



Intertek Testing Services
ETL SEMKO

VERIFICATION

of conformity with
European Low Voltage Directive

No. ETS-03146/00

Type of equipment: 802.11b Wireless Compact Flash Card

Document holder: TRENDware INTERNATIONAL INC.
3135, Kashiwa St., Torrance, CA 90505, U.S.A.

Type designation: TEW-222CF

Technical data: 3.5/5 Vdc, 300 mA
Class III

A sample of the equipment has been tested for CE-marking according to the EC Low Voltage Directive, 73/23/EEC, 93/68/EEC.

Standard(s) used for showing compliance with the essential requirements of the directive:

<i>Standard(s):</i>	<i>Test report(s):</i>	<i>Issued by:</i>	<i>Date(s):</i>
EN 60950: 2000	ETS-03146	ITS-Taiwan	May 2, 2003

The referred test report(s) show that the product fulfills the requirements in the EC Low Voltage Directive for CE marking. On this basis, together with the manufacturer's own documented production control, the manufacturer (or his European authorized representative) can in his EC Declaration of Conformity verify compliance with the EC Low Voltage Directive.

Taipei
May 2, 2003

Intertek Testing Services Taiwan Ltd.

PATRICK HSU
MANAGER
ETL SEMKO DIVISION







TEST REPORT

EN 60950

Safety of information technology equipment

Report reference No	ETS-03146	
Tested by	Richard Weng	
Approved by	Patrick Hsu	
Date of issue	May 2, 2003	
Contents	33 pages test report + photo 2 pages	
Testing Laboratory Name	Intertek Testing Services Taiwan Ltd.	
Address	14 F, No. 27, Chung Shan North Road, Sec. 3, Taipei Taiwan	
Testing location	Same as above	
Applicant's Name	TRENDware INTERNATIONAL INC.	
Address	3135, Kashiwa St., Torrance, CA 90505, U.S.A.	
Test specification		
Standard	EN 60950:2000 (3 rd Edition)	
Test procedure	CE mark service	
Procedure deviation	Group differences and special national deviations of CENELEC countries	
Non-standard test method	No	
Test Report Form		
Test Report Form No.....	60950__E/00-08	
Master TRF	dated 00-08	
Copyright reserved to the bodies participating in the IECEE Schemes (CB and CB-FCS) and/or the bodies participating in the C.I.G (CCA-ENEC).		
Test item description	802.11b Wireless Compact Flash Card	
Trademark	TRENDware	
Model and/or type reference	TEW-222CF	
Rating(s)	3.3/5 Vdc, 300 mA	



Particulars: test item vs. test requirements

Equipment mobility: Build-in
Operating condition.....: Continuous
Mains supply tolerance (%)......: No
Tested for IT power systems: No
IT testing, phase-phase voltage (V) : —
Class of equipment: Class III
Mass of equipment (kg).....: 0.02
Protection against ingress of water: IP 20

Test case verdicts

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

Testing

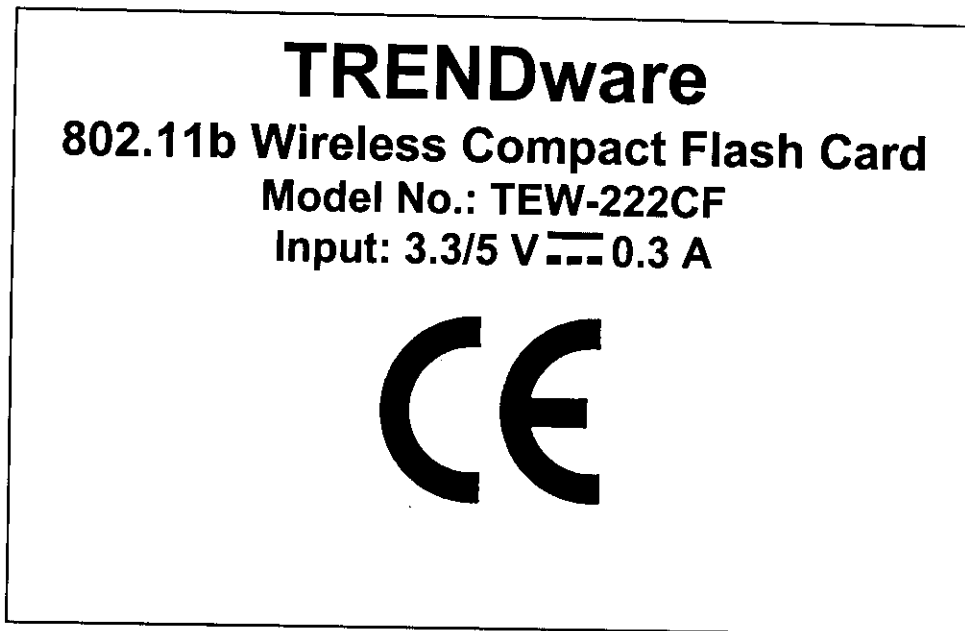
Date of receipt of test item: April 17, 2003
Date(s) of performance of test: May 2, 2003

