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TEST REPORT

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

Report Number. ..... :	EMC-CE-S1150	
Tested by (printed name and signature) ..... :	Kwang-Ho, Lee	K.H. Lee .....
Approved by (printed name and signature) ..... :	Jae-Kyu, Lee	J.K. Lee .....
Date of issue..... :	2014-03-26	

Testing Laboratory..... :	EMC Compliance Ltd.
Address ..... :	65, Sinwon-ro, Yeongtong-gu, Suwon-shi, Kyunggi-do, 443-390, Korea.
Applicant's name..... :	SAMSUNG TECHWIN CO., LTD.
Address ..... :	84 Jeongdong-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do 641-716, REPUBLIC OF KOREA
Manufacturer's name……..…..:	Same as applicant
Address ..... :	Same as applicant
Test specification:	
Standard..... :	EN 60950-1:2006+A11:2009+A1:2010+A12:2011.
Test procedure ..... :	CCA Scheme
Non-standard test method……..:	N/A
Test Report Form No..... :	IEC60950_1B
Test Report Form(s) Originator ..... :	SGS Fimko Ltd
Master TRF..... :	Dated 2010-04

Test item description .....:	Network Encoder
Trade Mark .....:	SAMSUNG
Manufacturer .....:	Same as applicant
Model/Type reference.....:	SPE-1600RP, SPE-1600RN
Ratings .....:	100-240 V~, 50/60 Hz, 0.5 A

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

Attachment 1: 16 pages (European Group Differences)

Attachment 2: 5 pages (Photograph)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All clauses	EMC Compliance Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-shi, Kyunggi-do, 443-390, Korea

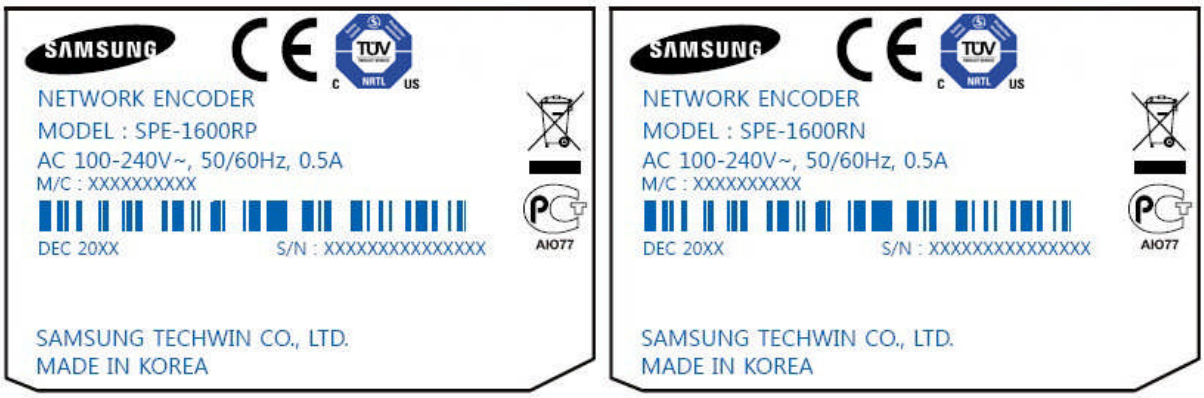
Summary of compliance with National Differences

List of countries addressed: N/A

☒ The product fulfils the requirements of the standard EN 60950-1:2006+A11:2009+A1:2010+A12:2011

Copy of marking plate

(Additional requirements for markings. See 1.7 NOTE)



Test item particulars	
Equipment mobility..... :	[X] movable [] hand-held [] transportable [] stationary [] for building-in [] direct plug-in
Connection to the mains ..... :	[X] pluggable equipment [X] type A [] type B [] permanent connection [X] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition..... :	[X] continuous [] rated operating / resting time:
Access location ..... :	[X] operator accessible [] restricted access location
Over voltage category (OVC) ..... :	[] OVC I [X] OVC II [] OVC III [] OVC IV [] other: No dierect connection to the mains
Mains supply tolerance (%) or absolute mains supply values ..... :	-10 %, +6 %
Tested for IT power systems ..... :	[] Yes [X] No
IT testing, phase-phase voltage (V) ..... :	N/A
Class of equipment ..... :	[X] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installlation (A) ..... :	16 A
Pollution degree (PD) ..... :	[] PD 1 [X] PD 2 [] PD 3
IP protection class ..... :	IPX0
Altitude during operation (m) ..... :	Up to 2 000 m
Altitude of test laboratory (m) ..... :	70 m
Mass of equipment (kg) ..... :	3.7 kg
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A (or N)
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing::	
Date of receipt of test item ..... :	2014-03-25
Date(s) of performance of tests..... :	2011-03-10 to 2011-03-23

General remarks:

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

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

Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:

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

☐ Yes

☒ Not applicable

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

Name and address of factory (ies) ..... : SAMSUNG TECHWIN CO., LTD.
84 Jeongdong-ro, Seongsan-gu,
Changwon-si, Gyeongsangnam-do
641-716, REPUBLIC OF KOREA

General product information:

1. The maximum ambient temperature permitted by the manufacturer (Tma): 40 °C
2. The test samples are pre-production without serial number.

Abbreviations used in the report:

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

Indicate used abbreviations (if any)

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		P
1.5	**Components**		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.	P
1.5.3	Thermal controls	No thermal controls.	N/A
1.5.4	Transformers	(see appended Annex C)	P
1.5.5	Interconnecting cables	The interconnecting cables contain only SELV.	P
1.5.6	Capacitors bridging insulation	(see appended table 1.5.1)	P
1.5.7	Resistors bridging insulation	No resistors bridging insulation.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		P
1.5.9.1	General	(see appended table 1.5.1)	P
1.5.9.2	Protection of VDRs	A fuse is connected in series with the VDR.	P
1.5.9.3	Bridging of functional insulation by a VDR	Approved varistor (VR1) located between mains lines.	P

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.4	Bridging of basic insulation by a VDR	Approved varistor (VR1) and surge absorber (AR1) located between phases and earth.	P
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		P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N/A
1.6.4	Neutral conductor	Neutral is insulated from earth with basic insulation throughout the equipment.	P
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections.....:		N/A
	Rated voltage(s) or voltage range(s) (V) ..... :	100-240 V~	P
	Symbol for nature of supply, for d.c. only..... :		N/A
	Rated frequency or rated frequency range (Hz) ... :	50/60 Hz	P
	Rated current (mA or A) ..... :	0.5 A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark ..... :	SAMSUNG	P
	Model identification or type reference ..... :	SPE-1600RP, SPE-1600RN	P
	Symbol for Class II equipment only ..... :	Class I equipment	N/A
	Other markings and symbols ..... :	(see the copy of marking plate)	P
1.7.2	Safety instructions and marking	Provided User manual	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Appliance inlet	P
1.7.2.3	Overcurrent protective device	Pluggable equipment type A	N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool		N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles	Continuous operation	N/A
1.7.4	Supply voltage adjustment ..... :	No voltage selector	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Methods and means of adjustment; reference to installation instructions ..... :		N/A
1.7.5	Power outlets on the equipment ..... :	No power outlet	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) ..... :	Correct marking applied close t o the fuse on SMPS: F1 250V T5AL F2 250V T5AL	P
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals ..... :	Terminal for connection of protective bonding conductor is marked with standard earth symbol (IEC 60417-5019) near the terminal.	P
1.7.7.2	Terminals for a.c. mains supply conductors	Appliance inlet used.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		P
1.7.8.1	Identification, location and marking ..... :	No indicator or control.	N/A
1.7.8.2	Colours ..... :	For functional indication a LED lights when the equipment is operating.	P
1.7.8.3	Symbols according to IEC 60417..... :	No switches provided.	N/A
1.7.8.4	Markings using figures ..... :	No controls.	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 ..... :	No such devices	N/A
1.7.11	Durability	The marking withstand the required test.	P
1.7.12	Removable parts	No removable parts.	N/A
1.7.13	Replaceable batteries ..... :	The lithium battery is not placed in an operator access area. The required warning is in the installation/operation manual	P
	Language(s) .....:	English	—
1.7.14	Equipment for restricted access locations ..... :	Equipment not intended for installation in restricted access locations.	N/A

2	**PROTECTION FROM HAZARDS**		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas		P
2.1.1.1	Access to energized parts	No part of ELV or hazardous voltages are accessible.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Test by inspection ..... :	No hazard.	P
	Test with test finger (Figure 2A) ..... :	No hazard.	P
	Test with test pin (Figure 2B) ..... :	No hazard.	P
	Test with test probe (Figure 2C) ..... :		N/A
2.1.1.2	Battery compartments	No battery compartments	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring operator access area	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards ..... :	No energy hazard in operator access area.	P
2.1.1.6	Manual controls	No shafts of knobs etc. at ELV or hazardous voltage.	N/A
2.1.1.7	Discharge of capacitors in equipment		P
	Measured voltage (V); time-constant (s)..... :	0 V d.c. at 1 s	—
2.1.1.8	Energy hazards – d.c. mains supply	Not for d.c. mains supply.	N/A
	a) Capacitor connected to the d.c. mains supply .. :		N/A
	b) Internal battery connected to the d.c. mains supply ..... :		N/A
2.1.1.9	Audio amplifiers ..... :	No audio amplifiers.	N/A
2.1.2	Protection in service access areas	Checked by inspection, unintentional contact is unlikely during service operations.	P
2.1.3	Protection in restricted access locations	Equipment not intended for installation in restricted access locations.	N/A
2.2	**SELV circuits**		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V) ..... :	Between any SELV circuits 42.4 V peak or 60 V d.c. are not exceeded.	P
2.2.3	Voltages under fault conditions (V) ..... :	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71 V peak and 120 V d.c. were not exceed and SELV limits not for longer than 0.2 s.	P

