REPORT

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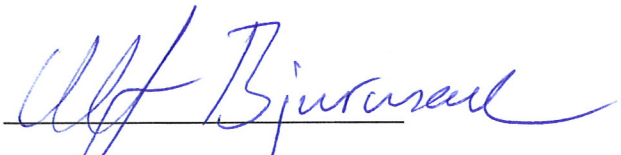
Elektroniktest
Mikroelektronik
Datateknik
Ljus & Optik
Akustik & Vibration

CONFORMITY VERIFICATION OF Explorer 500
ACCORDING TO EN 60950-1:2000 /A11:2004
Thrane & Thrane

Project no.: E701258
Date: 2005-09-09

Title	CONFORMITY VERIFICATION OF Explorer 500 ACCORDING TO EN 60950-1
Project no.	E701258
Client	Thrane & Thrane Lundtoftegaardsvej 93 D 2800 Kgs. Lyngby Denmark Tlf.: +45 39 55 88 00
Contact person	Morten Becker Saul
Test object	EXPLORER 500, serial number ALPHA A9.
Specification	EN 60950-1:2000 /A11:2004. Information technology equipment - Safety – Part 1: General requirements
Carried out by	Ulf Bjurman
Results	The test object complies generally with the specification. Detailed description of non-conformance and remarks are listed in *section 2.*
Date	2005-09-09
Responsible	 DELTA Development Technology AB

Please note that we have not tested the equipment for any errors which may arise before, during, or after the change of date from the year 1999 to the year 2000, either in the equipment or its interaction with other products

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1. Introduction

This report describes the safety inspection and test for demonstration of conformity between the EXPLORER 500, a broadband mobile terminal, manufactured by Thrane & Thrane and the safety requirements of the Directive 73/23/EEC of 19. February 1973 as amended by Directive 93/68/EEC of 22. July 1993. The low Voltage Directive.

1.1 Specification

The selected standard for the demonstration is EN 60950-1:2000 /A11:2004 Information technology equipment - Safety – Part 1: General requirements. This standard has been published together with its amendment for this purpose in the Official Journal of the EEC. The standard including both amendments has been used for this analysis.

1.2 Test object

The test was performed on one sample of the EXPLORER 500. Datasheets for specific components have been delivered from Thrane & Thrane. It appears from the report in *Annex 1* where and how this information has been used. If some details of this report are in contradiction with other parts of the documentation, the content of this report shall be considered as basis for the reported results.

1.3 Method of analysis

The sample of the EXPLORER 500 together with the reports for specific components has been analysed according to the report shown in *Annex 1* and *Annex 2*. The analysis has been made as a combination of inspection and test as appropriate.

2 Results

The completed report in *Annex 1* lists the clauses of the standard, a short statement of the requirement/test, the results of inspection/test for the particular clause and the verdict for that clause. *Annex 2* contains lists of components and parts with specific functions related to the electrical safety of the product. The verdicts of these lists are transferred to the check list in *Annex 1*. The possible verdicts are:

C: Compliance. The actual design complies with the requirement.

NC: Non-Compliance. The actual design does not comply with the requirement.

REM: Remark. The Compliance / Non-Compliance depends on details not verifiable on the test object.

NA: Not Applicable. The specific requirement is irrelevant for the actual design.

A number follows the verdicts NC and REM. This reference number and a reference to the actual clause of EN 60950-1 appear in section 2.1 and 2.2 below together with a description of the details observed.

2.1 List of points of non-compliance

No non-compliances.

2.2 List of point of remark

There are no remarks

3. Conclusion

The test object complies generally with the requirements of EN 60950-1. This compliance has been demonstrated on the test object, ref. section 1.2. There are no non-compliances, see section 2.1. There are no remarks, see section 2.2.

