



TEST REPORT	
IEC 60950-1	
Information technology equipment – Safety –	
Part 1: General requirements	
Report Reference No	T1612198-958
Tested by (printed name and signature)	Elsa Wang <i>Elsa Wang</i>
Approved by (printed name and signature)	Kane Ma <i>Kane Ma</i>
Date of issue	: 2017-01-17
Testing Laboratory Name	Cerpess Technology (Suzhou) Co., Ltd.
Address.....	No.66, Tangzhuang Road, Suzhou Industrial Park, Jiangsu, China.
Applicant's name	Zhejiang Dahua Vision Technology Co., Ltd.
Address.....	No.1199 Bin'an Road, Binjiang District, Hangzhou, P. R. China.
Test specification:	
Standard	IEC 60950-1:2005 (Second Edition) + A1:2009 + A2:2013 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
Test procedure	Service of CE Marking in LVD
Non-standard test method.....	N/A
Test item description	Network Video Recorder
Trade Mark.....	
Manufacturer.....	Zhejiang Dahua Vision Technology Co., Ltd. No.1199 Bin'an Road, Binjiang District, Hangzhou, P.R. China.
Model/Type reference	1) DHI-NVR4832-16P-4KS2, DHI-NVR4816-16P-4KS2, DHI-NVR4832-16P-4KS2, NVR4816-16P-4KS2, NVR4832-16P-4KS2, DHI-NVR4432-16P-4KS2, DHI-NVR4416-16P-4KS2, DHI-NVR4432-16P-4KS2, NVR4416-16P-4KS2, NVR4432-16P-4KS2 2) DHI-NVR4832-4KS2, DHI-NVR4816-4KS2, DHI-NVR4832-4KS2, NVR4816-4KS2, NVR4832-4KS2, DHI-NVR4432-4KS2, DHI-NVR4416-4KS2, DHI-NVR4432-4KS2, NVR4416-4KS2, NVR4432-4KS2
Ratings.....	1) I/P: 100-240V~, 50-60Hz, 4.0A 2) I/P: 100-240V~, 50-60Hz, 1.9A



Particulars: test item vs. test requirements	
Equipment mobility	: Movable
Connection to the mains	: Pluggable A
Operating condition.....	: Continuous
Access location	: Operator accessible
Over voltage category (OVC)	: OVCII
Mains supply tolerance (%) or absolute mains supply values	: +10%, -10%
Tested for IT power systems	: Yes
IT testing, phase-phase voltage (V)	: 230V (for Norway)
Class of equipment	: Class I
Considered current rating (A)	: 16A
Pollution degree (PD)	: PD 2
IP protection class	: IP X0
Altitude during operation (m)	: Up to 2000
Altitude of test laboratory (m)	: Up to 2000
Mass of equipment (kg)	: Approx. DHI-NVR4832-16P-4KS2: 9.1Kg; DHI-NVR4832-4KS2: 8.7Kg.
Possible test case verdicts:	
- test case does not apply to the test object.....	: N/A
- test object does meet the requirement	: P (Pass)
- test object does not meet the requirement	: F (Fail)
Testing	
Date of receipt of test item.....	: 2017-01-03
Date(s) of performance of tests.....	: 2017-01-03 to 2017-01-03



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 point is used as the decimal separator.

The instructions specified by the standard have to be in official language of each country, however, only English is checked for this report. It is the applicant responsibility to provide instruction in each official language of the EU.

This report is submitted for the exclusive use of the client to whom it is addressed. Its significance is subject to the adequacy and representative character of the sample(s) and to the comprehensiveness of the tests, examinations or surveys made.

This report justified only the submitted samples exclusively and not necessarily implies that all other samples are also to be found in same result.

The CE marking may only be used if all relevant and effective EC directives are complied with.

Factor(ies):

Zhejiang Dahua Vision Technology Co., Ltd.

Address: No.1199 Bin'an Road, Binjiang District, Hangzhou, P. R. China.

General product information:

1. The unit is a Network Video Recorder for use in general office equipment. All electrical components are mounted on V-1 PCB and housed in metal and plastic enclosure fixed by screws.
2. The model differences listed below:
 - 1) DHI-NVR4832-16P-4KS2, DHI-NVR4816-16P-4KS2, DHI-NVR4832-16P-4KS2, NVR4816-16P-4KS2, NVR4832-16P-4KS2, DHI-NVR4432-16P-4KS2, DHI-NVR4416-16P-4KS2, DHI-NVR4432-16P-4KS2, NVR4416-16P-4KS2, NVR4432-16P-4KS2 are identical except for the type designation for marketing purpose.
 - 2) DHI-NVR4832-4KS2, DHI-NVR4816-4KS2, DHI-NVR4832-4KS2, NVR4816-4KS2, NVR4832-4KS2, DHI-NVR4432-4KS2, DHI-NVR4416-4KS2, DHI-NVR4432-4KS2, NVR4416-4KS2, NVR4432-4KS2 are identical except for the type designation for marketing purpose.
 - 3) DHI-NVR4832-16P-4KS2 and DHI-NVR4832-4KS2 are similar except employing different internal power units, and DHI-NVR4832-16P-4KS2 assembly 16 POE ports.
3. All ports complied with limited power source, see appended table 2.5.
4. According to the applicants' requirement, the equipment is only evaluated to horizontal position.
5. The equipment was evaluated on only four HDD according to the requirements of the manufacture.
6. Unless otherwise indicated, all tests were conducted on Model DHI-NVR4832-16P-4KS2 and DHI-NVR4832-4KS2 to represent the other similar models.

Other comments:



The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 55 degree C.

This report has been amended, due to the following:

- To add trade mark  for all models.

For the above described change(s) the following was considered to be necessary:

Change	Testing	Comments
1, 2	N/A	See clause 1.7.1.2&1.7.11.

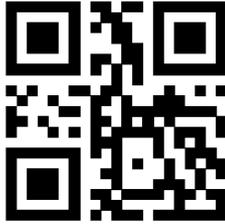
History of amendments and modifications:

Item	Certificate No. / Issue date	Test Report No. / Issue date	Remark
1	T1610040-434 / 2016-10-25	T1610098-575 / 2016-10-25	Original report

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.

(Representative)

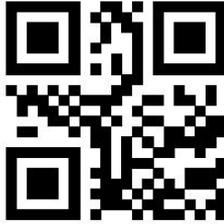
<p>NETWORK VIDEO RECORDER DHI-NVR4832-4KS2 100-240V ~, 1.9A, 50-60Hz P/N: 1.0.01.23.11229</p>  <p>S/N: 2E04801YAZA0D51 MADE IN CHINA ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD. No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China</p>	    
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NETWORK VIDEO RECORDER
DHI-NVR4832-16P-4KS2
100-240V ~, 4A, 50-60Hz
P/N: 1.0.01.23.11230



S/N: 2E04803YAZX8008
MADE IN CHINA
ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.
No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China





IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General	See below.	P
	Comply with IEC 60950-1 or relevant component standard	Components which were found to affect safety aspects comply with the requirements of this standard or with the safety aspects of the relevant IEC/EN component standards (See appended table 1.5.1).	P
1.5.2	Evaluation and testing of components	Components that 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
1.5.3	Thermal controls	No thermal control.	N/A
1.5.4	Transformers	Used transformer in approved switching power supply, which is suitable for their intended application and comply with the relevant requirements of the standard.	N/A
1.5.5	Interconnecting cables	Interconnection o/p cable to other device is carrying only SELV on an energy level below 240VA. Except for the insulation material, there are no further requirements for the o/p interconnection cable.	P
1.5.6	Capacitors bridging insulation	In approved built-in power supply.	N/A
1.5.7	Resistors bridging insulation		N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
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



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		N/A
1.5.9.1	General		N/A
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	TN power system and IT power system (for Norway).	P
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD. See appended table 1.6.2	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not a hand-held equipment.	N/A
1.6.4	Neutral conductor	The neutral is not identified in the equipment. Base insulation for rated voltage between earthed parts and primary phases. Reinforced insulation for rated voltage between secondary parts and primary phases.	P
1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	The required marking is located on the outside surface of the equipment.	P
1.7.1.1	Power rating marking	See below.	P
	Multiple mains supply connections.....:		N/A
	Rated voltage(s) or voltage range(s) (V) :	See Test item description for details.	P



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Symbol for nature of supply, for d.c. only	Mains from AC Source.	N/A
	Rated frequency or rated frequency range (Hz) ...	See Test item description for details.	P
	Rated current (mA or A)	See Test item description for details.	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark	<u>Manufacturer</u> : Zhejiang Dahua Vision Technology Co., Ltd.	P
	Model identification or type reference	See Test item description for details.	P
	Symbol for Class II equipment only	Class I equipment.	N/A
	Other markings and symbols	Additional symbols or markings do not give rise to misunderstanding.	P
1.7.1.3	Use of graphical symbols		P
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	The user's manual contains information for operation, installation, servicing, transport, storage and technical data. The operation guide is provided to the user.	P
1.7.2.2	Disconnect devices	Appliance inlet is provided as disconnection device.	P
1.7.2.3	Overcurrent protective device	Neither Pluggable equipment type B nor Permanently Connected Equipment.	N/A
1.7.2.4	IT power distribution systems	For Norway compliance has to be evaluated during the national approval.	N/A
1.7.2.5	Operator access with a tool	No tool is required to gain access to operator access area.	N/A
1.7.2.6	Ozone	No ozone produces within this equipment.	N/A
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment	No adjustment of supply voltage necessary.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Methods and means of adjustment; reference to installation instructions		N/A
1.7.5	Power outlets on the equipment	No outlet provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Fuse marking on the approved built-in power supply.	N/A
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals	Evaluated in approved built-in power supply.	N/A
1.7.7.2	Terminals for a.c. mains supply conductors	The equipment with appliance inlet is intended to be used the detachable type power supply cord.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	No connection to DC mains.	N/A
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking	The marking and indication for switches are located adjacent to the switches.	P
1.7.8.2	Colours	No safety relevant controls for indicators.	N/A
1.7.8.3	Symbols according to IEC 60417.....	The symbols of switch comply with IEC 60417-5007, IEC 60417-5008 and IEC 60417-5009.	P
1.7.8.4	Markings using figures	No used.	N/A
1.7.9	Isolation of multiple power sources	Only one supply connection.	N/A
1.7.10	Thermostats and other regulating devices	No such device provided.	N/A
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 s and then again for 15 s 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 neither curling nor lifting of the label edge.	P
1.7.12	Removable parts	No removable part provided.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
1.7.13	Replaceable batteries	Warning text provided in the servicing instructions.	P
	Language(s)	English	—
1.7.14	Equipment for restricted access locations	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A

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 energized parts	No acces with test finger and test pin to any parts with only basic insulation to hazardous voltage. Any hazardous parts accessible are unlikely.	P
	Test by inspection	Same as above.	P
	Test with test finger (Figure 2A)	Same as above.	P
	Test with test pin (Figure 2B)	Same as above.	P
	Test with test probe (Figure 2C)	No TNV circuits provided.	N/A
2.1.1.2	Battery compartments	No battery compartment.	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	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 wiring in operator accessible area.	N/A
2.1.1.5	Energy hazards	No energy hazards circuit in user accessible parts.	P
2.1.1.6	Manual controls	No conductive shaft of operating knob and handle.	N/A
2.1.1.7	Discharge of capacitors in equipment	No risk of electric shock. Done in the approval of the switching power supply.	N/A
	Measured voltage (V); time-constant (s)	Same as above.	—
2.1.1.8	Energy hazards – d.c. mains supply	AC mains supply only.	N/A
	a) Capacitor connected to the d.c. mains supply ...:		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

	b) Internal battery connected to the d.c. mains supply :		N/A
2.1.1.9	Audio amplifiers	No audio amplifier provided.	N/A
2.1.2	Protection in service access areas	No service work necessary.	N/A
2.1.3	Protection in restricted access locations	The equipment is not limited to be used in restricted access locations.	N/A

2.2	SELV circuits <i>(Evaluated in approved built-in power supply, the secondary circuits were tested as SELV)</i>		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V)		P
2.2.3	Voltages under fault conditions (V)		P
2.2.4	Connection of SELV circuits to other circuits	SELV circuits are only connected to other SELV circuits.	P

2.3	TNV circuits <i>(No TNV circuits within the equipment)</i>		N/A
2.3.1	Limits		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
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Clause	Requirement + Test	Result - Remark	Verdict

2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz)		—
	Measured current (mA).....		—
	Measured voltage (V)		—
	Measured circuit capacitance (nF or µF).....		—
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	See appended table 2.5.	P
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition	See appended table 2.5.	P
	Use of integrated circuit (IC) current limiters	See appended table 1.5.1.	P
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....	See appended table 2.5.	—
	Current rating of overcurrent protective device (A) ..		—

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Approved sources of internal power supply are used.	P
2.6.2	Functional earthing	Functional earthing (secondary trace) connected to protective bonding and separated from Hazardous voltage by reinforced insulation.	P
	Use of symbol for functional earthing		P
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General	No power supply cord provided. See subclause 2.6.3.4.	P
2.6.3.2	Size of protective earthing conductors	No power cord provided.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors	Complied with sub-clause 2.6.3.4.	P
	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)	See appended table 2.6.3.4.	P
2.6.3.5	Colour of insulation	No green/yellow wire used except in approved built-in power supply.	N/A
2.6.4	Terminals	See below.	P
2.6.4.1	General	Refer to 2.6.4.2 and 2.6.4.3.	P
2.6.4.2	Protective earthing and bonding terminals	Appliance inlet considered as protective earthing terminal.	P
	Rated current (A), type, nominal thread diameter (mm)		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used.	P
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	The unit has its own earthing connection. Any other units connected via the output shall be provided SELV only.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductors.	P
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect protective earth without disconnecting mains; an appliance inlet is used as disconnect device.	P
2.6.5.4	Parts that can be removed by an operator	Plug or inlet, earthing connected before and disconnected after hazardous voltage. No other operator removable parts.	P



