



Testing laboratory No. 1341 accredited by the Czech Accreditation Institute

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TEST REPORT

8551-PT-B0186-13

Copy No. 1 of 2

Date of issue: December 15th, 2013

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Customer: EUROCONTRACTS s.r.o.
Na Orátě 485
783 61 Hlubočky
Czech Republic

Manufacturer: Infinet LLC.
69/75, Vavilova str.,
Moscow 117997
Russian Federation

Subject of the test: Electrical safety

Kind of equipment: 5 GHz high performance RLAN

Type: R5000-Smn/5X.300.2x63.2x19, R5000-Smn/5X.300.2x63.2x21,
R5000-Smn/5X.300.2x63.2x23, R5000-Smn/5X.300.2x63.2x28,
R5000-Smnb/5X.300.2x63.2x16, R5000-Smn/5X.300.2x63

Serial number: 192515, 19516, 192415, 192416, 192929, 192 482

Test procedure (used standard): ČSN EN 60950-1, ed.2: 2006, +A1:2010, +A11:2009+A12:2011, + Cor.:2011-10

The results of the tests have been obtained following the procedures reported in this Report and are related only to the tested item, date, place and conditions of the test. Test Report does not substitute any other document that may be required by national authorities according to relevant regulations.

Date of the test: December 5th- 15th, 2013

Tested by:

František Šebek, Ph.D.



Head of the Department:

Marek Svoboda, Ph.D.

Instruments and equipment used in the test:

Name of the instrument /equipment	Type	Serial number	Number of the metrological card
Multimeter	M3850	EC458990	B6
Multimeter	M3860-M	JJ202819	B10
Sliding rule (digital) PROMA CZ, s.r.o.	0-150/0,03	- - -	B18
Measuring panel	Almeno 5990-2	A04050063	B25
Digital thermometer / hygrometer	Comet D3120	01910003	B30
Equipment for measurement of electrical strength	Schleich GLP2-I	5580	B37
Scale loupe Meopta	Scale Loupe 12,5x	- - -	Z1
Climatic chamber Feutron	KPK400P	142	Z10
Multimeter	Fluke 289	96550180	B41
Test preparation	-	-	-
Measuring microscope	MM110	-	B38

Test procedure:

Tests were made according to the standard:

ČSN EN 60950-1: 2006, ed 2, +A1.:2010, +A11: 2009, clause:

1.5;1.6;1.7;2.2;2.3;2.4;2.5;2.6;2.7;2.8;2.9;2.10;3.1;3.2;3.3;3.4;4.1;4.2;4.3;4.4;4.5.1;4.6;4.7;5.1;5.2;5.3;6.1;6.2;6.3.

The standard is the Czech Version of the European Standard:

EN 60950-1:2006 ed.2, +A1.:2010, +A11: 2009, +A12:2011, +Cor.:2011-10

Safety of information technology equipment.

Part 1: General requirements (Part 1: General Requirements)

This standard is applicable to mains-powered or battery powered information technology equipment, including electrical business equipment and associated equipment, with a rated voltage not exceeding 600 V.

This standard is also applicable to such information technology equipment:

- Which are designed and intended to be connected directly to a telecommunication network, regardless of the source power.
- Which are designed and intended for direct connection to a cable distribution system, or are used infrastructure facilities such as cable distribution system, regardless of power source.
- Which are designed to use AC power supply network as a communication transmission medium.

This standard specifies requirements intended to reduce the risk of fire, electric shock or injury to the operator or unknowing person who can come into contact with the device, and where it is expressly stated, persons carrying out maintenance.

It is also applicable to such information technology equipment designed to use AC mains supply as a telecommunication medium.

The laboratory environment	
Uncertainty of measurement:	U
temperature	±5°C
relative humidity	±10% RH

Description of test equipment:

The equipment can be powered by delivered AC/DC adaptor only via ethernet connector RJ45.. Mains supply adapter 230VAC/50Hz is not subject of testing. Acces into the equipment is limited to authorized personnel only. Equipment contains no battery.

Testing device types R5000-Smb/5X.300.2x63. 2xaa is type with integrated antenna 19; 21; 23; 28 and 16 dBi.

Unit dimensions: 370mm x 370mm x 85mm, weight: 3 kg

Label the device:



The test results:

Note:

Tests or results that are marked "*" have been made beyond the laboratory accreditation according to ISO / IEC 17025:2005

Test case verdicts:

Test case does not apply to the test objects: **N/A**
 Test item does meet the requirement of standard clause: **P**(pass)
 Test item does not meet the requirement of standard clause: **F**(fail)

Table 1.6.2 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, clause 1.6.2 - Input current.

1.6.2	Input current.				Verdict *)
No-load measurement.					
Input voltage U ₁ (VDC)	Input current I ₁ (mA)	Power P ₁ (W)	Uncertainty U (%)	P	
47,6	145,0	6,9	2,9	P	
56	125,6	7,05	2,9	P	
67,2	111,5	7,5	2,9	P	
Nominal voltage 48 VDC					

Table 2.10 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, clause 2.10 - Clearances, creepage distances and distances through insulation.

2.10	Clearances, creepage distances and distances through insulation.				Uncertainty U (%)
	creepage distances (mm)		clearances (mm)		
Measure between	measure	require	measure	require	
Clearances pins ETH0.	0,85	0,2	-	-	5
Pins connectors on the printed board ETH0 from to earth on the printed board.	0,85	0,2	-	-	5

**Table 4.5.1 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009,
clause 4.5.1 - Temperature rise test.**

4.5.1	Temperature rise test.		
	Nominal-load equipment		
	Ambient temperature when the test started:	24,6°C	
	Ambient temperature when the test finished:	26,8°C	
	Measured under voltage:	67,2 V DC/108,0 mA	
	Time of the test:	10hour.	
Temperatures which are allowed according this standard were not exceeded. Minimum of temperature rise of the equipment.			

Measured part	Measured temperature (°C)	Uncertainty U (°C)	Verdict *)
Connector RJ45	33,4	0,42	P
Capacitor 120µF 100V	36,4	0,42	P
POE 300F-50L	47,9	0,42	P
PCB up to processor POE 300F-50L	54,9	0,42	P
Processor DD7	32,2	0,42	P
Cover of equipment	33,5	0,42	P

4.5.1	Temperature rise test.		
	Nominal-load equipment without loading into coaxial connector		
	Ambient temperature when the test started:	25,5°C	
	Ambient temperature when the test finished:	25,5°C	
	Measured under voltage:	47,6 VDC/148 mA	
	Time of the test:	12,5hour.	
Temperatures which are allowed according this standard were not exceeded. Minimum of temperature rise of the equipment.			

Measured part	Measured temperature (°C)	Uncertainty U (°C)	Verdict *)
Connector RJ45	34,2	0,42	P
Capacitor 120µF 100V	37,6	0,42	P
POE 300F-50L	41,4	0,42	P
PCB up to processor POE 300F-50L	53,6	0,42	P

Processor DD7	32,8	0,42	P	
Cover of equipment	34,9	0,42	P	

**Table 5.2 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009,
clause 5.2 - Electric strength**

5.2	Electric strength.		
Measured between:	Test Voltage (V)	Verdict *)	
Internal cable – RJ45 connector	500VAC	no breakdown	
Internal cable – service connector	500VAC	no breakdown	
Internal cable – coaxial cable	500VAC	no breakdown	
Voltage of substantially sine-wave form having a frequency of 50 Hz. Insulation coatings are tested with metal foil in contact with the insulating surface.			

**Table 5.3 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009,
clause 5.3 - Abnormal operating and fault conditions**

5.3	Abnormal operating and fault conditions				P	
	Ambient temperature when the test started:	24,2 °C				
	Ambient temperature when the test finished:	24,4 °C				
	Measured under voltage:	67,2 VDC				
	Time of the test:	4 hours				
	Component	Fault	Test voltage (V)	Flammable y / no	Gas y / no	Verdict
	service connector	short	67,2VDC	no	no	P
	C157 120µF 100V	short	67,2VDC	no	no	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
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Summary of test results:

