

TEST REPORT

IEC 60950-1 and EN 60950-1

Safety of information technology equipment including electrical business equipment

Report reference No..... : 108S012S
 Compiled by (+ signature) : Bruce Zhang



Approved by (+ signature) ... : Patrick Yen



Date of issue : Sep. 9, 2010

Testing laboratory : Quietek Technology(Suzhou)Co.,Ltd
 Address : No.99 Hongye RD.Suzhou Industrial Park Loufeng
 Hi-Tech Development Zone.,Suzhou,China

Testing location : As above

Applicant : Compex Systems Pte Ltd
 Address : 135 Joo Seng Road, #08-01 PM Industrial Building
 Singapore 368363

Manufacturer : Compex Systems Pte Ltd
 Address : 135 Joo Seng Road, #08-01 PM Industrial Building
 Singapore 368363

Factory : Same as the manufacturer.
 Address : Same as the manufacturer.

Standard..... : IEC 60950-1: 2005(2nd Edition), EN 60950-1:2006
 Test procedure : Standard

Type of test object : WIRELESS ACCESS POINT
 Trademark : COMPEX
 Model / type reference : WP543HV; WP543AHV; MMC543HV; MMC543AHV;
 MMS2543HV; MMS2543AHV
 Rating : 48Vdc, 0.625A

Other Aspects:

The completed test report – includes the following documents: (total page 44)

Test results give in this report only relate to the specimen(s) tested, calibrated or measured.
 This report shall not be reproduced other than in full without the written consent of Quietek.

Test item particulars:

Equipment mobility..... : building-in equipment
Operating condition : continuous
Tested for IT power systems..... : No
IT testing, phase-phase voltage(v)..... : N.A.
Class of equipment : Class III
Mass of equipment (kg) : 0.02Kg
Protection against ingress of water..... : IPX0

Possible test case verdicts:

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

General remarks:

“(see remark #)” refers to a remark appended to the test report.
“(see appended table)” refers to a table appended to the report.
Throughout this report a point is used as the decimal separator.
The test results presented in this report relate only to the object tested
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General product information:

1. The product is a WIRELESS ACCESS POINT for the use in information technology equipment.
2. The product has 6 kinds of models: model WP543HV; WP543AHV; MMC543HV; MMC543AHV; MMS2543HV and MMS2543AHV, except for differences of model name and plastic enclosure.
3. The test results presented in this report only to main test model: WP543HV.
4. The product is powered by a certified LPS power adapter.
Input: 100-240Vac, 50/60Hz, 1.2A; Output: 48Vdc, 0.625A.

Comments:

Brief description of the test sample:

The maximum ambient temperature is specified as 40°C

Copy of Marking plate:

(For Example)

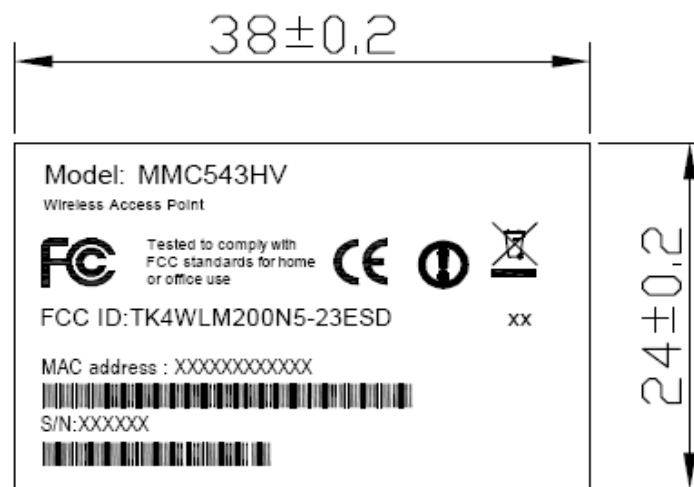
1.



2.



3.



4.



5.



6.



Note:

1. Company or brand name will screen on this rating label or one side of enclosure.
2. Rating voltage and current will screen on this rating label or one side of enclosure.