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Clause	Requirement + Test	Result - Remark	Verdict

2.6.5.5	Parts removed during servicing	It is not necessary to disconnect earthing except for the removing of the earthed parts itself.	P
2.6.5.6	Corrosion resistance	All protective earth connections in compliance with Annex J. Specifically no direct Al – Cu contacts.	P
2.6.5.7	Screws for protective bonding	No selftapping screws are used.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuits.	N/A

2.7	Overcurrent and earth fault protection in primary circuits		N/A
2.7.1	Basic requirements		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
2.7.6	Warning to service personnel :		N/A

2.8	Safety interlocks		N/A
2.8.1	General principles		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



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Clause	Requirement + Test	Result - Remark	Verdict

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	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation. Electric strength test was conducted after the humidity treatment. See below.	P
2.9.2	Humidity conditioning	See below.	P
	Relative humidity (%), temperature (°C) :	95%, 30°C, 48hours	—
2.9.3	Grade of insulation	Functional, basic, supplementary, double and reinforced insulation.	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used :	Method 1 used.	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See below.	P
2.10.1.1	Frequency :	The Frequency does not exceeding 30kHz.	P
2.10.1.2	Pollution degrees :	2	P
2.10.1.3	Reduced values for functional insulation	See subclause 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts	No such conductive parts.	N/A
2.10.1.5	Insulation with varying dimensions	No reduction of distances considered.	N/A
2.10.1.6	Special separation requirements	No TNV circuit.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No such circuit.	N/A
2.10.2	Determination of working voltage	Measured in the approved built-in power supply.	N/A
2.10.2.1	General	Same as above.	N/A
2.10.2.2	RMS working voltage	Same as above.	N/A
2.10.2.3	Peak working voltage	Same as above.	N/A
2.10.3	Clearances	See below.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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	In approved built-in power supply	N/A
2.10.3.4	Clearances in secondary circuits		N/A
2.10.3.5	Clearances in circuits having starting pulses	No such circuit.	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	In approved built-in power supply	N/A
2.10.4.1	General	See below.	N/A
2.10.4.2	Material group and comparative tracking index	See below.	N/A
	CTI tests.....	Material group IIIb assumed; 100<=CTI<175.	—
2.10.4.3	Minimum creepage distances	In approved built-in power supply	N/A
2.10.5	Solid insulation	In approved built-in power supply	N/A
2.10.5.1	General	Same as above.	N/A
2.10.5.2	Distances through insulation	Same as above.	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



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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.6	Thin sheet material – General	In approved built-in power supply.	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	In approved built-in power supply.	N/A
2.10.6.1	Uncoated printed boards		N/A
2.10.6.2	Coated printed boards	No coated printed board.	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



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Clause	Requirement + Test	Result - Remark	Verdict
	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	Internal cable is UL recognized wiring, which is PVC insulated, rated VW-1, min. 80°C. Internal wiring gauge is suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges and heatsinks, which could damage the insulation and cause hazards.	P
3.1.3	Securing of internal wiring	The wires are secured by soldering and use of quick-connect termination, so that a loosening of the terminal connection is unlikely.	P
3.1.4	Insulation of conductors	The insulation of the individual conductors is suitable for the application and the working voltage. For the insulation material see 3.1.1.	P
3.1.5	Beads and ceramic insulators	No such insulators used.	N/A
3.1.6	Screws for electrical contact pressure	No screw used for electrical connection.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
3.1.7	Insulating materials in electrical connections	All current carrying connections are metal to metal.	N/A
3.1.8	Self-tapping and spaced thread screws	No self-tapping or spaced thread screws used.	N/A
3.1.9	Termination of conductors	All conductors are reliable secured.	P
	10 N pull test	After test, no break away or pivot on its terminal.	P
3.1.10	Sleeving on wiring	No sleeving used as supplementary insulation.	N/A
3.2	Connection to a mains supply		P
3.2.1	Means of connection	Approved appliance inlet is provided.	P
3.2.1.1	Connection to an a.c. mains supply	An appliance inlet for connection of detachable power supply cord.	P
3.2.1.2	Connection to a d.c. mains supply	AC mains supply.	N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment	Not permanently connected.	N/A
	Number of conductors, diameter of cable and conduits (mm)		—
3.2.4	Appliance inlets	Evaluated in approved built-in power supply.	P
3.2.5	Power supply cords	No power supply cords provided.	N/A
3.2.5.1	AC power supply cords	Same as above.	N/A
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC power supply cords	AC power supply cords used.	N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. Enclosure without sharp edges.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict

3.2.8	Cord guards	No cord guard.	N/A
	Diameter or minor dimension D (mm); test mass (g)		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space		N/A

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals		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
	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	See below.	N/A
3.4.2	Disconnect devices	Appliance inlet is provided as disconnect devices.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	When power cord is removed from inlet no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords	No such components.	N/A
3.4.6	Number of poles - single-phase and d.c. equipment	The appliance inlet disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single phase.	N/A
3.4.8	Switches as disconnect devices	Refer to 3.4.2.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict

3.4.9	Plugs as disconnect devices	Same as above.	N/A
3.4.10	Interconnected equipment	Interconnection of the power supply to the other equipment by secondary output connectors only.	N/A
3.4.11	Multiple power sources		N/A

3.5	Interconnection of equipment		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits	Interconnection circuits to SELV through the connectors.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A
3.5.4	Data ports for additional equipment	All data ports are comply with the requirements of L.P.S. See appended table 2.5.	P

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N/A
	Angle of 10°		P
	Test force (N)		N/A

4.2	Mechanical strength		P
4.2.1	General	See below. After tests, unit complies with the requirements of sub-clauses 2.1.1, 2.6.1, and 4.4.1.	P
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N	Evaluated in approved built-in power supply.	N/A
4.2.3	Steady force test, 30 N	30N applied to internal power supply's enclosure.	P
4.2.4	Steady force test, 250 N	250N applied to outer enclosure. No energy or other hazards.	P
4.2.5	Impact test	No hazard as result from steel ball impact test.	P
	Fall test	Same as above.	P



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Clause	Requirement + Test	Result - Remark	Verdict
	Swing test	Same as above.	P
4.2.6	Drop test; height (mm)	Not hand-held or direct plug-in equipment.	N/A
4.2.7	Stress relief test	After 7h at 70°C and cooling down to room temperature, no shrinkage, distortion or loosening of outer plastic enclosure parts.	P
4.2.8	Cathode ray tubes	No CRTs provided.	N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps	No such lamps.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N)	No such equipment.	N/A
4.3	Design and construction		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.3.2	Handles and manual controls; force (N)..... :	No handles or controls provided.	N/A
4.3.3	Adjustable controls	No controls provided.	N/A
4.3.4	Securing of parts	Mechanical fixings in such a way designed that they will withstand mechanical stress occurring in normal use.	P
4.3.5	Connection by plugs and sockets	No mismatch of connectors, plugs or sockets possible.	P
4.3.6	Direct plug-in equipment	Not direct plug-in type.	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	Approved non-rechargeable source. See appended table 1.5.1	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery	See appended table 4.3.8.	P
	- Reverse charging of a rechargeable battery		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	Insulation in intended use not considered to be exposed to oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment in intended use not considered to be exposed to dust, powders, liquids and gases.	N/A
4.3.11	Containers for liquids or gases	No container for liquid or gas provided.	N/A
4.3.12	Flammable liquids	No flammable liquids provided.	N/A
	Quantity of liquid (l)		N/A
	Flash point (°C)		N/A
4.3.13	Radiation	See below.	P
4.3.13.1	General	See below.	P
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg)		N/A
	Measured high-voltage (kV)		N/A
	Measured focus voltage (kV)		N/A
	CRT markings		N/A
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	LEDs considered as Class I.	P
4.3.13.5.1	Lasers (including laser diodes)		N/A
	Laser class		N/A
4.3.13.5.2	Light emitting diodes (LEDs)	The LED used as indicating lights.	P
4.3.13.6	Other types	No such consideration.	N/A
4.4	Protection against hazardous moving parts		P
4.4.1	General	See below.	P



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Clause	Requirement + Test	Result - Remark	Verdict
4.4.2	Protection in operator access areas	No moving parts except for DC fans located within equipment which was no operator accessible area inside.	P
	Household and home/office document/media shredders	No such devices.	N/A
4.4.3	Protection in restricted access locations	Not for restricted access locations used.	N/A
4.4.4	Protection in service access areas	Unintentional contact with inside DC fan is possible. However, indication for power off equipment first in service manual provided.	P
4.4.5	Protection against moving fan blades	No moving parts except for DC fans located within equipment which was no operator accessible area inside.	N/A
4.4.5.1	General	Same as above.	N/A
	Not considered to cause pain or injury. a).....	Same as above.	N/A
	Is considered to cause pain, not injury. b)	Same as above.	N/A
	Considered to cause injury. c)	Same as above.	N/A
4.4.5.2	Protection for users	Same as above.	N/A
	Use of symbol or warning	Same as above.	N/A
4.4.5.3	Protection for service persons	Same as above.	N/A
	Use of symbol or warning	Same as above.	N/A

4.5	Thermal requirements		P
4.5.1	General	See below	P
4.5.2	Temperature tests	See appended table 4.5.1	P
	Normal load condition per Annex L	See Annex L.	P
4.5.3	Temperature limits for materials	See appended table 4.5.1	P
4.5.4	Touch temperature limits	See appended table 4.5.1	P
4.5.5	Resistance to abnormal heat	In approved built-in power supply.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
4.6	Openings in enclosures		P
4.6.1	Top and side openings	See below.	P
	Dimensions (mm)	See the appended table 4.6.1, 4.6.2	P
4.6.2	Bottoms of fire enclosures	See below.	P
	Construction of the bottom, dimensions (mm) ..	See the appended table 4.6.1, 4.6.2	P
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment	The equipment is not transportable equipment.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm)		N/A
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		N/A
	Conditioning temperature (°C), time (weeks)		N/A

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
	Method 1, selection and application of components wiring and materials	Method 1 used.	P
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	With having the following components: - Componets in primary - Component in secondary (not supplied by LPS) - Components having unenclosurd arcing parts at hazardous voltage or energy level - Insulated wirings The fire enclosre is required.	P



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Clause	Requirement + Test	Result - Remark	Verdict
4.7.2.2	Parts not requiring a fire enclosure	See sub-clauses 4.7.2.1	N/A
4.7.3	Materials		P
4.7.3.1	General	Integrated circuits and small electrical parts mounted on a printed wiring board min. rated V-1.	P
4.7.3.2	Materials for fire enclosures	Metal enclosure and plastic enclosure.	P
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assembly within this equipment.	N/A
4.7.3.6	Materials used in high-voltage components	No high voltage components provided.	N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	P
5.1.2	Configuration of equipment under test (EUT)	See below.	P
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		P
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Single phase equipment intended only for connection to TN system.	P
5.1.4	Application of measuring instrument	Tests are conducted using one of the measuring instruments in Annex D, or any other circuit giving the same results.	P
5.1.5	Test procedure		P
5.1.6	Test measurements	See below.	P
	Supply voltage (V)	See appended table 5.1.6.	—
	Measured touch current (mA)	See appended table 5.1.6.	—



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Clause	Requirement + Test	Result - Remark	Verdict
	Max. allowed touch current (mA)	See appended table 5.1.6.	—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)..:		—
5.1.7	Equipment with touch current exceeding 3,5 mA	Touch current does not exceed 3.5mA.	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		P
5.2.1	General	See appended table 5.2	P
5.2.2	Test procedure	Tabel 5B used.	P
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	Certified HDD and DC Fan were used.	N/A
5.3.3	Transformers	In approved Built-in power supply.	N/A
5.3.4	Functional insulation.....	Functional insulation complies with the requirements.	P



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Clause	Requirement + Test	Result - Remark	Verdict
5.3.5	Electromechanical components	No electromechanical component provided.	N/A
5.3.6	Audio amplifiers in ITE		N/A
5.3.7	Simulation of faults	See appended table 5.3	P
5.3.8	Unattended equipment	None of the listed components was provided.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See appended table 5.3.	P
5.3.9.1	During the tests	No fire, emission of molten metal or deformation was noted during the tests.	P
5.3.9.2	After the tests	Electric Strength tests performed after abnormal and fault tests.	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		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)		—



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Clause	Requirement + Test	Result - Remark	Verdict

	Current limiting method		—
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7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
7.1	General		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		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples.....		—
	Wall thickness (mm).....		—
A.1.2	Conditioning of samples; temperature (°C)		N/A
A.1.3	Mounting of samples		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	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



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Clause	Requirement + Test	Result - Remark	Verdict
A.2.1	Samples, material		—
	Wall thickness (mm).....		—
A.2.2	Conditioning of samples; temperature (°C)		N/A
A.2.3	Mounting of samples		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N/A
B.1	General requirements		N/A
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days)		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V)		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V)		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V)		—
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N/A
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
	Method of protection		—
C.1	Overload test		N/A
C.2	Insulation		N/A
	Protection from displacement of windings		N/A
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument		P
D.2	Alternative measuring instrument		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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
G.1	Clearances		N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply		N/A
G.2.2	Earthed d.c. mains supplies		N/A
G.2.3	Unearthed d.c. mains supplies		N/A
G.2.4	Battery operation		N/A
G.3	Determination of telecommunication network transient voltage (V)		N/A
G.4	Determination of required withstand voltage (V)		N/A
G.4.1	Mains transients and internal repetitive peaks		N/A
G.4.2	Transients from telecommunication networks		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient voltages (V)		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
G.6	Determination of minimum clearances		N/A
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P



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Clause	Requirement + Test	Result - Remark	Verdict