ČSN EN 60 950-1:23006, ed. 2,			
Clause	Requirements – Tests	Test Result - Verdict*)	
1.5	Components.		
1.5.1	General		P
	Where safety is involved, components shall comply either with the requirements of this standard or with the safety aspects of the relevant IEC components standards.		P
1.5.2	Evaluation and testing of components.		P
	A component that has been demonstrated to comply with a standard harmonized with the relevant IEC component standard shall be checked for correct application and use in accordance with its rating.	Component which are certified to IEC and /or national standards are used correctly within their ratings.	N/A
	A component that has not been demonstrated to comply with a relevant standard as above shall be checked for correct application and use in accordance with its specified rating. It shall be subjected to the applicable tests of this standard, as part of the equipment.	Components not covered by IEC standards are tested under the conditions present in the equipment.	P
	Where no relevant IEC component standard exists, or where components are used in circuits not in accordance with their specified ratings – testing under the conditions occurring in the equipment.	No such components.	N/A
1.5.3	Thermal controls.	No thermal control.	N/A
	Shall be tested in accordance with annex K.		N/A
1.5.4	Transformers.	No such component.	N/A
	Transformers shall comply with the relevant requirements of this standard, including those of annex C.		N/A
1.5.5	Interconnecting cables.	Interconnection cable to other device is carrying only SELV voltages on an energy level below 240VA	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
1.5.6	Capacitors bridging insulation	No such components.	N/A
	Between two line conductors or between one line conductor and the neutral conductor – shall comply with IEC 60384-14:1993, subclass X1 or X2.		N/A
	Between the primary circuit and protective earth – shall comply with IEC 60384-14:1993, subclass Y1, Y2 or Y4.,		N/A
1.5.7	Resistors bridging insulation	No such components.	N/A
1.5.7.1	Resistors bridging functional insulation, basic insulation or supplementary insulation	No bridging resistors.	N/A
1.5.7.2	Resistors bridging double insulation or reinforced insulation between the AC mains supply and other circuits	No resistors bridging double insulation	N/A
	Bridge double insulation or reinforced insulation by one resistor or by a group of two or more resistors		N/A
	The resistor or group of resistors shall comply with the minimum clearances of 2.10.3 or Annex G and the minimum creepage distances of 2.10.4 for reinforced insulation for the total working voltage across the resistor or group of resistors.		N/A
	Two capacitors in series, each complying with IEC 60384-14:1993, subclass Y2 or Y4. If an accessible conductive part or circuit is separated from another part by double insulation or reinforced insulation that is bridged by a resistor or group of resistors, the accessible part or circuit shall comply with the requirements for a limited current circuit in 2.4.		N/A
1.5.7.3	Resistors bridging double insulation or reinforced insulation between the AC mains supply and circuits connected to an antenna or coaxial cable	No such bridging resistors.	N/A
	After the test, the resistance of each sample shall not have changed by more than 20 % and no failure is permitted.		N/A
1.5.8	Components in equipment for IT power distribution systems.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Components connected between line and earth shall be capable of withstanding the stress due to the line-to-line voltage. However, capacitors rated for the applicable line-to-neutral voltage are permitted in such applications if they comply with subclass Y1, Y2 or Y4	No such components.	N/A
1.5.9	Surge suppressors		
1.5.9.1	General		P
	If a surge suppressor is used in a primary circuit, it shall be a VDR and it shall comply with Annex Q.	No used primary circuit	N/A
1.5.9.2	Protection of VDR		P
	An interrupting means having an adequate breaking capacity shall be connected in series with the VDR.		P
1.5.9.3	Bridging of functional insulation by a VDR		P
1.5.9.4	1.5.9.4 Bridging of basic insulation by a VDR		P
	– pluggable equipment type B; or – permanently connected equipment; or – equipment that has provision for a permanently connected protective earthing conductor and is provided with instructions for the installation of that conductor.	Equipment that has provision for a permanently connected protective earthing conductor and is provided with instructions for the installation of that conductor.	P
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR	No such bridging components.	N/A
	It is not permitted to bridge supplementary insulation double insulation or reinforced insulation by a VDR		N/A
1.6	Power interface.		
1.6.1	The AC power distribution systems.	No used.	N/A
	AC power distribution systems are classified as TN-C, TN-C-S, TN-S, TT or IT		N/A
1.6.2	Input current.	See table 1.6.2	P
	The steady state input current of the equipment shall not exceed the rated current by more than 10% under normal load.		P
1.6.3	Voltage limit of hand-held equipment.	No such equipment.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	The rated voltage of hand-held equipment shall not exceed 250V.	No such equipment.	N/A
1.6.4	Neutral conductor.	No used neutral conductor	N/A
	The neutral conductor shall be insulated from earth and from the body as if it were a line conductor.		N/A
1.7	Markings and instructions.		
1.7.1	Power rating.	Is provided with instructions for the installation.	P
	If a unit is not provided with a means for direct connection to the AC mains supply, it need not be marked with any electrical rating.	Equipment is not provided with an electrical plug for direct connection to the mains supply.	N/A
	For equipment intended to be installed by an operator, the marking shall be readily visible in an operator access area.	Be installed by an operator	N/A
	For equipment intended to be installed by service person, and if the marking is in a service access area, the location of the permanent marking shall be indicated in the installation instructions or on a readily visible marker on the equipment.	Equipment intended to be installed by service person	P
	Rated voltage(s) or rated voltage range(s).	56VDC	P
	Symbol for nature of supply, for DC only.	Is provided with instructions for the installation.	P
	Rated frequency or rated frequency range, in hertz, unless the equipment is designed for DC only.		N/A
	Rated current, in milliamperes or amperes.	148 mA Special power supply is intended with instructions for the installation.	N/A
	Manufacturer's name or trade mark or identification mark.	INFINET LLC., 69/75 Vavilova Str, Moscow 117997 Russian Federation	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Manufacturer's model or type reference.	R5000-Smn/5X300.2x63.2x16 R5000-Smn/5X300.2x63.2x16 R5000-Smn/5X300.2x63.2x16 R5000-Smn/5X.300.2x63.2x16 R5000-Smnb/5X300.2x63.2x16 R5000-Smn/5X300.2x63	P
	Symbol for class II equipment only.	No symbol of class II provided.	N/A
	Another marking.	Other symbols do not give rise to misunderstanding.	N/A
1.7.2	Safety instructions and marking	Safety instructions in English.	P
1.7.2.1	General		P
	Sufficient information shall be provided to the user concerning any condition necessary to ensure that, when used as prescribed by the manufacturer, the equipment is unlikely to present a hazard within the meaning of this standard.	Users manual are provided.	P
	If it is necessary to take special precautions to avoid the introduction of hazards when operating, installing, servicing, transporting or storing equipment, the necessary instructions shall be made available.	There are special precautions to installing.	P
	The operating instructions, and the installation instructions for pluggable equipment intended for user installation, shall be made available to the user.	No pluggable equipment.	N/A
1.7.2.2	Disconnect devices		N/A
	- for permanently connected equipment, a readily accessible disconnect device shall be incorporated external to the equipment; – for pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.		N/A
1.7.2.3	Device protective devices	Device protective devices are not used.	N/A
	For pluggable equipment type B or permanently connected equipment, the installation instructions shall specify the maximum rating of an overcurrent protective device to be provided external to the equipment, unless there are appropriate overcurrent protective devices in the equipment [see also 2.6.3.3 b)].		N/A
1.7.2.4	IT power distribution systems.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	If the equipment has been designed or, when required, modified for connection to an IT power distribution system, the equipment installation instructions shall so state.		N/A
1.7.2.5	Operator access with a tool		N/A
	If a tool is necessary to gain access to an operator access area, either all other compartments within that area containing a hazard shall be inaccessible to the operator by the use of the same tool, or such compartments shall be marked to discourage operator access.	Is not such equipment.	N/A
1.7.2.6	Ozone	Is not such equipment.	N/A
	For equipment that may produce ozone, the installation and operating instructions shall refer to the need to take precautions to ensure that the concentration of ozone is limited to a safe value.		N/A
1.7.3	Short duty cycles.		N/A
	The equipment shall be marked with rated operating time and rated resting time.	Equipment is designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment.		N/A
	The method of adjustment shall be fully described in the servicing or installation instructions.	No voltage setting.	N/A
1.7.5	Power outlets on the equipment.		N/A
	If it is accessible to the operator, a marking shall be placed in the vicinity of the outlet to show the maximum load that is permitted to be connected to it.	No outlet provided.	N/A
1.7.6	Fuse identification.		N/A
	Fuse current rating and, where fuses of different voltage rating value could be fitted, the fuse voltage rating.	Fuse not used.	N/A
	Special fusing characteristics – the type shall be indicated.		N/A
	Fuses located in the operator access area – cross reference to the servicing instructions which shall contain the relevant information.		N/A
1.7.7	Wiring terminals.		P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
1.7.7.1	Protective earthing and bonding terminals.	Protective earthing terminals used.	P
	The right symbol shall be used.	according to 60417-1-IEC-5017	P
	The symbol shall not be located on screws, or other parts which might be removed when conductors are being connected.	The symbol is not located on screws.	P
1.7.7.2	Terminals for AC mains supply conductors.	Is not such terminals.	N/A
	Permanently connected equipment and equipment with ordinary non-detachable power supply cords.	No such equipment.	N/A
	Neutral conductor shall be indicated by the capital letter N.		N/A
	Three-phase equipment – phase rotation.	No three-phase equipment.	N/A
1.7.7.3	Terminals for DC mains supply conductors.	No terminals for DC mains supply conductors.	N/A
	For permanently connected equipment and equipment ordinary non-detachable power supply cords – marking to indicate polarity.		N/A
	If a single terminal is provided, both as a main protective earthing terminal in the equipment and for the connection to one pole of the DC mains supply, it shall be marked as specified symbol.	No such terminal.	N/A
	These indications shall not be located on screws or other parts which might be removed when conductors are being connected.		N/A
1.7.8	Controls and indicators.	No controls. Indications with LCD diode.	P
1.7.8.1	Identification, location and marking.		N/A
	Indications used for this purpose shall be comprehensible without a knowledge of languages, national standards, etc.	No controls and indications affecting safety. Indications with LCD diode.	N/A
1.7.8.2	Colours.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Colours of controls and indicators shall comply with IEC 60073. Where colours are used for functional controls or indicators, any colour, including red, is permitted provided that it is clear that safety is not involved.	Indications with LCD diode is not safety indicators.	N/A
1.7.8.3	Symbols.	No symbols.	N/A
	Switches, push buttons, etc. – the right symbols shall be used.	No switches or controls.	N/A
1.7.8.4	Markings using figures.	No indicators for different positions.	N/A
1.7.9	Isolation of multiple power sources.	Only one supply from mains.	N/A
	Where there is more than one connection supplying hazardous voltages or hazardous energy levels to equipment, a prominent marking, located close to the entry point provided for a service person to gain access to the hazardous parts, shall be provided to indicate which disconnect device or devices isolate the equipment completely and which disconnect devices can be used to isolate each section of the equipment.	Equipment designed for only one connection to the mains.	N/A
1.7.10	Thermostats and other regulating devices..	No thermostats used.	N/A
	An indication for the direction of adjustment to increase or decrease the value of the characteristic being adjusted..	Neither thermostat nor other regulating devices provided.	N/A
1.7.11	Durability.		P
	In considering the durability of the marking, the effect of normal use shall be taken into account.		P
	Rubbing the marking by hand for 15 s with a piece of cloth soaked with water.	The label was subjected to the permanence of marking test. The label was rubbed with cloth for 15 sec. and then again for 15 sec. with the cloth soaked with HEXANE. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	P
	Rubbing the marking by hand for 15 s with a piece of cloth soaked with petroleum spirit.	Marking is legible, show no curling.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
1.7.12	Removable parts.		N/A
	Marking shall not be placed on removable parts which can be replaced in such a way that the marking would become misleading.	No such parts.	N/A
1.7.13	Replaceable batteries.		N/A
	If the battery is placed in an operator access area – marking close to the battery or a statement in both the operating and the servicing instructions.	No batteries.	N/A
	If the battery is placed elsewhere in the equipment – marking close to the battery or a statement in the servicing instructions.		N/A
1.7.14	Equipment for restricted access locations	No such equipment.	N/A
	For equipment intended only for installation in a restricted access location, the installation instructions shall contain a statement to this effect.	No restricted access location.	N/A
2	Protection from hazards.		
2.1*	Protection from electric shock and energy hazards.		
2.1.1*	Protection in operator access areas.	See below.	P
2.1.1.1*	Access to energized parts.	Mains supply 56V DC	P
	The equipment shall be so constructed that in operator access areas there is adequate protection against contact.	Operator can not contact with any parts with only basic insulation to ELV or hazardous voltage.	P
	A test with the test finger.	No access with test finger to any parts with only basic insulation to ELV hazardous voltage.	P
	A test with the test pin.	No any openings or seams of the whole enclosure.	N/A
	A test with the test probe.		P
2.1.1.2*	Battery compartments.	No batteries.	N/A
	Access to bare conductive parts of TNV circuits within a battery compartment in the equipment.		N/A
2.1.1.3*	Access to ELV wiring.	No ELV wiring in operator accessible area.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Insulation of internal wiring in an ELV circuit is permitted to be accessible to an operator under some conditions.		N/A
2.1.1.4*	Access to hazardous voltage circuit wiring.	No hazardous voltage wiring in operator accessible area.	N/A
	The insulation shall meet the requirements for double or reinforced insulation.	Not accessible to an operator.	N/A
2.1.1.5*	Energy hazards.	Energy does not exceed 240VA between any two points in accessible parts.	P
	There shall be no energy hazard in operator areas.	No risk.	P
	Compliance is checked by means of the test finger.	It is not possible to bridge with the finger two or more live parts.	P
2.1.1.6*	Manual controls.	No conductive shafts of operating knobs and handles.	N/A
	Conductive shafts of operating knobs, handles, levers and the like shall not be connected to parts at hazardous voltages, to ELV or TNV circuits.	No such knobs, handles and levers.	N/A
	Conductive operating knobs, handles, levers and like which are manually moved.	No such knobs, handles and levers.	N/A
2.1.1.7*	Discharge of capacitors in equipment.	No such capacitors in equipment.	N/A
	External point of disconnection of the AC mains supply, the risk of electric shock from stored charge on capacitors connected in the primary circuit is reduced. Time- constant (s); measured voltage (V).....	No used AC mains supply.	N/A
2.1.1.8*	Energy hazards - DC mains supplies	No use hazards DC mains.	N/A
	Equipment shall be so designed that at an operator -accessible external point of disconnection of a DC mains supply, either – there is no hazardous energy level (for example, due to stored charge on a capacitor or a battery in the equipment, or to a redundant DC mains supply for backup), or – the hazardous energy level is removed within 2 s of the disconnection.		N/A
2.1.1.9*	Audio amplifiers in information technology equipment		N/A
	Accessible circuits, terminals and parts of audio amplifiers and associated circuits shall comply with either – 2.1.1.1 of this standard, or – 9.1.1 of IEC 60065.	No such equipment.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.1.2*	Protection in service access areas.	No maintenance work in operation mode necessary.	N/A
2.1.3*	Protection in restricted access locations.	The equipment is not intended to be used in restricted locations.	N/A
2.2	SELV circuits.		
2.2.1	General requirements.	Mains supply 56 V DC	P
	SELV circuits shall exhibit voltages that are safe to touch both under normal operating conditions and after a single fault.		P
2.2.2	Voltages under normal conditions.		P
	42.4 V peak or 60 V DC		P
2.2.3	Voltages under fault conditions.		P
	42.4 V peak or 60 V DC shall be exceeded, but limit 71 V peak or 120 V DC shall not be exceeded.		P
2.3	TNV circuits.		
2.3.1	Limits.	No TNV circuits. Mains supply 56 V DC Mains supply is not object of safety test.	N/A
2.3.2	Separation of TNV circuits from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
