IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-031818

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	Switching Power Supply
Name and address of the applicant Nom et adresse du demandeur	Mean Well Enterprises Co., Ltd. No. 28, Wu-Chuan 3rd Road Wu Ku Ind. Park, Taipei Hsien 248 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Mean Well Enterprises Co., Ltd. No. 28, Wu-Chuan 3rd Road Wu Ku Ind. Park, Taipei Hsien 248 Taiwan
Name and address of the factory Nom et adresse de l'usine	See additional page(s)
Rating and principal characteristics Valeurs nominales et caractéristiques principales	Input : AC 100-240V; 50/60Hz; 1) 1.3A, 2) 1.1A; Class I Output: refer to the test report
Trade mark (if any) Marque de fabrique (si elle existe)	Trademark of Mean Well
Model/type Ref. Ref. de type	1) NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D) 2) SCP-50-z (z= 12 or 24)
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 60950-1:2005 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	11019654 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

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 14.04.2010

Signature: Dipl.-Ing. W. Hsu

1. Mean Well Enterprises Co., Ltd.
   No. 28, Wu-Chuan 3rd Road
   Wu Ku Ind. Park, Taipei Hsien 248
   Taiwan

2. GUANGZHOU MEAN WELL
   ELECTRONICS CO., LTD
   2nd Floor
   No. A Building, Yuean Ind. Park
   Dongpu Town, TianHe, Guangzhou, P.R. China

3. SuZhou Mean Well Technology
   Co., Ltd.
   No. 77, Jian-min Road,
   Dong-qiao, Pan-yang Ind. Park,
   Huang-dai Town, Xiang-cheng District, Suzhou, Jiangsu 215152, P.R. China

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

Date: 14.04.2010 Signature: Dipl.-Ing. W. Hsu

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

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

Report Reference No. ..... :	11019654 001
Date of issue ..... :	Apr. 13, 2010
Total number of pages	104
CB/CCA Testing Laboratory ..... :	TÜV Rheinland Taiwan Ltd., Taichung Laboratory
Address ..... :	10F, No. 219, Min Chuan Rd., Taichung 403, Taiwan
Applicant's name ..... :	Mean Well Enterprises Co., Ltd.
Address ..... :	No. 28, Wu-Chuan 3rd Road, Wu Ku Ind. Park, Taipei Hsien 248 Taiwan
Manufacturer's name ..... :	Same as applicant
Address ..... :	Same as applicant
Factory's name ..... :	See page 7
Address ..... :	See page 7
Test specification:	
Standard ..... :	☒ IEC 60950-1:2005 (2nd Edition) and/or ☒ EN 60950-1:2006 + A11:2009
Test procedure ..... :	CB
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IECEN60950_1C
Test Report Form(s) Originator ..... :	SGS Fimko Ltd
Master TRF ..... :	Dated 2007-06

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

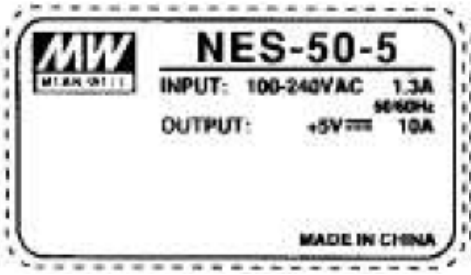
If this Test Report Form is used by non-CCA members, the CIG logo and the reference to the CCA Procedure shall be removed.
This report is not valid as a CCA Test Report unless signed by an approved CCA Testing Laboratory and appended to a CCA Test Certificate issued by an NCB in accordance with CCA

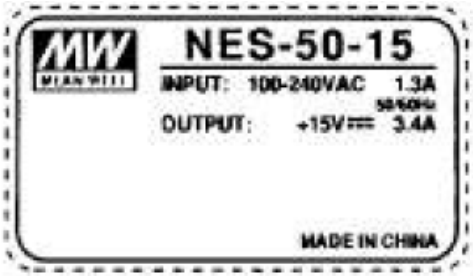
Test item description ..... :	Switching Power Supply
Trade Mark ..... :	MEAN WELL
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	1) NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D) 2) SCP-50-z (z= 12 or 24)
Ratings ..... :	I/P: 1) 100-240VAC, 50/60Hz, 1.3A, 2) 100-240VAC, 50/60Hz, 1.1A O/P: 1), 2) See details on page 7

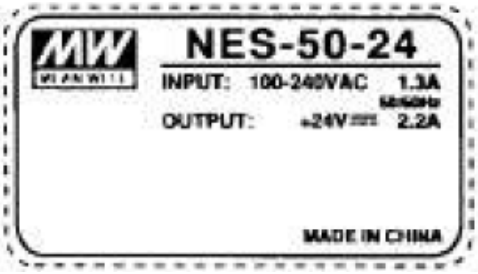
Testing procedure and testing location:	
☒ **CB/CCA Testing Laboratory:**	Refer to cover page
Testing location/ address..... :	Refer to cover page
☐ **Associated CB Laboratory:**	N/A
Testing location/ address..... :	
Tested by (name + signature)..... :	Jean Chen
Approved by (+ signature)..... :	Andy Liu
☐ Testing procedure: TMP	N/A
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Testing location/ address..... :	
☐ Testing procedure: WMT	N/A
Tested by (name + signature)..... :	
Witnessed by (+ signature) ..... :	
Approved by (+ signature)..... :	
Testing location/ address..... :	
☐ Testing procedure: SMT	N/A
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Supervised by (+ signature)..... :	
Testing location/ address..... :	
☐ Testing procedure: RMT	N/A
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Supervised by (+ signature)..... :	
Testing location/ address..... :	

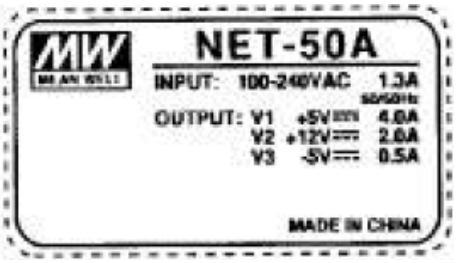
Summary of testing:	
Tests performed (name of test and test clause): • All applicable tests as described in Test Case and Measurement Sections were performed. • Pre-production samples without serial numbers. • Load conditions used during testing, see appended in table 1.6.2. • The maximum ambient temperature is specified as +40°C for NES-50y, +35°C for NED-50y, +39°C for NET-50y or +50°C for SCP-50-z. • All tests were performed on model NES-50-5, NES-50-48, NED-50A, NED-50B, NET-50C, NET-50B, NET-50D and SCP-50-12 to represent other similar model for details see appended table and measurement section. • The equipment is building-in type to use terminal block or primary connector as input connection, for connection to a.c. mains supply, wiring terminals for connection of external conductors and disconnect from the mains supply shall be evaluated in the final system.	**Testing location:** • All tests as described in Test Case and Measurement Sections were performed at the laboratory described on page 2.
Summary of compliance with National Differences: EU Group Differences, EU Special National Conditions, EU A-Deviations, AT, AU, CA, CH, DE, DK, FI, FR, GB, IT, KR, NL, NO, PL, SE, SI, US. Explanation of used codes: AT=Austria, AU=Australia, CA=Canada, CH=Switzerland, DE=Germany, DK=Denmark, FI=Finland, FR=France, GB=United Kingdom, IT=Italy, KR=Korea, NL=The Netherlands, NO=Norway, PL=Poland, SE=Sweden, SI=Slovenia, US=United States of America. For National Differences see corresponding Attachment.	

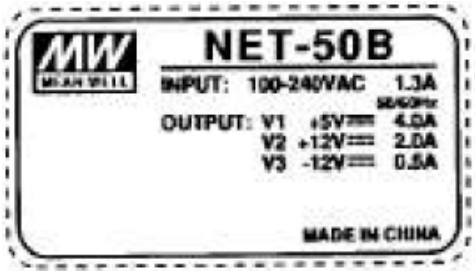
Copy of marking plate:

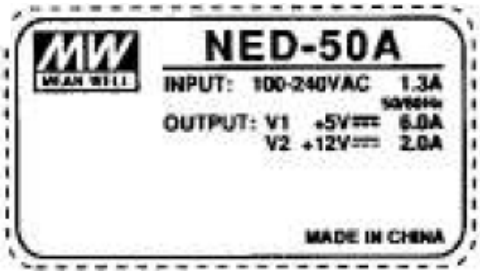


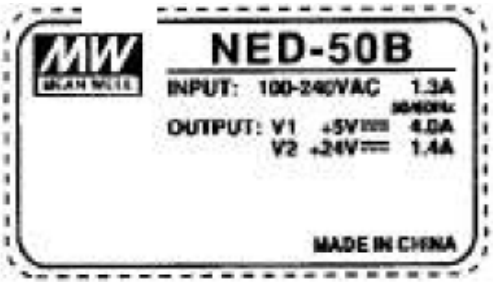


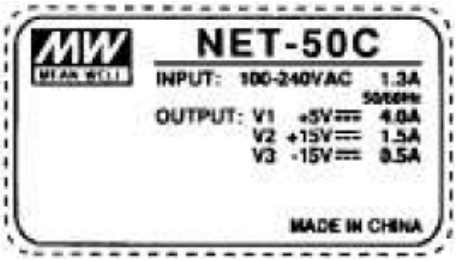


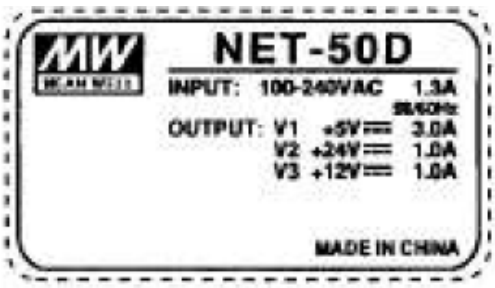




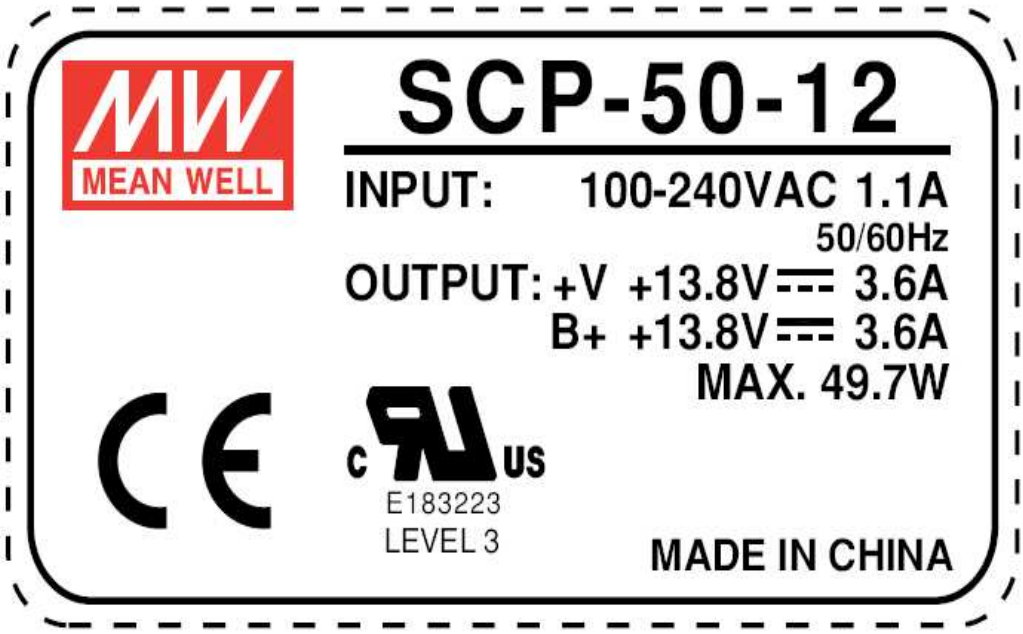


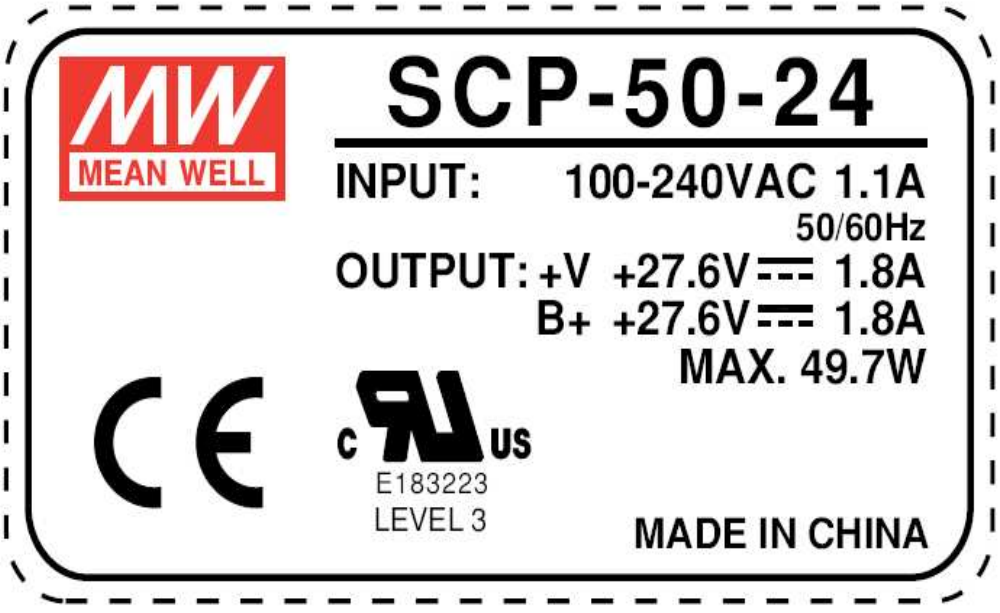






Copy of marking plate:





The above label is a draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.

Test item particulars ..... :	
Equipment mobility ..... :	[] movable [] hand-held [] transportable [] stationary [x] for building-in [] direct plug-in
Connection to the mains..... :	[x] pluggable equipment [] permanent connection [] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition ..... :	[x] continuous [] rated operating / resting time:
Access location ..... :	[] operator accessible [] restricted access location
Over voltage category (OVC) ..... :	[] OVC I [x] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values ..... :	±10%
Tested for IT power systems ..... :	[x] Yes [] No
IT testing, phase-phase voltage (V) ..... :	230V (for Norway)
Class of equipment ..... :	[x] Class I [] Class II [] Class III [] Not classified
Considered current rating (A) ..... :	16A (or 20A for North America)
Pollution degree (PD) ..... :	[] PD 1 [x] PD 2 [] PD 3
IP protection class ..... :	IPX0
Altitude during operation (m) ..... :	Not over 2000m
Altitude of test laboratory (m) ..... :	Not over 2000m
Mass of equipment (kg) ..... :	0.38
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing ..... :	
Date of receipt of test item .....:	Jan., 2010
Date(s) of performance of tests .....:	Jan. to Apr., 2010

General remarks:

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

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

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

General product information:

The equipment models NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D) are the building-in type switching power supply for use in information technology equipment.

Models NEx-50y are similar except for model designation, output rating, PCB layout, secondary winding of transformer (T1), specified ambient temperature and different ratings of critical components used, see appended table of critical components for details.

Both PCBs (no. NEx-50 and NEx-50A (x=S, D or T) were used, which are similar except for put location of these components (C22, C23, C1, R1) before fuse for PCB no. NEx-50 and after fuse for PCB no. NEx-50A.

Models SCP-50-x (x= 12 or 24) are similar to models NES-50y (y= -12 or -24) except for model designation, input current, output rating, PCB layout, secondary winding of transformer (T1), optional top metal cover and max. ambient temperature 50°C.

For model difference:

Model No.	Output Rating	PCB no.	Transformer type
NES-50-5	+5Vdc, 10A	NES-50, NES-50A	TF-1010
NES-50-12	+12Vdc, 4.2A	NED-50, NED-50A	TF-1011
NES-50-15	+15Vdc, 3.4A	NES-50, NES-50A	TF-1012
NES-50-24	+24Vdc, 2.2A	NED-50, NED-50A	TF-1013
NES-50-48	+48Vdc, 1.1A	NED-50, NED-50A	TF-1014
NED-50A	+5V/6A, +12V/2A	NED-50, NED-50A	TF-1015
NED-50B	+5V/4A, +24V/1.4A	NED-50, NED-50A	TF-1016
NET-50A	+5V/4A, +12V/2A, -5V/0.5A	NET-50, NET-50A	TF-1017
NET-50B	+5V/4A, +12V/2A, -12V/0.5A	NET-50, NET-50A	TF-1018
NET-50C	+5V/4A, +15V/1.5A, -15V/0.5A	NET-50, NET-50A	TF-1019
NET-50D	+5V/3A; +24V/1A, +12V/1A	NET-50, NET-50A	TF-1020
SCP-50-12	+V +13.8Vdc/3.6A, B+ +13.8Vdc/3.6A, MAX. 49.7W	SCP-50	TF-5026
SCP-50-24	+V +27.6Vdc/1.8A, B+ +27.6Vdc/1.8A, MAX. 49.7W	SCP-50	TF-5027

Other comments:

Factories:

1. Mean Well Enterprises Co., Ltd.
   No. 28, Wu-Chuan 3rd Road, Wu Ku Ind. Park, Taipei Hsien 248, Taiwan
2. GUANGZHOU MEAN WELL ELECTRONICS CO., LTD
   2nd Floor, No. A Building, Yuean Ind. Park, Dongpu Town, TianHe, Guangzhou, P.R. China
3. SuZhou Mean Well Technology Co., Ltd.
   No. 77, Jian-min Road, Dong-qiao, Pan-yang Ind. Park, Huang-dai Town, Xiang-cheng District, Suzhou, Jiangsu 215152, P.R. China

The manufacturer's declaration, that the samples tested represent the products from each factory, is available.

Definition of variable(s):

Variable:	Range of variable:	Content:
NEx-50y		
x	S, D or T	Denote different output: “S” for Single output, “D” for dual output, “T” for triple output
y	-5, -12, -15, -24, -48, A, B, C or D	Denote different output ratings
SCP-50-z		
z	12 or 24	Denote different output ratings
Attachments to this Test Report: - Photo Documentation - Measurement Section - National Differences		

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		**P**
1.5	Components		**P**
1.5.1	General	See below.	**P**
	Comply with IEC 60950 or relevant component standard	See appended table 1.5.1.	**P**
1.5.2	Evaluation and testing of components	Components, which are certified to IEC and/or national standards, are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	**P**
1.5.3	Thermal controls		**N/A**
1.5.4	Transformers	Transformers used are suitable for the intended application and comply with the relevant requirements of the standard and particularly with those of Annex C.	**P**
1.5.5	Interconnecting cables	No interconnecting cables provided.	**N/A**
1.5.6	Capacitors bridging insulation	Between lines: X1 or X2 capacitors according to IEC 60384-14 with 21 days damp heat test. Between line and ground: Y1 or Y2 capacitors according to IEC 60384-14 with 21 days damp heat test. Between primary and secondary: Y1 capacitor according to IEC 60384-14 with 21 days damp heat test was bridged by one capacitor.	**P**
1.5.7	Resistors bridging insulation	See below.	**P**
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	One approved bleeder resistor is located before fuse as bridging functional insulation for PCB P/N: NEx-50 and one bleeder resistor are located after fuse and fuse as providing protective device while short circuit for PCB P/N: NEx-50A and SCP-50.	**P**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		**N/A**
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		**N/A**
1.5.8	Components in equipment for IT power systems	Phase to earth designed in according to phase-to-phase working voltage. The Y2 min. class capacitor used between phase-to-earth is rated accordingly.	**P**
1.5.9	Surge suppressors	See below.	**P**
1.5.9.1	General	Approved Varistor comply with Annex Q used in primary circuit.	**P**
1.5.9.2	Protection of VDRs	A fuse is connected in series with VDR.	**P**
1.5.9.3	Bridging of functional insulation by a VDR	Approved Varistor located between mains lines.	**P**
1.5.9.4	Bridging of basic insulation by a VDR		**N/A**
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		**N/A**
1.6	Power interface		**P**
1.6.1	AC power distribution systems	TN power system and IT power system (for Norway).	**P**
1.6.2	Input current	See appended table 1.6.2.	**P**
1.6.3	Voltage limit of hand-held equipment		**N/A**
1.6.4	Neutral conductor	The neutral is not identified in the equipment. Basic insulation for rated voltage between earthed parts and primary phases. Reinforced insulation for rated voltage between secondary parts and primary phases.	**P**
1.7	Marking and instructions		**P**
1.7.1	Power rating	Marking label was stuck on metal enclosure.	**P**
	Rated voltage(s) or voltage range(s) (V) .....:	See copy of marking plate.	**P**
	Symbol for nature of supply, for d.c. only.....:	Mains from AC source.	**N/A**
	Rated frequency or rated frequency range (Hz) ....:	See copy of marking plate.	**P**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (mA or A) .....:	See copy of marking plate.	**P**
	Manufacturer's name or trade-mark or identification mark .....:	See copy of marking plate.	**P**
	Model identification or type reference .....:	See copy of marking plate.	**P**
	Symbol for Class II equipment only .....:	Class I equipment.	**N/A**
	Other markings and symbols .....:	Other symbols do not give rise to misunderstanding.	**N/A**
1.7.2	Safety instructions and marking	See below.	**P**
1.7.2.1	General	Installation instruction with directions to maintain the requirements of IEC 60950-1 with installation in end product. Included are directions regarding the maximum input rating, the maximum output rating, the maximum ambient temperature and that the requirements of the IEC 60950-1 must be observed with the installation in end product.	**P**
1.7.2.2	Disconnect devices	Terminal Block or Primary Connector used, equipment is for building-in. Compliance shall be investigated in the end product.	**N/A**
1.7.2.3	Overcurrent protective device	Equipment is for building-in. Compliance shall be investigated in the end product.	**N/A**
1.7.2.4	IT power distribution systems	For Norway compliance has to be evaluated during the national approval.	**N/A**
1.7.2.5	Operator access with a tool	Equipment is for building-in. Compliance shall be investigated in the end product.	**N/A**
1.7.2.6	Ozone		**N/A**
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	**N/A**
1.7.4	Supply voltage adjustment .....:	Full range voltage design, no necessary adjustment.	**N/A**
	Methods and means of adjustment; reference to installation instructions .....:		**N/A**
1.7.5	Power outlets on the equipment .....:		**N/A**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....:	Fuse marking on PCB near fuse: FS1 UL F3A/250V IEC F 3.15A/250V	**P**
1.7.7	Wiring terminals	See below.	**P**
1.7.7.1	Protective earthing and bonding terminals .....:	Terminal Block or Primary Connector used used and symbol for Protective bonding terminal (IEC 60417-5017) provided on top metal cover.	**P**
1.7.7.2	Terminals for a.c. mains supply conductors	Indication by the capital letters L, N is shown above related the terminal block or Primary Connector on top metel cover.	**P**
1.7.7.3	Terminals for d.c. mains supply conductors	AC supplied equipment.	**N/A**
1.7.8	Controls and indicators	See below.	**N/A**
1.7.8.1	Identification, location and marking .....:	No controls and indicators.	**N/A**
1.7.8.2	Colours .....:	No indicators.	**N/A**
1.7.8.3	Symbols according to IEC 60417 .....:		**N/A**
1.7.8.4	Markings using figures .....:		**N/A**
1.7.9	Isolation of multiple power sources .....:	Only one supply from the mains.	**N/A**
1.7.10	Thermostats and other regulating devices .....:	Neither thermostats nor other regulating devices provided.	**N/A**
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 s and then again for 15 s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	**P**
1.7.12	Removable parts	No removable parts.	**N/A**
1.7.13	Replaceable batteries .....:	No batteries provided.	**N/A**
	Language(s) .....:	See above.	—
1.7.14	Equipment for restricted access locations.....:	Should be investigated in the final system assembly.	**N/A**

