WITRUST TESTING LABORATORY

TEST REPORT

Client Name: Zhejiang Sur-link Technology Co Ltd

Report No.: L093800-01

Issued on: May 24, 2009

Address: No. 505 Tianmushan Road,
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Hangzhou Witrust Testing Laboratory is a WTDP laboratory certified by Underwriters Laboratories Inc.

Hangzhou Witrust Testing Laboratory

Project No. 09DF3800 Report No.: L093800-01

GENERAL INFORMATION AND CONCLUSION PAGE

CLIENT INFORMATION	
Appliance Name	Zhejiang Sur-link Technology Co Ltd
Address	1 North Rd Batang Hangzhouwan New Zone Cixi Zhejiang 315300 China
Manufacturer Name	Zhejiang Sur-link Technology Co Ltd
Address	1 North Rd Batang Hangzhouwan New Zone Cixi Zhejiang 315300 China

PROJECT INFORMATION	
Product Name	Communication Circuit Accessories
Model(s)	Patch Panel:SPP-2XX2H1,SPP-4XX2H1 Outlet:SFP-2XX101,SFP-7XX101 Keystone Jack:SPP-2XX201,SPP-7XX201
Additional Description	125V AC, 1.5A
Standard/Edition	EN 60950-1:2006
Tested Period	05-08-09 ~ 05-24-09
Requested Service	☒ Full or partial pretest for the following certification: **[ ]** UL **[ ]** GS **[X]** CE-LVD **[ ]** CE-EMC **[ ]** others:_____ ☐ Other commercial inspection and testing service: _____

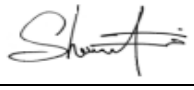
SAMPLE RECORDS			
Sampling Information	**[x]** Submitted by the client **[ ]** Selected by Hangzhou Witrust Testing Laboratory		
Sample	Quantity	Description	Date Received
Patch Panel	8	Well for testing	05-06-09
Keystone Jack	8	Well for testing	05-06-09
Outlet	8	Well for testing	05-06-09

ONLY FOR SELECTION SAMPLING			
Selected by	N/A	Signature	---
Location	N/A	Date	---

CONCLUSION:

The submitted sample(s) were tested according to the standard(s) specified above and found **COMPLIANCE WITH** the applicable requirements.

Issued on: 05-24-09

Finally reviewed by:	Primarily reviewed by:	Handled by:
Shawn Fei	Kelvin Xu	Gerry Zhou
(Printed Name)	*(Printed Name)*	*(Printed Name)*
		
(Signature)	*(Signature)*	*(Signature)*

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– END OF THIS PAGE –

TEST REPORT

EN 60950-1 :2006

Information technology equipment – Safety – Part 1: General requirements

Report reference No ..... :	L093800-01
Tested by (printed name and signature) ..... :	Gerry Zhou
Approved by (printed name and signature) ..... :	Kelvin Xu
Date of issue ..... :	05-24-09
Testing Laboratory Name ..... :	Hangzhou Witrust Testing Laboratory
Address ..... :	No 505 Tianmushan Rd Hangzhou Zhejiang 310023 China
Applicant's Name ..... :	ZHEJIANG SUR-LINK TECHNOLOGY CO.,LTD
Address ..... :	1 North Rd Batang,Hangzhouwan New Zone,Cixi,Zhejiang, 315300,China
Test specification	
Standard ..... :	EN 60950-1:2006
Test procedure ..... :	CE
Non-standard test method ..... :	N/A
Product ..... :	Communications Circuit Accessories
Trademark ..... :	SUR-LINK®
Manufacturer ..... :	ZHEJIANG SUR-LINK TECHNOLOGY CO.,LTD
Factory ..... :	ZHEJIANG SUR-LINK TECHNOLOGY CO.,LTD
Patch Panel.....	SPP-2XX2H1,APP-4XX2H1
Outlet.....	SFP-2XX101,SFP-7XX101
KeystoneJack.....	SPP2XX201,SPP-7XX201
Serial number ..... :	Pre-production unit
Technical..... :	AC 125 V 1.5 A

Copy of marking plate and summary of test results (information/comments):

For representative rating label refer to original test report no. 30482325.001; current ratings are adjusted to show 12 / 6A as mentioned on the cover page of this test report

Summary of testing:

Clause 1.6.2	Power Input Measurements
Clause 2.1.1.1	Accessibility to Energized parts (test finger, test pin)
Clause 2.1.1.7	Capacitance Discharge Test
Clause 2.2	SELV circuits – voltage measurements (normal and fault conditions)
Clause 2.4	Measurments on limited current circuits
Clause 2.6.3	Resistance of earthing conductors and their terminations
Clause 3.1.9	Termination of conductors – 10N pull test
Clause 4.2	Mechanical strength test
Clause 4.5	Temperature rise measurements
Clause 5.1	Touch current and protective conductor current
Clause 5.2	Electric strength measurements
Clause 5.3	Abnormal operating and fault conditions
Annex K	Measurement of thermal controls

Particulars: test item vs. test requirements	
Equipment mobility ..... :	~~movable / hand-held /~~ **stationary / fixed** ~~/ permanent connection / direct plug-in / for building-in~~
Operating condition ..... :	**continuous** ~~/ short-time / intermittent~~
Mains supply tolerance (%)..... :	-10%, +6%
Tested for IT power systems ..... :	**Yes** ~~/ No~~
IT testing, phase-phase voltage (V) :	230 V
Class of equipment ..... :	Class I ~~/ **Class II**~~
Mass of equipment (kg)..... :	Approx. 30 kg
Protection against ingress of water ..... :	IPX0
Test case verdicts	
Test case does not apply to the test object :	N/A
Test item does meet the requirement ..... :	P(ass)
Test item does not meet the requirement .. :	F(ail)
Testing	
Date of receipt of test item ..... :	May 6, 2009
Date(s) of performance of test ..... :	May 8, 2009 - May 24, 2009

General remarks

"This report is not valid as a CB Test Report unless appended by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02".

The test result presented in this report relate only to the object(s) tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

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

The following group and/or national deviations were considered: AR(Argentina), AT(Austria), AU(Australia), BE(Belgium), CA(Canada), CH(Switzerland), CN(China), DE(Germany), DK(Denmark), FI(Finland), FR(France), GR(Greece), HU(Hungary), IL(Israel), IN(India), IT(Italy), JP(Japan), KE(Kenya), KR(Korea), MY (Malaysia), NL(Netherlands), NO(Norway), PL(Poland), SE(Sweden), SG(Singapore), SI(Slovenia), SK(Slovakia), US(United States)

The following Attachments are integral part of this test report:

Attachment A: Photographs of Test Sample

Attachment B: CB-Certificate of Power Supply

General product information:

This test report is an amendment to the original test report with number 30482325.001 and covers the addition of similar models. The additional products are LAN Switches with four different product codes depending on the backplane that is installed. For new / additional model numbers refer to the cover page of this test report. All models are similar to the previously certified units except for the following differences:

- A new set of SELV-communication cards has been introduced. However, all cards from the previously certified models are exchangeable.
- Different power supplies have been introduced which are CB-certified and do have individual power supply connections.
- Power Backplane changed from 'hazardous voltage' to SELV voltage
- AC-inlet / EMI-filter combo removed due to individual AC-inlets as part of approved power supplies

The new models are intended to be fully operational with a minimum of two power supplies only. However, the four power supply configuration is intended for dual-AC systems (where there are two different sources of AC power), and the enclosure will continue to run with one AC off and one power supply down.

The M3-MONITOR, M3-SW32-16F, , and M3-2SW32 are identical with the cards in the previous project. The 10G-SW16-8C, and 10G-2SW16 are new. They each use less than 35W. The 10G-2SW16 has no front panel ports. The 10G-SW16-8C has eight "CX4" ports - these are ports to connect to copper cables. There is no power available on these ports. All signals are AC coupled through 470pF capacitors.

During the testing the maximum power was generated by using resistive loads. Due to the expenses of each individual card a low-cost test configuration with these resistive load cards, generating 640W of power, was used for the temperature rise measurements and abnormal fault conditions.

It should be noted that for the final configuration of the LAN Switches each individual card has two redundant temperature sensors which control the power to a card (thermal cut-out / power off at 55°C). Also the two DC-fans at the back-side of the product are speed-adjustable depending on the temperature inside the LAN Switch enclosure. Individual temperature sensors are located on each fan controller PCB.

There are no connections to a Telecommunication Network (TNV). The equipment is rated for a maximum ambient temperature of 40ºC.

Due to the size of the power supply CB-Report ony the CB-Certificate has been attached to this report. The test report for the power supply will be available upon request from the applicant.

