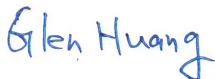


TEST REPORT	
IEC 60950-1 and/or EN 60950-1	
Information technology equipment – Safety – Part 1: General requirements	
Report number.....	CTI190708X01-LV
Applicant's name.....	MSTronic Co., Ltd.
Address.....	2F., No. 12, Gong Shang Rd., Wugu District, New Taipei City 248, Taiwan
Testing Laboratory Name	Centre Testing International (Taiwan) Co., Ltd-Safety testing center
Address	2F.-11, No.9, Sec. 2, Nankan Rd., Luzhu Dist., Taoyuan City 338, Taiwan.
Test specification:	
Standard.....	IEC 60950-1:2005 (2nd Edition)+Am 1:2009+Am 2:2013 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 AS/NZS 60950.1
Test item description.....	Gigabit PoE Injector
Trademark	 and/or MSTronic Co., Ltd.
Manufacturer's name and address ..	Same as applicant
Model and/or type reference	See General product information for details.
Rating(s).....	See General product information for details.
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.	
Test case verdicts	
Test case does not apply to the test object ... : N (Not applicable)	
Test item does meet the requirement	
Test item does not meet the requirement : F (Fail)	
Testing	
Date of receipt of test item	
Date(s) of performance of test	
Tested by (name + signature)..... : Glen Huang  Date: 2019-08-09	
Approved by (name + signature) : Kent Tseng  Date: 2019-08-09	

Test item particulars

Equipment mobility: ☒ movable ☐ hand-held ☐ transportable ☐ stationary
☐ for building-in ☐ direct plug-in

Connection to the mains.....: ☐ pluggable equipment ☐ type A ☐ type B
☐ permanent connection
☐ detachable power supply cord
☐ non-detachable power supply cord
☒ not directly connected to the mains

Operating condition: Continuous

Access location.....: ☒ operator accessible ☐ restricted access location

Mains supply tolerance (%): ± 10

Tested for IT power systems: ☐ Yes ☒ No

IT testing, phase-phase voltage (V) ..: Not considered

Class of equipment: ☐ Class I ☐ Class II ☐ Class III ☒ Not classified

Pollution degree (PD): 2

Altitude during operation (m): Up to 2000 m

Mass of equipment (kg): 0.135 kg max. (Plastic Enclosure)
0.215 kg max. (Metal Enclosure)

Protection against ingress of water ..: IPX0

Copy of marking plate:

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



Note: This making plate is a representative of other models, except for the I/P and O/P rated and model designation.

Summary of testing:

All relevant tests were carried out and their results were complied with IEC 60950-1:2005+A1:2009+A2:2013 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 and AS/NZS 60950.1

General product information:
Model list and differences:

Model No. *	data rate	Input	PoE Output	Power	Standard	Remark	
MIT-69N-1218BNNN	10/100	9~36VDC	18VDC/4578	18W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69N-1224BNNN	10/100	9~36VDC	24VDC/4578	20W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69N-1248BNNN	10/100	9~36VDC	48VDC/4578	24W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69N-1248BDNN	10/100	9~36VDC	48VDC/4578	16.8W	802.3af	B mode (4578) Detection, No reverse	Normal plastic case normal operation temp.
MIT-69N-1248BDNNH	10/100	9~36VDC	48VDC/4578	16.8W	802.3af	B mode (4578) Detection, No reverse	Normal plastic case High operation temp.
MIT-69N-1248BDNNM	10/100	9~36VDC	48VDC/4578	16.8W	802.3af	B mode (4578) Detection, No reverse	Metal case normal operation temp.
MIT-69N-1248BDNNMH	10/100	9~36VDC	48VDC/4578	16.8W	802.3af	B mode (4578) Detection, No reverse	Metal case High operation temp.
MIT-69G-1224BNNN	gigabit	9~36VDC	24VDC/4578	20W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-1248BNNN	gigabit	9~36VDC	48VDC/4578	24W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-1248BDNN	gigabit	9~36VDC	48VDC/4578	16.8W	802.3af	B mode (4578) Detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-1248BDNNMH	gigabit	9~36VDC	48VDC/4578	16.8W	802.3af	B mode (4578) Detection, No reverse	Metal case High operation temp.
MIT-69G-1248ANNN	gigabit	9~36VDC	48VDC/1236 1/2 (-), 3/6 (+)	24W	passive	A mode (1236) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-1248ANRN	gigabit	9~36VDC	48VDC/1236 1/2 (+), 3/6 (-)	24W	passive	A mode (1236) No detection, Reverse	Normal plastic case normal operation temp.
MIT-69G-1248ADNN	gigabit	9~36VDC	48VDC/1236 1/2 (-), 3/6 (+)	16.8W	802.3af	A mode (1236) Detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-1248ADRN	gigabit	9~36VDC	48VDC/1236 1/2 (+), 3/6 (-)	16.8W	802.3af	A mode (1236) Detection, Reverse	Normal plastic case normal operation temp.
MIT-69G-4818BNNN	gigabit	36~72VDC	18VDC/4578	18W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-4824BNNN	gigabit	36~72VDC	24VDC/4578	20W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.
MIT-69G-4848BNNN	gigabit	36~72VDC	48VDC/4578	24W	passive	B mode (4578) No detection, No reverse	Normal plastic case normal operation temp.

- The equipment is an Gigabit PoE Injector for use with information technology equipment.
- Except Clause 1.6.2, 2.1.1.5, 2.5, 4.5, 5.3 relevant tests conducted on models MIT-69N-1218BNNN, MIT-69N-1248BDNNMH, MIT-69G-1248ANRN and MIT-69G-4848BNNN, other tests are based on MIT-69G-4848BNNN
- The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of 50°C.
- All PoE ports of all models are complied with the requirements of the limited power source (L.P.S.).
- The investigation of the product did not cover the functional characteristics of the equipment, only

the safety aspects as laid out in IEC 60950-1 were subjected to the investigation.

Summary of compliance with National Differences

The sample(s) tested in compliance with the requirements of IEC 60950-1:2005 (2nd Edition) +Am 1:2009+Am 2:2013 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 and AS/NZS 60950.1
The European Group / National differences of all CENELEC members are listed in the attachment of this report.

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

01. Pages 1 to 41 for IEC 60950-1 TRF
02. Appendix 1 European Group Differences and National Differences (Total pages:23)
03. Appendix 2 Photo (Total pages:8)

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

1.5	Components		P
1.5.1	General	See below	P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	Components certified to IEC harmonized standard and checked for correct application. 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 exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.	P
1.5.3	Thermal controls		N
1.5.4	Transformers	Compliance with annex C.	P
1.5.5	Interconnecting cables	No interconnecting cables are provided.	N
1.5.6	Capacitors bridging insulation		N
1.5.7	Resistors bridging insulation		P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	All resistors bridge the functional insulation only.	P
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N
1.5.8	Components in equipment for IT power systems		N
1.5.9	Surge suppressors		P
1.5.9.1	General	Secondary circuit used.	P
1.5.9.2	Protection of VDRs	A fuse (F1) is connected in series with the VDR.	P
1.5.9.3	Bridging of functional insulation by a VDR	Secondary circuit used.	P
1.5.9.4	Bridging of basic insulation by a VDR		N
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6	Power interface		P
1.6.1	AC power distribution systems	Equipment supplied by a D.C. power source.	N
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not the hand-held equipment.	N
1.6.4	Neutral conductor		N

1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	Rating marking readily visible to operator.	P
1.7.1.1	Power rating marking	See below.	P
	Multiple mains supply connections.....:	Single connection with a D.C. power source.	N
	Rated voltage(s) or voltage range(s) (V)	See Page 3	P
	Symbol for nature of supply, for d.c. only	Equipment supplied by a D.C. power source.	N
	Rated frequency or rated frequency range (Hz)....:		N
	Rated current (mA or A)	See Page 3	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark	MSTronic Co., Ltd. and/or 	P
	Model identification or type reference	See Page 3	P
	Symbol for Class II equipment only		N
	Other markings and symbols	Additional symbols or markings do not give rise to misunderstanding.	P
1.7.1.3	Use of graphical symbols		N
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	Safety instruction in English. Other languages will be provided when submitted for national approval.	P
1.7.2.2	Disconnect devices	Equipment doesn't supply from mains supply.	N
1.7.2.3	Overcurrent protective device		N
1.7.2.4	IT power distribution systems	Not considered the IT power system.	N
1.7.2.5	Operator access with a tool	No operator accessible areas need a tool to access.	N
1.7.2.6	Ozone	No ozone produced within this equipment.	N
1.7.3	Short duty cycles	Equipment operated	N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		continuously.	
1.7.4	Supply voltage adjustment	The supply voltage can't be adjusted.	N
	Methods and means of adjustment; reference to installation instructions		N
1.7.5	Power outlets on the equipment	No power outlet used.	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Fuse marking located on the PCB and adjacent to the fuse See appended table 1.5.1	P
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals		N
1.7.7.2	Terminals for a.c. mains supply conductors		N
1.7.7.3	Terminals for d.c. mains supply conductors		N
1.7.8	Controls and indicators	See below.	N
1.7.8.1	Identification, location and marking	No identification, location and marking provided.	N
1.7.8.2	Colours	The LED is the functional indicator not affecting safety.	N
1.7.8.3	Symbols according to IEC 60417	No symbols used.	N
1.7.8.4	Markings using figures	No figures used.	N
1.7.9	Isolation of multiple power sources		N
1.7.10	Thermostats and other regulating devices	No thermostats or similar regulating devices are used.	N
1.7.11	Durability	The marking is still legible and label without curling.	P
1.7.12	Removable parts	No marking is located on removable parts.	P
1.7.13	Replaceable batteries	No batteries are used.	N
	Language(s)		—
1.7.14	Equipment for restricted access locations	Equipment is not installed in a restricted access location.	N

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	See below.	P
2.1.1.1	Access to energized parts	No operator can access the energized parts.	P
	Test by inspection	No operator can access the energized parts.	P
	Test with test finger (Figure 2A)	No bare hazardous parts, basic insulation, or ELV circuits are contacted by the	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		test finger.	
	Test with test pin (Figure 2B)	No bare hazardous parts are contacted by the test pin.	P
	Test with test probe (Figure 2C)	No TNV circuits within the equipment.	N
2.1.1.2	Battery compartments	No batteries are used.	N
2.1.1.3	Access to ELV wiring	No ELV wirings can be accessed by operators.	P
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No operators can touch the internal hazardous voltage wiring's insulation.	P
2.1.1.5	Energy hazards	(see appended table 2.1.1.5)	P
2.1.1.6	Manual controls	No manual controls are used.	P
2.1.1.7	Discharge of capacitors in equipment		N
	Measured voltage (V); time-constant (s)		—
2.1.1.8	Energy hazards – d.c. mains supply		N
	a) Capacitor connected to the d.c. mains supply ..		N
	b) Internal battery connected to the d.c. mains supply		N
2.1.1.9	Audio amplifiers	No audio amplifiers' circuits, terminals and parts within the equipment.	N
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N

