is to be decided based on the column where Nominal AC MAINS SUPPLY VOLTAGE in Table G.1 is 150 V.</p>	Added.	N
Annex P	<p>Addition:</p> <p>Add “IEC 61965:2000, Mechanical Safety for Cathode Ray Tubes”.</p>	Added.	N
Annex U	<p>Replacement:</p> <p>Replace 2nd paragraph.</p> <p>This annex covers to round winding wires having diameters between 0.05 mm and 5.00 mm.</p>	Replaced.	N
U.2.1	<p>Replacement:</p> <p>Electric strength</p> <p>The test sample is prepared according to IEC 60851-5:1997, 4.4.1 (for a twisted pair). The sample is then subjected to the test of 5.2.2 of this standard, with a test voltage not less than twice the appropriate voltage in table 5B (see 5.2.2) of this standard. However, the minimum values shall be as follows:</p> <p>for BASIC INSULATION or SUPPLEMENTARY INSULATION, 3000 V, or;</p> <p>for REINFORCED INSULATION, 6000 V.</p>	Replaced	N
U.2.2	<p>Replacement:</p> <p>Flexibility and adherence</p> <p>Test 8 of IEC 60851-3:1996, 5.1.1, using the mandrel diameters of table U.1. The test sample is then examined in accordance with IEC 60851-3:1996, 5.1.1.4, followed by the test of 5.2.2 of this standard except applying the test voltage between the wire and the mandrel. A test voltage shall not be less than twice the appropriate voltage in table 5B (see 5.2.2) of this standard. However, the minimum values shall be as follows:</p> <p>for BASIC INSULATION or SUPPLEMENTARY INSULATION, 1500 V, or;</p> <p>for REINFORCED INSULATION, 3000 V.</p>	Replaced.	N
Table U.1	<p>Replacement:</p> <p>Mandrel diameter</p>		N
	Nominal Conductor diameter mm	Mandrel diameter mm ± 0,2 mm	
	0,05 – 0,34	4,0	

National Differences				
Clause	Requirement – Test		Result – Remark	Verdict
	0,35 – 0,49	6,0		
	0,50 – 0,74	8,0		
	0,75 – 2,49	10,0		
	2,50 – 5,00	4 times of the diameter of conductor ¹⁾		
	¹⁾ in compliance with IEC 60317-43.			
	The tension to be applied to the wire during winding on the mandrel is calculated from the wire diameter to be equivalent to 118 MPa ± 10 % (118 N/mm ² ± 10 %).			

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
APPENDIX	Korean National Differences according to CB Bulletin, No. 107A, May 2004 (K60950) (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
1.5.101	Addition: Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirements (KSC 8305).	No plug.	N
7	Addition: EMC The apparatus shall comply with the relevant CISPR standards.	The CISPR requirements have to be considered with the end product.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
APPENDIX	US National Differences according to CB Bulletin No. 107A, May 2004 (UL 60950) (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
Special National Conditions			
1.1.1	All equipment is to be designed to allow installations in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, and, unless marked or otherwise identified, the Standard for the protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Complies.	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies which are not types specified in the NEC are required to have special construction features and identification markings.	No power cord provided.	N
1.7.1	Equipment for use on supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 “Normal Operating Conditions.” Likewise, a voltage rating shall not be lower than the specified “Normal Operating Conditions,” unless it is part of a range that extends into the “Normal Operating Conditions.”	Single phase.	N
2.5	Where a fuse is used to provide Class 2, LPS (or TNV) current limiting, it shall not be operator-accessible unless it is not interchangeable.	Fuse not used for LPS.	N
2.7.1	Suitable NEC branch circuit protection is required for all standard supply outlets, receptacles and medium-base or smaller lampholders if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require transformer overcurrent protection.	No outlet.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC.	Appliance inlet used.	N
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	No supply cord.	N
3.2.3	Permanent connection of equipment to the mains by a power supply cord is not permitted.	Pluggable equipment type A.	N
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Flexible power supply cords are required to be compatible with Article 400 of the NEC.	No supply cord.	N
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Pluggable equipment type A.	N
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.	Neither wiring terminals nor associated spacings.	N
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).	No wire binding screws.	N
3.3.4	Terminals for permanent wiring, including protective earthing terminals are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and specially marked when specified (1.7.7).	Pluggable equipment type A.	N
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the motor (a) has a nominal voltage rating greater than 120 V, (b) is rated more than 12 A, or (c) is rated more than 1/3 hp (locked rotor current over 43 A)	No motor.	N
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No switch.	N
3.4.10	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No battery.	N
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No fluids.	N
4.3.13	Equipment with lasers is required to meet Code of Federal Regulations 21 CFR 1040 and Canadian Radiation Emitting Devices Act, REDR C1370.	No laser.	N

