EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

TEST REPORT

EN 60950

Safety of information technology equipment including electrical business equipment

Report reference No.: Compiled by （+ signature）: Approved by （+ signature）: Date of issue:	ASH04032503 Fenix Yang Leon Tien March 25, 2004
Testing laboratory: Address: Testing location:	QuieTek Corporation . 5F, No. No. 20, Lane 76, Rueiguang Rd., Neihu, Taipei, Taiwan, R.O.C. as above
Applicant: Address:	Minitar Corporation. 5FL., NO. 53, Sec. 4 , Chung Hsin Road,San Chung City,Taipei Hsien,Taiwan
Standard:	IEC 60950:1999, EN 60950:2000
Test procedure:	Standard
Type of test object: Trademark: Model / type reference: Manufacturer: Address: Factory: Address: Rating:	Wireless 11g USB Adaptor Minitar MN54GU MICRO-STAR INT'L CO., LTD. No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan. +5Vdc (From USB interface)

Other Aspects:
The completed test report – includes the following documents: (total page 38)

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

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

Test item particulars:

Equipment mobility……..……...:	Transportable.
Operating condition ……..……..:	continuous
Tested for IT power systems……..……..:	No mains connection
IT testing, phase-phase voltage(v)…..……..:	N.A.
Class of equipment…….……..:	Class III
Mass of equipment (kg)…….…..…..:	Approx. 20g
Protection against ingress of water……..……:	IPX0

Possible test case verdicts:

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

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

Comments:

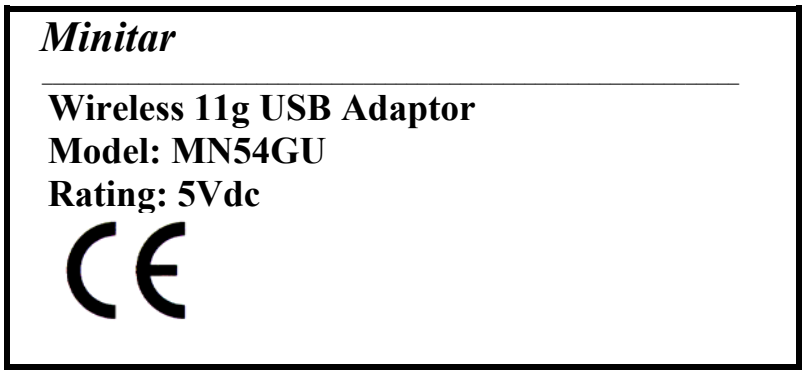
Brief description of the test sample:

The equipment's power source from USB.

Top enclosure - overall 73.5 by 31.5 by 92.7 mm, secured together by tube..
The devices are for continuous operation.
The ambient temperature for 40℃.

Copy of marking plate

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict



1	GENERAL	**P**

1.5	Components		**P**
1.5.1	Comply with IEC 60950 or relevant component standard	Components, which were found to affect safety aspects, comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards (see appended table 1.5.1).	**P**
1.5.2	Evaluation and testing of components	Components, which are certified to IEC and/or national standards, are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	**P**
	Dimensions (mm) of mains plug for direct plug-in :	Not direct plug-in type.	**N**
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N) ..... :	dto.	**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
1.5.3	Thermal controls	No thermal control.	**N**
1.5.4	Transformers	No transformer.	**N**
1.5.5	Interconnecting cables	Interconnection cable for signal connected to PC is carrying only SELV on an energy level below 240VA. → Except for the insulation material there are no further requirements to the interconnection cable.	**P**
1.5.6	Capacitors in primary circuits .....:	Class III equipment.	**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	Class III equipment.	**N**

1.6	Power interface		**P**
1.6.1	AC power distribution systems.....:	Class III equipment.	**N**
1.6.2	Input current	Normal load according to 1.2.2.1 for this equipment is movement of mouse. (see appended table 1.6.2)	**P**
1.6.3	Voltage limit of hand-held equipment	Class III equipment.	**N**
1.6.4	Neutral conductor	Class III equipment.	**N**