2	PROTECTION FROM HAZARDS	**P**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1	Protection from electric shock and energy hazards		**P**
2.1.1	Protection in operator access areas	See below.	**P**
2.1.1.1	Access to energized parts	The accessibility of hazardous are prevented with in the final system. Therefore, the inspection with test pin and test finger should be conducted with the approval of the end system. Installation instruction requires, that the requirements of the IEC/EN 60950-1 must be observed to the installation.	**N/A**
	Test by inspection .....:	See above.	**N/A**
	Test with test finger (Figure 2A) .....:	See above.	**N/A**
	Test with test pin (Figure 2B) .....:	See above.	**N/A**
	Test with test probe (Figure 2C) .....:	No TNV circuits provided.	**N/A**
2.1.1.2	Battery compartments	No battery compartment.	**N/A**
2.1.1.3	Access to ELV wiring	This EUT is for building-in. Compliance shall be investigated in the final system assembly.	**N/A**
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)	See above.	—
2.1.1.4	Access to hazardous voltage circuit wiring	This equipment is for building-in. Compliance shall be investigated in the final system assembly.	**N/A**
2.1.1.5	Energy hazards .....:	See attachment measurement section table 2.1.1.5. Energy not exceeded 240VA between any two points in o/p connector of secondary circuit.	**P**
2.1.1.6	Manual controls	No manual controls.	**N/A**
2.1.1.7	Discharge of capacitors in equipment	No risk of electric shock, see below.	**P**
	Measured voltage (V); time-constant (s) .....:	See attachment measurement section table 2.1.1.7.	—
2.1.1.8	Energy hazards – d.c. mains supply		**N/A**
	a) Capacitor connected to the d.c. mains supply ..:		**N/A**
	b) Internal battery connected to the d.c. mains supply .....:		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.9	Audio amplifiers .....:		**N/A**
2.1.2	Protection in service access areas	Equipment is for building-in. Compliance shall be investigated in the end product.	**N/A**
2.1.3	Protection in restricted access locations	Equipment is for building-in. Compliance shall be investigated in the end product.	**N/A**
2.2	SELV circuits		**P**
2.2.1	General requirements	See below, the secondary circuits were tested as SELV.	**P**
2.2.2	Voltages under normal conditions (V) .....:	42.4Vpeak or 60Vdc are not exceeded between any conductor of the SELV circuits under normal operation. See measurement section table 2.2.2.	**P**
2.2.3	Voltages under fault conditions (V) .....:	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120Vd.c. were compliance Figure 2E and limits 42.4V peak and 60Vd.c. were not exceeded for longer than 0.2 and were compliance Figure 2E. See measurement section table 2.2.3.	**P**
2.2.4	Connection of SELV circuits to other circuits .....:	See sub-clauses 1.5.6, 2.2.2, 2.2.3 and 2.4.3.	**P**
2.3	TNV circuits		**N/A**
2.3.1	Limits		**N/A**
	Type of TNV circuits .....:		—
2.3.2	Separation from other circuits and from accessible parts		**N/A**
2.3.2.1	General requirements		**N/A**
2.3.2.2	Protection by basic insulation		**N/A**
2.3.2.3	Protection by earthing		**N/A**
2.3.2.4	Protection by other constructions .....:		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
2.3.3	Separation from hazardous voltages		**N/A**
	Insulation employed.....:		—
2.3.4	Connection of TNV circuits to other circuits		**N/A**
	Insulation employed.....:		—
2.3.5	Test for operating voltages generated externally		**N/A**
2.4	Limited current circuits		**P**
2.4.1	General requirements	See below.	**P**
2.4.2	Limit values	See measurement section table 2.4.2.	**P**
	Frequency (Hz).....:	60	—
	Measured current (mA).....:	The peak drop voltage was measured with an oscilloscope at a 2kΩ non-inductive resistor. See measurement section table 2.4.2.	—
	Measured voltage (V) .....:	See measurement section table 2.4.2.	—
	Measured circuit capacitance (nF or µF).....:	2200pF	—
2.4.3	Connection of limited current circuits to other circuits	Output circuit as limited current circuit connected to primary via one bridging capacitor.	**P**
2.5	Limited power sources		**N/A**
	a) Inherently limited output		**N/A**
	b) Impedance limited output		**N/A**
	c) Regulating network limited output under normal operating and single fault condition		**N/A**
	d) Overcurrent protective device limited output		**N/A**
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....:		—
	Current rating of overcurrent protective device (A)		—
2.6	Provisions for earthing and bonding		**P**
2.6.1	Protective earthing	Reliable connection of the PCB trace to the protective earthing terminal. To be evaluated for the final system.	**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.2	Functional earthing	Secondary functional earthing is separated to primary by reinforced or double insulation. No green/yellow wire used for functional earthing.	**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 cord provided.	**N/A**
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
2.6.3.3	Size of protective bonding conductors	Evaluation by test. See sub-clause 2.6.3.4, protective current rating is considered as 16A.	**P**
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
	Protective current rating (A), cross-sectional area (mm^2), AWG .....:		
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min) .....:	See measurement section table 2.6.3.4 for test result.	**P**
2.6.3.5	Colour of insulation.....:		**N/A**
2.6.4	Terminals	See below.	**N/A**
2.6.4.1	General	See below.	**N/A**
2.6.4.2	Protective earthing and bonding terminals	The earthed trace is considered as protective bonding conductors are evaluation by 2.6.3.4 test. Shall be evaluated in the final system assembly.	**N/A**
	Rated current (A), type, nominal thread diameter (mm) .....:	Evaluation by test. See sub-clause 2.6.3.4.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Shall be evaluated in the final system assembly.	**N/A**
2.6.5	Integrity of protective earthing	See below.	**P**
2.6.5.1	Interconnection of equipment	This unit has it own earthing connection. Any other units connected via the DC output Terminal Block shall provide SELV only.	**P**
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device in protective bonding conductor.	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.3	Disconnection of protective earth	Shall be evaluated in the final system assembly.	**N/A**
2.6.5.4	Parts that can be removed by an operator	See above.	**N/A**
2.6.5.5	Parts removed during servicing	See above.	**N/A**
2.6.5.6	Corrosion resistance	All safety earthing connections in compliance with Annex J.	**P**
2.6.5.7	Screws for protective bonding	Only ISO thread screw used in metal chassis for protective bonding. Metal thickness at least twice the pitch of the screw. No self-tapping or spaced thread screws.	**P**
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV.	**N/A**
2.7	Overcurrent and earth fault protection in primary circuits		**P**
2.7.1	Basic requirements	Equipment relies on a rated fuse or 16 A (20A North America) circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short-circuit. Over current protection is provided by the built-in fuse.	**P**
	Instructions when protection relies on building installation	Not applicable for pluggable equipment type A.	**N/A**
2.7.2	Faults not simulated in 5.3.7	The protection device is well dimensioned and mounted.	**P**
2.7.3	Short-circuit backup protection	The final system is considered to pluggable equipment type A, the building installation is considered as providing short circuit backup protection.	**P**
2.7.4	Number and location of protective devices .....:	Over current protection by one built-in fuse.	**P**
2.7.5	Protection by several devices	Only one fuse provided.	**N/A**
2.7.6	Warning to service personnel .....:	This equipment is for building-in. Compliance shall be evaluated in the final system.	**N/A**
2.8	Safety interlocks		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
2.8.1	General principles		**N/A**
2.8.2	Protection requirements		**N/A**
2.8.3	Inadvertent reactivation		**N/A**
2.8.4	Fail-safe operation		**N/A**
2.8.5	Moving parts		**N/A**
2.8.6	Overriding		**N/A**
2.8.7	Switches and relays		**N/A**
2.8.7.1	Contact gaps (mm) .....:		**N/A**
2.8.7.2	Overload test		**N/A**
2.8.7.3	Endurance test		**N/A**
2.8.7.4	Electric strength test		**N/A**
2.8.8	Mechanical actuators		**N/A**
2.9	Electrical insulation		**P**
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	**P**
2.9.2	Humidity conditioning	Tested for 120hrs.	**P**
	Relative humidity (%), temperature (°C) .....:	95% R.H., 40°C.	—
2.9.3	Grade of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	**P**
2.9.4	Separation from hazardous voltages	Double or reinforced for the highest working voltage across a particular insulation is provided.	**P**
	Method(s) used .....:	Method 1 used.	—
2.10	Clearances, creepage distances and distances through insulation		**P**
2.10.1	General	See below.	**P**
2.10.1.1	Frequency .....:	EUT freguency under 30kHz.	**P**
2.10.1.2	Pollution degrees .....:	Pollution degree 2.	**P**
2.10.1.3	Reduced values for functional insulation	See sub-clause 5.3.4.	**P**
2.10.1.4	Intervening unconnected conductive parts	No such conductive parts.	**N/A**
2.10.1.5	Insulation with varying dimensions	Not applicable.	**N/A**
2.10.1.6	Special separation requirements	No TNV circuit.	**N/A**
2.10.1.7	Insulation in circuits generating starting pulses	No such circuit.	**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.2	Determination of working voltage	See below.	**P**
2.10.2.1	General	The unit was connected to a 240V TN power system. 2.10.1.5 not applied for.	**P**
2.10.2.2	RMS working voltage	See measurement section table 2.10.2.	**P**
2.10.2.3	Peak working voltage	See measurement section table 2.10.2.	**P**
2.10.3	Clearances	See below and alternative method of annex G is not considered.	**P**
2.10.3.1	General	Annex F and minimum clearances considered.	**P**
2.10.3.2	Mains transient voltages	Normal transient voltage considered.	**P**
	a) AC mains supply .....:	Overvoltage category II for primary circuit and transient voltage 2500Vpeak.	**P**
	b) Earthed d.c. mains supplies .....:		**N/A**
	c) Unearthed d.c. mains supplies .....:		**N/A**
	d) Battery operation .....:		**N/A**
2.10.3.3	Clearances in primary circuits	See appended table 2.10.3 and 2.10.4.	**P**
2.10.3.4	Clearances in secondary circuits	See sub-clause 5.3.4.	**N/A**
2.10.3.5	Clearances in circuits having starting pulses	No such circuit.	**N/A**
2.10.3.6	Transients from a.c. mains supply .....:		**N/A**
2.10.3.7	Transients from d.c. mains supply .....:		**N/A**
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....:		**N/A**
2.10.3.9	Measurement of transient voltage levels		**N/A**
	a) Transients from a mains supply		**N/A**
	For an a.c. mains supply .....:		**N/A**
	For a d.c. mains supply .....:		**N/A**
	b) Transients from a telecommunication network .:		**N/A**
2.10.4	Creepage distances	See below.	**P**
2.10.4.1	General	Considered.	**P**
2.10.4.2	Material group and comparative tracking index	CTI rating for all materials are min. 100.	**P**
	CTI tests .....:	Material group IIIb is assumed to be used.	—

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.4.3	Minimum creepage distances	See appended table 2.10.3 and 2.10.4.	**P**
2.10.5	Solid insulation	Complied with 2.10.5.2 to 2.10.5.14 and 5.2.	**P**
2.10.5.1	General	See below.	**P**
2.10.5.2	Distances through insulation	See appended table 2.10.5.	**P**
2.10.5.3	Insulating compound as solid insulation	Certified sources of photo couplers used. See sub-clause 2.10.5.2 and 2.10.10.	**P**
2.10.5.4	Semiconductor devices	For photo couplers see sub-clause 2.10.5.3.	**P**
2.10.5.5.	Cemented joints		**N/A**
2.10.5.6	Thin sheet material – General	Considered.	**P**
2.10.5.7	Separable thin sheet material	Reinforced insulation.	**P**
	Number of layers (pcs) .....:	See measurement section tables C.2 for detail applicable.	—
2.10.5.8	Non-separable thin sheet material	Not applicable.	**N/A**
2.10.5.9	Thin sheet material – standard test procedure	Not applicable.	**N/A**
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	See below.	**P**
	Electric strength test	See appended table 2.10.5.	—
2.10.5.11	Insulation in wound components		**N/A**
2.10.5.12	Wire in wound components		**N/A**
	Working voltage .....:		**N/A**
	a) Basic insulation not under stress .....:		**N/A**
	b) Basic, supplementary, reinforced insulation .....:		**N/A**
	c) Compliance with Annex U .....:		**N/A**
	Two wires in contact inside wound component; angle between 45° and 90° .....:		**N/A**
2.10.5.13	Wire with solvent-based enamel in wound components		**N/A**
	Electric strength test		—
	Routine test		**N/A**
2.10.5.14	Additional insulation in wound components		**N/A**
	Working voltage .....:		**N/A**
	- Basic insulation not under stress .....:		**N/A**
	- Supplementary, reinforced insulation .....:		**N/A**
2.10.6	Construction of printed boards	See below.	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.6.1	Uncoated printed boards	See appended table 2.10.3 and 2.10.4.	**P**
2.10.6.2	Coated printed boards		**N/A**
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		**N/A**
2.10.6.4	Insulation between conductors on different layers of a printed board		**N/A**
	Distance through insulation		**N/A**
	Number of insulation layers (pcs) .....:		**N/A**
2.10.7	Component external terminations	See appended table 2.10.3 and 2.10.4.	**P**
2.10.8	Tests on coated printed boards and coated components		**N/A**
2.10.8.1	Sample preparation and preliminary inspection		**N/A**
2.10.8.2	Thermal conditioning		**N/A**
2.10.8.3	Electric strength test		**N/A**
2.10.8.4	Abrasion resistance test		**N/A**
2.10.9	Thermal cycling	Certified sources of photo couplers used.	**P**
2.10.10	Test for Pollution Degree 1 environment and insulating compound	Certified sources of photo couplers used.	**P**
2.10.11	Tests for semiconductor devices and cemented joints	Certified sources of photo couplers used.	**N/A**
2.10.12	Enclosed and sealed parts		**N/A**

3	WIRING, CONNECTIONS AND SUPPLY		**P**
3.1	General		**P**
3.1.1	Current rating and overcurrent protection	For models NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), no internal wirings provided. For models SCP-50-z, the internal wirings are UL recognized wiring which is PVC insulated, rated VW-1, 300V, min. 80°C, the wiring gauge is suitable for current intended to be carried.	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.2	Protection against mechanical damage	For models SCP-50-z, wires do not touch sharp edges. Where they touch heatsinks additional tubing or cable tie is provided so that the heatsink cannot damage the insulation and cause hazard.	**P**
3.1.3	Securing of internal wiring	For models SCP-50-z, the wiring is so routed and fixed that there is not excessive strength on the wire and terminal connections. Damage of the conductor insulation or loosening of the terminal connection is unlikely.	**P**
3.1.4	Insulation of conductors	For models SCP-50-z, the insulation of the individual conductors is suitable for the application and the working voltage. For the insulation material see sub-clause 3.1.1.	**P**
3.1.5	Beads and ceramic insulators	Not used.	**N/A**
3.1.6	Screws for electrical contact pressure	To ensure proper earth connection through the PCB, screws and spring-washers are provided to compensate possible shrinkage of the PCB material.	**P**
3.1.7	Insulating materials in electrical connections	All connections are metal to metal or, where contact pressure is transmitted through PCB material for earthing purposes a combination of screw and spring-washer is provided.	**P**
3.1.8	Self-tapping and spaced thread screws	No self tapping screws are used.	**N/A**
3.1.9	Termination of conductors	All conductors are reliable secured.	**P**
	10 N pull test	After test, no break away or pivot on its terminal.	**P**
3.1.10	Sleeving on wiring	No sleeving used as supplementary insulation.	**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
3.2	Connection to a mains supply *SPS for building-in with Terminal Block or Primary Connector, shall be evaluated in the final system assembly.*		**N/A**
3.2.1	Means of connection		**N/A**
3.2.1.1	Connection to an a.c. mains supply		**N/A**
3.2.1.2	Connection to a d.c. mains supply		**N/A**
3.2.2	Multiple supply connections		**N/A**
3.2.3	Permanently connected equipment		**N/A**
	Number of conductors, diameter of cable and conduits (mm) .....:		—
3.2.4	Appliance inlets		**N/A**
3.2.5	Power supply cords		**N/A**
3.2.5.1	AC power supply cords		**N/A**
	Type .....:		—
	Rated current (A), cross-sectional area (mm²), AWG .....:		—
3.2.5.2	DC power supply cords		**N/A**
3.2.6	Cord anchorages and strain relief		**N/A**
	Mass of equipment (kg), pull (N) .....:		—
	Longitudinal displacement (mm) .....:		—
3.2.7	Protection against mechanical damage		**N/A**
3.2.8	Cord guards		**N/A**
	Diameter or minor dimension D (mm); test mass (g) .....:		—
	Radius of curvature of cord (mm).....:		—
3.2.9	Supply wiring space		**N/A**

3.3	Wiring terminals for connection of external conductors *EUT is for building-in. Compliance has to be evaluated for the final system.*		**N/A**
3.3.1	Wiring terminals		**N/A**
3.3.2	Connection of non-detachable power supply cords		**N/A**
3.3.3	Screw terminals		**N/A**
3.3.4	Conductor sizes to be connected		**N/A**
	Rated current (A), cord/cable type, cross-sectional area (mm^2).....:		—
3.3.5	Wiring terminal sizes		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A), type, nominal thread diameter (mm) .....:		—
3.3.6	Wiring terminal design		**N/A**
3.3.7	Grouping of wiring terminals		**N/A**
3.3.8	Stranded wire		**N/A**
3.4	Disconnection from the mains supply *EUT is for building-in. Compliance has to be evaluated for the final system.*		**N/A**
3.4.1	General requirement		**N/A**
3.4.2	Disconnect devices		**N/A**
3.4.3	Permanently connected equipment		**N/A**
3.4.4	Parts which remain energized		**N/A**
3.4.5	Switches in flexible cords		**N/A**
3.4.6	Number of poles - single-phase and d.c. equipment		**N/A**
3.4.7	Number of poles - three-phase equipment		**N/A**
3.4.8	Switches as disconnect devices		**N/A**
3.4.9	Plugs as disconnect devices		**N/A**
3.4.10	Interconnected equipment	The equipment is interconnected to other devices by secondary output connector, secondary output mechanical cramp terminal or secondary output terminal block only.	**N/A**
3.4.11	Multiple power sources	Only one supply connection provided.	**N/A**
3.5	Interconnection of equipment		**P**
3.5.1	General requirements	The power supply is not considered for connection to TNV.	**P**
3.5.2	Types of interconnection circuits .....:	Interconnection circuits of SELV via secondary output connector, secondary output mechanical cramp terminal or secondary output terminal block.	**P**
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	**N/A**
3.5.4	Data ports for additional equipment		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict

4	PHYSICAL REQUIREMENTS		**P**
4.1	Stability		**N/A**
	Angle of 10°	Equipment is for building-in. Compliance has to be evaluated when installed into the final system.	**N/A**
	Test force (N) .....:		**N/A**

4.2	Mechanical strength		**P**
4.2.1	General	See below. After tests, unit complies with the requirements of sub-clause 2.1.1, 2.6.1 and 2.10. However, building-in type equipment shall be evaluated in the final system assembly.	**P**
4.2.2	Steady force test, 10 N	Applied to components other than those serving as an metal chassis.	**P**
4.2.3	Steady force test, 30 N	Building-in type equipment, shall be evaluated in the final system assembly.	**N/A**
4.2.4	Steady force test, 250 N	Building-in type equipment, shall be evaluated in the final system assembly.	**N/A**
4.2.5	Impact test		**N/A**
	Fall test		**N/A**
	Swing test		**N/A**
4.2.6	Drop test; height (mm) .....:		**N/A**
4.2.7	Stress relief test	Metal chassis.	**N/A**
4.2.8	Cathode ray tubes	No CRT in the unit.	**N/A**
	Picture tube separately certified .....:		**N/A**
4.2.9	High pressure lamps	No high pressure lamp provided.	**N/A**
4.2.10	Wall or ceiling mounted equipment; force (N) .....:	Equipment is for building-in. Compliance has to be evaluated when installed into the final system.	**N/A**

4.3	Design and construction		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.1	Edges and corners	Equipment is for building-in and compliance must be evaluated in end product.	**N/A**
4.3.2	Handles and manual controls; force (N).....:		**N/A**
4.3.3	Adjustable controls	No adjustable controls.	**N/A**
4.3.4	Securing of parts	Mechanical fixings in such a way designed that they will withstand mechanical stress occurring in normal use.	**P**
4.3.5	Connection by plugs and sockets	Mismatching of connectors either not possible or does not result in any hazard. Equipment is for building-in and compliance must be evaluated in end product.	**N/A**
4.3.6	Direct plug-in equipment		**N/A**
	Torque .....:		—
	Compliance with the relevant mains plug standard .....:		**N/A**
4.3.7	Heating elements in earthed equipment		**N/A**
4.3.8	Batteries		**N/A**
	- Overcharging of a rechargeable battery		**N/A**
	- Unintentional charging of a non-rechargeable battery		**N/A**
	- Reverse charging of a rechargeable battery		**N/A**
	- Excessive discharging rate for any battery		**N/A**
4.3.9	Oil and grease	Insulation in intended use not considered to be exposed to oil or grease.	**N/A**
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	**N/A**
4.3.11	Containers for liquids or gases	No container for liquid or gas provided.	**N/A**
4.3.12	Flammable liquids .....:	No flammable liquids provided.	**N/A**
	Quantity of liquid (l) .....:		**N/A**
	Flash point (°C) .....:		**N/A**
4.3.13	Radiation	See below.	**P**
4.3.13.1	General	No ionizing radiation or laser or flammable liquids presents.	**P**
4.3.13.2	Ionizing radiation		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured radiation (pA/kg) .....:		—
	Measured high-voltage (kV) .....:		—
	Measured focus voltage (kV) .....:		—
	CRT markings .....:		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		**N/A**
	Part, property, retention after test, flammability classification .....:		**N/A**
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....:		**N/A**
4.3.13.5	Laser (including LEDs)	The LED as indicating lights used.	**P**
	Laser class .....:		—
4.3.13.6	Other types .....:		**N/A**
4.4	Protection against hazardous moving parts		**N/A**
4.4.1	General		**N/A**
4.4.2	Protection in operator access areas .....:		**N/A**
4.4.3	Protection in restricted access locations .....:		**N/A**
4.4.4	Protection in service access areas		**N/A**
4.5	Thermal requirements		**P**
4.5.1	General	No exceeding temperature.	**P**
4.5.2	Temperature tests	See appended table 4.5.	**P**
	Normal load condition per Annex L .....:	See Annex L.	—
4.5.3	Temperature limits for materials	See appended table 4.5.	**P**
4.5.4	Touch temperature limits	No operator access areas.	**N/A**
4.5.5	Resistance to abnormal heat .....:	Phenolic bobbin material used in Transformer (T1) and Line Filter (LF1) which accept without test. Others, see appended table.	**P**
4.6	Openings in enclosures		**N/A**
4.6.1	Top and side openings	Equipment is for building-in. Compliance shall be evaluated for the final system.	**N/A**
	Dimensions (mm) .....:		—
4.6.2	Bottoms of fire enclosures		**N/A**
	Construction of the bottom, dimensions (mm) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
4.6.3	Doors or covers in fire enclosures		**N/A**
4.6.4	Openings in transportable equipment		**N/A**
4.6.4.1	Constructional design measures		**N/A**
	Dimensions (mm) .....:		—
4.6.4.2	Evaluation measures for larger openings		**N/A**
4.6.4.3	Use of metallized parts		**N/A**
4.6.5	Adhesives for constructional purposes		**N/A**
	Conditioning temperature (°C), time (weeks) .....:		—
4.7	Resistance to fire		**P**
4.7.1	Reducing the risk of ignition and spread of flame	See below.	**P**
	Method 1, selection and application of components wiring and materials	Use of materials with the required flammability classes.	**P**
	Method 2, application of all of simulated fault condition tests	Not applied for.	**N/A**
4.7.2	Conditions for a fire enclosure	See below.	**N/A**
4.7.2.1	Parts requiring a fire enclosure	With having the following components: - Components in primary - Components in secondary (not supplied by LPS) - Components having unenclosed arcing parts at hazardous voltage or energy level - Insulated wirings The fire enclosure is required. However, with this unit as a building-in component, the meeting of the requirements has to be observed within the end product.	**N/A**
4.7.2.2	Parts not requiring a fire enclosure	See 4.7.2.1.	**N/A**
4.7.3	Materials		**P**
4.7.3.1	General	PCB is rated accordingly. See appended table 1.5.1 for details.	**P**
4.7.3.2	Materials for fire enclosures	Metal chassis.	**N/A**
4.7.3.3	Materials for components and other parts outside fire enclosures		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2 or better.	**P**
4.7.3.5	Materials for air filter assemblies	No air filter provided.	**N/A**
4.7.3.6	Materials used in high-voltage components	No high voltage components provided.	**N/A**
5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		**P**
5.1	Touch current and protective conductor current		**P**
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	**P**
5.1.2	Configuration of equipment under test (EUT)	See below.	**P**
5.1.2.1	Single connection to an a.c. mains supply	EUT has only single AC mains connection.	**P**
5.1.2.2	Redundant multiple connections to an a.c. mains supply		**N/A**
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		**N/A**
5.1.3	Test circuit	Equipment of figure 5A used.	**P**
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	**P**
5.1.5	Test procedure	The touch current was measured from mains to metal chassis (earth).	**P**
5.1.6	Test measurements	See measurement section table 5.1.6.	**P**
	Supply voltage (V) .....:	See measurement section table 5.1.6.	—
	Measured touch current (mA) .....:	See measurement section table 5.1.6.	—
	Max. allowed touch current (mA) .....:	See measurement section table 5.1.6.	—
	Measured protective conductor current (mA) .....:		—
	Max. allowed protective conductor current (mA)....:		—
5.1.7	Equipment with touch current exceeding 3,5 mA	Touch current does not exceed 3.5mA.	**N/A**
5.1.7.1	General .....:		**N/A**
5.1.7.2	Simultaneous multiple connections to the supply		**N/A**
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV.	**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	No TNV.	**N/A**
	Supply voltage (V) .....:		—
	Measured touch current (mA) .....:		—
	Max. allowed touch current (mA) .....:		—
5.1.8.2	Summation of touch currents from telecommunication networks	No connected to TNV.	**N/A**
	a) EUT with earthed telecommunication ports .....:		**N/A**
	b) EUT whose telecommunication ports have no reference to protective earth		**N/A**
5.2	Electric strength		**P**
5.2.1	General	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	See appended table 5.3.	**P**
5.3.2	Motors		**N/A**
5.3.3	Transformers	Having shorted the output of the transformer, no high temperature of the transformer was recorded or observed. Results of the short-circuit tests see appended table 5.3 and measurement section C.2.	**P**
5.3.4	Functional insulation.....:	Requirement c). Test results see measurement section table 5.3.	**P**
5.3.5	Electromechanical components		**N/A**
5.3.6	Audio amplifiers in ITE .....:		**N/A**
5.3.7	Simulation of faults	See appended table 5.3.	**P**
5.3.8	Unattended equipment	None of the listed components was provided.	**N/A**
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	**P**
5.3.9.1	During the tests	No fire occurred, no emit molten metal.	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.2	After the tests	Electric strength tests primary to SELV and primary to earth were passed.	**P**
6	CONNECTION TO TELECOMMUNICATION NETWORKS		**N/A**
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		**N/A**
6.1.1	Protection from hazardous voltages		**N/A**
6.1.2	Separation of the telecommunication network from earth		**N/A**
6.1.2.1	Requirements		**N/A**
	Supply voltage (V) .....:		—
	Current in the test circuit (mA) .....:		—
6.1.2.2	Exclusions .....:		**N/A**
6.2	Protection of equipment users from overvoltages on telecommunication networks		**N/A**
6.2.1	Separation requirements		**N/A**
6.2.2	Electric strength test procedure		**N/A**
6.2.2.1	Impulse test		**N/A**
6.2.2.2	Steady-state test		**N/A**
6.2.2.3	Compliance criteria		**N/A**
6.3	Protection of the telecommunication wiring system from overheating		**N/A**
	Max. output current (A) .....:		—
	Current limiting method .....:		—
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		**N/A**
7.1	General		**N/A**
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		**N/A**
7.3	Protection of equipment users from overvoltages on the cable distribution system		**N/A**
7.4	Insulation between primary circuits and cable distribution systems		**N/A**
7.4.1	General		**N/A**
7.4.2	Voltage surge test		**N/A**
7.4.3	Impulse test		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict

