



Test Report issued under the responsibility of:

NCB TÜV SÜD PSB Pte Ltd
1 Science Park Drive,
Singapore 118221



PSB Singapore

TEST REPORT

IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006 Information technology equipment – Safety – Part 1: General requirements

Report Reference No.: 081-110522-000

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CB/CCA Testing Laboratory: TÜV SÜD Asia Ltd. Taiwan Branch

Address: 7F., No.37, Sec. 2, Zhongyang S., Rd., Beitou District, Taipei City, 11270, Taiwan.

Applicant's name: NEC Display Solutions, Ltd.

Address: 4-13-23 Shibaura, Minato-ku, Tokyo, 108-0023, Japan

Manufacturer's name: NEC Display Solutions, Ltd.

Address: 4-13-23 Shibaura, Minato-ku, Tokyo, 108-0023, Japan

Factory's name: See page 5 for details.

Address: See page 5 for details.

Test specification:

Standard: ☒ IEC 60950-1:2005 (2nd Edition) and/or
☒ EN 60950-1:2006 + A11:2009

Test procedure: CB / CCA

Non-standard test method: N/A

Test Report Form No.: IECEN60950_1C

Test Report Form(s) Originator: SGS Fimko Ltd

Master TRF: Dated 2007-06

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Test item description	LCD Monitor
Trade Mark	NEC
Manufacturer	Same as applicant
Model/Type reference	L240UN, P241W, P241W-BK, P241W(C), P241W-BK(C)
Ratings	100-240 Vac, 50/60 Hz, 1.38-0.56 A
Testing procedure and testing location:	
☒ CB/CCA Testing Laboratory:	TÜV SÜD Asia Ltd. Taiwan Branch
Testing location/ address	7F., No.37, Sec. 2, Zhongyang S., Rd., Beitou District, Taipei City, 11270, Taiwan.
☐ Associated CB Laboratory:	N/A
Testing location/ address	N/A
Tested by (name + signature)	Mr. Owen Hsu
Approved by (+ signature)	Mr. Watson Yang
☐ Testing procedure: TMP	N/A
Tested by (name + signature)	
Approved by (+ signature)	
Testing location/ address	N/A
☐ Testing procedure: WMT	N/A
Tested by (name + signature)	
Witnessed by (+ signature)	
Approved by (+ signature)	
Testing location/ address	N/A
☐ Testing procedure: SMT	N/A
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
Testing location/ address	N/A
☐ Testing procedure: RMT	N/A
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
Testing location/ address	N/A



Tests performed (name of test and test clause):

Testing location:

All tests as described in Test Case and Measurement Sections were performed at the laboratory described on page 2.

National Differences for Austria (AT), Canada (CA), Germany (DE), Denmark (DK), Finland (FI), France (FR), United Kingdom (GB), Italy (IT), Japan (JP), Korea (KR), The Netherlands (NL), Norway (NO), Poland (PL), Sweden (SE), Slovenia (SI), United States of America (US). Group Differences as listed in the CB Bulletin No. 112A (December 2006) are recorded at the end of this Report.

**See attachment No. 2
(Total 1 page)**



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Test item particulars	
Equipment mobility	☒ movable ☐ hand-held ☐ transportable ☐ stationary ☐ for building-in ☐ direct plug-in
Connection to the mains	☒ pluggable equipment ☒ type A ☐ type B ☐ permanent connection ☒ detachable power supply cord ☐ non-detachable power supply cord ☐ not directly connected to the mains
Operating condition	☒ continuous ☐ rated operating / resting time:
Access location	☒ operator accessible ☐ restricted access location
Over voltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:
Mains supply tolerance (%) or absolute mains supply values	+10 %, -10 %
Tested for IT power systems	☒ Yes ☐ No
IT testing, phase-phase voltage (V)	230 V (for Norway)
Class of equipment	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Considered current rating (A)	16 A or 20 A (for US)
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3
IP protection class	Ordinary
Altitude during operation (m)	Up to 3,048
Altitude of test laboratory (m)	below 2,000
Mass of equipment (kg)	Approx. 7.6 / 10.8 (without / with stand) Approx. 0.7 (Hood)
Possible test case verdicts:	
- test case does not apply to the test object	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Testing	
Date of receipt of test item	2011-05-26
Date(s) of performance of tests	2011-05-27 to 2011-06-10



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General remarks:

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

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"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.

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

Factory:

1) TOSHIN Technology (Shenzhen) Factory (ID No. : 45530)

Block 8, Townfull Industrial Park, Dalang Street, Baoan District, 518109 Shenzhen, Guangdong,
People's Republic of China

Attachments:

Attachment No. 1	National Differences	19	pages
Attachment No. 2	Marking Plate	1	page
Attachment No. 3	Photo	11	pages

General product information:

The equipment is LCD Monitor of information technology equipment.

All models are identical except for the model designation.

The backlight fulfils the requirements of limited current circuit (Clause 2.4).

All data ports were complied with the Limited Power Sources test mentioned at sub-clause 2.5.

The maximum ambient temperature specified by manufacturer is 40 °C.

The manufacturer specified that the equipment could be operated up to an altitude of 10,000 ft (3,048 m). The requirements according to IEC 60664-1:2007 for clearances are considered as the altitude correction factors (1.15) specified in Table A.2.

Unless otherwise specified, all tests were performed on model L240UN to represent the other similar models.

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

1	GENERAL		P
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1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	Components which were found to affect safety aspects comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see 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
1.5.3	Thermal controls	No thermal control.	N/A
1.5.4	Transformers	Transformer used is suitable for their intended application and comply with the relevant requirements of the standard.	P
1.5.5	Interconnecting cables	Interconnection o/p cable to other device is carrying only SELV voltages on an energy level below 240 VA. →Except for the insulation material, there is no further requirement to the o/p interconnection cable.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.6	Capacitors bridging insulation	X2 capacitor according to IEC 60384-14 with 2.5 kVpk pulse test. Y2 capacitor according to IEC 60384-14 with 5.0 kVpk pulse test. Y1 capacitor according to IEC 60384-14 with 8.0 kVpk pulse test. Y1 type capacitor (C44) is provided and bridged between primary and secondary of SPS board.	P
1.5.7	Resistors bridging insulation	No bridging resistors provided.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems	Y-Cap. are all rated min. 230 V and complied with IEC 60384-14, and others component in such condition has suitable voltage rating. See table 1.5.1 for details.	P
1.5.9	Surge suppressors	See below.	P
1.5.9.1	General	Certified Varistor (VS1) is used between L and N of SPS, see appended table 1.5.1 for details.	P
1.5.9.2	Protection of VDRs	The current fuse (F1) provided protection.	P
1.5.9.3	Bridging of functional insulation by a VDR	Refer to 1.5.9.1.	P
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

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

1.6	Power interface		P
1.6.1	AC power distribution systems	TN / IT power system. Equipment was evaluated in TN power system. (see 1.5.8 and 1.7.2.4 for IT power system)	P
1.6.2	Input current	The definition for highest load according to 1.2.2.1, for this equipment is the unit operated under full brightness and contrast of the LCD backlight circuit. Results see appended table.	P
1.6.3	Voltage limit of hand-held equipment	This equipment is not hand-held equipment.	N/A
1.6.4	Neutral conductor	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)	100-240 Vac	P
	Symbol for nature of supply, for d.c. only	Mains from AC source.	N/A
	Rated frequency or rated frequency range (Hz) :	50/60 Hz	P
	Rated current (mA or A)	1.38-0.56 A	P
	Manufacturer's name or trademark or identification mark	NEC	P
	Model identification or type reference	L240UN, P241W, P241W-BK, P241W(C), P241W-BK(C)	P
	Symbol for Class II equipment only	Class I equipment.	N/A
	Other markings and symbols	Additional symbols or markings that do not give rise to misunderstanding.	P
1.7.2	Safety instructions and marking	Safety instructions in English and German. Other languages will be provided when submitted for national approval.	P
1.7.2.1	General	Instructions are available.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.2	Disconnect devices	Appliance Inlet is provided as disconnection device.	P
1.7.2.3	Overcurrent protective device		N/A
1.7.2.4	IT power distribution systems	Installation instruction will be stated when equipment is intended to be used for IT power system.	P
1.7.2.5	Operator access with a tool	No operator accessible area which needs to be accessed by use of a tool.	N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment	No supply voltage adjustment device.	N/A
	Methods and means of adjustment; reference to installation instructions		—
1.7.5	Power outlets on the equipment	No power outlet provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Marking adjacent to fuse reads as F1 T4AH, 250 V of SPS board.	P
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals	The equipment is provided with appliance inlet, which is for connection of a detachable type power supply cord. One green/yellow wire with ring terminal is soldered and hook-in the PE pin of the appliance inlet and fixed to the stud of metal chassis by screw and star washer.	P
1.7.7.2	Terminal for a.c. mains supply conductors	The equipment with Appliance Inlet is intended to be use the detachable type power supply cord.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	Mains from AC source only.	N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking	The marking and indication of the power switch is located on the switch so that indication of function is clear.	P
1.7.8.2	Colours	The colour is clear that safety is not involved.	P
1.7.8.3	Symbols according to IEC 60417	The 60417-1-IEC-5009 (☺) is marked on secondary power switch.	P
1.7.8.4	Markings using figures	No indicators for different positions.	N/A
1.7.9	Isolation of multiple power sources	Only one supply from mains.	N/A
1.7.10	Thermostats and other regulating devices	No thermostats used.	N/A
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth for 15 sec. and then again for 15 sec. with the cloth soaked with Petroleum Ether. 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
1.7.12	Removable parts	Marking is not placed on removable parts.	P
1.7.13	Replaceable batteries	No batteries.	N/A
	Language		—
1.7.14	Equipment for restricted access locations	No restricted access location.	N/A