2.2	SELV circuits		P
2.2.1	General requirements	See below.	P
2.2.2	Voltages under normal conditions (V)	All accessible voltages are less than 42.4 V _p or 60 V dc and classified as SELV (see appended table 2.2)	P
2.2.3	Voltages under fault conditions (V)	Under fault conditions, voltages not exceeded 71V peak and 120Vdc and not exceeded 42.4V peak or 60V dc for more than 0.2 sec. (see appended table 2.2)	P
2.2.4	Connection of SELV circuits to other circuits	SELV circuits are only connected to other SELV circuits.	N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.3	TNV circuits		N
2.3.1	Limits	No TNV circuits within the equipment.	N
	Type of TNV circuits :		—
2.3.2	Separation from other circuits and from accessible parts		N
2.3.2.1	General requirements		N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing		N
2.3.2.4	Protection by other constructions :		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed..... :		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed..... :		—
2.3.5	Test for operating voltages generated externally		N

2.4	Limited current circuits		N
2.4.1	General requirements	No such kind of circuits.	N
2.4.2	Limit values		N
	Frequency (Hz) :		—
	Measured current (mA)..... :		—
	Measured voltage (V) :		—
	Measured circuit capacitance (nF or μ F)..... :		—
2.4.3	Connection of limited current circuits to other circuits		N

2.5	Limited power sources		P
	a) Inherently limited output	Not the inherently limited output.	N
	b) Impedance limited output	Not impedance limited output.	N
	c) Regulating network limited output under normal operating and single fault condition	(see appended table 2.5)	P
	Use of integrated circuit (IC) current limiters	No such kind of IC used.	N
	d) Overcurrent protective device limited output	Not overcurrent protective device limited output.	N
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) .:	Not overcurrent protective device.	—

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

2.6	Provisions for earthing and bonding		N
2.6.1	Protective earthing		N
2.6.2	Functional earthing		N
	Use of symbol for functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		—
	Protective current rating (A), cross-sectional area (mm ²), AWG		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)		N
2.6.3.5	Colour of insulation		N
2.6.4	Terminals		N
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		N
	Rated current (A), type, nominal thread diameter (mm)		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing		N
2.6.5.1	Interconnection of equipment		N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator		N
2.6.5.5	Parts removed during servicing		N
2.6.5.6	Corrosion resistance		N
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N

2.7	Overcurrent and earth fault protection in primary circuits		N
2.7.1	Basic requirements	Equipment supplied by a D.C.	N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		power source.	
	Instructions when protection relies on building installation		N
2.7.2	Faults not simulated in 5.3.7		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices :		N
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel :		N

2.8	Safety interlocks		N
2.8.1	General principles	No safety interlock devices are used.	N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
	Protection against extreme hazard		N
2.8.5	Moving parts		N
2.8.6	Overriding		N
2.8.7	Switches, relays and their related circuits		N
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) :		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test		N
2.8.8	Mechanical actuators		N

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	No natural rubber, hygroscopic materials and materials containing asbestos used as insulation.	P
2.9.2	Humidity conditioning	See below.	P
	Relative humidity (%), temperature (°C) :	93%R.H., 25°C, 48 hours	—
2.9.3	Grade of insulation	All kinds of insulations of this standard are considered.	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used :	To use other construction providing equivalent separation. See sub-clauses 2.2, 5.3.4, appended tables 2.10.3,	—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
		2.10.4 and 5.2.2.	

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See below.	P
2.10.1.1	Frequency	Considered the frequencies up to 30 kHz or more.	P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	See sub-clause 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts	Considered.	P
2.10.1.5	Insulation with varying dimensions	No such kind of insulation transformer.	N
2.10.1.6	Special separation requirements	No TNV circuits.	N
2.10.1.7	Insulation in circuits generating starting pulses	No such kind of circuit.	N
2.10.2	Determination of working voltage	See below.	P
2.10.2.1	General	Related requirements are applied.	P
2.10.2.2	RMS working voltage	(See appended table 2.10.2)	P
2.10.2.3	Peak working voltage	(See appended table 2.10.2)	P
2.10.3	Clearances	See below.	P
2.10.3.1	General	Considered.	P
2.10.3.2	Mains transient voltages	See below.	P
	a) AC mains supply		N
	b) Earthed d.c. mains supplies		N
	c) Unearthed d.c. mains supplies		N
	d) Battery operation		N
2.10.3.3	Clearances in primary circuits		N
2.10.3.4	Clearances in secondary circuits	See sub-clauses 2.2, 2.9, 5.3.4, appended tables 2.10.3, 2.10.4 and 5.2.2.	P
2.10.3.5	Clearances in circuits having starting pulses		N
2.10.3.6	Transients from a.c. mains supply		N
2.10.3.7	Transients from d.c. mains supply		N
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9	Measurement of transient voltage levels		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network :		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.4	Creepage distances	See below.	P
2.10.4.1	General	Considered.	P
2.10.4.2	Material group and comparative tracking index	See below.	P
	CTI tests	Material group IIIb assumed.	—
2.10.4.3	Minimum creepage distances	See sub-clauses 2.2, 2.9, 5.3.4, appended tables 2.10.3, 2.10.4 and 5.2.2.	P
2.10.5	Solid insulation		P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation		N
2.10.5.4	Semiconductor devices	No such kind of device bridged the supplementary insulation or reinforced insulation.	N
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material – General	Two layers are used.	P
2.10.5.7	Separable thin sheet material	Basic insulation.	P
	Number of layers (pcs)	Two layers used, each layer complied with the required electric strength test.	—
2.10.5.8	Non-separable thin sheet material		N
2.10.5.9	Thin sheet material – standard test procedure	Refer to sub-clauses 2.10.5.7 and 2.10.5.10.	N
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	See below.	P
	Electric strength test	(see appended table 5.2)	—
2.10.5.11	Insulation in wound components	See sub-clause 2.10.5.12.	P
2.10.5.12	Wire in wound components	Finished transformer are subject to routine tests for electric strength.	P
	Working voltage	(see appended table 2.10.2)	P
	a) Basic insulation not under stress	Insulation tape used as basic insulation.	P
	b) Basic, supplementary, reinforced insulation		N
	c) Compliance with Annex U		N
	Two wires in contact inside wound component; angle between 45° and 90°	Insulation tape and tubing are used against mechanical stress.	P
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage		N
	- Basic insulation not under stress		N
	- Supplementary, reinforced insulation		N
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards	No coated printed board used.	N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board		N
	Distance through insulation		N
	Number of insulation layers (pcs)		N
2.10.7	Component external terminations		N
2.10.8	Tests on coated printed boards and coated components		N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling		N
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11	Tests for semiconductor devices and cemented joints		N
2.10.12	Enclosed and sealed parts		N

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	The equipment used in secondary circuit. Creation of hazards is unlikely.	P
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts.	P
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.4	Insulation of conductors	Functional insulation are used.	P
3.1.5	Beads and ceramic insulators	No such kinds of insulators used.	N
3.1.6	Screws for electrical contact pressure		N
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating material.	N
3.1.8	Self-tapping and spaced thread screws	No such kinds of screws are used for electrical connections of current-carrying parts.	N
3.1.9	Termination of conductors	The equipment used in secondary circuit. Creation of hazards is unlikely.	N
	10 N pull test		N
3.1.10	Sleeving on wiring		N

3.2	Connection to a mains supply		N
3.2.1	Means of connection	The equipment supplied by a D.C. power supply source.	N
3.2.1.1	Connection to an a.c. mains supply		N
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections		N
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter of cable and conduits (mm) :		—
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type :		—
	Rated current (A), cross-sectional area (mm ²), AWG :		—
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N) :		—
	Longitudinal displacement (mm) :		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	Diameter or minor dimension D (mm); test mass (g) :		—
	Radius of curvature of cord (mm) :		—
3.2.9	Supply wiring space		N

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Clause	Requirement + Test	Result - Remark	Verdict

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

3.4	Disconnection from the mains supply		N
3.4.1	General requirement		N
3.4.2	Disconnect devices		N
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N
3.4.6	Number of poles - single-phase and d.c. equipment		N
3.4.7	Number of poles - three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources		N

3.5	Interconnection of equipment		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits :	To be connected with SELV or limited current circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N
3.5.4	Data ports for additional equipment	(see appended table 2.5)	P

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N
	Angle of 10°	Total mass not exceed 7kg.	N

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Clause	Requirement + Test	Result - Remark	Verdict
	Test force (N)	Equipment is not the type of floor standing unit.	N

4.2	Mechanical strength		P
4.2.1	General	See below.	P
	Rack-mounted equipment.		N
4.2.2	Steady force test, 10 N	No hazards occurred.	P
4.2.3	Steady force test, 30 N	No cover or door used as an enclosure.	N
4.2.4	Steady force test, 250 N	No hazards occurred.	P
4.2.5	Impact test	No hazards occurred.	P
	Fall test	See above.	P
	Swing test		N
4.2.6	Drop test; height (mm)		N
4.2.7	Stress relief test	109.9°C, 7 h. No shrinkage or distortion.	P
4.2.8	Cathode ray tubes		N
	Picture tube separately certified		N
4.2.9	High pressure lamps		N
4.2.10	Wall or ceiling mounted equipment; force (N)	50N, no breaking or damaging the securing means.	P

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are smothed and rounded.	P
4.3.2	Handles and manual controls; force (N)		N
4.3.3	Adjustable controls		N
4.3.4	Securing of parts	All screws are secured.	P
4.3.5	Connection by plugs and sockets	Misconnection is not possible happened.	P
4.3.6	Direct plug-in equipment		N
	Torque		—
	Compliance with the relevant mains plug standard:		N
4.3.7	Heating elements in earthed equipment		N
4.3.8	Batteries		N
	- Overcharging of a rechargeable battery		N
	- Unintentional charging of a non-rechargeable battery		N
	- Reverse charging of a rechargeable battery		N
	- Excessive discharging rate for any battery		N

