

CB TEST REPORT

50050519 001

for

Printer

ECOSYS P3060dn, ECOSYS P3055dn,
ECOSYS P3050dn, ECOSYS P3045dn

KYOCERA Document Solutions Inc.



This documentation consists of **220** pages (excluding this cover page).



Test Report issued under the responsibility of:


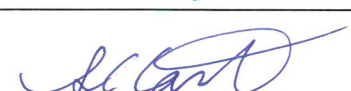


<p style="text-align: center;">TEST REPORT IEC 60950-1 Information technology equipment - Safety - Part 1: General requirements</p>
<p>Report Number. : 50050519 001 Date of issue : 2016-08-02 Total number of pages : 220</p>
<p>Applicant's name : KYOCERA Document Solutions Inc. Address : 1-2-28, Tamatsukuri, Chuo-ku, Osaka-shi, Osaka, 540-8585 Japan</p>
<p>Test specification: Standard : IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 Test procedure..... : CB Scheme Non-standard test method..... : N/A</p>
<p>Test Report Form No..... : IEC60950_1F Test Report Form(s) Originator..... : SGS Fimko Ltd Master TRF : Dated 2014-02</p> <p>Copyright © 2014 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.</p> <p>This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.</p> <p>If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.</p> <p>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.</p>
<p>General disclaimer:</p> <p>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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.</p>

IEC 60950-1

Test item description :	Printer
Trade Mark..... :	KYOCERA (on the products)
Manufacturer :	(Same as Applicant)
Model/Type reference :	1) ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn 2) ECOSYS P3045dn
Ratings :	1) AC220-240V, 50/60Hz, 5.6A AC120V, 60Hz, 10.0A AC110V, 60Hz, 11.9A 2) AC220-240V, 50/60Hz, 5.4A AC120V, 60Hz, 9.5A AC110V, 60Hz, 11.4A

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Testing procedure and testing location:		
<input type="checkbox"/>	CB Testing Laboratory:	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Testing location/ address		Global Technology Assessment Center (GTAC), 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name + signature).....		
Approved by (name + signature)		
<input checked="" type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	KYOCERA Document Solutions Inc.
Testing location/ address		1-2-28, Tamatsukuri, Chuo-ku, Osaka-shi, Osaka, 540-8585 Japan
Tested by (name + signature).....		N. Mukaijo 
Approved by (name + signature)		S. Hamamoto 
<input type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name + signature)		
Approved by (name + signature)		
Supervised by (name + signature).....		

IEC 60950-1
List of Attachments:
Attachments included in this Test Report:

- Measurement Section
- National Differences
- IEC/EN 60825-1 test report

Attachments separated from this Test Report:

- Photo Documentation

Summary of testing:
Test sample(s):

Serial No.: Production sample with serial number:

- ECOSYS P3060dn : Z9S6500002
- ECOSYS P3045dn : ZM36500005

If not stated otherwise, tests were conducted on model "ECOSYS P3060dn" to represent the other similar models(see General product information).

Test Condition 1: Continuous duplex printing

The combinations of the options and are as follows.

Combination No.	Option	
1	PF-320 (max. 4 units)	
2	PB-325	PF-3100

Relevant tests were performed on those models within the series that were considered to represent the worst case condition for the respective tests.

Appended Table 4.5 Heating test data re-calculated by Max specified ambient temperature 35°C by customer's request.

Tests performed (name of test and test clause):

(see below)

Testing location:

(see "testing procedure and testing location" on the previous page)

Testing		Applicable (Yes/No)	Comments
Clause	Test description		
1.6.2	Input current	Yes	
1.7.11	Durability	Yes	
2.1.1.5	Energy hazards	Yes	
2.1.1.7	Discharge of capacitors in equipment	Yes	
2.1.1.8	Energy hazards - d.c. mains supply	No	
2.2.2	SELV/Voltage measurement under normal condition	Yes	
2.2.3	SELV/Voltage measurement under fault conditions	Yes	
2.3.5	Operating voltages generated externally	No	

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Testing		Applicable (Yes/No)	Comments
Clause	Test description		
2.4.2	Limited current circuits	Yes	
2.5	Limited power sources	Yes	
2.6.3.4	Resistance of earthing conductors and their terminations	Yes	
2.9.2	Humidity conditioning	Yes	
2.10	Creepage and Clearances, Distance through Insulation	Yes	
2.10.2.2/ 2.10.2.3	Determination of working voltage	Yes	
2.10.5	Solid insulation	Yes	
2.10.12	Enclosed and sealed parts	No	
3.2.6	Cord anchorages and strain relief	No	
4.1	Stability	Yes	
4.2	Mechanical strength	Yes	
4.3.6	Direct plug-in equipment	No	
4.3.8	Batteries	No	
4.3.13	Radiation	Yes	
4.5.2	Maximum Temperatures	Yes	
4.5.5	Resistance to abnormal heat	Yes	
5.1	Touch current and protective conductor current	Yes	
5.2	Electric strength	Yes	
5.3	Abnormal operating and fault conditions	Yes	
6.1.2	Separation of the telecommunication network from earth	No	
6.2	Protection of equipment users from overvoltages on telecom. networks	No	
6.3	Protection of the telecommunication wiring system from overheating	No	
7.2	Protection of equipment users from overvoltages on cable distribution system	No	
7.3	Insulation between primary and cable distribution system	No	

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Testing		Applicable (Yes/No)	Comments
Clause	Test description		
Annex A	Resistance to heat and fire	No	
Annex B	Locked-rotor overload test	Yes	
Annex C	Overload test	Yes	
Annex G	Determining minimum clearances	Yes	
Annex H	Ionizing radiation	No	
Annex K	Thermal controls	No	
Annex M	Criteria for telephone ringing signals	No	
Annex Q	Voltage dependent resistors (VDRs)	No	
Annex U	Insulated wire for use without interleaved insulation	No	
Annex Y	Ultraviolet light conditioning test	No	
Annex CC	Evaluation of Integrated circuit (IC) current limiters	No	
Annex DD	Requirements for the mounting means of rack-mounted equipment	No	
Annex EE	Household and home/office document/media shredders	No	

Additionally evaluated Test specifications (see appended test report):

EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013

IEC 60825-1:2014 / EN 60825-1:2014

UL 60950-1:2007 R10.14

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014

Summary of compliance with National Differences:**List of countries addressed:**

EU Group Differences, EU Special National Conditions, EU A-Deviations

AT, CA, DK, IT, SE, GB, US

AT=Austria, CA=Canada, DK=Denmark, IT=Italy, SE=Sweden, GB=United Kingdom, US=United States of America.

For National Differences see end of this test report.

Additional information:**- Customer's request. -**

Additional of National Differences for Australian and New Zealand National Differences according to AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013).

Additionally evaluated Test specifications IEC60825-1:2007 for North America.

See attached in this test report.

IEC 60950-1

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

For 220-240V models, Main unit:**ECOSYS P3060dn**

Printer 220-240 V~ 50/60 Hz 5.6 A

CLASS 1 LASER PRODUCT
KLASSE 1 LASER PRODUKT

Apparatet må tilkoples jordet stikkontakt.
 Apparatet skall anslutas till jordat uttag.
 Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.
 Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.

KYOCERA Document Solutions Inc.
 2-26, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, Japan
 Designed in Japan / Assembled in Vietnam



In Europe, Middle East, Africa and CIS distributed by
 KYOCERA Document Solutions Europe B.V.
 Bloemlaan 4, 2132 NP, Hoofddorp The Netherlands

ECOSYS P3055dn

Printer 220-240 V~ 50/60 Hz 5.6 A

CLASS 1 LASER PRODUCT
KLASSE 1 LASER PRODUKT

Apparatet må tilkoples jordet stikkontakt.
 Apparatet skall anslutas till jordat uttag.
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ECOSYS P3050dn

Printer 220-240 V~ 50/60 Hz 5.6 A

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KLASSE 1 LASER PRODUKT

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 Designed in Japan / Assembled in Vietnam



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 Bloemlaan 4, 2132 NP, Hoofddorp The Netherlands

ECOSYS P3045dn

Printer 220-240 V~ 50/60 Hz 5.4 A

CLASS 1 LASER PRODUCT
KLASSE 1 LASER PRODUKT

Apparatet må tilkoples jordet stikkontakt.
 Apparatet skall anslutas till jordat uttag.
 Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.
 Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.

KYOCERA Document Solutions Inc.
 2-26, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, Japan
 Designed in Japan / Assembled in Vietnam



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Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

For AC120V models, Main unit:**ECOSYS P3060dn**

Printer
120 V~
60 Hz 10.0 A



Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN ICES-3B/NMB-3B

KYOCERA Document Solutions Inc.
2-28, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, Japan

>ABS<
Designed in Japan / Assembled in Vietnam

ECOSYS P3055dn

Printer
120 V~
60 Hz 10.0 A



Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN ICES-3B/NMB-3B

KYOCERA Document Solutions Inc.
2-28, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, Japan

>ABS<
Designed in Japan / Assembled in Vietnam

ECOSYS P3050dn

Printer
120 V~
60 Hz 10.0 A



Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN ICES-3B/NMB-3B

KYOCERA Document Solutions Inc.
2-28, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, Japan

>ABS<
Designed in Japan / Assembled in Vietnam

ECOSYS P3045dn

Printer
120 V~
60 Hz 9.5 A



Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN ICES-3B/NMB-3B

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2-28, 1-Chome, Tamatsukuri, Chuo-ku, Osaka, Japan

>ABS<
Designed in Japan / Assembled in Vietnam

IEC 60950-1

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

For AC 110V, Main unit:**ECOSYS P3060dn**
 110 V \sim
 60 Hz 11.9 A (KYOCERA 雷射印表機)

設計開發: 日本 製造國別: 越南

 KYOCERA Document Technology Vietnam Co., Ltd.
 No.56A, 56B and 56C, VSIP Haiphong Township, Industrial and Service Park,
 Thuy Nguyen District, Dinh Vu-Cat Hai Economic Zone, Haiphong, Vietnam

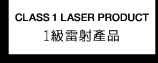
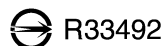
進口商 (台灣分公司):

台灣京瓷辦公資訊系統股份有限公司

住址: 104台北市中山區民權東路三段37號6樓

電話: 02-2507-6709 服務專線: 0800-055-828

功能規格和使用方法: 請參考使用手冊



注意: 維修及更換保險絲時, 請務必將電源線拆下。 >ABS<

ECOSYS P3055dn
 110 V \sim
 60 Hz 11.9 A (KYOCERA 雷射印表機)

設計開發: 日本 製造國別: 越南

 KYOCERA Document Technology Vietnam Co., Ltd.
 No.56A, 56B and 56C, VSIP Haiphong Township, Industrial and Service Park,
 Thuy Nguyen District, Dinh Vu-Cat Hai Economic Zone, Haiphong, Vietnam

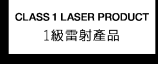
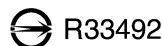
進口商 (台灣分公司):

台灣京瓷辦公資訊系統股份有限公司

住址: 104台北市中山區民權東路三段37號6樓

電話: 02-2507-6709 服務專線: 0800-055-828

功能規格和使用方法: 請參考使用手冊



注意: 維修及更換保險絲時, 請務必將電源線拆下。 >ABS<

ECOSYS P3050dn
 110 V \sim
 60 Hz 11.9 A (KYOCERA 雷射印表機)

設計開發: 日本 製造國別: 越南

 KYOCERA Document Technology Vietnam Co., Ltd.
 No.56A, 56B and 56C, VSIP Haiphong Township, Industrial and Service Park,
 Thuy Nguyen District, Dinh Vu-Cat Hai Economic Zone, Haiphong, Vietnam

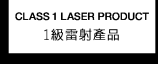
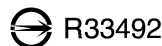
進口商 (台灣分公司):

台灣京瓷辦公資訊系統股份有限公司

住址: 104台北市中山區民權東路三段37號6樓

電話: 02-2507-6709 服務專線: 0800-055-828

功能規格和使用方法: 請參考使用手冊



注意: 維修及更換保險絲時, 請務必將電源線拆下。 >ABS<

ECOSYS P3045dn
 110 V \sim
 60 Hz 11.4 A (KYOCERA 雷射印表機)

設計開發: 日本 製造國別: 越南

 KYOCERA Document Technology Vietnam Co., Ltd.
 No.56A, 56B and 56C, VSIP Haiphong Township, Industrial and Service Park,
 Thuy Nguyen District, Dinh Vu-Cat Hai Economic Zone, Haiphong, Vietnam

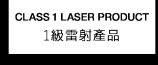
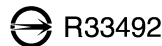
進口商 (台灣分公司):

台灣京瓷辦公資訊系統股份有限公司

住址: 104台北市中山區民權東路三段37號6樓

電話: 02-2507-6709 服務專線: 0800-055-828

功能規格和使用方法: 請參考使用手冊

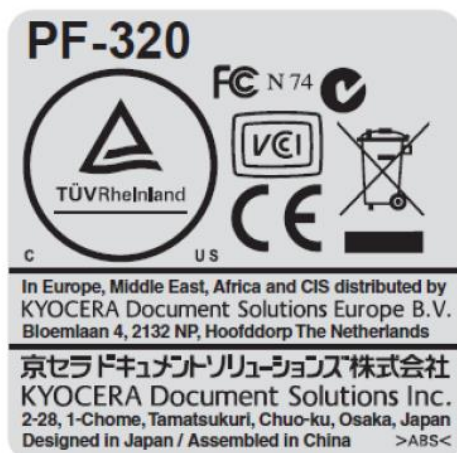
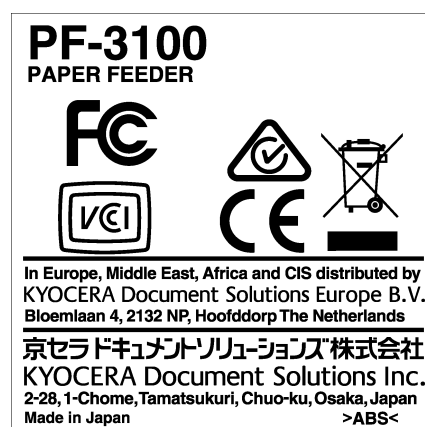
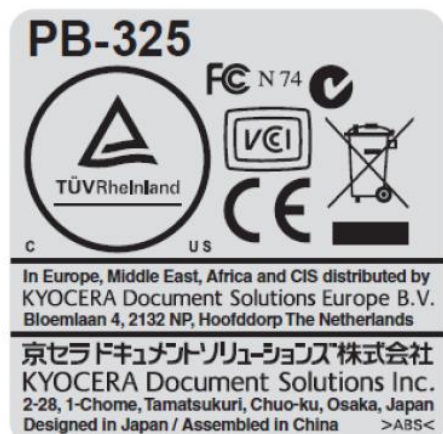


注意: 維修及更換保險絲時, 請務必將電源線拆下。 >ABS<

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Copy of marking plate

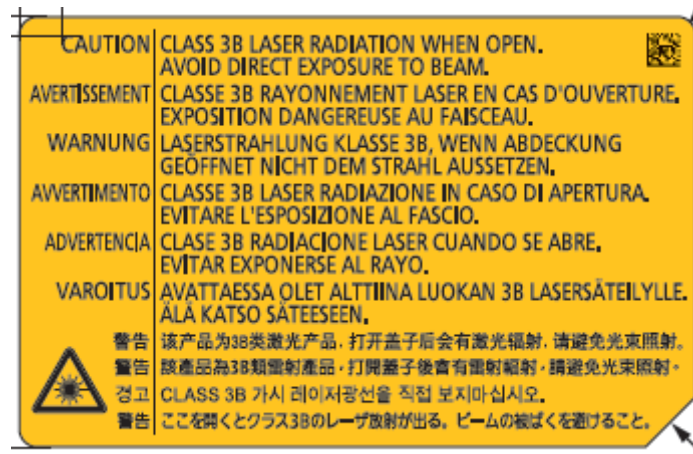
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Option:**Paper Feeder, PF-320****Paper Feeder, PF-3100****Attachment Kit, PB-325**

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The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Laser Caution Label:**Rear Cover Caution Label:****Fuser Unit Caution Label:**

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Test item particulars	
Equipment mobility	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in (not floor-standing)
Connection to the mains	<input checked="" type="checkbox"/> pluggable equipment <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input checked="" type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains
Operating condition	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
Mains supply tolerance (%) or absolute mains supply values	±10%
Tested for IT power systems	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
IT testing, phase-phase voltage (V)	230V
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	16A (for Europe), 20A (for Canada, USA and Taiwan)
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	Not rated, indoor use only.
Altitude during operation (m)	Up to 3500
Altitude of test laboratory (m)	< 1000
Mass of equipment (kg)	ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn: Approx. 15.5kg without optional accessories ECOSYS P3045dn: Approx. 14.7kg without optional accessories

IEC 60950-1**Possible test case verdicts:**

- test case does not apply to the test object.....: N/A (or N)
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

Testing

Date of receipt of test item: N/A

Date(s) of performance of tests: 2016-06-29 to 2016-07-22

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General remarks:

"(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 6.2.5 of IEC 60950-1:

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) :

- 1) KYOCERA Document Technology Vietnam Co., Ltd.
 No. 56A, 56B and 56C, VSIP Haiphong Township,
 Industrial and Service Park, Thuy Nguyen District Dinh,
 Vu-Cat Hai Economic Zone, Haiphong, Vietnam
- 2) KYOCERA Document Technology (Dongguan) Co., Ltd.
 Kyocera Industrial Park
 3 Fangzheng East Rd, Shilong,
 Dongguan, Guangdong, P.R. China
- 3) YiHe PLASTIC & ELECTRONIC PRODUCTS
 (SHENZHEN) CO., LTD
 EVA Industrial Garden, number 11 GuoTai Road,
 TangTou Community, ShiYan Town, BaoAn District,
 Shenzhen, P.R. China
- 4) KYOCERA Document Solutions Inc. Hirakata Plant
 1-38-12 Tsuda-Kita-machi, Hirakata-shi, Osaka 573-0121
 Japan

IEC 60950-1**General product information:****1) Application details / Description of the product:**

The product tested is a printer or multi-functional printer for use in a general office environment.

Max. specified ambient temperature (°C) : 32.5 °C

Supply connection..... : Appliance inlet and detachable power cord set

Laser classification..... : Class 1

Non-approved building-in type switching power supplies in main unit were tested as part of the overall configuration of the equipment.

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2) Differences between the models:

The models of main units are essentially the same except for the items described in the following table. See appended table 1.5.1 including differences of motors and clutches in sec for details. The following table shows differences of each model.

Models Differences	ECOSYS P3060dn			ECOSYS P3055dn		
Rating	AC220-240V, 50/60Hz, 5.6A	AC120V, 60Hz, 10.0A	AC110V, 60Hz, 11.9A	AC220-240V, 50/60Hz, 5.6A	AC120V, 60Hz, 10.0A	AC110V, 60Hz, 11.9A
SWPS Unit	MPW9289	MPW9288	MPW9288	MPW9289	MPW9288	MPW9288
Heater Lamp	641W + 427W	600W + 400W	600W + 400W	641W + 427W	600W + 400W	600W + 400W
High Voltage Unit	MPH7462A	MPH7462A	MPH7462A	MPH7462A	MPH7462A	MPH7462A
A4 size Print Speed (sheet/min.)	60			55		
Weight (kg)	15.5			15.5		
Drum Motor	Provided			Provided		
Lift Motor	Provided			Provided		
FD Motor	PM42M-048			PM42M-048		
Machine Size (W x D x H)	380 x 410 x 320 mm			380 x 410 x 320 mm		
Shape	See attachment Photo documentation.					

Models Differences	ECOSYS P3050dn			ECOSYS P3045dn		
Rating	AC220-240V, 50/60Hz, 5.6A	AC120V, 60Hz, 10.0A	AC110V, 60Hz, 11.9A	AC220-240V, 50/60Hz, 5.4A	AC120V, 60Hz, 9.5A	AC110V, 60Hz, 11.4A
SWPS Unit	MPW9289	MPW9288	MPW9288	MPW9289	MPW9288	MPW9288
Heater Lamp	641W + 427W	600W + 400W	600W + 400W	641W + 427W	600W + 400W	600W + 400W
High Voltage Unit	MPH7462A	MPH7462A	MPH7462A	MPH7462B	MPH7462B	MPH7462B
A4 size Print Speed (sheet/min.)	50			45		
Weight (kg)	15.5			14.7		
Drum Motor	Provided			Not Provided		
Lift Motor	Provided			Not Provided		
FD Motor	PM42M-048			PM42S-F48		
Machine Size (W x D x H)	380 x 410 x 320 mm			380 x 410 x 285 mm		
Shape	See attachment Photo documentation.					

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3) Options:

Paper Feeder, Model PF-320 max. 4 units
 Paper Feeder, Model PF-3100
 Attachment Kit, Model PB-325

4) Insulation system:

- Secondary circuits are separated from primary by double/reinforced insulation.
- Primary circuits are separated from earth by at least basic insulation.
- All output / interface voltages are at SELV level.
- Secondary circuits are conductively connected to earth.
- High voltage is generated from SELV circuits, see cl. 2.2.4.
- Internal metal chassis and relevant accessible metal parts are reliably connected to protective bonding.

4.1) Sub-units (PCB's, ...)

With pri - sec separation: SWPS Units, Fuser Unit in main unit
 With pri - parts only: (none)
 HV-unit(s): High Voltage Unit (Secondary circuit) (see appended table 1.5.1)

4.2) Pri - sec components, which are not part of the above mentioned sub-units:

(none)

4.3) Non certified pri-components directly mounted to chassis:

(certified components were only checked for correct-application (see cl 1.5.1)

(none)

Abbreviations used in the report:

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	FI	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI
- protective earth/protective bonding	PE/PB	- primary	Pri
- (switching) power supply	(SW)PS	- secondary	sec
- high voltage	HV	- ground	gnd
- printed circuit (wiring) board	PCB	- input/output	I/O
- triple insulated wire	TIW	- installation instruction	ii
- built-in application	B/I		

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Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
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	Components, which are certified for IEC and/or national standards, are used correctly within their ratings.	P
1.5.3	Thermal controls	Certified components used; correct application confirmed.	P
1.5.4	Transformers	(see Annex C)	P
1.5.5	Interconnecting cables	No interconnecting cables.	N/A
1.5.6	Capacitors bridging insulation	Type X2 capacitors used between lines, type Y1 or Y2 capacitors used between line and earth, double or reinforced insulation bridged between primary and secondary by Y1 capacitors comply with IEC 60384-14. (see appended table 1.5.1)	P

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

1.5.7	Resistors bridging insulation	See below	P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Only resistors bridging functional insulations.	P
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	No such components.	N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	No such components.	N/A
1.5.8	Components in equipment for IT power systems	Line to PE components are rated for line to line voltage.	P
1.5.9	Surge suppressors	See below.	P
1.5.9.1	General	Only approved VDRs used in primary.	P
1.5.9.2	Protection of VDRs	Fuse (F1 in SWPS) is installed in series.	P
1.5.9.3	Bridging of functional insulation by a VDR		P
1.5.9.4	Bridging of basic insulation by a VDR	No such VDRs.	N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR	No such VDRs.	N/A

1.6	Power interface		P
1.6.1	AC power distribution systems	TN, TN-S, IT (considered for Norway)	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 equipment.	N/A
1.6.4	Neutral conductor	Neutral insulated from earth and body like as line conductor. Components between neutral and earth are rated the same as for line to earth.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	See below.	P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections..... :	Single mains supply connection.	N/A
	Rated voltage(s) or voltage range(s) (V) :	220-240V~, 120V~, 110V~	P
	Symbol for nature of supply, for d.c. only :	AC supply.	N/A
	Rated frequency or rated frequency range (Hz) ... :	220-240V~ models: 50/60Hz 120V~ models: 60Hz 110V~ models: 60Hz	P
	Rated current (mA or A) :	1) 220-240V~ models: 4.4A 120V~ models: 8.7A 110V~ models: 9.2A 2) 220-240V~ models: 4.2A 120V~ models: 8.1A 110V~ models: 9.2A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark :	KYOCERA (on the products)	P
	Model identification or type reference :	1) ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn 2) ECOSYS P3045dn	P
	Symbol for Class II equipment only :	Class I equipment.	N/A
	Other markings and symbols :	(see copy of marking plate)	P

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.1.3	Use of graphical symbols	Symbols placed on the equipment shall be explained in the user manual.	P
1.7.2	Safety instructions and marking	See below.	P
	<p>Operating Instructions provided to the operator, containing necessary instructions and caution information. English version checked. At least the safety relevant information is given in German or other applicable languages. Correct translation of safety relevant information for Germany confirmed.</p> <p>(In the following, relevant information may be given in an equivalent wording.)</p> <p><u>Disconnect Device</u> according 3.4.3 described in the manual (pluggable equipment): "The socket outlet must be located close to the machine and be easily accessible."</p> <p>Dangerous levels of <u>ozone</u> not generated. Instruction for installation in a well-ventilated room is given.</p> <p><u>Non-toxic toner</u> used. Proper disposal instructions provided (service manual). "Caution hot"; high temperature warning on fuser unit, as it does not immediately cool down when accessed during paper jam removal.</p> <p><u>Laser label and warning label</u> is provided: "CLASS 1 LASER PRODUCT" and other warning label. Refer to IEC/EN 60825-1 report.</p>		—
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Plug	P
1.7.2.3	Overcurrent protective device	Pluggable equipment type A	N/A
1.7.2.4	IT power distribution systems	Considered for Norway. No special modification, no instruction required.	P
1.7.2.5	Operator access with a tool	Only SELV voltages accessible to the operator without the use of another tool.	N/A
1.7.2.6	Ozone	See cl. 1.7.2.	P
1.7.3	Short duty cycles	Continuous operation.	N/A
1.7.4	Supply voltage adjustment	Single voltage range.	N/A
	Methods and means of adjustment; reference to installation instructions	--	—
1.7.5	Power outlets on the equipment	No power outlets provided.	P