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Clause	Requirement - Test	Result -remark	Verdict
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1	GENERAL		P
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1.5	Components		P
1.5.1	Comply with IEC 60950-1 or relevant component standard	Components, which were found to affect safety aspects, comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards (see appended table 1.5.1).	P
1.5.2	Evaluation and testing of components	Components, which are certified to IEC and/or national standards, are used correctly within their ratings or had been evaluated during this approval.	P
1.5.3	Thermal controls	No thermal controls provided.	N
1.5.4	Transformers	Transformer used in approved adapter only.	P
1.5.5	Interconnecting cables		N
1.5.6	Capacitors in primary circuits	Class III equipment. No direct mains connection.	N
1.5.7	Resistors bridging insulation	Evaluated as part of power supply unit.	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	Evaluated as part of power supply unit.	N
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	Evaluated as part of power supply unit.	N
1.5.8	Components in equipment for IT power systems	Class III equipment. No direct mains connection.	N
1.5.9	Surge suppressors		N
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

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Clause	Requirement - Test	Result -remark	Verdict
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	Class III equipment. No direct mains connection.	N
1.6.2	Input current	No direct mains connection. Highest load for this equipment according to 1.2.2.1 is the operation with maximum brightness and contrast of the LCD backlight circuit, maximum volume for speaker and charged with empty battery pack. Results see appended table.	P
1.6.3	Voltage limit of hand-held equipment	Not exceeding.	P
1.6.4	Neutral conductor	Class III equipment. No direct mains connection.	N

1.7	Marking and instructions		P
1.7.1	Power rating	See below.	P
	Rated voltage(s) or voltage range(s) (V)	No direct connection to the AC mains supply.	N
	Symbol for nature of supply for d.c.....	No direct connection to the AC mains supply.	N
	Rated frequency or frequency range (Hz)	No direct connection to the AC mains supply.	N
	Rated current (mA or A)	No direct connection to the AC mains supply.	N
	Manufacturer's name/Trademark	See page 1	P
	Type/model.....	See page 1	P
	Symbol of Class II	Class III equipment.	N
	Other symbols	Additional symbols or marking do not give rise to misunderstanding.	P
	Certification marks.....	CE	P

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Clause	Requirement - Test	Result -remark	Verdict
1.7.2	Safety instructions	The User's Manual contains information for transportation, storage, installation, operation and servicing of the equipment as well as technical data.	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Investigated during separate certification of power adaptor.	N
1.7.2.3	Overcurrent protective device		N
1.7.2.4	IT power distribution systems	Class III equipment.	—
1.7.2.5	Operator access with a tool	All areas containing hazard(s) are inaccessible to the operator.	P
1.7.2.6	Ozone	The equipment does not produce Ozone.	N
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Supply voltage adjustment	Equipment supplied by single DC supply voltage.	N
	Methods and means of adjustment; reference to installation instructions		N
1.7.5	Power outlets on the equipment	No standard power outlets provided.	N
1.7.6	Fuse identification	Fuse not located in operator access area, unambiguous Fuse cross-reference provided.	P
1.7.7	Wiring terminals	See below.	N
1.7.7.1	Protective earthing and bonding terminals	No direct connection to the AC mains supply.	N
1.7.7.2	Terminal for a.c. mains supply conductors	No direct connection to the AC mains supply.	N
1.7.7.3	Terminals for d.c. mains supply conductors	No d.c. mains supply.	N
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking	No safety relevant switch or control.	N
1.7.8.2	Colors	No safety relevant control and indicator.	N
1.7.8.3	Symbols according to IEC 60417	Not used.	N
1.7.8.4	Markings using figures		N

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Clause	Requirement - Test	Result -remark	Verdict
1.7.9	Isolation of multiple power sources	No such component provided.	N
1.7.10	Thermostats and other regulating devices	No direct connection to the AC mains supply.	N
1.7.11	Durability	The marking plate was subjected to the permanence of marking test. The marking plate 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 marking. The marking on the label did not fade. There was no curling of the marking.	P
1.7.12	Removable parts		N
1.7.13	Replaceable batteries		N
	Language	English.	—
1.7.14	Equipment for restricted access locations	No restricted access location.	N

2	PROTECTION FROM HAZARDS	P
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2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Only SELV inside the equipment.	P
2.1.1.1	Access to energized parts		P
	Test by inspection		N
	Test with test finger(Figure 2A)		N
	Test with test pin(Figure 2B)		N
	Test with test probe(Figure 2C).....		N
2.1.1.2	Battery compartments	No TNV circuits within a battery compartments.	N
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N
	Working voltage (V); distance (mm) trough insulation		—

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Clause	Requirement - Test	Result -remark	Verdict
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 energy hazard in operator access area.	N
2.1.1.6	Manual controls	No such controls provided.	N
2.1.1.7	Discharge of capacitor s in the primary circuit	Not direct connection to mains.	N
	Time-constant (s); measured voltage (V)..... :		—
2.1.1.8	Energy hazards – d.c. mains supply		N
	a) Capacitor connected to the d.c. mains supply ...:		N
	b) Internal battery connected to the d.c. mains supply		N
2.1.1.9	Audio amplifiers		N
2.1.2	Protection in service access areas	No maintenance works in operation mode necessary.	N
2.1.3	Protection in restricted access locations	The unit doesn't intended to be used in restricted locations.	N