General remarks

This report shall not be reproduced except in full without the written approval of the testing laboratory.
The test results presented in this report relate only to the item(s) tested.
"(see remark #)" refers to a remark appended to the report.
"(see Annex #)" refers to an annex appended to the report.
Throughout this report a dot is used as the decimal separator.



Copy of marking plate and summary of test results (information/comments):






EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict

1	GENERAL		
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1.5	Components		
1.5.1	Comply with IEC 950 or relevant component standard		P
1.5.2	Evaluation and testing of components		P
	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
1.5.3	Thermal controls		N
1.5.4	Transformers		N
1.5.5	Interconnecting cables		N
1.5.6	Capacitors in primary circuits		N
1.5.7	Double or reinforced insulation bridged by components		N
1.5.7.1	Bridging capacitors		N
1.5.7.2	Bridging resistors		N
1.5.7.3	Accessible parts		N
1.5.8	Components in equipment for IT power systems		N

1.6	Power interface		
1.6.1	AC power distribution systems		N
1.6.2	Input current		P
1.6.3	Voltage limit of hand-held equipment		N
1.6.4	Neutral conductor		N

1.7	Marking and instructions		
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V)	3.3/5 Vdc	P
	Symbol for nature of supply for d.c.		P
	Rated frequency or frequency range (Hz)		N
	Rated current (A)	300 mA	P
	Manufacturer's name/Trademark	TRENDware	P
	Type/model	TEW-222CF	P



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
	Symbol of Class II		N
	Other symbols		N
	Certification marks		N
1.7.2	Safety instructions		P
1.7.3	Short duty cycles		N
1.7.4	Supply voltage adjustment		N
1.7.5	Power outlets on the equipment		N
1.7.6	Fuse identification		N
1.7.7	Wiring terminals		N
1.7.7.1	Protective earthing and bonding terminals		N
1.7.7.2	Terminal for a.c. mains supply conductors		N
1.7.8	Controls and indicators		—
1.7.8.1	Identification, location and marking		N
1.7.8.2	Colours		N
1.7.8.3	Symbols according to IEC 60417		N
1.7.8.4	Markings using figures		N
1.7.9	Isolation of multiple power sources		N
1.7.10	IT power system		N
1.7.11	Thermostats and other regulating devices		N
1.7.12	Language	English and local language to each country that would be marketed	P
1.7.13	Durability		P
1.7.14	Removable parts		N
1.7.15	Replaceable batteries		N
	Language		—
1.7.16	Operator access with a tool		N
1.7.17	Equipment for restricted access locations		N
2	PROTECTION FROM HAZARDS		
2.1	Protection from electric shock and energy hazards		
2.1.1	Protection in OPERATOR access areas		P