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) :	Fuses are clearly and adequately marked with fuse numbers and ratings. SWPS Unit Model MPW9288: F1: T6.3A H/250V, SWPS Unit Model MPW9289: F1: T4A H/250V F51: T10A H/250V No user accessible fuse holder.	P
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals :	Approved appliance inlet used. PB terminals, connecting to the chassis, are marked with symbol IEC 60417, No. 5017.	P
1.7.7.2	Terminals for a.c. mains supply conductors	Appliance inlet used.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	No connection to DC mains.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking	Safety related switches and controls: Other indicators/controls provided for functional reasons, not affecting safety.	P
1.7.8.2	Colours	--	N/A
1.7.8.3	Symbols according to IEC 60417	Marking for Stand-by button No. 5009.	P
1.7.8.4	Markings using figures	Not used.	N/A
1.7.9	Isolation of multiple power sources	Single supply.	N/A
1.7.10	Thermostats and other regulating devices	No such thermostats or the like.	N/A
1.7.11	Durability		P
1.7.12	Removable parts	Safety relevant markings are located on fixed installed parts.	P
1.7.13	Replaceable batteries	Lithium battery not replaceable by user.	P
	Language(s)	English	—
1.7.14	Equipment for restricted access locations.....	Not intended for restricted access location.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas		P
2.1.1.1	Access to energized parts	See below.	P
	Test by inspection	Operator cannot contact any hazardous bare parts or parts with only basic insulation to hazardous voltage. No ELV circuits.	P
	Test with test finger (Figure 2A)	No access to hazardous parts.	P
	Test with test pin (Figure 2B)	The test pin cannot touch hazardous bare parts through any openings in the enclosure.	P
	Test with test probe (Figure 2C)		--
2.1.1.2	Battery compartments	No battery compartment.	N/A
2.1.1.3	Access to ELV wiring	No ELV circuits.	N/A
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	Not accessible to operator.	P
2.1.1.5	Energy hazards	No energy hazards in operator access area.	P
2.1.1.6	Manual controls	Not connected to and sufficiently separated from hazardous voltages.	P
2.1.1.7	Discharge of capacitors in equipment		P
	Measured voltage (V); time-constant (s)	(see appended table 2.1.1.7)	—
2.1.1.8	Energy hazards - d.c. mains supply	No d.c. mains supply.	N/A
	a) Capacitor connected to the d.c. mains supply ..	--	N/A
	b) Internal battery connected to the d.c. mains supply	--	N/A
2.1.1.9	Audio amplifiers	Not provided.	N/A
2.1.2	Protection in service access areas	Bare parts carrying hazardous voltage or energy levels are located or guarded properly to avoid unintentional contact and bridging. No unexpected hazard.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.1.3	Protection in restricted access locations	Not intended to be installed in a restricted access location.	N/A
2.2	SELV circuits		P
2.2.1	General requirements	(see appended table 2.2)	P
2.2.2	Voltages under normal conditions (V) :	--	P
2.2.3	Voltages under fault conditions (V) :	Limits of 71V peak and 120Vdc were not exceed, SELV limits not for longer than 0.2 seconds, (see appended table 2.2 and table 5.3)	P
2.2.4	Connection of SELV circuits to other circuits :	SELV not connected to primary. HV-unit(s): supplied from SELV; if HV (anode) was shorted to SELV side, SELV was not exceeded at the output connections of the unit. (measured with oscilloscope) (see appended table 2.2 and table 5.3)	P

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Clause	Requirement + Test	Result - Remark	Verdict

2.3	TNV circuits <i>No TNV circuits.</i>		N/A
2.3.1	Limits		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 <i>Test performed for evaluation of Capacitor C50 and cl. 1.5.6 and HV Unit.</i>		P
2.4.1	General requirements	See below.	P
2.4.2	Limit values	(see appended table 2.4.2)	P
	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	The limited current circuits are supplied from SELV circuits.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.5	Limited power sources <i>The following circuits were tested for limited power source:</i> 24V output after YF1/YF2/YF4 or YF7 on Engine PWB 24V output after F1 on High Voltage Unit 5V output after YF1 on Main PWB 5V output after YF5 on Engine PWB 3.3V output after YF8 on Engine PWB 3.3V output after YF507/YF508 or YF509 on Main PWB		P
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition		P
	Use of integrated circuit (IC) current limiters		N/A
	d) Overcurrent protective device limited output	(see appended table 2.5)	P
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) :	Fuse F1 on High Voltage Unit: rated 1A. Fuses YF1 on Main PWB, YF2, YF4, YF5, YF8, YF507, YF508, YF509 on Engine PWB: rated 2A Fuse YF7 on Engine PWB: rated 3.15A Fuse YF1 on Engine PWB : rated 4A The fuses have the characteristics required in remark 4 of table 2C.	—

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Clause	Requirement + Test	Result - Remark	Verdict

2.6	Provisions for earthing and bonding		P
	Protective Bonding wire is on one side hooked in and soldered to Protective Earth pin of appliance inlet or soldered to the pin and additionally secured by heat-shrinkable tubing, the other side has ring terminal (fixed by double crimping). Ring terminal fitted with toothed lock is secured to chassis by M4 screw.		—
2.6.1	Protective earthing	a) Accessible basic insulated conductive parts are reliably bonded to the protective earth terminal. f) Ground of SELV circuits was earthed to reduce touch current.	P
2.6.2	Functional earthing	Functional earthing either separated from hazardous voltages by double- or reinforced insulation or safely connected to PB.	P
	Use of symbol for functional earthing.....:	--	N/A
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General	2.6.1 a) metal parts: See below. 2.6.1 f) Ground of SELV: adequate construction for actual current.	P
2.6.3.2	Size of protective earthing conductors	(refers to table 3B, cl. 3.2.5)	P
	Rated current (A), cross-sectional area (mm ²), AWG	Rated 5.6A, 0.75mm ² Rated 5.4A, 0.75mm ² Rated 10.0A, 16AWG Rated 9.5A, 16AWG Rated 11.9A, 2.0mm ² Rated 11.4A, 2.0mm ²	—
2.6.3.3	Size of protective bonding conductors	Table 3B for PB wires connected to Inlet. Tested per cl. 2.6.3.4 anyway.	P
	Rated current (A), cross-sectional area (mm ²), AWG	Rated 11.9A, 16AWG	—
	Protective current rating (A), cross-sectional area (mm ²), AWG	--	—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)	(see appended table 2.6.3.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.5	Colour of insulation :	PE and PB conductors are green/yellow. Green/Yellow wire not used for other connections.	P
2.6.4	Terminals		P
2.6.4.1	General	Appliance inlet used.	P
2.6.4.2	Protective earthing and bonding terminals	Tested per cl. 2.6.3.4	P
	Rated current (A), type, nominal thread diameter (mm) :	Rated 11.9A, M4 screw used for PB terminals.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used.	P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductors.	P
2.6.5.3	Disconnection of protective earth	Appliance inlet: It is not possible to disconnect earth without disconnecting mains.	P
2.6.5.4	Parts that can be removed by an operator	Plug and Appliance inlet: Earthing connected before and disconnected after hazardous voltage. No hazards expected on operator removable Fuser Unit.	P
2.6.5.5	Parts removed during servicing	It is not necessary to disconnect earthing except for the removing of the earthed parts itself.	P
2.6.5.6	Corrosion resistance	All protective earth connections in compliance with Annex J. Specifically no direct Al - Cu contacts.	P
2.6.5.7	Screws for protective bonding	Thread cutting or space thread screwed connections not used for protective bonding connections.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	The protective earthing of the equipment does not rely on the telecommunication network.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	The built-in device fuse provides overcurrent protection. Pluggable equipment type A. Equipment relies on 16A or 20A rated fuse or circuit breaker of the building installation for short circuit and earth fault.	P
	Instructions when protection relies on building installation	Neither pluggable equipment type B nor permanent connection.	N/A
2.7.2	Faults not simulated in 5.3.7		P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the building installation is considered as providing short circuit protection. Additionally verification by short / abnormal tests	P
2.7.4	Number and location of protective devices :	Overcurrent protections in primary phase by fuses F1 in SWPS Unit for 110V, 120V models. Overcurrent protections in primary phase by fuses F1, F51 in SWPS Unit for 220-240V models. Earth fault protection by fuse or circuit breaker in the building installation.	P
2.7.5	Protection by several devices	Only these fuses in phase or line.	N/A
2.7.6	Warning to service personnel :	No unexpected hazard.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.8	Safety interlocks		P
2.8.1	General principles	Safety interlocks are provided and prevent operator from access to hazardous moving parts and hazardous voltages.	P
	Power (DC 24V) to the following parts is cut by Interlock Switch located in secondary when Front Cover opened. High Voltage Unit, Main Motor, Drum Motor, Lift Motor, Polygon Motor, Toner Motor, FD Motor, Envelop Motor, DLP Clutch, Feed Clutch, Reg Clutch, Mid Clutch, DU Clutch, Face U/D Solenoid, MPF Solenoid		—
2.8.2	Protection requirements	Hazardous voltages and energy levels are de-energized when interlock is activated; moving parts are stopped and/or slowed down to non hazardous speeds. No access to hazardous parts by test finger in interlocked areas.	P
2.8.3	Inadvertent reactivation	Inadvertent reactivation is not possible. Test finger can not override interlock system.	P
2.8.4	Fail-safe operation	Failure in interlock system will result in open circuit condition of the system, no hazard.	P
	Protection against extreme hazard		P
2.8.5	Moving parts	Relevant doors are provided with levers, directly activating the approved interlock switches. No intermediate mechanism involved.	N/A
2.8.6	Overriding	No such systems.	N/A
2.8.7	Switches, relays and their related circuits	Interlock Switches comply with IEC 61058-1. No relays related to interlock.	P
2.8.7.1	Separation distances for contact gaps and their related circuits (mm)	Approved switches.	N/A
2.8.7.2	Overload test	Approved switches.	N/A
2.8.7.3	Endurance test	Approved switches.	N/A
2.8.7.4	Electric strength test	Not tested per 2.8.7.2 / 3.	N/A
2.8.8	Mechanical actuators	Adequate design of the actuator/switch mechanism, no overstress.	P

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Clause	Requirement + Test	Result - Remark	Verdict

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	Humidity treatment conducted for 120h. Humidity conditioning was also conducted to Transformer, Photo Coupler and their alternate components.	P
	Relative humidity (%), temperature (°C) :	93%, 40°C	—
2.9.3	Grade of insulation	Kind of insulation and working voltage considered.	P
2.9.4	Separation from hazardous voltages		P
	Method(s) used :	Method 1: a, b Method 2	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General		P
2.10.1.1	Frequency :	(see appended table 2.10.2)	P
2.10.1.2	Pollution degrees :	Pollution degree 2.	P
2.10.1.3	Reduced values for functional insulation	5.3.4 a) not applied except for before fuse. (see appended table 2.10.3 and 2.10.4)	P
2.10.1.4	Intervening unconnected conductive parts	No considered.	N/A
2.10.1.5	Insulation with varying dimensions	No applied.	N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses	No such lamps used.	N/A
2.10.2	Determination of working voltage	The r.m.s. and the peak voltages were measured on all sources of the switching power supply.	P
2.10.2.1	General		P
2.10.2.2	RMS working voltage	(see appended table 2.10.2)	P
2.10.2.3	Peak working voltage	(see appended table 2.10.2)	P
2.10.3	Clearances		P
2.10.3.1	General	Comply with 2.10.3.3 and 2.10.3.4, Annex G not applied.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.2	Mains transient voltages	Not measured, normal transient levels considered.	P
	a) AC mains supply :	2500V considered for the rating AC220-240V. 1500V considered for the rating AC120V and AC110V.	P
	b) Earthed d.c. mains supplies :	No direct connection to dc mains.	N/A
	c) Unearthed d.c. mains supplies :	No direct connection to dc mains.	N/A
	d) Battery operation :	No such batteries.	N/A
2.10.3.3	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Clearances in secondary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.5	Clearances in circuits having starting pulses	No such lamps used.	N/A
2.10.3.6	Transients from a.c. mains supply :	(see cl. 2.10.3.9)	N/A
2.10.3.7	Transients from d.c. mains supply :	--	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems :	--	N/A
2.10.3.9	Measurement of transient voltage levels	Not measured, normal transient levels considered.	N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply :	--	N/A
	For a d.c. mains supply :	--	N/A
	b) Transients from a telecommunication network.. :	--	N/A
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index	See below.	P
	CTI tests :	Material group IIIb is assumed to be used.	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation	No such insulations.	N/A
2.10.5.4	Semiconductor devices	Photo-couplers are approved components.	N/A
2.10.5.5.	Cemented joints	Not considered.	N/A
2.10.5.6	Thin sheet material - General	Provided for reinforced insulation within Transformers T1 used in SWPS Unit.	P
2.10.5.7	Separable thin sheet material		P
	Number of layers (pcs) :	3 layers for the reinforced insulation within Transformers T1. 1 or 2 layers for as the functional or basic insulation within Transformer T1.	—
2.10.5.8	Non-separable thin sheet material	No such construction.	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		P
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.11	Insulation in wound components	(see cl. 2.10.5.14)	P
2.10.5.12	Wire in wound components	Not considered.	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

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.13	Wire with solvent-based enamel in wound components	Not considered.	N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		P
	Working voltage :	(see appended table 2.10.2.2)	P
	- Basic insulation not under stress :	--	N/A
	- Supplementary, reinforced insulation :	(see appended table 2.10.5)	P
2.10.6	Construction of printed boards	--	P
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards	Coating not tested.	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	Not used to provide supplementary or double/reinforced insulation.	N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)..... :	--	N/A
2.10.7	Component external terminations	No such components.	N/A
2.10.8	Tests on coated printed boards and coated components	Coating not tested.	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.9	Thermal cycling	Photo Coupler (PC1, PC2, PC5), Model LTV-816, EL816M, TLP785F on Switching Power Supply Unit was certified. Photo Coupler (PC3 ,PC4) on Switching Power Supply Unit was certified.	P
2.10.10	Test for Pollution Degree 1 environment and insulating compound	Not applied.	N/A
2.10.11	Tests for semiconductor devices and cemented joints	Photo Coupler (PC1, PC2, PC5), Model LTV-816, EL816M, TLP785F on Switching Power Supply Unit was certified. Photo Coupler (PC3, PC4) on Switching Power Supply Unit was certified.	P
2.10.12	Enclosed and sealed parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Sufficient cross sectional area of internal wiring. Internal wires are UL recognized wires.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges and heat sinks that could damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	Internal secondary wires with basic isolation are routed so that they are not close to any live bare components. Wires are adequately fixed to prevent excessive strain or damage of the conductors' insulation.	P
3.1.4	Insulation of conductors	The insulation of the individual conductors is suitable for the application and the working voltage.	P
3.1.5	Beads and ceramic insulators	Ends of heater lamp. Adequately fixed, 10N applied, no hazard.	P
3.1.6	Screws for electrical contact pressure	Relevant electrical and bonding connections engage at least two complete threads into metal. No screws of insulating material are used for electrical and earthing connections.	P
3.1.7	Insulating materials in electrical connections	Relevant current carrying and all protective earthing/bonding connections are metal to metal.	P
3.1.8	Self-tapping and spaced thread screws	Where safety is involved, thread cutting or space thread screws not used for current carrying electrical connections.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.9	Termination of conductors	Conductors are suitable terminated, creepage and clearances maintained, second securing for soldered terminations provided.	P
	10 N pull test	10 N applied to relevant conductors.	P
3.1.10	Sleeving on wiring	Relevant sleeving on primary and secondary wirings reliably kept in position.	P

3.2	Connection to a mains supply		P
3.2.1	Means of connection		P
3.2.1.1	Connection to an a.c. mains supply	Appliance inlet.	P
3.2.1.2	Connection to a d.c. mains supply	No connection to DC mains.	N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment	Not such equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm)	--	—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320-1 and is located at the rear of the unit. The power cord can be inserted without difficulties and does not support the unit.	P
3.2.5	Power supply cords		P
3.2.5.1	AC power supply cords	The power supply cord is provided with this unit.	P
	Type	(see appended table 1.5.1)	—
	Rated current (A), cross-sectional area (mm ²), AWG	Rated 5.6A, 0.75mm ² Rated 5.4A, 0.75mm ² Rated 10.0A, 16AWG Rated 9.5A, 16AWG Rated 11.9A, 2.0mm ² Rated 11.4A, 2.0mm ²	—
3.2.5.2	DC power supply cords	No connection to dc main.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.2.6	Cord anchorages and strain relief	Appliance inlet used.	N/A
	Mass of equipment (kg), pull (N) :	--	—
	Longitudinal displacement (mm) :	--	—
3.2.7	Protection against mechanical damage	No sharp points or cutting edges that may damage the power supply cord.	P
3.2.8	Cord guards	(see above)	N/A
	Diameter or minor dimension D (mm); test mass (g) :	--	—
	Radius of curvature of cord (mm) :	--	—
3.2.9	Supply wiring space	Appliance inlet used.	N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict

3.4	Disconnection from the mains supply		P
3.4.1	General requirement	Disconnect device is provided.	P
3.4.2	Disconnect devices	Appliance inlet	P
3.4.3	Permanently connected equipment	Pluggable equipment type A.	N/A
3.4.4	Parts which remain energized	No parts remain energized.	P
3.4.5	Switches in flexible cords	Not provided.	N/A
3.4.6	Number of poles - single-phase and d.c. equipment	The plug and appliance coupler disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single phase equipment.	N/A
3.4.8	Switches as disconnect devices	Switch not used as disconnect device.	N/A
3.4.9	Plugs as disconnect devices	Appliance inlet used.	N/A
3.4.10	Interconnected equipment	No such interconnection	N/A
3.4.11	Multiple power sources	Single supply connection	N/A

3.5	Interconnection of equipment		N/A
3.5.1	General requirements		N/A
3.5.2	Types of interconnection circuits	--	N/A
3.5.3	ELV circuits as interconnection circuits		N/A
3.5.4	Data ports for additional equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P
	Angle of 10°	Stable mechanical construction, equipment does not overbalance when tilted to an angle of 10° from its normal upright position	P
	Test force (N)	--	N/A

4.2	Mechanical strength		P
4.2.1	General	Outer enclosure shows sufficient strength to withstand expected handling conditions.	P
	Rack-mounted equipment.	Not rack-mounted.	N/A
4.2.2	Steady force test, 10 N	Applied to relevant parts, no hazard.	P
4.2.3	Steady force test, 30 N	30N applied to internal enclosures.	P
4.2.4	Steady force test, 250 N	250N applied to outer enclosure. Test points: (see appended table 4.2)	P
4.2.5	Impact test		P
	Fall test	(see appended table 4.2)	P
	Swing test		N/A
4.2.6	Drop test; height (mm)	Neither direct plug-in nor hand held.	N/A
4.2.7	Stress relief test	After 7h at 72°C for enclosures, at 124°C for Fuser Unit Cover and cooling down to room temperature, no shrinkage, distortion or loosening of enclosure parts was noticeable on the unit.	P
4.2.8	Cathode ray tubes	No CRT.	N/A
	Picture tube separately certified	--	N/A
4.2.9	High pressure lamps	No such lamp.	P
4.2.10	Wall or ceiling mounted equipment; force (N)	Not intended for wall or ceiling mounting.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3	Design and construction		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded and smooth.	P
4.3.2	Handles and manual controls; force (N) :	15N (Main switch)	P
4.3.3	Adjustable controls	Full range circuit, no voltage adjustment necessary. Operational controls not likely to cause any hazard.	N/A
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress. Relevant screws provided with lock-washer.	P
4.3.5	Connection by plugs and sockets	In operator and service areas, mismatching prevented by incompatible form or location.	P
4.3.6	Direct plug-in equipment	Not direct plug-in.	N/A
	Torque :	--	—
	Compliance with the relevant mains plug standard :	--	N/A
4.3.7	Heating elements in earthed equipment	Each heater lamp protected by certified thermal cutouts in one phase and TRIAC in the other.	P
4.3.8	Batteries	Lithium battery (CR2032) circuits in Main PWB utilize a diode in series with a 1kΩ resistor.	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery	(see above)	P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery	(see above)	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.9	Oil and grease	Insulation not in contact with oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases	Insulation not exposed to any possible paper dust or toner; separation by internal covers.	P
4.3.11	Containers for liquids or gases	No liquid contained.	N/A
4.3.12	Flammable liquids	No flammable liquids present.	N/A
	Quantity of liquid (l)	--	N/A
	Flash point (°C)	--	N/A
4.3.13	Radiation	See below.	P
4.3.13.1	General	Adequate construction confirmed.	P
4.3.13.2	Ionizing radiation	No 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	No ultraviolet (UV) radiation.	N/A
	Part, property, retention after test, flammability classification	--	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation	--	N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		P
4.3.13.5.1	Lasers (including laser diodes)	For laser see IEC/EN 60825-1 test report.	P
	Laser class	Class 1	—
4.3.13.5.2	Light emitting diodes (LEDs)	--	N/A
4.3.13.6	Other types	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.4	Protection against hazardous moving parts		P
4.4.1	General	Access to hazardous moving parts prevented by construction.	P
4.4.2	Protection in operator access areas	Operator accessible moving parts represent no hazard, e.g. paper feeding / -exit areas. Hazardous moving parts are protected by interlock per cl.2.8.	P
	Household and home/office document/media shredders	Not shredder.	N/A
4.4.3	Protection in restricted access locations	Not intended to be installed there.	N/A
4.4.4	Protection in service access areas	No unexpected hazard.	N/A
4.4.5	Protection against moving fan blades	No user accessible fan blade. Service accessible fan blade: see cl. 4.4.5.3.	P
4.4.5.1	General	1), LVU Fan Motor Type: D06R-24TH XX (AX) m = 0.04kg r = 30mm N = 5000rpm K = 540 a): 0.56 2), LSU Fan Motor Type: 2410RL-05W-S60-XXX m = 0.06g r = 30mm N = 4900rpm K = 777.92 a): 0.65 3), DLP Fan Motor Type: D08K-24TU 83 (AX) m = 0.065g r = 40mm N = 3400rpm K = 721.34 a): 0.53	P
	Not considered to cause pain or injury. a).....	$\frac{r/min}{15000} + \frac{K \text{ factor}}{2400} = \text{Less than 1 (see above)}$	P
	Is considered to cause pain, not injury. b).....	--	N/A
	Considered to cause injury. c).....	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.4.5.2	Protection for users	No user accessible fan blade.	N/A
	Use of symbol or warning :	--	N/A
4.4.5.3	Protection for service persons	Inadvertent contact by service person is impossible.	N/A
	Use of symbol or warning :	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests	(see appended table 4.5)	P
	Normal load condition per Annex L :	Method L.7	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat :	(see appended table 4.5.5)	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings	No openings above parts with hazardous voltages. Side openings comply with the 5° angle projection. Requirements for fire enclosure considered. Accessories: no hazardous voltages, SELV only	P
	Dimensions (mm) :	(see appended table 4.6.1/.2)	—
4.6.2	Bottoms of fire enclosures	Protection against emission of flame, molten metal, flaming or glowing particles or drops by constructions.	P
	Construction of the bottom, dimensions (mm) .. :	No openings below parts requiring fire enclosure.	—
4.6.3	Doors or covers in fire enclosures	Doors and covers are interlocked per cl. 2.8.	P
4.6.4	Openings in transportable equipment	Not transportable equipment.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) :	--	—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes	Not used.	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	Materials with the required flammability classes are used. Safety relevant components used within their specified rating. Electrical parts are not likely to ignite nearby materials. Temperatures see 4.5.1.	P
	Method 1, selection and application of components wiring and materials	(see appended table 1.5.1)	P
	Method 2, application of all of simulated fault condition tests	Not considered.	N/A
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	Components with windings, wiring, semiconductor devices, resistors, capacitors and inductors are located inside a fire enclosure.	P
4.7.2.2	Parts not requiring a fire enclosure	The following parts are located outside a fire enclosure: Cables and connectors in sec circuits supplied with LPS, power supply cord sets.	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	Materials		P
4.7.3.1	General	Materials with the required flammability classes are used. For overheating of VDRs (Z1) by fault conditions, the VDRs were mounted on PCBs with min. V-1 and other components / materials (SWPS Unit: C1, YC1) within 13 mm from VDRs were min. V-1 Class Material or approved components.	P
4.7.3.2	Materials for fire enclosures	Metal enclosure and Plastic enclosures: min V-1 (see appended table 1.5.1)	P
4.7.3.3	Materials for components and other parts outside fire enclosures	Decorative parts rated at least HB75 or HB40.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2, VTM-2, HF-2 or better. Small parts were mounted on min. V-1 PCB.	P
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components	Transformers main materials of flammability V-2 or better.	P

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Clause	Requirement + Test	Result - Remark	Verdict

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	Tested for TN system.	P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply	Single supply, independently tested.	P
5.1.2.2	Redundant multiple connections to an a.c. mains supply	Single-supply equipment.	N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Per figure 5A.	P
5.1.4	Application of measuring instrument	Per Annex D.	P
5.1.5	Test procedure		P
5.1.6	Test measurements		P
	Supply voltage (V)	(see appended table 5.1)	—
	Measured touch current (mA)	(see appended table 5.1)	—
	Max. allowed touch current (mA)	(see appended table 5.1)	—
	Measured protective conductor current (mA)	(see appended table 5.1)	—
	Max. allowed protective conductor current (mA) ..	3.5 mA	—
5.1.7	Equipment with touch current exceeding 3,5 mA	Leakage current does not exceed 3.5mA	N/A
5.1.7.1	General	--	N/A
5.1.7.2	Simultaneous multiple connections to the supply	Single supply equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) :	--	—
	Measured touch current (mA) :	--	—
	Max. allowed touch current (mA) :	--	—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports :	--	N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5.2	Electric strength		P
5.2.1	General	(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	(see appended table 5.3)	P
5.3.2	Motors	Motors locked, stepping motors excluded. Temperature limits of Annex B not exceeded. (see appended Annex B)	P
5.3.3	Transformers	Adequate protection against overload provided. (see appended table 5.3)	P
5.3.4	Functional insulation	Short circuit tests. (see appended table 5.3)	P
5.3.5	Electromechanical components	Movement locked. Solenoids and clutches continuously energized. (see appended table 5.3)	P
5.3.6	Audio amplifiers in ITE	Not provided.	N/A
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	Fault condition in temperature regulating circuit for heater lamps did not result in a hazard. (see appended table 5.3)	P
5.3.9	Compliance criteria for abnormal operating and fault conditions		P
5.3.9.1	During the tests	No fire propagated beyond the equipment. No molten metal was emitted.	P
5.3.9.2	After the tests	Electric strength test primary to SELV passed.	P

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

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

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Clause	Requirement + Test	Result - Remark	Verdict

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS <i>No Cable Distribution System.</i>		N/A
7.1	General		N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE <i>Not tested; flammability data were taken from available literature.</i>		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples..... :	--	—
	Wall thickness (mm) :	--	—
A.1.2	Conditioning of samples; temperature (°C) :	--	N/A
A.1.3	Mounting of samples :	--	N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D :	--	—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s) :	--	—
	Sample 2 burning time (s) :	--	—
	Sample 3 burning time (s) :	--	—

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Clause	Requirement + Test	Result - Remark	Verdict
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)		P
B.1	General requirements		P
	Position	(see appended table 1.5.1)	—
	Manufacturer	(see appended table 1.5.1)	—
	Type	(see appended table 1.5.1)	—
	Rated values	(see appended table 1.5.1)	—
B.2	Test conditions	Motors were locked inside the equipment or in a bench test set-up. For stepping motors no test performed. (see appended table annex B)	P
B.3	Maximum temperatures	(see appended table annex B)	P
B.4	Running overload test	DC motors in secondary only.	N/A
B.5	Locked-rotor overload test	DC motors in secondary only.	N/A
	Test duration (days)	--	—
	Electric strength test: test voltage (V)	--	—
B.6	Running overload test for d.c. motors in secondary circuits	Running overload not likely. Electronically controlled.	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		P
B.7.1	General	See below.	P
B.7.2	Test procedure	(tested per B.7.3)	N/A
B.7.3	Alternative test procedure	(see appended table annex B)	P
B.7.4	Electric strength test; test voltage (V)	--	N/A
B.8	Test for motors with capacitors	(none)	N/A
B.9	Test for three-phase motors	(none)	N/A
B.10	Test for series motors	(none)	N/A
	Operating voltage (V)	--	—