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

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Clause	Requirement + Test	Result - Remark	Verdict
	Use of integrated circuit (IC) current limiters		—
2.6	**Provisions for earthing and bonding**		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth.	P
2.6.2	Functional earthing	Functional earthing is separated from hazardous voltages by basic insulation and protective earth.	P
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General		P
2.6.3.2	Size of protective earthing conductors		P
	Rated current (A), cross-sectional area (mm^2), AWG ..... :	0.5 A, Min. 0.75 mm^2, Min. 18 AWG (see appended table 1.5.1)	—
2.6.3.3	Size of protective bonding conductors		P
	Rated current (A), cross-sectional area (mm^2), AWG ..... :	0.5 A, Min. 0.75 mm^2, Min. 18 AWG (see appended table 1.5.1)	—
	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)..... :	From the appliance inlet to the accessible conductive parts: 0.003 Ω, 0.12 V, 40 A, 2 min	P
2.6.3.5	Colour of insulation ..... :	The color combination green-and-yellow is used.	P
2.6.4	Terminals		P
2.6.4.1	General		P
2.6.4.2	Protective earthing and bonding terminals		P
	Rated current (A), type, nominal thread diameter (mm)..... :	0.5 A, Screw type, 3.9 mm diameter	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used.	P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	There are no switches or overcurrent protective devices in the protective earthing / bonding conductors.	P
2.6.5.3	Disconnection of protective earth	Appliance inlet used.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.4	Parts that can be removed by an operator	No operator removable parts with protective earth connection except supply cord.	P
2.6.5.5	Parts removed during servicing	Protective earthed parts can not be removed in a way which impair safety.	P
2.6.5.6	Corrosion resistance	No risk of corrosion.	P
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		P
2.7.1	Basic requirements	Protective device is integrated in the equipment.	P
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7		P
2.7.3	Short-circuit backup protection	Adequate protective device.	P
2.7.4	Number and location of protective devices ..... :	Two fuses provided, line and neutral.	P
2.7.5	Protection by several devices	Two fuses provided,	P
2.7.6	Warning to service personnel ..... :	No unexpected hazard.	N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles	No safety interlocks	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) ..... :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.9	**Electrical insulation**		P
2.9.1	Properties of insulating materials	Insulation is considered to be functional, basic, supplementary, reinforced or double insulation.	P
2.9.2	Humidity conditioning	48 h	P
	Relative humidity (%), temperature (°C) ..... :	93 %, 25 °C	—
2.9.3	Grade of insulation	Insulation is considered to be functional, basic, supplementary, reinforced or double insulation.	P
2.9.4	Separation from hazardous voltages		P
	Method(s) used ..... :	Method 1	—
2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General		P
2.10.1.1	Frequency ..... :	EUT Frequency under 30 kHz.	P
2.10.1.2	Pollution degrees ..... :	Pollution degree 2.	P
2.10.1.3	Reduced values for functional insualtion	Function insulation verified by short-circuit tests according 5.3.4 c)	P
2.10.1.4	Intervening unconnected conductive parts		P
2.10.1.5	Insulation with varying dimensions	No such transformer used.	N/A
2.10.1.6	Special separation requirements	Special separation is not used.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No insulation in circuit generating starting pulses.	N/A
2.10.2	Determination of working voltage		P
2.10.2.1	General		P
2.10.2.2	RMS working voltage	(see appended table 2.10.3 and 2.10.4)	P
2.10.2.3	Peak working voltage	(see appended table 2.10.3 and 2.10.4)	P
2.10.3	Clearances		P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply ..... :	Overvoltage category II for primary circuit and transient voltage 2500 V peak.	P
	b) Earthed d.c. mains supplies ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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	Function insulation verified by short-circuit tests according 5.3.4 c)	P
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 ..... :	Overvoltage Category II ; Mains transient voltage is 1500 V peak.	P
2.10.3.7	Transients from d.c. mains supply ..... :		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :	Not connected to telecommunication networks and cable distribution systems.	N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains suplply	Measurement not relevant.	N/A
	For an a.c. mains supply ..... :		N/A
	For a d.c. mains supply ..... :		N/A
	b) Transients from a telecommunication network :	Not connected to telecommunication networks.	N/A
2.10.4	Creepage distances		P
2.10.4.1	General		P
2.10.4.2	Material group and caomparative tracking index		P
	CTI tests..... :	Material group IIIb is assumed to be used.	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation	No such construction used.	N/A
2.10.5.4	Semiconductor devices	Certified optocoupler (see appended table 1.5.1)	P
2.10.5.5.	Cemented joints	Not used.	N/A
2.10.5.6	Thin sheet material – General		P
2.10.5.7	Separable thin sheet material	Insulation tape for transformer (T1)	P
	Number of layers (pcs)..... :	3 layers.	—
2.10.5.8	Non-separable thin sheet material		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test	3000 V a.c. of 2 layers.	—
2.10.5.11	Insulation in wound components	No insulation in wound components provided.	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, supplemetary, 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	No 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	No additional insulation used.	N/A
	Working voltage ..... :		N/A
	- Basic insulation not under stress ..... :		N/A
	- Supplemetary, reinforced insulation ..... :		N/A
2.10.6	Construction of printed boards		P
2.10.6.1	Uncoated printed boards	Considered. (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	Coatings not used over terminations to increase effective creepage and clearance distances.	N/A
2.10.8	Tests on coated printed boards and coated components	No special coating in order to reduce distance.	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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	No special insulation in order to reduce distance.	N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound	Certified optocoupler (see appended table 1.5.1)	P
2.10.11	Tests for semiconductor devices and cemented joints	No such device used.	N/A
2.10.12	Enclosed and sealed parts	Certified optocoupler (see appended table 1.5.1)	P
3	**WIRING, CONNECTIONS AND SUPPLY**		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring.	P
3.1.2	Protection against mechanical damage	Wireways are smooth and free from edges.	P
3.1.3	Securing of internal wiring	Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation.	P
3.1.4	Insulation of conductors	(see appended table 5.2) Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating materials.	N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors	Terminations can not become displaced so that clearances and creepage distances can be reduced.	P
	10 N pull test	Force of 10 N applied to the termination points of the conductors.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.10	Sleeving on wiring	Sleeves can only be removed by breaking or cutting.	P
3.2	**Connection to a mains supply**		P
3.2.1	Means of connection	Appliance inlet.	P
3.2.1.1	Connection to an a.c. mains supply		P
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter of cable and conduits (mm) ..... :		—
3.2.4	Appliance inlets	(see appended table 1.5.1)	P
3.2.5	Power supply cords		P
3.2.5.1	AC power supply cords		P
	Type ..... :	(see appended table 1.5.1)	—
	Rated current (A), cross-sectional area (mm^2), AWG ..... :	0.5 A, Min. 0.75 mm^2, Min. 18 AWG (see appended table 1.5.1)	—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief	Equipment provided with an appliance inlet.	N/A
	Mass of equipment (kg), pull (N) ..... :		—
	Longitudinal displacement (mm) ..... :		—
3.2.7	Protection against mechanical damage		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**		N/A
3.3.1	Wiring terminals	No wiring terminals for connection of external conductors.	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) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type, nominal thread diameter (mm) ..... :		—
3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A
3.4	**Disconnection from the mains supply**		P
3.4.1	General requirement		P
3.4.2	Disconnect devices	Appliance inlet.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	No parts 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	The disconnect device disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single phase equipment.	N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment	No interconnections using hazardous voltages.	N/A
3.4.11	Multiple power sources	Only one supply source.	N/A
3.5	**Interconnection of equipment**		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits ..... :	SELV circuit – SELV circuit.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N/A
3.5.4	Data ports for additional equipment	Alam out, Alam In, RS-485 port: see clause 2.5	P
4	**PHYSICAL REQUIREMENTS**		P
4.1	Stability		P
	Angle of 10°	Unit does not overbalance at 10°.	P
	Test force (N) ..... :		N/A
4.2	**Mechanical strength**		P

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Clause	Requirement + Test	Result - Remark	Verdict
4.2.1	General		P
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N	No hazard.	P
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N	No hazard.	P
4.2.5	Impact test		P
	Fall test	No hazard.	P
	Swing test	Alternate fall test	P
4.2.6	Drop test; height (mm) ..... :		N/A
4.2.7	Stress relief test	Metal enclosure	N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified ..... :		N/A
4.2.9	High pressure lamps	No high pressure lamps in the equipement.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ..... :		N/A
4.3	**Design and construction**		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded and smooth.	P
4.3.2	Handles and manual controls; force (N) .....:		N/A
4.3.3	Adjustable controls	No adjustable controls.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur.	P
4.3.5	Connection by plugs and sockets		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	(see appended table 4.3.8)	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N/A
4.3.12	Flammable liquids ..... :	The equipment does not contain flammable liquid.	N/A
	Quantity of liquid (l) ..... :		N/A
	Flash point (°C) ..... :		N/A
4.3.13	Radiation		N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) ..... :		—
	Measured high-voltage (kV) ..... :		—
	Measured focus voltage (kV) ..... :		—
	CRT markings ..... :		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification ..... :		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation ..... :		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	The LED used for functional indicator.	N/A
4.3.13.5.1	Lasers (including laser laser diodes)		N/A
	Laser class ..... :		—
4.3.13.5.2	Light emitting diodes (LEDs)		—
4.3.13.6	Other types ..... :		N/A

4.4	**Protection against hazardous moving parts**		N/A
4.4.1	General	No hazardous moving parts	N/A
4.4.2	Protection in operator access areas ..... :		N/A
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations ..... :		N/A
4.4.4	Protection in service access areas		N/A
4.4.5	Protection against moving fan blades		N/A
4.4.5.1	General		N/A
	Not considered to cause pain or injury. a)……:		N/A
	Is considered to cause pain, not injury. b) ……:		N/A
	Considered to cause injury. c) ……:		N/A
4.4.5.2	Protection for users		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Use of symbol or warning .....:		N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning .....:		N/A

4.5	**Thermal requirements**		P
4.5.1	General		P
4.5.2	Temperature tests	(see appended table 4.5)	P
	Normal load condition per Annex L ..... :	L.7	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat ..... :	(see appended table 5.3)	P

4.6	**Openings in enclosures**		P
4.6.1	Top and side openings		P
	Dimensions (mm) ..... :	No hazardous parts within 5° angle.	—
4.6.2	Bottoms of fire enclosures		P
	Construction of the bottomm, dimensions (mm) .. :	No openings	—
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		P
	Method 1, selection and application of components wiring and materials	(see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	(see appended table 5.3)	P
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts.	P
4.7.2.2	Parts not requiring a fire enclosure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures	Components and materials have adequate flammability classification. (see appended table 1.5.1)	P
4.7.3.3	Materials for components and other parts outside fire enclosures		P
4.7.3.4	Materials for components and other parts inside fire enclosures		P
4.7.3.5	Materials for air filter assemblies	No air filters in the equipment.	N/A
4.7.3.6	Materials used in high-voltage components	No high-voltage components.	N/A
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		P
5.1	**Touch current and protective conductor current**		P
5.1.1	General		P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply		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		P
5.1.4	Application of measuring instrument	Measuring instrument D.1 is used.	P
5.1.5	Test procedure		P
5.1.6	Test measurements		P
	Supply voltage (V) ..... :	254.4 V a.c., 60 Hz	—
	Measured touch current (mA) ..... :	Accessible parts and circuits not connected to protective earth: 0.0 mA (Alam In/Out port) Equipment main protective earthing terminal: 0.13 mA	—
	Max. allowed touch current (mA) ..... :	Accessible parts and circuits not connected to protective earth: 0.25 mA Equipment main protective earthing terminal: 3.5 mA	—
	Measured protective conductor current (mA) ..... :		—
	Max. allowed protective conductor current (mA)... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.7	Equipment with touch current exceeding 3,5 mA	The touch current does not exceed 3.5 mA.	N/A
5.1.7.1	General ..... :		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	Not connected to a telecommunication network.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports ..... :		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A
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	Approved DC fan used.	N/A
5.3.3	Transformers	(see appended Annex C)	P
5.3.4	Functional insulation ..... :	Complied with c)	P
5.3.5	Electromechanical components	No 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	No thermostats, temperature limiters or thermal cut-outs.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions		P
5.3.9.1	During the tests	No fire, emission of molten metal or deformation was noted during the tests.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.2	After the tests	No reduction of clearance and creepage distances. Electric strength test is made on reinforced insulation.	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	No TNV circuits	N/A
	Supply voltage (V) ..... :		—
	Current in the test circuit (mA) ..... :		—
6.1.2.2	Exclusions ..... :		N/A
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		N/A
6.2.1	Separation requirements	No TNV circuits	N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		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) ..... :	No TNV circuits	—
	Current limiting method ..... :		—
7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		N/A
7.1	General	No connections to cable distribution systems	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