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

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Clause	Requirement + Test	Result - Remark	Verdict
A.3.2	Test procedure		**N/A**
A.3.3	Compliance criterion		**N/A**
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		**N/A**
B.1	General requirements		**N/A**
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
B.2	Test conditions		**N/A**
B.3	Maximum temperatures		**N/A**
B.4	Running overload test		**N/A**
B.5	Locked-rotor overload test		**N/A**
	Test duration (days) .....:		—
	Electric strength test: test voltage (V) .....:		—
B.6	Running overload test for d.c. motors in secondary circuits		**N/A**
B.6.1	General		**N/A**
B.6.2	Test procedure		**N/A**
B.6.3	Alternative test procedure		**N/A**
B.6.4	Electric strength test; test voltage (V) .....:		**N/A**
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		**N/A**
B.7.1	General		**N/A**
B.7.2	Test procedure		**N/A**
B.7.3	Alternative test procedure		**N/A**
B.7.4	Electric strength test; test voltage (V) .....:		**N/A**
B.8	Test for motors with capacitors		**N/A**
B.9	Test for three-phase motors		**N/A**
B.10	Test for series motors		**N/A**
	Operating voltage (V) .....:		—
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		**P**
	Position .....:	T1	—
	Manufacturer .....:	See appended table 1.5.1.	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Type .....:	See appended table 1.5.1.	—
	Rated values .....:	See appended table 1.5.1.	—
	Method of protection.....:	Over current protection by circuit design.	—
C.1	Overload test	See appended table 5.3.	**P**
C.2	Insulation	See appended table 5.2.	**P**
	Protection from displacement of windings.....:	Refer to measurement section table C.2.	**P**
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		**P**
D.1	Measuring instrument	Figure D.1 used.	**P**
D.2	Alternative measuring instrument		**N/A**
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		**N/A**
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		**P**
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		**N/A**
G.1	Clearances		**N/A**
G.1.1	General		**N/A**
G.1.2	Summary of the procedure for determining minimum clearances		**N/A**
G.2	Determination of mains transient voltage (V)		**N/A**
G.2.1	AC mains supply .....:		**N/A**
G.2.2	Earthed d.c. mains supplies .....:		**N/A**
G.2.3	Unearthed d.c. mains supplies .....:		**N/A**
G.2.4	Battery operation .....:		**N/A**
G.3	Determination of telecommunication network transient voltage (V) .....:		**N/A**
G.4	Determination of required withstand voltage (V)		**N/A**
G.4.1	Mains transients and internal repetitive peaks .....:		**N/A**
G.4.2	Transients from telecommunication networks .....:		**N/A**
G.4.3	Combination of transients		**N/A**
G.4.4	Transients from cable distribution systems		**N/A**
G.5	Measurement of transient voltages (V)		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Transients from a mains supply		**N/A**
	For an a.c. mains supply		**N/A**
	For a d.c. mains supply		**N/A**
	b) Transients from a telecommunication network		**N/A**
G.6	Determination of minimum clearances .....:		**N/A**
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		**N/A**
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		**P**
	Metal(s) used .....:	Compliance.	—
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		**N/A**
K.1	Making and breaking capacity		**N/A**
K.2	Thermostat reliability; operating voltage (V) .....:		**N/A**
K.3	Thermostat endurance test; operating voltage (V) :		**N/A**
K.4	Temperature limiter endurance; operating voltage (V) .....:		**N/A**
K.5	Thermal cut-out reliability		**N/A**
K.6	Stability of operation		**N/A**
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		**P**
L.1	Typewriters		**N/A**
L.2	Adding machines and cash registers		**N/A**
L.3	Erasers		**N/A**
L.4	Pencil sharpeners		**N/A**
L.5	Duplicators and copy machines		**N/A**
L.6	Motor-operated files		**N/A**
L.7	Other business equipment	Continuous operation at max. rated output load.	**P**
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		**N/A**
M.1	Introduction		**N/A**
M.2	Method A		**N/A**
M.3	Method B		**N/A**
M.3.1	Ringing signal		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
M.3.1.1	Frequency (Hz) .....:		—
M.3.1.2	Voltage (V) .....:		—
M.3.1.3	Cadence; time (s), voltage (V) .....:		—
M.3.1.4	Single fault current (mA) .....:		—
M.3.2	Tripping device and monitoring voltage .....:		**N/A**
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		**N/A**
M.3.2.2	Tripping device		**N/A**
M.3.2.3	Monitoring voltage (V) .....:		**N/A**
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		**N/A**
N.1	ITU-T impulse test generators		**N/A**
N.2	IEC 60065 impulse test generator		**N/A**
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		**N/A**
	a) Preferred climatic categories .....:		**N/A**
	b) Maximum continuous voltage .....:		**N/A**
	c) Pulse current .....:		**N/A**
R	Annex R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		**N/A**
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		**N/A**
R.2	Reduced clearances (see 2.10.3)		**N/A**
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		**N/A**
S.1	Test equipment		**N/A**
S.2	Test procedure		**N/A**
S.3	Examples of waveforms during impulse testing		**N/A**
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		**N/A**
			—

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Clause	Requirement + Test	Result - Remark	Verdict
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		**N/A**
			—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		**P**
V.1	Introduction	See below.	**P**
V.2	TN power distribution systems	Single-phase TN power system considered and used for testing.	**P**
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		**N/A**
W.1	Touch current from electronic circuits		**N/A**
W.1.1	Floating circuits		**N/A**
W.1.2	Earthed circuits		**N/A**
W.2	Interconnection of several equipments		**N/A**
W.2.1	Isolation		**N/A**
W.2.2	Common return, isolated from earth		**N/A**
W.2.3	Common return, connected to protective earth		**N/A**
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		**N/A**
X.1	Determination of maximum input current		**N/A**
X.2	Overload test procedure		**N/A**
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		**N/A**
Y.1	Test apparatus .....:		**N/A**
Y.2	Mounting of test samples .....:		**N/A**
Y.3	Carbon-arc light-exposure apparatus .....:		**N/A**
Y.4	Xenon-arc light exposure apparatus .....:		**N/A**
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		**P**
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		**N/A**
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

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Clause	Requirement + Test	Result - Remark	Verdict
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.		**N/A**
Biblio-graphy	Additional EN standards.		—
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
ZB	SPECIAL NATIONAL CONDITIONS		**P**
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		**N/A**
1.5.7.1	In **Finland**, **Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.		**N/A**
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		**P**
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		**N/A**
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag”		**N/A**
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		**N/A**
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		**N/A**
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		**N/A**
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		**N/A**
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		**N/A**
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		**N/A**
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998 Plug Type 25 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2.1998 Plug Type 23 L+N+PE 250 V, 16 A		**N/A**
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.		**N/A**
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		**N/A**
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		**N/A**

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3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	**N/A**
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	**N/A**
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	**N/A**
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	**N/A**
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	**N/A**
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	**N/A**
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that - is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and - has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and - is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.		**N/A**
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		**N/A**
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		**N/A**
7.3	In **Norway** and **Sweden**, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.		**N/A**
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.		**N/A**

ZC	A-DEVIATIONS (informative)	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
1.5.1	**Sweden** (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.		**N/A**
1.5.1	**Switzerland** (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.		**N/A**
1.7.2.1	**Denmark** (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text: Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket  eller  If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: “For tilslutning af de øvrige ledere, se medfølgende installationsvejledning.”		**N/A**
1.7.2.1	**Germany** (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.		**N/A**
1.7.5	**Denmark** (Heavy Current Regulations) With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.		**N/A**
1.7.13	**Switzerland** (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.		**N/A**
5.1.7.1	**Denmark** (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components				**P**
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity [1.]
Chassis with top metal cover and bottom metal chassis (Top metal cover is optional provide for SCP-50-z)	--	--	Metal, min. 1.0 mm thick	--	--
Terminal Block (TB1)	Dinkle	DT-4 series	20A, 300Vac	--	UL
	Dinkle	DT-43 series	21A, 300Vac	--	UL
	Dinkle	DT-45 series	25A, 300Vac	--	UL
	Dinkle	DT-49 series	25A, 300Vac	--	UL
	Howder	HB-95 series HI-20 series	10A, 250Vac	--	UL
	Switchlab	T14 series T24 series T34 series T35 series	20A, 300Vac	--	UL
	Switchlab	T44 series	15A, 300Vac	--	UL
	JITE	BTB-654 series	20A, 300Vac	--	UL
	Dinkle	EK-950 series	30A, 300Vac	--	UL
	Switchlab	MB910 series	30A, 300Vac	--	UL
Or Primary Connector (CN1)	Taiwan King Pin	P8950I-X8 (X8=03)	Max. 7A, 250Vac	EN/IEC 61984	TÜV, UL
PCB	--	--	Min. V-1 or better, min. 130°C	UL 796	UL
Y-Capacitors (C3, C4, C22, C23, C29, C30) (Optaional) (Y1 or Y2 type)	Murata	KH, KX	Max. 4700pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
	Walsin	AC, AH	Max. 4700pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
	TDK	CD, CS	Max. 4700pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL

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Clause	Requirement + Test	Result - Remark	Verdict

	Welson	WD, KL	Max. 4700pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
Bleeder Resistor (R1) For PCB no. NEx-50 (x=S, D, T)	Futaba	RM-series	1MΩ, min.1/4W	IEC/EN 60065 comply with clasue 14.1 a)	Semko
	Queen Mao	HV 1/4W, HV 1/2WS, HV 1/2W, HV 1WS, HV 1W,	1MΩ, Min.1/4W	IEC/EN 60065 comply with clasue 14.1 a)	VDE
Or Bleeder Resistor (R6) For PCB no. NEx-50A (x=S, D, T) and SCP-50	--	--	680 kΩ, Min.1/4W	--	--
Fuse (FS1)	Bel	5MF	F3A, 250V	--	UL
	Conquer	GBM	F3A, 250V	--	UL
	Conquer	GFE	F3A, 250V	--	UL
	Conquer	GMA, GME	F3A, 250V	--	UL
	Jenn Feng	MFG	F3A, 250V	--	UL
	Littelfuse	235	F3A, 250V	--	UL
	Sleek	50FG	F3A, 250V	--	UL
	Walter	CIS	F3A, 250V	--	UL
	Bel	5 SF	F3.15A, 250V	EN/IEC 60127-2	UL, VDE
	Conquer	UFE	F3.15A, 250V	EN/IEC 60127-2	UL, VDE
	Suzhou Littelfuse	217.XXX	F3.15A, 250V	EN/IEC 60127-2	UL, VDE
	Walter	FSD	F3.15A, 250V	EN/IEC 60127-2	UL, VDE
X-Capacitors (C1, C2) (X1 or X2 type) (Optional)	Arcotronics	R.46	Max. 0.6µF 300V, 110°C	IEC 60384-14	ENEC 03, UL
	Arcotronics	R.49	Max. 0.6µF 310V, 110°C	IEC 60384-14	ENEC 03, UL
	Iskra	KNB 1530	Max. 0.6µF 275V, 100°C	IEC 60384-14	VDE, UL

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Clause	Requirement + Test	Result - Remark	Verdict

	Iskra	KNB 1560	Max. 0.6µF 300V, 125°C	IEC 60384-14	VDE, UL
	Liow Gu	GS-L	Max. 0.6µF 275V, 100°C	IEC 60384-14	VDE, UL
	Pilkor	PCX2 335M	Max. 0.6µF 275V, 105°C	IEC 60384-14	ENEC 14, UL
	Pilkor	PCX2 337	Max. 0.6µF 275V, 100°C	IEC 60384-14	VDE, UL
	EPCOS	B3292#	Max.0.6µF 305V, 105°C	IEC 60384-14	VDE, UL
	Ultra Tech	HQX	Max. 0.6µF 275V, 100°C	IEC 60384-14	VDE, UL
	Cheng Tung	CTX	Max. 0.6µF 300V, 100°C	IEC 60384-14	VDE, UL
	Shiny Space	SX1	Max. 0.6µF 300V, 100°C	IEC 60384-14	VDE, UL
	Vishay	339	Max. 0.6µF 275V, 105°C	IEC 60384-14	ENEC 02, UL
Thermsitor (RTH1) (optional)	--	--	Min. 3A, max. 15 ohm	--	--
Varistor (ZNR1) (Optional)	Centra Science	CNR-14D471K	300Vac, 385Vdc, 85°C	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 UL 1449	VDE, UL
	Joyin	14S471K 14N471K	300Vac, 385Vdc, 85°C	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 UL 1449	VDE, UL
	Nippon Chemi-Con	TNR14V-471K	300Vac, 385Vdc, 85°C	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 UL 1449	VDE, UL
	Thinking	TVR10471-D TVR14471-D	300Vac, 385Vdc, 85°C	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 UL 1449	VDE, UL
Storage Capacitor (C5)	--	--	100µF, min. 400V, min. 85°C	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

PhotoCoupler (U2, U3) U2 optional used	Lite-on	LTV-817	Dti=0.8mm int. dcr=5.2mm ext. dcr=7.8mm 100°C	EN 60747-5-2 IEC 60950-1 IEC 60747-5-2 EN 60950-1	VDE, FI, UL, CUL, CSA
	NEC	PS2561..-.	Dti= 0.4mm, Int. dcr= 4mm, Ext. dcr= 7mm, 100°C	EN 60747-5-2 IEC 60950-1 IEC 60747-5-2 EN 60950-1	VDE, FI, UL
	Sharp	PC123	Dti=0.7mm int. dcr=5mm ext. dcr=8mm, thermal cycling test, 110°C	EN 60747-5-2 IEC 60950-1 IEC 60747-5-2 EN 60950-1	VDE, FI, UL, CUL, CSA
	Cosmo	K1010	Dti=0.7mm int. dcr=5.2mm ext. dcr=8mm, thermal cycling test, 115°C	EN 60747-5-2 IEC 60950-1 IEC 60747-5-2 EN 60950-1	VDE, FI, UL, CUL, CSA
Bridging Capacitor (Optaional) (Y1 type) (C31)	Murata	KX	Max. 2200pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
	Walsin	AH	Max. 2200pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
	TDK	CD	Max. 2200pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
	Welson	WD	Max. 2200pF, Min. 250V, 125°C	IEC 60384-14	VDE, UL
Bridge Rectifer (BD1)	--	--	Min. 4A, min. 600V	--	--
Transistor (Q1)	--	--	Min. 5A, min. 500V	--	--
Transformer (T1) For NES-50-5	Long Sail	TF-1010	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1010	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland

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Clause	Requirement + Test	Result - Remark	Verdict

	Yao Sheng	TF-1010	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1010	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NES-50-12	Long Sail	TF-1011	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1011	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1011	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1011	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NES-50-15	Long Sail	TF-1012	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1012	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1012	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1012	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland

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Clause	Requirement + Test	Result - Remark	Verdict

For NES-50-24	Long Sail	TF-1013	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1013	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1013	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1013	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NES-50-48	Long Sail	TF-1014	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1014	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1014	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1014	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NED-50A	Long Sail	TF-1015	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1015	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland

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Clause	Requirement + Test	Result - Remark	Verdict

	Yao Sheng	TF-1015	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1015	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NED-50B	Long Sail	TF-1016	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1016	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1016	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1016	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NET-50A	Long Sail	TF-1017	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1017	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1017	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1017	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland

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Clause	Requirement + Test	Result - Remark	Verdict

For NET-50B	Long Sail	TF-1018	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1018	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1018	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1018	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NET-50C	Long Sail	TF-1019	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1019	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Yao Sheng	TF-1019	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1019	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For NET-50D	Long Sail	TF-1020	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-1020	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland

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Clause	Requirement + Test	Result - Remark	Verdict

	Yao Sheng	TF-1020	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-1020	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For SCP-50-12	Long Sail	TF-5026	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-5026	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Elytone	TF-5026	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-5026	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
For SCP-50-24	Long Sail	TF-5027	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Jet Signal	TF-5027	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Elytone	TF-5027	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
	Ten Well	TF-5027	Class B	Applicable part in IEC 60950-1 and evaluated according to IEC 60085	Accepted by TÜV Rheinland
Line Filter (LF1) (Optional)	Mean Well	LF-101	130°C	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

	Mean Well	LF-133	130°C	--	--
Insulation Sheet between main PCB and bottom metal chassis used	--	--	V-2 or better, min. 0.2 mm thick	UL 94	UL
Note: 1. An asterisk indicates a mark that assures the agreed level of surveillance.					

1.6.2	TABLE: Electrical data (in normal conditions)					**P**
U (V)/F(Hz)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
Model NES-50-5						
90/50	1.19	--	66.7	FS1	1.19	Maximum normal load: +5Vdc/10A
100/50	1.09	1.3	64.9	FS1	1.09	Same as above
240/50	0.58	1.3	63	FS1	0.58	Same as above
264/50	0.54	--	63	FS1	0.54	Same as above
90/60	1.22	--	66	FS1	1.22	Same as above
100/60	1.12	1.3	64.8	FS1	1.12	Same as above
240/60	0.57	1.3	63	FS1	0.57	Same as above
264/60	0.53	--	63	FS1	0.53	Same as above
Model NES-50-12						
90/50	1.17	--	64.1	FS1	1.17	Maximum normal load: +12Vdc/4.2A
100/50	1.07	1.3	63.2	FS1	1.07	Same as above
240/50	0.57	1.3	62	FS1	0.57	Same as above
264/50	0.53	--	62	FS1	0.53	Same as above
90/60	1.18	--	64.0	FS1	1.18	Same as above
100/60	1.09	1.3	63.2	FS1	1.09	Same as above
240/60	0.56	1.3	62	FS1	0.56	Same as above
264/60	0.53	--	62	FS1	0.53	Same as above
Model NES-50-15						
90/50	1.16	--	64.2	FS1	1.16	Maximum normal load: +15Vdc/3.4A
100/50	1.06	1.3	63.3	FS1	1.06	Same as above

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Clause	Requirement + Test				Result - Remark	Verdict

240/50	0.56	1.3	62	FS1	0.56	Same as above
264/50	0.52	--	62	FS1	0.52	Same as above
90/60	1.17	--	64.1	FS1	1.17	Same as above
100/60	1.08	1.3	63.3	FS1	1.08	Same as above
240/60	0.56	1.3	62	FS1	0.56	Same as above
264/60	0.52	--	62	FS1	0.52	Same as above
Model NES-50-24						
90/50	1.15	--	63.5	FS1	1.15	Maximum normal load: +24Vdc/2.2A
100/50	1.05	1.3	62.9	FS1	1.05	Same as above
240/50	0.55	1.3	62	FS1	0.55	Same as above
264/50	0.51	--	63	FS1	0.51	Same as above
90/60	1.17	--	63.5	FS1	1.17	Same as above
100/60	1.07	1.3	62.9	FS1	1.07	Same as above
240/60	0.55	1.3	62.0	FS1	0.55	Same as above
264/60	0.51	--	63	FS1	0.51	Same as above
Model NES-50-48						
90/50	1.15	--	63.3	FS1	1.15	Maximum normal load: +48Vdc/1.1A
100/50	1.06	1.3	62.5	FS1	1.06	Same as above
240/50	0.57	1.3	62	FS1	0.57	Same as above
264/50	0.52	--	62	FS1	0.52	Same as above
90/60	1.17	--	63.2	FS1	1.17	Same as above
100/60	1.08	1.3	62.5	FS1	1.08	Same as above
240/60	0.56	1.3	62	FS1	0.56	Same as above
264/60	0.52	--	62	FS1	0.52	Same as above
Model NED-50A						
90/50	1.30	--	71.3	FS1	1.30	Maximum normal load: +5Vdc/6.0A, +12Vdc/2.0A
100/50	1.17	1.3	70.1	FS1	1.17	Same as above
240/50	0.62	1.3	67	FS1	0.62	Same as above
264/50	0.57	--	68	FS1	0.57	Same as above
90/60	1.31	--	71.1	FS1	1.31	Same as above

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Clause	Requirement + Test				Result - Remark	Verdict

