



TEST REPORT	
IEC 62368-1	
Audio/video, information and communication technology equipment	
Part 1: Safety requirements	
Report Number.....	KES-SA-20T0186
Date of issue	2020-06-03
Total number of pages	76 pages
Name of Testing Laboratory preparing the Report	KES Co., Ltd. / Electrical Safety Laboratory 473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Republic of Korea
Applicant's name	Hanwha Techwin Co., Ltd.
Address	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi- do, Republic of Korea
Test specification:	
Standard	EN IEC 62368-1:2020+A11:2020
Test procedure.....	-
Non-standard test method.....	N/A
Test Report Form No.	IEC62368_1C
Test Report Form(s) Originator....	UL(US)
Master TRF	Dated 2019-01-17
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Test item description	NETWORK VIDEO RECORDER
Trade Mark	Hanwha Techwin Co., Ltd.
Manufacturer	DREAM I SYSTEM CO., LTD
Model/Type reference	PRP-5000H16, TAW-4000H16
Ratings	100-240 V~, 50/60 Hz, 8-4 A



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Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	KOLAS Testing Laboratory:	KES Co., Ltd. / Electrical Safety Laboratory
Testing location/ address		473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Republic of Korea
☐	CB Testing Laboratory:	
Testing location/ address		
Tested by (name, function, signature)		Youngmin, Ji
Approved by (name, function, signature) ..		JaeKwan, Cha
☐	Testing procedure: CTF Stage 1:	N/A
Testing location/ address		N/A
Tested by (name, function, signature)		N/A
Approved by (name, function, signature) ..		N/A
☐	Testing procedure: CTF Stage 2:	N/A
Testing location/ address		N/A
Tested by (name + signature)		N/A
Witnessed by (name, function, signature) .		N/A
Approved by (name, function, signature) ..		N/A
☐	Testing procedure: CTF Stage 3:	N/A
☐	Testing procedure: CTF Stage 4:	N/A
Testing location/ address		N/A
Tested by (name, function, signature)		N/A
Witnessed by (name, function, signature) .		N/A
Approved by (name, function, signature) ..		N/A
Supervised by (name, function, signature) :		N/A

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List of Attachments (including a total number of pages in each attachment):

Attachment 1: European group differences and national differences	(24 pages)
Attachment 2: Photographs	(10 pages)
Attachment 3: Instruction / Installation Manual	(28 pages)

Summary of testing:

Tests performed (name of test and test clause):		Testing location:
5.2	Classification of electrical energy sources	KES Co., Ltd. / Electrical Safety Laboratory 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Republic of Korea
5.4.9	Electric strength tests	
5.6.6	Resistance of protective conductors and terminations	
5.7.4	Unearthed accessible parts	
5.7.5	Earthed accessible conductive part	
6.2.2	Power source circuit classifications	
6.2.3.1	Determination of Arcing PIS	
6.2.3.2	Determination of resistive PIS	
5.4.1.4, 9.3, B.1.5, B.2.6	Temperature measurements	
B.2.5	Input test	
B.3, B.4	Abnormal operating and fault condition tests	
Q.1	Circuits intended for interconnection with building wiring (LPS)	
T.2, T.3, T.4, T.5	Steady force test	
T.6, T.9	Impact test	
T.7	Drop test	
4.1.2	List of critical components	

Summary of compliance with National Differences (List of countries addressed):

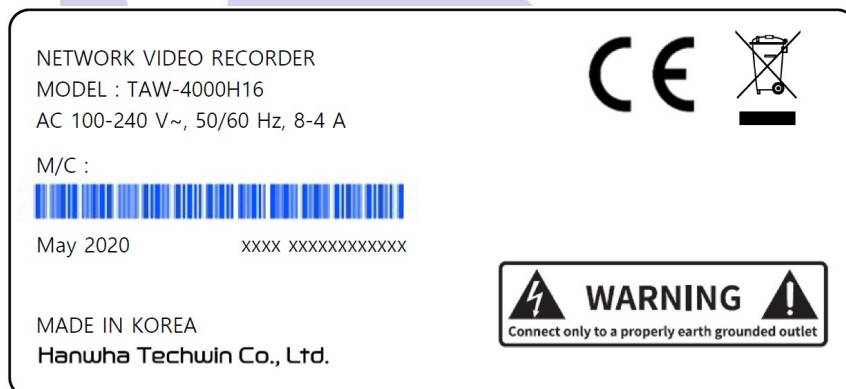
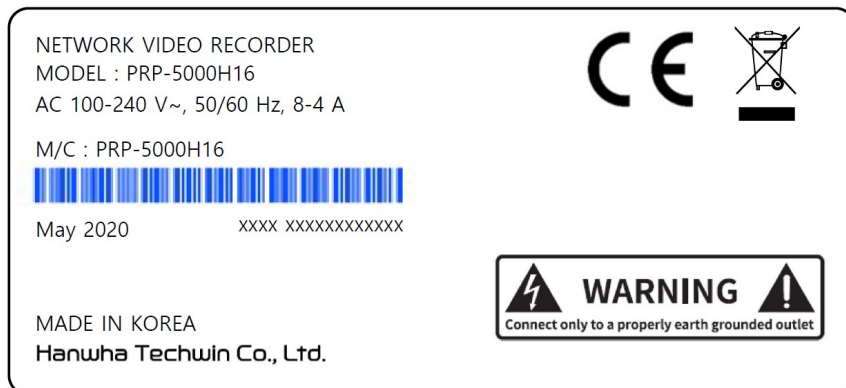
CENELEC member countries (EU group differences): Austria (AT), Belgium (BE), Bulgaria (BG), Croatia (HR), Cyprus (CY), the Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), Former Yugoslav Republic of Macedonia (MK), France (FR), Germany (DE), Greece (GR), Hungary (HU), Iceland (IS), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), the Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR) and the United Kingdom (GB).

☒ **The product fulfils the requirements of national and group differences according to EN IEC 62368-1:2020+A11:2020**

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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.



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Test item particulars:			
Product group	☒ end product ☐ built-in component		
Classification of use by	☐ Ordinary person ☐ Children likely present ☒ Instructed person ☐ Skilled person		
Supply connection	☒ AC mains ☐ DC mains ☐ not mains connected: ☐ ES1 ☐ ES2 ☐ ES3		
Supply tolerance	☒ +10%/-10% ☐ +20%/-15% ☐ + %/ - % ☐ None		
Supply connection – type	☒ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☐ other:		
Considered current rating of protective device	☒ 16 A; Location: ☒ building ☐ equipment ☐ N/A		
Equipment mobility	☒ movable ☐ hand-held ☐ transportable ☐ direct plug-in ☐ stationary ☐ for building-in ☐ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:		
Overvoltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:		
Class of equipment	☒ Class I ☐ Class II ☐ Class III ☐ Not classified ☐		
Special installation location	☒ N/A ☐ restricted access area ☐ outdoor location ☐		
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3		
Manufacturer's specified T_{ma}	40 °C ☐ Outdoor: minimum °C		
IP protection class	☒ IPX0 ☐ IP ☐		
Power systems	☒ TN ☐ TT ☐ IT - V _{L-L} ☐ not AC mains		
Altitude during operation (m)	☒ 2000 m or less ☐ 5000 m		
Altitude of test laboratory (m)	☒ 2000 m or less ☐ m		
Mass of equipment (kg)	22.6 kg		

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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: 2020-02-24 Date (s) of performance of tests: 2020-02-27 to 2020-06-01	
General remarks: "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : DREAM I SYSTEM CO., LTD #510.Daerung Post Tower 6. 50-3 Gasan-dong, Geumcheon-gu, Seoul, Korea	

General product information and other remarks:

- Report History –

Clause 4.1.2: Use of components

The equipment has connected to a class I switching power supply according to EN 62368-1: 2014+A11:2017 by GUANGDONG UTL CO., LTD. (Test report number: 18PNC01144 03001). However, the necessary requirements according to EN IEC 62368-1:2020+A11:2020 were evaluated in this report.

Clause 5 and 6: energy source classification

The ES and PS energy classifications for switching power supply unit were evaluated, therefore classification of ES and PS was measured starting from the secondary outputs of switching power supply unit in this report.