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1	GENERAL		P
1.5	Components		P
1.5.1	General	Complies	P
	Comply with IEC 60950 or relevant component standard	refer to appended table 1.5.1 (list of critical components).	P
1.5.2	Evaluation and testing of components	All safety critical components are certified. All components are used within their specified ratings, plastic materials, PCBs and wiring materials are UL listed, non-certified components were tested according to this standard.	P
1.5.3	Thermal controls	Thermal sensors are used on each individual plug-in card which shut down the power if temperature reaches 55°C Thermal sensors are used on the fan control cards to increase the speed of fans in case of increased temperature inside the enclosure Cycling test according to Annex K6 is tested for thermal cut-out However, safety is not relied upon correct functioning of thermal sensors (redundant DC-fans, fully enclosed compartment for signal cards is used in case a fire occurs)	P
1.5.4	Transformers	Mains transformers are part of already certified Power Supplies	P
1.5.5	Interconnecting cables	SELV interconnecting cables for the Ethernet connection, optical cables for the optical links; minimum flammability rated: VW-1	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1.5.6	Capacitors in primary circuits .....:	All caps in primary circuits are part of approved power supplies and certified according to IEC 60384-14:1993	P
1.5.7	Double insulation or reinforced insulation bridged by components	Bridging components are part of already approved and certified power supplies	P
1.5.7.1	General	Refer to above	P
1.5.7.2	Bridging capacitors	Refer to above	N
1.5.7.3	Bridging resistors	Refer to above	N
1.5.7.4	Accessible parts		N
1.5.8	Components in equipment for IT power systems	Power supplies have been evaluated for IT power systems	P

1.6	Power interface		P
1.6.1	AC power distribution systems	TN – power distribution system, IT for Norway	P
1.6.2	Input current	Complies <10% (see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand held	N
1.6.4	Neutral conductor	Insulated from earth and accessible parts by Basic insulation within approved power supplies	P
1.7	Marking and instructions		P
1.7.1	Power rating	Complies	P
	Rated voltage(s) or voltage range(s) (V) .....:	AC 125V	P
	Symbol for nature of supply, for d.c. only.....:	DC Input	N
	Rated frequency or rated frequency range (Hz) .:	60 / 50 Hz	P
	Rated current (mA or A) .....:	12.0 / 6.0A	P
	Manufacturer's name or trademark or identification mark .....:		P
	Type/model or type reference .....:	Refer to cover page of test report	P
	Symbol ~~of~~ for Class II equipment only .....:	Class I	N
	Other symbols .....:	No other symbols provided	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	Certification marks .....:	cTUVus, others to be provided	P
1.7.2	Safety instructions	Installation and operating instructions provided, refer to original test report 30482325.001; warning for Laser Class 1M' located at front side of unit and reads the following: **"Laser radiation, do not view optical-fiber ports directly with optical instruments. Class 1M Laser product"**	P
1.7.3	Short duty cycles	Continuous	N
1.7.4	Supply voltage adjustment .....:	No adjustment, autoranging power supply	N
1.7.5	Power outlets on the equipment .....:	No power outlet provided	N
1.7.6	Fuse identification .....:	Main fuse is part of approved power supply (4 ea) and not operator accessible, no other fuses provided	P
1.7.7	Wiring terminals	No wiring terminals	P
1.7.7.1	Protective earthing and bonding terminals .....:	AC-inlet, protective earthing and bonding terminals are part of already approved power supplies	P
1.7.7.2	Terminal for a.c. mains supply conductors	No terminals for a.c.-mains supply conductors, approved AC-inlets are part of approved power supplies	N
1.7.7.3	Terminals for d.c. mains supply conductors	No d.c. mains supply conductors	N
1.7.8	Controls and indicators	No controls or indicators related to safety, LEDs provided on insert cards for status information at front of the unit	N
1.7.8.1	Identification, location and marking .....:	Refer to above	N
1.7.8.2	Colours .....:	Refer to above	N
1.7.8.3	Symbols according to IEC 60417.....:	Refer to above	N
1.7.8.4	Markings using figures .....:	No markings using figures	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1.7.9	Isolation of multiple power sources .....:	Four individual power connections, prominent marking is provided close to entry points	P
1.7.10	IT power distribution systems	Proper marking in installation instructions “This product is also designed for IT power systems with phase-to-phase voltage 230V”	P
1.7.11	Thermostats and other regulating devices	No adjustments necessary for thermal sensors	N
1.7.12	Language .....:	Instructions in English reviewed, French language available, other languages to be provided	P
1.7.13	Durability	Compliant with rub test	P
1.7.14	Removable parts	Not on removable parts	P
1.7.15	Replaceable batteries	No replaceable batteries	N
	Language.....:		□
1.7.16	Operator access with a tool.....:	Product is not operator accessible	N
1.7.17	Equipment for restricted access locations.....:	EUT is not considered for exclusive usage in restricted access locations	N

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Access to SELV only	P
2.1.1.1	Access to energized parts	No access to other hazardous or ELV parts	P
	Test by inspection .....:	Protection is established by insulation materials and barriers	P
	Test with test finger .....:	No access to above mentioned parts even when one or two power supplies are removed	P
	Test with test pin .....:	No access to above mentioned parts	P
	Test with test probe .....:	See above	N
2.1.1.2	Battery compartments .....:	No battery at all	N
2.1.1.3	Access to ELV wiring	No ELV wiring	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	Working voltage (V); minimum distance (mm) through insulation	Not applicable	□
2.1.1.4	Access to hazardous voltage circuit wiring	Not accessible, refer to clause 2.1.1 above	N
2.1.1.5	Energy hazards .....:	No energy hazards in operator access areas (refer also to clause 2.1.1 above)	P
2.1.1.6	Manual controls	No such controls	N
2.1.1.7	Discharge of capacitors in equipment	Tested at 254Vac	P
	Time-constant (s); measured voltage (V).....:	Measured (one power supply tested): L – GND: 80.3Vpk after 1 sec. N – GND: 0.4 Vpk after 1 sec. L – N: 0.0 Vpk after 1 sec	□
2.1.2	Protection in service access areas	No unexpected hazards	P
2.1.3	Protection in restricted access locations	Refer to clause 1.7.17	N

2.2	SELV circuits		P
2.2.1	General requirements	<42.4Vpk/60Vdc under normal and fault conditions	P
2.2.2	Voltages under normal conditions (V) .....:	+ 12V max	P
2.2.3	Voltages under fault conditions (V) .....:	<42.4Vpk/60Vdc	P
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)	Separation by double or reinforced insulation within approved power supplies	P
2.2.3.2	Separation by earthed screen (method 2)	Refer to above	N
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Refer to above	N
2.2.4	Connection of SELV circuits to other circuits .....:	SELV to SELV	P

2.3	TNV circuits		N
2.3.1	Limits	No TNV-circuits provided	N
	Type of TNV circuits .....:		□
2.3.2	Separation from other circuits and from accessible parts		N
	Insulation employed.....:		□
2.3.3	Separation from hazardous voltages		N
	Insulation employed.....:		□

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed.....:		□
2.3.5	Test for operating voltages generated externally		N

2.4	Limited current circuits		P
2.4.1	General requirements	Inverter board for display has been tested for 'limited current' and was found to comply with this clause (refer to original test report no. 30482325.001)	P
2.4.2	Limit values	Values measured through a 2000Ohm resistor	P
	Frequency (Hz).....:	48.8 kHz (2000 Ohm)	□
	Measured current (mA) .....:	7 mA (limit: 33.6 mA)	□
	Measured voltage (V) .....:	140 Vpk (2000 Ohm) *975 Vpk (display connected)* *1785 Vpk (open circuit)*	□
	Measured capacitance (μF).....:	26 pF	□
2.4.3	Connection of limited current circuits to other circuits	Connection to SELV only	P

2.5	Limited power sources		N
	Inherently limited output	Not applied for	N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault condition		N
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output voltage (V), output current (A), apparent power (VA)..... :		□
	Current rating of overcurrent protective device (A)		□

2.6	Provisions for earthing and bonding	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.6.1	Protective earthing	PE connection through earthing pin of appliance inlet of individual power supplies, all power supplies are fully enclosed, GND-connection to LAN Switch enclosure via chassis of individual power supplies	P
2.6.2	Functional earthing	No functional earthing provided	N
2.6.3	Protective earthing and protective bonding conductors	See clause 2.6.1 above	P
2.6.3.1	General	GND-Continuity test performed; internal bonding conductor(s) within power supplies are sufficiently rated, power cords (refer to list of critical components for details) comply with table 3B of standard	P
2.6.3.2	Size of protective earthing conductors	Refer to clause 2.6.3.1 above	P
	Rated current (A), cross-sectional area (mm^2), AWG .....:		□
2.6.3.3	Size of protective bonding conductors	Test performed according to clause 2.6.3.4	P
	Rated current (A), cross-sectional area (mm^2), AWG .....:		□
2.6.3.4	Resistance (Ω) of earthing conductors and their terminations, test current (A) .....:	15.6Ω, 40A test current, 2min. GND-pin left #1PS to Montior Card Face	P
2.6.3.5	Colour of insulation.....:	Approved power cords used	P
2.6.4	Terminals		P
2.6.4.1	General	Certified appliance inlets are used as part of approved power supplies	P
2.6.4.2	Protective earthing and bonding terminals	Refer to above	P
	Rated current (A), type and nominal thread diameter (mm) .....:		□
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Separation within fully enclosed and already approved power supplies	P
2.6.5	Integrity of protective earthing	No other equipment connected to the LAN switch which is in the scope of this clause	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.6.5.1	Interconnection of equipment	SELV connections only	N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or overcurrent protection in PE or bonding conductors provided	P
2.6.5.3	Disconnection of protective earth	Inspected	P
2.6.5.4	Parts that can be removed by an operator	None	N
2.6.5.5	Parts removed during servicing	No protective earth connection needs to be removed for servicing (removal of power supplies is not considered as such)	N
2.6.5.6	Corrosion resistance	Annex J of standard considered	P
2.6.5.7	Screws for protective bonding	None used	N
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV	N