2.2	SELV circuits		N
2.2.1	General requirements		N
2.2.2	Voltages under normal conditions (V) :		N
2.2.3	Voltages under fault conditions (V) :		N
2.2.4	Connection of SELV circuits to other circuits :		N

2.3	TNV circuits		N
2.3.1	Limits		N
	Type of TNV circuits :		—
2.3.2	Separation from other circuits and from accessible parts		N
	Used insulation :		—
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

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Clause	Requirement - Test	Result -remark	Verdict
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed		—
2.3.5	Test for operating voltages generated externally		N

2.4	Limited current circuits		N
2.4.1	General requirements		N
2.4.2	Limit values		N
	Frequency (Hz).....		—
	Measured current (mA)		—
	Measured voltage (V)		—
	Measured capacitance (μF).....		—
2.4.3	Connection of limited current circuits to other circuits		N

2.5	Limited power sources		N
	Inherently limited output		N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating condition		N
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output voltage (V), output current (A), apparent power (VA)		—
	Current rating of overcurrent protective device (A)		—

2.6	Provisions for earthing and bonding		N
2.6.1	Protective earthing	Class III equipment.	N
2.6.2	Functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N

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Clause	Requirement - Test	Result -remark	Verdict
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
	Resistance (Ω) of earthing conductors and their terminations, test current (A)		—
2.6.3.4	Resistance (Ω) of earthing conductors and their terminations, test current (A) ..:		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 and 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		N
	Instructions when protection relies on building installation		N
2.7.2	Faults not covered in 5.3		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices... :		N

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Clause	Requirement - Test	Result -remark	Verdict
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel..... :		N

2.8	Safety interlocks		N
2.8.1	General principles	No safety interlock.	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	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning		N
	Humidity (%) :		—
	Temperature (°C) :		—
2.9.3	Grade of insulation	Functional insulation	P
2.9.4	Separation from hazardous voltages		N
	Method(s) used		—

2.10	Clearances, creepage distances and distances through insulation		N
2.10.1	General		N
2.10.1.1	Frequency		N
2.10.1.2	Pollution degrees		N
2.10.1.3	Reduced values for functional insulation		N

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Clause	Requirement - Test	Result -remark	Verdict
2.10.1.4	Intervening unconnected conductive parts		N
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements		N
2.10.1.7	Insulation in circuits generating starting pulses		N
2.10.2	Determination of working voltage		N
2.10.2.1	General		N
2.10.2.2	RMS working voltage		N
2.10.2.3	PEAK working voltage		N
2.10.3	Clearances		N
2.10.3.1	General		N
2.10.3.2	Mains transient voltage		N
2.10.3.3	Clearances in primary circuit		N
2.10.3.4	Clearances in secondary circuits		N
2.10.3.5	Clearances in circuits having starting pulses		N
2.10.3.6	Transients from a.c. mains supply		N
2.10.3.7	Transients from d.c. mains supply		N
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9	Measurement of transient voltage levels		N
2.10.4	Creepage distances		N
2.10.4.1	General		N
2.10.4.2	Material group and comparative tracking index		N
2.10.4.3	CTI test		—
2.10.5	Solid insulation		N
2.10.5.1	General		N
2.10.5.2	Distances through insulation		N
2.10.5.3	Insulating compound as solid insulation		N
2.10.5.4	Semiconductor devices		N
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material – General		N
2.10.5.7	Separable thin sheet material		N
	Number of layers (pcs)		—
2.10.5.8	Non-separable thin sheet material		N

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Clause	Requirement - Test	Result -remark	Verdict
2.10.5.9	Thin sheet material – standard test procedure		N
2.10.5.10	Thin sheet material – alternative test procedure		—
	Electric strength test		—
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components		N
	Working voltage		N
	a) Basic insulation not under stress		N
	b) Basic, supplementary, reinforced insulation		N
	c) Compliance with Annex U		N
	Two wires in contact inside wound component; angle between 45° and 90°		N
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		—
	Routine test		—
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	Coated printed boards	No coated printed boards.	N
2.10.6.1	General		N
2.10.6.2	Sample preparation and preliminary inspection		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing		N
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		N
	Electric strength test		—
2.10.7	Enclosed and sealed parts	No hermetically sealed components	N
	Temperature $T_1 = T_2 + T_{ma} - T_{amb} + 10K$ (°C).....		N
2.10.8	Spacing filled by insulating compound		N