100/60	1.20	1.3	70	FS1	1.20	Same as above
240/60	0.61	1.3	67	FS1	0.61	Same as above
264/60	0.57	--	68	FS1	0.57	Same as above
Model NED-50B						
90/50	1.24	--	68.7	FS1	1.24	Maximum normal load: +5Vdc/4.0A, +24Vdc/1.4A
100/50	1.13	1.3	67.4	FS1	1.13	Same as above
240/50	0.60	1.3	65	FS1	0.60	Same as above
264/50	0.55	--	66	FS1	0.55	Same as above
90/60	1.25	--	68.4	FS1	1.25	Same as above
100/60	1.15	1.3	67.3	FS1	1.15	Same as above
240/60	0.59	1.3	65	FS1	0.59	Same as above
264/60	0.55	--	66	FS1	0.55	Same as above
Model NET-50A						
90/50	1.14	--	62	FS1	1.14	Maximum normal load: +5Vdc/4.0A, +12Vdc/2.0A, -5Vdc/0.5A
100/50	1.04	1.3	61.1	FS1	1.04	Same as above
240/50	0.55	1.3	60	FS1	0.55	Same as above
264/50	0.51	--	60	FS1	0.51	Same as above
90/60	1.16	--	61.9	FS1	1.16	Same as above
100/60	1.06	1.3	61.1	FS1	1.06	Same as above
240/60	0.54	1.3	60	FS1	0.54	Same as above
264/60	0.51	--	60	FS1	0.51	Same as above
Model NET-50B						
90/50	1.22	--	66.7	FS1	1.22	Maximum normal load: +5Vdc/4.0A, +12Vdc/2.0A, -12Vdc/0.5A
100/50	1.11	1.3	65.7	FS1	1.11	Same as above
240/50	0.59	1.3	64	FS1	0.59	Same as above
264/50	0.54	--	64	FS1	0.54	Same as above
90/60	1.23	--	66.6	FS1	1.23	Same as above
100/60	1.13	1.3	65.6	FS1	1.13	Same as above
240/60	0.58	1.3	64	FS1	0.58	Same as above

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Clause	Requirement + Test				Result - Remark	Verdict

264/60	0.54	--	64	FS1	0.54	Same as above
Model NET-50C						
90/50	1.24	--	68.5	FS1	1.24	Maximum normal load: +5Vdc/4.0A, +15Vdc/1.5A, -15Vdc/0.5A
100/50	1.13	1.3	67.2	FS1	1.13	Same as above
240/50	0.60	1.3	65	FS1	0.60	Same as above
264/50	0.55	--	65	FS1	0.55	Same as above
90/60	1.26	--	68.2	FS1	1.26	Same as above
100/60	1.15	1.3	67.2	FS1	1.15	Same as above
240/60	0.59	1.3	65	FS1	0.59	Same as above
264/60	0.55	--	65	FS1	0.55	Same as above
Model NET-50D						
90/50	1.17	--	64.7	FS1	1.17	Maximum normal load: +5Vdc/3.0A, +24Vdc/1.0A, +12Vdc/1.0A
100/50	1.07	1.3	63.7	FS1	1.07	Same as above
240/50	0.56	1.3	62	FS1	0.56	Same as above
264/50	0.52	--	63	FS1	0.52	Same as above
90/60	1.19	--	64.6	FS1	1.19	Same as above
100/60	1.07	1.3	64	FS1	1.07	Same as above
240/60	0.55	1.3	62	FS1	0.55	Same as above
264/60	0.52	--	63	FS1	0.52	Same as above
Model SCP-50-12						
90/50	1.09	--	63.6	FS1	1.09	Maximum normal load: +13.8Vdc/3.6A+V, MAX. 49.7W
100/50	0.98	1.1	62.3	FS1	0.98	Same as above
240/50	0.54	1.1	61.0	FS1	0.54	Same as above
254/50	0.51	--	61.0	FS1	0.51	Same as above
264/50	0.50	--	61,0	FS1	0.50	Same as above
90/60	1.09	--	63.6	FS1	1.09	Same as above
100/60	0.99	1.1	62.3	FS1	0.99	Same as above
240/60	0.54	1.1	61.0	FS1	0.54	Same as above
254/50	0.52	--	61.0	FS1	0.52	Same as above

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Clause	Requirement + Test	Result - Remark	Verdict

264/60	0.50	--	61.0	FS1	0.50	Same as above
Model SCP-50-24						
90/50	1.04	--	60.3	FS1	1.04	Maximum normal load: +27.6Vdc/1.8A, MAX. 49.7W
100/50	0.95	1.1	58.8	FS1	0.95	Same as above
240/50	0.51	1.1	58.0	FS1	0.51	Same as above
254/50	0.48	--	58.0	FS1	0.48	Same as above
264/50	0.47	--	58.0	FS1	0.47	Same as above
90/60	1.05	--	59.6	FS1	1.05	Same as above
100/60	0.96	1.1	58.9	FS1	0.96	Same as above
240/60	0.51	1.1	58.0	FS1	0.51	Same as above
254/50	0.49	--	58.0	FS1	0.49	Same as above
264/60	0.47	--	58.0	FS1	0.47	Same as above
Supplementary information:						

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements	**P**

Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
For PCB no. NES-50 and NES-50A						
Functional:						
Distance between Line to neutral before fuse or under Fuse	420	250	1.5	See below	2.5	See below
L to N before fuse for PCB no. NES-50				3.0		3.0
Under fuse for PCB no. NES-50				5.8		5.8
L to N before fuse for PCB no. NES-50A				2.7		2.7
Under fuse for PCB no. NES-50A				5.4		5.4
Basic / supplementary:						
Primary components (with 10N) to earthed part	420	250	2.0	See below	2.5	See below
R8 to heat sink of Q1 (earthed part) for two PCBs				4.3		22

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Clause	Requirement + Test			Result - Remark		Verdict
Q1 to heat sink of Q1 (earthed part) for two PCBs				4.0		4.0
C5 to heat sink of Q1 (earthed part) for two PCBs				4.5		4.5
LF1 to metal chassis (earthed part) for two PCBs				3.0		4.3
C5 to top metal chassis (earthed part) for two PCBs				6.3		6.3
FS1 to top metal chassis (earthed part) for PCB no. NES-50A				8.8		8.8
Primary traces to earthed trace	420	250	2.0	See below	2.5	See below
Trace at C1 to earthed trace for PCB no. NES-50				3.3		3.3
Trace at N to earthed trace for PCB no. NES-50				3.3		3.3
Trace at C3/C4 to earthed trace for PCB no. NES-50				2.8		2.8
Trace at C30 to earthed trace for PCB no. NES-50				4.0		4.0
Trace at C31 to earthed trace for PCB no. NES-50				5.4		5.4
Trace at L to earthed trace for PCB no. NES-50A				2.6		2.6
Trace at C1 to earthed trace for PCB no. NES-50A				2.6		2.6
Trace at N to earthed trace for PCB no. NES-50A				3.1		3.1
Trace at FS1 to earthed trace for PCB no. NES-50A				2.8		2.8
Trace at C23 to earthed trace for for PCB no. NES-50A				3.7		3.7
Trace at C3/C4 to earthed trace for for PCB no. NES-50A				2.8		2.8
Trace at C30 to earthed trace for for PCB no. NES-50A				3.8		3.8
Trace at C31 to earthed trace for for PCB no. NES-50A				5.7		5.7
Reinforced:						

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Clause	Requirement + Test	Result - Remark	Verdict

Primary components (with 10N) to secondary (with 10N)	420	250	4.0	See below	5.0	See below
C40 to U2 sec pin. for two PCBs				6.3		6.3
C31 pri. pin to C31 sec pin. for two PCBs				9.2		9.2
U2/U3 pri. pin to U2/U3 sec pin. for two PCBs				8.5		8.5
FS1 to C129 for PCB no. NES-50A				6.9		8.0
Primary traces to secondary traces	420	250	4.0	See below	5.0	See below
T1 Pin 2 to R125 for PCB no. NES-50				8.7		8.7
U1 to T1 Pin 7/8/9 for PCB no. NES-50				7.8		7.8
Under C31 for PCB no. NES-50	336	209	4.0	5.3	5.0	5.3
Under U2/U3 for two PCBs	352	223	4.0	6.5	5.0	6.5
Under C31 for PCB no. NES-50A	336	209	4.0	5.8	5.0	5.8
U1 to T1 Pin 7/8/9 for PCB no. NES-50A	420	250	4.0	7.4	5.0	7.4
Under T1 for PCB no. NES-50	528	259	4.4	7.8	5.2	7.8
Under T1 for PCB no. NES-50A	528	259	4.4	7.4	5.2	7.4
For PCB no. NED-50 and NED-50A						
Functional:						
Distance between Line to neutral before fuse or under Fuse	420	250	1.5	See below	2.5	See below
L to N before fuse for PCB no. NED-50				2.8		2.8
Under fuse for PCB no. NED-50				5.5		5.5
L to N before fuse for PCB no. NED-50A				2.6		2.6
Under fuse for PCB no. NED-50A				5.2		5.2
Basic / supplementary:						

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Clause	Requirement + Test	Result - Remark	Verdict

Primary components (with 10N) to earthed part	420	250	2.0	See below	2.5	See below
R8 to heat sink of Q1 (earthed part) for two PCBs				6.3		22
Q1 to heat sink of Q1 (earthed part) for two PCBs				3.6		3.6
C5 to heat sink of Q1 (earthed part) for two PCBs				4.3		4.3
LF1 to metal chassis (earthed part) for two PCBs				2.6		4.1
C5 to top metal chassis (earthed part) for two PCBs				5.3		5.3
C23 to C129 earthed pin for PCB no. NED-50A				7.1		7.1
FS1 to top metal chassis (earthed part) for PCB no. NED-50A				8.7		8.7
Primary traces to earthed trace	420	250	2.0	See below	2.5	See below
Trace at L to earthed trace for PCB no. NED-50				3.1		3.1
Trace at N to earthed trace for PCB no. NED-50				3.2		3.2
Trace at C1 to earthed trace for PCB no. NED-50				3.1		3.1
Trace at C4 to earthed trace for PCB no. NED-50				3.9		3.9
Trace at C3 toearthed trace for PCB no. NED-50				2.6		2.6
Trace at C30 toearthed trace for PCB no. NED-50				3.8		3.8
Trace at L to earthed trace for PCB no. NED-50A				2.8		2.8
Trace at N to earthed trace for PCB no. NED-50A				3.1		3.1
Trace at C1 to earthed trace for PCB no. NED-50A				2.7		2.7
Trace at C23 to earthed trace for PCB no. NED-50A				3.2		3.2
Trace at C3 to earthed trace for PCB no. NED-50A				2.7		2.7

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Clause	Requirement + Test			Result - Remark		Verdict
Trace at C31 to earthed trace for PCB no. NED-50A				5.9		5.9
Reinforced:						
Primary components (with 10N) to secondary (with 10N)	420	250	4.0	See below	5.0	See below
C40 to U2 sec pin. for two PCBs				6.3		6.3
C31 pri. pin to C31 sec pin. for two PCBs				9.2		9.2
U2/U3 pri. pin to U2/U3 sec pin. for two PCBs				8.5		8.5
FS1 to C129 for PCB no. NED-50				7.0		7.0
Primary traces to secondary traces	420	250	4.0	See below	5.0	See below
Trace at T1 Pin 2 to trace at R125 for PCB no. NED-50				9.2		9.2
Trace at U1 to trace at T1 Pin 7 for PCB no. NED-50				11.2		11.2
Trace at U1 to trace at C31 for PCB no. NED-50				7.4		7.4
Trace at C30 to trace at C31 for PCB no. NED-50				5.0		5.0
Under C31 for PCB no. NED-50	336	209	4.0	5.0	5.0	5.0
Under U2/U3 for two PCBs	352	223	4.0	6.4	5.0	6.4
Under C31 for PCB no. NED-50A	336	209	4.0	6.3	5.0	6.3
Trace at C30 to trace at C31 for PCB no. NED-50A	420	250	4.0	5.9	5.0	5.9
Trace at U1 to Trace at C31 for PCB no. NED-50A	420	250	4.0	7.5	5.0	7.5
Under T1 for two PCBs	432	257	4.2	11.1	5.2	11.1
For PCB no. NET-50 and NET-50A						
Functional:						
Distance between Line to neutral before fuse or under Fuse	420	250	1.5	See below	2.5	See below
L to N before fuse for PCB no. NET-50				2.7		2.78

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Clause	Requirement + Test			Result - Remark		Verdict
Under fuse for PCB no. NET-50				5.4		5.4
L to N before fuse for PCB no. NET-50A				2.6		2.6
Under fuse for PCB no. NET-50A				5.2		5.2
Basic / supplementary:						
Primary components (with 10N) to earthed part	420	250	2.0	See below	2.5	See below
R8 to heat sink of Q1 (earthed part) for two PCBs				3.1		16.2
Q1 to heat sink of Q1 (earthed part) for two PCBs				3.7		3.7
C5 to heat sink of Q1 (earthed part) for two PCBs				4.1		4.1
LF1 to metal chassis (earthed part) for two PCBs				2.8		4.6
C5 to top metal chassis (earthed part) for two PCBs				5.2		5.2
C23 to C129 earthed pin for PCB no. NED-50A				7.1		7.1
FS1 to top metal chassis (earthed part) for PCB no. NET-50A				6.8		6.8
Primary traces to earthed trace	420	250	2.0	See below	2.5	See below
Trace at L to earthed trace for PCB no. NET-50				3.1		3.1
Trace at N to earthed trace for PCB no. NET-50				3.2		3.2
Trace at C1 to earthed trace for PCB no. NET-50				3.1		3.1
Trace at C22 to earthed trace for PCB no. NET-50				3.2		3.2
Trace at C3 to earthed trace for PCB no. NET-50				2.7		2.7
Trace at C30 to earthed trace for PCB no. NET-50				3.9		3.9
Trace at L to earthed trace for PCB no. NET-50A				2.7		2.7

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Clause	Requirement + Test			Result - Remark		Verdict
Trace at N to earthed trace for PCB no. NET-50A				3.3		3.3
Trace at C1 to earthed trace for PCB no. NET-50A				2.8		2.8
Trace at FS1 to earthed trace for PCB no. NET-50A				2.8		2.8
Trace at C23 to earthed trace for PCB no. NET-50A				2.9		2.9
Trace at C4 to earthed trace for PCB no. NET-50A				2.8		2.8
Trace at C3 to earthed trace for PCB no. NET-50A				2.7		2.7
Reinforced:						
Primary components (with 10N) to secondary (with 10N)	420	250	4.0	See below	5.0	See below
C40 to U2 sec pin. for two PCBs				5.9		5.9
C31 pri. pin to C31 sec pin. for two PCBs				9.2		9.2
U2/U3 pri. pin to U2/U3 sec pin. for two PCBs				8.5		8.5
FS1 to C129 for PCB no. NED-50				8.8		8.8
Primary traces to secondary traces	420	250	4.0	See below	5.0	See below
Trace at T1 Pin 2 to trace at R125 for PCB no. NET-50				9.1		9.1
Trace at U1 to trace at T1 Pin 7 for PCB no. NET-50				11.1		11.1
Trace at U1 to trace at C31 for PCB no. NET-50				7.8		7.8
Under C31 for PCB no. NET-50	336	209	4.0	6.0	5.0	6.0
Trace at C30 to trace at C31 for PCB no. NET-50	420	250	4.0	6.0	5.0	6.0
Under U2/U3 for two PCBs	352	223	4.0	6.3	5.0	6.3
Under C31 for PCB no. NET-50A	336	209	4.0	5.7	5.0	5.7
Trace at C30 to trace at C31 for PCB no. NET-50A	420	250	4.0	5.5	5.0	5.5

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Clause	Requirement + Test			Result - Remark		Verdict

Trace at U1 to Trace at C31 for PCB no. NET-50A	420	250	4.0	7.7	5.0	7.7
Under T1 for two PCBs	432	276	4.2	11.1	5.6	11.1
For PCB no. SCP-50						
Functional:						
Distance between Line to neutral before fuse or under Fuse	420	250	1.5	See below	2.5	See below
L to N before fuse on components side				7.5		7.5
L to N before fuse on traces side				2.9		2.9
Between fuse on components side				9.3		9.3
Under fuse through trace at N on traces side				5.7		5.7
Basic / supplementary:						
Primary components to earth component/trace (with 10N)	420	250	2.0	See below	2.5	See below
Trace at L to earthed trace				2.9		2.9
Trace at N to earthed trace				2.9		2.9
Trace at FS1 to earthed trace				3.1		3.1
Trace at LF1 to earthed trace				3.9		3.9
Trace at C4 to earthed trace				2.9		2.9
Trace at C3 to earthed trace				2.8		2.8
Trace at C1 to earthed trace				2.8		2.8
Trace at C30 to earthed trace				3.7		3.7
N to earthed pin of Terminal Block on components side				7.5		7.5
C5 to HS1/earthed bottom metal chassis on components side				4.5		4.5
SCR1 to HS1/earthed bottom metal chassis on components side				4.3		4.3
C37 to HS1/earthed bottom metal chassis on components side				3.9		8.6

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R11 to HS1/earthed bottom metal chassis on components side				3.6		10.1
LF1 to earthed top metal cover on components side				4.3		4.3
C5 to earthed top metal cover on components side				4.0		4.5
L/N to earthed top metal cover on components side				3.7		3.7
FS1 to earthed top metal cover on components side				6.3		6.3
Reinforced:						
Primary component (with 10N) to secondary component (with 10N)	420	250	4.0	See below	5.0	See below
Pins between U2/U3 on components side				8.2		8.2
Pins between C31 on components side				9.5		9.5
Traces under U2 on traces side				6.8		6.8
Traces under U3 on traces side				6.7		6.7
Traces under C31 on traces side				5.0		5.0
Traces under T1	416	253	4.0	7.9	5.1	7.9

Supplementary information:

1. Functional insulation shorted, see 5.3.4.
2. The insulation Sheet (dimension: 126.1 x 95.2mm) was used between PCB traces and metal enclosure on bottom side for all PCBs.
3. The component (Q1) was covered by rubber material for all PCBs.
4. Tubed component: L200 for PCB no. NED-50 and NED-50A.
5. Glued component: SCR1 for all PCBs, C37 for all PCBs, L200 for PCB no. NED-50, NED-50A, NET-50 and NET-50A, L300 for PCB no. NET-50 and NET-50A, C105 together with C106 for PCB no. SCP-50, C110 together with L100 for PCB no. SCP-50, Q1 with rubber cover.
6. The C23 was fixed with LF1 by glue for PCB no. NEx-50A (x= S, D, T).
7. The C22 was fixed with C1 by glue for PCB no. NES-50.
8. The C22 was fixed with TB1 by glue for PCB no. NET-50 and NED-50.
9. The C129 was fixed with C110 by glue for PCB no. NES-50A.
10. The C129 was fixed with L200 by glue for PCB no. NED-50A and NED-50.
11. The C129 was fixed with heat sink of RG1 by glue for PCB no. NET-50A.
12. The C129 was fixed with R305/L300 by glue for PCB no. NET-50 and keep 2.0mm clearance and

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2.5mm creepage distances to C22 for PCB no. NET-50.

13. All secondary wires are fixed in position reliably by soldering and mechanical cramp terminal.

2.10.5	TABLE: Distance through insulation measurements					**P**
Distance through insulation (DTI) at/of:		U peak (V)	U r.m.s. (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Photo Coupler		420	250	AC 3000	1)	1)
Rubber cover used on Q1		420	250	AC 3000	--	0.5
One layer of insulation tape used for T1		420	250	AC 3000	--	--
Insulation Sheet used between main board and bottom metal enclosure		420	250	AC 1500	--	0.5
Supplementary information: 1) For details refer to table 1.5.1.						

4.3.8	TABLE: Batteries									**N/A**
The tests of 4.3.8 are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										

Test results:		Verdict
- Chemical leaks		
- Explosion of the battery		
- Emission of flame or expulsion of molten metal		
- Electric strength tests of equipment after completion of tests		

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

4.5	TABLE: Thermal requirements						P
	Supply voltage (V) ..... :	90Vac	264Vac	--	--	--	—
	Ambient T_{min} (°C) ..... :	--	--	--	--	--	—
	Ambient T_{max} (°C) ..... :	See below	See below	--	--	--	—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Model NES-50-5							
Ambient T_{ma} (°C)		40.0	40.0	--	--	--	--
Ambient T_{amb} (°C)		22.1	21.4	--	--	--	--
TB1 body		47.7	49.3	--	--	--	85
LF1 coil		93.6	68.9	--	--	--	130
PCB under RTH1		98.1	79.5	--	--	--	130
C2 body		90.3	77.2	--	--	--	100
BD1 body		98.1	81.0	--	--	--	--
C5 body		81.4	73.1	--	--	--	85
HS1 body near Q1		74.1	73.0	--	--	--	130
T1 top-side coil		99.1	93.0	--	--	--	110
T1 bottom-side coil		105.9	98.5	--	--	--	110
T1 core		99.6	94.6	--	--	--	110
L100 coil		81.5	80.3	--	--	--	105
HS2 body near D100		69.8	68.3	--	--	--	130
C30 body		83.5	75.8	--	--	--	125
C31 body		90.5	80.2	--	--	--	125
U3 body		84.7	81.1	--	--	--	100
Model NES-50-24							
Ambient T_{ma} (°C)		40.0	40.0	--	--	--	--
Ambient T_{amb} (°C)		24.9	25.7	--	--	--	--
LF1 coil		76.6	58.5	--	--	--	130
T1 top-side coil		91.7	88.2	--	--	--	110
T1 bottom-side coil		93.2	89.8	--	--	--	110
T1 core		84.9	82.8	--	--	--	110

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Clause	Requirement + Test	Result - Remark	Verdict

Model NES-50-48						
Ambient T_{ma} (°C)	40.0	--	--	--	--	--
Ambient T_{amb} (°C)	25.9	--	--	--	--	--
TB1 body	47.3	--	--	--	--	85
LF1 coil	91.3	--	--	--	--	130
PCB under RTH1	88.7	--	--	--	--	130
C2 body	89.9	--	--	--	--	100
BD1 body	89.4	--	--	--	--	--
C5 body	75.0	--	--	--	--	85
HS1 body near Q1	59.0	--	--	--	--	130
T1 top-side coil	90.5	--	--	--	--	110
T1 bottom-side coil	85.3	--	--	--	--	110
T1 core	82.5	--	--	--	--	110
L100 coil	54.2	--	--	--	--	105
HS3 body near D100	56.1	--	--	--	--	130
C30 body	69.8	--	--	--	--	125
C31 body	74.3	--	--	--	--	125
U3 body	64.1	--	--	--	--	100
Model NED-50A						
Ambient T_{ma} (°C)	35.0	35.0	--	--	--	--
Ambient T_{amb} (°C)	21.1	22.0	--	--	--	--
TB1 body	40.7	39.3	--	--	--	85
LF1 coil	91.9	62.2	--	--	--	130
PCB under RTH1	94.9	71.8	--	--	--	130
C2 body	89.6	67.9	--	--	--	100
BD1 body	94.6	69.4	--	--	--	--
C5 body	82.7	71.1	--	--	--	85
HS1 body near Q1	73.1	69.9	--	--	--	130
T1 top-side coil	101.7	91.2	--	--	--	110
T1 bottom-side coil	97.6	88.7	--	--	--	110
T1 core	100.1	92.5	--	--	--	110
L100 coil	79.5	77.0	--	--	--	105
HS2 body near D100	69.9	67.1	--	--	--	130

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Clause	Requirement + Test	Result - Remark	Verdict

C30 body	90.6	77.6	--	--	--	125
C31 body	89.9	75.7	--	--	--	125
U3 body	82.5	77.6	--	--	--	100
Model NET-50B						
Ambient T_{ma} (°C)	39.0	--	--	--	--	--
Ambient T_{amb} (°C)	39.0	--	--	--	--	--
TB1 body	48.8	--	--	--	--	85
LF1 coil	100.8	--	--	--	--	130
PCB under RTH1	104.3	--	--	--	--	130
C2 body	93.3	--	--	--	--	100
BD1 body	94.2	--	--	--	--	--
C5 body	82.8	--	--	--	--	85
HS1 body near Q1	72.6	--	--	--	--	130
T1 top-side coil	109.5	--	--	--	--	110
T1 bottom-side coil	109.4	--	--	--	--	110
T1 core	104.5	--	--	--	--	110
L100 coil	89.0	--	--	--	--	105
HS2 body near D100	72.1	--	--	--	--	130
C30 body	92.0	--	--	--	--	125
C31 body	95.3	--	--	--	--	125
U3 body	82.9	--	--	--	--	100
L300 coil	90.4	--	--	--	--	105
HS3 body	110.4	--	--	--	--	130
Model NET-50C						
Ambient T_{ma} (°C)	39.0	--	--	--	--	--
Ambient T_{amb} (°C)	39.0	--	--	--	--	--
TB1 body	46.0	--	--	--	--	85
LF1 coil	95.4	--	--	--	--	130
PCB under RTH1	89.7	--	--	--	--	130
C2 body	83.0	--	--	--	--	100
BD1 body	87.8	--	--	--	--	--
C5 body	79.5	--	--	--	--	85
HS1 body near Q1	70.8	--	--	--	--	130

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Clause	Requirement + Test		Result - Remark			Verdict
T1 top-side coil	104.4	--	--	--	--	110
T1 bottom-side coil	89.4	--	--	--	--	110
T1 core	65.8	--	--	--	--	110
L100 coil	83.0	--	--	--	--	105
HS2 body near D100	68.3	--	--	--	--	130
C30 body	85.6	--	--	--	--	125
C31 body	89.4	--	--	--	--	125
U3 body	78.2	--	--	--	--	100
L300 coil	91.3	--	--	--	--	105
HS3 body	100.0	--	--	--	--	130
Model SCP-50-12						
Ambient T_{ma} (°C)	50.0	50.0	--	--	--	--
Ambient T_{amb} (°C)	24.4	23.8	--	--	--	--
TB1 body	60.0	58.7	--	--	--	85
C1 body	64.1	61.3	--	--	--	100
LF1 coil	85.5	67.7	--	--	--	130
C2 body	86.1	71.6	--	--	--	100
PCB under BD1	77.1	67.3	--	--	--	130
C5 body	76.4	68.6	--	--	--	85
C3 body	79.6	83.7	--	--	--	125
C4 body	74.6	69.2	--	--	--	125
PCB under RTH1	97.8	89.7	--	--	--	130
HS1 body near Q1	71.9	71.1	--	--	--	130
T1 primary side coil	94.7	92.5	--	--	--	110
T1 secondary side coil	95.9	91.8	--	--	--	110
T1 core	88.5	90.1	--	--	--	110
U3 body	81.2	81.4	--	--	--	100
HS2 body near D100	90.0	87.3	--	--	--	130
L100 coil	70.1	69.8	--	--	--	105
Metal enclosure	73.5	73.6	--	--	--	--
Ambient T_{ma} (°C)	50.0	50.0	--	--	--	--
Ambient T_{amb} (°C)	26.8	27.0	--	--	--	--
ZNR1	75.8	70.6	--	--	--	85

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Clause	Requirement + Test	Result - Remark	Verdict

C31		92.0	82.8	--	--	--	100
Supplementary information:							
Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class

Supplementary information:

1. The temperatures were measured under worst normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described above.

2. The maximum ambient temperature permitted by the manufacturer's specification is 40°C (for models NES-50y), 35°C (for models NED-50y), 39°C (for models NET-50y) or 50°C (for models SCP-50-z).