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Clause	Requirement + Test	Result - Remark	Verdict

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position	Pri - sec transformers: T1	—
	Manufacturer	(see appended table 1.5.1)	—
	Type	(see appended table 1.5.1)	—
	Rated values	(see appended table 1.5.1)	—
	Method of protection	--	—
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation	(see appended table 2.10.5, 5.2)	P
	Protection from displacement of windings.....	Adequate construction; for further details, see appended table 2.10.3 and 2.10.4.	P

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

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13) <i>Thermocouples used.</i>		N/A
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G) <i>Measured accordingly.</i>		P
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Clause	Requirement + Test	Result - Remark	Verdict
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		P
G.1	Clearances	Applied for interlock in sec.	P
G.1.1	General		P
G.1.2	Summary of the procedure for determining minimum clearances		P
G.2	Determination of mains transient voltage (V)		P
G.2.1	AC mains supply :	2500V considered.	P
G.2.2	Earthed d.c. mains supplies :	No d.c. mains.	N/A
G.2.3	Unearthed d.c. mains supplies :	--	N/A
G.2.4	Battery operation :	No such operation.	N/A
G.3	Determination of telecommunication network transient voltage (V) :	--	N/A
G.4	Determination of required withstand voltage (V)		P
G.4.1	Mains transients and internal repetitive peaks :	1500V, rule 3) b3) used.	P
G.4.2	Transients from telecommunication networks :	1500V	P
G.4.3	Combination of transients		P
G.4.4	Transients from cable distribution systems	No such 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 :	(see appended table 2.10.3 and 2.10.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict

H	ANNEX H, IONIZING RADIATION (see 4.3.13) <i>No ionizing radiation source.</i>		N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal(s) used	Tin on steel / zinc on steel.	—

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

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

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Clause	Requirement + Test	Result - Remark	Verdict
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1) <i>No ringing signals generated.</i>		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) :	--	—
M.3.1.2	Voltage (V) :	--	—
M.3.1.3	Cadence; time (s), voltage (V) :	--	—
M.3.1.4	Single fault current (mA) :	--	—
M.3.2	Tripping device and monitoring voltage :	--	N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) :	--	N/A
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5) <i>Not used.</i>		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1) <i>Approved Surge Suppressor used.</i>		P
	- Preferred climatic categories :	40/085/56	P
	- Maximum continuous voltage :	470V or 510V	P
	- Combination pulse current :	--	P
	Body of the VDR Test according to IEC60695-11-5.....:	--	P
	Body of the VDR. Flammability class of material (min V-1).....:	--	P

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Clause	Requirement + Test	Result - Remark	Verdict
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2) <i>Not applied.</i>		N/A
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4) <i>Not used.</i>		N/A
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) <i>Considered.</i>		P
V.1	Introduction		P
V.2	TN power distribution systems		P
W	ANNEX W, SUMMATION OF TOUCH CURRENTS <i>Considered.</i>		P
W.1	Touch current from electronic circuits		P
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		P
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

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Clause	Requirement + Test	Result - Remark	Verdict
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1) <i>Considered.</i>		P
X.1	Determination of maximum input current		P
X.2	Overload test procedure		P
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3) <i>No ultraviolet light source.</i>		N/A
Y.1	Test apparatus	--	N/A
Y.2	Mounting of test samples	--	N/A
Y.3	Carbon-arc light-exposure apparatus	--	N/A
Y.4	Xenon-arc light exposure apparatus	--	N/A
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2) <i>Considered.</i>		P
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8) <i>Not applied.</i>		N/A
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters <i>Not applied.</i>		N/A
CC.1	General		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

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Clause	Requirement + Test	Result - Remark	Verdict

DD	ANNEX DD, Requirements for the mounting means of rack-mounted equipment <i>Not applied.</i>		N/A
DD.1	General		N/A
DD.2	Mechanical strength test, variable N	--	N/A
DD.3	Mechanical strength test, 250N, including end stop	--	N/A
DD.4	Compliance	--	N/A

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

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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	Mark(s) of conformity ¹⁾	
Power Supply Cord						
Power Supply Cord for 220 - 240V models (Optional), Alternate	Interchangeable	Plug: Interchangeable Cord: Interchangeable Connector: Interchangeable	250V, 16A 0.75 mm ² x 3 250V, 10A	IEC/EN60799 or IEC/EN60884 IEC/EN60227 IEC/EN60320	--	
Power Supply Cord for 120V models (Optional), Alternate	Interchangeable	Plug: Interchangeable Cord: Interchangeable Connector: Interchangeable	125V, 15A (Marking:13A) 16 AWG x 3 Type: SJT 125V, 13A Max. 4.5m long, min. 1.5m long	UL817 or UL498 UL62 UL498	UL	
Power Supply Cord for 110V models (Optional)	Volex	Plug: TW15CS3 Cord: VCTF Connector: V1625	125V, 15A 2.0 mm ² x 3 125V, 15A	CNS10917-2 CNS3199 IEC60320-1	BSMI	
Appliance Inlet						
Appliance Inlet	Rong Feng Industrial Co., Ltd.	SS-120	250V ac, 10A (for 220-240V, 110V) 250V ac, 15A (for 120V)	IEC/EN 60320-1 UL498	VDE UL(E102641)	
Switch						
Interlock Switch	Omron Corp.	D3V-16506-3C25 or D3V series	30Vdc/10A 50,000 Cycles (VDE) 40Vdc/5A, 30Vdc/10A 100,000 Cycles (UL)	EN61058-1 UL1054	VDE UL(E41515)	

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	Mark(s) of conformity ¹⁾	
Fuser Unit						
Thermal Cutoff	Wako Electronics Co., Ltd.	CS-7TA-35	250Vac/Min.10A, 202°C	IEC/EN60730 UL873	TUV UL(E50367)	
Thermistor Center	Shibaura Electronics Co., Ltd.	PT9-312 (PSB series) or PT9S-312-M4	1.379kohm (Zero-power resistance at 185°C)	--	Evaluated together with unit	
Thermistor Side	Semitec Corporation	HF-51061 (HF-series)	7kohm(Zero-power resistance at 180°C)	--	Evaluated together with unit	
Fuser Up Frame	Kaneka Corp.	3401NX	V-0, Min. 1.5mm thick	UL94	UL(E48854)	
Fuser Low Frame	Kaneka Corp.	3401NX	V-0, Min. 1.5mm thick	UL94	UL(E48854)	
Heater Lamp for 220-240V ac	Ushio Inc.	QIRF 240-641/427 MKFU	240V, 641W/427W	--	Evaluated together with unit	
Heater Lamp for 120V ac	Ushio Inc.	QIRF 120-600/400 MKFU	120V, 600W/400W	--	Evaluated together with unit	
Heater Lamp for 110V ac	Ushio Inc.	QIRF 110-600/400 MKFU	110V, 600W/400W	--	Evaluated together with unit	
Fuser Unit - Heater Connector	Japan Solderless Terminal Mfg. Co., Ltd.	Type H, series VH	250V, 10A (AWG 16) or 7A (AWG18)	IEC/EN61984 UL1977	TUV UL(E60389)	

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	Mark(s) of conformity ¹⁾	
Switching Power Supply Unit for 220 - 240V						
Switching Power Supply Unit	Murata Mfg. Co., Ltd.	MPW9289	Input: AC 220 - 240 V 24V/ 6.6A	--	Evaluated together with unit	
Bleeding Resistor (R4, R5)	Interchangeable	Interchangeable	2.7 kohm, 1/4 W	--	Evaluated together with unit	
Bleeding Resistor (R6, R7)	Interchangeable	Interchangeable	5.6 kohm, 1/4 W	--	Evaluated together with unit	
CAP Discharge IC (IC1)	Fuji Electric Co., Ltd.	FA8A71N (Marking: 8A71)	VH pin: 500V/10mA VCC pin: 28V/20mA	IEC/EN60950-1	NEMKO CB (NO81148)	
Varistor (Z1)	Nippon Chemi-Con Corp.	TNR14SE471K or TND14SE471K (Marking: 14SE471)	470 Vac	IEC/EN 61051 IEC/EN 60950-1 Ed2.2: 2013/ Annex Q	VDE	
Varistor (Z1), Alternate	Joyin Co., Ltd.	JVH14N511K or 14N511K	510 Vac	IEC/EN 61051-1/- 2/-2-2, IEC/EN 60950-1 Ed2.2: 2013/ Annex Q	VDE	
Varistor (Z1), Alternate	Thinking Electronic Industrial Co., Ltd.	TVR14511-K or TVR14511	510 Vac	IEC/EN 61051-1/- 2/-2-2, IEC/EN 60950-1 Ed2.2: 2013/ Annex Q	VDE	
Varistor (Z1), Alternate	Epcos OHG or Epcos (Zhuhai FTZ) Co., Ltd.	S14K300E2K1 (S14KV471)	470 Vac	IEC/EN 61051 IEC/EN 60950-1 Ed2.2: 2013/ Annex Q	VDE	
X - Capacitor (C1)	Okaya Electric Industries Co., Ltd.	LE series (Marking: LE224)	310V, 0.22uF X2	IEC/EN 60384-14	ENEC(SEMKO)	
X - Capacitor (C1), Alternate	Panasonic Electronic Devices Japan Co., Ltd. or Panasonic	ECQUL	275V, 0.22uF X2	IEC/EN 60384-14	VDE	
X - Capacitor (C1), Alternate	Pilkor Electronics Co., Ltd.	PCX2 337	275V/305V, 0.22uF X2	IEC/EN 60384-14	ENEC(SEMKO)	

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	Mark(s) of conformity ¹⁾	
X - Capacitor (C1), Alternate	Zhuhai Sung Ho Electronics Co., Ltd.	CMPP	275/310V, 0.22uF X2	IEC/EN 60384-14	ENEC(VDE)	
X - Capacitor (C6)	Okaya Electric Industries Co., Ltd.	LE series (Marking: LE104)	310V, 0.1uF X2	IEC/EN 60384-14	ENEC(SEMKO)	
X - Capacitor (C6), Alternate	Panasonic Electronic Devices Japan Co., Ltd. or Panasonic	ECQUL	275V, 0.1uF X2	IEC/EN 60384-14	VDE	
X - Capacitor (C6), Alternate	Pilkor Electronics Co., Ltd. or Cowell Fashion Co.,Ltd.	PCX2 337	275V/305V, 0.1uF X2	IEC/EN 60384-14	ENEC(SEMKO)	
X - Capacitor (C6), Alternate	Zhuhai Sung Ho Electronics Co., Ltd.	CMPP	275/310V, 0.1uF X2	IEC/EN 60384-14	ENEC(VDE)	
Y -Capacitors (C4, C5)	Murata Mfg. Co., Ltd.	KH	300V/250V, 470pF Y2	IEC/EN 60384-14	SEMKO	
Y -Capacitors (C4, C5), Alternate	Murata Mfg. Co., Ltd.	KX	300V/250V, 470pF Y1	IEC/EN 60384-14	SEMKO	
Y -Capacitors (C4, C5), Alternate	TDK-EPC Corp. or TDK Corp.	CS	250V, 470pF Y2	IEC/EN 60384-14	SEMKO	
Y -Capacitors (C4, C5), Alternate	TDK-EPC Corp. or TDK Corp.	CD	250V, 470pF Y1	IEC/EN 60384-14	SEMKO	
Bridging - Capacitor (C50)	Murata Mfg. Co., Ltd.	KX	300V/250V, 3300pF Y1	IEC/EN 60384-14	SEMKO	
Bridging - Capacitor (C50), Alternate	TDK-EPC Corp. or TDK Corp.	CD	250V, 3300pF Y1	IEC/EN 60384-14	SEMKO	
Electrolytic Capacitor (C7)	Interchangeable	Interchangeable	400V, 180uF	--	Evaluated together with unit	
Inductor (L1)	Tokyo Parts Industrial Co., Ltd.	2R0A133F28YA (Marking:2R0A133 A)	Max.140 °C	--	Evaluated together with unit	
Inductor (L2)	Tokyo Parts Industrial Co., Ltd.	1R5A402V20A (Marking:402A)	Max.140 °C	--	Evaluated together with unit	

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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	Mark(s) of conformity ¹⁾	
FET (Q1,Q2)	Fuji Electric Co., Ltd.	FMV06N90 or FMV06N90E (Marking:06N90E)	900V, 6A	--	Evaluated together with unit	
Triac (TRA31,TRA41)	Interchangeable	Interchangeable	Min.800V, Min.12A	--	Evaluated together with unit	
Photo Coupler (PC1, PC2, PC5)	Everlight Electronics Co., Ltd.	EL816M (Marking: EL816)	Isolation thickness: ≥0.5 mm, Ext. cr.: ≥7.7 mm, Int. cr. : ≥6 mm Isolation voltage: min. AC 4800V	IEC/EN60950-1 IEC/EN60065	SEMKO	
Photo Coupler (PC1, PC2, PC5), Alternate	Lite-On Technology Corp.	LTV-816 series (Marking: 816B3)	Isolation thickness: ≥0.6 mm, Ext. cr.: ≥8.0 mm, Int. cr. : ≥5.2mm Isolation voltage: min. AC 4800V	IEC/EN60950-1 IEC/EN60065	DEMKO	
Photo Coupler (PC1, PC2, PC5), Alternate	Toshiba Corp.	TLP785F (Marking: P785F)	Isolation thickness: > 0.6 mm, Ext. cr.: > 8.0 mm, Int. cr. : > 5.2 mm Isolation voltage: min. AC 4800V	IEC/EN60950-1 IEC/EN60065	SEMKO	
Photo Coupler (PC3,PC4)	Toshiba Corp.	TLP363JF (Marking: P363JF)	Isolation thickness: > 0.4 mm, Ext. cr.: > 8 mm, Int. cr. = thermal cycling tested (2.10.11), Isolation voltage: min. AC 5000V	IEC/EN60950-1 IEC/EN60747-5-5	TUV	
Transformer (T1)	Murata Mfg. Co., Ltd.	2Q159	Max.130 °C Class B	--	Evaluated together with unit	
Fuse (F1)	Cooper Bussmann Inc.	S505 (-R series)	250V, T4AH	IEC/EN 60127-2	SEMKO	
Fuse (F1), Alternate	SkyGate Co., Ltd.	SG5063	250V, T4AH	IEC/EN 60127-2	SEMKO	
Fuse (F51)	Cooper Bussmann Inc.	S505 (-R series)	250V, T10AH	IEC/EN 60127-2	SEMKO	
Fuse (F51), Alternate	SkyGate Co., Ltd.	SG5063	250V, T10AH	IEC/EN 60127-2	SEMKO	

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	Mark(s) of conformity ¹⁾	
Relay (RL1)	Daiichi Electric Co., Ltd.	DG1U series	Contact: 250V, 10A Coil: 24 Vdc Isolation voltage: min. AC 4000V	IEC/EN61810-1 (TUV) IEC/EN61058-1 (SEMKO)	TUV SEMKO	
Relay (RL1), Alternate	Panasonic Electric Works Co., Ltd. or Panasonic	LK series LKP1aF-24V	Contact: 250/277V, 10A Coil: 24 Vdc Isolation voltage: min. AC 4000V	IEC/EN61810-1	VDE/TUV	
Relay (RL1), Alternate	Fujitsu Component Ltd.	FTR-H2 series	Contact: 250V, 10A Coil: 24 Vdc Isolation voltage: min. AC 4000V	IEC/EN61810-1	VDE	
Connector (YC1)	Japan Solderless Terminal Mfg Co., Ltd.	Type H, series VT	250V, Max.12A	IEC/EN61984	TUV	
Connector (YC2)	Japan Solderless Terminal Mfg Co., Ltd.	Type H, series VH	250V, Max.10A	IEC/EN61984	TUV	
Fixing Bond for R27/R28	Konishi Co.,Ltd.	FB500HW or FB500HB	V-0, 105°C	UL94	UL(E325882)	
Printed Wiring Board	Interchangeable	Interchangeable	Min. V-1, Min. 105°C	UL796	UL	

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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	Mark(s) of conformity ¹⁾	
Switching Power Supply Unit for 110 /120V						
Switching Power Supply Unit	Murata Mfg. Co., Ltd.	MPW9288	Input: AC 110 - 120 V 24V/ 6.6A	--	Evaluated together with unit	
Bleeding Resistor (R4, R5)	Interchangeable	Interchangeable	2.7 kohm, 1/4 W	--	Evaluated together with unit	
Bleeding Resistor (R6, R7)	Interchangeable	Interchangeable	5.6 kohm, 1/4 W	--	Evaluated together with unit	
CAP Discharge IC (IC1)	Fuji Electric Co., Ltd.	FA8A71N (Marking: 8A71)	VH pin: 500V/10mA VCC pin: 28V/20mA	--	--	
Varistor (Z1)	Nippon Chemi-Con Corp.	TNR14SE471K or TND14SE471K (Marking: 14SE471)	470 Vac	UL1449	UL(E323623)	
Varistor (Z1), Alternate	Joyin Co., Ltd.	JVH14N511K or 14N511K	510 Vac	UL1449	UL(E325508)	
Varistor (Z1), Alternate	Thinking Electronic Industrial Co., Ltd.	TVR14511-K or TVR14511	510 Vac	UL1449	UL(E314979)	
Varistor (Z1), Alternate	Epcos OHG or Epcos (Zhuhai FTZ) Co., Ltd.	S14K300E2K1 (S14KV471)	470 Vac	UL1449	UL(E321126)	
X - Capacitor (C1,C6)	Okaya Electric Industries Co., Ltd.	LE series (Marking: LE334)	310V, 0.33uF X2	UL60384-14	UL(E47474)	
X - Capacitor (C1,C6), Alternate	Panasonic Electronic Devices Japan Co., Ltd. or Panasonic	ECQUL	275V, 0.33uF X2	UL60384-14	UL(E62674)	
X – Capacitor (C1,C6), Alternate	Pilkor Electronics Co., Ltd.	PCX2 337	275V/305V, 0.33uF X2	UL60384-14	UL(E165646)	
X – Capacitor (C1,C6), Alternate	Zhuhai Sung Ho Electronics Co., Ltd.	CMPP	275/310V, 0.33uF X2	UL60384-14	UL(E327138)	
Y -Capacitors (C4, C5)	Murata Mfg. Co., Ltd.	KH	300V/250V, 2200pF Y2	UL60384-14	UL(E37921)	

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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	Mark(s) of conformity ¹⁾	
Y -Capacitors (C4, C5), Alternate	Murata Mfg. Co., Ltd.	KX	300V/250V, 2200pF Y1	UL60384-14	UL(E37921)	
Y -Capacitors (C4, C5), Alternate	TDK-EPC Corp. or TDK Corp.	CS	250V, 3300pF Y2	UL60384-14	UL(E37861)	
Y -Capacitors (C4, C5), Alternate	TDK-EPC Corp. or TDK Corp.	CD	250V, 3300pF Y1	UL60384-14	UL(E37861)	
Bridging - Capacitor (C50)	Murata Mfg. Co., Ltd.	KX	300V/250V, 3300pF Y1	UL60384-14	UL(E37921)	
Bridging - Capacitor (C50), Alternate	TDK-EPC Corp. or TDK Corp.	CD	250V, 3300pF Y1	UL60384-14	UL(E37861)	
Electrolytic Capacitor (C7)	Interchangeable	Interchangeable	200V, 1000uF	--	Evaluated together with unit	
Inductor (L1)	Tokyo Parts Industrial Co., Ltd.	3R5A382F28YA (Marking: 3R5A382A)	Max.140 °C	--	Evaluated together with unit	
Inductor (L2)	Tokyo Parts Industrial Co., Ltd.	2R7A182F24A (Marking: 2R7A182A)	Max.140 °C	--	Evaluated together with unit	
FET (Q1,Q2)	Toshiba Corporation Semiconductor Company	TK8A50 or TK8A50D	500V,8A	--	Evaluated together with unit	
Triac (TRA31,TRA41)	Interchangeable	Interchangeable	Min.600V, Min.16A	--	Evaluated together with unit	

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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	Mark(s) of conformity ¹⁾	
Photo Coupler (PC1, PC2, PC5)	Everlight Electronics Co., Ltd.	EL816M (Marking: EL816)	Isolation thickness: ≥0.5 mm, Ext. cr.: ≥7.7 mm, Int. cr. : ≥6 mm Isolation voltage: min. AC 5000V	UL1577	UL(E214129)	
Photo Coupler (PC1, PC2, PC5), Alternate	Lite-On Technology Corp.	LTV-816 series (Marking: 816B3)	Isolation thickness: ≥0.6 mm, Ext. cr.: ≥8.0 mm, Int. cr. : ≥5.2mm Isolation voltage: min. AC 5000V	UL1577	UL(E113898)	
Photo Coupler (PC1, PC2, PC5), Alternate	Toshiba Corp.	TLP785F (Marking: P785F)	Isolation thickness: > 0.6 mm, Ext. cr.: > 8.0 mm, Int. cr. : > 5.2 mm Isolation voltage: min. AC 5000V	UL1577	UL(E67349)	
Photo Coupler (PC3,PC4)	Toshiba Corp.	TLP363JF (Marking: P363JF)	Isolation thickness: > 0.4 mm, Ext. cr.: > 8 mm, Int. cr. = thermal cycling tested (2.10.11), Isolation voltage: min. AC 5000V	UL1577	UL(E67349)	
Transformer (T1)	Murata Mfg. Co., Ltd.	2Q158	Class B UL System Designation: CM Max.130 °C	UL1446	Evaluated together with unit UL(E247878)	
Fuse (F1)	Cooper Bussmann Inc.	S505 (-R series)	250V, T6.3AH	UL248-1/ UL248- 14	UL(E19180)	
Fuse (F1), Alternate	SkyGate Co., Ltd.	SG5063	250V, T6.3AH	UL248-1/ UL248- 14	UL(E195833)	

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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	Mark(s) of conformity ¹⁾	
Relay (RL1)	Panasonic Corporation	ALE1PB24	Contact: 277V, 16A Coil: 24 Vdc Isolation voltage: min. AC 4000V	UL508 UL60947	UL(E43149)	
Relay (RL1), Alternate	Panasonic Electric Works Co., Ltd. or Panasonic	LK series LKP1aF-24V	Contact: 250/277V, 10A Coil: 24 Vdc Isolation voltage: min. AC 4000V	UL508 UL60947	UL(E43149)	
Relay (RL1), Alternate	Fujitsu Component Ltd.	FTR-H2 series	Contact: 250V, 10A Coil: 24 Vdc Isolation voltage: min. AC 4000V	UL508 UL60947	UL(E63614)	
Connector (YC1)	Japan Solderless Terminal Mfg Co., Ltd.	Type H, series VT	250V, Max.12A	UL1977	UL(E60389)	
Connector (YC2)	Japan Solderless Terminal Mfg Co., Ltd.	Type H, series VH	250V, Max.10A	UL1977	UL(E60389)	
Fixing Bond for R27/R28	Konishi Co.,Ltd.	FB500HW or FB500HB	V-0, 105°C	UL94	UL(E325882)	
Printed Wiring Board	Interchangeable	Interchangeable	Min. V-1, Min. 105°C	UL796	UL	

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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	Mark(s) of conformity ¹⁾	
High Voltage Unit for Model ECOSYS P3060dn,ECOSYS P3055dn,ECOSYS P3050dn						
High Voltage Unit	Murata Mfg. Co., Ltd.	MPH7462A	Input: 24V dc,Max.0.7A Outputs: M : 1100V (p-p) B : 1.5kV (p-p) T : -2.4kV S : 2kV	--	Evaluated together with unit	
Transformer (B51)	Murata Mfg. Co., Ltd.	QU004	Class A	--	Evaluated together with unit	
Transformer (B101)	Murata Mfg. Co., Ltd.	QM113	Class A	--	Evaluated together with unit	
Transformer (B200)	Murata Mfg. Co., Ltd.	QU003	Class A	--	Evaluated together with unit	
Transformer (B301)	Murata Mfg. Co., Ltd.	QW014	Class A	--	Evaluated together with unit	
Transformer (B451)	Murata Mfg. Co., Ltd.	QJ002	Class A	--	Evaluated together with unit	
Transformer (B501)	Murata Mfg. Co., Ltd.	QJ003	Class A	--	Evaluated together with unit	
Fuse (F1) for L.P.S	Littelfuse Inc.	491	125V,1.5A	UL248-1	UL(E10480)	
Fuse (F1) for L.P.S,Alternate	Bussmann Div Copper (UK) Ltd. or Cooper Bussmann Inc. or Cooper Bussmann L L C	MCRF	125V,1.5A	UL248-1	UL(E19180)	
Printed Wiring Board	Interchangeable	Interchangeable	Min. V-1, Min. 105°C	UL796	UL	

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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	Mark(s) of conformity ¹⁾	
High Voltage Unit for Model ECOSYS P3045dn						
High Voltage Unit	Murata Mfg. Co., Ltd.	MPH7462B	Input: 24V dc,Max.0.7A Outputs: M : 1100V (p-p) B : 1.5kV (p-p) T : -2.4kV S : 2kV	--	Evaluated together with unit	
Transformer (B51)	Murata Mfg. Co., Ltd.	QU004	Class A	--	Evaluated together with unit	
Transformer (B101)	Murata Mfg. Co., Ltd.	QM113	Class A	--	Evaluated together with unit	
Transformer (B200)	Murata Mfg. Co., Ltd.	QU003	Class A	--	Evaluated together with unit	
Transformer (B301)	Murata Mfg. Co., Ltd.	QW014	Class A	--	Evaluated together with unit	
Transformer (B451)	Murata Mfg. Co., Ltd.	QJ002	Class A	--	Evaluated together with unit	
Transformer (B501)	Murata Mfg. Co., Ltd.	QJ003	Class A	--	Evaluated together with unit	
Fuse (F1) for L.P.S	Littelfuse Inc.	491	125V,1.5A	UL248-1	UL(E10480)	
Fuse (F1) for L.P.S, Alternate	Bussmann Div Copper (UK) Ltd. or Cooper Bussmann Inc. or Cooper Bussmann L L C	MCRF	125V,1.5A	UL248-1	UL(E19180)	
Printed Wiring Board	Interchangeable	Interchangeable	Min. V-1, Min. 105°C	UL796	UL	