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

2	PROTECTION FROM HAZARDS		P
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2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	See below.	P
2.1.1.1	Access to energized parts	See below.	P
	Test by inspection	Operator can not contact with any parts with only basic insulation to ELV or hazardous voltage.	P
	Test with test finger (Figure 2A)	No access with test finger to any parts with only basic insulation to ELV or hazardous voltage.	P
	Test with test pin (Figure 2B)	The test pin can not touch hazardous voltage through any openings or seams of the whole enclosure.	P
	Test with test probe (Figure 2C)	No TNV circuit.	N/A
2.1.1.2	Battery compartments	No battery compartments provided.	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N/A
	Working voltage (V_{peak} or V_{rms}); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N/A
2.1.1.5	Energy hazards	No energy hazard in operator access area. The connectors of the equipment below 240 VA.	P
2.1.1.6	Manual controls	None at ELV or hazardous voltage.	N/A
2.1.1.7	Discharge of capacitors in equipment	No risk of electric shock, see appended table.	P
	Measured voltage (V); time-constant (s)	<1s; (see appended table 2.1.1.7).	—

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

2.1.1.8	Energy hazards – d.c. mains supply		N/A
	a) Capacitor connected to the d.c. mains supply . :		N/A
	b) Internal battery connected to the d.c. mains supply :		N/A
2.1.1.9	Audio amplifiers :		N/A
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N/A
2.1.3	Protection in restricted access locations	The equipment is not intended to be used in restricted locations.	N/A

2.2	SELV circuits		P
2.2.1	General requirements	42.4 V peak or 60 Vdc are not exceeded in SELV circuit under normal operation or single fault condition.	P
2.2.2	Voltages under normal conditions (V) :	Between any SELV circuits 42.4 V peak or 60 Vdc 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 71 V peak and 120 Vdc were not exceed and SELV limits not for longer than 0.2 seconds. (see appended table 2.2.2 and 5.3)	P
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.	N/A

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

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

2.4	Limited current circuits		P
2.4.1	General requirements	The limits specified in 2.4.2 are not exceeded under normal operating conditions and in the event of a single failure within the equipment of the inverter output connector.	P
2.4.2	Limit values	The peak drop voltage was measured with an oscilloscope at a 2 kΩ non-inductive resistor. Results see appended table 2.4.2.	P
	Frequency (Hz)	See appended table.	—
	Measured current (mA)	See appended table.	—
	Measured voltage (V).....	See appended table.	—
	Measured circuit capacitance (nF or μF)	≤ 0.1 μF	—
2.4.3	Connection of limited current circuits to other circuits	Complies.	P

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Clause	Requirement + Test	Result - Remark	Verdict

2.5	Limited power sources		P
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output under normal operating and single fault condition	The USB ports and outputs (+5Vdc, +12Vdc) of power supply board are in compliance with table 2B in normal operating and single fault condition. (Results see appended table).	P
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)	See appended table.	—
	Current rating of overcurrent protective device (A) ..		—

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

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	One green/yellow wire with ring terminal is soldered and hook-in the PE pin of the appliance inlet and fixed to the stud of metal chassis by screw and star washer.	P
2.6.2	Functional earthing	Secondary functional earthing is connected to protectively earthed conductive part that separated from primary by basic insulation.	P
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General		N/A
2.6.3.2	Size of protective earthing conductors	Appliance Inlet is used. Power supply cord is not provided.	P
	Rated current (A), cross-sectional area (mm ²), AWG :		—
2.6.3.3	Size of protective bonding conductors	Protective bonding conductor complied with the minimum conductor size of table 2D and complied with the requirement of 2.6.3.4	P
	Rated current (A), cross-sectional area (mm ²), AWG		—
	Protective current rating (A), cross-sectional area (mm ²), AWG	The rating of overcurrent protective device is < 16 A, min. conductor size of 20 AWG used.	—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)	< 0.1 Ω	P
2.6.3.5	Colour of insulation.....	Green/ Yellow wire from AC Inlet to PE trace and metal chassis provided.	P
2.6.4	Terminals	The equipment with detachable power supply core, connected on Appliance Inlet.	P
2.6.4.1	General	See below.	P
2.6.4.2	Protective earthing and bonding terminals	The equipment with detachable power supply cord, connected on Appliance Inlet.	N/A
	Rated current (A), type, nominal thread diameter (mm)		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Protective earthing conductor is in Appliance Inlet; the earth pin of Inlet is connected to PCB earthing trace directly with solderd then connected to metal chassis with connection by screwed grounding pad on PCB.	P
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	This equipment has its own earthing connection. Any other units connected via the interconnecting cable to other unit shall provide SELV only.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductor.	P
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect protective earth without disconnecting mains; an Appliance Inlet is used as disconnect device.	P
2.6.5.4	Parts that can be removed by an operator	Plug or inlet, earthing connected before and disconnected after hazardous voltage. No other operator removable parts.	P

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

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 safety earthing connections in compliance with Annex J.	P
2.6.5.7	Screws for protective bonding	No self tapping screws are used.	P
2.6.5.8	Reliance on telecommunication network or cable distribution system	Not intend to connect with telecommunication network or a cable distribution system for the integrity of protective earthing.	P

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Equipment relies on 16 A or 20 A rated fuse or circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short circuit. Overcurrent protection is provided by the built-in device fuse.	P
	Instructions when protection relies on building installation	English.	—
2.7.2	Faults not simulated in 5.3.7	The protection devices are well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the building installation is considered as providing short circuit protection.	P
2.7.4	Number and location of protective devices :	Overcurrent protection by several built-in fuse, earth fault protection by fuse or circuit breaker in the phase of the building installation.	P
2.7.5	Protection by several devices	Only one fuse.	N/A
2.7.6	Warning to service personnel :	No service work necessary.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2.8	Safety interlocks		N/A
2.8.1	General principles	No safety interlock provided.	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm) :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	Humidity treatment performed for 48 h.	P
	Relative humidity (%), temperature (°C) :	95 % R.H., 25 °C	—
2.9.3	Grade of insulation	Please refer to 5.2, 2.10 and 4.5.	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used :	Method 1.	—

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

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See 2.10.3, 2.10.4 and 2.10.5.	P
2.10.1.1	Frequency :	The frequency does not exceeding 30 kHz.	P
2.10.1.2	Pollution degrees :	Pollution degrees 2.	P
2.10.1.3	Reduced values for functional insulation	See 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts	Complied with.	P
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage	The rms and the peak voltage were measured on the switching power supply. The unit was connected to a 240 V TN power system and secondary ground was maintained during measurement. Results see appended table 2.10.2.	P
2.10.2.1	General	Complied	P
2.10.2.2	RMS working voltage	See appended table 2.10.2.	P
2.10.2.3	Peak working voltage	See appended table 2.10.2.	P
2.10.3	Clearances	See below.	P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages	See appended table 2.10.3 and 2.10.4.	P
	a) AC mains supply :	2500 Vpk considered.	P
	b) Earthed d.c. mains supplies :		N/A
	c) Unearthed d.c. mains supplies :		N/A
	d) Battery operation :		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.3	Clearances in primary circuits	See appended table 2.10.3 and 2.10.4.	P
2.10.3.4	Clearances in secondary circuits	See appended table 2.10.3 and 2.10.4 and refer to 5.3.4.	P
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply	2500 Vpk assumed.	P
2.10.3.7	Transients from d.c. mains supply		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems	No TNV circuit.	N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	See below.	P
2.10.4.1	General	See appended table 2.10.3 and 2.10.4.	P
2.10.4.2	Material group and comparative tracking index	Material group IIIa/IIIb assumed.	P
	CTI tests	CTI rating for all materials of min. 100.	—
2.10.4.3	Minimum creepage distances	See appended table 2.10.3 and 2.10.4.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5	Solid insulation	Complied with 2.10.5.2 to 2.10.5.14 and 5.2.	P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	—
2.10.5.3	Insulating compound as solid insulation	Complied with 2.10.5.2 and 2.10.10.	P
2.10.5.4	Semiconductor devices	See 2.10.5.3.	P
2.10.5.5.	Cemented joints	See appended table 2.10.3 and 2.10.4.	P
2.10.5.6	Thin sheet material – General	Considered.	P
2.10.5.7	Separable thin sheet material	Insulation tape providing supplementary or reinforced insulation: - used in T1, T2.	P
	Number of layers (pcs) :	See appended table C.2.	—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	Electric strength test applied to each one layer.	P
	Electric strength test	See appended table 5.2.	—
2.10.5.11	Insulation in wound components	In equipment, winding in wound components (choke, transformer...) are complied with functional insulation only. No wire in wound component provides basic, supplementary and reinforce insulation.	P



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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.12	Wire in wound components	Reinforced insulation.	P
	Working voltage	(see appended table 2.10.2).	P
	a) Basic insulation not under stress		N/A
	b) Basic, supplementary, reinforced insulation		N/A
	c) Compliance with Annex U	Triple insulated wire is used in secondary winding of T2 for reinforced insulation, also see annex U and appended table 1.5.1.	P
	Two wires in contact inside wound component; angle between 45° and 90°	Insulation tape and/or tubing provided.	—
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage		N/A
	- Basic insulation not under stress		N/A
	- Supplementary, reinforced insulation		N/A
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards	See appended table 2.10.3 and 2.10.4.	P
2.10.6.2	Coated printed boards	No coated printed wiring boards.	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs).....		N/A
2.10.7	Component external terminations	See appended table 2.10.3 and 2.10.4.	P
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		—
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling	No insulation breakdown.	P
2.10.10	Test for Pollution Degree 1 environment and insulating compound	No cracks or voids in the insulating material.	P
2.10.11	Tests for semiconductor devices and cemented joints	No cracks, voids or gaps in the insulating material.	P
2.10.12	Enclosed and sealed parts	Passed 2.10.10.	P

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Clause	Requirement + Test	Result - Remark	Verdict