EN 60950			
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Clause	Requirement - Test	Result - Remark	Verdict
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2.1.1.1	Access to energised parts	Class III equipment, only SELV circuit	—
	Test by inspection		N
	Test with test finger		N
	Test with test pin		N
	Test with test probe		N
2.1.1.2	Battery compartments		N
2.1.1.3	Access to ELV wiring		N
	Working voltage (V); distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring		N
2.1.1.5	Energy hazards	No energy hazards in operator accessible	P
2.1.1.6	Manual controls		N
2.1.1.7	Discharge of capacitors in the primary circuit		N
	Time-constant (s); measured voltage (V)		—
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N

2.2	SELV circuits		
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V)	Measured max. 5 Vdc	P
2.2.3	Voltages under fault conditions (V)	The voltage in any fault condition does not exceed the voltage in the max. normal operation	P
2.2.3.1	Separation by double or reinforced insulation (method 1)		N
2.2.3.2	Separation by earthed screen (method 2)		N
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N
2.2.4	Connection of SELV circuits to other circuits	All the requirements are met	P
2.3	TNV circuits		
2.3.1	Limits		N
	Type of TNV circuits	Only SELV circuit	—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.3.2	Separation from other circuits and from accessible parts		N
	Insulation employed		—
2.3.3	Separation from hazardous voltages		N
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed		—
2.3.5	Test for operating voltages generated externally		N
2.4	Limited current circuits		
2.4.1	General requirements		N
2.4.2	Limit values		N
	Frequency (Hz)		—
	Measured current (mA)		—
	Measured voltage (V)		—
	Measured capacitance (μ F)		—
2.4.3	Connection of limited current circuits to other circuits		N
2.5	Limited power sources		—
	Inherently limited output		N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault 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		
2.6.1	Protective earthing		N
2.6.2	Functional earthing		N

EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.2	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Rated current (A), type and nominal thread diameter (mm)		N
	Resistance (Ω) of earthing conductors and their terminations, test current (A).....		N
2.6.3.4	Colour of insulation		N
2.6.4	Terminals		N
2.6.4.1	Protective earthing and bonding terminals		N
	Rated current (A), type and nominal thread diameter (mm)		—
2.6.4.2	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		N
2.7	Overcurrent and earth fault protection in primary circuits		
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



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.7.4	Number and location of protective devices		N
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel		N

2.8	Safety interlocks		
2.8.1	General principles		N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Interlocks with moving parts		N
2.8.6	Overriding an interlock		N
2.8.7	Switches and relays in interlock systems		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		
2.9.1	Properties of insulating materials		N
2.9.2	Humidity conditioning		N
2.9.3	Requirements for insulation		N
2.9.4	Insulation parameters		N
2.9.5	Categories of insulation		N

2.10	Clearances, creepage distances and distances through insulation		
2.10.1	General		N
2.10.2	Determination of working voltage		N
2.10.3	Clearances		N
2.10.3.1	General		N
2.10.3.2	Clearances in primary circuit		N
2.10.3.3	Clearances in secondary circuits		N
2.10.3.4	Measurement of transient levels		N

EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.10.4	Creepage distances		N
	CTI tests.....:		—
2.10.5	Solid insulation		N
2.10.5.1	Minimum distance through insulation		N
2.10.5.2	Thin sheet material		N
	Number of layers (pcs).....:		—
	Electric strength test		—
2.10.5.3	Printed boards.....:		N
	Distance through insulation		N
	Electric strength test for thin sheet insulating material		N
	Number of layers (pcs).....:		N
2.10.5.4	Wound components.....:		N
	Number of layers (pcs).....:		N
	Two wires in contact inside component; angle between 45° and 90°		N
2.10.6	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		N
2.10.6.6	Abrasion resistance test.....:		N
	Electric strength test		N
2.10.7	Enclosed and sealed parts.....:		N
	Temperature $T_1=T_2 = T_{mra} - T_{amb} + 10K$ (°C)		N
2.10.8	Spacings filled by insulating compound.....:		N
	Electric strength test		N
2.10.9	Component external terminations		N
2.10.10	Insulation with varying dimensions		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict

