





TEST REPORT	
IEC 60950-1 : 2005(2nd Edition) and/or EN 60950-1: 2006	
Information Technology Equipment – Safety – Part 1:General requirements	
Report No.	C160707Z05-LV
Report reference No.	N/A
Date of duration	2016-07-26 to 2016-07-28
Testing laboratory	Compliance Certification Services (Shenzhen) Inc.
Location.....	No.10-1 Mingkeda Logistics park, No.18 Huanguan South Road, Guan Lan Town, Longhuaxin District, Shenzhen, Guangdong, China
Applicant.....	SHENZHEN TENDA TECHNOLOGY CO.,LTD
Address:	6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Standards.....	EN 60950-1:2006 + A11:2009 + A1:2010 +A12:2011+A2:2013 IEC 60950-1:2005(2nd Edition) + Am1:2009+Am2:2013
Procedure deviation.....	N/A
Non-standard test method.....	N/A
Type of test equipment	200M Powerline Adapter
Trade mark.....	Tenda
Model/Type designation.....	P200
Manufacturer.....	SHENZHEN TENDA TECHNOLOGY CO.,LTD 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Rating.....	Input : AC100-240V, 0.1A, 50/60Hz
<p>Declaration:</p> <p>CCS represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Institute of Metrology (NIM) of P.R.C.</p> <p>CCS's reports apply only to the specific samples tested under conditions. It is manufacture's res-ponsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components.CCS shall have no liability for any declarations, inferences or generalizations drawn by the client or others from CCS issued reports.</p> <p>CCS's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.</p> <p>This report is the confidential property of the client. As a mutual protection to the clients, the public and CCS-self, extracts from the test report shall not be reproduced except in full with CCS's authorized written approval.</p>	
Tested by: (signature)  Jack Du	Reviewed by: (signature)  Bun Hu



Test item particulars:

Equipment mobility	Direct plug-in
Operating Condition.....	Continuous
Mains supply tolerance (%).....	+10%, -10%
Tested for IT power systems.....	No
IT testing, phase-phase voltage (V).....	N/A
Class of equipment.....	Class II
Mass of equipment.(Kg).....	0.061 Kg
Protection against ingress of water.....	IPX0

Possible test case verdicts:

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

General Remarks:

The test results presented in this report relate only to the object tested.

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

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

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The report included following content:

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4	Attachment - C. Schematics and Layout	Page 63
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Report revise record:

No.	Issue Date	Report Number	Rev.	Revisions	Effect Page
00	2016-07-20	C160707Z05-LV	00	Original report	N/A
00	2016-07-28	C160707Z05-LV	01	The client request	N/A



Comments:

Sample Number: C160707Z05-LV #1

Brief description of the test sample:

1. The product is a 200M Powerline Adapter, intend to use connected to the power socket and transmit data through household power line
2. This product employ with a plug, a power supply board, all electrical components are housed in a plastic enclosure and secured by screws.
3. Equipment rating: Input : AC100-240V, 0.1A, 50/60Hz
4. The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tmra) of 40 °C.

Summary of compliance with National Differences (for explanation of codes see below):

AR, AT, AU, BE, CA, CH, CN, DE, DK, FI, FR, GB, GR, HU, IL, IN, IT, KE, KR, MY, NL, NO, PL, SE, SG, SI, SK, US.

AR=Argentina, AT=Austria, AU=Australia, BE=Belgium, CA=Canada, CH=Switzerland, CN=China, DE=Germany, DK=Denmark, FI=Finland, FR=France, GB=United Kingdom, GR=Greece, HU=Hungary, IL=Israel, IN=India, IT=Italy, KE=Kenya, KR=Korea, MY=Malaysia, NL=The Netherlands, NO=Norway, PL=Poland, SE=Sweden, SG=Singapore, SI=Slovenia, SK=Slovakia, US=United States of America.



IEC/EN 60950-1			
Clause	Requirement - Test		Verdict
1	General		P
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950 or relevant component standard	Components that were found to affect safety aspects comply with the requirements of this standard or with the safety aspects of the relevant IEC component standards. (see appended table 1.5.1)	P
1.5.2	Evaluation and testing components	Components that were certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
1.5.3	Thermal controls	No thermal controls.	N
1.5.4	Transformers	Transformers with the relevant requirements of annex C	P
1.5.5	Interconnecting cables	Interconnecting O/P cable to other device is carrying only SELV on an energy level below 240VA.	P
1.5.6	Capacitors bridging insulation	Capacitor used in accordance with their rating and complied with subclasses of IEC60384-14 with at least 21 days damp heat test.	P
1.5.7	Resistors bridging insulation	No resistors bridging insulation.	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	No bridging resistors.	N
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	No bridging resistors.	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		N
1.5.9.2	Protection of VDRs		N
1.5.9.3	Bridging of functional insulation by a VDR		N
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
1.6	Power interface		P
1.6.1	AC power distribution systems		P
1.6.2	Input current	See append table 1.6.2	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment	N
1.6.4	Neutral conductor		N
1.7	Marking and instructions		P



IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V)	AC100-240V	P
	Symbol for nature of supply for d.c. only.	Mains from AC source	N
	Rated frequency or rated frequency range (Hz)	50/60Hz	P
	Rated current (mA or A)	0.1A	P
	Manufacturer's name or Trade-mark or identification mark	See cover page	P
	Model identification or type reference	P200	P
	Symbol for Class II equipment only	See Attachment - B	P
	Other markings and symbols	Additional symbols or marking does not give rise to misunderstanding	P
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	The user's manual contains information for operation, installation and technical.	P
1.7.2.2	Disconnect devices	Mains plug is regarded as disconnect devices.	P
1.7.2.3	Overcurrent protective device	No such equipment.	N
1.7.2.4	IT power distribution system		N
1.7.2.5	Operator access with a tool	No operator accessible area that needs to be accessed by the use of a tool	N
1.7.2.6	Ozone	No such equipment	N
1.7.3	Short duty cycles		N
1.7.4	Supply voltage adjustment		N
	Methods and means of adjustment ; reference to installation instructions		N
1.7.5	Power outlets on the equipment		N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Marking adjacent to fuse on PCB as: T3.15A/250VAC	P
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals		N
1.7.7.2	Terminal for a.c. mains supply conductors		N
1.7.7.3	Terminal for d.c. mains supply conductors		N
1.7.8	Controls and indicators	See below	P
1.7.8.1	Identification, location and marking		P
1.7.8.2	Colours		P
1.7.8.3	Symbols according to IEC 60417	No shown this symbols	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 applied.	N



IEC/EN 60950-1			
Clause	Requirement - Test	Result - Remark	Verdict
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15s and then again for 15s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling or lifting of the label edge.	P
1.7.12	Removable parts		N
1.7.13	Replaceable batteries	No replaceable batteries.	N
	Language(s)		—
1.7.14	Equipment for restricted access locations	No restricted access locations.	N

2	Protection from hazards		P
2.1	Protection from electric shock and energy hazards	See below.	P
2.1.1	Protection in operator access areas	No access with test pin or finger to any parts with only basic insulation to ELV or hazardous voltage. The test pin or finger can not touch hazardous voltage through any openings of the whole enclosure.	P
2.1.1.1	Access to energized parts	No access with test finger to any parts with only SELV circuits.	P
	Test by inspection	Ditto.	P
	Test with test finger(Figure 2A)	Ditto.	P
	Test with test pin(Figure 2B)	Ditto.	P
	Test with test probe(Figure 2C)	No TNV circuits.	N
2.1.1.2	Battery compartments	No battery compartments.	N
2.1.1.3	Access to ELV wiring	SELV circuits, no ELV wiring in operator accessible area.	N
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation(mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N
2.1.1.5	Energy hazards	No operator access connector.	N
2.1.1.6	Manual controls		N
2.1.1.7	Discharge of capacitors in equipment	Less than 0.1 uF	N
	Measured voltage(V) ; time-constant(s)		—
2.1.1.8	Energy hazard-d.c. mains supply	No direct connection to the DC 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		N
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N



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Clause	Requirement - Test	Result - Remark	Verdict

2.2	SELV circuits		P
2.2.1	General requirements	See below.	P
2.2.2	Voltage under normal conditions (V)	See appended table 2.2.2.	P
2.2.3	Voltage under fault conditions (V)	No fault conditions.	N
2.2.4	Connection of SELV circuits to other circuits	See 2.2.2 and 2.2.3.	P

2.3	TNV circuits		N
2.3.1	Limits	No TNV circuits.	N
	Type of TNV circuit		N
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		P
2.4.1	General requirements		P
2.4.2	Limit values		P
	Frequency (Hz)	See append table 2.4.2	—
	Measured current (mA)	See append table 2.4.2	—
	Measured voltage (V)	See append table 2.4.2	—
	Measured circuit capacitance (nF or μ F)	CY1=2200pF	—
2.4.3	Connection of limited current circuits to other circuits	complied	P

2.5	Limited power source		P
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition	See appended table 2.5	P
	d) 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)		—



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Clause	Requirement - Test		Verdict
2.6	Provisions for earthing and bonding		N
2.6.1	Protective earthing	Class II equipment	N
2.6.2	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		—
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	Class II equipment	N
	Instruction 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



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Clause	Requirement - Test	Result - Remark	Verdict

2.8	Safety interlocks		N
2.8.1	General principles		N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	moving parts		N
2.8.6	Overriding		N
2.8.7	Switches and relays		N
2.8.7.1	Contact gaps (mm)		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test (V)		N
2.8.8	Mechanical actuators		N

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	See appended table 1.5.1	P
2.9.2	Humidity conditioning	Humidity treatment performed to 120 hrs in condition	P
	Relative humidity (%), temperature (°C)	96%,40°C	—
2.9.3	Grade of insulation	Reinforced insulation or double insulation for unit.	P
2.9.4	Separation from hazardous voltage	See below	P
	Method (s) used	Method 1 used, Between input and enclosure according to reinforced insulation.	—

2.10	Clearance, creepage distances and distances through insulation		P
2.10.1	General	See 2.10.3,2.10.4,and 2.10.5	P
2.10.1.1	Frequency		P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	The 5.3.4 c) used, see appended table 5.3	N
2.10.1.4	Intervening unconnected conductive parts	No such part.	N
2.10.1.5	Insulation with varying dimensions	No such transformer used.	N
2.10.1.6	Special separation requirements	No TNV.circuit.	N
2.10.1.7	Insulation in circuits generating Starting pulses	No such circuit.	N
2.10.2	Determination of working voltage	See below.	P
2.10.2.1	General	Considered.	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