3	WIRING, CONNECTIONS AND SUPPLY		P
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3.1	General		P
3.1.1	Current rating and overcurrent protection	Line, Neutral and PE wirings used 18AWG. Other internal wires are UL recognized wiring that is PVC insulated, rated VW-1, min. 80 °C, 300 V. Internal wiring gauge is suitable for current intended to be carried.	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	Internal wires with only basic isolation are routed so that they are not close to any live bare components. The wires are secured by solder pins or quick connect terminals so that a loosening of the terminal connection is unlikely.	P
3.1.4	Insulation of conductors	Securely held on PCB. No hazard. The insulation of the individual conductors are 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/A
3.1.6	Screws for electrical contact pressure	Electrical connections screwed two or more complete threads into metal.	P
3.1.7	Insulating materials in electrical connections	All current carrying and safety earthing connections are metal to metal.	P
3.1.8	Self-tapping and spaced thread screws	No self-tapping or spaced thread screws used.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.1.9	Termination of conductors	All conductors are reliable secured.	P
	10 N pull test	10N pull test performed for all relevant conductors. No hazards caused hereby.	—
3.1.10	Sleeving on wiring	Sleeving on wiring reliable kept in position by cable ties or by the use of heatshrink sleeving.	P

3.2	Connection to a mains supply		P
3.2.1	Means of connection	See below.	P
3.2.1.1	Connection to an a.c. mains supply	Connection to AC mains by Appliance Inlet.	P
3.2.1.2	Connection to a d.c. mains supply	No connection to d.c. mains supply.	N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment	The unit is not permanent connected equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm)		—
3.2.4	Appliance inlets	The Appliance Inlet complies with IEC/EN 60320-1.	P
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief	This equipment is not with non-detachable power supply cord.	N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—

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Clause	Requirement + Test	Result - Remark	Verdict

3.2.7	Protection against mechanical damage	No sharp edges and no part likely to damage the power cord.	P
3.2.8	Cord guards	No cord guard provided.	N/A
	Diameter or minor dimension D (mm); test mass (g)		—
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space	Not permanently connected and without non-detachable power supply cord.	N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict

3.4	Disconnection from the mains supply		P
3.4.1	General requirement	See below.	P
3.4.2	Disconnect devices	The Appliance Inlet is considered as disconnect device.	P
3.4.3	Permanently connected equipment	The unit is not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	When the disconnect device is disconnected no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords	No isolation switch provided.	N/A
3.4.6	Number of poles - single-phase and d.c. equipment	The appliance coupler disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Equipment is single phase.	N/A
3.4.8	Switches as disconnect devices	No switch as disconnect device.	N/A
3.4.9	Plugs as disconnect devices	The Appliance Inlet is considered to be the disconnect device.	N/A
3.4.10	Interconnected equipment	Not interconnected equipment.	N/A
3.4.11	Multiple power sources	Only one supply connection provided.	N/A

3.5	Interconnection of equipment		P
3.5.1	General requirements	The power supply is not considered for connection to TNV.	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 circuits.	N/A
3.5.4	Data ports for additional equipment	Considered. See appended table 2.5 for details	P

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Clause	Requirement + Test	Result - Remark	Verdict

4	PHYSICAL REQUIREMENTS		P
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4.1	Stability		P
	Angle of 10°	This unit is of a stable mechanical construction and does not overbalance when tilted to an angle of 10° from its normal upright position.	P
	Test: force (N)	Equipment is not a floor standing unit.	N/A

4.2	Mechanical strength		P
4.2.1	General	See below.	P
4.2.2	Steady force test, 10 N	10 N applied to components.	P
4.2.3	Steady force test, 30 N	30 N applied to internal chassis.	P
4.2.4	Steady force test, 250 N	250 N applied to outer enclosure (all type of enclosure source). No energy or other hazards.	P
4.2.5	Impact test	500 g steel sphere ball fall, from 1.3 m height onto outer enclosure (all type of enclosure source). No safety relevant damages.	P
	Fall test	Ditto.	P
	Swing test	Ditto.	P
4.2.6	Drop test; height (mm).....	The unit is not hand-held or direct plug-in equipment.	N/A
4.2.7	Stress relief test	After 7 h at 70 °C and cooling down to room temperature, no shrinkage, distortion or loosening of outer plastic enclosure parts (all type of enclosure source) was noticeable on the equipment. The internal metal chassis also treated as parts of enclosure.	P
4.2.8	Cathode ray tubes	No cathode ray tube.	N/A
	Picture tube separately certified		—

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Clause	Requirement + Test	Result - Remark	Verdict

4.2.9	High pressure lamps	No high pressure lamp.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ...:	The equipment is mounted in accordance with the instruction in user's manual. The mounting means withstood the additional loading test of 24.9 kg.	P

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).....:	Each handle withstood the loading test of 50 N.	P
4.3.3	Adjustable controls	No control devices.	N/A
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to with standard usual mechanical stress. For the protection, solder pins, cable ties and heatshrink tubing are used.	P
4.3.5	Connection of plugs and sockets	No mismatching of connectors possible.	N/A
4.3.6	Direct plug-in equipment	The equipment is not a direct plug-in unit.	N/A
	Torque		—
	Compliance with the relevant mains plug standard		—
4.3.7	Heating elements in earthed equipment	No heating elements.	N/A
4.3.8	Batteries	No batteries provided.	N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.3.9	Oil and grease	Insulation not in contact with oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	N/A
4.3.11	Containers for liquids or gases	The equipment does not contain liquid.	N/A
4.3.12	Flammable liquids	No flammable liquids in this unit.	N/A
	Quantity of liquid (l)		—
	Flash point (°C)		—
4.3.13	Radiation; type of radiation	See below.	P
4.3.13.1	General	No radiation is generated inside the equipment.	P
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification		—
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Laser (including LEDs)	LED as indicator below the limit of Laser class 1.	P
	Laser class		—
4.3.13.6	Other types		N/A

4.4	Protection against hazardous moving parts		N/A
4.4.1	General	No hazardous moving part.	N/A
4.4.2	Protection in operator access areas	No hazardous moving part.	N/A
4.4.3	Protection in restricted access locations	The equipment is not intended to be used in restricted locations.	N/A
4.4.4	Protection in service access areas	No hazardous moving part.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	Thermal requirements		P
4.5.1	General	See below.	P
4.5.2	Temperature tests	See appended table 4.5.	P
	Normal load condition per Annex L	Maximum normal load which specified by manufacturer.	—
4.5.3	Temperature limits for materials	See appended table 4.5.	P
4.5.4	Touch temperature limits	See appended table 4.5.	P
4.5.5	Resistance to abnormal heat	Phenolic bobbin used in Transformer T1 and T2. Other components see appended table 4.5.5 for details.	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings	See below.	P
	Dimensions (mm)	(See appended table).	—
4.6.2	Bottoms of fire enclosures	See below.	P
	Construction of the bottom	(See appended table).	—
4.6.3	Doors or covers in fire enclosures	No door or cover.	N/A
4.6.4	Openings in transportable equipment	Not transportable equipment.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm)		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes	No barrier or screen secured with adhesive.	N/A
	Conditioning temperature (°C)/time (weeks)		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classes and testing in Single Fault Conditions.	P
	Method 1, selection and application of components wiring and materials	Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	P
	Method 2, application of all of simulated fault condition tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	With having the following components: ■ components with windings ■ wiring ■ semiconductor devices, transistors, diodes, integrated circuits ■ resistors, capacitors, inductors The metal chassis and plastic material used as fire enclosure.	P
4.7.2.2	Parts not requiring a fire enclosure	See 4.7.2.1.	N/A

4.7.3	Materials		P
4.7.3.1	General	Integrated circuits and small electrical parts mounted on a printed wiring board min. rated V-1 or better.	P
4.7.3.2	Materials for fire enclosures	The metal chassis and plastic material used as fire enclosure.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	Materials or parts outside fire enclosure are metal or decorative plastic.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2, HF-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filters assemblies.	N/A
4.7.3.6	Materials used in high-voltage components	No high voltage component used.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
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5.1	Touch current and protective conductor current		P
5.1.1	General	See sub-clause 5.1.2 to 5.1.6.	P
5.1.2	Configuration of equipment under test (EUT)	EUT has only one mains connection.	P
5.1.2.1	Single connection to an a.c. mains supply	Each piece of equipment tested separately.	P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Equipment is tested using the test circuit in figure 5 A.	P
5.1.4	Application of measuring instrument	Tests are conducted using one of the measuring instruments in annex D, or any other circuit giving the same results.	P
5.1.5	Test procedure	The touch current was measured from supply to conductive parts and to 10 cm by 20 cm metal foil wrapped on accessible non- conductive parts (plastic enclosure).	P
5.1.6	Test measurements	See appended table 5.1.	P
	Supply voltage (V)	264 Vac	—
	Measured touch current (mA)	See appended table 5.1.	—
	Max. allowed touch current (mA)	3.5 mA (for PE) or 0.25 mA (for accessible non- conductive parts).	—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)..		—

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Clause	Requirement + Test	Result - Remark	Verdict

5.1.7	Equipment with touch current exceeding 3,5 mA	Touch current does not exceed 3.5 mA.	N/A
5.1.7.1	General		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	Not connected to telecommunication networks.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	No TNV.	N/A
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks	No TNV.	N/A
	a) EUT with earthed telecommunication ports		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

5.2	Electric strength		P
5.2.1	General	All tests voltages were applied for 1 minute in the chamber after the humidity test of 2.9.2 and in warm conditions after the heating test of 4.5.2. No isolation breakdown was observed. (results see appended tables)	P
5.2.2	Test procedure	See appended table 5.2.	P