	SELV-circuits, TNV-1 circuits and accessible conductive parts shall be separated from TNV-2 circuits and TNV-3 circuits in such a way that in the event of a single fault (see 1.4.14) both of the following conditions are met: a) the voltages of TNV-1 circuits do not exceed the limits of Figure 2F; and b) the voltages of the SELV circuits and accessible conductive parts do not exceed the limits specified in 2.3.1 b) for TNV-2 circuits and TNV-3 circuits under normal operating conditions.		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions	No used.	N/A
2.3.3	Separation from hazardous voltages.	No such hazardous voltage.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Double or reinforced insulation. a) (Method 1) double insulation or reinforced insulation providing permanent separation, assured by barriers, routing or fixing; or b) (Method 1) double insulation or reinforced insulation on or between the parts to be separated; or c) (Method 1) double insulation, consisting of basic insulation on one of the parts to be separated and supplementary insulation on the other part; or d) (Method 2) basic insulation on the part at a hazardous voltage, together with protective screening connected to the main protective earthing terminal in accordance with 2.6.1 b); or e) (Method 3) basic insulation on the part at a hazardous voltage, together with connection of the other part to the main protective earthing terminal in accordance with 2.6.1 b), such that the voltage limits for the accessible part are maintained by relative circuit impedances or by the operation of a protective device; or f) any other construction providing equivalent separation.		N/A
2.3.4	Connection of TNV circuits to other circuits.		N/A
	It is separated by basic insulation from any primary circuit.	No primary circuit.	N/A
	If TNV circuit obtains its supply from a secondary circuit, which is separated from hazardous voltage circuit by: - double or reinforced insulation - the use of an earthed conductive screen that is separated by basic insulation.		N/A
2.3.5	Test for operating voltages generated externally.	Not used.	N/A
2.4	Limited current circuits.		
2.4.1	General requirements.	Mains supply is not object of safety test.	N/A
2.4.2	Limit values.	No limited current circuits.	N/A
	Limited current circuits shall be so designed that the limits are not exceeded under normal operating conditions and in the event of a single failure within the equipment.	The peak drop voltage was measured with an oscilloscope at a 2kΩ non-inductive resistor.	N/A
2.4.3	Connection of limited current circuits to other circuits.	No such equipment. Mains supply is not object of safety test.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.5	Limited power sources.		
	<p>A limited power source shall comply with one of the following, a), b), c) or d):</p> <p>a) the output is inherently limited in compliance with Table 2B; or</p> <p>b) a linear or non-linear impedance limits the output in compliance with Table 2B. If a positive temperature coefficient device is used, it shall pass the tests specified in IEC 60730-1, Clauses 15, 17, J.15 and J.17; or</p> <p>c) a regulating network limits the output in compliance with Table 2B, both with and without a simulated single fault (see 1.4.14) in the regulating network (open circuit or short-circuit); or</p> <p>d) an overcurrent protective device is used and the output is limited in compliance with Table 2</p>	No such equipment.	N/A
2.6	Provisions for earthing and bonding.		
2.6.1	Protective earthing.		
	a) Accessible conductive parts that might assume a hazardous voltage in the event of a single fault (see 1.4.14).	No such parts.	N/A
	b) Parts to be earthed as required by 2.9.4 d) or e).	No such parts.	N/A
	c) SELV circuits, TNV circuits and accessible conductive parts required to be earthed by 2.3.2.3 or 2.3.2.4, if the power source is not a telecommunication network or a cable distribution system.	Mains supply 56 V DC	P
	d) SELV circuits, TNV circuits and accessible conductive parts required to be earthed by 2.3.2.3, if the power source is a telecommunication network or a cable distribution system.	No such power source.	N/A
	e) Circuits, transformer screens and components (such as surge suppressors) that could not assume a hazardous voltage in the event of a single fault (see 1.4.14) but are required to be earthed in order to reduce transients that might affect insulation (for example, see 6.2.1 and 7.4.1).	No circuits, transformer screens.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	f) SELV circuits and TNV circuits that are required to be earthed in order to reduce or eliminate touch current to a telecommunication network or a cable distribution system (see 5.1.8.1).		N/A
2.6.2	Functional earthing.		N/A
2.6.3	Protective earthing and protective bonding conductors.	Only protective earth terminal.	P
2.6.3.1	General.		N/A
2.6.3.2	Size of protective earthing conductors.	See instructions for the installation.	P
	For protective earthing conductors in power supply cords supplied with the equipment.	Only protective earth terminal on the equipment.	N/A
2.6.3.3	Size of protective bonding conductors.	No protective bonding conductors.	N/A
2.6.3.4	Resistance of earthing conductors and their terminations.	See instructions for the installation.	N/A
2.6.3.5	Colour of insulation.		N/A
	The insulation of the protective earthing conductor in a power supply cord supplied with the equipment shall be green-and-yellow.	Only protective earth terminal on the equipment.	N/A
2.6.4	Terminals.		P
2.6.4.1	General.	Only one protective earth terminal on the equipment.	P
2.6.4.2	Protective earthing and bonding terminals.	See instructions for the installation. Mains supply 48V DC	P
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors.	No such parts. Only one protective earth terminal on the equipment.	N/A
2.6.5	Integrity of protective earthing.	Only one equipment was tested.	N/A
2.6.5.1	Interconnection of equipment.	Only one equipment was tested. See instructions for the installation.	N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors.		P
	Shall not contain switches or overcurrent protective devices.	No switches or overcurrent protective devices.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.6.5.3	Disconnection of protective earth.		P
	Protective earthing connections shall be such that disconnection of a protective earth at one point in a unit or a system does not break the protective earthing connection to other parts or units in a system, unless the relevant hazard is removed at the same time.	Protective earthing connections inside of the equipment.	P
2.6.5.4	Parts that can be removed by an operator.	No such parts.	N/A
	Protective earthing connections shall make earlier and break later than the supply connections of the connector, plug and appliance coupler.		N/A
2.6.5.5	Parts removed during servicing.	No such parts.	N/A
2.6.5.6	Corrosion resistance.		N/A
2.6.5.7	Screws for protective bonding.	Self-tapping and spaced thread screws are not used.	N/A
2.6.5.8	Reliance on telecommunication network or a cable distribution system.		N/A
	Protective earthing shall not rely on a telecommunication network or a cable distribution system.	Protective earthing does not rely on a telecommunication network or a cable distribution system.	N/A
2.7	Overcurrent and earth fault protection in primary circuits.		
2.7.1	Basic requirements.		N/A
	Protection in primary circuits against overcurrents, short circuits and earth faults shall be provided, either as an integral part of the equipment or as part of the building installation.	No primary circuits	N/A
2.7.2	Empty		N/A
2.7.3	Short-circuit backup protection.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Unless appropriate short-circuit backup protection is provided, protective devices shall have adequate breaking capacity to interrupt the maximum fault current.	See instructions for the installation.	N/A
	For permanently connected equipment or pluggable equipment type B, it is permitted for short circuit backup protection to be in the building installation.	No such equipment.	N/A
	For pluggable equipment type A, the building installation is considered as providing short-circuit backup protection.		N/A
2.7.4	Number and location of protective devices.		N/A
2.7.5	Protection by several devices.		N/A
2.7.6	Warning to service persons.	Mains supply 56 V DC See instructions for the installation.	N/A
2.8	Safety interlock.		
2.8.1	General principles.	Safety interlock is not used.	N/A
2.8.2	Protection requirements.	Mains supply 56V DC	N/A
	Safety interlocks shall be so designed that the hazard will be removed before the covers, doors, etc., are in any position that will permit contact with hazardous parts by the test finger.	No such areas.	N/A
2.8.3	Inadvertent reactivation..		N/A
	Safety interlocks shall be designed so that inadvertent reactivation of the hazard cannot occur when covers, guards, doors, etc., are not in the closed position.		N/A
2.8.4	Fail-safe operation.	Safety interlocks system is not used.	N/A
2.8.5	Moving parts..	Not such parts.	N/A
2.8.6	Overriding an interlock.	Safety interlocks system is not used.	N/A
2.8.7	Switches and relays.	Not such parts.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.8.7.1	Contact gaps.		N/A
2.8.7.2	Overload test.		N/A
2.8.7.3	Endurance test.		N/A
2.8.7.4	Electric strength test.		N/A
2.8.8	Mechanical actuators.		N/A
2.9	Electrical insulation.		
2.9.1	Properties of insulating materials.		P
	Natural rubber, hygroscopic materials and materials containing asbestos shall not be used as insulation.	Natural rubber, asbestos or hygroscopic materials are not used.	P
	Driving belts and couplings shall not be relied upon to ensure electrical insulation, unless the belt or coupling is of a special design which removes the risk of inappropriate replacement.	Not used.	P
2.9.2	Humidity conditioning.		P
	Humidity cabinet, 48 hours, 91 – 95% relative humidity, 20 – 30°C.	Relative humidity 95%. Temperature 25°C. 48 hours.	P
2.9.3	Grade of insulation.		P
2.9.4	Separation from hazardous voltages	No hazardous voltages. Mains supply 48 V DC	N/A
2.10	Clearences, creepage distances and distances through insulation.		
2.10.1	General.		P
2.10.1.1	Frequency	Mains supply DC	N/A
2.10.1.2	Pollution degrees	Pollution degrees 2.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.10.1.3	Reduced values for functional insulation		N/A
	There is no minimum clearance or creepage distance for functional insulation unless it is required by 5.3.4 a).		N/A
2.10.1.4	Intervening unconnected conductive parts	Not such parts.	N/A
2.10.1.5	Insulation with varying dimensions	Not such parts.	N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses	Not such parts.	N/A
2.10.2	Determination of working voltage.	Mains supply 56 V DC	P
2.10.2.1	General		P
2.10.2.2	RMS working voltage		P
2.10.2.3	Peak working voltage		P
2.10.3	Clearances.	See below.	P
2.10.3.1	General.		P
	Clearances shall be so dimensioned that overvoltage transients which may enter the equipment, and peak voltages which may be generated within the equipment, do not break down the clearance.	(see appended table 2.10).	P
2.10.3.2	Mains transient voltages.		P
	a) AC mains supply b) Earthed DC mains supplies c) Unearthed DC mains supplies d) Battery operation	Mains supply 56 V DC (c)	P
2.10.3.3	Clearances in primary circuits.	No primary circuits.	N/A
2.10.3.4	Clearances in secondary circuits.	(see appended table 2.10).	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.10.3.5	Clearances in circuits having starting pulses	Not such parts.	N/A
2.10.3.6	Transients from an AC mains supply		N/A
2.10.3.7	Transients from a DC mains supply	Mains supply 56 V DC	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N/A
2.10.3.9	Measurement of transient voltages		N/A
	Only where it is required to determine whether or not transient voltages across the clearance in any circuit are lower than normal.		N/A
	Transients from a mains supply		N/A
	Transients from a telecommunication network		N/A
2.10.4	Creepage distances.	(see appended table 2.10).	P
2.10.4.1	General		P
2.10.4.2	Material group.	Is not known – IIIb is assumed.	P
2.10.4.3	Minimum creepage distances		P
	Creepage distances shall be not less than the appropriate minimum values specified in Table 2N.		P
2.10.5	Solid insulation.		P
2.10.5.1	General	See point 2.10.5.2	N/A
2.10.5.2	Minimum distance through insulation.		N/A
	The peak working voltage does not exceed 71 V.	The peak working voltage does not exceed 71 V.	N/A
	The peak working voltage exceeds 71 V.		N/A
	Functional and basic insulation.		N/A
	Supplementary and reinforced insulation – minimum distance through insulation of 0,4mm.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.10.5.3	Insulating compound as solid insulation	Not used.	N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5	Cemented joints		N/A
2.10.5.6	Thin sheet material - General	Not used.	N/A
2.10.5.7	Separable thin sheet material		N/A
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material - standard test procedure		N/A
2.10.5.10	Thin sheet material - alternative test procedure		N/A
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
2.10.5.14	Additional insulation in wound components		N/A
2.10.6	Construction of printed boards		N/A
2.10.6.1	Uncoated printed boards		N/A
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different surfaces of a printed board		N/A
2.10.7	Component external terminations.		N/A
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and for insulating compound		N/A
2.10.11	Tests for semiconductor devices and for cemented joints.	No such insulation.	N/A
2.10.12	Enclosed and sealed parts		N/A
3	Wiring, connections and supply.		
3.1	General.		
3.1.1	Current rating and overcurrent protection.		N/A
	The cross-sectional area of internal wires and interconnecting cables shall be adequate for the current they are intended to carry when the equipment is operating under normal load such that maximum permitted temperature of conductor insulation is not exceeded.		N/A
	All internal wiring and interconnecting cables used in the distribution of primary circuit power shall be protected against overcurrent and short circuit by suitably rated protective devices.		N/A
3.1.2	Protection against mechanical damage.		P
	Wireways shall be smooth and free from sharp edges. Wires shall be protected so that they do not come into contact with burrs, cooling fins, moving parts etc, which could cause damage to the insulation of conductors. Holes in metal, through which insulated wires pass, shall have smooth well-rounded surfaces or shall be provided with bushings.	Wires do not touch sharp edges and heat sinks which could damage the insulation and cause hazard.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
3.1.3	Securing of internal wiring.		P
	Internal wiring shall be routed, supported, clamped or secured in a manner the likelihood.	Internal wiring are protected to excessive strain on wire and on terminal connections and loosening of terminal connections and damage of conductor insulation.	P
3.1.4	Insulation of conductors.	The insulation of the individual conductors is suitable for the application and the working voltage.	P
3.1.5	Beads and ceramic insulators.	Not used.	N/A
3.1.6	Screws for electrical contact pressure.	Only protective earth terminal on the equipment.	P
	A screw shall engage at least two complete threads into a metal plate, a metal nut or a metal insert.		P
	Screws of insulating material shall not be used where electrical connections, including protective earthing, are involved.	Not used.	N/A
3.1.7	Insulating materials in electrical connections.	All current connections are metal to metal.	P
3.1.8	Self-tapping and spaced thread screws.	No self-tapping screws are used.	N/A
3.1.9	Termination of conductors.		N/A
3.1.10	Sleeving on wiring.	Not used.	N/A
	Where sleeving is used as supplementary insulation on internal wiring, it shall be retained in position by positive means.		N/A
3.2	Connection to a mains supply		
3.2.1	Means of connection.		P
3.2.1.1	Connection to an AC mains supply.		N/A
	Terminals for permanent connection to the supply.	Not used.	N/A
	Non-detachable power supply cord.	Not used.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	An appliance inlet for connection of a detachable power supply cord.	Not used.	N/A
	A mains plug that is part of direct plug-in equipment.	Direct plug-in equipment.	N/A
3.2.1.2	Connection to a DC mains supply	Connection to a DC mains supply 24V with RJ45 connector.	P
	Terminals for permanent connection to the supply.		N/A
	Non-detachable power supply cord.		N/A
	An appliance inlet for connection of a detachable power supply cord.	Connection to a DC mains supply 24V with RJ45 connector.	P
3.2.2	Multiple supply connections.	Only one supply connection.	N/A
3.2.3	Permanently connected equipment.	The unit is not permanently connected equipment.	N/A
	A set of terminals.		N/A
	A non-detachable power supply cord.		N/A
3.2.4	Appliance inlets.	RJ45 connector.	P
3.2.5	Power supply cords.	Not used.	N/A
3.2.5.1	The AC power supply cords.	Not used.	N/A
	Rubber insulating.		N/A
	Not lighter than H05 RR-F.		N/A
	PVC insulating.		N/A
	Non-detachable power supply cord and having a mass not exceeding 3kg – not lighter than H03 VV-F or H03 VVH2-F.		N/A
	Non-detachable power supply cord and having a mass exceeding 3kg – not lighter than H05 VV-F or H05 VVH2-F2.		N/A
	Detachable supply cord – not lighter than H03 VV-F or H03 VVH2-F.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
3.2.5.2	The DC power supply cords.	Equipment connection to a DC mains supply 48V with RJ45 connector. No used supply cord.	N/A
	A power supply cord for connection to the DC mains supply shall be suitable for the voltage, current and the physical abuses it is likely to encounter.		N/A
3.2.6	Cord anchorages and strain relief.	Not used.	N/A
	Non-detachable supply cords: -cord replacement does not impair the safety -for ordinary replacement cords , it is clear how relief from strain is to be obtained -the cord is not clamped by a screw -methods such as tying the cord into a knot or tying the cord with a string are not used -the cord cannot rotate in relation to the body of the equipment to such an extent that mechanical strain is imposed on the electrical connections.		N/A
3.2.7	Protection against mechanical damage.	No used supply cord.	N/A
	Power supply cords shall not be exposed to sharp points or cutting edges.		N/A
3.2.8	Cord guards.	No used.	N/A
	A cord guard shall be provided at the power supply cord inlet opening of equipment which has a non-detachable power supply cord, and which is hand-held or intended to be moved while in operation.		N/A