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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	Mark(s) of conformity ¹⁾	
Fan Motor, Motor, Clutch, Solenoid						
LVU Fan Motor	Nidec Corporation	D06R-24TH 04(AX)	24V dc, Max.0.11A	--	Evaluated together with unit	
LSU Fan Motor	Minebea Motor Manufacturing Corporation	2410RL-05W-S60- C01	24V dc, Max.0.12A,	--	Evaluated together with unit	
DLP Fan Motor	Nidec Corporation	D08K-24TU 49(AX)	24V dc, Max.0.143A,	--	Evaluated together with unit	
Main Motor	Nidec Corporation	48M069F180	24V dc, Max.2.2A	--	Evaluated together with unit	
Drum Motor for Model ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn	Nidec Corporation	48M069F180	24V dc, Max.2.2A	--	Evaluated together with unit	
Toner Motor	Mabuchi Motor Co., Ltd.	RK-370CA-11670	24V dc, Max.130mA	--	Evaluated together with unit	
FD Motor for Model ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn	Minebea Co., Ltd.	PM42M-048-MIJ1	Stepper Type, 24V dc, Max.400mA	--	Evaluated together with unit	
FD Motor for Model ECOSYS P3045dn	Minebea Co., Ltd.	PM42S-F48-MIP7	Stepper Type, 24V dc, Max.310mA	--	Evaluated together with unit	
Envelop Motor	Standard Motor Co., Ltd.	RC370-KT-081000	24V dc, Max.110mA	--	Evaluated together with unit	
Lift Motor for Model ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn	Standard Motor Co., Ltd.	RC370-KT-081000	24V dc, Max.110mA	--	Evaluated together with unit	

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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	Mark(s) of conformity ¹⁾	
DLP Clutch	Tenryu Marusawa Co., Ltd.	TMC-2T-06	24V dc, 0.083A	--	Evaluated together with unit	
Feed Clutch	Tenryu Marusawa Co., Ltd.	TMC-2T-06	24V dc, 0.083A	--	Evaluated together with unit	
DU Clutch	Tenryu Marusawa Co., Ltd.	TMC-2T-06	24V dc, 0.083A	--	Evaluated together with unit	
Mid Clutch	Tenryu Marusawa Co., Ltd.	TMC-3.5L-01	24Vdc, 0.083A	--	Evaluated together with unit	
Reg Clutch	Sinfonia MT	MCA-50T	24V dc, 0.104A	--	Evaluated together with unit	
Face U/D Solenoid for Model ECOSYS P3060dn, ECOSYS P3055dn, ECOSYS P3050dn	TDS Co., Ltd.	TDS-KN07A-65	24V dc, 1A	--	Evaluated together with unit	
MPF Solenoid	TDS Co., Ltd.	TDS-F06A-18	24V dc, MAX.300mA	--	Evaluated together with unit	

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1.5.1	TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Laser Scanner Unit						
Laser Diode	Ushio Opto Semiconductors, Inc.	HL67150GN	Class 3B, Wavelength: 670nm, Output Power: 32.5mW	--	Evaluated together with unit	
Laser Diode, Alternate	Rohm Co., Ltd.	RLD2BPND2-00B	Class 3B, Wavelength: 670nm, Output Power: 25mW	--	Evaluated together with unit	
Polygon Motor for Model ECOSYS P3050dn, ECOSYS P3045dn	Minebea Co., Ltd.	MASQ6EF3LK	24V dc, Max.0.6A	--	Evaluated together with unit	
Polygon Motor for Model ECOSYS P3060dn, ECOSYS P3055dn	Minebea Co., Ltd.	MASQ6NF8LK	24V dc, Max.0.65A	--	Evaluated together with unit	
Lid Scanner	Trinseo (Hong Kong) Ltd.	Styron 438	Min. HB75 Min.1.1mm	UL94	UL	
Housing Scanner	Teijin Limited Resin and Plastic	DN-7730M	Min. HB75 Min.2.2mm	UL94	UL	

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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	Mark(s) of conformity ¹⁾	
Other Components on Main Unit						
Lithium Battery (BAT1) on Main PWB	Interchangeable	CR2032	3 V; max.10mA reverse charging current. Protected by a diode and a 1 kohm resistor.	UL1642	UL	
Fuse (YF1) for L.P.S. (on Engine PWB) for 24V of Polygon Motor, Face U/D Solenoid, Toner Sensor PWB, Eraser PWB	Hollyland (China) Electronics Technology Corp.Ltd or Hollyland Co., Ltd.	12T series	32Vdc,4A	UL248-1/ UL248-14	UL(E156471)	
Fuse (YF2) for L.P.S. (on Engine PWB) for 24V of LSU Fan Motor, DLP Fan Motor,	Hollyland (China) Electronics Technology Corp.Ltd or Hollyland Co., Ltd.	12T series	63Vdc,3A	UL248-1/ UL248-14	UL(E156471)	
Fuse (YF4) for L.P.S. (on Engine PWB) for 24V of Toner Motor, Lift Motor, Envelop Motor	SkyGate Co., Ltd.	0603FT series	32Vdc,2A	UL248-1/ UL248-14	UL(E195833)	
Fuse (YF7) for L.P.S. (on Engine PWB) for 24V of Optional Paper Feeder, Model PF-320, PF-3100	SkyGate Co., Ltd.	SCT series	250V,T3.15A	UL248-1/ UL248-14	UL(E195833)	
Fuse (YF5) for L.P.S. (on Engine PWB) for 5V of APC PWB, Panel PWB	SkyGate Co., Ltd.	0603FT series	32Vdc,2A	UL248-1/ UL248-14	UL(E195833)	

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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	Mark(s) of conformity ¹⁾	
Fuse (YF507) for L.P.S. (on Engine PWB) for 3.3V of Panel PWB	SkyGate Co., Ltd.	0603FT series	32Vdc,2A	UL248-1/ UL248- 14	UL(E195833)	
Fuse (YF509) for L.P.S. (on Engine PWB) for 3.3V of MPF Sensor	SkyGate Co., Ltd.	0603FT series	32Vdc,2A	UL248-1/ UL248- 14	UL(E195833)	
Fuse (YF8) for L.P.S. (on Engine PWB) for 3.3V of Optional Paper Feeder, Model PF-320, PF-3100	SkyGate Co., Ltd.	0603FT series	32Vdc,2A	UL248-1/ UL248- 14	UL(E195833)	
Fuse (YF508) for L.P.S. (on Engine PWB) for 3.3V of PD PWB, Paper Full Sensor, Exit Sensor, Lift Sensor, High Voltage Unit, DU Jam Sensor, Regist Sensor	SkyGate Co., Ltd.	0603FT series	32Vdc,2A	UL248-1/ UL248- 14	UL(E195833)	
Fuse (YF1) for L.P.S. (on Main PWB) for 5V of USB	Skygate Co., Ltd.	1206FT series	32Vdc, 4A	UL248-1/ UL248- 14	UL(E195833)	

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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	Mark(s) of conformity ¹⁾	
Enclosure						
Main Plate	Interchangeable	Interchangeable	Steel,0.5mm thick	--	Evaluated together with unit	
Option Plate	Interchangeable	Interchangeable	Steel, 1 mm thick.	--	Evaluated together with unit	
Right Up Cover, Right Low Cover, Right Front Cover, Right Rear Cover,	Bayer Material Science or Covestro Deutschland AG	FR3006 HF	5VB, Min. 1.8 mm thick	UL94	UL(E41613)	
Top Cover, Front Cover, Left Up Cover, Left Low Cover, Rear Up Cover MPF Cover, Cassette Cover	Interchangeable	Interchangeable	Min. HB75	UL94	UL	
Right Frame, Left Frame	Interchangeable	Interchangeable	Steel,0.8mm thick	--	Evaluated together with unit	

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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	Mark(s) of conformity ¹⁾	
Paper Feeder, Model PF-320 (Option)						
Trans Motor	Nidec Corporation	48M069F261	24V dc, Max.1.6A	--	Evaluated together with unit	
Lift Motor	Standard Motor Co., Ltd.	RC370-KT-081000	24V dc, Max.110mA	--	Evaluated together with unit	
Feed Clutch	Sinfonia MT	MCA-50T	24V dc, 0.104A	--	Evaluated together with unit	
Trans Clutch	Sinfonia MT	MCA-50T	24V dc, 0.104A	--	Evaluated together with unit	
Right Frame	Interchangeable	Interchangeable	Min. HB75	UL94	UL	
Left Frame	Interchangeable	Interchangeable	Min. HB75	UL94	UL	
Top Frame	Interchangeable	Interchangeable	Min. HB75	UL94	UL	
Paper Feeder, Model PF-3100 (Option)						
Feed Motor	Mitsumi Electric Co., Ltd.	M49SP-3K	Stepper Type, 24V dc, Max.1.0A	--	Evaluated together with unit	
Lift Motor	Mabuchi Motor Co., Ltd.	RK-370CA-11670	24Vdc, Max.35mA	--	Evaluated together with unit	
Side Cover	Interchangeable	Interchangeable	Min. HB75	UL94	UL	
Supplementary information:						
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.						

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Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: Opto Electronic Devices	P
Manufacturer.....: --		
Type.....: --		
Separately tested.....: --		
Bridging insulation: --		
External creepage distance: --		
Internal creepage distance: --		
Distance through insulation: --		
Tested under the following conditions: --		
Input.....: --		
Output.....: --		
supplementary information		
See appended table 1.5.1 for details		

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Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: Electrical data (in normal conditions)						P
U (V)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status	
Model ECOSYS P3060dn with PF-320 (x4)							
110V/60Hz	9.91	11.9	1080	F1	0.27	Warm up	
110V/60Hz	0.25	11.9	13	F1	0.25	Standby	
110V/60Hz	10.3	11.9	1112	F1	0.6	Test Condition 1	
120V/60Hz	8.62	10.0	1025	F1	0.24	Warm up	
120V/60Hz	0.24	10.0	13	F1	0.24	Standby	
120V/60Hz	8.91	10.0	1058	F1	0.54	Test Condition 1	
220V/50Hz	4.44	5.6	973	F1/F51	0.14/4.30	Test Condition 1	
220V/50Hz	0.14	5.6	13	F1/F51	0.14/0.00	Standby	
220V/50Hz	4.6	5.6	1004	F1/F51	0.29/4.31	Test Condition 1	
240V/50Hz	4.62	5.6	1009	F1/F51	0.12/4.50	Warm up	
240V/50Hz	0.13	5.6	13	F1/F51	0.13/0.00	Standby	
240V/50Hz	4.78	5.6	1140	F1/F51	0.27/4.51	Test Condition 1	
220V/60Hz	4.43	5.6	972	F1/F51	0.14/4.29	Warm up	
220V/60Hz	0.14	5.6	13	F1/F51	0.14/0.00	Standby	
220V/60Hz	4.63	5.6	1010	F1/F51	0.31/4.32	Test Condition 1	
240V/60Hz	4.64	5.6	1111	F1/F51	0.14/4.50	Warm up	
240V/60Hz	0.13	5.6	13	F1/F51	0.13/0.00	Standby	
240V/60Hz	4.79	5.6	1141	F1/F51	0.25/4.54	Test Condition 1	

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Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: Electrical data (in normal conditions)						P
U (V)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status	
Model ECOSYS P3045dn with PF-320 (x4)							
110V/60Hz	9.9	11.4	1077	F1	0.26	Warm up	
110V/60Hz	0.25	11.4	13	F1	0.25	Standby	
110V/60Hz	10.1	11.4	1110	F1	0.58	Test Condition 1	
120V/60Hz	8.61	9.5	1023	F1	0.23	Warm up	
120V/60Hz	0.24	9.5	13	F1	0.24	Standby	
120V/60Hz	8.89	9.5	1055	F1	0.52	Test Condition 1	
220V/50Hz	4.42	5.4	970	F1/F51	0.12/4.30	Warm up	
220V/50Hz	0.13	5.4	13	F1/F51	0.13/0.00	Standby	
220V/50Hz	4.55	5.4	1000	F1/F51	0.25/4.30	Test Condition 1	
240V/50Hz	4.61	5.4	1008	F1/F51	0.11/4.50	Warm up	
240V/50Hz	0.13	5.4	13	F1/F51	0.13/0.00	Standby	
240V/50Hz	4.76	5.4	1138	F1/F51	0.25/4.51	Test Condition 1	
220V/60Hz	4.42	5.4	979	F1/F51	0.13/4.29	Warm up	
220V/60Hz	0.13	5.4	13	F1/F51	0.13/0.00	Standby	
220V/60Hz	4.62	5.4	1007	F1/F51	0.30/4.32	Test Condition 1	
240V/60Hz	4.42	5.4	1110	F1/F51	0.13/4.50	Warm up	
240V/60Hz	0.13	5.4	13	F1/F51	0.13/0.00	Standby	
240V/60Hz	4.54	5.4	1139	F1/F51	0.25/4.54	Test Condition 1	
supplementary information:							
Warm up: From the power On to Standby							
Standby : Ready to Print							

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Clause	Requirement + Test	Result - Remark	Verdict

2.1.1.5 c) 1)	TABLE: max. V, A, VA test				P
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
Switching Power Supply Unit, Model MPW9288					
24V output	--	24.0	7.2	170.6 ¹⁾	
Switching Power Supply Unit, Model MPW9289					
24V output	--	24.0	8.5	198.9 ¹⁾	
supplementary information:					
¹⁾ not possible to bridge with the test finger					

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

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Clause	Requirement + Test	Result - Remark	Verdict

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			P
Component (measured between)		max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
Supply Voltage: 132V 60Hz				
Switching Power Supply Unit, Model MPW9288				
T1 pin 10 - pin 12 (GND)		61.5	--	
D101 cathode - T1 pin 10 (GND)		--	24.3	D101
Supply Voltage: 264V 50Hz				
Switching Power Supply Unit, Model MPW9289				
T1 pin 10 - pin 12 (GND)		60.9	--	
D101 cathode - T1 pin 10 (GND)		--	24.2	D101
supplementary information:				
--				

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Clause	Requirement + Test	Result - Remark	Verdict

2.2	TABLE: evaluation of voltage limiting components in SELV circuits - continued		P
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)	
Supply Voltage: 132V, 60Hz			
Switching Power Supply Unit, Model MPW9288			
D101 cathode - T1 pin 10 (GND) (D101 shorted.)		24V output shutdown in 0.1sec after D101 shorted	
D101 cathode - T1 pin 10 (GND) (PC1 A - K shorted.)		30.7Vpeak (Output shut down in 0.1 sec.)	
Supply Voltage: 264V, 50Hz			
Switching Power Supply Unit, Model MPW9289			
D101 cathode - T1 pin 10 (GND) (D101 shorted.)		24V output shutdown in 0.1sec after D101 shorted	
D101 cathode - T1 pin 10 (GND) (PC1 A - K shorted.)		30.6Vpeak (Output shut down in 0.1 sec.)	
supplementary information:			
--			

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Clause	Requirement + Test	Result - Remark	Verdict

2.4.2	TABLE: Limited current circuit measurement						P
Location		Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
SWPS Unit Model:MPW9288 (Input 132V, 60Hz)							
C50	--	0.14	--	0.7	Measured by Annex D		
SWPS Unit Model: MPW9289 (Input 264V, 60Hz)							
C50	--	0.16	--	0.7	Measured by Annex D		
High voltage Unit Model: MPH7462A (Input 240V, 60Hz)							
Output M (No fault)	1.07kVpeak	0.28	--	0.7	Measured by Annex D.		
Output M(D102 short)	--	0.20	--	0.7	Measured by Annex D.		
Output B (No fault)	1.34kVpeak	0.30	--	0.7	Measured by Annex D.		
Output B (C507 short)	--	0.20	--	0.7	Measured by Annex D.		
Output T (No fault)	-2.14kVdc	0.1	--	0.7	Measured by Annex D.		
Output T (R329 open)	--	0.1	--	0.7	Measured by Annex D.		
Output S (No fault)	1.32kVpeak	0.02	--	0.7	Measured by Annex D.		
Output S (R453 open)	--	0.02	--	0.7	Measured by Annex D.		
supplementary information:							
--							

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Clause	Requirement + Test	Result - Remark	Verdict

2.5	TABLE: Limited power sources					P
Circuit output tested: (see below)						
Note: Measured Uoc (V) with all load circuits disconnected: (see below)						
Location		Uoc (V)	Isc (A)		VA	
			Meas.	Limit	Meas.	Limit
table 2B is applied						
24V output for Lift Motor, Normal Condition	24	0.15	8	3.6	100	
Fault condition : Transistor Q20 on Engine PWB	24	1.5	8	36	100	
24V output for Envelop Motor, Normal Condition	24	0.2	8	4.8	100	
Fault condition : Transistor Q9 on Engine PWB	24	1.8	8	43.2	100	
24V output for Toner Motor, Normal Condition	24	0.4	8	9.6	100	
Fault condition : Transistor Q10 on Engine PWB	24	2.6	8	62.4	100	
table 2C is applied						
24V output after Fuse YF7 on Engine PWB, 3.15A YF7 bypassed.	24	8.8	41.67	205.9	250	
24V output after Fuse YF4on Engine PWB, 2A YF4 bypassed.	24	8.8	41.67	205.9	250	
24V output after Fuse YF2 on Engine PWB, 2A YF2 bypassed.	24	8.8	41.67	205.9	250	
24V output after Fuse YF1 on Engine PWB, 4A YF1 bypassed.	24	8.8	41.67	205.9	250	
24V output after Fuse F1 on HV Unit, 1.5A F1 bypassed.	24	8.8	41.67	205.9	250	
5V output after Fuse YF5 on Engine PWB, 2A YF5 bypassed.	5	11.9	200	59.5	250	
5V output after Fuse YF1 on Main PWB, 2A YF1 bypassed.	5	11.9	200	59.5	250	
3.3V output after Fuse YF8 on Engine PWB, 2A YF8 bypassed.	3.3	7.2	303.03	23.8	250	
3.3V output after Fuse YF507 on Engine PWB, 2A YF507 bypassed.	3.3	7.2	303.03	23.8	250	
3.3V output after Fuse YF508 on Engine PWB, 2A YF508 bypassed.	3.3	7.2	303.03	23.8	250	
3.3V output after Fuse YF509 on Engine PWB, 2A YF509 bypassed.	3.3	7.2	303.03	23.8	250	
supplementary information:						
--						

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Clause	Requirement + Test	Result - Remark	Verdict

2.6.3.4	TABLE: Resistance of earthing measurement		P
Location		Voltage drop (V)	Comments
Inlet earth to Rear Frame		0.48	Limit: 2.5V
supplementary information:			
Tested current 40A, 2min			
Tested by Model ECOSYS P3060dn			

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Clause	Requirement + Test	Result - Remark	Verdict

2.10.2	Table: working voltage measurement			P
Location		RMS voltage (V)	Peak voltage (V)	Comments
Switching Power Supply Unit, Model MPW9288				
Input 120V, 60Hz				
T1 pin 1 - pin 9	106	216	3.052kHz	
T1 pin 2 - pin 9	105	216	1.591kHz	
T1 pin 4 - pin 9	97.2	239	121.6Hz	
T1 pin 5 - pin 9	119	350	3.034kHz	
T1 pin 7 - pin 9	104	224	3.370kHz	
T1 pin 1 - pin 13	98.9	170	60.13Hz	
T1 pin 2 - pin 13	96.4	170	60.06Hz	
T1 pin 4 - pin 13	109	287	2.948kHz	
T1 pin 5 - pin 13	142	378	392.3Hz	
T1 pin 7 - pin 13	115	277	5.910kHz	
Input 110V, 60Hz				
T1 pin 1 - pin 9	95.2	201	3.561kHz	
T1 pin 2 - pin 9	95.5	199	3.689kHz	
T1 pin 4 - pin 9	89.0	224	1.077kHz	
T1 pin 5 - pin 9	111	330	2.052kHz	
T1 pin 7 - pin 9	93.5	203	3.496kHz	
T1 pin 1 - pin 13	92.1	158	60.04Hz	
T1 pin 2 - pin 13	89.8	153	59.99Hz	
T1 pin 4 - pin 13	102	267	2.513kHz	
T1 pin 5 - pin 13	132	380	3.836kHz	
T1 pin 7 - pin 13	107	245	5.029kHz	

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Clause	Requirement + Test	Result - Remark	Verdict

2.10.2	Table: working voltage measurement			P
Location		RMS voltage (V)	Peak voltage (V)	Comments
Switching Power Supply Unit, Model MPW9289				
Input 240V, 50Hz				
T1 pin 1 - pin 9	213	396	7.205kHz	
T1 pin 2 - pin 9	204	410	3.156kHz	
T1 pin 4 - pin 9	209	490	112.8Hz	
T1 pin 5 - pin 9	247	645	376.1Hz	
T1 pin 7 - pin 9	207	404	100.4Hz	
T1 pin 1 - pin 13	205	348	50.08Hz	
T1 pin 2 - pin 13	202	351	50.04Hz	
T1 pin 4 - pin 13	221	522	3.139kHz	
T1 pin 5 - pin 13	271	690	574.5Hz	
T1 pin 7 - pin 13	215	474	3.616kHz	
Input 220V, 60Hz				
T1 pin 1 - pin 9	191	364	3.265kHz	
T1 pin 2 - pin 9	190	384	3.424kHz	
T1 pin 4 - pin 9	192	460	11.79kHz	
T1 pin 5 - pin 9	231	615	12.73kHz	
T1 pin 7 - pin 9	188	372	101.2Hz	
T1 pin 1 - pin 13	187	317	50.09Hz	
T1 pin 2 - pin 13	185	318	50.02Hz	
T1 pin 4 - pin 13	203	502	4.579kHz	
T1 pin 5 - pin 13	252	665	994.4Hz	
T1 pin 7 - pin 13	198	436	2.580kHz	
supplementary information:				
--				

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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) * ¹⁾	cl (mm)	Required cr (mm) * ²⁾	cr (mm)	
SWPS-PCB MPW9288 (pri, gnd, sec)							
Functional:							
Pri - pri (before fuse)	< 210	< 125	0.7	2.9	1.5	2.9	
Basic / supplementary:							
Pri - gnd (trace at D2)	< 210	< 125	1.3	3.8	1.5	3.8	
Pri - gnd (trace at C4, C5)	< 210	< 125	1.3	5.4	1.5	5.4	
Pri - gnd (chassis)	380	142	1.5	4.0	1.6	4.0	
Reinforced:							
Pri - sec (traces at T1)	380	142	3.0	6.9	3.2	6.9	
Pri - sec (traces at PC1, PC2)	380	142	3.0	6.9	3.2	6.9	
Pri - sec (traces at PC3, PC4, PC5)	380	142	3.0	7.1	3.2	7.1	
Pri - sec (traces at C50)	380	142	3.0	7.9	3.2	7.9	
Pri - sec (between R28 and Heatsink for D101)	380	142	3.0	9.6	3.2	9.6	

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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) ^{*1)}	cl (mm)	Required cr (mm) ^{*2)}	cr (mm)	
SWPS-PCB MPW9289 (pri, gnd, sec)							
Functional:							
Pri - pri (before fuse)	< 420	<250	1.9	2.9	2.5	2.9	
Basic / supplementary:							
Pri - gnd (trace at D2)	< 420	<250	2.5	3.8	2.5	3.8	
Pri - gnd (trace at C4, C5)	< 420	<250	2.5	5.4	2.5	5.4	
Pri - gnd (chassis)	690	271	3.0	4.0	3.2	4.0	
Reinforced:							
Pri - sec (traces at T1)	690	271	5.9	6.9	5.9	6.9	
Pri - sec (traces at PC1, PC2)	690	271	5.9	6.9	5.9	6.9	
Pri - sec (traces at PC3, PC4, PC5)	690	271	5.9	7.1	5.9	7.1	
Pri - sec (traces at C50)	690	271	5.9	7.9	5.9	7.9	
Pri - sec (between R28 and Heatsink for D101)	690	271	5.9	9.6	5.9	9.6	

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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) ^{*1)}	cl (mm)	Required cr (mm) ^{*2)}	cr (mm)
Transformer T1 type 2Q158							
Basic / supplementary:							
Pri - core ^{*3)}	--	--	--	4.7	--	4.7	
Sec - core ^{*3)}	--	--	--	3.9	--	3.9	
Reinforced:							
Pri - core - sec	380	142	3.0	8.6	3.2	8.6	
Pri - sec	380	142	3.0	3.5	3.2	3.5	
	Construction details of Transformer T1 type 2Q158: ^{*3)} core is floating; no electric potential defined. Pri - Core:2.1mm + Core – Sec:4.0mm						
Transformer T1 type 2Q159							
Basic / supplementary:							
Pri - core ^{*3)}	--	--	--	5.0	--	5.0	
Sec - core ^{*3)}	--	--	--	4.9	--	4.9	
Reinforced:							
Pri - core - sec	690	271	5.9	9.9	5.9	9.9	
Pri - sec	690	271	5.9	6.4	5.9	6.4	
	Construction details of Transformer T1 type 2Q159: ^{*3)} core is floating; no electric potential defined. Pri - Core:2.1mm + Core - Sec:4.0mm						

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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) * ¹⁾	cl (mm)	Required cr (mm) * ²⁾	cr (mm)	
Interlock system (PCB traces)							
Basic:							
Before interlock switch - after interlock switch	DC 24	DC 24	1.0 * ⁴⁾	1.0 * ⁵⁾	1.0	1.0 * ⁵⁾	
Fuser Unit							
Basic:							
Pri - Earth	< 420	<250	2.5	5.4	2.5	5.4	
Reinforced:							
Pri - sec	< 420	<250	4.9	5.4	5.0	5.4	
Supplementary information:							
* ¹⁾ ...Altitude 3500 m (x1.215) was considered for clearance.							
* ²⁾ ...Minimum required clearance considered.							
* ⁴⁾ ...Annex G used.							
* ⁵⁾ ...Measured three times.							

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Clause	Requirement + Test	Result - Remark	Verdict

2.10.5	TABLE: Distance through insulation measurements					P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Reinforced:						
Insulation Tape between Primary winding to Secondary winding of Transformer T1 Type : CT(YELLOW)	690	271	AC 3000V (2 of 3 layers)	3 layers	3 layers	
Insulation Tape between Primary winding to Secondary winding of Transformer T1 Type : 631S #25	690	271	AC 3000V (2 of 3 layers)	3 layers	3 layers	
Insulation Tape between Primary winding to Secondary winding of Transformer T1 Type : WF	690	271	AC 3000V (2 of 3 layers)	3 layers	3 layers	
Insulation Tape between Primary winding to Secondary winding of Transformer T1 Type : 673F 0.5	690	271	AC 3000V (2 of 3 layers)	3 layers	3 layers	
Bobbin for Transformer 2Q158 and 2Q159	690	271	AC 3000V	0.4	0.8	
Insulation Wire UL3122 AWG16 for Heater Lamp	< 420	<250	AC 3000V	0.4	0.4	
Insulation Wire UL3122 AWG18 for Heater Lamp	< 420	<250	AC 3000V	0.4	0.4	
Supplementary information:						
Test voltages applied for 1 min. each.						

