





Test Report issued under the responsibility of



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TEST REPORT	
IEC 60950-1	
Information technology equipment – Safety –	
Part 1: General requirements	
Report Number	145878
Date of issue	4 June 2010
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CB Testing Laboratory	Nemko A/S Phone: (+47) 22 96 03 30
Address	Gaustadalléen 30, NO - 0373 Oslo, Norway
Applicant's name	Thrane & Thrane A/S
Address	Lundtoftegaardsvej 93D, 2800 Kgs. Lyngby, Denmark
Manufacturer's name	Thrane & Thrane A/S
Address	Lundtoftegaardsvej 93D, 2800 Kgs. Lyngby, Denmark
Test specification:	
Standard	IEC 60950-1:2005 (2nd Edition); Am 1:2009
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No	IEC60950_1B
Test Report Form(s) Originator	SGS Fimko Ltd
Master TRF	Dated 2010-04
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
Test item description	Satellite communication system
Trade Mark	EXPLORER
Manufacturer	Thrane & Thrane A/S
Model/Type reference	Explorer 325
Ratings	14-5.5A 10.5-32VDC

This Test Report, when bearing the Nemko name and logo is only valid when issued by a Nemko laboratory, or by a laboratory having special agreement with Nemko.

Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Nemko A/S
Testing location/ address		Gaustadalléen 30, NO - 0373 Oslo, Norway
<input type="checkbox"/>	Associated CB Laboratory:	
Testing location/ address		
Tested by (name + signature)		Mikko Luusalo 
Approved by (name + signature)		Hans-Eirik Lie 

List of Attachments (including a total number of pages in each attachment):
 Photos (5 Pages), European differences (12 Pages)

Summary of testing:
 Tested according to national requirements for the countries listed below.

Tests performed (name of test and test clause): Tested according to national requirements for the countries listed below.	Testing location: Gaustadalléen 30, NO - 0373 Oslo, Norway
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Summary of compliance with National Differences
 All CENELEC members as listed in EN 60950-1:2006.

Copy of marking plate


The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

TT-3733A Explorer Terminal
P/N 403733A Rev.: X

IC: 6200B-EXPLORER325

FCC ID: ROJEXPLORER325


This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.




S/N: XXXXXXXX
Prod.: Year/Week

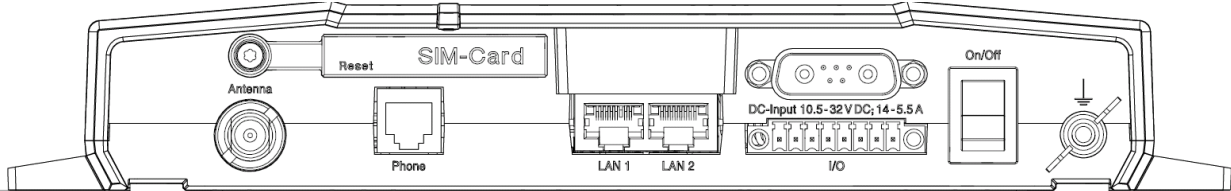
IMEI: XXXXXXXXXX

CE







Thrane & Thrane A/S Denmark




TT-3058A Explorer 325 Antenna
P/N 403058A-THR Rev.: X
Prod.: Year/Week
S/N: XXXXXXXX





CE



Thrane & Thrane A/S Denmark

Test item particulars:	
Equipment mobility.....:	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input checked="" type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains
Operating condition.....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location.....:	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC).....:	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: N/A
Mains supply tolerance (%) or absolute mains supply values.....:	10.5 - 32V according to manufacturer
Tested for IT power systems.....:	[N/A] Yes [N/A] No
IT testing, phase-phase voltage (V).....:	N/A
Class of equipment.....:	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input checked="" type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A).....:	N/A
Pollution degree (PD).....:	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class.....:	IP 20 for main unit IP X6 for antenna
Altitude during operation (m).....:	2000m
Altitude of test laboratory (m).....:	100m
Mass of equipment (kg).....:	Ca. 5 kg (BDU unit) Ca. 5 kg (Antenna unit)
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A (or N)
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item.....:	May 2010
Date(s) of performance of tests.....:	May 2010

General remarks:

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 Issuing testing laboratory.
 "(see Enclosure #)" refers to additional information appended to the report.
 "(see appended table)" refers to a table appended to the report.

Throughout this report a comma / point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 6.2.5 of IEC60950-1:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....: Yes Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)	Thrane & Thrane A/S Lundtoftegaardsvej 93D, 2800 Kgs. Lyngby, Denmark
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General product information:

The equipment under test is a satellite communication system. The equipment consists of an antenna and a BDU unit (below deck unit):

EXPLORER 325 (system name: TT-3721A; consists of TT-3058A (antenna) and TT-3733A (BDU unit)

The unit has input connector, LAN ports, a connection to the antenna, general I/O port and a connection to a handset/fax. The equipment contains secondary (SELV) circuits and will be connected to safety earth. SELV supply voltage can be maximum 32V. The output to the antenna is tested for LPS requirements and are max. 30VDC depending on type of antenna. The EUT can also supply other equipment via the LAN ports, using the Power over Ethernet (PoE) system. The PoE complies with LPS requirements.

The BDU unit will be placed in an environment judged to be pollution degree 2. The antenna will be placed outside.

The BDU can be fixed to positions with four screws. The antenna has magnets in bottom for attachment to metal surface.

Maximum recommended ambient (Tmra): 50/55°C

Connection to the supply: DC supplied through a special input connector

1.1.2 - Additional requirements:

Exposure to extreme temperatures, excessive dust, moisture or vibration; to flammable gases; to corrosive or explosive atmospheres:

Tested for an ambient of 55°C. Antenna complies with IPX6

Electromedical equipment connected to the patient:

This equipment is not an electromedical equipment intended to be physically connected to a patient.