3	WIRING, CONNECTIONS AND SUPPLY		
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3.1	General		
3.1.1	Current rating and overcurrent protection		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		N
3.1.6	Screws for electrical contact pressure		N
3.1.7	Non-metallic materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws		N
3.1.9	Termination of conductors		N
	10 N pull test		N
3.1.10	Sleeving on wiring		N

3.2	Connection to a.c. mains supplies		
3.2.1	Means of connection		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
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
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)		—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
3.2.9	Supply wiring space		N
3.3	Wiring terminals for connection of external conductors		
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	Rated current (A), cord/cable type, cross-sectional area (mm ²).....:		N
3.3.5	Rated current (A), type and nominal thread diameter (mm)		N
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		
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 energised		N
3.4.5	Switches in flexible cords		N
3.4.6	Single-phase 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		
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits..... :	SELV to SELV	P
3.5.3	ELV circuits as interconnection circuits		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict

4	PHYSICAL REQUIREMENTS		
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4.1	Stability		—
	Angle of 10°		N
	Test: force (N).....:		N

4.2	Mechanical strength		
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
4.2.6	Drop test		N
4.2.7	Stress relief		N
4.2.8	Cathode ray tubes		—
	Picture tube separately certified.....:		N
4.2.9	High pressure lamps		N
4.2.10	Wall or ceiling mounted equipment; force (N)		N

4.3	Design and construction		
4.3.1	Edges and corners		P
4.3.2	Handles and manual controls; force (N).....:		N
4.3.3	Adjustable controls		N
4.3.4	Securing of parts		N
4.3.5	Connection of plugs and sockets		N
4.3.6	Direct plug-in equipment		N
	Torque (Nm).....:		—
4.3.7	Heating elements in earthed equipment		N
4.3.8	Batteries		N
4.3.9	Oil and grease		N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases		N
4.3.12	Flammable liquids.....:		N



EN 60950			
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Clause	Requirement - Test	Result - Remark	Verdict
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	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation; type of radiation		N
	Equipment using lasers		N

4.4	Protection against hazardous moving parts		
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		
4.5.1	Temperature rises		P
	Normal load condition per Annex L		N
4.5.2	Resistance to abnormal heat		N

4.6	Openings in enclosures		
4.6.1	Top and side openings		N
	Dimensions (mm)	No opening	—
4.6.2	Bottoms of fire enclosures		N
	Construction of the bottom	No opening	—
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/time		N

4.7	Resistance to fire		
4.7.1	Reducing the risk of ignition and spread of flame		P
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure		P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General		P



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
4.7.3.2	Materials for fire enclosures		P
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		P
4.7.3.5	Materials for air filter assemblies		N
4.7.3.6	Materials used in high-voltage components		N

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS	
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5.1	Touch current and protective conductor current		
5.1.1	General	Class III equipment	N
5.1.2	Equipment under test (EUT)		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
	Test voltage (V)		—
	Measured current (mA)		—
	Max. allowed current (mA)		—
5.1.7	Equipment with touch current exceeding 3.5 mA		N
5.1.8	Touch currents to and from telecommunication networks		N
5.1.8.1	Limitation of the touch current to a telecommunication network		N
	Test voltage (V)		—
	Measured current (mA)		—
	Max. allowed current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks.....		N

5.2	Electric strength		
5.2.1	General		N
5.2.2	Test procedure		N



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Clause	Requirement - Test	Result - Remark	Verdict

5.3	Abnormal operating and fault conditions		
5.3.1	Protection against overload and abnormal operation		P
5.3.2	Motors		N
5.3.3	Transformers		N
5.3.4	Functional insulation		N
5.3.5	Electromechanical components		N
5.3.6	Simulation of faults		P
5.3.7	Unattended equipment		N
5.3.8	Compliance criteria for abnormal operating and fault conditions		P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		
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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		
6.1.1	Protection from hazardous voltages		
6.1.2	Separation of the telecommunication network from earth		
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		
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		
	Max. output current (A)		—
	Current limiting method		—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N
A.1.1	Samples, material		N
	Wall thickness (mm)		—
A.1.2	Conditioning of samples; temperature (°C).....		N
A.1.3	Mounting of samples		N
A.1.4	Test flame		N
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s).....		—
	Sample 2 burning time (s).....		—
	Sample 3 burning time (s).....		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material		N
	Wall thickness (mm)		—
A.2.6	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	High current arcing ignition test (see 4.7.3.2)		N
A.3.1	Samples, material		N
	Wall thickness (mm)		—
A.3.5	Compliance criteria		N
	Sample 1 number of arcs to ignition (pcs)		—
	Sample 2 number of arcs to ignition (pcs)		—
	Sample 3 number of arcs to ignition (pcs)		—