The secondary DC output port +12V (+12 V / 65 A) and +12 Vsb (+12 V / 2.1 A) have evaluation SELV circuits output. (See Switching power supply unit test report)

Annex F.1: Instructions

Instructions / instructional safeguards / user's manual are only in English.

The information shall be given in a language acceptable to the country where the apparatus is intended to be sold.

Annex G.7: Plug / External flexible cords

The equipment shall be provided with a cord set complying with the national regulations of the countries in which the equipment is to be sold.

- Product Description –

The equipment under test is NETWORK VIDEO RECORDER of insulation class I. Also equipment is not intended for use by the ordinary person, and is intended for use by the instructed person by a skilled person to energy sources of equipment safeguards and precautionary safeguards.

The equipment has several input/out terminals PS2, DVI, VGA, HDMI, LAN, HD AUDIO (IN, FRONT, CTR, REAR, SPDIF), 2.0 and 3.0 for USB ports – See attached photos.

Maximum ambient temperature (T_{ma}): 40 °C

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: All secondary output circuit of certified power supply unit.	Instructed person	N/A	N/A	N/A
ES1: All output terminals	Instructed person	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3	Combustible material	Normal temperatures below ignition temperatures	Fire enclosure to be provided	N/A
PS3	Combustible material for internal wire	Normal temperatures below ignition temperatures	Cl. 6.5.1 Complied with 60695-11-21	N/A
PS3 (PIS)	Combustible material	Normal temperatures below ignition temperatures	1. Fire enclosure to be provided 2. Separated from fire cone of PIS	N/A
PS1	All output terminals	N/A	N/A	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	Instructed person	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1 (Sharp edges and corners)	Instructed person	N/A	N/A	N/A
MS3 (Plastic fan blade of Certified Power Supply Unit)	Instructed person	Complies with no touched by test probes specified in Annex V.	Safeguards are verified according to clause F.5	N/A

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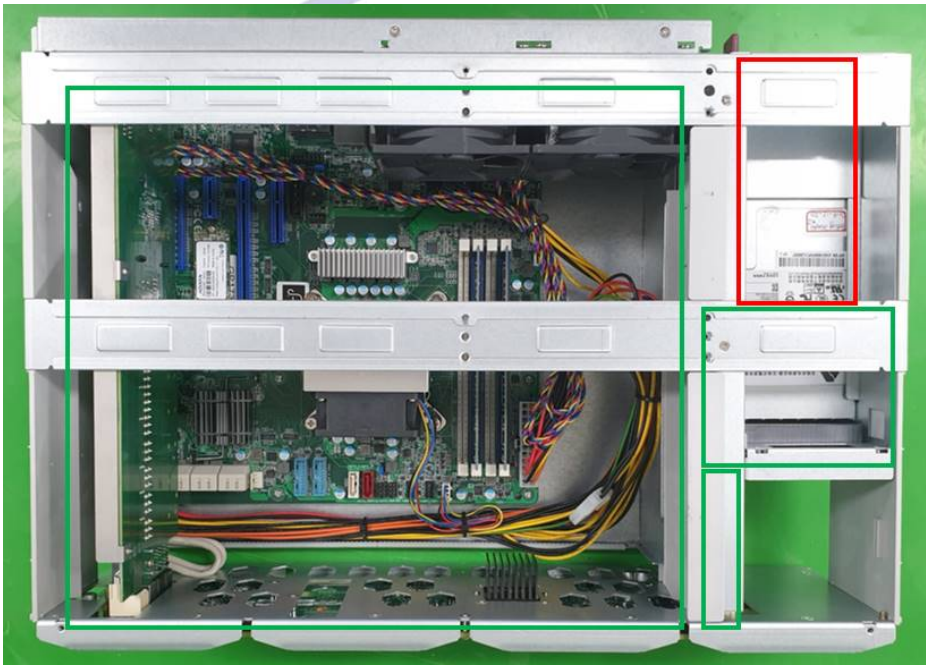


MS2 (Equipment mass)	Instructed person	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1 (External surfaces)	Instructed person	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS1 (LED is indicating lights type)	Instructed person	N/A	N/A	N/A
Supplementary Information: "B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard See next pages of energy source diagram for additional details				

ENERGY SOURCE DIAGRAM

Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

ES 1	■	ES 2	■	ES 3	■
 <Interior part>  < Certified PSU> ☒ ES ☐ PS ☐ MS ☐ TS ☐ RS					

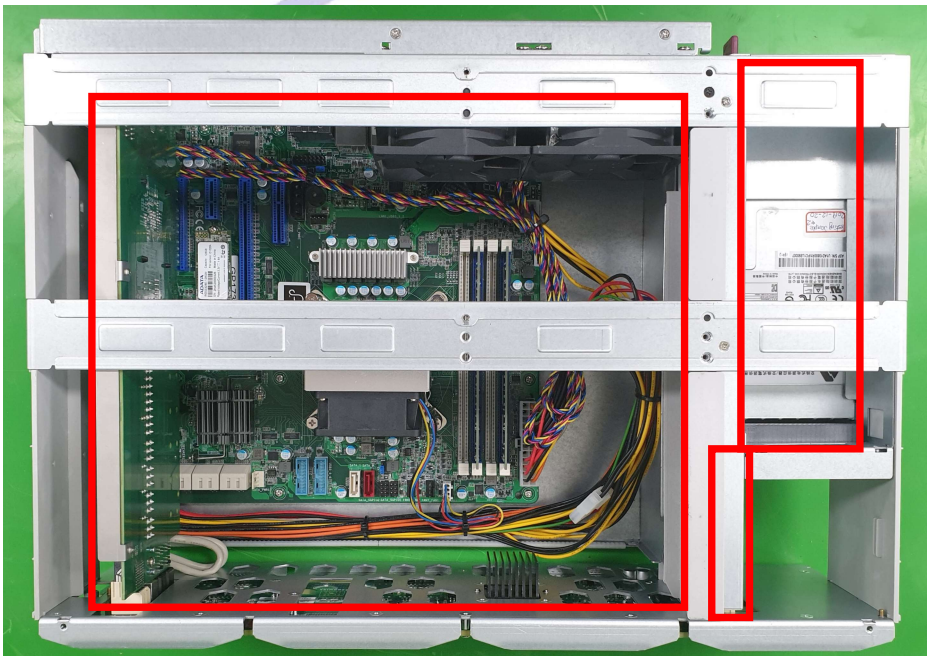
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Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

PS 1		PS 2		PS 3	
------	--	------	---	------	--



<Interior part>



< Certified PSU>

☐ ES
☒ PS
☐ MS
☐ TS
☐ RS

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ENERGY SOURCE DIAGRAM

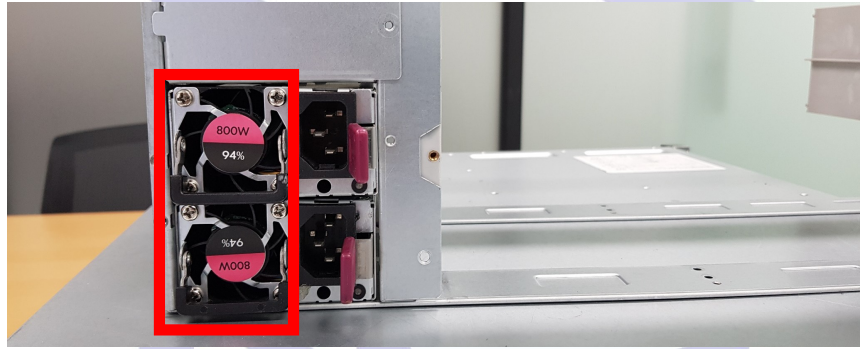
Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

MS 1		MS 2		MS 3	
------	---	------	---	------	---



< External part >



< Fan blade view in the certified PSU>

Note: External enclosure is considered as MS1 for sharp edge and corner.
 Plastic fan blades in the internal is considered as MS3
 External enclosure is considered as MS2 for equipment mass

☐ ES ☐ PS ☒ MS ☐ TS ☐ RS

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Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings





IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(See appended table 4.1.2.)	P
4.1.2	Use of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1, IEC 60065 or the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of EN/IEC 62368-1. (See appended table 4.1.2.)	P
4.1.3	Equipment design and construction	Equipment is adequately designed and constructed.	P
4.1.4	Specified ambient temperature for outdoor use (°C):	Not outdoor equipment	N/A
4.1.5	Constructions and components not specifically covered		P
4.1.8	Liquids and liquid filled components (LFC)	No Liquids and LFC in the equipment	N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General	See below;	P
4.4.3.2	Steady force tests	(See Annex T.5)	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(See Annex T.6)	P
4.4.3.5	Internal accessible safeguard tests	(See Annex T.3)	P
4.4.3.6	Glass impact tests	No glass in the equipment.	N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.4.3.7	Glass fixation tests	No glass in the equipment.	N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	Evaluated in the approved PSU	N/A
4.4.3.9	Air comprising a safeguard	Evaluated in the approved PSU	P
4.4.3.10	Accessibility, glass, safeguard effectiveness	All safeguards remain effective.	P
4.4.4	Displacement of a safeguard by an insulating liquid	No insulating liquid in the equipment	N/A
4.4.5	Safety interlocks	No safety interlocks in the equipment	N/A
4.5	Explosion		P
4.5.1	General	During normal / abnormal operating conditions and single fault conditions, explosion does not occur.	P
4.5.2	No explosion during normal/abnormal operating condition	(See Annex B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Annex B.4)	P
4.6	Fixing of conductors	See below;	P
	Fix conductors not to defeat a safeguard	Conductors are adequately fixed.	P
	Compliance is checked by test..... :	Evaluated in the approved PSU	P
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard .. :	No direct plug-in equipment.	N/A
4.7.3	Torque (Nm) :		N/A
4.8	Equipment containing coin/button cell batteries		P
4.8.1	General	See below;	P
4.8.2	Instructional safeguard :	The equipment containing coin/button cell battery inside, but without tools the operator can't open the cover. Also equipment is intended for use by the instructed person (See	N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
		general product information).	
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test	Not portable equipment	N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test	Not hand held remote control devices	N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		P
4.10	Component requirements		P
4.10.1	Disconnect Device	(See Annex L)	P
4.10.2	Switches and relays	No Switches and relays	N/A
5	ELECTRICALLY-CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits	See below;	P
5.2.2.2	Steady-state voltage and current limits	(See appended table 5.2)	P
5.2.2.3	Capacitance limits	(See appended table 5.2)	P
5.2.2.4	Single pulse limits	No single pulses generated.	N/A
5.2.2.5	Limits for repetitive pulses	No repetitive pulses generated.	N/A
5.2.2.6	Ringling signals	Not used an analogue telephone network ringing signal in the equipment.	N/A
5.2.2.7	Audio signals		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	CAUTION applied in marking plate of the enclosure.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits	No accessible ES1/ES2 derived from ES2/ES3 circuits (See PSU test report and appended table 5.2)	P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors	ES3 bare part is not accessible by skilled persons.	P
5.3.2.1	Accessibility to electrical energy sources and safeguards	ES3 bare part is not accessible by instructed person.	P
	Accessibility to outdoor equipment bare parts	Not outdoor equipment	N/A
5.3.2.2	Contact requirements	ES3 voltage exceeds 420 V _{peak} , but no contact to bare internal conductive part.	P
	Test with test probe from Annex V	No parts can be touched by test probes specified in Annex V.	-
5.3.2.2 a)	Air gap – electric strength test potential (V)	(See appended table 5.4.9)	P
5.3.2.2 b)	Air gap – distance (mm)	Min. 25 mm	P
5.3.2.3	Compliance	(See Annex T.3)	P
5.3.2.4	Terminals for connecting stripped wire	No stripped wire in the equipment.	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	Evaluated in the approved PSU (See PSU test report)	P
5.4.1.3	Material is non-hygroscopic	(See sub-clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degrees	Pollution degree 2	P
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	Not required.	N/A
5.4.1.5.3	Thermal cycling test	Not required.	N/A
5.4.1.6	Insulation in transformers with varying dimensions	No such transformer is used.	N/A
5.4.1.7	Insulation in circuits generating starting pulses	No circuitry generating starting pulse.	N/A
5.4.1.8	Determination of working voltage	Evaluated in the approved PSU (See PSU test report)	P
5.4.1.9	Insulating surfaces	Evaluated in the approved PSU (See PSU test report)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	See below	P
5.4.1.10.2	Vicat test.....:		N/A
5.4.1.10.3	Ball pressure test	Evaluated in the approved PSU (See PSU test report)	P
5.4.2	Clearances		P
5.4.2.1	General requirements	Evaluated in the approved PSU (See PSU test report)	P
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance	Evaluated in the approved PSU (See PSU test report)	P
	Temporary overvoltage		—
5.4.2.3	Procedure 2 for determining clearance	Evaluated in the approved PSU (See PSU test report)	P
5.4.2.3.2.2	a.c. mains transient voltage.....:	2500 V _{peak}	—
5.4.2.3.2.3	d.c. mains transient voltage		—
5.4.2.3.2.4	External circuit transient voltage.....:		—
5.4.2.3.2.5	Transient voltage determined by measurement		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages	Altitude during operation is less than 2000 m	N/A
5.4.2.6	Clearance measurement	Evaluated in the approved PSU (See PSU test report)	P
5.4.3	Creepage distances	See below	P
5.4.3.1	General	Evaluated in the approved PSU (See PSU test report)	P
5.4.3.3	Material group	Material Group IIIB.	—
5.4.3.4	Creepage distances measurement		P
5.4.4	Solid insulation	See below	P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation	Evaluated in the approved PSU (See PSU test report)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.3	Insulating compound forming solid insulation	Evaluated in the approved PSU (See PSU test report)	P
5.4.4.4	Solid insulation in semiconductor devices	Evaluated in the approved PSU (See PSU test report)	P
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material	Evaluated in the approved PSU (See PSU test report)	P
5.4.4.6.1	General requirements		P
5.4.4.6.2	Separable thin sheet material		P
	Number of layers (pcs)		P
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs)		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components	Evaluated in the approved PSU (See PSU test report)	P
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P , K_R , d , V_{PW} (V)	Evaluated in the approved PSU (See PSU test report)	P
	Alternative by electric strength test, tested voltage (V), K_R		P
5.4.5	Antenna terminal insulation	No Antenna terminal	N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance ($M\Omega$)		N/A
	Electric strength test		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard	Internal wires are ES1 electrical energy source. Also, internal wires do not touch ES3.	P
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning	See below;	P
	Relative humidity (%), temperature ($^{\circ}C$), duration (h)	93 %, 30 $^{\circ}C$, 48 h	—