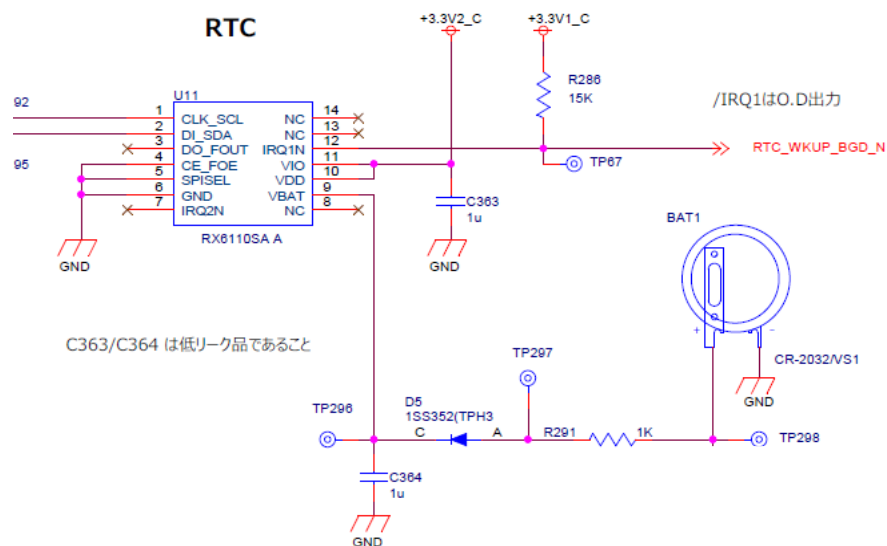
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Clause	Requirement + Test	Result - Remark	Verdict

4.3.8	TABLE: Batteries								P
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						--		N/A	
- Explosion of the battery						--		N/A	
- Emission of flame or expulsion of molten metal						--		N/A	
- Electric strength tests of equipment after completion of tests						--		N/A	
Supplementary information:									
--									

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Clause	Requirement + Test	Result - Remark	Verdict

4.3.8	TABLE: Batteries	P
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Battery category : Lithium
 Manufacturer : Interchangeable
 Type / model : CR2032
 Voltage : 3V
 Capacity : 220mAh
 Tested and Certified by (incl. Ref. No.) : UL
 Circuit protection diagram: See below.



Test was not conducted, because it is clear from protect circuit diagram.

MARKINGS AND INSTRUCTIONS (1.7.13)

Location of replaceable battery	On the Main PWB.
Language(s)	English
Close to the battery	--
In the servicing instructions	RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
In the operating instructions	--

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> A: Standby / ECOSYS P3060dn with PF-320 x4 B: Standby / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		A: 108 V, 60 Hz		B:132 V, 60 Hz		
t _{amb1} (°C):		A: -- B: --		t _{amb2} (°C): A: 23 B: 24		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		A T (°C)	B T (°C)	A T (°C)	B T (°C)	
SWPS Unit T1 coil		39	39	51	50	110
SWPS Unit T1 core		38	38	50	49	--
SWPS Unit L1 coil		31	31	43	42	90
SWPS Unit L2 coil		34	34	46	45	90
SWPS Unit L51 coil		38	39	50	50	90
SWPS Unit Z1 body		30	30	42	41	85
SWPS Unit C4		30	30	42	41	125
SWPS Unit RL1 ambience		35	36	47	47	85
SWPS Unit D1		37	36	49	47	85
SWPS Unit C7		36	35	48	46	105
SWPS Unit PC3		33	33	45	44	150
SWPS Unit PC5		36	35	48	46	110
SWPS Unit PC1		33	33	45	44	110
SWPS Unit C50		33	33	45	44	125
SWPS Unit TRA41		33	33	45	44	105
SWPS Unit Q1		42	42	54	53	105
SWPS Unit YC1		30	30	42	41	85
SWPS Unit YC2		31	31	43	42	85
SWPS Unit YC3		36	36	48	47	85
Fuser Unit Primary wiring		25	25	37	36	200
Fuser Unit Secondary wiring		25	24	37	35	150
Fuser Unit Cover		24	24	36	35	--
Main Unit Cover Rear		25	24	37	35	95
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition C and D at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> C: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 D: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		C: 108 V, 60 Hz		D:132 V, 60 Hz		
t _{amb1} (°C):		C: -- D: --		t _{amb2} (°C): C: 23 D: 23		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		C T (°C)	D T (°C)	C T (°C)	D T (°C)	
SWPS Unit T1 coil		46	47	58	59	110
SWPS Unit T1 core		46	46	58	58	--
SWPS Unit L1 coil		45	43	57	55	90
SWPS Unit L2 coil		44	42	56	54	90
SWPS Unit L51 coil		59	58	71	70	90
SWPS Unit Z1 body		38	37	50	49	85
SWPS Unit C4		36	36	48	48	125
SWPS Unit RL1 ambience		56	54	68	66	85
SWPS Unit D1		50	48	62	60	85
SWPS Unit C7		48	47	60	59	105
SWPS Unit PC3		55	52	67	64	150
SWPS Unit PC5		48	47	60	59	110
SWPS Unit PC1		33	33	45	45	110
SWPS Unit C50		33	34	45	46	125
SWPS Unit TRA41		67	63	79	75	105
SWPS Unit Q1		64	64	76	76	105
SWPS Unit YC1		38	38	50	50	85
SWPS Unit YC2		45	45	57	57	85
SWPS Unit YC3		43	43	55	55	85
Fuser Unit Primary wiring		83	83	95	95	200
Fuser Unit Secondary wiring		75	75	87	87	150
Fuser Unit Cover		101	102	113	114	--
Main Unit Cover Rear		43	43	55	55	95
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition E and F at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> E: Standby / ECOSYS P3060dn with PF-320 x4 F: Standby / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		E: 198 V, 50 Hz		F:242 V, 50 Hz		
t _{amb1} (°C):		E: -- F: --		t _{amb2} (°C): E: 23 F: 23		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		E T (°C)	F T (°C)	E T (°C)	F T (°C)	
SWPS Unit T1 coil		38	38	50	50	110
SWPS Unit T1 core		36	37	48	49	--
SWPS Unit L1 coil		31	31	43	43	90
SWPS Unit L2 coil		33	33	45	45	90
SWPS Unit L51 coil		40	43	52	55	90
SWPS Unit Z1 body		30	30	42	42	85
SWPS Unit C4		30	30	42	42	125
SWPS Unit RL1 ambience		45	47	57	59	85
SWPS Unit D1		34	34	46	46	85
SWPS Unit C7		34	35	46	47	105
SWPS Unit PC3		33	33	45	45	150
SWPS Unit PC5		35	35	47	47	110
SWPS Unit PC1		32	32	44	44	110
SWPS Unit C50		31	31	43	43	125
SWPS Unit TRA41		32	33	44	45	105
SWPS Unit Q1		41	42	53	54	105
SWPS Unit YC1		30	30	42	42	85
SWPS Unit YC2		30	31	42	43	85
SWPS Unit YC3		35	35	47	47	85
Fuser Unit Primary wiring		24	25	36	37	200
Fuser Unit Secondary wiring		24	24	36	36	150
Fuser Unit Cover		24	24	36	36	--
Main Unit Cover Rear		24	24	36	36	95
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P
Temperatures were measured according cl. 1.4.5. Test in condition G and H at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> G: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 H: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.					
test voltage(s) (V):		G: 198 V, 50 Hz		H:242 V, 50 Hz	
t _{amb1} (°C):		G: -- H: --		t _{amb2} (°C):	

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition I and J at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> I: Standby / ECOSYS P3060dn with PF-320 x4 J: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		I: 264 V, 60 Hz		J:264V, 60 Hz		
t _{amb1} (°C):		I: -- J: --		t _{amb2} (°C): I: 23 J: 24		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		I T (°C)	J T (°C)	I T (°C)	J T (°C)	
SWPS Unit T1 coil		38	50	50	61	110
SWPS Unit T1 core		37	45	49	56	--
SWPS Unit L1 coil		31	43	43	54	90
SWPS Unit L2 coil		33	48	45	59	90
SWPS Unit L51 coil		44	46	56	57	90
SWPS Unit Z1 body		30	37	42	48	85
SWPS Unit C4		30	37	42	48	125
SWPS Unit RL1 ambience		47	48	59	59	85
SWPS Unit D1		34	44	46	55	85
SWPS Unit C7		35	46	47	57	105
SWPS Unit PC3		33	49	45	60	150
SWPS Unit PC5		35	45	47	56	110
SWPS Unit PC1		32	34	44	45	110
SWPS Unit C50		31	35	43	46	125
SWPS Unit TRA41		33	52	45	63	105
SWPS Unit Q1		43	65	55	76	105
SWPS Unit YC1		30	38	42	49	85
SWPS Unit YC2		31	39	43	50	85
SWPS Unit YC3		35	44	47	55	85
Fuser Unit Primary wiring		25	78	37	89	200
Fuser Unit Secondary wiring		25	79	37	90	150
Fuser Unit Cover		24	89	36	100	--
Main Unit Cover Rear		24	47	36	58	95
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P
Temperatures were measured according cl. 1.4.5. Test in condition K and L at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> K: Standby / ECOSYS P3060dn with PF-320 x4 L: Standby / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.					
test voltage(s) (V):		K: 99 V, 60 Hz		L:121V, 60 Hz	
t _{amb1} (°C):		K: -- L: --		t _{amb2} (°C):	

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition M and N at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> M: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 N: Test Condition 1 / ECOSYS P3060dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		M: 99 V, 60 Hz		N:121V, 60 Hz		
t _{amb1} (°C):		M: -- N: --		t _{amb2} (°C): M: 25 N: 25		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		M T (°C)	N T (°C)	M T (°C)	N T (°C)	
SWPS Unit T1 coil		49	50	59	60	110
SWPS Unit T1 core		48	49	58	59	--
SWPS Unit L1 coil		50	48	60	58	90
SWPS Unit L2 coil		49	47	59	57	90
SWPS Unit L51 coil		67	65	77	75	90
SWPS Unit Z1 body		42	42	52	52	85
SWPS Unit C4		40	40	50	50	125
SWPS Unit RL1 ambience		62	60	72	70	85
SWPS Unit D1		56	53	66	63	85
SWPS Unit C7		52	51	62	61	105
SWPS Unit PC3		58	55	68	65	150
SWPS Unit PC5		52	51	62	61	110
SWPS Unit PC1		36	36	46	46	110
SWPS Unit C50		37	37	47	47	125
SWPS Unit TRA41		73	68	83	78	105
SWPS Unit Q1		67	67	77	77	105
SWPS Unit YC1		43	43	53	53	85
SWPS Unit YC2		51	51	61	61	85
SWPS Unit YC3		46	46	56	56	85
Fuser Unit Primary wiring		87	88	97	98	200
Fuser Unit Secondary wiring		81	82	91	92	150
Fuser Unit Cover		96	97	106	107	--
Main Unit Cover Rear		48	48	58	58	95
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition O and P at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> O: Test Condition 1 / ECOSYS P3045dn with PF-320 x4 P: Test Condition 2 / ECOSYS P3045dn with PF-320 x4 Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		O: 120 V, 60 Hz		P:120V, 60 Hz		
t _{amb1} (°C):		O: -- P: --		t _{amb2} (°C): O: 25 P: 25		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		O T (°C)	P T (°C)	O T (°C)	P T (°C)	
Main Motor		51	56	61	66	100
FD Motor		50	59	60	69	100
Operation Panel OK button (for short period only)		28	29	38	39	85
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition Q at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> Q: Test Condition 1 / ECOSYS P3060dn with PB-325 and PF-3100						
Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		Q: 120 V, 60 Hz				
t _{amb1} (°C):		Q: --		t _{amb2} (°C): Q: 25		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		Q T (°C)	--	Q T (°C)	--	
Trans Motor on PF-3100		48	--	58	--	100
Lift Motor on PF-3100		29	--	39	--	100
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition R at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> R: Test Condition 1 / ECOSYS P3060dn with PF-320 x4						
Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 35°C(T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		R: 120 V, 60 Hz				
t _{amb1} (°C):		R: --		t _{amb2} (°C): R: 27		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		R T (°C)	--	R T (°C)	--	
Rear Cover (inside of the main unit)		62	--	70	--	95
Knob of Fuser Unit (inside of the main unit)		58	--	66	--	95
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition S at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> S: Test Condition 1 / ECOSYS P3060dn with PF-320 x4						
Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of <u>35°C</u> (T _{ma}), as specified by the manufacturer.						
test voltage(s) (V):		S: 120 V, 60 Hz				
t _{amb1} (°C):		S: --		t _{amb2} (°C): S: 27		
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		S T (°C)	--	S T (°C)	--	
Knob of Cassette (for short period only)		28	--	36	--	85
Operation Panel OK button (for short period only)		29	--	37	--	85
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Temperature rise measurements				P	
Temperatures were measured according cl. 1.4.5. Test in condition T at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. <Condition> T: Test Condition 1 / ECOSYS P3060dn with PF-320 x4						
Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of <u>35°C(T_{ma})</u> , as specified by the manufacturer.						
test voltage(s) (V):		T: 120 V, 60 Hz				
t _{amb1} (°C):		T: --	t _{amb2} (°C):		T: 24	
Temperature of part/at: (measured with thermocouples)		Measured temperature at T _{amb}		Calculated temperature at T _{ma}		Allowed T _{max} (°C)
		T T (°C)	--	T T (°C)	--	
Knob of Left Side		25	--	36	--	85
Metal of Rear Side near the USB Connector		45	--	56	--	85
Interlock Switch		36	--	47	--	105
Cover of Front Side near Multipurpose Tray		33	--	44	--	95
Metal of Front Side near Multipurpose Tray		31	--	42	--	80
Right Low Cover		35	--	46	--	95
Metal of Bottom		29	--	40	--	70
Supplementary information:						
Temperatures measured with winding resistance method: Not used.						

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Clause	Requirement + Test	Result - Remark	Verdict

4.5.5	TABLE: Ball pressure test of thermoplastic parts			P
	Allowed impression diameter (mm):	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
SWPS Unit, YC1 /Glass-filled nylon66		125	1.5	
SWPS Unit, YC2 /Nylon66		125	1.6	
SWPS Unit, Bobbin of TLF-28YA(L1) and TLF-24A(L2 on MPW9288) /PBT, 4115-202FV, CHANG CHUN PLASTICS CO., LTD.		125	1.5	
SWPS Unit, Bobbin of TLV-20 (L2 on MPW9289) /PBT, 4130, CHANG CHUN PLASTICS CO., LTD.		125	1.5	
SWPS Unit, T1 bobbin / Phenol		--	--	
Fuser Unit Heater Connector Plug /Nylon		125	1.5	
Supplementary information:				
--				

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
--	--	--	--	--	--	
Supplementary information:						
(see appended table 1.5.1)						

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Clause	Requirement + Test	Result - Remark	Verdict

5.1	TABLE: touch current measurement					P
	Test voltage (V) : (see below)					—
Measurement location (Terminal A connected to...)	Polarity (normal) [mA]		Polarity (reverse) [mA]		Limit (mA)	Comments
	Switch: ON	Switch: OFF	Switch: ON	Switch: OFF		
Earth terminal ("e" = open)	0.24	--	0.24	--	3.5	AC 132V, 60Hz Plug in off mode
Earth terminal ("e" = open)	0.24	--	0.24	--	3.5	AC 132V, 60Hz Standby mode
Earth terminal ("e" = open)	0.24	--	0.24	--	3.5	AC 132V, 60Hz Sleep mode
LAN Connector ("e" = close)	0.001	--	0.001	--	0.25	AC 132V, 60Hz
Earth terminal ("e" = open)	0.33	--	0.33	--	3.5	AC 264V, 60Hz Plug in off mode
Earth terminal ("e" = open)	0.32	--	0.32	--	3.5	AC 264V, 60Hz Standby mode
Earth terminal ("e" = open)	0.32	--	0.32	--	3.5	AC 264V, 60Hz Sleep mode
LAN Connector ("e" = close)	0.001	--	0.001	--	0.25	AC 264V, 60Hz
Supplementary information:						
Tested by Model ECOSYS P3060dn						

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Clause	Requirement + Test	Result - Remark	Verdict

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				
ECOSYS P3060dn 120V (Primary - Earth)		AC	1500	No
ECOSYS P3060dn 110V (Primary - Earth)		AC	1500	No
ECOSYS P3060dn 220-240V (Primary - Earth)		AC	2050	No
SWPS Unit: MPW9288, (Primary - Earth)		AC	1500	No
SWPS Unit: MPW9289, (Primary - Earth)		AC	2050	No
Transformer 2Q158, (Primary - Core)		AC	1500	No
Transformer 2Q159, (Primary - Core)		AC	2050	No
Supplementary				
Transformer 2Q158, (Secondary - Core)		AC	1500	No
Transformer 2Q159, (Secondary - Core)		AC	2050	No
Reinforced:				
ECOSYS P3060dn 120V (Primary - Secondary)		AC	3000	No
ECOSYS P3060dn 110V (Primary - Secondary)		AC	3000	No
ECOSYS P3060dn 220-240V (Primary - Secondary)		AC	3000	No
SWPS Unit: MPW9288 (Primary - Secondary)		AC	3000	No
SWPS Unit: MPW9289 (Primary - Secondary)		AC	3000	No
Transformer 2Q158, (Primary - Secondary)		AC	3000	No
Transformer 2Q159, (Primary - Secondary)		AC	3000	No
Supplementary information:				
Test voltages applied for 1 min. each.				

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C)				23 (see Observation)	—
	Power source for EUT: Manufacturer, model/type, output rating				--	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9288 T1	24V output overload with Fan	132V, 60Hz	1.5h	F1 F51	1.5 8.4	24V Output of SWPS Unit shut down Maximum temp. of T1: 62.7 °C ¹⁾ Ambient temp.: 26.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 T1	24V output overload without Fan	132V, 60Hz	9.5h	F1 F51	1.5 8.4	24V Output of SWPS Unit shut down. Q1 and D7 were damaged. F1 was opened Maximum temp. of T1: 121.6 °C ¹⁾ Ambient temp.: 26.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed. (3 times tested)
Switching Power Supply Unit, Model MPW9289 T1	24V output overload with Fan	264V, 60Hz	3.5h	F1 F51	0.9 4.5	24V Output of SWPS Unit shut down. Maximum temp. of T1: 77.5 °C ¹⁾ Ambient temp.: 26.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9289 T1	24V output overload without Fan	264V, 60Hz	8.5h	F1 F51	0.5 4.5	24V Output of SWPS Unit shut down. Q1 and D7 were damaged. F1 was opened. Maximum temp. of T1: 137.7 °C ¹⁾ Ambient temp.: 24.8°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed. (3 times tested)
Switching Power Supply Unit, Model MPW9288 Z1	Short	132V, 60Hz	10min	F1 F51	-- (Peak current of F1: 99A)	24V Output of SWPS Unit shut down immediately. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 D1 pin1 - pin2	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. D1 was damaged. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :			23 (see Observation)		—
	Power source for EUT: Manufacturer, model/type, output rating :			--		—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9288 D2	Short	132V, 60Hz	10min	F1 F51	1.9 8.0	Operated normally. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 D3	Short	132V, 60Hz	10min	F1 F51	1.9 8.0	Operated normally. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 C7	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 Q1 D - S	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. Q1 and D7 were shorted. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9288 T1 pin1 - pin2	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 C62	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 D6	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 IC1 CS - GND	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9288 IC1 FB - CS	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 IC1 VCC - FB	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 PC1 A - K	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 PC1 C - E	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9288 PC1 A	Open	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 PC1 K	Open	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 D101	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9288 C102	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9288 C106	Short	132V, 60Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 Z1	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 D1 pin1 - pin2	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 D2	Short	264V, 50Hz	10min	F1 F51	0.6 4.6	Operated normally. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9289 D3	Short	264V, 50Hz	10min	F1 F51	0.6 4.6	Operated normally. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 C7	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 Q1 D - S	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. Q1 and D7 were shorted. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 T1 pin1 - pin2	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. F1 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9289 C62	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 D6	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 IC1 CS - GND	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 IC1 FB - CS	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9289 IC1 VCC - FB	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 PC1 A - K	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9225 PC1 C - E	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 PC1 A	Open	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9289 PC1 K	Open	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 D101	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 C102	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Switching Power Supply Unit, Model MPW9289 C106	Short	264V, 50Hz	10min	F1 F51	-- 0.001	24V Output of SWPS Unit shut down immediately. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Switching Power Supply Unit, Model MPW9289 YC2 Live - Neutral	Short	264V, 50Hz	10min	F1 F51	0.6 --	24V Output of SWPS Unit shut down immediately. F51 was opened. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
DLP Clutch, Feed Clutch, DU Clutch, Model: TMC-2T-06	CE	24Vdc	7h	--	--	Temperature was stabilized. Maximum temp. : 92.5 °C ¹⁾ Ambient temp.: 25°C No ignition of the wrapping tissue or cheesecloth.
Mid Clutch Model: TMC-3.5L-01	CE	24Vdc	7h	--	--	Temperature was stabilized. Maximum temp. : 86.5 °C ¹⁾ Ambient temp.: 26°C No ignition of the wrapping tissue or cheesecloth.
Reg Clutch, Feed Clutch(PF-320), Trans Clutch(PF-320) MCA-50T	CE	24Vdc	7h	--	--	Temperature was stabilized. Maximum temp. : 99.5 °C ¹⁾ Ambient temp.: 23°C No ignition of the wrapping tissue or cheesecloth.
Face U/D Solenoid Model: TDS-KN07A	Plunger locked and CE	24Vdc	7h	--	--	Temperature was stabilized. Maximum temp. : 62.5 °C ¹⁾ Ambient temp.: 25°C No ignition of the wrapping tissue or cheesecloth.
MPF Solenoid Model: TDS-F06A	--	24Vdc	7h	--	--	Temperature was stabilized. Maximum temp. : 121.5 °C ¹⁾ Ambient temp.: 26°C No ignition of the wrapping tissue or cheesecloth.

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
FD Motor A1 - B1 Model PM42M-048-MIJ1	Short	240V, 50Hz	--	--	--	Sensing circuit provided with motor driver disconnected power to the motor in 0.5 sec. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No
FD Motor A1 - A2 Model PM42M-048-MIJ1	Short	240V, 50Hz	--	--	--	Sensing circuit provided with motor driver disconnected power to the motor in 0.5 sec. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No
FD Motor A1 - B1 Model PM42S-F48-MIP7	Short	240V, 50Hz	--	--	--	Sensing circuit provided with motor driver disconnected power to the motor in 0.5 sec. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No
FD Motor A1 - A2 Model PM42S-F48-MIP7	Short	240V, 50Hz	--	--	--	Sensing circuit provided with motor driver disconnected power to the motor in 0.5 sec. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No
Feed Motor (PF-3100) A1 - B1 Model M49SP-3K	Short	240V, 50Hz	--	--	--	Sensing circuit provided with motor driver disconnected power to the motor in 0.5 sec. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					23 (see Observation)
	Power source for EUT: Manufacturer, model/type, output rating :					--
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Feed Motor (PF-3100) A1 - A2 Model M49SP-3K	Short	240V, 50Hz	--	--	--	Sensing circuit provided with motor driver disconnected power to the motor in 0.5 sec. During the test Fire: No Emission of molten metal: No Deformation of enclosures: No
Model ECOSYS P3060dn Fuser Unit thermal control	Disable	121V, 60Hz	10min	--	--	Thermal cutoff opened in 2min after disabling. Ambient temp.: 23.8°C Ambient temp During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Model ECOSYS P3060dn Fuser Unit thermal control	Disable	132V, 60Hz	10min	--	--	Thermal cutoff opened in 2min after disabling. Ambient temp.: 23.6°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Model ECOSYS P3060dn Fuser Unit thermal control	Disable	264V, 50Hz	10min	--	--	Thermal cutoff opened in 2min after disabling. Ambient temp.: 24.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :		23 (see Observation)		—	
	Power source for EUT: Manufacturer, model/type, output rating :		--		—	
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Model ECOSYS P3060dn LVU Fan Motor, LSU Fan Motor, DLP Fan Motor	Stalled Fan	121V, 60Hz	2h	--	--	Ambient temp.: 25.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Model ECOSYS P3060dn LVU Fan Motor, LSU Fan Motor, DLP Fan Motor	Stalled Fan	132V, 60Hz	2h	--	--	Ambient temp.: 25.3°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Model ECOSYS P3060dn LVU Fan Motor, LSU Fan Motor, DLP Fan Motor	Stalled Fan	264V, 50Hz	2h	--	--	Ambient temp.: 25.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Model ECOSYS P3060dn Ventilation openings closed.	--	121V, 60Hz	2h	--	--	Ambient temp.: 25.1°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Model ECOSYS P3060dn Ventilation openings closed.	--	132V, 60Hz	2h	--	--	Ambient temp.: 25.1°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.

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

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :				23 (see Observation)	—
	Power source for EUT: Manufacturer, model/type, output rating :				--	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Model ECOSYS P3060dn LVU Fan Motor, LSU Fan Motor, DLP Fan Motor	Stalled Fan	264V, 50Hz	2h	--	--	Ambient temp.: 25.0°C During the test Fire: No Emission of molten metal: No Deformation of enclosures: No After the test HV test: 3000Vac passed.
Supplementary information:						
CE = Continuously Energized. 1) Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 32.5°C(Tma).						