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Equipment is ‘Pluggable Type A’, building installation is regarded as providing adequate protection.	P
	Instructions when protection relies on building installation	Product is ‘pluggable equipment type A’, no instructions necessary	N
2.7.2	Faults not covered in 5.3	All faults are covered by clause 5.3;Fully enclosed power supplies are approved components and were sufficiently tested	P
2.7.3	Short-circuit backup protection	Product is pluggable Equipment Type A, building installation is considered as providing short-circuit back-up protection	P
2.7.4	Number and location of protective devices .....:	Power supplies are approved components and have one fuse in line each	P
2.7.5	Protection by several devices	See clause 2.7.4 above	N
2.7.6	Warning to service personnel.....:	No warning required for service personnel	N

2.8	Safety interlocks	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.8.1	General principles	None provided	N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Moving parts		N
2.8.6	Overriding		N
2.8.7	Switches and relays		N
2.8.7.1	Contact gaps (mm) .....:		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test		N
2.8.8	Mechanical actuators		N

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	No natural rubber, hygroscopic materials and materials containing asbestos used as insulation, approved power supplies used	P
2.9.2	Humidity conditioning	No further humidity test performed, refer to above	N
	Humidity (%) .....:	Refer to above	N
	Temperature (°C) .....:		N
2.9.3	Grade of insulation	Reinforced or double insulation provided between primary and SELV within power supplies	P

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	Based on pollution degree 2, fully enclosed power supplies have been sufficiently evaluated according to this clause; no further testing necessary	P
2.10.2	Determination of working voltage	Actual working voltage applied but not less than 254Vac for primary	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.10.3	Clearances	No further creepage and clearance measurements necessary, refer to above	P
2.10.3.1	General	Refer to above	P
2.10.3.2	Clearances in primary circuit	Refer to above	N
2.10.3.3	Clearances in secondary circuits	Functional insulation only, clause 5.3.4, method c) performed	P
2.10.3.4	Measurement of transient voltage levels	Standard transient voltages assumed	N
2.10.4	Creepage distances	See clause 2.10.1 above	P
	CTI tests ..... :	III a/b assumed	□
2.10.5	Solid insulation	Not used (approved power supplies)	N
2.10.5.1	Minimum distance through insulation		N
2.10.5.2	Thin sheet material		N
	Number of layers (pcs) ..... :		□
	Electric strength test		□
2.10.5.3	Printed boards	No multi-layer boards used, functional insulation only	N
	Distance through insulation	Refer to above	N
	Electric strength test for thin sheet insulating material		□
	Number of layers (pcs) ..... :	Refer to above	P
2.10.5.4	Wound components	No triple insulation used (approved power supply)	N
	Number of layers (pcs) ..... :		N
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N
2.10.6	Coated printed boards	No coated printed boards used	N
2.10.6.1	General		N
2.10.6.2	Sample preparation and preliminary inspection		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing (°C) ..... :		N
2.10.6.5	Electric strength test		□
2.10.6.6	Abrasion resistance test		N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	Electric strength test		□
2.10.7	Enclosed and sealed parts ..... :	No enclosed or sealed parts used other than in approved power supplies, all laser transceivers are approved components and are not considered as such	N
	Temperature T_1=T_2 = T_{ma} – T_{amb} +10K (°C) ..... :		N
2.10.8	Spacings filled by insulating compound ..... :	Photo couplers within approved power supplies	P
	Electric strength test		□
2.10.9	Component external terminations		N
2.10.10	Insulation with varying dimensions		N

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Certified cables used between power distribution board and back panel, fan control PCBs & monitor (DC wires) overcurrent protection within approved power supplies	P
3.1.2	Protection against mechanical damage	Internal wiring is protected from damage	P
3.1.3	Securing of internal wiring	Internal wiring secure against loosening, excessive strain or insulation damage; secondary wires can not touch hazardous parts	P
3.1.4	Insulation of conductors	Adequate insulation, certified wiring used	P
3.1.5	Beads and ceramic insulators	None used	N
3.1.6	Screws for electrical contact pressure	No contact pressure through insulation material	N
3.1.7	Insulating materials in electrical connections	Not used	N
3.1.8	Self-tapping and spaced thread screws	Not used	N
3.1.9	Termination of conductors	Cables are securely fastened not to short circuit on PCB or other metal parts, see also clause 3.1.3	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	10 N pull test	Complies	P
3.1.10	Sleeving on wiring	No sleeving used	N

3.2	Connection to an a.c. mains supply or a d.c. mains supply		P
3.2.1	Means of connection .....:	Four appliance inlets for connection of detachable power cords are provided, AC inlets are part of approved power supplies	P
3.2.1.1	Connection to an a.c. mains supply	Refer to above	P
3.2.1.2	Connection to a d.c. mains supply	No connection to a d.c. mains supply	N
3.2.2	Multiple supply connections	All power connections have their own AC-inlet, no hazard can be created by incorrect plugging; the plug contacts of unplugged power supplies do not have hazardous voltages when at least one power supply is connected to the mains	P
3.2.3	Permanently connected equipment	Refer to above, clause 3.2.1	N
	Number of conductors, diameter (mm) of cable and conduits .....:		□
3.2.4	Appliance inlets	Appliance inlets are certified and part of already approved power supplies	P
3.2.5	Power supply cords	Power supply cords are approved components	P
3.2.5.1	AC power supply cords	Refer to list of critical components for details	P
	Type.....:	See above	□
	Rated current (A), cross-sectional area (mm^2), AWG .....:	See above	□
3.2.5.2	DC power supply cords	No d.c. power supply cords	N
3.2.6	Cord anchorages and strain relief	No cord-anchorage and strain relief provided (detachable power supply cord)	N
	Mass of equipment (kg), pull (N) .....:		□
	Longitudinal displacement (mm) .....:		□
3.2.7	Protection against mechanical damage	No sharp edges	N
3.2.8	Cord guards	Not used	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	D (mm); test mass (g) .....:		
	Radius of curvature of cord (mm).....:		
3.2.9	Supply wiring space	AC Inlets used, equipment is not for permanent connection and does not have ordinary non-detachable power supply cords	N

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

3.4	Disconnection from the mains supply		P
3.4.1	General requirement	Appliance couplers are considered disconnect devices	P
3.4.2	Disconnect devices	Refer to above	P
3.4.3	Permanently connected equipment	Not permanently connected	N
3.4.4	Parts which remain energized	None	N
3.4.5	Switches in flexible cords	No switches in flexible cords	N
3.4.6	Single-phase equipment and d.c. equipment	Disconnect devices disconnect all poles simultaneously	P
3.4.7	Three-phase equipment	Not three phase	N
3.4.8	Switches as disconnect devices	Refer to above	N
3.4.9	Plugs as disconnect devices	Refer to above	N
3.4.10	Interconnected equipment	SELV connections only	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
3.4.11	Multiple power sources	Prominent marking with adequate instructions for the removal of all power is located at each disconnect device	P

3.5	Interconnection of equipment		P
3.5.1	General requirements	Considered	P
3.5.2	Types of interconnection circuits.....:	SELV and optical only	P
3.5.3	ELV circuits as interconnection circuits	None provided	N

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P
	Angle of 10°	Product does not fall over	P
	Test: force (N).....:	Not floor standing	N

4.2	Mechanical strength		P
4.2.1	General	Metal enclosure used	P
4.2.2	Steady force test, 10 N	Components and parts internally the product are tested with 10N	P
4.2.3	Steady force test, 30 N	Internal metal enclosure after removal of insert cards was tested with 30N	P
4.2.4	Steady force test, 250 N	Enclosure withstands 250N	P
4.2.5	Impact test	Metal enclosure used, no further testing necessary	N
	Fall test		N
	Swing test		N
4.2.6	Drop test	Product is not subject to a drop test	N
4.2.7	Stress relief test	See above (clause 4.2.5)	N
4.2.8	Cathode ray tubes	None provided	N
	Picture tube separately certified..... :		N
4.2.9	High pressure lamps	None provided	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
4.2.10	Wall or ceiling mounted equipment; force (N) ... :	Original models have been properly tested, refer to report no. 30482325.001 *[equipment weight: 45kg, additional force equal to 3 x 45kg = 135kg (force: 1325N); test passed with equipment mounted in a rack]*	P

4.3	Design and construction		P
4.3.1	Edges and corners	No sharp edges	P
4.3.2	Handles and manual controls; force (N)..... :	No handles or manual controls	N
4.3.3	Adjustable controls	None provided	N
4.3.4	Securing of parts	Loosening parts can not become disposed in a way to reduce creepage or clearance distances	P
4.3.5	Connection of plugs and sockets	Special shape of connectors used	P
4.3.6	Direct plug-in equipment	Not for direct plug-in	N
	Dimensions (mm) of mains plug for direct plug-in .....:	See above	□
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N).....:		□
4.3.7	Heating elements in earthed equipment	None provided	N
4.3.8	Batteries	No lithium batteries used.	N
4.3.9	Oil and grease	Not applicable	N
4.3.10	Dust, powders, liquids and gases	No dust, powders, liquids, gases and the like produced	N
4.3.11	Containers for liquids or gases	None	N
4.3.12	Flammable liquids..... :	None	N
	Quantity of liquid (l)..... :	See above	N
	Flash point (°C)..... :	See above	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
4.3.13	Radiation; type of radiation .....:	All optical transceivers are laser class 1- or class 1M-components, refer to list of critical components for details All visible LEDs are below Class 1 and operate at a wavelength in the 400-700 nm range. Specific data sheets for the LED may be available from the manufacturer	P
4.3.13.1	General	Refer to above	P
4.3.13.2	Ionizing radiation	No ionized radiation	N
	Measured radiation (pA/kg) .....:		□
	Measured high-voltage (kV) .....:		□
	Measured focus voltage (kV) .....:		□
	CRT markings .....:		□
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	No ultraviolet radiation	N
	Part, property, retention after test, flammability classification .....:		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....:	See clause 4.3.13.3 above	N
4.3.13.5	Laser (including LEDs)	Refer to clause 4.3.13 above	P
	Laser class .....:	Class 1 or Class 1M	□
4.3.13.6	Other types .....:	No other types of radiation	N