3. Some values for T (°C) are re-calculated from actual ambient respectively, for details see above.

4. Winding components (providing safety isolation):

- Class B: Tmax = 120°C –10°C =110°C

4. For the load conditions, see appended table 1.6.2.

4.5.5	TABLE: Ball pressure test of thermoplastic parts		**N/A**
	Allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)
Terminal Block, mfr. Dinkle, type DT-4 series, 1.4 mm thickness	125	1.1
Terminal Block, mfr. Dinkle, type DT-43 series, 1.4 mm thickness	125	1.1
Terminal Block, mfr. Dinkle, type DT-45 series, 1.4 mm thickness	125	1.0
Terminal Block, mfr. Dinkle, type DT-49 series, 1.4 mm thickness	125	1.1
Terminal Block, mfr. Howder, type HB-95 series, 1.4 mm thickness	125	1.0
Terminal Block, mfr. Howder, type HI-20 series, 1.4 mm thickness	125	1.0
Terminal Block, mfr. Switchlab, type T14 series, 1.4 mm thickness	125	1.1
Terminal Block, mfr. Switchlab, type T24 series, 1.4 mm thickness	125	1.1
Terminal Block, mfr. Switchlab, type T34 series, 1.4 mm thickness	125	1.04
Terminal Block, mfr. Switchlab, type T35 series, 1.4 mm thickness	125	1.0

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Terminal Block, mfr. Switchlab, type T44 series, 1.4 mm thickness	125	1.0
Terminal Block, mfr. JITE, type BTB-654 series, 1.4 mm thickness	125	1.1
Primary Connector, mfr. Taiwan King Pin, type P-8950-I Series, 0.96 mm thickness	125	1.5
Line Filter (LF1), mfr. Nan Yan Plastics, material PBT, type 1403G3, 0.8 mm thickness	125	0.3
Line Filter (LF1), mfr. Nan Yan Plastics, material PBT, type 1403G6, 0.8 mm thickness	125	0.3
Terminal Block, mfr. Dinkle, type EK-950 series, 1.4 mm thickness	125	0.8
Terminal Block, mfr. Switchlab, type MB910 series, 1.4 mm thickness	125	1.5
Supplementary information: 1) Phenolic material were used in bobbin materials of Transformer (T1) and Line Filter (LF1) are accepted without test.		

4.7	Table: Resistance to fire				**N/A**
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Supplementary information:					

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			**P**
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:				
Basic / supplementary:				
Rubber cover used on Q1		Vac	1500	No
One layer of insulation tape used for T1		Vac	1500	No
Insulation Sheet used between main board and bottom metal enclosure		Vac	1500	No
Unit: primary and earth for all models		Vdc	3000	No

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T1: secondary windings and core for all types and sources except for types TF-5026 and TF-5027	Vac	1900	No
T1: primary windings and core for all types and sources except for types TF-5026 and TF-5027	Vac	1900	No
T1: secondary windings and core for types TF-5026 and all sources	Vac	1700	No
T1: primary windings and core for types TF-5026 and all sources	Vac	1700	No
Reinforced:			
Unit: primary and secondary for all models	Vdc	4242	No
T1: primary winding and secondary windings all types and sources	Vac	3000	No
One layer of insulation tape used for T1 with thickness 0.05mm for all types and sources	Vac	3000	No
Supplementary information:			

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) .....:	See below or 26°C.	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	--	—

Component No.	Fault	Supply voltage (Vac)	Test time	Fuse #	Fuse current (A)	Observation
Model NES-50-5						
T1 pin 7, 8, 9 to pin 10, 11, 12	Short	240	10min	FS1	0.05 to 0.41	Unit cycle protection, no high temp., no hazards.
All Openings	Block	240	4hr	FS1	0.57	Normal operation, no hazard. T1= 94.2°C, ambient= 23.4°C
T1 pin 10, 11,12 after D100 (+5V)	Overload	240	7hr	FS1	0.64	Temperature stable at 15.5A, output increased to 16A, unit shutdown, no hazard. T1= 118°C, ambient = 25°C
+5V to RTN	Short	240	10min	FS1	0.05 to 0.33	Unit cycle protection, no hazard. T1= 87°C, ambient= 23°C
+5V	Overload	240	6hr	FS1	0.62	Temperature stable at 15A, output increased to 16A, unit shutdown, no hazard. T1= 116°C, ambient= 25°C

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Model NES-50-48						
T1 pin 7, 8, 9 to pin 10, 11, 12	Short	240	10min	FS1	0.05 to 0.42	Unit cycle protection, no high temp., no hazards.
All Openings	Block	240	4hr	FS1	0.56	Normal operation, no hazard. T1= 92.8°C, ambient= 27.0°C
T1 pin 10, 11,12 after D100 (+48V)	Overload	240	5hr	FS1	0.65	Temperature stable at 2.2A, output increased to 2.4A, unit shutdown, no hazard. T1= 107°C, ambient = 25°C
+48V to RTN	Short	240	10min	FS1	0.05 to 0.37	Unit cycle protection, no hazard, T1= 122°C, ambient= 23°C
+48V	Overload	240	4hr	FS1	0.63	Temperature stable at 2.0A, output increased to 2.1A, unit shutdown, no hazard. T1= 104°C, ambient= 25°C
Model NED-50A						
T1 pin 9 to pin 11	Short	240	10min	FS1	0.04 to 0.38	Unit cycle protection, no high temp., no hazards.
T1 pin 10 to pin 12	Short	240	10min	FS1	0.04 to 0.38	Unit cycle protection, no high temp., no hazards.
All Openings	Block	240	4hr	FS1	0.60	Normal operation, no hazard. T1= 113.8°C, ambient= 25.5°C
+5V to RTN	Short	240	10min	FS1	0.05 to 0.40	Unit cycle protection, no hazard
+12V to RTN	Short	240	10min	FS1	0.05 to 0.36	Unit cycle protection, no hazard
+5V to +12V	Short	240	10min	FS1	0.05 to 0.41	Unit cycle protection, no hazard. T1= 46°C, ambient= 23°C
+5V	Overload	240	6hr	FS1	0.74	Temperature stable at 10A, output increased to 11A, unit shutdown, no hazard. T1= 142°C, ambient= 25°C
+12V	Overload	240	6hr	FS1	0.73	Temperature stable at 4A, output increased to 4.5A, unit shutdown, no hazard. T1= 102°C, ambient= 24°C
Model NET-50B						
T1 pin 9 to pin 11	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no high temp., no hazards.

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Clause	Requirement + Test	Result - Remark	Verdict

T1 pin 12 to pin 10	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no high temp., no hazards.
T1 pin 10 to pin 8	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no high temp., no hazards.
All Openings	Block	240	4hr	FS1	0.57	Normal operation, no hazard. T1= 109.5°C, ambient= 25.5°C
T1 pin 12 after D100 (+5V)	Overload	240	7hr	FS1	0.70	Temperature stable at 10.5A, output increased to 11A, unit shutdown, no hazard. T1= 144°C, ambient= 24°C
T1 pin 9 after D200 (+12V)	Overload	240	6hr	FS1	0.67	Temperature stable at 4.5A, output increased to 5A, unit shutdown, no hazard. T1= 138°C, ambient= 24°C
T1 pin 8 after D300 (-12V)	Overload	240	6hr	FS1	0.64	Temperature stable at 0.8A, output increased to 0.9A, unit shutdown, no hazard. T1= 106°C, ambient= 24°C
+5V to RTN	Short	240	10min	FS1	0.05 to 0.44	Unit cycle protection, no hazard
+12V to RTN	Short	240	10min	FS1	0.05 to 0.34	Unit cycle protection, no hazard
-12V to RTN	Short	240	10min	FS1	0.62	Unit shutdown, no hazard only – 12V shutdown
+5V to +12V	Short	240	10min	FS1	0.05 to 0.41	Unit cycle protection, no hazard
+5V to –12V	Short	240	10min	FS1	0.05	Unit shutdown, no hazard. T1= 101°C, ambient= 23°C
+12V to –12V	Short	240	10min	FS1	0.05 to 0.44	Unit cycle protection, no hazard
+5V	Overload	240	7hr	FS1	0.68	Temperature stable att 10A, output increased to 11A, unit shutdown, no hazard. T1= 141°C, ambient= 24°C
+12V	Overload	240	5hr	FS1	0.66	Temperature stable at 4A, output increased to 5A, unit shutdown, no hazard. T1= 136°C, ambient= 24°C
-12V	Overload	240	5hr	FS1	0.62	Temperature stable at 0.8A, output increased to 0.9A, unit shutdown, no hazard. T1= 105°C, ambient= 24°C

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Clause	Requirement + Test	Result - Remark	Verdict

Model NET-50C						
BD1 L to +	Short	240	1sec	FS1	--	Fuse opened, no hazard.
C5	Short	240	1sec	FS1	--	Fuse opened, no hazard.
Q1 G-D	Short	240	1sec	FS1	--	Fuse opened, U1, Q1 damaged, no hazards.
Q1 D-S	Short	240	1sec	FS1	--	Fuse opened, U1, Q1 damaged, no hazards.
Q1 G-S	Short	240	10min	FS1	0.05	Unit shutdown, no high temp., no component damaged, no hazards.
U1 pin 2 to pin 8	Short	240	1sec	FS1	--	Fuse opened, U1, Q1 damaged, no hazards.
U2 primary pins	Short	240	10min	FS1	0.05	Unit shutdown, no high temp., no component damaged, no hazards.
U2 secondary pins	Short	240	10min	FS1	0.05	Unit shutdown, no high temp., no component damaged, no hazards.
U3 primary pins	Short	240	10min	FS1	0.05	Unit shutdown, no high temp., no component damaged, no hazards.
U3 secondary pins	Short	240	10min	FS1	0.05	Unit shutdown, no high temp., no component damaged, no hazards.
U2 pin 1	Open	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no hazards.
U3 pin 1	Open	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no hazards.
T1 pin 2 to pin 3	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no hazards.
T1 pin 9 to pin 11	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no hazards.
T1 pin 12 to pin 10	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no hazards.
T1 pin 10 to pin 8	Short	240	10min	FS1	0.05 to 0.32	Unit cycle protection, no hazards.
All Openings	Block	240	4hr	FS1	0.58	Normal operation, no hazard. T1= 101.5°C, ambient= 22.5°C

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Clause	Requirement + Test	Result - Remark	Verdict

T1 pin 12 after D100 (+5V)	Overload	240	6hr	FS1	0.70	Temperature stable at 9.5A, output increased to 9.7A, unit shutdown, no hazard. T1= 118°C, ambient= 24°C
T1 pin 9 after D200 (+15V)	Overload	240	6hr	FS1	0.69	Temperature stable at 3.3A, output increased to 3.8A, unit shutdown, no hazard. T1= 115°C, ambient= 24°C
T1 pin 8 after D300 (-15V)	Overload	240	6hr	FS1	0.68	Temperature stable at 0.9A, output increased to 1A, unit shutdown, no hazard. T1= 120°C, ambient= 25°C
+5V to RTN	Short	240	10min	FS1	0.05 to 0.37	Unit cycle protection, no hazard
+15V to RTN	Short	240	10min	FS1	0.05 to 0.34	Unit cycle protection, no hazard
-15V to RTN	Short	240	10min	FS1	0.63	Unit shutdown, no hazard only – 12V shutdown. T1= 56°C, ambient= 23°C
+5V to +15V	Short	240	10min	FS1	0.05	Unit shutdown, no hazard
+5V to –15V	Short	240	10min	FS1	0.05 to 0.36	Unit cycle protection, no hazard
+15V to –15V	Short	240	10min	FS1	0.05 to 0.36	Unit cycle protection, no hazard
+5V	Overload	240	5hr	FS1	0.67	Temperature stable at 9A, output increased to 9.8A, unit shutdown, no hazard. T1= 115°C, ambient= 24°C
+15V	Overload	240	4hr	FS1	0.67	Temperature stable at 3A, output increased to 3.5A, unit shutdown, no hazard. T1= 112°C, ambient= 26°C
-15V	Overload	240	5hr	FS1	0.65	Temperature stable at 0.8A, output increased to 0.9A, unit shutdown, no hazard. T1= 108°C, ambient= 26°C
Model NED-50B						
+24V	Overload	240	3hr	FS1	0.62	Temperature stable at 2.4A, output increased to 2.5A, unit shutdown, no hazard. T1= 90.5°C, ambient= 24°C
Model SCP-50-12						

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

T1 pin 7, 8, 9 to pin 10, 11, 12	Short	240	30min	FS1	0.05 to 0.35	Unit cycle protection, no high temp., internal protection operated (U1), no hazards.
All Openings	Block	240	1hr 57min	FS1	0.54	Normal operation, no hazard. T1= 87.6°C, U3= 76.5°C, ambient= 25.1°C
T1 pin 10, 11,12 after D100 (+13.8V)	Overload	240	10hr 13min	FS1	0.66	Constant temperatures operated at 3.0A, output load=3.6A, total load=6.6A, increased to 3.4A. Unit shutdown, no hazards. T1= 103°C, U3= 90°C, Ambient= 22.5°C.
+13.8V	Short	240	30min	FS1	0.05 to 0.35	Unit cycle protection, internal protection operated (U1), no hazards.
+13.8V	Overload	240	5hr 42min	FS1	0.66	Constant temperatures operated at 6.6A, increased to 7.0A. Unit shutdown, no hazards. T1= 92°C, U2= 80°C, Ambient= 25.8°C.

Supplementary information:

1. For UL approved fuses, all tests have been repeated ten times on fuse opened condition with same result.

2. Maximum permitted temperature of T1 based on a test temperature of 23°C:
- Tmax = 175°C – (40-23)°C = 158°C. for model NES-50y
- Tmax = 175°C – (39-23)°C = 159°C. for model NET-50y
- Tmax = 175°C – (35-23)°C = 163°C. for model NED-50y

List of test equipment used:

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date
Supplementary information: No listing of test equipment used necessary for chosen test procedure.				

Clause	Requirement + Test	Result - Remark	Verdict

2.1.1.5	TABLE: max. V, A, VA test				P
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
Model NES-50-5					
+5	10	5.04	15.2	58.4	
Model NES-50-48					
+48	1.1	48.05	1.9	69.2	
Model NED-50A					
+5	6	5.06	15.8	63.5	
+12	2	13.17	7.2	68.3	
Model NET-50B					
+5	4	5.08	14.0	55.3	
+12	2	12.52	6.4	58.5	
-12	0.5	12.06	1.42	14.0	
Model NET-50C					
+5	4	5.09	13.7	53.6	
+15	1.5	16.92	3.9	49.7	
-15	0.5	15.04	1.6	23.1	
Model SCP-50-12					
+13.8	3.6	13.28	7.0	65.0	
Model SCP-50-24					
+27.6	1.8	27.55	4.0	68.0	
Supplementary information: Test voltage 240V, 60Hz					

2.1.1.7	TABLE: discharge test				P
Condition	τ calculated (s)	τ measured (ms)	t u→ 0V (s)	Comments	
For PCB no. NEx-50A (x= S, D, T) and SCP-50					
L-N (Fuse in)	0.82	0.64	--	Vo=362V, 37% of Vo=134V	
For PCB no. NEx-50 (x= S, D, T)					
L-N (Fuse in)	1.20	0.97	--	Vo=362V, 37% of Vo=134V	
L-N (Fuse out)	0.60	0.49	--	Vo=366V, 37% of Vo=135V	

Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

Input voltage: 264VAC, 60Hz

Overall capacity: 1) Fuse in: 1.2µF (C1=C2=0.6µF), 2) Fuse out: 0.6µF (C1=0.6µF)

Discharge resistor: 1) Fuse in: 1MΩ (R1=1MΩ) for PCB no. NEx-50 or 680kΩ (R1=680kΩ) for PCB no. NEx-50A (x= S, D, T) and SCP-50, 2) Fuse out: 1MΩ (R1=1MΩ)

2.2.2	TABLE: SELV measurement (under normal conditions)			P
Transformer	Location	Voltage (max.) (V)		Voltage Limitation Component
		V peak	V d.c.	
Model NES-50-5				
T1	Pin 10,11, 12 to 7/8/9 (Earth)	22	--	--
Model NES-50-48				
T1	Pin 10,11, 12 to 7/8/9 (Earth)	220	--	--
T1	After D100 to 7/8/9 (Earth)	--	52	D100
Model NED-50A				
T1	Pin 9 to 10 (Earth)	25.6	--	--
T1	Pin 11 to 10 (Earth)	--	--	--
T1	Pin 12 to 10 (Earth)	23.2	--	--
Model NED-50B				
T1	Pin 9 to 10 (Earth)	92	--	--
T1	After D200 to 10 (Earth)	24	--	D200
T1	Pin 11 to 10 (Earth)	8.8	--	--
T1	Pin 12 to 10 (Earth)	26.4	--	--
Model NET-50B				
T1	Pin 8 to 10 (Earth)	72	--	--
T1	After D300 to 10 (Earth)	--	16	D300
T1	Pin 9 to 10 (Earth)	28	--	--
T1	Pin 11 to 10 (Earth)	--	8	--
T1	Pin 12 to 10 (Earth)	2	--	--
Model NET-50C				
T1	Pin 8 to 10 (Earth)	88	--	--
T1	After D300 to 10 (Earth)	--	17.6	D300
T1	Pin 9 to 10 (Earth)	44	--	--

Clause	Requirement + Test	Result - Remark	Verdict

T1	After D200 to 10 (Earth)	--	17.6	D200
T1	Pin 11 to 10 (Earth)	--	7.2	--
T1	Pin 12 to 10 (Earth)	24.8	--	--
Model NET-50D				
T1	Pin 8 to 10 (Earth)	72	--	--
T1	After D100 to 10 (Earth)	--	14.4	D100
T1	Pin 9 to 10 (Earth)	116	--	--
T1	After D200 to 10 (Earth)	--	26.4	D200
Model SCP-50-12				
T1	Pin 10, 11, 12 to RTN	64	--	--
T1	After D100 to RTN	--	16	D100
Supplementary information: Test voltage 240V, 60Hz				

2.2.3	TABLE: SELV measurement (under fault conditions)	P

Location	Voltage (max.) (V)	Comments
Model NES-50-48		
+48Vdc to RTN	0 [1)]	D100 short
Model NET-50B		
-12Vdc to RTN	0 [1)]	D300 short
Model NET-50C		
-15Vdc to RTN	0 [1)]	D300 short
+15Vdc to RTN	0 [1)]	D200 short
Model NED-50B		
+24Vdc to RTN	0 [1)]	D200 short
Model NET-50D		
+12Vdc to RTN	0 [1)]	D100 short
+24Vdc to RTN	0 [1)]	D200 short
Model SCP-50-12		
+12Vdc to RTN	0 [1)]	D100 short
Supplementary information: 1) Unit shutdown		

2.4.2	TABLE: Limited current circuit measurement	P

Location	Voltage (V)	Current (mA)	Freq. (Hz)	Limit (mA)	Comments

Clause	Requirement + Test	Result - Remark	Verdict

Secondary pin of C31 to RTN	0.6	0.3	0.06	0.7	C31= 2200pF
Supplementary information:					

2.5	TABLE: limited power source measurement		**N/A**
	Limits	Measured	Verdict
According to Table 2B/2C (normal condition)			
current (in A)			
apparent power (in VA)			

2.6.3.4	TABLE: Resistance of earthing measurement	**P**
Location	Resistance measured (mΩ)	Comments
For PCB no. NEx-50 (x= S, D, T)		
Earth pin of Terminal Block (TB1) to trace at C30	9	Test current=32A, 2 minutes, voltage drop=0.30V.
Earth pin of Terminal Block (TB1) to metal chassis	10	Test current=32A, 2 minutes, voltage drop=0.32V.
Earth pin of Terminal Block (TB1) to trace at C30	7	Test current=40A, 2 minutes, voltage drop=0.26V.
Earth pin of Terminal Block (TB1) to metal chassis	7	Test current=40A, 2 minutes, voltage drop=0.28V.
For PCB no. NEx-50A (x= S, D, T) and SCP-50		
Earth pin of Terminal Block (TB1) to trace at C30	10	Test current=32A, 2 minutes, voltage drop=0.33V.
Earth pin of Terminal Block (TB1) to metal chassis	10	Test current=32A, 2 minutes, voltage drop=0.33V.
Earth pin of Terminal Block (TB1) to trace at C30	7	Test current=40A, 2 minutes, voltage drop=0.28V.
Earth pin of Terminal Block (TB1) to metal chassis	8	Test current=40A, 2 minutes, voltage drop=0.30V.
Supplementaly information:		

2.10.2	Table: working voltage measurement		**P**
Location	RMS voltage (V)	Peak voltage (V)	Comments
Model NES-50-5			
T1 pin 2 to pin 7, 8, 9	205	344	

