



Ref. Certif. No.

JPTUV-012934

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST  
CERTIFICATES FOR ELECTRICAL EQUIPMENT  
(IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE  
CERTIFICATS D'ESSAIS DES EQUIPEMENTS  
ELECTRIQUES (IECEE) METHODE OC

## CB TEST CERTIFICATE *CERTIFICAT D'ESSAI OC*

Product  
Produit

High Speed Color Scanner

Name and address of the applicant  
Nom et adresse du demandeur

Panasonic Communications Co., Ltd.  
1471 Murata-machi  
Tosu-shi, Saga 841-8501, Japan

Name and address of the manufacturer  
Nom et adresse du fabricant

Panasonic Communications Co., Ltd.  
1471 Murata-machi  
Tosu-shi, Saga 841-8501, Japan

Name and address of the factory  
Nom et adresse de l'usine

Panasonic Communications Co., Ltd.  
1471 Murata-machi  
Tosu-shi, Saga 841-8501, Japan

Rating and principal characteristics  
Valeurs nominales et caractéristiques principales

AC 220-240V; 50/60Hz: 0.7A; Class I

Trade mark (if any)  
Marque de fabrique (si elle existe)

Panasonic

Model/type Ref.  
Ref. de type

KV-S7065C, KV-S7065CCN  
Accessories : refer to the test report

Additional information (if necessary)  
Information complémentaire (si nécessaire)

For model differences, refer to the test report.

A sample of the product was tested and found  
to be in conformity with  
Un échantillon de ce produit a été essayé et a été  
considéré conforme à la

IEC 60950-1:2001  
inclusive CENELEC Common Modifications  
National differences see test report

As shown in the Test Report Ref. No. which forms part  
of this Certificate  
Comme indiqué dans le Rapport d'essais numéro de  
référence qui constitue une partie de ce Certificat

12700608 001

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



TÜV Rheinland Group

TÜV Rheinland Japan Ltd.  
Shin Yokohama Daini Center Bldg.  
3-19-5, Shin Yokohama, Kohoku-ku  
Yokohama 222-0033 Japan  
Phone + 81 45 470-1850  
Fax + 81 45 473-5221  
Mail: info@jpn.tuv.com  
Web: www.tuv.com

Signature:

Dipl.-Ing. W. Herlitschke

Date: 30.11.2005

**CB TEST REPORT**  
**12700608 001**



according to  
**IEC 60950-1:2001**

**KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US**  
**Panasonic Communications Co., Ltd.**




<b>TEST REPORT</b> <b>IEC 60950-1 First Edition</b> <b>Information technology equipment – Safety –</b> <b>Part 1: General requirements</b>	
Report reference No .....	12700608 001
Tested by (printed name and signature) .....	M. Teng
Approved by (printed name and signature) .....	J. Howell
Date of Issue .....	28.11.2005
Testing Laboratory Name .....	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address .....	4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
Testing location .....	CBTL <input checked="" type="checkbox"/> CCATL <input type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address .....	(as above)
Applicant's Name .....	Panasonic Communications Co., Ltd.
Address .....	1471 Murata-machi, Tosu-shi, Saga 841-8501, Japan
<b>Test specification</b>	
Standard .....	IEC 60950-1:2001 (1 <sup>st</sup> edition) EN 60950-1:2001 + A11:2004
Test procedure .....	CB-scheme
Procedure deviation .....	Argentina, Austria, Australia, Belgium, Switzerland, Germany, Denmark, Finland, France, United Kingdom, Greece, Hungary, Israel, India, Italy, Korea, Malaysia, Netherlands, Norway, Poland, Sweden, Singapore, Slovenia and incl. Group differences (EN)
Non-standard test method .....	N.A.
Test Report Form No. ....	IECEN60950_1B
TRF originator .....	SGS Fimko Ltd
Master TRF .....	dated 2003-03
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Test item description .....	High Speed Color Scanner
Trademark .....	1) Panasonic, 2) & 3) Bowe Bell + Howell
Model and/or type reference .....	1) KV-S7065C and KV-S7065CCN 2) 3200-EU, 3200-US & 3) 3600-EU, 3600FDX, 3600-US
Serial number .....	Production sample without serial number
Rating(s) .....	AC 220-240V, 50 / 60Hz: 1) & 2) 0.7A, 3) 0.6A


## Copy of marking plate:

<b>Panasonic</b> High Speed Color Scanner Model No. KV-S7065C	WARNING: TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
220-240 V~ 50/60 Hz 0.7 A	ACHTUNG: Gerätedeckel nicht abheben, um elektrische Schläge zu vermeiden. Es sind keine vom Anwender zu wechselnden Teile einbaufähig. Das Gerät darf nur von geschulten Service-Fachpersonal geöffnet werden.
 	Apparatet må kun tilkoples Jordet stikkontakt. Apparatet skall anslutas till Jordet uttag när den ansluts till ett nätverk. Manufactured by Panasonic Communication Co., Ltd. Fukuoka Japan Made in Japan/Fabrique au Japon/Fabricado en Japon

<b>Panasonic</b> 高速彩色扫描仪 型号: KV-S7065CCN 电源: 220-240 V~ 50/60 Hz 0.7 A	
松下通信系统株式会社 日本福岡 日本制造	

<b>Bowe Bell + Howell Scanners, L.L.C.</b> <a href="http://www.bbhs scanners.com">www.bbhs scanners.com</a>	Model No. 3200-EU Product Code 0103541  220 - 240 V AC 50/60 Hz 0.7A   CAUTION: DISCONNECT UNIT FROM POWER SOURCE BEFORE SERVICING.
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<b>Bowe Bell + Howell Scanners, L.L.C.</b> 彩色扫描仪 型: 3200-US 电源要求: 交流 220-240 V, 50/60 Hz 0.7 A  © Bowe Bell + Howell 扫描仪有限公司。 日本制造	
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<b>Bowe Bell + Howell Scanners, L.L.C.</b> <a href="http://www.bbhs scanners.com">www.bbhs scanners.com</a>	Model No. 3000-EU Product Code 0103551  220 - 240 V AC 50/60 Hz 0.6A   CAUTION: DISCONNECT UNIT FROM POWER SOURCE BEFORE SERVICING.
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Bowe Bell + Howell Scanners, L.L.C.

Bowe Bell + Howell Scanners, L.L.C.

彩色扫描仪

型号: 3600-LS

电源要求: 交流 220-240 V, 50/60 Hz 0.6 A

彩色扫描仪

型号: 3600PDX

电源要求: 交流 220-240 V, 50/60 Hz 0.6 A

© Bowe Bell + Howell 扫描仪有限公司。

日本制造

PJGT0655ZA

© Bowe Bell + Howell 扫描仪有限公司。

日本制造

PJGT0708ZA

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.  
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

THIS CLASS A DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.  
CET APPAREIL NUMÉRIQUE DE LA CLASSE A EST CONFORME À LA NORME NMB-003 DU CANADA.

Laitte on lähtevä suojamaadoituskehoitukse varustettu pöytämalli.  
Apparätet må kun släppes jordet utifrån tillståndet.  
Apparaten skall anslutas till jordet utgång när den ansluts till ett nätverk.

Bowe Bell + Howell Scanners, L.L.C.

www.bbhscanners.com

Made in Japan

PJGT0708ZA

Model No. 3600PDX  
Product Code 9103061

100 - 120 V AC 50/60 Hz 1.4A

220 - 240 V AC 50/60 Hz 0.6A


CAUTION: DISCONNECT UNIT  
FROM POWER SOURCE  
BEFORE SERVICING.

## Option Imprinter Unit:

**Panasonic**
**CE**

Imprinter unit

Model No. KV-SS014

24 V  $\Rightarrow$  0.05 A      3.3 V  $\Rightarrow$  0.06 A

Manufactured by Panasonic Communications Co., Ltd. Fukuoka Japan  
Fabriqué par Panasonic Communications Co., Ltd. Fukuoka Japan  
Made in Japan/Fabriqué au Japon


**BÖWE BELL+HOWELL**
**CE**

Imprinter unit

24 V  $\Rightarrow$  0.05A

Model No. 0123030

3.3 V  $\Rightarrow$  0.06A

Made in Japan

PJGT0515ZA



## Summary of testing:

All test results were acceptable.

**Particulars: test item vs. test requirements**

Equipment mobility .....: Stationary; for desktop use  
 Operating condition.....: continuous  
 Mains supply tolerance (%).....:  $\pm 10\%$   
 Tested for IT power systems .....: Considered for Norway  
 IT testing, phase-phase voltage (V) : 230V  
 Class of equipment .....: Class I  
 Mass of equipment (kg) .....: Approx. 27kg (without paper)  
 Protection against ingress of water .....: Not rated, indoor use only

**Test case verdicts**

Test case does not apply to the test object : N(/A)  
 Test item does meet the requirement .....: P(ass)  
 Test item does not meet the requirement ...: F(ail)

**Testing**

Date of receipt of test item .....: 25.11.2005  
 Date(s) of performance of test .....: 28.11.2005

**General remarks:**

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

The test result presented in this report relate only to the object(s) tested.

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

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

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

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

**1) Application details / Description of the product:**

The product tested is a High Speed Color Scanner for general office use.

Max. specified ambient temperature (°C) .....: 30°C

Supply Connection .....: Appliance Inlet

(Power cord is not provided. Information of Power Supply Cord is provided in Operation Instructions)

A non-approved building-in type switching power supply was tested as part of the overall configuration of the equipment.

## 2) Differences between the models:

The models are essentially the same except for the items listed below.

Items:	Models:	KV-S7065C KV-S7065CCN	3200-EU 3200-US	3600-EU, 3600FDX 3600-US
Brand Name		Panasonic	Bowe Bell + Howell	
Option Imprinter		KV-SS014	0123030	
Scanner Type		Duplex ADF & FlatBed		Duplex ADF
Interface		USB and SCSI		USB
Power Switch	Mfr.:	Echo Electric Co., Ltd.		Matsushita
	Type:	SJ		ESB92D18B
	Ratings:	AC 250V, 10A		AC 250V, 4A
Carriage Motor		103H5210-0414		Not provided

If not stated otherwise, tests were conducted on model "KV-S7065C" to represent the other similar models.

## 3) Options:

The following (optional) **accessories** are included in this test report and considered during relevant tests:

Imprinter Unit: type KV-SS014 or 0123030, power supplied by DC 24V and 3.3V, mass 380g  
Only mechanical parts present on Imprinter unit.

## 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.
- High voltage is generated from SELV circuits, see cl. 2.2.4.
- (Internal) Metal chassis and bottom metal enclosure is reliably connected to protective earth.

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

With pri – sec separation .....: SWPS unit type PJUPB0031ZA; T801, IC803, IC804 and IC805

With pri – parts only .....: (none)

HV-unit(s) .....: Inverter for lamp (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 only checked for correct-application (see 1.5.1))

(none)

## 5) Manufacture:

(same as applicant)

**6) Production facilities:**

(same as applicant)

**Abbreviations used throughout this test report:**

PE/PB	: protective earth/bonding	pri	: primary
CB	: circuit breaker	sec	: secondary
(S)PS	: (switching) power supply	gnd	: ground
HV	: high voltage	I/O	: input/output
PCB	: printed circuit (wiring) board	li	: installation instruction
TIW	: triple insulated wire		
F/B/S/R	: Functional/Basic/Supplementary/Reinforced Insulation		

Clause	Requirement – Test	Result - Remark	Verdict
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1	GENERAL		P
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1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950 or relevant component standard	(see appended table 1.5.1) Components, which are found to affect safety aspects, comply with the requirements of this standard or comply with the safety requirement of the relevant component standards. (surge absorber ZNR801 provided after fuse F801)	P
1.5.2	Evaluation and testing of components	Components certified for IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
1.5.3	Thermal controls	(see Annex K)	N
1.5.4	Transformers	Transformer T801 is suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C.	P
1.5.5	Interconnecting cables	Interconnection cable for signal I/O is carrying SELV voltages.	N
1.5.6	Capacitors in primary circuits:	Type X1 or X2 capacitors used between lines, type Y1 or Y2 capacitors used between line and earth comply with IEC 60384-14. (see appended table 1.5.1)	P
1.5.7	Double or reinforced insulation bridged by components		N
1.5.7.1	General	See below.	P
1.5.7.2	Bridging capacitors	Double or reinforced insulation not bridged by capacitors.	N
1.5.7.3	Bridging resistors	Double or reinforced insulation not bridged by resistors.	N
1.5.7.4	Accessible parts	No components per 1.5.7.1 or 1.5.7.2 provided.	N

Clause	Requirement – Test	Result - Remark	Verdict
1.5.8	Components in equipment for IT power systems	Lines to PE components are rated for line-to-line voltage.	P
1.6	Power interface		P
1.6.1	AC power distribution systems	TN IT (considered for Norway)	P
1.6.2	Input current	Input current measured under continuous scanning mode. (see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N
1.6.4	Neutral conductor	Neutral insulated from earth like a line conductor by at least basic insulation. Components between Neutral and earth are rated the same as for line to earth.	P
1.7	Marking and instructions		P
1.7.1	Power rating	See below.	P
	Rated voltage(s) or voltage range(s) (V):	AC 220 – 240V	P
	Symbol for nature of supply, for d.c. only:	AC supply	N
	Rated frequency or rated frequency range (Hz):	50/60Hz	P
	Rated current (mA or A):	0.7A or 0.6A	P
	Manufacturer's name or trademark or identification mark:	Panasonic Communications Co., Ltd. / Panasonic	P
	Type/model or type reference:	(see "Copy of marking plate")	P
	Symbol of Class II equipment only:		N
	Other symbols:		N
	Certification marks:	No requirement.	N
1.7.2	Safety instructions	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. (In the following, relevant information may be given in an equivalent wording.)</p> <p>Noise declaration for Germany: "Der arbeitsplatzbezogene Geräuschemissionswert dieses Gerätes beträgt &lt;70dB(A) nach DIN 45635 Teil 19.</p> <p>Disconnect Device according 3.4.3 described in the manual (pluggable equipment): "The socket outlet must be near this equipment and must be easily accessible."</p>		

Clause	Requirement – Test	Result - Remark	Verdict
1.7.3	Short duty cycles	Continuous operation.	N
1.7.4	Supply voltage adjustment:	Single voltage range.	N
1.7.5	Power outlets on the equipment:	No power outlets provided.	N
1.7.6	Fuse identification:	<p>Fuse(s) are clearly and adequately marked with fuse number and rating.</p> <p>F801: T4AH 250V (primary circuit)</p> <p>F841: T6.3AH 250V (secondary circuit)</p> <p>Caution: For continued protection against risk of fire, replace only with same type and rating of fuse.</p>	P
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals	<p>Protective bonding terminals are marked with symbol IEC 60417, No. 5019 (⊕)</p> <p>This symbol is not used for other earth connection.</p>	P
1.7.7.2	Terminal for a.c. mains supply conductors	Appliance Inlet used.	N
1.7.7.3	Terminal for d.c. mains supply conductors	No connection to d.c. mains.	N
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking:	<p>Safety related switches and controls:</p> <p>Power Switch: function is obvious by positioning and marking (see 1.7.8.3)</p> <p>Other Indicators/controls provided for functional reasons, not affecting safety.</p>	P
1.7.8.2	Colours:		N
1.7.8.3	Symbols according to IEC 60417:	<p>Marking for power switch according to IEC 60417; No. 5007 "I" and 5008 "O" "or" push-push type, No 5010.</p>	P
1.7.8.4	Markings using figures:	Not used.	N
1.7.9	Isolation of multiple power sources:	Single supply.	N

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Clause	Requirement – Test	Result - Remark	Verdict

1.7.10	IT power distribution systems	Considered for Norway. No special modification, no instruction required.	P
1.7.11	Thermostats and other regulating devices	No such devices.	N
1.7.12	Language:	Instruction related to safety provided in German. Functional markings are in English.	P
1.7.13	Durability	Marking is durable and legible. Tested by water followed with petroleum spirit.	P
1.7.14	Removable parts	Safety relevant markings are located on fixed installed parts.	P
1.7.15	Replaceable batteries	No battery.	N
	Language:		
1.7.16	Operator access with a tool:	Operator is not instructed to use any tool for access.	N
1.7.17	Equipment for restricted access locations:	Not intended for restricted access location.	N

2	PROTECTION FROM HAZARDS	P
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2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in OPERATOR access areas	Operator access to hazardous parts is prevented by measures according to 2.1.1.1 and 2.1.3.	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:	No access to hazardous parts.	P
	Test with test pin:	The test pin cannot touch hazardous bare parts through any openings in the enclosure.	P
	Test with test probe:	No TNV circuits.	N
2.1.1.2	Battery compartments:	No battery compartment. No TNV circuits.	N

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Clause	Requirement – Test	Result - Remark	Verdict
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2.1.1.3	Access to ELV wiring	No ELV circuits.	N
	Working voltage (V); distance (mm) through insulation:		
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. No outputs providing power. I/O connectors are only for signal at low energy levels.	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
	Time-constant (s); measured voltage (V):	(see appended table 2.1.1.7)	--
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.	N
2.1.3	Protection in restricted access locations	Not intended to be installed in a restricted access location.	N