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.9	Electric strength test	(See PSU test report and appended table 5.4.9)	P
5.4.9.1	Test procedure for type test of solid insulation..... :	Evaluated in the approved PSU (See PSU test report)	P
5.4.9.2	Test procedure for routine test	Not applicable.	N/A
5.4.10	Safeguards against transient voltages from external circuits	The equipment is not connected to such external circuits	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test :		N/A
5.4.10.2.3	Steady-state test..... :		N/A
5.4.10.3	Verification for insulation breakdown for impulse test :		N/A
5.4.11	Separation between external circuits and earth	The equipment is not connected to such external circuits	N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V)..... :		—
	Nominal voltage U_{peak} (V)..... :		—
	Max increase due to variation ΔU_{sp} :		—
	Max increase due to ageing ΔU_{sa} :		—
5.4.11.3	Test method and compliance :		N/A
5.4.12	Insulating liquid	No insulating liquid in equipment	N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid :		N/A
5.4.12.3	Compatibility of an insulating liquid :		N/A
5.4.12.4	Container for insulating liquid :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.5	Components as safeguards		P
5.5.1	General	All components comply with the applicable requirements for that safeguard and used within its rating.	P
5.5.2	Capacitors and RC units	See below;	P
5.5.2.1	General requirement	Evaluated in the approved PSU (See PSU test report)	P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector..... :	Evaluated in the approved PSU (See PSU test report)	P
5.5.3	Transformers	Evaluated in the approved PSU (See PSU test report)	P
5.5.4	Optocouplers	Evaluated in the approved PSU (See PSU test report)	P
5.5.5	Relays	No relays	N/A
5.5.6	Resistors		N/A
5.5.7	SPDs	Evaluated in the approved PSU (See PSU test report)	P
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)..... :		—
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors	See below;	P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation	Green-and-yellow coloured wire used for protective earthing conductor on power supply cord.	P
5.6.3	Requirement for protective earthing conductors	Certified mains cord set is used, see appended Table 4.1.2.	P
	Protective earthing conductor size (mm ²) :		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.4	Requirements for protective bonding conductors	See below;	P
5.6.4.1	Protective bonding conductors	Evaluated in the approved PSU (See PSU test report)	P
	Protective bonding conductor size (mm ²). :		—
5.6.4.2	Protective current rating (A)..... :	Evaluated in the approved PSU (See PSU test report)	—
5.6.5	Terminals for protective conductors	See below;	P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N/A
	Terminal size for connecting protective bonding conductors (mm) :	Evaluated in the approved PSU (See PSU test report)	P
5.6.5.2	Corrosion	Evaluated in the approved PSU (See PSU test report)	P
5.6.6	Resistance of the protective bonding system	See below;	P
5.6.6.1	Requirements	Protective bonding conductors and appliance inlet does not have excessive resistance.	P
5.6.6.2	Test Method..... :	(See appended table 5.6.6)	P
5.6.6.3	Resistance (Ω) or voltage drop..... :	(See appended table 5.6.6)	P
5.6.7	Reliable connection of a protective earthing conductor	No permanently connected equipment	N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm ²)..... :		N/A
	Class II with functional earthing marking :		N/A
	Appliance inlet cl & cr (mm)..... :		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current	(See appended table 5.7.4)	P
5.7.2.2	Measurement of voltage	(See appended table 5.2)	P
5.7.3	Equipment set-up, supply connections and earth connections	Tests are performed with protective earthing connection disconnected.	P
5.7.4	Unearthed accessible parts :	(See appended table 5.7.4)	P
5.7.5	Earthed accessible conductive parts :	(See appended table 5.7.5)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.6	Requirements when touch current exceeds ES2 limits	The protective conductor current does not exceed the ES2 limits.	P
	Protective conductor current (mA)..... :	Max. 0.52 mA _{peak}	P
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits	No external circuits	N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits	The equipment is not connected to such external circuits	N/A
	a) Equipment connected to earthed external circuits, current (mA)		N/A
	b) Equipment connected to unearthed external circuits, current (mA)		N/A
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES		N/A
	Air gap (mm).....		N/A