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.9	Oil and grease		N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases		N
4.3.12	Flammable liquids		N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation		N
4.3.13.1	General		N
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N
	Part, property, retention after test, flammability classification		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N
4.3.13.5	Lasers (including laser diodes) and LEDs		N
4.3.13.5.1	Lasers (including laser diodes)		N
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	Low power LEDs used as indicating lights.	N
4.3.13.6	Other types		N

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

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

4.5	Thermal requirements		P
4.5.1	General	See below.	P
4.5.2	Temperature tests	(see appended table 4.5)	P
	Normal load condition per Annex L	Operated in the most unfavourable way of operation given in the operating instructions until steady conditions established.	—
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	The bobbin of T1 made of phenolic, regarded as thermoset material and UL approved it at 150°C. (see appended table 1.5.1)	N

4.6	Openings in enclosures		P
4.6.1	Top and side openings	See below.	P
	Dimensions (mm)	No openings.	—
4.6.2	Bottoms of fire enclosures	See below.	P
	Construction of the bottommm, dimensions (mm) ...	No openings.	—
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment		N
4.6.4.1	Constructional design measures		N
	Dimensions (mm)		—
4.6.4.2	Evaluation measures for larger openings		N
4.6.4.3	Use of metallized parts		N
4.6.5	Adhesives for constructional purposes		N
	Conditioning temperature (°C), time (weeks)		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Method 1: Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	P
	Method 1, selection and application of components	(see appended table 4.7)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	wiring and materials		
	Method 2, application of all of simulated fault condition tests	Not applicable.	N
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	Fire enclosure covers all parts.	P
4.7.2.2	Parts not requiring a fire enclosure	See 4.7.2.1.	N
4.7.3	Materials		P
4.7.3.1	General	Adequated flammability classification materials used.	P
4.7.3.2	Materials for fire enclosures	(see appended table 1.5.1)	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No components or parts outside fire enclosures.	N
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated minimum V-2 or better, mounted on a PWB rated 94V-1 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies used.	N
4.7.3.6	Materials used in high-voltage components	No high voltage component used.	N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		N
5.1.1	General		N
5.1.2	Configuration of equipment under test (EUT)		N
5.1.2.1	Single connection to an a.c. mains supply		N
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit		N
5.1.4	Application of measuring instrument		N
5.1.5	Test procedure		N
5.1.6	Test measurements		N
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)...		—
5.1.7	Equipment with touch current exceeding 3,5 mA		N
5.1.7.1	General		N

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.2	Simultaneous multiple connections to the supply		N
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N
	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) EUT with earthed telecommunication ports		N
	b) EUT whose telecommunication ports have no reference to protective earth		N

5.2	Electric strength		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	No insulation breakdown during the test. (see appended table 5.2)	P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors		N
5.3.3	Transformers	See Annex C.	P
5.3.4	Functional insulation	Functional insulation complies with the requirements b) and c).	P
5.3.5	Electromechanical components	No electromechanical components used.	N
5.3.6	Audio amplifiers in ITE	No audio amplifiers used.	N
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	Equipment is not for unattended use.	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	No fire, emission of molten metal or deformation was noted during the tests. Electric Strength tests performed after abnormal and fault tests.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.1	During the tests	No fire burns, emit molten metal and enclosures deformation.	P
5.3.9.2	After the tests	Electric strength test made.	P

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

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

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

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N
7.1	General		N
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
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N

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Clause	Requirement + Test	Result - Remark	Verdict

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
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.1.1	Samples		—
	Wall thickness (mm)		—
A.1.2	Conditioning of samples; temperature (°C)		N
A.1.3	Mounting of samples		N
A.1.4	Test flame (see IEC 60695-11-3)		N
	Flame A, B, C or D		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	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.2.1	Samples, material		—
	Wall thickness (mm)		—
A.2.2	Conditioning of samples; temperature (°C)		N
A.2.3	Mounting of samples		N
A.2.4	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	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
	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.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N

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Clause	Requirement + Test	Result - Remark	Verdict

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N
B.1	General requirements		N
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		N
B.6.1	General		N
B.6.2	Test procedure		N
B.6.3	Alternative test procedure		N
B.6.4	Electric strength test; test voltage (V)		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	General		N
B.7.2	Test procedure		N
B.7.3	Alternative test procedure		N
B.7.4	Electric strength test; test voltage (V)		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V)		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position	T1	—
	Manufacturer	(see appended table 1.5.1)	—
	Type	(see appended table 1.5.1)	—
	Rated values	(see appended table 1.5.1)	—
	Method of protection	By external protection circuit	—
C.1	Overload test	(see appended table 5.3)	P

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Clause	Requirement + Test	Result - Remark	Verdict
C.2	Insulation	(see appended table C.2)	P
	Protection from displacement of windings.....:	(see appended table C.2)	P
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		N
D.1	Measuring instrument		N
D.2	Alternative measuring instrument		N
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
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
G.1	Clearances		N
G.1.1	General		N
G.1.2	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.2.1	AC mains supply		N
G.2.2	Earthed d.c. mains supplies		N
G.2.3	Unearthed d.c. mains supplies		N
G.2.4	Battery operation		N
G.3	Determination of telecommunication network transient voltage (V)		N
G.4	Determination of required withstand voltage (V)		N
G.4.1	Mains transients and internal repetitive peaks:		N
G.4.2	Transients from telecommunication networks		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient voltages (V)		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network		N
G.6	Determination of minimum clearances		N
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N

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Clause	Requirement + Test	Result - Remark	Verdict

J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal(s) used		—

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

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
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment	Continuous operation at rated output load.	P

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.1	Introduction		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz)		—
M.3.1.2	Voltage (V)		—
M.3.1.3	Cadence; time (s), voltage (V)		—
M.3.1.4	Single fault current (mA)		—
M.3.2	Tripping device and monitoring voltage		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V)		N

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Clause	Requirement + Test	Result - Remark	Verdict

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
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N

P	ANNEX P, NORMATIVE REFERENCES		—
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Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N
	- Preferred climatic categories		N
	- Maximum continuous voltage		N
	- Combination pulse current		N
	Body of the VDR Test according to IEC60695-11-5.....		N
	Body of the VDR. Flammability class of material (min V-1)		N

R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N
R.2	Reduced clearances (see 2.10.3)		N

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N

T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
		IPX0	—

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.12)		N
			—

V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		N
V.1	Introduction		N
V.2	TN power distribution systems		N

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Clause	Requirement + Test	Result - Remark	Verdict

W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N
W.1	Touch current from electronic circuits		N
W.1.1	Floating circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	Isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N

X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N

Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus		N
Y.2	Mounting of test samples		N
Y.3	Carbon-arc light-exposure apparatus		N
Y.4	Xenon-arc light exposure apparatus		N

Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
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BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
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CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N
CC.1	General		N
CC.2	Test program 1		N
CC.3	Test program 2		N
CC.4	Test program 3		N
CC.5	Compliance		N

DD	ANNEX DD, Requirements for the mounting means of rack-mounted equipment		N
DD.1	General		N
DD.2	Mechanical strength test, variable N.....		N

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Clause	Requirement + Test	Result - Remark	Verdict
DD.3	Mechanical strength test, 250N, including end stops.....:		N
DD.4	Compliance.....:		N

EE	ANNEX EE, Household and home/office document/media shredders		N
EE.1	General		N
EE.2	Markings and instructions		N
	Use of markings or symbols		N
	Information of user instructions, maintenance and/or servicing instructions		N
EE.3	Inadvertent reactivation test		N
EE.4	Disconnection of power to hazardous moving parts:		N
	Use of markings or symbols		N
EE.5	Protection against hazardous moving parts		N
	Test with test finger (Figure 2A)		N
	Test with wedge probe (Figure EE1 and EE2)		N

IEC/EN 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
1.5.1	TABLE: list of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
Metal enclosure (for Model: MIT-69N-1248BDNM/ MIT-69N-1248BDNMH/ MIT-69G-1248BDNMH only)	Interchangeable	Interchangeable	Matel, min. 0.8 mm thickness	Evaluated with equipment	--
Mylar sheet (between PCB and Metal)for Model: MIT-69N-1248BDNM/ MIT-69N-1248BDNMH/ MIT-69G-1248BDNMH only	Interchangeable	Interchangeable	Min 0.4 mm. thickness	UL 94	UL
Plastic enclosure	Sabic Innovative Plastics B V	C6200(GG)	Min. V-1, min. 2.0 mm	ANSI/UL 94	UL
(Alternate)	Sabic Innovative Plastics Us L L C	C6200(GG)	Min. V-1, min. 2.0 mm	ANSI/UL 94	UL
(Alternate)	Teijin Limited Resin and Plastic	LN-1250G(#)(*)	Min. V-1, min. 2.0 mm	ANSI/UL 94	UL
PCB	Interchangeable	Interchangeable	V-1 or better, min.105°C	ANSI/UL 746	UL
Terminal block (P1, mounted on PCB)	Interchangeable	Interchangeable	Min. 5A, min. 100V, min. 105 degree C	IEC/EN 60947-1, IEC/EN 60947-7-1, IEC/EN 61984	VDE, TUV, FI or ENEC
Terminal block (P1, header connection)	Interchangeable	Interchangeable	Min. 5A, min. 100V, min. 105 degree C	IEC/EN 60947-1, IEC/EN 60947-7-1, IEC/EN 61984	VDE, TUV, FI or ENEC
Fuse (F1)	Conquer	PTU 005	T5A, 250V	IEC/EN 60127-1, IEC/EN 60127-3	VDE
(Alternate)	Interchangeable	Interchangeable	T5A, 250V	IEC/EN 60127-1, IEC/EN 60127-3	VDE, TUV, FI or ENEC
Fuse (F1) for Model: MIT-69G-4818BNNN/ MIT-69G-4824BNNN/ MIT-69G-4848BNNN only)	Conquer	PTU 002	T2A, 250V	IEC/EN 60127-1, IEC/EN 60127-3	VDE
(Alternate)	Interchangeable	Interchangeable	T2A, 250V	IEC/EN 60127-1, IEC/EN 60127-3	VDE, TUV, FI or ENEC