2.2	SELV circuits		P
2.2.1	General requirements	Secondary output max. DC 24V	P
2.2.2	Voltages under normal conditions (V):	Between any SELV circuits 42.4V peak or 60Vdc are not exceeded.	P
2.2.3	Voltages under fault conditions (V):	Limits of 71V peak and 120Vdc were not exceed, SELV limits not for longer than 0.2 seconds, see abnormal results 5.3.	P
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)	Considered; SELV circuit are separated from primary by double or reinforced insulation.	P
2.2.3.2	Separation by earthed screen (method 2)	Considered; Primary are isolated from earthed conductive parts by basic insulation.	P
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N

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Clause	Requirement – Test	Result - Remark	Verdict
2.2.4	Connection of SELV circuits to other circuits:	SELV not connected to primary. Lamp inverter unit supplied from SELV; if lamp inverter output is shorted to SELV side, SELV was not exceeded at the input connections of the unit. (Measured with oscilloscope)	P
2.3	TNV circuits <i>No TNV circuits.</i>		N
2.4	Limited current circuits <i>Lamp inverter not tested for this clause. (see abnormal tests clause 5.3)</i>		N
2.5	Limited power sources <i>Power supply for operation panel rated DC 5V and 12V were tested for limited power source.</i>		P
	Inherently limited output		P
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault condition	(see appended table 2.5)	P
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output voltage (V), output current (A), apparent power (VA):	(see appended table 2.5)	
	Current rating of overcurrent protective device (A)		
2.6	Provisions for earthing and bonding		P
	Protective Bonding wire is on one side soldered to Protective Earth pin of appliance inlet (additionally secured by heat-shrinkable tubing), the other side has ring terminal (fixed by double crimping) Ring terminal is secured to chassis by M4 screw; spring-washer provided.		
2.6.1	Protective earthing	Internal metal enclosure and accessible basic insulated conductive parts are reliably bonded to the protective earth terminal.	P

Clause	Requirement – Test	Result - Remark	Verdict
2.6.2	Functional earthing	Functional earthing either separated from hazardous voltages by double- or reinforced insulation or connected to PB.	P
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General	See below.	P
2.6.3.2	Size of protective earthing conductors	No power cords provided.	N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG:		
2.6.3.3	Size of protective bonding conductors	(refers to cl. 3.2.5, table 3B)	P
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG:	Rated 0.7A, 0.75mm <sup>2</sup>	
2.6.3.4	Resistance ( $\Omega$ ) of earthing conductors and their terminations, test current (A):	(see appended table 2.6.3.4)	
2.6.3.4	Colour of insulation:	PB conductor(s) are green/yellow. Green/Yellow wire not used for other connections.	P
2.6.4	Terminals		P
2.6.4.1	General	Appliance inlet.	P
2.6.4.2	Protective earthing and bonding terminals	Appliance inlet used.	P
	Rated current (A), type and nominal thread diameter (mm):	M4 screw used for bonding terminals.	
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors	Separate terminals provided for protective earth conductors and protective bonding conductors.	P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment	No such system of interconnected equipment.	N
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	Appliance Inlet: Earthing connected before and disconnected after hazardous voltage.	P

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Clause	Requirement – Test	Result - Remark	Verdict
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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.	P
2.6.5.7	Screws for protective bonding	Thread cutting or space thread screwed connections not used for protective bonding connections.	N
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuits.	N

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Pluggable equipment type A Equipment relies on 16A rated fuse or circuit breaker of the building installation for short circuit and earth fault.  The built-in device fuse F801 provides overcurrent protection.	P
	Instructions when protection relies on building installation	Pluggable equipment type A.	P
2.7.2	Faults not covered in 5.3		P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the building installation is considered as providing short circuit protection.	P
2.7.4	Number and location of protective devices:	Overcurrent protections by fuse F801 in primary phase. Earth fault protection by fuse or circuit breaker in the building installation.  In Norway, IT power system is used. However, equipment with a single protective device is accepted.	P
2.7.5	Protection by several devices	Only one fuse in phase or line.	N
2.7.6	Warning to service personnel:	Not required, no unexpected hazard.	N

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Clause	Requirement – Test	Result - Remark	Verdict

2.8	Safety interlocks <i>No operator accessible areas, which presents hazards in the meaning of this standard. Since the door switch is provided for disabling and motion upon openings front door.</i>		N
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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	Singapore considered: Tested for 120 h.	P
	Humidity (%)	93%	
	Temperature (°C)	40°C	
2.9.3	Grade of insulation	Kind of insulation and working voltage considered.	P

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	Creepage distances and clearances measured per Annex F.  Overvoltage category I used to determine clearances in secondary circuits.	P
2.10.2	Determination of working voltage	The r.m.s. and the peak voltage were measured on all sources of the switching power supply.	P
2.10.3	Clearances		P
2.10.3.1	General	Comply with 2.10.3.1 and 2.10.3.2, Annex G not applied.	P
2.10.3.2	Clearances in primary circuit	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.3	Clearances in secondary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Measurement of transient voltage levels	Not measured, normal transient levels considered.	N
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P

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	CTI tests:	For PCB considered, material group IIIa/IIIb assumed. For transformers T801 considered material group I.	
2.10.5	Solid insulation		P
2.10.5.1	Minimum distance through insulation	(see appended table 2.10.5)	P
2.10.5.2	Thin sheet material	Provided within transformer(s): T801.	P
	Number of layers (pcs):	3 layers.	
	Electric strength test:	2 layers tape at AC 3000V.	
2.10.5.3	Printed boards	Not used to provide supplementary or double/reinforced insulation.	N
	Distance through insulation		
	Electric strength test for thin sheet insulating material		
	Number of layers (pcs):		
2.10.5.4	Wound components	No such components used.	N
	Number of layers (pcs):		
	Two wires in contact inside component; angle between 45° and 90°		
2.10.6	Coated printed boards	Coating not tested.	N
2.10.6.1	General		N
2.10.6.2	Sample preparation and preliminary inspection		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing (°C):		N
2.10.6.5	Electric strength test		N
2.10.6.6	Abrasion resistance test		N
	Electric strength test		
2.10.7	Enclosed and sealed parts:	Photo-couplers are approved components. Not applied for other components.	N
	Temperature $T_1 = T_2 + T_{mra} - T_{amb} + 10K$ (°C):		
2.10.8	Spacings filled by insulating compound:	Not provided.	N
	Electric strength test		
2.10.9	Component external terminations	See appended table 2.10.3/4. No components conforming to 2.10.6 provided.	N

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Clause	Requirement – Test	Result - Remark	Verdict

2.10.10	Insulation with varying dimensions	Single working voltage (highest value) used to determine creepage distances and clearances.	N
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3	WIRING, CONNECTIONS AND SUPPLY		P
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3.1	General		P
3.1.1	Current rating and overcurrent protection	Sufficient cross sectional area of internal wiring. Internal wires are UL recognized wiring that is PVC insulated.	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 Fan motor 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. (see appended table 5.2)	P
3.1.5	Beads and ceramic insulators	Adequately fixed, 10 N applied, no hazard.	P
3.1.6	Screws for electrical contact pressure	Relevant electrical and earthing 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	Non-metallic materials in electrical connections	Relevant current carrying and all protective bonding connections are metal to metal.	P

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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
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 reliably kept in position.	P

3.2	Connection to a.c. mains supply or a d.c. mains supply		P
3.2.1	Means of connection:	See below.	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		N
3.2.2	Multiple supply connections	Only one supply connection.	N
3.2.3	Permanently connected equipment	See clause 3.2.1.	N
	Number of conductors, diameter (mm) of cable and conduits:		
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320 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		N
3.2.5.1	AC power supply cords	The power supply cord is not provided with this unit. (Information of power supply cord is provided in Operation Instructions)	N
	Type:		
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG:		
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N):		
	Longitudinal displacement (mm):		

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3.2.7	Protection against mechanical damage	No sharp points or cutting edges that may damage the power supply cord.	N
3.2.8	Cord guards	Neither hand-held nor intended to be moved while in operation.	N
	D (mm); test mass (g):		
	Radius of curvature of cord (mm):		
3.2.9	Supply wiring space	Appliance inlet used.	N

3.3	Wiring terminals for connection of external conductors <i>No terminals, appliance inlet and detachable power supply cord.</i>		N
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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
3.4.4	Parts which remain energized	No parts remain energized.	P
3.4.5	Switches in flexible cords	Not provided.	N
3.4.6	Single-phase equipment and d.c. equipment	The appliance inlet disconnects both poles simultaneously.	P
3.4.7	Three-phase equipment	Single-phase equipment.	N
3.4.8	Switches as disconnect devices	Switch not used as disconnect device.	N
3.4.9	Plugs as disconnect devices	Appliance inlet used.	N
3.4.10	Interconnected equipment	Interconnections to SELV.	N
3.4.11	Multiple power sources	Single supply connection.	N

3.5	Interconnection of equipment		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits:	SELV is connected to SELV.	P
3.5.3	ELV circuits as interconnection circuits	No ELV circuits.	N

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Clause	Requirement – Test	Result - Remark	Verdict

4	PHYSICAL REQUIREMENTS		P
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4.1	Stability		P
	Angle of 10°	Stable mechanical construction, equipment does not overbalance when tilted to an angle of 10° from its normal upright position.	P
	Test: force (N):	Not a floor-standing unit.	N

4.2	Mechanical strength		P
4.2.1	General	Outer enclosure shows sufficient strength to withstand expected handling conditions.	P
4.2.2	Steady force test, 10 N	Applied to relevant parts, no hazard.	P
4.2.3	Steady force test, 30 N	30 N applied to internal enclosures.	P
4.2.4	Steady force test, 250 N	250N applied to outer enclosure.	P
4.2.5	Impact test	No hazardous parts became accessible after test.	P
	Fall test		P
	Swing test		N
4.2.6	Drop test	Neither direct plug-in nor hand held.	N
4.2.7	Stress relief test	After 7h at 70°C 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
	Picture tube separately certified:		
4.2.9	High pressure lamps	No such lamp.	N
4.2.10	Wall or ceiling mounted equipment; force (N):	Not intended for wall or ceiling mounting.	N

4.3	Design and construction		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded and smooth.	P

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4.3.2	Handles and manual controls; force (N):	15N (power switch)	P
4.3.3	Adjustable controls	Full range circuit, no voltage adjustment. Other controls not likely to cause hazard.	N
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress. Relevant screws provided with spring-washer.	P
4.3.5	Connection of plugs and sockets	In operator and service areas, mismatching prevented by incompatible form or location.	P
4.3.6	Direct plug-in equipment	No direct plug-in.	N
	Dimensions (mm) of mains plug for direct plug-in:		N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N):		N
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries	No battery.	N
4.3.9	Oil and grease	Insulation not in contact with oil or grease.	N
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	P
4.3.11	Containers for liquids or gases	No liquid contained.	N
4.3.12	Flammable liquids:	No flammable liquids present.	N
	Quantity of liquid (l):		
	Flash point (°C):		
4.3.13	Radiation; type of radiation:	No radiation hazards.	N
4.3.13.1	General		N
4.3.13.2	Ionizing radiation	No ionizing radiation.	N
	Measured radiation (pA/kg):		
	Measured high-voltage (kV):		
	Measured focus voltage (kV):		
	CRT markings:		
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	No ultraviolet (UV) radiation.	N
	Part, property, retention after test, flammability classification:		N

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4.3.13.4	Human exposure to ultraviolet (UV) radiation:		N
4.3.13.5	Laser (including LEDs)	No laser. Indicator LED's below laser class 1 limits.	N
	Laser class .....		
4.3.13.6	Other types .....		N

4.4	Protection against hazardous moving parts		P
4.4.1	General	Moving parts do not presented hazards in the meaning of this standard.	N
4.4.2	Protection in operator access areas	Operator accessible moving parts represent no hazard, e.g. paper feeding / –exit areas.	P
4.4.3	Protection in restricted access locations	Applied cl. 4.4.2.	N
4.4.4	Protection in service access areas	No hazards by moving parts.	N

4.5	Thermal requirements		P
4.5.1	Temperature rises	(see appended table 4.5.1)	P
	Normal load condition per Annex L:		P
4.5.2	Resistance to abnormal heat	(see appended table 4.5.2)	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings	No top and side openings provided.	P
	Dimensions (mm):		
4.6.2	Bottoms of fire enclosures	Protection against emission of flame, molten metal, flaming or glowing particles or drops by the fire enclosure.	P
	Construction of the bottom:	No openings on the bottom. SWPS unit, main (CPU) board and motors drive board are completely enclosed by inner metal steel. Thickness: 1.0mm	
4.6.3	Doors or covers in fire enclosures	No doors or covers as a part of the fire enclosure.	P
4.6.4	Openings in transportable equipment		N

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4.6.5	Adhesives for constructional purposes	Not used.	N
	Conditioning temperature/time:		

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 cl. 4.5.1.)	P
	Method 1, selection and application of components wiring and materials		P
	Method 2, application of all of simulated fault condition tests		P
4.7.2	Conditions for a fire enclosure		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. (All PCB's are V-1 or better.)	P
4.7.2.2	Parts not requiring a fire enclosure	Others SELV parts are located outside a fire enclosure. Except for operation panel supplied from a limited power source (no fire enclosure required).	P
4.7.3	Materials		P
4.7.3.1	General	Materials with the required flammability classes are used.	P
4.7.3.2	Materials for fire enclosures	Protective enclosure with adequate flammability rating. (refer to introduction part for weight, etc. and to appended table 1.5.1 for enclosure data)	P
4.7.3.3	Materials for components and other parts outside fire enclosures	Decorative parts rated at least HB.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2, HF-2 or better. Insulating material consists of PVC.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies.	N

Clause	Requirement – Test	Result - Remark	Verdict
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4.7.3.6	Materials used in high-voltage components	No high voltage (>4 kV) components.	N
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5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
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5.1	Touch current and protective conductor current		P
5.1.1	General	Tested for TN system.	P
5.1.2	Equipment under test (EUT)	Single supply, independently tested.	P
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
	Test voltage (V):	(see appended table 5.1)	
	Measured current (mA):	(see appended table 5.1)	
	Max. allowed current (mA):	3.5mA	
5.1.7	Equipment with touch current exceeding 3.5 mA:	Leakage current does not exceed 3.5mA.	N
5.1.8	Touch currents to and from telecommunication networks	No TNV circuits.	N
5.1.8.1	Limitation of the touch current to a telecommunication network		N
	Test voltage (V):		
	Measured current (mA):		
	Max. allowed current (mA):		
5.1.8.2	Summation of touch currents from telecommunication networks:		N

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

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	Component failure, careless use and foreseeable misuse considered.	P

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5.3.2	Motors	Only stepping motors used. (see clause 5.3.5)	N
5.3.3	Transformers	(see appended Annex C and 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. One winding continuously energized. (see appended table 5.3)	P
5.3.6	Simulation of faults	(see appended table 5.3)	P
5.3.7	Unattended equipment	No such equipment.	N
5.3.8	Compliance criteria for abnormal operating and fault conditions	No fire propagated beyond the equipment. No molten metal was emitted. Electric strength test primary to SELV passed.	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS <i>No TNV circuits.</i>	N
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7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS <i>Not connected to Cable Distribution System</i>	N
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A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE <i>Not tested; flammability data were taken from available literature.</i>	N
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B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2) <i>Only stepping motors used.</i>	N
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C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position:	Pri – sec transformer: T801	
	Manufacturer:	(see appended table 1.5.1)	
	Type:	(see appended table 1.5.1)	
	Rated values:	(see appended table 1.5.1)	

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	Method of protection:		
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation	(see appended tables 2.10.3/4, 2.10.5, 5.2)	P
	Protection from displacement of windings:	See below.	P

**Construction details of Transformer T801:**

Concentric windings on phenolic bobbin, 3 layers insulation between prim and sec windings.

Distance tape: 6.6mm on both sides of bobbin of transformer. Outer winding primary pin 3-2.

Primary pin 8 winding ends are provided with tubing (from solder pins to beyond the distance tape).

**Barrier tape:**

- Teraoka Seisakusho, type 673F / CTI I / tested by Japan Electrical Testing Laboratory "and"
- 3M Company, type Super 10 / CTI I / UL file No. E17385 (tape width min. 8.0mm; only for pin 3-2)

**Insulation tape:**

- Teraoka Seisakusho, type 630F / CTI I / tested by Japan Electrical Testing Laboratory.

For working voltage and insulation distance measurements, see appended table 2.10.3/4.