1.7	Marking and instructions		**P**
1.7.1	Power rating	See below.	**P**
	Rated voltage(s) or voltage range(s) (V) ..... :	Not shown (no direct connection to the AC mains supply)	**N**
	Symbol for nature of supply for d.c. ..... :	Shown label.	**N**
	Rated frequency or frequency range (Hz) .... :	No direct connection to the AC mains supply.	**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
	Rated current (mA or A) ..... :	Not shown (no direct connection to the AC mains supply)	**N**
	Manufacturer's name/Trademark ..... :	Minitar	**P**
	Type/model ..... :	MN54GU	**P**
	Symbol of Class II ..... :	Class III equipment.	**N**
	Other symbols ..... :	Additional symbols or markings do not give rise to misunderstanding.	**P**
	Certification marks ..... :		**N**
1.7.2	Safety instructions		**N**
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	**N**
1.7.4	Supply voltage adjustment ..... :	No voltage/frequency setting.	**N**
1.7.5	Power outlets on the equipment ..... :	No outlet.	**N**
1.7.6	Fuse identification ..... :	No fuse.	**N**
1.7.7	Wiring terminals	See below.	**N**
1.7.7.1	Protective earthing and bonding terminals	Class III equipment.	**N**
1.7.7.2	Terminal for a.c. mains supply conductors	Class III equipment.	**N**
1.7.8	Controls and indicators	No safety relevant switch or control.	**—**
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 ..... :	No indicators.	**N**
1.7.9	Isolation of multiple power sources ..... :	Class III equipment.	**N**
1.7.10	IT power system	Class III equipment.	**N**
1.7.11	Thermostats and other regulating devices	No thermostat or other regulating device.	**N**
1.7.12	Language ..... :	Marking and user's manual in English. Version of other language will be provided when national approval.	**P**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
1.7.13	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15s and then again for 15s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	**P**
1.7.14	Removable parts	No required markings placed on removable parts.	**N**
1.7.15	Replaceable batteries		**N**
	Language ..... :		**—**
1.7.16	Operator access with a tool ..... :	Only SELV inside.	**N**
1.7.17	Equipment for restricted access locations ..... :	No restricted access location.	**N**

2	PROTECTION FROM HAZARDS	**P**

2.1	Protection from electric shock and energy hazards		**P**
2.1.1	Protection in operator access areas	See below.	**P**
2.1.1.1	Access to energised parts		**—**
	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) trough insulation		**—**
2.1.1.4	Access to hazardous voltage circuit wiring		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
2.1.1.5	Energy hazards .....:	No energy hazard in operator access area. The connectors on the backside of the equipment below 240VA.	**P**
2.1.1.6	Manual controls	No manual controls	**N**
2.1.1.7	Discharge of capacitor s in the primary circuit		**N**
	Time-constant (s); measured voltage (V) .....:		**—**
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	**N**
2.1.3	Protection in restricted access locations	It is not intended to be used in restricted locations	**N**
2.2	SELV circuits		**P**
2.2.1	General requirements	The secondary circuits were tested as SELV. See 2.2.1 to 2.2.4.	**P**
2.2.2	Voltages under normal conditions (V).....:	42.4V peak or 60Vd.c. are not exceeded in SELV circuit under normal operation, see appended table 2.2.2.	**P**
2.2.3	Voltages under fault conditions (V).....:	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120Vd.c. did not exceeded within 0.2s and limits 42.4V peak and 60Vd.c. did not exceeded for longer than 0.2 s, see appended tables 2.2.2 and 5.3.	**P**
2.2.3.1	Separation by double or reinforced insulation (method 1)	Class III equipment.	**N**
2.2.3.2	Separation by earthed screen (method 2)	Dto	**N**
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Dto	**N**
2.2.4	Connection of SELV circuits to other circuits .....:	Only SELV circuit provided.	**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