Clause	Requirement + Test	Result - Remark	Verdict

T1 pin 2 to pin 10, 11, 12	206	344	
T1 pin 3 to pin 7, 8, 9	202	328	
T1 pin 3 to pin 10, 11, 12	203	328	
T1 pin 5 to pin 7, 8, 9	220	352	
T1 pin 5 to pin 10, 11, 12	220	368	
T1 pin 6 to pin 7, 8, 9	**257**	**432**	* Highest Vpeak and Vrms in T1
T1 pin 6 to pin 10, 11, 12	255	432	
Model NES-50-48			
T1 pin 2 to pin 7, 8, 9	202	336	
T1 pin 2 to pin 10, 11, 12	216	368	
T1 pin 3 to pin 7, 8, 9	200	328	
T1 pin 3 to pin 10, 11, 12	216	368	
T1 pin 5 to pin 7, 8, 9	221	352	
T1 pin 5 to pin 10, 11, 12	234	**528**	* Highest Vpeak in T1
T1 pin 6 to pin 7, 8, 9	**259**	432	* Highest Vrms in T1
T1 pin 6 to pin 10, 11, 12	227	384	
U2 pin 3 to pin 1	223	352	
U2 pin 3 to pin 2	222	352	
U2 pin 4 to pin 1	220	352	
U2 pin 4 to pin 2	220	352	
U3 pin 3 to pin 1	203	328	
U3 pin 3 to pin 2	212	336	
U3 pin 4 to pin 1	203	328	
U3 pin 4 to pin 2	208	336	
C30 primary to C31 secondary	209	336	
Model NED-50A			
T1 pin 2 to pin 9	213	348	
T1 pin 2 to pin 10	208	340	
T1 pin 2 to pin 11	211	348	
T1 pin 2 to pin 12	208	248	
T1 pin 3 to pin 9	211	340	
T1 pin 3 to pin 10	207	332	
T1 pin 3 to pin 11	210	336	

Clause	Requirement + Test	Result - Remark	Verdict

T1 pin 3 to pin 12	207	336	
T1 pin 5 to pin 9	212	364	
T1 pin 5 to pin 10	216	340	
T1 pin 5 to pin 11	213	340	
T1 pin 5 to pin 12	217	368	
T1 pin 6 to pin 9	246	408	
T1 pin 6 to pin 10	**257**	424	* Highest Vrms in T1
T1 pin 6 to pin 11	249	416	
T1 pin 6 to pin 12	252	**432**	* Highest Vpeak in T1
Model NET-50B			
T1 pin 2 to pin 8	205	344	
T1 pin 2 to pin 9	209	352	
T1 pin 2 to pin 10	205	336	
T1 pin 2 to pin 11	208	344	
T1 pin 2 to pin 12	206	344	
T1 pin 3 to pin 8	207	384	
T1 pin 3 to pin 9	208	344	
T1 pin 3 to pin 10	204	328	
T1 pin 3 to pin 11	207	336	
T1 pin 3 to pin 12	205	336	
T1 pin 5 to pin 8	220	368	
T1 pin 5 to pin 9	215	368	
T1 pin 5 to pin 10	220	352	
T1 pin 5 to pin 11	216	344	
T1 pin 5 to pin 12	220	368	
T1 pin 6 to pin 8	**274**	**432**	* Highest Vpeak and Vrms in T1
T1 pin 6 to pin 9	242	424	
T1 pin 6 to pin 10	254	424	
T1 pin 6 to pin 11	244	416	
T1 pin 6 to pin 12	250	424	
Model NET-50C			
T1 pin 2 to pin 8	205	352	
T1 pin 2 to pin 9	212	352	
T1 pin 2 to pin 10	206	344	

Clause	Requirement + Test	Result - Remark	Verdict

T1 pin 2 to pin 11	210	344	
T1 pin 2 to pin 12	206	344	
T1 pin 3 to pin 8	207	392	
T1 pin 3 to pin 9	210	344	
T1 pin 3 to pin 10	205	328	
T1 pin 3 to pin 11	208	336	
T1 pin 3 to pin 12	205	336	
T1 pin 5 to pin 8	223	368	
T1 pin 5 to pin 9	217	384	
T1 pin 5 to pin 10	220	352	
T1 pin 5 to pin 11	216	344	
T1 pin 5 to pin 12	222	368	
T1 pin 6 to pin 8	**276**	**432**	* Highest Vpeak and Vrms in T1
T1 pin 6 to pin 9	242	408	
T1 pin 6 to pin 10	254	424	
T1 pin 6 to pin 11	250	424	
T1 pin 6 to pin 12	250	424	
Model NED-50B			
T1 pin 2 to pin 9	195	332	
T1 pin 2 to pin 10	184	312	
T1 pin 2 to pin 11	187	316	
T1 pin 2 to pin 12	184	312	
T1 pin 3 to pin 9	187	316	
T1 pin 3 to pin 10	183	296	
T1 pin 3 to pin 11	186	304	
T1 pin 3 to pin 12	183	304	
T1 pin 5 to pin 9	199	**400**	* Highest Vpeak in T1
T1 pin 5 to pin 10	199	328	
T1 pin 5 to pin 11	196	320	
T1 pin 5 to pin 12	199	344	
T1 pin 6 to pin 9	217	384	
T1 pin 6 to pin 10	**237**	392	* Highest Vrms in T1
T1 pin 6 to pin 11	234	384	
T1 pin 6 to pin 12	231	384	

Clause	Requirement + Test	Result - Remark	Verdict

Model NET-50D			
T1 pin 2 to pin 8	207	352	
T1 pin 2 to pin 9	164	364	
T1 pin 2 to pin 10	207	340	
T1 pin 2 to pin 11	210	344	
T1 pin 2 to pin 12	205	344	
T1 pin 3 to pin 8	206	340	
T1 pin 3 to pin 9	212	352	
T1 pin 3 to pin 10	205	332	
T1 pin 3 to pin 11	208	336	
T1 pin 3 to pin 12	205	332	
T1 pin 5 to pin 8	215	392	
T1 pin 5 to pin 9	214	412	
T1 pin 5 to pin 10	215	344	
T1 pin 5 to pin 11	211	366	
T1 pin 5 to pin 12	215	360	
T1 pin 6 to pin 8	231	408	
T1 pin 6 to pin 9	231	400	
T1 pin 6 to pin 10	**250**	**412**	* Highest Vpeak and Vrms in T1
T1 pin 6 to pin 11	244	404	
T1 pin 6 to pin 12	246	404	
Model SCP-50-12			
T1 pin 2 to pin 7, 8, 9, RTN	208	344	
T1 pin 2 to pin 10, 11, 12	213	360	
T1 pin 3 to pin 7, 8, 9, RTN	206	336	
T1 pin 3 to pin 10, 11, 12	209	350	
T1 pin 5 to pin 7, 8, 9, RTN	216	344	
T1 pin 5 to pin 10, 11, 12	218	400	
T1 pin 6 to pin 7, 8, 9, RTN	**253**	**416**	* Highest Vpeak and Vrms in T1
T1 pin 6 to pin 10, 11, 12	243	408	
Supplementary information: 1. Input voltage: 240Vac, 60Hz			

4.6.1, 4.6.2	Table: Enclosure opening measurements	**N/A**

Clause	Requirement + Test	Result - Remark	Verdict

Location	Size (mm)	Comments
Supplementary information: No openings.		

5.1.6	TABLE: touch current measurement				**P**
Condition	L→ terminal A (mA)	N → terminal A (mA)	Limit (mA)	Comments	
Unit on [1)]	1.8	1.8	3.5	To Metal Enclosure (switch “e” open)	
Unit on [1)]	0.17	0.17	0.25	To output (+) (switch “e” closed)	
Unit on [1)]	0.17	0.17	0.25	To output (-) (switch “e” closed)	
Power switch off [2)]	0.10	0.82	3.5	To output (-) (switch “e” open)	
Supplementary information: Input voltage / frequency: 264V / 60Hz Overall capacity: C3= C4= C22= C23= C29= C30= 4700pF, C31= 2200pF					

C.2	TABLE: Insulation of transformers		P
	Transformer part name ..... :	T1	—
	Manufacturer ..... :	See appended table 1.5.1.	—
	Type ..... :	See appended table 1.5.1.	—

Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Primary/input winding and secondary/output winding (internal)	528 (for model NES-50-48)	276 (for model NET-50C)	4.4	6.0 (primary input winding to secondary output winding)	5.6	6.0 (primary input winding to secondary output winding)
Primary/input winding and core (internal)			2.2	3.0	2.8	3.0
Secondary/output winding and core (internal)			2.2	3.0	2.8	3.0
Primary/input part and secondary/output part (external)			4.4	9.6 (primary input pin to core to secondary output pin)	5.6	9.6 (primary input pin to core to secondary output pin)

Clause	Requirement + Test	Result - Remark	Verdict

Primary/input part and core (external)			2.2	4.8	2.8	4.8
Primary/input part and secondary/output winding (external)			4.4	6.0 (primary input pin to secondary output winding)	5.6	6.0 (primary input pin to secondary output winding)
Secondary/output part and core (external)			2.2	4.8	2.8	4.8
Secondary/output part and primary/input winding (external)			4.4	6.0 (secondary output pin to primary input winding)	5.6	6.0 (secondary output pin to primary input winding)

Description of design:	
(a) Bobbin	
Primary/input pins ……..... :	3 - 2, 6 - 4 - 5 for all types
Secondary/output pins ..... :	1. 10/11/12 - 7/8/9 for type TF-1010 to TF-1014 2. 12 - 10, 9 - 11 for type TF-1015 to TF-1016 3. 9 - 11, 12 - 10 - 8 for type TF-1017 to TF-1020
Material (manufacturer, type, ratings) ..... :	1. Chang Chun, type T375J (Phenolic), flammability class V-0, 150 °C for mfr. Jet Signal 2. Chang Chun, type T373J or T375J (Phenolic), flammability class V-0, 150 °C for mfr. Yao Sheng 3. Sumitomo, type PM-9820 (Phenolic), flammability class V-0, 150 °C for mfr. Long Sail 4. Chang Chun, type T373J (Phenolic), flammability class V-0, 150 °C for mfr. Ten Well
Thickness (mm)..... :	Min. 1.1
(b) General	
Transformer construction as below: Concentric windings on ER-28 type bobbin, three layers insulation between primary windings and secondary windings. Margin tape is 3.0mm at both sides of transformer. Winding ends additionally fixed with tape, outer winding is primary. Tubing on all winding exit ends are provided. One layer insulation tape are wrapped around the transformer. Two layers insulation tape are wrapped around the “E” shape core of transformer on top and bottom sides.	
Supplementary information: All types of transformer are similar except below, 1. mfr., 2. type number, 3. winding turns of primary pin 3-2, 8 turns for type TF-1013, TF-1015, TF-1016, TF-1017, TF-1018, TF-1019, TF-1020, and 9 turns for type TF-1010, TF-1011, TF-1012, TF-1014, 4.	

Clause	Requirement + Test	Result - Remark	Verdict

layers, turns and gauge of secondary windings.

C.2	TABLE: Insulation of transformers		P
	Transformer part name ..... :	T1	—
	Manufacturer ..... :	See appended table 1.5.1.	—
	Type ..... :	TF-5026	—

Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Primary/input winding and secondary/output winding (internal)	420 for model SCP-50-12	253 for model SCP-50-12	4.0	6.0 (primary input winding to secondary output winding)	5.1	6.0 (primary input winding to secondary output winding)
Primary/input winding and core (internal)			2.0	3.0	2.6	3.0
Secondary/output winding and core (internal)			2.0	3.0	2.6	3.0
Primary/input part and secondary/output part (external)			4.0	18.0 (primary input pin to core to secondary output pin)	5.1	18.0 (primary input pin to core to secondary output pin)
Primary/input part and core (external)			2.0	9.5	2.6	9.5
Primary/input part and secondary/output winding (external)			4.0	6.0 (primary input pin to secondary output winding)	5.1	6.0 (primary input pin to secondary output winding)
Secondary/output part and core (external)			2.0	8.5	2.6	8.5
Secondary/output part and primary/input winding (external)			4.0	5.5 (secondary output pin to primary input winding)	5.1	5.5 (secondary output pin to primary input winding)
Description of design:						
(a) Bobbin						

Clause	Requirement + Test	Result - Remark	Verdict

Primary/input pins ……..…..:	3 - 2, 6 - 4, 4 - 5
Secondary/output pins .....:	10, 11, 12 – 7, 8, 9
Material (manufacturer, type, ratings).....:	1. Sumitomo, type PM-9820 or PM-9630 (Phenolic), flammability class V-0, 150°C for mfr. Jet Signal, Long Sail and Elytone 2. Chang Chun, type T375J (Phenolic), flammability class V-0, 150°C for mfr. Ten Well
Thickness (mm).....:	Min. 1.1
(b) General	
Transformer construction as below: Concentric windings on ER-28/EER-28 type bobbin. Three layers of insulation tape between primary and secondary windings. Margin tape is 3.0mm on at both sides of transformer. Winding ends additionally fixed with tape, endings additionally sleeve and leaded above the margin tape. Outer winding is primary. The core are considered as floating. Two layers insulation tape are wrapped on the core of transformer. One or two layers insulation tape are stuck on two “E” shape core of transformer. One layer insulation tape is wrapped on outer of transformer. Pin 1 cut off, half of pin 4 cut off.	
Supplementary information: Types TF-5026 and TF-5027 of transformer are similar except for mfr., type number, winding turns of primary windings (N4) and winding turns and gauge of secondary windings (N2, N3, N5, N6).	

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES	
Differences according to.....:	EN 60950-1:2006+A11:2009

	CENELEC COMMON MODIFICATIONS (EN)	
ZA	**Normative references to international publications with their corresponding European publications**	—

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		**P**
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.	Not Cable Distribution system.	**N/A**
1.5.7.1	**Replace** the existing SNC by the following: In **Finland, Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.	The resistor bridging functional insulation.	**N/A**
1.7.2.1	**Add** as new SNC: In **Norway** and **Sweden**, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).” NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Utstyr som er koplet til beskyttelsesjord via	Not Cable Distribution system.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet." Translation to Swedish: "Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet."		
1.7.5	**Add** the following paragraph to the existing SNC for **Denmark**: For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.	Class I equipment.	**N/A**
7.3	**Delete** the existing SNC for Norway and Sweden (based on NOTE 1 of IEC 60950-1:2005 + corr. 1). **Add** as new SNC (based on future NOTE 3 of IEC 60950-1:200X): In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	Not Cable Distribution system.	**N/A**

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		**P**
1.5.1	**Sweden** **Delete** the A-deviation.	Deleted.	**P**
1.7.2.1	**Denmark** **Delete** the A-deviation.	Deleted.	**P**
1.7.5	**Denmark** **Delete** the A-deviation.	Deleted.	**P**
5.1.7.1	**Denmark** **Delete** the A-deviation.	Deleted.	**P**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	Canadian National Differences		**P**
	SPECIAL NATIONAL CONDITIONS		
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Unit was evaluated according to IEC 60950-1. The requirements have to be checked during national approval.	**N/A**
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Considered.	**P**
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the CEC/NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC are required to have special construction features and identification markings.		**N/A**
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." Likewise, a voltage rating shall not be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions."	Single phase.	**N/A**
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC shall be marked with the voltage rating and “Class 2” or equivalent. Marking shall be located adjacent to the terminals and shall be visible during wiring.	Not applied for.	**N/A**
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	No such fuse.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.	No such components provided.	**N/A**
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Overall acceptance has to be evaluated during the national approval process.	**N/A**
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	No power supply cords provided.	**N/A**
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		**N/A**
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not permanent connection equipment.	**N/A**
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Flexible power supply cords are required to be compatible with Tables 11 and 12 of the CEC and Article 400 of the NEC.	No power supply cord provided.	**N/A**
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Not permanent connection equipment.	**N/A**
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.	No wiring terminals.	**N/A**
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).	No binding screws.	**N/A**
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for Canadian/US wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).	No such wiring.	**N/A**
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	Equipment is not such a device.	**N/A**
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No such device incorporated.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	Not such application.	**N/A**
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No liquids provided.	**N/A**
4.3.13.5	Equipment with lasers is required to meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.	No laser provided.	**N/A**
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	Not automated information storage systems.	**N/A**
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.	No such enclosure.	**N/A**
Annex H	Equipment that produces ionizing radiation is required to comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.	No ionizing radiation.	**N/A**
OTHER DIFFERENCES			
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables.	Approved components used, see component list 1.5.1 in Measurement section report.	**P**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage shall include consideration of the battery charging "float voltage" associated with the intended supply system, regardless of the marked power rating of the equipment.		**N/A**
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No TNV circuits.	**N/A**
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.	No TNV circuits.	**N/A**
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	See table 2.6.3.4 in Measurement section report. However, building-in type shall be evaluated for the final system assembly.	**N/A**
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT.	**N/A**
4.2.11	For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails.		**N/A**
4.3.2	Equipment with handles is required to comply with special loading tests.	Complied, see IEC 60950-1 report.	**P**
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV circuits.	**N/A**
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded. During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.	Complied. See table 5.3 in Measurement section report.	**P**
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV circuits.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No TNV circuits.	**N/A**
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.	No TNV circuits.	**N/A**
Annex NAF	Document (paper) shredders likely to be used in a home or home office (Pluggable Equipment Type A plug configuration) are required to comply with additional requirements, including markings/instructions, protection against inadvertent reactivation of a safety interlock, disconnection from the mains supply (via provision of an isolating switch), and protection against operator access (accessibility determined via new accessibility probe & probe/wedge).	Not document (paper) shredders equipment.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
	Korean National Differences		**P**
	Corresponding National Standard: K 60950-1		**P**
1.5.101	Addition: Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305).	No power cord provided.	**N/A**
8	Addition: EMC The apparatus shall comply with the relevant CISPR standards.	The CISPR requirements have to be considered during national approval.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict

	US National Differences		**P**
SPECIAL NATIONAL CONDITIONS BASED ON FEDERAL REGULATIONS			
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	Unit was evaluated according to IEC 60950-1. The requirements have to be checked during national approval.	**N/A**
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Considered.	**P**
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type specified in the NEC. For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC are required to have special construction features and identification markings.		**N/A**
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings.	Single phase.	**N/A**
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	No such fuse.	**N/A**
2.7.1	Suitable NEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.	No such components provided.	**N/A**
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC.	Overall acceptance has to be evaluated during the national approval process.	**N/A**
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	No power supply cords provided.	**N/A**
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not permanent connection equipment.	**N/A**
3.2.5	Power supply cords are required to be no longer than 4.5 m in length and minimum length shall be 1.5 m. Flexible power supply cords are required to be compatible with Article 400 of the NEC.	No power supply cord provided.	**N/A**
3.2.9	Permanently connected equipment must have a suitable wiring compartment and wire bending space.	Not permanent connection equipment.	**N/A**
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm2).	No wiring terminals.	**N/A**
3.3.4	Terminals for permanent wiring, including protective earthing terminals, must be suitable for U.S wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).	No binding screws.	**N/A**
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	Equipment is not such a device.	**N/A**
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	No such device incorporated.	**N/A**
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	Not such application.	**N/A**
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No liquids provided.	**N/A**
4.3.13.5	Equipment with lasers is required to meet the Code of Federal Regulations 21 CFR 1040.	No laser provided.	**N/A**
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	Not automated information storage systems.	**N/A**
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.	No such enclosure.	**N/A**
Annex H	Equipment that produces ionizing radiation must comply with Federal Regulations, 21 CFR 1020	No ionizing radiation.	**N/A**

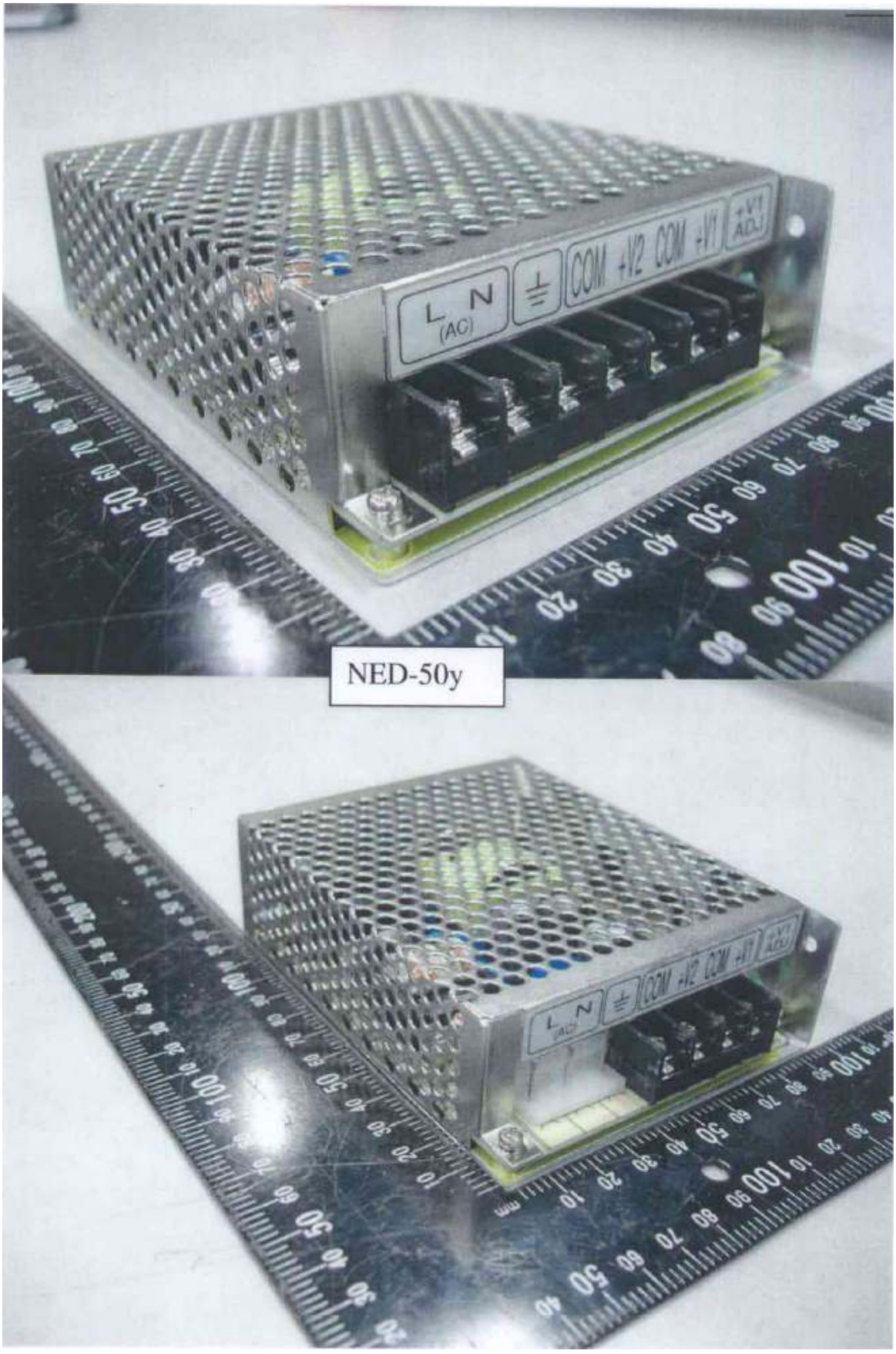
National Differences			
Clause	Requirement – Test	Result – Remark	Verdict

OTHER NATIONAL DIFFERENCES			
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables.	Approved components used, see component list 1.5.1 in Measurement section report.	**P**
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage it to include consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment.	Not connection to the DC Mains Supply.	**N/A**
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the max. acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No TNV circuits.	**N/A**
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.	No TNV circuits.	**N/A**
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	See table 2.6.3.4 in Measurement section report. However, building-in type shall be evaluted for the final system assembly.	**N/A**

National Differences			
Clause	Requirement – Test	Result – Remark	Verdict
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT.	**N/A**
4.2.11	For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails.		**N/A**
4.3.2	Equipment with handles is required to comply with special loading tests.	Complied, see IEC 60950-1 report.	**P**
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV circuits.	**N/A**
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded. During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.	Complied. See table 5.3 in Measurement section report.	**P**
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV circuits.	**N/A**
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No TNV circuits.	**N/A**
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.	No TNV circuits.	**N/A**
Annex NAF	Document (paper) shredders likely to be used in a home or home office (Pluggable Equipment Type A plug configuration) are required to comply with additional requirements, including markings/instructions, protection against inadvertent reactivation of a safety interlock, disconnection from the mains supply (via provision of an isolating switch), and protection against operator access (accessibility determined via new accessibility probe & probe/wedge).	Not document (paper) shredders equipment.	**N/A**