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

B	TABLE: MOTOR TEST UNDER ABNORMAL CONDITION		P
B.7	Locked-rotor overload test for DC motor in secondary circuits		—
B.7.3	test time(h):	7h	—
Motor type / No.		Max. Temp. (°C)	Comments
Main Motor, Drum Motor Type: 48M069F180		--	Sensing circuits provided with motor disconnected power to the motor in 0.8 sec. after starting the locked rotor. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
Trans Motor(PF-320) Type: 48M069F261		--	Sensing circuits provided with motor disconnected power to the motor in 1.1 sec. after starting the locked rotor. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
Lift Motor, Envelop Motor, Lift Motor(PF-320) Motor Type: RC370-KT-081000		123	Temperature saturated. Ambient Temp. at 25°C. No ignition of the wrapping tissue or cheesecloth.
Polygon Motor Type: MASQ6NF8LK		--	Sensing circuits provided with motor disconnected power to the motor in 0.5 sec. after starting the locked rotor. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
Polygon Motor Type: MASQ6EF3LK		--	Sensing circuits provided with motor disconnected power to the motor in 0.5 sec. after starting the locked rotor. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
Toner Motor, Lift Motor(PF-3100) Type: RK-370CA-11670		148	Temperature saturated. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
LVU Fan Motor D06R-24		48	Temperature saturated. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
LSU Fan Motor Type: 2410RL-05W-S60		46	Temperature saturated. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
DLP Fan Motor Type: D08K-24TU		43	Temperature saturated. Ambient Temp. at 24°C. No ignition of the wrapping tissue or cheesecloth.
Supplementary information:			
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

C.2	TABLE: transformers						P
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	Measure d distance thr. insul. / mm; number of layers
--	--			--	--	--	--
supplementary information:							
Refer to the table 2.10.3 and 2.10.4							

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

C.2

TABLE: transformers

P

1. TYPE: 2Q158

2. INSULATION CLASS
CLASS B

MURATA MFG CO LTD (OBJY2, E247878)
CLASS B (130°C) TRANSFORMER INSULATION SYSTEM DESIGNATED

3. OUTLINE AND INTERNAL CONNECTION

CORE SIZE TYP. 35X41.4X11.3
(UNIT : mm)
BOBBIN THICKNESS : 0.8mm Min

4. WINDING AND RATING

WINDING NAME	PIN NO. (INSULATION TUBE)		WINDING TYP.	WIRE TYPE	INSULATION TAPE (BETWEEN LAYERS)	
	START	END			TYPE	LAYERS
L 19 (PRI)	6 (NONE)	7 (NONE)	14 T	$\phi 0.23 \times 3$	B	3 MIN
L 22 (SEC)	15 (NONE)	11 (NONE)	8 T	$\phi 0.12 \times 30 \times 2$	B	3 MIN
L 12 (PRI)	4 (NONE)	5 (NONE)	12 T	$\phi 0.45 \times 3$	B	3 MIN
L 21 (SEC)	14 (NONE)	12 (NONE)	8 T	$\phi 0.12 \times 30 \times 2$	B	3 MIN
L 11 (PRI)	2 (NONE)	3 (NONE)	12 T	$\phi 0.45 \times 3$	B	3 MIN
					B	1 MIN

5. INSIDE STRUCTURE DRAWING

6. INDICATION FOR TRANSFORMER

Marking Detail (CLASS B)

(1) TYPE NAME OF TRANSFORMER
(2) Lot No.
(3) System Designation : CM
(4) Company Name :
(5) Factory Code

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

C.2	TABLE: transformers						P
7. MATERIAL LIST							
	PARTS	MATERIAL AND TYPE	FACTURE	UL No.	Grade		CTI
					Temp	Flame	
A	BOBBIN	PHENOLE PM-9820	SUMITOMO BAKELITE CO LTD	E41429	150°C	94V-0	175≤CTI <250
B	INSULATION TAPE ※THICKNESS : 25um MIN	POLYESTER FILM TAPE CT(YELLOW)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111	130°C	510FR	CTI≥600
		or 631S #25	TERAOKA SEISAKUSHO CO LTD	E56086	130°C	510	CTI≥600
C	INSULATION TAPE	POLYESTER FILM COMPOSITE TAPE WF	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111	130°C	510FR	CTI≥600
		or 673F 0.5	TERAOKA SEISAKUSHO CO LTD	E56086	130°C	510FR	CTI≥600
D	WIRE	POLYURETHAN ENAMELED COPPER WIRE 1UEW	various	-	130°C	-	-

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

C.2

TABLE: transformers

P

1. TYPE: 2Q159

2. INSULATION CLASS
CLASS B

MURATA MFG CO LTD (OBJY2, E247878)

CLASS B (130°C) TRANSFORMER INSULATION SYSTEM DESIGNATED

3. OUTLINE AND INTERNAL CONNECTION

CORE SIZE TYP. 35X41.4X11.3
(UNIT : mm)
BOBBIN THICKNESS : 0.8mm Min

4. WINDING AND RATING

WINDING NAME	PIN NO. (INSULATION TUBE)		WINDING TYP.	WIRE TYPE	INSULATION TAPE (BETWEEN LAYERS)	
	START	END			TYPE	LAYERS
L 19 (PRI)	6 (NONE)	7 (NONE)	14 T	$\phi 0.26 \times 3$	B	3 MIN
L 22 (SEC)	15 (NONE)	11 (NONE)	8 T	$\phi 0.12 \times 50 \times 1$	B	3 MIN
L 12 (PRI)	4 (NONE)	5 (NONE)	19 T	$\phi 0.30 \times 2$	B	3 MIN
L 21 (SEC)	14 (NONE)	12 (NONE)	8 T	$\phi 0.12 \times 50 \times 1$	B	3 MIN
L 11 (PRI)	2 (NONE)	3 (NONE)	19 T	$\phi 0.30 \times 2$	B	3 MIN
					B	1 MIN

5. INSIDE STRUCTURE DRAWING

6. INDICATION FOR TRANSFORMER

Marking Detail (CLASS B)

(1) TYPE NAME OF TRANSFORMER
(2) Lot No.
(3) System Designation : CM
(4) Company Name :
(5) Factory Code

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

C.2		TABLE: transformers					P
7. MATERIAL LIST							
	PARTS	MATERIAL AND TYPE	FACTURE	UL No.	Grade		CTI
					Temp	Flame	
A	BOBBIN	PHENOLE PM-9820	SUMITOMO BAKELITE CO LTD	E41429	150°C	94V-0	175≤CTI <250
B	INSULATION TAPE ※THICKNESS :25um MIN	POLYESTER FILM TAPE CT(YELLOW)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111	130°C	510FR	CTI≥600
		or 631S #25	TERAOKA SEISAKUSHO CO LTD	E56086	130°C	510	CTI≥600
C	INSULATION TAPE	POLYESTER FILM COMPOSITE TAPE WF	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111	130°C	510FR	CTI≥600
		or 673F 0.5	TERAOKA SEISAKUSHO CO LTD	E56086	130°C	510FR	CTI≥600
		or 44T-A	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	E17385	130°C	510	CTI≥600
D	WIRE	POLYURETHAN ENAMELED COPPER WIRE 1UEW ANSI TYPE MW28 or MW75	various	-	130°C	-	-
	CORE	FERRITE	various	-	-	-	-
supplementary information:							
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used: at CTF Stage 1

Management No.	Test Instrument Name	Type	Mechanical No.	Manufacturing	Calibration Date - Last	Calibration Date - Due
G14-C076	Temperature Recorder	4177	41YPO126	Yokogawa	2015-07-29	2016-07-27
G14-C077	Temperature Recorder	4179	4179JA141	Yokogawa	2015-07-29	2016-07-27
G14-C089	AC Current Meter	2052-02	71BC00246	Yokogawa	2015-10-20	2016-10-19
G14-C094	Lekage current tester	228	348	Simpson	2016-06-23	2017-06-22
G14-C095	Ball Pressure tester	T-10.02	BP-001	EXCEL	2015-07-23	2016-07-22
G14-C096	High Voltage probe	P6015A	B051259	Tektronix	2016-01-14	2017-01-13
G14-C097	Portable DC Ammeters & Voltmeters	201200	85AA1194	Yokogawa	2016-06-23	2017-06-22
G14-C099	Digital Multi Meter	(Fluke) 189	89410662	FLUKE	2015-07-28	2016-07-27
G14-C101	Temperature Recorder	437124	S5F703898	Yokogawa	2015-07-29	2016-07-28
G14-C102	Temperature Recorder	437124	S5F703899	Yokogawa	2015-07-29	2016-07-28
G14-C103	Steel Ball	TB-500	G14-C103	EXCEL	2015-10-07	2016-10-06
G14-C112	Scale Lupe	Scale Lupe 10x	G14-C112	PEAK	2016-05-17	2017-05-16
G14-C113	Steel Ruler 2m	No. 102H04J	G14-C113	Shinwa	2016-05-17	2017-05-16
G14-C114	Temp. and Humidity Meter	NT3-D	50173024	Rotronic	2016-03-11	2017-03-10
G14-C117	Digital Force Gauge	Z2-500N	202869	IMADA	2015-10-07	2016-10-06
G14-C118	Stop Watch	SVAE101	756428	SEIKO S-YARD	2015-10-08	2016-10-07
G14-C122	Power Meter	253401	2534FA042	Yokogawa	2016-03-14	2017-03-13
G14-C123	Protractor	DS	---	Niigata Seiki	2016-05-18	2017-05-17
G14-C125	Dielectric Tester	TOS5051	BA002985	Kikusui	2015-07-27	2016-07-26
G14-C126	Clamp ON Power HI TESTER	3286-20	070616420	HIOKI	2015-07-28	2016-07-27
G14-C128	Earth Continuity Tester	TOS6210	MB005213	Kikusui	2016-01-14	2017-01-13
G14-C131	Vernier Caliper	CD-20B	10369	Mitsutoyo	2015-07-30	2016-07-29
G14-C132	Laser Power Meter	PD300-UV/VEGA	65574/651539	OPHIR	2015-10-15	2016-10-14
G14-C133	Digital Oscilloscope	TDS3054B	B033788	Tektronix	2016-06-01	2017-05-31
TS-46	Chamber	LP-201	1040000403	TABAI ESPEC	2015-11-27	2016-11-26
TS-50	Humidity Chamber	PR-3ST	0	TABAI	2015-11-30	2016-11-29

Measurement Section				
Clause	Requirement + Test			Verdict
2.1.1.7	TABLE: Discharge test			P
Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments
Supply Voltage : 132V, 60Hz				
Plug in off mode	--	0.070	0.112	Initial Voltage(peak)V0: 187V
Standby mode	--	0.032	0.076	Initial Voltage(peak)V0: 186V
Supply Voltage : 264V, 60Hz				
Plug in off mode	--	0.0816	0.129	Initial Voltage(peak)V0: 378V
Standby mode	--	0.0584	0.0912	Initial Voltage(peak)V0: 376V
Supplementary information:				
Tested by Model ECOSYS P3060dn				

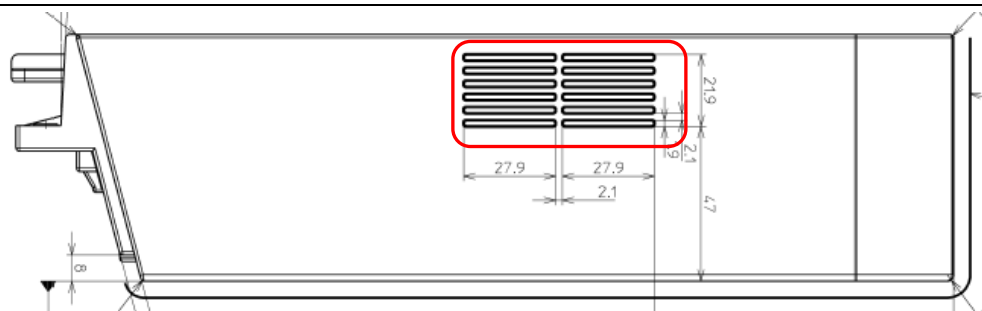
Measurement Section			
Clause	Requirement + Test	Result - Remark	Verdict
4.2	Table: Mechanical strength		P
4.2.4 Steady force test, 250N ± 10N			
Main Unit, Model ECOSYS P3060dn: Top Cover, Front Cover, Left Up Cover, Left Low Cover, Right Up Cover, Right Low Cover, Right Front Cover, Right Rear Cover, MPF Cover, Cassette Cover, Rear Up Cover Main Unit, Model ECOSYS P3045dn: Top Cover, Front Cover, Left Up Cover, Left Low Cover, Right Up Cover, Right Low Cover, Right Front Cover, Right Rear Cover, MPF Cover, Cassette Cover, Rear Up Cover Paper Feeder, PF-320(Optional): Right Frame, Left Frame, Top Frame Paper Feeder, PF-3100 (Option): Side Cover			
4.2.5 Impact test, Fall test			
Main Unit, Model ECOSYS P3060dn: Top Cover, Front Cover, Left Up Cover, Left Low Cover, Right Up Cover, Right Low Cover, Right Front Cover, Right Rear Cover, MPF Cover, Cassette Cover, Rear Up Cover Main Unit, Model ECOSYS P3045dn: Top Cover, Front Cover, Left Up Cover, Left Low Cover, Right Up Cover, Right Low Cover, Right Front Cover, Right Rear Cover, MPF Cover, Cassette Cover, Rear Up Cover Paper Feeder, PF-320(Optional): Right Frame, Left Frame, Top Frame Paper Feeder, PF-3100 (Option): Side Cover			
Supplementary information:			
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Measurement Section

Clause	Requirement + Test	Result - Remark	Verdict
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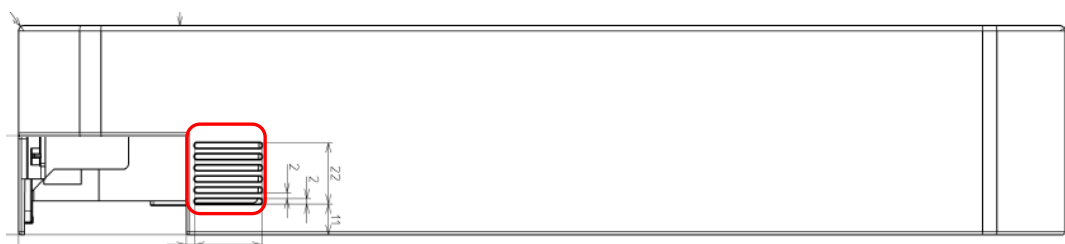
4.6.1/2	Table: Enclosure opening measurements		P
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Top Cover



27.9 mm x 1.9 mm slots

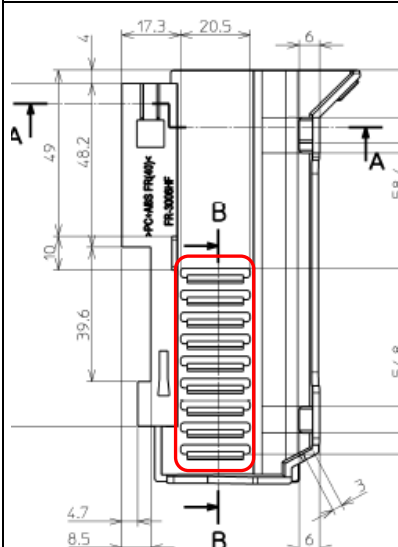
Covering an area of 57.9 mm W x 21.9 mm H



24.4 mm x 2.0 mm slots

Covering an area of 24.5 mm W x 22.0 mm H

Right Front Cover



20.5 mm x 3.0 mm slots

Covering an area of 20.5 mm W x 55.0 mm H

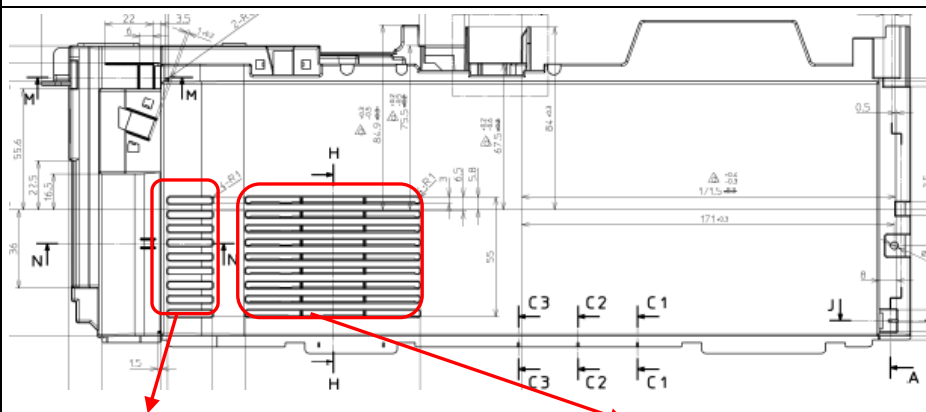
Measurement Section

Clause	Requirement + Test	Result - Remark	Verdict
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4.6.1/2 Table: Enclosure opening measurements

P

Right Up Cover



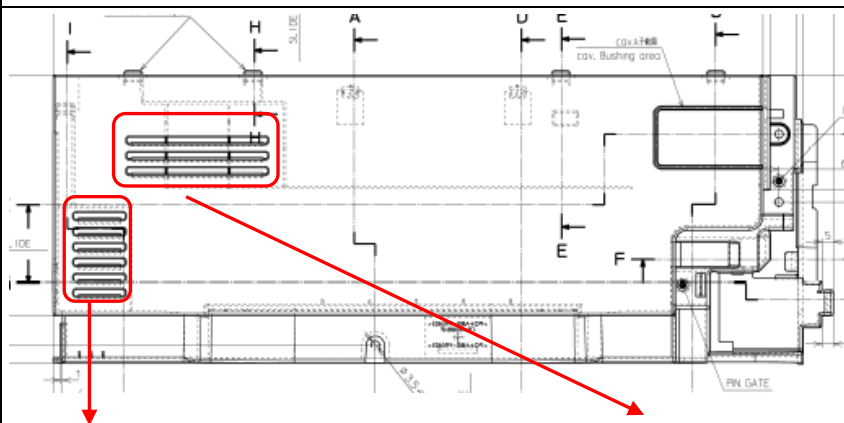
20.5 mm x 3.0 mm slots

Covering an area of 20.5 mm W x 55.0 mm H

Max. 27.6 mm x 3.0 mm slots

Covering an area of 80.5 mm W x 55.0 mm H

Right Low Cover



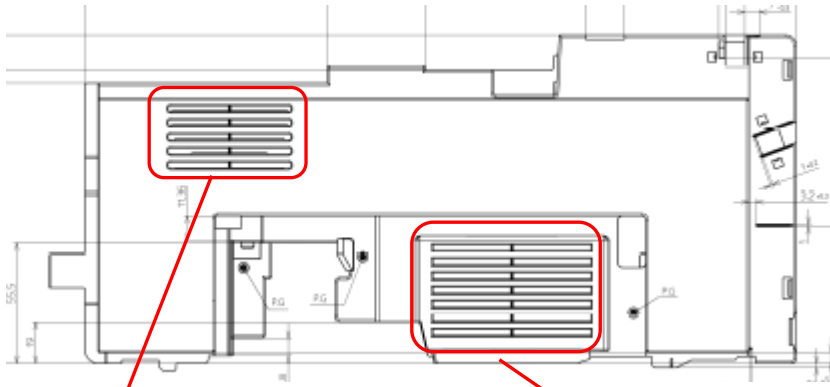
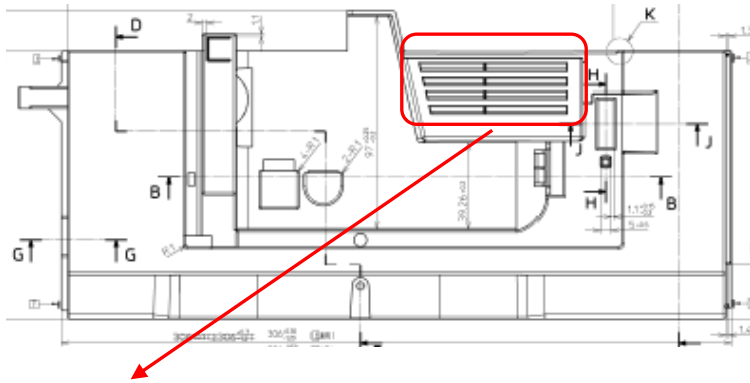
22.0 mm x 3.0 mm slots

Covering an area of 22.0 mm W x 36.0 mm H

Max. 26.0 mm x 3.0 mm slots

Covering an area of 60.0 mm W x 16.0 mm H

Measurement Section

Clause	Requirement + Test	Result - Remark	Verdict
4.6.1/2	Table: Enclosure opening measurements		P
Left Up Cover			
 <p>28.0 mm x 3.0 mm slots Covering an area of 57.0 mm W x 29.0 mm H</p> <p>Max. 36.5.0 mm x 2.6 mm slots Covering an area of 73.2 mm W x 41.6 mm H</p>			
Left Low Cover			
 <p>Max. 36.3 mm x 2.5 mm slots Covering an area of 66.0 mm W x 22.0 mm H</p>			
Supplementary information:			
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IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

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_1F

Attachment Originator: SGS Fimko Ltd

Master Attachment: Date 2013-09

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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"		P
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		P
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		P

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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		P
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.		N/A
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.	No such equipment.	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	Deleted.	N/A
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.		N/A

IEC60950_1F - ATTACHMENT			
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.	Deleted.	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: <ul style="list-style-type: none"> - is designed to allow the user to listen to recorded or broadcast sound or video; and - primarily uses headphones or earphones that can be worn in or on or around the ears; and - allows the user to walk around while in use. NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment. A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause. The requirements in this sub-clause are valid for music or video mode only. The requirements do not apply: <ul style="list-style-type: none"> - while the personal music player is connected to an external amplifier; or - while the headphones or earphones are not used. NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player. The requirements do not apply to: <ul style="list-style-type: none"> - 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.	No such equipment.	N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>- 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.</p> <p>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.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>		
	<p>Zx.2 Equipment requirements</p> <p>No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none"> - 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. <p>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.</p> <p>All other equipment shall:</p> <ol style="list-style-type: none"> protect the user from unintentional acoustic outputs exceeding those mentioned above; and have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and 		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>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.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none"> 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. <p>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.</p> <p>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.</p> <p>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.</p>		

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.3 Warning</p> <p>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <ul style="list-style-type: none"> - the symbol of Figure 1 with a minimum height of 5 mm; and - the following wording, or similar: <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p>  <p>Figure 1 - Warning label (IEC 60417-6044)</p> <p>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.</p>		N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	<p>Zx.4.1 Wired listening devices with analogue input</p> <p>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.</p> <p>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).</p> <p>NOTE The values of 94 dBA - 75 mV correspond with 85dBA - 27 mV and 100 dBA - 150 mV.</p>		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.2 Wired listening devices with digital input</p> <p>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.</p> <p>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.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N/A
	<p>Zx.4.3 Wireless listening devices</p> <p>In wireless mode:</p> <ul style="list-style-type: none"> - 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. <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N/A
	<p>Zx.5 Measurement methods</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N/A

IEC60950_1F - ATTACHMENT															
Clause	Requirement + Test	Result - Remark	Verdict												
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		P												
2.7.2	This subclause has been declared 'void'.		P												
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A												
3.2.5.1	<p>Replace "60245 IEC 53" by "H05 RR-F";</p> <p>"60227 IEC 52" by "H03 VV-F or H03 VVH2-F";</p> <p>"60227 IEC 53" by "H05 VV-F or H05 VVH2-F2".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6</td><td> </td><td>0,75^{a)}</td><td> </td></tr><tr><td>Over 6 up to and including 10</td><td> </td><td>(0,75)^{b)}</td><td>1,0</td></tr><tr><td>Over 10 up to and including 16</td><td> </td><td>(1,0)^{c)}</td><td>1,5</td></tr></table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6		0,75 ^{a)}		Over 6 up to and including 10		(0,75) ^{b)}	1,0	Over 10 up to and including 16		(1,0) ^{c)}	1,5		P
Up to and including 6		0,75 ^{a)}													
Over 6 up to and including 10		(0,75) ^{b)}	1,0												
Over 10 up to and including 16		(1,0) ^{c)}	1,5												
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		P												

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 Delete the fifth line: conductor sizes for 13 to 16 A		N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).		N/A
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 $\mu\text{Sv/h}$ (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.		N/A
Bibliography	Additional EN standards.		—

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N/A
1.2.13.14 (A11:2009)	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1 (A11:2009)	In Finland , Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N/A
1.5.8	In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		P
1.5.9.4	In Finland , Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A
1.7.2.1	In Finland , Norway and Sweden , CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland : "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway : "Apparatet må tilkoples jordet stikkontakt" In Sweden : "Apparaten skall anslutas till jordat uttag"		P

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1 (A11:2009)	<p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing - and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”</p> <p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr - og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1 (A2:2013)	<p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in Denmark shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord."</p>		P
1.7.5 1.7.5 (A11:2009)	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p> <p>For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p>		N/A
1.7.5 (A2:2013)	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011.</p> <p>For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a.</p> <p>Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N/A
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		P
2.3.2	In Finland , Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A
2.7.1	In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	No direct plug-in.	N/A
2.10.5.13	In Finland, Norway and Sweden , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
3.2.1.1	<p>In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <p>SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A</p> <p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998: Plug Type 25 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21 L+N 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23 L+N+PE 250 V, 16 A</p>		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N/A
3.2.1.1 (A2:2013)	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N/A
3.2.1.1	<p>In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
3.2.1.1	<p>In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p>		N/A
3.2.4	In Switzerland , for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the United Kingdom , a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N/A
3.3.4	<p>In the United Kingdom, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is:</p> <ul style="list-style-type: none"> • 1,25 mm² to 1,5 mm² nominal cross-sectional area. 		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.6	In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	In Ireland , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: <ul style="list-style-type: none"> • STATIONARY PLUGGABLE EQUIPMENT TYPE A that <ul style="list-style-type: none"> - is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and - has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and - is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT. 		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	<p>In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. 		N/A
	<p>Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. <p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. 		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3 (A11:2009)	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

**Annex ZD
(informative)**

IEC and CENELEC code designations for flexible cords

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60277 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Clause	Requirement + Test	Result - Remark	Verdict

**ATTACHMENT TO TEST REPORT IEC 60950-1 with A1:2009 and A2:2013
CANADA NATIONAL DIFFERENCES**

Information technology equipment - Safety -

PART 1: GENERAL REQUIREMENTS

Differences according to : CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014

Attachment Form No. : CA_ND_IEC60950_1F

Attachment Originator : CSA

Master Attachment..... : Date (2015-05)

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	Special national conditions		
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.		P
1.1.2	Baby monitors are required to comply with ASTM F2951, Consumer Safety Specification for Baby Monitors		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Considered.	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the CEC/NEC.		N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC are required to have special construction features and identification markings.		N/A

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.1	<p>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.</p> <p>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</p> <p>- if it is part of a range that extends into the Table 2 "Normal Operating Conditions."</p> <p>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."</p>	Single phase conductor.	N/A
1.7.7	<p>Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC shall be marked with the voltage rating and "Class 2" or equivalent.</p> <p>Marking shall be located adjacent to the terminals and shall be visible during wiring.</p>	No such terminals.	N/A
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	Not accessible and interchangeable fuses used for LPS.	P
2.6	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-112 and 10-906(8).	Modified.	P
2.7.1	<p>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.</p> <p>Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.</p>	<p>No standard supply outlets.</p> <p>No such transformers.</p>	N/A

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Clause	Requirement + Test	Result - Remark	Verdict
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Approved appliance inlet used.	P
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Rated: max. 10.0A Plug rated 15A.	P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.	Not connected to DC mains.	N/A
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not permanent connection.	N/A
3.2.5	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.	Length of power supply cord: 2.5 m. Type: SJT	P
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Appliance inlet used.	N/A
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.	Appliance inlet used.	N/A
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for Canadian/US wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).		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."	Revised.	P

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Clause	Requirement + Test	Result - Remark	Verdict
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	No such motor.	N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No such switches or breakers.	N/A
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No such systems.	N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No flammable liquid.	N/A
4.3.13.5.1	Equipment with lasers is required to meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.	Tested for IEC 60825-1. (see IEC 60825-1 test report) FDA applied separately. (Accession No. 0720775-048)	P
4.7	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.	No such systems.	N/A
4.7.3.1	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.	No such enclosures.	N/A
	For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N/A
Annex H	Equipment that produces ionizing radiation is required to comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.	No ionizing radiation source.	N/A