2.3	TNV circuits *No TNV circuit.*		**N**
2.3.1	Limits		**N**
	Type of TNV circuits .....:		—
2.3.2	Separation from other circuits and from accessible parts		**N**
	Used insulation.....:		—
2.3.3	Separation from hazardous voltages		**N**
	Used insulation.....:		—
2.3.4	Connection of TNV circuits to other circuits		**N**
	Used insulation.....:		—
2.3.5	Test for operating voltages generated externally		**N**

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

2.5	Limited power sources		**N**
	Inherently limited output		**N**
	Impedance limited output		**N**
	Overcurrent protective device limited output		**N**
	Regulating network limited output under normal operating and single fault condition		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
	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 *Class III equipment.*		**N**
2.6.1	Protective earthing		**N**
2.6.2	Functional earthing		**N**
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**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
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		**N**
2.7.1	Basic requirements		**N**
2.7.2	Faults not covered in 5.3		**N**
2.7.3	Short-circuit backup protection		**N**
2.7.4	Number and location of protective devices .. :		**N**
2.7.5	Protection by several devices		**N**
2.7.6	Warning to service personnel.....:		**N**
2.8	Safety interlocks *No safety interlock.*		**N**
2.8.1	General principles		**N**
2.8.2	Protection requirements		**N**
2.8.3	Inadvertent reactivation		**N**
2.8.4	Fail-safe operation		**N**
2.8.5	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**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

2.9	Electrical insulation *Only SELV inside the unit → no requirement on insulation. (See also sub clause 5.3.4)*		**P**
2.9.1	Properties of insulating materials		**P**
2.9.2	Humidity conditioning		**P**
2.9.3	Requirements for insulation		**P**
2.9.4	Insulation parameters		**P**
2.9.5	Categories of insulation		**P**

2.10	Clearances, creepage distances and distances through insulation *See also sub clause 5.3.4.*		**N**
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**
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 ..... :	Not applied for.	**N**
2.10.5.4	Wound components..... :		**N**
2.10.6	Coated printed boards	No coated printed boards.	**N**
2.10.6.1	General		**N**
2.10.6.2	Sample preparation and preliminary inspection ..... :		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
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 ..... :	No hermetically sealed components.	**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	Insulation kept homogenous.	**N**
3	WIRING, CONNECTIONS AND SUPPLY		**P**
3.1	General		**P**
3.1.1	Current rating and overcurrent protection	All internal wires are UL recognized wiring which is PVC insulated, rated VW-1, minimum 80°C, 300V. Internal wiring gauge is suitable for current intended to be carried. No internal wire for primary power distribution.	**P**
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges, which could damage the insulation and cause hazard.	**P**
3.1.3	Securing of internal wiring	Internal wires are routed. The wires are secured by solder pins and quick connect terminals so that a loosening of the terminal connection is unlikely.	**P**
3.1.4	Insulation of conductors		**N**
3.1.5	Beads and ceramic insulators		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
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**
3.1.10	Sleeving on wiring		**N**
3.2	Connection to a.c. mains supplies *Class III equipment.*		**N**
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) .....:		—
3.2.9	Supply wiring space		**N**
3.3	Wiring terminals for connection of external conductors *Class III equipment.*		**N**
3.3.1	Wiring terminals		**N**
3.3.2	Connection of non-detachable power supply cords		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
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 *Class III equipment.*		**N**
3.4.1	General requirement		**N**
3.4.2	Disconnect devices		**N**
3.4.3	Permanently connected equipment		**N**
3.4.4	Parts which remain energized		**N**
3.4.5	Switches in flexible cords		**N**
3.4.6	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		**P**
3.5.1	General requirements	See below.	**P**
3.5.2	Types of interconnection circuits..... :	Interconnection circuits of SELV through the connectors. No ELV interconnection circuits.	**P**
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection	**N**
4	PHYSICAL REQUIREMENTS		**P**
4.1	Stability		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
	Angle of 10°	This appliance is of a stable mechanical construction and does not overbalance when tilted to an angle of 10° from its normal upright position.	**P**
	Test: force (N) ..... :	Equipment is not a floorstanding unit.	**N**