6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of PS and PIS		P
6.2.2	Power source circuit classifications..... :	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources	See below	P
6.2.3.1	Arcing PIS	(See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS	(See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6 and B.3)	P
	Combustible materials outside fire enclosure	No combustible materials outside fire enclosure in the equipment.	N/A
6.4	Safeguards against fire under single fault conditions		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.1	Safeguard method	Method for control fire spread is used.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits	Method for control fire spread is used.	N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	Method for control fire spread is used.	N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions	(See PSU test report and appended table B.3, B.4).	P
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits	No supplementary safeguards are needed.	N/A
6.4.5	Control of fire spread in PS2 circuits	See below;	P
6.4.5.2	Supplementary safeguards	- All components in a PS3 are mounted on min. V-0 class material of printed boards and comply with the requirements of the relevant IEC components standard. - Certified wire insulation is used. (See appended Table 4.1.2, Annex G and certified PSU test report)	P
6.4.6	Control of fire spread in PS3 circuits	- All components in a PS3 are mounted on min. V-0 class material of printed boards and comply with the requirements of the relevant IEC components standard. - Certified appliance inlet is used. - Metal chassis is used for fire enclosure with clause 6.4.5 and 6.4.8. (See appended Table 4.1.2, Annex G and certified PSU test report)	P
6.4.7	Separation of combustible materials from a PIS	V-0 class material is used for fire enclosure, see appended Table 4.1.2.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier	No fire barrier in the equipment.	N/A
6.4.8	Fire enclosures and fire barriers		P
6.4.8.2	Fire enclosure and fire barrier material properties	See below;	P
6.4.8.2.1	Requirements for a fire barrier	No fire barrier in the equipment.	N/A
6.4.8.2.2	Requirements for a fire enclosure	The available power does not exceed 4000 W, V-0 class material (or metal) is used for fire enclosure.	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	(See appended Table 4.1.2)	P
6.4.8.3.1	Fire enclosure and fire barrier openings	See below;	P
6.4.8.3.2	Fire barrier dimensions	No fire barrier in the equipment.	N/A
6.4.8.3.3	Top openings and properties	See below;	P
	Openings dimensions (mm)..... :	Rear openings dimensions are max. 3.9 mm x 3.9 mm. However, there is outside fire cone of PIS.	—
6.4.8.3.4	Bottom openings and properties	No bottom openings	N/A
	Openings dimensions (mm)..... :		—
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties	No side openings	N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :	No such door or cover in the equipment.	N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... :	V-0 class material (or metal chassis) is used for fire enclosure.	N/A
6.4.9	Flammability of insulating liquid..... :	No insulating liquid in equipment	N/A
6.5	Internal and external wiring		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.1	General requirements	CSA/UL type, rated min VW-1 which is equivalent to performance of burning characteristics test for contained in IEC 60695-11-21.	P
6.5.2	Requirements for interconnection to building wiring	All output terminals are limited power source. (See Annex Q)	P
6.5.3	Internal wiring size (mm ²) for socket-outlets.....	No socket-outlets	—
6.6	Safeguards against fire due to the connection to additional equipment		P
7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		P
7.2	Reduction of exposure to hazardous substances		P
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards or personal protective equipment (PPE)		N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010).....		—
7.6	Batteries and their protection circuits		P
8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		N/A
8.4	Safeguards against parts with sharp edges and corners		N/A
8.4.1	Safeguards	Classified as MS1, additional safeguard is not required.	N/A
	Instructional Safeguard		N/A
8.4.2	Sharp edges or corners	All edges and corners are rounded and/or smoothed, classified as MS1.	N/A
8.5	Safeguards against moving parts		P
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	MS2 or MS3 part required to be accessible for the function of the equipment	MS3 part is not accessible. (No touched by test probes specified in Annex V)	P
	Moving MS3 parts only accessible to skilled person	No accessible to skilled person	N/A
8.5.2	Instructional safeguard.....:	Instructional Safeguard used. The applied for "WARNING" in marking plate near fan blades	—
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....:		N/A
	Space between end point and nearest fixed mechanical part (mm).....:		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N).....:		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps	No high pressure lamps in the equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Explosion test.....:		N/A
8.5.5.3	Glass particles dimensions (mm)		N/A
8.6	Stability of equipment		P
8.6.1	General	The equipment is classified as MS2 and non-floor standing.	P
	Instructional safeguard.....:	No instructional Safeguard. The equipment is intended for use by the instructed person.	N/A
8.6.2	Static stability	See below:	P
8.6.2.2	Static stability test	The equipment does not tip over at 10°.	P
8.6.2.3	Downward force test	Not applicable.	N/A
8.6.3	Relocation stability	Not applicable.	N/A
	Wheels diameter (mm)		—
	Tilt test		N/A
8.6.4	Glass slide test	Not applicable.	N/A
8.6.5	Horizontal force test		N/A
8.7	Equipment mounted to wall, ceiling or other structure		N/A
8.7.1	Mount means type	Not wall/ceiling mounted equipment.	N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N).....:		N/A
	Test 2, number of attachment points and test force (N).....:		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm).....:		N/A
8.8	Handles strength		N/A
8.8.1	General	No handle.	N/A
8.8.2	Handle strength test		N/A
	Number of handles.....:		—
	Force applied (N)		—
8.9	Wheels or casters attachment requirements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.9.2	Pull test	No wheels or casters in the equipment.	N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General	No carts, stands and similar carriers in the equipment.	N/A
8.10.2	Marking and instructions.....:		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N)		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N)		—
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General	The equipment is not intended for rack mounted equipment.	N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied.....:		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm)	No telescoping or rod antennas in the equipment.	—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts.....:	(See appended tables 5.4.1.4, 9.3, B.1.5, B.2.6 and B.3 and B.4)	P
9.3.2	Test method and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.4	Safeguards against thermal energy sources		N/A
9.5	Requirements for safeguards		P
9.5.1	Equipment safeguard	Measured temperature for external enclosure does not exceed TS1 limit. (See appended Tables 9.0, B.2.6, B.3 and B.4)	P
9.5.2	Instructional safeguard.....:	Instructional safeguard is not required.	N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General	No wireless power transmitters	N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance		N/A
10	RADIATION		N/A
10.2	Radiation energy source classification		N/A
10.2.1	General classification	No radiation in equipment.	N/A
	Lasers		—
	Lamps and lamp systems.....:		—
	Image projectors.....:		—
	X-Ray		—
	Personal music player		—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply	The equipment does not contain laser or laser diode	N/A
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		N/A
10.4.1	General requirements	Only LED for indicator, RS1	N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures	No UV radiation	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	UV radiation exposure		N/A
10.4.3	Instructional safeguard		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements	No X-radiation.	N/A
	Instructional safeguard for skilled persons		—
10.5.3	Maximum radiation (pA/kg).....		—
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General	Not personal music player.	N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....		N/A
	Unweighted RMS output voltage (mV).....		N/A
	Digital output signal (dBFS).....		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30)		N/A
	Warning for MEL ≥ 100 dB(A)		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV).....		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A).....		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A).....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
B.2	Normal operating conditions		P
B.2.1	General requirements	(See Test Item Particulars and appended test tables)	
	Audio Amplifiers and equipment with audio amplifiers	No audio amplifiers	N/A
B.2.3	Supply voltage and tolerances	Tolerance is taken as + 10 % and - 10 % of rated input voltage in this test report.	P
B.2.5	Input test	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General	(See appended table B.3, B.4)	P
B.3.2	Covering of ventilation openings	Rear openings are covered with a piece of card as abnormal operating condition.	P
	Instructional safeguard		N/A
B.3.3	DC mains polarity test	The equipment is not intended to be connected dc mains.	N/A
B.3.4	Setting of voltage selector	No voltage selector in the equipment.	N/A
B.3.5	Maximum load at output terminals	Tested with attainable maximum output power and short-circuited at three USB outputs (See appended table B.3, B.4)	P
B.3.6	Reverse battery polarity	The RTC battery's polarity can't be reversed according to the design.	N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.8	Safeguards functional during and after abnormal operating conditions	During an abnormal operating condition, all safeguards remain effective. After restoration of normal operating conditions, all safeguards comply with applicable requirements.	P
B.4	Simulated single fault conditions		P
B.4.1	General	See below;	P
B.4.2	Temperature controlling device	No temperature controlling device in the equipment.	N/A
B.4.3	Blocked motor test	(See appended table B.4)	P
B.4.4	Functional insulation	Complied with distance requirements.	N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed board in the equipment.	N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors	No electrodes in the equipment.	N/A
B.4.6	Short circuit or disconnection of passive components	(See appended table B.4)	P
B.4.7	Continuous operation of components	No motors, relay coils, or the components intended for shorttime operation or intermittent operation in the equipment.	N/A
B.4.8	Compliance during and after single fault conditions	During and after single fault conditions, no flame and ignition inside the equipment.	P
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	P
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements	The equipment does not produce significant UV radiation.	N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus..... :	The equipment does not produce significant UV radiation.	N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	TEST GENERATORS		P
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		P
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Electrical energy source classification for audio signals		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω)		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard		—
E.2	Audio amplifier normal operating conditions		N/A
	Audio signal source type		—
	Audio output power (W)..... :		—
	Audio output voltage (V)		—
	Rated load impedance (Ω)		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	Language	English	—
F.2	Letter symbols and graphical symbols		P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.2.1	Letter symbols according to IEC60027-1	Used letter symbols according to IEC 60027-1 in label and user manual.	P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Used graphic symbols according to IEC, ISO standard.	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	The equipment markings are located on the outside surface of the equipment.	P
F.3.2	Equipment identification markings	See below;	P
F.3.2.1	Manufacturer identification	Hanwha Techwin Co., Ltd.	—
F.3.2.2	Model identification	PRP-5000H16, TAW-4000H16	—
F.3.3	Equipment rating markings	See below;	P
F.3.3.1	Equipment with direct connection to mains	(See Annex F.3.3.3 to F.3.3.6)	P
F.3.3.2	Equipment without direct connection to mains	Equipment with direct connection to mains.	N/A
F.3.3.3	Nature of the supply voltage	The symbol (IEC 60417-1-5032) is used for ac mains.	—
F.3.3.4	Rated voltage	100-240 V~	P
F.3.3.5	Rated frequency	50/60 Hz	P
F.3.3.6	Rated current or rated power	550 W	P
F.3.3.7	Equipment with multiple supply connections	Only one supply connection.	N/A
F.3.4	Voltage setting device	No voltage setting device in the equipment.	N/A
F.3.5	Terminals and operating devices	See below;	P
F.3.5.1	Mains appliance outlet and socket-outlet markings	No mains appliance outlet and socket-outlet in the equipment.	N/A
F.3.5.2	Switch position identification marking	No disconnect switch in the equipment, but stand-by switch is used. The symbol (IEC 60417-1-5009) is used for stand-by switch.	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.3	Replacement fuse identification and rating markings	Evaluated in the approved PSU (See PSU test report)	P
	Instructional safeguards for neutral fuse		N/A
F.3.5.4	Replacement battery identification marking	Instructional safeguard is provided in user manual.	P
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location	(See Annex F.3.6.1)	P
F.3.6	Equipment markings related to equipment classification	See below;	P
F.3.6.1	Class I equipment	Class I equipment.	P
F.3.6.1.1	Protective earthing conductor terminal	Symbol $\oplus$ (IEC60417-5019(2006-08)) on AC inlet earth terminal	P
F.3.6.1.2	Protective bonding conductor terminals		N/A
F.3.6.2	Equipment class marking	Class I equipment	N/A
F.3.6.3	Functional earthing terminal marking		N/A
F.3.7	Equipment IP rating marking	This equipment is classified as IPX0	—
F.3.8	External power supply output marking	USB 2.0 and 3.0 terminals only.	N/A
F.3.9	Durability, legibility and permanence of marking	See below;	P
F.3.10	Test for permanence of markings	The marking withstands required tests.	P
F.4	Instructions		P
	a) Information prior to installation and initial use	Provided in user manual.	P
	b) Equipment for use in locations where children not likely to be present	No parts can be touched by test probes specified in Annex V.	N/A
	c) Instructions for installation and interconnection	Provided in user manual.	P
	d) Equipment intended for use only in restricted access area	Equipment is not intended for use in restricted access area.	N/A
	e) Equipment intended to be fastened in place	Equipment is not intended to be fastened in place.	N/A
	f) Instructions for audio equipment terminals	No audio equipment terminals	P
	g) Protective earthing used as a safeguard	Provided in user manual.	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	h) Protective conductor current exceeding ES2 limits	No protective earthing conductor current exceeding ES2 limits, see Clause 5.7.4	P
	i) Graphic symbols used on equipment	Graphical symbols are explained on the equipment.	P
	j) Permanently connected equipment not provided with all-pole mains switch	No permanently connected equipment.	N/A
	k) Replaceable components or modules providing safeguard function	No such part in the equipment.	N/A
	l) Equipment containing insulating liquid	No insulating liquid in equipment	N/A
	m) Installation instructions for outdoor equipment	No outdoor equipment	N/A
F.5	Instructional safeguards		P
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General	No disconnect switch in the equipment.	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	Relays		N/A
G.2.1	Requirements	No Relays	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs	No thermal cut-offs in the equipment.	N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links	No thermal links in the equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors	No PTC thermistor in the equipment.	N/A
G.3.4	Overcurrent protection devices	Mains fuse (F1) is certified according to IEC 60127 (See PSU test report)	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4	See below;	P
G.3.5.1	Non-resettable devices suitably rated and marking provided	Marking is located close to the protective devices.	P
G.3.5.2	Single faults conditions..... :	(See appended table B.4)	—
G.4	Connectors		P
G.4.1	Spacings	Evaluated in the approved PSU (See PSU test report)	P
G.4.2	Mains connector configuration..... :	Certified appliance inlet used. (See PSU test report)	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No plug has such a shape that insertion into mains socket-output or appliance coupler is likely to occur.	N/A
G.5	Wound components		P
G.5.1	Wire insulation in wound components	Evaluated in the approved PSU (See PSU test report)	P
G.5.1.2	Protection against mechanical stress	Evaluated in the approved PSU (See PSU test report)	P
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle)..... :		—
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.3	Transformers	Evaluated in the approved PSU (See PSU test report)	P
G.5.3.1	Compliance method..... :		P
	Position		P
	Method of protection		P
G.5.3.2	Insulation		P
	Protection from displacement of windings..... :		—
G.5.3.3	Transformer overload tests		P
G.5.3.3.1	Test conditions		P
G.5.3.3.2	Winding temperatures		P
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors	Approved DC fan used	P
G.5.4.1	General requirements	(See appended table 4.1.2)	P
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days)		—
G.5.4.5	Running overload test for DC motors	See Annex G.5.4.6.	N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors	See below;	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.6.2	Tested in the unit	Alternative test method used. (See Annex G.5.4.6.3)	N/A
	Maximum Temperature		N/A
G.5.4.6.3	Alternative method	(See appended table B.3)	P
G.5.4.7	Motors with capacitors	No motors with capacitors.	N/A
G.5.4.8	Three-phase motors	No three-phase motors.	N/A
G.5.4.9	Series motors	No series motors.	N/A
	Operating voltage		—
G.6	Wire Insulation		P
G.6.1	General	Evaluated in the approved PSU (See PSU test report)	P
G.6.2	Enamelled winding wire insulation		N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements	Not provided	N/A
	Type		—
G.7.2	Cross sectional area (mm ² or AWG)		N/A
G.7.3	Cord anchorages and strain relief for non- detachable power supply cords	Appliance inlet provided.	N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection	Appliance inlet provided.	N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm)		—
	Radius of curvature after test (mm)		—
G.7.6	Supply wiring space	Appliance inlet provided.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		P
G.8.1	General requirements	Evaluated in the approved PSU (See PSU test report)	P
G.8.2	Safeguards against fire		P
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements	No IC current limiter provided within the equipment	N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	Resistors		N/A
G.10.1	General	No such resistors	N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		P
G.11.1	General requirements	Evaluated in the approved PSU (See PSU test report)	P
G.11.2	Conditioning of capacitors and RC units		P
G.11.3	Rules for selecting capacitors		P
G.12	Optocouplers		P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Optocouplers comply with IEC 60747-5-5 with specifics	Evaluated in the approved PSU (See PSU test report)	P
	Type test voltage $V_{ini,a}$:		—
	Routine test voltage, $V_{ini,b}$:		—
G.13	Printed boards	Evaluated in the approved PSU (See PSU test report)	P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation :		N/A
	Number of insulation layers (pcs) :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements :	No coatings in the equipment.	N/A
G.15	Pressurized liquid filled components		N/A
G.15.1	Requirements	No liquid filled components in the equipment.	N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16.1	Condition for fault tested is not required	No IC including capacitor discharge function (ICX).	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test :		—
G.16.3	Capacitor discharge test..... :		N/A
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal	Not used an analogue telephone network ringing signal in the equipment.	N/A
H.3.1.1	Frequency (Hz) :		—
H.3.1.2	Voltage (V) :		—
H.3.1.3	Cadence; time (s) and voltage (V) :		—
H.3.1.4	Single fault current (mA): :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) :		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
J.1	General		N/A
	Winding wire insulation :	No insulated winding wires used.	—
	Solid round winding wire, diameter (mm) :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²) :		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
J.2/J.3	Tests and Manufacturing		—
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
	Instructional safeguard :	No safety interlocks in the equipment.	N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2 :		N/A
K.7.2	Overload test, Current (A) :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		P
L.1	General requirements	Appliance coupler is considered as disconnect device.	P
L.2	Permanently connected equipment	Not permanently connected equipment.	N/A
L.3	Parts that remain energized	No parts that remain energized when the disconnect device is off	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
L.4	Single-phase equipment	Appliance coupler disconnects both poles simultaneously.	P
L.5	Three-phase equipment	Not three-phase equipment.	N/A
L.6	Switches as disconnect devices	No switches in the equipment.	N/A
L.7	Plugs as disconnect devices	Appliance coupler is regarded as disconnect device. Relevant warning is provided in user manual.	P
L.8	Multiple power sources	Only single power source is used.	N/A
	Instructional safeguard		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements		P
M.2	Safety of batteries and their cells		P
M.2.1	Batteries and their cells comply with relevant IEC standards	Coin / button cell battery used. See below clauses.	P
M.3	Protection circuits for batteries provided within the equipment		P
M.3.1	Requirements	Protection circuits for RTC battery provided within the equipment	P
M.3.2	Test method	See below;	P
	Overcharging of a rechargeable battery	No rechargeable batteries in the equipment.	N/A
	Excessive discharging	Not apply	N/A
	Unintentional charging of a non-rechargeable battery	The test is performed protection component of the RTC battery. The reverse current protection is accomplished by series diode and resistor. See appended table Annex M for details.	P
	Reverse charging of a rechargeable battery	No rechargeable batteries in the equipment.	N/A
M.3.3	Compliance	(See appended table M.3)	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		N/A
M.4.1	General	Primary battery used.	N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance		N/A
M.4.3	Fire enclosure		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%):		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration	No lead acid and NiCd batteries in the equipment.	N/A
	Calculated hydrogen generation rate		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h)		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%)		N/A
M.7.3.3	Ventilation test – alternative 2		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Obtained hydrogen generation rate..... :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%)..... :		N/A
M.7.4	Marking		N/A
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General	No lead acid batteries in the equipment.	N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)..... :		—
M.8.2.3	Correction factors		—
M.8.2.4	Calculation of distance d (mm)		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage	No risk of electrolyte spillage.	N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard		N/A
N	ELECTROCHEMICAL POTENTIALS		P
	Material(s) used	considered	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Value of X (mm)..... :	considered	—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		P
P.1	General	See below clauses;	P
P.2	Safeguards against entry or consequences of entry of a foreign object		P
P.2.1	General		P
P.2.2	Safeguards against entry of a foreign object	See below;	P
	Location and Dimensions (mm)	Rear openings dimensions are max.3.9 mm x 3.9 mm. comply with IP3X.	—
P.2.3	Safeguards against the consequences of entry of a foreign object	See below;	P