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Clause	Requirement - Test	Result -remark	Verdict
	Electric strength test		—
2.10.9	Component external terminations		N
2.10.10	Insulation with varying dimensions	Insulation kept homogenous.	N
2.10.11	Tests for semiconductor devices and cemented joints		N
2.10.12	Enclosed and sealed parts		N

3	WIRING, CONNECTIONS AND SUPPLY		N
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3.1	General		N
3.1.1	Current rating and overcurrent protection	No internal wiring or interconnecting cables used.	N
3.1.2	Protection against mechanical damage		N
3.1.3	Securing of internal wiring		N
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators	Not used.	N
3.1.6	Screws for electrical contact pressure	No screws used for electrical connections.	N
3.1.7	Insulating materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws	No self-tapping screws are used.	N
3.1.9	Termination of conductors		N
	10 N pull test		N
3.1.10	Sleeving on wiring	No sleeving used.	N

3.2	Connection to an a.c. mains supply or a d.c. mains supply		N
3.2.1	Means of connection		N
3.2.1.1	Connection to an a.c. mains supply		N
3.2.1.2	Connection to a d.c. mains supply	.	N
3.2.2	Multiple supply connections		N
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter (mm) of cable and conduits		—
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N

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Clause	Requirement - Test	Result -remark	Verdict
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
	D (mm); test mass (g)		—
	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:		N
	Rated current (A), cord/cable type, cross-sectional area (mm ²).....:		—
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		N
3.4.1	General requirement		N
3.4.2	Disconnect devices		N
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N

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Clause	Requirement - Test	Result -remark	Verdict
3.4.6	Single-phase equipment and d.c. equipment		N
3.4.7	Three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources		N

3.5	Interconnection of equipment		N
3.5.1	General requirements		N
3.5.2	Types of interconnection circuits :		N
3.5.3	ELV circuits as interconnection circuits		N
3.5.4	Data ports for additional equipment		N

4	PHYSICAL REQUIREMENTS		N
4.1	Stability		N
	Angle of 10°	Less than 7kg.	N
	Test: force (N)..... :	Equipment is not a floor-standing unit.	N

4.2	Mechanical strength		N
4.2.1	General		N
4.2.2	Steady force test, 10 N		N
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N		N
4.2.5	Impact test		N
	Fall test		N
	Swing test		N
4.2.6	Drop test		N
4.2.7	Stress relief		N
4.2.8	Cathode ray tubes	No such device provided.	N
	Picture tube separately certified..... :		N
4.2.9	High pressure lamps	No such device provided.	N
4.2.10	Wall or ceiling mounted equipment; force (N) :		N

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Clause	Requirement - Test	Result -remark	Verdict
4.3	Design and construction		N
4.3.1	Edges and corners		N
4.3.2	Handles and manual controls; force (N).....:	No handles or controls provided.	N
4.3.3	Adjustable controls	No such controls provided.	N
4.3.4	Securing of parts		N
4.3.5	Connection of plugs and sockets		N
4.3.6	Direct plug-in equipment	Not direct plug-in type.	N
	Dimensions (mm) of mains plug for direct plug-in :		N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)		N
4.3.7	Heating elements in earthed equipment	No heating elements.	N
4.3.8	Batteries		N
4.3.9	Oil and grease	No oil or grease inside the equipment.	N
4.3.10	Dust, powders, liquids and gases	Equipment is intended use doesn't consider to be exposed to these.	N
4.3.11	Containers for liquids or gases	No container for liquid or gas.	N
4.3.12	Flammable liquids	No flammable liquid.	N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation; type of radiation		P
4.3.13.1	General	No ionizing radiation or laser or flammable liquids presents.	N
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N
	Part, property, retention after test, flammability classification		N

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Clause	Requirement - Test	Result -remark	Verdict
4.3.13.4	Human exposure to ultraviolet (UV) radiation.....:		N
4.3.13.5	Laser (including LEDs)		N
	Laser class		—
4.3.13.6	Other types		N

4.4	Protection against hazardous moving parts		N
4.4.1	General		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	Temperature rises	See appended table 4.5	P
	Normal load condition per Annex L.....:	See Annex L	P
4.5.2	Resistance to abnormal heat	Such plastic materials only used in approved adapter.	N