	Metal(s) used		—
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K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V)		N/A
K.3	Thermostat endurance test; operating voltage (V)		N/A
K.4	Temperature limiter endurance; operating voltage (V)		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		P
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	See appended table 1.6.2.	P

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringling signal		N/A
M.3.1.1	Frequency (Hz)		—
M.3.1.2	Voltage (V)		—
M.3.1.3	Cadence; time (s), voltage (V)		—
M.3.1.4	Single fault current (mA)		—
M.3.2	Tripping device and monitoring voltage		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V)		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
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N/A
	- Preferred climatic categories		N/A
	- Maximum continuous voltage		N/A
	- Combination pulse current		N/A
	Body of the VDR Test according to IEC60695-11-5.....		N/A
	Body of the VDR. Flammability class of material (min V-1).....		N/A
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
			—



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)		P
V.1	Introduction		P
V.2	TN power distribution systems		P
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N/A
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N/A
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N/A
Y.1	Test apparatus		N/A
Y.2	Mounting of test samples		N/A
Y.3	Carbon-arc light-exposure apparatus		N/A
Y.4	Xenon-arc light exposure apparatus		N/A
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		P
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—



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

CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N/A
CC.1	General		N/A
CC.2	Test program 1.....:		N/A
CC.3	Test program 2.....:		N/A
CC.4	Test program 3.....:		N/A
CC.5	Compliance.....:		N/A

DD	ANNEX DD, Requirements for the mounting means of rack-mounted equipment		N/A
DD.1	General		N/A
DD.2	Mechanical strength test, variable N.....:		N/A
DD.3	Mechanical strength test, 250N, including end stops.....:		N/A
DD.4	Compliance.....:		N/A

EE	ANNEX EE, Household and home/office document/media shredders		N/A
EE.1	General		N/A
EE.2	Markings and instructions		N/A
	Use of markings or symbols.....:		N/A
	Information of user instructions, maintenance and/or servicing instructions.....:		N/A
EE.3	Inadvertent reactivation test.....:		N/A
EE.4	Disconnection of power to hazardous moving parts:		N/A
	Use of markings or symbols.....:		N/A
EE.5	Protection against hazardous moving parts		N/A
	Test with test finger (Figure 2A):		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with wedge probe (Figure EE1 and EE2)		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS			
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note		P
General (A2:2013)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P
1.1.1 (A1:2010)	Replace the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	<p>Add the following subclause:</p> <p>1.3.Z1 Exposure to excessive sound pressure</p> <p>The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones.</p> <p>NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.</p>		N/A
(A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete the addition of 1.3.Z1 / EN 60950-1:2006</p> <p>Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010</p>		N/A
1.5.1 (Added info*)	<p>Add the following NOTE:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *</p>		P
1.7.2.1 (A1:2010)	<p>In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.</p>		N/A
1.7.2.1 (A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete NOTE Z1 and the addition for Portable Sound System.</p> <p>Add the following clause and annex to the existing standard and amendments.</p>		N/A
	<p>Zx Protection against excessive sound pressure from personal music players</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that: is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use.</p> <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply: while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used.</p> <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to: hearing aid equipment and professional equipment;</p> <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>		N/A
	<p>Zx.2 Equipment requirements</p> <p>No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none"> equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” as described in EN 50332-1. <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none"> a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and 		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none"> 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. <p>For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: “To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p>  <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N/A
	<p>Zx.4 Requirements for listening devices (headphones and earphones)</p>		N/A
	<p>Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N/A
	<p>Zx.4.3 Wireless listening devices In wireless mode: with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N/A
	<p>Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		P
	<p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N/A
2.7.2	<p>This subclause has been declared 'void'.</p>		P
3.2.3	<p>Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.</p>		N/A



IEC 60950-1									
Clause	Requirement + Test	Result - Remark	Verdict						
3.2.5.1	<p>Replace “60245 IEC 53” by “H05 RR-F”; “60227 IEC 52” by “H03 VV-F or H03 VVH2-F”; “60227 IEC 53” by “H05 VV-F or H05 VVH2-F2”.</p> <p>In Table 3B, replace the first four lines by the following:</p> <table border="0"> <tr> <td>Up to and including 6 </td> <td>0,75^{a)} </td> </tr> <tr> <td>Over 6 up to and including 10 </td> <td>(0,75)^{b)} 1,0 </td> </tr> <tr> <td>Over 10 up to and including 16 </td> <td>(1,0)^{c)} 1,5 </td> </tr> </table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 ^{a)}	Over 6 up to and including 10	(0,75) ^{b)} 1,0	Over 10 up to and including 16	(1,0) ^{c)} 1,5		N/A
Up to and including 6	0,75 ^{a)}								
Over 6 up to and including 10	(0,75) ^{b)} 1,0								
Over 10 up to and including 16	(1,0) ^{c)} 1,5								
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N/A						
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table border="0"> <tr> <td>Over 10 up to and including 16 </td> <td>1,5 to 2,5 </td> <td>1,5 to 4 </td> </tr> </table> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>	Over 10 up to and including 16	1,5 to 2,5	1,5 to 4		N/A			
Over 10 up to and including 16	1,5 to 2,5	1,5 to 4							
4.3.13.6 (A1:2010)	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).</p>		N/A						
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A						
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N/A						



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

Bibliography	Additional EN standards.		—
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ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
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ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
1.2.4.1	In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N/A
1.2.13.14 (A11:2009)	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1 (A11:2009)	In Finland, Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N/A
1.5.8	In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
1.5.9.4	In Finland, Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
1.7.2.1	<p>In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N/A
1.7.2.1 (A11:2009)	<p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>"Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)."</p>		



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
	<p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway): “Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel-TV nettet.”</p> <p>Translation to Swedish: ”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		N/A
1.7.2.1 (A2:2013)	<p>In Denmark, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in Denmark shall be as follows: In Denmark: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”</p>		N/A



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

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
1.7.5 1.7.5 (A11:2009)	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
1.7.5 (A2:2013)	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c		N/A
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
3.2.1.1	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N/A
3.2.1.1 (A2:2013)	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
3.2.1.1	<p>In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A
3.2.1.1	<p>In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
3.2.1.1	<p>In Ireland, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p>		N/A
3.2.4	<p>In Switzerland, for requirements see 3.2.1.1 of this annex.</p>		N/A
3.2.5.1	<p>In the United Kingdom, a power supply cord with conductor of 1,25 mm² is allowed for equipment with a rated current over 10 A and up to and including 13 A.</p>		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
3.3.4	In the United Kingdom , the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm ² to 1,5 mm ² nominal cross-sectional area.		N/A
4.3.6	In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	In Ireland , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A



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

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
6.1.2.1 (A1:2010)	<p>In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. 		N/A



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
	<p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. 		N/A
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3 (A11:2009)	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A



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

**Annex ZD
(informative)**

IEC and CENELEC code designations for flexible cords

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60277 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H



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)	
Metal Enclosure	Interchangeable	Interchangeable	Min. 1.2mm thickness	--	--	
Plastic Enclosure	SABIC Innovative Plastics Japan L L C	C6600	V-0 or better, min. 1.5mm thickness, 70°C	UL 94, UL 746	UL	
Built-in power supply (For models DHI-NVR4832-16P-4KS2, DHI-NVR4816-16P-4KS2, DHI-NVR4832-16P-4KS2, NVR4816-16P-4KS2, NVR4832-16P-4KS2, DHI-NVR4432-16P-4KS2, DHI-NVR4416-16P-4KS2, DHI-NVR4432-16P-4KS2, NVR4416-16P-4KS2, NVR4432-16P-4KS2 used)	Delta Electronics Inc	DPS-300AB 81A	I/P: 100-240V~, 5.5A, 50-60Hz, O/P: +12Vdc / 12.5A, - 53Vdc/2.83A, Total output continuous shall not exceed 300W. Ambient: 55degree C (Power less than 264W). Class I	IEC 60950-1: 2005(Seconded Edition)+Am1: 2009, EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011	CB by TUV Rh	



Built-in power supply (For models DHI-NVR4832-4KS2, DHI-NVR4816-4KS2, DHI-NVR4832-4KS2, NVR4816-4KS2\NVR4832-4KS2, DHI-NVR4432-4KS2, DHI-NVR4416-4KS2, DHI-NVR4432-4KS2, NVR4416-4KS2, NVR4432-4KS2 used)	Delta Electronics Inc	DPS-150AB 3A	I/P: 100-240V~, 4A, 47-63Hz, O/P: +12Vdc / 12.5A, Total output continuous shall not exceed 150W. Ambient: 55degree C. Class I	IEC 60950-1: 2005(Seconded Edition)+Am1: 2009, EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011	CB by TUV Rh
DC Fan for system (One provided)	ADDA CORP	AD0812LX-A70GL	12Vdc, maximum 0.12A, minimum 26.801CFM	EN 60950-1: 2006+A11+A1+A12+A2:2013	TUV
RTC Battery	Hitachi Maxell	CR2032	3Vdc, max. abnormal charging current 10mA.	UL 1642	UL
HDD (Optional)	Interchangeable	Interchangeable	5/12Vdc, 0.75/0.75A max.	EN60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 or later version.	Approved by certification Body
Polyswitch (RT8 for Alarm port(J56))	CYG WAYON Circuit protection Co Ltd	LP-MSM150/24	24Vdc, 1.5A	IEC/EN 60730-1, UL 1434	TUV, UL
Integrated Circuits (U25 for HDMI (J12) used)	DIODES INC	AP2331	2.7-5.2Vdc, 2.0A	IEC 60950-1	CB by Nemko



Integrated Circuits (U31 for USB2.0 (J29, U33 for USB3.0 (J10) used)	SILERGY CORP.	SY6288C	2.5-5.5Vdc,2.0A	EN 60950-1:2006+A11+A1+A12+A2	TUV Mark
PCB	Interchangeable	Interchangeable	Min. V-1, min. 105°C	UL 796, UL 94	UL
Supplementary information:					

1.6.2	TABLE: Electrical data (in normal conditions)						P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status	
Test model: DHI-NVR4832-4KS2							
90Vac/50 Hz	0.972	--	86.2	F1	0.972	Maximum normal load	
90Vac/60 Hz	0.973	--	86.4	F1	0.973	Maximum normal load	
100Vac/50 Hz	0.874	1.9	85.6	F1	0.874	Maximum normal load	
100Vac/60 Hz	0.870	1.9	85.9	F1	0.870	Maximum normal load	
240Vac/50 Hz	0.371	1.9	80.9	F1	0.371	Maximum normal load	
240Vac/60 Hz	0.381	1.9	80.8	F1	0.381	Maximum normal load	
254.4Vac/50Hz	0.356	--	80.5	F1	0.356	Maximum normal load	
254.4Vac/60Hz	0.367	--	80.6	F1	0.367	Maximum normal load	
264Vac/50 Hz	0.348	--	80.4	F1	0.348	Maximum normal load	
264Vac/60 Hz	0.360	--	80.6	F1	0.360	Maximum normal load	
Test model: DHI-NVR4832-16P-4KS2							
90Vac/50 Hz	2.878	--	253.7	F1	2.878	Maximum normal load	
90Vac/60 Hz	2.864	--	253.7	F1	2.864	Maximum normal load	
100Vac/50 Hz	2.582	4.0	251.5	F1	2.582	Maximum normal load	
100Vac/60 Hz	2.561	4.0	251.2	F1	2.561	Maximum normal load	



240Vac/50 Hz	1.075	4.0	240.2	F1	1.075	Maximum normal load
240Vac/60 Hz	1.069	4.0	240.1	F1	1.069	Maximum normal load
254.4Vac/50Hz	1.022	--	239.5	F1	1.022	Maximum normal load
254.4Vac/60Hz	1.019	--	239.2	F1	1.019	Maximum normal load
264Vac/50 Hz	0.993	--	239.4	F1	0.993	Maximum normal load
264Vac/60 Hz	0.991	--	239.2	F1	0.991	Maximum normal load
Supplementary information: Maximum normal load: Cross reading/writing data in HDD (HDD rating 12/5Vdc, 0.75/0.75A max.). Each of two USB 3.0 port loaded 4.5W, Each of two USB 2.0 port loaded 2.5W. And each of sixteen POE connectors loaded 9.375W. And Unit normal record video continually.						

2.1.1.5 c) 1)	TABLE: max. V, A, VA test				P
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:				

2.1.1.7	TABLE: Discharge test				N/A
Condition	τ calculated (s)	τ measured (s)	t u → 0V (s)	Comments	
--	--	--	--	--	
Supplementary information:					



2.2	TABLE: evaluation of voltage limiting components in SELV circuits			P
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:				
Approved in internal power unit.				