IEC/EN 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
Choke (L1)	Jai Mei	13-02MIT-G45-L1	Min. 130°C	Evaluating with equipment	--
Optocoupler (PL1)	Lite-On	LTV-817	Min. dti=0.4mm, min. int. cr.=5.0mm, min. ext. cr.=5.0mm, complied with thermal cycling test, min. 100°C	IEC/EN 60747-5-5, IEC/EN 60950-1	VDE, TUV, FI or ENEC
(Alternate)	Interchangeable	Interchangeable	Min. dti=0.4mm, min. int. cr.=5.0mm, min. ext. cr.=5.0mm, complied with thermal cycling test, min. 100°C	IEC/EN 60747-5-5, IEC/EN 60950-1	VDE, TUV, FI or ENEC
Transformer (T1)	Jai Mei Technology Inc.	13-01MIT-G4548	Class 130°C	Evaluating with equipment	--
- Bobbin	SUMITOMO BAKELITE CO LTD	PM-9820	Phenolic, min. V-0, 150°C	UL 94	UL
- Insulation tape	3M Company	1350F-1 1350F-2	130°C	UL 510	UL
(Alternate)	Symbio Inc.	35660	130°C	UL 510	UL
(Alternate)	Jingjiang Yahua Pressure Sensitive Glue Co Ltd	CT PZ	130°C	UL 510	UL
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

1.5.1	TABLE: Opto Electronic Devices	P
Manufacturer.....	See table above	
Type.....	See table above	
Separately tested.....	See table above	
Bridging insulation	See table above	
External creepage distance	See table above	
Internal creepage distance	See table above	
Distance through insulation	See table above	
Tested under the following conditions	Reinforced insulation	
Input.....	GaAs IR-LED	
Output.....	Phototransistor	
Supplementary information:		

IEC/EN 60950-1							
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	
Model : MIT-69N-1218BNNN							
9Vdc	2.68	2.8	24.12	F1	2.68	Max. normal load: PoE port connected to DC electronic load with its rated load.	
36Vdc	0.59	0.64	21.24	F1	0.59		
Model : MIT-69N-1248BDNMH							
9Vdc	2.32	2.8	20.88	F1	2.32	Max. normal load: PoE port connected to DC electronic load with its rated load.	
36Vdc	0.54	0.64	19.44	F1	0.54		
Model : MIT-69G-1248ANRN							
9Vdc	2.31	2.86	20.79	F1	2.31	Max. normal load: PoE port connected to DC electronic load with its rated load.	
36Vdc	0.52	0.67	18.72	F1	0.52		
Model : MIT-69G-4848BNNN							
36Vdc	0.74	0.75	26.64	F1	0.74	Max. normal load: PoE port connected to DC electronic load with its rated load.	
72Vdc	0.36	0.37	25.92	F1	0.36		
Supplementary information:							
The measured input current at rated voltage shall be $\leq 110\%$ of rated current.							

2.1.1.5 c) 1)	TABLE: Max. V, A, VA test					P
Accessible Part From – To	Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max. at 60 s) (VA)	
Model : MIT-69N-1218BNNN						
PoE port (RJ45)	18Vdc	1	18.39	1.6	28.8	
Model : MIT-69N-1248BDNMH						
PoE port (RJ45)	48Vdc	0.35	48.64	0.65	31.512	
Model : MIT-69G-1248ANRN						
PoE port (RJ45)	48Vdc	0.5	48.35	0.75	35.8875	
Model : MIT-69G-4848BNNN						
PoE port (RJ45)	48Vdc	0.5	48.33	0.75	36.0375	
Supplementary information:						

2.1.1.5 c) 2)	TABLE: stored energy			N
Accessible Part From – To	Capacitance C (μF)	Voltage U (V)	Energy E (J)	
Supplementary information:				

2.1.1.7	TABLE: discharge of capacitors in equipment					N
Measurement Locations	Fuse In/Out	Switch Position	Vo (V dc)	37% Vo (V dc)	Vtc (Vdc)	
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 5 to Pin 6	196	--	--	

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
After R25	194	--	R25
After D8	--	30.8	D8
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)		
D8, SC	Unit shutdown		
Supplementary information:			
Supply voltage: 1.Test Model : MIT-69G-4848BNNN 2.Supply voltage:72Vdc 3.SC=short circuit			

2.4	TABLE: limited current circuit						N
Operation condition:		Volts Peak	Volts dc	mAp	mA dc	Frequency kHz	Limit value (mA)
Supplementary information:							

2.5 (3.5.4)	TABLE: Limited power sources					P
Circuit output tested: see below						
Note: Measured Uoc (V) with all load circuits disconnected: see below						
Components	Test condition (Single fault)	Uoc (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Model : MIT-69N-1218BNNN						
PoE port	Normal	18.39	1.6	8	28.8	100
PoE port	R13, SC	18.39	2.85	8	42.1	100
Model : MIT-69N-1248BDNMH						
PoE port	Normal	48.64	0.65	8	31.512	100
PoE port	R13, SC	48.64	1.12	8	35.23	100
Model : MIT-69G-1248ANRN						
PoE port	Normal	48.35	0.75	8	35.8875	100
PoE port	R13, SC	48.35	1.55	8	39.83	100
Model : MIT-69G-4848BNNN						
PoE port	Normal	48.33	0.75	8	36.0375	100
PoE port	R13, SC	48.33	1.62	8	42.53	100
Supplementary information:						
Supply voltage: SC=short circuit						

2.6.3.4	TABLE: Resistance of earthing / bonding conductors and their terminations					N
Test current:	☐ 40 A, ☐ 32 A, ☐ ___ A					
Time Duration (s):	120					
Measurement parts		Measured resistance (Ω)	Limit (Ω)	Measured voltage (V)	Limit (V)	
Supplementary information:						

2.10.2	TABLE: Working Voltage Measurement			P
Location		RMS voltage (V)	Peak voltage (V)	Comments
T1, pin 1 to pin 5		29.5	144	--
T1, pin 1 to pin 6		42.9	84.8	--
T1, pin 2 to pin 5		72.4	189	Max Vpk, RMS

IEC/EN 60950-1				
Clause	Requirement + Test		Result - Remark	Verdict
T1, pin 2 to pin 6	3.01	11.2	--	
T1, pin 3 to pin 5	52.8	144	--	
T1, pin 3 to pin 6	19.5	59.6	--	
T1, pin 4 to pin 5	72.4	184	--	
T1, pin 4 to pin 6	2.76	9.6	--	
PL1, pin 3 to pin 1	4.53	14.4	--	
PL1, pin 3 to pin 2	3.18	12.8	--	
PL1, pin 4 to pin 1	9.61	30.4	--	
PL1, pin 4 to pin 2	4.52	17.6	--	
C14	2.94	5.92	--	
Supplementary information:				
Supply voltage: 72Vdc				

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)	
Transformer (T1) and enclosure accessible surface	189	72.4	1.8	3.4	2.6	3.4	
Supplementary information:							
See sub-clauses 2.2, 2.9, 5.3.4 and appended table 5.2.2.							

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)	
Insulation tape for transformer (T1)	210	80	1500Vac	2 layers	1 layer evaluated	
Plastic enclosure	210	80	1500Vac	0.4	2.0	
Supplementary information:						

4.3.8	TABLE: Batteries								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available									—
Is it possible to install the battery in a reverse polarity position?									—
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. Current	Manuf. Specs.		Meas. Current	Manuf. Specs.	Meas. Current	Manuf. Specs.	Meas. Current	Manuf. Specs.
Max. current during normal condition									
Max. current during fault condition									
Test results:									Verdict
- Chemical leaks									
- Explosion of the battery									
- Emission of flame or expulsion of molten metal									
- Electric strength tests of equipment after completion of tests									
Supplementary information:									

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

4.3.8	TABLE: Batteries		N
Battery category..... :			
Manufacturer..... :			
Type / model :			
Voltage..... :			
Capacity..... :			
Tested and Certified by (incl. Ref. No.) :			
Circuit protection diagram..... :			

4.5	TABLE: Thermal requirements					P
	Supply voltage (V)	9Vdc		36Vdc		—
	Ambient Tmin (°C)	See below	Shift to 50	See below	Shift to 50	—
	Ambient Tmax (°C)					—
Maximum measured temperature T of part/at.....		T (°C)				Allowed T _{max} (°C)
Model : MIT-69N-1218BNNN						
1.	Plastic enclosure external surface above the T1	57.7	82.7	48.7	80.4	95
2.	Plastic enclosure internal surface above the T1	74.9	99.9	60.6	92.3	--
3.	Primary conductor body (P1) near VIN+ pin	51.1	76.1	35.4	67.1	85
4.	L1 coil	93.2	118.2	68.3	100.0	130
5.	C4 body	78.1	103.1	69.3	101.0	105
6.	T1 coil	83.4	108.4	77.2	108.9	110
7.	T1 core	82.3	107.3	76.9	108.6	110
8.	PCB near T1	104.6	129.6	88.9	120.6	130
9.	PL1 body	73.7	98.7	66.9	98.6	100
10.	Ambient	25.0	50.0	18.3	50.0	--
Model : MIT-69N-1248BDNMH						
1.	Metal enclosure external surface above the T1	44.3	69.3	37.9	69.4	70
2.	Primary conductor body (P1) near VIN+ pin	43.5	68.5	33.8	65.3	85
3.	L1 coil	94.4	119.4	60.9	92.4	130
4.	C4 body	78.5	103.5	65.9	97.4	105
5.	T1 coil	83.9	108.9	77.8	109.3	110
6.	T1 core	83.1	108.1	77.2	108.7	110
7.	PCB near T1	79.4	104.4	75.1	106.6	130
8.	PL1 body	62.6	87.6	56.4	87.9	100
9.	Ambient	25.0	50.0	18.5	50.0	--
Model : MIT-69G-1248ANRN						
1.	Plastic enclosure external surface above the T1	51.1	76.0	38.8	70.5	95
2.	Plastic enclosure internal surface above the T1	44.3	69.2	35.4	67.1	--
3.	Primary conductor body (P1) near VIN+ pin	43.5	68.4	33.7	65.4	85
4.	L1 coil	93.5	118.4	60.6	92.3	130
5.	C4 body	78.5	103.4	68.3	100.0	105
6.	T1 coil	83.8	108.7	75.5	107.2	110
7.	T1 core	81.6	106.5	75.0	106.7	110
8.	PCB near T1	74.9	99.8	71.8	103.5	130
9.	PL1 body	62.6	87.5	60.6	92.3	100
10.	Ambient	25.1	50.0	18.3	50.0	--
Model : MIT-69G-4848BNNN						
Maximum measured temperature T of part/at:		36Vdc		72Vdc		—
		See below	Shift to 50	See below	Shift to 50	Allowed T _{max} (°C)

IEC/EN 60950-1							
Clause	Requirement + Test			Result - Remark			Verdict
1. Plastic enclosure external surface above the T1	47.7	71.5	46.1	69.5	95		
2. Plastic enclosure internal surface above the T1	55.6	79.4	53.6	77.0	--		
3. Primary conductor body (P1) near VIN+ pin	35	58.8	32.1	55.5	85		
4. L1 coil	67.6	91.4	60.3	83.7	130		
5. C4 body	72.8	96.6	64.5	87.9	105		
6. T1 coil	83.5	107.3	80.6	104.0	110		
7. T1 core	81.0	104.8	78.6	102.0	110		
8. PCB near T1	76.7	100.5	78.8	102.2	130		
9. PL1 body	64.4	88.2	62.7	86.1	100		
10. Ambient	26.2	50.0	26.6	50.0	--		
Supplementary information:							
Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							
The temperatures were measured with thermocouples (type J) under worst case of normal mode defined in sub-cl. 1.2.2.1 and as described in sub-cl. 1.6.2 and different voltages as described above.							
The above-measured temperatures are shifted that are based on the maximum ambient temperature specified at 50°C.							
The maximum temperature limit is considered as allowed T _{max} (°C).							