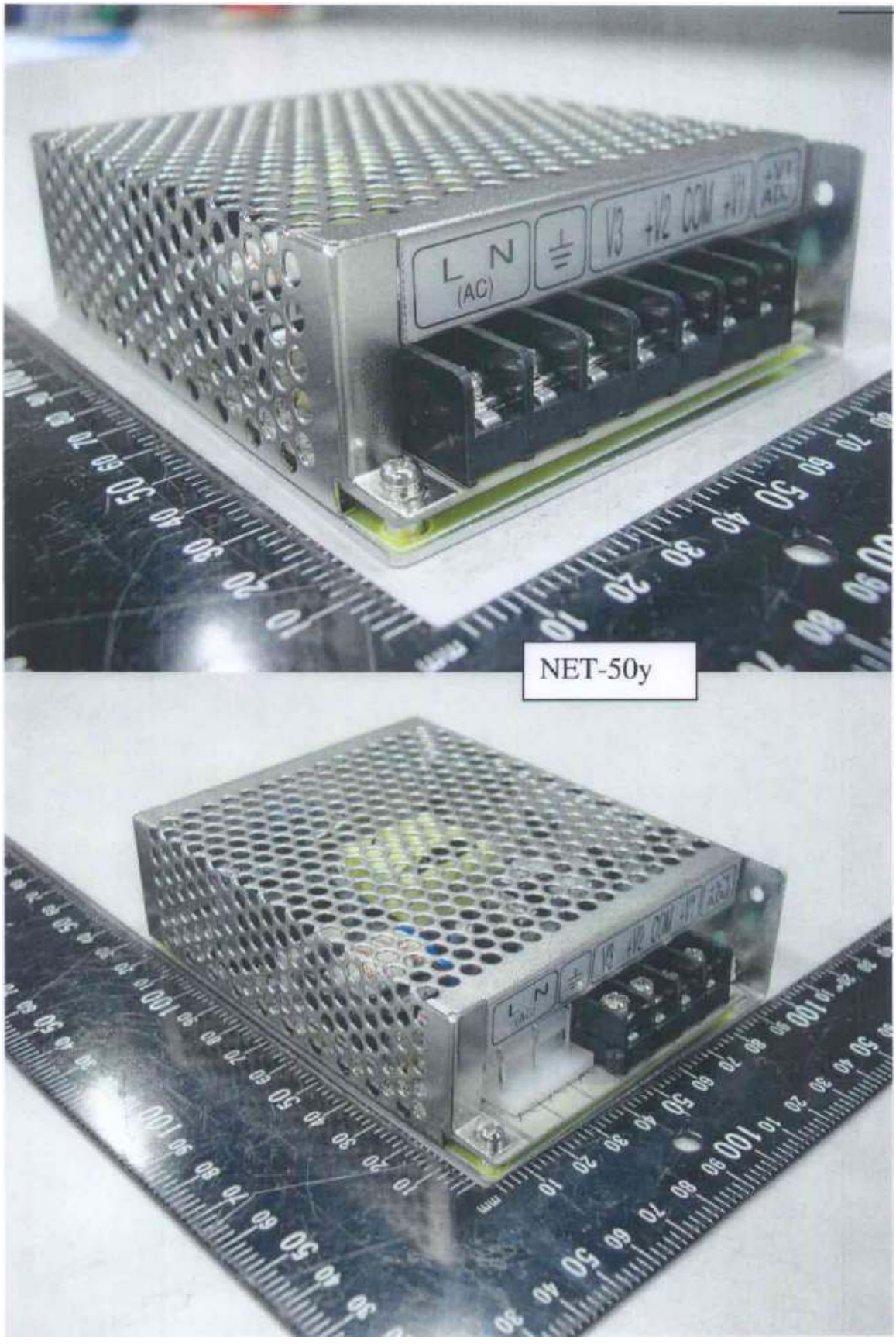
Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

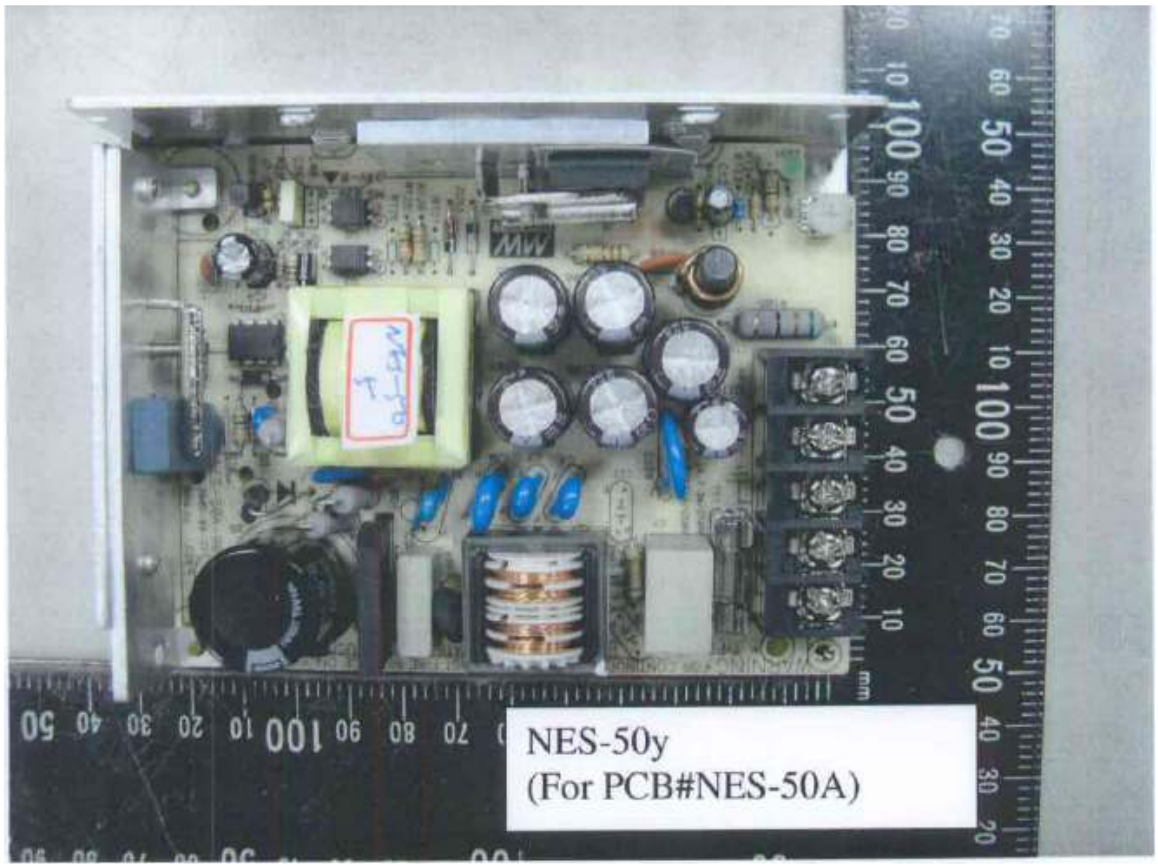


Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

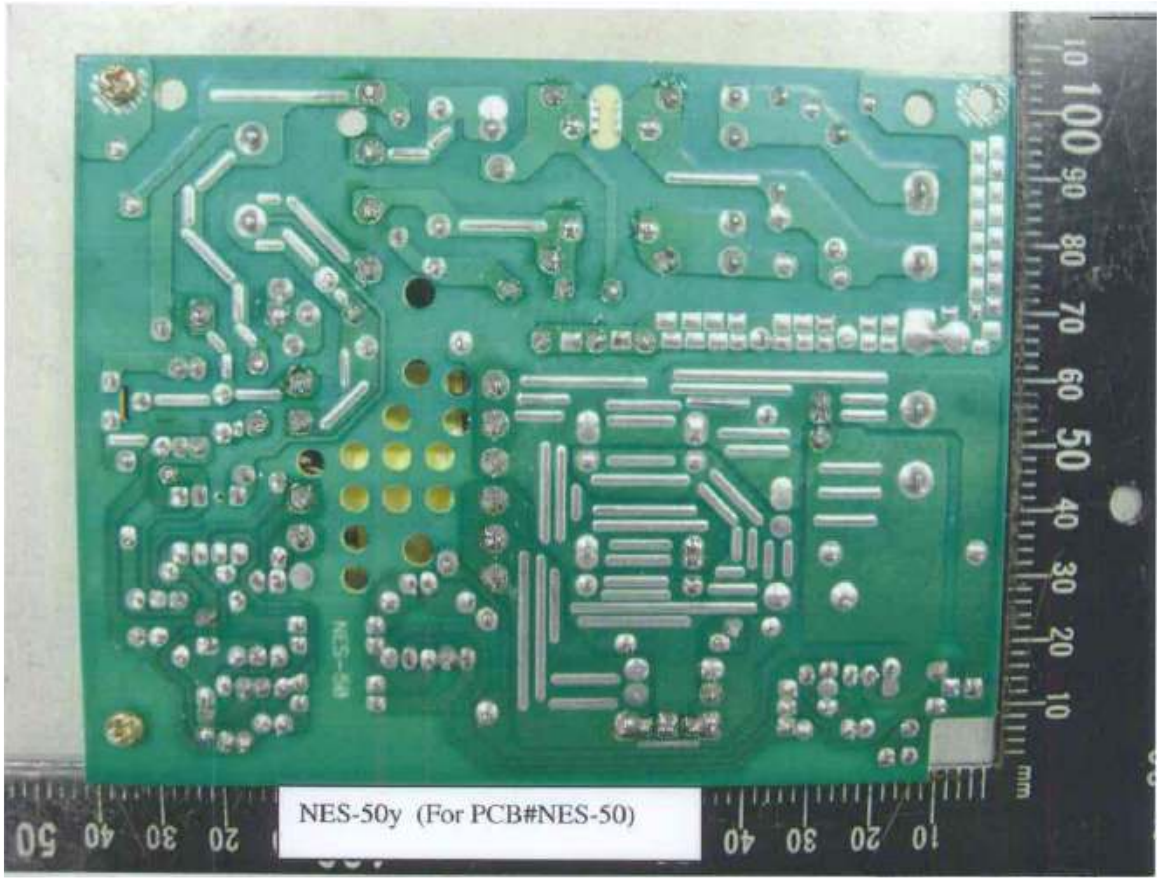
Product: Switching Power Supply

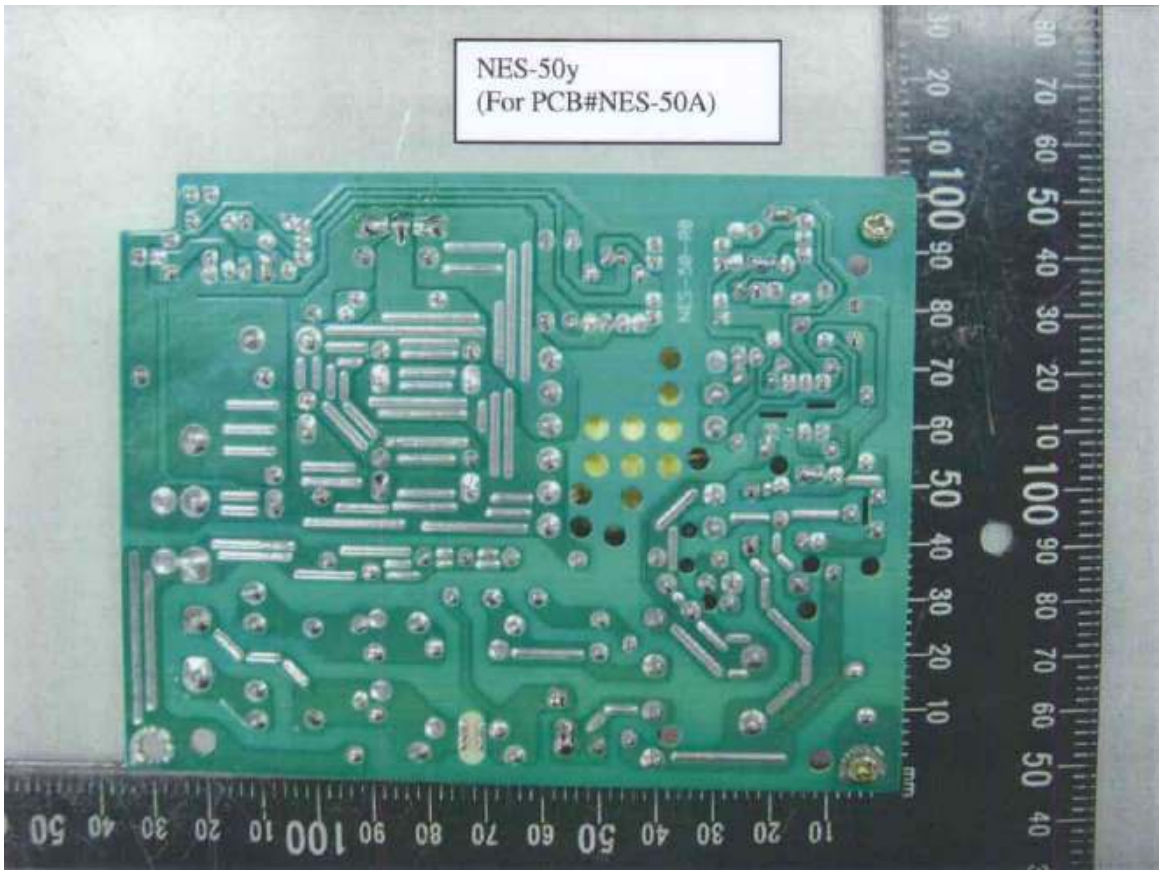
Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



Product: Switching Power Supply

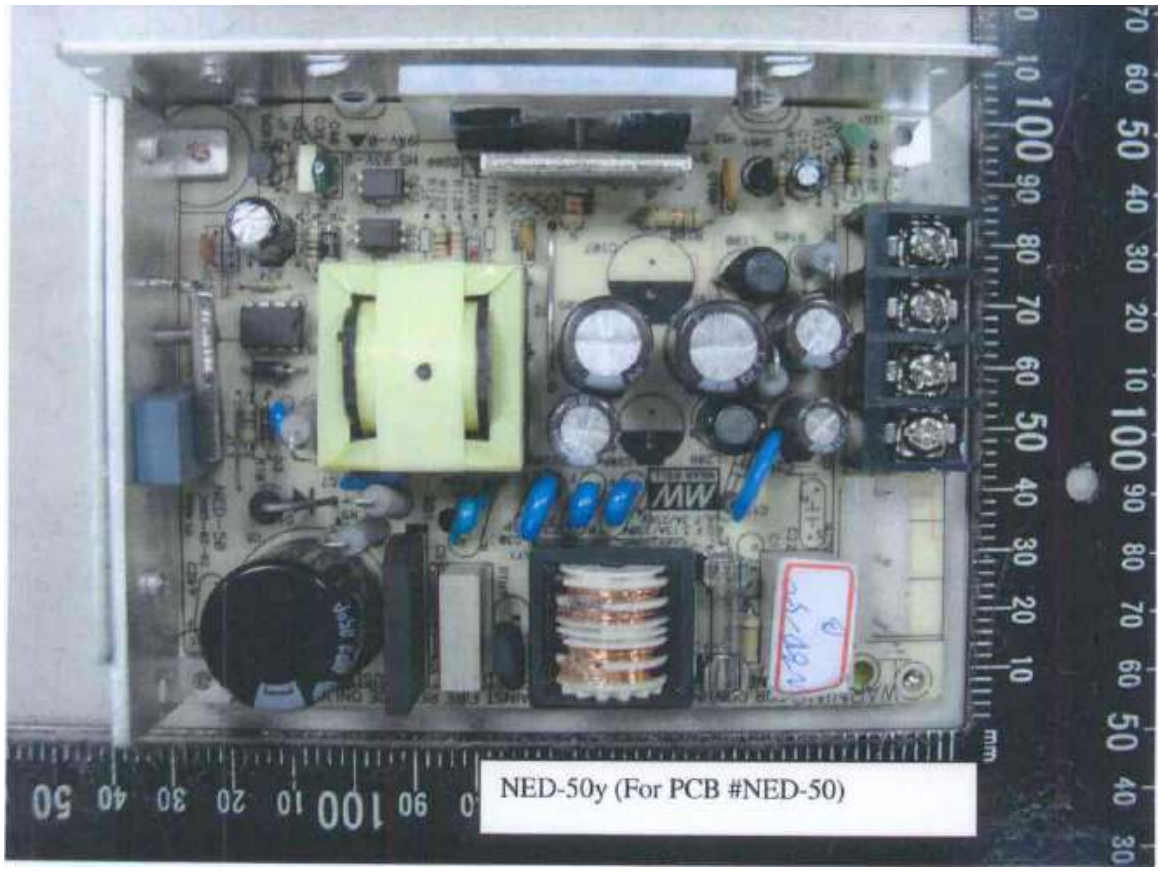
Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)





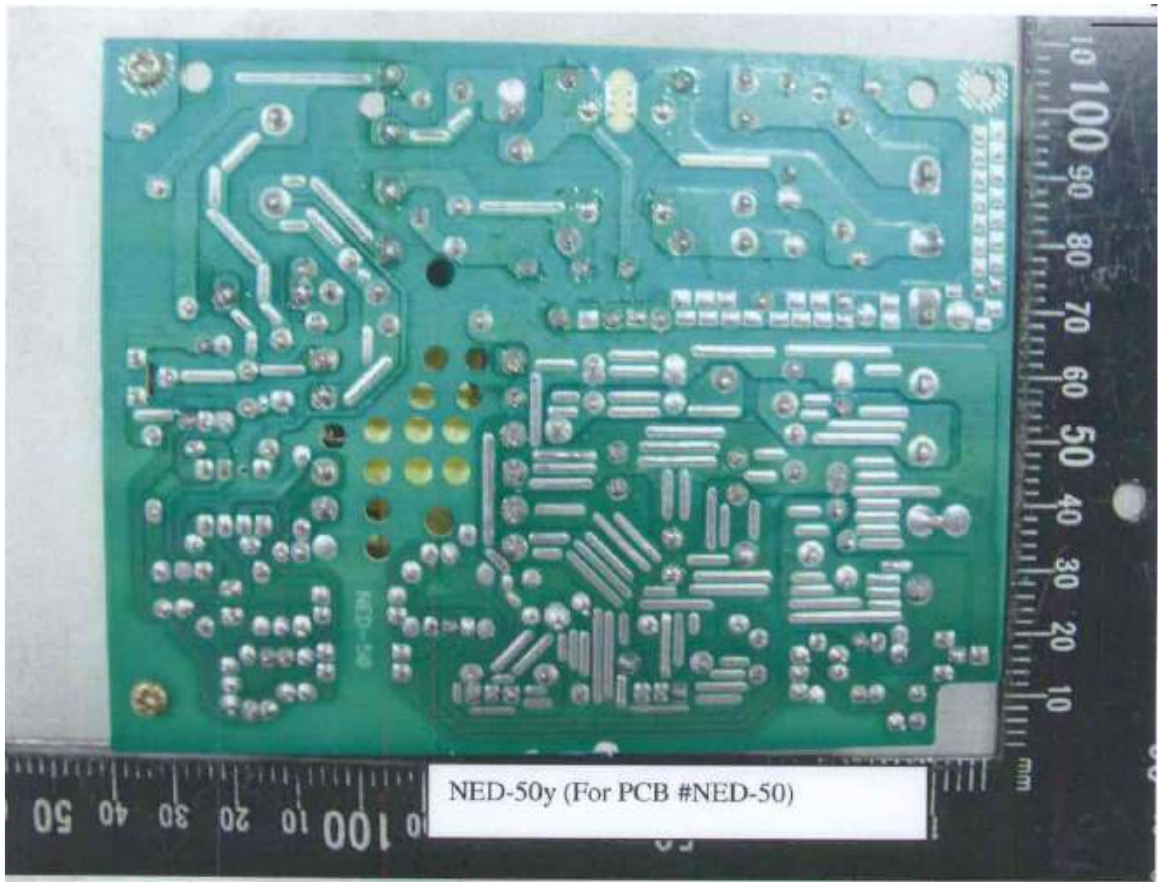
Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



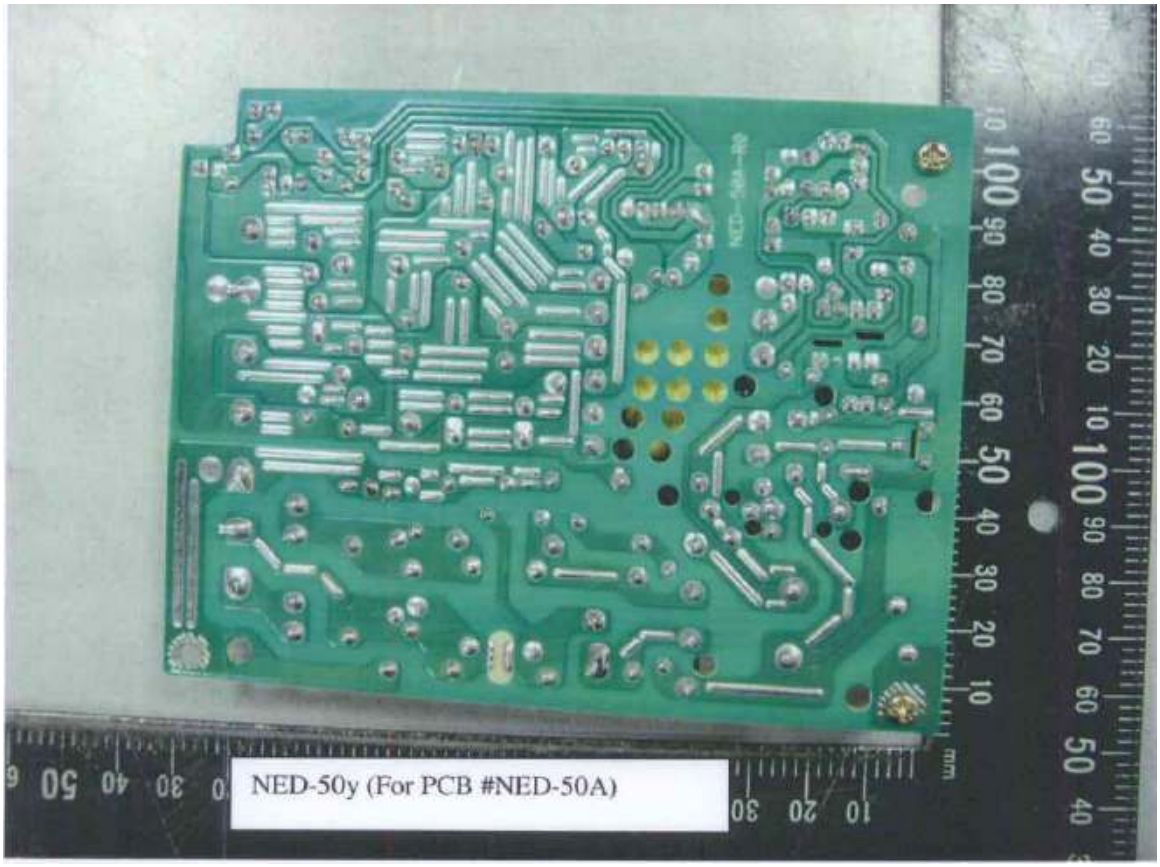
Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