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Clause	Requirement + Test	Result - Remark	Verdict
7.4.3	Impulse test		N/A
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 ..... :	Primary to Secondary (see appended table 1.5.1)	—
	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 ..... :	Regulating network	—
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation	(see appended table 5.2)	P
	Protection from displacement of windings ..... :	Barrier tape and bobbin	P
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		P
D.1	Measuring instrument		P
D.2	Alternative measuring instrument		N/A
E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**		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
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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)**		N/A
	Metal(s) used ..... :		—
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		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
M.3.1.1	Frequency (Hz) ..... :		—
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
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)**		P
	a) Preferred climatic categories ..... :	(see appended table 1.5.1)	P
	b) Maximum continuous voltage ..... :	(see appended table 1.5.1)	P
	c) Pulse current ..... :	(see appended table 1.5.1)	P
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
			—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		N/A
			—

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Clause	Requirement + Test	Result - Remark	Verdict
V	**ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)**		N/A
V.1	Introduction		N/A
V.2	TN power distribution systems		N/A
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)**		N/A
AA	**ANNEX AA, MANDREL TEST (see 2.10.5.8)**		N/A
BB	**ANNEX BB, CHANGES IN THE SECOND EDITION**		—
CC	**ANNEX CC, Evaluation of integrated circuit (IC) current limiters**		N/A
CC.1	General		N/A
CC.2	Test program 1.....:		N/A
CC.3	Test program 2.....:		N/A
DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
DD.1	General		N/A
DD.2	Mechanical strength test, variable N……..:		N/A
DD.3	Mechanical strength test, 250N, including end stops……:		N/A
DD.4	Compliance……..:		N/A
EE	**ANNEX EE, Household and home/office document/media shredders**		N/A
EE.1	General		N/A
EE.2	Markings and instructions		N/A
	Use of markings or symbols……..:		N/A
	Information of user instructions, maintenance and/or servicing instructions……..:		N/A
EE.3	Inadvertent reactivation test……..:		N/A
EE.4	Disconnection of power to hazardous moving parts:		N/A
	Use of markings or symbols……..:		N/A
EE.5	Protection against hazardous moving parts		N/A
	Test with test finger (Figure 2A) ……..:		N/A
	Test with wedge probe (Figure EE1 and EE2) ……:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
Power cord set	Changzhou Hong Chang	DTIII-2P-05 H05VV-F DTII-3P-04	16 A, 250 V~ 3 x 0.75 mm^2 10 A, 250 V~	IEC 60884-1 - EN 60320-1	FIMKO
Alt.	Weihai Honglin	HL-014 H05VV-F HL-026	16 A, 250 V~ 3 x 0.75 mm^2 10 A, 250 V~	EN 60779	FIMKO
Alt.	I-Sheng	SP-022 H05VV-F IS-14	16 A, 250 V~ 3 x 0.75 mm^2 10 A, 250 V~	IEC 60884-1 - EN 60320-1	FIMKO
Alt.	Longwell	LP-34A H05VV-F LS-60	16 A, 250 V~ 3 x 0.75 mm^2 10 A, 250 V~	EN 60779	FIMKO
Alt.	Volex	M2511 H05VV-F V1625	16 A, 250 V~ 3 x 0.75 mm^2 10 A, 250 V~	IEC 60884-1 - EN 60320-1	FIMKO
AC Inlet	Rong Feng Industrial Co., Ltd.	SS-7B	250 V, 10 A	EN 60320-1	SEMKO
Alt.	Supercom Enectronics Co., Ltd.	SC-9-1	250 V, 10 A	EN 60320-1	SEMKO
AC Lead wire	Various	1015	105°C, 600 V, 18 AWG	UL 758 CSA-C22.2 No. 127	UL cUL
AC Input connector(CN1)	Yeon Ho Electronics Co., Ltd.	YH396-03V, YW396-03V	250 V, 7.5 A	UL 1977 CSA-C22.2 No. 182.3	UL CSA
Fuse (F1, F2)	Orisel Co., Ltd.	OS5	250 V, T5 A	EN 60127-3	VDE
Alt.	Cooper Bussmann Inc. (Save Fusetech Inc.)	SS-5	250 V, T5 A	EN 60127-3	SEMKO
X-Capacitor (C1, C2)	Pilkor Electronics Co., Ltd.	PCX2 337	275 V, 0.47 µF, X2	IEC 60384-14	SEMKO, FIMKO

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Clause	Requirement + Test	Result - Remark	Verdict

Alt.	Sun il Electronics Industry Co., Ltd.	436D	275 V, 0.47 µF, X2	IEC 60384-14	VDE
X-Capacitor (C3)	Pilkor Electronics Co., Ltd.	PCX2 337	275 V, 0.1 µF, X2	IEC 60384-14	SEMKO, FIMKO
Alt.	Sun il Electronics Industry Co., Ltd.	436D	275 V, 0.1 µF, X2	IEC 60384-14	VDE
Y-Capacitor (CY2, CY3)	Dongil Electronics Co., Ltd.	DA	250 V, 100 pF, Y1	IEC 60384-14	FIMKO
Alt.	Wendeng Netrontech Electric Co., Ltd.	AD	250 V, 100 pF, Y1	IEC 60384-14	VDE
Alt.	Guangdong South Hongming Electronic Science & Technology Co., Ltd.	F	250 V, 100 pF, Y1	IEC 60384-14	FIMKO
Bridge Capacitor (CY1)	Dongil Electronics Co., Ltd.	DA	250 V, 1000 pF, Y1	IEC 60384-14	FIMKO
Alt.	Wendeng Netrontech Electric Co., Ltd.	AD	250 V, 1000 pF, Y1	IEC 60384-14	VDE
Alt.	Guangdong South Hongming Electronic Science & Technology Co., Ltd.	F	250 V, 1000 pF, Y1	IEC 60384-14	FIMKO
Varistor (VR1)	Amotech Co., Ltd.	INR14D561K	Climatic category: 40/085/56 Maximum continuous voltage: 350 V a.c. Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60950-1 Annex Q	VDE VDE

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

Alt.	Thinking Electronic Industrial Co., Ltd.	TVR14D561K	Climatic category: 40/085/56 Maximum continuous voltage: 350 V a.c. Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60950-1 Annex Q	VDE VDE
Varistor (VR2, VR3)	Amotech Co., Ltd.	INR14D621K	Climatic category: 40/085/56 Maximum continuous voltage: 385 V a.c. Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60950-1 Annex Q	VDE VDE
Alt.	Thinking Electronic Industrial Co., Ltd.	TVR14D621K	Climatic category: 40/085/56 Maximum continuous voltage: 385 V a.c. Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60950-1 Annex Q	VDE VDE
Surge absorber (AR1)	Mitsubishi Materials Corp.	DB60-452M	250 V a.c., Basic insulation	EN 60950-1	TUV-RH
Thermister (TH1)	DSC Electronics Co., Ltd.	DSC-5D-11	240 V, 3 A, 5 ohm at 25°C	UL 1434 CSA-C22.2 No. 72	UL cUL
Opto coupler (PC1)	Cosmo Electronics Corp.	K1010	5000 V Creepage internal: 5.3 mm/external: 8.0 mm Distance through insulation: 0.5 mm	EN 60950-1	FIMKO
Alt.	Lite-on Technology Corp.	LVT817	5000 V Creepage internal: 5.2 mm/external: 7.8 mm Distance through insulation: 0.8 mm	IEC/EN 60950-1	FIMKO

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Clause	Requirement + Test	Result - Remark	Verdict

Alt.	Renesas Electronics Corporation	PS2561L-1	5000 V Creepage internal: Min. 4.0 mm/external: Min. 7.0 mm Distance through insulation: 0.4 mm	EN 60950-1	FIMKO
Battery protection IC (U45, U46, U47, U48)	Maxim Integrated Products	DS3232SN	VBAT: 3.0 V	UL 60950-1 CSA Standard C 22.2 No. 60950-1	UL cUL
Line Filter (LF1)	TNC Co., Ltd.	620180S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	WOOSUNG L&C	620180S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Line Filter (LF2)	TNC Co., Ltd.	613400S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	WOOSUNG L&C	613400S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
PFC Trans (LP1)	SUN TECH CO.,LTD / ST	MQGAH013050	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONG IN SYSTEM CO.,LTD. / DI	MQGAH013050	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONGHEUNGELECTRONICS CO., LTD	EER2834H	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Transformer (T1)	SUN TECH CO.,LTD / ST	MQGAH034020	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONG IN SYSTEM CO.,LTD. / DI	MQGAH034020	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONGHEUNGELECTRONICS CO., LTD / DH	MQGAH034020	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Bridge Diode (BD1)	Various	Various	600 V, 4 A	IEC/EN 60950-1	Tested in equipment
Switching IC (ICB1)	Various	Various	650 V, 67 kHz	IEC/EN 60950-1	Tested in equipment
FET (Q1)	Various	Various	600 V, 11 A	IEC/EN 60950-1	Tested in equipment
Elect cap. (CP9)	Various	Various	450 V, 150 uF, 105 °C	IEC/EN 60950-1	Tested in equipment

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Clause	Requirement + Test	Result - Remark	Verdict

Insulation sheet for SMPS(LP1) to Chassis	Various	Various	V-0, Min. 0.51 mm thickness	UL 94	UL
PCB	Various	Various	V-0, Min. 105 °C, 1.6 mm thickness	UL 796	UL
Enclosure	Various	Various	Metal, 1.2 mm thickness	IEC/EN 60950-1	Tested in equipment
supplementary information:					
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

1.5.1	TABLE: Opto Electronic Devices	P
Manufacturer..... :	(see appended table 1.5.1)	
Type..... :	(see appended table 1.5.1)	
Separately tested..... :	(see appended table 1.5.1)	
Bridging insulation..... :	Reinforced insulation	
External creepage distance ..... :	(see appended table 1.5.1)	
Internal creepage distance ..... :	(see appended table 1.5.1)	
Distance through insulation ..... :	(see appended table 1.5.1)	
Tested under the following conditions ..... :	Reinforced insulation	
Input..... :		
Output..... :		
supplementary information:		

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Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90	0.49	-	43.30	F1	0.49	Max. Normal load(50 Hz)
100	0.43	0.5	43.40	F1	0.43	Max. Normal load(50 Hz)
240	0.21	0.5	42.91	F1	0.21	Max. Normal load(50 Hz)
254.4	0.21	-	42.96	F1	0.21	Max. Normal load(50 Hz)
90	0.49	-	43.70	F1	0.49	Max. Normal load(60 Hz)
100	0.44	0.5	43.30	F1	0.44	Max. Normal load(60 Hz)
240	0.23	0.5	42.90	F1	0.23	Max. Normal load(60 Hz)
254.4	0.22	-	43.00	F1	0.22	Max. Normal load(60 Hz)
supplementary information						

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

Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)
supplementary information:				

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

Capacitance C (µF)	Voltage U (V)	Energy E (J)
supplementary information:		

2.2	TABLE: evaluation of voltage limiting components in SELV circuits	P

Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	
T1 Pin 9, 10, 11 to GND	86	-	DB6

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Clause	Requirement + Test	Result - Remark	Verdict

Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)
DB6 Sc	0 V (After 1 s)
supplementary information:	
Sc=Short circuit, Oc=Open circuit	

2.5	TABLE: limited power sources	P

Circuit output tested:

Measured Uoc (V) with all load circuits disconnected:

Circuit output tested			Condition (Normal / Single Fault)	Uoc (V)	I_{sc} (A)		VA	
					Meas.	Limit	Meas.	Limit
CN2	12 V	GND	Normal	12.04	6.8	8.0	71.0	100
Alam out	1, 2, 3, 4	GND	Normal	1.04	0.00027	8.0	0	100
Alam in	1, 2, 3, 4	GND	Normal	2.048	0.00027	8.0	0	100

supplementary information:

2.10.2	Table: working voltage measurement	P

Location			Peak voltage (V)	RMS voltage (V)	Comments
Part	Pin	Pin			
Transformer (T1)	1	9,10,11	204	115	
		12,13,14	244	120	
	3	9,10,11	**548**	**180**	
		12,13,14	458	157	
	4	9,10,11	308	118	
		12,13,14	220	111	
	5	9,10,11	316	119	
		12,13,14	220	112	
	6	9,10,11	204	114	
		12,13,14	236	118	
Optocoupler (PC1)	1	3	72	41.06	
		4	75.2	42.88	

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Clause	Requirement + Test	Result - Remark	Verdict

	2	3	77	43.88	
		4	75.2	43.22	
Bridge-capacitor (CY1)	Pri.	Sec.	117	63.39	
supplementary information:					
Supply voltage: 240 V a.c., 60 Hz The highest measured working voltages are indicated with **bold** characters.					

