APPENDIX F. PRODUCT SAFETY REPORT

Technical Report No. 72120951-000
Rev. -
Dated: 2016-10-18

Client:	Election Systems & Software LLC 11208 John Galt Blvd. Omaha, NE 68137 USA
Manufacturing place:	Election Systems & Software LLC 11208 John Galt Blvd. Omaha, NE 68137 USA
Test subject:	Product: Central Count Scanner and Tabulator Type: DS450
Test specification:	UL 60950-1:2007/R:2014-10
Purpose of examination:	• Test according to the test specification.
Test result:	*The test results show that the presented product is in compliance with the specified requirements.*

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America

1 Description of the test subject

1.1 Function

Manufacturer's specification for intended use:

The model DS450 central count scanner and tabulator is mounted on a cart with supporting separately certified equipment that consists of a certified laser scanner, certified dot matrix printer and a certified UPS. Both printers along with the central count scanner and tabulator plugs into the UPS outlets. The ballots cannot be scanned and laser printer printing at the same time. The system process is that the ballots are scanned, then results are download electronically via the UPS connector or printed via the laser printer. The dot matrix printer is for system command reporting.

The central count scanner and tabulator power is supplied to the appliance inlet via a detachable power supply cord which has not been evaluated.

Manufacturer's specification for predictive misuse:

No restrictions provided.

1.2 Consideration of the foreseeable misuse

☐ *Not applicable*
☒ *Covered through the applied standard*
☐ *Covered by the following comment*
☐ *Covered by attached risk analysis*

1.3 Technical Data

120VAC, 50/60HZ, 12A, Class I equipment

2.0 Order

2.1 Date of Purchase Order, Customer's Reference

NTS PO #PRPO054733-2 Issued on: 2016-09-30
TUV Reference No: 72120951

2.2 Receipt of Test Sample, Location
2016-10-05

2.3 Date of Testing
2016-10-05 and 2016-10-06

2.4 Location of Testing
TÜV SÜD America Inc.
5610 West Sligh Ave., Suite 100
Tampa, FL 33634 USA

2.5 Points of Non-compliance or Exceptions of the Test Procedure
None.

3. Test Results

3.1 Positive Test Results

- *Electrical safety*
  UL 60950-1:2007/R:2014-10

- *Mechanical safety*
  UL 60950-1:2007/R:2014-10

"The test specifications are met."

3.2 Points of non-compliance according to the test specification
None.

4. Remark
The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

5. Summary
Positive
"The test specifications are met."

TÜV SÜD Product Service GmbH

Engineer: Karl Wagner — Technical Report checked: David B. Dorfner

Karl Wagner — David Dorfner

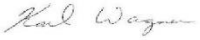
TEST REPORT

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

Report Number. ..... :	72120951-000
Date of issue..... :	2016-10-18
Total number of pages	45
CB Testing Laboratory..... :	TÜV SÜD America Inc.
Address ..... :	5610 West Sligh Ave., Suite 100, Tampa, FL 33634 USA
Applicant's name..... :	Election Systems & Software LLC
Address ..... :	11208 John Galt Blvd., Omaha, NE 68137 USA
Manufacturer's name..... :	Election Systems & Software LLC
Address ..... :	11208 John Galt Blvd., Omaha, NE 68137 USA
Test specification:	
Standard ..... :	UL 60950-1:2007/R:2014-10
Test procedure ..... :	Report Only
Non-standard test method..... :	N/A
Test Report Form No..... :	IEC60950_1E
Test Report Form(s) Originator ..... :	SGS Fimko Ltd
Master TRF..... :	Dated 2013-07

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

Test item description .....:	Central Count Scanner and Tabulator
Trade Mark .....:	
Manufacturer.....:	Election Systems & Software LLC 11208 John Galt Blvd., Omaha, NE 68137 USA
Model/Type reference.....:	DS450
Ratings .....:	120VAC, 50/60HZ, 12A, Class I equipment

Testing procedure and testing location:		
☒ **Testing Laboratory:**		
Testing location/ address ..... :	TÜV SÜD America Inc. 5610 West Sligh Ave., Suite 100, Tampa, FL 33634 USA	
Tested by (name + signature) ..... :	Karl Wagner	
Approved by (name + signature) ..... :	David Dorfner	

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

Attachment 1: US National Differences (15 pages)

Attachment 2: Photos (5 pages)

Summary of testing:

The product fulfils the requirements of UL 60950-1:2007/R:2014-10.

MNL: Unit cannot scan ballots and print from the laser printer at the same time. The laser printer and the scan equipment are plugged into the UPS outlets. Max input current draw on the UPS input is with the laser printer printing. The UPS current rating is 12A. Scanning ballots is the worst case load for the DS450 central count scanner and tabulator.

Tests performed (name of test and test clause):	**Testing location:**
All required for this investigation.	TÜV SÜD America Inc. 5610 West Sligh Ave., Suite 100 Tampa, FL 33634 USA

Summary of compliance with National Differences

List of countries addressed:

This report is includes US National Differences.

Copy of marking plate

Input 120VAC, 50/60Hz, 12A

Test item particulars:	
Equipment mobility:	[] movable [] hand-held [] transportable [X] stationary [] for building-in [] direct plug-in
Connection to the mains:	[] pluggable equipment [X] type A [] type B [] permanent connection [] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition:	[X] continuous [] rated operating / resting time:
Access location:	[X] operator accessible [] restricted access location
Over voltage category (OVC):	[] OVC I [X] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values:	-10%, +6%
Tested for IT power systems:	[] Yes [X] No
IT testing, phase-phase voltage (V):	N/A
Class of equipment:	[X] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A):	20A
Pollution degree (PD):	[] PD 1 [X] PD 2 [] PD 3
IP protection class:	IPX0
Altitude during operation (m):	2000 m max
Altitude of test laboratory (m):	0 m
Mass of equipment (kg):	147kg (Complete Unit (scanner and cart) 58.5kg (Scanner only)
Possible test case verdicts:	
- test case does not apply to the test object:	N/A
- test object does meet the requirement:	P (Pass)
- test object does not meet the requirement:	F (Fail)
Testing:	
Date of receipt of test item:	2016-10-05
Date(s) of performance of tests:	2016-10-05 and 2016-10-06

General remarks:

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

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:

☐ **Yes**

☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... : Election Systems & Software LLC
11208 John Galt Blvd., Omaha, NE 68137 USA

General product information:

The model DS450 central count scanner and tabulator is mounted on a cart with supporting separately certified equipment that consists of a certified laser scanner, certified dot matrix printer and a certified UPS. Both printers along with the central count scanner and tabulator plugs into the UPS outlets. The ballots cannot be scanned and laser printer printing at the same time. The system process is that the ballots are scanned, then results are download electronically via the UPS connector or printed via the laser printer. The dot matrix printer is for system command reporting.

The central count scanner and tabulator power is supplied to the appliance inlet via a detachable power supply cord which has not been evaluated.