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Clause	Requirement + Test	Result - Remark	Verdict
P.2.3.1	Safeguard requirements	Openings are not located within 5° against bare conductive parts of ES3 or PS3 and PIS.	P
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment	Not transportable equipment.	N/A
	Transportable equipment with metalized plastic parts		N/A
P.2.3.2	Consequence of entry test.....	Not transportable equipment.	N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General	Internal liquid is not used in the equipment.	N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General	Metallized coating is not used in the equipment.	N/A
P.4.2	Tests		N/A
	Conditioning, T _c (°C)		—
	Duration (weeks).....		—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources		P
Q.1.1	Requirements	See below;	P
	a) Inherently limited output	PS2, DVI, VGA, HDMI, LAN, HD AUDIO (IN, MIC, CTR, REAR, SPDIF) and USB (2.0 and 3.0) terminals are inherently limited. (See appended table Q.1)	P
	b) Impedance limited output	USB outputs are regulating network limited. (See appended table Q.1)	P
	c) Regulating network limited output	USB outputs are regulating network limited. (See appended table Q.1)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	d) Overcurrent protective device limited output	No overcurrent protective device.	N/A
	e) IC current limiter complying with G.9	No IC current limiter.	N/A
Q.1.2	Test method and compliance	See below;	P
	Current rating of overcurrent protective device (A)	(See appended table Q.1)	P
Q.2	Test for external circuits – paired conductor cable	The equipment is not supplying power to an external circuit paired conductor cable.	N/A
	Maximum output current (A)		N/A
	Current limiting method		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test.....		—
R.3	Test method		N/A
	Cord/cable used for test		—
R.4	Compliance		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material	All materials have suitable flame class, no testing required.	—
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material		—
	Wall thickness (mm)		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Conditioning (°C)		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples		—
	Wall thickness (mm)		—
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power exceeding 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
T	MECHANICAL STRENGTH TESTS		P
T.1	General		P
T.2	Steady force test, 10 N	Evaluated in the approved PSU (See PSU test report)	P
T.3	Steady force test, 30 N	(See appended table T.3)	P
T.4	Steady force test, 100 N	Not transportable, hand-held or direct plug-in equipment.	N/A
T.5	Steady force test, 250 N	(See appended table T.5)	P
T.6	Enclosure impact test	(See appended table T.6)	P
	Fall test		N/A
	Swing test		N/A
T.7	Drop test		N/A
T.8	Stress relief test.....	(See appended table T.8)	P
T.9	Glass Impact Test	No glasses in the equipment.	N/A
T.10	Glass fragmentation test		N/A
	Number of particles counted.....	No glasses in the equipment.	N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)	No telescoping or rod antennas in the equipment.	N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard :	No cathode ray tube in the equipment.	N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		P
V.1	Accessible parts of equipment		P
V.1.1	General	See below;	P
V.1.2	Surfaces and openings tested with jointed test probes	Does not accessed to the hazardous energy source.	P
V.1.3	Openings tested with straight unjointed test probes	Does not accessed to the hazardous energy source.	P
V.1.4	Plugs, jacks, connectors tested with blunt probe	Does not accessed to the hazardous energy source.	P
V.1.5	Slot openings tested with wedge probe	No electromechanical device for destruction of media.	N/A
V.1.6	Terminals tested with rigid test wire	Does not accessed to the hazardous energy source.	P
V.2	Accessible part criterion		P
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		N/A
	Clearance		N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		N/A
Y.6.1	General		N/A
Y.6.2	Impact test :		N/A