Recurring peak voltage	592V <sub>peak</sub>	
Required clearance for reinforced insulation (table 2H and 2J)	4.6mm	
Measured min. clearances, location	inside (mm)	outside (mm)
pri-sec	6.6	12.2
pri-core	2.1	6.4
sec-core	6.2	5.8
Effective voltage rms	402V	
Required creepage for reinforced insulation ( table 2L)	8.0mm (CIT: III) 4.0mm (CTI: I)	
Measured min. creepages, location:	inside (mm)	outside (mm)
pri-sec (on barrier tape)	6.6 (CTI: I)	12.2
pri-core	2.1	6.4
sec-core	6.2	5.8
Pin numbers primary:	4-3, 8-6, 8-7, 3-2	
Pin numbers secondary:	11/12-14/15	
Bobbin thickness /material:	1.0mm/phenolic	
Electric strength test, 3000Vac after humidity treatment	No breakdown	

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Clause	Requirement – Test	Result - Remark	Verdict
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument		
D.2	Alternative measuring instrument		Not used
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13) <i>Thermocouples used</i>		N
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10) <i>Measured accordingly.</i>		P
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES <i>Alternate method not considered.</i>		N
H	ANNEX H, IONIZING RADIATION (see 4.3.13) <i>No ionizing radiation generated.</i>		N
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal used:	No direct Al – Cu contact.	--
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7) <i>Not used.</i>		N
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1) <i>Tested according to method L.7 "Other business equipment".</i>		P
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1) <i>Not considered.</i>		N
N	ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5) <i>Not used.</i>		N

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P	ANNEX P, NORMATIVE REFERENCES		P
Q	ANNEX Q, BIBLIOGRAPHY		P
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES <i>Not applied</i>		N
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3) <i>Not applied.</i>		N
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2) <i>Not applied</i>		N
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4) <i>Not used in the equipment or components.</i>		N
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) <i>Considered.</i>		P
W	ANNEX W, SUMMATION OF TOUCH CURRENTS <i>Considered.</i>		P
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1) <i>Considered.</i>		P
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3) <i>No ultraviolet light source.</i>		N

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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
AC Inlet	Echo Electric Co., Ltd.	AC-P06	AC250V, 10A	DIN VDE 0625-1 EN 60320	VDE
Power Switch (for KV-S7065C / CCN, 3200- EU / US)	Echo Electric Co., Ltd.	SJ	AC250V, 10A	DIN VDE 0630	VDE
Power Switch (for 3600-EU / -US / FDX)	Matsushita Electric Comp. Co., Ltd.	R2	AC250V, 4A	EN61058-1	NEMKO VDE SEMKO
<b>On SWPS board:</b>					
Connector (CN801)	Japan Solderless Terminal Mfg. Co., Ltd.	VH Series	AC 250V, 7A	EN 61984	TÜV-R
Fuse (F801)	Littelfuse Ltd.	215	AC250V, T4AH	DIN VDE 0820-1 BS EN 60127-2	VDEI BSI
alternate	Sky Gate Co., Ltd.	SG5013	AC250V, T4AH	EN 60127-2 DIN VDE 60127-1	SEMKO VDE
alternate	SOC Corporation	HT	AC250V, T4AH	EN 60127-2 BS EN 60127-2	SEMKO BSI
Surge Absorber (ZNR801)	Ohizumi Mfg Co., Ltd.	470NS	AC 300V	—	UL
Alternate	Fuji Electric Co., Ltd.	ENC471D	AC 300V	—	UL
X-Capacitor (C801, C802)	Matsushita Electric Industrial Co., Ltd.	ECQUL (X2-type)	AC275V, Max. 0.68uF	DIN EN 132400 DIN EN 132400/A3 IEC384-14 EN132400	VDE
alternate	Okaya Electric Industrial Co., Ltd.	PA (X2-type)	AC275V, Max. 0.68uF	EN 132400 IEC 60384-14	VDE
alternate	Okaya Electric Industrial Co., Ltd.	XE (X2-type)	AC275V, Max. 0.68uF	EN 132400 IEC 60384-14	VDE
Inductor (L801, L802)	Matsushita Electric Co., Ltd.	ELF18D850C	Winding resist.: Max. 0.097 $\Omega$ Insul. class E Bobbin: PBT	—	Tested inside unit

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Clause	Requirement – Test	Result - Remark	Verdict
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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
Bleeder Resistor (R801)	Various	Carbon type	0.5W, 680k $\Omega$ max	—	Tested inside unit
Y-Capacitor (C803, C804)	Murata Manufacturing Co., Ltd.	KH (Y2-type)	AC250V, Max 2200pF	EN 132 400 IEC 60384-14	VDE
alternate	Matsushita Electric Industrial Co., Ltd.	TS (Y2-type)	AC250V, Max 2200pF	DIN EN 132400 (VDE0565-1-1) IEC384-14	VDE
Optoisolator (IC803, IC804, IC805)	Toshiba Corp	TLP421F (D4)	U <sub>orm</sub> : 890V U <sub>tr</sub> : 8000V cr./cl: 8.0mm dl: 0.4mm, 100°C	IEC60950 IEC 60747-5-2	TUV-R FIMKO
Y-Capacitor (C808)	Murata Manufacturing Co., Ltd.	KH (Y2-type)	AC250V, Max 4700pF	EN 132 400 IEC 60384-14	VDE
alternate	Matsushita Electric Industrial Co., Ltd.	TS (Y2-type)	AC250V, Max 4700pF	DIN EN 132400 (VDE0565-1-1) IEC384-14	VDE
Electrolytic Capacitor (C807)	Diverse manufacturers	Various	450V, max. 220uF	—	Tested inside unit
Transformer (T801)	Toho zinc Co., Ltd.	THA0500B	Winding resist.: 3-2: $\varnothing$ 0.23mm 20T 4-3: $\varnothing$ 0.23mm 26T 8-6: $\varnothing$ 0.20mm 8T 8-7: $\varnothing$ 0.20mm 5T 11/12-14/15: $\varnothing$ 0.18mm 8T Insul. class A Bobbin: Phenol	—	Tested inside unit
Secondary Fuse (F841)	Littelfuse Ltd.	215	AC250V, T6.3AH	BS EN 60127-2 DIN VDE 0820-1	BSI VDE
alternate	Sky Gate Co., Ltd.	SG5013	AC250V, T6.3AH	EN 60127-2 DIN VDE 60127-1	SEMKO VDE
alternate	SOC Corporation	HT	AC250V, T6.3AH	EN 60127-2 BS EN 60127-2	SEMKO BSI
<b>Motors</b>					
Conveyor Motor (Stepping Motor)	Oriental motor Co., Ltd.	PV267-02B-C1	4.8Vdc, 2A/phase winding: 2.4 $\Omega$ $\pm$ 10%/ phase Insul. class B	—	Tested inside 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 <sup>1)</sup>
Feed Motor (Stepping Motor)	Oriental Motor Co., Ltd.	PK266-02-C131	3.6Vdc, 2A/phase winding: 1.8 Ω ±10%/ phase Insul. class B	—	Tested inside unit
Carriage Motor (Stepping Motor)	Sanyo Denki Co., Ltd	103H5210-0414	4Vdc, 1.2A/phase winding: 3.3 Ω ±10%/ phase Insul. class A	—	Tested inside unit
Fan Motor	Minebea Co., Ltd	2410ML-05W- B10	24Vdc, 0.08Amax 0.39m <sup>3</sup> /min CFM Insul. class E	DIN EN 60950 (VDE 0805)	VDE
Inverter					
CIS lamp	Harison Toshiba Lighting Corp.	CSLKA4JBB9SX 343TP30A70/Z- 1AS  Or CSLKA4JBB9SX 343TP39A70/Z- 2AS	(combined with lamp inverter)	--	Tested inside unit
Lamp Inverter	Harison Toshiba Lighting Corp	INV- 24X04408DMS  Or Inv- 24X04482PCC	Input: DC 24V, 1A max. Output: 1150Vrms ±20% (2112Vp-0 max) 38 ±7mA rms  No-load: 2145Vp-0 max.	--	Tested inside unit
Inverter transformer T1	Kijima Musen Co., Ltd.	TBFL-274	Insul. class A	--	Tested inside unit
Fuse F1 (on Inverter PCB)	Walter Electronic Co., Ltd.	2000	250V, 1A	DIN VDE 0820-1 EN 60127-1/A1 EN 30127-3 EN 60127-3	VDE SEMKO
Others					
All PCB's	Various	Various	V-1 or better	UL94	UL
Insulation Sheet under SWPS	Various	Various	V-1 or better thickness: 0.5mm	UL94	UL

Clause	Requirement – Test	Result - Remark	Verdict
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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 <sup>1)</sup>
Sleeving / Tubing on primary wire and DC Fan motor	Various	Various	VW-1	UL94	UL
All enclosure material	Various	Various	HB or better	UL94	UL
<sup>1)</sup> An asterisk indicates a mark that assures the agreed level of surveillance. Remark: All standards mentioned above are harmonised with the relevant IEC standard or are mentioned to show compliance with the regulations of a specific country.					

1.6.2	TABLE: electrical data (in normal conditions)					P
Fuse #	$I_{nom}$ (A)	U (V)	P (W)	I (A)	$I_{lim}$ (A)	condition/status
F801	0.7	220 (50Hz)	92	460mA	--	
F801	0.7	240 (50Hz)	91	439mA	--	
F801	0.7	220 (60Hz)	92	471mA	--	
F801	0.7	240 (60Hz)	92	444mA	--	
Operating condition(s): Measured under continuous auto scanning mode operation, deviation throughout one cycle: less than 110% of rating.						

2.1.1.7	TABLE: discharge of capacitors in the primary circuit				P
Condition	$t_{\text{calculated}}(\text{s})$	$t_{\text{measured}}(\text{s})$	$t_{U > 0V}(\text{s})$	Comments	
Switch on	0.93s	127ms	221ms	$V_{\text{peak}} = 368\text{V}$ , 37% of $V_{\text{peak}} = 136.2\text{V}$	
Switch off	0.93s	3ms	80ms	$V_{\text{peak}} = 360\text{V}$ , 37% of $V_{\text{peak}} = 133.2\text{V}$	
Determined by calculation:	$C_{x \text{ total}} = 1.36\mu\text{F}$ (C801 = 0.68 $\mu\text{F}$ and C802 = 0.68 $\mu\text{F}$ ) $R_{\text{discharge}} = 680\text{k}\Omega$ (R801) $\Rightarrow \tau = 0.93\text{sec}$				
Measured voltage (V)	0 V after 0.22sec				

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Clause	Requirement – Test	Result - Remark	Verdict

2.5	TABLE: limited power source					P
	Use of limited power source:	output	method employed			
		DC 5V and 12V	Regulating network limited output under normal operating and single fault condition.			
Output	Condition (normal/single fault)	U <sub>oc</sub> [V]	I <sub>sc</sub> [A]		V <sub>XA</sub> [VA]	
			Measured	Limit	Measured	Limit
DC 5V (CN4004; pin 5)	Normal	4.2 *	2.1	8.0	8.82	21.0
Signal line on (CN4004; pin 1-4)	Shorted with 24Vdc	4.3 *	2.0	8.0	8.6	21.5
DC 12V (CN4004; pin 6)	Normal	11.7 *	0.8	8.0	9.36	58.5
Signal line on (CN4004; pin 1-4)	Shorted with 24Vdc	11.6 *	0.8	8.0	9.28	58
- *) with no load. - Unit shutdown immediately when DC 5V or 12V line shorted to DC 24V line.						

2.6.3.3	TABLE: resistance of earthing conductors and their terminations			P
Protective bonding conductor at:	Current rating	Required resistance	Measured resistance	
Primary lead of C803 – gnd screw near CN801	0.7	0.1Ω	36mΩ	
Transformer T801 secondary pin 11/12 - heatsink	0.7	0.1Ω	10mΩ	
Results: the calculated resistance did not exceed 0.1Ω. (tested current: 25A / 1min)				

2.10.3/4	TABLE: clearance and creepage distance measurements						P
Type of insulation	clearance and creepage distance (mm)	U <sub>peak</sub> (V)	U <sub>min</sub> (V)	required cl (mm)	measured cl (mm)	required cr (mm)	measured cr (mm)
Pattern of SWPS unit							
O	Pri - pri (before fuse)	< 420	< 250	1.5	3.0	2.5	3.0
B	Pri – gnd (at traces C803)	< 420	< 250	2.0	2.7 (via Gap)	2.5	2.9
B	Pri – gnd (at traces F801)	< 420	< 250	2.0	2.4 (via Gap)	2.5	3.1
B	Pri – gnd (at traces C804)	< 420	< 250	2.0	2.4	2.5	2.9
B	Pri – gnd (heatsink at D801)	< 420	< 250	2.0	3.3	2.5	3.3
B	Pri – gnd (heatsink at D802)	< 420	< 250	2.0	4.0	2.5	4.0

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Clause	Requirement – Test	Result - Remark	Verdict

2.10.3/4	TABLE: clearance and creepage distance measurements						P
Type of Insulation	clearance cl and creepage distance dcrl or dcr	U <sub>peak</sub> (V)	U <sub>rms</sub> (V)	required cl (mm)	measured cl (mm)	required dcr (mm)	measured dcr (mm)
B	Pri – gnd (heatsink at Q801)	< 420	< 250	2.0	5.2	2.5	5.2
R	Pri – sec (at traces T801)	592	402	4.6	21.0	8.0	21.0
R	Pri – sec (at traces IC805)	< 420	< 250	4.0	8.3	5.0	8.3
<b>CIS lamp Unit construction (on secondary circuit)</b>							
R	Surface lamp – accessible surface (entirely through air)	2145	--	5.0	6.5	5.0	6.5

## Note:

- 1) Measured according annex F.
- 2) Insulation sheet provided under and top of SWPS unit, thickness 0.5mm.
- 3) Distance of components: clearances and creepage distance between primary components and secondary components are complied with requirement of clause 4.2.2 after pushed by 10N force.
- 4) Only functional insulation is provided on lamp inverter, short-circuited test between inverter output and SELV circuits / metal chassis is fulfils the requirements of 5.3.4; c).
- 5) Inverter unit is completely enclosed by inner cover, not accessible to operator.
- 6) Internal cl./cr. distance of semiconductor D801/D802/Q801 is fulfils the basic insulation and electric strength tests.
- 7) Working voltage measurement of main transformer T801.  
Only the highest measured working voltage is listed below.

Transformer type	Measured location	V <sub>peak</sub>	V <sub>rms</sub>
T801	Primary pin 2 – 11/12	592	402

2.10.5	TABLE: distance through insulation measurements					P
Type of Insulation	Distance through insulation dila/or	U <sub>peak</sub> (V)	Test voltage (V)	Required dl (mm)	Measured dl (mm)	
B/S	Sleeving/tubing of pri-wiring and DC Fan motor	592	1893	B	0.5	
S	Semiconductor D801/D802/Q801	592	1893	B	0.5	
S	Insulation sheet below SWPS unit	592	1893	B	0.5	
R	Insulation tape of transformer T801	592	AC 3.0kV (2 layers)	3 layers	3 layers	
R	Photocouplers IC803/IC804/IC805	592	AC 3.0kV	0.4	Approved components	
F	Insulation of lamp inverter cables.	--	AC 3000kV	B/S	0.71	

Photocouplers are certified for double/reinforced insulation according IEC and IEC 60747-5-2. Their insulation thickness is > 0.4mm according to manufacturers data.

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4.5.1	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. Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of 30°C(T <sub>ma</sub> ), as specified by the manufacturer.						
test voltage(s) (V):		A: 198 V, 50 Hz		B: 264 V, 60Hz		
t <sub>amb1</sub> (°C):		A: -- B: --		t <sub>amb2</sub> (°C):		
Temperature of part at: (measured with thermocouples)		Measured temperature rise at: t <sub>amb</sub>		Calculated temperature at T <sub>ma</sub>		Allowed T <sub>max</sub> (°C)
		A ΔT (K)	B ΔT (K)	A T (°C)	B T (°C)	
Surface of connector (CN801)		18	18	48	48	65
C801 (surface)		19	19	48	49	65
L801 (coil)		21	20	51	50	90 <sup>1)</sup>
L802 (coil)		24	22	54	52	90 <sup>1)</sup>
L803 (coil)		33	26	63	56	90 <sup>1)</sup>
C807 (body)		23	23	53	53	105
Surface heatsink of IC802		24	24	54	54	-- <sup>2)</sup>
Surface heatsink of D801		20	19	50	49	-- <sup>2)</sup>
IC804 (body)		17	17	47	47	-- <sup>2)</sup>
T801 (coil)		20	19	50	49	90
Surface enclosure (near DC Fan motor)		12	11	42	41	85
Lamp inverter unit (lower side)						
T1 (coil)		44	44	74	74	90
Surface of connector CN2		34	33	64	63	-- <sup>2)</sup>
Surface of lamp socket		48	47	78	77	120
Lamp inverter unit (upper side)						
T1 (coil)		49	49	79	79	90
Surface of connector CN2		37	37	67	67	-- <sup>2)</sup>
Surface of lamp socket		50	50	80	80	120
Surface of metal part near upper lamp		21	20	51	50	70
Motors						
Surface of conveyor motor		73	73	103	103	120
Surface of feed motor		33	33	63	63	120

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Clause	Requirement – Test	Result - Remark	Verdict

4.5.1	TABLE: Temperature rise measurements				P
Temperature of part/al. (measured with thermocouples)	Measured temperature rise at $T_{amb}$		Calculated temperature at $T_{max}$		Allowed $T_{max}(^{\circ}C)$
	A $\Delta T (^{\circ}C)$	B $\Delta T (^{\circ}C)$	A $T (^{\circ}C)$	B $T (^{\circ}C)$	
Surface of carriage motor	20	20	50	50	100
<b>Others</b>					
Ambient of secondary main circuits	19	19	49	49	-- <sup>2)</sup>
Surface enclosure near AC inlet	4	4	34	34	85
Surface of power switch button	4	3	34	33	85
Note: <sup>1)</sup> Above inductor L801 and L802 specified insulation class E with no evidence, therefore we evaluated as insulation class A. <sup>2)</sup> For General reference only.					

4.5.2	TABLE: ball pressure test of thermoplastic parts			P
	allowed impression diameter (mm):	$\leq 2$ mm		
Circuit	Part	Test temperature ( $^{\circ}C$ )	Impression diameter (mm)	
Pri.	Bobbin of L801 and L802, material PBT	125	1.6	
Maximum impression did not exceed the limits. Bobbin(s) of T801 is phenolic resin not tested.				