4.2	Mechanical strength		**P**
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**
	Picture tubes > 16 cm intrinsically protected		**N**
	Non-intrinsically protected tubes > 16cm used with protective screen		**N**
	Intrinsically protected tubes: tests on 12 samples		**N**
	Samples subject to ageing: 6		**N**
	Samples subject to implosion test: 6		**N**
	Samples subject to mechanical strength test (steel ball): 6		**N**
	Non-intrinsically protected tubes tested		**N**
4.2.9	High pressure lamps		**N**
4.2.10	Wall or ceiling mounted equipment; force (N) ..... :		**N**

4.3	Design and construction	**P**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	**P**
4.3.2	Handles and manual controls; force (N) ..... :		**N**
4.3.3	Adjustable controls	None that would cause hazard.	**N**
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to with standard usual mechanical stress. For the protection solder pins are used.	**P**
4.3.5	Connection of plugs and sockets		**N**
4.3.6	Direct plug-in equipment	Not direct plug-in type.	**N**
	Torque (Nm) ..... :		**—**
4.3.7	Heating elements in earthed equipment	Class III equipment.	**N**
4.3.8	Batteries	Non-Provide.	**N**
4.3.9	Oil and grease	No oil or grease.	**N**
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	**P**
4.3.11	Containers for liquids or gases	No container for liquid or gas.	**N**
4.3.12	Flammable liquids..... :	No flammable liquid.	**N**
	Quantity of liquid (l) ..... :		**N**
	Flash point (°C)..... :		**N**
4.3.13	Radiation; type of radiation ..... :		**N**
	Equipment using lasers, see separate test report of IEC 60825-1.		**N**

4.4	Protection against hazardous moving parts *No hazardous moving part.*		**N**
4.4.1	General		**N**
4.4.2	Protection in operator access areas		**N**
4.4.3	Protection in restricted access locations		**N**
4.4.4	Protection in service access areas		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
4.5	Thermal requirements		**P**
4.5.1	Temperature rises	(see appended table)	**P**
4.5.2	Resistance to abnormal heat		**N**
4.6	Openings in enclosures		**N**
4.6.1	Top and side openings	No electrical enclosure required.	**N**
	Dimensions (mm) ..... :		**—**
4.6.2	Bottoms of fire enclosures	There is no openings at bottom of enclosure.	**P**
	Construction of the bottom ..... :	(see appended table)	**—**
4.6.3	Doors or covers in fire enclosures		**N**
4.6.4	Openings in transportable equipment	Equipment is not transportable equipment.	**N**
4.6.5	Adhesives for constructional purposes		**N**
4.7	Resistance to fire		**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 4.7.2.1.	**P**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
4.7.2.1	Parts requiring a fire enclosure	With having the following components: ■ components in secondary (not supplied by LPS) ■ insulated wiring the fire enclosure is required. However, according to decisions by operating staff meeting (documents OSM/EE (Chairman)9/99, the enclosure of keyboard or similar devices can be accepted to be made of material class HB min. based on abnormal test. There is no fire hazard after 5.3. Enclosure material rated flammability class HB material is acceptable here.	**P**
4.7.2.2	Parts not requiring a fire enclosure	See 4.7.2.1.	**N**
4.7.3	Materials	See below.	**P**
4.7.3.1	General	PCB rated V-1 or better.	**P**
4.7.3.2	Materials for fire enclosures	See 4.7.2.1.	**N**
4.7.3.3	Materials for components and other parts outside fire enclosures	dto	**N**
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.	**P**
4.7.3.5	Materials for air filter assemblies	No air filter assemblies.	**N**
4.7.3.6	Materials used in high-voltage components	No high voltage component.	**N**