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Clause	Requirement - Test	Result - Remark	Verdict
	Sample 4 number of arcs to ignition (pcs)		—
	Sample 5 number of arcs to ignition (pcs)		—
A.4	Hot wire ignition test (see 4.7.3.2)		N
A.4.1	Samples, material		N
	Wall thickness (mm)		—
A.4.5	Compliance criteria		N
	Sample 1 ignition time (s)		—
	Sample 2 ignition time (s)		—
	Sample 3 ignition time (s)		—
	Sample 4 ignition time (s)		—
	Sample 5 ignition time (s)		—
A.5	Hot flaming oil test (see 4.6.2)		N
A.5.1	Mounting of samples		N
A.5.2	Test procedure		N
A.5.3	Compliance criterion		N
A.6	Flammability tests for classifying materials V-0, V-1 or V-2		N
A.6.1	Samples, material		N
	Wall thickness (mm)		—
A.6.5	Compliance criteria		N
A.6.6	Permitted retest	(see appended table A.6.6)	N
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HFB		N
A.7.1	Sample, material		N
	Wall thickness (mm)		—
A.7.4	Compliance criteria		N
A.7.5	Compliance criteria, HF-2		N
A.7.6	Compliance criteria, HF-1		N
A.7.7	Compliance criteria, HBF		N
A.7.8	Permitted retest, HF-1 or HF-2		N
A.7.9	Permitted retest, HBF		N
A.8	Flammability test for classifying materials HB		N
A.8.1	Samples, material		N
	Sample thickness (mm)		—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
A.8.2	Conditioning of samples; temperature (°C)..... :		N
A.8.4	Test procedure		N
A.8.5	Compliance criteria		N
A.8.6	Permitted retest		N
A.9	Flammability test for classifying materials 5V		N
A.9.1	Samples, material		N
	Sample thickness (mm) :		—
A.9.4	Test procedure, test bars		N
A.9.5	Test procedure, test plaques		N
A.9.6	Compliance criteria :		N
A.9.7	Permitted retest		N
A.10	Stress relief conditioning (see 4.2.7)		N
	Temperature (°C)..... :		—

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N
B.1	General requirements		N
	Position :		—
	Manufacturer :		—
	Type :		—
	Rated values :		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days) :		—
	Electric strength test: test voltage (V) :		—
B.6	Running overload test for DC motors in secondary circuits		N
B.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



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Clause	Requirement - Test	Result - Remark	Verdict
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V)		—
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
	Method of protection		
C.1	Overload test		N
C.2	Insulation		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.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 (see 4.3.13)		N
	Ionizing radiation		N
	Measured radiation (mR/h)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal used		—
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		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
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringling signal		N
M.3.1.1	Frequency (f)..... :		N
M.3.1.2	Voltage (V)		N
M.3.1.3	Cadence; time (s), voltage (V)		N
M.3.1.4	Single fault current (mA)		N
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
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N
	Separate test report		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components					P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾	
Enclosure	various	various	Min. HB, 1.5 mm thickness	Applicable parts of EN 60950	UL	
PCB	various	various	Min. V-1, min. 105 °C	Applicable part of EN 60950	UL	

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



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict

EN 60950: 2000			
<p>GROUP DIFFERENCES, NATIONAL DEVIATIONS AND SPECIAL NATIONAL CONDITIONS IN THE CENELEC COUNTRIES</p> <p>S = Special National Condition D = National Deviation C = CENELEC Common Modification F = other information</p>			