3.2.9	Supply wiring space.	Mains supply 48V with RJ45 connector.	N/A
	Inside the equipment or inside the part of the equipment, permanent connection or connection on ordinary non-detachable power supply cords.		N/A
3.3	Wiring terminals for connection of external conductors.		
3.3.1	Wiring terminals.	No used.	N/A
3.3.2	Connection of non-detachable power supply cords.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Special non-detachable power supply cords – any means that will provide a reliable electrical and mechanical connection without exceeding the permitted temperature limits while the equipment is operated under normal load.	No used connection of non-detachable power supply cord.	N/A
3.3.3	Screw terminals.	Only protective earth terminal on the equipment.	P
3.3.4	Conductor sizes to be connected.		N/A
3.3.5	Wiring terminal sizes.	Protective earth terminal M5.	P
3.3.6	Wiring terminal design.		P
3.3.7	Grouping of wiring terminals.		N/A
3.3.8	Stranded wire.	Is not consolidated by soft soldering.	P
3.4	Disconnection from the mains supply.		
3.4.1	General requirement.	See below.	P
3.4.2	Disconnect devices.	Equipment connection to a DC mains supply 48V with RJ45 connector.	P
	The plug on the power supply cord.		N/A
	A mains plug that is part of direct plug-in equipment.		N/A
	An appliance coupler.		N/A
	Isolating switches.		N/A
	Circuit breakers.		N/A
	for a DC mains supply that is not at a hazardous voltage, a removable fuse, provided that it is accessible only to a service person		N/A
	Any equivalent device.	RJ45 connector.	P
3.4.3	Permanently connected equipment.	The unit is not a permanently connected equipment.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	The disconnect device shall be incorporated in the equipment.		N/A
	Installation instructions – the disconnect device shall be provided as part of the building installation.		N/A
3.4.4	Parts which remain energized.		P
	It shall be guarded so as to reduce the likelihood of accidental contact by service person.	When the disconnect device is disconnected no remaining parts with hazardous voltage in the equipment. Mains supply 48 V DC	P
3.4.5	Switches in flexible cords.	No isolation switch provided..	N/A
3.4.6	Number of poles - single-phase and DC equipment		N/A
	Disconnect both poles simultaneously.		N/A
	Single-pole disconnects – where is possible to rely on the identification of the neutral conductor or earthed conductor in a DC mains apply.		N/A
3.4.7	Number of poles – three-phase equipment.	Equipment is single phase.	N/A
	Disconnection of all line conductors of the AC mains supply.		N/A
3.4.8	Switches as disconnect devices.	No switch or the switch is not a disconnect device.	N/A
	„ON“ and „OFF“ positions shall be marked.		N/A
3.4.9	Plugs as disconnect devices.	RJ45 connector.	N/A
3.4.10	Interconnected equipment.	Interconnected equipment mains supply 48V with RJ45 connector.	N/A
3.4.11	Multiple power sources.	Only one supply connection provided.	N/A
3.5	Interconnection of equipment.		
3.5.1	General requirements.	Connection to safe voltage 48V DC This equipment is not considered for connection to TNV.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
3.5.2	Types of interconnection circuits.	Interconnection circuits of SELV.	P
3.5.3	ELV circuits as interconnection circuits.	No ELV interconnection circuits.	N/A
	ELV circuits are permitted as interconnection circuits between the equipments, provided that the equipments continue to meet the requirements of this standard when connected together.		N/A
3.5.4	Data ports for additional equipment	No data ports. Additional equipment is not subject to a test.	N/A
4	Physical requirements.		
4.1	Stability.		
	Under conditions of normal use, units and equipment shall not become physically unstable to the degree that they could become a hazard to operators and service person.	The equipment is to be secured to the antenna mast structure before operation.	N/A
	A unit shall not overbalance when tilted to an angle of 10° from its normal upright position.		N/A
	A floor-standing unit having a mass of 25kg or more shall not tip over when a force equal to 20% of the weight of the unit, but not more than 250 N, is applied in any direction except upwards.		N/A
	A floor-standing unit shall not overbalance when a constant downward force of 800 N is applied.		N/A
	The equipment is to be secured to the building structure before operation.		N/A
4.2	Mechanical strength.		
4.2.1	General.		P
4.2.2	Steady force test, 10 N.		P
	Components and parts other than parts serving as an enclosure.	(10±1) N applied to components.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
4.2.3	Steady force test, 30 N.	Not used.	N/A
	Parts of an enclosure located in an operator access area, which are protected by a cover or door.	(30±3) N	N/A
4.2.4	Steady force test 250 N.		P
	External enclosures, steady force applied in turn to the top, bottom and sides.	(250±10) N applied to outer enclosure.	P
4.2.5	Impact test.	Impact test no apply to equipment. No danger voltage.	N/A
	Except for equipment identified in 4.2.6.		N/A
4.2.6	Drop test.	Drop test no apply to equipment.	N/A
	Hand-held equipment.		N/A
	Direct plug-in equipment.		N/A
	Transportable equipment.		N/A
	Desk-top equipment having a mass of 5 kg or less.		N/A
4.2.7	Stress relief test.		P
	No reduction of creepage distances or clearances below the minimum required.	After 7h at 70°C and cooling down to room temperature, no shrinkage or distortion of enclosure parts was noticeable on the equipment	P
4.2.8	Cathode ray tubes.	No cathode ray tube.	N/A
4.2.9	High pressure lamps.	No high pressure lamp.	N/A
4.2.10	Wall or ceiling mounted equipment.	No wall or ceiling mounted equipment.	N/A
4.3	Design and construction.		
4.3.1	Edges and corners.	Edges and corners of the enclosure are rounded.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
4.3.2	Handles and manual controls.	No handles and manual controls.	N/A
	Handles, knobs, grips, levers and the like shall be reliably fixed.		N/A
4.3.3	Adjustable controls.	No control devices.	N/A
	Requires the use of a tool if incorrect setting might create a hazard.		N/A
4.3.4	Securing of parts.		P
	Screws, nuts, washers, springs or similar parts shall be secured so as to withstand mechanical stresses occurring in normal use if loosening would create a hazard.	Screws, nuts, washers, springs or similar parts are secured.	P
4.3.5	Connection of plugs and sockets.	No such parts.	N/A
	Plugs and sockets likely to be used by the operator or by service personnel shall not be employed in a manner likely to create a hazard due to misconnection. Connectors complying with IEC 60083 or IEC 60320 shall not be used for SELV circuits or TNV circuits.	No mismatching of connectors possible.	N/A
4.3.6	Direct plug-in equipment.	No such equipment.	N/A
	Direct plug-in equipment shall not impose undue strain on the socket-outlet.	Vertical plane shall not exceed 0,25Nm.	N/A
4.3.7	Heating elements in earthed equipment.	Not heating elements.	N/A
4.3.8	Batteries.	No batteries provided.	N/A
4.3.9	Oil and grease.	No oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases.	Equipment no producing dust or using powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases.	No container for liquid or gas provided.	N/A
4.3.12	Flammable liquids.	No flammable liquids in this unit.	N/A
4.3.13	Radiation.	No radiation.	N/A
4.3.13.1	General.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
4.3.13.2	Ionizing radiation.	No ionizing radiation.	N/A
4.3.13.3	Effect of ultraviolet (UV) radiation on materials.	No ultraviolet (UV) radiation.	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation.		N/A
	General purpose incandescent and fluorescent lamps, with ordinary glass envelopes, are not considered to emit significant UV radiation.		N/A
4.3.13.5	Lasers (including LEDs).		P
	Some examples of applications of LEDs which will normally comply are those used as: <ul style="list-style-type: none"> - indicating lights - infra-red devices as are used in home entertainment devices - infra-red devices for data transmission such as are used between computers and computers peripherals - optocouplers - similar low power devices 	Diode LED indicating lights.	P
4.3.13.6	Other types.	Not used.	N/A
4.4	Protection against hazardous moving parts.		
4.4.1	General.	No moving parts.	N/A
4.4.2	Protection in operator access areas.	No moving parts.	N/A
4.4.3	Protection in restricted access locations.	The equipment is not intended to be used in restricted locations.	N/A
4.4.4	Protection in service access areas..	No moving parts.	N/A
4.5	Thermal requirements.		
4.5.1	General.	See table 4.5.1.	P
4.5.2	Temperature tests.		P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Materials used in components and in the construction of the equipment shall be selected so that under normal load operation, temperatures do not exceed safe values in the meaning of this standard.	Materials used in components and in the construction of the equipment is selected so that under normal load, temperatures do not exceed safe values in the meaning of this standard.	P
	Components working at high temperature shall be effectively shielded or separated to avoid overheating of their adjacent materials and components.	No such parts.	N/A
	Equipment intended for building-in or rack-mounting, or for incorporation in larger equipment, is tested under the most adverse actual or simulated conditions permitted in the installation instructions.	No such equipment.	N/A
	The temperature of electrical insulation (other than that of windings, see 1.4.13), the failure of which could create a hazard, is measured on the surface of the insulation at a point close to the heat source (see Footnote an in Table 4B).	Not used such parts.	N/A
4.5.3	Temperature limits for materials.	Temperature of materials and components not exceed the values shown in Table 4B.	P
4.5.4	Touch temperature limits.	Temperatures of accessible parts in operator access areas not exceed the values shown in Table 4C.	P
4.5.5	Resistance to abnormal heat.	No used. Safe voltage 48VDC	N/A
	Thermoplastic parts on which parts at hazardous voltage are directly mounted shall be resistant to abnormal heat.	Not used such parts.	N/A
	Ball pressure test. Temperature min. 125°C.	made at the temperature: 125°C crowded diameter mm.	N/A
4.6	Openings in enclosures.		
4.6.1	Top and side openings.	There is no opening at whole enclosure.	N/A
	It is unlikely that objects will enter the openings and create hazards by containing bare conductive parts.	No such equipment.	N/A
4.6.2	Bottoms of fire enclosures.	There is no opening at whole enclosure.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
4.6.3	Doors or covers in fire enclosures.	No door or cover.	N/A
4.6.4	Openings in transportable equipment.	Not transportable equipment.	N/A
4.6.4.1	Constructional design measures.	No such equipment.	N/A
4.6.4.2	Evaluation measures for larger openings.	No larger openings.	N/A
4.6.4.3	Use of metallised parts.	Not used such parts.	N/A
4.6.5	Adhesives for constructional purposes.	Not used.	N/A
	If a barrier or screen is secured with adhesive to the inside of the enclosure or to other parts inside the enclosure, the adhesive shall have adequate bonding properties throughout the life of the equipment.	No barrier or screen secured with adhesive.	N/A
4.7	Resistance to fire.		
	Metal, ceramic material and glass – suitable without test.	Metal material.	P
4.7.1	Reducing the risk of ignition and spread of flame.	Use of materials with the required flammability classes.	P
4.7.2	Conditions for a fire enclosure.	See below.	N/A
	In cases when the temperature under fault operation can be adequate to fire.	Not such condition	N/A
4.7.2.1	Parts requiring a fire enclosure.	No such.	N/A
4.7.2.2	Parts not requiring a fire enclosure.	Fire enclosure is not required.	N/A
4.7.3	Materials.		P
4.7.3.1	General.		P
	Enclosures, components and other parts shall be so constructed, or shall make use such materials, that the propagation of fire is limited.	Integrated circuits and small electrical parts mounted on a printed wiring board min. rated V-1 or better.	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
4.7.3.2	Materials for fire enclosures.	Fire enclosure is not required. Cover made out of metal material.	N/A
4.7.3.3	Materials for components and other parts outside fire enclosures.	No components or parts outside fire enclosures.	N/A
4.7.3.4	Materials for components and other parts inside fire enclosures.	Internal components except small parts are V-2, HF-2 or better..	N/A
4.7.3.5	Materials for air filter assemblies.	No air filter assemblies.	N/A
4.7.3.6	Materials used in high-voltage components.	No high-voltage components used.	N/A
5	Electrical requirements and simulated abnormal conditions.		
5.1	Touch current and protective conductor current.		
5.1.1	General.		N/A
	Neither touch current nor is protective conductor current likely to create an electric shock hazard.	Connection to safe voltage 48VDC	N/A
5.1.2	Configuration of equipment under test (EUT)		N/A
5.1.2.1	Single connection to an AC mains supply	No connection to an AC mains supply.	N/A
	Systems of interconnected equipment with individual connections to the AC mains supply – tested separately.	Only one equipment.	N/A
5.1.2.2	Redundant multiple connections to an AC mains supply		N/A
	Equipment which is designed for connection to multiple power sources, only one of which is required at a time shall be tested with only one source connected.	No such equipment.	N/A
5.1.2.3	Simultaneous multiple connections to an AC mains supply	No such equipment.	N/A
5.1.3	Test circuit.	Connection to safe voltage 24VDC	N/A
5.1.4	Application of measuring instrument.		N/A
5.1.5	Test procedure.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
5.1.6	Test measurements.	Connection to safe voltage 24VDC	N/A
	Maximum touch current.:		N/A
	Accessible parts and circuits not connected to protective earth – 0,25mA r.m.s.	No such equipment.	N/A
	Hand-held equipment – 0,75mA r.m.s.	No such equipment.	N/A
	Movable including transportable equipment – 3,5mA r.m.s.		N/A
	Stationary equipment, pluggable type A – 3,5mA r.m.s.	No such equipment.	N/A
	All other stationary equipment – 3,5mA r.m.s.	No such equipment.	N/A
5.1.7	Equipment with touch current exceeding 3,5 mA.	Connection to safe voltage 48VDC	N/A
5.1.7.1	General	Connection to safe voltage 48VDC	N/A
	For stationary permanently connected equipment or stationary pluggable equipment type B having a main protective earthing terminal.	No such equipment.	N/A
5.1.7.2	Simultaneous multiple connections to the supply	No such equipment.	N/A
5.1.8	Touch current to telecommunication networks and cable distribution systems and from telecommunication networks.	Not connected to telecommunication networks.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system.	Safe voltage 48VDC	N/A
5.1.8.2	Summation of touch currents from telecommunication networks.	No TNV.	N/A
5.2	Electric strength.		
5.2.1	General.	All tests voltages were applied for 1 minute in the chamber after the humidity test of 2.9.2 and in warm conditions after the heating test of 4.5.1 No isolation breakdown was observed (results see appended tables).	P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
5.2.2	Test procedure.	See appended table 5.2.	P
	A voltage of substantially sine-wave form having a frequency of 50 Hz or 60 Hz.	50Hz.	P
	Insulation coatings are tested with metal foil in contact with the insulating surface.	Cover made out of metal material.	N/A
5.3	Abnormal operating and fault conditions.		
5.3.1	Protection against overload and abnormal operation.	Output overload test: The most unfavourable load test. Result see appended table 5.3. After test the electric strength test was conducted. No isolation break down was noted.	P
	The risk of fire or electric shock due to mechanical or electrical overload or failure, or due to abnormal operation or careless use, is limited as far as practicable.	Safe voltage 48VDC Cover made out of metal material.	P
5.3.2	Motors.	No motors.	N/A
	Under overload, locked rotor and other abnormal conditions, motors shall not cause a hazard due to excessive temperatures.		N/A
5.3.3	Transformers.	No transformers.	N/A
	Transformers shall be protected against overload, for example by overcurrent protection, internal thermal cut-outs, use of current limiting transformers.		N/A
5.3.4	Functional insulation.	Short circuit tests.	P
	They meet the clearance and creepage distance requirements for functional insulation in 2.10 or they withstand the electric strength tests for functional insulation in 5.2.2 or they are short circuited where a short circuit could cause overheating or thermal damage.	Test results. See table 5.3.	P
5.3.5	Electromechanical components.	No electromechanical components.	N/A
5.3.6	Audio amplifiers in information technology equipment	No audio amplifiers in information technology equipment	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
5.3.7	Simulation of faults.		P
	Faults in any components in primary circuits.	No primary circuits.	N/A
	Faults in any components where failure could adversely affect supplementary insulation or reinforced insulation.	Used safe voltage 48VDC No such components.	N/A
	Short-circuit, disconnection or overloading of all relevant components and parts unless they comply with the requirements of 4.7.3.	Components and parts fulfill requirements of 4.7.3. Used safe voltage 48VDC	P
	Faults arising from connection of the most unfavourable load impedance to terminals.	No risk.	P
	Other single faults specified in 1.4.14.	No risk. Used safe voltage 48VDC	P
5.3.8	Unattended equipment.		N/A
	Thermostats, temperature limiters, thermal cut-outs.	No such parts.	N/A
	Equipment is operated under the conditions specified in 4.5.2 and any control that serves to limit the temperature is short-circuited.	No such parts.	N/A
	If interruption of the current does not occur, the equipment is switched off as soon as steady conditions are established.	No such parts.	N/A
5.3.9	Criteria for abnormal operating and fault conditions.		P
5.3.9.1	During the tests of 5.3.4 c), 5.3.5, 5.3.7, 5.3.8 and Clause C.1.		P
	A fire shall not propagate beyond the equipment, it shall not emit molten metal, enclosures shall not deform.	A fire shall not propagate beyond the equipment, it shall not emit molten metal, enclosures shall not deform.	P
5.3.9.2	After the tests.		P
	Electric strength test is made.	No fire occurred. Electric strength tests.	P
6	Connection to telecommunication networks.		
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment.		