5.1	TABLE: touch current and protective conductor current				P
	Test voltage (V) .....	AC 264V, 60Hz			
Measurement location (terminal A connected to...)	Polarity (normal) [mA]		Polarity (reverse) [mA]		Limit [mA]
	Switch ON	Switch OFF	Switch ON	Switch OFF	
Chassis (switch "e" open)	0.56	27.2 $\mu$ A	0.58	53.0 $\mu$ A	3.5
Enclosure (switch "e" closed)	6.42 $\mu$ A	5.76 $\mu$ A	3.24 $\mu$ A	2.74 $\mu$ A	0.25

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Clause	Requirement – Test	Result - Remark	Verdict



5.2	TABLE: electric strength tests and impulse tests			P
Type of Insulation	Test voltage applied between	Test voltage (V)	Breakdown Yes//No	
R	Equipment (primary – secondary)	AC 3.0kV	No	
B	Equipment (primary – bottom chassis)	AC 1893V	No	
R	Transformer T801 (primary – secondary)	AC 3.0kV	No	
B/S	Semiconductor D801, Q801 and D802 (primary – heatsink; gnd)	AC 1893V	No	
R	CIS lamp Unit (surface lamp – accessible surface)	AC 3803V	No	
supplementary information:				
Tests were performed after heating, abnormal tests and humidity treatment.				

5.3	TABLE: fault condition tests						P
	ambient temperature (°C):						24
	model/type of power supply:						(see appended table 1.5.1)
	manufacturer of power supply:						(see appended table 1.5.1)
	rated markings of power supply:						(see appended table 1.5.1)
No.	Component No.	Fault	Test voltage (V)	Test time	Fuse No.	Fuse current (A)	Result
1	D801 (pins 2-1)	S	240	5 min	F801	72 (peak)	Fuse (F801) opened immediately. After replaced F801 → normal operation. No hazards.
2	Q801 (S-D)	S	240	5 min	F801	52.8 (peak)	Fuse (F801) opened immediately. After replaced F801 → normal operation. No hazards.
3	Q801 (S-G)	S	24	30 min	F801	684mA	SWPS unit operated normally. Max. temp. on transf. T801 = 42°C. After removed shorted point → normal operation. No hazards. Ambient: 24°C
4	IC802 (pins 7-1)	S	240	5 min	F801	51.2 (peak)	SWPS output shutdown immediately. F801, IC801 and IC802 damaged. After replaced those parts → normal operation. No hazards.
5	IC802 (pins 1-6)	S	240	30 min	F801	118mA	SWPS output shutdown immediately. After removed shorted point → normal operation. No hazards.
6	C807	S	240	5 min	F801	51.2 (peak)	Fuse (F801) opened immediately. After replaced F801 → normal operation. No hazards.

Clause	Requirement – Test	Result - Remark	Verdict
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5.3	TABLE: fault condition tests						P
No	Component No.	Fault	Test voltage (V)	Test time	Fuse No.	Fuse current (A)	Result
7	IC801 (pin 12)	O	240	30 min	F801	490mA	SWPS output operated normally. No hazards.
8	IC801 (pins 10-12)	S	240	30 min	F801	491mA	SWPS output operated normally. No hazards.
9	CN802 (pins 8-5)	S	240	1 h	F801	0.2	SWPS output shutdown immediately. After removed shorted point→ normal operation. No hazards.
10	CN802 (pin 8)	OL	240	5 h	F801	1.0	SWPS shutdown when output loaded to max. 10A. Max. temp. on transf. T801 = 86°C Ambient: 24°C
11	Conveyor motor	CE	24Vdc	7h	--	--	Max. temp. on surface of conveyor = 54°C, ambient = 23°C.
12	Feed motor	CE	24Vdc	7h	--	--	Max. temp. on surface of conveyor = 50°C, ambient = 24°C.
13	Carriage motor	CE	24vdc	7h	--	--	Max. temp. on surface of conveyor = 59°C, ambient = 26°C.
14	Carriage motor	CE	24vdc	7h	--	--	Max. temp. on surface of conveyor = 59°C, ambient = 26°C.
SELV reliability tests: Lamp inverter unit was shorted to input. Input voltage (SELV side) was measured with oscilloscope.							
15	Lamp inverter (CN2 pin 4-gnd)	S	240	5 min	F1	501mA	Inverter output shutdown immediately. Fuse (F1) opened after 3 sec and Q1 damaged. No hazards.
16	Lamp inverter (T1 pins 5-8)	S	240	5 min	F1	501mA	Same as above.
Remarks: During the tests no fire or other hazard occurred, SELV limits were not exceeded for longer than 0.2 sec. The insulation system could withstand the dielectric strength test after fault conditions. S = shorted, O = open, OL = overloaded, CE = one winding continuously energized.							

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Clause	Requirement – Test	Result - Remark	Verdict
Appendix	EN 60950-1:2001 + A11:2004 (IEC 60950-1:2001) Group Differences and National Differences according to CB Bulletin No. 107A, May 2004.		--
EXPLANATION FOR ABBREVIATIONS G = Group Differences, N = National Differences CH= Switzerland, DE= Germany, DK= Denmark, FI= Finland, GB= United Kingdom, NO= Norway, SE= Sweden.			
ADDITIONAL INFORMATION No National Differences for Austria, Belgium, France, Greece and Netherlands			
General	G: Delete all the "country" notes in the reference document according to the following list:  1.5.1 Note 2    1.5.8 Note 2    1.6.1 Note 1.7.2 Note 4    1.7.12 Note 2    2.1 Note 2.2.3 Note    2.2.4 Note    2.3.2 Note 2, 7, 8 2.3.3 Note 1, 2    2.3.4 Note 2,3    2.7.1 Note 2.10.3.1 Note 4    3.2.1.1 Note    3.2.3 Note 1, 2 3.2.5.1 Note 2    4.3.6 Note 1,2    4.7.2.2 Note 4.7.3.1 Note 2    6.1.2.1 Note    6.1.2.2 Note 6.2.2 Note    6.2.2.1 Note 2    6.2.2.2 Note 7 Note 4    7.1 Note G2.1 Note 1, 2    Annex H Note 2	Deleted.	P
1.2.4.1	N (DK): 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.	Tested with a power cord/plug for Germany. Compliance with relevant national standards shall be checked during approval for the respective countries.	N
1.5.1	N (SE, Ordinance 1990:944): Add NOTE – Switches containing mercury such as thermostats, relays and level controllers are not allowed.	No such components.	N
1.5.8	N (NO): Due to the IT power system used (see annex V, Fig. V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Considered.	P
1.7.2	N (FI, NO, SE): 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:  FI: "Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" NO: "Apparatet må tilkoples jordet stikkontakt" SE: "Apparaten skall anslutas till jordat uttag"	Provided.	P
	FI: "Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"	Will provide before shipping.	N
	NO: "Apparatet må tilkoples jordet stikkontakt"		P
	SE: "Apparaten skall anslutas till jordat uttag"		P

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Clause	Requirement – Test	Result – Remark	Verdict
1.7.2	<p>N (DK, Heavy Current Regulations): Supply cords of class I equipment, which is delivered without a plug, must be provided with a visible tag with the following text:</p> <p>Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klæmme mærket</p> <p> eller </p> <p>If essential for the safety of the equipment, the tag must in addition be provided with a diagram which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."</p>	Tested with a power cord/plug for Germany. Compliance with relevant national standards shall be checked during approval for the respective countries.	N
1.7.5	N (DK): Socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For stationary equipment the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.	No socket outlet.	N
1.7.5	N (DK, Heavy Current Regulations): CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.	No such construction.	N
1.7.12	<p>N (DE, Gesetz über technische Arbeitsmittel (Gerätesicherheitsgesetz) [Law on technical labour equipment (Equipment safety law)], of 23<sup>rd</sup> October 1992, Article 3, 3<sup>rd</sup> paragraph, 2<sup>nd</sup> sentence, together with the "Allgemeine Verwaltungsvorschrift zur Durchführung des Zweiten Abschnitts des Gerätesicherheitsgesetzes" [General administrative regulation on the execution of the Second Section of the Equipment safety law], of 10<sup>th</sup> January 1996, article 2, 4<sup>th</sup> paragraph item 2):</p> <p>Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language.</p> <p>NOTE: Of this requirement, rules for use even only by service personnel are not exempted.</p>	Service considered. No special warnings required.	P
1.7.15	N (CH, Ordinance on environmentally hazardous substances SR 814.013): Annex 4.10 of SR 814.013 applies for batteries.	No battery.	P
2.2.4	N (NO): Requirements according to this annex, 1.7.2 and 6.1.2.1 apply.	(see 1.7.2 for NO)	N
2.3.2	N (NO): Requirements according to this annex, 6.1.2.1 apply.	No TNV circuits.	N
2.3.3 and 2.3.4	N (NO): Requirements according to this annex, 1.7.2 and 6.1.2.1 apply.	No TNV circuits.	N

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Clause	Requirement – Test	Result – Remark	Verdict
2.6.3.3	N (GB): The current rating of the circuit shall be taken as 13 A, not 16 A.		N
2.7.1	<p>G: 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>	Replaced.	P
2.7.1	N (GB): To protect against excessive currents and short-circuits in the PRIMARY CIRCUIT OF DIRECT PLUG-IN EQUIPMENT, protective device shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT.	Not direct plug-in	N
2.7.2	G: Void.		N
2.10.2	G: Replace in the first line "(see also 1.4.7)" by "(see also 1.4.8)".	Replaced	P
2.10.3.1	N (NO): Due to the IT power distribution system used (see annex V, Fig. V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage and will remain at 230 V in case of a single earth fault.	Considered.	P

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Clause	Requirement – Test	Result – Remark	Verdict
3.2.1.1	<p>N (CH): Supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <p>SEV 6532-2.1991, Plug type 15, 3P+N+PE 250/400 V, 10 A            SEV 6533-2.1991, Plug type 11, L+N 250 V, 10 A            SEV 6534-2.1991, Plug type 12, L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998, Plug type 25, 3L+N+PE 230/400 V, 16 A            SEV 5933-2.1998, Plug type 21, L+N 250 V, 16 A            SEV 5934-2.1998, Plug type 23, L+N+PE 250 V, 16 A</p>	Tested with a power cord/plug for Germany. Compliance with relevant national standards shall be checked during approval for the respective countries.	N
3.2.1.1	<p>N (DK). Supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.</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 10A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations Section 107-1-D1 or EN 60309-2.</p>	Tested with a power cord/plug for Germany. Compliance with relevant national standards shall be checked during approval for the respective countries.	N
3.2.1.1	<p>N (GB): Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 – The Plugs and Socket 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>	Tested with a power cord/plug for Germany. Compliance with relevant national standards shall be checked during approval for the respective countries.	N
3.2.3	G: Delete Note 1 and in Table 3A, delete the conduit sizes in parentheses.	Deleted.	N

EN 60950-1									
Clause	Requirement – Test	Result – Remark	Verdict						
3.2.5.1	<p>G: Replace</p> <p>"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>0,75<sup>1)</sup></td></tr><tr><td>Over 6 up to and including 10</td><td>(0,75)<sup>2)</sup> 1,0</td></tr><tr><td>Over 10 up to and including 16</td><td>(1,0)<sup>3)</sup> 1,5</td></tr></table> <p>In the Conditions applicable to Table 3B delete the words "in some countries" in condition <sup>1)</sup>.</p> <p>In Note 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 <sup>1)</sup>	Over 6 up to and including 10	(0,75) <sup>2)</sup> 1,0	Over 10 up to and including 16	(1,0) <sup>3)</sup> 1,5	Replaced.	N
Up to and including 6	0,75 <sup>1)</sup>								
Over 6 up to and including 10	(0,75) <sup>2)</sup> 1,0								
Over 10 up to and including 16	(1,0) <sup>3)</sup> 1,5								
3.2.5.1	<p>N (GB): A power supply cord with conductor of 1,25 mm<sup>2</sup> is allowed for equipment with a rated current over 10 A and up to and including 13 A.</p>	Rated current less than 10A.	N						
3.3.4	<p>G: In table 3D, delete the fourth line: conductor sizes for 10 to 13A, and replace with the following:</p> <p>"Over 10 up to and including 16 1,5 to 2,5 1,5 to 4"</p> <p>Delete the fifth line: conductor sizes for 13 to 16 A.</p>	Deleted and replaced.	N						
3.3.4	<p>N (GB): 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> <p>- 1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> nominal cross-sectional area.</p>	Rated current less than 10A.	N						
4.3.6	<p>N (GB): The torque test is performed using a socket outlet complying with BS 1363 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, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C.</p>	Not direct plug-in	N						
4.3.13.6	<p>G: Add the following note:</p> <p>NOTE Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this recommendation are currently under development.</p>	Added.	N						

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	<p>N (FI, NO): Add the following text between the first and second paragraph:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES AND CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>- passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV); and</li> <li>- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950:2000, 6.2.2.1;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 132400;</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.</li> </ul>	No TNV circuits.	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	<p>N (SE): Add the following text between the first and second paragraph:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES AND CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>- passes the tests and inspection criteria of IEC 60950-1, 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of IEC 60950-1, 2.10.7 shall be performed using 1,5 kV); and</li> <li>- is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with IEC 60384-14:1993, subclass Y2.</p> <p>A capacitor classified Y3 according to IEC 60384-14:1993, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by IEC 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in IEC 60950-1, subclause 6.2.2.1.</li> </ul> <p>The additional testing shall be performed on all the test specimens as described in IEC 60384-14.</p> <p>The impulse test of 2,5 kV is to be performed before the Endurance Test in IEC 60384-14 in the sequence of tests as described in IEC 60384-14.</p>	No TNV circuits.	N
6.1.2.2	<p>N (FI, NO, SE): The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a service person.</p>		N

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Clause	Requirement – Test	Result – Remark	Verdict
7.1	N (FI, NO, SE): Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N
G.2.1	N (NO): Due to the IT power distribution system used (see annex V, Fig. V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault.	Considered.	P
Annex H	G: 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 $\mu$ 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.	Replaced. No X-ray emission source.	N
Annex P	G: Replace the text of this annex by: See annex ZA.	Replaced.	P
Annex Q	G: Replace the title of IEC 61032 by "Protection of persons and equipment by enclosures – Probes for verification". Add the following notes for the standards indicated: IEC 60127 NOTE Harmonized as EN 60127 (Series) (not modified) IEC 60269-2-1 NOTE Harmonized as HD 630.2.1 S4:2000 (modified) IEC 60529 NOTE Harmonized as EN 60529:1991 (not modified) IEC 61032 NOTE Harmonized as EN 61032:1998 (not modified) IEC 61140 NOTE Harmonized as EN 61140:2001 (not modified) ITU-T Recommendation K.31 NOTE In Europe, the suggested document is EN 50083-1.		P