4.4	Protection against hazardous moving parts		P
4.4.1	General	DC-fans are located in protected area	P
4.4.2	Protection in operator access areas	No operator access	P
4.4.3	Protection in restricted access locations	Not evaluated for restricted access locations	N
4.4.4	Protection in service access areas	Unintentional contact with DC-fans during service is unlikely, however, DC-fans are of SELV-type and with low power only	P

4.5	Thermal requirements		P
4.5.1	Maximum temperatures	Complies with test, see appended table 4.5	P
	Normal load condition per Annex L .....:		N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
4.5.2	Resistance to abnormal heat	All critical parts are certified	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings	**Front opening:** 1 opening of 405mm by 55mm with 4.4 mm holes; small openings at each power supply: 50mm by 38mm **Back openings**: 3 openings total, 2 openings are 115mm by 115 mm with 4.4 mm holes, 1 opening is 370 mm by 80 mm with 4.4 mm holes [refer also to original test report no. 30482325.001]	P
	Dimensions (mm) .....:	Refer to above	□
4.6.2	Bottoms of fire enclosures	No openings in the bottom of the fire enclosure	N
	Construction of the bottom .....:	Refer to above, enclosure is out of metal	□
4.6.3	Doors or covers in fire enclosures	Once an insert card is removed from the LAN-Switch it will be replaced with a dummy which has the same metal front as all other cards; front of cards are building the fire-enclosure at front of LAN-switch	P
4.6.4	Openings in transportable equipment	Equipment is not transportable	N
4.6.5	Adhesives for constructional purposes	No adhesives for constructional purposes used	N
	Conditioning temperature (□C)/time (weeks).....:		□

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	No excessive temperatures, no easily burning materials employed (see appended table 4.7)	P
	Method 1, selection and application of components wiring and materials	Fault conditions adequately tested on approved power supplies	P
	Method 2, application of all of simulated fault condition tests	Considered (see appended table 5.3)	P
4.7.2	Conditions for a fire enclosure	Fire enclosure required	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
4.7.2.1	Parts requiring a fire enclosure	Refer to above	P
4.7.2.2	Parts not requiring a fire enclosure	Refer to above	N
4.7.3	Materials		P
4.7.3.1	General	Metal enclosure provided	P
4.7.3.2	Materials for fire enclosures	Metal enclosure provided	P
4.7.3.3	Materials for components and other parts outside fire enclosures	None	N
4.7.3.4	Materials for components and other parts inside fire enclosures	Certified components used or components which are mounted on PCB rated minimum V-1, safety relevant components are used within their specified temperature limits, other plastic parts are sufficiently rated.	P
4.7.3.5	Materials for air filter assemblies	None used	N
4.7.3.6	Materials used in high-voltage components	No components operating above 4kV	N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	Complies with test	P
5.1.2	Equipment under test (EUT)	Considered: single system with multiple supply connection	P
5.1.3	Test circuit	TN circuit, Figure 5A	P
5.1.4	Application of measuring instrument	Per standard	P
5.1.5	Test procedure	Per standard	P
5.1.6	Test measurements	Movable equipment	P
	Test voltage (V) ..... :	254V	□
	Measured touch current (mA) ..... :	L or N – PE (on/off) 2.68 mA max. (one power supply connected only)	□
	Max. allowed touch current (mA) ..... :	3.5 mA	□
5.1.7	Equipment with touch current exceeding 3.5 mA ..... :		N
	Max. allowed protective conductor current (mA) :	--	□
	Measured protective conductor current (mA) .... :	--	□

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
5.1.8	Touch currents to and from telecommunication networks and cable distribution systems and from telecommunication networks	No TNV	N
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		N
	Test voltage (V) ..... :		□
	Measured touch current (mA) ..... :		□
	Max. allowed touch current (mA) ..... :		□
5.1.8.2	Summation of touch currents from telecommunication networks ..... :		N

5.2	Electric strength		P
5.2.1	General	Considered	P
5.2.2	Test procedure	See appended table 5.2	P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	SELV signal overload (see appended table 5.3)	P
5.3.2	Motors	DC-fans are approved components	N
5.3.3	Transformers	Transformer is part of approved power supply	N
5.3.4	Functional insulation..... :	Method c) used	P
5.3.5	Electromechanical components	No electromechanical components	N
5.3.6	Simulation of faults	Intake air blocked vents (see appended table 5.3)	P
5.3.7	Unattended equipment	Thermal cut-out was tested according to Annex K6; thermal cut-out has not been short-circuited because each card has two temperature sensors, and a short on only one card would not have an impact on all other cards shutting off due to high temperature	P
5.3.8	Compliance criteria for abnormal operating and fault conditions	Considered	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements	No TNV	N
	Test voltage (V) ..... :		□
	Current in the test circuit (mA) ..... :		□
6.1.2.2	Exclusions ..... :		N

6.2	Protection of equipment users from overvoltages on telecommunication networks		N
6.2.1	Separation requirements	No TNV	N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N

6.3	Protection of the telecommunication wiring system from overheating		N
	Max. output current (A)..... :	No TNV	□
	Current limiting method ..... :		□

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N
7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	Not a cable distribution system	N
7.2	Protection of equipment users from overvoltages on the cable distribution system		N
7.3	Insulation between primary circuits and cable distribution systems		N
7.3.1	General		N
7.3.2	Voltage surge test		N
7.3.3	Impulse test		N

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

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N
A.1.1	Samples..... :	Power supplies are already approved components, no further tests necessary	□
	Wall thickness (mm) ..... :		□
A.1.2	Conditioning of samples; temperature (□C)..... :		N
A.1.3	Mounting of samples ..... :		N
A.1.4	Test flame		N
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s) ..... :		□
	Sample 2 burning time (s) ..... :		□
	Sample 3 burning time (s) ..... :		□
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material..... :		□
	Wall thickness (mm) ..... :		□
A.2.2	Conditioning of samples		N
A.2.3	Mounting of samples		N
A.2.4	Test flame		N
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s) ..... :		□
	Sample 2 burning time (s) ..... :		□
	Sample 3 burning time (s) ..... :		□
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N
	Sample 1 burning time (s) ..... :		□
	Sample 2 burning time (s) ..... :		□
	Sample 3 burning time (s) ..... :		□
A.3	Hot flaming oil test (see 4.6.2)		N
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N
B.1	General requirements	No motors	N
	Position .....:		□
	Manufacturer .....:		□
	Type .....:		□
	Rated values .....:		□
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days) .....:		□
	Electric strength test: test voltage (V) .....:		□
B.6	Running overload test for d.c. motors in secondary circuits		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	Test procedure		N
B.7.2	Alternative test procedure; test time (h) .....:		N
B.7.3	Electric strength test		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V) .....:		□

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position .....:	Transformers are part of already approved power supplies	□
	Manufacturer .....:		□
	Type .....:		□
	Rated values .....:		□
	Method of protection..... :		□
C.1	Overload test		P
C.2	Insulation		P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	Protection from displacement of windings..... :		P

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS		P
D.1	Measuring instrument	Simpson 228	P
D.2	Alternative measuring instrument		N

E	ANNEX E, TEMPERATURE RISE OF A WINDING	N

F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)	N

G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Summary of the procedure for determining minimum clearances	No alternative method used	N
G.2	Determination of mains transient voltage (V)..... :		N
G.2.1	AC mains supply		N
G.2.2	DC mains supply		N
G.3	Determination of telecommunication network transient voltage (V) ..... :		N
G.4	Determination of required withstand voltage (V) :		N
G.5	Measurement of transient levels (V)..... :		N
G.6	Determination of minimum clearances..... :		N

H	ANNEX H, IONIZING RADIATION (see 4.3.13)	N

J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal used .....:		□

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		P
K.1	Making and breaking capacity	Two temperature sensors are used on each individual card, if a temperature above 55□C is detected the power to the card will be shut-off [automatic reset], LAN Switch was tested according to K6	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
K.2	Thermostat reliability; operating voltage (V)..... :		N
K.3	Thermostat endurance test; operating voltage (V) ..... :		N
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N
K.5	Thermal cut-out reliability		N
K.6	Stability of operation	200 cycles tested, unit passed	P

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		N
L.1	Typewriters	Equipment is not an electrical business equipment	N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment		N

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.1	Introduction	No TNV	N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz) ..... :		□
M.3.1.2	Voltage (V) ..... :		□
M.3.1.3	Cadence; time (s), voltage (V) ..... :		□
M.3.1.4	Single fault current (mA)..... :		□
M.3.2	Tripping device and monitoring voltage ..... :		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V) ..... :		N

N	ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
N.1	ITU-T impulse test generators	No impulse test performed	N
N.2	IEC 60065 impulse test generator		N

P	ANNEX P, NORMATIVE REFERENCES	P

Q	ANNEX Q, BIBLIOGRAPHY	P

R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)	Not used	N
R.2	Reduced clearances (see 2.10.3)		N

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N
S.1	Test equipment	No TNV, no impulse test performed	N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N