Equipment used in vehicles, ships or aircrafts, in tropical countries, or at elevations > 2000m:

This equipment is intended to operate in vehicles.

General product information (continued):

The project history of IEC 60950 1st edition main test report. Provided for reference information only:

Project history:		
Nemko Report/ Order No.:	Modification to the appliances:	Changes/ Modifications in clause(s):
93654	Main test report	-
100995	Addition of alternative system, EXPLORER 727	Clause 1.5.1, 1.5.2, 1.6.2, 1.7.1, 4.5.1, 5.3.1 and TABLES: 1.5.1, 1.6.2, 4.5 and 5.3
127675	Addition of alternative system, SAILOR 150FB. The system has new antenna TT-3050C that is same as TT-3050A except for antenna element and radome. New BDU unit TT-3739A is downgraded version of TT-3738A.	Clause 1.5.1, 1.5.2, 1.6.2, 1.7.1 and 4.5.1 TABLES: 1.5.1, 1.6.2 and 4.5
129185	Alternative antenna to system SAILOR 500FB. New system name: TT-3740A; consists of TT-3738A (BDU unit) and TT-3052B (antenna) Modified temperature rating for new TT-3740A system.	Clause 1.5.1, 1.5.2, 1.6.2 and 4.5.1 TABLES: 1.5.1, 1.6.2 and 4.5

Abbreviations used in the report:

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI
- Direct current	DC		
- Alternating current	AC		

Indicate used abbreviations (if any)

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General	Refer below:	P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	<p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component standard.</p> <p>Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950.</p>	P
1.5.3	Thermal controls	Thermal control is used for functional protection of electronics only. No thermal control for safety purposes.	N/A
1.5.4	Transformers	No safety isolating transformers in the equipment.	N/A
1.5.5	Interconnecting cables	The interconnecting cables do not represent any hazard in the meaning of this standard.	P
1.5.6	Capacitors bridging insulation	No such capacitors.	N/A
1.5.7	Resistors bridging insulation	Refer below:	P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Bridging functional insulation in SELV circuits only.	P
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	-	N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	-	N/A
1.5.8	Components in equipment for IT power systems	DC supplied.	N/A
1.5.9	Surge suppressors	No surge suppressors.	N/A
1.5.9.1	General	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.2	Protection of VDRs	-	N/A
1.5.9.3	Bridging of functional insulation by a VDR	-	N/A
1.5.9.4	Bridging of basic insulation by a VDR	-	N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR	-	N/A

1.6	Power interface		P
1.6.1	AC power distribution systems	DC supplied.	N/A
1.6.2	Input current	(See appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	The equipment is not hand-held.	N/A
1.6.4	Neutral conductor	DC supplied.	N/A

1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	Refer below:	P
1.7.1.1	Power rating marking	Refer below:	P
	Multiple mains supply connections.....:	Single supply only.	N/A
	Rated voltage(s) or voltage range(s) (V)	10.5-32VDC	P
	Symbol for nature of supply, for d.c. only	DC marked adjacent to input connector.	P
	Rated frequency or rated frequency range (Hz)	DC supplied.	N/A
	Rated current (mA or A)	14-5.5A	P
1.7.1.2	Identification markings	Refer below:	P
	Manufacturer's name or trade-mark or identification mark	Thrane & Thrane	P
	Model identification or type reference	EXPLORER 325	P
	Symbol for Class II equipment only	The equipment is not Class II.	N/A
	Other markings and symbols	Other markings do not give rise to misunderstanding.	P
1.7.2	Safety instructions and marking	Refer below:	P
1.7.2.1	General	Safety instructions are in English and describe the use of the unit. Installation instructions are available to the user in Installation Guide.	P
1.7.2.2	Disconnect devices	DC connector used as disconnect device.	N/A
1.7.2.3	Overcurrent protective device	Not required.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.4	IT power distribution systems	DC supplied.	N/A
1.7.2.5	Operator access with a tool	No operator access with tool.	N/A
1.2.7.6	Ozone	The equipment does not produce ozone.	N/A
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Supply voltage adjustment	No voltage selector.	N/A
	Methods and means of adjustment; reference to installation instructions	-	N/A
1.7.5	Power outlets on the equipment	No power outlets.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Fuse is not operator replaceable. Cross-reference provided.	P
1.7.7	Wiring terminals	Refer below:	P
1.7.7.1	Protective earthing and bonding terminals	Terminal for connection of protective earthing conductor is marked with standard earth symbol (IEC 60417-2 No. 5019) near the terminal.	P
1.7.7.2	Terminals for a.c. mains supply conductors	DC only.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	DC connector is used.	N/A
1.7.8	Controls and indicators	Refer below:	P
1.7.8.1	Identification, location and marking	On/off switch is only manual control and clearly marked.	P
1.7.8.2	Colours	Colours for functional indication only.	N/A
1.7.8.3	Symbols according to IEC 60417	The switch is marked "I" "0" and ON/OFF.	P
1.7.8.4	Markings using figures	No such markings.	N/A
1.7.9	Isolation of multiple power sources	Only one power source.	N/A
1.7.10	Thermostats and other regulating devices	No thermostats or other regulating devices.	N/A
1.7.11	Durability	The marking withstands required tests.	P
1.7.12	Removable parts	No marking is placed on removable parts.	N/A
1.7.13	Replaceable batteries	No battery in the equipment.	N/A
	Language(s)	-	—
1.7.14	Equipment for restricted access locations.....	Not for restricted access location.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Refer below:	P
2.1.1.1	Access to energized parts	No hazardous voltages.	N/A
	Test by inspection	-	N/A
	Test with test finger (Figure 2A)	-	N/A
	Test with test pin (Figure 2B)	-	N/A
	Test with test probe (Figure 2C)	-	N/A
2.1.1.2	Battery compartments	No batteries.	N/A
2.1.1.3	Access to ELV wiring	No ELV.	N/A
	Working voltage (V_{peak} or V_{rms}); minimum distance through insulation (mm)	-	—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage circuit wiring	N/A
2.1.1.5	Energy hazards	Refer below:	N/A
2.1.1.6	Manual controls	No conductive manual controls.	N/A
2.1.1.7	Discharge of capacitors in equipment	DC only.	N/A
	Measured voltage (V); time-constant (s)	-	—
2.1.1.8	Energy hazards – d.c. mains supply	Refer below:	N/A
	a) Capacitor connected to the d.c. mains supply ..	No large capacitors at DC input.	N/A
	b) Internal battery connected to the d.c. mains supply	No batteries.	N/A
2.1.1.9	Audio amplifiers	No audio amplifiers.	N/A
2.1.2	Protection in service access areas	Checked by inspection, unintentional contact is unlikely during service operations.	P
2.1.3	Protection in restricted access locations	Not limited for restricted access location.	N/A
2.2	SELV circuits		P
2.2.1	General requirements	SELV limits are not exceeded under normal condition and after a single fault.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.2.2	Voltages under normal conditions (V)	Within SELV limits. Input: SELV: 10 .5- 32V DC Output: SELV connections (radio signals, LAN, USB) Antenna: SELV: 18 – 30V DC SELV circuits are not intended to be connected to telecommunication networks	P
2.2.3	Voltages under fault conditions (V)	Within SELV limits. See also clause 2.2.2	P
2.2.4	Connection of SELV circuits to other circuits	SELV circuits are only connected to other SELV circuits and protective earth.	P