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Clause	Requirement + Test	Result - Remark	Verdict
	Other National Differences The following key national differences are based on requirements other than national regulatory requirements.		P
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard 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.	(see appended table 1.5.1)	P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage shall include consideration of the battery charging "float voltage" associated with the intended supply system, regardless of the marked power rating of the equipment.	No connection to DC mains.	N/A
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No TNV circuits.	N/A
2.3.2.1	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.		P
2.6.2	Equipment with functional earthing is required to be marked with the functional earthing symbol (IEC 60471-6092).		N/A

CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.4	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 such constructions.	N/A
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRTs.	N/A
4.3.2	Equipment with handles is required to comply with special loading tests.		N/A
4.3.8	Battery packs for both portable and stationary applications are required to comply with special component requirements.		N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are 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		P
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.		N/A
Annex EE	Articulated accessibility probe (Fig EE.3) required for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	Not shredders.	N/A
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex NAD	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.		N/A

UL 60950-1, Edition 2, Amendment 2 (IEC 60950-1, Ed 2, Am2)			
Clause	Requirement + Test	Result - Remark	Verdict

**ATTACHMENT TO TEST REPORT IEC 60950-1 with A1:2009 and A2:2013
U.S.A. NATIONAL DIFFERENCES**

Information technology equipment - Safety - Part 1: General requirements

Differences according to	UL 60950-1:2007 R10.14
Attachment Form No.	US_ND_IEC60950_1F
Attachment Originator	UL
Master Attachment	Date 2014-07
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	Special National condition		
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2.		P
	Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.		P
1.1.2	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Considered.	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the NEC.		N/A
	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.		N/A

UL 60950-1, Edition 2, Amendment 2 (IEC 60950-1, Ed 2, Am2)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings.	Single phase conductor.	N/A
	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 CAN3-C235, and		N/A
	- if it is part of a range that extends into the Table 2 "Normal Operating Conditions."		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."		N/A
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1 or NEC are marked with the voltage rating and "Class 2" or equivalent.	No such terminals.	N/A
	- Marking is located adjacent to the terminals		N/A
	- Marking is visible during wiring.		N/A
2.5	Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable	Not accessible and interchangeable fuses used for LPS.	P
2.6	Equipment with isolated ground (earthing) receptacles is in compliance with NEC 250.146(D) and CEC 10-112 and 10-906(8).	Modified.	P
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	No standard supply outlets.	N/A
	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection.	No such transformers.	N/A

UL 60950-1, Edition 2, Amendment 2 (IEC 60950-1, Ed 2, Am2)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC.	Approved appliance inlet used.	P
3.2.1	Attachment plug of power supply cords are rated not less than 125 percent of the rated current of the equipment.	Rated: max. 10.0A Plug rated 15A.	P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment comply with special earthing, wiring, marking and installation instruction requirements.	Not connected to DC mains.	N/A
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not permanent connection.	N/A
3.2.5	Power supply cords are no longer than 4.5 m in length	Length of power supply cord: 2.5 m.	P
	Minimum cord length is 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement.		P
	Flexible power supply cords are compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.	Type: SJT	P
3.2.9	Permanently connected equipment has a suitable wiring compartment and wire bending space.	Appliance inlet used.	N/A
3.3	Wiring terminals and associated spacings for field wiring connections comply with CSA C22.2 No. 0.	Appliance inlet used.	N/A
3.3.3	Wire binding screws are not attached with conductors larger than 10 AWG (5.3 mm ²).		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are suitable for Canadian/US wire gauge sizes, are		N/A
	- rated 125 percent of the equipment rating, and		N/A
	- are specially marked when specified (1.7.7).		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."	Revised.	P

UL 60950-1, Edition 2, Amendment 2 (IEC 60950-1, Ed 2, Am2)			
Clause	Requirement + Test	Result - Remark	Verdict
3.4.2	Motor control devices are provided for cord-connected equipment with a motor if the equipment is rated more than 12 A.	No such motor.	N/A
	- or if the motor has a nominal voltage rating greater than 120 V		N/A
	- or is rated more than 1/3 hp (locked rotor current over 43 A)		N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position.	No such switches or breakers.	N/A
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No such systems.	N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complies with NFPA 30.	No flammable liquid.	N/A
4.3.13. 5.1	Equipment with lasers meets the U.S Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Tested for IEC 60825-1. (see IEC 60825-1 test report) FDA applied separately. (Accession No. 0720775-048)	P
4.7	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.	No such systems.	N/A
4.7.3.1	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) have a flame spread rating of 50 or less.	No such enclosures.	N/A
	For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N/A
4.7.3.1	Non-metallic enclosures of equipment for use in space used for environmental air (plenums) are required to comply with UL 2043.	No such enclosures.	N/A
Annex H	Equipment that produces ionizing radiation complies with the U.S. Code of Federal Regulations, 21CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No ionizing radiation source.	N/A

UL 60950-1, Edition 2, Amendment 2 (IEC 60950-1, Ed 2, Am2)			
Clause	Requirement + Test	Result - Remark	Verdict
	Other National Differences		P
1.5.1	<p>Some components and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (Canadian and/or US) component or material requirements.</p> <p>These components include:</p> <p>attachment plugs, battery backup systems, battery packs, 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, electrochemical capacitor modules (energy storage modules with ultracapacitors), 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, surge protective devices, tubing, vehicle battery adapters, wire connectors, and wire and cables.</p>	(see appended table 1.5.1)	P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as a SELV Circuit, a TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply.	No connection to DC mains.	N/A
	This maximum operating voltage includes consideration of the battery charging "float voltage" associated with the intended supply system, regardless of the marked power rating of the equipment.		N/A
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
2.3.2.1	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.		N/A
2.6.2	Equipment with functional earthing marked with the functional earthing symbol (IEC 60417-6092).		N/A

UL 60950-1, Edition 2, Amendment 2 (IEC 60950-1, Ed 2, Am2)			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.4	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 such constructions.	N/A
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT.	No CRTs.	N/A
4.3.2	Equipment with handles is required to comply with special loading tests.		N/A
4.3.8	Battery packs for both portable and stationary applications comply with special component requirements.		N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals comply with a special touch current measurement tests.		N/A
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are overloaded.		P
	During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test is repeated twice (three tests total) using new components as necessary	Considered.	P
6.4	Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.		N/A
Annex EE	Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	Not shredders.	N/A
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex NAD	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.		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict

Australian and New Zealand National Differences according to AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
Annex ZZ Variations			
	After definition 'PERSON, SERVICE', <i>insert</i> the following new definition: POTENTIAL IGNITION SOURCE 1.2.12.201	Added.	P
1.2.12.201	After Clause 1.2.12.15, <i>insert</i> the following new clause: 1.2.12.201 POTENTIAL IGNITION SOURCE Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s. current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in CONDUCTIVE PATTERNS on PRINTED BOARDS. NOTE 1 An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE. NOTE 2 This definition is from AS/NZS60065:2012, Clause 2.8.11.	Added.	P
1.5.1	1. First paragraph, <i>insert</i> the following text after the words 'IEC component standard': or the relevant Australian/New Zealand Standard 2. In the Note, <i>insert</i> the following text after the word 'standard': or an Australian/New Zealand Standard 3. Second paragraph, <i>delete</i> the words 'without further evaluation'.	Added.	P
1.5.2	1. First paragraph, <i>insert</i> the following text after the word 'standard': or an Australian/New Zealand Standard 2. First paragraph, second dash item, second line, <i>insert</i> the following text after the word 'standard': or an Australian/New Zealand Standard 3. First paragraph, second dash item, last line, <i>insert</i> the following text after the word 'standard': or an Australian/New Zealand Standard	Added.	P

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)																								
Clause	Requirement + Test	Result - Remark		Verdict																				
1. 7.1.3	<p><i>Delete</i> existing text and <i>replace</i> with the following: Graphical symbols placed on the equipment as a requirement of this standard, shall be in accordance with IEC 60417 or ISO 3864-2 or ISO 7000, if available. In the absence of suitable symbols, the manufacturer may design specific graphical symbols. Symbols as required by this standard placed on the equipment shall be explained in the user manual.</p>	Symbols placed on the equipment are explained in the user manual.		P																				
2.9.2 Table 3B	<p>Second paragraph, <i>delete</i> the word 'designated'.</p> <p>1. <i>Delete</i> the first four rows and <i>replace</i> with the following:</p> <table><tr><td>Over 0.2</td><td>up to and including 3</td><td>0,5 a</td><td>18</td><td>[0,8]</td></tr><tr><td>Over 3</td><td>up to and including 7,5</td><td>0,75</td><td>16</td><td>[1 ,3]</td></tr><tr><td>Over 7,5</td><td>up to and including 10</td><td>(0,75) b</td><td>1,00</td><td>16 [1 ,3]</td></tr><tr><td>Over 10</td><td>up to and including 16</td><td>(1,0) c</td><td>1,5</td><td>14 [2]</td></tr></table> <p>2. <i>Delete</i> NOTE 1 and <i>renumber</i> existing NOTE 2 as 'NOTE'.</p> <p>3. <i>Delete</i> Footnote ^a and <i>replace</i> with the following:</p> <p>^a This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0,5 mm² three-core supply flexible cords are not permitted; see AS/NZS 3191).</p>			Over 0.2	up to and including 3	0,5 a	18	[0,8]	Over 3	up to and including 7,5	0,75	16	[1 ,3]	Over 7,5	up to and including 10	(0,75) b	1,00	16 [1 ,3]	Over 10	up to and including 16	(1,0) c	1,5	14 [2]	P
Over 0.2	up to and including 3	0,5 a	18	[0,8]																				
Over 3	up to and including 7,5	0,75	16	[1 ,3]																				
Over 7,5	up to and including 10	(0,75) b	1,00	16 [1 ,3]																				
Over 10	up to and including 16	(1,0) c	1,5	14 [2]																				
4.1.201	<p>After Clause 4.1, <i>insert</i> new Clause 4.1.201 as follows:</p> <p>4.1.201 Display devices used for television purposes</p> <p>Display devices which may be used for television purposes, with a mass of 7 kg or more, shall comply with the requirements for stability and mechanical hazards, including the additional stability requirements for television receivers, specified in AS/NZS 60065.</p>	No display device.		N/A																				
4.3.6	<p><i>Delete</i> the third paragraph and <i>replace</i> with the following:</p> <p><i>Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in ASINZS 3112 for equipment with integral pins for insertion into socket-outlets.</i></p>	Not a direct-plug-in equipment.		N/A																				

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.8	Eighth paragraph, <i>insert</i> the following new note after the first dash item: NOTE 6.201 In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.	Lithium battery (CR2032) circuits in Main PWB utilize a diode in series with a 1kΩ resistor.	P
4.3.8.201	After Clause 4.3.8, <i>add</i> the following new clause as follows: 4.3.8.201 Products containing coin/button cell batteries and batteries designated R1 The requirements of AS/NZS 60065:2012 Amendment 1:2015, Clause 14.10.201 apply for this Clause.	Coin/button cell or R1 batteries used. (see table 'AS/NZS 60065:2012 Amendment 1:2015, Clause 14.10.201')	P
4.3.13.5.1	1. <i>Delete</i> the first paragraph and <i>replace</i> with the following: Except as permitted below, equipment shall be classified and labelled according to IEC 60825-1 or AS/NZS 60825.1, IEC 60825-2 or AS/NZS 60825.2 and IEC 60825-12, as applicable. 2. Third paragraph, first sentence, after 'IEC 60825-1 ', <i>insert</i> the following text: or AS/NZS 60825.1 3. Fourth paragraph, after 'IEC 60825-1 ', <i>insert</i> the following text: or AS/NZS 60825.1		P

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7	At the end of Clause 4. 7, <i>insert</i> the following text: For alternate tests refer to Clause 4.7.201.	No alternative tests applied.	N/A
4.7.201	After Clause 4.7.3.6, <i>add</i> new clauses as follows: 4.7.201 Resistance to fire-Alternative tests	Enclosure has relevant flammability class.	N/A
4.7.201.1	<p>General</p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the apparatus, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> - small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; - small electrical components, such as capacitors with a volume not exceeding 1,750 mm³ , integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. <p>NOTE In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p> <p><i>Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5.</i></p> <p><i>For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5.</i></p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p>		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.2	<p>Testing of non-metallic materials</p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part.</p>		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.3	Testing of insulating materials Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C. The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE Contacts in components such as switch contacts are considered to be connections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested. The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:		N/A
	Clause of AS/NZS 60695.11.5	Change	
	9 Test procedure		
	9.2 Application of needle-flame	<i>Delete</i> the first and second paragraphs and <i>replace</i> with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s ± 1 s.	
	9.3 Number of test specimens	<i>Delete</i> existing text and <i>replace</i> with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.	
	11 Evaluation of test results	<i>Delete</i> existing text and <i>replace</i> with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.	
	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the sample tested was not thicker than the relevant part.		

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.4	<p>Testing in the event of non-extinguishing material</p> <p>If parts, other than enclosures, do not withstand the glow-wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not to be tested.</p> <p>NOTE 1 - If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirement of clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 2 - If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burring or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirement of clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 3 - Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p>		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.5	<p>Testing of printed boards</p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE.</p> <p>The test is not carried out if the:</p> <ul style="list-style-type: none"> - Printed board does not carry any POTENTIAL IGNITION SOURCE; - Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or - Base material of printed boards, on which the available apparatus power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <p><i>Compliance shall be determined using the smallest thickness of the material.</i></p> <p>NOTE Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power for more than 2 m when the circuit supplied is disconnected.</p>		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.2	For Australia only, <i>delete</i> the first paragraph and Note, and <i>replace</i> with the following: In Australia only, compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2.		N/A
6.2.2.1	For Australia only, <i>delete</i> the first paragraph including the Notes, and <i>replace</i> with the following: <i>In Australia only, the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator Reference 1 of Table N. 1.</i> <i>The interval between successive impulses is 60 s and the initial voltage, U_c, is:</i> <i>(i) for 6.2.1 a): 7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and</i> <i>(ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV.</i> NOTE 201 The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.		N/A
6.2.2.2	For Australia only, <i>delete</i> the second paragraph including the Note, and <i>replace</i> with the following: <i>In Australia only, the a.c. test voltage is:</i> <i>(i) for 6. 2. 1 a): 3 kV; and</i> <i>(ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV.</i> NOTE 201 Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.		N/A
7.3	<i>Add</i> the following before the first paragraph: Equipment providing functions that fall only within the scope of AS/NZS 60065 and that incorporate a PSTN interface, are not required to comply with this Clause where the only ports provided on the equipment, in addition to a coaxial cable connection and a PSTN interface, are audio or video ports and analogue or data ports not intended to be used for telecommunications purposes.	No cable distribution system.	N/A
Annex P	<i>Add</i> the following Normative References: AS/NZS 3191, Electric flexible cords AS/NZS 3112, Approval and test specification-Plugs and socket outlets	Power plug and cord not provided.	N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE	AS/NZS 60065:2012 Amendment 1:2015, Clause 14.10.201		P
14.10.201	Products containing coin/button cell batteries and batteries designated R1	Coin/button battery used.	P
14.10.201.1	<p>General</p> <p>These requirements apply to equipment, including remote controls, that—</p> <ul style="list-style-type: none"> – are likely to be accessible to children; and – include coin/button cell batteries with a diameter of 32 mm or less and batteries designated R1. <p>NOTE 1 Coin/button cell batteries are devices that are small, single cell batteries having a diameter greater than their height.</p> <p>NOTE 2 Batteries are specified in IEC 60086-2.</p> <p>These requirements do not apply to—</p> <ul style="list-style-type: none"> – professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. Equipment sold through normal electronics stores is considered not to be professional equipment.</p> <ul style="list-style-type: none"> – equipment for locations where it is unlikely that children will be present; or – equipment containing batteries that are soldered in place. 	Equipment containing coin/button battery that are soldered in place.	N/A
14.10.201.2	<p>Safety warnings</p> <p>Equipment containing one or more coin/button cell/R1 batteries shall have safety warnings in the instructions accompanying the equipment.</p> <p>The safety warnings are not required where these batteries are not intended to be replaced or are only accessible after damaging the equipment.</p> <p>The safety warnings shall be as follows:</p> <ul style="list-style-type: none"> – CAUTION: Do not ingest battery, Chemical Burn Hazard [or equivalent wording]. – [The remote control supplied with] this product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. – Keep new and used batteries away from children. – If the battery compartment does not close securely, stop using the product and keep it away from children. – If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention. 	Battery not replaceable by user.	N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
14.10.201.3	Construction Equipment containing one or more coin/button cell/R1 batteries and having a battery compartment door/cover shall be designed to reduce the possibility of children removing the battery by one of the following methods: – a tool, such as a screwdriver or coin, required to open the battery compartment; or – the battery compartment door/cover requires the application of a minimum of two independent and simultaneous movements to open by hand.		N/A
14.10.201.4	Tests		N/A
14.10.201.4.1	General Equipment containing one or more coin/button cell/R1 batteries shall be subject to the requirements of 14.10.201.1 to 14.10.201.4 followed by the compliance criteria of 14.10.201.5.		N/A
14.10.201.4.2	Test sequence One sample shall be subjected to the applicable tests of 14.10.201.4.3 to 14.10.201.4.7. If applicable, the test in 14.10.201.4.3 shall be conducted first.		N/A
14.10.201.4.3	Stress relief test If the battery compartment utilizes moulded or formed thermoplastic materials, the sample consisting of the complete equipment, or of the complete enclosure together with any supporting framework, is tested according to the stress relief test of Clause 12.1.5 or the mould stress relief test of IEC 60695-10-3. During the test, the battery may be removed.		N/A
14.10.201.4.4	Battery replacement test For equipment with a battery compartment door/cover, the battery compartment shall be opened and closed and the battery removed and replaced 10 times to simulate normal replacement according to the manufacturer's instructions. If the battery compartment door/cover is secured by one or more screws, the screws are loosened and then tightened applying a continuous linear torque according to Table 20 Column II, using a suitable screwdriver, spanner or key. The screws are to be completely removed and reinserted each time.		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
14.10.201.4.5	Drop test Portable equipment having a mass of 7 kg or less shall be subjected to three drops from a height of 1 m onto a horizontal surface in positions likely to produce the maximum force on the battery compartment in accordance with Clause 12.1.4. If the equipment is a remote control, it shall be subjected to 10 drops.		N/A
14.10.201.4.6	Impact test The battery compartment door/cover shall be subjected to three impacts in a direction perpendicular to the battery compartment door/cover according to the 50 mm steel ball impact test method of Clause 12.1.3 and Figure 8 with a force of: – 0.5 J (102 mm ± 10 mm height) for glasses for watching, for example, 3 dimensional television; or – 2 J (408 mm ± 10 mm height) for all other doors/covers. Alternatively horizontal impacts may be simulated on vertical or sloping surfaces by mounting the sample at 90° to its normal position and applying the vertical impact test instead of the pendulum test.		N/A
14.10.201.4.7	Crush test Hand-held remote control devices are to be supported by a fixed rigid supporting surface in a position likely to produce the most adverse results as long as the position can be self-supported. A crushing force of 330 N ± 5 N is applied to the exposed top and back surfaces of remote control devices placed in a stable condition on a flat surface measuring approximately 100 mm by 250 mm for a period of 10 s.		N/A

AS/NZS 60950.1:2015 (IEC Publication 60950-1:2013)			
Clause	Requirement + Test	Result - Remark	Verdict
14.10.201.5	<p>Compliance criteria</p> <p>Compliance is checked by applying a force of 30 N \pm 1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.</p> <p>The battery compartment door/cover shall remain functional, and—</p> <ul style="list-style-type: none"> – the battery shall not become accessible; or – it shall not be possible to remove the battery from the product with the test hook of Figure 4 using a force of approximately 20 N. 		N/A

IEC 60825-1:2014

TEST REPORT
IEC 60825-1
Safety of laser products -
Part 1: Equipment classification and requirements

Report Number..... : See IEC60950-1 report.
Date of issue..... : See IEC60950-1 report.
Total number of pages : See IEC60950-1 report.

**Name of Testing Laboratory
preparing the Report** : See IEC60950-1 report.

Applicant's name : See IEC60950-1 report.

Address..... : See IEC60950-1 report.

Test specification:

Standard..... : IEC 60825-1:2014 (Third Edition)

Test procedure : CB Scheme

Non-standard test method : N/A

Test Report Form No. : IEC60825_1E

Test Report Form(s) Originator : ÖVE

Master TRF..... : Dated 2014-07

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General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

IEC 60825-1:2014

Test item description..... :	See IEC60950-1 report.	
Trade Mark..... :	See IEC60950-1 report.	
Manufacturer	See IEC60950-1 report.	
Model/Type reference	See IEC60950-1 report.	
Ratings	See IEC60950-1 report.	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:	See IEC60950-1 report.	
Testing location/ address..... :	See IEC60950-1 report.	
<input type="checkbox"/> Associated CB Testing Laboratory:		
Testing location/ address..... :		
Tested by (name, function, signature)	See IEC60950-1 report.	
Approved by (name, function, signature)...	See IEC60950-1 report.	
Testing procedure: TMP/CTF Stage 1:		
<input type="checkbox"/> Testing procedure: TMP/CTF Stage 1:		
Testing location/ address..... :		
Tested by (name, function, signature)		
Approved by (name, function, signature)...		
Testing procedure: WMT/CTF Stage 2:		
<input type="checkbox"/> Testing procedure: WMT/CTF Stage 2:		
Testing location/ address..... :		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature)...		
Testing procedure: SMT/CTF Stage 3 or 4:		
<input type="checkbox"/> Testing procedure: SMT/CTF Stage 3 or 4:		
Testing location/ address..... :		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature)...		
Supervised by (name, function, signature) :		

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

N/A

Summary of testing:

(see General product information)

Tests performed (name of test and test clause):

cl.5, Determination of the accessible emission level and product classification.

Testing location:

Tests were conducted on CBTL.

Summary of compliance with National Differences:**List of countries addressed**

EN 60825-1:2014

Additional tests are not necessary.

Copy of marking plate:

See the main IEC60950-1 test report.

IEC 60825-1:2014

Test item particulars	
Classification of installation and use : (see IEC 60950-1 report) Supply Connection : (see IEC 60950-1 report)	
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 : (see IEC 60950-1 report) Date (s) of performance of tests : (see IEC 60950-1 report)	
General remarks:	
"(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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60950-1:	
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 :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : (see IEC 60950-1 report)	

General product information:

The Unit has two laser diode, one polygon motor and mirror, one laser apertures

The length of laser pass between the polygon mirror and aperture is 141mm.

The polygon motor runs on 24V dc and laser diode run on

Polygon motor speed: maximum (customer request condition)

Laser aperture dimensions: 12.2mm x 8mm

Laser scan angles for each laser aperture:

- Long sides of the aperture: +38.2.1 / -37.2 degrees
- Short sides of the aperture: 52 degrees

ECOSYS P3060dn and ECOSYS P3055dn can provided following two type Laser Scanner Units.

1) Laser Scanner Unit 1

	Manufacturer	type
Laser Diode	Ushio Opto Semiconductors, Inc.	HL67150GN
Polygon Motor	Minebea Co., Ltd.	MASQ6NF8LK

2) Laser Scanner Unit 2

	Manufacturer	type
Laser Diode	Rohm Co., Ltd.	RLD2BPND2-00B
Polygon Motor	Minebea Co., Ltd.	MASQ6NF8LK

ECOSYS P3050dn and ECOSYS P3045dn can provided following two type Laser Scanner Units.

3) Laser Scanner Unit 3

	Manufacturer	type
Laser Diode	Ushio Opto Semiconductors, Inc.	HL67150GN
Polygon Motor	Minebea Co., Ltd.	MASQ6EF3LK

4) Laser Scanner Unit 4

	Manufacturer	type
Laser Diode	Rohm Co., Ltd.	RLD2BPND2-00B
Polygon Motor	Minebea Co., Ltd.	MASQ6EF3LK

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

4	CLASSIFICATION PRINCIPLES		
4.3	Classification rules		---
4.3 a	Radiation of a single wavelength	Single wavelength.	P
4.3 b	Radiation of multiple wavelengths		N/A
	1) Laser product emits at two or more wavelengths shown as additive in Table 1		N/A
	2) Laser product emits at two or more wavelengths not shown as additive in Table 1		N/A
4.3 c	Radiation from extended sources (see 5.4.3)	Small source.	N/A
4.3 d	Non-uniform, non-circular or multiple apparent source		N/A
4.3 e	Time bases		---
	1) 0,25 s		N/A
	2) 100 s	Applied.	P
	3) 30000 s		N/A
4.3 f	Repetitively pulsed or modulated lasers		N/A
	1) Any single pulse		N/A
	2) Average power for pulse trains		N/A
	3) Pulse duration $t \leq T_i$: Number of pulses N and C_5 :	--	N/A
	3) Pulse duration $t > T_i$: Number of pulses N and C_5 :	--	N/A
4.4	Laser products designed to function as conventional lamps.		N/A
	α measured at 200 mm distance from closest point of human access ($\alpha > 5$ mrad).		N/A
	Un-weighted radiance L measured at 200 mm distance (comparison with $L_T = 1 \text{ MWm}^{-2}\text{sr}^{-1}/\alpha$) under reasonably foreseeable single fault conditions.		N/A
	Evaluation of emission according to IEC 62471 series (optional): Standard applied (IEC 62471 series)..... : Risk Group..... : Labelling..... : Classification of product based on accessible laser radiation (if no laser radiation accessible: Class 1).	--	N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
5	DETERMINATION OF THE ACCESSIBLE EMISSION LEVEL and PRODUCT CLASSIFICATION		
5.1	Tests	See table "Measured accessible laser radiation and comparison with AEL".	---
	Compliance under reasonably foreseeable single fault conditions.		P
5.3	Determination of the class of the laser product ... : For Class 1C: vertical safety standard applied with requirements for Class 1C.	See table "Measured accessible laser radiation and comparison with AEL".	---
5.4	Measurement geometry		---
5.4.1	General		---
5.4.2	Default (simplified) evaluation		P
	Conditions applied	Condition 3	P
	Aperture diameter	7mm	P
	Reference point :	See table "Measured accessible laser radiation and comparison with AEL".	P
	Measurement distance : (for each condition)	See table "Measured accessible laser radiation and comparison with AEL".	P
5.4.3	Evaluation condition for extended sources	No extended sources.	N/A
	Conditions applied	--	N/A
	Most restrictive position : (distance from reference point)	--	N/A
	Angular subtense of the apparent source α and C_6 : (for each condition)	--	N/A
5.4.3 a	Aperture diameters (for each condition). :	--	N/A
5.4.3 b	Angle of acceptance (for each condition)..... :	--	N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

Table: Measured accessible laser radiation and comparison with AEL

Laser Scanner unit:

The classification of the built-in type laser unit is determined by radiation from projection aperture of laser unit.
 Measured laser radiation, calculations and comparison with AEL limits:

Time base: $t = 100s$

Size of apparent source: -- ($C_6=1$)

Diameter of aperture stop: 7mm

Distance of aperture stop to source: $r =$ at outside the equipment (main unit) for leakage.