Abbreviations used in the report:

- normal conditions	**N.C.**	- single fault conditions	**S.F.C**
- functional insulation	**OP**	- basic insulation	**BI**
- double insulation	**DI**	- supplementary insulation	**SI**
- between parts of opposite polarity	**BOP**	- reinforced insulation	**RI**

Indicate used abbreviations (if any)

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		—
1.5	**Components**		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of UL 60950-1 and the relevant component standard. Components, for which no relevant UL-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of UL 60950-1.	P
1.5.3	Thermal controls	None unless part of certified power supply.	N/A
1.5.4	Transformers	None unless part of certified power supply.	N/A
1.5.5	Interconnecting cables	No interconnecting cables provided with device.	N/A
1.5.6	Capacitors bridging insulation	None unless part of certified power supply.	N/A
1.5.7	Resistors bridging insulation	None unless part of certified power supply.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems	Not evaluated for IT power systems.	N/A
1.5.9	Surge suppressors	None provided.	N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	**Power interface**		P
1.6.1	AC power distribution systems	TN	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held	N/A
1.6.4	Neutral conductor	Neutral is insulated from earth with basic insulation throughout the equipment.	P
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings	The required marking is located on the outside surface of the equipment.	P
1.7.1.1	Power rating marking	The required marking is located on the outside surface of the equipment.	P
	Multiple mains supply connections.....:	The equipment does not have multiple mains connections.	N/A
	Rated voltage(s) or voltage range(s) (V) .....:	120VAC	P
	Symbol for nature of supply, for d.c. only.....:	The equipment is for a.c. supply.	N/A
	Rated frequency or rated frequency range (Hz) ....:	50/60Hz	P
	Rated current (mA or A) .....:	Refer to marking plate, page 4.	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....:		P
	Model identification or type reference .....:	DS450	P
	Symbol for Class II equipment only .....:	The equipment is not Class II.	N/A
	Other markings and symbols .....:	None.	N/A
1.7.1.3	Use of graphical symbols	None.	N/A
1.7.2	Safety instructions and marking	Sufficient instructions for installation and use provided.	P
1.7.2.1	General	The equipment is not Class II.	N/A
1.7.2.2	Disconnect devices	Statement not required.	N/A
1.7.2.3	Overcurrent protective device	Not Pluggable Type B or permanently connected.	N/A
1.7.2.4	IT power distribution systems	Not evaluated for IT power systems.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.5	Operator access with a tool	Tool required to access any circuits. User not directed to use a tool to gain access.	N/A
1.7.2.6	Ozone	The equipment does not produce ozone.	N/A
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Supply voltage adjustment .....:	No supply adjustment on the equipment.	N/A
	Methods and means of adjustment; reference to installation instructions .....:		N/A
1.7.5	Power outlets on the equipment .....:	None.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....:	No operator replaceable fuses.	N/A
1.7.7	Wiring terminals	No wiring terminals.	N/A
1.7.7.1	Protective earthing and bonding terminals .....:	Marked appliance inlet.	P
1.7.7.2	Terminals for a.c. mains supply conductors	The equipment is not permanently connected or provided with a non-detachable power supply cord.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	Not for connection to a d.c. mains.	N/A
1.7.8	Controls and indicators	None provided.	N/A
1.7.8.1	Identification, location and marking .....:		N/A
1.7.8.2	Colours .....:		N/A
1.7.8.3	Symbols according to IEC 60417.....:		N/A
1.7.8.4	Markings using figures .....:		N/A
1.7.9	Isolation of multiple power sources .....:	Single input.	N/A
1.7.10	Thermostats and other regulating devices .....:	No thermostats or other regulating devices.	N/A
1.7.11	Durability	The marking withstands required tests.	P
1.7.12	Removable parts	No marking on removable parts.	N/A
1.7.13	Replaceable batteries .....:	No batteries.	N/A
	Language(s) .....:		—
1.7.14	Equipment for restricted access locations.....:	Not intended for resticted access.	N/A

2	**PROTECTION FROM HAZARDS**		P
2.1	**Protection from electric shock and energy hazards**		P
2.1.1	Protection in operator access areas	Refer below:	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.1	Access to energized parts	All covers / guards preventing access to energized parts require a tool for removal. Checked by test finger and test pin.	P
	Test by inspection .....:		P
	Test with test finger (Figure 2A) .....:	No parts accessible with test finger.	P
	Test with test pin (Figure 2B) .....:	No parts accessible with test pin.	P
	Test with test probe (Figure 2C) .....:	No TNV circuits.	N/A
2.1.1.2	Battery compartments	No battery compartments, no TNV circuits.	N/A
2.1.1.3	Access to ELV wiring	No accessible wiring.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No accessible to hazardous voltage wiring.	P
2.1.1.5	Energy hazards .....:	No accessible to energy hazards,	P
2.1.1.6	Manual controls	No manual controls.	N/A
2.1.1.7	Discharge of capacitors in equipment	Complies.	P
	Measured voltage (V); time-constant (s).....:	Initial value: 180Vp 37% value: 54Vp 1 second value: 0Vp	—
2.1.1.8	Energy hazards – d.c. mains supply	The equipment is not intended to connect to a d.c. mains.	N/A
	a) Capacitor connected to the d.c. mains supply ..:		N/A
	b) Internal battery connected to the d.c. mains supply .....:		N/A
2.1.1.9	Audio amplifiers .....:	No audio amplifiers.	N/A
2.1.2	Protection in service access areas	No service areas.	N/A
2.1.3	Protection in restricted access locations	Not for use in restricted access locations.	N/A