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Clause	Requirement - Test	Result - Remark	Verdict
2.10.3.1	General	Annex F is considered.	P
2.10.3.2	Main Transient voltage	See below	P
	a)AC mains supply	Normal transient voltage considered. (overvoltage category II for primary circuit)	P
	b)Earthed d.c. mains supplies		N
	c)Unearthed d.c. mains supply		N
	d)Battery operation		N
2.10.3.3	Clearance in primary circuits	See appended table 2.10.3 and 2.10.4	P
2.10.3.4	Clearance in secondary circuits	No such circuit	N
2.10.3.5	Clearance in circuits having starting pulses		N
2.10.3.6	Transients from a.c. mains supply	1500Vpk assumed.	P
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
2.10.4	Creepage distance	See below.	P
2.10.4.1	General	Considered.	P
2.10.4.2	Material group and comparative tracking index	Material group IIIb assumed.	P
	CTI tests		—
2.10.4.3	Minimum creepage distances	See appended table 2.10.3 and 2.10.4	P
2.10.5	Solid insulation	Complied with 2.10.5.2 to 2.10.5.14 and 5.2.	P
2.10.5.1	General	See below	P
2.10.5.2	Distances through insulation	Bobbin of T1 and enclosure thickness >0.4mm used	P
2.10.5.3	Insulating compound as solid insulation	No such part.	N
2.10.5.4	Semiconductor devices	Approved optocoupler provided.	P
2.10.5.5	Cemented joints	No such construction.	N
2.10.5.6	Thin sheet material-General	2 layers of insulated tape used between T1 core and surrounding components that as reinforced insulation	P
2.10.5.7	Separable thin sheet material	See above.	P
	Number of layers (pcb)	2	—
2.10.5.8	Non-separable thin sheet material	No such material.	N
2.10.5.9	Thin sheet material-standard test procedure	See 2.10.5.10.	N
	Electric strength test		—
2.10.5.10	Thin sheet material-alternative test procedure		P



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Clause	Requirement - Test	Result - Remark	Verdict
	Electric strength test	See appended table 5.2	—
2.10.5.11	Insulation in wound components	See below:	P
2.10.5.12	Wire in wound components	Approved source of triple insulated wire used in T1 secondary winding for reinforce insulation.	P
	Working voltage	See appended table 2.10.2.	P
	a)basic insulation not under stress		N
	b)basic supplementary, reinforced insulation		N
	c)Compliance with Annex U	See appended table 1.5.1	P
	Tow wires in contact inside wound component ; angle between 45° and 90°	Protection against mechanical stress is provided by tube.	P
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		—
	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 boards	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	See appended table 2.10.3 and 2.10.4.	P
2.10.8	Test on coated printed boards and coated components	No such parts.	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 insulation compound		N
2.10.11	Test 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



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Clause	Requirement - Test	Result - Remark	Verdict
3.1.1	Current rating and overcurrent protection	All adequate cross sectional areas are on internal wiring.	P
3.1.2	Protection against mechanical damage	Wire ways are smooth and free from edge. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding from damage to the insulation of the conductors.	P
3.1.3	Securing of internal wiring	Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation.	P
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5	Beads and ceramic insulators		N
3.1.6	Screws for electrical contact pressure		N
3.1.7	Insulation materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws		N
3.1.9	Termination of conductors		N
	10N pull test		N
3.1.10	Sleeving on wiring	No sleeving used.	N
3.2	Connection to a.c. mains supply		P
3.2.1	Means of connection	See below	P
3.2.1.1	Connection to an a.c. mains supply	A mains plug of direct plug-in equipment provided.	P
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections	Only one supply connection	N
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter (mm) of cable and conduits		—
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)		—



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Clause	Requirement - Test	Result - Remark	Verdict
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space		N
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		—
	Rated current (A), type and nominal thread diameter (mm)		N
3.3.5	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter (mm)		—
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Standard wire		N
3.4	Disconnection from the a.c. mains supply		P
3.4.1	General requirement		P
3.4.2	Disconnect devices	Plug as disconnect devices	P
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized	When the disconnect device is disconnected, no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords	No switches.	N
3.4.6	Number of poles-Single-phase and d.c. equipment	Disconnect devices disconnects all poles simultaneously.	P
3.4.7	Number of poles -Three-phase equipment	Single phase.	N
3.4.8	Switches as disconnect devices	No switches.	N
3.4.9	Plugs as disconnect devices	No power cord.	N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power source	Only one supply connection provided	N
3.5	Interconnection of equipment		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits	SELV interconnection circuits via secondary output connector.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N
3.5.4	Data ports for additional equipment	Output data port complies LPS	P
4	Physical requirements		P
4.1	Stability		N
	Angle of 10°		N



IEC/EN 60950-1			
Clause	Requirement - Test		Verdict
	Test force (N)		N
4.2	Mechanical strength		P
4.2.1	General	See below. After the tests, the equipment continued to comply with 2.1.1 and 2.10.	P
4.2.2	Steady force test, 10N	10N applied to all parts other than enclosure.	P
4.2.3	Steady force test, 30N	No internal enclosure.	N
4.2.4	Steady force test, 250N	No hazards as a result of the 250N test.	P
4.2.5	Impact test	Direct –plug in equipment.	N
	Fall test		N
	Swing test		N
4.2.6	Drop test ; height (mm)	The product has been subjected to 3 drops from 1 m height on a hard wooden surface.	P
4.2.7	Stress relief test	Plastic enclosure, after 70℃,7 hours and permitted to cool to room temperature, no shrinkage, distortion and loosening of enclosure was noticeable on the apparatus, the test was conducted with all enclosure material.	P
4.2.8	Cathode ray tubes	No cathode ray tubes.	N
	Picture tube separately certified		N
4.2.9	High pressure lamps	No high pressure lamp.	N
4.2.10	Wall or ceiling mounted equipment		N
	force (N)		N
4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners judged to be sufficiently well rounded.	P
4.3.2	Handles and manual controls; force (N)	No such controls.	N
4.3.3	Adjustable controls	No adjustable controls.	N
4.3.4	Securing of parts		P
4.3.5	Connection of plugs and sockets		P
4.3.6	Direct plug-In equipment	See below	P
	Torque	0.15Nm	P
	Compliance with the relevant mains plug standard	See appended table 4.3.6, the specification of plug is complied.	P
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries	No batteries used.	N
	-Overcharging of a rechargeable battery		N
	-Unintentional charging of a non-rechargeable battery		N
	-Reverse charging of a rechargeable battery		N



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Clause	Requirement - Test		Verdict
	Excessive discharging rate for any battery		N
4.3.9	Oil and grease	No oil and grease.	N
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	N
4.3.11	Containers for liquids or gases	No container for liquid or gases.	N
4.3.12	Flammable liquids	No flammable liquids.	N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation; type of radiation		P
4.3.13.1	General	See 4.3.13.5	P
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		—
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N
4.3.13.5	Laser (including LEDs)	For indicator used only, no need to comply with IEC 62471	P
	Laser class		—
4.3.13.6	Other types		N
4.4	Protection against hazardous moving parts		N
4.4.1	General	No hazardous moving parts.	N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas		N
4.5	Thermal requirements		P
4.5.1	General	See below	P
4.5.2	Temperature rise	See appended table 4.5.1	P
	Normal load condition per Annex L	See appended table 1.6.2	—
4.5.3	Temperature limits for materials	See appended table 4.5.1	P
4.5.4	Touch temperature limits	See appended table 4.5.1	P
4.5.5	Resistance to abnormal heat	See appended table 4.5.2.	p
4.6	Openings in enclosures		P
4.6.1	Top and side openings		P
	Dimensions (mm)	Width: 0.60mm	—
4.6.2	Bottom of fire enclosures		P



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Clause	Requirement - Test	Result - Remark	Verdict
	Construction of the bottom, dimensions (mm)		—
4.6.3	Doors or covers in fire enclosures	No doors or covers.	N
4.6.4	Openings in transportable equipment	Movable 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 metalized parts		N
4.6.5	Adhesives for constructional purposes	No adhesives for constructional purpose.	N
	Conditioning temperature (°C),time (weeks)		—
4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	See below	P
	Method 1, selection and application of components wiring and materials	Method 1 used.	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure	With having the following parts: - components in primary - components in secondary circuits - insulated wiring The fire enclosure is required.	P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure prevent the fire spread	P
4.7.2.2	Parts no requiring a fire enclosure		N
4.7.3	Materials	See below	P
4.7.3.1	General	The components is mounted on PCB rated V-0 or better	P
4.7.3.2	Materials for fire enclosures	The fire enclosure is V-0 material.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No applied.	N
4.7.3.4	Materials for components and other parts inside fire enclosures.	Internal components except small parts are V-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies.	N
4.7.3.6	Materials used in high-components	No high voltage components.	N
5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General		P
5.1.2	Configuration of equipment under test (EUT)	Equipment designed for connection to only one power sources.	P
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N



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Clause	Requirement - Test	Result - Remark	Verdict
5.1.3	Test circuit	Test circuit in Figure 5A used.	P
5.1.4	Application of measuring instrument	Measuring instruments as in annex D used.	P
5.1.5	Test procedure	Applied.	P
5.1.6	Test measurements	See appended table 5.1	P
	Supply voltage (V)	Ditto	—
	Measured touch current (mA)	Ditto	—
	Max. allowed touch current (mA)	Ditto	—
	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		—
5.1.7.2	Simultaneous multiple connections to the supply		
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV.	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	No TNV.	N
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch current from telecommunication networks	No TNV.	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	See appended table 5.2	P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	See below	P
5.3.2	Motors		N
5.3.3	Transformers	See appended Annex C	P
5.3.4	Functional insulation	Functional insulation complied with the requirements c).	P
5.3.5	Electromechanical components		N
5.3.6	Audio amplifiers in ITE		N
5.3.7	Simulation of faults	Results see appended table 5.3.	P
5.3.8	Unattended equipment		N



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Clause	Requirement - Test	Result - Remark	Verdict
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	Neither fire burns the equipment nor molten metal.	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 telecommunication wiring system from overheating		N
	Max. output current (A)		—
	Current limiting method		—
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N
7.1	General		
7.2	Protection of cable distribution system service personnel, and users of other equipment connected to the system, from hazards voltage 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 system		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N
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



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Clause	Requirement - Test	Result - Remark	Verdict
A.1.1	Samples		N
	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		N
	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
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
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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 DC 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 DC 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	See table 1.5.1	—
	Manufacturer	Ditto .	—
	Type	Ditto .	—
	Rated values	Ditto .	—



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Clause	Requirement - Test		Verdict
	Method of protection.....:	Overcurrent protection by circuit	—
C.1	Overload test	See appended table 5.3	P
C.2	Insulation	See appended table 5.2	P
	Protection from displacement of winding	See appended table C2	P
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument	D .1 used	P
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. amins 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 levels (V)		N
	a)transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N