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS	**P**

5.1	Touch current and protective conductor current *Class III equipment without TNV circuit.*	**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
5.1.1	General		**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 A ..... :		**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 *Class III equipment.*		**N**
5.2.1	General		**N**
5.2.2	Test procedure		**N**
5.3	Abnormal operating and fault conditions		**N**
5.3.1	Protection against overload and abnormal operation		**N**
5.3.2	Motors	No motor.	**N**
5.3.3	Transformers	No isolating transformer used.	**N**
5.3.4	Functional insulation..... :		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
5.3.5	Electromechanical components	No electromechanical component.	**N**
5.3.6	Simulation of faults	No other abnormal tests necessary.	**N**
5.3.7	Unattended equipment	Equipment was not intended for unattended use.	**N**
5.3.8	Compliance criteria for abnormal operating and fault conditions		**N**
5.3.8.1	During the tests		**N**
5.3.8.2	After the tests	Considered.	**N**

6	CONNECTION TO TELECOMMUNICATION NETWORKS *No TNV.*		**N**
6.1	Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment		**N**
6.1.1	Protection from hazardous voltages		**N**
6.1.2	Separation of the telecommunication network from earth		**N**
6.1.2.1	Requirements		**N**
	Test voltage (V) .....:		**—**
	Current in the test circuit (mA) .....:		**—**
6.1.2.2	Exclusions .....:		**N**

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

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

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

A	ANNEX , TESTS FOR RESISTANCE TO HEAT AND FIRE		**N**
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 g, and of stationary equipment (see 4.7.3.2)		**N**
A.1.1	Samples		**N**
	Wall thickness (mm) ..... :		**—**
A.1.2	Conditioning of samples; temperature (°C) . :		**N**
A.1.3	Mounting of samples..... :		**N**
A.1.4	Test flame		**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		**N**
	Wall thickness (mm) ..... :		**—**
A.2.2	Conditioning of samples; temperature (°C) . :		**N**
A.2.3	Mounting of samples..... :		**N**
A.2.4	Test flame		**N**
A.2.5	Test procedure		**N**
A.2.6	Compliance criteria		**N**
	Sample 1 burning time (s)..... :		**—**
	Sample 2 burning time (s)..... :		**—**
	Sample 3 burning time (s)..... :		**—**
A.2.7	Alternative test acc. to IEC 60695-2-2, 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**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
A.3.1	Samples		**N**
	Wall thickness (mm) ..... :		—
A.3.2	Test circuit		**N**
A.3.3	Test electrodes		**N**
A.3.4	Test procedure		**N**
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) :		—
	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		**N**
	Wall thickness (mm) ..... :		—
A.4.2	Test circuit		**N**
A.4.3	Mounting of samples..... :		**N**
A.4.4	Test procedure		**N**
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		**N**
	Wall thickness (mm) ..... :		—
A.6.2	Conditioning of samples temperature (°C)... :		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
A.6.3	Mounting of samples..... :		**N**
A.6.4	Test procedure		**N**
A.6.5	Compliance criteria		**N**
A.6.6	Permitted retest		**N**
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HFB		**N**
A.7.1	Sample		**N**
	Wall thickness (mm) ..... :		**—**
A.7.2	Conditioning of samples; temperature (°C) . :		**N**
A.7.3	Test procedure		**N**
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		**N**
	Sample thickness (mm)..... :		**—**
A.8.2	Conditioning of samples; temperature (°C) . :		**N**
A.8.3	Mounting of samples..... :		**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		**N**
	Sample thickness (mm)..... :		**—**
A.9.2	Conditioning of samples temperature (°C)... :		**N**
A.9.3	Test flame		**N**
A.9.4	Test procedure, test bars		**N**
A.9.5	Test procedure, test plaques		**N**
A.9.6	Compliance criteria ..... :		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
A.9.7	Permitted retest		**N**
A.10	Stress relief conditioning (see 4.2.7)		**N**
	Temperature (°C)..... :		—