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	Ventilation openings covered: results see appended table. No other foreseeable misuse considered to be possible.	P
5.3.2	Motors	No motor provided.	N/A
5.3.3	Transformers	No high temp. of the transformer are to be observed or to be expected. (see appended table 5.3 and Annex C)	P
5.3.4	Functional insulation.....:	Short Circuit tests. Result see appended table 5.3.	P
5.3.5	Electromechanical components	No electromechanical components.	N/A
5.3.6	Audio amplifiers in ITE		N/A
5.3.7	Simulation of faults	Faults in primary and secondary components and operational insulation were already considered for the building-in power supply board. No other abnormal tests necessary.	P
5.3.8	Unattended equipment	None of them are used.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	No fire propagated beyond the equipment. No molten metal was emitted. Electric strength test was passed.	P
5.3.9.1	During the tests	Ditto.	P
5.3.9.2	After the tests	Ditto.	P

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Clause	Requirement + Test	Result - Remark	Verdict

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
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6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements	Not connected to telecommunication networks directly.	N/A
	Supply voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions		N/A

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

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

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Clause	Requirement + Test	Result - Remark	Verdict

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



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

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Clause	Requirement + Test	Result - Remark	Verdict

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



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Clause	Requirement + Test	Result - Remark	Verdict

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



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Clause	Requirement + Test	Result - Remark	Verdict

C.2	Safety isolation transformer		P
Construction details:			
Transformer T1 of SPS board			
Mfr.: TAMURA			
Type: T0-5881			
Recurring peak voltage		472 V	
Required clearance insulation (from table 2K and 2L, pollution degree 2)			
for Reinforced		*4.9 mm	
for Basic		*2.5 mm	
Effective voltage rms		275 V	
Required creepage insulation (from table 2N, pollution degree 2, material group IIIa/IIIb)			
for Reinforced		5.6 mm	
for Basic		2.8 mm	
Measured min. clearances			
prim-sec (Reinforced)		6.4 mm (between inner windings)	
prim-core (Basic)		5.5 mm (between prim. windings to core)	
sec-core (Basic)		5.5 mm (between sec. windings to core)	
Measured min. creepages			
prim-sec (Reinforced)		6.4 mm (between inner windings)	
prim-core (Basic)		5.5 mm (between prim. windings to core)	
sec-core (Basic)		5.5 mm (between sec. windings to core)	
Supplementary information:			
*The multiplication factor for clearances as 1.15 according to Table A.2 of IEC 60664-1:2007 is considered for altitude up to 10,000 ft.			



PSB Singapore

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

Construction:	
Concentric windings on single bobbin. The Primary windings and secondary windings are separated by the construction of bobbin. Core is considered as floating.	
Pin numbers	
Prim.	6-8, 3-5
Sec.	11-12-13, 15-16, 17-18
Bobbin	
Material	Sumitomo, type PM-9820
Thickness	Min. 0.64 mm
Electric strength test	
With AC 3000 V after humidity treatment	
Result	Pass



PSB Singapore

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

C.2	Safety isolation transformer		P
Construction details:			
Transformer T2 of SPS board			
Mfr.: TAMURA			
Type: T0-5882			
Recurring peak voltage		532 V	
Required clearance insulation (from table 2K and 2L, pollution degree 2)			
for Reinforced		*5.1 mm	
for Basic		*2.6 mm	
Effective voltage rms		280 V	
Required creepage insulation (from table 2N, pollution degree 2, material group IIIa/IIIb)			
for Reinforced		5.6 mm	
for Basic		2.8 mm	
Measured min. clearances			
prim-sec (Reinforced)		Triple insulation wire used.	
sec-core (Reinforced)		6.4 mm (between sec. windings to core)	
Measured min. creepages			
prim-sec (Reinforced)		Triple insulation wire used.	
sec-core (Reinforced)		6.4 mm (between sec. windings to core)	
Supplementary information:			
*The multiplication factor for clearances as 1.15 according to Table A.2 of IEC 60664-1:2007 is considered for altitude up to 10,000 ft.			



PSB Singapore

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

Construction:	
Concentric windings on single bobbin (Phenolic material) with vertical core orientation or other identical sources. Certified triple insulation wires used for secondary windings, two layers of insulation tape between primary and secondary windings, core is considered as primary part. The secondary winding is fly wires construction which is fixed on PCB by soldering and glued, protection against direct crossover of triple insulation wire by tape.	
Pin numbers	
Prim.	1-5-2, 3-4
Sec.	6-7
Bobbin	
Material	Sumitomo, type PM-9820
Thickness	Min. 0.55 mm
Electric strength test	
With AC 3000 V after humidity treatment	
Result	Pass

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

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

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

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

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal(s) used	Metals which the combination electrochemical potential is less than 0.6V.	—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V)		N/A
K.3	Thermostat endurance test; operating voltage (V)		N/A
K.4	Temperature limiter endurance; operating voltage (V)		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

P	Annex P, NORMATIVE REFERENCES		P
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Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		P
	a) Preferred climatic categories	Varistor (VS1) is certified component on SPS board, see appended table 1.5.1.	P
	b) Maximum continuous voltage	Ditto.	P
	c) Pulse current	Ditto.	P

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
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U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
		See separated Report for triple insulation wire used in T2.	—

V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction	Single-phase TN power system considered and used for testing.	P
V.2	TN power distribution systems		P
V.3	TT power systems		N/A
V.4	IT power systems	230 V for Norway.	P

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

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

Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N/A
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
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BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
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IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS						
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations					P
General	Delete all the “country” notes in the reference document according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6. 2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2					P
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.					N/A
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC					N/A
1.7.2.1	Add the following NOTE: NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss					N/A

IEC/EN 60950-1															
Clause	Requirement + Test	Result - Remark	Verdict												
2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		P												
2.7.2	This subclause has been declared 'void'.		N/A												
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A												
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: <table><tr><td> Up to and including 6</td><td> </td><td>0,75^{a)}</td><td> </td></tr><tr><td> Over 6 up to and including 10</td><td> (0,75)^{b)}</td><td>1,0</td><td> </td></tr><tr><td> Over 10 up to and including 16</td><td> (1,0)^{c)}</td><td>1,5</td><td> </td></tr></table> In the conditions applicable to Table 3B delete the words "in some countries" in condition^{a)}. In NOTE 1, applicable to Table 3B, delete the second sentence.	Up to and including 6		0,75 ^{a)}		Over 6 up to and including 10	(0,75) ^{b)}	1,0		Over 10 up to and including 16	(1,0) ^{c)}	1,5			N/A
Up to and including 6		0,75 ^{a)}													
Over 6 up to and including 10	(0,75) ^{b)}	1,0													
Over 10 up to and including 16	(1,0) ^{c)}	1,5													
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: <table><tr><td> Over 10 up to and including 16</td><td> 1,5 to 2,5</td><td> 1,5 to 4</td><td> </td></tr></table> Delete the fifth line: conductor sizes for 13 to 16 A.	Over 10 up to and including 16	1,5 to 2,5	1,5 to 4			N/A								
Over 10 up to and including 16	1,5 to 2,5	1,5 to 4													
4.3.13.6	Add the following NOTE: NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A												

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

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

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
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ZB	SPECIAL NATIONAL CONDITIONS		P
1.2.4.1	In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N/A
1.5.7.1	In Finland, Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.		N/A
1.5.8	In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		P
1.5.9.4	In Finland, Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A
1.7.2.1	In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"		N/A
1.7.5	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		N/A

IEC/EN 60950-1																											
Clause	Requirement + Test	Result - Remark	Verdict																								
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A																								
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A																								
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A																								
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		P																								
2.7.1	In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N/A																								
2.10.5.13	In Finland, Norway and Sweden , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A																								
3.2.1.1	In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: <table> <tr> <td>SEV 6532-2.1991</td><td>Plug Type 15</td><td>3P+N+PE</td><td>250/400 V, 10 A</td></tr> <tr> <td>SEV 6533-2.1991</td><td>Plug Type 11</td><td>L+N</td><td>250 V, 10 A</td></tr> <tr> <td>SEV 6534-2.1991</td><td>Plug Type 12</td><td>L+N+PE</td><td>250 V, 10 A</td></tr> </table> In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: <table> <tr> <td>SEV 5932-2.1998</td><td>Plug Type 25</td><td>3L+N+PE</td><td>230/400 V, 16 A</td></tr> <tr> <td>SEV 5933-2.1998</td><td>Plug Type 21</td><td>L+N</td><td>250 V, 16 A</td></tr> <tr> <td>SEV 5934-2.1998</td><td>Plug Type 23</td><td>L+N+PE</td><td>250 V, 16 A</td></tr> </table>	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	SEV 5932-2.1998	Plug Type 25	3L+N+PE	230/400 V, 16 A	SEV 5933-2.1998	Plug Type 21	L+N	250 V, 16 A	SEV 5934-2.1998	Plug Type 23	L+N+PE	250 V, 16 A		N/A
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																								
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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																								
3.2.1.1	In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.		N/A																								

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		N/A
3.2.1.1	In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A
3.2.1.1	In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N/A
3.2.4	In Switzerland , for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the United Kingdom , a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N/A
3.3.4	In the United Kingdom, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm² to 1,5 mm² nominal cross-sectional area.		N/A
4.3.6	In the United Kingdom, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	In Ireland, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A
6.1.2.1	In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. 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 - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.		N/A



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IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3	In Norway and Sweden , there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.		N/A
7.3	In Norway , for installation conditions see EN 60728-11:2005.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZC	A-DEVIATIONS (informative)		P
1.5.1	Sweden (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.		N/A
1.5.1	Switzerland (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.		N/A
1.7.2.1	Denmark (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is 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  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.”		N/A
1.7.2.1	Germany (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.		N/A
1.7.5	Denmark (Heavy Current Regulations) With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.		N/A
1.7.13	Switzerland (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.		N/A
5.1.7.1	Denmark (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.		N/A

