



DELTA Report

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DELTA Development
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*CONFORMITY VERIFICATION OF VoIP handset & cradle
ACCORDING TO EN 60950-1:2000 /A11:2004
performed for Thrane & Thrane*

*Project no.: E702218
Date: 8 June 2009*

Title CONFORMITY VERIFICATION OF VoIP handset & cradle
ACCORDING TO EN 60950-1:2000 /A11:2004
performed for Thrane & Thrane

Project no. E702218

Client Thrane & Thrane
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Test object VoIP handset & cradle TT-3672B, TT-3674B

Test date 2008-11-03, 2009-05-20

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 with the specification.

Detailed description of conformance and remarks
are listed in *section 2*.

Date 2009-06-08

Responsible



DELTA Development Technology AB

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1. Introduction

This report describes the safety inspection and test for demonstration of conformity between the VoIP handset & cradle, TT-3672B and TT-3674B, 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 VoIP handset & cradle TT-3672B and TT-3674B. 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 VoIP handset & cradle 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*

There are no non-compliances.

2.2 *List of point of remark*

There are no remarks

3. *Conclusion*

The test object complies 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.

4. *Revision*

Revision	Remark	Date
-	New document	2009-06-08

Clause	Requirement/test	Result	Verdict
1	GENERAL		-
1.5	Components	As listed below	-
1.5.1	Comply with IEC 950 or relevant component standard.		C
1.5.2	Evaluation and testing of components		C
1.5.3	Transformers		NA
1.5.4	Flammability class of high voltage components		C
1.5.5	Interconnecting cables		C
1.5.6	Mains capacitors		NA
1.5.7	Double insulation or reinforced insulation bridged by components		NA
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)	12-24 VDC and USB	C
1.6.2	Rated Current (A)	7 Watt and USB	C
1.6.2	Measured Current (A)	12-24 VDC and USB	NA
1.6.2	Deviation		NA
1.6.3	Voltage limits of hand-held equipment		NA
1.6.4	Neutral conductor		NA
1.7	MARKING AND INSTRUCTIONS	As listed below	C
1.7.1	Rated voltage (V)	12-24 VDC and USB	C
1.7.1	Rated current (A)	12-24 VDC and USB	C
1.7.1	Rated frequency (Hz)	12-24 VDC and USB	C
1.7.1	Manufacturer	Thrane & Thrane A/S.	NA
1.7.1	Trademark	Not necessary	NA
1.7.1	Type/Model	TT-3672B and TT3674B	C
1.7.1	Symbol of class II	12-24 VDC and USB	NA
1.7.1	Certification marks	CE-mark	C
1.7.2	Safety Instructions		NA
1.7.3	Short duty cycles	Not applicable	NA
1.7.4	Mains voltage adjustment	12-24 VDC and USB	NA
1.7.5	Power outlets	No standard power supply outlet	NA
1.7.6	Fuses	No user changeable fuses	NA
1.7.7	Wiring terminals		NA
1.7.8.1	Clear indications of switches and controls		C
1.7.8.2	Colours of controls and indicators		NA
1.7.8.3	Symbols at controls	Not applicable	C
1.7.8.4	Figures used for indications of positions of controls	Not applicable	C
1.7.8.5	Location of markings and indications for switches and controls	Marking on user control panel	C
1.7.9	Isolation of multiple power sources	12-24 VDC and USB	NA
1.7.10	IT power systems	12-24 VDC and USB	NA
1.7.11	Protection in building installation	12-24 VDC and USB	NA
1.7.12	High leakage current	Not applicable	NA
1.7.13	Thermostats and other regulating devices	No thermostats	NA
1.7.14	Language		C
1.7.15	Durability		C

Clause	Requirement/test	Result	Verdict
1.7.16	Removable parts	No removable parts with warning signs that risk to be misplaced	C
1.7.17	Lithium batteries	Not user serviceable	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		C
2.2.3	Voltage under faults conditions		C
2.2.3	Method used for separation	Not applicable	NA
2.2.4	Connection of SELV circuits other circuits	SELV can be connected to other circuits but only SELV	C
2.3	TNV circuits	As listed below	-
2.3.1	Limits	Not applicable	NA
2.3.2	Separation from other circuits and from accessible parts	Not applicable	NA
2.3.3	Separation from hazardous voltages	Not applicable	NA
2.3.4	Connection of TNV circuits to other circuits	Not applicable	NA
2.3.5	Test for operating voltages generated externally	Not applicable	NA
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	Not applicable	NA
2.6.2	Functional earthing	No functional earthing	NA
2.6.3	Protective earthing and protective bonding conductors	12-24 VDC and USB	NA
2.6.4	Terminals	12-24 VDC and USB	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	12-24 VDC and USB	NA
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 Personnel	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