2.2	**SELV circuits**		P
2.2.1	General requirements	SELV circuits provided by the certified PSU output.	P
2.2.2	Voltages under normal conditions (V) .....:	Refer to 2.2.1.	P
2.2.3	Voltages under fault conditions (V) .....:	Refer to 2.2.1.	P
2.2.4	Connection of SELV circuits to other circuits .....:	SELV circuits are only connected to other SELV circuits.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.3	**TNV circuits**		N/A
2.3.1	Limits	No TNV circuits	N/A
	Type of TNV circuits ..... :		—
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions ..... :		N/A
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed ..... :		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed ..... :		—
2.3.5	Test for operating voltages generated externally		N/A
2.4	**Limited current circuits**		N/A
2.4.1	General requirements	No limited current circuits.	N/A
2.4.2	Limit values		N/A
	Frequency (Hz) ..... :		—
	Measured current (mA) ..... :		—
	Measured voltage (V) ..... :		—
	Measured circuit capacitance (nF or µF) ..... :		—
2.4.3	Connection of limited current circuits to other circuits		N/A
2.5	**Limited power sources**	No output ports.	N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output under normal operating and single fault condition		N/A
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA) ..... :		—
	Current rating of overcurrent protective device (A) .:		—
	Use of integrated circuit (IC) current limiters		
2.6	**Provisions for earthing and bonding**		P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.1	Protective earthing	No accessible metal that can be energized by a single fault. Appliance inlet has a PE terminal.	N/A
2.6.2	Functional earthing	No functional earthing terminals provided.	N/A
	Use of symbol for functional earthing .....:		N/A
2.6.3	Protective earthing and protective bonding conductors	Refer below.	P
2.6.3.1	General	Refer below.	P
2.6.3.2	Size of protective earthing conductors	Earth terminal of certified appliance inlet serves as PE conductor.	P
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
2.6.3.3	Size of protective bonding conductors	Refer below.	P
	Rated current (A), cross-sectional area (mm^2), AWG .....:	Min.18AWG wire used	—
	Protective current rating (A), cross-sectional area (mm^2), AWG.....:	20A.	
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min).....:	40A applied for 2 minutes from AC inlet to AC outlet earthing terminals. The measured resistance was 59mΩ.	P
2.6.3.5	Colour of insulation .....:	Green/yellow.	N/A
2.6.4	Terminals	No terminals provided.	N/A
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals	Earth terminal of certified appliance inlet serves as PE conductor.	N/A
	Rated current (A), type, nominal thread diameter (mm).....:		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		N/A
2.6.5.1	Interconnection of equipment	Not a system of interconnected equipment or marked as a Class II device.	N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No such components.	N/A
2.6.5.3	Disconnection of protective earth	Disconnection of PE removes all hazards.	P
2.6.5.4	Parts that can be removed by an operator	Detachable power supply cord and appliance inlet meet make/break criteria.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.5	Parts removed during servicing	Disconnection of PE removes all hazards.	P
2.6.5.6	Corrosion resistance	Evaluated.	P
2.6.5.7	Screws for protective bonding	No protective bonding screws provided.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV or CDS circuits.	N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		P
2.7.1	Basic requirements	Provided by the building installation.	P
	Instructions when protection relies on building installation	Pluggable type A equipment.	N/A
2.7.2	Faults not simulated in 5.3.7	Considered.	N/A
2.7.3	Short-circuit backup protection	Provided by the building installation.	N/A
2.7.4	Number and location of protective devices .....:	Provided by the building installation	N/A
2.7.5	Protection by several devices	Provided by the building installation	N/A
2.7.6	Warning to service personnel .....:	Provided by the building installation	N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles	No safety interlocks provided or required.	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) .....:		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test	(see appended table 5.2)	N/A
2.8.8	Mechanical actuators		N/A
2.9	**Electrical insulation**		P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.9.1	Properties of insulating materials	Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation.	P
2.9.2	Humidity conditioning	Certified power supplies used.	N/A
	Relative humidity (%), temperature (°C) ..... :		—
2.9.3	Grade of insulation	Only BI evaluated.	P
2.9.4	Separation from hazardous voltages	Reinforced insulation provided by certified power supply.	N/A
	Method(s) used ..... :		—
2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General	All distances within the PSU evaluated as part of separately certified power supply. Only BI evaluated from Mains to PE in terminal block.	P
2.10.1.1	Frequency ..... :	50/60Hz	N/A
2.10.1.2	Pollution degrees ..... :	2	N/A
2.10.1.3	Reduced values for functional insulation	No reduced values for functional insulation.	N/A
2.10.1.4	Intervening unconnected conductive parts	No such parts.	N/A
2.10.1.5	Insulation with varying dimensions	None used.	N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses	None used.	N/A
2.10.2	Determination of working voltage	Part of certified power supply.	N/A
2.10.2.1	General		—
2.10.2.2	RMS working voltage	Used input rating 120V.	—
2.10.2.3	Peak working voltage	Used input rating 170V.	—
2.10.3	Clearances	All distances within the PSU evaluated as part of separately certified power supply. Only BI evaluated from Mains to PE in terminal block.	—
2.10.3.1	General		—
2.10.3.2	Mains transient voltages	Not measured.	N/A
	a) AC mains supply ..... :	Used input rating 120VAC.	—
	b) Earthed d.c. mains supplies ..... :	No dc mains.	N/A
	c) Unearthed d.c. mains supplies ..... :	No dc mains.	N/A
	d) Battery operation ..... :	No batteries.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.3	Clearances in primary circuits	All distances within the PSU evaluated as part of separately certified power supply. Only BI evaluated from Mains to PE in terminal block. (see appended table 2.10.3 and 2.10.4)	N/A
2.10.3.4	Clearances in secondary circuits	Only functional insulation in secondary circuits, ref. 5.3.4.	N/A
2.10.3.5	Clearances in circuits having starting pulses	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.3.6	Transients from a.c. mains supply ..... :	Use 1500Vp.	—
2.10.3.7	Transients from d.c. mains supply ..... :	No dc mains.	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :	No TNV or CDS circuits.	N/A
2.10.3.9	Measurement of transient voltage levels	Measurement not relevant.	N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply ..... :		N/A
	For a d.c. mains supply ..... :		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	All distances within the PSU evaluated as part of separately certified power supply. Only BI evaluated from Mains to PE in terminal block.	—
2.10.4.1	General		—
2.10.4.2	Material group and comparative tracking index		N/A
	CTI tests ..... :		—
2.10.4.3	Minimum creepage distances	All distances within the PSU evaluated as part of separately certified power supply. Only BI evaluated from Mains to PE in terminal block. (see appended table 2.10.3 and 2.10.4)	N/A
2.10.5	Solid insulation	Part of power supply certifications.	N/A
2.10.5.1	General		—
2.10.5.2	Distances through insulation		N/A
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints		N/A
2.10.5.6	Thin sheet material – General		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs)..... :		—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		N/A
	Electric strength test		—
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage ..... :		N/A
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation ..... :		N/A
	c) Compliance with Annex U ..... :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage ..... :		N/A
	- Basic insulation not under stress ..... :		N/A
	- Supplementary, reinforced insulation ..... :		N/A
2.10.6	Construction of printed boards	Part of certified power supply.	N/A
2.10.6.1	Uncoated printed boards		N/A
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)..... :		N/A
2.10.7	Component external terminations	Part of certified power supply.	N/A
2.10.8	Tests on coated printed boards and coated components	Part of certified power supply.	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A
3	**WIRING, CONNECTIONS AND SUPPLY**		P
3.1	**General**		P
3.1.1	Current rating and overcurrent protection	Adequate for loads.	P
3.1.2	Protection against mechanical damage	All internal wires are properly routed and away from sharp edges.	P
3.1.3	Securing of internal wiring	Internal wires are properly secured.	P
3.1.4	Insulation of conductors	Wiring insulation appropriate based on voltages. (see appended table 5.2)	P
3.1.5	Beads and ceramic insulators	None used.	N/A
3.1.6	Screws for electrical contact pressure	None used.	N/A
3.1.7	Insulating materials in electrical connections	None used.	N/A
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections.	N/A
3.1.9	Termination of conductors	Wiring properly secured based on voltages.	P
	10 N pull test	Reliable connectors/terminals used.	N/A
3.1.10	Sleeving on wiring	None used.	N/A
3.2	**Connection to a mains supply**		P
3.2.1	Means of connection	Refer below:	P
3.2.1.1	Connection to an a.c. mains supply	Provided with appliance inlet.	P
3.2.1.2	Connection to a d.c. mains supply	The equipment is not for connection to a d.c. mains supply.	N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment	The equipment is not intended for permanent connection to the mains.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of conductors, diameter of cable and conduits (mm) ..... :		—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320.	P
3.2.5	Power supply cords	Refer below:	N/A
3.2.5.1	AC power supply cords	Power supply cord is not evaluated with the equipment.	N/A
	Type ..... :		—
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
3.2.5.2	DC power supply cords	The equipment is not for connection to a d.c. mains supply.	N/A
3.2.6	Cord anchorages and strain relief	Equipment provided with an appliance inlet.	N/A
	Mass of equipment (kg), pull (N) ..... :		—
	Longitudinal displacement (mm) ..... :		—
3.2.7	Protection against mechanical damage	Equipment provided with an appliance inlet.	N/A
3.2.8	Cord guards	The equipment is neither hand-held nor intended to be moved during operation.	N/A
	Diameter or minor dimension D (mm); test mass (g) ..... :		—
	Radius of curvature of cord (mm) ..... :		—
3.2.9	Supply wiring space	Equipment provided with an appliance inlet.	N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
3.4	**Disconnection from the mains supply**		N/A
3.4.1	General requirement	Equipment provided with an appliance inlet.	N/A
3.4.2	Disconnect devices	Refer below:	N/A
3.4.3	Permanently connected equipment	The appliance inlet is considered the disconnect device.	N/A
3.4.4	Parts which remain energized	Not permanently connected equipment.	N/A
3.4.5	Switches in flexible cords	No switches in flexible cords.	N/A
3.4.6	Number of poles - single-phase and d.c. equipment	Power supply cord is not evaluated with the equipment.	P
3.4.7	Number of poles - three-phase equipment	The disconnect device disconnects both poles simultaneously.	N/A
3.4.8	Switches as disconnect devices	Single-phase equipment.	N/A
3.4.9	Plugs as disconnect devices	Operator's Guide provided.	P
3.4.10	Interconnected equipment	Only one supply source.	N/A
3.4.11	Multiple power sources	Only one supply source.	N/A