1.5.1	TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾	
Plastic Enclosure	Teijin Chemicals Ltd Research & Development Div	TN-7500, TN-7950	5 VB min., 2.0 mm thick min., 60 °C min.	UL 94	UL	
	Cheil industries inc chemicals div	GC-1017(+) ((+)- May be replaced by one, two, or three numbers and/or letter(s))	5 VB min., 85 °C, thick 2.0 mm min.	UL 94	UL	
Metal Enclosure	--	--	Min. 1.0 mm thick.	--	--	
PCB	Various	Various	V-1 or better, 105 °C min.	UL 796	UL	
Stand (Optional)	Various	Various	Metal with decorative part, min. HB, weight: 3.2 kg	UL 94	UL	
Speaker (2 provided) (Optional)	--	--	8 ohm, 2 W max.	--	--	
LCD Panel	LG Display	LM240WU7	24.1", TFT type	--	--	
Insulation sheet (under internal power supply board)	Various	Various	V-2 min.	UL 94	UL	
Internal Switching Power Supply	Tamura	NDS2401	I/P: 100-240 Vac, 50/60 Hz, 1.59-0.64 A. O/P: 24 Vdc/4 A max., 12 Vdc/1.5 A max, 5 Vdc/3.4 A max.	--	--	
- AC Inlet	Solteam	ST-01	250 Vac, 10 A 70 °C	IEC/EN 60320-1, UL498	VDE, UL	
- Fuse (F1)	Littelfuse	215	T4AH, 250 V	IEC 60127-2, EN 60127-2, UL 248-1	VDE, UL	

1.5.1	TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾	
-Varistor (VS1) (optional)	Thinking	TVR14471K	300 Vac; 385 Vdc	IEC/EN 61051-1, IEC/EN 61051-2, UL1449 3rd	VDE, UL	
- Thermistor (TH1) (Optional)	--	--	4 A, 8 ohm at 25 °C	--	--	
- X Capacitor (C1) (Optional)	Okaya	LE	Min. 250 Vac, min. 100 °C, max. 0.33 uF	IEC/EN 60384- 14, UL1414	ENEC, UL	
- Choke (L1, L2) (Optional)	UENO	ADR16H- 02080YD	105 °C min.	--	--	
- Y Capacitor (C2, C3) (Optional) (Y1or Y2 type)	TDK	CD	Min. 250 Vac, max. 680 pF, min. 125 °C	IEC/EN 60384- 14, UL1414	VDE, UL	
	Murata	KX	Min. 250 Vac, max. 680 pF, min. 125 °C	IEC/EN 60384- 14, UL1414	VDE, UL	
- Y Capacitor (C4) (Optional) (Y1 or Y2 type)	TDK	CD	Min. 250 Vac, max. 150 pF, min. 125 °C	IEC/EN 60384- 14, UL1414	VDE, UL	
	Murata	KX	Min. 250 Vac, max. 150 pF, min. 125 °C	IEC/EN 60384- 14, UL1414	VDE, UL	
- Bridge Diode (D1)	--	--	Min. 600 V, min. 15 A	--	--	
- Choke (L5) (Optional)	Hong Kok	301300H-354	105 °C min.	--	--	
- PFC Choke (L3, L4)	Tamura	T0-9793	105 °C min.	--	--	
- Transistor (Q1, Q2)	--	--	Min. 600 V, min. 7 A	--	--	
- Electrolytic Capacitor (C8)	--	--	100 uF, 450 V min., 105 °C min.	--	--	
- Transistor (Q3, Q4)	--	--	Min. 600 V, min. 6 A.	--	--	
- Transistor (Q5)	--	--	Min. 900 V, min. 9 A	--	--	
- Sensor Resistor (R51)	--	--	Min. 0.75 ohm, 2 W	--	--	

1.5.1	TABLE: List of critical components (continues)					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾	
- Bridge Capacitor (C44)(Y1 type) (Optional)	Murata	KX	Min. 250 Vac, max. 1500 pF, min. 125 °C	IEC/EN 60384-14, UL1414	VDE, UL	
	TDK	CD	Min. 250 Vac, max. 1500 pF, min. 125 °C	IEC/EN 60384-14, UL1414	VDE, UL	
- Photo Coupler (PHC1, PHC2, PHC3, PHC4)	NEC	PS2561A-1	Dti>0.4 mm, Ext. dcr>7.0 mm, 100 °C, comply with thermal cycling test	IEC 60950-1, EN 60950-1, IEC 60747-5-2, EN 60747-5-2, UL1577	FI, VDE, UL	
- Transformer (T1)	TAMURA	T0-5881	Class A	--	--	
- Transformer (T2)	TAMURA	T0-5882	Class A	--	--	
- Triple Insulation Wire (used in T2)	Furukawa	TEX-E	130 °C min.	IEC 690950-1, EN 60950-1, UL 2353	VDE, UL	
- PCB	Various	Various	V-1 or better, 105 °C min.	UL 796	UL	
DC/AC Inverter (one provided)	LOGAH Technology Corp.	MIJ36001.00	I/P: 26.4 V max., 3 A. O/P: 1550 Vrms, 8.5 mA max.	--	--	
- DC/AC Inverter Transformers (T1~T12)	LOGAH Technology Corp.	T51.8234.210	105 °C	--	--	
	LOGAH Technology Corp.	T51.8235.210	105 °C	--	--	
- DC/AC Inverter Choke (L1) (Optional)	LOGAH Technology Corp.	L51.8032.210 Cancel	105 °C	--	--	
- PCB	Various	Various	V-1 or better, min. 105 °C	UL 796	UL	
- Mylar sheet	Various	Various	V-2 min.	UL 94	UL	
Hood (Optional)	Various	Various	HB Min.	UL 94, UL 746C	UL	
¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance						

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (Vac/Hz)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status
For DVI-1 mode (with LCD panel type: LM240WU7, D/A inverter type LM240WU7)						
90 V/50 Hz	1.145	--	101.1	F1	1.145	Maximum normal load.
90 V/60 Hz	1.146	--	101.2	F1	1.146	Maximum normal load.
100 V/50 Hz	1.027	1.38	100.4	F1	1.027	Maximum normal load.
100V/60 Hz	1.031	1.38	100.5	F1	1.031	Maximum normal load.
240 V/50 Hz	0.430	0.56	99.0	F1	0.430	Maximum normal load.
240 V/60 Hz	0.431	0.56	99.1	F1	0.431	Maximum normal load.
254 V/50 Hz	0.401	--	98.9	F1	0.401	Maximum normal load.
254 V/60 Hz	0.408	--	98.9	F1	0.408	Maximum normal load.
264 V/50 Hz	0.391	--	98.8	F1	0.391	Maximum normal load.
264 V/60 Hz	0.392	--	98.8	F1	0.392	Maximum normal load.
For DVI-2 mode (with LCD panel type: LM240WU7, D/A inverter type LM240WU7)						
90 V/50 Hz	1.153	--	101.7	F1	1.153	Maximum normal load.
90 V/60 Hz	1.155	--	101.8	F1	1.155	Maximum normal load.
100 V/50 Hz	1.034	1.38	101.3	F1	1.034	Maximum normal load.
100 V/60 Hz	1.035	1.38	101.3	F1	1.035	Maximum normal load.
240 V/50 Hz	0.432	0.56	99.5	F1	0.432	Maximum normal load.
240 V/60 Hz	0.434	0.56	99.6	F1	0.434	Maximum normal load.
254 V/50 Hz	0.409	--	99.5	F1	0.409	Maximum normal load.
254 V/60 Hz	0.410	--	99.5	F1	0.410	Maximum normal load.
264 V/50 Hz	0.393	--	99.5	F1	0.393	Maximum normal load.
264 V/60 Hz	0.395	--	99.5	F1	0.395	Maximum normal load.

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (Vac/Hz)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status
For VGA (D-SUB) mode (with LCD panel type: LM240WU7, D/A inverter type LM240WU7)						
90 V/50 Hz	1.158	--	102.4	F1	1.158	Maximum normal load.
90 V/60 Hz	1.158	--	102.4	F1	1.158	Maximum normal load.
100 V/50 Hz	1.035	1.38	101.5	F1	1.035	Maximum normal load.
100 V/60 Hz	1.036	1.38	101.5	F1	1.036	Maximum normal load.
240 V/50 Hz	0.432	0.56	99.3	F1	0.432	Maximum normal load.
240 V/60 Hz	0.433	0.56	99.3	F1	0.433	Maximum normal load.
254 V/50 Hz	0.407	--	99.2	F1	0.407	Maximum normal load.
254 V/60 Hz	0.409	--	99.3	F1	0.409	Maximum normal load.
264 V/50 Hz	0.392	--	99.4	F1	0.392	Maximum normal load.
264 V/60 Hz	0.392	--	99.4	F1	0.392	Maximum normal load.
For Display mode (with LCD panel type: LM240WU7, D/A inverter type LM240WU7)						
90 V/50 Hz	1.165	--	102.3	F1	1.165	Maximum normal load.
90 V/60 Hz	1.165	--	102.4	F1	1.165	Maximum normal load.
100 V/50 Hz	1.042	1.38	102.3	F1	1.042	Maximum normal load.
100 V/60 Hz	1.045	1.38	102.3	F1	1.045	Maximum normal load.
240 V/50 Hz	0.437	0.56	100.4	F1	0.437	Maximum normal load.
240 V/60 Hz	0.438	0.56	100.4	F1	0.438	Maximum normal load.
254 V/50 Hz	0.412	--	100.3	F1	0.412	Maximum normal load.
254 V/60 Hz	0.414	--	100.4	F1	0.414	Maximum normal load.
264 V/50 Hz	0.397	--	100.4	F1	0.397	Maximum normal load.
264 V/60 Hz	0.398	--	100.4	F1	0.398	Maximum normal load.
Supplementary information:						



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2.1.1.5	TABLE: Energy hazard measurement				P
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
+5 V	3.4 A	5.17 V	4.3 A	21.5 VA	
+12 V	1.5 A	11.6 V	2.5 A	29.0 VA	
+24 V	4.0 A	23.8 V	5.9 A	140.42 VA	
Supplementary information: Energy does not exceed 240 VA between any two points in accessible parts (o/p) connector of secondary circuit.					