Clause	Requirement/test	Result	Verdict
1	GENERAL		-
1.5	Components	As listed below	-
1.5.1	Comply with IEC 950 or relevant component standard.	CE-marked Power Supply, CE-marked Battery	C
1.5.2	Evaluation and testing of components	CE-marked Power Supply, CE-marked Battery	C
1.5.3	Transformers	CE-marked Power Supply	C
1.5.4	Flammabilty class of high voltage components	CE-marked Power Supply, CE-marked Battery	C
1.5.5	Interconnecting cables	CE-marked Power Supply	C
1.5.6	Mains capacitors	CE-marked Power Supply	C
1.5.7	Double insulation or reinforced insulation bridged by components	CE-marked Power Supply	C
1.5.8	Components in equipment for IT power distribution systems		NA
1.6	POWER INTERFACE	As listed below	-
1.6.1	AC power distribution systems	TN or TN-S	-
1.6.2	Rated Voltage (V)	100 to 240 VAC	C
1.6.2	Rated Current (A)	240 V 50W gives 0.2 A	C
1.6.2	Measured Current (A)	190 mA	C
1.6.2	Deviation	< 10 %	C
1.6.3	Voltage limits of hand-held equipment	Not applicable	NA
1.6.4	Neutral conductor	Earth conductor isolated	C
1.7	MARKING AND INSTRUCTIONS	As listed below	C
1.7.1	Rated voltage (V)	100 to 240 VAC	C
1.7.1	Rated current (A)	40 W	C
1.7.1	Rated frequency (Hz)	47 to 63 Hz	C
1.7.1	Manufacturer	Thrane & Thrane A/S.	C
1.7.1	Trademark	Not necessary	NA
1.7.1	Type/Model	EXPLORER 500	C
1.7.1	Symbol of class II	Class I equipment	NA
1.7.1	Certification marks	CE-mark	C
1.7.2	Safety Instructions	No special information for MAINS connection	NA
1.7.3	Short duty cycles	Not applicable	NA
1.7.4	Mains voltage adjustment	Only one voltage setting	NA
1.7.5	Power outlets	No standard power supply outlet	NA
1.7.6	Fuses	No user changeble fuses	NA
1.7.7	Wiring terminals	No marking of phase and neutral	NA
1.7.8.1	Clear indications of switches and controls	Mains power controls clearly indicated.	C
1.7.8.2	Colours of controls and indicators	No mains power colours controls and indicators.	NA
1.7.8.3	Symbols at controls	Not applicable	NA
1.7.8.4	Figures used for indications of positions of controls	Not applicable	NA
1.7.8.5	Location of markings and indications for swithes and controls	Marking on user control panel	C
1.7.9	Isolation of multiple power sources	Only one mains supply.	NA

Clause	Requirement/test	Result	Verdict
1.7.10	IT power systems	Not designed fo IT power systems	NA
1.7.11	Protection in building installation	Not meansion in installation manual	NA
1.7.12	High leakage current	Not applicable, ref. 5.2	NA
1.7.13	Thermostats and other regulating devices	No thermostats	C
1.7.14	Language	English text in markings	C
1.7.15	Durability		C
1.7.16	Removable parts	No removable parts with warning signs that risk to be missplaced	C
1.7.17	Lithium batteries	Statement in user manual	C
2	PROTECTION FROM HAZARDS	As listed below	-
2.1	PROTECTION AGAINST ELECTRIC SHOCK AND ENERGY HAZARDS	As listed below	-
2.1.1	Access to energized parts	Operator cannot access hazardous voltage parts.	C
2.1.2	Protection in service access areas	No service access area	NA
2.1.3	Protection in restricted access locations	No restricted access locations	NA
2.2	SAFETY EXTRA-LOW VOLTAGE (SELV) CIRCUITS	As listed below	-
2.2.2	Voltage under normal conditions	OK	C
2.2.3	Voltage under faults conditions	CE-marked Power Supply	C
2.2.3	Method used for separation	Method 1	C
2.2.4	Connection of SELV circuits other circuits	SELV can be con-nected to other circuits but only SELV	C
2.3	TNV circuits	As listed below	-
2.3.1	Limits	TNV-1 circuit	C
2.3.2	Separation from other circuits and from accessible parts	Isolation 1000 VAC 1.2 mm creep 1mm clear	C
2.3.3	Separation from hazardous voltages		C
2.3.4	Connection of TNV circuits to other circuits	Isolation	C
2.3.5	Test for operating voltages generated externally	Tested OK at 1000 V AC	C
2.4	LIMITED CURRENT CIRCUITS	No touchable limited current circuits	NA
2.4.1	Voltage (V)	Not applicable	NA
	Measured current (mA)	Not applicable	NA
	Measured capacitance (uF)	Not applicable	NA
	Measure charge (uC)	Not applicable	NA
	Measured energy (mJ)	Not applicable	NA
2.5	Limited power sources	No limited power source	NA
2.6	PROVISION FOR EARTHING	As listed below	-
2.6.1	Protective earthing	CE-marked power supply	C
2.6.2	Functional earthing	No functional earthing	NA
2.6.3	Protective earthing and protective bonding conductors	CE-marked Power Supply	C
2.6.4	Terminals	CE-marked Power Supply	C
2.6.5	Integrity of protective earthing	Not applicable	NA
2.7	OVERCURRENT AND EARTH FAULT PROTECTION IN PRIMARY CIRCUITS	See below	-
2.7.1	Basic requirements	CE-marked Power Supply	C