2.10.3 and 2.10.4	**TABLE: Clearance and creepage distance measurements**					P
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Functional:						
PCB (Line – Neutral; before fuse)	340	240	2.0	4.0	2.5	4.0
Basic/supplementary:						
PCB (Primary-Protective earth)	340	240	2.0	4.0	2.5	4.0
Reinforced:						
Transformer T1 (Primary-Secondary) Reinforced insulation	548	180	4.4	6.0	5.0	6.0
PCB under PC1 (Primary-Secondary) Reinforced insulation	77	44	4.0	7.3	5.0	7.3
PCB under CY1 (Primary-Secondary) Reinforced insulation	117	63	4.0	7.7	5.0	7.7
supplementary information:						

2.10.5	**TABLE: Distance through insulation measurements**				P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Transformer Bobbin Reinforced insulation	548	180	3000 V a.c.	0.4	1.0
Optocoupler (PC1) Reinforced insulation	77	44	3000 V a.c.	0.4	>0.4

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Clause	Requirement + Test	Result - Remark	Verdict

Insulation tape for transformer Reinforce insulation	548	180	2 layers : 3000 V a.c	3 layers	3 layers
supplementary information:					
Certified optical isolator (see appended table 1.5.1)					

4.3.8	**TABLE: Batteries**								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available						Appropriate battery data is available. (see appended table 1.5.1)			P
Is it possible to install the battery in a reverse polarity position?						No			N/A

	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	-	-	-	-	-	-	-	-	-
Max. current during fault condition	-	-	-	-	-	-	-	-	-

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

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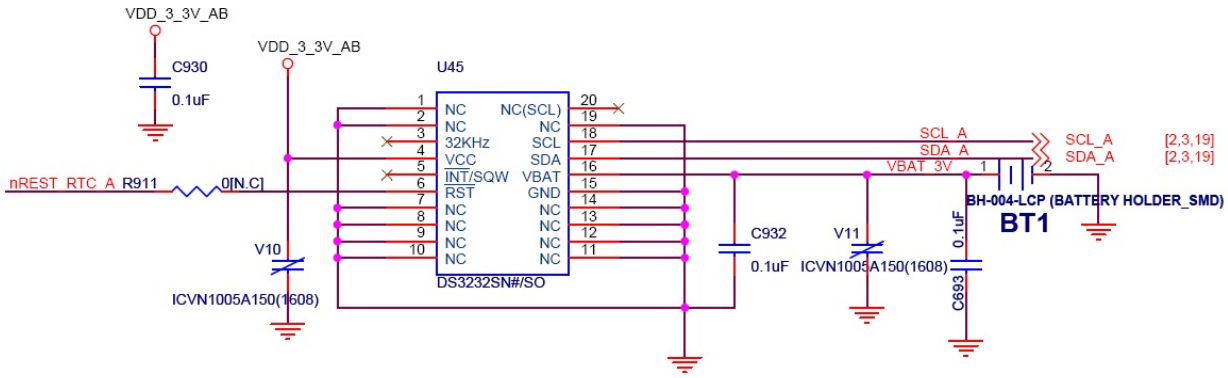
Clause	Requirement + Test	Result - Remark	Verdict

4.3.8	TABLE: Batteries	P

Battery category.....: lithium/manganese dioxide coin cells
Manufacturer.....: (see appended table 1.5.1)
Type / model.....: (see appended table 1.5.1)
Voltage.....: (see appended table 1.5.1)
Capacity.....: (see appended table 1.5.1)
Tested and Certified by (incl. Ref. No.).....: (see appended table 1.5.1)
Circuit protection diagram:



Supplementary information:

Certified protect IC used.
(see appended table 1.5.1)

4.5	TABLE: Thermal requirements			P
	Supply voltage (V) .....:	90 V a.c., 60 Hz	254.4 V a.c., 50 Hz	—
	Ambient T_{min} (°C) .....:	See below	See below	—
	Ambient T_{max} (°C) .....:	See below	See below	—
Maximum measured temperature T of part/at::		Tc (°C)	Tc (°C)	Allowed T_{max} (°C)
1. Input connector		48.5	44.7	-
2. LF2 coil		59.3	51.0	90
3. TH1 body		75.3	55.7	-
4. BD1 body		62.9	52.8	-
5. LF1 coil		51.1	49.3	90
6. C3 near PCB		50.2	49.2	105
7. LP1 coil		51.6	49.7	90
8. LP1 core		49.4	47.2	90
9. DB3 near PCB		50.9	50.3	105

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Clause	Requirement + Test	Result - Remark	Verdict

10. Q1 for heat sink (HS1)	53.4	57.2	-
11. T1 coil	71.8	71.8	90
12. T1 core	60.4	60.1	90
13. HS2	65.1	64.8	-
14. U31 body	81.2	80.6	105
15. U16 body	72.6	72.2	105
16. DC Fan body	48.4	47.6	-
17. U9 near PCB	64.7	64.1	105
18. Top enclosure	40.8	40.5	70
19. Ambient	40(25.3 °C)	40(26.0 °C)	-

supplementary information:

Maximum temperature T at Tma(40 °C) is calculated. (T at Tma = T- t_2+Tma)

Temper ature 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:

4.5.5	TABLE: Ball pressure test of thermoplastic parts		P
	Allowed impression diameter (mm)	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)
AC Input connector (CN1)	125	0.5
Transformer (T1) bobbin	125	0.1
PFC Trans (LP1) bobbin	125	0.1
Line filter (LF1, LF2) bobbin	125	1.0

supplementary information:

4.7	TABLE: Resistance to fire				P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence

supplementary information:

(see appended table 1.5.1)

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Clause	Requirement + Test	Result - Remark	Verdict

5.1	TABLE: Touch current measurement			P
Measured between:		Measured (mA)	Limit (mA)	Comments/conditions
Line to Metal chassis		0.13	3.5	
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:				
Unit: Primary - Protective earth		AC	1834	No
Transformer (T1): Primary – Core		AC	1834	No
Transformer (T1): Secondary – Core		AC	1834	No
Reinforced:				
Unit: Primary – Secondary		AC	3000	No
Transformer (T1): Primary – Secondary		AC	3000	No
supplementary information:				

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) ..... :			See below		—
	Power source for EUT: Manufacturer, model/type, output rating ..... :			-		—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
BD1 ~ to +	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
BD1 ~ to -	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
C3	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
DP4	Short	254.4	10 min	F1	0.37	Normal operation. No hazard.

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Clause	Requirement + Test	Result - Remark	Verdict

ICB1(2, 3)	Short	254.4	10 min	F1	0.094	Protection circuit operated, No hazard
Q1 (G, D)	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
Q1 (D, S)	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
PC1 (1, 2)	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
PC1 (3, 4)	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
BD6 (1, 2)	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
CB14	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
Output +12 V d.c	Overload	254.4	52 min	F1	0.37	Max. Temperature of T1 coil: 80.0 °C, ambient: 27.2 °C at output loaded 6.8 A. Unit internal protection at output loaded 7.0 A No hazard.
DC Fan	Locked	254.4	1 h 7 min	F1	0.22	Max. Temperature of T1 coil: 62.6 °C, ambient: 25.3 °C. No hazard.
Openings	Blocked	254.4	2 h 18 min	F1	0.22	Max. Temperature of T1 coil: 71.4 °C, ambient: 24.0 °C. No hazard.
supplementary information:						
The following electric strength test were conducted after above tests. - Primary-Secondary: 3000 V a.c. - Primary-Protective earth: 1834 V a.c.						

C.2	TABLE: transformers						P
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
T1	Reinforced	548	180	3000 V	4.4	5.0	2 layers min. or 0.4 mm / Annex U

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Clause	Requirement + Test	Result - Remark	Verdict

Loc.	Tested insulation	Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
T1	Primary winding – Secondary winding	3000 V	12	12	1.0 mm
supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

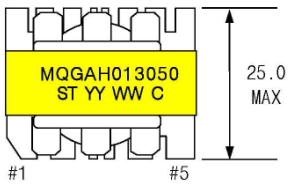
C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: SUN TECH CO.,LTD.
Type: MQGAH034020

SPECIFICATION

		SHEET NO	
		DATE	2011. 03. 14.
PART NAME	PFC TRANS	MODEL NAME	SPE-1600R
CODE NO	MQGAH013050	DESCRIPTION	ER-28X28V

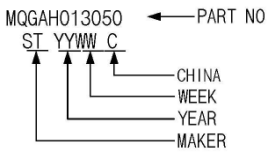
1. APPEARANCE & DIMENSION (UNIT:m/m)

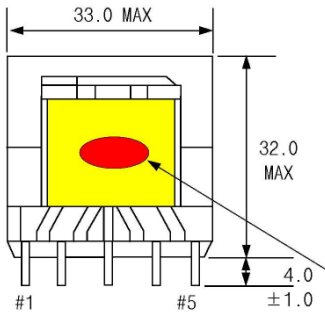


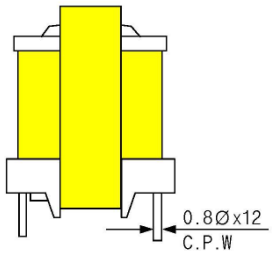
LOT NO

YEAR(00)	WEEK(00)	PRODUCT CODE(0)
2010Y→10 2011Y→11 2012Y→12	1'st WEEK→01 2'nd WEEK→02 3'rd WEEK→03	K:KOREA C:CHINA

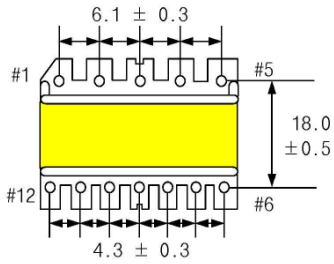
MARKING(BLACK)







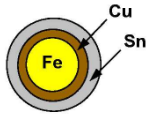
015B 갭부분에 본드작업



중점 관리 요함

※ 함침 작업시 VARNISH가 WINDING 1차 내부까지 침투되도록 작업 후 반드시 확인 할 것.(파괴검사)

*. PIN 도금 사양



NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
2						
3		- 6 -				
4				S.Y.CHOI	J.H.KANG	H.H.HAN

SUN TECH CO., LTD.