4.6	Openings in enclosures		N
4.6.1	Top and side openings		N
	Dimensions (mm).....:		—
4.6.2	Bottoms of fire enclosures		N
	Construction of the bottom		—
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment		N
4.6.5	Adhesives for constructional purposes		N
	Conditioning temperature (°C)/time (weeks)		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	See below.	P
	Method 1, selection and application of components wiring and materials	Use of materials with the required flammability classes.	P

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Clause	Requirement - Test	Result -remark	Verdict
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure		N
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General	See appended table 1.5.1 for PCB.	P
4.7.3.2	Materials for fire enclosures		N
4.7.3.3	Materials for components and other parts outside fire enclosures		N
4.7.3.4	Materials for components and other parts inside fire enclosures		N
4.7.3.5	Materials for air filter assemblies	No air-filter provided.	N
4.7.3.6	Materials used in high-voltage components	No such components used.	N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		N
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5.1	Touch current and protective conductor current		N
5.1.1	General		N
5.1.2	Equipment under test (EUT)		N
5.1.2.1	Single connection to an a.c. mains supply		N
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit		N
5.1.4	Application of measuring instrument		N
5.1.5	Test procedure		N
5.1.6	Test measurements		N
5.1.7	Equipment with touch current exceeding 3.5mA..... :		N
5.1.8	Touch currents to and from telecommunication networks and cable distribution systems and from telecommunication networks		N

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Clause	Requirement - Test	Result -remark	Verdict
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		N
	Test voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks.....		N

5.2	Electric strength		N
5.2.1	General		N
5.2.2	Test procedure		N

5.3	Abnormal operating and fault conditions		N
5.3.1	Protection against overload and abnormal operation		N
5.3.2	Motors	No motors used.	N
5.3.3	Transformers	No safety isolation transformer except in approved switching power supply adapter.	N
5.3.4	Functional insulation		N
5.3.5	Electromechanical components		N
5.3.6	Simulation of faults		N
5.3.7	Unattended equipment		N
5.3.8	Compliance criteria for abnormal operating and fault conditions		N
5.3.9	Compliance criteria for abnormal operating and fault conditions		N
5.3.9.1	During the tests		N
5.3.9.2	After the tests		N

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
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6.1	Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N

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Clause	Requirement - Test	Result -remark	Verdict
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements		N
	Test 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
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7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment.		N
7.3	Protection of equipment users from overvoltages on the cable distribution system.		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse		N

A	ANNEX, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
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Clause	Requirement - Test	Result -remark	Verdict
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18g, and of stationary equipment		N
A.1.1	Samples		—
	Wall thickness (mm)		—
A.1.2	Conditioning of samples; temperature (°C) . :		N
A.1.3	Mounting of samples		N
A.1.4	Test flame		N
	Flame A, B or C		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material		—
	Wall thickness (mm)		—
A.2.2	Conditioning of samples		N
A.2.3	Mounting of samples		N
A.2.4	Test flame		N
	Flame A, B or C		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		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

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Clause	Requirement - Test	Result -remark	Verdict
A.3.3	Compliance criterion		N

B	ANNEX B , MOTOR TESTS UNDER ABNORMAL CONDITIONS		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.7	Locked-rotor overload test for DC motors in secondary circuits		N
B.7.1	Test procedure		N
B.7.2	Alternative test procedure; test time (h)		N
B.7.3	Electric strength test		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		N
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
	Method of protection		—
C.1	Overload test		N
C.2	Insulation	Basic provided.	N
	Protection from displacement of windings.....		N

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Clause	Requirement - Test	Result -remark	Verdict
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCHCURRENT TESTS		N
D.1	Measuring instrument		N
D.2	Alternative measuring instrument		N
E	ANNEX E, TEMPERATURE RISE OF A WINDING		N
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		N
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	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	DC mains supply		N
G.3	Determination of telecommunication network transient voltage (V)		N
G.4	Determination of required withstand voltage (V).....		N
G.5	Measurement of transient levels (V).....		N
G.6	Determination of minimum clearances		N
H	ANNEX H, IONIZING RADIATION		N
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS		N
	Metal used :		—
K	ANNEX K, THERMAL CONTROLS		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

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Clause	Requirement - Test	Result -remark	Verdict
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L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT		N
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		N

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

N	ANNEX N, IMPULSE TEST GENERATORS		N
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N