Clause	Requirement/test	Result	Verdict
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)	Power over ethernet	NA
2.9.2	Humidity conditioning		C
2.9.3	Grade of insulation	Not applicable	NA
2.10	Clearances, creepage distances and distances through insulation	See below	-
2.10.3	Clearance	Not applicable	NA
2.10.4	Creepage distances	Not applicable	NA
2.10.5.1	Minimum distances through insulation	Not applicable	NA
2.10.5.2	Thin sheet material	Not applicable	NA
2.10.5.3	Printed boards		C
2.10.5.4	Wound components without interleaved insulation		C
2.10.6	Coated printed boards		NA
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	Not applicable	NA
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		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	-
3.2.1	Means of connection	Power over ethernet	NA
3.2.2	Multiple supply connections	Not applicable	NA
3.2.3	Permanently connected equipment	Power over ethernet	NA
3.2.4	Appliance inlet	Power over ethernet	NA
3.2.5	Type and cross-section of power supply cord	Power over ethernet	NA
3.2.6	Cord anchorages and strain relief	Power over ethernet	NA
3.2.7	Protection against mechanical damage	Power over ethernet	NA
3.2.8	Cord guards	Power over ethernet	NA
3.2.9	Supply wiring space	Power over ethernet	NA
3.3	WIRING TERMINALS FOR EXTERNAL POWER SUPPLY CONDUCTORS	See below	-

Clause	Requirement/test	Result	Verdict
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	No mains supply	NA
3.4.2	Disconnect devices	No mains supply	NA
3.4.3	Permanently connected equipment	No mains supply	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	NA
3.5.1	General requirements	Not applicable	NA
3.5.2	Types of interconnection circuits	Not applicable	NA
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	OK	C
4.2.6	Drop test	The headphone plug was	Rem
4.2.7	Stress relief test	OK	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		NA
4.3.7	Heating elements in earthed equipment	Not applicable	NA
4.3.8	Batteries	0	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

Clause	Requirement/test	Result	Verdict
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	Not applicable	NA
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	-
	Reducing the risk of ignition and spread of flame	Method 1	C
4.7.1			C
4.7.2	Conditions for a fire enclosure	V-0 class material	C
4.7.3	Materials	V-0 class material	C
	Electrical requirements and simulated abnormal conditions	Assessed	C
5			
5.1	Touch current and protective conductor current	Not applicable	NA
5.2	Electric strength		C
6	Connection to telecommunication networks	See below	-
	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment	Not applicable	NA
6.1			
6.1.1	Protection from hazardous voltages	Not applicable	NA
6.1.2	Separation of the telecommunication network from earth	Not applicable	NA
	Protection of equipment users from overvoltages on telecommunication networks	See below	-
6.2			
6.2.1	Separation requirements	Isolation	C
6.2.2	Electric strength test procedure	Not applicable	NA
	Protection of the telecommunication wiring system from overheating	Not applicable	NA
6.3			
7	Connection to cable distribution systems	Not applicable	NA
	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
7.1			
7.2	Protection of equipment users from overvoltages on the cable distribution system	Not applicable	NA
	Insulation between primary circuits and cable distribution systems	Not applicable	NA
7.3			

List of components ref. EN 60950 clause 1.5

Diagr. ID	Description	Data ref.	Specification ref.	Safety involv.	Correct applic.	Verdict	Comment
	Battery		Doc nr 3, 4, 5, 7, 8, 9, 10 in DOC-list Annex3	Fire	Yes	C	
	Charging circuit		Doc nr 6, 13 in DOC-list Annex3	Fire	Yes	C	
	Battery connector		Doc nr 12 in DOC-list Annex3	Fire	Yes	C	

Doc	Name	Doc. Id.	Version	Revision	Date
1	User Manual Thrane IP Handset, Thrane & Thrane	98-126059-E	-	-	January 16, 2009
2	BBCV2.MH12383 - Lithium Batteries - Component, UL	Page extracted from UL's OCD (online certification directory)			2009-06-08
3	UL's online certifications directory introduction.pdf	UL's online certifications directory introduction.pdf	-	-	2009 05 19
4	Battery Specification 1022-06C02_1S2P_ICP103450R, SANYO	Project 1022-06	-	-	08.11.28
5	1022-06U01_TT_Label, Thrane & Thrane	1022-06U01_TT_Label.jpg	-	-	2008-11-28
6	Schematics for TT-3672B Handset Battery PCM, Thrane & Thrane	93-124990	-	-	070209
7	Battery assembly, Thrane & Thrane	11022-06U01_Battery assembly	-	-	10-04-2008
8	Final battery, Thrane & Thrane	1022-06U01_Final battery.cdr	-	-	10-04-2008
9	TT-3672A/TT-3672B VoIP Handset TT 88-124990 Li-ion Battery Pack, Thrane & Thrane	TT 99-125134	-	-	11 June 2008
10	Lithium Ion Battery UF103450P, SANYO	Lithium Ion Battery UF103450P	-	-	24/May/'05
11	CONFORMITY VERIFICATION OF VoIP handset & cradle ACCORDING TO EN 60950-1:2000/A1_2004, DELTA	REC-E701419	-	-	29 April 2008
12	Connector 0.5 FPC Conn NON-ZIF SMT (H=1.2mm), MOLEX	PS-51281-002	-	-	2004/03/25
13	Schematics: Mainboard TT-3672B Handset, Thrane & Thrane	93-124794	-	-	070205

Copy of the marking plates



Annex 4

Photo of unit



Photo 1 VoIP handset & cradle