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
6.1.1	Protection from hazardous voltages.		N/A
	Circuitry intended to be directly connected to a telecommunication network shall comply with requirements for an SELV circuit or TNV circuit.	Not directly connected to telecommunication network.	N/A
6.1.2	Separation of the telecommunication network from earth.	Not directly connected to telecommunication network	N/A
6.1.2.1	Requirements.		N/A
	There shall be insulation between circuitry intended to be connected to a telecommunication network and any parts or circuitry that will be earthed in some applications, either within the EUT or via other equipment.		N/A
	Surge suppressors that bridge the insulation shall have a minimum DC spark over voltage of 1.6 times the rated voltage or 1.6 times the upper voltage of the rated voltage range of the equipment.		N/A
	Insulation is subjected to an electric strength. 1,5 kV – AC mains supply exceeds 130V 1,0 kV – for all other equipment		N/A
6.1.2.2	Exclusions.	Equipment is intended to be installed by a service person. Equipment that has provision for a permanently connected protective earthing conductor and is provided with instructions for the installation of that conductor.	N/A
	6.1.2.1 do not apply to any of the following: -permanently connected equipment or pluggable equipment type B -equipment that is intended to be installed by service personnel -equipment that provision for permanently connected protective earthing conductor.		N/A
6.2	Protection of equipment users from overvoltages on telecommunication networks.		
6.2.1	Separation requirements.	Not directly connected to telecommunication network.	N/A
	Equipment shall provide adequate electrical separation between a TNV-1 circuit or a TNV-3 circuit and certain parts of the equipment.		N/A
6.2.2	Electric strength procedure.	Not directly connected to telecommunication network.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
6.2.2.1	Impulse test.	10 impulses 2,5kV - TNV-hand- held part 10 impulses 1,5kV - TNV - EUT	P
6.2.2.2	Steady-state test.	1,5kV - TNV-hand- held part 1,5kV - TNV - EUT	P
6.2.2.3	Compliance criteria.	there is no breakdown of insulation	P
6.3	Protection of the telecommunication wiring system from overheating.		
	Equipment intended to provide power over the telecommunication wiring system to remote equipment shall limit the output current to a value that does not cause damage to the telecommunication wiring system, due to overheating, under any external load condition.	Not connected to telecommunication network. Equipment not intended to provide power over the telecommunication wiring system to remote equipment.	N/A
7*	Connection to cable distribution systems.		
7.1*	General		P
	If the equipment is to be connected to a cable distribution system, the requirements of Clause 7 applies in addition to the requirements of Clauses 1 to 5 of this standard.	The equipment to be connected only to an outdoor antenna with coaxial cable.	P
7.2*	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	The equipment is connection to safe voltage 24VDC	N/A
7.3*	Protection of cable equipment user from overvoltage s on the cable distribution system.	The screen of the coaxial cable is intended to be connected to earth in the building installation.	N/A
7.4*	Insulation between primary circuits and cable distribution systems		
7.4.1*	General		N/A
	Except as specified below, the insulation between the primary circuit and the terminal or lead provided for the connection of a cable distribution system shall pass either: – the voltage surge test of 7.4.2 for equipment intended to be connected to outdoor antennas; or – the impulse test of 7.4.3 for equipment intended to be connected to other cable distribution systems	No primary circuit.	N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
7.4.2*	Voltage surge test	No primary circuit.	N/A
7.4.3*	Impulse test	No primary circuit.	N/A
Annex A	Tests for resistance to heat and fire.		
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment.		
A.1.1	Samples.		N/A
	Three samples have to be.		N/A
A.1.2	Conditioning of samples.		N/A
	A period 168 hours, temperature 70°C.		N/A
A.1.3	Mounting of samples.		N/A
	They are mounted as they would be in actual use.		N/A
A.1.4	Test flame.		N/A
	The test flame according to IEC 60695-11-3 is used.		N/A
A.1.5	Test procedure.		N/A
A.1.6	Compliance criteria.		N/A
	The sample shall not release either flaming drops or particles capable of igniting the surgical cotton. The sample shall not continue to burn for more than 1 min after the fifth application of the test flame, and shall not be consumed completely.		N/A
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.		
A.2.1	Samples.		P
	Three samples have to be.		P