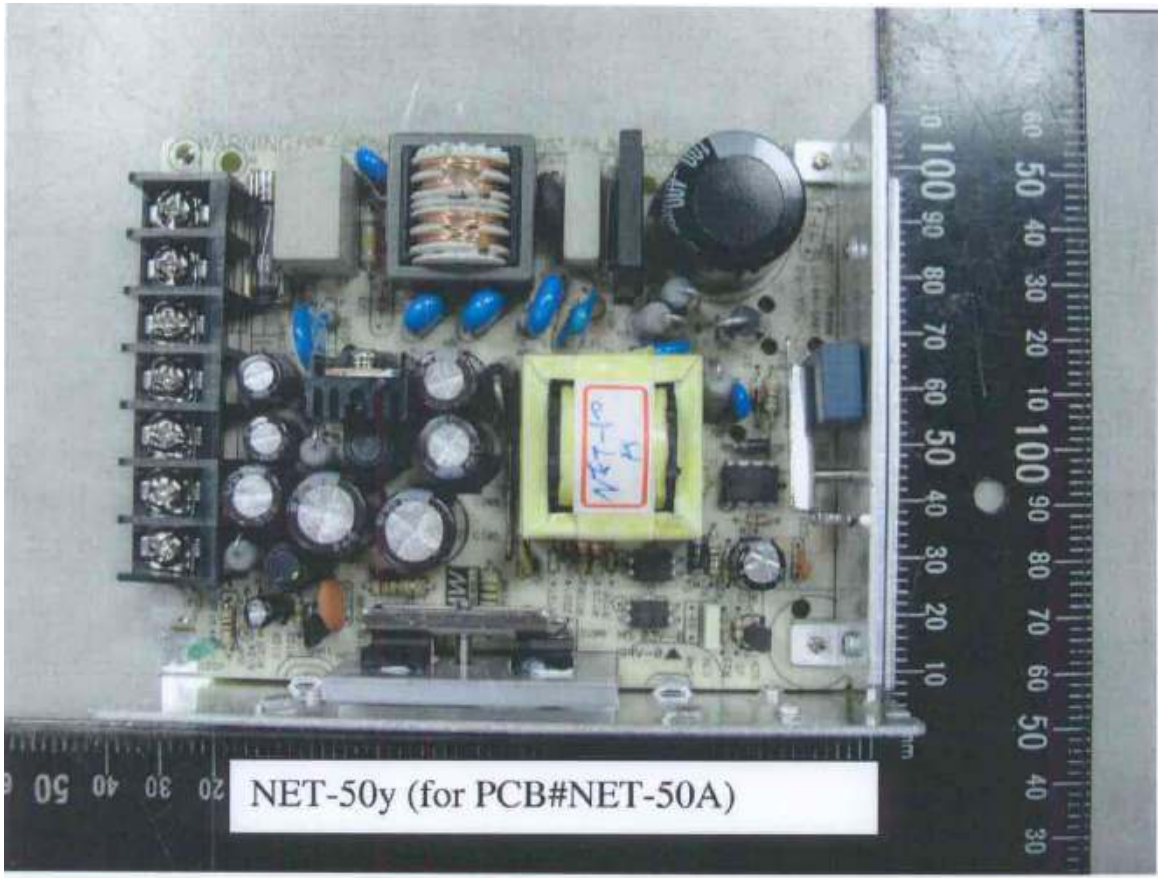
Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



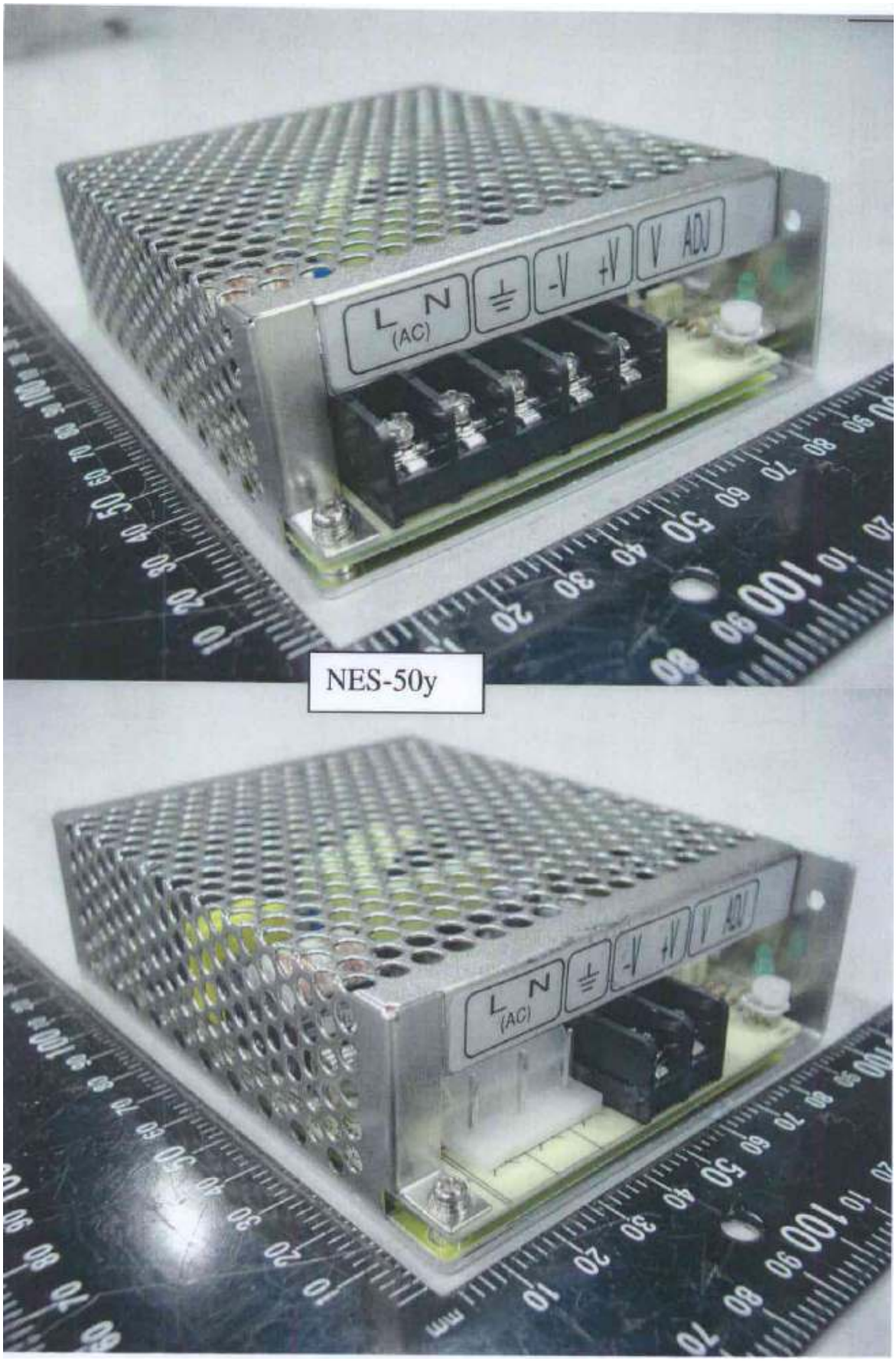
Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



Product: Switching Power Supply

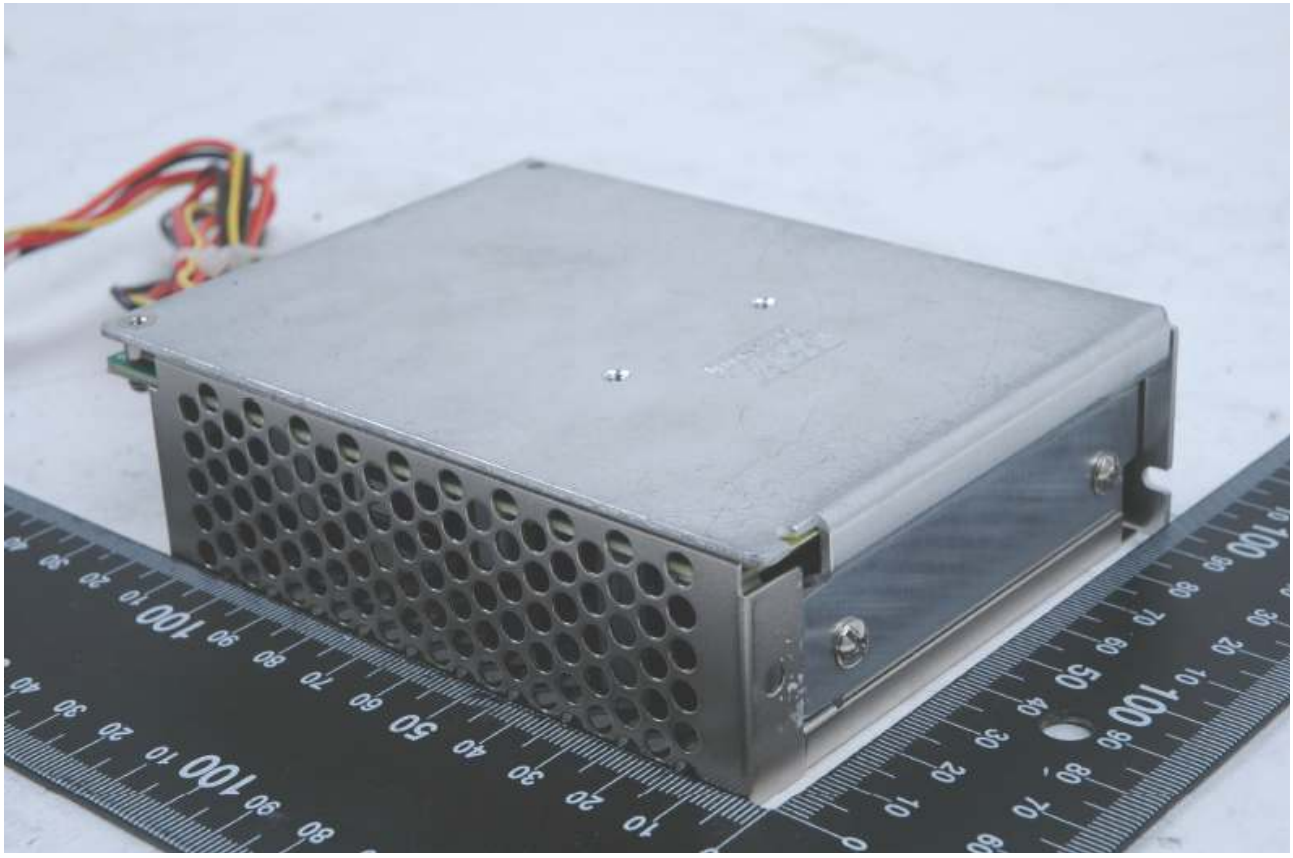
Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)



Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

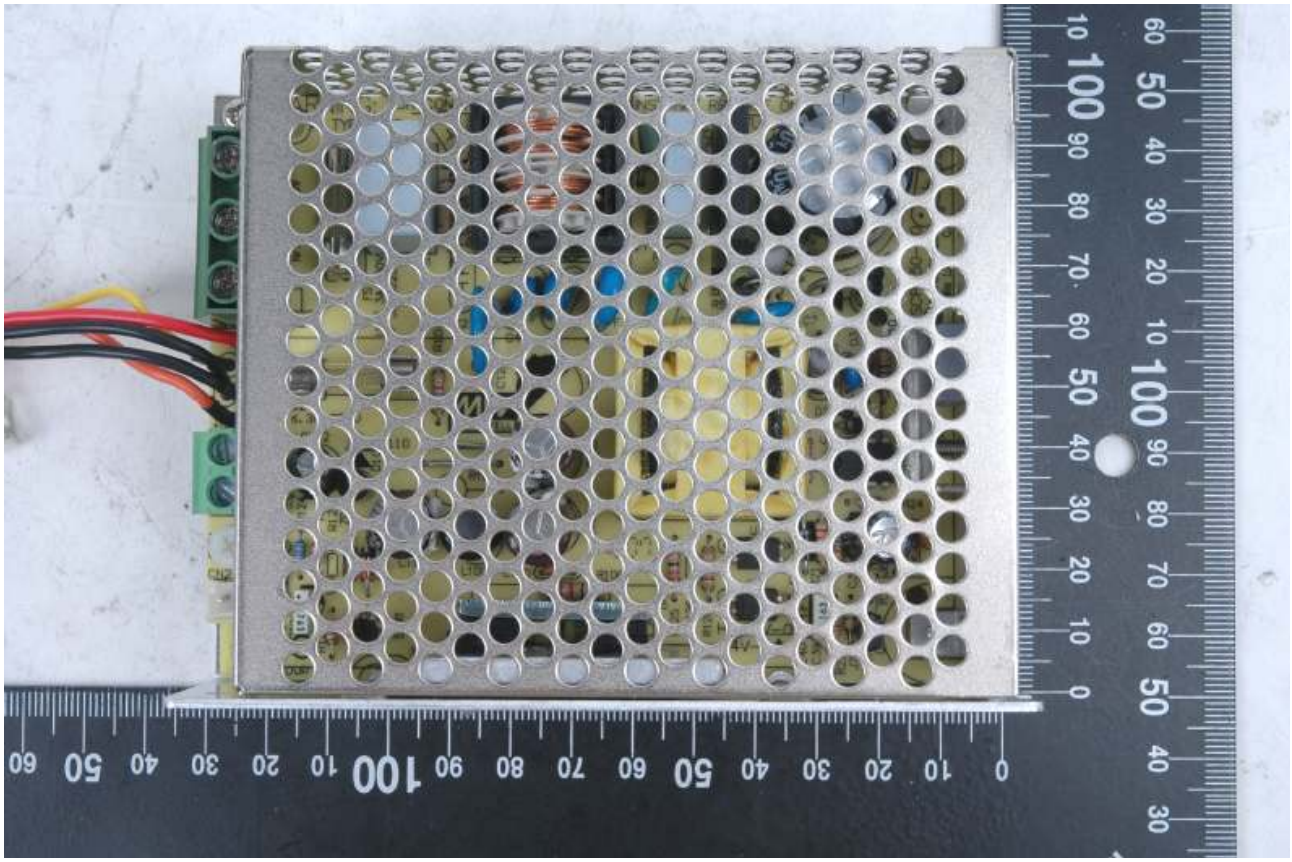
Model SCP-50-z

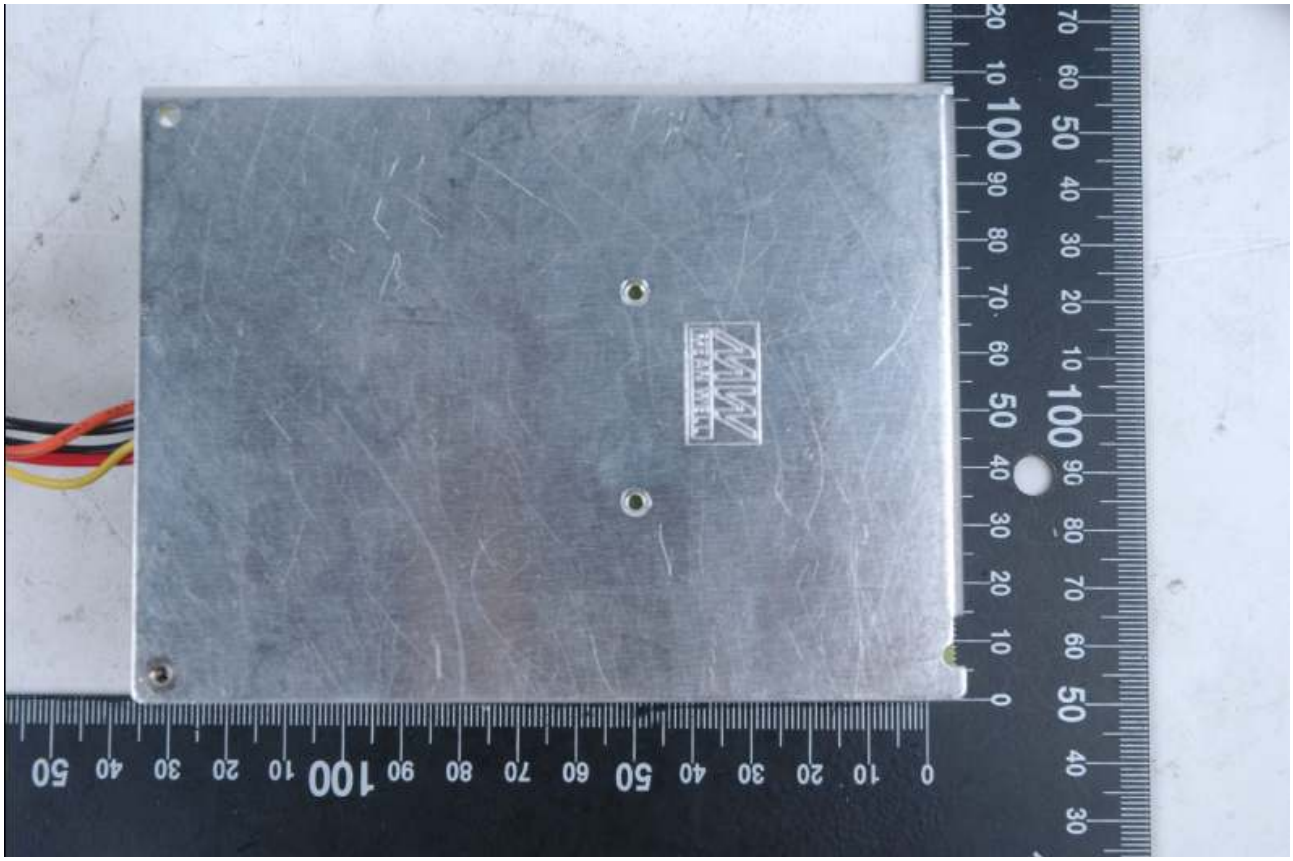


Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

Model SCP-50-z

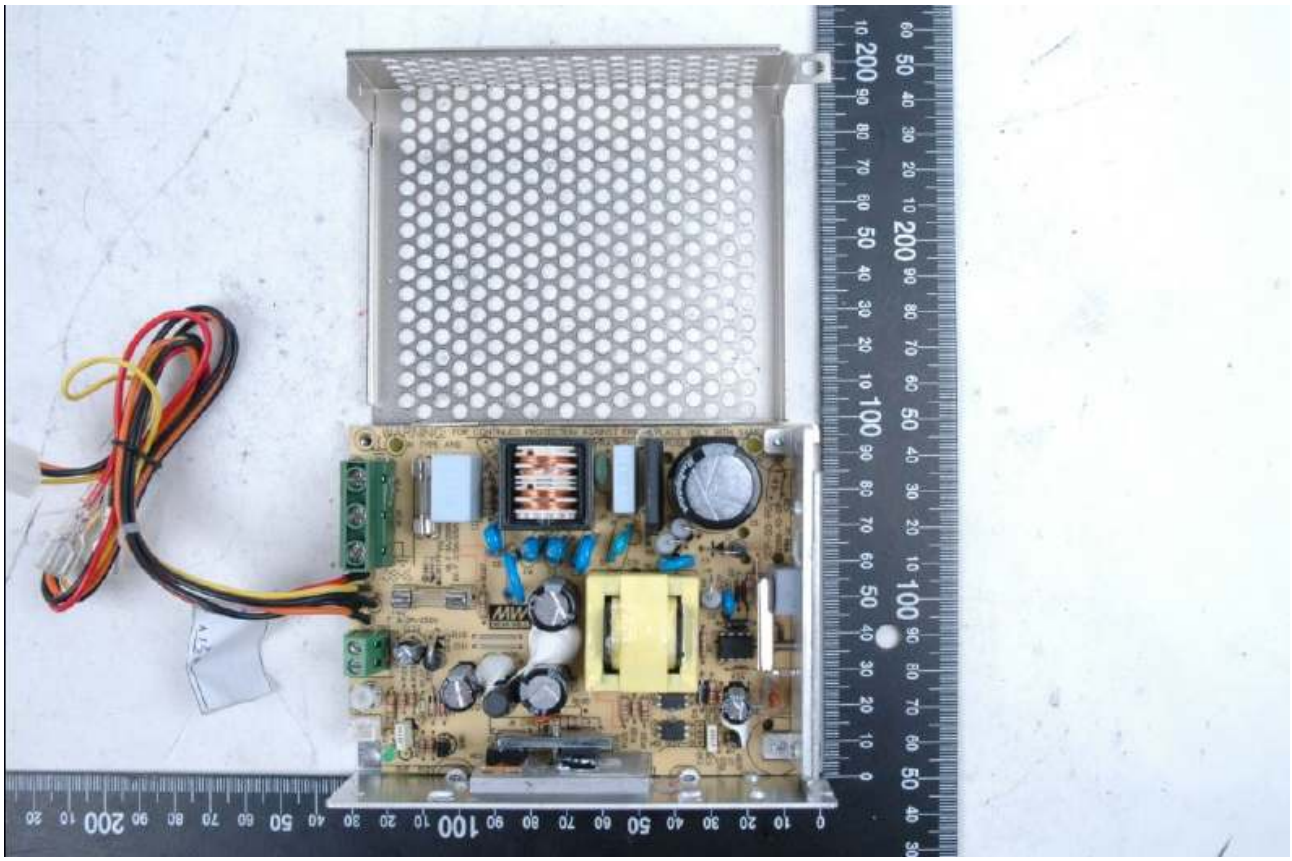




Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

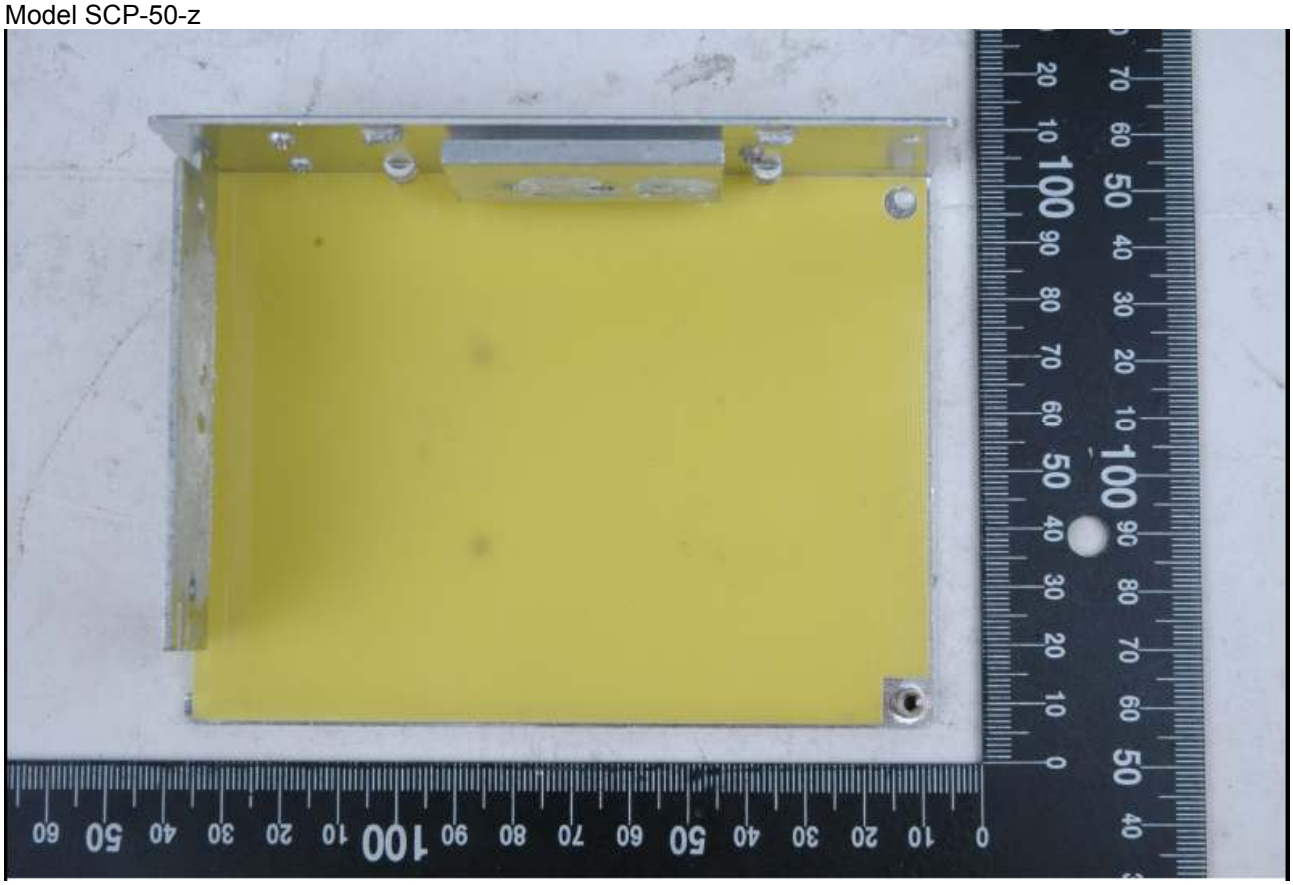
Model SCP-50-z



Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

Model SCP-50-z



Product: Switching Power Supply

Type Designation: NEx-50y (x=S, D, T; y= -5, -12, -15, -24, -48, A, B, C or D), SCP-50-z (z= 12 or 24)

Model SCP-50-z