2.4.2	TABLE: Limited current circuit measurement					N/A
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
--	--	--	--	--	--	
Supplementary information:						

2.5	TABLE: limited power sources						P
Circuit output tested: See below							
Note: Measured Uoc (V) with all load circuits disconnected: See below							
Components	Sample No.	Uoc (V)	I _{sc} (A)		VA		
			Meas.	Limit	Meas.	Limit	
VGA Port (J21) (Pin5, 6, 7 8,10: GND; Pin 4, 9, 11, 12, 15: NC)							
According to Table 2B (Normal condition) (Pin 1, 2, 3, 13, 14 to GND)	1	0	0	8.0	0	100	
HDMI Port (J21) (Pin 2, 5, 8, 11, 17: GND; Pin 13, 14: NC)							
According to Table 2B (Normal condition) (Pin 18 to GND) ¹⁾	1	4.98	0.38	8.0	1.401	100	



According to Table 2B (Normal condition) (Pin 15, 16 to GND)	1	4.85	0	8.0	0	100
According to Table 2B (Normal condition) (Pin 1, 3, 4, 6, 7, 9, 10, 12, 19 to GND)	1	0	0	8.0	0	100
Two USB Port (J29, J30 on main board) (Pin 4: GND)						
According to Table 2B (Normal condition) (Pin Pin 1 to GND) ²⁾	1	5.0	2.78	8.0	10.29	100
According to Table 2B (Normal condition) (Pin Pin 2, 3 to GND)	1	0	0	8.0	0	100
USB3.0 Port (J10) (Pin 4, 7: GND)						
According to Table 2B (Normal condition) (Pin Pin 1 to GND) ³⁾	1	4.93	2.63	8.0	11.4	100
According to Table 2B (Normal condition) (Pin Pin 2, 3, 5, 6, 8, 9 to GND)	1	0	0	8.0	0	100
RJ45 Port (J9)						
According to Table 2B (Normal condition) (Pin Pin 1-8 to GND)	1	0	0	8.0	0	100
MIC_IN&OUT Port (J13) (Pin 1: GND)						



According to Table 2B (Normal condition) (Pin 3 to GND)	1	0	0	8.0	0	100
RS232 Port (J34) (Pin 3: GND)						
According to Table 2B (Normal condition) (Pin 1, 2 to GND)	1	0	0	8.0	0	100
ALARM in Port (J56) (Pin 10, 12: GND)						
According to Table 2B (Normal condition) (Pin Pin 1-9, 11, 14, 16 to GND)	1	4.76	0	8.0	0	100
According to Table 2B (Normal condition) (Pin Pin 15 to GND) ⁴⁾	1	12	2.5	8.0	28.25	100
ALARM in Port (J71)						
According to Table 2B (Normal condition) (Pin Pin 1-6 to GND)	1	4.76	0	8.0	0	100
According to Table 2B (Normal condition) (Pin Pin 7-9 to GND)	1	4.76	0	8.0	0	100
Sixteen POE Ports (J5A, J5B, J6A, J6B, J7A, J7B, J8A, J8B on POE board)						
According to Table 2B (Normal condition) (Pin A3-A8, B3-B8, C3-C8, D3-D8 to GND)	1	0	0	8	0	100



According to Table 2B (Normal condition) (Pin A1, A2, B1, B2, C1, C, 2, D1, D2 to GND)	1	51.76	0.26	2.8	13.36	100
According to Table 2B (Single fault condition: M2, M3, M4, M5, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, M17, M18) (Pin A1, A2, B1, B2, C1, C, 2, D1, D2 to GND)	1	51.76	0.26	2.8	13.36	100
supplementary information:						
<ol style="list-style-type: none"> 1) HDMI (J12) was protected by IC (U25), see appended table 1.5.1. 2) USB 2.0 (J29, J30) was protected by IC (U31), see appended table 1.5.1. 3) USB 3.0 (J10) was protected by IC (U33), see appended table 1.5.1. 4) Alarm port (J56) was protected by PTC (RT8), see appended table 1.5.1. 						

2.6.3.4	TABLE: Resistance of earthing measurement			P
Location	Resistance measured (mΩ)	Comments		
Model: DHI-NVR4832-4KS2				
AC Inlet earthing pin to the farthest metal enclosure	17.1	32A, 2 minutes		
Model: DHI-NVR4832-16P-4KS2				
AC Inlet earthing pin to the farthest metal enclosure	13.7	32A, 2 minutes		
Supplementary information:				

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



--	--	--	--
supplementary information:			

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:							

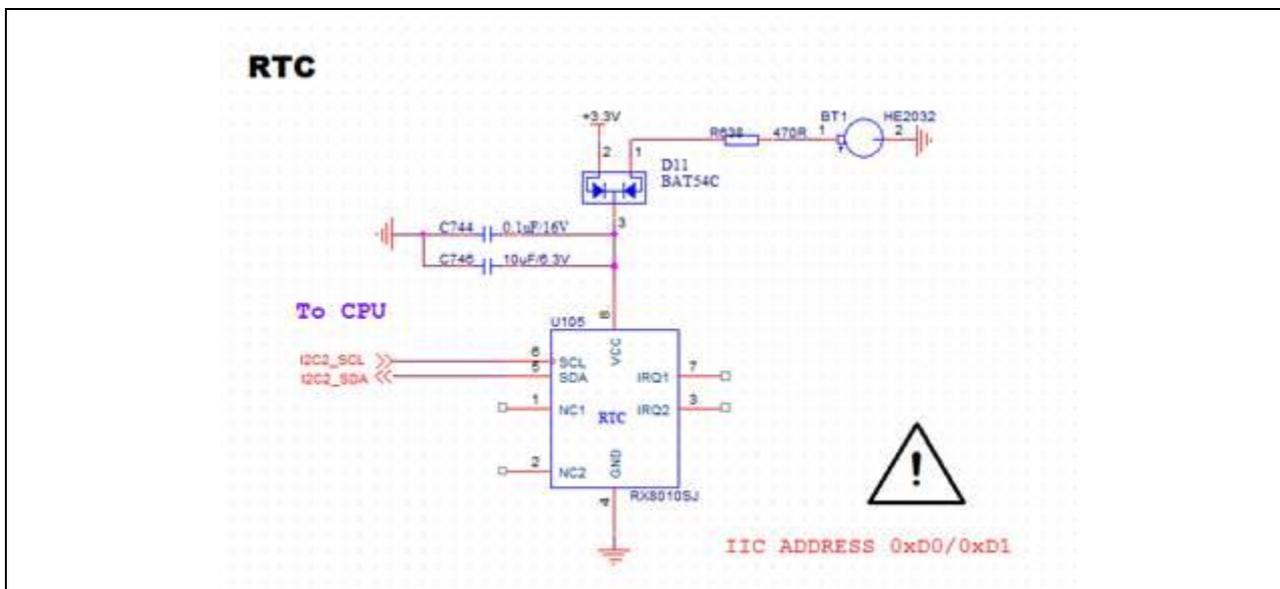
2.10.5	TABLE: Distance through insulation measurements					N/A
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
--	--	--	--	--	--	
Supplementary information:						

4.3.8	TABLE: Batteries								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available						See below.		P	
Is it possible to install the battery in a reverse polarity position?						Not possible.		N/A	
	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	--	--	0	--	--	--	--	--	--



4.3.8	TABLE: Batteries								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available						See below.		P	
Is it possible to install the battery in a reverse polarity position?						Not possible.		N/A	
	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 fault condition (D12 Pin1 to Pin 2 Shorted)	--	--	6.6mA	--	--	--	--	--	--
Max. current during fault condition (R538 Shorted)	--	--	0	--	--	--	--	--	--
Test results:									
- Chemical leaks						No chemical leak.		P	
- Explosion of the battery						No explosion of the battery.		P	
- Emission of flame or expulsion of molten metal						No emission of flame or expulsion of molten metal.		P	
- Electric strength tests of equipment after completion of tests								N/A	
Supplementary information:									

4.3.8	TABLE: Batteries								P
Battery category: Lithium									
Manufacturer: See appended table 1.5.1									
Type / model: See appended table 1.5.1									
Voltage.....: See appended table 1.5.1									
Capacity.....: --									
Tested and Certified by (incl. Ref. No.).....: See appended table 1.5.1 & 4.3.8									
Circuit protection diagram: See below									



MARKINGS AND INSTRUCTIONS (1.7.2.1, 1.7.13)	
Location of replaceable battery	In service access areas
Language(s)	English
Close to the battery	N/A
In the servicing instructions	Provided.
In the operating instructions	N/A

4.5	TABLE: Thermal requirements						P
Supply voltage (V)	See below	See below	See below	See below	--	--	
Ambient T _{min} (°C)	--	--	--	--	--	--	
Ambient T _{max} (°C)	See below	See below	See below	See below	--	--	
Maximum measured temperature T of part/at::	T (°C)					Allowed T _{max} (°C)	
Test model: DHI-NVR4832-4KS2							
Test Voltage:	90Vac/60Hz		264Vac/60Hz		--	--	
AC inlet(on supply power)	27.7	63.3	26.0	62.4	--	70	
Power switch (on supply power)	24.8	60.4	22.5	58.9	--	85	
Primary wire(on supply power)	31.7	67.3	27.8	64.2	--	70	



CX1 body(on supply power)	40.6	76.2	36.1	72.5	--	100
CY6 body(on supply power)	43.5	79.1	36.9	73.3	--	85
FL1 coil(on supply power)	50.0	85.6	41.5	77.9	--	130
FL3 coil(on supply power)	51.7	87.3	34.4	70.8	--	130
PCB near BD1(on supply power)	59.5	95.1	37.1	73.5	--	130
PCB near Q501(on supply power)	42.9	78.5	36.9	73.3	--	130
C804 body(on supply power)	32.5	68.1	27.5	63.9	--	105
IC151 body(on supply power)	51.2	86.8	45.5	81.9	--	100
T501 coil(on supply power)	45.1	80.7	42.3	78.7	--	110
T501 core(on supply power)	41.5	77.1	38.9	75.3	--	110
L801 coil(on supply power)	58.7	94.3	37.1	73.5	--	130
L151coil(on supply power)	49.8	85.4	47.1	83.5	--	105
PCB near U3	29.1	64.7	28.8	65.2	--	105
PCB near U7	30.5	66.1	29.7	66.1	--	105
T1 body	26.8	62.4	26.0	62.4	--	110
HDD body	25.5	61.1	25.4	61.8	--	--
BT1 body	22.3	57.9	22.0	58.4	--	100
Internal plastic enclosure (front board)	22.6	58.2	21.8	58.2	--	70
External plastic enclosure (front board)	22.9	58.5	22.1	58.5	--	95
metal enclosure near power supply	24.8	60.4	23.3	59.7	--	70
Ambient	19.4	Shift to 55.0	18.6	Shift to 55.0	--	--
Test model: DHI-NVR4832-16P-4KS2						
Test Voltage:	90Vac/50Hz		264Vac/50Hz		--	--
AC inlet(on supply power)	37.1	67.8	32.9	63.6	--	70
Power switch (on supply power)	32.1	62.8	30.5	61.2	--	85
Primary wire(on supply power)	34.6	65.3	31.7	62.4	--	70
T501 coil(on supply power)	40.3	71.0	39.2	69.9	--	110
T501 core(on supply power)	40.3	71.0	38.6	69.3	--	110
T901 coil(on supply power)	49.9	80.6	47.8	78.5	--	110
T901 core(on supply power)	40.9	71.6	41.3	72.0	--	110
CX4 body(on supply power)	53.2	83.9	36.7	67.4	--	100
CY4 body(on supply power)	37.0	67.7	32.8	63.5	--	100
T502 coil(on supply power)	40.4	71.1	34.5	65.2	--	130
FL1 coil(on supply power)	53.6	84.3	35.6	66.3	--	130
FL2 coil(on supply power)	53.2	83.9	36.3	67.0	--	130
L801 coil	46.9	77.6	36.9	67.6	--	130



PCB near BD1(on supply power)	73.7	104.4	43.7	74.4	--	130
PCB near Q501(on supply power)	52.5	83.2	41.2	71.9	--	130
IC151 body(on supply power)	32.3	63.0	32.2	62.9	--	100
L151 coil(on supply power)	39.1	69.8	38.7	69.4	--	105
C802 body(on supply power)	48.3	79.0	36.5	67.2	--	85
PCB near U3	34.8	65.5	36.1	66.8	--	105
PCB near U20	49.8	80.5	49.1	79.8	--	105
PCB near U10	37.0	67.7	38.4	69.1	--	105
T5 body	33.5	64.2	32.9	63.6	--	110
T1 body	35.5	66.2	35.9	66.6	--	110
BT1 body	30.8	61.5	31.8	62.5	--	100
Internal plastic enclosure (front board)	28.5	59.2	28.3	59.0	--	70
External plastic enclosure (front board)	28.2	58.9	28.1	58.8	--	95
metal enclosure near power supply	28.5	59.2	28.5	59.2	--	70
HDD body	33.8	64.5	34.9	65.6	--	--
Ambient	24.3	Shift to 55.0	24.3	Shift to 55.0	--	--

Supplementary information:

Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

1. The temperature were measured under the worse case normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 at voltage as described above.
2. The maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification is 55°C.

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:

4.6.1, 4.6.2	Table: enclosure openings		P
Location	Size (mm)	Comments	
Top side/ Front side/ Bottom side	None	--	
Rear side	Max. Φ6.2mm	Numerous regular hexagon openings for power fan used. No hazardous parts with 5° projection area.	



Left side	Max. Φ 4.4mm	Numerous regular hexagon openings. Openings that do not exceed 5mm in any dimension.
Right side	Max. Φ 5.0mm	Numerous regular hexagon openings for DC fan. Openings that do not exceed 5mm in any dimension.
	Max. Φ 4.4mm	Numerous regular hexagon openings. Openings that do not exceed 5mm in any dimension.
Note(s):		

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
PCB	--	--	-	1)	P	
Metal Enclosure	--	Metallic	1)	1)	P	
Plastic Enclosure	1)	1)	1)	1)	P	
Supplementary information: 1) For details refer to table 1.5.1.						