3.5	**Interconnection of equipment**		P
3.5.1	General requirements		—
3.5.2	Types of interconnection circuits .....:	SELV to SELV.	P
3.5.3	ELV circuits as interconnection circuits	None.	N/A
3.5.4	Data ports for additional equipment	No data ports for additional equipment.	N/A

4	**PHYSICAL REQUIREMENTS**		P
4.1	**Stability**		P
	Angle of 10°	Complies (scanning unit and cart).	P
	Test force (N) .....:	Used 250N and 800N applied downward on side foldout work surface. No hazards.	P

4.2	**Mechanical strength**		P
4.2.1	General		P
	Rack-mounted equipment.	Not rack-mount equipment. (see Annex DD)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.2.2	Steady force test, 10 N	Certified PSU used.	N/A
4.2.3	Steady force test, 30 N	No internal enclosure barriers.	N/A
4.2.4	Steady force test, 250 N	Complies.	P
4.2.5	Impact test	Complet metal enclosure mm thickness.	N/A
	Fall test		N/A
	Swing test		N/A
4.2.6	Drop test; height (mm) .....:	Drop test not applicable.	N/A
4.2.7	Stress relief test	Metal Enclosure.	N/A
4.2.8	Cathode ray tubes	No CRT.	N/A
	Picture tube separately certified .....:	(see separate test report or attached certificate)	N/A
4.2.9	High pressure lamps	No high pressure lamps.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....:	Not wall of ceiling mount.	N/A

4.3	**Design and construction**		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P
4.3.2	Handles and manual controls; force (N) .....:	None.	N/A
4.3.3	Adjustable controls	No hazardous adjustable controls.	N/A
4.3.4	Securing of parts	Properly secured.	P
4.3.5	Connection by plugs and sockets	SELV connector does not comply with IEC 60320 or IEC 60083.	N/A
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N/A
	Torque .....:		—
	Compliance with the relevant mains plug standard .....:		N/A
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N/A
4.3.8	Batteries	No batteries. (see appended tables 4.3.8)	N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.10	Dust, powders, liquids and gases	The equipment does not generate ionizing radiation or use a laser, and does not contain flammable liquids or gases. Only a certified laser printer used.	N/A
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N/A
4.3.12	Flammable liquids ..... :	The equipment does not contain flammable liquid.	N/A
	Quantity of liquid (l) ..... :		N/A
	Flash point (°C) ..... :		N/A
4.3.13	Radiation	No radiation.	N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N/A
	Measured radiation (pA/kg) ..... :		—
	Measured high-voltage (kV) ..... :		—
	Measured focus voltage (kV) ..... :		—
	CRT markings ..... :		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce UV radiation.	N/A
	Part, property, retention after test, flammability classification ..... :		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation ..... :	The equipment does not produce UV radiation.	N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	No lasers, LED's provided are diffused. Only a certified laser printer used.	N/A
4.3.13.5.1	Lasers (including laser diodes)	None.	N/A
	Laser class ..... :		—
4.3.13.5.2	Light emitting diodes (LEDs)	LED's provided are diffused indicating types only.	
4.3.13.6	Other types ..... :	The equipment does not generate other types of radiation.	N/A

4.4	**Protection against hazardous moving parts**		P
4.4.1	General	Adequate protection against risk of personnel injury.	P
4.4.2	Protection in operator access areas ..... :	No hazardous moving parts accessible to the operator other than guarded fans.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Household and home/office document/media shredders	(see Annex EE)	N/A
4.4.3	Protection in restricted access locations .....:	Not intended for restricted access location	N/A
4.4.4	Protection in service access areas	Adequate protection.	N/A
4.4.5	Protection against moving fan blades	Guarded fans	P
4.4.5.1	General		N/A
	Not considered to cause pain or injury. a).....:		N/A
	Is considered to cause pain, not injury. b) .....:		N/A
	Considered to cause injury. c) .....:		N/A
4.4.5.2	Protection for users		N/A
	Use of symbol or warning .....:		N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning .....:		N/A
4.5	**Thermal requirements**		P
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L .....:	Refer to Annex L.	—
4.5.3	Temperature limits for materials	Complies. (see appended table 4.5)	P
4.5.4	Touch temperature limits	Complies. (see appended table 4.5)	P
4.5.5	Resistance to abnormal heat .....:	Certified components, no testing performed.	N/A
4.6	**Openings in enclosures**		P
4.6.1	Top and side openings	No openings in the enclosure.	N/A
	Dimensions (mm) .....:		—
4.6.2	Bottoms of fire enclosures	No bottom openings	N/A
	Construction of the bottomm, dimensions (mm) ..:		—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment	No openings in the enclosure.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) .....:		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
4.7	**Resistance to fire**		P
4.7.1	Reducing the risk of ignition and spread of flame	Method 1 used.	P
	Method 1, selection and application of components wiring and materials	Suitable materials used, refer to appended table 1.5.1. (see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	Method 1 used.	N/A
4.7.2	Conditions for a fire enclosure	Refer below.	—
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts.	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		—
4.7.3.1	General	Components and materials have adequate flammability classification. (see appended Table 4.7)	—
4.7.3.2	Materials for fire enclosures	Refer to enclosure in Table 1.5.1.	P
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	PWB flame rated 94V-0.	P
4.7.3.5	Materials for air filter assemblies	No air filters.	N/A
4.7.3.6	Materials used in high-voltage components	No high voltage components.	N/A
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		P
5.1	**Touch current and protective conductor current**		P
5.1.1	General		P
5.1.2	Configuration of equipment under test (EUT)	Only single connection.	P
5.1.2.1	Single connection to an a.c. mains supply	Only single connection.	P
5.1.2.2	Redundant multiple connections to an a.c. mains supply	Only single connection.	N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Single phase type TN system.	P
5.1.4	Application of measuring instrument	Measuring circuit D1 used.	P
5.1.5	Test procedure	Switch "e" opened and closed.	P
5.1.6	Test measurements	(see appended table 5.1)	P
	Supply voltage (V) ..... :	127.2VAC/60Hz	—
	Measured touch current (mA) ..... :	0.050	—
	Max. allowed touch current (mA) ..... :	3.5	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured protective conductor current (mA) ..... :	N/A	—
	Max. allowed protective conductor current (mA)... :	N/A	—
5.1.7	Equipment with touch current exceeding 3,5 mA		N/A
5.1.7.1	General ..... :		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV circuits.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
5.1.8.2	Summation of touch currents from telecommunication networks	No TNV circuits.	N/A
	a) EUT with earthed telecommunication ports ..... :		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

5.2	**Electric strength**		P
5.2.1	General	Complies. (see appended table 5.2)	P
5.2.2	Test procedure		P