2.1.1.7	TABLE: Discharge test				P
Condition	Switch Position	τ calculated (s)	τ measured (s)	comments	
Line-Neutral	--	--	0.94	Vo= 373 V 37 % x Vo= 137.64 V Vt=1 sec= 84 V	
EMI Filter capacity: N/A					
Overall capacity: C1=0.33 μ F					
Discharge resistor: N/A					

2.2.2	TABLE: Hazardous voltage (circuit) measurement Test				P
Transformer designation	Location	Maximum Voltage	Voltage Limiting Component	Comments	
T1	Pin 15 to 16, 17	31.2 Vpk	--	--	
T1	Pin 18 to 16, 17	31.8 Vpk	--	--	
T1	Pin 11 to 12	16.0 Vpk	--	--	
T1	Pin 13 to 12	16.4 Vpk	--	--	
T2	Pin 6 to 7	37.2 Vpk	--	--	
Supplementary information:					
If the voltage exceeded 42.4 V pk or 60 V dc, the measurement was taken again after the next component in series with the secondary until the voltage measured was less than 42.4 V pk or 60 V dc.					
Each voltage measured and each component located in series directly before the measurement was noted.					

2.4.2	TABLE: Limited current circuit measurement (continues)					P
Location	Voltage (V)	Current (mA)	Freq. (KHz)	Limit (mA)	Comments	
For Power Board						
C44 second pin to Earth	0.156	0.312	0.06	0.7	Bridge capacitor C44 = 1500 pF.	
For D/A inverter type LM240WU7						
Normal (OP1 to Earth)	22.4	11.2	50.01	35.007	Normal operation.	
R200 S.C (OP1 to Earth)	21.6	10.8	50.61	35.427	Normal operation.	
C108 S.C (OP1 to Earth)	--	--	--	--	Unit shutdown immediately.	
C116 S.C (OP1 to Earth)	--	--	--	--	Unit shutdown immediately.	
C105 S.C (OP1 to Earth)	18.4	9.2	50.61	35.427	Normal operation.	
C208 S.C (OP1 to Earth)	21.6	10.8	51.47	36.029	Normal operation.	
Q201 pin3-1 S.C (OP1 to Earth)	--	--	--	--	Unit shutdown immediately.	
Normal (OP1 to OP2)	19.2	9.6	49.41	34.587	Unit shutdown immediately.	
R200 S.C (OP1 to OP2)	23.2	11.6	50.41	35.287	Normal operation.	
C108 S.C (OP1 to OP2)	--	--	--	--	Unit shutdown immediately.	
C116 S.C (OP1 to OP2)	--	--	--	--	Unit shutdown immediately.	
C105 S.C (OP1 to OP2)	16.8	8.4	50.71	35.497	Normal operation.	
C208 S.C (OP1 to OP2)	23.2	11.6	50.71	35.497	Normal operation.	
Q201 pin3-1 S.C (OP1 to OP2)	--	--	--	--	Unit shutdown immediately.	
Supplementary information:						
Output measured with a non-inductive resistor of 2 KΩ as load.						

2.5	TABLE: Limited power source measurement					P
For USB port						
1. According to Table 2B (normal condition) for USB port (P703 Pin 1 to G)						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	1.2	≤100	5.52
2. According to Table 2B (single fault condition: IC704 Pin 7 to 8 short) for USB port (P703 Pin 1 to G)						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	3.6	≤100	14.4
3. According to Table 2B (normal condition) for USB port (P704 Pin 1 to G)						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	1.3	≤100	5.59
4. According to Table 2B (single fault condition: IC704 Pin 7 to 5 short) for USB port (P704 Pin 1 to G)						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	3.6	≤100	14.4
5. According to Table 2B (normal condition) for USB port (P705 Pin 1 to G)						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	1.2	≤100	5.52
6. According to Table 2B (single fault condition: IC705 Pin 7 to 8 short) for USB port (P705 Pin 1 to G)						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	3.6	≤100	14.04
For Power board output (+5 V)						
7. According to Table 2B (normal condition) for output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	4.3	≤100	21.07

2.5	TABLE: Limited power source measurement					P
8. According to Table 2B (single fault condition: PHC2 Pin 1 to 2 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
9. According to Table 2B (single fault condition: PHC2 Pin 3 to 4 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
10. According to Table 2B (single fault condition: PHC2 Pin 1 open) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
11. According to Table 2B (single fault condition: PHC2 Pin 3 open) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
12. According to Table 2B (single fault condition: PHC3 Pin 1 to 2 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.1	≤8.0	4.3	≤100	21.5
13. According to Table 2B (single fault condition: PHC3 Pin 3 to 4 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
14. According to Table 2B (single fault condition: PHC3 Pin 1 open) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5

2.5	TABLE: Limited power source measurement					P
15. According to Table 2B (single fault condition: PHC3 Pin 3 open) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5
16. According to Table 2B (single fault condition: PHC4 Pin 1 to 2 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5
17. According to Table 2B (single fault condition: PHC4 Pin 3 to 4 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5
18. According to Table 2B (single fault condition: PHC4 Pin 1 open) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5
19. According to Table 2B (single fault condition: PHC4 Pin 3 open) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5
20. According to Table 2B (single fault condition: R51 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.3	≤100	21.5
21. According to Table 2B (single fault condition: R52 short) output +5 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	5.2	≤8.0	4.1	≤100	20.5

2.5	TABLE: Limited power source measurement					P
For Power board output (+12 V)						
22. According to Table 2B (normal condition) for output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.0	≤8.0	2.5	≤100	29.0
23. According to Table 2B (single fault condition: PHC1 Pin 1 to 2 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
24. According to Table 2B (single fault condition: PHC1 Pin 3 to 4 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
25. According to Table 2B (single fault condition: PHC1 Pin 1 open) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
26. According to Table 2B (single fault condition: PHC1 Pin 3 open) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
27. According to Table 2B (single fault condition: PHC3 Pin 1 to 2 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.0	≤8.0	5.3	≤100	59.89
28. According to Table 2B (single fault condition: PHC3 Pin 3 to 4 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)

2.5	TABLE: Limited power source measurement					P
29. According to Table 2B (single fault condition: PHC3 Pin 1 open) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.0	≤8.0	5.3	≤100	59.89
30. According to Table 2B (single fault condition: PHC3 Pin 3 open) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.0	≤8.0	5.3	≤100	59.89
31. According to Table 2B (single fault condition: PHC4 Pin 1 to 2 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
32. According to Table 2B (single fault condition: PHC4 Pin 3 to 4 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.0	≤8.0	2.5	≤100	42.5
33. According to Table 2B (single fault condition: PHC4 Pin 1 open) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
34. According to Table 2B (single fault condition: PHC4 Pin 3 open) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	0	≤8.0	--(*)	≤100	--(*)
35. According to Table 2B (single fault condition: R51 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	11.9	≤8.0	0(**)	≤100	--(**)

2.5	TABLE: Limited power source measurement					P
36. According to Table 2B (single fault condition: R32 short) output +12 V						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.1	≤8.0	2.5	≤100	29.25
37. According to Table 2B (single fault condition: R81 short) output +12 V, Uoc =12.0 Vdc						
Output Voltage (Voc)			Output Current (Isc)		VA	
V ac	V dc	Measured	Max Allowed	Measured	Max Allowed	Measured
≤30	≤30	12.0	≤8.0	5.3	≤100	60.42
Supplementary information:						
(*) : Output shut down immediately.						
(**) : Output is unable to upload.						

2.6.3.4	TABLE: Ground continue test		P
Location		Resistant measured (mΩ)	Comments
Ground pin of AC inlet to metal enclosure		10.6	Test current=32 A, 2 min., voltage drop: 0.34 V
Ground pin of AC inlet to metal enclosure		11.0	Test current=40 A, 2 min., voltage drop: 0.44 V
Supplementary information:			
The resistance did not exceed 0.1 Ω from any accessible conductive part and earth.			

2.10.2	TABLE: Max. working voltage measurement			P
Location	Peak Voltage (V)	TRMS Voltage (V)	Comments	
T1, Pin 2, 3 to 10, 11	336	177		
T1, Pin 2, 3 to 12	314	173		
T1, Pin 2, 3 to 13	308	170		
T1, Pin 2, 3 to 15	356	179		
T1, Pin 2, 3 to 16, 17	316	172		
T1, Pin 2, 3 to 18	320	168		
T1, Pin 4 to 10, 11	27.6	10.9		
T1, Pin 4 to 12	35.2	15.2		
T1, Pin 4 to 13	39.6	21.0		
T1, Pin 4 to 15	30.8	9.0		
T1, Pin 4 to 16, 17	35.6	15.4		
T1, Pin 4 to 18	46.0	26.9		
T1, Pin 5, 6 to 10, 11	384	206		
T1, Pin 5, 6 to 12	400	213		
T1, Pin 5, 6 to 13	412	220		
T1, Pin 5, 6 to 15	400	200		
T1, Pin 5, 6 to 16, 17	400	213		
T1, Pin 5, 6 to 18	424	228		
T1, Pin 7 to 10, 11	47.2	29.5		
T1, Pin 7 to 12	46.8	36.4		
T1, Pin 7 to 13	53.6	42.3		
T1, Pin 7 to 15	54.8	25.9		
T1, Pin 7 to 16, 17	46.8	36.6		
T1, Pin 7 to 18	59.6	48.3		
T1, Pin 8 to 10, 11	464	250		
T1, Pin 8 to 12	448	259		
T1, Pin 8 to 13	464	267		
T1, Pin 8 to 15	464	242		
T1, Pin 8 to 16, 17	452	258		