5.1	TABLE: touch current measurement			P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
Test model: DHI-NVR4832-4KS2				
Earthed SELV terminal	0.19	3.5	Switch "e" opened, Polarity Switch P1 Normal, Primary Switch on	
Earthed SELV terminal	0.19	3.5	Switch "e" opened, Polarity Switch P1 Reverse, Primary Switch on	
Earthed SELV terminal	0.32	3.5	Switch "e" opened, Polarity Switch P1 Normal, Primary Switch off	
Earthed SELV terminal	0.07	3.5	Switch "e" opened, Polarity Switch P1 Reverse, Primary Switch off	
Earthed Metal enclosure	0.19	3.5	Switch "e" opened, Polarity Switch P1 Normal, Primary Switch on	
Earthed Metal enclosure	0.19	3.5	Switch "e" opened, Polarity Switch P1 Reverse, Primary Switch on	
Earthed Metal enclosure	0.32	3.5	Switch "e" opened, Polarity Switch P1 Normal, Primary Switch off	



Earthed Metal enclosure	0.07	3.5	Switch “e” opened, Polarity Switch P1 Reverse, Primary Switch off
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch on
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch on
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch off
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch off
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch on
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch on
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch off
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch off
Test model: DHI-NVR4832-16P-4KS2			
Earthed SELV terminal	0.22	3.5	Switch “e” opened, Polarity Switch P1 Normal, Primary Switch on
Earthed SELV terminal	0.22	3.5	Switch “e” opened, Polarity Switch P1 Reverse, Primary Switch on
Earthed SELV terminal	0.39	3.5	Switch “e” opened, Polarity Switch P1 Normal, Primary Switch off
Earthed SELV terminal	0.04	3.5	Switch “e” opened, Polarity Switch P1 Reverse, Primary Switch off
Earthed Metal enclosure	0.22	3.5	Switch “e” opened, Polarity Switch P1 Normal, Primary Switch on
Earthed Metal enclosure	0.22	3.5	Switch “e” opened, Polarity Switch P1 Reverse, Primary Switch on
Earthed Metal enclosure	0.39	3.5	Switch “e” opened, Polarity Switch P1 Normal, Primary Switch off
Earthed Metal enclosure	0.04	3.5	Switch “e” opened, Polarity Switch P1 Reverse, Primary Switch off
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch on
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch on
Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch off



Unearthed Metal enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch off
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch on
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch on
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Normal, Primary Switch off
Plastic enclosure	0.005	0.25	Switch “e” closed, Polarity Switch P1 Reverse, Primary Switch off
supplementary information:			
Test Voltage 264Vac, 60Hz			

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Test model: DHI-NVR4832-16P-4KS2¹⁾				
Functional:				
Line to Neutral (without fuse)		AC	1500	No
Basic/supplementary:				
Line and Neutral to earthed metal enclosure		DC	2759	No
Line and Neutral to earthed terminal		DC	2759	No
Reinforced:				
Line and Neutral to Plastic enclosure		AC	3000	No
Line and Neutral to unearthed metal enclosure		AC	3000	No
Test model: DHI-NVR4832-4KS2²⁾				
Functional:				
Line to Neutral (without fuse)		AC	1500	No
Basic/supplementary:				
Line and Neutral to earthed metal enclosure		DC	2853	No
Line and Neutral to earthed terminal		DC	2853	No
Reinforced:				
Line and Neutral to Plastic enclosure		AC	3000	No
Line and Neutral to unearthed metal enclosure		AC	3000	No



Supplementary information:
- All electrical strength test durations last at least 60s.
- ¹⁾ Applied test voltages for electric strength (In table 5B) are based on the working voltage measured on T1 of switching power supply(DPS-300AB 81A): 413Vr.m.s, 640Vpeak.
- ²⁾ Applied test voltages for electric strength (In table 5B) are based on the working voltage measured on T1 of switching power supply(DPS-300AB 81A): 473Vr.m.s, 688Vpeak.

5.3 TABLE: Fault condition tests							P
Ambient temperature (°C)					See below		—
Power source for EUT: Manufacturer, model/type, output rating					See table 1.5.1.		—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation	
Test model: DHI-NVR4832-4KS2							
1.Unit fan	Locked	240Vac	1hr	F1	0.381→ 0.381A	Unit normal operation, Max. Temp. : PCB near U3=51.5°C, T501 coil= 43.8°C, T501 core= 40.1°C, Ambient=27.2°C, no damaged no hazard, NC, NT, NB.	
2.Power fan	Locked	240Vac	1hr	F1	0.381→ 0.381A	Unit normal operation, Max. Temp. : L151 coil=46.1°C, T501 coil= 43.9°C, T501 core= 40.5°C, Ambient=27.7°C, no damaged no hazard, NC, NT, NB.	
3.Ventilation openings	Blocked	240Vac	1hr	F1	0.381→ 0.381A	Unit normal operation, Max. Temp. : L151 coil =52.6°C T501 coil=47.8°C, T501=44.9°C, Ambient=27.0°C, no damaged no hazard, NC, NT, NB.	
Test model: DHI-NVR4832-16P-4KS2							
1.Unit fan	Locked	240Vac	1hr	F1	1.075→ 1.075A	Unit normal operation, Max. Temp. : PCB near U20=53.9°C, T901 coil= 44.3°C, T901 core= 36.5°C, Ambient=24.9°C, no damaged no hazard, NC, NT, NB.	
2.Power fan	Locked	240Vac	1hr	F1	1.075→ 1.075A	Unit normal operation, Max. Temp. : PCB near BD1=68.3°C, T901 coil= 62.5°C, T901 core= 58.2°C, Ambient=26.5°C, no damaged no hazard, NC, NT, NB.	



3.Ventilation openings	Blocked	240Vac	1hr	F1	1.075→ 1.075A	Unit normal operation, Max. Temp. : PCB near BD1=78.6°C T901 coil=65.2°C, T901 =63.0°C, Ambient=19.2°C, no damaged no hazard, NC, NT, NB.
Supplementary information:						

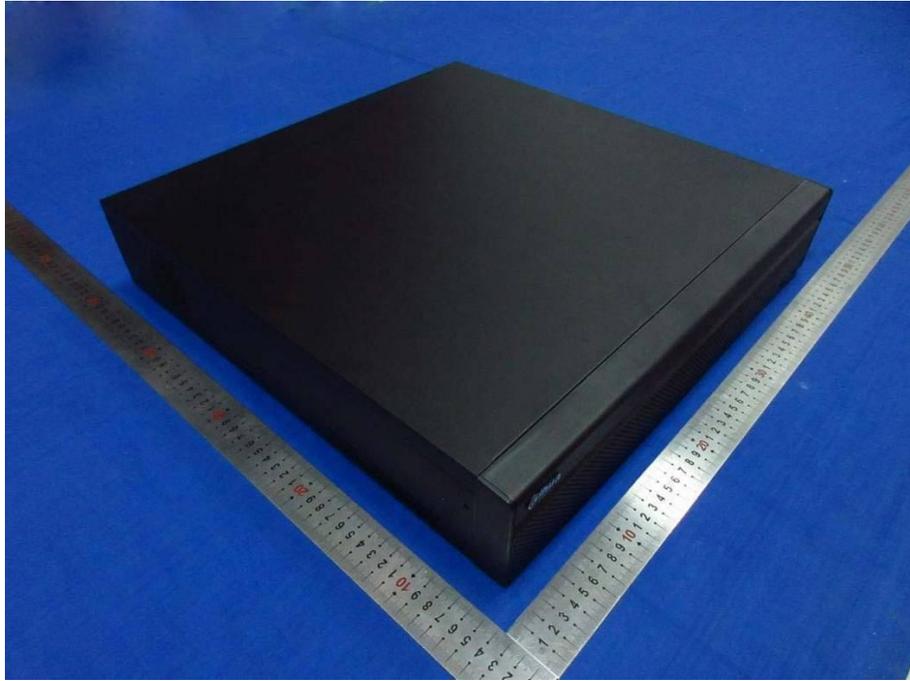
C.2	TABLE: transformers						N/A
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
--	--	--	--	--	--	--	--
Loc.	Tested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

C.2	TABLE: transformers						N/A



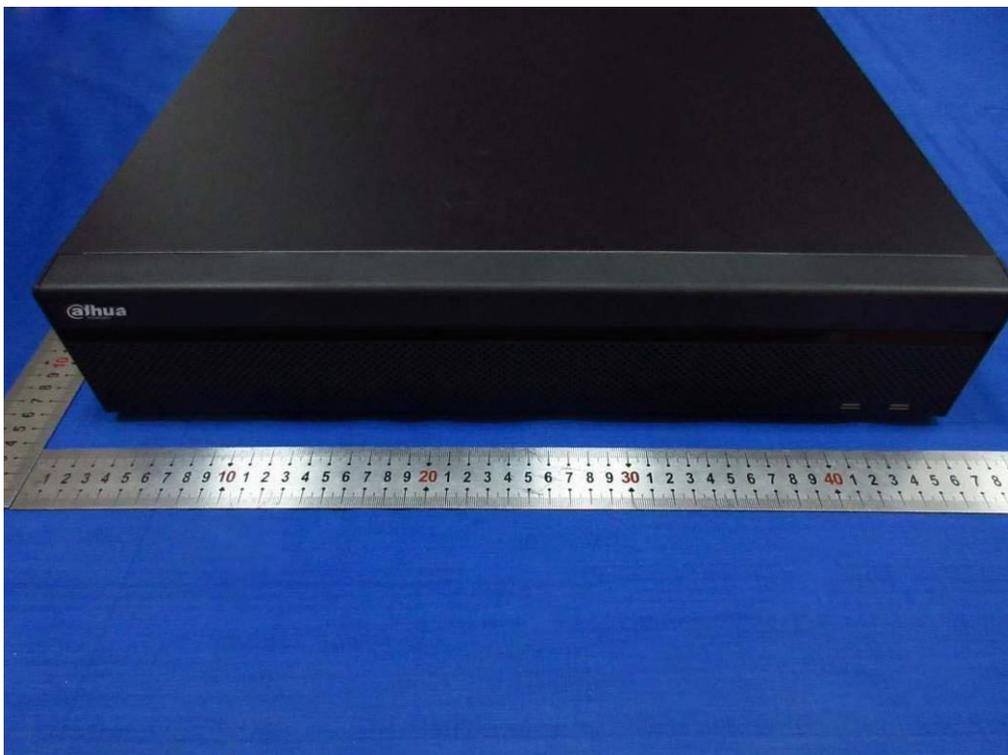
Photo(s)

Model: DHI-NVR4832-4KS2



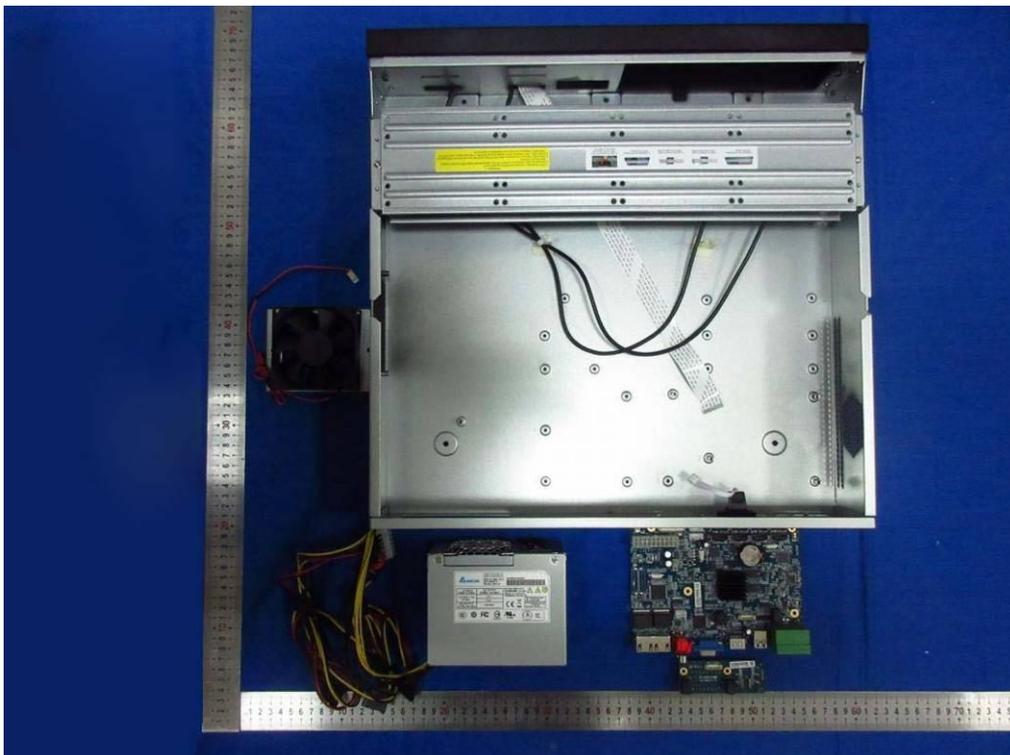
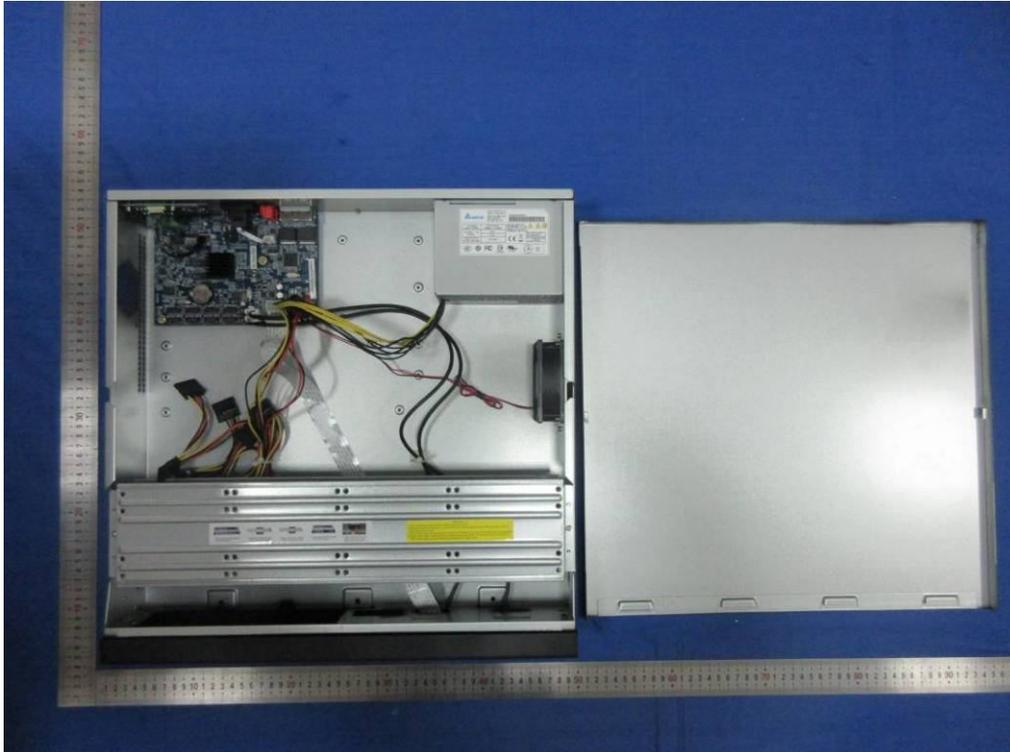