5.3	**Abnormal operating and fault conditions**		P
5.3.1	Protection against overload and abnormal operation	Locked rotor all fans. (see appended table 5.3)	P
5.3.2	Motors	Only dc stepper motor and certified fans.	N/A
5.3.3	Transformers	No transformers. (see appended Annex C)	N/A
5.3.4	Functional insulation..... :	No functional insulation relied upon for safety.	N/A
5.3.5	Electromechanical components	No such components.	N/A
5.3.6	Audio amplifiers in ITE ..... :	No audio amplifiers.	N/A
5.3.7	Simulation of faults		N/A
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions		N/A
5.3.9.1	During the tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.2	After the tests		N/A
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		N/A
6.1	**Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment**		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements	No TNV Circuits.	N/A
	Supply voltage (V) ..... :		—
	Current in the test circuit (mA) ..... :		—
6.1.2.2	Exclusions ..... :		N/A
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		N/A
6.2.1	Separation requirements	No TNV Circuits.	N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test	(see appended table 5.2)	N/A
6.2.2.2	Steady-state test	(see appended table 5.2)	N/A
6.2.2.3	Compliance criteria		N/A
6.3	**Protection of the telecommunication wiring system from overheating**		N/A
	Max. output current (A) ..... :		—
	Current limiting method ..... :		—
7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		N/A
7.1	**General**	No CDS	N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test	(see appended table 5.2)	N/A
7.4.3	Impulse test	(see appended table 5.2)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A	**ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
A.1	**Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)**	All materials have suitable flame class, no additional testing required.	N/A
A.1.1	Samples ..... :		—
	Wall thickness (mm) ..... :		—
A.1.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.1.3	Mounting of samples ..... :		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D ..... :		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.2	**Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)**		N/A
A.2.1	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
A.2.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.2.3	Mounting of samples ..... :		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C ..... :		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.3	**Hot flaming oil test (see 4.6.2)**		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		N/A
B.1	**General requirements**	Only dc stepper motor and certified fans.	N/A
	Position ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
B.2	**Test conditions**		N/A
B.3	**Maximum temperatures**	(see appended table 5.3)	N/A
B.4	**Running overload test**	(see appended table 5.3)	N/A
B.5	**Locked-rotor overload test**		N/A
	Test duration (days) ..... :		—
	Electric strength test: test voltage (V) ..... :		—
B.6	**Running overload test for d.c. motors in secondary circuits**		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V) ..... :		N/A
B.7	**Locked-rotor overload test for d.c. motors in secondary circuits**	DC stepper motor only in printer.	N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V) ..... :		N/A
B.8	**Test for motors with capacitors**	(see appended table 5.3)	N/A
B.9	**Test for three-phase motors**	(see appended table 5.3)	N/A
B.10	**Test for series motors**		N/A
	Operating voltage (V) ..... :		—

C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		N/A
	Position ..... :	No transformers.	—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
	Method of protection ..... :		—
C.1	**Overload test**	(see appended table 5.3)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
C.2	**Insulation**	(see appended tables 5.2 and C2)	N/A
	Protection from displacement of windings .....:		N/A
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		P
D.1	**Measuring instrument**	Measuring circuit D1 used.	P
D.2	**Alternative measuring instrument**		N/A
E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**		N/A
F	**ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)**		N/A
G	**ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES**		N/A
G.1	**Clearances**	Annex G not relied upon.	N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	**Determination of mains transient voltage (V)**		N/A
G.2.1	AC mains supply .....:		N/A
G.2.2	Earthed d.c. mains supplies .....:		N/A
G.2.3	Unearthed d.c. mains supplies .....:		N/A
G.2.4	Battery operation .....:		N/A
G.3	**Determination of telecommunication network transient voltage (V) .....:**		N/A
G.4	**Determination of required withstand voltage (V)**		N/A
G.4.1	Mains transients and internal repetitive peaks .....:		N/A
G.4.2	Transients from telecommunication networks .....:		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	**Measurement of transient voltages (V)**		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
G.6	**Determination of minimum clearances .....:**		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A
J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		N/A
	Metal(s) used ..... :	Corrosion not critical.	—
K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)**		N/A
K.1	Making and breaking capacity	No thermal controls relied upon for safety unless part of certified components.	N/A
K.2	Thermostat reliability; operating voltage (V) ..... :		N/A
K.3	Thermostat endurance test; operating voltage (V) ..... :		N/A
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation	(see appended table 5.3)	N/A
L	**ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)**		P
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	(MNL): Unit cannot scan ballots and print from the laser printer at the same time. The laser printer and the scan equipment are plugged into the UPS outlets. Max input current draw on the UPS input is with the laser printer printing. The UPS current rating is 12A. Scanning ballots is the worst case load for the DS450 central count scanner and tabulator.	P
M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A
M.1	Introduction	No TNV circuits.	N/A
M.2	Method A		N/A
M.3	Method B		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) ..... :		—
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—
M.3.1.4	Single fault current (mA) ..... :		—
M.3.2	Tripping device and monitoring voltage ..... :		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) ..... :		N/A
N	**ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)**		N/A
N.1	ITU-T impulse test generators	Impulse Test not relied upon.	N/A
N.2	IEC 60065 impulse test generator		N/A
P	**ANNEX P, NORMATIVE REFERENCES**		—
Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		N/A
	- Preferred climatic categories ..... :	No VDR's.	N/A
	- Maximum continuous voltage ..... :		N/A
	- Combination pulse current ..... :		N/A
	Body of the VDR Test according to IEC60695-11-5..... :		N/A
	Body of the VDR. Flammability class of material (min V-1)..... :		N/A
R	**ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES**		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)	Coated PWB not relied upon for safety.	N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	**ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		N/A
S.1	Test equipment	Impulse not relied upon.	N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
T	**ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)**		N/A
		No ingress protection claimed.	—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		N/A
		Annex U not relied upon.	—
V	**ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)**		P
V.1	Introduction		P
V.2	TN power distribution systems	TN.	P
W	**ANNEX W, SUMMATION OF TOUCH CURRENTS**		N/A
W.1	Touch current from electronic circuits	No TNV circuits.	N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A
X	**ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)**		N/A
X.1	Determination of maximum input current	No transformers.	N/A
X.2	Overload test procedure		N/A
Y	**ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)**		N/A
Y.1	Test apparatus ..... :	No UV.	N/A
Y.2	Mounting of test samples ..... :		N/A
Y.3	Carbon-arc light-exposure apparatus ..... :		N/A
Y.4	Xenon-arc light exposure apparatus ..... :		N/A
Z	**ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)**		N/A
AA	**ANNEX AA, MANDREL TEST (see 2.10.5.8)**		N/A
BB	**ANNEX BB, CHANGES IN THE SECOND EDITION**		—

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

CC	**ANNEX CC, Evaluation of integrated circuit (IC) current limiters**		N/A
CC.1	General	No IC current limiters.	N/A
CC.2	Test program 1.....:		N/A
CC.3	Test program 2.....:		N/A
CC.4	Test program 3.....:		N/A
CC.5	Compliance.....:		N/A

DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		N/A
DD.1	General	Not rack mounted equipment.	N/A
DD.2	Mechanical strength test, variable N.....:		N/A
DD.3	Mechanical strength test, 250N, including end stops.....:		N/A
DD.4	Compliance.....:		N/A

EE	**ANNEX EE, Household and home/office document/media shredders**		N/A
EE.1	General	Not a shredder.	N/A
EE.2	Markings and instructions		N/A
	Use of markings or symbols.....:		N/A
	Information of user instructions, maintenance and/or servicing instructions.....:		N/A
EE.3	Inadvertent reactivation test.....:		N/A
EE.4	Disconnection of power to hazardous moving parts:		N/A
	Use of markings or symbols.....:		N/A
EE.5	Protection against hazardous moving parts		N/A
	Test with test finger (Figure 2A) .....:		N/A
	Test with wedge probe (Figure EE1 and EE2) .....:		N/A