Clause	Requirement/test	Result	Verdict
2.7.2	Faults not covered by 5.3	Not applicable	NA
2.7.3	Short-circuit backup protection	Not applicable	NA
2.7.4	Number and location of protective devices	Not applicable	NA
2.7.5	Protection by several devices	Not applicable	NA
2.7.6	Warning to Service Personel	Not applicable	NA
2.8	SAFETY INTERLOCKS	See below	-
2.8.1	General principles	Not applicable	NA
2.8.2	Protection requirements	Not applicable	NA
2.8.3	Inadvertent reactivation	Not applicable	NA
2.8.4	Fail-safe operation	Not applicable	NA
2.8.5	Moving parts	Not applicable	NA
2.8.6	Overriding	Not applicable	NA
2.8.7	Switches and relays	Not applicable	NA
2.8.8	Mechanical actuators	Not applicable	NA
2.9	Electrical insulation	See below	-
2.9.1	Nominal Voltage (V)	CE-marked Power Supply	C
2.9.2	Humidity conditioning	CE-marked Power Supply	C
2.9.3	Grade of insulation	CE-marked Power Supply and Basic insulation SELV to TNV-1 circuit	C
2.10	Clearances, creepage distances and distances through insulation	See below	-
2.10.3	Clearance	CE-marked Power Supply and 1 mm fot SELV TNV-1 circuit	C
2.10.4	Creepage distances	CE-marked Power Supply and 1.3 mm fot SELV TNV-1 circuit	C
2.10.5.1	Minimum distances through insulation	CE-marked Power Supply	C
2.10.5.2	Thin sheet material	Not applicable	NA
2.10.5.3	Printed boards	CE-marked Power Supply	C
2.10.5.4	Wound components without interleaved insulation	CE-marked Power Supply	C
2.10.6	Coated printed boards	CE-marked Power Supply	C
2.10.7	Enclosed and sealed parts	Not applicable	NA
2.10.8	Spacing filled by insulating compound	Not applicable	NA
2.10.9	Component external terminations	Ethernet connector	C
2.9.9	Insulation with varying dimensions	Not applicable	NA
3	WIRING, CONNECTIONS AND SUPPLY	As listed below	-
3.1	General	See below	-
3.1.1	Current rating and overcurrent protection	CE-maked powersupply	C
3.1.2	Protection against mechanical damage	OK	C
3.1.3	Securing of internal wiring	OK	C
3.1.4	Insulation of conductors	OK	C
3.1.5	Beads and ceramic insulators	Not applicable	NA
3.1.6	Screws for electrical contact pressure	Not applicable	NA
3.1.7	Insulating materials in electrical connections		C
3.1.8	Self-tapping and spaced thread screws	Not used	C
3.1.9	Termination of conductors	CE-marked powersupply	C
3.1.10	Sleeving on wiring	Not applicable	NA
3.2	Connection to an a.c. mains supply or a d.c. mains supply	See below	-