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

C	ANNEX , TRANSFORMERS		**N**
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
C.1	Overload test		**N**
C.2	Insulation		**N**
D	ANNEX , MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		**N**
D.1	Measuring instrument		**N**
D.2	Alternative measuring instrument		**N**
E	ANNEX , TEMPERATURE RISE OF A WINDING (see 1.4.13 and 4.5.1)		**N**
F	ANNEX , MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		**N**
G	ANNEX , 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 , 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 60 950			
Clause	Requirement - Test	Result -remark	Verdict
J	ANNEX , TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		**N**
	Metal used .....:		—
K	ANNEX , 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**
L	ANNEX , NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		**P**
L.1	Typewriters	No typewriter.	**N**
L.2	Adding machines and cash registers	No adding machine or cash registers.	**N**
L.3	Erasers	No eraser.	**N**
L.4	Pencil sharpeners	No pencil sharpener.	**N**
L.5	Duplicators and copy machines	No duplicator or copy machine.	**N**
L.6	Motor-operated files	No motor-operated file.	**N**
L.7	Other business equipment	See 1.6.2.	**P**
M	ANNEX , CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		**N**
M.1	Introduction		**N**
M.2	Method A		**N**
M.3	Method B		**N**
M.3.1	Ringing signal		**N**
M.3.1.1	Frequency (f)..... :		**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict
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 , INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4).		**N**
	Separate test report		**N**

V	ANNEX , AC POWER DISTRIBUTION SYSTEMS (see 1.6.1) *Class III equipment.*		**N**
V.1	Introduction		**N**
V.2	TN power systems		**N**
V.3	TT power systems		**N**
V.4	IT power systems		**N**

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 Material	Various	Various	HB or better.	UL 94	UL
PCB material	--	--	V-1, min., 105°C	UL 94	UL
[1]) an asterisk indicates a mark which assures the agreed level of surveillance					

1.6.2	TABLE: electrical data (in normal conditions)					**N**
Fuse #	Irated (mA)	U (V)	P (mW)	I (mA)	Ifuse (A)	Condition/status

EN 60 950						
Clause	Requirement - Test			Result -remark		Verdict
Fuse	--	5Vdc	1.723	344.6	344.6	Maximum normal load

2.1.1.5	TABLE: max. V, A, VA test				N
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	

2.1.1.7	TABLE: discharge test				N
Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments	

2.2.2	TABLE: Hazardous voltage measurement			N
Transformer	Location	max. Voltage		Voltage Limitation Component
		V peak	V d.c.	

2.2.2	TABLE: SEL voltage measurement		N
Location	Voltage measured (V)	Comments	

2.4.2	TABLE: limited current circuit measurement					N
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

2.6.3.3	TABLE: ground continue test		**N**
Location		Resistant measured (mΩ)	Comments

2.10.2	Table: working voltage measurement			**N**
Location		RMS voltage (V)	Peak voltage (V)	Comments

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements						**N**
Clearance cl and creepage distance dcr at/of:		Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required dcr (mm)	dcr (mm)

2.10.5	TABLE: distance through insulation measurements				**N**
Distance through insulation di at/of:		U r.m.s. (V)	Test voltage (V)	Required di (mm)	di (mm)

4.5	TABLE: temperature rise measurements			**P**
	test voltage (V) ..... :	+5Vdc		—
	t1 (°C) ..... :	--		—
	t2 (°C) ..... :	--		—
Rise dT of part/at:		DT (K)	Allowed dT (K)	
Ambient		21.7		
Tuner		19.8		
ISL		26.5		

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

U24	17.2	
PWB near ISL	15.6	
PWB near U24	15.7	
Enclosure inside near ISL	10.5	
Enclosure outside near ISL	4.4	