T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
			□

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N
			□

1.5.1	TABLE: list of critical components	P

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
Power Supply (4 ea)	Astec	DS850-3	Input: 100-240VAC / 12A Output: +12VDC 70A, +3.3V 6A	IEC/EN/UL 60950-1	CSA, cULus, TUV PS *(CB-Report)*
DC Fan (4 ea)	Delta	FFB1212EHE	12VDC 3.0A – 5.38 m^3/min	IEC/EN/UL 60950-1	VDE, CE, UL, CSA
DC Fan Controller board	Myricom	05-2896	Minimum flammability rating: V-0, 10A fuse	--	UL
AC-inlet / EMI Filter	Corcom	15ED8	15A 250V 10A 250V (VDE)	IEC 60320-1	VDE, UL, CSA
Back Plane	Myricom	05-02926	Minimum flammability rating: V-0	--	UL
Power Supply Connection board	Myricom	05-02985	Minimum flammability rating: V-0, 6 layers	--	UL
Display with Inverter	Sharp	LQ038Q5DR01	With inverter board Taiyo Yuden, P/N: SIPF200A (limited current circuitry)	--	(complies with clause 2.4 of IEC/EN 60950-1)
Enclosure	Various	Various	Metal - Aluminium	--	--
Internal wiring	Various	Various	Rated 600V, 105□C, flammability rating minimum VW-1	--	UL
Splices on internal AC-mains wiring	AMP	AMP 320570 plus an AMP 327637 insert.	600V, 105□C, 12-10 AWG (solid or stranded)	--	UL
Cards	Myricom	M3-SW32-16F	Minimum flammability rating: V-0	--	UL
Transceiver (on (Card M3-SW32-16F)	STRATOS Lightwave	SLC-25-C-1-E	Class 1 laser	IEC/EN 60825-1	TUV, UL
Transceiver (on (Card M3-SW32-16F)	Finisar	FTRJ8519F1KNL -MY	Class 1 laser	IEC/EN 60825-1	TUV, UL
Cards	Myricom	M3-MONITOR	Minimum flammability rating: V-0	--	UL
Power Cord (U.K.)	Volex	2922	250V, 10A, 13A fuse, 1mm2	--	ASTA, BSI

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
Power Cord (Germany / Europe)	Volex or equivalent	17850 or equivalent	Rating: 300V, 10A, 1.0mm2	--	VDE, N, FI, S, D, I
Power Cord (U.S.)	Volex	17504	125V, 15A, 14 AWG	--	UL, CSA
Power Cord (Japan)	Feller	5330-440	125V, 15A, 2.0mm2	--	DENTORI

1.6.2	TABLE: electrical data (in normal conditions)	P

fuse #	Irated (A)	U (V)	P (W)	I (A)	Ifuse (A)	condition/status
--	--	90	823	9.36	--	**4 power supplies connected,**
--	12.0	100	819	8.35	--	**Maximum load configured**
--	12.0	127	801	6.5	--	
	--	135	795	6.06	--	
	--	180	792	4.61	--	
--	6.0	200	785	4.18	--	
--	6.0	240	778	3.51	--	
--	--	254	785	3.35	--	

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements	N

clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Power supplies are fully enclosed; all creepage and clearance distances are within power supply						

2.10.5	TABLE: distance through insulation measurements	N

distance through insulation di at/of:	Up (V)	test voltage (V)	required di (mm)	di (mm)
Approved power supply used, no other 'distance through insulation'				

4.5	TABLE: maximum temperatures						P
	test voltage (Vac) ..... :	90Vac Normal	254Vac Normal	90Vac right Intake fan locked	90Vac PS intake blocked	90Vac Exhaust blocked	□
	t_{amb1} (□C) ..... :	21.9	22.2	22.3	22.3	23.3	□
	t_{amb2} (□C) ..... :						□

maximum temperature T of part/at::	T (□C)					allowed T_{max} (□C)
Normal & Abnormal operating conditions:						
F1 Body:	**48.0**	**40.7**	48.8	50.8	63.0	**--**
L3 Winding:	**46.9**	**40.8**	47.5	49.6	61.8	**75**
L2 winding:	**49.8**	**41.6**	50.3	52.6	64.6	**75**
TH2/TH3 on PCB:	**47.7**	**42.2**	48.1	50.3	62.4	**85 *)**
C7 Body:	**40.4**	**40.2**	40.7	42.7	53.1	**70**
D1 Body:	**56.1**	**46.1**	56.9	59.1	73.8	**--**
D2 body:	**63.7**	**48.4**	64.0	66.6	80.6	**--**
L4 winding:	**52.7**	**47.4**	53.0	55.5	68.9	**75**
L1 winding:	**64.1**	**55.0**	63.6	67.1	80.5	**75**
Cabinet:	**22.9**	**23.4**	24.5	23.6	27.8	**--**
Ambient:	21.9	22.2	21.3	22.3	23.3	--
	90Vac right Intake fan blocked	90Vac left Intake fan blocked	90Vac intake fan blocked **(Cycle test)**			
F1 Body:	50.3	47.4	36.2			--
L3 Winding:	49.1	46.1	36.1			--
L2 winding:	52.0	49.0	36.8			--
TH2/TH3 on PCB:	49.8	46.8	36.9			--
C7 Body:	42.1	39.4	33.3			--
D1 Body:	58.7	55.6	41.6			--
D2 body:	66.3	63.0	43.7			--
L4 winding:	54.9	51.8	40.9			--
L1 winding:	65.9	62.5	47.6			--
Cabinet:	25.4	21.7	42.9			--
Ambient:	22.2	20.7	17.5			--

maximum temperature T of part/at::	T (°C)					allowed T_{max} (°C)

Notes: **all temperatures measured with thermo-couplers; max. ambient operating temperature assumed 40ºC; all windings are considered to be minimum of 'class A', capacitors are minimum rated 85°C**

***) temperature rating of PCB**

temperature T of winding:	R_1 (Ω)	R_2 (Ω)	T (°C)	allowed T_{max} (°C)	insulation class

4.5.2	TABLE: ball pressure test of thermoplastic parts		N
	allowed impression diameter (mm) .....:	2 mm	

part	test temperature (°C)	impression diameter (mm)

AC-inlet and other parts where primary or hazardous voltage is connected to, are part of approved power supplies

4.7	TABLE: resistance to fire			N
part	manufacturer of material	type of material	thickness (mm)	flammability class

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

test voltage applied between:	test voltage (V) a.c. / d.c.	breakdown Yes / No
L/N and chassis	2300 Vdc	No
supplementary information		

5.3	TABLE: fault condition tests		P
	ambient temperature (□C) .....:		□
	model/type of power supply .....:		□
	manufacturer of power supply .....:		□
	rated markings of power supply .....:		□

component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	Right Intake fan locked	90 Vac	33 m	--	--	No hazards, refer to temperature rise data as per table 4.5
2	PS intake blocked	90 Vac	35 m	--	--	No hazards, refer to temperature rise data as per table 4.5
3	Exhaust blocked	90 Vac	55 m	--	--	No hazards, refer to temperature rise data as per table 4.5
4	Right Intake fan blocked	90 Vac	78 m	--	--	No hazards, refer to temperature rise data as per table 4.5
5	Left Intake fan blocked	90 Vac	30 m	--	--	No hazards, refer to temperature rise data as per table 4.5
6	Intake fans blocked	90 Vac	2 days	--	--	No hazards, refer to temperature rise data as per table 4.5
7	'Ethernet A' pins short	254Vac	2 s	--	--	No hazard, all 8 pins of connector tested individually to GND, max. voltage was tested with 10mV, short circuit current was measured with 0mA
supplementary information						
Power supply is an approved component, no further testing deemed necessary						

A.6.5	TABLE: flammability test for classifying materials V-0, V-1 or V-2	N
sample No. / ref.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$
1/A		
2/A		
3/A		
4/A		

sample No. / ref.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$
5/A		
6/B		
7/B		
8/B		
9/B		
10/B		
supplementary information:		
Total afterflame time (s) for any condition set $t_1 + t_2$ for five (5) specimens:		
Conditioning "A" designates 7 days at 70 □C □ 1 □C followed by 4 h minimum in calcium chloride desiccator.		
Conditioning "B" designates 48 h at 23 □C □ 2 □C and relative humidity between 45 % and 55 %.		

A.6.6	**TABLE: flammability re-test for classifying materials V-0, V-1 or V-2**	N

sample No.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$
11		
12		
13		
14		
15		
supplementary information:		
Total afterflame time (s) for any condition set $t_1 + t_2$ for five (5) specimens:		

A.7.4, A.7.5, A.7.6 and A.7.7	**TABLE: flammability test for classifying foam materials HF-1, HF-2 or HBF**			N

sample No. / ref.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
1/A				
2/A				
3/A				
4/A				

sample No. / ref.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
5/A				
6/B				
7/B				
8/B				
9/B				
10/B				

supplementary information:
Conditioning "A" designates 7 days at 70 □C □ 1 □C followed by 4 h minimum in calcium chloride desiccator.
Conditioning "B" designates 48 h at 23 □C □ 2 □C and relative humidity between 45 % and 55 %.