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Clause	Requirement - Test	Result - Remark	Verdict
	b)transients from a telecommunication network		N
G.6	Determination of minimum clearances :		N
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal 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	Maximum normal load operation.	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) :		N
M.3.1.2	Voltage(V) :		N
M.3.1.3	Cadence; time(s), voltage(V) :		N



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Clause	Requirement - Test	Result - Remark	Verdict
M.3.1.4	Single fault current (mA) :		—
M.3.2	Tripping device and monitoring voltage ...:		N
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
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 generators		N
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs)(see 1.5.9.1)		N
	a)preferred climatic categories		N
	b)Maximum continuous voltage		N
	c)Pulse current		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
			—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
			—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS(see 1.6.1)		N



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Clause	Requirement - Test	Result - Remark	Verdict
V.1	Introduction		N
V.2	TN power distribution systems		N
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		P
W.1	Touch current from electronic circuits		P
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)		P
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—



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_1E
Attachment Originator	SGS Fimko Ltd
Master Attachment	Date (2013-09)
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EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)						
Clause	Requirement + Test			Result - Remark		Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"					—
Contents	Add the following annexes:					—
(A2:2013)	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			
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		
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	
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list:					—
	2.7.1		Note *	2.10.3.1	Note 2	
	6.2.2.		Note			
	* Note of secretary: Text of Common Modification remains unchanged.					
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.					—



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"		—
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	No audio output	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		—
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 *		—
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.	Not a portable sound system.	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.	Not a portable sound system.	N
	Zx Protection against excessive sound pressure from personal music players		N



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>Zx.1 General</p> <p>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.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none"> is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use. <p>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.</p> <p>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.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none"> while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used. <p>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.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"> hearing aid equipment and professional equipment; <p>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.</p>		N
	<p>analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>		N




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>Zx.2 Equipment requirements</p> <p>No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none">equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; anda personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none">a) protect the user from unintentional acoustic outputs exceeding those mentioned above; andb) 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 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>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none"> 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. <p>For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>		N



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>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."</p>  <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N
	Zx.4 Requirements for listening devices (headphones and earphones)		N
	<p>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.</p>		N
	<p>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.</p>		N



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>Zx.4.3 Wireless listening devices</p> <p>In wireless mode:</p> <p>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</p> <p>with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N
	<p>Zx.5 Measurement methods</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		N



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>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N								
2.7.2	This subclause has been declared 'void'.		—								
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	<p>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".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6 </td><td>0,75 ^{a)} </td></tr><tr><td>Over 6 up to and including 10 (0,75) ^{b)}</td><td>1,0</td></tr><tr><td> Over 10 up to and including 16 (1,0) ^{c)}</td><td></td></tr><tr><td>1,5</td><td> </td></tr></table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p> <p>NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD</p>	Up to and including 6	0,75 ^{a)}	Over 6 up to and including 10 (0,75) ^{b)}	1,0	Over 10 up to and including 16 (1,0) ^{c)}		1,5			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											
(A2:2013)											
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table><tr><td>Over 10 up to and including 16 1,5 to 2,5 1,5 to 4</td><td> </td></tr></table> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>	Over 10 up to and including 16 1,5 to 2,5 1,5 to 4			N						
Over 10 up to and including 16 1,5 to 2,5 1,5 to 4											
4.3.13.6	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>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).</p>		N								
(A1:2010)											



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"		—
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>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.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N
Bibliography	Additional EN standards.		—

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



ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	<p>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.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>	Building-in equipment, shall be considered in the end use	—
1.7.2.1 (A11:2009)	<p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>"Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)."</p>		



ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		—
1.7.2.1 (A2:2013)	<p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in Denmark shall be as follows: In Denmark: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”</p>	Building-in equipment, shall be considered in the end use	—
1.7.5 1.7.5 (A11:2009)	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p> <p>For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p>		N



ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
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.	No TNV circuits within the equipment	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.	No TNV circuits within the equipment	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.	No TNV circuits within the equipment	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		N



ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A</p>		N
3.2.1.1	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N
3.2.1.1 (A2:2013)	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1. 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</p>		N



ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N
3.2.1.1	<p>In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N
3.2.1.1	<p>In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p>		N
3.2.4	<p>In Switzerland, for requirements see 3.2.1.1 of this annex.</p>		N
3.2.5.1	<p>In the United Kingdom, a power supply cord with conductor of 1,25 mm² is allowed for equipment with a rated current over 10 A and up to and including 13 A.</p>		N
3.3.4	<p>In the United Kingdom, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is:</p> <ul style="list-style-type: none"> • 1,25 mm² to 1,5 mm² nominal cross-sectional area. 		N



ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
4.3.6	In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N
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
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: <ul style="list-style-type: none">• STATIONARY PLUGGABLE EQUIPMENT TYPE A that 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



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



ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N
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



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⁾
Enclosure Material and plug holder	SABIC INNOVATIVE PLASTICS B V	940(f1)	V-0, 130°C, min. 2.55mm	UL 94	UL
PCB	Various	Various	V-1 or better, 130°C	UL 796	UL
Primary Lead Wire	Various	Various	VW-1, 105°C, 26AWG	UL 758	UL
Fuse (F1)	Zhongshan lanbao Electrical Appliances Co., Ltd.	RTI-10 serie(s)	3.15A, 250Vac	IEC/EN 60127-1, IEC/EN 60127-3	VDE
Transformer (T1for power board)	DONGGUAN SUN HUNG KIN ELECTRICAL CO LTD	T008 V01	Class B	Evaluated according to EN 60950-1	Test with appliance
-Bobbin	CHANG CHUN PLASTI CS CO.,LTD	T375J	V-0, 130°C	UL 94	UL
-Triple Insulation Wire	FURUKAWA ELECTRIC C O LTD	TEX-E	130°C, ϕ 0.5mm	EN 60950-1	VDE
-Insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT	130°C, thickness 0.025mm	UL 510	UL
Transformer (T1for power board)	SHENZHEN DIHYLEN TECHNOLOG Y CO.,LTD	T008 V01	Class B	Evaluated according to EN 60950-1	Test with appliance
-Bobbin	CHANG CHUN PLASTI CS CO.,LTD	T375HF	V-0, 130°C	UL 94	UL
-Triple Insulation Wire	Shang Hai Lucky Trade CO.,Ltd.	TIW-B	130°C, ϕ 0.5mm	EN 60950-1	VDE
-Insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280-B	130°C,thickness 0.025mm	UL 510	UL
Choke(LF1)	Dongguan TNK Industry Co., Ltd.	TDB072	150 °C	EN 60950-1	Test with appliance



Alt.	Shenzhen Cenker Enterprise Ltd	CKEE8.3-20mH	150 °C	EN 60950-1	Test with appliance
Alt.	Dongguan Sun Mao Electronics Co., Ltd	SC1152	150 °C	EN 60950-1	Test with appliance
X-Capacitor (CX1)	Shenzhen Jinghao Capacitor Co., Ltd.	CBB62B	47nF,280Vac, 110°C	EN 60384-14	VDE
Alt.	Shenzhen Yimanfeng Science And Technology Co., Ltd.	MPX/MKP	47nF,275/280Vac, 110°C	EN 60384-14	VDE
Alt.	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	MPX	47nF,275Vac, 110°C	EN 60384-14	VDE
Alt.	Hongzhi Enterprises Ltd.	MPX	47nF,275Vac, 100°C	EN 60384-14	VDE
Alt.	Dain Electronics Co., Ltd.	MPX	47nF,275Vac, 110°C	EN 60384-14	VDE
Rectifier Bridge (BD1)	Various	Various	0.8A Min., 600V Min	EN 60950-1	Test with appliance
Diode (D2 for power board)	Various	Various	1000V, 1.0A	EN 60950-1	Test with appliance
Diode (D1 for data board)	Various	Various	1000V, 1.0A	EN 60950-1	Test with appliance
E-Cap (EC1)	Various	Various	10uF, Min. 400V, Min.105°C	EN 60950-1	Test with appliance
Optocoupler (U3,Q1)	Sharp Corporation	PC817	dTI=0.4mm, int. dcr.=5mm, ext. dcr.=8mm, 100°C	DIN EN 60747-5-2	VDE
Alt.	Cosmo Electronics Corporation	K1010	Dti. =0.5mm, Ext. Dcr. =8.0mm, 110 °C	DIN EN 60747-5-2 EN 60950-1	VDE
Y1- Capacitor (CY1)	Hongzhi Enterprises Ltd.	Y	2200pF, 400Vac, 85 °C	EN60384-14	VDE
Alt.	Hsuan Tai Electronic co.,Ltd.	CY	2200pF, 400Vac, 125 °C	EN60384-14	VDE
Alt.	Jyh Chung Electronic Co., Ltd.	JD	2200pF, 400Vac, 125 °C	EN60384-14	VDE



Alt.	SHENZHEN HAOTIAN ELECTRONIC CO LTD	HT	2200pF, 400Vac, 125 °C	EN60384-14	VDE
Alt.	Shantou High- New Technology Dev. Zone Songtian Enterprise Co., Ltd.,	CD-Series	2200pF, 400Vac, 125 °C	EN60384-14	VDE
X-Capacitor (C45,C46 for data board)	Shenzhen Jinghao Capacitor Co., Ltd.	CBB62B	47nF,280Vac, 110°C	EN 60384-14	VDE
Alt.	Shenzhen Yimanfeng Science And Technology Co., Ltd.	MPX/MKP	47nF,275/280Va c, 110°C	EN 60384-14	VDE
Alt.	Shantou High- New Technology Dev. Zone Songtian Enterprise Co., Ltd.	MPX	47nF,275Vac, 110°C	EN 60384-14	VDE
Alt.	Hongzhi Enterprises Ltd.	MPX	47nF,275Vac, 100°C	EN 60384-14	VDE
Alt.	Dain Electronics Co., Ltd.	MPX	47nF,275Vac, 110°C	EN 60384-14	VDE
Transformer(T1 for data board)	DONG GUAN SUN MAO ELECTRONIC CO.,LTD.	SP7441	130°C	---	Test with appliance
-Triple Insulation Wire	DAH JIN TECHNOLOG Y CO LTD	TLW-B	130°C	UL 746	UL
-Alt.	FURUKAWA ELECTRIC CO LTD	TEX-E	130°C	UL 746	UL
Mylar sheet	Various	Various	V-0,Min. thickness:0.4mm, 80°C	--	--

¹⁾ An asterisk indicates a mark which assures the agreed level of surveillance

Supplementary information:--



1.6.2	Input Test					P
Fuse #	I _{rated} (A)	U (V/Hz)	P (W)	I (mA)	I _{fuse} (mA)	Condition/status
F1	--	90/50	1.97	42.4	42.4	Maximum Normal Load
F1	--	90/60	1.98	43.2	43.2	Maximum Normal Load
F1	0.1	100/50	1.92	39.4	39.4	Maximum Normal Load
F1	0.1	100/60	1.97	40.2	40.2	Maximum Normal Load
F1	0.1	240/50	2.19	25.1	25.1	Maximum Normal Load
F1	0.1	240/60	2.22	25.6	25.6	Maximum Normal Load
F1	--	254.4/50	2.26	24.3	24.3	Maximum Normal Load
F1	--	254.4/60	2.28	24.8	24.8	Maximum Normal Load
Remarks: The measured input current at rated voltage shall be $\leq 110\%$ of rated current.						