4.5.5	TABLE: ball pressure test of thermoplastic parts			N
	allowed impression diameter (mm)	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

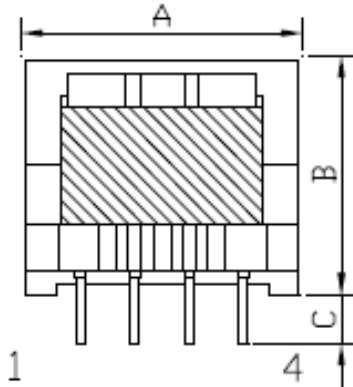
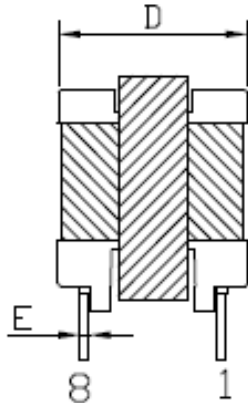
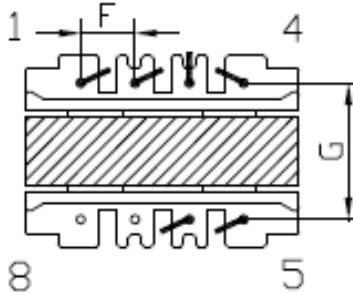
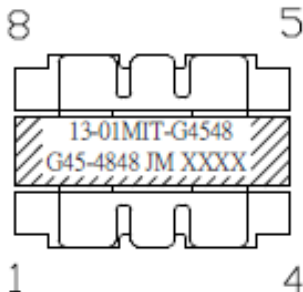
4.7	TABLE: resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
--	(see appended tables 1.5.1)	--	--	--	--	
Supplementary information:						

5.1	TABLE: Touch Current Measurement				N
Measured between:		Measured (mA r.m.s.)	Limit (mA r.m.s.)	Comments/conditions	
Supplementary information:					

5.2.2	TABLE: Electric Strength Test			P
Test voltage applied between:		Test voltage (v) [a.c. / d.c.]	Breakdown [Yes / No]	
Model : MIT-69G-4848BNNN				
Input +&- pins and PoE (RJ45) port		2121Vdc	No	
Input +&- pins and Plastic enclosure		2121Vdc	No	
One layer of insulation tape		1500Vac	No	
T1 between primary windings/pins and secondary winding/pins		1500Vac	No	
Supplementary information:				

IEC/EN 60950-1							
Clause	Requirement + Test				Result - Remark		Verdict
C.2	TABLE: transformers						P
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
T1, between primary windings/pins and secondary winding/pins	Basic	189	72.4	1500Vac	#	#	#
T1, between secondary winding/pins and core	Basic	189	72.4	1500Vac	#	#	#
T1, between primary windings/pins and core	Basic	189	72.4	1500Vac	#	#	#
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
T1, between primary windings/pins and secondary winding/pins	Basic			1500Vac	#	#	#
T1, between secondary windings/pins and core	Basic			1500Vac	#	#	#
T1, between primary windings/pins and core	Basic			1500Vac	#	#	#
Supplementary information:							
#: Compliance with requirements of sub-clauses 2.2, 2.9, 5.3.4 and appended table 5.2.2.							

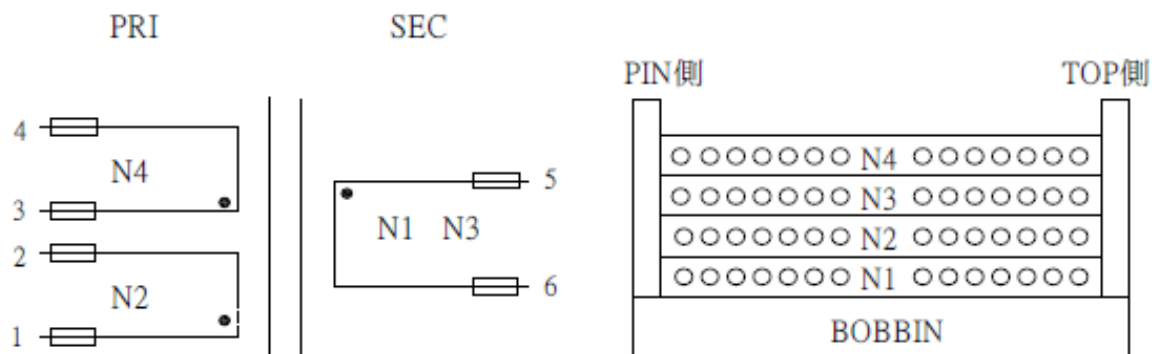
IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

C.2	TABLE: transformers	P
T1:		
(1) CONFIGURATION & DESCRIPTION		
UNIT : m/m		
   		

IEC/EN 60950-1

Clause	Requirement + Test	Result - Remark	Verdict
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(2) SCHEMATIC



※ NOTE ● START, TEFLON TUBE,

(3) WINDING CONSTRUCTION

WINDING ORDER	TERMINAL NO. START - FINISH	WINDING SPECIFICATION	MYLAR TAPE	REMARK
#1	N1 5 - 6	UEWS/U 0.2 ϕ *2*44Ts	2Ts	密繞
#2	N2 1 - 2	UEWS/U 0.28 ϕ *4*26Ts	2Ts	密繞
#3	N3 5 - 6	UEWS/U 0.2 ϕ *2*44Ts	2Ts	密繞
#4	N4 3 - 4	UEWS/U 0.2 ϕ *1*12Ts	2Ts	密中繞

IEC/EN 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
PART MATERIAL IDENTIFICATION					
No	ITEM	MATERIAL	CLASS	UL FILE NO.	MANUFACTURER
1.	INSULATION SYSTEM	CLASS 130(B) SBI4.2		E231049	DONGGUAN ZHANGMUTOU HONG CHAN ELECTRONICS CO.,LTD.
2.	CORE	EE-25.4 MZ4			HIMAG
		E25/19 DMR40			DMEGC
		EE25/19 JPP-4			A-CORE
		EE25/19 P4			ACME
3.	BOBBIN	PM9820(SW-25H or EQU)	150℃	E41429	SUMITOMO BAKELITE CO LTD
4.	WIRE	UEWS/U MW75-C	130℃	E201757	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN)CO.,LTD.
5.	TAPE	POLYESTER CAT . NO. 35660	130℃	E50292	SYMBIO INC
		NO.1350F-1 NO.1350F-2	130℃	E17385	3M COMPANY ELECTRICAL PRODUCTS DIV
		CT,PZ	130℃	E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.
6.	VARNISH	V1630FS 468-2(X)	130℃	E75225	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC
7.	TUBE	TEFLON (TFL)	200℃	E156256	GREAT HOLDING INDUSTRIAL CO.,LTD.

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 60950-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Information technology equipment – Safety – Part 1: General requirements			
Differences according to	EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013		
Attachment Form No.	EU_GD_IEC60950_1F		
Attachment Originator	SGS Fimko Ltd		
Master Attachment	Date 2014-02		
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EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)							
Clause	Requirement + Test				Result - Remark		Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"						P
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD (informative) IEC and CENELEC code designations for flexible cords						P
General	Delete all the "country" notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3.2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2						P
General (A1:2010)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note						P
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2 Note 2 * Note of secretary: Text of Common Modification remains unchanged.						P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.1.1 (A1:2010)	Replace the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		N
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
(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
1.5.1 (Added info*)	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *		P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N
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
	Zx Protection against excessive sound pressure from personal music players		N

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

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

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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	Zx.4 Requirements for listening devices (headphones and earphones)		N
	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
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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 above mentioned 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
	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
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
	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

IEC/EN 60950-1												
Clause	Requirement + Test	Result - Remark	Verdict									
2.7.2	This subclause has been declared 'void'.		N									
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N									
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: <table><tr><td>Up to and including</td><td>6 </td><td>0,75^{a)} </td></tr><tr><td>Over 6 up to and including</td><td>10 (0,75)^{b)}</td><td>1,0 </td></tr><tr><td>Over 10 up to and including</td><td>16 (1,0)^{c)}</td><td>1,5 </td></tr></table> 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.	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		N
Up to and including	6	0,75 ^{a)}										
Over 6 up to and including	10 (0,75) ^{b)}	1,0										
Over 10 up to and including	16 (1,0) ^{c)}	1,5										
3.2.5.1 (A2:2013)	NOTE Z1The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N									
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									
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).		N									
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N									
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									
Bibliography	Additional EN standards.		—									
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—									

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

ZB ANNEX (NORMATIVE) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N
1.2.13.14 (A11:2009)	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N
1.5.7.1 (A11:2009)	In Finland , Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N
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
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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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"		N
1.7.2.1 (A11:2009)	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)."		