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
264	All secondary output of PSU	Normal	—	—	SS	—	ES1 ^{*)}
		Abnormal	—	—	SS	—	
		Single fault – SC/OC	—	—	SS	—	
264	All outer output terminals	Normal	Max. 5.37 Vdc	—	SS	—	ES1 ^{**))}
		Abnormal	Max. 5.37 Vdc	—	SS	—	
		Single fault – SC/OC	—	—	SS	—	
Supplementary information:							
*) Output voltage are evaluated in certified PSU (See certified PSU test reports)							
**) See annex Q output voltage.							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							



IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
5.4.1.8	TABLE: Working voltage measurement			N/A
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
Supplementary information: Evaluated in the approved PSU (see PSU test report)				

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics			N/A
Method		ISO 306 / B50		—
Object/ Part No./Material	Manufacturer/trademark	Thickness (mm)	T softening (°C)	
Supplementary information:				

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics			N/A
Allowed impression diameter (mm)		≤ 2 mm		—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)
Supplementary information: Evaluated in the approved PSU (see PSU test report)				

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance							N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U _p (V)	U _{rms} (V)	Freq ¹⁾ (Hz)	Required cl (mm)	cl (mm)	E.S. ²⁾ (V)	Required cr (mm)	cr (mm)
Supplementary information: Evaluated in the approved PSU (see PSU test report) 1) Only for frequency above 30 kHz 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								



IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
5.4.4.2	TABLE: Minimum distance through insulation			N/A
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)
Supplementary information:				
Evaluated in the approved PSU (see PSU test report)				

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz					N/A
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)
Supplementary information:						
Evaluated in the approved PSU (see PSU test report)						

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No
Basic insulation				
Primary – Enclosure surface with metal foil		AC	1800 Vrms	No
Reinforced insulation				
Primary – Secondary		AC	2900 Vrms	No
Supplementary information:				

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
5.5.2.2	TABLE: Stored discharge on capacitors				N/A
Location	Supply voltage (V)	Operating and fault condition ¹⁾	Switch position	Measured voltage (V _{pk})	ES Class
Supplementary information:					
Evaluated in the approved PSU (see PSU test report)					
X-capacitors installed for testing:					
☐ bleeding resistor rating:					
☐ ICX:					
1) Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit					

5.6.6	TABLE: Resistance of protective conductors and terminations				P
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Metal enclosure to inlet protective earthing conductor	32	2	0.43	0.013	
Supplementary information:					

5.7.4	TABLE: Unearthed accessible parts					P
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V _{rms} or V _{pk})	Current (A _{rms} or A _{pk})	Freq. (Hz)	
Mains poles (primary parts) to sec. outputs	Normal	264	-	0.54 mApk	-	ES1
	Abnormal	264	-	0.54 mApk	-	
	Single fault	264	-	0.54 mApk	-	
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						



IEC 62368-1							
Clause	Requirement + Test			Result - Remark		Verdict	
5.7.5	TABLE: Earthed accessible conductive part					P	
Supply voltage (V)		264 Vac			—		
Phase(s)		[x] Single Phase; [] Three Phase: [] Delta [] Wye					
Power Distribution System		☒ TN ☐ TT ☐ IT					
Location		Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment			
Earthed accessible conductive parts		[1]	0.52 mA				
Supplementary Information: Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable. [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.							
5.8	TABLE: Backfeed safeguard in battery backed up supplies					N/A	
Location		Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
Supplementary information: Abbreviation: SC= short circuit, OC= open circuit							
6.2.2	TABLE: Power source circuit classifications					P	
Location		Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
All secondary circuits		Normal	—	—	—	—	PS3 (Declared)
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit ¹⁾ Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.							



IEC 62368-1				
Clause	Requirement + Test			Verdict
6.2.3.1	TABLE: Determination of Arcing PIS			P
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
All internal circuits / components	-	-	-	Yes (declaration)
Supplementary information:				

6.2.3.2	TABLE: Determination of resistive PIS			P
Location		Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No
All internal circuits / components		-	-	Yes (declaration)
Supplementary information:				
Abbreviation: SC= short circuit; OC= open circuit				

8.5.5	TABLE: High pressure lamp			N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No
Supplementary information:				

9.6	TABLE: Temperature measurements for wireless power transmitters								N/A
Supply voltage (V)..... :								—	
Max. transmit power of transmitter (W)..... :								—	
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
Supplementary information:									

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IEC 62368-1					
Clause	Requirement + Test				Verdict
5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements				P
Supply voltage (V)..... :	90 V / 50 Hz	264 V / 50 Hz	90 V / 60 Hz	264 V / 60 Hz	—
Ambient temperature during test T_{amb} (°C)..... :	21.7	21.5	25.7	23.1	—
Maximum measured temperature T of part/at:	T (°C) ¹⁾				Allowed T_{max} (°C)
Chock coil, LF1 in PSU (130 °C)	61.3	57.5	60.4	57.0	130
Chock coil, LF2 in PSU (130 °C)	86.2	61.2	64.8	60.5	130
PCB near of BD1 in PSU (130 °C)	80.3	73.9	77.2	72.7	130
Transformer, T1 coil in PSU (Class B)	65.6	65.1	62.0	63.5	110 ³⁾
Chock coil, L3 in PSU (130 °C)	80.2	79.8	76.6	78.2	130
Chock coil, L1 in PSU (130 °C)	86.9	78.1	82.9	76.9	130
Electrolytic capacitor, C1 body in PSU	70.4	68.7	66.7	67.4	105
Transformer, TT1 coil in PSU (Class B)	75.0	75.0	71.6	73.2	110 ³⁾
RTC battery body	55.4	55.6	55.0	54.9	80
PCB near LTVC 05 (130 °C)	58.3	58.0	58.2	57.5	130
PCB near SX2 (130 °C)	54.4	54.3	54.0	54.1	130
PCB near U1 (130 °C)	55.4	54.8	55.1	54.9	130
PCB near L5 (130 °C)	60.7	60.5	60.3	60.9	130
PCB near U9 (130 °C)	56.0	55.6	54.9	55.6	130
Enclosure surface of PSU (inside)	62.8	60.4	61.2	59.5	-
HDD body	49.3	49.4	46.6	49.2	-
Case of system DC FAN	42.6	40.6	41.7	40.4	-
Maximum measured temperature T of part/at:	T (°C) ²⁾				Allowed T_{max} (°C)
Enclosure near rear terminals (metallic) ⁵⁾	37.7	37.4	37.0	36.9	70
Enclosure near AC inlet (metallic) ⁵⁾	46.6	43.7	45.1	43.2	70
Enclosure surface of right side (metallic) ⁵⁾	38.7	37.9	36.9	36.6	70
Enclosure surface of top side (metallic) ⁵⁾	39.2	37.9	37.7	36.6	70
Standby switch button (non-metallic) ⁴⁾	32.3	31.6	23.6	30.0	77