	C: delete all the "country" notes that appear on the following pages of the reference document (IEC 60950:1999): 85, 91, 99, 103, 117, 119, 123, 125, 149, 171, 213, 215, 219, 251, 283, 325, 327, 331, 333 and 407		P
1.2.4.1	S (DK): certain types of Class I appliances (see subclause 3.2.1) may be provided with a plug not establishing earthing continuity when inserted into Danish socket-outlets		N
1.5.1	A (CH, SE): add the following: NOTE: Switches containing mercury such as thermostats, relays and level controllers are not allowed		N
1.5.8	S (NO): due to the IT power system used (see annex V, figure V.7), capacitors are required to be rated for the applicable phase-to phase voltage (230 V)		N
1.7.2	S (NO): class I pluggable equipment type A intended for connection to other equipment or a communication network shall, if safety relies on connection to protective earth, require a marking stating that the equipment must be connected to an earthed mains socket outlet		N
	S (SE): if the separation between the mains and SELV terminal relies upon connection to the safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket-outlet. The marking text shall be in Swedish and as follows: "Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk."		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
	<p>A (DK): supply cords of Class I equipment, which are delivered without a plug must be provided with a visible tag with the following text:</p> <p>"Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket (IEC 417, No. 5019 eller IEC 417, No. 5017)."</p> <p>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:</p> <p>"For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."</p>		N
1.7.5	S (DK): 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		N
	A (DK): Class II equipment shall not be fitted with socket-outlets for providing power to other equipment		N
1.7.12	<p>A (DE): (Gesetz über technische Arbeitsmittel (Gerätesicherheitsgesetz) [Law on technical labour equipment {Equipment safety law}], of 23rd October 1992, Article 3, 3rd paragraph, 2nd sentence, together with the "Allgemeine Verwaltungsvorschrift zur Durchführung des Zweiten Abschnitts des Gerätesicherheitsgesetzes" [General administrative regulation on the execution of the Second Section of the Equipment safety law], of 10th January 1996, article 2, 4th paragraph item 2)</p> <p>Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language.</p> <p>NOTE: Of this requirement, rules for use even only by service personnel are not exempted</p>		N
1.7.15	A (CH): (Ordinance on environmentally hazardous substances SR 814.013) Annex 4.10 of SR 814.013 applies for batteries		—
	F (ALL): warning texts for lithium batteries		N
	Languages.....:		—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
2.2.4	S (NO): requirements according to this annex, sub-clauses 1.7.2 and 6.1.2.1 apply		N
2.3.2	S (NO): requirements according to this annex, sub-clause 6.1.2.1 apply		—
2.3.3	S (NO): requirements according to this annex, sub-clause 6.1.2.1 apply		N
2.3.4	S (NO): requirements according to this annex, sub-clauses 1.7.2 and 6.1.2.1 apply		N
2.7.1	<p>C: replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short circuits and earth faults in primary circuits, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b), and c):</p> <p>a) Except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as integral parts of the equipment.</p> <p>b) For components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short circuit and earth fault protection may be provided by protective devices in the building installation.</p> <p>c) It is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instruction.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet</p>		N
2.7.2	C: This subclause has been declared 'void'		—
2.10.3.1	S (NO): due to the IT power distribution system used (see annex V, figure V.7), the a.c. mains supply voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
3.2.1	<p>S (CH): supply cords of equipment having a rated current not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 884-1 and one of the following dimensions sheets:</p> <ul style="list-style-type: none">- 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 <p>In general, EN 60 309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: - SEV 5932-2:1998: plug type 25, 3L+N+PE 230/400 V, 16 A - SEV 5933-2:1998: plug type 21, L+N 250 V, 16 A</p> <ul style="list-style-type: none">- SEV 5934-2:1998: plug type 23, L+N+PE 250 V, 16 A		N
	<p>S (DK): supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.</p> <p>Class I equipment provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with Standard Sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a rated current exceeding 10 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations Section 107-D1 or EN 60309-2</p>		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
	<p>S (ES): supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993</p> <p>Class I equipment provided with socket-outlets with earth contacts, or which are intended to be used locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2</p>		N
	<p>S (GB): apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a "standard plug" in accordance with Statutory Instrument 1768:1994 – The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE: "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug</p>		N
	<p>S (IE): apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug shall be fitted with a 13 A plug in accordance with Statutory Instrument 525: 1997 – National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997</p>		N
3.2.3	<p>C: delete note 1, and in table 3A delete the conduit sizes in parentheses</p>		