Temperature rise dT of winding:	R_1 (Ω)	R_2 (Ω)	dT (K)	allowed dT (K)	insulation class
Ambient temperature is 40°C					

4.5.2	TABLE: ball pressure test of thermoplastic parts		**N**
	allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)

4.6.1, 4.6.2	Table: enclosure openings	**P**

Location	Size (mm)	Comments
Top	None	
Side	None	
Bottom	None	

5.1.6	TABLE: touch current measurement			**N**

Condition	L→ terminal A (mA)	N → terminal A (mA)	Limit (mA)	Comments

5.2	TABLE: electric strength tests and impulse tests	**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

Test voltage applied between:	Test voltage (V)	Breakdown
Supplementary information		

5.3	TABLE: fault condition tests		N
	ambient temperature (°C) ..... :		—
	model/type of power supply ..... :		—
	manufacturer of power supply ..... :		—
	rated markings of power supply ..... :		—

No.	Component no.	Fault	Test voltage (V)	Test time	Fuse no.	Fuse current (A)	Result
Supplementary information							
Note: In fault column, s-c=short-circuited, o-l=over-loaded.							

A.6.5	TABLE: flammable test for classifying materials V-0, V-1 or V-2	N
Sample no./ref.	Afterflame time (s) t_1 or t_2	Afterflame + afterglow (s) after 2nd flame application $t_2 +$ $_3$
1/A		
2/A		
3/A		
4/A		
5/A		
6/B		
7/B		
8/B		
9/B		
10/B		

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

Supplementary information:
Total afterflame time (s) for any condition set t_1 + t_2 for five (5) specimens:

A.6.6	TABLE: flammable test for classifying materials V-0, V-1 or V-2	**N**
Sample no.	Afterflame time (s) t_1 or t_2	Afterflame + afterglow (s) after 2nd flame application t_2 +t_3
11		
12		
13		
14		
15		
Supplementary information:		
Total afterflame time (s) for any condition set t_1 + t_2 for five (5) specimens:		

A.7.4, A.7.5, A.7.6 and A.7.7	TABLE: flammability test for classifying foam materials HF-1, HF-2 or HBF			**N**
Sample no./ref.	Flame time (s)	Glow time (s)	Flaming/glowing distance from he end (mm)	Comment (for A.7.7 Burning rate mm/min)
1/A				
2/A				
3/A				
4/A				
5/A				
6/B				
7/B				
8/B				
9/B				

EN 60 950				
Clause	Requirement - Test		Result -remark	Verdict
10/B				
Supplementary information:				

A.7.8	TABLE: flammability test for classifying foam materials HF-1 or HF-2			**N**
Sample no.	Flame time (s)	Glow time (s)	Flaming/glowing distance from the end (mm)	Comment
11				
12				
13				
14				
15				
supplementary information:				

A.7.9	TABLE: flammability test for classifying foam materials HBF			**N**
Sample no.	Flame time (s)	Glow time (s)	Flaming/glowing distance from the end (mm)	Comment (for A.7.7 Burning rate mm/min)
11				
12				
13				
14				
15				
Supplementary information:				

A.8.5	TABLE: flammable test for classifying materials HB	**N**

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

Sample no.	Flaming/glowing rate (mm/min)	Flaming/glowing distance from reference mark (mm)
1		
2		
3		
Supplementary information:		

A.8.6	TABLE: flammable test for classifying materials HB	N
Sample no.	Flaming/glowing rate (mm/min)	Flaming/glowing distance from reference mark (mm)
4		
5		
6		
Supplementary information:		

A.9.6	TABLE: flammability test for classifying materials 5V			N
Sample no./ ref.	Test bars		Test plaques	
	Flaming + glowing time (s)	Burning distance (mm)	Flaming + glowing time (s)	Burning distance (mm)
1/A				
2/A				
3/A				
4/A				
5/A			—	—
6/B				
7/B				
8/B				
9/B				