A.7.8	**TABLE: flammability re-test for classifying foam materials HF-1 or HF-2**			N
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment
11				
12				
13				
14				
15				
supplementary information:				

A.7.9	**TABLE: flammability re-test for classifying foam materials HBF**			N
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
11				
12				
13				
14				
15				
supplementary information:				

A.8.5	TABLE: flammability test for classifying materials HB	N

sample No.	flaming/glowing rate mm/min	flaming/glowing distance from reference mark (mm)
1		
2		
3		
supplementary information:		

A.8.6	TABLE: flammability re-test for classifying materials HB	N

sample No.	flaming/glowing rate mm/min	flaming/glowing distance from reference mark (mm)
4		
5		
6		
supplementary information:		

A.9.6	TABLE: flammability test for classifying materials 5V				N

sample No./ref.	test bars		test plaques		
	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
1/A			A		
2/A			B		
3/A			C		
4/A			D		
5/A			□	□	□
6/B			A		
7/B			B		
8/B			C		
9/B			D		
10/B			□	□	□
supplementary information:					
Conditioning "A" designates 7 days at 70 □C □ 1 □C followed by 4 h minimum in calcium chloride desiccator.					
Conditioning "B" designates 48 h at 23 □C □ 2 □C and relative humidity between 45 % and 55 %.					

A.9.7	TABLE: flammability re-test for classifying materials 5V				N
sample No.	test bars		test plaques		
	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
11			A		
12			B		
13			C		
14			D		
15			□	□	□
supplementary information:					

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
CENELEC COMMON MODIFICATIONS: (EN 60950-1:2001)			P
General	Delete all the "country" notes in the reference document according to the following list: 1.1.5 Note 2, 1.5.8 Note 2, 1.6.1 Note 1.7.2 Note 4, 1.7.12 Note 2, 2.6 Note 2.2.3 Note, 2.2.4 Note, 2.3.2 Note 2, 7, 8 2.3.3 Note 1, 2, 2.3.4 Note 2,3, 2.7.1 Note 2.10.3.1 Note 4, 3.2.1.1 Note, 3.2.3 Note 1, 2 3.2.5.1 Note 2, 4.3.6 Note 1,2, 4.7.2.2 Note 4.7.3.1 Note 2, 6.1.2.1 Note, 6.1.2.2 Note 6.2.2 Note, 6.2.2.1 Note 2, 6.2.2.2 Note 7 Note 4, 7.1 Note G2.1 Note 1, 2, Annex H Note 2	Deleted	deleted
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.	See clause 2.7.1.	Replaced
2.7.2	Void.	Void	Replaced
2.10.2	Replace in the first line "(see also 1.4.7)" by "(see also 1.4.8)".	Replaced	Replaced

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
3.2.3	Delete Note 1 and in Table 3A, delete the conduit sizes in parentheses.	Deleted	Deleted
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: Up to and including 6 0,75[1)] Over 6 up to and including 10 (0,75)[2)] 1,0 Over 10 up to and including 16 (1,0)[3)] 1,5 In the Conditions applicable to Table 3B delete the words "in some countries" in condition [1)]. In Note 1, applicable to Table 3B, delete the second sentence.	Replaced and Deleted.	Replaced and Deleted
3.3.4	In table 3D, delete the fourth line: conductor sizes for 10 to 13A, and replace with the following: "Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 Delete the fifth line: conductor sizes for 13 to 16 A.	No wiring terminals	Deleted and Replaced
4.3.13.6	Add the following note: NOTE 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 are currently under development.	Noted	Added
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 □Sv/h (0,1 mR/h) (see note). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete Note 2.	No ionizing radiation	Replaced
Annex P	Replace the text of this annex by: See annex ZA.	Noted	Replaced

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
Annex Q	Replace the title of IEC 61032 by "Protection of persons and equipment by enclosures – Probes for verification". Add the following notes for the standards indicated: IEC 60127 NOTE Harmonized as EN 60127 (Series) (not modified) IEC 60269-2-1 NOTE Harmonized as HD 630.2.1 S4:2000 (modified) IEC 60529 NOTE Harmonized as EN 60529:1991 (not modified) IEC 61032 NOTE Harmonized as EN 61032:1998 (not modified) IEC 61140 NOTE Harmonized as EN 61140:2001 (not modified) ITU-T Recommendation K.31 NOTE in Europe, the suggested document is EN 50083-1.		PASSED

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

Annex ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR RELEVANT EUROPEAN PUBLICATIONS This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments). NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.		P
	□	IEC 60050-151	Noted
	□	IEC 60050-195	Noted
	EN 60065:1998 + corr. June 1999	IEC 60065 (mod):1998	Noted
	EN 60073:1996	IEC 60073:1996	Noted
	HD 566 S1:1990	IEC 60085:1984	Noted
	HD 214 S2:1980	IEC 60112:1979	Noted
	HD 611.4.1.S1:1992	IEC 60216-4-1:1990	Noted
	HD 21 1) Series	IEC 60227 (mod) Series	Noted
	HD 22 2) Series	IEC 60245 (mod) Series	Noted
	EN 60309 Series	IEC 60309 Series	Noted
	EN 60317-43:1997	IEC 60317-43:1997	Noted
	EN 60320 Series	IEC 60320 (mod) Series	Noted
	HD 384.3 S2:1995	IEC 60364-3 (mod):1993	Noted
	HD 384.4.41 S2:1996	IEC 60364-4-41 (mod):1992 [3)]	Noted
	EN 132400:1994 [4)] + A2:1998 + A3:1998 + A4:2001	IEC 60384-14:1993	Noted
	EN 60417-1	IEC 60417-1	Noted
	HD 625.1 S1:1996 + corr. Nov. 1996	IEC 60664-1 (mod):1992	Noted
	EN 60695-2-2:1994	IEC 60695-2-2:1991	Noted
	EN 60695-2-11:2001	IEC 60695-2-11:2000	Noted
	□	IEC 60695-2-20:1995	Noted
	□	IEC 60695-10-2:1995	Noted
	□	IEC 60695-11-3:2000	Noted
	□	IEC 60695-11-4:2000	Noted
	EN 60695-11-10:1999	IEC 60695-11-10:1999	Noted
	EN 60695-11-20:1999	IEC 60695-11-20:1999	Noted
	EN 60730-1:2000	IEC 60730-1:1999 (mod)	Noted

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	EN 60825-1:1994 + corr. Febr. 1995 + A11:1996 + corr. July 1997	IEC 60825-1:1993	Noted
	EN 60825-2:2000	IEC 60825-2:2000	Noted
	□	IEC 60825-9:1999	Noted
	EN 60851-3:1996	IEC 60851-3:1996	Noted
	EN 60851-5:1996	IEC 60825-5:1996	Noted
	EN 60851-6:1996	IEC 60851-6:1996	Noted
	□	IEC 60885-1:1987	Noted
	EN 60990:1999	IEC 60990:1999	Noted
	□	IEC 61058-1:2000	Noted
	EN 61965:2001	IEC 61965:2000	Noted
	EN ISO 178:1996	ISO 178:1993	Noted
	EN ISO 179 Series	ISO 179 Series	Noted
	EN ISO 180:2000	ISO 180:1993	Noted
	□	ISO 261:1998	Noted
	□	ISO 262:1998	Noted
	EN ISO 527 Series	ISO 527 Series	Noted
	□	ISO 386:1984	Noted
	EN ISO 4892 Series	ISO 4892 Series	Noted
	□	ISO 7000:1989	Noted
	EN ISO 8256:1996	ISO 8256:1990	Noted
	□	ISO 9772:1994	Noted
	EN ISO 9773:1998	ISO 9773:1998	Noted
	□	ITU-T:1988 Recommendation K.17	Noted
	□	ITU-T:2000 Recommendation K.21	Noted
	1) The HD 21 series is related to, but not directly equivalent with the IEC 60227 series 2) The HD 22 series is related to, but not directly equivalent with the IEC 60245 series 3) IEC 60364-4-41:1992 is superseded by IEC 60364-4-41:2001 4) EN 132400, Sectional Specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (Assessment level D), and its amendments are related to, but not directly equivalent to IEC 60384-14		

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

National Differences CB Bulletin 109A and A,S Deviations EN 60950-1:2001

National Differences for **Australia and New Zealand (AU)**			P
1.2	Between the definitions for 'Person, service' and 'Range, rated frequency' insert the following: I ignition source 1.2.12.201	Inserted	Inserted
1.2.12.15	After the definition of 1.2.12.15, add the following: 1.2.12.201 potential ignition source: Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in conductive patterns on printed boards. NOTE 201 An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE. NOTE 202 This definition is from AS/NZS 60065:2003.	Considered	P
1.5.1	Add the following to the end of first paragraph: 'or the relevant Australian/New Zealand Standard'.	Added	added
1.5.2	Add the following to the end of first and third dash items: 'or the relevant Australian/New Zealand Standard'.	Added	added
2.1	Delete the Note.	Note deleted	deleted
3.2.3	Delete Note 2.	Note 2 deleted	deleted
3.2.5.1	Modify Table 3B as follows: Delete the first four rows and replace with	First four rows deleted and replaced with the following	replaced

Rated Current of the Equipment A	Minimum Conductor Sizes	
	Nominal cross-sectional area mm^2	AWG or kcmil [cross-sectional area in mm2] see note 2
Over 0.2 up to and including 3	0,5 [1)]	18 [0,8]
Over 3 up to and including 7.5	0,75	16 [1,3]
Over 7.5 up to and including 10	(0,75)[2)] 1,00	16 [1,3]
Over 10 up to and including 16	(1,0)[3)] 1,5	14 [2]