EN 60950									
Clause	Requirement - Test	Result - Remark	Verdict						
	<p>C: replace "60245 IEC 53" by "H05 RR-F", "60227 IEC 52" by "H03 VV-F or H03 VVH2-F" and "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2"</p> <p>In table 3B, replace the first four lines by the following:</p> <table border="0"> <tr> <td>Up to and including 6</td> <td style="text-align: right;">0,75¹⁾</td> </tr> <tr> <td>Over 6; up to and including 10</td> <td style="text-align: right;">(0,75)²⁾ 1,0</td> </tr> <tr> <td>Over 10 up to and including 16</td> <td style="text-align: right;">(1,0)³⁾ 1,5</td> </tr> </table> <p>In the conditions applicable to table 3B, delete the words "in some countries" in condition¹⁾.</p> <p>In NOTE 1, delete the second sentence</p>	Up to and including 6	0,75 ¹⁾	Over 6; up to and including 10	(0,75) ²⁾ 1,0	Over 10 up to and including 16	(1,0) ³⁾ 1,5		N
Up to and including 6	0,75 ¹⁾								
Over 6; up to and including 10	(0,75) ²⁾ 1,0								
Over 10 up to and including 16	(1,0) ³⁾ 1,5								
	S (GB): a power supply cord with conductor of 1,25 mm ² is allowed for equipment with rated current over 10 A and up to and including 13 A		N						
3.3.4	<p>C: in table 3D, delete the fourth line – conductor sizes for 10 to 13 A, and replace with the following:</p> <p>"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>		—						
	<p>S (GB): the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current of over 10 A up to and including 13 A is:</p> <p>- 1,25 mm² to 1,5 mm² nominal cross-sectional area</p>		N						
4.3.6	S (GB): the torque test is performed using a socket outlet complying with BS 1363 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, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C		N						
	S (IE): 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						



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
4.3.13	<p>C: replace the second compliance paragraph by: For equipment using LEDs or lasers, compliance is checked according to EN 60825-1</p> <p>NOTE 1 – If equipment falling within the scope of EN 60950 is inherently a class 1 laser product, i.e. it contains no embedded laser or LED of a higher class number, then a laser warning label or other laser warning statement is not required (see 1.1 of EN 60825-1)</p> <p>Renumber the NOTE below the third compliance paragraph as NOTE 2</p>		N
6.1.2.1	<p>S (NO, SE): add the following text between the first and second paragraph:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none">- two layers of thin sheet material, each of which shall pass the electric strength test below, or- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>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 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV); and- is subjected 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>		N
6.1.2.2	<p>S (FI, NO, SE): the exclusions are applicable for permanently connected equipment and pluggable equipment type B only</p>		N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
G.2	S (NO): due to the IT power distribution system used (see annex V, figure V.7), the a.c. mains supply voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault		N
Annex H	C: 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 μ Sv/h (0,1 mR/h) (see note). Account is taken of the background level		N
	C: replace the NOTE as follows: NOTE – These values appear in Directive 96/29/Euratom		—