Comparison with the AEL depend on the wavelength:

Classification	Wavelength λ nm	Formula used	Correction factors	Accessible Emission Limit (AEL)
Class 1	670	$3.9 \times 10^{-4} [W]$	--	0.39mW
Class 3B	670	0.5 [W]	--	500mW

Measured laser radiation results:
Laser Scanner Unit 1

Fault condition - area of Toner Container, Top Cover opened, and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.42uW
Fault condition - area of Toner Container, Top Cover opened, pulled out the Drum/DLP unit to the front and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.48uW

Laser Scanner Unit 2

Fault condition - area of Toner Container, Top Cover opened, and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.38uW
Fault condition - area of Toner Container, Top Cover opened, pulled out the Drum/DLP unit to the front and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.39uW

Laser Scanner Unit 3

Fault condition - area of Toner Container, Top Cover opened, DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.40uW
Fault condition - area of Toner Container, Drum Unit and DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.48uW

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

Measured laser radiation results: Cont.

Laser Scanner Unit 4

Fault condition - area of Toner Container, Top Cover opened, DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.38uW
Fault condition - area of Toner Container, Drum Unit and DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.40uW

Conclusion:

The radiant power measurements for the product under normal and abnormal conditions were below AEL for the Class 1 per IEC60825-1(Ed.3):2014.

Supplementary information:

Tests are conducted by customer prepared unit and jig.
 Temperature: 25°C, Relative humidity: 69%.
 The Class 3B Laser radiation fields are completely enclosed by the internal protective housings.

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

6	ENGINEERING SPECIFICATIONS		
6.2	Protective housing		---
6.2.1	General		---
	Protective housing prevents access to energy levels in excess of the AEL for Class 1.	See table "Measured accessible laser radiation and comparison with AEL".	P
	Protective housing prevents access to energy levels equivalent to Class 4 and withstands exposures under reasonably foreseeable single fault conditions.		N/A
	Maintenance of Class 1, 1C, 1M, 2, 2M, or 3R (access to emissions of Class 3B or 4 is prevented).	See table "Measured accessible laser radiation and comparison with AEL".	P
	Maintenance of Class 3B product (access to emission of Class 4 is prevented).		N/A
6.2.2	Service	Caution label on the equipment. A tool is required to remove the protective housing.	P
6.2.3	Removable laser system (laser system complies with requirements of Clauses 6 and 7).	Laser cannot be removed and operated without modification.	N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

6.3	Access panels and safety interlocks		---
6.3.1	Panel is intended to be removed during operation (or maintenance) and would give access to higher energy levels (see Table 13).	See cl. 6.2.2.	N/A
	Accessible emission (after removal of the panel) corresponds to product Class (designated by "X" in Table 13)		N/A
	Emission through the opening if interlocked panel of Class 1, 1C, 1M, 2, or 2M is removed (Emission < AEL of Class 1M or 2M).		N/A
	Emission through the opening if interlocked panel of Class 3R, 3B, or 4 is removed (Emission < AEL of Class 3R).		N/A
	Requirements regarding reasonably foreseeable single fault condition.		N/A
6.3.2	Override mechanism	Not provided.	N/A
	Behaviour of override in operation when the panel is replaced.		N/A
	Visible or audible warning for override mode.		N/A
6.4	Remote interlock connector	No remote interlock connector.	N/A
6.5	Manual reset	No manual reset.	N/A
6.6	Key control	No key control.	N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
6.7	Laser radiation emission warning		---
6.7.1	Laser product is a 3R ($\lambda < 400$ nm; $\lambda > 700$ nm), 1C, 3B or 4 laser systems.	Class 1 laser product.	N/A
6.7.2	Audible or visible warning.		N/A
	Warning is failsafe or redundant.		N/A
	Viewing of the visible warning does not require exposure to emissions > AEL for Class 1M and 2M.		N/A
6.7.3	Operational control and laser aperture are provided with a warning device when they are separated more than 2 m from warning device.		N/A
6.7.4	Visible indication of output aperture if laser emission may be distributed through more than one output.		N/A
6.7.5	Switch for handheld Class 3R device must be depressed for emission (in lieu of emission indicator).		N/A
6.8	Beam stop or attenuator	Class 1 laser product.	N/A
6.9	Controls	Class 1 laser product.	N/A
6.10	Viewing optics	No such equipment.	N/A
	a) Human access to laser radiation in excess of Class 1M prevented when the shutter is opened or attenuation varied.		N/A
	b) Opening of the shutter or variation of the attenuation prevented when exposure to laser radiation in excess of Class 1M is possible.		N/A
6.11	Scanning safeguard	Scanned radiation only within protective housing. No influence to accessible laser radiation.	N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
6.12	Safeguard for Class 1C products	No Class 1C products.	N/A
	a) Human access to laser radiation in excess of AEL for Class 1 measured under Condition 3 is prevented.		N/A
	b) Human access to laser radiation in excess of AEL for Class 3B measured through 3,5 mm aperture at 5 mm distance from applicator is prevented.		N/A
6.13	Walk-in access		N/A
	a) Means provided so that any person inside the housing can prevent activation of Class 3B or 4 laser hazards.	No "walk in" access.	N/A
	b) A warning device provides adequate warning of emission to any person within the housing.		N/A
	c) Where "walk-in" access during operation is intended or reasonably foreseeable, emission of laser radiation that is equivalent to Class 3B or 4 while someone is present inside the enclosure of Class 1, Class 2 or Class 3R product is prevented by engineering means.		N/A
6.14	Environmental conditions		---
	- climatic conditions	Considered.	P
	- vibration and shock	The product is not intended to place in a location of vibration and shock.	N/A
6.15	Protection against other hazards		---
6.15.1	Non-optical hazards (product safety standard)	(see IEC 60950-1 test report)	P
	- electrical hazards;		P
	- excessive temperature;		P
	- spread of fire from the equipment;		P
	- sound and ultrasonics;		N/A
	- harmful substances;		N/A
	- explosion;		N/A
6.15.2	Collateral radiation		P
6.16	Power limiting circuit		P

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
7	LABELLING		
7.1	General		---
	Labels durable, permanently affixed		P
	Labels clearly visible		P
	Reading of labels is possible without exposure to laser radiation in excess of AEL for Class 1.		P
	Colour combination		P
	Labelling impractical due to the size or design of the product.		N/A
	Warning label - Hazard symbol (Figure 3)		P
7.2 - 7.7	Text on explanatory label or pictogram (laser class, warning text)	(see "Copy of marking labels" in IEC 60950-1 test report)	P
7.8	Aperture label	Class 1 laser product.	N/A
7.9	Radiation output and standards information	The information is provided in the user manual.	---
	Max output of laser radiation	Class 1 laser product.	P
	Pulse duration	--	N/A
	Emitted wavelength(s)	--	N/A
	Name and publication date of the standard	IEC 60825-1: 2014	P
7.10	Labels for access panels		---
7.10.1 a) - f)	Labels for panels - warning wording used	Class 1 laser product. (see "Copy of marking labels" in IEC 60950-1 test report)	P
7.10.2	Labels for safety interlocked panels - Warning wording used	--	N/A
7.11	Warning for invisible laser radiation	--	N/A
7.12	Warning for visible laser radiation	Visible laser radiation.	P
7.13	Warning for potential hazard to the skin or anterior parts of the eye - warning wording used	--	N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
8	OTHER INFORMATIONAL REQUIREMENTS		
8.1	Information for the user		---
	a) adequate instructions for assembly, maintenance and safe use and description of the classification limitations, if appropriate.	The information is provided in the user manual.	P
	b) additional warning for Class 1M and 2M	Class 1 laser product.	N/A
	c) laser beam parameters for radiation above the AEL of Class 1	Class 1 laser product.	---
	• Wavelength	--	N/A
	• Beam divergence	--	N/A
	• Pulse pattern (pulse duration, repetition rate, ...)	--	N/A
	• Maximum power or energy output	--	N/A
	d) safety instruction for embedded laser products and other incorporated laser products.	Specified in instruction.	P
	e) MPE and NOHD for Class 3B and 4 laser products; For collimated beam Class 1M and 2M lasers the extended NOHD (ENOHD).		N/A
	f) information for the selection of eye protection.		N/A
	g) reproduction of all required labels and warnings.	The information is provided in the user manual.	P
	h) location of laser apertures		N/A
	i) list of controls, adjustments of procedures for operation and maintenance - and warning statement.		N/A
	j) information (compatibility requirements) about laser energy source if not incorporated.		N/A
	k) additional warning for Class 1, 1M, 2, 2M, and 3R regarding skin or corneal burns.		N/A
	l) Information for Class 1C products (e.g. warning that repeated application may pose a risk).		N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
8.2	Purchasing and service information		P
	a) safety classification of each laser product stated in all descriptive material (e.g. brochures).		P
	b) adequate instructions for servicing available: <ul style="list-style-type: none">• warnings and precautions regarding exposure of laser emission above Class 1• maintenance schedule• list of controls and procedures that could increase accessible emissions• description of displaceable parts• protective procedures for service personnel• reproduction of labels and hazard warnings		P

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
9	ADDITIONAL REQUIREMENTS FOR SPECIFIC LASER PRODUCTS		
9.1	Applicable other parts of the standard series IEC 60825		---
	IEC 60825-2 (Safety of optical communication systems)		N/A
	IEC 60825-4 (Laser guards)		N/A
	IEC 60825-12 (Safety of free space optical communication systems used for transmission of information)		N/A
9.2	Medical laser products: Class 3B and Class 4 medical laser products comply with IEC 60601-2-22		N/A
9.3	Laser processing machines: Comply with IEC/ISO 11553 series.		N/A
9.4	Electric toys: Comply with IEC 62115		N/A
9.5	Consumer electronic products: Comply with IEC 60950 (IT-equipment) or IEC 60065 (AV equipment)	IEC60950-1 complied.	P

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE: Critical components information					--
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
--	--	--	--	--	--
Supplementary information:					
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. (see IEC 60950-1 test report)					

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to TMP/CTF stage 1 or WMT/CTF stage 2 procedure has been used.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
--	--	--	--	--	--
Supplementary information:					
(see IEC 60950-1 test report)					

Further remarks:**ANNEX A:** N/A**ANNEX B:** N/A

IEC 60825-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict

Appendix	EU Group Differences (EN 60825-1:2014)	--				
Annex ZA	<p>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</p> <p>The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.</p> <p>NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.</p> <p>NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here:</p> <table><tr><td>-- series</td><td>IEC 60050 series</td></tr><tr><td>EN 62471</td><td>IEC 62471 (mod)</td></tr></table>	-- series	IEC 60050 series	EN 62471	IEC 62471 (mod)	P
-- series	IEC 60050 series					
EN 62471	IEC 62471 (mod)					

TEST REPORT IEC 60825-1, 2nd Edition Part 1: Equipment classification and requirements	
Report Reference No.	(see IEC60950-1 test report)
Date of issue	(see IEC60950-1 test report)
Total number of pages	--
CB Testing Laboratory	(see IEC60950-1 test report)
Address	(see IEC60950-1 test report)
Applicant's name	(see IEC60950-1 test report)
Address	(see IEC60950-1 test report)
Test specification:	
Standard	IEC 60825-1: 2007 (2nd Edition)
Test procedure	CB / CCA
Non-standard test method	N/A
Test Report Form No.	IEC60825_1D
Test Report Form(s) Originator	Intertek Semko AB
Master TRF	Dated 2007-06
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Test item description	(see IEC60950-1 test report)
Trade Mark	(see IEC60950-1 test report)
Manufacturer	(see IEC60950-1 test report)
Model/Type reference	(see IEC60950-1 test report)
Ratings	(see IEC60950-1 test report)

IEC 60825-1:2007

Copy of marking plate:

See IEC/EN 60950-1 test report.

Summary of testing:

Tested and evaluated in accordance with IEC/EN 60825-1 except for sub clause 4.14.1 Non-optical hazards.

For the sub clause, compliance will be checked in the end equipment.

For measuring laser radiations from Laser Scan Unit, the Unit was controlled a testing jig supplied by the manufacturer.

Tests performed (name of test and test clause):

Clause 9
Measurements of accessible emission level

Testing location:

(see IEC60950-1 test report)

Additionally evaluated Test specifications.

EN 60825-1:2007

(see below)

Summary of compliance with National Differences:

Only Annex ZA of EN 60825-1 exists and was evaluated. No additional requirements.

See Appendix EU Group Differences (EN 60825-1:2007).

Test item particulars:

Classification of installation and use : (see IEC60950-1 test report)

Supply Connection..... : (see IEC60950-1 test report)

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..... : (see IEC60950-1 test report)

Date (s) of performance of tests : (see IEC60950-1 test report)

IEC 60825-1:2007

General remarks:

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

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

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

General product information:

The Unit has two laser diode, one polygon motor and mirror, one laser apertures

The length of laser pass between the polygon mirror and aperture is 141mm.

The polygon motor runs on 24V dc and laser diode run on

Polygon motor speed: maximum (customer request condition)

Laser aperture dimensions: 12.2mm x 8mm

Laser scan angles for each laser aperture:

- Long sides of the aperture: +38.2.1 / -37.2 degrees
- Short sides of the aperture: 52 degrees

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	Manufacturer	type
Laser Diode	Rohm Co., Ltd.	RLD2BPND2-00B
Polygon Motor	Minebea Co., Ltd.	MASQ6NF8LK

ECOSYS P3050dn and ECOSYS P3045dn can provided following two type Laser Scanner Units.

3) Laser Scanner Unit 3

	Manufacturer	type
Laser Diode	Ushio Opto Semiconductors, Inc.	HL67150GN
Polygon Motor	Minebea Co., Ltd.	MASQ6EF3LK

4) Laser Scanner Unit 4

	Manufacturer	type
Laser Diode	Rohm Co., Ltd.	RLD2BPND2-00B
Polygon Motor	Minebea Co., Ltd.	MASQ6EF3LK

IEC 60825-1:2007			
Clause	Requirement + Test	Result - Remark	Verdict
4	ENGINEERING SPECIFICATIONS		P
4.1	General remarks		P
	Modification	Not modified product.	N/A
4.2	Protective housing		P
4.2.1	General	Protective housing provided to restrict operator access to laser radiation in excess of Class 1.	P
4.2.2	Service	Caution label on the equipment. A tool is required to remove the protective housing.	P
4.2.3	Removable laser system	Not removable.	N/A
4.3	Access panels and safety interlocks		N/A
4.3.1	Access panels of protective housing	No access panels intended.	N/A
	Product Class	Class 1 laser product.	—
	Accessible emission during removal of access panel	--	N/A
	The removal of the panel gives access to laser radiation levels designated by "X" in the table		N/A
	Accessible emissions after removal	--	—
4.3.2	Deliberate override mechanism	No such mechanisms.	N/A
4.4	Remote interlock connector	Class 1 laser product.	N/A
4.5	Manual reset	Class 1 laser product.	N/A
4.6	Key control	Class 1 laser product.	N/A
4.7	Laser radiation emission warning		N/A
4.7.1	Class 3R ($\lambda < 400$ nm; $\lambda > 700$ nm), 3B and 4	Class 1 laser product.	N/A
4.7.2	Audible or visible warning	Class 1 laser product.	N/A
4.7.3	Operational control and laser aperture		N/A
4.7.4	Laser emission distributed through more than one output		N/A
4.8	Beam stop or attenuation	Class 1 laser product.	N/A
4.9	Controls	Class 1 laser product.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.10	Viewing optics	Not provided.	N/A
	a) Human access to laser radiation in excess of Class 1M prevented when the shutter is opened or attenuation varied		N/A
	b) Opening of the shutter or variation of the attenuation prevented when exposure to laser radiation in excess of Class 1M is possible		N/A
4.11	Scanning safeguard	Not considered.	N/A
4.12	Walk-in access		N/A
	a) Means provided so that any person inside the housing can prevent activation of a Class 3B or 4 laser hazard	No Walk-in access provided.	N/A
	b) A warning device provides adequate warning of emission to any person within the housing		N/A
	c) Where "walk-in" access during operation is intended or reasonably foreseeable, emission of laser radiation that is equivalent to Class 3B or Class 4 while someone is present inside the enclosure of Class 1, Class 2 or Class 3R product shall be prevented by engineering means		N/A
4.13	Environmental conditions		P
	- climatic conditions		P
	- vibration and shock		P
4.14	Protection against other hazards		P
4.14.1	Non-optical hazards (product safety standard)	(see IEC60950-1 test report)	P
	- electrical hazards;		P
	- excessive temperature;		P
	- spread of fire from the equipment;		P
	- sound and ultrasonic;		N/A
	- harmful substances;		P
	- explosion;		N/A
4.14.2	Collateral radiation	No such concerns expected.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5	LABELLING		P
5.1	General		P
	LASER PRODUCT CLASS	Class 1 laser product.	—
	Labelling location (Product / User instruction / Package)	Class 1 laser label provided in rating label. (see copy of marking plate)	P
	Warning label - Hazard symbol (Figure 1)		P
	Explanatory label (Figure 2)		P
5.2-5.6	Text on explanatory label	CLASS 1 LASER PRODUCT	P
5.7	Aperture label		N/A
5.8	Radiation output and standards information	For Class 1.	P
	Max output of laser radiation	--	—
	Pulse duration	--	—
	Emitted wavelength(s)	--	—
	The name and publication date of the standard....	In instructions.	P
5.9	Labels for access panels		P
5.9.1 a) - f)	Warning wording used	Class 1 laser product. (see "Copy of marking labels" in IEC 60950-1 test report)	P
5.9.2	Labels for safety interlocked panels		N/A
	Warning wording used	Class 1 laser product.	N/A
5.10	Warning for invisible laser radiation		N/A
5.11	Warning for visible laser radiation	Visible laser radiation.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6	OTHER INFORMATIONAL REQUIREMENTS		P
6.1	Information for the user	Provided in the instructions of this product.	P
	a) adequate instructions for proper assembly, maintenance and safe use and description of the classification limitations, if appropriate	Provided.	P
	b) warning for Class 1M and 2M	Class 1 laser product.	N/A
	c) laser beam parameters for radiation above the AEL of Class 1	Class 1 laser product.	N/A
	• Wavelength	--	N/A
	• Beam divergence	--	N/A
	• Pulse duration	--	N/A
	• Maximum power or energy output	--	N/A
	d) embedded laser products and other incorporated laser products	No exposure to user expected.	N/A
	e) MPE and NOHD for Class 3B and Class 4 laser products For collimated beam Class 1M and 2M lasers the extended NOHD (ENOHD)	Class 1 laser product.	N/A
	f) information for the selection of eye protection		N/A
	g) reproduction of labels	The information is provided in the user manual.	P
	h) location of laser apertures		N/A
	i) listing of controls, adjustment of procedures and warning statement		N/A
	j) information about laser energy source if not incorporated in the manual		N/A
6.2	Purchasing and service information		P
	a) safety classification of each laser product stated in descriptive material	Stated.	P
	b) adequate instructions for servicing available	Provided in service instructions.	P

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Clause	Requirement + Test	Result - Remark	Verdict
7	ADDITIONAL REQUIREMENTS FOR SPECIFIC LASER PRODUCTS		P
7.1	Applicable other parts of the standard series IEC/EN 60825		P
	IEC 60825-2 (Safety of optical communication systems)		N/A
	IEC 60825-4 (Laser guards)		N/A
	IEC 60825-12 (Safety of free space optical communication systems used for transmission of information)		N/A
	Further information may be found in:		P
	IEC/TR 60825-3 (Guidance for laser displays and shows)	Not referred.	—
	IEC/TR 60825-5 (Manufacturer's checklist for IEC 60825-1)	Referred.	—
	IEC/TR 60825-8 (Guidelines for the safe use of laser beams on humans)	Not referred.	—
	IEC/TR 60825-9 (Compilation of maximum permissible exposure to incoherent optical radiation)	Referred.	—
	IEC/TR 60825-10 (Application guidelines and explanatory notes to IEC 60825-1)	Referred.	—
	IEC/TR 60825-13 (Measurements for classification of laser products)	Not referred.	—
	IEC/TR 60825-14 (A user's guide)	Referred.	—
	IEC 62471 (CIE S 009) (Photobiological safety of lamps and lamp system)	Not referred.	—
7.2	Medical laser products	Not such products.	N/A
	Class 3B and Class 4 medical laser products comply with IEC 60601-2-22		N/A
7.3	Laser processing machines	Not such products.	N/A
	Comply with IEC/ISO 11553-1		N/A
7.4	Electric toys	Not such products.	N/A
	Comply with IEC 62115		N/A
7.5	Consumer electronic products	IT equipment.	P
	Complying with IEC 60950 or IEC 60065	(see IEC60950-1 test report)	P

IEC 60825-1:2007			
Clause	Requirement + Test	Result - Remark	Verdict
8	CLASSIFICATION		P
8.2	Classification responsibilities		P
8.3	Classification rules		P
8.3a	Radiation of a single wavelength		P
8.3b	Radiation of multiple wavelengths	No such radiation.	N/A
	1) Laser product emission two or more wavelengths in spectral regions shown as additive in Table 2	--	N/A
	2) Laser product emission two or more wavelengths in spectral regions not shown as additive in Table 2	--	N/A
8.3c	Radiation from extended sources	No such sources radiating from Laser Scanner Unit considered.	N/A
	Value of angular subtense α (mrad)	--	N/A
8.3d	Non-uniform retinal image radiance profile, non-circular and multiple sources	No such sources considered.	N/A
8.3e	Time basis		P
	1) 0.25s		N/A
	2) 100s		P
	3) 30000s		N/A
8.3f	Repetitively pulsed or modulated lasers	Radiation from Laser Scanner Unit was considered as continuous output (CW) under the system configured.	N/A
	1) Exposure from any single pulse not exceeding the AEL for a single pulse		N/A
	2) Average power for a pulse train		N/A
	3a) Constant pulse energy and pulse duration		N/A
	3b) Varying pulse widths or varying pulse durations		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9	DETERMINATION OF ACCESSIBLE EMISSION LEVELS		P
9.1	Tests		P
	Single fault eliminated		N/A
	Housing material withstanding degradation		N/A
	Fault detection		N/A
9.2	Measurement conditions	See 9.3.2.	P
	Measured laser radiation	See table "Measured laser radiation, calculations and comparison with AEL limits"	P
9.3	Measurement geometry		P
9.3.1	General, evaluation scheme		—
	a) Simplified (default) method		P
	b) Increased AEL by parameter C ₆		N/A
9.3.2	Default (simplified) evaluation		P
	Condition applied	3	P
	Aperture stop diameter (mm)	7	P
	Measurement distance (mm)	At the closest point on the outside of the aperture of Laser Scanner Unit and main unit.	P
9.3.3	Extended sources	No such sources considered.	N/A
	C ₆	--	N/A
9.3.3a	Aperture diameters		N/A
	Condition applied	--	N/A
	Aperture stop diameter (mm).....	--	N/A
	Angular subtense of the apparent source α	--	N/A
9.3.3b	Angle of acceptance		N/A
	Condition applied	--	N/A
	1) Photochemical retinal limits	--	N/A
	Angle of acceptance	--	N/A
	2) All other retinal limits.....	--	N/A
	Angle of acceptance	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Measured laser radiation, calculations and comparison with AEL limits:

1. Classification, Laser Class: Class 1
(3B for laser diode from the specification)

2. Calculation of AEL

Angular subtense: $\alpha = 0$ mrad assumed

Accessible emission limits (AEL)

- Class 1: 0.39mW

- Class 3B: 0.5W

3. Measurement results of outside the equipment (main unit) for leakage

Laser Scanner Unit 1	
Fault condition - area of Toner Container, Top Cover opened, and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.42uW
Fault condition - area of Toner Container, Top Cover opened, pulled out the Drum/DLP unit to the front and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.48uW
Laser Scanner Unit 2	
Fault condition - area of Toner Container, Top Cover opened, and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.38uW
Fault condition - area of Toner Container, Top Cover opened, pulled out the Drum/DLP unit to the front and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.39uW
Laser Scanner Unit 3	
Fault condition - area of Toner Container, Top Cover opened, DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.40uW
Fault condition - area of Toner Container, Drum Unit and DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.48uW

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Clause	Requirement + Test	Result - Remark	Verdict

Measured laser radiation, calculations and comparison with AEL limits: Cont.

Laser Scanner Unit 4	
Fault condition - area of Toner Container, Top Cover opened, DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.38uW
Fault condition - area of Toner Container, Drum Unit and DLP Unit and Toner Container removed and adjusted to max power laser unit and Polygon motor locked.	0.40uW

Main unit provided to restrict operator access to laser radiation in excess of Class 1.

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Clause	Requirement + Test	Result - Remark	Verdict

Appendix	EU Group Differences (EN 60825-1:2007)	--								
Annex ZA	<p>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</p> <p>The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.</p> <p>NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.</p> <table><tr><td>--</td><td>IEC 60050-845: 1987</td></tr><tr><td>EN 60601-2-22: 1996 ²⁾</td><td>IEC 60601-2-22 ¹⁾</td></tr><tr><td>EN 61010-1: 2001 ³⁾</td><td>IEC 61010-1 ¹⁾</td></tr><tr><td>+ corr. June: 2002</td><td></td></tr></table>	--	IEC 60050-845: 1987	EN 60601-2-22: 1996 ²⁾	IEC 60601-2-22 ¹⁾	EN 61010-1: 2001 ³⁾	IEC 61010-1 ¹⁾	+ corr. June: 2002		P
--	IEC 60050-845: 1987									
EN 60601-2-22: 1996 ²⁾	IEC 60601-2-22 ¹⁾									
EN 61010-1: 2001 ³⁾	IEC 61010-1 ¹⁾									
+ corr. June: 2002										
	<p>1) Undated reference.</p> <p>2) Valid edition at date of issue. EN 60601-2-22:1996 will be superseded by EN 60601-1-2-22: 200X, which is based on IEC 60601-2-22:2007.</p> <p>3) Valid edition at date of issue.</p>									

IEC 60825-1:2007			
Clause	Requirement + Test	Result - Remark	Verdict

Appended table	EQUIPMENT MANUFACTURE INFORMATION (DATA SHEET) ABOUT THE CONTAINING LASER COMPONENT/S (see IEC 60950-1 test report)		--
	Manufacturer	--	—
	Type designation	--	—
	Structure	--	—
	Wavelength	--	—
	Output power (min. and max.)	--	—
	Radiation is		—
	Continuous.....	--	—
	Pulsed	--	—
	Pulse time	--	—
	Pulse repetition frequency	--	—
	Others	--	—
	PIC UP UNIT		--
	Manufacturer	--	—
	Type designation	--	—
	Others	--	—
	TRANSMITTER/TRANSCIEVER UNIT		--
	Manufacturer	--	—
	Type designation	--	—
	Others	--	—