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
Replace footnote 1) with the following: 1) This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm2 three-core supply flexible cords are not permitted; see AS/NZS 3191). Delete Note 1			
4.3.6	Replace paragraph three with: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.	Product is not for direct plug-in	N
4.3.13.5	Add the following to the end of the first paragraph: ‘, or AS/NZS 2211.1’.“.	Added and considered	added
4.7	Add the following paragraph: For alternative tests refer to Clause 4.7.201.	Added and considered	added
4.7.201	Add the following after Clause 4.7.3.6. 4.7.201 Resistance to fire – Alternative tests 4.7.201.1 General Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following: Components that are contained in an enclosure having a flammability category of FV-0 according to AS/NZS 4695.707 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length. The following parts which would contribute negligible fuel to a fire: small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; small electrical components, such as capacitors with a volume not exceeding 1 750 mm3, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category FV-1, or better, according to AS/NZS 4695.707. NOTE In considering how to minimize propagation of fire and what ‘small parts’ are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another. Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5. For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5. The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring. 4.7.201.2 Testing of non-metallic materials Parts of non-	Resistance to fire –alternative tests added and considered	added

IEC 60950-1 / EN 60950-1				
Clause	**Requirement – Test**		**Result – Remark**	**Verdict**
	metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part. 4.7.201.3 Testing of insulating materials Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 5.2.11 which shall be carried out at 750°C.			
	The test shall be also carried out on other parts of insulating material which are within a distance of 3mm of the connection. NOTE Contacts in components such as switch contacts are considered to be connections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested. The needle-flame test shall be made in accordance with AS/NZS 4695.2.2 with the following modifications:		Considered	considered
	Clause of AS/NZS 4695.2.2	Change		--
	5 Severities	Replace with: The duration of application of the test flame shall be 30 s ±1 s.	Replaced & considered	considered
	8.2	Replace the first sentence with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1.	Replaced & considered	considered
	8.4	The first paragraph does not apply. Addition: If possible, the flame shall be applied at least 10 mm from a corner.	Replaced & considered	considered

IEC 60950-1 / EN 60950-1				
Clause	**Requirement – Test**		**Result – Remark**	**Verdict**
	8.5	Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test.	Replaced & considered	considered
	10 Evaluation of test results	Replace with: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.	Replaced & considered	considered
	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10, provided that the sample tested was not thicker than the relevant part. 4.7.201.4 Testing in the event of non-extinguishing material If parts, other than enclosures, do not withstand the glow wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1 - If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 2 - If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 3 - Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections. 4.7.201.5 Testing of printed boards The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE. The test is not carried out if the — Printed board does not carry any POTENTIAL IGNITION SOURCE; Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category FV-1 or better according to AS/NZS 4695.707, or the printed boards are protected by an enclosure meeting the flammability category FV-0 according to AS/NZS 4695.707, or made of metal, having openings only for connecting wires which fill the openings		Considered	considered

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	completely; or Base material of printed boards, on which the available apparatus power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category FV-0 according to AS/NZS 4695.707 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. Compliance shall be determined using the smallest thickness of the material. NOTE – Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power for more than 2 min when the circuit supplied is disconnected.		
6.2.2	Add the symbol NZ in the right hand margin beside the first paragraph. Add the following after the first paragraph: In Australia (this variation does not apply in New Zealand), compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2. Delete the note.	Symbol NZ added, however, no TNV	N
6.2.2.1	Add the symbol NZ in the right hand margin beside the first paragraph including Note 1. Delete Note 2 Add the following after the first paragraph: In Australia (this variation does not apply in New Zealand), the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator of annex N for 10/700µs impulses. The interval between successive impulses is 60 s and the initial voltage, Uc, is: for 6.2.1 a):7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and for 6.2.1 b) and 6.2.1 c):1.5 kV. NOTE 201 – The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 – The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.	Symbol NZ added, however, no TNV	N
6.2.2.2	Add the symbol NZ in the right hand margin beside the second paragraph. Delete the Note. Add the following after the second paragraph: In Australia (this variation does not apply in New Zealand), the a.c. test voltage is: for 6.2.1 a):3 kV; and for 6.2.1 b) and 6.2.1 c):1.5 kV. NOTE 201 – Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 – The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.	Symbol NZ added, however, no TNV	N

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
Annex P	Add the following Normative References to Annex P: IEC 60065, Audio, Video and similar electronic apparatus—Safety requirements AS/NZS 3191, Approval and test specification—Electric flexible cords AS/NZS 3112, Approval and test specification—Plugs and socket-outlets AS/NZS 4695.707, Fire hazard testing of electrotechnical products—Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source	Added	added
Index	Between the entries for 'polyimide insulating material' and 'powder' insert the following: potential ignition source 1.12.201, 4.7.201.3, 4.7.201.5	Added	added
National Differences for **Canada (CA);** UL 60950-1/CSA C22.2 No. 60950-1			P
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Complies	P
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Considered	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC are required to have special construction features and identification markings.	Power cord is less than 3.05m in length and is an approved component	P

IEC 60950-1 / EN 60950-1			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." Likewise, a voltage rating shall not be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions."	One phase only	N
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	Fuses are part of already approved power supplies	N
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets, receptacles and medium-base or smaller lampholders if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require transformer overcurrent protection.	No power outlets provided	N
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Approved AC-inlet is used, no other wiring methods	P
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Power cords with plugs are sufficiently rated	P
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment such as ATMs.	Equipment is not for permanent connection	N
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.	Power supply cord for this country is an approved component and less than 4.5m in length	P
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Refer to above, equipment is not permanently connected	N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.		N
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ^{2}).		N
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).	No terminals provided	N
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	No motor control devices	N
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No such switch	N
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	Equipment does not have battery systems capable of supplying 750VA	N
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No flammability liquids	N
4.3.13	Equipment with lasers is required to meet the Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	All laser components are sufficiently certified for this country	P
4.7	For computer room applications, automated information storage systems with combustible media greater than 27 cubic feet are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No combustible media	N
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m 2 or a single dimension greater than 1.8 m are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
Annex H	Equipment that produces ionizing radiation is required to comply with the Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Equipment does not produce ionizing radiation	N
Other Differences - The following key national differences are based on requirements other than national regulatory requirements. The bi-national standard (CAN/CSA C22.2 No. 60950-1/UL 60950-1, First Edition) referenced above should be consulted for further details on the national differences summarized below.			
1.5.1	Components of equipment must be suitable for the application, and must comply with the requirements of the equipment standard and the applicable national (Canadian and/or U.S.) component or material standards, as far as they may apply. The acceptance will be based on the following: I) A component Certified by a Canadian or U.S. National Certification Body (NCB) to a Canadian or U.S. component standard will be checked for correct application and use in accordance with its specified rating. Where necessary, it will also be subject to the applicable tests of the equipment standard. J) A component, which has a CB Test Certificate for compliance with a relevant IEC component standard, will be checked for correct application and use in accordance with its specified ratings. Where necessary, it will also be subject to the applicable tests of the equipment standard, and to the applicable tests of the Canadian and/or U.S. component or material standard, under the conditions occurring in the equipment. K) A component, which has no approval as in A) or B) above or which is used not in accordance with its specified ratings, will be subject to the applicable tests of the equipment standard, and to the applicable tests of the Canadian and/or U.S. component or material standard, under the conditions occurring in the equipment. L) Some components may require annual re-testing, which may be carried out by the manufacturer, CSA International or another laboratory	All critical components are UL certified	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No TNV	N
2.3.2	In the event of a single fault, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.		N
2.6.3.3	When subject to impedance testing, protective earthing and bonding are required to be subjected to the additional test conditions specified.		N
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.	Not for connection to a centralized d.c. power system	N
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRTs	N
4.3.2	Equipment with handles is required to comply with special loading tests.	No handles	N
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV	N
6.2.1	Enamel coating on winding wire not considered electrical separation unless subjected to special investigation.		N
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.		N
6.5	Equipment connected to a telecommunications network and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure tests.		N
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
National Differences for **Switzerland (CH)**			P
1.7.15	(Ordinance on environmentally hazardous substances SR 814.013): Annex 4.10 of SR 814.013 applies for batteries.	No batteries	N
3.2.1.1	S (CH): Supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991, Plug type 15, 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991, Plug type 11, L+N 250 V, 10 A SEV 6534-2.1991, Plug type 12, L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998, Plug type 25, 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998, Plug type 21, L+N 250 V, 16 A SEV 5934-2.1998, Plug type 23, L+N+PE 250 V, 16 A	Product has a detachable power cord and an approved AC-inlet, correct power cord with plug to be provided once distributed to this country	N
National Differences for **Germany (DE);** EN 60950-1:2001			P
1.7.12	Germany (Gesetz über technische Arbeitsmittel (Gerätesicherheitsgesetz) [Law on technical labour equipment {Equipment safety law}], of 23 rd October 1992, Article 3, 3 rd paragraph, 2 nd sentence, together with the "Allgemeine Verwaltungsvorschrift zur Durchführung des Zweiten Abschnitts des Gerätesicherheitsgesetzes" [General administrative regulation on the execution of the Second Section of the Equipment safety law], of 10 th January 1996, article 2, th paragraph, item 2). Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language. NOTE Of this requirement, rules for use even only by service personnel are not exempted.	Instructions are in English, and French, German language to be provided once the product is distributed to this country	P
Annex H (a)	a) A license is required by those who operate an X-ray emission source	No X-Ray	N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
Annex H (b)	b) A license in accordance with Clause 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 kV if: 1) The local dose rate at a distance of 0.1 m from the surface does not exceed 1 μSv/h and 2) it is adequately indicated on the X-ray emission source that i) X-rays are generated and ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer		N
Annex H (c)	c) A license in accordance with Clause 1 is also not required by persons who operate an X-ray emission source on which the electron acceleration voltage exceeds 20 kV if: 1) The X-ray emission source has been granted a type approval and 2) it is adequately indicated on the X-ray emission source that i) X-rays are generated, ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded and iii) the electron acceleration voltage does not exceed the maximum value stipulated by the manufacturer or importer	No X-Ray	N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
Annex H (d)	d) Furthermore, a license in accordance with Clause 1 is also not required by persons who operate X-ray emission source on which the electron acceleration voltage does not exceed 30 kV if: 1) the X-rays are generated only intrinsically safety CRTs complying with Enclosure III, No. 6 2) the values stipulated in accordance with Enclosure III, No. 6.2 are limited by technical measured and specified in the device and 3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT	No X-Ray	N