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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.”		
1.7.2.1 (A2:2013)	In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in Denmark shall be as follows: In Denmark: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”		N
1.7.5 1.7.5 (A11:2009)	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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5 (A2:2013)	In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c		N
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
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
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
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		N
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
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
3.2.1.1	In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991: Plug Type 15, 3P+N+PE, 250/400 V, 10 A SEV 6533-2.1991: Plug Type 11, L+N, 250 V, 10 A SEV 6534-2.1991: Plug Type 12, L+N+PE, 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25, 3L+N+PE, 230/400 V, 16 A SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16 A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A		N

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. 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
3.2.1.1 (A2:2013)	In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1. 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 a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Justification the Heavy Current Regulations, 6c		N
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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
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
3.2.4	In Switzerland , for requirements see 3.2.1.1 of this annex.		N
3.2.5.1	In the United Kingdom , a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N
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
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
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

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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
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
7.3 (A11:2009)	In Norway and Sweden, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N

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

Annex ZD
(informative)

IEC and CENELEC code designations for flexible cords

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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
Clause	Requirements – Test	Result – Remark	Verdict
AUSTRALIA-Differences to IEC 60950-1:2005 AS/NZS 60950.1-2011 (2011-05-06)			
Appendix ZZ (normative) Variations to IEC 60950-1:2005 (2nd Ed.) for application in Australia and New Zealand			
ZZ.1 Introduction This Appendix sets out variations and additional requirements to cover issues which have not been addressed by the International Standard. These variations indicate national variations for purposes of the IEC EE CB System and will be published in the IEC EE CB Bulletin.			
ZZ.2 Variations The variations are as follows:			
1.2	Insert the following between 'person, service' and 'range, rated frequency': POTENTIAL IGNITION SOURCE 1.2.12	Considered.	P
1.2.12.201	Insert a new Clause 1.2.12.201 after Clause 1.2.12.15 as follows: 1.2.12.201 POTENTIAL IGNITION SOURCE Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s. current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in CONDUCTIVE PATTERNS on PRINTED BOARDS . NOTE 201 An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE . NOTE 202 This definition is from AS/NZS 60065:2003.		P
1.5.1	1. Add the following to the end of first paragraph: 'or the relevant Australian/New Zealand Standard'. 2. In NOTE 1, add the following after the word 'standard': 'or an Australian/New Zealand Standard'		P
1.5.2	Add the following to the end of first and third dash items: 'or the relevant Australian/New Zealand Standard'.		N/A
3.2.5.1	Modify Table 3B as follows: 1. Delete the first four rows and replace with the following: 2. Delete Note 1. 3. Delete Footnote a and replace with the following: a This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0,5 mm ² three-core supply flexible cords are not permitted; see AS/NZS 3191).	No cord provided.	N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.1.201	<i>Insert a new Clause 4.1.201 after Clause 4.1 as follows:</i> 4.1.201 Display devices used for television purposes Display devices which may be used for television purposes, with a mass of 7 kg or more, shall comply with the requirements for stability and mechanical hazards, including the additional stability requirements for television receivers, specified in AS/NZS 60065.		N/A
4.3.6	<i>Delete the third paragraph and Replace with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.</i>		N/A
4.3.13.5	<i>Add the following to the end of first paragraph: 'or AS/NZS 2211.1'.</i>		N/A
4.7	<i>Add the following paragraph to the end of the clause: For alternative tests refer to Clause 4.7.201.</i>		N/A
4.7.201	<i>Insert a new Clause 4.7.201 after Clause 4.7.3.6 as follows:</i> 4.7.201 Resistance to fire – Alternative tests 4.7.201.1 General Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following: (a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length. (b) The following parts which would contribute negligible fuel to a fire: - small mechanical parts, the mass of which does not exceed 4g, such as mounting parts, gears, cams, belts and bearings; - small electrical components, such as capacitors with a volume not exceeding 1,750mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	NOTE In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another. Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5. For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5. The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring.		
4.7.201.2	Testing of non-metallic materials Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glowwire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH3 material. The glowwire test shall be not carried out on parts of material classified at least FH3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part.		N/A
4.7.201.3	Testing of insulating materials Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C The test shall also be carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE: Contacts in components such as switch contacts are considered to be connections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested. The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the sample tested was not thicker than the relevant part.		
4.7.201.4	Testing in the event of non-extinguishing material If parts, other than enclosures, do not withstand the glow wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1 If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 2 If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 3 Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.		N/A
4.7.201.5	Testing of printed boards The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE. The test is not carried out if the – - Printed board does not carry any POTENTIAL IGNITION SOURCE;		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or - Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. Compliance shall be determined using the smallest thickness of the material. NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power from more than 2 min when the circuit supplied is disconnected.		
6.2.2	For Australia only, <i>delete</i> the first paragraph and Note, and replace with the following: In Australia only, compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2.		N/A
6.2.2.1	For Australia only, <i>delete</i> the first paragraph including the Notes, and <i>replace</i> with the following: In Australia only, the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator reference 1 of Table N.1. The interval between successive impulses is 60 s and the initial voltage, U_c, is: (i) for 6.2.1 a): 7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and (ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 201 The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.2.2	For Australia only, <i>delete</i> the second paragraph including the Note, and <i>replace</i> with the following: In Australia only, the a.c. test voltage is: (i) for 6.2.1 a): 3 kV; and (ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 201 Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.		N/A
7.3	<i>Add</i> the following before the first paragraph: Equipment providing functions that fall only within the scope of AS/NZS 60065 and that incorporate a PSTN interface, are not required to comply with this Clause where the only ports provided on the equipment, in addition to a coaxial cable connection and a PSTN interface, are audio or video ports and analogue or data ports not intended to be used for telecommunications purposes.		N/A
Annex P	<i>Add</i> the following Normative References: AS/NZS 3191, Electric flexible cords AS/NZS 3112, Approval and test specification— Plugs and socket-outlets		N/A
Index	1. Insert the following between asbestos, not to be used as insulation and attitude see orientation, AS/NZS 2211.1.....4.3.13.5 AS/NZS 3112.....4.3.6 AS/NZS 3191.....3.2.5.1(Table 3B) AS/NZS 60064.....4.1.201 AS/NZS 60695.2.11.....4.7.201.2, 4.7.201.3 AS/NZS 60695.11.10.....4.7.201.1, 4.7.201.5 AS/NZS 60695.11.5.....4.7.201.3 2. Insert the following between positive temperature coefficient (PTC) device and powder potential ignition source..... 1.2.201, 4.7.201.3, 4.7.201.5		N/A

Photographs

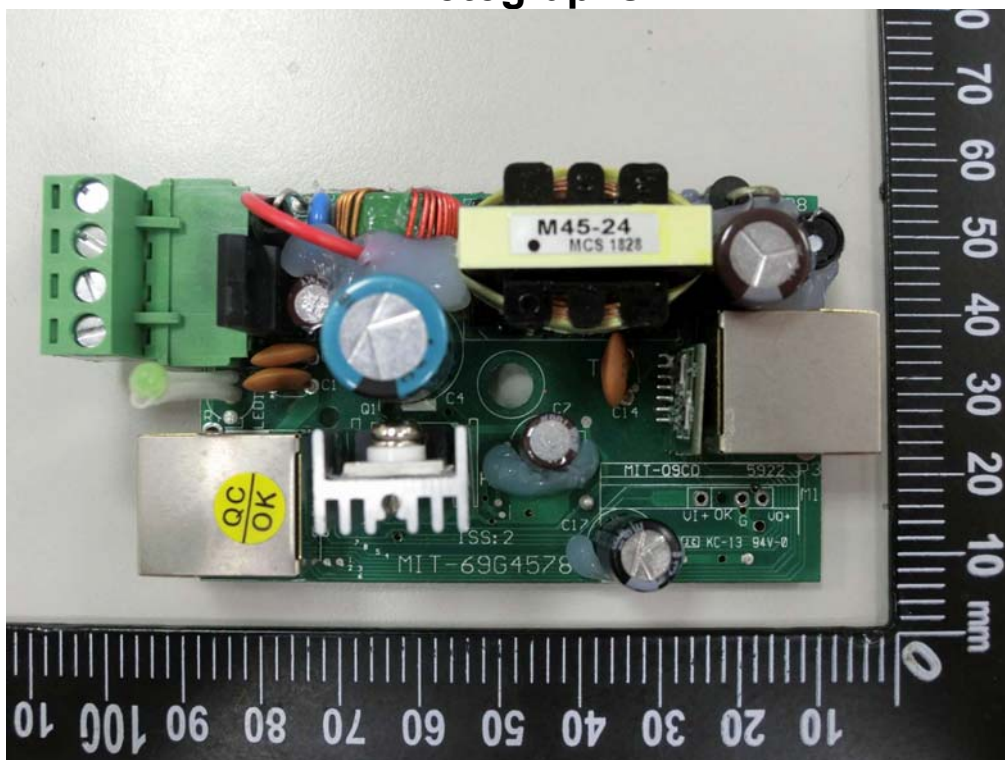


Overall view(MIT-69N-1218BNNN)

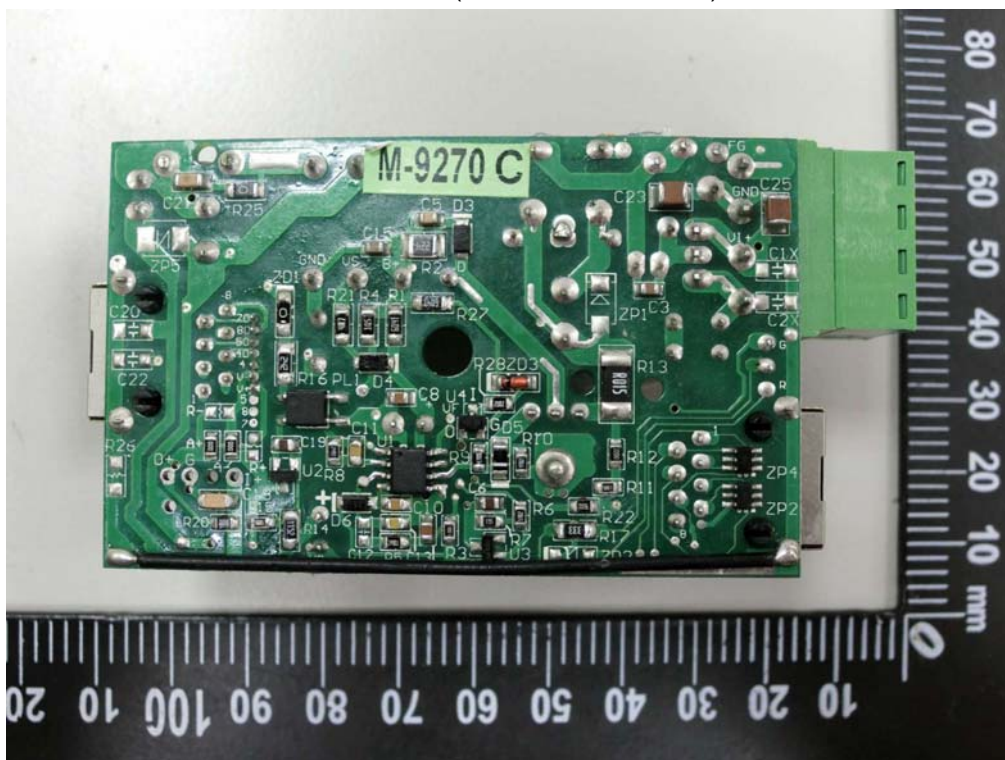


Overall view(MIT-69N-1218BNNN)