2.2.2	TABLE: Hazardous Voltage (Circuit) Measurement Test				P
Transformer Designation	Location	Maximum Voltage		Voltage Limiting Component	Comments
		V peak	V dc		
T1	Pin 3-4	--	3.26	--	At max. normal load
Notes:					
Under highest <u>Rated</u> Voltage: 240V/60Hz					
Measured at the output of safety isolation transformer and component used in series with transformer till SELV voltage measured.					

2.2.3	SELV voltage measurement				--
Voltage limitation component		Fault	Test time (Duration)	Voltage measured (mV)	Comments

2.4.2	TABLE: Limited current circuits test					P
Location	Voltage (V)	Current (mA)	Freq. (Hz)	Limit (mA)	Comments	
CY1 Secondary pin to earth	--	0.18	--	0.7	CY1=2200pF	
Note(s):						
Supply Voltage: U up-rated 254.4V, 60Hz						

2.5	TABLE: limited power source measurement			P
	Limits	Measured	Verdict	
According to Table 2B: under max. normal load condition, U _{oc} = 0V (RJ45 port)				



current (in A)	$\leq 8A$	0	P
apparent power (in VA)	$\leq 100 VA$	0	P
According to Table 2B: under Abnormal operation(S-C R13), Uoc= 0V (RJ45 port)			
current (in A)	$\leq 8A$	0	P
apparent power (in VA)	$\leq 100 VA$	0	P
According to Table 2B: under Abnormal operation(S-C R14), Uoc= 0V (RJ45 port)			
current (in A)	$\leq 8A$	0	P
apparent power (in VA)	$\leq 100 VA$	0	P
According to Table 2B: under Abnormal operation(S-C R15), Uoc= 0V (RJ45 port)			
current (in A)	$\leq 8A$	0	P
apparent power (in VA)	$\leq 100 VA$	0	P
According to Table 2B: under Abnormal operation(S-C R17), Uoc= 0V (RJ45 port)			
current (in A)	$\leq 8A$	0	P
apparent power (in VA)	$\leq 100 VA$	0	P
According to Table 2B: under Abnormal operation(S-C R18), Uoc= 0V (RJ45 port)			
current (in A)	$\leq 8A$	0	P
apparent power (in VA)	$\leq 100 VA$	0	P
Note(s):			

2.10.2	TABLE: Max. Working Voltage Measurement			P
Location		Peak Voltage (V)	RMS Voltage (V)	Comments
T1 for power board				
Pin 1-3	348	216		
Pin 1-4	360	213		
Pin 2-3	552	217		
Pin 2-4	552	218	Max. Vpeak & Max. Vrms	
CY1				
Pri-Sec	338	211		
U3				
Pin 1-3	340	211		
Pin 1-4	336	208		
Pin 2-3	340	212		
Pin 2-4	340	209		
T1 for data board				
Pin 1-5	340	120		
Pin 1-6	180	120		
Pin 2,3,4-5	176	118		
Pin 2,3,4-6	176	120		

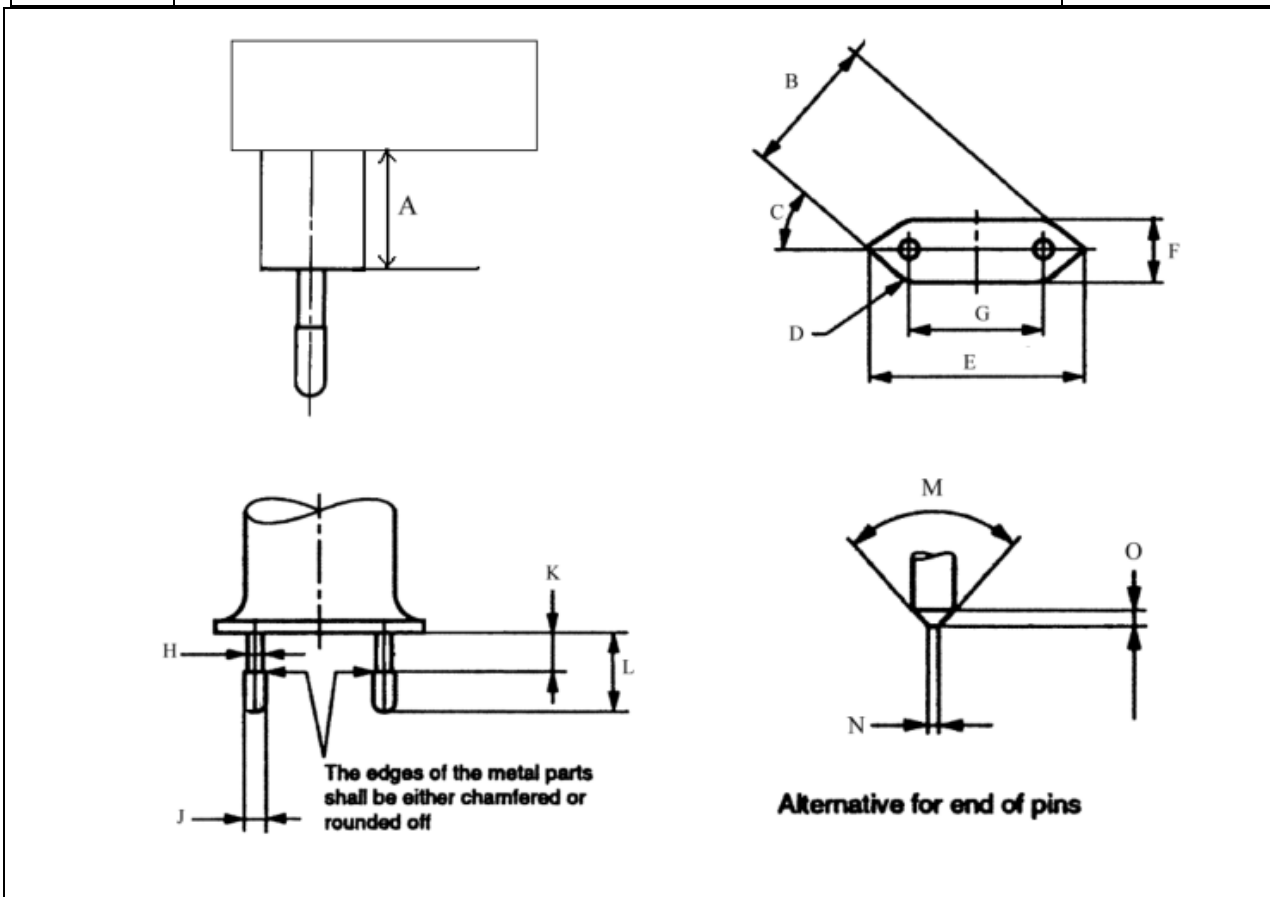


Note(s): 1. The unit was connected to AC240V, 60Hz.

2.10.3, 2.10.4	Table: Clearance and creepage distance measurements					P
Clearance cl and creepage distance dcr at/of:	U p (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	dcr (mm)
Distance between L & N before fuse	340	240	2.0	4.5	2.4	4.5
Different polarity for fuse	340	240	2.0	2.9	2.4	2.9
Primary trace to accessible parts of enclosure	340	240	4.0	6.5	4.8	6.5
Primary trace to secondary trace(Under T1 for power board)	552	218	4.4	4.9	4.8	5.3
Core to secondary trace(Under T1 for power board)	340	240	4.0	6.0	4.8	6.0
Primary trace to secondary trace(Under CY1)	338	211	4.0	5.6	4.8	5.6
Primary trace to secondary trace(Under U3)	340	212	4.0	4.3	4.8	8.2
Primary trace to secondary trace(Under T1 for data board)	340	120	4.0	6.0	4.8	6.8
Notes: Altitude during operation (m): Less than 2000m * F=functional insulation, B= Basic insulation, S=supplementary insulation, R=reinforced insulation, D=Double insulation.						



4.3.6	Table: Check List for Plug Dimensions for Europe (Standard: EN 50075)	P
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Symbol	Requirement (mm)	Measured (mm)	Pass/Fail
A	≥ 16.5	18.26	P
B	25.6 – 26.6	25.77	P
C	45°	45.09°	P
D	R 5.0 – 6.0	5.93	P
E	34.6 – 36.0	35.51	P
F	13.0 – 14.4	14.18	P
G	Engagement face 18.0 – 19.2	18.59	P
G	End of pins 17.0 – 18.0	17.69	P
H ¹⁾	≤ 3.8	3.89	P
J	3.94 – 4.06	3.97	P
K	10.0 – 11.0	10.13	P
L	18.5 – 19.5	18.87	P
M	$\leq 90^\circ$	--	N
N	0.7 – 1.7	--	N
O	≤ 2.0	--	N

1) This dimension may be increased to 4 mm within a distance of 4 mm from the engagement face of the plug.



4.5	TABLE: Thermal requirements					P
	Supply voltage (V)	90Vac Max. normal load		254.4Vac Max. normal load		—
	Ambient Tmin (°C)	--	--	--	--	—
	Ambient Tmax (°C)	--	--	--	--	—
Maximum measured temperature T of part/at::		T (°C)				Allowed Tmax (°C)
		Vertical	Horizontal	Vertical	Horizontal	--
Primary Lead Wire		59.9	57.8	61.5	59.8	105
LF1 winding(power board)		65.8	64.1	67.2	66.1	150
CX1 body(power board)		74.7	73.7	77.1	76.3	110
EC1 body(power board)		80.0	81.6	95.5	96.4	105
T1 winding(power board)		81.7	83.9	85.9	87.9	110
T1 core(power board)		77.5	80.0	81.3	83.1	110
PCB near T1(power board)		72.1	72.5	75.8	76.8	130
CY1 body(power board)		74.8	75.5	77.6	78.8	85
U3 body(power board)		69.3	69.6	71.6	73	100
Connector on PCB		76.7	77.3	76.9	78.7	85
T1 winding(data board)		71.1	69.1	70.9	70.5	110
C45, C46 body(data board)		59.8	57.1	60.0	59	110
Q1 body(data board)		68.3	66.2	70.0	68.6	100
PCB near U2(data board)		85.8	85.3	86.5	86.4	130
PCB near U1(data board)		85.8	83.0	82.3	82.3	130
Plastic enclosure inside near(power board)T1		62.0	63.6	64.8	66.8	130
Plastic enclosure outside		58.8	55.0	56.2	55.8	85
Plastic plug holder		51.4	48.3	50.8	49.2	130
Button of reset		56.3	56.1	54.9	56	85
Ambient		40.0	40.0	40.0	40.0	--
Supplementary information:						
1. The temperatures were measured under worst normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described above.						
2. The maximum ambient temperature permitted by the manufacturer's specification is 40°C, the temperature limit for each component have been re-calculated based on actual ambient temperature.						