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
A.2.2	Conditioning of samples.		P
	A period 168 hours, temperature 70°C.		P
A.2.3	Mounting of samples.		P
	They are mounted as they would be in actual use.		P
A.2.4	Test flame.		P
	The test flame according to IEC 60695-11-4 is used.		P
A.2.5	Test procedure.		P
A.2.6	Compliance criteria.		P
A.2.7	Alternative test.		P
A.3	High current arcing ignition test.		
A.3.1	Mounting of samples.		N/A
A.3.2	Test procedure.		N/A
A.3.3	Compliance criteria.		N/A
Annex B	Motor tests under abnormal conditions.		
B.1	General requirements.		N/A
	Motors, other than DC motors in secondary circuits.		N/A
	Motors which are used for air-handling only where the air propelling component is directly coupled to the motor shaft.		N/A
	Shaded pole motors.		N/A
	The dDC motors in secondary circuits.		N/A
B.2	Test conditions.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	Test equipment is operated at rated voltage or at the upper voltage of the rated voltage range.		N/A
B.3	Maximum temperatures.		N/A
B.4	Running overload test..		N/A
B.5	Locked-rotor overload test..		N/A
B.6	Running overload test for DC motors in secondary circuits.		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test		N/A
B.7	locked-rotor overload test for DC motors in secondary circuits.		N/A
B.7.1	General		N/A
B.7.2	Test procedure.		N/A
B.7.3	Alternative test procedure.		N/A
B.7.4	Electric strength test.		N/A
	If the motor voltage exceeds 42,4 V peak or 60 V DC		N/A
B.8	Test for motors with capacitors.		N/A
B.9	Test for three-phase motors.		N/A
B.10	Test for series motors.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	1,3 times the motor voltage rating for 1 min with the lowest possible load.		N/A
Annex C	Transformers.		
C.1	Overload test.		N/A
	Transformers for switch mode power supply units are tested in the complete power supply unit or in the complete equipment.		N/A
	The output of a switch mode power supply unit is loaded to result in the maximum heating effect in the transformer.		N/A
	Where an overload cannot occur or is unlikely to create a hazard, the above tests are not made.		N/A
C.2	Insulation.		N/A
Annex D	Measuring instruments for touch – current tests.		
D.1	Measuring instruments from IEC 60990, figure4.		N/A
D.2	Alternative measuring instruments.		N/A
Annex E	Temperature rise of a winding.		
	The formula..		N/A
Annex F	Measurement of clearances and creepage distances.		
	The methods of measuring.		V
Annex G	Alternative method for determining minimum clearances.		
G.1	Clearances		N/A
G.1.1	General		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage.		N/A
G.2.1	AC mains supply		N/A
G.2.2	Earthed DC mains supplies		N/A
G.2.3	Unearthed DC mains supplies		N/A
G.2.4	Battery operation		N/A
G.3	Determination of telecommunication network transient voltage.		N/A
G.4	Determination of required withstand voltage.		N/A
G.4.1	Mains transients and internal repetitive peaks		N/A
G.4.2	Transients from telecommunication networks		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient levels.		N/A
G.6	Determination of minimum clearances.		N/A
	10mm for an air gap serving as reinforced insulation.		N/A
	2mm for an air gap serving as basic insulation.		N/A
Annex H	Ionizing radiation.		
	Equipment which might produce ionizing radiation is checked by measuring the amount of radiation.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
Annex J	Table of electrochemical potentials.		
Annex K	Thermal controls.		
K.1	Making and breaking capacity..		N/A
	Thermostats and temperature limiters shall have adequate making and breaking capacity.		N/A
	Components not marked with individual ratings are tested either in the equipment or separately.		N/A
K.2	Thermostat reliability.		N/A
	200 cycles of operation.		N/A
K.3	Thermostat endurance test.		N/A
	10 000 cycles of operation.		N/A
K.4	Temperature limiter endurance.		N/A
	1 000 cycles of operation.		N/A
K.5	Thermal cut-out reliability.		N/A
	Automatic reset thermal cut-outs are caused – operating 200 times.		N/A
	Manual reset thermal cut-outs – operating 10 times.		N/A
K.6	Stability of operation.		N/A
Annex L	Normal load conditions for some types of electrical business equipment.		
L.1	Typewriters.		N/A
L.2	Adding machines and cash registers.		N/A
L.3	Erasers.		N/A
L.4	Pencil sharpeners.		N/A
L.5	Duplicators and copy machines.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
L.6	Motor-operated files.		N/A
L.7	Other business equipment.		N/A
Annex M	Criteria for telephone ringing signals.		
M.1	Introduction.		N/A
	Method A – used in Europe. Method B – used in America.		N/A
M.2	Method A.		N/A
M.3	Method B.		N/A
M.3.1	Ringing signal.		N/A
M.3.1.1	Frequency.		N/A
M.3.1.2	Voltage.		N/A
M.3.1.3	Cadence.		N/A
M.3.1.4	Single fault current.		N/A
M.3.2	Tripping device and monitoring voltage.		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage.		N/A
M.3.2.2	Tripping device.		N/A
M.3.2.3	Monitoring voltage.		N/A
Annex N	Impulse test generators.		
Annex P	Normative references.		
Annex Q	Bibliography.		
Annex R	Examples of requirements for quality control programmes.		
R.1	Minimum separation distances for unpopulated coated printed boards.		N/A


Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
R.2	Reduced clearances.		N/A
Annex S	Procedure of impulse testing.		
S.1	Test equipment.		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing.		N/A
Annex T	Guidance on protection against ingress of water.		
	Degree of protection according to IEC 60529:1989.		N/A
Annex U	Insulated winding wires for use without interleaved insulation.		
U.1	Wire construction.		N/A
U.2	Type tests.		N/A
U.2.1	Electric strength.		N/A
U.2.2	Flexibility and adherence.		N/A
U.2.3	Heat shock.		N/A
U.2.4	Retention of electric strength after bending.		N/A
U.3	Tests during manufacture.		N/A
U.3.1	Routine testing.		N/A
U.3.2	Sampling tests.		N/A
Annex V	The AC power distribution systems.		
V.1	Introduction.		N/A
V.2	TN power systems.		N/A
	TN-S power system.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
	TN-C-S power system.		N/A
	TN-C power system.		N/A
V.3	TT power systems.		N/A
V.4	IT power systems.		N/A
Annex W	Summation of touch currents.		
W.1	Touch current from electronic circuits.		N/A
W.1.1	Floating circuits.		N/A
W.1.2	Earthed circuits.		N/A
W.2	Interconnection of several equipments.		N/A
W.2.1	Isolation.		N/A
W.2.2	Common return, isolated from earth.		N/A
W.2.3	Common return, connected to protective earth.		N/A
Annex X	Maximum heating effect in transformer tests.		
X.1	Determination of maximum input current.		N/A
X.2	Overload test procedure.		N/A
Annex Y	Ultraviolet light conditioning test.		
Y.1	Test apparatus.		N/A
Y.2	Mounting of test samples.		N/A
Y.3	Carbon-arc light-exposure apparatus.		N/A
Y.4	Xenon-arc light-exposure apparatus.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
Annex Z	Overvoltage categories		
Annex AA	Mandrel test		
Annex BB	Changes in the second edition		
Annex ZA	Normative references to international publications with their corresponding European publications		
Annex 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/A
1.5.7.1	In Finland, Norway and Sweden, resistors bridging basic insulation in class I pluggable equipment type A must comply with the requirements in 1.5.7.2.		N/A
1.5.8	In Norway, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
1.5.9.4	In Finland, Norway and Sweden, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A
1.7.2.1	In Finland, Norway and Sweden, class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Late on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" In Norway: "Apparatus må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"		N/A
1.7.5	In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For stationary equipment the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		N/A
2.2.4	In Norway, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In Norway, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this		N/A
2.6.3.3	In the United Kingdom, the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
2.7.1	In the United Kingdom, to protect against excessive currents and short-circuits in the primary circuits of direct plug in equipment, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the direct plug in equipment, so that the requirements of 5.3 are met.		N/A
2.10.5.13	In Finland, Norway and Sweden, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
3.2.1.1	In Switzerland, supply cords of equipment having a rated current not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998 Plug Type 25 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998 Plug Type 21 L+N 250 V,		N/A
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/A
	In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. class I equipment provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		N/A
	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.		N/A
	In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 -National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
3.2.4	In Switzerland, for requirements see 3.2.1.1 of this annex.		N/A
4.3.6	In the United Kingdom, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1: 1997 and Amendment 2:2003 and the plug part of direct plug in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
	In Ireland, direct plug in equipment is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A
5.1.7.1	<p>In Finland, Norway and Sweden touch current measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment:</p> <ul style="list-style-type: none"> • stationary pluggable equipment type A that is intended to be used in a restricted access location where equipotent bonding has been applied, for example, in a telecommunication centre; and o has provision for a permanently connected protective earthing conductor ; and is provided with instructions for the installation of that conductor by a service person; • stationary pluggable equipment type B; • stationary permanently connected equipment 		N/A
6.1.2.1	<p>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 pass 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.</p> <p>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/A