2.3	TNV circuits		N/A
2.3.1	Limits	2.3.1 – 2.3.5; No TNV circuits in the equipment.	N/A
	Type of TNV circuits	-	—
2.3.2	Separation from other circuits and from accessible parts	-	N/A
2.3.2.1	General requirements	-	N/A
2.3.2.2	Protection by basic insulation	-	N/A
2.3.2.3	Protection by earthing	-	N/A
2.3.2.4	Protection by other constructions	-	N/A
2.3.3	Separation from hazardous voltages	-	N/A
	Insulation employed	-	—
2.3.4	Connection of TNV circuits to other circuits	-	N/A
	Insulation employed	-	—
2.3.5	Test for operating voltages generated externally	-	N/A

2.4	Limited current circuits		N/A
2.4.1	General requirements	No limited current circuits.	N/A
2.4.2	Limit values	-	N/A
	Frequency (Hz).....	-	—
	Measured current (mA)	-	—
	Measured voltage (V)	-	—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Measured circuit capacitance (nF or μ F)	-	—
2.4.3	Connection of limited current circuits to other circuits	-	N/A
2.5	Limited power sources		P
	a) Inherently limited output	(see appended table 2.5)	P
	b) Impedance limited output	-	N/A
	c) Regulating network limited output under normal operating and single fault condition	-	N/A
	d) Overcurrent protective device limited output	-	N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)	-	—
	Current rating of overcurrent protective device (A) ..	-	—
	Use of integrated circuit (IC) current limiters	-	
2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth. Protective earth connection is made in rear side of enclosure. Refer to attached copy of installation guide.	P
2.6.2	Functional earthing	No hazardous voltages in equipment.	N/A
2.6.3	Protective earthing and protective bonding conductors	Refer below:	P
2.6.3.1	General	Refer below:	P
2.6.3.2	Size of protective earthing conductors	Earth is directly connected to chassis.	N/A
	Rated current (A), cross-sectional area (mm^2), AWG	-	—
2.6.3.3	Size of protective bonding conductors	See clause 2.6.3.1.	N/A
	Rated current (A), cross-sectional area (mm^2), AWG	-	—
	Protective current rating (A), cross-sectional area (mm^2), AWG.....	-	
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)	Earth is directly connected to chassis.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.5	Colour of insulation	No bonding conductors. Green and yellow is not used for other conductors.	P
2.6.4	Terminals	Refer below:	P
2.6.4.1	General	Refer below:	P
2.6.4.2	Protective earthing and bonding terminals	Refer below:	P
	Rated current (A), type, nominal thread diameter (mm)..... :	14A, Stud terminal, 3.5 mm minimum.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	No earthing or bonding conductors.	N/A
2.6.5	Integrity of protective earthing	Refer below:	P
2.6.5.1	Interconnection of equipment	No connection of earth to interconnected equipment.	N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	There are no switches or overcurrent protective devices in the protective earthing / bonding conductors.	P
2.6.5.3	Disconnection of protective earth	Instructions provided in installation guide.	P
2.6.5.4	Parts that can be removed by an operator	No parts can be removed by the operator.	N/A
2.6.5.5	Parts removed during servicing	Protective earthed parts cannot be removed in a way which impair safety.	P
2.6.5.6	Corrosion resistance	No risk of corrosion.	N/A
2.6.5.7	Screws for protective bonding	Self tapping and space thread screws are not used.	P
2.6.5.8	Reliance on telecommunication network or cable distribution system	Protective earthing does not rely on a telecommunication network.	N/A