P	ANNEX P, NORMATIVE REFERENCES		N
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Q	ANNEX Q, BIBLIOGRAPHY		N
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R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
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Clause	Requirement - Test	Result -remark	Verdict
R.1	Minimum separation distances for unpopulated coated printed boards		N
R.2	Reduced clearances		N
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING		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		N
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS		N
V.1	Introduction		N
V.2	TN power distribution systems		N
V.3	TT power systems		N
V.4	IT power systems		N
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N
W.1	Touch current from electronic 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
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST		N
Y.1	Test apparatus		N
Y.2	Mounting of test samples		N
Y.3	Carbon-arc light-exposure apparatus		N

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Clause	Requirement - Test	Result -remark	Verdict
Y.4	Xenon-arc light exposure apparatus.....:		N
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		N

EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS

Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations	—
General	Delete all the “country” notes in the reference document according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6. 2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2	N

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Clause	Requirement - Test	Result -remark	Verdict
1.3.Z1	<p>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</p> <ul style="list-style-type: none"> - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers. 		N
1.5.1	<p>Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC</p>		N
1.7.2.1	<p>Add the following NOTE: NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss</p>		N

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Clause	Requirement - Test	Result -remark	Verdict
2.7.1	<p>Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>	Class III equipment.	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.		—

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Clause	Requirement - Test	Result -remark	Verdict
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: 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 </p> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition a). In NOTE 1, applicable to Table 3B, delete the second sentence.</p>		N
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 </p> <p>Delete the fifth line: conductor sizes for 13 to 16 A.</p>		N
4.3.13.6	<p>Add the following NOTE: NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p>		—
Annex H	<p>Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.</p>		N
Bibliography	Additional EN standards.		—

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
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ZB	SPECIAL NATIONAL CONDITIONS		—
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
1.5.7.1	In Finland, Norway and Sweden, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.		N
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

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Clause	Requirement - Test	Result -remark	Verdict
1.7.2.1	In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"		N
1.7.5	In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		N
2.2.4	In Norway, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.4	In Norway, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.6.3.3	In the United Kingdom, the current rating of the circuit shall be taken as 13 A, not 16 A.		N
2.7.1	In the United Kingdom, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N
2.10.5.13	In Finland, Norway and Sweden, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N
3.2.1.1	In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998 Plug Type 25 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2.1998 Plug Type 23 L+N+PE 250 V, 16 A		N

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Clause	Requirement - Test	Result -remark	Verdict
3.2.1.1	In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.		N
3.2.1.1	In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		N
3.2.1.1	In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N
3.2.1.1	In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N
3.2.4	In Switzerland, for requirements see 3.2.1.1 of this annex.		N
3.2.5.1	In the United Kingdom, a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N
3.3.4	In the United Kingdom, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm ² to 1,5 mm ² nominal cross-sectional area.		N

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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 <ul style="list-style-type: none"> ○ 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

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Clause	Requirement - Test	Result -remark	Verdict
6.1.2.1	<p>In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</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 ass the electric strength test below. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> - 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. <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400. 		N
6.1.2.2	<p>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.</p>		N
7.2	<p>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.</p>		N
7.3	<p>In Norway and Sweden, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.</p>		N
7.3	<p>In Norway, for installation conditions see EN 60728-11:2005.</p>		N
ZC	<p>A-DEVIATIONS (informative)</p>		—
1.5.1	<p>Sweden (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.</p>		N

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

1.5.1	TABLE: list of critical components					P
Subject/no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity1)	
PWB	Various	Various	V-1 or better. 105°C	UL94	UL	
1) An asterisk indicates a mark which assures the agreed level of surveillance						

1.6.2	TABLE: electrical data					P
fuse #	rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	Condition/status
Random adapter for evaluating (Model: DSA-0421S-50 1)						
Power	0.625A	47.8V	4.1W	0.088A	--	Maximum normal load
Adapter (Model: PSA16U-480 (POE))						
Power	0.32A	48.1V	1.97W	0.041A	--	Maximum normal load
Adapter (Model: HK-R212-A24)						
Power	0.5A	23.79V	0.36W	0.015A		Maximum normal load
Supplementary information:						

2.5	TABLE: limited power source measurement				N
Measurement Location		Single Fault Condition	Maximum		
From	To		Uoc	Isc	VA (60s)
Supplementary information:					

2.6.3.4	TABLE: ground continue test		N
Location	Resistant measured (Ω)	Comments	
Supplementary information:			

4.2.1, 4.2.4	TABLE: Steady Force Test			N
Test Location	Thickness (mm)	Force (N)	Observation	
Supplementary information:				

4.2.1, 4.2.6	TABLE : Drop Test		N
Impact Area	Drop No.	Observation	
Supplementary information:			