4.5.5	TABLE: Ball Pressure Test Of Thermoplastic Parts		P
--	Required Impression Diameter (mm)	≤2mm	—
		Test Temperature (°C)	Impression Diameter (mm)
	Plug holder (model:940(f1))	125	1.92



Note: Supplementary information

Phenolic bobbin material used in T1, which is acceptable without test.

5.1.6	TABLE: Touch Current Measurement				P
Condition	L→ terminal A (mA)	N → terminal A (mA)	Limit (mA)	Comments	
Switch “e” closed	0.08	0.08	0.25	Output terminal	
Switch “e” closed	0.02	0.01	0.25	Plastic enclosure cover with metal foil	
Supplementary information:					
Supply with 264V/60Hz.					

5.2	TABLE: Electric Strength Measurements and Impulse Tests		P
Test Voltage Applied Between:		Test Voltage (V)	Breakdown
Primary and secondary (for unit)		4242Vdc	No
Primary and earth (for unit)		2121Vdc	No
Primary and plastic enclosure cover with metal foil(for unit)		4242Vdc	No
T1 primary to secondary		4242Vdc	No
T1 core to secondary (core as primary)		4242Vdc	No
Mylar sheet(thickness:0.4mm)		4242Vdc	No
Supplementary information:			
Test after humidity treatment, heating test, and each fault condition test of 5.3.			

5.3	TABLE: Fault Condition Tests							P
--	Ambient temperature (°C)				25.0°C, if not otherwise stated			--
--	Model/type of power supply				--			--
--	Rated markings of power supply				--			--
No	Component No.	Fault	Test Voltage (V)	Test Time	Fuse No.	Fuse Current (mA)	Result	
1	All opening	block	240	1hour 42min	F1	25.6->25.6	Normal operating, no damaged, no hazards. NB,NC,NT T1 coil: 73.8°C T1 core: 69.5°C Ambient: 25.0°C	
2	T1 for power board pin1-2	s-c	240	10min	F1	25.6->0.12	Unit shut down immediately, no damaged, no hazards. NB,NC,NT	
3	T1 for power board pin4-5	s-c	240	10min	F1	25.6->0.11	Unit shut down immediately, no damaged, no hazards. NB,NC,NT	
4	U3 pin1-2	s-c	240	10min	F1	25.6->0.08	Unit shut down immediately, no damaged, no hazards.	



							NB,NC,NT
5	U3 pin3-4	s-c	240	10min	F1	25.6->0.08	Unit shut down immediately, no damaged, no hazards. NB,NC,NT
6	CY1	s-c	240	10min	F1	25.6->0.10	Unit shut down immediately, no damaged, no hazards. NB,NC,NT
7	BD1 + to -	s-c	240	1s	F1	25.6->0	Fuse open, no damaged, no hazards. NB,NC,NT
8	CX1	s-c	240	1s	F1	25.6->0	Fuse open, no damaged, no hazards. NB,NC,NT
9	T1 Pin4 after D1 to GND	o-l	240	2hour45min	F1	25.6->0.09	Unit shut down immediately, unable to load T1 pin6 to GND, no damaged, no hazards. NB,NC,NT T1 coil: 85.8°C T1 core: 81.6°C Ambient: 22.2°C

Note: Supplementary information: s-c: short circuit, o-l: overload, o-c: open circuit.

NB - No indication of dielectric breakdown

NC - Cheesecloth remained intact

NT - Tissue paper remained intact



C.2	Transformers						P
Location	Tested insulation	Working voltage / Vpeak	Working voltage / Vrms	Required electric strength	Required clearance (mm)	Required creepage distance (mm)	Required distance thr. Insul. (mm)
T1 (for power board) Primary windings - Secondary windings	RI	552	218	4242Vdc	4.4	4.8	*)
T1(for power board) Core - Secondary windings	RI	552	218	4242Vdc	4.4	4.8	*)
T1 (for data board) Primary windings - Secondary windings	RI	340	120	4242Vdc	4.0	4.8	
T1(for data board) Core - Secondary windings	RI	340	120	4242Vdc	4.0	4.8	
Location	Tested insulation			Test voltage/ V	Measured clearance (mm)	Measure d creepage distance (mm)dist. / mm	Measured distance thr. Insul./mm; number of layers
T1 (for power board) Primary windings - Secondary windings	RI			4242Vdc	>10	>10	TIW used.
T1(for power board) Core - Secondary windings	RI			4242Vdc	>10	>10	TIW used.
T1 (for data board) Primary windings - Secondary windings	RI			4242Vdc	6.0	>10	TIW used.
T1(for data board) Core - Secondary windings	RI			4242Vdc	6.0	>10	TIW used.
Remark: *) 2 layers or 3 layers 0.4mm thick Secondary winding is triple insulated wire, core considered primary circuit.							



Attachment –A.