2.7	Overcurrent and earth fault protection in primary circuits		N/A
2.7.1	Basic requirements	2.7.1. – 2.7.6; DC supplied equipment, no primary circuits.	N/A
	Instructions when protection relies on building installation	-	N/A
2.7.2	Faults not simulated in 5.3.7	-	N/A
2.7.3	Short-circuit backup protection	-	N/A
2.7.4	Number and location of protective devices	-	N/A
2.7.5	Protection by several devices	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.6	Warning to service personnel	-	N/A
2.8	Safety interlocks		N/A
2.8.1	General principles	2.8.1 – 2.8.8; No hazards in operator access area. No safety interlock provided.	N/A
2.8.2	Protection requirements	-	N/A
2.8.3	Inadvertent reactivation	-	N/A
2.8.4	Fail-safe operation	-	N/A
	Protection against extreme hazard	-	N/A
2.8.5	Moving parts	-	N/A
2.8.6	Overriding	-	N/A
2.8.7	Switches, relays and their related circuits	-	N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm)	-	N/A
2.8.7.2	Overload test	-	N/A
2.8.7.3	Endurance test	-	N/A
2.8.7.4	Electric strength test	-	N/A
2.8.8	Mechanical actuators	-	N/A
2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation. No driving belts or couplings used.	P
2.9.2	Humidity conditioning	No hygroscopic materials used.	N/A
	Relative humidity (%), temperature (°C)	-	—
2.9.3	Grade of insulation	Insulation is considered to be functional.	P
2.9.4	Separation from hazardous voltages	No hazardous voltages.	N/A
	Method(s) used	-	—
2.10	Clearances, creepage distances and distances through insulation		P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.1	General	There are no requirements for insulation distance. Only functional insulation that complies with clause 5.3.4.	N/A
2.10.1.1	Frequency	-	N/A
2.10.1.2	Pollution degrees	-	N/A
2.10.1.3	Reduced values for functional insulation	-	N/A
2.10.1.4	Intervening unconnected conductive parts	-	N/A
2.10.1.5	Insulation with varying dimensions	-	N/A
2.10.1.6	Special separation requirements	-	N/A
2.10.1.7	Insulation in circuits generating starting pulses	-	N/A
2.10.2	Determination of working voltage	-	N/A
2.10.2.1	General	-	N/A
2.10.2.2	RMS working voltage	-	N/A
2.10.2.3	Peak working voltage	-	N/A
2.10.3	Clearances	-	N/A
2.10.3.1	General	-	N/A
2.10.3.2	Mains transient voltages	-	N/A
	a) AC mains supply	-	N/A
	b) Earthed d.c. mains supplies	-	N/A
	c) Unearthed d.c. mains supplies	-	N/A
	d) Battery operation	-	N/A
2.10.3.3	Clearances in primary circuits	-	N/A
2.10.3.4	Clearances in secondary circuits	Only functional insulation, ref. 5.3.4.	P
2.10.3.5	Clearances in circuits having starting pulses	-	N/A
2.10.3.6	Transients from a.c. mains supply	-	N/A
2.10.3.7	Transients from d.c. mains supply	-	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems	-	N/A
2.10.3.9	Measurement of transient voltage levels	-	N/A
	a) Transients from a mains supply	-	N/A
	For an a.c. mains supply	-	N/A
	For a d.c. mains supply	-	N/A
	b) Transients from a telecommunication network :	-	N/A
2.10.4	Creepage distances	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.4.1	General	-	N/A
2.10.4.2	Material group and comparative tracking index	-	N/A
	CTI tests	-	—
2.10.4.3	Minimum creepage distances	-	N/A
2.10.5	Solid insulation	-	N/A
2.10.5.1	General	-	N/A
2.10.5.2	Distances through insulation	-	N/A
2.10.5.3	Insulating compound as solid insulation	-	N/A
2.10.5.4	Semiconductor devices	-	N/A
2.10.5.5.	Cemented joints	-	N/A
2.10.5.6	Thin sheet material – General	-	N/A
2.10.5.7	Separable thin sheet material	-	N/A
	Number of layers (pcs)	-	—
2.10.5.8	Non-separable thin sheet material	-	N/A
2.10.5.9	Thin sheet material – standard test procedure	-	N/A
	Electric strength test	-	—
2.10.5.10	Thin sheet material – alternative test procedure	-	N/A
	Electric strength test	-	—
2.10.5.11	Insulation in wound components	-	N/A
2.10.5.12	Wire in wound components	-	N/A
	Working voltage	-	N/A
	a) Basic insulation not under stress	-	N/A
	b) Basic, supplementary, reinforced insulation	-	N/A
	c) Compliance with Annex U	-	N/A
	Two wires in contact inside wound component; angle between 45° and 90°	-	N/A
2.10.5.13	Wire with solvent-based enamel in wound components	-	N/A
	Electric strength test	-	—
	Routine test	-	N/A
2.10.5.14	Additional insulation in wound components	-	N/A
	Working voltage	-	N/A
	- Basic insulation not under stress	-	N/A
	- Supplementary, reinforced insulation	-	N/A
2.10.6	Construction of printed boards	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.6.1	Uncoated printed boards	-	N/A
2.10.6.2	Coated printed boards	-	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	-	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board	-	N/A
	Distance through insulation	-	N/A
	Number of insulation layers (pcs)..... :	-	N/A
2.10.7	Component external terminations	-	N/A
2.10.8	Tests on coated printed boards and coated components	-	N/A
2.10.8.1	Sample preparation and preliminary inspection	-	N/A
2.10.8.2	Thermal conditioning	-	N/A
2.10.8.3	Electric strength test	-	N/A
2.10.8.4	Abrasion resistance test	-	N/A
2.10.9	Thermal cycling	-	N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound	-	N/A
2.10.11	Tests for semiconductor devices and cemented joints	-	N/A
2.10.12	Enclosed and sealed parts	-	N/A