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

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
Enclosure	Various	Various	Metal, min. 2.0 mm thickness,	UL 60950-1	Evaluated in Equipment
Cart	Various	Various	Metal, 2.0mm thickness overall provided with 4 locking casters	UL 60950-1	Evaluated in Equipment
UPS	APC	BR1500G	120VAC, 50/60Hz, 12A	UL 1778	cTUVRHus
Laser Printer	Dell	S2810dn	110-127V, 50/60Hz, 11A	UL 60950-1	cTUVRHus
Dot Matrix Printer	Oki Data Corp.	D22900A	100-127VAC, 50/60Hz, 1.0A	UL 60950-1	UL E135780
AC Inlet/Filter/ Switch/Fuseholder	Schurter	Type FKSP (CD34.1101.15)1	Rated 125/250V, 50/60Hz, 4A	UL 1283	UL E72928
Fuses (each pole)	Cooper Bussman	Type MDA	Rated 250V, 4A	UL 248-1	UL E19180
Terminal Block	Phoenix Contact	TYP ST 2.5	Rated 600V, 20A, 26-2 AWG., 2.0A	UL 508	UL E60425
ATX Power Supply	Systium Electronics (FSP Group)	FSP220-60LE	Rated 100-240V, 4-2A, 60-50Hz Max. output 250W	UL 60950-1	UL E190414
Main Power Supply	Astec	LPQ252	100-250V, 50/60Hz, 4.5A	UL 60950-1	UL
Monitor	TRU-Vu (Vita Electronics)	VT-150XAR1	Rated 12VDC, 2.0A	UL 60950-1	UL E147601
Stepper Motor	Sanyo Denki	103H7123-0440	3.2VDC, rated 2A	UL 60950-1	Evaluated in Equipment
Side Fan	Traco	D09T12HWS GN	Rated 12VDC, 0.23A	UL 507	UL
Top Internal Fan	Traco	D04T12MWS GN	Rated 12VDC, 0.07A	UL 507	UL
Scanner Module (Contact Type Image Sensor)	Canon	HW12H-W02	LED, 1200dpi, 3.3V, 310mA	UL 60950-1	Evaluated in Equipment
Mother Board	Kontron	KTQM87/mitx	Rated 12VDC	UL 60950-1	UI E147705
Hard Drive	Seagate	ST 1000NM0033	Rated 5VDC, 0.75A;12VDC, 0.99A	UL 60950-1	UL E106814)
PWB	Various	Various	Rated 94V-0, 105°C.	UL94	UL
Wiring	Various	Various	AWM, rated min 125V, VW-1, 80°C, min. 18AWG.	UL 758	UL

Supplementary information:

[1]) Provided evidence ensures the agreed level of compliance. See OD-CB2039.

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

1.5.1	TABLE: Opto Electronic Devices	N/A
Manufacturer ..... : Type..... : Separately tested..... : Bridging insulation ..... : External creepage distance..... : Internal creepage distance ..... : Distance through insulation ..... : Tested under the following conditions ..... :		
Input..... : Output..... :		
supplementary information: : No opto electronic devices used.		

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
108/50HZ	9.50	12	—	—	—	Laser Printer Printing
108/50HZ	1.64	12	—	—	—	Scanning Ballots
120/50HZ	10.00	12	—	—	—	Laser Printer Printing
120/50HZ	1.50	12	—	—	—	Scanning Ballots
127.2/50HZ	9.80	12	—	—	—	Laser Printer Printing
127.2/50HZ	1.45	12	—	—	—	Scanning Ballots
108/60HZ	8.70	12	—	—	—	Laser Printer Printing
108/60HZ	1.69	12	—	—	—	Scanning Ballots
120/60HZ	9.10	12	—	—	—	Laser Printer Printing
120/60HZ	1.50	12	—	—	—	Scanning Ballots
127.2/60HZ	9.30	12	—	—	—	Laser Printer Printing
127.2/60HZ	1.44	12	—	—	—	Scanning Ballots
Supplementary information: MNL: Unit cannot scan ballots and print from the laser printer at the same time. The laser printer and the scan equipment are plugged into the UPS outlets. Max input current draw on the UPS input is with the laser printer printing. The UPS current rating is 12A. Scanning ballots is the worst case load for the DS450 central count scanner and tabulator.						

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

2.1.1.5 c) 1)	**TABLE: max. V, A, VA test**	N/A

Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)
supplementary information: Part of certified PSU.				

2.1.1.5 c) 2)	**TABLE: stored energy**	N/A

Capacitance C (µF)	Voltage U (V)	Energy E (J)
supplementary information: Part of certified PSU.		

2.2	**TABLE: evaluation of voltage limiting components in SELV circuits**	N/A

Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	

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

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

2.5	**TABLE: Limited power sources**	N/A

Circuit output tested:

Note: Measured Uoc (V) with all load circuits disconnected:

Components	Sample No.	Uoc (V)	I_{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit

supplementary information: Part of certified PSU.

Sc=Short circuit, Oc=Open circuit

2.10.2	**Table: working voltage measurement**	N/A

Location	RMS voltage (V)	Peak voltage (V)	Comments

supplementary information: Part of certified PSU.

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

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements					P
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Functional:						
Basic/supplementary:						
AC Terminal Block (terminals L/N to PE)	170	120	1.0	6.5	1.5	6.5
Reinforced:						
Supplementary information: Cl and Cr are part of power supply certification except for BI of terminal block.						

2.10.5	TABLE: Distance through insulation measurements				N/A
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Supplementary information: Part of certified PSU.					

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

4.3.8	**TABLE: Batteries**								N/A
The tests of 4.3.8 are applicable only when appropriate battery data is not available									
Is it possible to install the battery in a reverse polarity position?									
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition									
Max. current during fault condition									
Test results:									Verdict
- Chemical leaks									
- Explosion of the battery									
- Emission of flame or expulsion of molten metal									
- Electric strength tests of equipment after completion of tests									
Supplementary information: No batteries									

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

4.3.8	TABLE: Batteries	N/A
Battery category..... :	(Lithium, NiMh, NiCad, Lithium Ion ...)	
Manufacturer ..... :		
Type / model..... :		
Voltage ..... :		
Capacity..... :	mAh	
Tested and Certified by (incl. Ref. No.) ..... :		
Circuit protection diagram:		

MARKINGS AND INSTRUCTIONS (1.7.13)	
Location of replaceable battery	
Language(s) .....:	
Close to the battery .....:	
In the servicing instructions .....:	
In the operating instructions .....:	

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

4.5	**TABLE: Thermal requirements:**						P
	Supply voltage (V) ..... :	108V/ 50Hz	108V/ 60Hz	127.2V/ 60Hz	127.2V/ 50Hz		—
	Ambient T_{min} (°C) ..... :	25	25	25	25		—
	Ambient T_{max} (°C) ..... :	25	25	25	25		—
Maximum measured temperature T of part/at.....:		T (°C)					Allowed T_{max} (°C)
Time for Stablized Temperatures (hours)		1.5	1.5	1.0	1.0		—
AC Inlet Filter Body		30.2	29.8	29.4	28.7		60
Input Inductor Windings (Systium PSU)		39.6	39.1	38.4	37.6		90
Bulk Capacitor Body (Systium PSU)		39.1	38.6	38.1	37.3		85
Transformer (T1) Windings (Systium PSU)		42.9	42.4	41.9	41.2		90
Input Inductor Windings (Astec PSU)		31.0	30.7	30.2	29.9		90
Bulk (C9) Capacitor Body (Astec PSU)		31.6	31.2	30.9	30.5		85
Transformer (T1) Windings (Astec PSU)		36.7	36.5	36.2	35.8		90
Inductor (L8) Windings (Astec PSU)		32.2	31.9	31.6	31.3		90
Side Fan Case (Traco)		29.6	29.3	29.0	28.7		90
Steeper Motor Case		28.9	28.6	28.2	28.0		90
Monitor Enclosure (Plastic)		28.7	28.3	22.8	27.9		95
Top of Enclosure Metal (Hot Spot)		28.5	28.4	28.2	27.7		70
Internal Ambient		30.4	30.1	29.7	29.1		reference
Supplementary information: MNL was feeding paper ballots through scanner system. Filled ballot paper tray as needed for a continious running process.							

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
Supplementary information: Transformer part of certified PSU.							