Clause	Requirement/test	Result	Verdict
3.2.1	Means of connection	Detachable power supply cord	C
3.2.2	Multiple supply connections	Not applicable	NA
3.2.3	Permanently connected equipment	Detachable power supply cord	NA
3.2.4	Appliance inlet	Appliance inlet. OK	C
3.2.5	Type and cross-section of power supply cord	0.75 mm2	C
3.2.6	Cord anchorages and strain relief	Not applicable	NA
3.2.7	Protection against mechanical damage	Detachable power supply cord	NA
3.2.8	Cord guards	Detachable power supply cord	NA
3.2.9	Supply wiring space	Detachable power supply cord	C
3.3	WIRING TERMINALS FOR EXTERNAL POWER SUPPLY CONDUCTORS	See below	-
3.3.1	Terminals	Not applicable	NA
3.3.2	Connection of non-detachable power supply cords	Not applicable	NA
3.3.3	Screw terminals	Not applicable	NA
3.3.4	Conductor sizes to be connected	Not applicable	NA
3.3.5	Wiring terminal sizes	Not applicable	NA
3.3.6	Wiring terminal design	Not applicable	NA
3.3.7	Grouping of wiring terminals	Not applicable	NA
3.3.8	Stranded wire	Not applicable	NA
3.4	Disconnection from the mains supply	See below	-
3.4.1	General requirement	Power coord	C
3.4.2	Disconnect devices	Power coord	C
3.4.3	Permanently connected equipment	Power coord	NA
3.4.4	Parts which remain energized	SELV	C
3.4.5	Switches in flexible cords	Not used	NA
3.4.6	Single-phase and d.c. equipment	Not applicable	NA
3.4.7	Three-phase equipment	Not applicable	NA
3.4.8	Switches as disconnect devices	Not used	NA
3.4.9	Plugs as disconnect devices		C
3.4.10	Interconnected equipment	Not applicable	NA
3.4.11	Multiple power sources	Not applicable	NA
3.5	Interconnection of equipment	See below	C
3.5.1	General requirements	TNV-1 and selv circuits	C
3.5.2	Types of interconnection circuits	TNV-1 and selv circuits	C
3.5.3	ELV circuits as interconnection circuits	Not applicable	NA
4	PHYSICAL REQUIREMENTS	As listed below	-
4.1	STABILITY AND MECHANICAL HAZARDS	OK	C
4.2	MECHANICAL STRENGTH AND STRESS RELIEF	As listed below	-
4.2.2	Steady force test, 10 N	OK	C
4.2.3	Steady force test, 30 N	OK	C
4.2.4	Steady force test, 250 N	OK	C
4.2.5	Impact test	CE-marked powersupply and battery	C

Clause	Requirement/test	Result	Verdict
4.2.6	Drop test	CE-marked powersupply and battery	C
4.2.7	Stress relief test	CE-marked powersupply and battery	C
4.2.8	Cathode ray tubes	Not applicable	NA
4.2.9	High pressure lamps	Not applicable	NA
4.2.10	Wall or ceiling mounted equipment	Not applicable	NA
4.3	Design and construction	As listed below	-
4.3.1	Edges and corners	Rounded edges and corner	C
4.3.2	Handles and manual controls		C
4.3.4	Adjustable controls	Not applicable	NA
4.3.5	Securing of parts		C
4.3.6	Direct plug-in equipment		C
4.3.7	Heating elements in earthed equipment	Not applicable	NA
4.3.8	Batteries	CE-marked battery	C
4.3.9	Oil and grease	Not applicable	NA
4.3.10	Dust, powders, liquids and gases	Not applicable	NA
4.3.11	Containers for liquids or gases	Not applicable	NA
4.3.12	Flammable liquids	Not applicable	NA
4.3.13	Radiation	Not applicable	NA
4.4	Protection against hazardous moving parts	See below	-
4.4.1	General	Not applicable	NA
4.4.2	Protection in operator access areas	Not applicable	NA
4.4.3	Protection in restricted access locations	Not applicable	NA
4.4.4	Protection in service access areas	Not applicable	NA
4.5	Thermal requirements	See below	-
4.5.1	Maximum temperatures	Internal thermal limit 60 deg celcius	C
4.5.2	Resistance to abnormal heat		C
4.6	Openings in enclosures	No openings	C
4.6.1	Top and side openings	No openings	NA
4.6.2	Bottoms of fire enclosures	No openings	NA
4.6.3	Doors or covers in fire enclosures	No openings	NA
4.6.4	Openings in transportable equipment	No openings	NA
4.6.5	Adhesives for constructional purposes	Not used	NA
4.7	RESISTANCE TO FIRE	See below	-
4.7.1	Reducing the risk of ignition and spread of flame	CE-marked powersupply and Method 1 for the EXPLORER 500	C
4.7.2	Conditions for a fire enclosure	V-0 class material	C
4.7.3	Materials	V-0 class material	C
5	Electrical requirements and simulated abnormal conditions	CE-marked powersupply	C
5.1	Touch current and protective conductor current	CE-marked powersupply	C
5.2	Electric strength	CE-marked powersupply	C
6	Connection to telecommunication networks	See below	-
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment	TNV-1 and selv circuits isolation	C
6.1.1	Protection from hazardous voltages	TNV-1 to selv circuits isolation	C

Clause	Requirement/test	Result	Verdict
6.1.2	Separation of the telecommunication network from earth	TNV-1 to selv earth	C
6.2	Protection of equipment users from overvoltages on telecommunication networks	See below	-
6.2.1	Separation requirements	Isolation	C
6.2.2	Electric strength test procedure	1.5 kVAC to earth 1 kVAC to SELV	C
6.3	Protection of the telecommunication wiring system from overheating	Not applicable	NA
7	Connection to cable distribution systems	Not applicable	NA
7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	Not applicable	NA
7.2	Protection of equipment users from overvoltages on the cable distribution system	Not applicable	NA
7.3	Insulation between primary circuits and cable distribution systems	Not applicable	NA