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
4.7.1	For computer room applications, automated information storage systems with combustible media greater than 27 cubic feet are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	Not automated information storage systems.	N
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m ² or a single dimension greater than 1.8 m, are required to have flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N
Annex H	Equipment that produces ionizing radiation is required to comply with Code of Federal Regulations, 21 CFR 1020 and Canadian Radiation Emitting Devices Act, REDR C1370.	No ionizing radiation.	N
Other Differences			
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These components include: attachment plugs, cathode ray tubes, circuit breakers, communication circuit accessories, cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, surge suppressors, switches (including interlock switches), thermal cutoffs, thermostats, transformer winding wire, tubing, wire connectors, and wire and cables.	For component, see table 1.5.1 of report IEC 60950.	P
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mAd.c. under normal operating conditions.	No TNV.	N
2.6.3.3	When subject to impedance testing, protective earthing and bonding is required to be tested subject per the specified test conditions that originate in CSA C22.2 No. 0.4.	See IEC 60950 report.	P

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
4.2.8.1	Enclosures around CRTs with a face area (diagonal dimension) of 160mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT.	N
4.3.2	Equipment with handles is required to comply with special loading tests.	No handle.	N
5.1.8.1.1	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV.	N
6.2.1	Enamel coating on winding wire not considered electrical separation unless subjected to special investigation.	No TNV.	N
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV.	N
6.5	Equipment connected to a telecommunications network and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure tests.	No TNV.	N
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No TNV.	N
Annex NAB	Equipment connected to centralized d.c. power systems is required to comply with special earthing, wiring, marking and insulation requirements in accordance with Annex NAB and 3.6.1.	Supplied from a.c. mains.	N

National Differences			
Clause	Requirement - Test	Result – Remark	Verdict
APPENDIX	Singaporean National Differences (SS 337:2001) (IEC Publication 60950:1999)		P
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
General	IT Power Systems are not allowed in the Republic of Singapore and all clauses related to IT Power Systems are not applicable.	Considered.	P
2.9.2	After the first paragraph, <i>insert</i> the following: Under tropical conditions, the duration of the humidity conditioning is 5 days (120 h) at a temperature (t) of 40°C ± 2°C with relative humidity of 90% to 95% <i>Explanation:</i> Conditions described in IEC Publications 60068-2-3:1969 – ‘Test Ca: Damp Heat, Steady State’ (temperature: 40°C ± 2°C, relative humidity: 90% to 95%) apply to insulation to be used under tropical conditions. The additional requirement on humidity conditioning is drawn from Clause 10.2 of IEC 60065:1998	See IEC 60950 report.	P
2.10.6.5	Delete ‘(48 h)’ <i>Explanation:</i> To be consistent with 2.9.2.	Deleted.	P
3.2.8	Replace ‘23°C ± 2°C’ by ‘27°C ± 2°C’ <i>Explanation:</i> The recommended temperature for tropical countries is drawn from ISO 554: 1976 – ‘Standard atmospheres for conditioning and/or testing – Specifications’.	Replaced.	P
Editorial amendment:			
1.2.8.6	After NOTE 2, <i>insert</i> the following: NOTE 3 – This definition for SELV CIRCUIT differs from the term ‘SELV system’ as given in SS CP 5. Attention is also drawn to the following : For a.c. power distribution systems, only TN-S and TT systems are allowed in the Republic of Singapore. Where the phrase ‘this standard’ appears, it should be read as ‘Singapore Standard SS 337’. The comma has been used throughout as a decimal marker in IEC 60950, whereas in Singapore standards it is a practice to use a full-point on the baseline as the decimal marker. The IEC standard referred to shall be replaced by Singapore Standards as follows:	Inserted.	P

National Differences			
Clause	Requirement - Test		Verdict
	<p>International Standard</p> <p>IEC 60065</p> <p>IEC 60227</p>	<p>Corresponding Singapore Standard</p> <p>SS 143:2000</p> <p>Audio, video and similar electronic apparatus – Safety requirements</p> <p>SS 358:-</p> <p>Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V.</p>	
NOTE	Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.		—
	Compliance with a Singapore Standard does not exempt users from legal obligations.		—