EUT Photos



Photo # 1

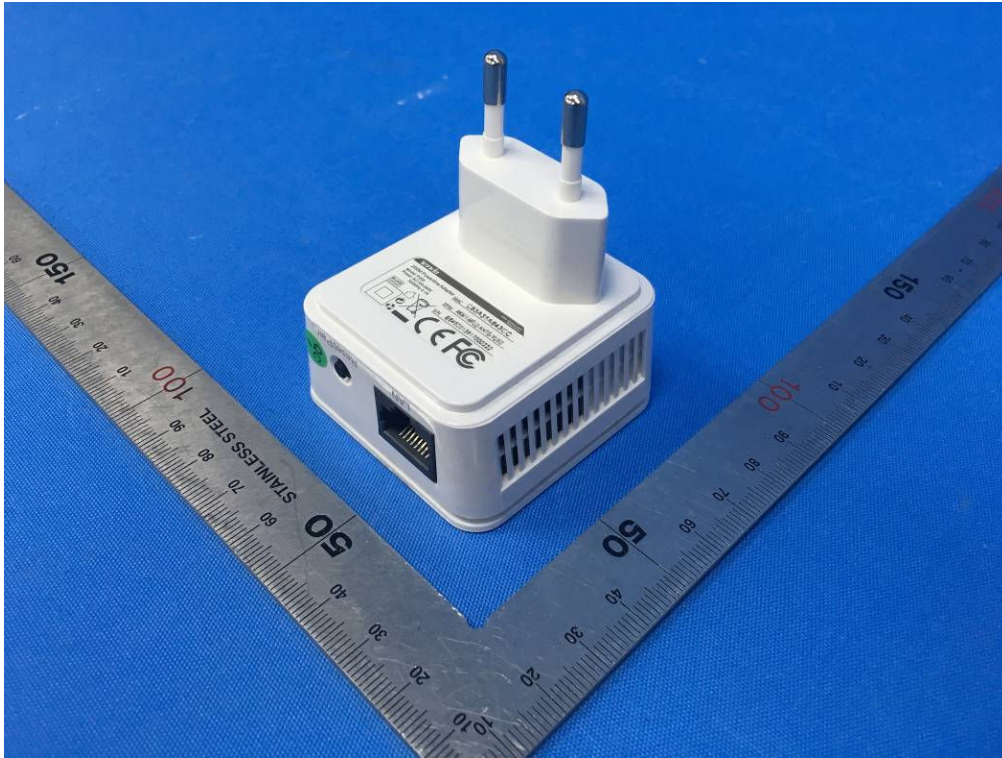


Photo # 2

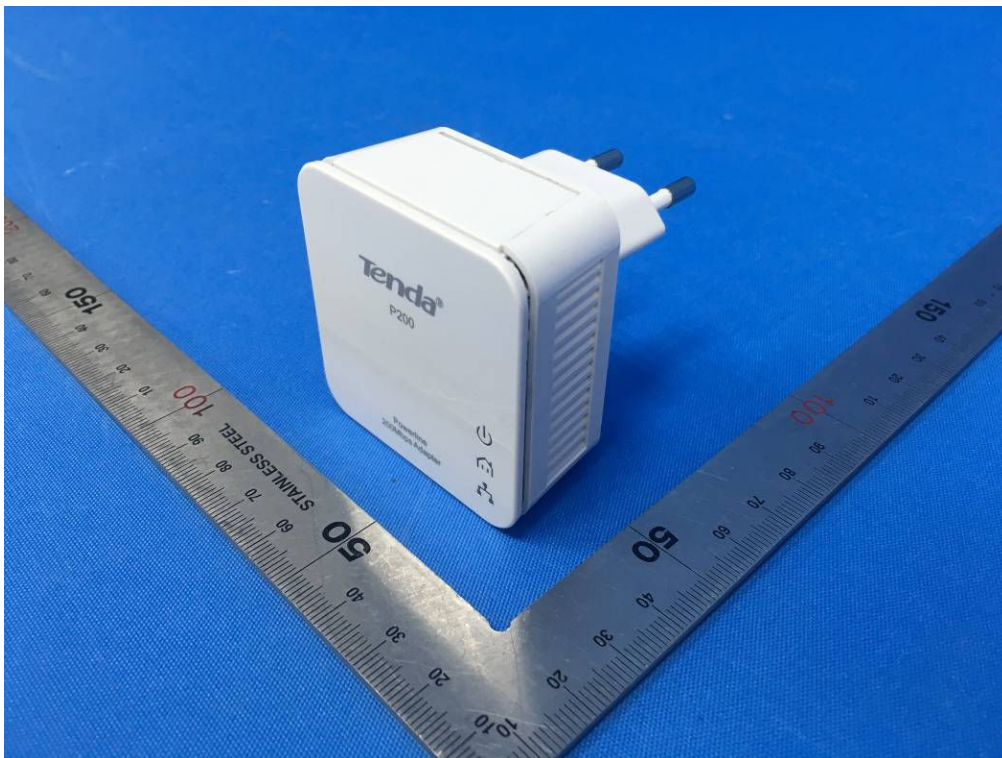




Photo # 3



Photo # 4





Photo # 5

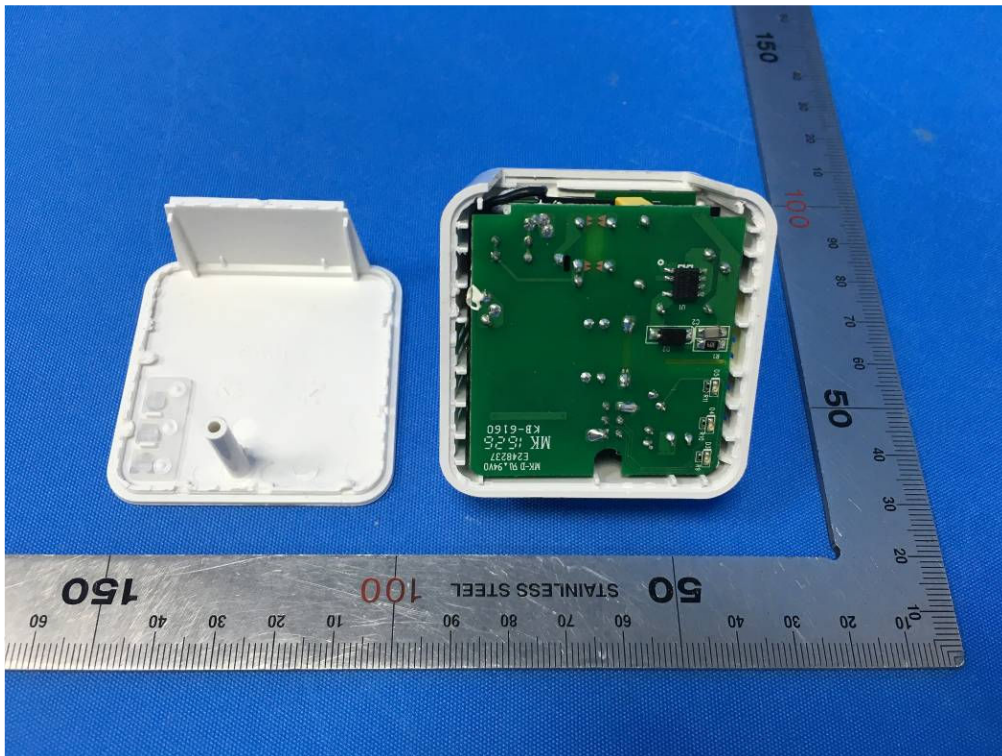


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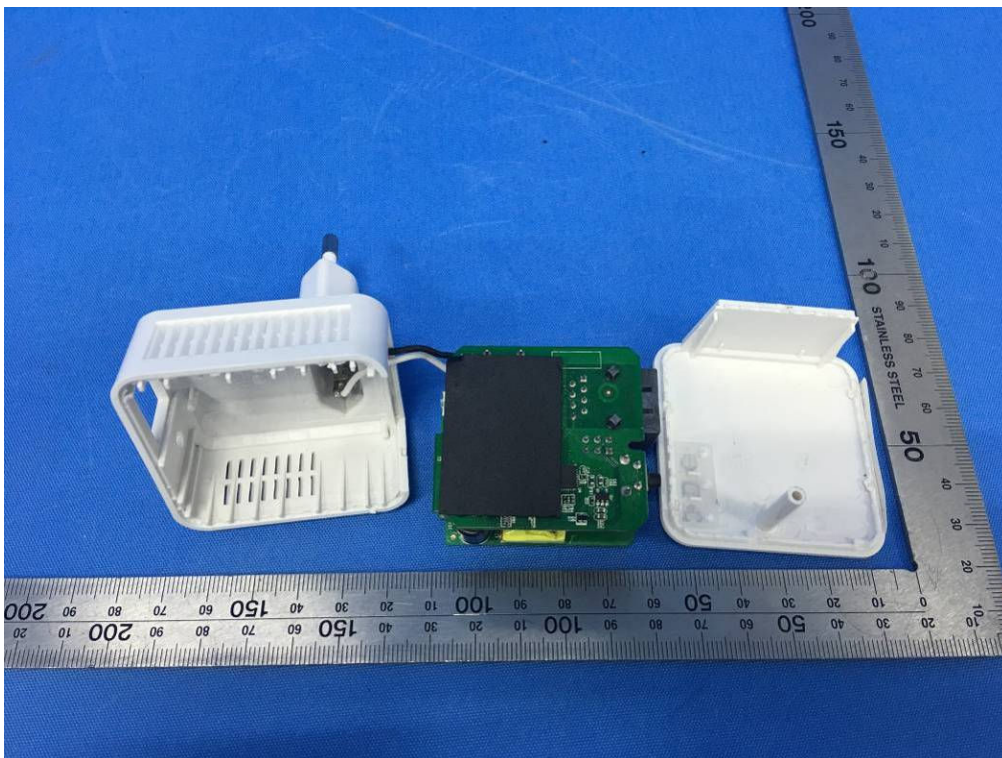




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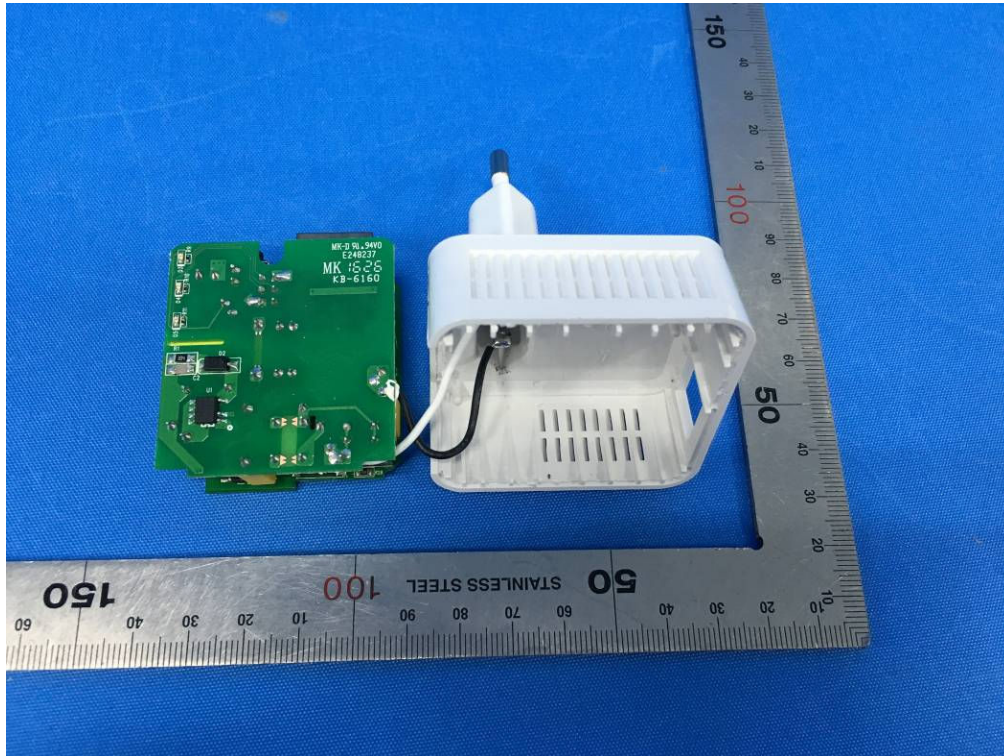


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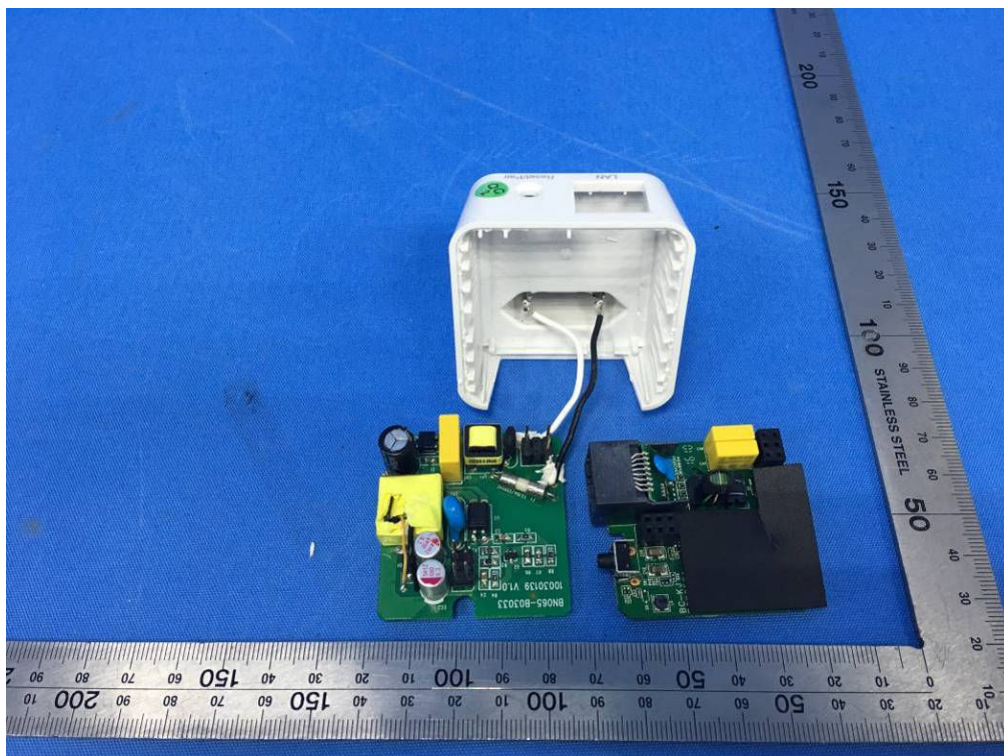




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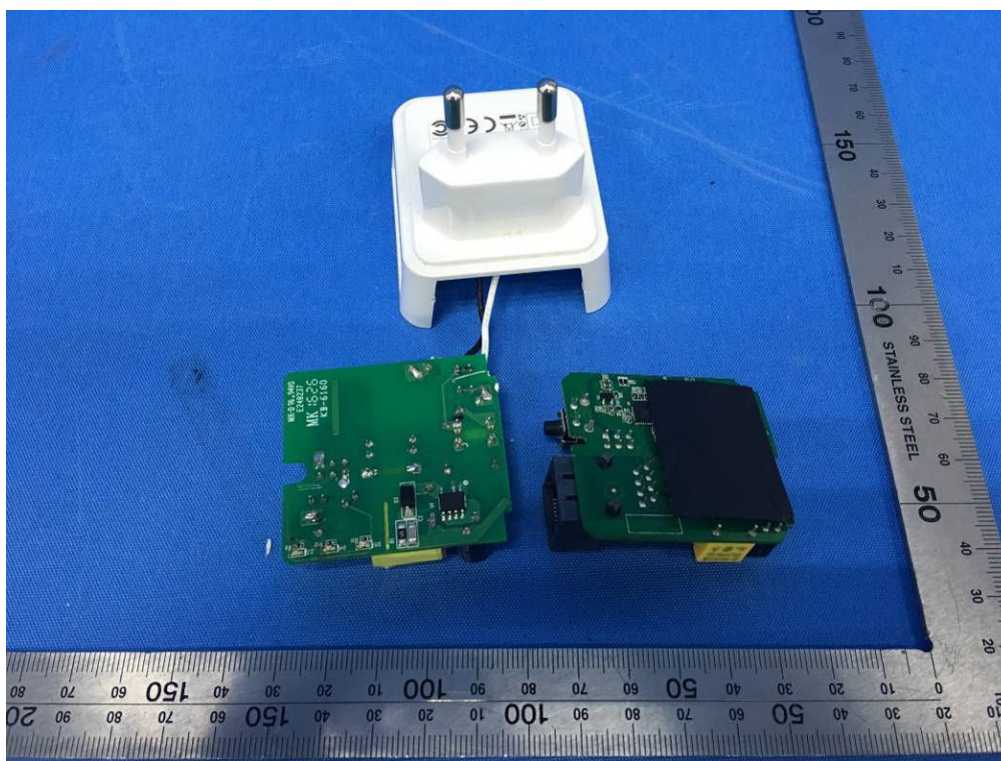