Photographs

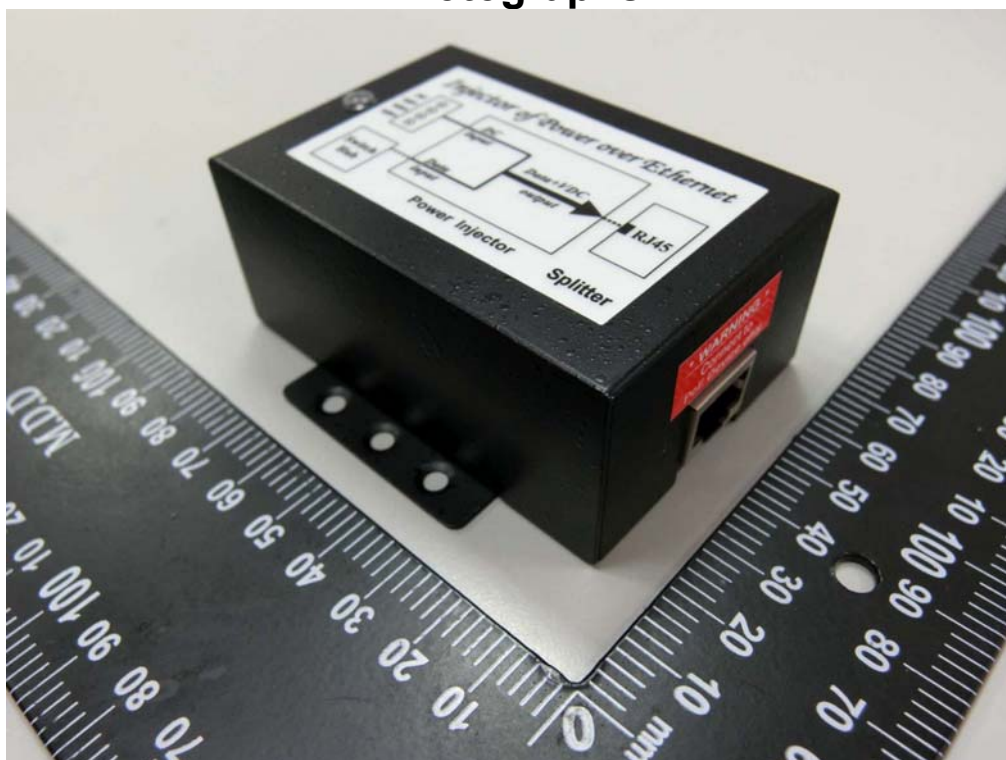


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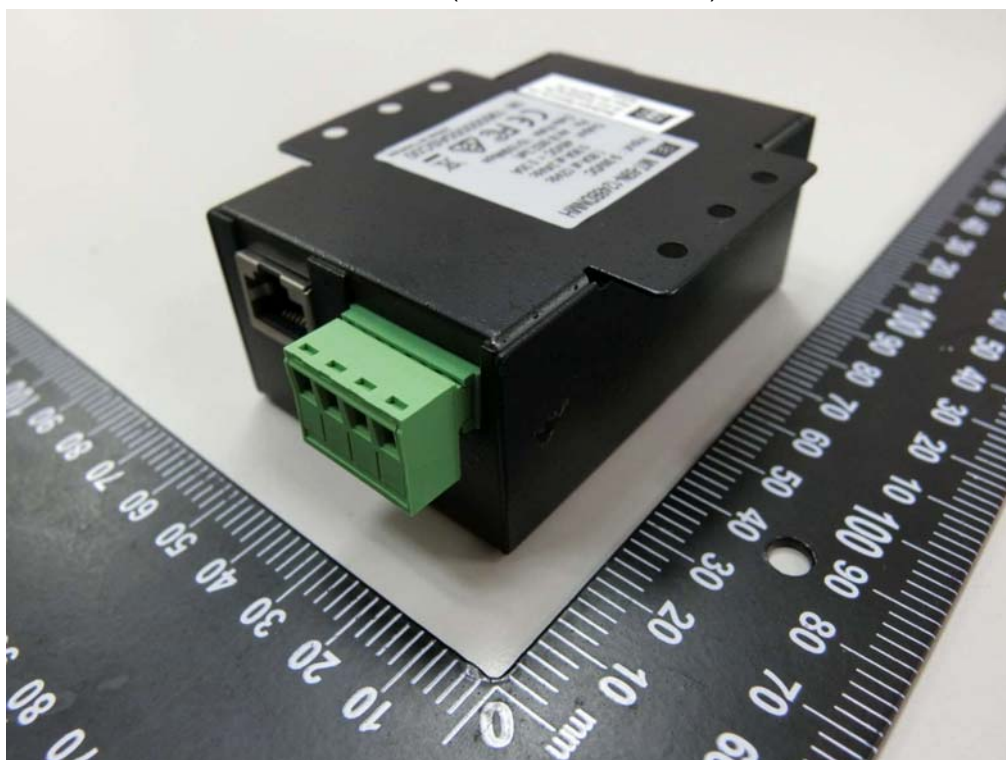


Internal view(MIT-69N-1218BNNN)

Photographs

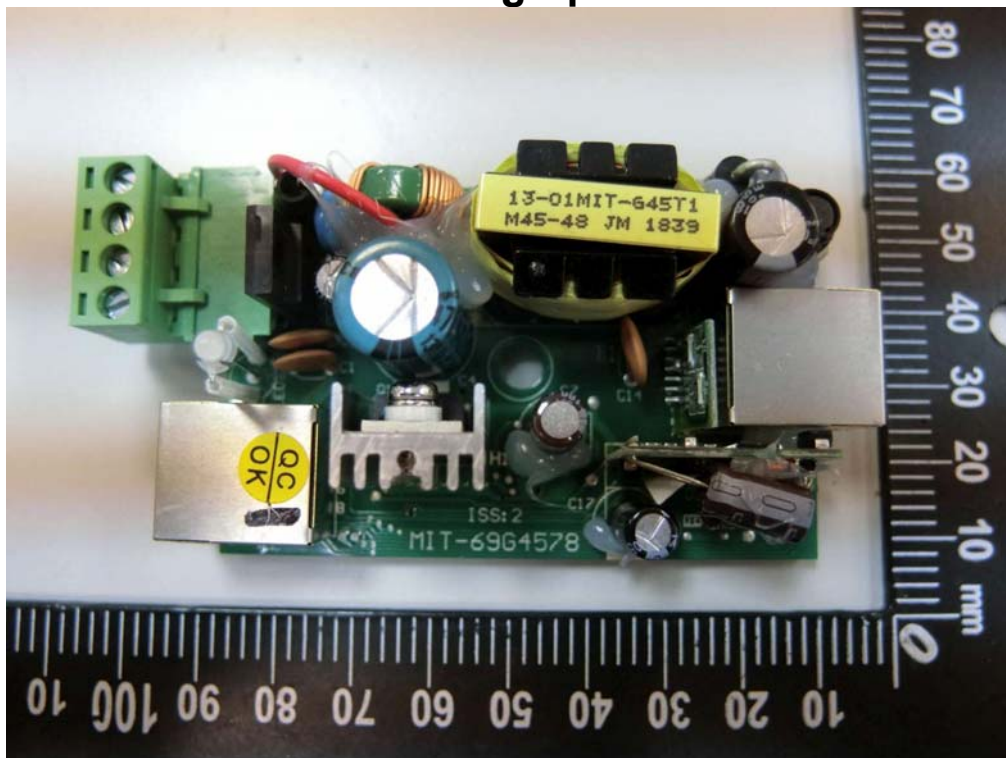


Overall view(MIT-69N-1248BNMH)

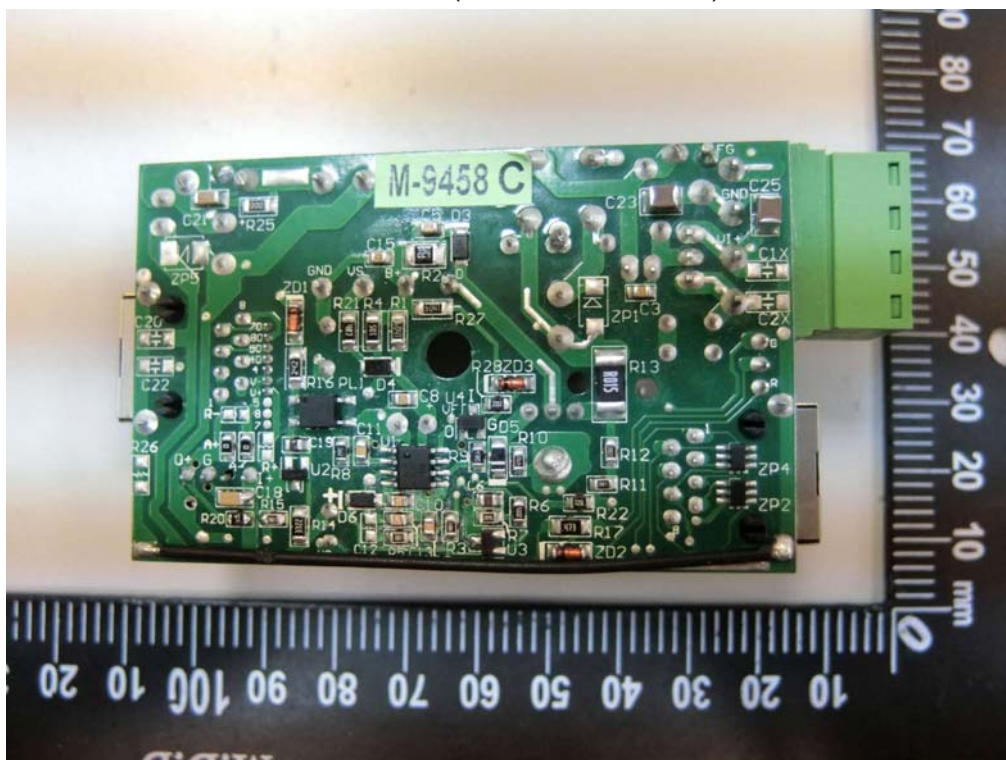


Overall view(MIT-69N-1248BNMH)

Photographs



Internal view(MIT-69N-1248BNMH)



Internal view(MIT-69N-1248BNMH)