EN 60950-1																																																															
Clause	Requirement – Test	Result – Remark	Verdict																																																												
Annex ZA	<p>G: Normative references to international publications with their relevant European publications</p> <p>This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).</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 60050-151</td> </tr> <tr> <td>—</td> <td>IEC 60050-195</td> </tr> <tr> <td>EN 60065:1998 + corr. June 1999</td> <td>IEC 60065 (mod):1998</td> </tr> <tr> <td>EN 60073:1996</td> <td>IEC 60073:1996</td> </tr> <tr> <td>HD 566 S1:1990</td> <td>IEC 60085:1984</td> </tr> <tr> <td>HD 214 S2:1980</td> <td>IEC 60112:1979</td> </tr> <tr> <td>HD 611.4.1.S1:1992</td> <td>IEC 60216-4-1:1990</td> </tr> <tr> <td>HD 21 <sup>1)</sup> Series</td> <td>IEC 60227 (mod) Series</td> </tr> <tr> <td>HD 22 <sup>2)</sup> Series</td> <td>IEC 60245 (mod) Series</td> </tr> <tr> <td>EN 60309 Series</td> <td>IEC 60309 Series</td> </tr> <tr> <td>EN 60317-43:1997</td> <td>IEC 60317-43:1997</td> </tr> <tr> <td>EN 60320 Series</td> <td>IEC 60320 (mod) Series</td> </tr> <tr> <td>HD 384.3 S2:1995</td> <td>IEC 60364-3 (mod):1993</td> </tr> <tr> <td>HD 384.4.41 S2:1996</td> <td>IEC 60364-4-41 (mod):1992 <sup>3)</sup></td> </tr> <tr> <td>EN 132400:1994 <sup>4)</sup></td> <td>IEC 60384-14:1993</td> </tr> <tr> <td>+ A2:1998 + A3:1998 + A4:2001</td> <td></td> </tr> <tr> <td>EN 60417-1</td> <td>IEC 60417-1</td> </tr> <tr> <td>HD 625.1 S1:1996 + corr. Nov. 1996</td> <td>IEC 60664-1 (mod):1992</td> </tr> <tr> <td>EN 60695-2-2:1994</td> <td>IEC 60695-2-2:1991</td> </tr> <tr> <td>EN 60695-2-11:2001</td> <td>IEC 60695-2-11:2000</td> </tr> <tr> <td>—</td> <td>IEC 60695-2-20:1995</td> </tr> <tr> <td>—</td> <td>IEC 60695-10-2:1995</td> </tr> <tr> <td>—</td> <td>IEC 60695-11-3:2000</td> </tr> <tr> <td>—</td> <td>IEC 60695-11-4:2000</td> </tr> <tr> <td>EN 60695-11-10:1999</td> <td>IEC 60695-11-10:1999</td> </tr> <tr> <td>EN 60695-11-20:1999</td> <td>IEC 60695-11-20:1999</td> </tr> <tr> <td>EN 60730-1:2000</td> <td>IEC 60730-1:1999 (mod)</td> </tr> <tr> <td>EN 60825-1:1994 + corr. Febr. 1995 + A11:1996 + corr. July 1997</td> <td>IEC 60825-1:1993</td> </tr> <tr> <td>EN 60825-2:2000</td> <td>IEC 60825-2:2000</td> </tr> <tr> <td>—</td> <td>IEC 60825-9:1999</td> </tr> </table>		—	IEC 60050-151	—	IEC 60050-195	EN 60065:1998 + corr. June 1999	IEC 60065 (mod):1998	EN 60073:1996	IEC 60073:1996	HD 566 S1:1990	IEC 60085:1984	HD 214 S2:1980	IEC 60112:1979	HD 611.4.1.S1:1992	IEC 60216-4-1:1990	HD 21 <sup>1)</sup> Series	IEC 60227 (mod) Series	HD 22 <sup>2)</sup> Series	IEC 60245 (mod) Series	EN 60309 Series	IEC 60309 Series	EN 60317-43:1997	IEC 60317-43:1997	EN 60320 Series	IEC 60320 (mod) Series	HD 384.3 S2:1995	IEC 60364-3 (mod):1993	HD 384.4.41 S2:1996	IEC 60364-4-41 (mod):1992 <sup>3)</sup>	EN 132400:1994 <sup>4)</sup>	IEC 60384-14:1993	+ A2:1998 + A3:1998 + A4:2001		EN 60417-1	IEC 60417-1	HD 625.1 S1:1996 + corr. Nov. 1996	IEC 60664-1 (mod):1992	EN 60695-2-2:1994	IEC 60695-2-2:1991	EN 60695-2-11:2001	IEC 60695-2-11:2000	—	IEC 60695-2-20:1995	—	IEC 60695-10-2:1995	—	IEC 60695-11-3:2000	—	IEC 60695-11-4:2000	EN 60695-11-10:1999	IEC 60695-11-10:1999	EN 60695-11-20:1999	IEC 60695-11-20:1999	EN 60730-1:2000	IEC 60730-1:1999 (mod)	EN 60825-1:1994 + corr. Febr. 1995 + A11:1996 + corr. July 1997	IEC 60825-1:1993	EN 60825-2:2000	IEC 60825-2:2000	—	IEC 60825-9:1999	P
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Clause	Requirement – Test	Result – Remark	Verdict
	EN 60851-3:1996	IEC 60851-3:1996	
	EN 60851-5:1996	IEC 60825-5:1996	
	EN 60851-6:1996	IEC 60851-6:1996	
	—	IEC 60885-1:1987	
	EN 60990:1999	IEC 60990:1999	
	—	IEC 61058-1:2000	
	EN 61965:2001	IEC 61965:2000	
	EN ISO 178:1996	ISO 178:1993	
	EN ISO 179 Series	ISO 179 Series	
	EN ISO 180:2000	ISO 180:1993	
	—	ISO 261:1998	
	—	ISO 262:1998	
	EN ISO 527 Series	ISO 527 Series	
	—	ISO 386:1984	
	EN ISO 4892 Series	ISO 4892 Series	
	—	ISO 7000:1989	
	EN ISO 8256:1996	ISO 8256:1990	
	—	ISO 9772:1994	
	EN ISO 9773:1998	ISO 9773:1998	
	—	ITU-T:1988 Recommendation K.17	
	—	ITU-T:2000 Recommendation K.21	
	1) The HD 21 series is related to, but not directly equivalent with the IEC 60227 series 2) The HD 22 series is related to, but not directly equivalent with the IEC 60245 series 3) IEC 60384-4-41:1992 is superseded by IEC 60384-4-41:2001 4) EN 132400, Sectional Specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (Assessment level D), and its amendments are related to, but not directly equivalent to IEC 60384-14		

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Appendix	AS/NZS 60950-1:2003 (IEC 60950-1:2001) National Differences of AUSTRALIA according to CB Bulletin, No. 107A, May 2004		--
EXPLANATION FOR ABBREVIATIONS P=Pass, F=Fail, N=Not applicable. Placed in the column to the right.			
Annex ZZ	Variations to IEC 60950-1:2001 for application in Australia and New Zealand		--
ZZ.1	Introduction This Annex sets out variations between this standard and IEC 60950-1:2001. These variations indicate national variations for purposes of the IECEE CB scheme and will be published in the IECEE CB Bulletin. These variations are indicated within the body of the Standard.		
ZZ.2	Variations The variations are as follows:		
1.2	Between the definitions for "Person, service" and "Range, rated frequency" insert the following : Ignition source 1.2.12.201	Added.	P
1.2.12.15	After definition 1.2.12.15, add the following variation: 1.2.12.201 POTENTIAL IGNITION SOURCE: Possible fault such as faulty contact or interruption in an electrical connection, including a conductive pattern on printed boards, which can start a fire if, under normal operating conditions, the open circuit voltage exceeds 50V (peak) a.c. or d.c. and the product of this open circuit voltage and the measured current through this possible fault exceeds 15VA. Such a faulty contact to interruption in an electrical connection includes those which may occur in conductive patterns on printed boards. NOTE 201 An electric protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE. NOTE 202 This definition is from AS/NZS 60065:2003	Added and considered.	P
1.5.1	Add the following variation to the first paragraph: "or the relevant Australian/New Zealand Standard"	Added and considered.	P
1.5.2	Add the following variation after the words "IEC component standard" in the first and third dash items: "or the relevant Australian/New Zealand Standard"	Added and considered.	P
2.1	Delete the Note		P
3.2.3	Delete Note 2		P

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Clause	Requirement – Test	Result – Remark	Verdict
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3.2.5.1	<p>Modify Table 3B as follows: Delete the first four rows and replace with</p> <table border="1"> <tr> <th rowspan="2">RATED CURRENT OF EQUIPMENT A</th><th colspan="2">Minimum conductor sizes</th></tr> <tr> <th>Nominal cross-sectional area mm<sup>2</sup></th><th>AWG or kcmil (cross-sectional area in mm<sup>2</sup>) see note 2</th></tr> <tr> <td>Over 0.2 up to and including 3</td><td>0.5 <sup>1)</sup></td><td>18 [0.8]</td></tr> <tr> <td>Over 3 up to and including 7.5</td><td>0.75</td><td>16 [1.3]</td></tr> <tr> <td>Over 7.5 up to and including 10</td><td>(0.75)<sup>2)</sup></td><td>16 [1.3]</td></tr> <tr> <td>Over 10 up to and including 16</td><td>(1.0)<sup>3)</sup></td><td>14 [2]</td></tr> </table> <p>Replace footnote <sup>1)</sup> with following:  <sup>1)</sup> 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 exceeds 2 m (0.5 mm<sup>2</sup> three-core supply flexible cords are not permitted; see AS/NZS 3191).  Delete Note 1</p>	RATED CURRENT OF EQUIPMENT A	Minimum conductor sizes		Nominal cross-sectional area mm <sup>2</sup>	AWG or kcmil (cross-sectional area in mm <sup>2</sup> ) see note 2	Over 0.2 up to and including 3	0.5 <sup>1)</sup>	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) <sup>2)</sup>	16 [1.3]	Over 10 up to and including 16	(1.0) <sup>3)</sup>	14 [2]	P
RATED CURRENT OF EQUIPMENT A	Minimum conductor sizes																		
	Nominal cross-sectional area mm <sup>2</sup>	AWG or kcmil (cross-sectional area in mm <sup>2</sup> ) see note 2																	
Over 0.2 up to and including 3	0.5 <sup>1)</sup>	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) <sup>2)</sup>	16 [1.3]																	
Over 10 up to and including 16	(1.0) <sup>3)</sup>	14 [2]																	
4.3.6	<p>Replace paragraph three with: Equipment with a plug portion, suitable for insert into a 10 A 3-pin flat-pin socket-outlet complying AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insert into socket-outlets.</p>	Not a direct-plug-in equipment.	N																
4.3.13.5	<p>Add the following to the end of the first paragrah: , or AS/NZS 2211.1'."</p>	Considered.	P																
4.7	<p>Add the following paragraph: For alternate tests refer to Clasue 4.7.201.</p>	No alternative tests applied.	N																
4.7.201	<p>Add the following after Clasue 4.7.3.6. <b>4.7.201 Resistance to fire</b></p>		N																
	<p><b>4.7.201.1 General</b> Parts of non-metallic material shall be resistant to ignition and spread of fire.  This requirement does not apply to decorative trims, knobs wiring insulation and other parts not likely to be ignited or to propagate flames from inside the apparatus, or the following:</p>		N																

## AS/NZS 60950-1

Clause	Requirement – Test	Result – Remark	Verdict
	<p>(a) Components that are contained in an enclosure having a flammability category of FV-0 according to AS/NZS 4695.707 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.</p> <p>(b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> <li>- small mechanical parts, the mass of which does not exceed 4g, such as mounting parts, gears, cams, belts and bearings;</li> <li>- small electric components, such as capacitors with a volume not exceeding 1750mm<sup>3</sup>, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category FV-1 or better according to AS/NZS 4695.707</li> </ul> <p>NOTE: In considering how to minimize propagation of fire and what "small parts" are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another.</p> <p>Compliance shall be checked by tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5.</p> <p>For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5.</p> <p>These tests shall be carried out on parts of non-metallic material, which have been removed from the apparatus. When the glow wire test is carried out, the parts shall be placed in the same orientation, as they would be in normal use. These tests are not carried out on internal wiring.</p>		
	<p><b>4.7.201.2 Testing of non-metallic materials</b></p> <p>Parts of non-metallic material shall be subject to the glow wire test of AS/NZS 60695.2.11, which is 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

## AS/NZS 60950-1

Clause	Requirement – Test	Result – Remark	Verdict
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<b>4.7.201.3 Testing of Insulating materials</b> Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test AS/NZS 60695.2.11, which is carried out at 750°C. The test shall be also carried out on other parts of insulating material, which are within a distance of 3mm of the connection. NOTE: Contacts in components such as switch contacts are considered to be connections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20mm and a height of 50mm shall be subjected to the needle-flame test. However, parts shielded by a barrier, which meets the needle-flame test, shall not be tested. The needle-flame test shall be made in accordance with AS/NZS 4695.2.2 with the following modifications:			N
Clause of AS/NZS 4695.2.2	Change		
5 Severities	Replace with The duration of application of the test flame shall be 30 ± 1s.		
8 Test procedure			
8.2	Replace the first sentence with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1.		
8.4	The first paragraph does not apply. Addition: If possible, the flame shall be applied at least 10mm from a corner.		
8.5	Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two other specimens, both of which shall then withstand the test.		
10 Evaluation of test results	Replace with: The duration of burning (tb) shall not exceed 30s. However, for printed circuit boards, it shall not exceed 15s.		
The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the sample tested was not thicker than the relevant part.			

AS/NZS 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

	<p><b>4.7.201.4 Testing in the event of non-extinguishing material</b></p> <p>If parts, other than enclosures, do not withstand the glow-wire test of 4.7.201.3, by failure to extinguish within 30s after removal of the glow wire tip, the needle-flame test as detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50mm or which are likely to be impinged upon by flame during the test of 4.7.201.3. Parts shielded by a separate barrier, which meets the needle-flame test, are not tested.</p> <p>NOTES 1 - If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirement of Annex 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 burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirement of Annex 4.7.201 without the need for consequential testing.</p> <p>NOTES 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 10mm 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
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AS/NZS 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	<p><b>4.7.201.5 Testing of printed boards</b></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 3mm from a POTENTIAL IGNITION SOURCE.</p> <p>The test is not carried out if the –</p> <ul style="list-style-type: none"> <li>- Printed board does not carry any POTENTIAL IGNITION SOURCE;</li> <li>- Base material of printed boards, on which the available apparent power at a connection exceeds 15VA operating at a voltage exceeding 50V and equal or less than 400V (peak) a.c. or d.c. under normal operating conditions, is of flammability category FV-1 or better according to AS/NZS 4695.707, or the printed boards are protected by an enclosure meeting the flammability category FV-0 according to AS/NZS 4695.707, or made of metal, having openings only for connecting wires which fill the openings completely, or</li> <li>- Base material of printed boards, on which the available apparent power at a connection exceeds 15VA operating at a voltage exceeding 400V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category FV-0 according to AS/NZS 4695.707, or the printed boards are contained in a metal, having openings only for connecting wires which fill the openings completely.</li> </ul> <p>Compliance shall be determined using the smallest thickness of the material.</p> <p>NOTE - Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.</p>		N
6.2.2	<p>Add the symbol NZ in the right hand margin beside the first paragraph.</p> <p>Add the following after the first paragraph: In Australia (this variation does not apply in New Zealand), compliance with 6.2.2 is checked by the tests of both 6.2.2.1 and 6.2.2.2.</p>	No TNV.	N

AS/NZS 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.2.2.1	<p>Add the symbol NZ in the right hand margin beside the first paragraph including Note 1.</p> <p>Delete Note 2.</p> <p>Add the following after the first paragraph:</p> <p>In Australia (this variation does not apply in New Zealand) the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator of annex N for 10/700µs impulses. The interval between successive impulses is 60s and the initial voltage, <math>U_c</math> is:</p> <ul style="list-style-type: none"> <li>- for 6.2.1a): 7.0kV for hand-held telephones and for headsets; and 2.5kV for other equipment; and</li> <li>- for 6.2.1b) and 6.2.1c): 1.5kV.</li> </ul> <p>NOTE 201 - The 7kV impulse simulates lightning surges on typical rural and semi-rural network lines.</p> <p>NOTE 202 - The 2.5kV impulse for 6.2.1a) was chosen to ensure adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</p>	No TNV.	N
6.2.2.2	<p>Add the symbol NZ in the right hand margin beside the second paragraph.</p> <p>Delete Note.</p> <p>Add the following after second paragraph:</p> <p>In Australia (this variation does not apply in New Zealand) the a.c. test voltage is:</p> <ul style="list-style-type: none"> <li>- for 6.2.1a): 3kV, and</li> <li>- for 6.2.1b) and 6.2.1c) 1.5kV.</li> </ul> <p>NOTE 201 - Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.</p> <p>NOTE 202 - The 3kV and 1.5kV values have been determined considering the low frequency induced voltages from the power supply distribution system.</p>	No TNV.	N
Annex P	<p>Add the following Normative References to Annex P</p> <p>IEC 60065, Audio, Video and similar electronic apparatus – Safety requirements</p> <p>AS/NZS 3191, Approval and test specification – Electric flexible cords</p> <p>AS/NZS 3112, Approval and test specification – Plug and socket-outlets</p> <p>AS/NZS 5695.707, Fire hazard testing of electrical products – Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source</p>		P
Index	<p>Between the entries for 'polyimide insulating material' and 'power' insert the following:</p> <p>Potential Ignition source 1.12.201, 4.7.201., 4.7.201.5</p>	<p>Added.</p> <p>Alternate method not applied.</p>	N

K 60950			
Clause	Requirement – Test	Result - Remark	Verdict

Appendix	K60950 (IEC 60950-1:1999) National Differences of KOREA according to CB Bulletin, No. 107A, May 2004		--
1.5.101	Addition: Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305 and 8305).	No plug provided. Suitable plug will be provided locally.	N
8	Addition: EMC The apparatus shall comply with the relevant CISPR standards	See separate EMC test report.	P

CB-scheme information			
Clause	Requirement – Test	Result - Remark	Verdict

Appendix	Information according to CB Bulletin, No. 107A, May 2004 The following country have only Group Differences: Austria, Belgium, France, Greece, Netherlands		--
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Appendix	Information according to CB Bulletin, No. 107A, May 2004 The following country have neither Group Differences nor National Differences: Argentina, Hungary, Israel, India, Italy, Malaysia, Poland, Singapore and Slovenia		--
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Appendix	Information according to CB Bulletin, No. 107A, May 2004 The following country is not listed on the CB bulletin, No 107A, May 2005: China		--
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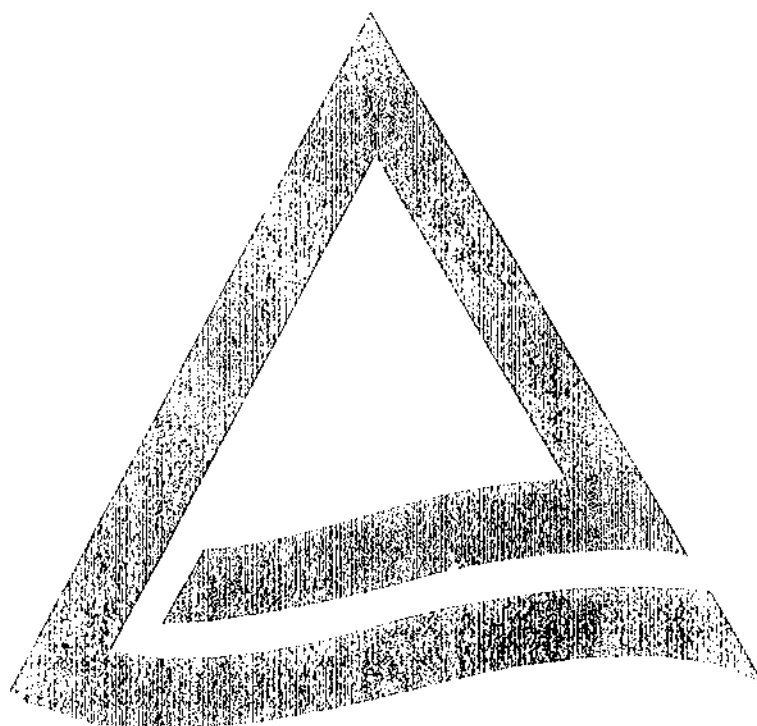
PHOTO DOCUMENTATION

12700608 001

for


High Speed Color Scanner  
KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US

Panasonic Communications Co., Ltd.