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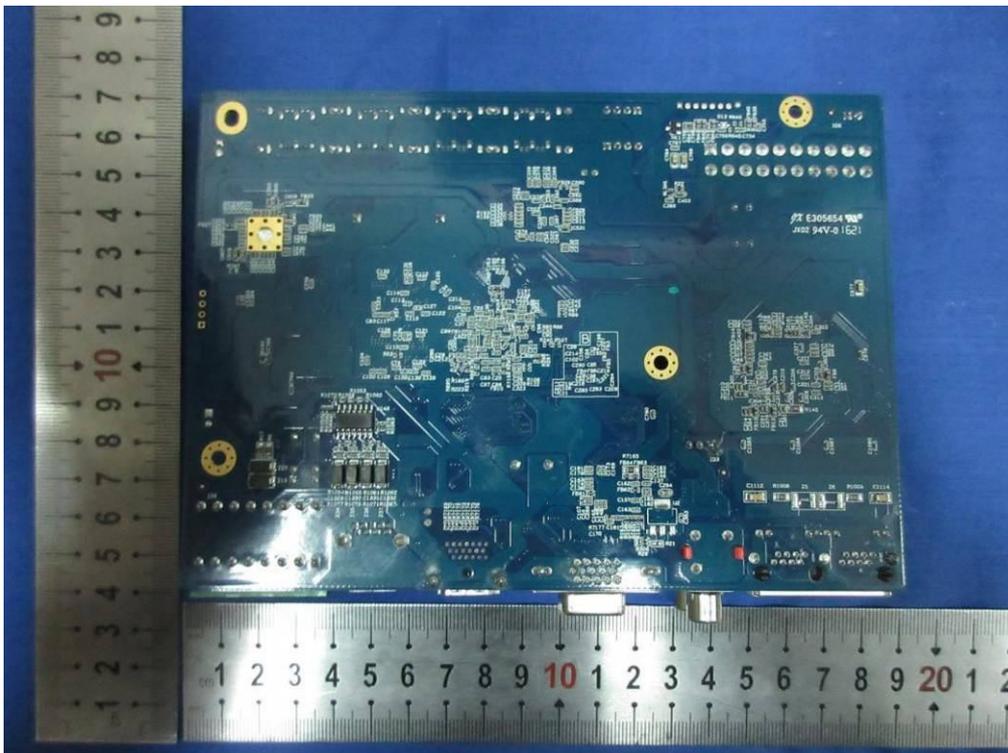
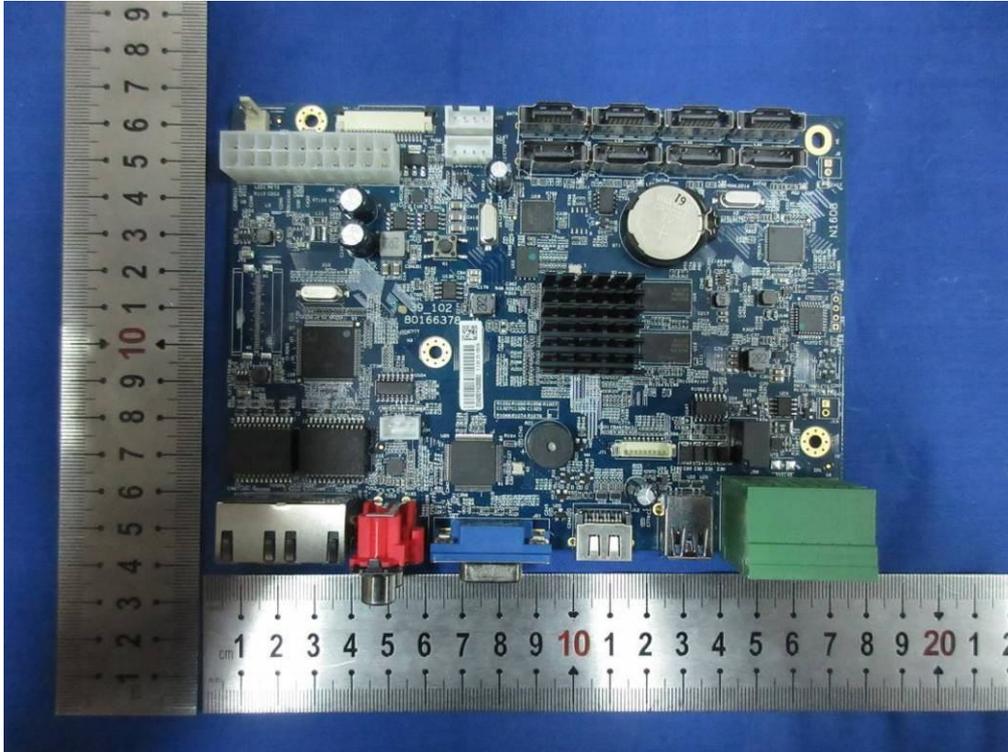


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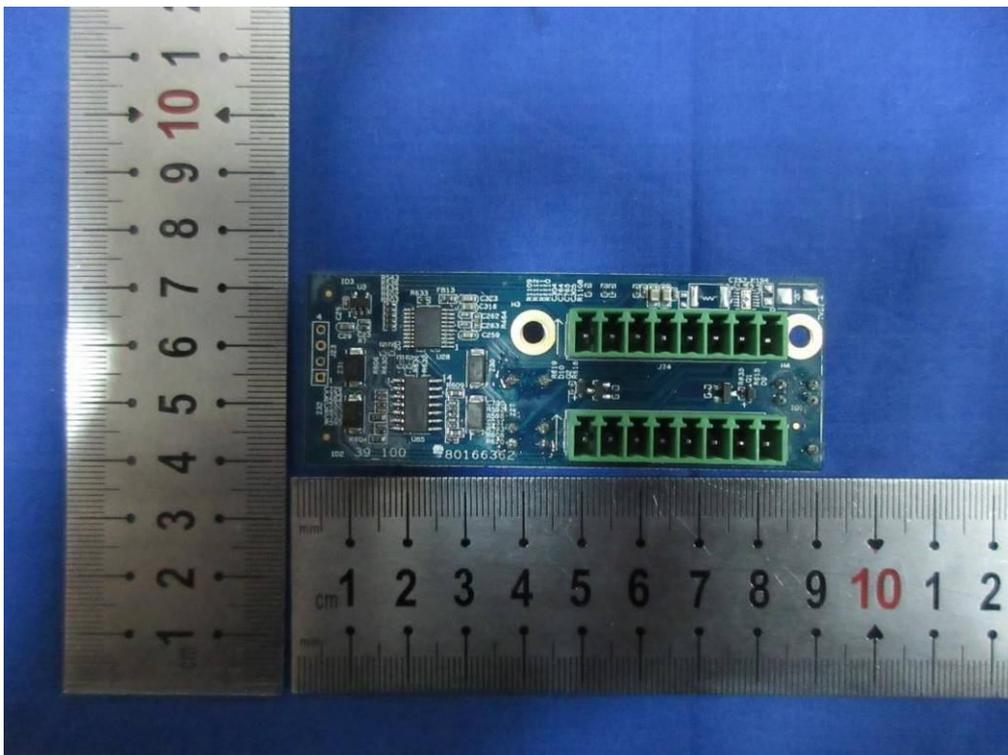
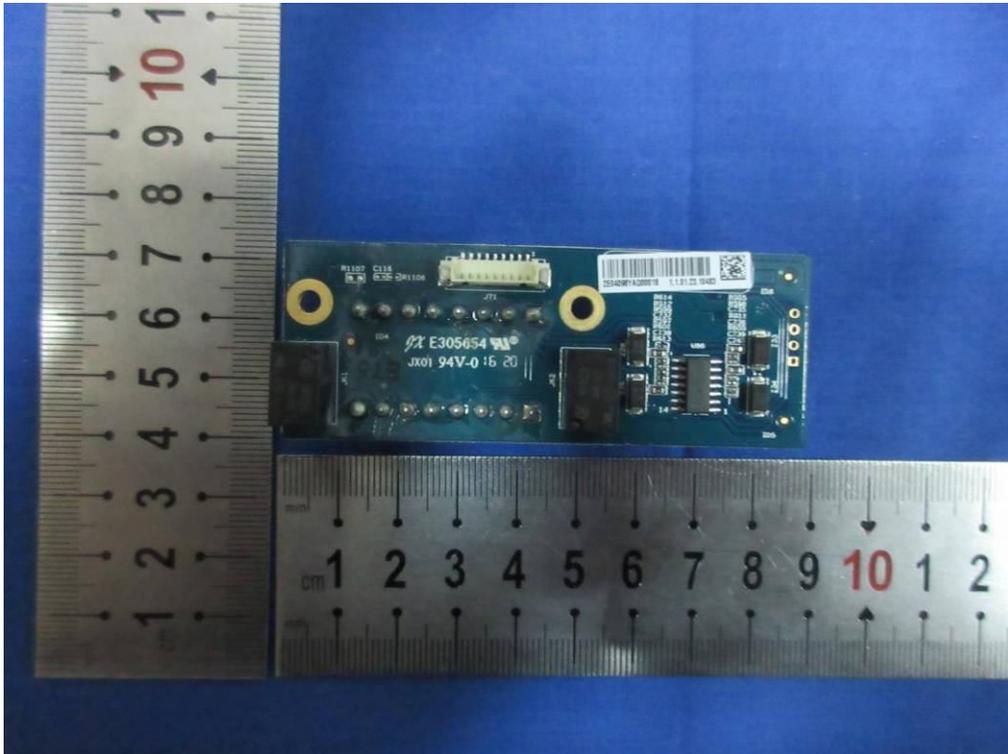


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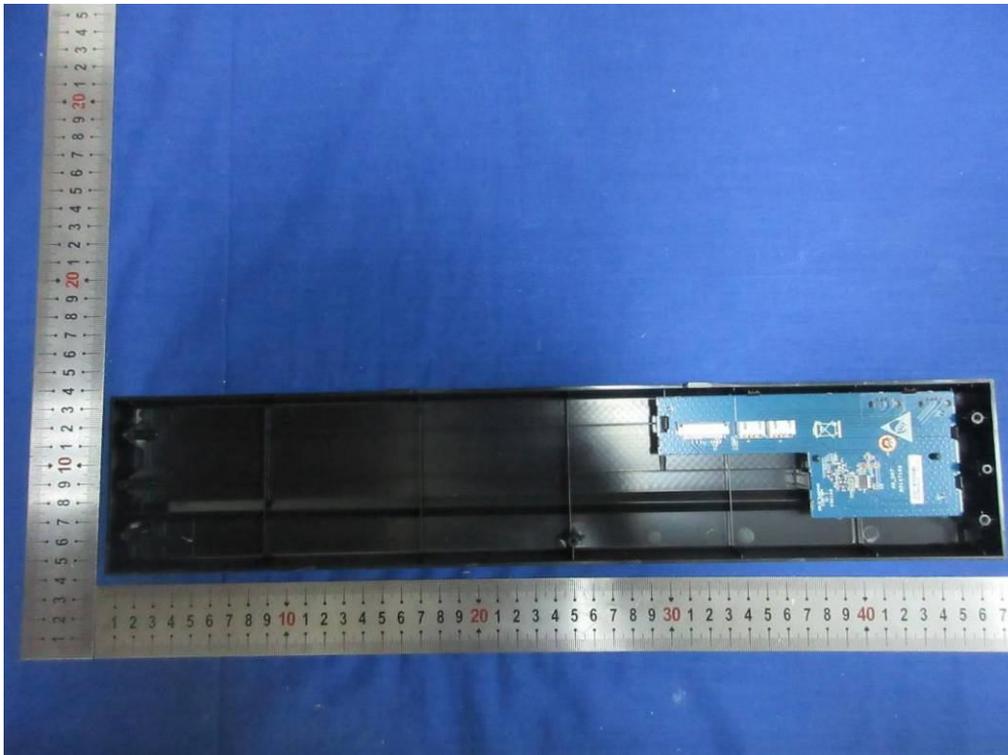