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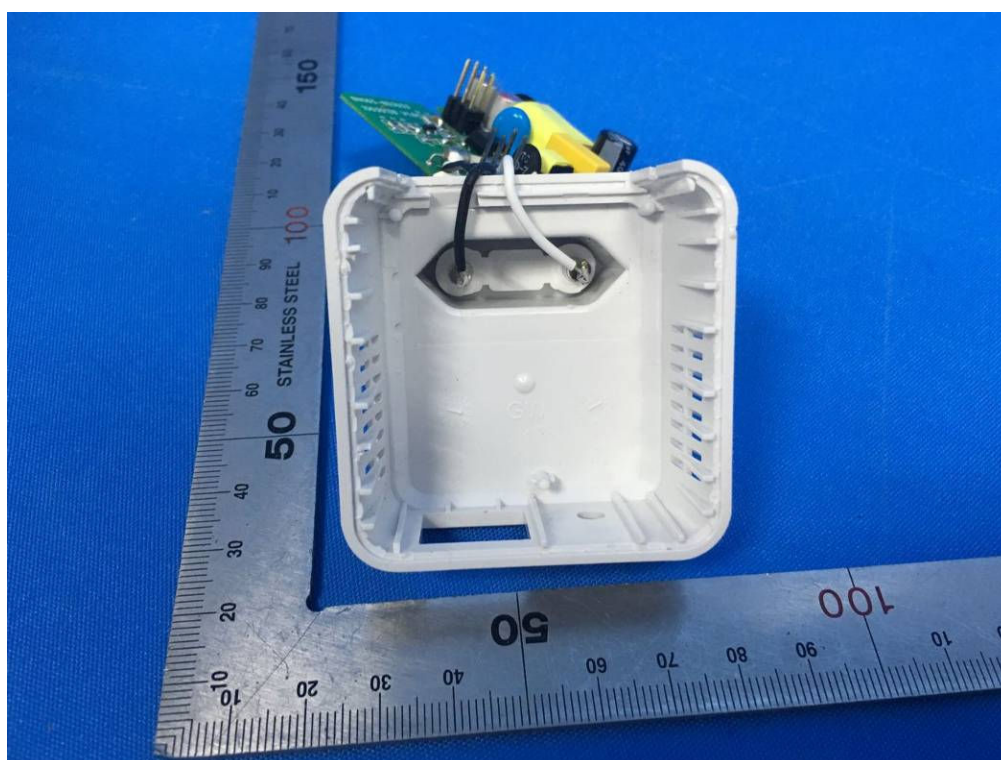




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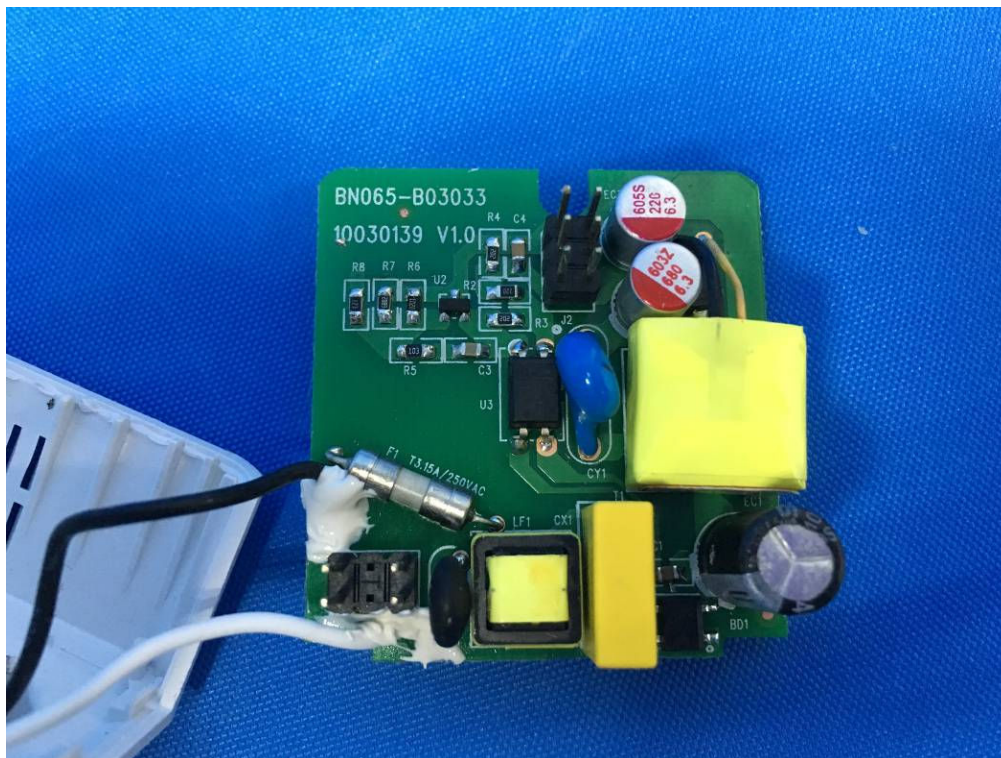


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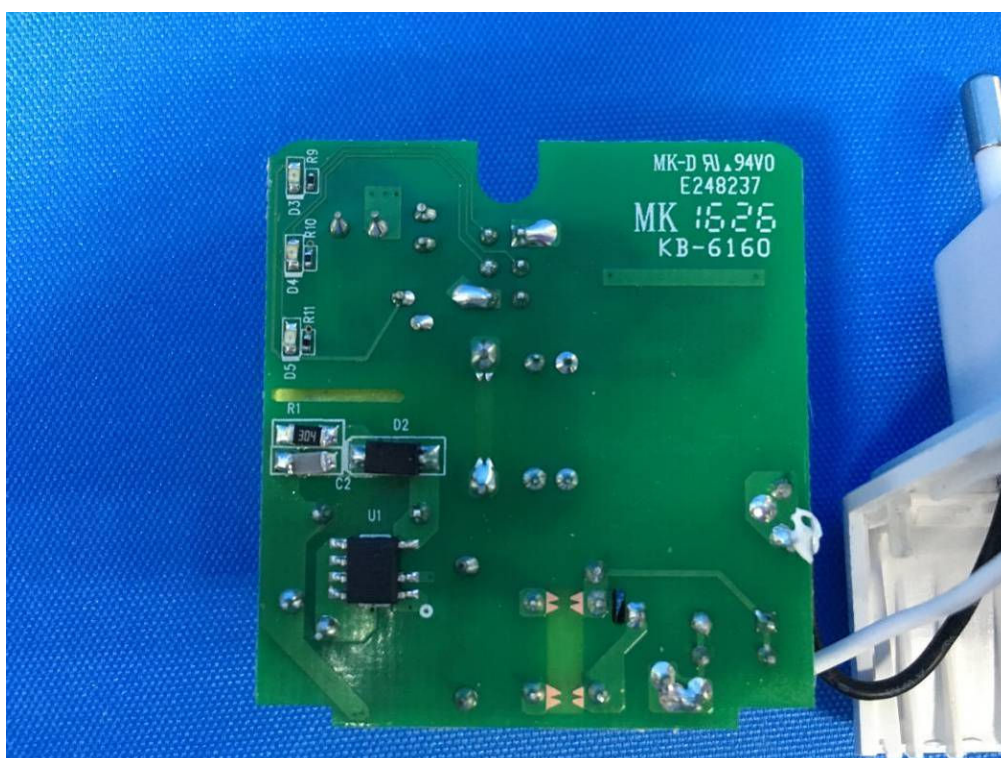




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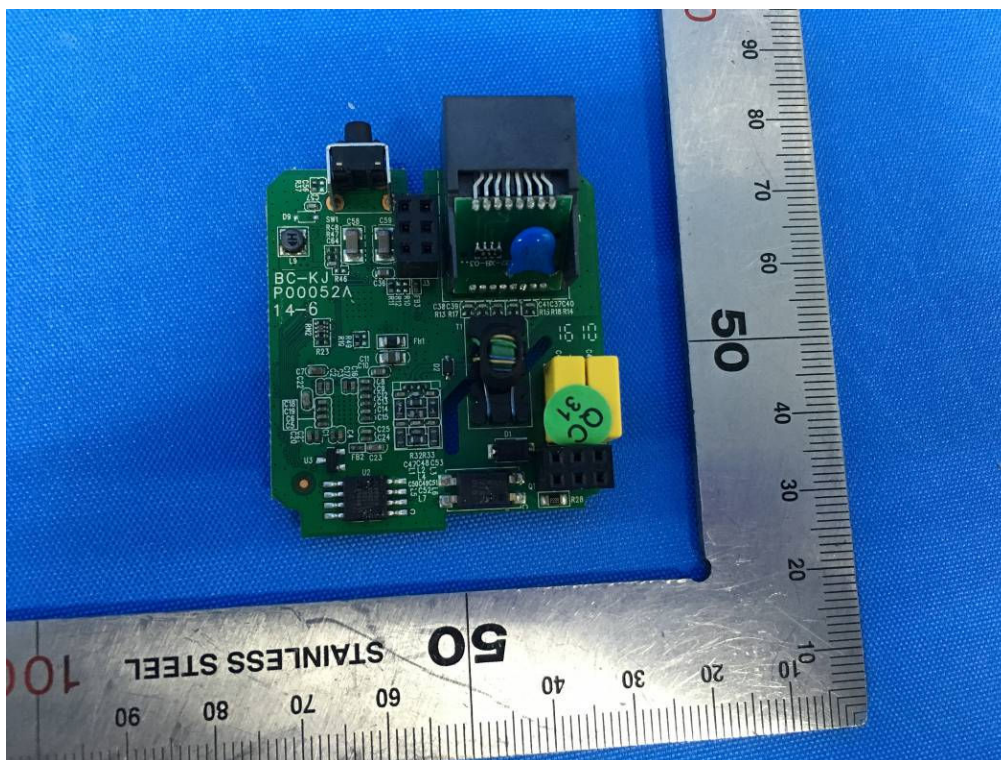