Photographs

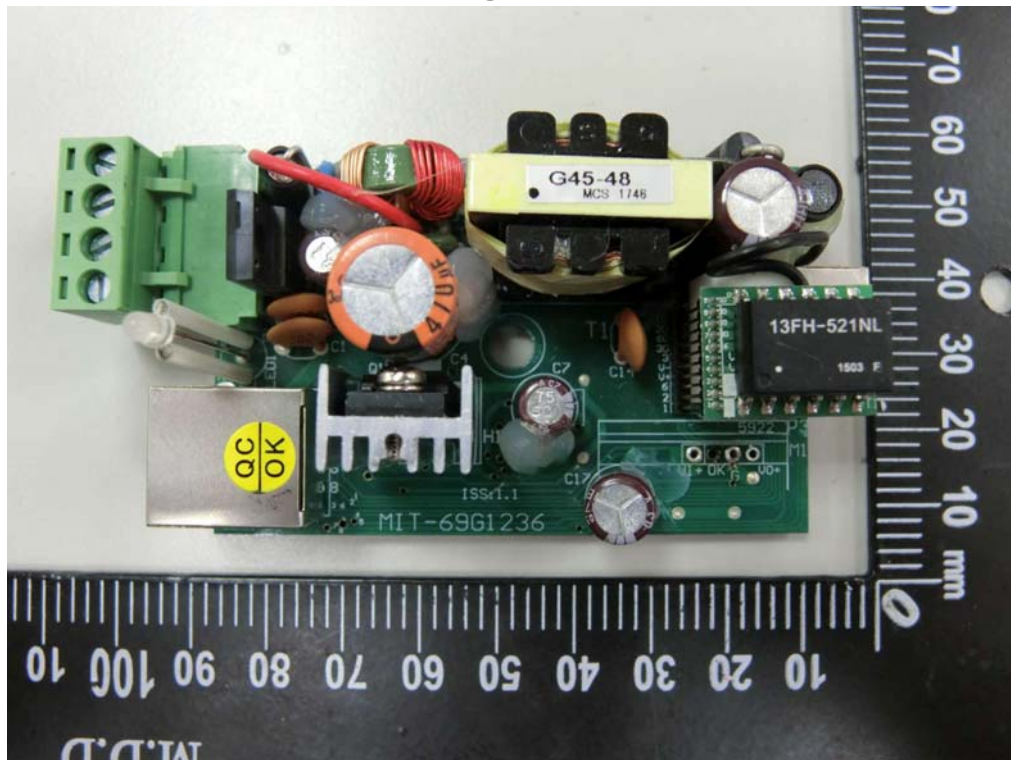


Overall view(MIT-69G-1248ANRN)

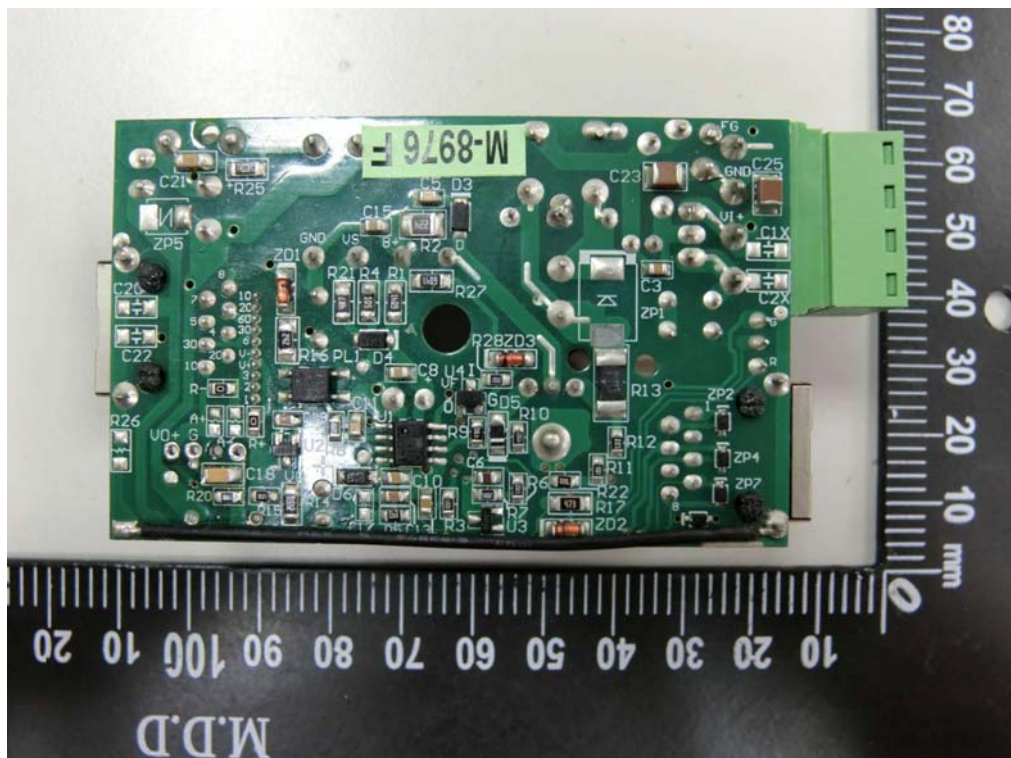


Overall view(MIT-69G-1248ANRN)

Photographs



Internal view(MIT-69G-1248ANRN)



Internal view(MIT-69G-1248ANRN)

Photographs

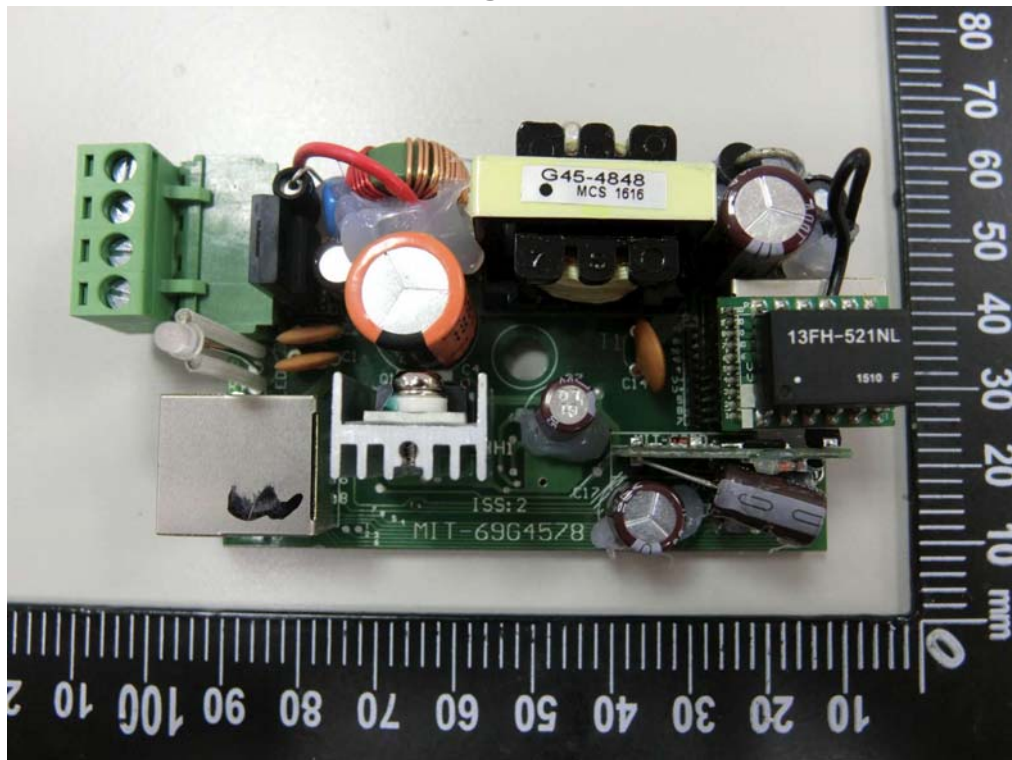


Overall view(MIT-69G-4848BNNN)

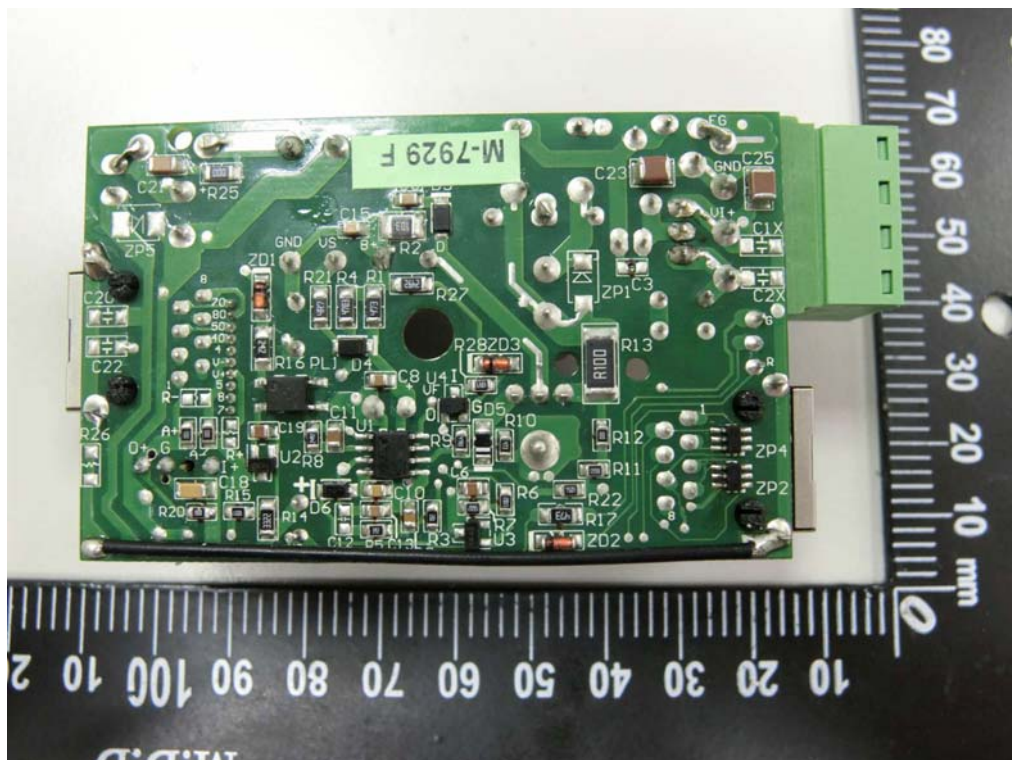


Overall view(MIT-69G-4848BNNN)

Photographs



Internal view(MIT-69G-4848BNNN)



Internal view(MIT-69G-4848BNNN)

- End of report -