EN 60 950				
Clause	Requirement - Test		Result -remark	Verdict
10/B			—	—
Supplementary information:				

A.9.7	TABLE: flammability test for classifying materials 5V			**N**
Sample no.	Test bars		Test plaques	
	Flaming + glowing time (s)	Burning distance (mm)	Flaming + glowing time (s)	Burning distance (mm)
11				
12				
13				
14				
15			—	—
Supplementary information:				

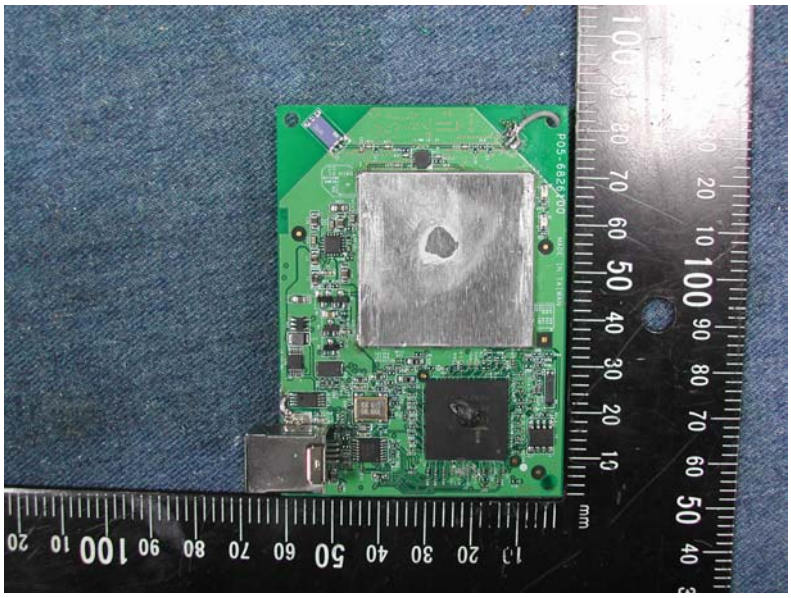
EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict

Photo

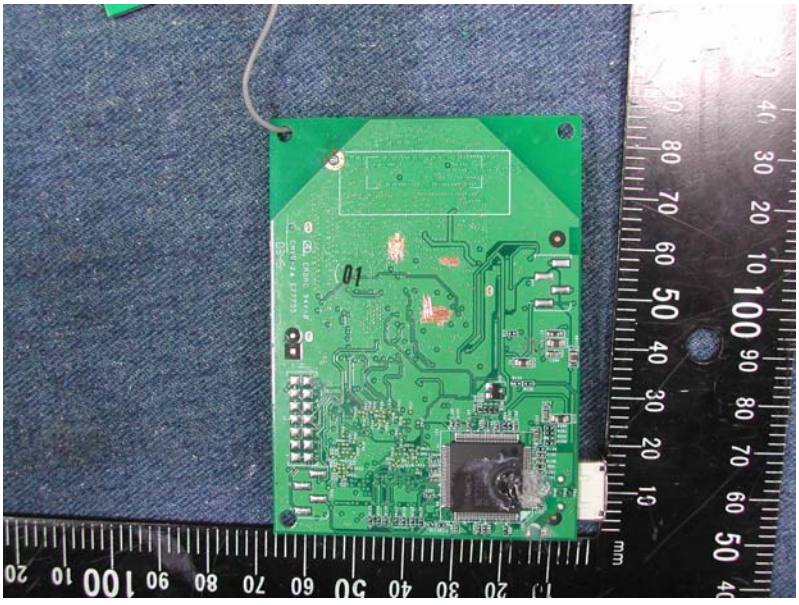
VIEW 1

VIEW 2

EN 60 950			
Clause	Requirement - Test	Result -remark	Verdict



VIEW 3



VIEW 4