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring.	P
3.1.2	Protection against mechanical damage	Wireways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	P
3.1.3	Securing of internal wiring	Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N/A
3.1.6	Screws for electrical contact pressure	Electrical screw connection is only connecting protective earth to chassis. Metal screw engages more than 2 threads. Screws made of insulating material are not used where electrical connections, including protective earthing, are involved.	P
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating material.	N/A
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections.	N/A
3.1.9	Termination of conductors	Terminations cannot become displaced so that clearances and creepage distances can be reduced	P
	10 N pull test	-	N/A
3.1.10	Sleeving on wiring	Sleeves are not used as supplementary insulation.	N/A

3.2	Connection to a mains supply		P
3.2.1	Means of connection	Refer below:	P
3.2.1.1	Connection to an a.c. mains supply	The equipment is not for connection to an AC mains supply.	P
3.2.1.2	Connection to a d.c. mains supply	The equipment is provided with special DC connector. It is not possible to connect a coupler intended for AC mains supply.	P
3.2.2	Multiple supply connections	Only one supply connection.	P
3.2.3	Permanently connected equipment	The equipment is not intended for permanent connection to the mains.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of conductors, diameter of cable and conduits (mm)	-	—
3.2.4	Appliance inlets	DC-supplied. Refer to table 1.5.1.	P
3.2.5	Power supply cords	Refer below:	P
3.2.5.1	AC power supply cords	The equipment is not for connection to an AC mains supply.	N/A
	Type	-	—
	Rated current (A), cross-sectional area (mm ²), AWG	-	—
3.2.5.2	DC power supply cords	Refer to table 1.5.1.	N/A
3.2.6	Cord anchorages and strain relief	Equipment provided with an DC input connector.	N/A
	Mass of equipment (kg), pull (N)	-	—
	Longitudinal displacement (mm)	-	—
3.2.7	Protection against mechanical damage	Equipment provided with an DC input connector.	N/A
3.2.8	Cord guards	The equipment is neither hand-held nor intended to be moved during operation.	N/A
	Diameter or minor dimension D (mm); test mass (g)	-	—
	Radius of curvature of cord (mm)	-	—
3.2.9	Supply wiring space	No supply terminals.	N/A

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals	3.3.1 – 3.3.8; No wiring terminals except earth terminal covered in clause 2.6. DC mains supply is connected with special input connector.	N/A
3.3.2	Connection of non-detachable power supply cords	-	N/A
3.3.3	Screw terminals	-	N/A
3.3.4	Conductor sizes to be connected	-	N/A
	Rated current (A), cord/cable type, cross-sectional area (mm ²)	-	—
3.3.5	Wiring terminal sizes	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A), type, nominal thread diameter (mm)	-	—
3.3.6	Wiring terminal design	-	N/A
3.3.7	Grouping of wiring terminals	-	N/A
3.3.8	Stranded wire	-	N/A

3.4	Disconnection from the mains supply		P
3.4.1	General requirement	Refer below:	P
3.4.2	Disconnect devices	The equipment is provided with a DC input connector.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	No parts remain energized after the disconnect device is switched off.	N/A
3.4.5	Switches in flexible cords	No isolating switch in the cord set.	P
3.4.6	Number of poles - single-phase and d.c. equipment	The disconnect device disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	The equipment is not for connection to an AC mains supply.	N/A
3.4.8	Switches as disconnect devices	Switches are not considered the disconnect device.	N/A
3.4.9	Plugs as disconnect devices	No plug used as disconnect device.	N/A
3.4.10	Interconnected equipment	No interconnections using hazardous voltages.	N/A
3.4.11	Multiple power sources	One power source only.	N/A

3.5	Interconnection of equipment		P
3.5.1	General requirements	Refer below:	P
3.5.2	Types of interconnection circuits	SELV circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV.	N/A
3.5.4	Data ports for additional equipment	PoE port is LPS. Refer to clause 2.5.	P

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Angle of 10°	Unit does not overbalance at 10°.	P
	Test force (N)	The unit is not floor-standing.	N/A

4.2	Mechanical strength		P
4.2.1	General	Complies with the requirement also after tests described below are applied.	P
	Rack-mounted equipment.	Not a rack mounted equipment.	N/A
4.2.2	Steady force test, 10 N	No hazard.	P
4.2.3	Steady force test, 30 N	No operator accessible internal enclosure.	N/A
4.2.4	Steady force test, 250 N	No hazard. The test is performed at all sides of enclosure.	P
4.2.5	Impact test	Refer below:	P
	Fall test	No hazard as result from the steel sphere fall test.	P
	Swing test	No hazard as result from the steel sphere swing test.	P
4.2.6	Drop test; height (mm)	Drop test not applicable.	N/A
4.2.7	Stress relief test	Metal enclosure. No risk of shrinkage or distortion on enclosures due to release of internal stresses.	N/A
4.2.8	Cathode ray tubes	No CRT.	N/A
	Picture tube separately certified	-	N/A
4.2.9	High pressure lamps	No high pressure lamps in the equipment.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N)	Tested with 150 N force.	P
4.2.11	Rotating solid media	No rotating solid media.	N/A
	Test to cover on the door.....	-	N/A