National Differences for **Denmark (DK);** EN 60950-1:2001			P
1.2.4.1	Certain types of Class I appliances (see sub-clause 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets	Distributor to provide correct power supply cord for this country	N
1.7.2 (Heavy Current Reg.)	Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text: 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."	Refer to above	N
1.7.5	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.	No socket outlets	N
1.7.5 (Heavy Current Reg.)	Class II equipment shall not be fitted with socket-outlets for providing power to other equipment	Class I equipment	N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
3.2.1.1	Supply cord 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 contact 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 107-1-D1 or EN 60309-2	No supply cord provided, distributor to provide correct power supply for this country	N
National Differences for **Spain (ES)**			P
3.2.1.1	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.	No supply cord provided, distributor to provide correct power supply for this country	N
National Differences for **Finland (FI);** EN 60950-1:2001			P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1.7.2	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: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan "	Correct marking will be provided once product is distributed to this country	N
6.1.2.1	Add the following text between the first and second paragraph: 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 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV), and - is 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 60950:2000, 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.	No TNV	N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
6.1.2.2	The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a service person.	No TNV	N
7.1	Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Replaced	replaced

National Differences for **Korea (KR);** K60950			P
General	When an appliance is supplied in Korea, it shall be set to and marked with 220V.	Autoranging power supply used, 220V is within range	P
General	When an appliance is supplied in Korea, it shall be set to and marked with 60Hz.	Product is marked 50/60Hz	P
1.5.101	Addition – Plugs for the connection of the apparatus to the supply shall comply with the Korean requirement (KSC 8305 and 8305)	Power supply cord for this country is not provided at this time, distributor to provide correct cord.	N
7	Addition – EMC, The apparatus shall comply with the relevant CISPR standards	EMC tests performed, test report according to CISPR standards will be provided upon request	P

National Differences for **Norway (NO);** EN 60950-1:2001			P
1.5.8	Due to the IT power system used (see annex V, figure V.7), capacitors are required to be rated for the applicable phase-to-phase voltage (230 V)	Capacitors within power supplies are sufficiently rated, power supplies were evaluated for IT systems	P
1.7.2	CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies onconnection 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: “Apparatet må tilkoples jordet stikkontakt”	Proper marking will be provided once the product is distributed to this country	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.2.4	Requirements according to this annex, 1.7.2 and 6.1.2.1 apply	Refer to main body of test report, however no TNV	P
2.3.2	Requirements according to this annex, 6.1.2.1 apply	No TNV	N
2.3.3	Requirements according to this annex, 1.7.2 and 6.1.2.1 apply	No TNV	N
2.3.4	Requirements according to this annex, 1.7.2 and 6.1.2.1 apply	No TNV	N
2.10.3.1	Due to the IT power distribution system used (see annex V, figure V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault	Refer to clause 1.5.8 above	P
6.1.2.1	Add the following text between the first and second paragraph: 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.	No TNV	N
	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 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.		N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	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 60950:2000, 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
6.1.2.2	The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a service person.	No TNV	N
7.1	Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	No cable distribution system	N
G.2.1	Due to the IT power distribution system used (see annex V, figure V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault	Refer to clause 1.5.8 above	P

National Differences for **Sweden (SE);** SS EN 60950-1			P
1.5.1	The following is added: **Sweden** (Ordinance (1990:944) NOTE - In Sweden, switches containing mercury such as thermostats, relays and level controllers are not allowed.	Added & considered	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1.7.2	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 shall be in Swedish and as follows: "Apparaten skall anslutas till jordat uttag."	Proper marking will be provided once the product is distributed to this country	P
6.1.2.1	The following text is added: NOTE - In Sweden the following text is added between the first and second paragraph: In Sweden, 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.	No TNV	N
	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 the accordance with the compliance clause below and in addition: - passes the test and inspection criteria of IEC 60950-1, 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of IEC 60950-1, 2.10.7 shall be performed using 1,5 kV); and - is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV.		N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
	It is permitted to bridge this insulation with a capacitor complying with IEC 60384-14:1993, subclass Y2. A capacitor classified Y3 according to IEC 60384-14:1993, may bridge this insulation under the following conditions: The insulation requirements are satisfied by having a capacitor classified Y3 as defined by IEC 60384-14, which in addition to the Y3 testing, is tested with an Impulse test of 2.5kV defined in IEC 60950-1, subclause 6.2.2.1. The additional testing shall be performed on all the test specimens as described in IEC 60384 -14. The Impulse test of 2.5kV is to be performed before the Endurance Test in IEC 60384 -14 in the sequence of tests as described in IEC 60384-14.		N
6.1.2.2	The exclusions are applicable only 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 SERVICE PERSON.	No TNV	N
7.1	Requirements according to the Swedish deviations to 6.1.2.1 and 6.1.2.2 apply. The term "TELECOMMUNICATION NETWORK" in 6.1.2 is replaced by "CABLE DISTRIBUTION SYSTEM".	No cable distribution system	N

National Differences for **USA (US);** UL 60950-1/CSA C22.2 No. 60950-1			P
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Complies	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Considered	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC are required to have special construction features and identification markings.	Power cord is less than 3.05m in length and is an approved component	P
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." Likewise, a voltage rating shall not be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions."	One phase only	N
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	Fuses are part of already approved power supplies	N
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets, receptacles and medium-base or smaller lampholders if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require transformer overcurrent protection.	No power outlets provided	N
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Approved AC-inlet is used, no other wiring methods	P
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Power cords with plugs are sufficiently rated	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment such as ATMs.	Equipment is not for permanent connection	N
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.	Power supply cord for this country is an approved component and less than 4.5m in length	P
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Refer to above, equipment is not permanently connected	N
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.		N
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).	No terminals provided	N
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	No motor control devices	N
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No such switch	N
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	Equipment does not have battery systems capable of supplying 750VA	N
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No flammability liquids	N
4.3.13	Equipment with lasers is required to meet the Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	CDRH reports for laser components are available	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
4.7	For computer room applications, automated information storage systems with combustible media greater than 27 cubic feet are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No combustible media	N
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m 2 or a single dimension greater than 1.8 m are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N
Annex H	Equipment that produces ionizing radiation is required to comply with the Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Equipment does not produce ionizing radiation	N
Other Differences - The following key national differences are based on requirements other than national regulatory requirements.			
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, surge suppressors, switches (including interlock switches), thermal cutoffs, thermostats, multi-layer transformer winding wire, tubing, wire connectors, and wire and cables.	All critical components are UL certified	P

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No TNV	N
2.3.2	In the event of a single fault, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.		N
2.6.3.4	When subject to impedance testing, protective earthing and bonding are required to be subjected to the additional test conditions specified.		N
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.	Not for connection to a centralized d.c. power system	N
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRTs	N
4.3.2	Equipment with handles is required to comply with special loading tests.	No handles	N
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV	N
6.2.1	Enamel coating on winding wire not considered electrical separation unless subjected to special investigation.		N
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.		N
6.5	Equipment connected to a telecommunications network and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure tests.		N
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N

EN 60950-1:2006			
Clause	**Requirement – Test**	**Result – Remark**	**Verdict**

CB-Certificate of Power Supply

LABORAMUS GMBH

ATTESTATION OF CONFORMITY

Certificate No.:CE-L093800-01

Applicant:	ZHEJIANG SUR-LINK TECHNOLOGY CO LTD
Manufacturer:	ZHEJIANG SUR-LINK TECHNOLOGY CO LTD
Address:	1 North Rd Batang, Hangzhouwan New Zone, Cixi, Zhejiang, 315300, China
Product:	Communications Circuit Accessories
Models:	Patch Panel: SPP-2XX2H1, SPP-4XX2H1; Outlet: SFP-2XX101, SFP-7XX101; Keystone Jack: SPP-2XX201, SPP-7XX201;
Technical: Data	125V AC, 1.5A

The submitted samples of the above equipments have been tested for CE Marking according to the following European Directives:

- Low Voltage Directive 2006/95/EC

Assessment of compliance of the product with the requirements relating to the above Directives was based on the following applicable standard(s).

EN 60950-1:2006

The referred test report(s) with the reference number of L093800-01 show that the product complied with the above standard(s) recognized as giving presumption of compliance with the essential requirements in the specified EU Directive(s).After preparation of the necessary technical documentation as well as the conformity declaration, the CE marking as shown below can be affixed on the equipment. Other relevant Directives have to be observed.

CE

LABORAMUS GmbH GERMANY

Signed by:

Tobias Von Schneider
Certification Manager

Issued on: May 26, 2009

Address: Bahn Str 19 D-40212 Düsseldorf Tel.: +49-211-66539618 Fax: +49-211-9632055 Website: www.laboratmus.eu

Photographs of Test Sample