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

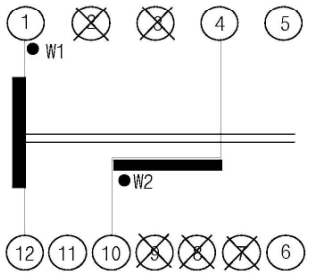
C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: SUN TECH CO.,LTD.
Type: MQGAH034020

SPECIFICATION

		SHEET NO	
		DATE	2011. 03. 14.
PART NAME	PFC TRANS	MODEL NAME	SPE-1600R
CODE NO	MQGAH013050	DESCRIPTION	ER-28X28V

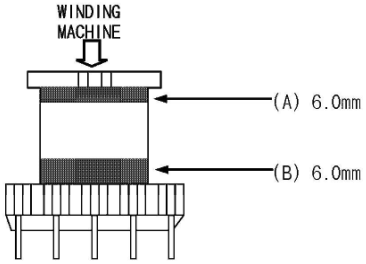
2. SCHEMATIC DIAGRAM



WINDING	BOTTOM VIEW	C.C.W
CUT PIN		
REMOVE PIN	#2,3,7,8,9	
N.C PIN	#5,6,11	
TEFLON TUBE		

3. WINDING SPECIFICATION

NO	TERMINAL (S - F)		WIRE	TURNS	WINDING METHOD	INSULATION MATERIAL	T/W	Ts	BARRIER A,B	Ts
W1	1	12	UEW 0.10Øx30#	73.5 t	SOLENOID	P.S TAPE	0.025/16.5	3		
W2	10	4	UEW 0.30Ø	9.5 t	SOLENOID	P.S TAPE	0.025/16.5	3	0.25t 6.0mm,6.0mm	12
CORE FIXING TAPE						P.S TAPE	0.025/11.0 (YELLOW)	3	-	



NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
2						
3		- 7 -				
4				S.Y.CHOI	J.H.KANG	H.H.HAN

SUN TECH CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: SUN TECH CO.,LTD.
Type: MQGAH034020

SPECIFICATION		SHEET NO	
		DATE	2011. 03. 14.
PART NAME	PFC TRANS	MODEL NAME	SPE-1600R
CODE NO	MQGAH013050	DESCRIPTION	ER-28X28V

* REGARDING ABOVE TABLE STANDARD, WIDTH, THICKNESS, TURNS OF TAPE MUST BE OVER SPECIFICATION RANGE.

* BARRIER TAPE TOLERANCE
① 6.0 ± 0.2㎜

※ Winding wire should not be over barrier(margin) tapes as shown below.

REGARDING ABOVE STANDARD WIDTH, THICKNESS, TURNS OF TAPE MUST BE OVER SPECIFICATION.

※ POLYESTER FILM TAPE TOLERANCE
① 11.0mm ± 0.5mm
② 16.5mm ± 0.5mm

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
2						
3		- 8 -				
4				S.Y.CHOI	J.H.KANG	H.H.HAN

SUN TECH CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: SUN TECH CO.,LTD.
Type: MQGAH034020

SPECIFICATION		SHEET NO	
		DATE	2011. 03. 14.
PART NAME	PFC TRANS	MODEL NAME	SPE-1600R
CODE NO	MQGAH013050	DESCRIPTION	ER-28X28V

4. ELECTRICAL CHARACTERISTIC

NO	ITEM	TERMINAL	SPECIFICATION	REMARKS
(1)	INDUCTANCE	1 - 12 4 - 10	350.0uH ±10% 8.5uH ±20%	HIOKI-3532-50 LCR-METER AT 100kHz 1V
(2)	LEAKAGE INDUCTANCE	1 - 12 (ALL PIN SHORTED)	160uH MAX	
(3)	DC RESISTANCE	1 - 12 4 - 10	0.40 Ω MAX 0.25 Ω MAX	HIOKI-3540 mΩ TESTER
(4)	DC CURRENT OVERLAR	1 - 12	280uH MIN	WITH 6.0(A)DC at 100KHz, 1Vrms
(5)	SURGE TEST	1 - 12	AC 1.5KV (1~2 SEC)	ST-215A TH2881A
(6)	WITHSTANDING VOLTAGE	P COIL - S COIL	-	KIKUSUI TOS8850
		P COIL - CORE	-	
		S COIL - CORE	-	
		P COIL - S COIL (공정검사 기준)	-	
		P COIL - CORE (공정검사 기준)	-	
		S COIL - CORE (공정검사 기준)	-	
(7)	INSULATION RESISTANCE	P COIL - S COIL	100Mohm MIN DC 500V	KIKUSUI TOS8850

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
2						
3		- 9 -				
4				S.Y.CHOI	J.H.KANG	H.H.HAN

SUN TECH CO., LTD.

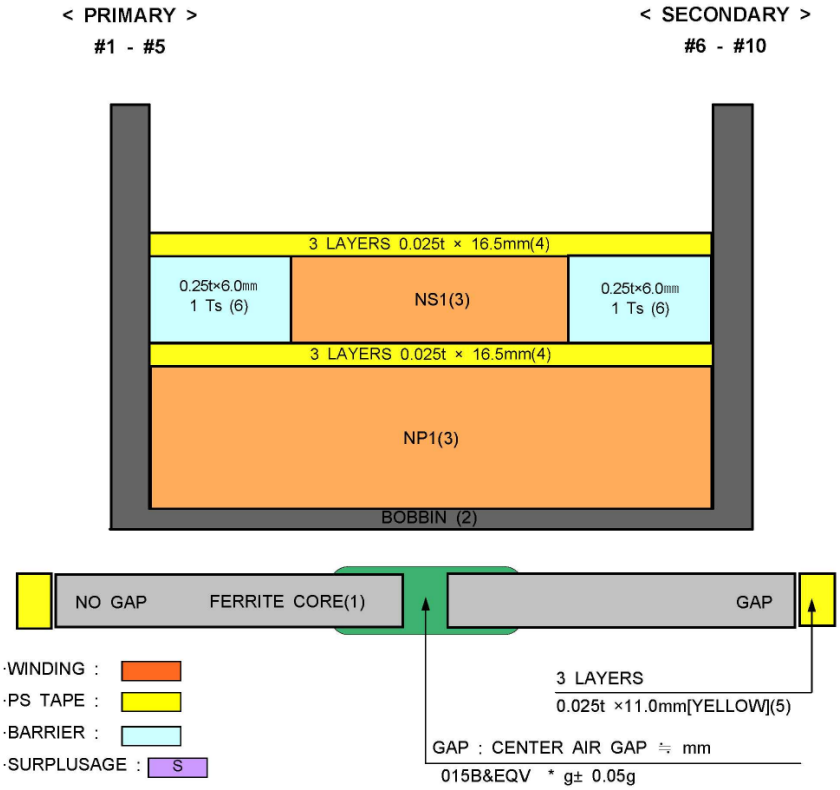
EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: SUN TECH CO.,LTD.
Type: MQGAH034020

SPECIFICATION		SHEET NO	
		DATE	2011. 03. 14.
PART NAME	PFC TRANS	MODEL NAME	SPE-1600R
CODE NO	MQGAH013050	DESCRIPTION	ER-28X28V

11. INTERNAL CONSTRUCTION



NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
2						
3		- 14 -				
4				S.Y.CHOI	J.H.KANG	H.H.HAN

SUN TECH CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: SUN TECH CO.,LTD.
Type: MQGAH034020

SPECIFICATION		SHEET NO	
		DATE	2011. 03. 14.
PART NAME	PFC TRANS	MODEL NAME	SPE-1600R
CODE NO	MQGAH013050	DESCRIPTION	ER-28X28V

12. MATERIAL LIST

NO	ITEM	MATERIALS & DIMENSIONS	MANUFACTURER	REMARK
1	CORE	EER 29X28Wmm PM-7	TODA ISU CERAMICS CO., LTD.	
		EER 29X28Wmm PL-7	SAMWHA ELECTRONICS CO., LTD.	
		EER 29X28Wmm TP-5	TIANTONG ELECTRONICS CO., LTD.	
		EER 29X28Wmm DMR40	DMEGC MAGNETICS CO., LTD.	
2	BOBBIN	EER 28X28mm [V-5+7P] PHENOL (94V - 0)	BAKELITE GMBH (PF-2736)	E61040M
3	WIRE	UEW 0.10Øx30# UEW 0.30Ø	DONG SUH ELECTRONICS CO., LTD. DONG YANG ELECTROINCS IND CO LTD CNICABLE CO LTD	E210918 E102761 E210918
4	INSULATION TAPE	POLYESTER TAPE 0.025t x 16.5mm	HYUN DAI CHEMICAL CO., LTD.	E162848
5	CORE FIXING TAPE	POLYESTER TAPE 0.025t x 11.0mm	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	E165111
6	BARRIER TAPE	P.N.W TAPE 0.25t/0.45t x 3.0mm 0.25t/0.45t x 6.0mm	TAE HWA INDUSTRIAL CO., LTD.	E92677S
7	TUBE	Teflon Tube	Shenzhen Woer Heat-Shrinkable Material co., LTD (WF 600/200)	E203950
8	ADHESIVE	EPOXY SK-015B	SE GYE CHEM CO., LTD.	
9	IMPREGNATION	VARNISH DVB - 2180T	DAE HAN PAINT & INK CO., LTD.	
10	MARKING	INK	BON MARQUE	

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
2						
3		- 15 -				
4				S.Y.CHOI	J.H.KANG	H.H.HAN

SUN TECH CO., LTD.

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

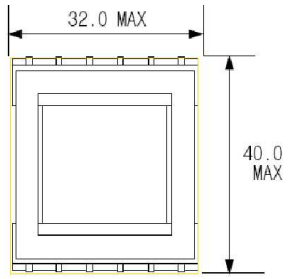
C.2	TABLE: transformers (continued)	P

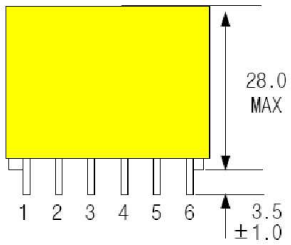
Transformer (T1)
Manufacturer: DONG IN SYSTEM CO.,LTD.
Type: MQGAH034020

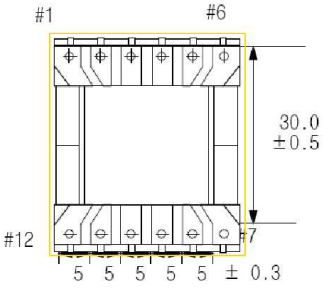
SPECIFICATIONS

				PAGE	
				DATE	2011.03.14
CUSTOMER	DONGYANG E&P INC.	MODEL NO.	SPE-1600R	PART NO.	MQGAH034020

6. DIMENSIONS (UNIT:mm)



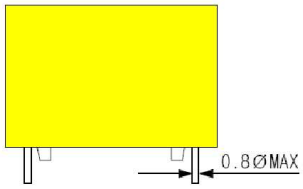




* MARKING *

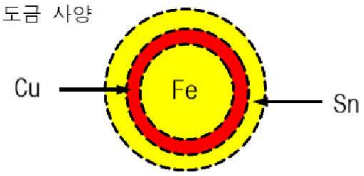
MQGAH034020 ← PART NO
DI AA BB C

MARKING	
PART NO.	MQGAH034020
(LOT NO)	AA : YEAR
	BB : WEEK
MAKER	DONG IN
C	CHNIA



※PIN 길이는 납땜 높이를 포함시키지 않은 규격임.