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

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N/A
	Allowed impression diameter (mm) .....:	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
Supplementary information: Part of certified PSU.				

4.7	TABLE: Resistance to fire				P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Enclosure	Various	Metal	Min. 2.0 mm thickness,	N/A	Evaluated in equipment.
PWB	Various	Various	Rated 105°C.	Flame rated 94V-0.	Certified by UL
Supplementary information:					

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

5.1	TABLE: touch current measurement				P
Measured between:		Measured (mA)		Limit (mA)	Comments/conditions
P1 Normal (ON)		0.050	<0.005	3.5	Only single supply connection.
P2 Reversed (ON)		0.050	<0.005	3.5	Only single supply connection.
e Open		x	—	—	
e Closed		—	x	—	
P1 Normal (OFF)		0.005	<0.005	3.5	Only single supply connection.
P1 Reversed (OFF)		0.005	<0.005	3.5	Only single supply connection.
e Open		x	—	—	
e Closed		—	x	—	
supplementary information: Using measuring circuit D1.					

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:				
Basic/supplementary:				
Mains to Ground (AC Inlet)		DC	1414	No
Reinforced:				
L/N to external USB Connetors (for signal only)		DC	2828	No
Supplementary information: Certified UL power supplies.				

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

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) .....:	24	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	90V/60Hz	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
DS450	Fans locked rotor	108	1 hour 8 min.	N/A	N/A	Using MNL. 108V/60Hz tested since it had the highest normal temperature results. The side, top, Astec PSU and Systium PSU fan rotors were locked.

	TABLE: maximum temperatures	Test					P
	test voltage (V) .....:	108V/60Hz					—
	t_{amb1} (°C) .....:	25					—
	t_{amb2} (°C) .....:	25					—

Component: Fan Locked Rotor	Maximum temperature T (°C)					allowed T_{max} (°C)
AC Inlet Filter Body	32.4					No limit
Input Inductor Windings (Systium PSU)	43.8					150
Bulk Capacitor Body (Systium PSU)	43.2					No limit
Transformer (T1) Windings (Systium PSU)	46.1					150
Input Inductor Windings (Astec PSU)	47.9					150
Bulk (C9) Capacitor Body (Astec PSU)	81.2					No limit
Transformer (T1) Windings (Astec PSU)	78.4					150
Inductor (L8) Windings (Astec PSU)	62.4					150
Side Fan Case (Traco)	36.4					150
Steeper Motor Case	34.7					150
Top of Enclosure Metal (Hot Spot)	28.3					70
Supplementary information: Using MNL. 108V/60Hz tested since it had the highest normal temperature results. The side, top, Astec PSU and Systium PSU fan rotors were locked. Test ran for 1 hour and 8 minutes before UL certified power supply Astec shuted down. After cool down normal operation.						

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

C.2	TABLE: transformers						N/A
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
supplementary information: Part of certified PSU.							

C.2	TABLE: transformers	N/A
Transformer		

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

List of test equipment used: Equipment list available in TÜV SÜD project file under same report number and equipment asset number indicated on test data sheets.

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date

Attachment No.1

ATTACHMENT TO TEST REPORT
IEC 60950-1:2005 + A1:2009 + A2:2013
EUROPEAN GROUP DIFFERENCES
and
NATIONAL DEVIATIONS

Information Technology Equipment – Safety –
Part 1: General Requirements

Report Reference No.: 72120951-000

Dated of issue: 2016-10-18

Explanation for Abbreviations (if any differ from main report):
SAME as base report. 72120951-000

Possible test case verdicts:	
- test case does not apply to the test object..... :	☒ N/A / ☐ N (Not Applicable)
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)

Remarks:
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Attachment No.1

Date: 2016-10-18 Page 2 of 15 Rpt. No.: 72120951-000

IEC 60950-1:2005 (ed.2) (per IECEE CB Bulletin Website)			
Group	**Group standard references**	**Last modification**	**File downloaded**
CENELEC	EN 60950-1:2006	2008-09-24	X
CENELEC	EN 60950-1:2006 + A11:2009	2009-06-23	X
CENELEC	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011	2011-08-19	X
CENELEC	EN 60950-1:2006/A2:2013	2013-09-03	X

IEC 60950-1:2005 (ed.2) (per IECEE CB Bulletin Website)			
Country	**National standard reference**	**Last modification***	**File downloaded**
USA – US	UL 60950-1, Second Edition	2007-08-08	X
IEC 60950-1:2005 (ed.2) + A1:2009 + A2:2013 (per IECEE CB Bulletin Website)			
Country	**National standard reference**	**Last modification***	**File downloaded**
United States (USA) – US	**UL 60950-1 Am.1; Am.2**	**2014-01-24**	**X**

* The last modified date indicates the last time the standard reference / attachment for this standard was modified.
The date 2007-05-29 is the date the information was imported into the online CB Bulletin from the previous non-database version.

Attachment No.1

Date: 2016-10-18 Page 3 of 15 Rpt. No.: 72120951-000

ATTACHMENT TO TEST REPORT IEC 60950-1 **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** Information technology equipment – Safety – Part 1: General requirements	
Differences according to.....:	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013
Attachment Form No......:	EU_GD_IEC60950_1E
Attachment Originator.....:	SGS Fimko Ltd
Master Attachment.....:	Date 2013-09

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

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

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P
1.1.1 (A1:2010)	**Replace** the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		P
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	Not a portable sound system.	N/A
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010		P
1.5.1 (Added info*)	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *		P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.	Not a portable sound system.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1 (A12.2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.	Not a portable sound system.	N/A
	Zx Protection against excessive sound pressure from personal music players		
	Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players. A personal music player is a portable equipment for personal use, that: – is designed to allow the user to listen to recorded or broadcast sound or video; and – primarily uses headphones or earphones that can be worn in or on or around the ears; and – allows the user to walk around while in use. NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment. A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause. The requirements in this sub-clause are valid for music or video mode only.	Not a personal music player.	N/A
	The requirements do not apply: – while the personal music player is connected to an external amplifier; or – while the headphones or earphones are not used. NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.	Not a personal music player.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	The requirements do not apply to: – hearing aid equipment and professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015. NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.	Not a personal music player.	N/A
	For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.	Not a personal music player.	N/A
	Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: – equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and – a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.	Not a personal music player.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; andc) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off. d) have a warning as specified in Zx.3; and e) not exceed the following: 1) equipment provided as a package (player with Its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed “programme simulation noise” described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” described in EN 50332-1.	Not a personal music player.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song. NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.	Not a personal music player.	N/A
	Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: – the symbol of Figure 1 with a minimum height of 5 mm; and – the following wording, or similar: "To prevent possible hearing damage, do not listen at high volume levels for long periods."  **Figure 1 – Warning label (IEC 60417-6044)** Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.	Not a personal music player.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.4 Requirements for listening devices (headphones and earphones)		
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.	Not a personal music player.	N/A
	Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed "programme simulation noise" described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.	Not a personal music player.	N/A
	Zx.4.3 Wireless listening devices In wireless mode: – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.	Not a personal music player.	N/A