2.10.2	TABLE: Max. working voltage measurement (continues)			P
Location		Peak Voltage (V)	TRMS Voltage (V)	Comments
T1, Pin 8 to 18		472	275	Highest Vrms and Vpeak of T1.
T2, Pin 1 to 6		468	230	
T2, Pin 1 to 7		424	230	
T2, Pin 2 to 6		532	274	
T2, Pin 2 to 7		532	280	Highest Vrms and Vpeak of T2.
T2, Pin 3 to 6		448	145	
T2, Pin 3 to 7		484	153	
T2, Pin 4 to 6		376	148	
T2, Pin 4 to 7		360	137	
R47 to R87		360	170	
PHC1, Pin 3 to 1		368	177	
PHC1, Pin 3 to 2		372	176	
PHC1, Pin 4 to 1		368	175	
PHC1, Pin 4 to 2		368	175	
R31 to PHC1 Pin 1		372	177	
PHC3, Pin 3 to 1		364	167	
PHC3, Pin 3 to 2		364	167	
PHC3, Pin 4 to 1		340	156	
PHC3, Pin 4 to 2		340	155	
PHC2, Pin 3 to 1		364	176	
PHC2, Pin 3 to 2		364	176	
PHC2, Pin 4 to 1		364	174	
PHC2, Pin 4 to 2		364	174	
PHC4, Pin 3 to 1		348	162	
PHC4, Pin 3 to 2		348	161	
PHC4, Pin 4 to 1		348	161	
PHC4, Pin 4 to 2		344	160	
T2, Pin 4 to PHC4 Pin 2		364	172	
C44, Primary to Secondary		360	172	
Supplementary information: Test voltage: 240 Vac at 60 Hz				

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements					P
clearance cl and creepage distance dcr at/of:	U peak (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
For power board						
Functional:						
L/N traces before use	420	250	1.8 ¹⁾	5.5	2.5	5.5
Trace under fuse	420	250	1.8 ¹⁾	8.0	2.5	8.0
Basic / supplementary:						
Line to PE wire	420	250	2.3 ¹⁾	4.4	2.5	4.4
Under C2, C3, C4	420	250	2.3 ¹⁾	4.8	2.5	4.8
C8 to T1 core	472	275	2.5 ¹⁾	7.2	2.9	14.8
L10 to T1 core	472	275	2.5 ¹⁾	9.0	2.9	16.6
C25 to T1 core	472	275	2.5 ¹⁾	5.0	2.9	9.6
C45, C46 to T1 core	472	275	2.5 ¹⁾	3.6	2.9	11.2
Power board primary side to metal enclosure (PE)	420	250	2.3 ¹⁾	4.9	2.5	10.0
Reinforced:						
Power board primary side to SELV board	420	250	4.6 ¹⁾	51.0	5.0	68.0
Primary components (with 10 N) to secondary components (with 10 N)	420	250	4.6 ¹⁾	See below	5.0	See below
Heat sink of D2 to C47				6.5		6.5
R47 to R48				9.2		9.2
R31 to PHC1 pin 1				7.5		7.5

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements (continues)					P
clearance cl and creepage distance dcr at/of:	U peak (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Primary trace to secondary trace	420	250	4.6 ¹⁾	See below	5.0	See below
Under PHC1				7.8		7.8
Under PHC2				7.8		7.8
Under PHC3				7.8		7.8
Under PHC4				7.8		7.8
Under C44				9.3		9.3
Under T1	472	275	4.9 ¹⁾	17.8	5.6	17.8
Under T2	532	280	5.1 ¹⁾	12.0	5.6	12.0
Supplementary information: 1) Altitude correction factor for clearance for an altitude of 3,048 m (Based on IEC 60664-1:2007):1.15. 2) The CTI rating of PCB is material group IIIa/IIIb (Cl. 2.10.4). 3) Separation Method between SELV and hazard circuit (Cl. 2.2.3) by double or reinforced insulation (Method 1) earthed screen (Method 2). 4) Functional insulation shorted, see sub-clause 5.3.4. 5) All primary and secondary internal wirings are keep in position and could not be contacted each other. 6) One mylar sheet is located under power board. 7) Tubes component: C25. 8) L, N wire soldered on PCB by soldering pin.						

2.10.5	TABLE: Distance through insulation measurements				P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (Vac)	Required DTI (mm)	DTI (mm)
Photo Couplers (reinforced insulation)	420	250	3000	0.4	1)
Plastic Enclosure (reinforced insulation)	420	250	3000	0.4	1)
Tube for C25 used (supplementary insulation)	420	250	3000	0.4	0.4
Supplementary information:					
1) For distance through insulation, see appended table 1.5.1 for details.					
2) Test all sources of optical isolator, see appended table 1.5.1 for details.					

4.5	TABLE: Thermal requirements			P
	Supply voltage (V) :	See below.		—
	Ambient T _{min} (°C) :	--		—
	Ambient T _{max} (°C) :	--		—
Maximum measured temperature T of part/at::		T (°C)		Allowed T _{max} (°C)
Test condition		90 Vac (Vertical)	264 Vac (Vertical)	--
Ambient		40.0	40.1	--
For Power board				
AC inlet		56.0	52.4	70
PWB under TH1		69.8	58.8	105
C1 body		59.2	49.1	100
L1 coil		57.2	47.8	105
C3 body		54.0	48.1	85
L2 coil		55.1	47.3	105
PWB under D1		57.9	51.6	105
L5 coil		50.4	46.1	105
L3 coil		61.0	55.2	105
L4 coil		63.9	58.9	105
C8 body		64.2	59.5	85
PWB under Q1		74.8	75.0	105
PWB under Q4		67.9	62.1	105
PHC3 body		69.0	64.2	100
C44 body		74.2	70.4	85
T2 core		74.5	68.7	90
T2 coil		77.9	73.4	90
T1 coil		72.9	71.4	90
T1 core		72.3	70.2	90
PWB under D19		82.0	80.8	105
C46 body		69.8	69.2	85

4.5	TABLE: Thermal requirements		P
	Supply voltage (V)	See below.	—
	Ambient T _{min} (°C)	--	—
	Ambient T _{max} (°C)	--	—
Maximum measured temperature T of part/at::		T (°C)	Allowed T _{max} (°C)
For main board			
PWB under IC401	75.3	75.5	105
PWB under IC100	63.1	63.3	105
For bridge board			
PWB under IC701	61.7	61.9	105
C742 body	56.1	56.5	85
For D/A inverter board			
T1 coil	59.9	59.9	105
T1 core	57.9	57.9	105
PWB under Q201	69.3	69.8	105
C204 body	66.7	66.7	85
L1 coil	69.5	69.7	105
Plastic enclosure inside near TOP	44.9	43.8	60
Plastic enclosure outside near TOP	42.2	41.8	95
Metal enclosure near AC inlet	52.5	52.2	70
Panel body	44.8	44.7	95

4.5	TABLE: Thermal requirements			P
	Supply voltage (V):	See below.		—
	Ambient T _{min} (°C):	--		—
	Ambient T _{max} (°C):	--		—
Maximum measured temperature T of part/at::		T (°C)		Allowed T _{max} (°C)
Test condition		90 Vac (elevation)	90 Vac (Horizontal)	--
Ambient		40.2	40.0	--
For Power board				
AC inlet		57.1	43.8	70
PWB under TH1		74.6	63.6	105
C1 body		64.7	60.3	100
L1 coil		64.0	59.7	105
C3 body		59.1	56.9	85
L2 coil		59.0	62.8	105
PWB under D1		61.8	65.6	105
L5 coil		51.6	65.7	105
L3 coil		62.2	69.8	105
L4 coil		64.8	67.7	105
C8 body		65.5	61.4	85
PWB under Q1		75.4	68.6	105
PWB under Q4		70.8	59.2	105
PHC3 body		72.7	54.7	100
C44 body		73.5	45.8	85
T2 core		76.8	52.9	90
T2 coil		78.9	53.6	90
T1 coil		73.6	66.2	90
T1 core		73.1	66.9	90
PWB under D19		83.1	60.3	105
C46 body		69.7	58.1	85

4.5	TABLE: Thermal requirements		P
	Supply voltage (V)	See below.	—
	Ambient T_{min} (°C)	--	—
	Ambient T_{max} (°C)	--	—
Maximum measured temperature T of part/at::		T (°C)	Allowed T_{max} (°C)
For main board			
PWB under IC401	73.8	66.6	105
PWB under IC100	61.1	55.9	105
For bridge board			
PWB under IC701	57.4	59.0	105
C742 body	51.3	49.9	85
For D/A inverter board			
T1 coil	56.2	53.8	105
T1 core	56.0	54.2	105
PWB under Q201	63.7	67.6	105
C204 body	60.9	57.7	85
L1 coil	69.9	64.5	105
Plastic enclosure inside near TOP	45.8	49.7	60
Plastic enclosure outside near TOP	42.9	45.4	95
Metal enclosure near AC inlet	48.2	42.4	70
Panel body	44.6	50.8	95

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

Supplementary information:

The temperatures were measured by thermal couple (type K) method under worst case normal mode as described in 1.6.2 at voltage described in 1.4.5. The worst case normal mode is defined with max load of the equipment.

With max. ambient temperature specified as 40 °C, therefore, the maximum temperature rise is calculated as follows:

Winding components:

- class A → $T_{max} = 100 - 10 = 90$ °C (T_1, T_2) (**For power board**)

For power board

Components with:

- max. temp. of 85 °C (C3, C8, C44, C46)
- max. temp. of 100 °C (C1)
- max. temp. of 100 °C (Photo Coupler)
- max. temp. of 105 °C (L1, L2, L3, L4, L5, PWB)
- max. temp. of 70 °C (AC inlet)

For main board

- max. temp. of 105 °C (PWB)

For bridge board

- max. temp. of 105 °C (PWB)
- max. temp. of 85 °C (C742)

For D/A inverter board

- max. temp. of 105 °C (T_1 , L1, PWB)
- max. temp. of 85 °C (C204)
- max. temp. of 60 °C (Plastic Enclosure)
- When no class of insulation is given, min. insulation 105 °C assumed.