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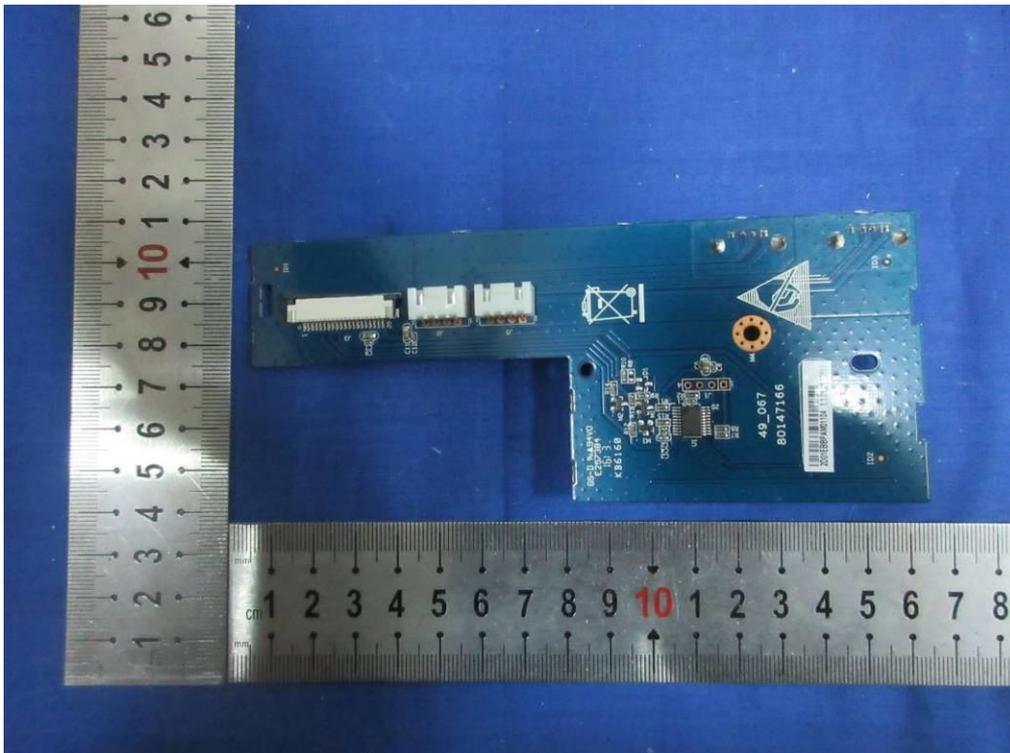
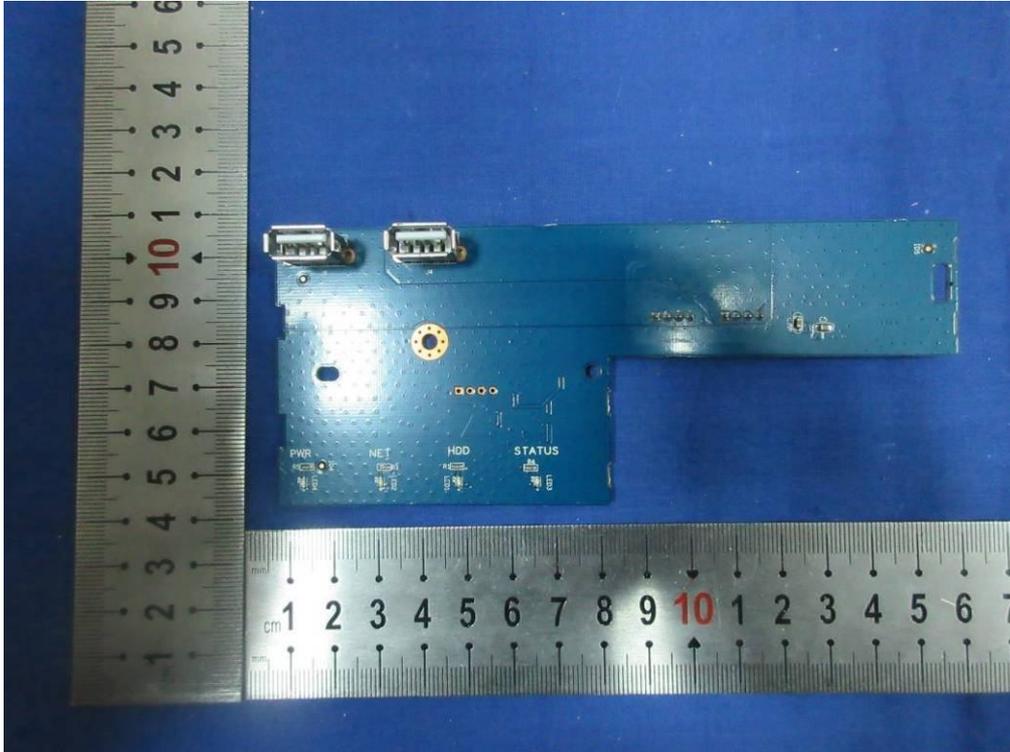


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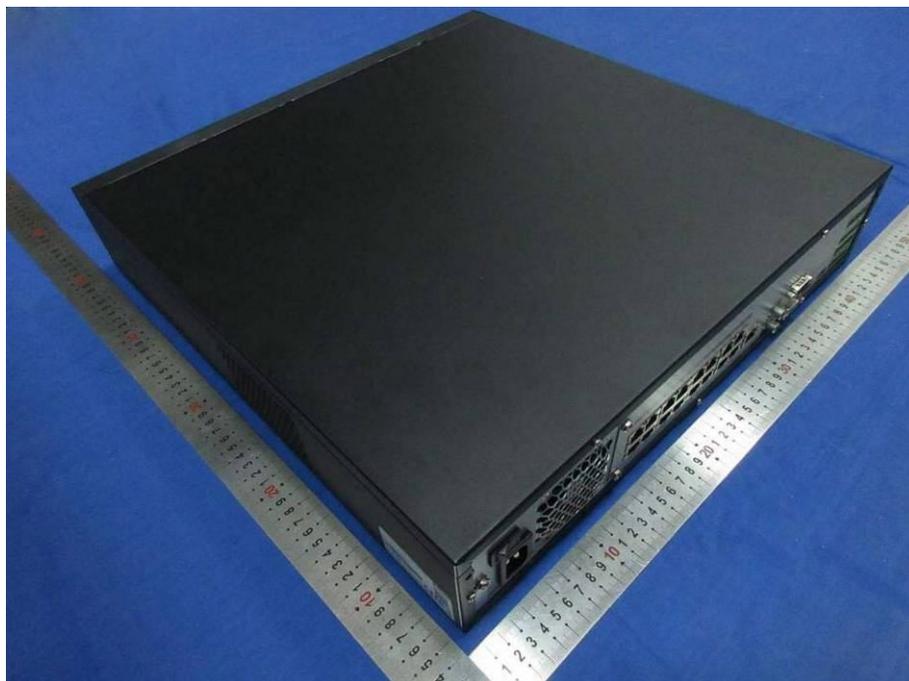


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Built-in power supply, model: DPS-150AB-3 A

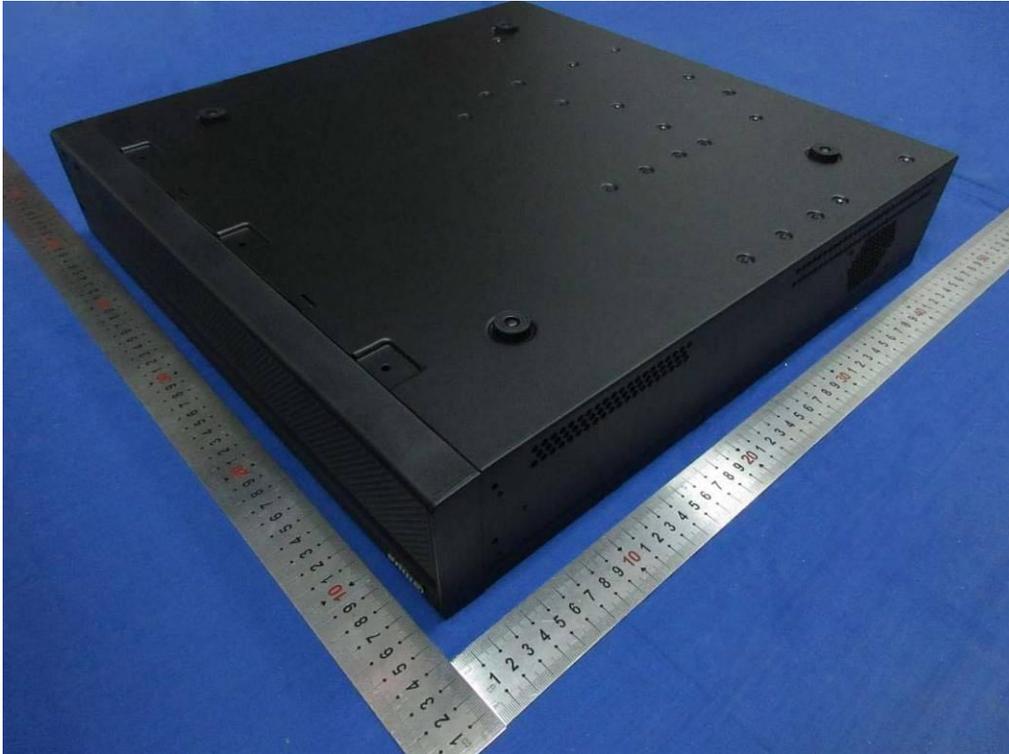


Model: DHI-NVR4832-16P-4KS2



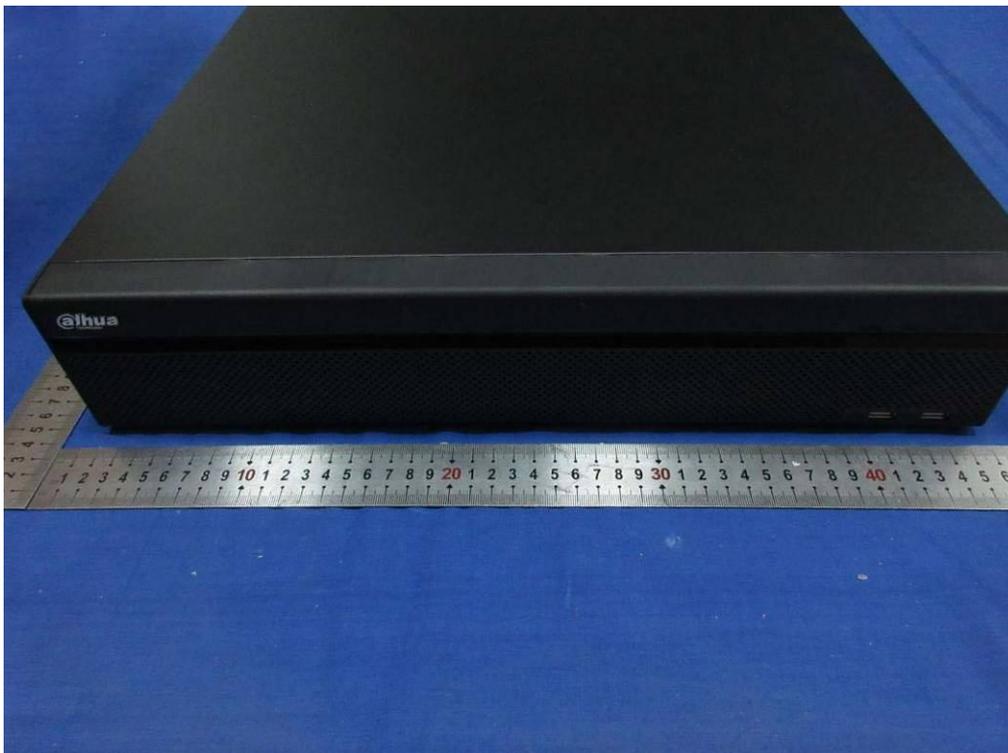


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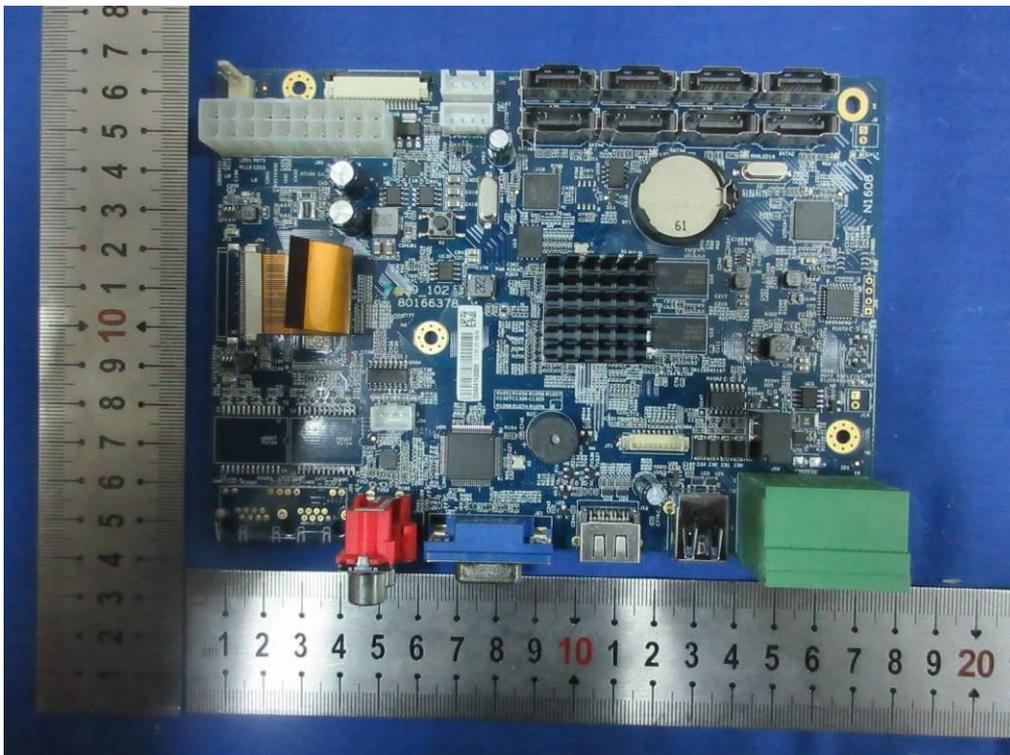