4.2.1, 4.2.7	TABLE : Stress Relief Test		N
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Thermocouple Location :			
ΔT : _ °C		Tma : _ °C	
Oven Temperature : ΔT _ °C + _ °C + Tma _ °C = _ °C			
Part	Material	Observations	Temperature °C
Supplementary information:			

4.2.10	TABLE : Loading Test	N
Weight of the equipment (kg)	Force applied (N) which was 3 times the weight of the equipment.	
Supplementary information:		

4.3.8	TABLE : BATTERY OVERCHARGE/DISCHARGE TESTS	N	
The tests of 4.3.8 are applicable only when appropriate battery data is not available		N	
Is it possible to install the battery in a reverse polarity position?		N	
Test Condition		Duration	
A fully charged rechargeable battery was connected in the unit and allowed to charge for 7 hours. The product charging circuit was adjusted for the maximum charging rate.			
Component	Abnormal Condition	Duration	Observation
Supplementary information:			

4.5	TABLE: Temperature rise measurements	P	
	Test voltage (V).....:	See below.	—
	t1 (°C) :		—
	t2 (°C) :		—
Temperature rise dT of part/at	T 1(°C)	T 2(°C)	Required dT (°C)
Wireless (Test voltage: 48V)			
CH011—DC Jack	32.4	45.5	70
CH012—PCB near QP03	41.2	54.3	105
CH013—PCB near U3	42.5	55.6	105
CH015—L1 body	38.4	51.5	90

CH016—PCB near RP011	45.6	58.7	105
CH017—PCB near U14	42.6	55.7	105
CH018—C8 body	41.5	54.6	70
CH019—L2 body	44.7	57.8	90
CH021—PCB near Q3	48.9	62	105
CH022—PCB near U91	46.9	60	105
CH023—PCB near U1	45.0	58.1	105
CH024—PCB near U92	41.3	54.4	105
CH025—PCB near U17	43.8	56.9	105
CH027—PCB near U7	43.2	56.3	105
CH028—PCB near DR1	34.4	47.5	105
CH029—PCB near D10	31.8	44.9	105
CH030—PCB near U8	42.5	55.6	105
CH031—PCB near U2	26.7	39.8	105
CH032—Ambient	26.9	40	—

Supplementary information:
 The temperature were measured under worst normal defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages a described above.

5.1, Annex D	TABLE : Touch Current Test				N
Terminal A (Switch “s”) of Measuring Instrument Connected to :	Switch “e” Position	Polarity P1/Primary Switch Condition			
		Normal / On	Normal / Off	Reverse / On	Reverse / Off

Supplementary information:

5.2	TABLE: electric strength tests		N
Test voltage applied between:		Test voltage (Vdc)	Breakdown

Supplementary information:

5.3	TABLE: Fault condition tests				N	
	Ambient temperature (°C)		See below		—	
	Power source for EUT: Manufacturer, model/type, output rating		--		—	
Component no.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation

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Supplementary information:

6.2.2, 6.2.2.1	TABLE: electric strength tests procedure impulse test			N
Measurement Location:		Test voltage (AC)	Breakdown	
From	To		Yes/No	
Supplementary information:				
Measurement Location:		Test voltage (Vdc)	Megohms	
From	To		(MΩ)	
Supplementary information:				

6.2.2, 6.2.2.2	TABLE: electric strength tests procedure steady state test			N
Measurement Location:		Test voltage (Vdc)	Breakdown	
From	To		Yes/No	
Supplementary information:				