This documentation consists of **14** pages (excluding this cover page).

TÜV Rheinland Japan Ltd.  
Product Safety and Quality  
**Genehmigt/Approved**  
November 28, 2005

  
Michael Teng

**Report Number:** 12700608 001



**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



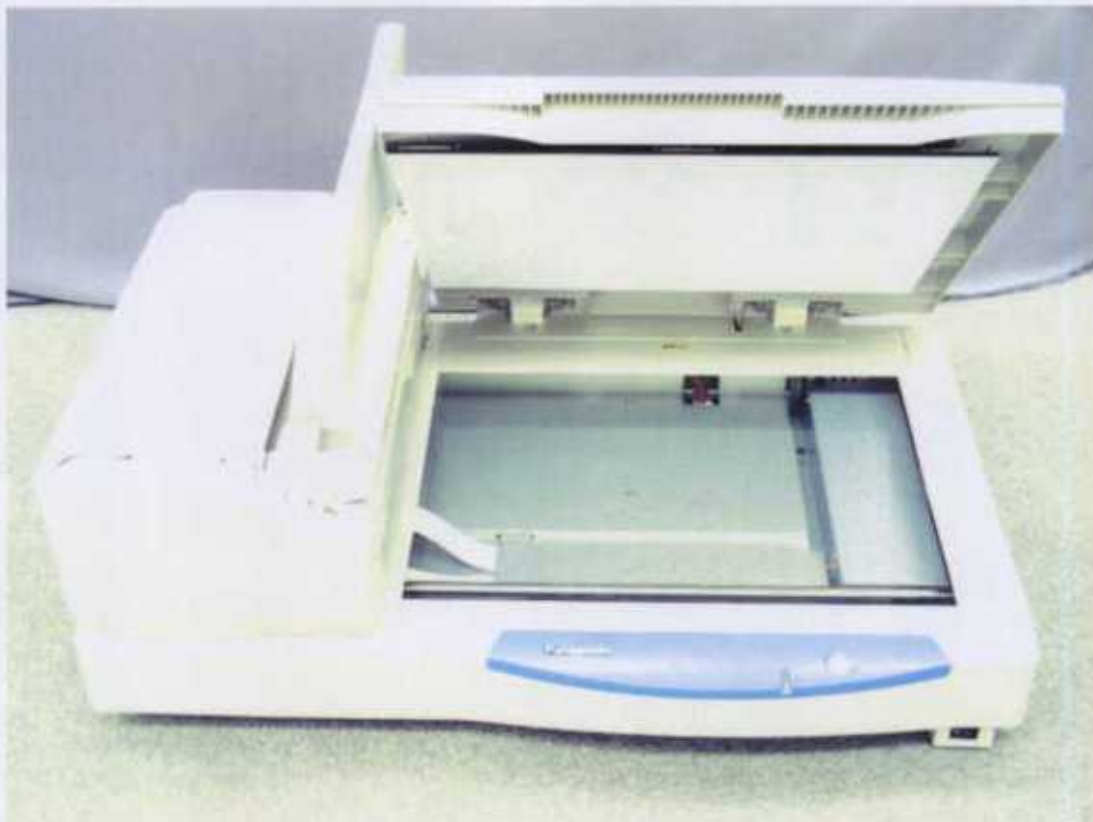
Picture 1 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)



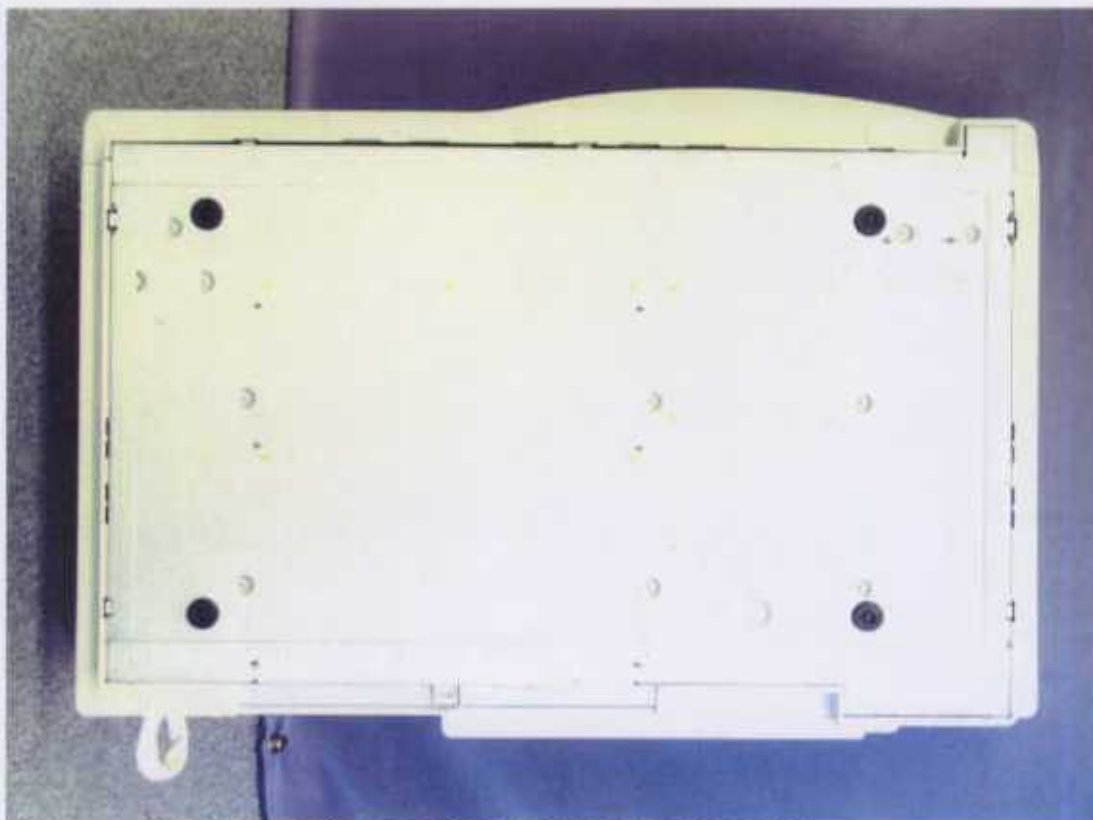
Picture 2 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)

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**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



Picture 3 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)



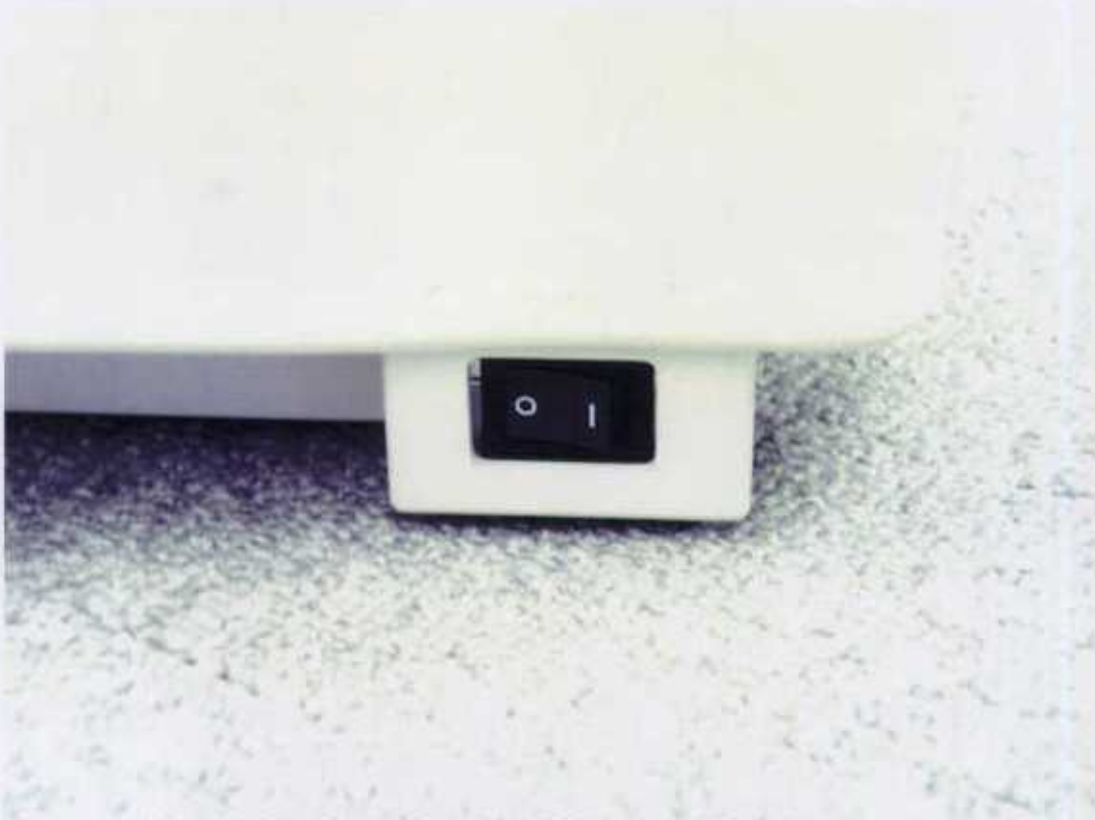
Picture 4 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)

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**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



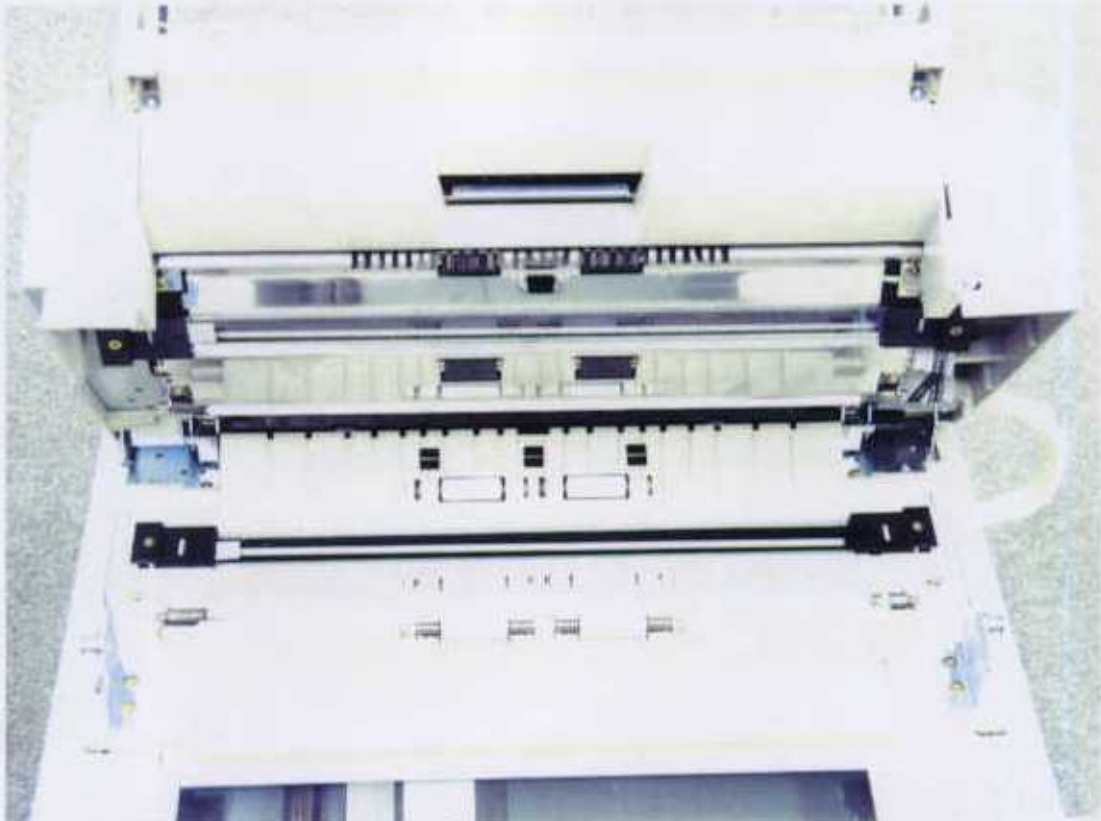
Picture 5 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)



Picture 6 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)

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3600-EU, 3600FDX and 3600-US



Picture 7 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)



Picture 8 (KV-S7065C, KV-S7065CCN, 3200-EU & 3200-US)

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**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



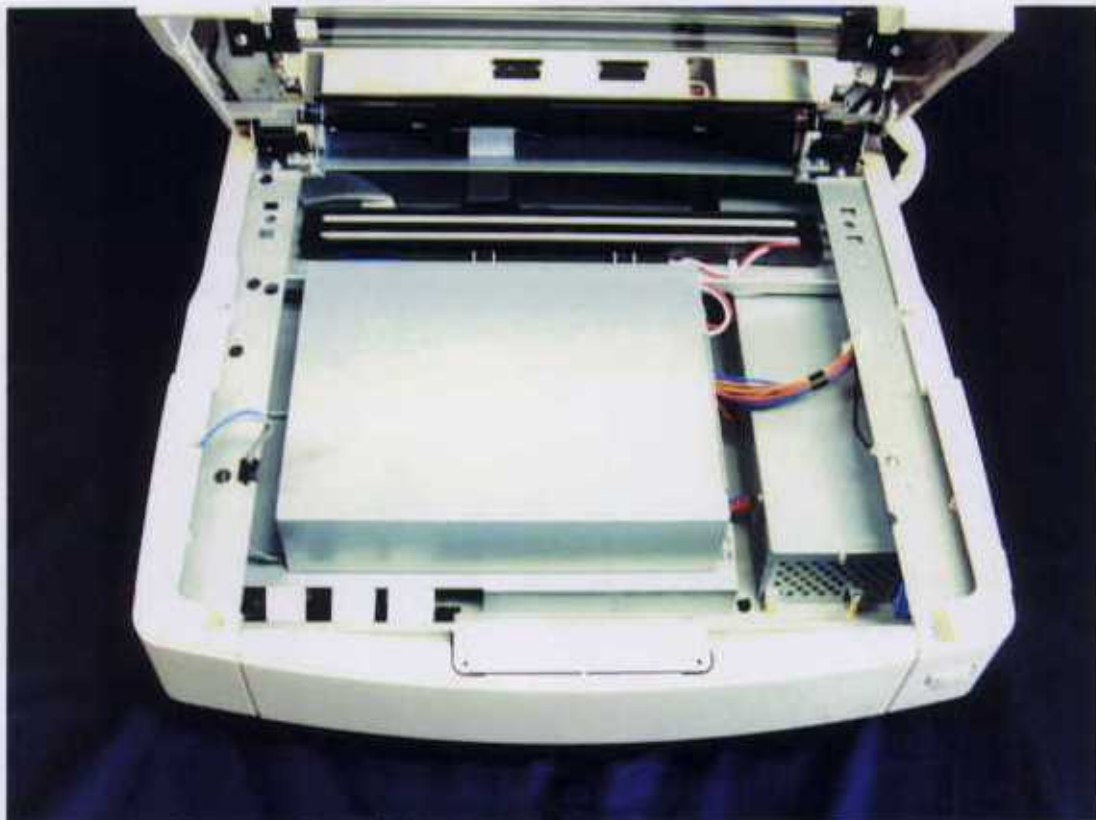
Picture 9 (3600-EU, 3600FDX & 3600-US)



Picture 10 (3600-EU, 3600FDX & 3600-US)

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**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



Picture 11 (3600-EU, 3600FDX & 3600-US)



Picture 12 (3600-EU, 3600FDX & 3600-US)

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3600-EU, 3600FDX and 3600-US



Picture 13 (3600-EU, 3600FDX & 3600-US)