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US – United States of America			
	National Differences + A1:2012-01-29 Bulletin Information		P
N-C = National Condition			P
1.1.1 N-C	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CED), 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.	Considered.	—
1.1.2	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.	Not a baby monitor.	N/A
1.4.14 N-C	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.	Not for connection to a.c. mains.	N/A
1.5.5 N-C	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type 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.	All external interconnecting cables are suitable cable type specified in the NEC.	P
1.7.1 N-C	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."	Not for connection to a.c. mains.	N/A
	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."		
1.7.7 N-C	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1 shall be marked with the voltage rating and "Class 2" or equivalent. The marking shall be located adjacent to the terminals and shall be visible during wiring.	No such terminals.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
2.5 N-C	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.	Not used.	N/A
2.6.3.3 N-C	The first column on Table 2D modified to require, "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration."	Considered.	P
2.7.1 N-C	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) 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 special transformer overcurrent protection.	20A branch circuit protection.	N/A
3.2 N-C	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Appliance inlet.	N/A
3.2.1 N-C	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Power supply cord not evaluated.	N/A
3.2.1.2 N-C	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.	No connection to dc mains.	N/A
3.2.3 N-C	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not permanently connected equipment.	N/A
3.2.5 N-C	Power supply cords are required to be no longer than 4.5 m in length. Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. 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 not evaluated.	N/A
3.2.9 N-C	Permanently connected equipment must have a suitable wiring compartment and wire bending space.	Not permanently connected equipment.	N/A
3.3 N-C	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.	No wiring terminals.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.3 N-C	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).	No wire binding screws provided.	N/A
3.3.4 N-C	Terminals for permanent wiring, including protective earthing terminals, must 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).	Not permanently connected equipment.	N/A
3.3.5	First column of Table 3E revised to require "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration."	No wiring terminals.	N/A
3.4.2 N-C	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 connection to dc mains.	N/A
3.4.8 N-C	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No disconnect switches.	N/A
3.4.11 N-C	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No batteries.	N/A
4.3.12 N-C	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No flammable liquids in the equipment.	N/A
4.3.13.5 N-C	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Laser printer is certified and is *compliant with 21 CFR 1040.*	P
4.7 N-C	For computer room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	The equipment has no combustible area greater than 27 cubic feet.	N/A
4.7.3.1 N-C	For computer room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) 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.	The equipment has no combustible material greater than 0.93m^2 or single dimension greater than 1.8m.	N/A
4.7.3.1	Non-metallic enclosures of equipment for use in spaces used for environmental air (plenums) are required to comply with UL 2043.	Not for use in air plenums.	N/A

National Deviations – IEC 60950-1 2.2 Ed – 2015-01-28 / Rev. 01

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Annex H N-C	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	The equipment does not produce ionizing radiation.	N/A
N-D = National Differences			P
1.5.1 N-D	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, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables.	All critical components are IEC, CSA, or UL certified. See appended table 1.5.1 in this report.	P
1.6.1.2 N-D	A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage is to include consideration of the battery charging "float voltage" associated with the intended supply system, regardless of the marked power rating of the equipment.	Not for connection to dc. mains.	N/A
2.3.1 N-D	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the max. 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 circuits.	N/A
2.3.2.1 N-D	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.	No TNV circuits.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.2 N-D	Equipment with functional earthing is required to be marked with the functional earthing symbol (IEC 60417-6092).	No functional earthing.	N/A
2.6.3.3	The current rating of the circuit shall be taken as 20 A not 16 A.	Considered.	—
2.6.3.4 N-D	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	No non-standard bonding constructions used.	N/A
4.2.8.1 N-D	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.	Not a CRT.	N/A
4.2.11 N-D	For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails.	National Difference removed per A1.	—
4.3.2 N-D	Equipment with handles is required to comply with special loading tests.	DS450 has two metal handles 16mm in thickness. Complies with loading test. Weight of equipment is 58.5kg with weight of 117kg applied to each handle.	P
4.3.8 N-D	Battery packs for both portable and stationary applications are required to comply with special component requirements.	No battery packs unless part of certified equipment.	N/A
5.1.8.3 N-D	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV circuits.	N/A
5.3.7 N-D	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded. During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.	No internal SELV circuit connectors or printed wiring board connectors that deliver power are accessible to the operator.	N/A
6.4 N-D	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV circuits.	N/A

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IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Annex EE	UL articulated accessibility probe (Fig EE.3) required for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	Not a document / media shredder.	N/A
Annex M.2 N-D	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No TNV circuits.	N/A
Annex NAD N-D	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.	No earpiece provided with the equipment.	N/A
~~Annex NAF~~	~~Document (paper) shredders likely to be…~~	Deleted per A1.	—

Note: Before placing the products in the different countries, the manufacturer must ensure that:

1. Operating Instructions, Ratings Labels and Warnings Labels shall be written in an Accepted or Official Language of the county in question.

   Instructions and other text required by this standard shall be written in the official language of the country in which the equipment is to be sold. This includes warnings/caution markings.

According to the German Equipment Safety Law the user manual has to contain the following points, if applicable, since all are safety relevant points:

- kind of mounting/installation
- instruction about handling at use of the devices (possibly forbiddance of certain work processes)
- maintenance
- accessories
- spare parts

2. The end product shall comply with the National Standards and/or Electrical Codes of the country in question.

---------- END REPORT ----------

ATTACHMENT # 2

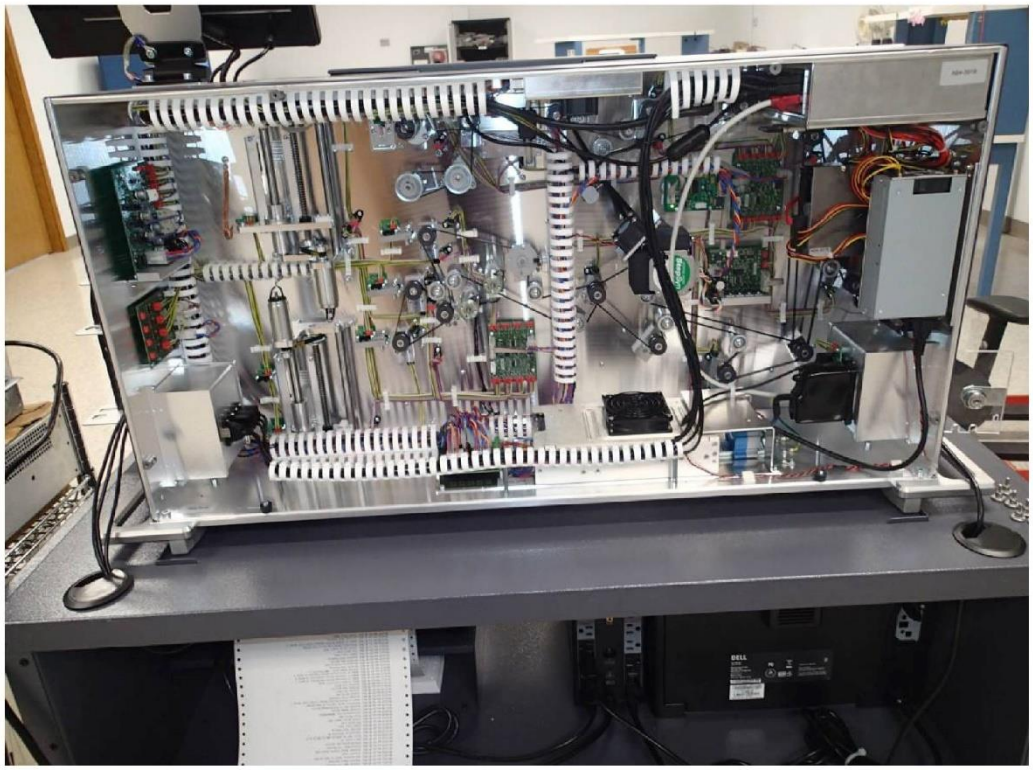
Photograph Documentation

TOTAL PAGES:	**5 pages**
COVER PAGE:	**1 page**
PHOTOS:	**4 pages**

Model DS450 plus Cart with Side Work Surfaces Opened (Front View):

Model DS450 plus Cart with Side Work Surfaces Opened (Rear View):

Model DS450 with Rear Enclosure Removed:



END OF TEST REPORT