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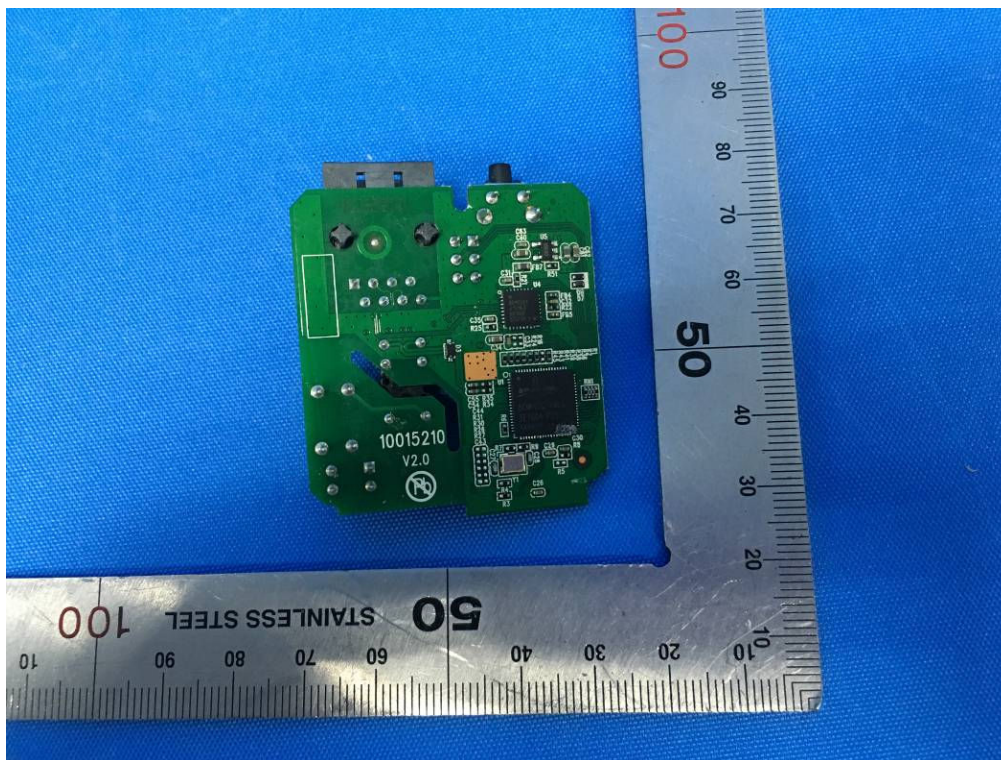




Photo # 15

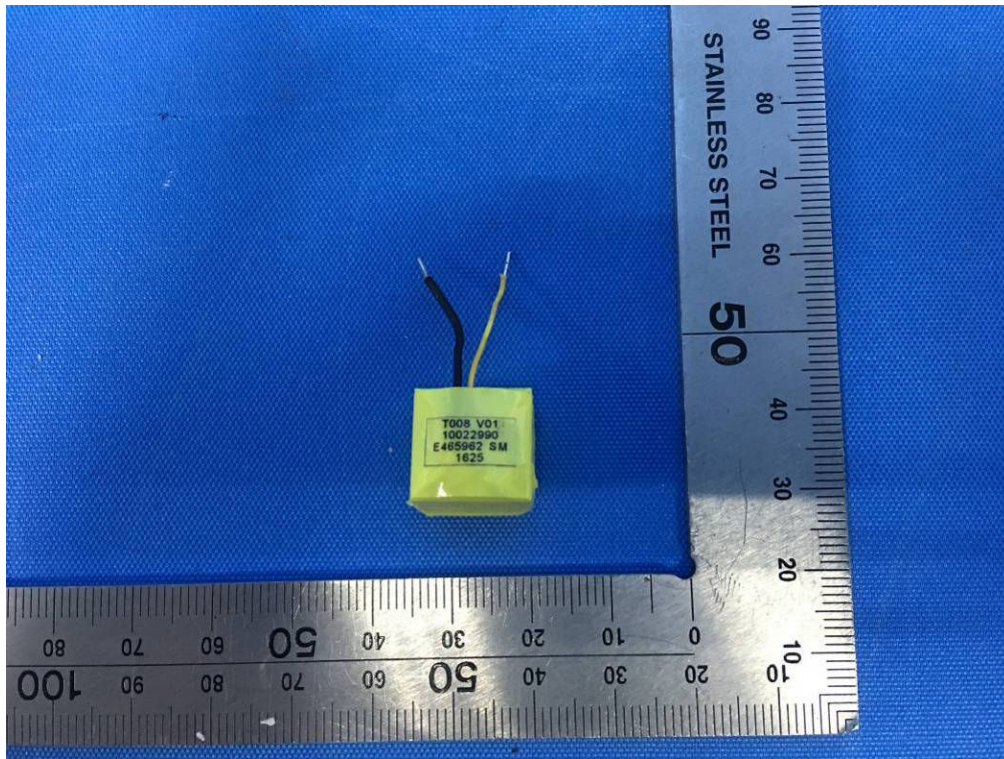
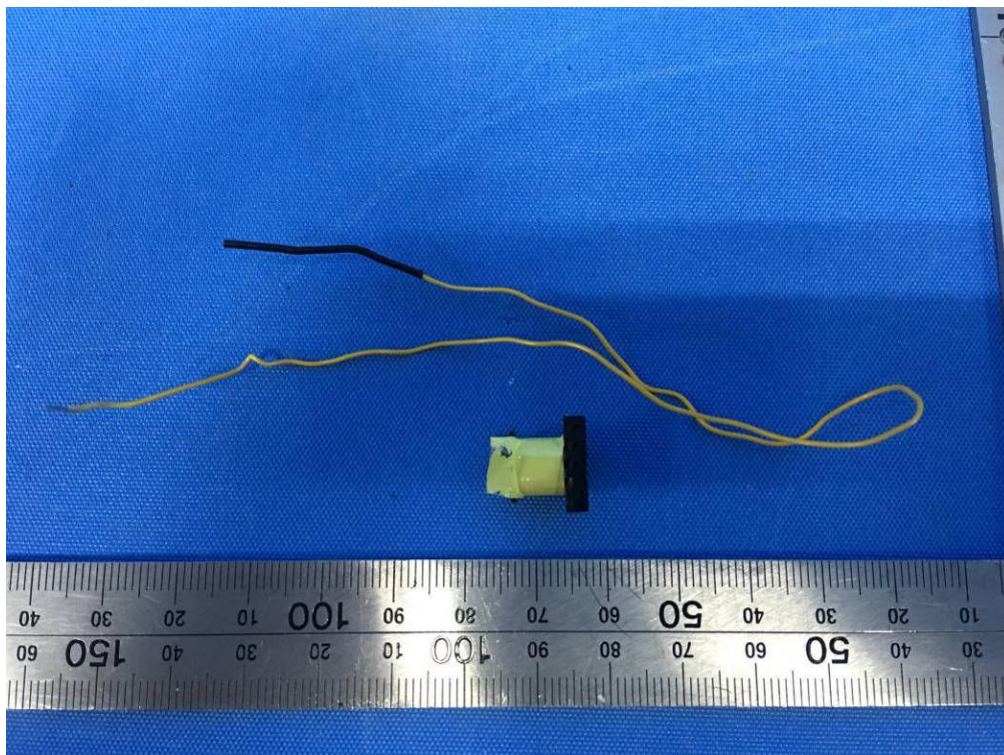


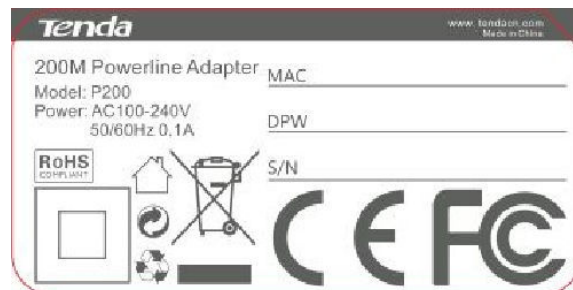
Photo # 16





Attachment - B.

Product ID Label





Attachment – C.

Schematics and Layout

(See attachment software copy)



Attachment - D.

User manual

(See attachment software copy)



Attachment - E.

Measuring Instrument List



ID NO	Instrument Type	Manufacture	Model	Scope	Cal. Date	Due Date
A00040	Data Acquisition Unit	YOKOGAWA	MX100-E-1H-S3	60 channels T: 0°C~200°C	2016-03-27	2017-03-26
A00033	DC Electronic Load	PRODIGIT	3311F+3302F	0-60V/0-60A/300W	2016-03-24	2017-03-23
A00058	True RMS Multimeter	FLUKE	289C	DC:1mV-1000V AC:0.1mV-1000V	2016-05-09	2017-05-08
A00057	Digital Phosphor Oscilloscope	Tektronix	MDO3034	300MHz 2.5GS/s 0.86ns	2016-05-09	2017-05-08
A00036	Probe of Oscilloscope	Tektronix	P6015A	250MHz, X100, 1200Vpk	2016-03-29	2017-03-28
A00045	Digital Caliper	Guang Lu	0-150mm	0-150、0.01mm	2016-03-26	2017-03-25
A00030	Digital Power Meter	YOKOGAWA	WT310E	0~600Vac/dc, 0~20Aac/dc, 50~2KHz, 0~10A (ac/dc)	2016-03-24	2017-03-23
A00022	Digital Temperature-Humidity Recorder	ZOGLab	DSR-TH	TEM : -70°C ~150°C HUMI : 20~98%	2016-03-27	2017-03-26
A00012	Temperature Oven	Yi Heng	DHG9140	300°C, 3KW,550*550*450	2016-03-24	2017-03-23
A00017	Test probe (2B)	JHC	N/A	Φ 12mmx80mm	2016-03-26	2017-03-25
A00016	Test finger (2A)	Zhong Chang	N/A	Φ 3mmx15mm	2016-03-26	2017-03-25
A00014	Ball Pressure test apparatus	JHC	BP2	Sphere R=5mm G=20N	2016-04-01	2017-03-31
A00043	Stop Watch	HUIBO	PC894	F=32.768HZ 0.01s-24hours	2016-03-28	2017-03-27
A00062	Leakage current tester	Simpson	228	10mA	2016-05-09	2017-05-08
A00082	Torque test apparatus for plug	HANYANG	FZ-1113	N/A	2016-05-23	2017-05-22
A00026	High Voltage Tester	EXTECH	7480	AC 0-5KV	2016-03-24	2017-03-23
A00045	Electronic scale	hengxin	ACS-30JZ	0-30Kg	2016-03-24	2017-03-23
A00020	Push-Pull Scales	AIGU	NK-500	MAX 500N	2016-03-20	2017-03-19