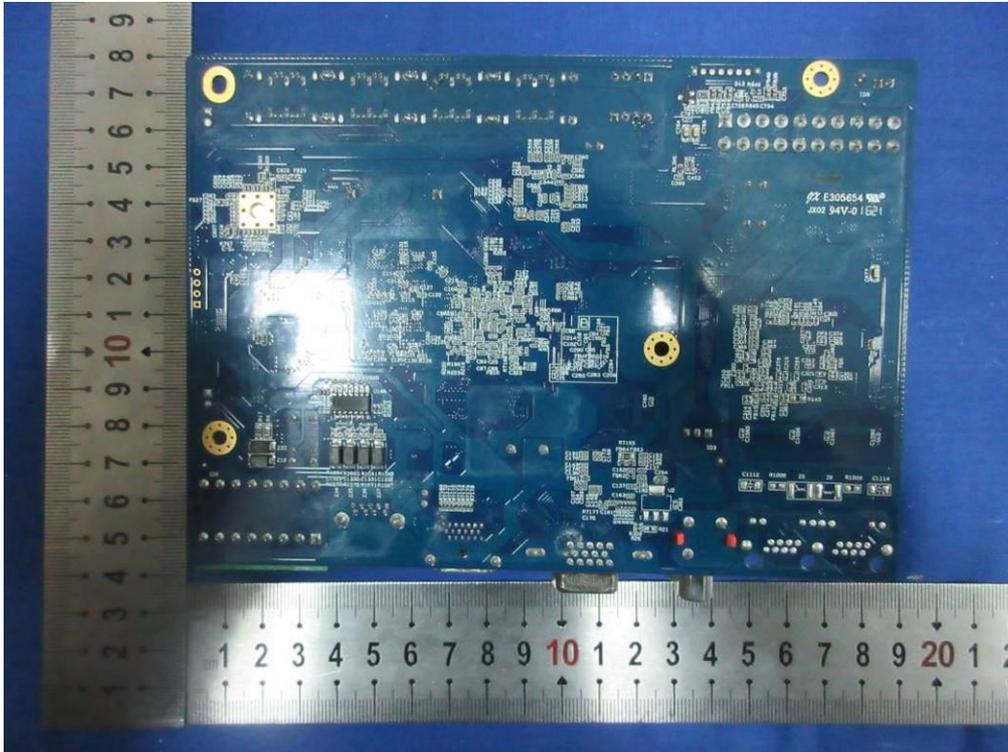
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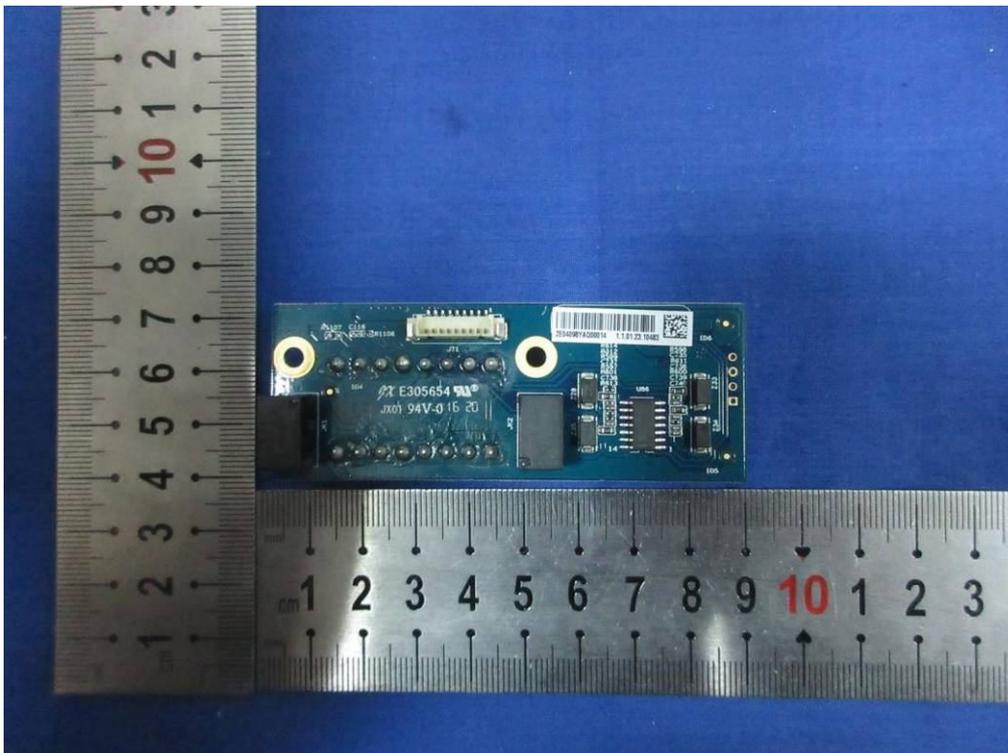


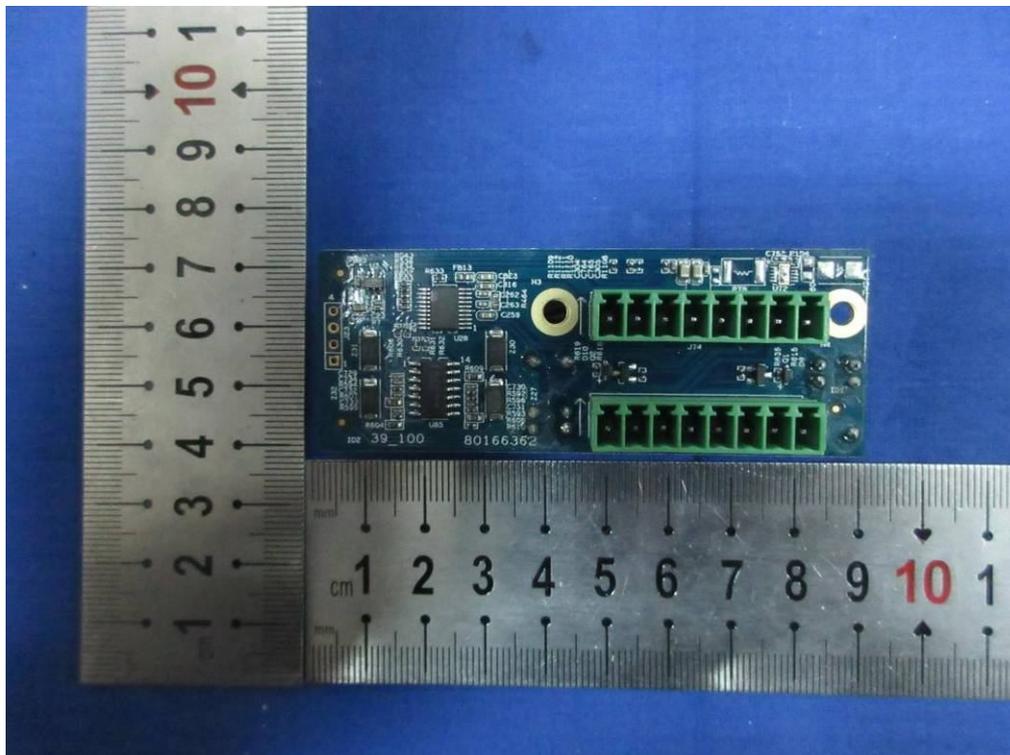
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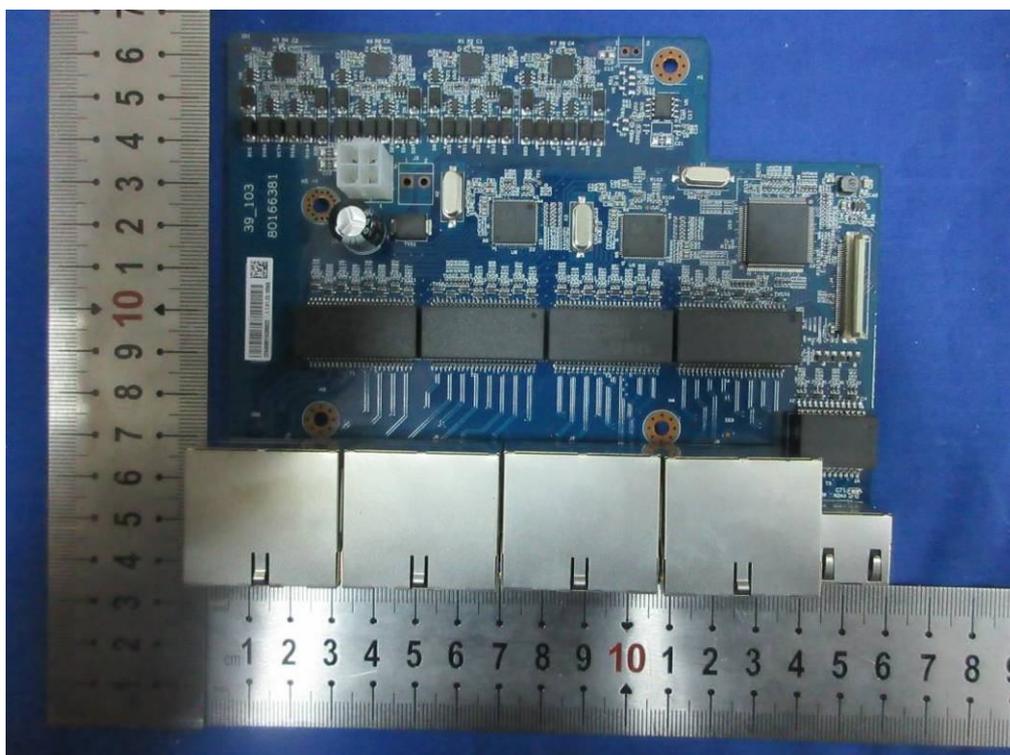


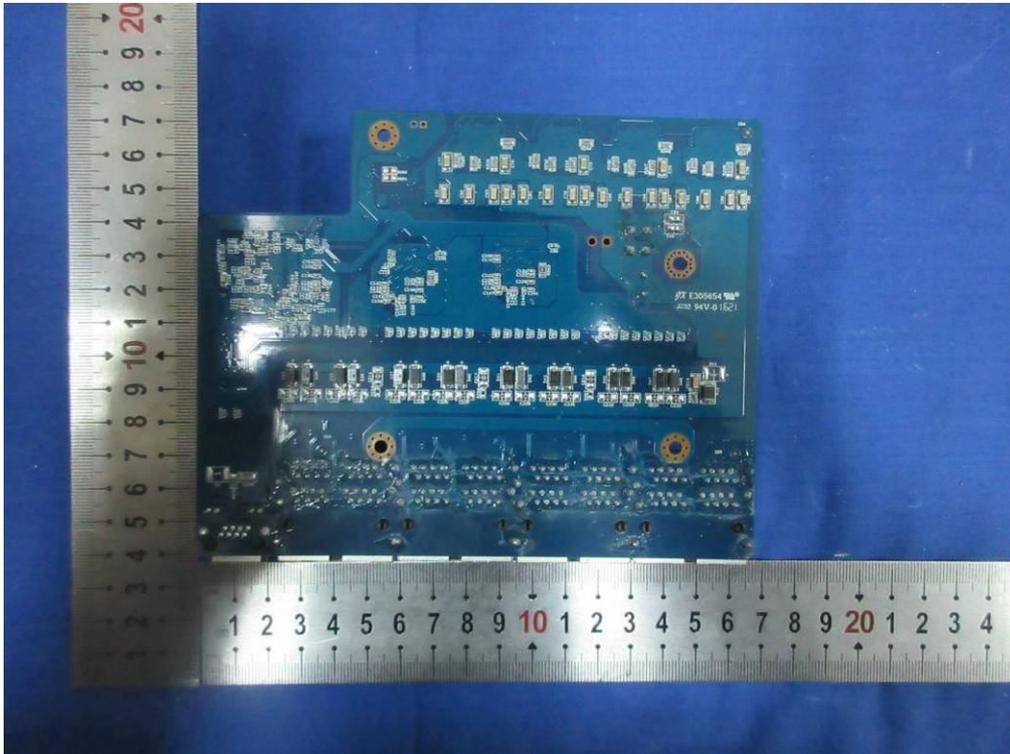
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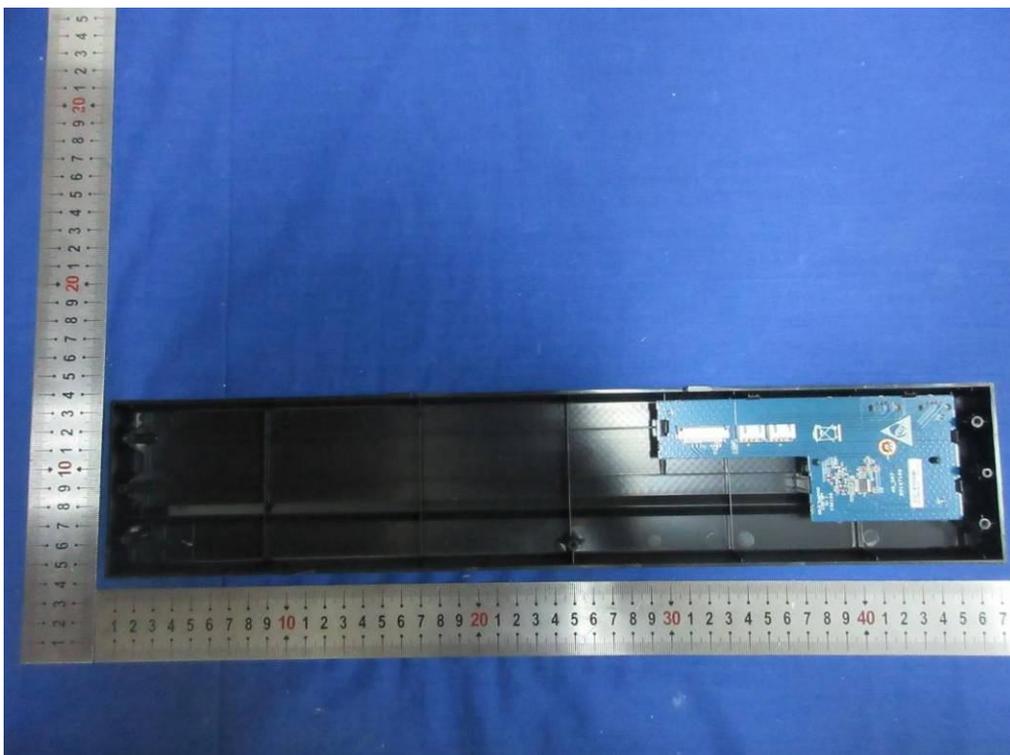


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