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P
4.3.2	Handles and manual controls; force (N)	No knobs, handles or levers.	N/A
4.3.3	Adjustable controls	No hazardous adjustable controls.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur.	P
4.3.5	Connection by plugs and sockets	SELV connectors do not comply with IEC 60320 or IEC 60083.	P
4.3.6	Direct plug-in equipment	Not intended to plug directly into a wall socket-outlet.	N/A
	Torque	-	—
	Compliance with the relevant mains plug standard	-	N/A
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N/A
4.3.8	Batteries	No batteries in the equipment.	N/A
	- Overcharging of a rechargeable battery	-	N/A
	- Unintentional charging of a non-rechargeable battery	-	N/A
	- Reverse charging of a rechargeable battery	-	N/A
	- Excessive discharging rate for any battery	-	N/A
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment does not generate ionizing radiation or use a laser, and does not contain flammable liquids or gases.	N/A
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N/A
4.3.12	Flammable liquids	The equipment does not contain flammable liquid.	N/A
	Quantity of liquid (l)	-	N/A
	Flash point (°C)	-	N/A
4.3.13	Radiation	Refer below:	P
4.3.13.1	General	Refer below:	P
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N/A
	Measured radiation (pA/kg)	-	—
	Measured high-voltage (kV)	-	—
	Measured focus voltage (kV)	-	—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	CRT markings	-	—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce UV radiation.	N/A
	Part, property, retention after test, flammability classification	-	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation	The equipment does not produce UV radiation.	N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	Refer below:	P
4.3.13.5.1	Lasers (including laser laser diodes)	No Lasers.	N/A
	Laser class	-	—
4.3.13.5.2	Light emitting diodes (LEDs)	LEDs provided are diffuse.	P
4.3.13.6	Other types	The antenna radiates microwave power. Relevant safety instructions and distances are given in user manual and marked on antennas.	P

4.4	Protection against hazardous moving parts		N/A
4.4.1	General	Fan and moving antenna are located in service access area.	P
4.4.2	Protection in operator access areas	No operator accessible moving parts.	N/A
	Household and home/office document/media shredders	-	N/A
4.4.3	Protection in restricted access locations	No such location.	N/A
4.4.4	Protection in service access areas	The antenna is not likely to cause any injury. Movement can be stooped by hand. Refer below for fan:	P
4.4.5	Protection against moving fan blades	Refer below:	P
4.4.5.1	General	Refer below:	P
	Not considered to cause pain or injury. a).....	K factor < 200, 7800 rpm.	P
	Is considered to cause pain, not injury. b)	-	N/A
	Considered to cause injury. c)	-	N/A
4.4.5.2	Protection for users	Service access.	N/A
	Use of symbol or warning	-	N/A
4.4.5.3	Protection for service persons	Not considered to cause pain or injury.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Use of symbol or warning	-	N/A
4.5	Thermal requirements		P
4.5.1	General	Refer below:	P
4.5.2	Temperature tests	(see appended table 4.5)	P
	Normal load condition per Annex L	Transmit and receive maximum antenna signal. Antenna motors moving back and forth continuously. Maximum load at LAN ports. Open call between two phones.	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat	No hazardous voltages.	N/A
4.6	Openings in enclosures		P
4.6.1	Top and side openings	No top openings. No side openings.	P
	Dimensions (mm)	-	—
4.6.2	Bottoms of fire enclosures	Fire enclosure construction is considered to comply with the requirements. No bottom openings.	P
	Construction of the bottom, dimensions (mm) ..:	-	—
4.6.3	Doors or covers in fire enclosures	No doors or covers in fire enclosure	N/A
4.6.4	Openings in transportable equipment	The unit is not regarded as transportable equipment.	N/A
4.6.4.1	Constructional design measures	-	N/A
	Dimensions (mm)	-	—
4.6.4.2	Evaluation measures for larger openings	-	N/A
4.6.4.3	Use of metallized parts	-	N/A
4.6.5	Adhesives for constructional purposes	No barrier secured by adhesive inside enclosure.	N/A
	Conditioning temperature (°C), time (weeks)	-	—
4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Method 1 is used.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Method 1, selection and application of components wiring and materials	(see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	-	N/A
4.7.2	Conditions for a fire enclosure	Refer below:	P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts in the BDU.	P
4.7.2.2	Parts not requiring a fire enclosure	The fire enclosure is not required for LPS supplied ADU.	P
4.7.3	Materials		P
4.7.3.1	General	Components and materials have adequate flammability classification. See appended table 1.5.1.	P
4.7.3.2	Materials for fire enclosures	The fire enclosure is metal.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	The enclosure of antenna is HB material.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	Minimum V-2 or small parts mounted on PCB of V-0 material.	P
4.7.3.5	Materials for air filter assemblies	No air filters.	N/A
4.7.3.6	Materials used in high-voltage components	No such components.	N/A
5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		N/A
5.1.1	General	5.1.1 – 5.1.8.2; DC supplied equipment with no connection to telecommunication networks.	N/A
5.1.2	Configuration of equipment under test (EUT)	-	N/A
5.1.2.1	Single connection to an a.c. mains supply	-	N/A
5.1.2.2	Redundant multiple connections to an a.c. mains supply	-	N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply	-	N/A
5.1.3	Test circuit	-	N/A
5.1.4	Application of measuring instrument	-	N/A
5.1.5	Test procedure	-	N/A
5.1.6	Test measurements	-	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Supply voltage (V)	-	—
	Measured touch current (mA)	-	—
	Max. allowed touch current (mA)	-	—
	Measured protective conductor current (mA)	-	—
	Max. allowed protective conductor current (mA)....	-	—
5.1.7	Equipment with touch current exceeding 3,5 mA	-	N/A
5.1.7.1	General	-	N/A
5.1.7.2	Simultaneous multiple connections to the supply	-	N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	-	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	-	N/A
	Supply voltage (V)	-	—
	Measured touch current (mA)	-	—
	Max. allowed touch current (mA)	-	—
5.1.8.2	Summation of touch currents from telecommunication networks	-	N/A
	a) EUT with earthed telecommunication ports	-	N/A
	b) EUT whose telecommunication ports have no reference to protective earth	-	N/A