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
Annex H (cont.)	<p>A (DE): (Regulation on protection against hazards by X-ray, of 8th January 1987, Article 5 [Operation of X-ray emission source], clauses 1 to 4)</p> <p>a) A licence is required by those who operate an X-ray emission source.</p> <p>b) A licence in accordance with Cl. 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 kV if</p> <p>1) the local dose rate at a distance of 0,1 m from the surface does not exceed 1 µSv/h and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-rays are generated and</p> <p>ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>c) A licence in accordance with Cl. 1 is also not required by persons who operate an X-ray emission source on which the electron acceleration voltage exceeds 20 kV if</p> <p>1) the X-ray emission source has been granted a type approval and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-rays are generated</p> <p>ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded and</p> <p>iii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>d) Furthermore, a licence in accordance with Cl. 1 is also not required by persons who operate X-ray emission sources on which the electron acceleration voltage does not exceed 30 kV if</p> <p>1) the X-rays are generated only by intrinsically safe CRTs complying with Enclosure III, No. 6,</p> <p>2) the values stipulated in accordance with Enclosure III, No. 6.2 are limited by technical measures and specified in the device and</p> <p>3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT</p>	<p>TRF No. 60950__E</p>	N



EN 60950			
Clause	Requirement - Test	Result - Remark	Verdict
Annex P	C: replace the text of this annex by: See Annex ZA		—
Annex Q	C: Add the following notes for the standards indicated: IEC 60127 series NOTE: Harmonized as EN 60127 series (not modified) IEC 60269-2-1 NOTE: Harmonized as HD 630.2.1 S2: 1997 (modified) IEC 60529 NOTE: Harmonized as EN 60529:1991 (not modified) IEC 61032 NOTE: Harmonized as EN 61032:1998 (not modified)		—
Annex ZA	C: This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies. NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.		Info
	—	IEC 60050-151:1978	
	—	IEC 60050-195:1998	
	EN 60065 ¹⁾ :1993 + corr. Nov. 1993	IEC 60065 (mod):1985	
	EN 60073:1996	IEC 60073:1996	
	HD 566 S1:1990	IEC 60085:1984	
	HD 214 S2:1980	IEC 60112:1979	
	HD 21 ²⁾ Series	IEC 60227 (mod) Series	
	HD 22 ³⁾ Series	IEC 60245 (mod) Series	
	EN 60309 Series	IEC 60309 Series	
	EN 60320 Series	IEC 60320 (mod) Series	
	HD 384.3 S2:1995	IEC 60364-3 (mod):1993	
	HD 384.4.41 S2:1996	IEC 60364-4-41 (mod):1992	
	—	IEC 60384-14:1993	
	EN 60417-1:1999	IEC 60417-1:1998	
	EN 60417-2:1999	IEC 60417-2:1998	
	HD 625.1 S1:1996 + corr. Nov. 1996	IEC 60664-1 (mod):1992	
	EN 60695-2-2/1:1996	IEC 60695-2-1/1:1994 + corr. May 1995	
	EN 60695-2-2:1994	IEC 60695-2-2:1991	



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Clause	Requirement - Test	Result - Remark	Verdict
	—	IEC 60695-10-2:1995	
	EN 60730-1:1995	IEC 60730-1 (mod):1993	
	EN 60825-1:1994 + corr. Feb. 1995 + A11:1996	IEC 60825-1:1993	
	EN 60851-3:1996	IEC 60851-3:1995	
	EN 60851-5:1996	IEC 60851-5:1996	
	EN 60851-6:1996	IEC 60851-6:1996	
	—	IEC 60885-1:1987	
	EN 60990:1999	IEC 60990:1999	
	—	IEC 61058-1:1996	
	—	ISO 261:1973	
	—	ISO 262:1973	
	—	ISO 3864:1984	
	—	ISO 4046:1978	
	—	ISO 7000:1989	
	<p>ITU-T Recommendation K.17:1988, Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference</p> <p>ITU-T Recommendation K.21:1996, Resistibility of subscribers' terminals to overvoltages and overcurrents</p> <p>_____</p> <p>¹⁾ EN 60065:1993 is superseded by EN 60065:1998 + corrigendum June 1999, which is based on IEC 60065:1998, mod.</p> <p>²⁾ The HD 21 series is related to, but not directly equivalent with the IEC 60227 series.</p> <p>³⁾ The HD 22 series is related to, but not directly equivalent with the IEC 60245 series.</p>		