★. PIN 도금 사양



DONG - IN SYSTEM CO.,LTD.	DRAWN	CHECKED	APPROVED

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

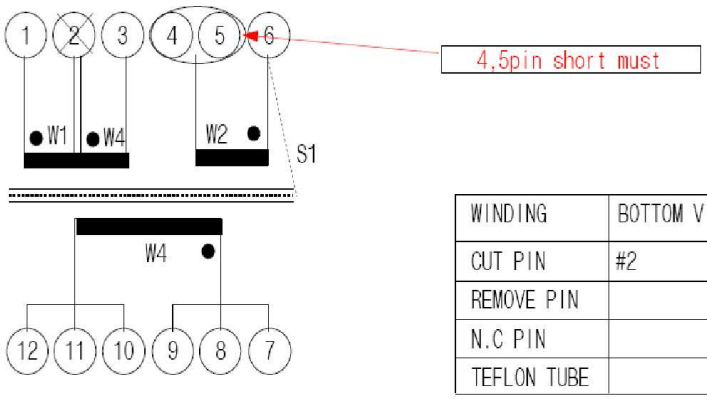
C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONG IN SYSTEM CO.,LTD.
Type: MQGAH034020

SPECIFICATIONS

				PAGE	
				DATE	2011.03.14
CUSTOMER	DONGYANG E&P INC.	MODEL NO.	SPE-1600R	PART NO.	MQGAH034020

7. CONNECTION



WINDING	BOTTOM VIEW	C.C.W
CUT PIN	#2	
REMOVE PIN		
N.C PIN		
TEFLON TUBE		

8. WINDING SPECIFICATION

NO	TERMINAL (S - F)		WIRE	TURNS	WINDING METHOD	INSULATION				
						MATERIAL	T/W	Ts	BARRIER	Ts
W1	1	2	UEW 0.50Ø	16 t	SOLENOID	P.S TAPE	0.025/22.0	2	0.45t 6.0mm,6.0mm	1
W2	6	4,5	UEW 0.3Ø	11 t	SOLENOID	P.S TAPE	0.025/22.0	3	0.45t 6.0mm,6.0mm	1
W3	7,8,9	10,11,12	LITZ0.20Øx20#x2#	7 t	SOLENOID	P.S TAPE	0.025/22.0	3	0.45t 6.0mm,6.0mm	4
S1	6	-	UEW 0.30Ø	26.5 t	SOLENOID	P.S TAPE	0.025/22.0	2	0.45t 6.0mm,6.0mm	1
W4	2	3	UEW 0.50Ø	16 t	SOLENOID	P.S TAPE	0.025/22.0	3	0.45t 6.0mm,6.0mm	1
CORE FIXING TAPE						P.S TAPE	0.025/11.0	3	-	
OUT FIXING TAPE						P.S TAPE	0.025/22.0	3	-	

DONG - IN SYSTEM CO.,LTD.	DRAWN	CHECKED	APPROVED

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONG IN SYSTEM CO.,LTD.
Type: MQGAH034020

SPECIFICATIONS				PAGE	
				DATE	2011.03.14
CUSTOMER	DONGYANG E&P INC.	MODEL NO.	SPE-1600R	PART NO.	MQGAH034020

9. BARRIER INSULATION

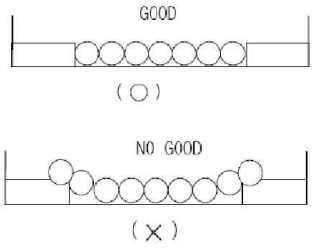
* REGARDING ABOVE TABLE STANDARD, WIDTH, THICKNESS, TURNS OF TAPE MUST BE OVER SPECIFICATION RANGE.
* BARRIER TAPE TOLERANCE
  ① 6.0 ± 0.2mm

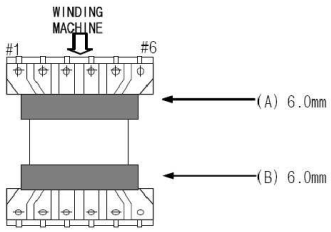
※ Winding wire should not be over barrier(margin) tapes as shown below.

REGARDING ABOVE STANDARD WIDTH, THICKNESS, TURNS OF TAPE MUST BE OVER SPECIFICATION.

※ POLYESTER FILM TAPE TOLERANCE
  ① 11.0mm ± 0.5mm
  ② 22.0mm ± 0.5mm

※ Winding wire should not be over barrier(margin) tapes as shown below.





DONG - IN SYSTEM CO.,LTD.	DRAWN	CHECKED	APPROVED

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONG IN SYSTEM CO.,LTD.
Type: MQGAH034020

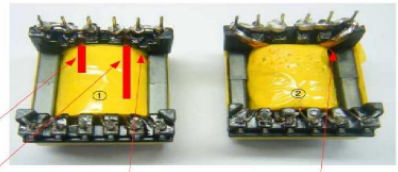
SPECIFICATIONS

				PAGE	
				DATE	2011.03.14
CUSTOMER	DONGYANG E&P INC.	MODEL NO.	SPE-1600R	PART NO.	MQGAH034020

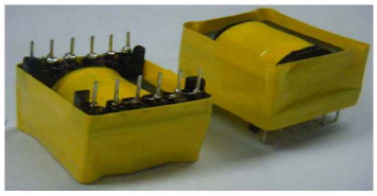
10. CONSTRUCTION

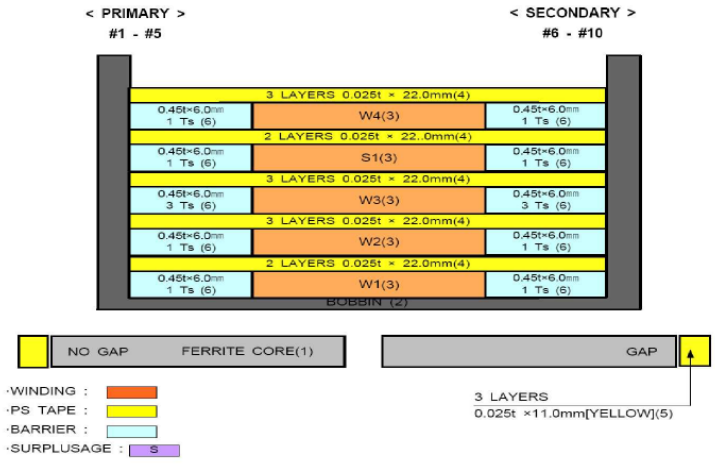
W3 코일 배선 및 결선 방법

참고 사진1.



W3	7,8,9	10,11,12	LITZ0.20Øx20#x2#	7 t	SOLENOID	P.S TAPE	0.025/22.0	3	0.45t 6.0mm,6.0mm	4





DONG - IN SYSTEM CO.,LTD.	DRAWN	CHECKED	APPROVED

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONG IN SYSTEM CO.,LTD.
Type: MQGAH034020

SPECIFICATIONS

				PAGE	
				DATE	2011.03.14
CUSTOMER	DONGYANG E&P INC.	MODEL NO.	SPE-1600R	PART NO.	MQGAH034020

11. ELECTRICAL SPECIFICATION

NO	ITEM	TERMINAL	SPECIFICATION	REMARKS
(1)	INDUCTANCE	1 - 2 6 - 4,5 7,8,9, - 10,11,12	220.0uH ±10% 28.0uH ±20% 11.0uH ±20%	HIOKI-3532-50 LCR-METER AT 100kHz 1V
(2)	LEAKAGE INDUCTANCE	1 - 2 (ALL PIN SHORTED)	10uH MAX	
(3)	DC RESISTANCE	1 - 2 6 - 4,5 7,8,9, - 10,11,12	0.30 Ω MAX 0.25 Ω MAX 0.01 Ω MAX	HIOKI-3540 mΩ TESTER
(4)	DC CURRENT OVERLAR	1 - 2	200uH MIN	WITH 3.5(A)DC at 100KHz, 1Vrms
(5)	SURGE TEST	1 - 2	AC 1.5KV (1~2 SEC)	ST-215A TH2881A
(6)	WITHSTANDING VOLTAGE	P COIL - S COIL	AC 3.750V 5mA 1 MIN	KIKUSUI TOS8850
		P COIL - CORE	AC 1.500V 5mA 1 MIN	
		S COIL - CORE	AC 1.500V 5mA 1 MIN	
		P COIL - S COIL (공정검사 기준)	AC 4.240V 5mA 2 SEC	
		P COIL - CORE (공정검사 기준)	AC 2.00V 5mA 2 SEC	
		S COIL - CORE (공정검사 기준)	AC 2.00V 5mA 2 SEC	
(7)	INSULATION RESISTANCE	P COIL - S COIL	100Mohm MIN DC 500V	KIKUSUI TOS8850

DIS DONG - IN SYSTEM CO.,LTD.	DRAWN	CHECKED	APPROVED
			

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONG IN SYSTEM CO.,LTD.
Type: MQGAH034020

SPECIFICATIONS

				PAGE	
				DATE	2011.03.14
CUSTOMER	DONGYANG E&P INC.	MODEL NO.	SPE-1600R	PART NO.	MQGAH034020

16. MATERIAL LIST

NO	COMPONENT	MATERIALS	MANUFACTURES	UL FILE
(1)	CORE	EER2834 PM-7 , HX-4P, PC-40	TODA ISU CO., LTD. NAN TONG CO., LTD JI SHUN CO., LTD	
(2)	BOBBIN	PHENOL 94V-0 EER2834 12 PIN "H" TYPE	SUMITOMO BAKELITE CO., LTD.	E41429
(3)	WIRE	POLYURETHANE ENAMELED COPPER WIRE (2UEW) 0.20¢X 20 ,0.30¢,0.50¢	DONG YANG ELECTROINCS IND CO LTD	E102761
(4)	INSULATION TAPE	POLYESTER FILM TAPE T= 0.025 W= 22.0mm(YELLOW)	DUCK SUNG HITECH CO LTD (Cat No. DTS-204)	E105147
(5)	FIXING TAPE	POLYESTER FILM TAPE T= 0.025 W= 11.0mm(YELLOW)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD. (Cat NO. CP-3002)	E165111
(6)	BARRIER TAPE	POLYESTER FILM(BARRIER) TAPE T=0.25 W=6.0mm	TAE HWA INDUSTRIAL CO LTD (Cat No. H-5673)	E92677
(7)	TUBE	TEFLON TUBE	DAIKIN INDUSTRIES LTD.	E52460
(8)	SOLDER	Sn 99.29% BAR	SEOUL ALLOY METAL CO., LTD.	
	FLUX	JS-7000S-1	KOKI SANEI KOREA CO., LTD.	
(9)	VARNISH	SR. 337A, SR. 337B	SE KYE CHEMICAL CO LTD	E257443
(10)	MARKING	INK	BON MARQUE	

DIS DONG - IN SYSTEM CO.,LTD.	DRAWN	CHECKED	APPROVED

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

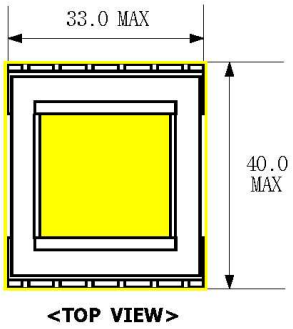
C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

SPECIFICATION

		SHEET NO.	2 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-1600R
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

6. APPEARANCE & DIMENSION (UNIT:mm)

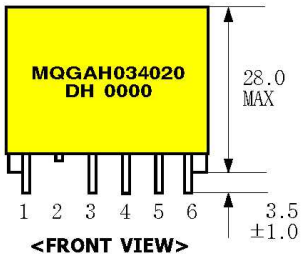


<TOP VIEW>

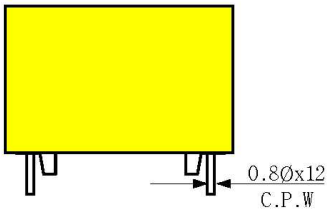
* MARKING (BLACK)

MQGAH034020 ← CODE NO.
DH 0000
→ PRODUCTION LINE
→ WEEK
→ YEAR
→ PRODUCTION MAKER

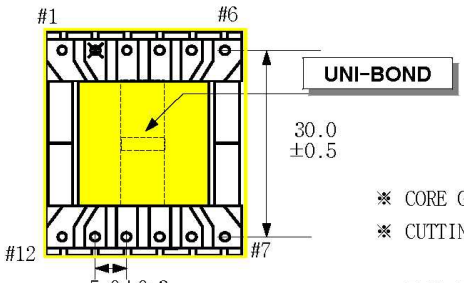
※ PRODUCTION LINE
1. A : CHUN AN
2. B : BAZHOU
3. Y : YANTAI



<FRONT VIEW>

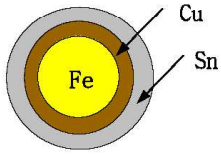


<SIDE VIEW>



<BOTTOM VIEW>

*. PIN PLATING SPEC



※ CORE GAP : CENTER AIR GAP
※ CUTTING PIN : #2

※ 함침 작업시 VARNISH가 WINDING 1차 내부까지 침투되도록 작업 후 반드시 확인 할 것.(파괴검사)

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
1						
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4						

0705-00양식04

DONG HEUNG ELECTRONICS CO., LTD.