5.2	Electric strength		N/A
5.2.1	General	Only SELV circuits.	N/A
5.2.2	Test procedure	-	N/A

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	Approved fan and stepper motors for direction control in the antenna.	P
5.3.3	Transformers	No isolating transformers.	N/A
5.3.4	Functional insulation.....	Complies with c).	P
5.3.5	Electromechanical components	No electromechanical components other than motors.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.6	Audio amplifiers in ITE	No audio amplifiers.	N/A
5.3.7	Simulation of faults	See the enclosed fault condition tests.	P
5.3.8	Unattended equipment	Thermal limiters not operating in normal condition or during single fault condition testing.	P
5.3.9	Compliance criteria for abnormal operating and fault conditions	Refer below:	P
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests	No visual signs of damage.	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements	6.1.2.1 – 6.3; No connection to telecommunication networks.	N/A
	Supply voltage (V)	-	—
	Current in the test circuit (mA)	-	—
6.1.2.2	Exclusions	-	N/A

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

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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
7.1	General	7.1 – 7.4.3; No connections to cable distribution systems.	N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	-	N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system	-	N/A
7.4	Insulation between primary circuits and cable distribution systems	-	N/A
7.4.1	General	-	N/A
7.4.2	Voltage surge test	-	N/A
7.4.3	Impulse test	-	N/A
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE (See appended table 1.5.1.)		P
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2) Stepper motors and separately certified fan. No testing required.		N/A
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N/A
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		N/A
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		N/A
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N/A
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		N/A
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N/A
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		N/A
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N/A
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		N/A
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N/A
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N/A
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N/A
DD	ANNEX DD, Requirements for the mounting means of rack-mounted equipment		N/A
EE	ANNEX EE, Household and home/office document/media shredders		N/A

IEC 60950-1			
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 (Edition / year)	Mark(s) of conformity ¹⁾	
Main unit (BDU):						
Enclosure material	Various	Various	Metal, min. 1.0mm thick	-	.	
Fuse H300	Cooper Bussmann	ATM	20A 32V	-	Tested in the equipment ²⁾	
Fuse holder	Keystone	3568	500V, 20A, 94V-0, 145°C	UL94	UL	
PCB	Various	Various	Min. 94V-0 min. 105°C	UL94	UL	
Input connector	CviLux	C7W2	20A, 32V, 125°C, 94V-0	UL1977	UL	
Internal connectors	Various	Various	Min. 94V-2 min. 105°C	UL94	UL	
Switching transformers (for DC/DC converter) T1000 and T800	Thrane & Thrane	L/T62	130°C	IEC60950-1	Tested in the unit	
DC supply cable	Various	Various	Supply leads min 2 x 2.5mm ² , 85°C PVC	-	Tested in the unit	
Antenna (ADU):						
Enclosure material	Romira GMBH	Rotec ASA E 310	HB75, min 2.2 mm thickness, 85°C	IEC60695-11-10	N ²⁾	
DC stepper motor (vertical movement)	Fulling	FL42STH25-0404A	9.6V, 0.4A, 130°C	IEC 60950-1	Tested in the unit	
DC stepper motor (horizontal movement)	Fulling	FL39ST34-0404A	12V, 0.4A, 130°C	IEC 60950-1	Tested in the unit	
Fan	Adda	AD0405HB-C51	5 V, 0.4 A, 8.8 CFM, 90°C	IEC 60950-1	TUV	

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
PCB	Various	Various	Min. 94V-0 min. 105°C	UL94	UL
Internal connectors	Various	Various	Min. 94V-2 min. 105°C	UL94	UL

Supplementary information:

¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

²⁾ The plastic material was tested according to IEC60695-11-10 for compliance with the requirement for HB and HB75 material at thinnest significant thickness. The material passed the tests. The result is kept on file at Nemko AS.

1.5.1	TABLE: Opto Electronic Devices	N/A
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Manufacturer : Type..... : Separately tested..... : Bridging insulation : External creepage distance : Internal creepage distance : Distance through insulation : Tested under the following conditions : Input..... : Output..... : supplementary information
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: Electrical data (in normal conditions)						P
U (V)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status	
10.5	7.0	14	74	H300	20	Normal load. Refer to clause 4.5.	
12	6.1	-	73	H300	20	Normal load. Refer to clause 4.5.	
24	2.9	-	70	H300	20	Normal load. Refer to clause 4.5.	
32	2.2	5.5	70	H300	20	Normal load. Refer to clause 4.5.	
Supplementary information:							

2.1.1.5 c) 1)	TABLE: max. V, A, VA test					N/A
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)		
supplementary information:						

2.1.1.5 c) 2)	TABLE: stored energy			N/A
Capacitance C (μF)	Voltage U (V)		Energy E (J)	
supplementary information:				

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			N/A
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components	
	V peak	V d.c.		
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)		
supplementary information:				

2.5	TABLE: limited power sources			P	
Circuit output tested: Output to antenna and PoE					
Measured Uoc (V) with all load circuits disconnected:		DC/DC converter: U(oc) = 30VDC PoE: U(oc) = 51VDC			
	I _{sc} (A)		VA		
	Meas.	Limit	Meas.	Limit	
Output of DC/DC converter ¹⁾		2.5	5.0	60	100
Output of LAN ports (PoE) ²⁾		1.25	2.94	64	100
supplementary information:					
¹⁾ Above result are worst case. The DC/DC converter has double current and voltage protection of the output.					
²⁾ The LAN output is tested without the current control circuit. The PoE is supplied from the DC/DC converter. See comment above.					