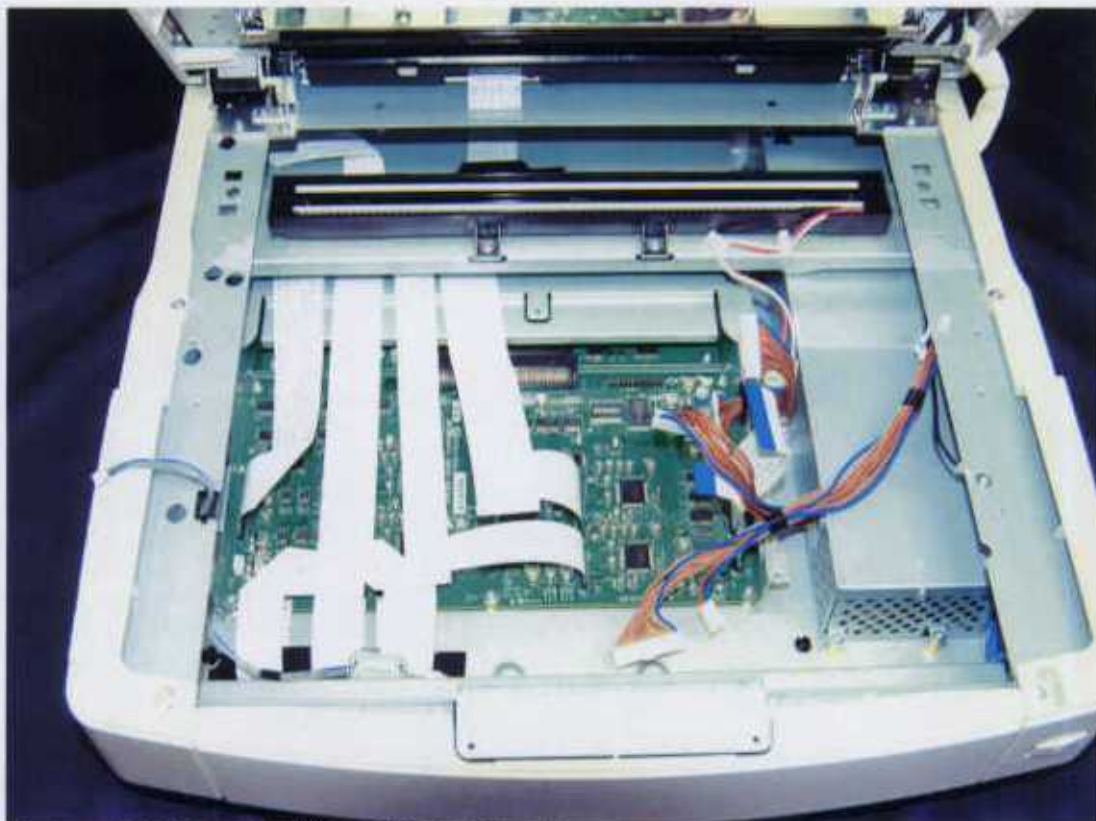
Picture 14 (3600-EU, 3600FDX & 3600-US)

**Report Number:** 12700608 001

**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



Picture 15 (3600-EU, 3600FDX & 3600-US)



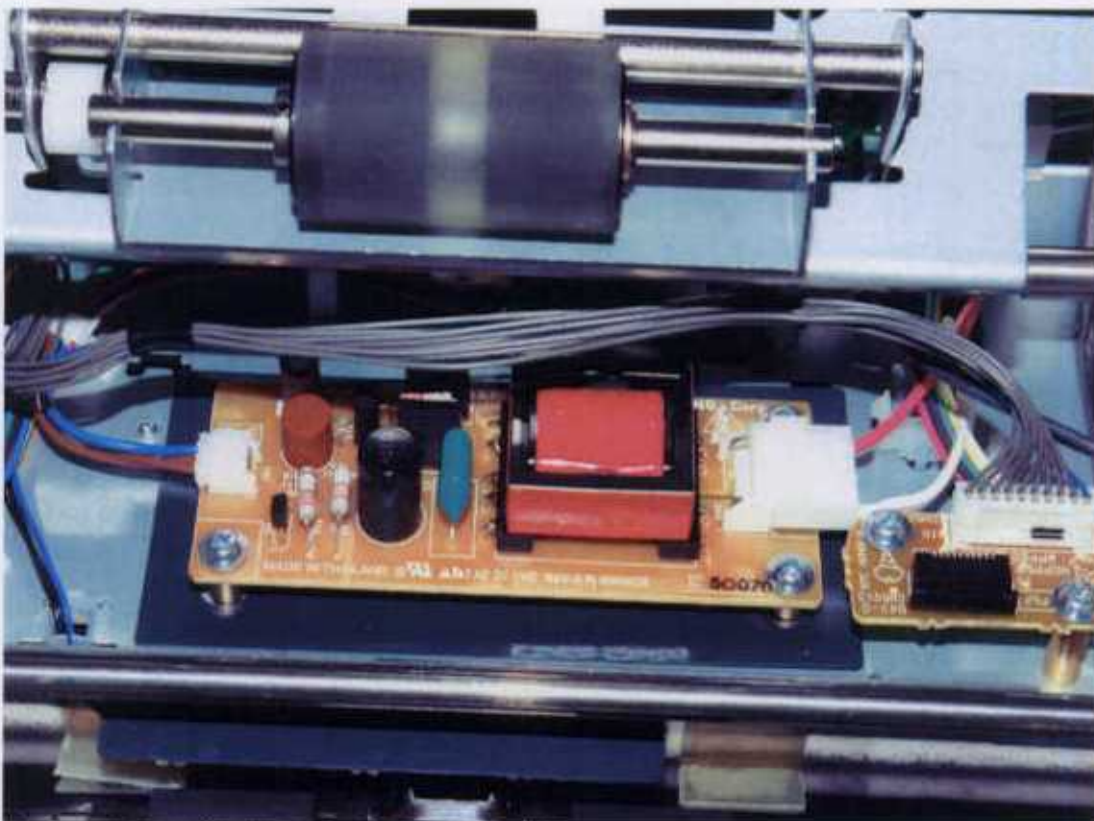
Picture 16 (3600-EU, 3600FDX & 3600-US)

Report Number: 12700608 001

Model: KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



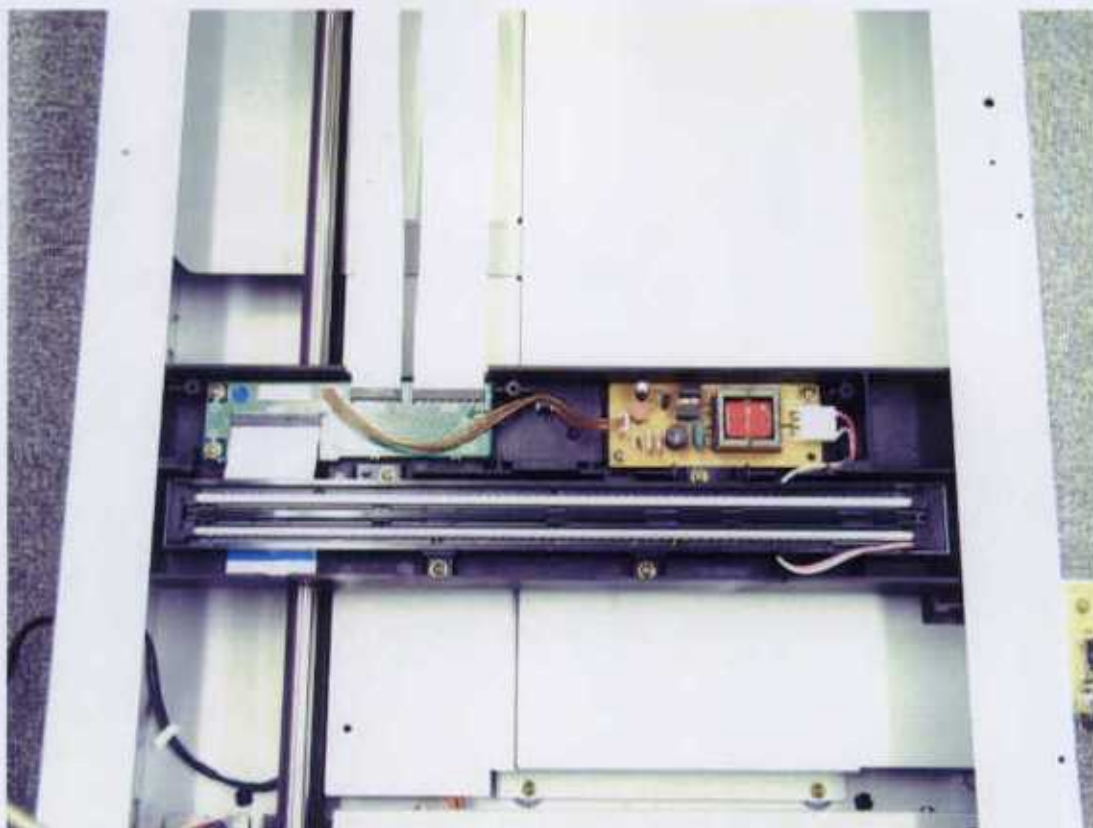
Picture 17 (3600-EU, 3600FDX & 3600-US)



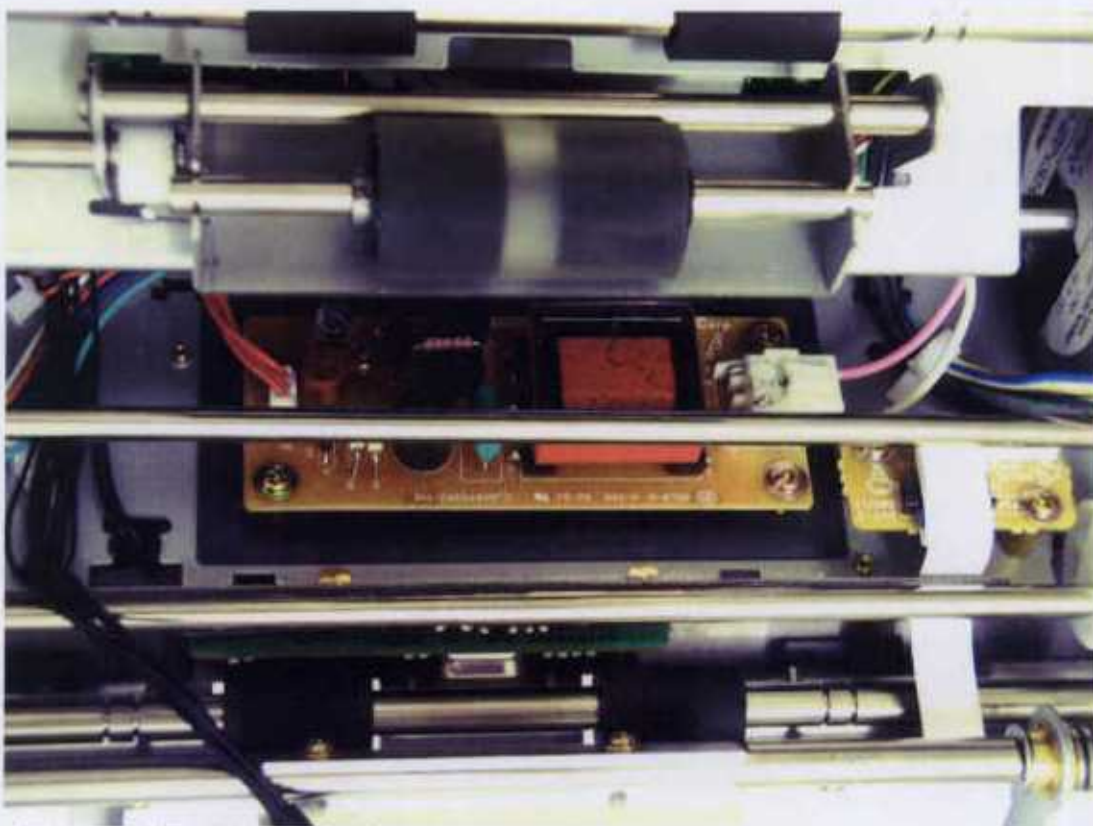
Picture 18 (3600-EU, 3600FDX & 3600-US)

**Report Number:** 12700608 001

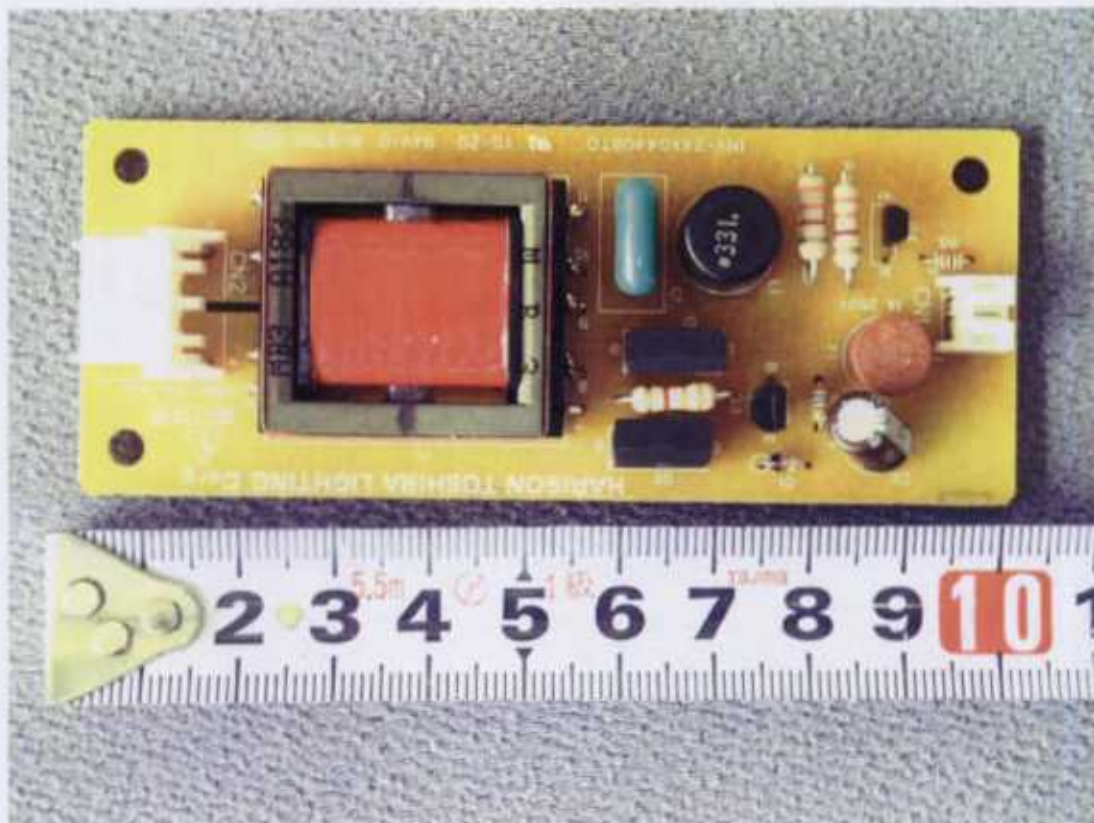
**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



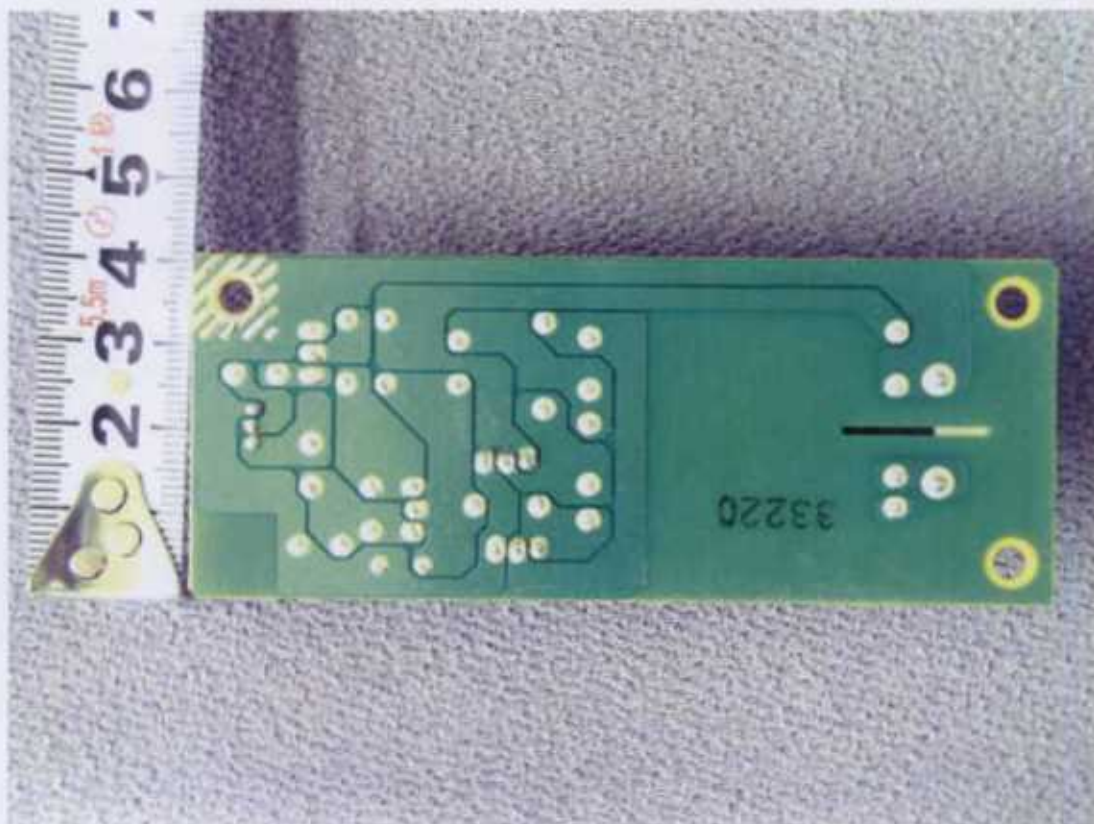
Picture 19 (Lower inverter unit)



Picture 20 (Top inverter unit)