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

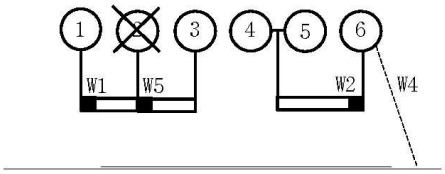
C.2	TABLE: transformers (continued)	P

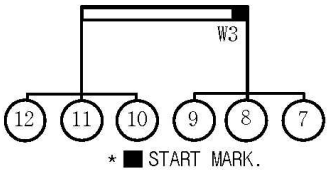
Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

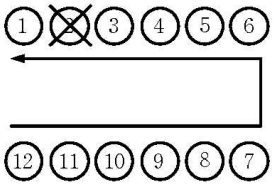
SPECIFICATION

		SHEET NO.	3 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-1600R
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

7. WINDING SPECIFICATION







WINDING	BOTTOM VIEW	C.C.W
REMOVED PIN		
CUT PIN	#2	
TUBE PIN		

8. WINDING SPECIFICATION

NO	SYMBOL	TERMINAL		WIRE	Ts	WINDING METHOD	REMARKS
		S	F				
1	W1	1	2	UEW 0.50Ø	16	SOLENOID	
2	W2	6	4,5	UEW 0.30Ø	11	SOLENOID	
3	W3	7,8,9	10,11,12	LITZ 0.20Øx20# x2#	7	SOLENOID	
4	W4	6	-	UEW 0.30Ø	26.5	SOLENOID	
5	W5	2	3	UEW 0.50Ø	16	SOLENOID	

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
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0705-00양식04

DONG HEUNG ELECTRONICS CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

SPECIFICATION		SHEET NO.	4 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-1600R
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

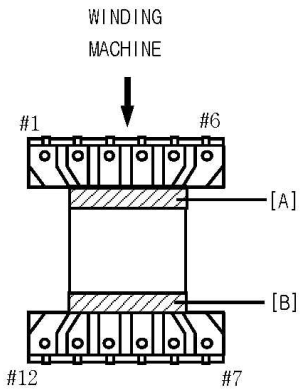
9. BARRIER INSULATION

NO	MATERIALS	LAYERS	THICKNESS(mm) x WIDTH (mm)
W1	P. N. W TAPE	A,B PART : 1T	A : 0.45T x 6.0mm B : 0.45T x 6.0mm
W2	P. N. W TAPE	A,B PART : 1T	A : 0.45T x 6.0mm B : 0.45T x 6.0mm
W3	P. N. W TAPE	A,B PART : 4T	A : 0.45T x 6.0mm B : 0.45T x 6.0mm
W4	P. N. W TAPE	A,B PART : 1T	A : 0.45T x 6.0mm B : 0.45T x 6.0mm
W5	P. N. W TAPE	A,B PART : 1T	A : 0.45T x 6.0mm B : 0.45T x 6.0mm

* REGARDING ABOVE TABLE STANDARD, WIDTH, THICKNESS, TURNS OF TAPE MIST BE OVER SPECIFICATION RANGE.

* P.N.W TAPE TOLERANCE
① 6.0mm ± 0.2mm

※ Winding wire should not be over barrier(margin) tape as shown below.



NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
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0705-00양식04 DONG HEUNG ELECTRONICS CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

SPECIFICATION		SHEET NO.	5 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-1600R
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

10. INSULATION TAPE

NO	C O I L	MATERIALS	WRAPS(T)	THICKNESS(m/m) x WIDTH(m/m)
1	W1 TO W2	POLYESTER TAPE	3	0.025t x 21.5mm
2	W2 TO W3	POLYESTER TAPE	3	0.025t x 21.5mm
3	W3 TO W4	POLYESTER TAPE	3	0.025t x 21.5mm
4	W4 TO W5	POLYESTER TAPE	2	0.025t x 21.5mm
5	W5 TO CORE	POLYESTER TAPE	3	0.025t x 21.5mm{YELLOW}
6	CORE FIXING TAPE	POLYESTER TAPE	3	0.025t x 11.0mm{YELLOW}
7	BOBBIN FIXING TAPE	POLYESTER TAPE	3	0.025t x 21.5mm{YELLOW}

* REGARDING ABOVE TABLE STANDARD, WIDTH, THICKNESS, TURNS OF TAPE MIST BE OVER SPECIFICATION RANGE.

* POLYESTER FILM TAPE TOLERANCE
① 11.0mm ± 0.5mm
② 21.5mm ± 0.5mm

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
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0705-00양식04 DONG HEUNG ELECTRONICS CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

SPECIFICATION		SHEET NO.	7 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-1600R
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

14. TEST SPECIFICATION AT 25℃

NO.	ITEM	TERMINAL	SPECIFICATION	REMARKS
1	INDUCTANCE	1 - 3 6 - 4,5 7,8,9 - 10,11,12	220 [uH] ±10% 28.0 [uH] ±20% 11.0 [uH] ±20%	HP-4284A at 100KHz, 1Vrms.
2	LEAKAGE INDUCTANCE	1 - 3 (SECONDARY ALL SHORT)	10.0 [uH] MAX	
3	DC RESISTANCE	1 - 3 6 - 4,5 7,8,9 - 10,11,12	0.30 [Ω] MAX 0.25 [Ω] MAX 0.01 [Ω] MAX	WHEATSTONE BRIDGE YEW TYPE 2755 HIOKI TYPE 3220
4	DC CURRENT OVERLAP	1 - 3	220.0 [uH] MIN	at 100KHz, 1Vrms WITH 3.5(A) DC
5	IMPULSE TEST (SUGE TEST)	1.5KV / 3PULSE		
6	WITHSTANDING VOLTAGE	P COIL - S COIL	AC 3.750V, 5mA 1 MIN	KIKUSUI : TOS-9200
		P COIL - CORE	AC 1.500V, 5mA 1 MIN	
		S COIL - CORE	AC 1.500V, 5mA 1 MIN	
		P COIL - S COIL (공정검사 기준)	AC 4.240V, 5mA 2 SEC	
		P COIL - CORE (공정검사 기준)	AC 2,000V, 5mA 2 SEC	
		S COIL - CORE (공정검사 기준)	AC 2.000V, 5mA 2 SEC	
7	INSULATION RESISTANCE	P COIL - S COIL	100Mohm MIN DC 500V	KIKUSUI : TOS-9200

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
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0705-00양식04

DONG HEUNG ELECTRONICS CO., LTD.

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

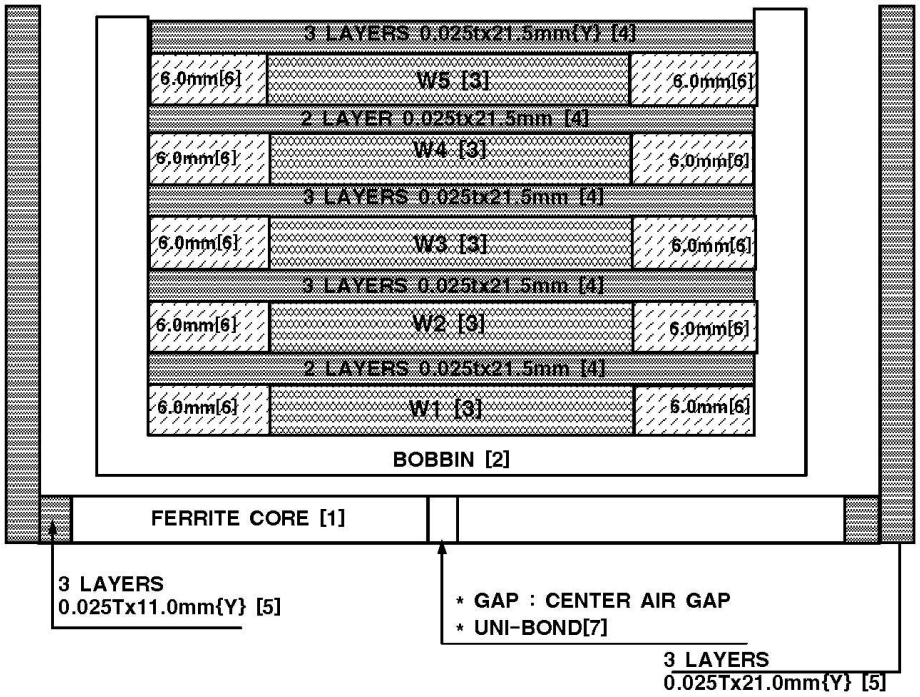
C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

SPECIFICATION		SHEET NO.	8 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-160OR
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

15. INTERNAL CONSTRUCTION

<PRI.(#1~6)> <SEC.(#7~12)>



* WINDING
* P.S TAPE
* BARRIER TAPE

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
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0705-00양식04 DONG HEUNG ELECTRONICS CO., LTD.

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

C.2	TABLE: transformers (continued)	P

Transformer (T1)
Manufacturer: DONGHEUNGELECTRONICS CO., LTD
Type: MQGAH034020

SPECIFICATION		SHEET NO.	9 OF 20
		D A T E	2011. 04. 06.
PART NAME	S/W TRANSFORMER	MODEL NAME	SPE-1600R
CODE NO.	MQGAH034020	DESCRIPTION	EER 28x34mm

16. MATERIAL LIST

NO	I T E M	MATERIALS & DIMENSIONS		MANUFACTURER	REMARK
1	CORE	EER2834	PL-7	SAM HWA ELECTRONICS CO., LTD.	
			PM7	TODA ISU CERAMICS CO.,LTD.	
			DMR40	ZHEJING DONGYANG DMEGC MAGNETIC CO., LTD.	
2	BOBBIN	EER 28 x 34mm[H] 12P PHENOL (94V-0)		HEXION SPECIALTY CHEMICALS GMBH. SUMITOMO BAKELITE CO., LTD. CHANG CHUN PLASTICS CO LTD.	E61040 E41429 E59481
3	COPPER WIRE	UEW 0.30Ø UEW 0.50Ø LITZ 0.20Øx20# x2#		DONG YANG ELECTRONICS IND CO.,LTD. SHANDONG PENGTAI SPECIAL ENAMELLED WIRE CO., LTD. SHANDONG ZHONGCHEN MAGNET WIRE CO LTD.	E102761 E166187 E248975
4	INSULATION TAPE	POLYESTER TAPE 0.025t x 21.5mm 0.025t x 21.5mm {YELLOW}		DUCK SUNG HITECH CO., LTD. JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. JINGJIANG JINGYANG INSULATING PRODUCT CO., LTD.	E105147 E165111 E309872
5	CORE FIXING TAPE	POLYESTER TAPE 0.025t x 11.0mm {YELLOW}			
6	BARRIER TAPE	P.N.W TAPE W=6.0mm			
7	EPOXY (SOFT)	UNI-BOND #812		GREENSTAR CO.,LTD.	
		SK-015B		SE GYE CHEMICAL CO., LTD.	
8	IMPREGNATION	SR-337A, SR-337B		SE GYE CHEMICAL CO., LTD.	
		319-5		JIANG CITY DENGFENG ELETRICAL METERIAL CO., LTD.	
9	SOLDER BAR	SN98CU2-B20		SAMWOO ALLOYMETAL CO., LTD. YUNNAN TIN CO.,LTD	
10	INK	INK		HITACHI INDUSTORIAL EQUIPMENT CO.,LTD	
11	FLUX	POST FLUX		HITACHI CHEMICAL CO., LTD KOKI SANEI KOREA CO.,LTD	

NO	REVISION	DATE	CHECK	DRAWN	CHECKED	APPROVED
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0705-00양식04

DONG HEUNG ELECTRONICS CO., LTD.