Clause	Requirements - Tests	Test Result - Verdict*)	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/A
7.2	In Finland, Norway and Sweden, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term telecommunication network in 6.1.2 being replaced by the term cable distribution system.		N/A
7.3	In Norway and Sweden, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.		N/A
7.4	In Norway, for installation conditions see EN 60728-11:2005.		N/A
Annex ZC	A-deviations		
1.5.1	Sweden (Ordinance 1990:944) Add the following: Note: In Sweden, switches containing mercury are not permitted. Switzerland (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: Note: In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.		N/A
1.7.2.1	Denmark (Heavy Current Regulations) Supply cords of class I equipment, which is delivered without a plug, must be provided with a visible tag with the following text: Vigtigt! Leaden med grøn/gul isolation må kun tilsluttes en klemme market  eller If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: “For tilslutning af de øvrige ledere, se medfølgende installationsvejledning.”		N/A
	Germany (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by service persons are not exempted.		N/A
1.7.5	Denmark (Heavy Current Regulations) With the exception of class II equipment provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, class II equipment shall not be fitted with socket-outlets for providing power to other equipment.		N/A

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
1.7.13	Switzerland (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries)		N/A
5.1.7.1	Denmark (Heavy Current Regulations, Chapter 707, clause 707.4) touch current measurement results exceeding 3,5 mA r.m.s. are permitted only for permanently connected equipment and pluggable equipment equipment type B.		N/A

Any comparison of the measured values with the required, as well as any assessment are beyond laboratory accreditation according to CSN EN ISO / IEC 17025:2005.

The standard uncertainty of measurement is in accordance with the document EA-4/16. The expanded measurement uncertainty stated in the protocol is the product of standard uncertainty of measurement and coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. Interpretation (conclusions) are presented in accordance with ILAC G8.

Note:

***) The tests or interpretations marked with "*" are outside the scope of laboratory accreditation according to DIN EN ISO / IEC 17025:2005**

Test case verdicts:

Test case does not apply to the test objects: **N/A**
 Test item does meet the requirement of standart clause: **P**(pass)
 Test item does not meet the requirement of standart clause: **F**(fail)

General remarks:

„(see remark #)“ refers to a remark appended to the report.
 „(see appended table)“ refers to a table appended to the report.
 Throughout this report a comma is used as the decimal separator.
 The test results presented in this report relate only to the object tested.
 This report shall not be reproduced except in full without the written approval of the testing laboratory.

End of test report

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
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Annex : Figures



Fig. 1



Fig. 2

Clause	Requirements - Tests	Test Result - Verdict*)	Verdict*)
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Fig. 3