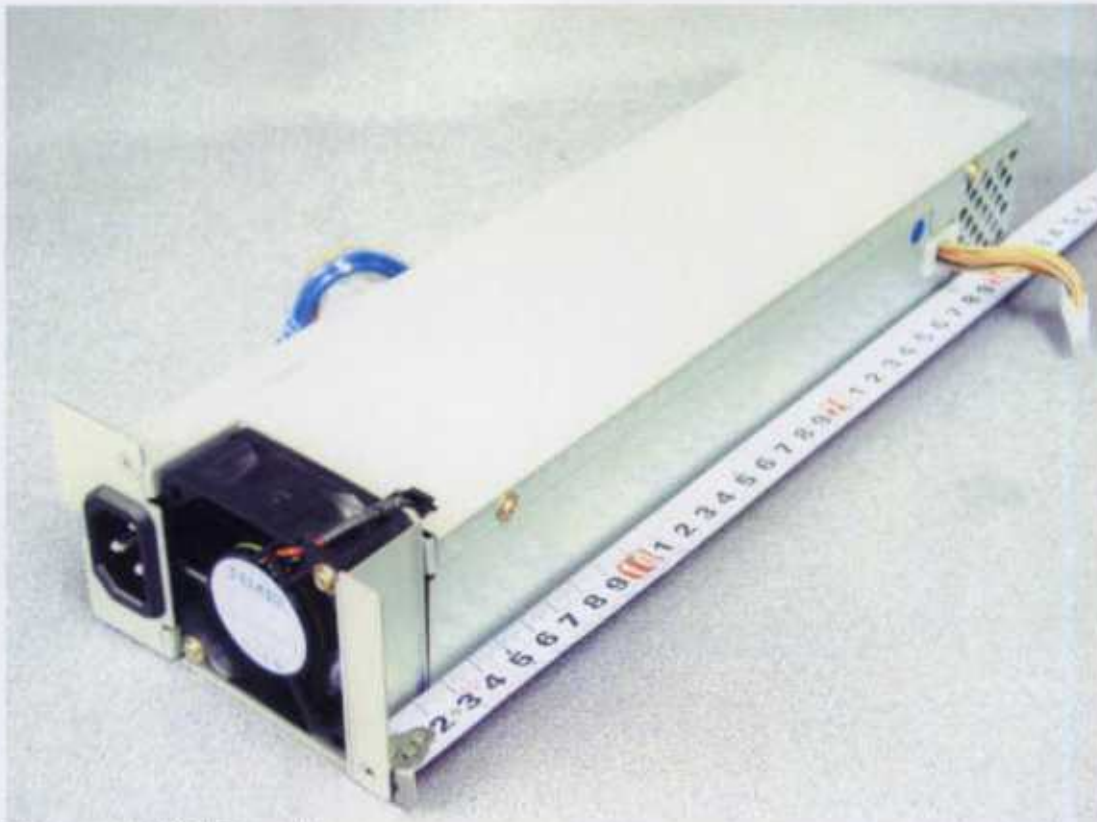
Picture 21 (Inverter unit)



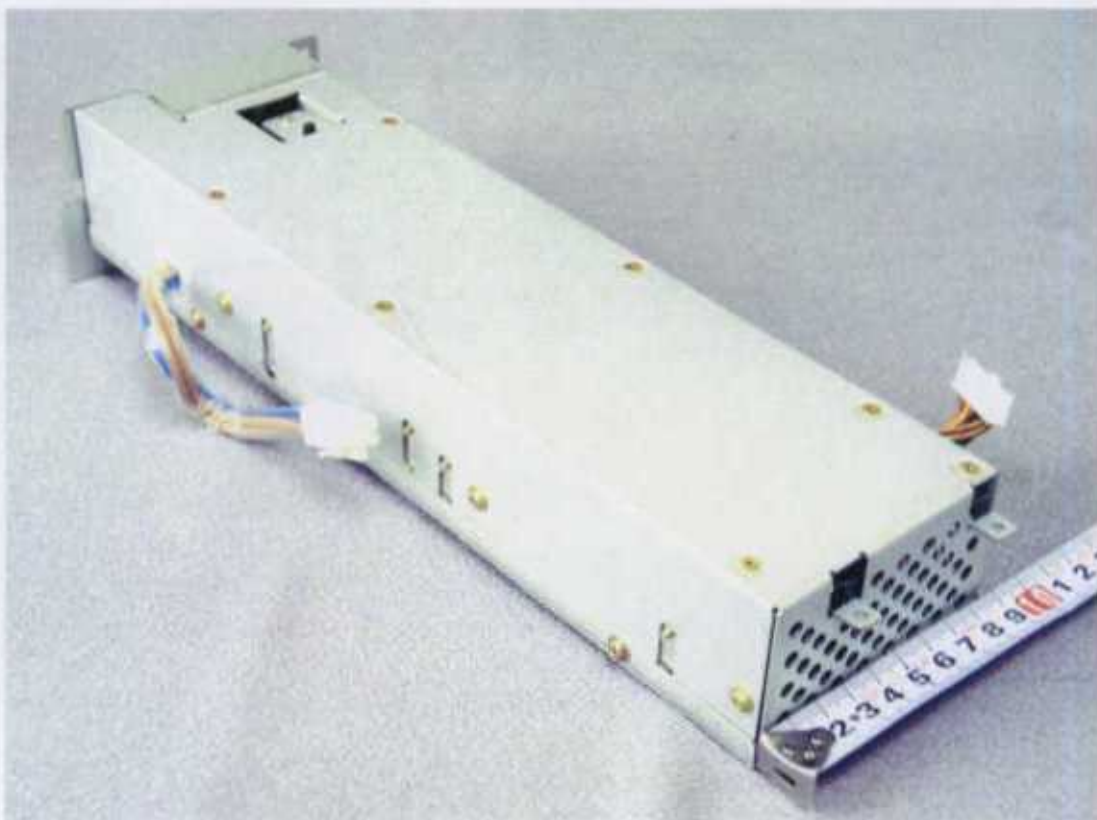
Picture 22 (Inverter unit)

**Report Number:** 12700608 001

**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



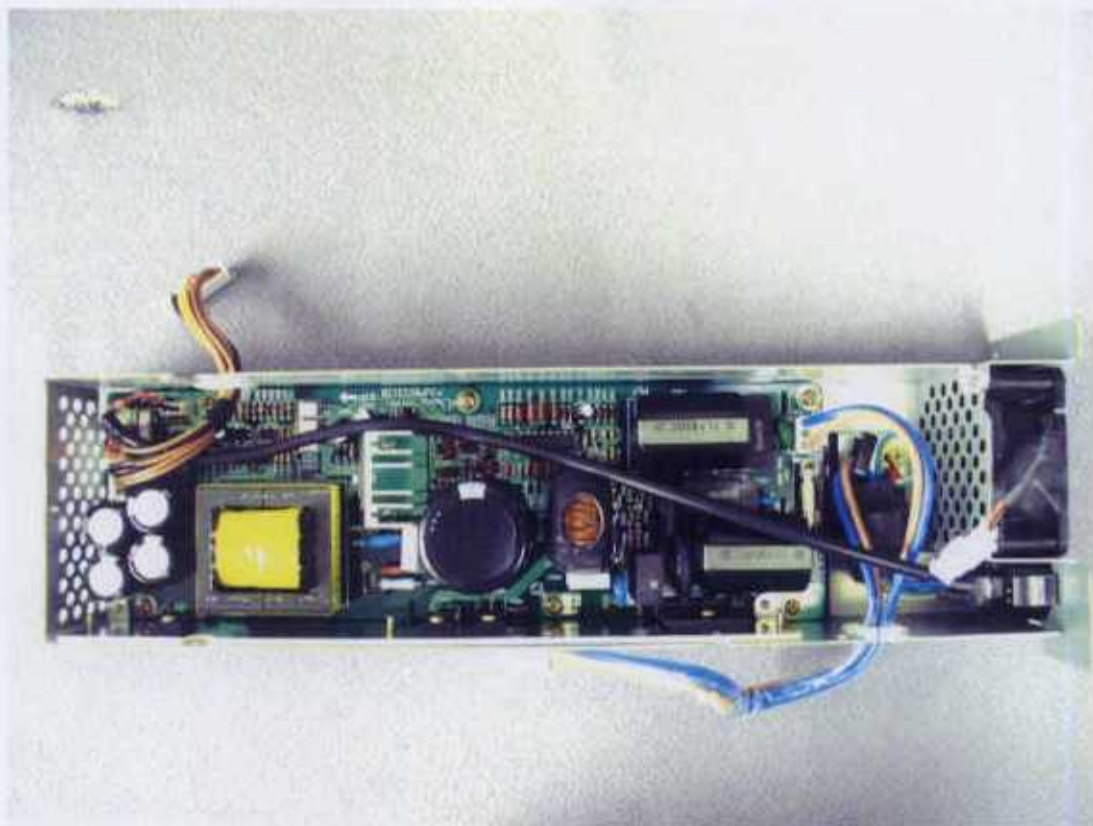
Picture 23 (SWPS unit)



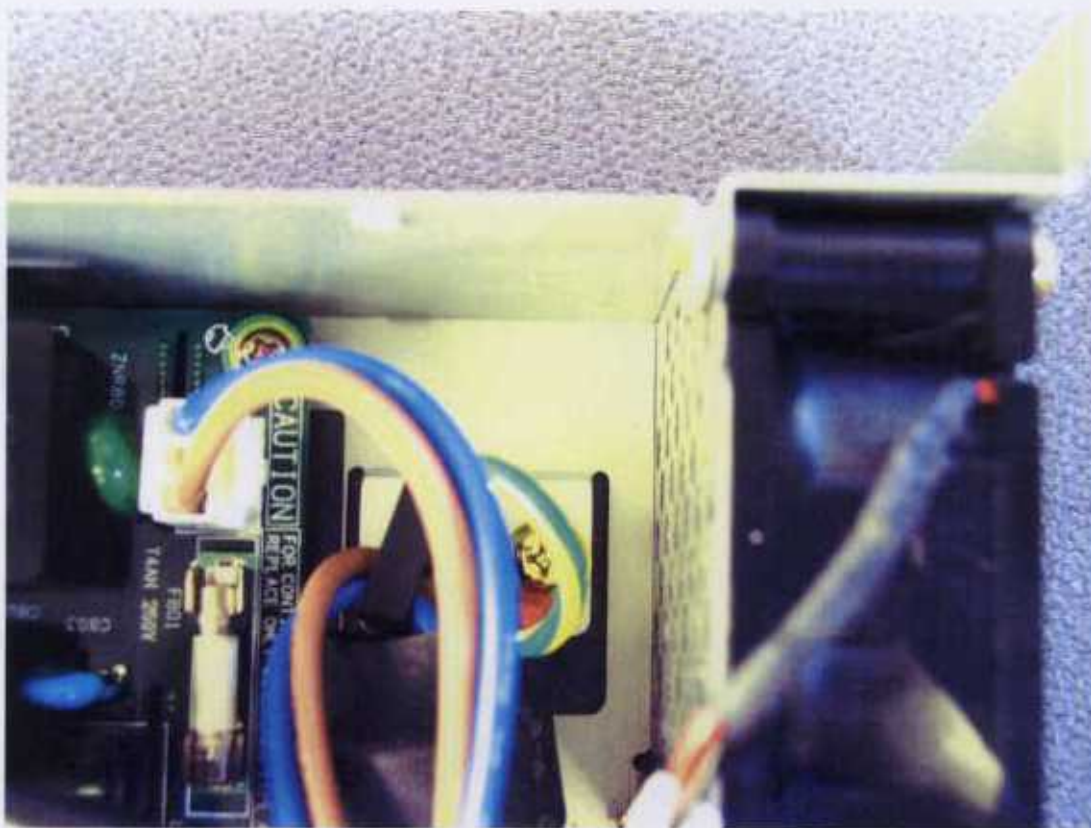
Picture 24

**Report Number:** 12700608 001

**Model:** KV-S7065C, KV-S7065CCN, 3200-EU, 3200-US,  
3600-EU, 3600FDX and 3600-US



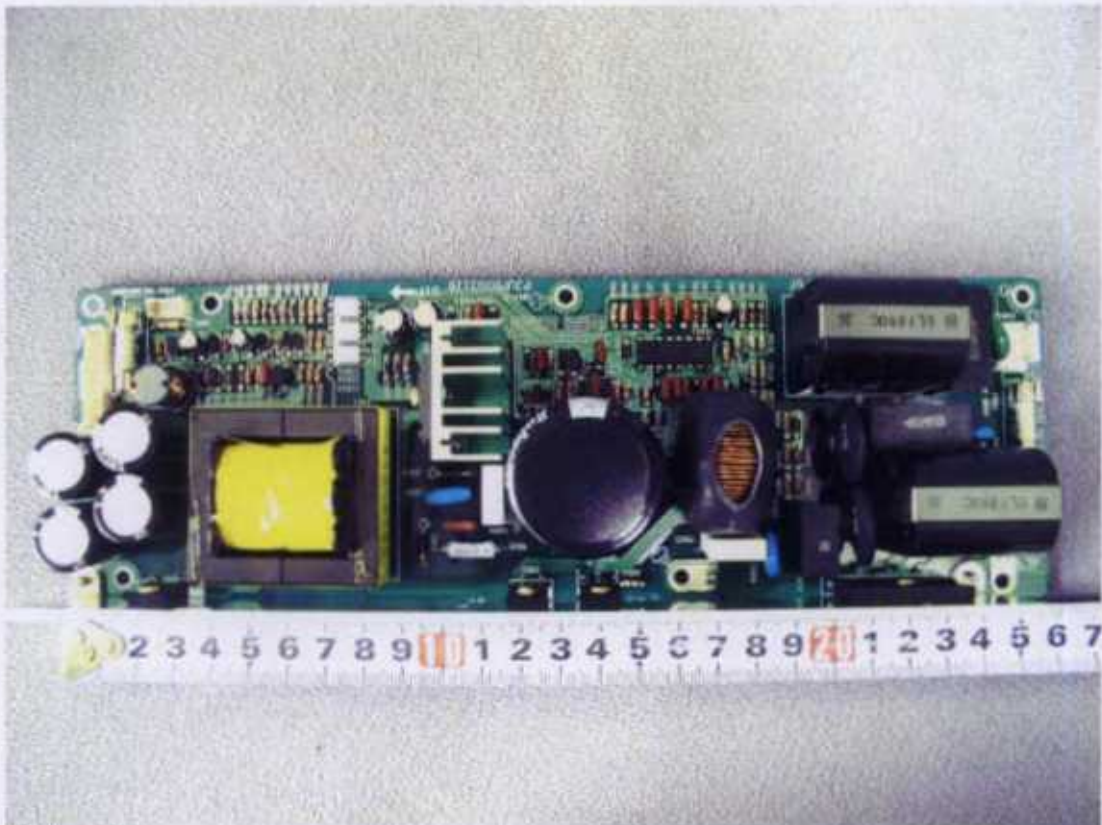
Picture 25



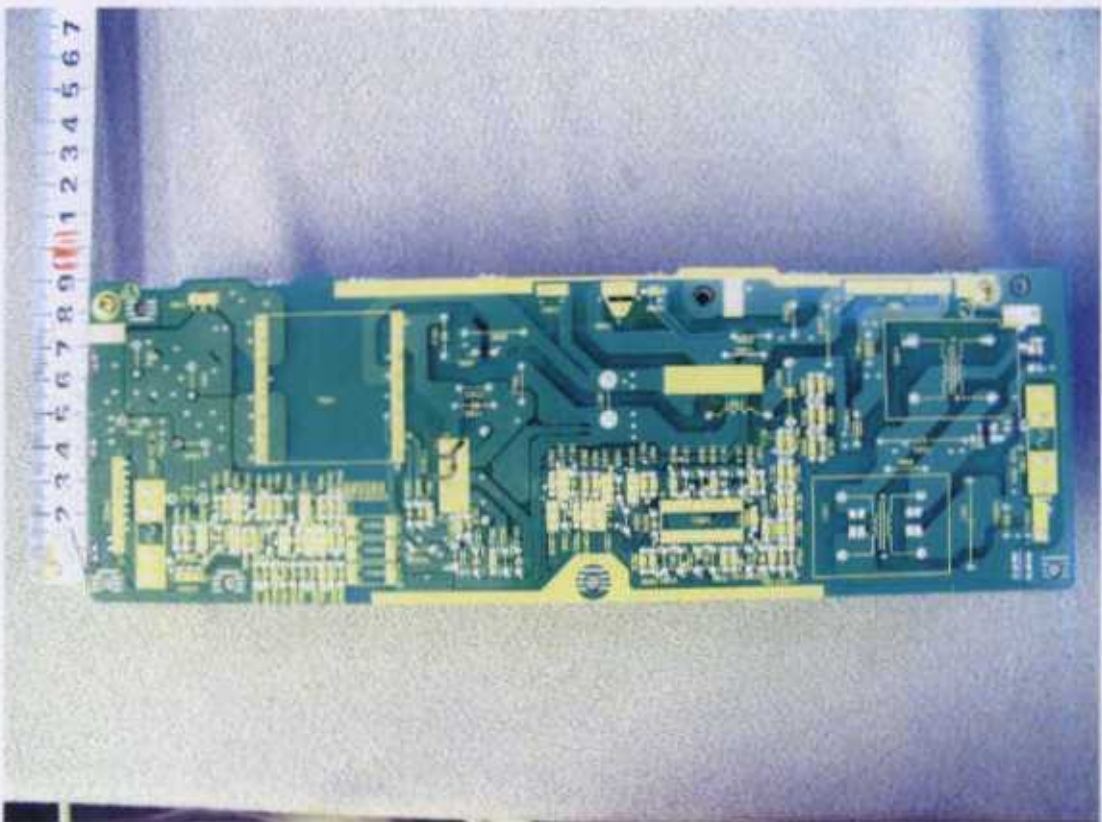
Picture 26

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3600-EU, 3600FDX and 3600-US



Picture 27



Picture 28