Attachment 1 – European Group Differences

ATTACHMENT TO TEST REPORT IEC 60950-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES **Information technology equipment – Safety –** Part 1: General requirements	
Differences according to.....:	EN 60950-1:2006/A11:2009/A1:2010/A12:2011
Attachment Form No.....:	EU_GD_IEC60950_1B_II
Attachment Originator .....:	SGS Fimko Ltd
Master Attachment.....:	Date 2011-08

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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1Note 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
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note; 6.1.2.1 Note 2 6.2.2.1 Note 2; EE.3 Note		P

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
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010		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		P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A
1.7.2.1 (A12.2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.		N/A
	Zx Protection against excessive sound pressure from personal music players		N/A

	Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players. A personal music player is a portable equipment☐ for personal use, that: ☐☐is designed to allow the user to listen to recorded or broadcast sound or video; and ☐☐primarily uses headphones or earphones that can be worn in or on or around the ears; and ☐☐allows the user to walk around while in use. NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment. A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause. The requirements in this sub-clause are valid for music or video mode only. The requirements do not apply: ☐☐while the personal music player is connected to an external amplifier; or ☐☐while the headphones or earphones are not used. NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player. The requirements do not apply to: ☐☐hearing aid equipment and professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.		N/A

	☐☐analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015. NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		
	Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: ☐☐equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and ☐☐a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx. All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and		N/A

	c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off. d) have a warning as specified in Zx.3; and e) not exceed the following: 1) equipment provided as a package (player with Its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song. NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.		

	Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: ☐☐☐the symbol of Figure 1 with a minimum height of 5 mm; and ☐☐☐the following wording, or similar: "To prevent possible hearing damage, do not listen at high volume levels for long periods."  **Figure 1 – Warning label (IEC 60417-6044)** Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.		N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.		N/A

	Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed "programme simulation noise" described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.		N/A
	Zx.4.3 Wireless listening devices In wireless mode: ☐☐with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and ☐☐respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and ☐☐with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.		N/A
	Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s. NOTE Test method for wireless equipment provided without listening device should be defined.		N/A

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;		N/A
	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.		N/A
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 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artifical optical radiation).		N/A
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 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
Bibliography	Additional EN standards.		—

ZA	**NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**	—

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N/A
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.		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 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N/A

1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag” 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).”		N/A

	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 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	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. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		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.		N/A
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		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, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 1		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
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

6.1.2.1 (A1:2010)	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. Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - 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.		N/A
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		

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**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.		N/A

Attachment 2 – Photograph

Fig. 1 Front side

Fig. 2 Bottom side

Fig. 3 Internal

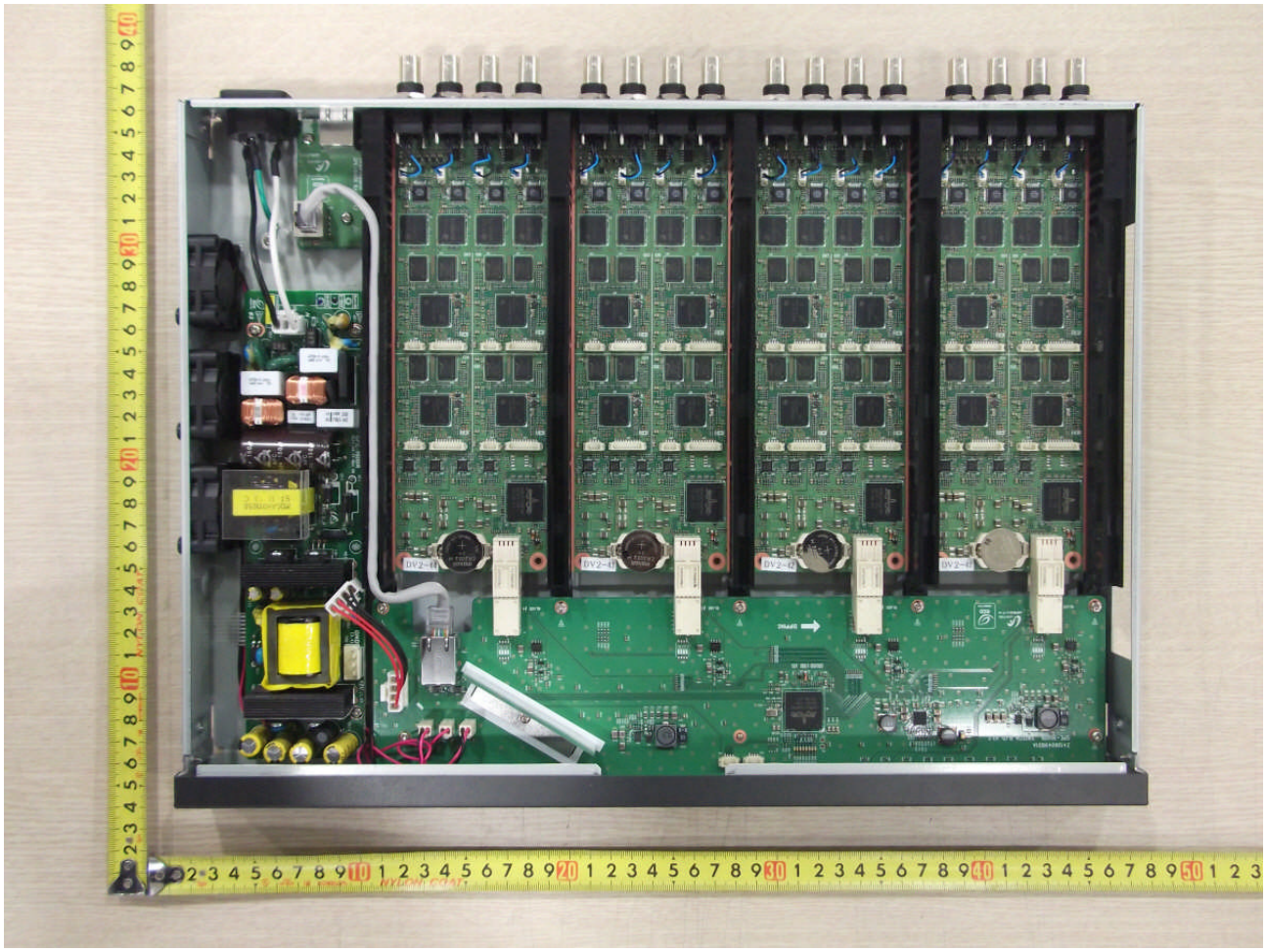

Fig. 4 Power Supply Top

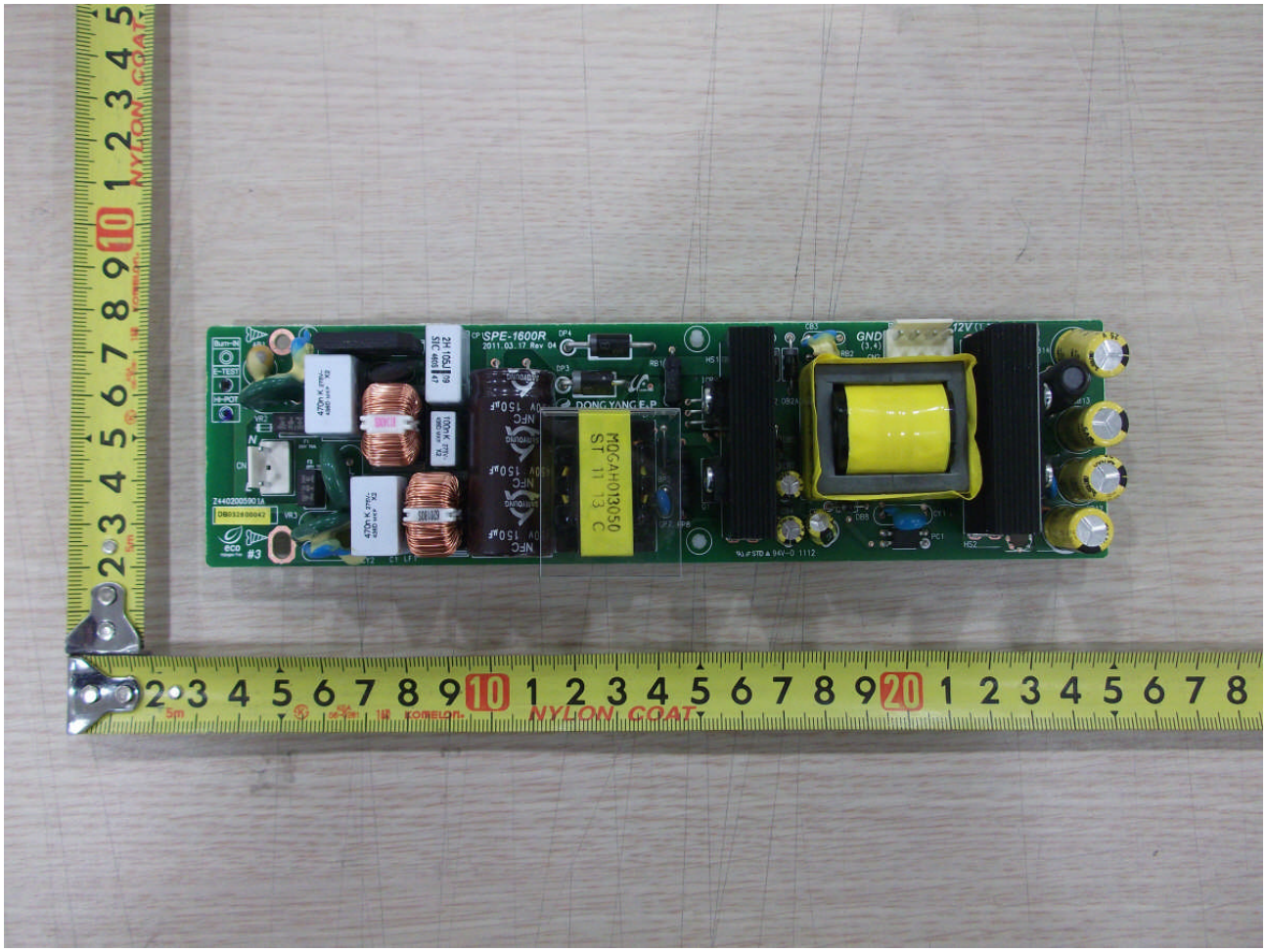

Fig. 5 Power Supply Bottom