Photo



VIEW 1



VIEW 2



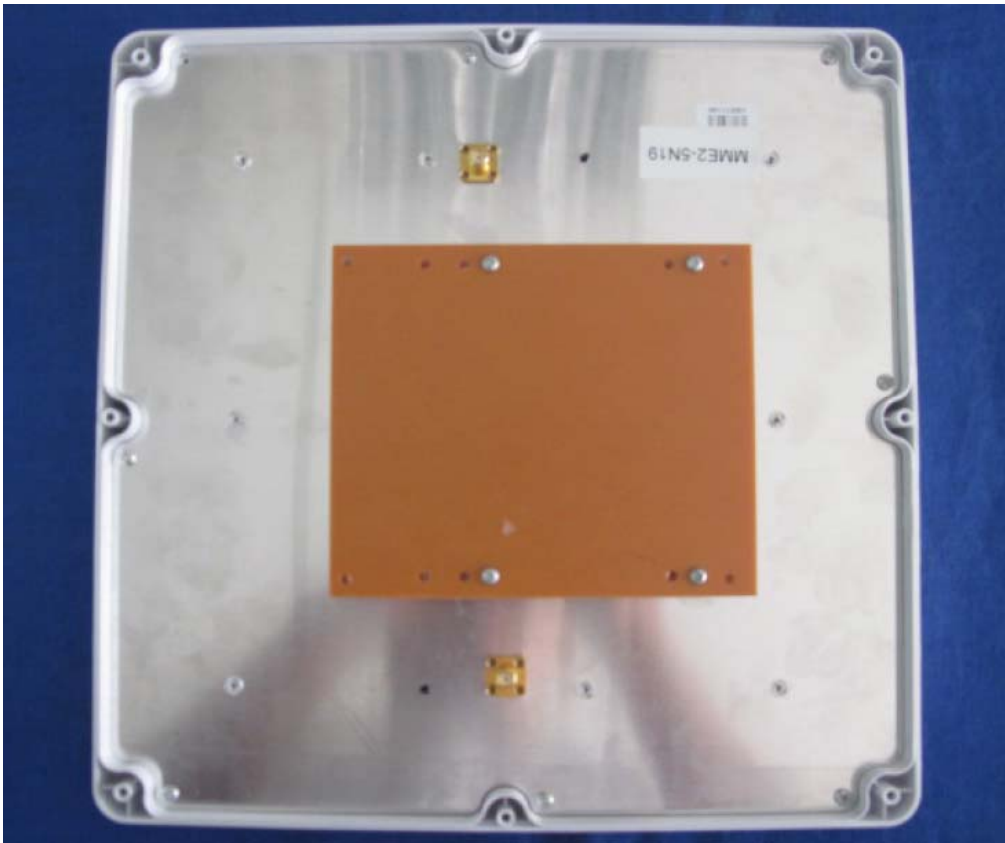
VIEW 3



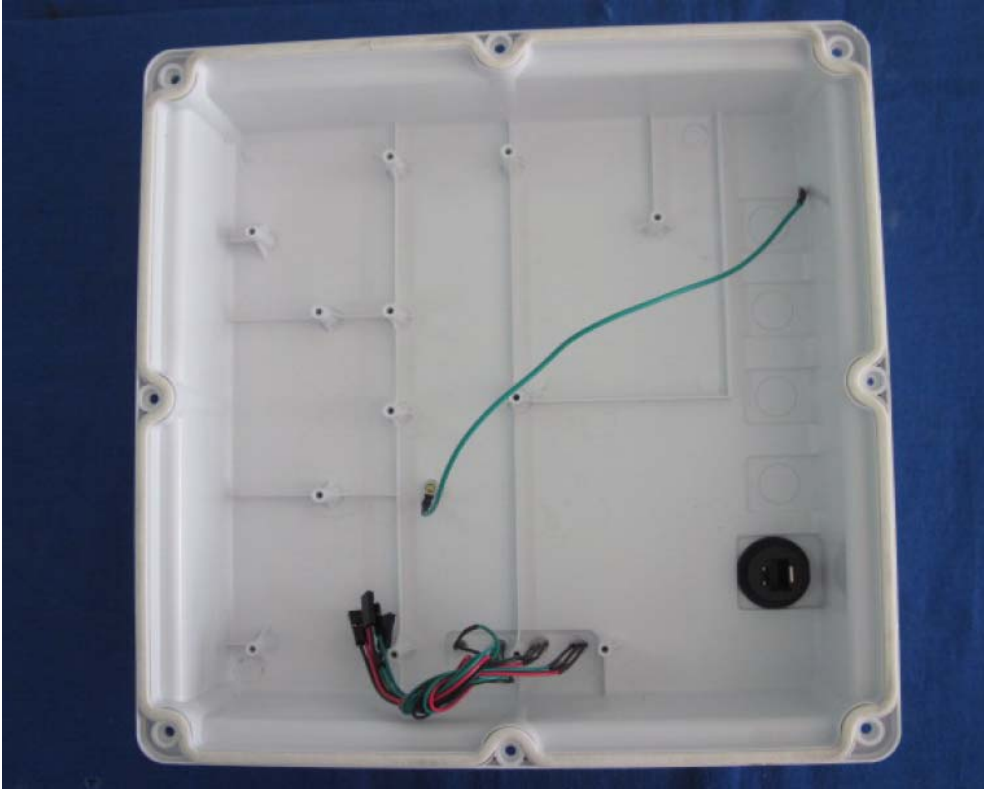
VIEW 4



VIEW 5



VIEW 6



VIEW 7

-END-