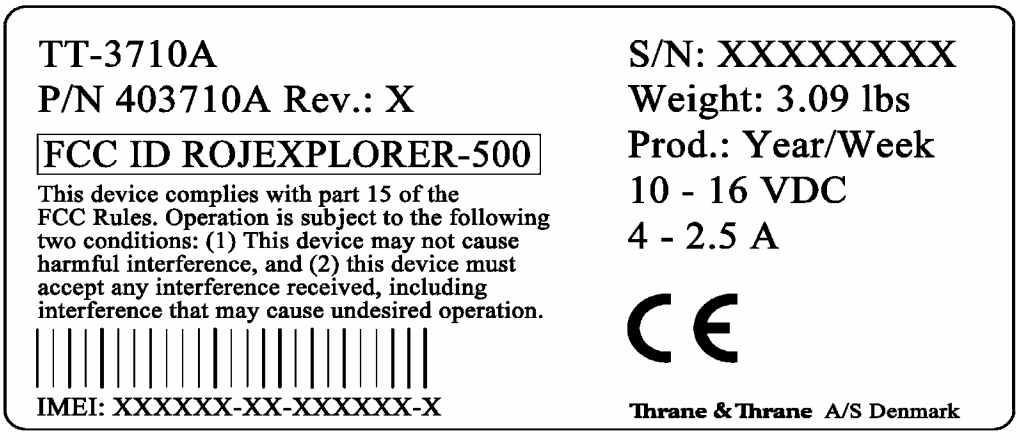
List of components ref. EN 60950 clause 1.5							
Diagr. ID	Description	Data ref.	Specification ref.	Safety involv.	Correct applic.	Verdict	Comment
	Power Supply	UP0501Q-15P/15T	Doc nr 3, 4 in DOC-list Annex3	IEC 60950	YES	C	
	Battery	3S/LiC 18650 11,1V/2200mAh (Thrane & Thrane) VBK.Nr.:56620 703 099 Mat.Nr.: 689049	Doc nr 2, 6 in DOC-list Annex4	Internal fuse	YES	C	

List of parts providing insulation ref. EN 60950 clause 2.2.4							
Diagr. ID	Description	Data reference / observed characteristic	Specification ref.	Insulation P to N	Insulation P/N to E	Insulation P/N to SELV	Verdict
	Power Supply	UP0501Q-15P/15T	Doc nr 3, 4 in DOC-list Annex3	C	C	C	C
	Ethernet transformer	TG110-S055N2	Doc nr 5 in DOC-list Annex3	-	-	-	C
	Ethernet connector	TT31-203018	Doc nr 7 in DOC-list	-	-	-	C

Components Involving Insulation & Fire risk				
Diagram ID	Description	Additional data from GPV Elbau	Comments	Important missings
	Power Supply	UP0501Q-15P/15T	Doc nr 3, 4 in DOC-list Annex3	

Name	Doc. Id.	Version	Revision	Date
User Manual EXPLORER 500	TT 98-122274-E	-	-	-
LEXAN ML6411 Desciption and test report of plastic used in Battery unit	LEXAN ML6411 Europe-Africa-Middle East: DEVELOPMENTAL	-	-	-
CB test certificate on Power supply TÜF Product services GmBH	Certificate nr: DE 3-53507	-	-	2005-06-13
Specification of Power supply UP0501Q( ) ( )/P( ) ( )T SERIES from Universal Microelectronics	UP0501Q-( ) ( )P	-	-	-
Eternet transformer TG110-S055N2, ULTRA Series manufacturer: Halo Electronics Inc.	ULTRA Series 16 Pin SOIC page in HIGH SPEED LAN document from HALO	-	-	-
EG-Konformitätserklärung Battery 3S/LiC 18650 11,1V/2200mAh (Thrane & Thrane) VBK.Nr.:56620 703 099 Mat.Nr.: 689049. Varta-Microbattery GmbH Daimlerstrasse 1 73479 Ellwangen	Ellwangen, 05.06.2005	-	-	2005-05-06
Connector Block (containing the Ethernet contact) TT31-203018	C2MP0-1005	-	-	2004-06-29
Short circuit test described in mail from Morten Becker Saul	Mail 2005-09-15	-	-	2005-09-15

Copy of the marking plate



Annex 4 **Photo of unit**

Photo 1 EXPLORER 500