2.10.2	Table: working voltage measurement			N/A
Location	RMS voltage (V)	Peak voltage (V)	Comments	
supplementary information:				

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements						N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)	
Functional:							
Basic/supplementary:							
Reinforced:							
Supplementary information:							

2.10.5	TABLE: Distance through insulation measurements					N/A
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Supplementary information:						

IEC 60950-1										
Clause	Requirement + Test			Result - Remark				Verdict		
4.3.8	TABLE: Batteries								N/A	
The tests of 4.3.8 are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										
Test results:								Verdict		
- Chemical leaks										
- Explosion of the battery										
- Emission of flame or expulsion of molten metal										
- Electric strength tests of equipment after completion of tests										
Supplementary information:										

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.3.8	TABLE: Batteries	N/A	
Battery category..... : Manufacturer : Type / model..... : Voltage : Capacity..... : Tested and Certified by (incl. Ref. No.) : Circuit protection diagram:			

MARKINGS AND INSTRUCTIONS (1.7.12, 1.7.15)	
Location of replaceable battery	
Language(s)	
Close to the battery	
In the servicing instructions	
In the operating instructions	

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Thermal requirements: Main unit (BDU)					P
	Supply voltage (V)	10.5		32		—
	Ambient T (°C)	26	55	25	55	—
Maximum measured temperature T of part/at::		T (°C)				Allowed T _{max} (°C)
		1)	2)	3)	4)	5)
T300		50	79	43	73	120
T1000		53	82	50	80	120
T800		57	86	53	83	120
L1000		51	80	48	78	120
L800		54	83	51	81	120
DC input connector		43	72	39	69	125
L600		55	84	47	77	120
C602		52	81	47	77	105
PCB (TT60-124511)		47	76	42	72	105
PCB (TT60-128606)		48	77	45	75	105
Enclosure		46	75 ⁶⁾	42	72 ⁶⁾	70
Supplementary information:						
1) Measurement results with 32 V supply voltage at room temperature 2) Measurement results with 32 V supply voltage corrected to 55°C (recommended maximum temperature) 3) Measurement results with 10.5 V supply voltage at room temperature 4) Measurement results with 32 V supply voltage corrected to 55°C (recommended maximum temperature) 5) Limits are for temperatures corrected to recommended maximum temperature 6) Max. 50°C ambient when mounted in a public area. Max. 55°C ambient when mounted in an area where unintentional contact is unlikely. The unit is marked with symbol 60417-1-IEC-5041 and relevant installation instructions are provided. The allowed temperature limit is not exceeded at 50°C ambient temperature. If no limit is stated, temperature is for reference only.						

IEC 60950-1							
Clause	Requirement + Test	Result - Remark					Verdict
4.5	TABLE: Thermal requirements: Antenna unit (ADU)						P
	Supply voltage (V)	10.5		32		24	—
	Ambient T (°C)	27	55	27	55	29	—
Maximum measured temperature T of part/at::		T (°C)					Allowed T _{max} (°C)
		1)	2)	3)	4)	5)	6)
Amplifier units internal enclosure		66	94	66	94	86	-
DC Fan		56	84	56	84	54	90
Stepper motor (horizontal)		65	93	65	93	80	120
Stepper motor (vertical)		68	96	69	97	81	120
Enclosure (bottom)		51	79	52	80	59	85
Enclosure (top)		43	71	45	73	47	85
Supplementary information:							
1) Measurement results with 32 V supply voltage at room temperature 2) Measurement results with 32 V supply voltage corrected to 55°C (recommended maximum temperature) 3) Measurement results with 10.5 V supply voltage at room temperature 4) Measurement results with 32 V supply voltage corrected to 55°C (recommended maximum temperature) 5) Measurement with fan stopped (Single fault condition. Limits are not applicable) 6) Limits are for temperatures corrected to recommended maximum temperature							

4.5.5	TABLE: Ball pressure test of thermoplastic parts					N/A
	Allowed impression diameter (mm)	≤ 2 mm				—
Part			Test temperature (°C)	Impression diameter (mm)		
Supplementary information:						

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:
See Table 1.5.1.

5.1	TABLE: touch current measurement			N/A
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
supplementary information:				

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			N/A
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No	
Functional:				
Basic/supplementary:				
Reinforced:				
Supplementary information:				

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: Fault condition tests						P
	Ambient temperature (°C)					23 – 29	—
	Power source for EUT: Manufacturer, model/type, output rating					Adjustable DC supply with output current higher than 2.1 times the fuse rating.	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation	
Antenna output in BDU unit	S-c	32	1 min	H300	0.46	Output shuts down. No excessive temperatures or other hazards.	
CR300	S-c	32	< 1sec	H300	#)	Fuse opens immediately ²⁾ .	
DC Fan in the antenna	Locked rotor	24	2 h	H300	2.9	No excessive temperatures or other hazards. See table 4.5.	
Supplementary information:							
#) > 2.1 times the fuse rating.							
2) Tested ten times in the equipment with the same result.							
The DC/DC converter has double current/voltage protection. No single fault can give a higher voltage than the values listed in 2.5.							

C.2	TABLE: transformers							N/A
Loc.	Tested insulation		Working voltage peak / V	Working voltage rms / V	Required electric strength	Required clearance / mm	Required creepage distance / mm	Required distance thr. insul.
			(2.10.2)	(2.10.2)	(5.2)	(2.10.3)	(2.10.4)	(2.10.5)
Loc.	Tested insulation				Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
supplementary information:								