User accessible area:

- material is plastic (95 °C)
- material is metal (70 °C)



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4.5.5	TABLE: Ball pressure test of thermoplastic parts		P
	Allowed impression diameter (mm) :	≤ 2 mm	—
Part		Test temperature (°C)	Impression diameter (mm)
Bobbin of T1, T2, L3, L4 (Sumitomo / PM-9820)		125	0.9
Bobbin of L1, L2 (MITSUBISHI / 5010N6)		125	0.9
Bobbin of L1, L2 (LG / LUPOX GP-2306F)		125	1.1
Supplementary information:			

4.6.1& 4.6.2	TABLE: enclosure openings		P
Location	Size (mm)	Comments	
Front side	--	No openings	
Top side	20.9 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 490 mm by 20.9 mm. (The internal metal chassis covered which is 3.5 mm max. in any dimension.)	
	19 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 334 mm by 19 mm. (The internal metal chassis covered which is 3.5 mm max. in any dimension.)	
	23 x 2.3 mm	Numerous rectangular openings provided, covering an area of approx. 80.1 mm by 23 mm. (The internal metal chassis covered which is 1.8 mm max. in any dimension.)	
Right side ¹⁾	20.9 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 320 mm by 20.9 mm. (The internal metal chassis covered which is metal bottom chassis confirming to the dimension limits of any line in thickness 1.0 mm, max. diameter of hole 1.8 mm and min. holes center to center 3.3 mm.)	
	19 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 210 mm by 19 mm. (The internal metal chassis covered which is metal bottom chassis confirming to the dimension limits of any line in thickness 1.0 mm, max. diameter of hole 1.8 mm and min. holes center to center 3.3 mm.)	
Left side	20.9 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 320 mm by 20.9 mm. (The internal metal chassis covered which is 3.5 mm max. in any dimension.)	
	19 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 210 mm by 19 mm. (The internal metal chassis covered which is 3.5 mm max. in any dimension.)	

4.6.1& 4.6.2	TABLE: enclosure openings (continues)		P
Location		Size (mm)	Comments
Rear side ¹⁾		31.5 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 390 mm by 31.5 mm. (The internal metal chassis covered which are 3.5 mm max. for any dimension with no components in 5 °C and metal bottom chassis confirming to the dimensional limits of any line in thickness 1.0 mm, max. diameter of hole 1.8 mm and min. holes center to center 3.18 mm.)
Bottom side		20.9 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 185 mm by 20.9 mm. (The internal metal chassis covered which is metal bottom chassis confirming to the dimensional limits of any line in thickness 1.0 mm, max. diameter of hole 1.8 mm and min. holes center to center 3.3 mm.)
		21.5 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 120 mm by 21.5 mm. (The internal metal chassis covered which is metal bottom chassis confirming to the dimensional limits of any line in thickness 1.0 mm, max. diameter of hole 1.8 mm and min. holes center to center 3.3 mm.)
		21.5 x 2.5 mm	Numerous rectangular openings provided, covering an area of approx. 120 mm by 21.5 mm. (The internal metal chassis covered which is metal bottom chassis confirming to the dimensional limits of any line in thickness 1.0 mm, max. diameter of hole 1.8 mm and min. holes center to center 3.3 mm.)
Supplementary information: All conditions are horizontal condition.			
¹⁾ : After rotating, the right side and rear side will be from side to bottom.			



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4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
Metal enclosure	--	--	1.0	--	P	
Plastic enclosure	Teijin Chemicals Ltd Research & Development Div	TN-7500, TN-7950	2.0	5 VB or better	P	
Plastic enclosure	Cheil industries inc chemicals div	GC-1017(+)	2.0	5 VB or better	P	
PCB	--	--	--	V-1 or better	P	
Supplementary information:						

5.1	TABLE: Touch current measurement			P
	Normal	The tests are repeated in reverse polarity		
Condition	Current (mA) L, N→enclosure (with foil)	Current (mA) L, N→enclosure (with foil)	Comments	
System ON	0.005	0.005	With “e” closed	
Condition	Current (mA) L, N→Terminal	Current (mA) L, N→Terminal	Comments	
System ON	0.25	0.25	With “e” opened	
Condition	Current (mA) L, N→ Metal Enclosure	Current (mA) L, N→ Metal Enclosure	Comments	
System ON	0.25	0.25	With “e” opened	
Input voltage: 264 V				
Input frequency: 60 Hz				
Overall capacity: on SPS board: C2, C3 = 680 pF; C4= 150pF ; Bridge capacitor C44 = 1500 pF.				

5.2	TABLE: Electric strength measurements			P
test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	test voltage (V)	breakdown
For Unit				
Primary to SELV		DC	4242	No
Primary to plastic enclosure with metal foil		AC	3000	No
Primary to earth		DC	2837	No
Insulation sheet between internal power supply board and metal chassis		DC	2837	No
For Transformer				
T1 Primary winding to SELV winding		AC	3000	No
T1 Primary winding to core		AC	1707	No
T1 SELV winding to core		AC	1707	No
T2 Primary winding to SELV winding		AC	3000	No
T2 SELV winding to core		AC	3000	No
One layer of insulation tape (Thickness:0.025 mm) (T1 and T2 used)		AC	3000	No
Supplementary information: 1) There was no indication of breakdown as a result of applying the test voltage to the indicated locations for 60 seconds. 2) Tape source: Teraoka / 631S #25, 632S #25; Jingjiang /CT, PZ; Symbio / 35660, 35660Y.				

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C)				25 °C or see below.	—
	Power source for EUT: Manufacturer, model/type, output rating				See Table 1.5.1 for detail.	—
Component No.	Fault	Supply voltage (Vac)	Test time	Fuse #	Fuse current (A)	Observation
PHC1 pin 1 to pin 2	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
PHC1 pin 3 to pin 4	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
PHC3 pin 1 to pin 2	s-c	240	30 min.	F1	0.64	Unit operated normally. No damage, no hazard.
PHC3 pin 3 to pin 4	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
PHC2 pin 1 to pin 2	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
PHC2 pin 3 to pin 4	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
PHC4 pin 1 to pin 2	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
PHC4 pin 3 to pin 4	s-c	240	30 min.	F1	0.64	Unit operated normally. No damage, no hazard.
PHC1 pin 1	o-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
PHC1 pin 3	o-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
PHC3 pin 1	o-c	240	30 min.	F1	0.64	Unit operated normally. No damage, no hazard.
PHC3 pin 3	o-c	240	30 min.	F1	0.64	Unit operated normally. No damage, no hazard.
PHC2 pin 1	o-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
PHC2 pin 3	o-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.

Component No.	Fault	Supply voltage (Vac)	Test time	Fuse #	Fuse current (A)	Observation
PHC4 pin 1	o-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
PHC4 pin 3	o-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
IC2, pin 14 to 4	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Q4 pin G to S	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Q3 pin G to S	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Q5 pin G to S	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
Q1 pin G to S	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
D1 ~ to +	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
C8	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
Q4 pin D to S	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Q4 pin D to G	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Q3 pin D to S	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Q3 pin D to G	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
Q7 pin D to G	s-c	240	30 min.	F1	0.64	Unit operated normally. No damage, no hazard.
R5	s-c	240	30 min.	F1	0.64	Unit operated normally. No damage, no hazard.

Component No.	Fault	Supply voltage (Vac)	Test time	Fuse #	Fuse current (A)	Observation
Q1 pin D to S	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
Q1 pin D to G	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
Q5 pin D to S	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
Q5 pin D to G	s-c	240	1 sec.	F1	--	Fuse (F1) open immediately. No hazard.
Ventilation openings	b-l	240	4 hr	F1	0.64	Unit operated normally. Maximum temperature of T1 primary coil= 83.8 °C, T1 secondary coil= 81.1 °C, T2 coil= 87.4 °C, ambient=27.2 °C. No damage, no hazard.
T1 pin 15 to 16, 17	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
T1 pin 18 to 16, 17	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
T1 pin 11 to 12	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
T1 pin 13 to 12	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
T1 pin 3 to 8	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
T2 pin 6 to 7	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
T2 pin 3 to 4	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
T2 pin 1 to 2	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.

Component No.	Fault	Supply voltage (Vac)	Test time	Fuse #	Fuse current (A)	Observation
T1 pin 11, 13 to 2 (After D19)	o-l	240	9.5 hr	F1	0.64 to 0.7 to 0.03	Unit shut down at load: 2.5 A. Maximum temperature of T1 primary coil= 51.6 °C, T1 secondary coil= 81.5 °C, T2 coil= 70.5 °C, ambient=26.4 °C. No damage, no hazard.
T1 pin 15, 18 to 16 (After D18)	o-l	240	11 hr	F1	0.64 to 0.8 to 0.12	Besides +5 V, unit shut down at load: 5.7 A. Maximum temperature of T1 primary coil= 91.5 °C, T1 secondary coil= 89.4 °C, T2 coil= 72.2 °C, ambient= 26.7 °C at load 5.5 A. No damage, no hazard.
T2 pin 6 to 7 (After D20)	o-l	240	8 hr	F1	0.64 to 0.67 to 0.03	Unit shut down at load: 4.2 A. Maximum temperature of T1 primary coil= 73.3 °C, T1 secondary coil= 72.3 °C, T2 coil= 69.9 °C, ambient=26.1 °C. No damage, no hazard.
+24 V	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
+12 V	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
+5 V	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
+5 V to +24 V	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
+5 V to +12 V	s-c	240	10 min.	F1	0.64 to 0.03	Unit shut down immediately. No damage, no hazard.
+24 V to +12 V	s-c	240	30 min.	F1	0.64 to 0.12	Besides +5 V, unit shut down immediately. No damage, no hazard.
Supplementary information:						
Fault: s-c = short circuit, o-c = open circuit, o-l = overload, b-l=blocked.						