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IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
AC inlet body ⁵⁾			42.6	40.6	41.7	40.4	70
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: - Maximum ambient temperature (T _{ma}): 40 °C 1) Calculated value for T _{ma} (Measured value – T _{amb} + T _{ma}). 2) Calculated value for T _{amb} : 25 °C 3) Temperature limits include less 10 °C for thermocouple measurement method. 4) External surfaces touched occasionally for very short period (> 1 s and < 10 s). 5) External surfaces touched occasionally (top, side, front and rear) for very short period (< 1 s)							



IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
B.2.5	TABLE: Input test							P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
90	50	1.96	-	175.4	-	F1	1.96	Normal operated (see below test condition)
100	50	1.81	-	174.3	550	F1	1.81	
240	50	0.76	-	170.4	550	F1	0.76	
264	50	0.68	-	167.2	-	F1	0.68	
90	60	1.96	-	177.6	-	F1	1.96	Normal operated (see below test condition)
100	60	1.75	-	176.7	550	F1	1.75	
240	60	0.75	-	169.4	550	F1	0.75	
264	60	0.65	-	157.5	-	F1	0.65	
Supplementary information:								
Test condition:								
Two(2) monitors connected (DVI and HDMI terminals), loaded throught the two(2) USB terminals (max. 2 A (Version 3.0) x 2), connected the keyboard/mouse to the front USB terminals (Version 2.0), data copy and CCTV camera images record in Hard disk driver (HDD).								



IEC 62368-1						
Clause	Requirement + Test				Result - Remark	
B.3, B.4	TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T_{amb} (°C).....					20 to 25 °C	—
Power source for EUT: Manufacturer, model/type, output rating ..					(See appended table 4.1.2)	—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
Ventilation opening (Rear)	Blocked	90	2 h	F1	1.98	NO, NCD, NH. See ¹⁾ in the next page for measured temperature.
Ventilation opening (Rear)	Blocked	264	1 h	F1	0.69	NO, NCD, NH. See ²⁾ in the next page for measured temperature.
DC FAN (System FAN)	Locked	90	2 h	F1	2.04	NO, NCD, NH. See ³⁾ in the next page for measured temperature.
DC FAN (System FAN)	Locked	264	2 h 28 min	F1	0.74	NO, NCD, NH. See ⁴⁾ in the next page for measured temperature.
Rear left side USB 3.0 output terminal	Max. loaded (2.3 A)	264	2 h 50 min	F1	0.69	NO, NCD, NH. See ⁵⁾ in the next page for measured temperature.
Rear left side USB 3.0 output terminal	SC	264	10 min	F1	0.67	USB output off immediately. NCD, NH.
Rear right side USB 3.0 output terminal	Max. loaded (2.3 A)	264	1 h	F1	0.69	NO, NCD, NH. See ⁶⁾ in the next page for measured temperature.
Rear right side USB 3.0 output terminal	SC	264	10 min	F1	0.67	USB output off immediately. NCD, NH.
Front USB 2.0 output terminal	Max. loaded (2.3 A)	264	1 h	F1	0.68	NO, NCD, NH. See ⁷⁾ in the next page for measured temperature.
Front USB 2.0 output terminal	SC	264	10 min	F1	0.67	USB output off immediately. NCD, NH.

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IEC 62368-1						
Clause	Requirement + Test				Result - Remark	
BR1	SC	264	10 min	F1	-	The abnormal reverse charging current is measured as 0 mA. NCD, NH
BD1 (pin 1 to pin 2)	SC	264	10 min	F1	-	The abnormal reverse charging current is measured as 2.90 mA. NCD, NH
BD1 (pin 2 to pin 3)	SC	264	10 min	F1	-	The abnormal reverse charging current is measured as 2.79 mA. NCD, NH
Supplementary information: SC=Short circuit, OC=Open circuit, NCD=No component damaged, NH=No hazard, NO=Normal operation.						

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
B.3, B.4	TABLE: Abnormal operating and fault condition tests - continued							P
Supply voltage (V)..... :	90 V, 60 Hz 1)	264 V, 50 Hz 2)	90 V, 60 Hz 3)	264 V, 50 Hz 4)	—			
Ambient temperature during test T_{amb} (°C) :	25.0	22.9	23.8	24.4	—			
Maximum measured temperature T of part/at:	T (°C) 1)				Allowed T_{max} (°C)			
Transformer, T1 coil in PSU	63.7	63.7	63.0	61.7	165 3)			
Transformer, TT1 coil in PSU	72.9	73.1	72.6	71.9	165 3)			
Maximum measured temperature T of part/at:	T (°C) 2)				Allowed T_{max} (°C)			
Enclosure near rear terminals (metallic) 5)	35.7	36.0	38.2	38.0	80			
Enclosure near AC inlet (metallic) 5)	43.0	41.5	42.3	40.7	80			
Enclosure surface of right side (metallic) 5)	34.6	34.5	37.4	35.6	80			
Enclosure surface of top side (metallic) 5)	34.7	35.2	38.8	37.7	80			
Standby switch button (non-metallic) 4)	33.8	27.4	31.6	33.0	87			
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:								
- Maximum ambient temperature (T_{ma}): 40 °C								
1) Calculated value for T_{ma} (Measured value – T_{amb} + T_{ma}).								
2) Calculated value for T_{amb} : 25 °C								
3) Temperature limits include less 10 °C for thermocouple measurement method.								
4) External surfaces touched occasionally for very short period (> 1 s and < 10 s).								
5) External surfaces touched occasionally (top, side, front and rear) for very short period (< 1 s)								

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
B.3, B.4	TABLE: Abnormal operating and fault condition tests - continued							P
Supply voltage (V)..... :	264 V, 50 Hz ⁵⁾	264 V, 50 Hz ⁶⁾	264 V, 50 Hz ⁷⁾	-	—			
Ambient temperature during test T_{amb} (°C) :	23.7	23.5	23.5	-	—			
Maximum measured temperature T of part/at:	T (°C) ¹⁾				Allowed T_{max} (°C)			
Transformer, T1 coil in PSU	63.6	63.7	63.3	-	165 ³⁾			
Transformer, TT1 coil in PSU	72.8	72.7	72.9	-	165 ³⁾			
Maximum measured temperature T of part/at:	T (°C) ²⁾				Allowed T_{max} (°C)			
Enclosure near rear terminals (metallic) ⁵⁾	37.7	37.5	37.1	-	80			
Enclosure near AC inlet (metallic) ⁵⁾	43.0	43.3	43.3	-	80			
Enclosure surface of right side (metallic) ⁵⁾	37.0	37.1	37.0	-	80			
Enclosure surface of top side (metallic) ⁵⁾	37.2	37.4	37.4	-	80			
Standby switch button (non-metallic) ⁴⁾	30.3	30.7	34.8	-	87			
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:								
- Maximum ambient temperature (T_{ma}): 40 °C								
1) Calculated value for T_{ma} ($\text{Measured value} - T_{amb} + T_{ma}$).								
2) Calculated value for T_{amb} : 25 °C								
3) Temperature limits include less 10 °C for thermocouple measurement method.								
4) External surfaces touched occasionally for very short period (> 1 s and < 10 s).								
5) External surfaces touched occasionally (top, side, front and rear) for very short period (< 1 s)								



IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
M.3	TABLE: Protection circuits for batteries provided within the equipment						P
Is it possible to install the battery in a reverse polarity position?				No		—	
Equipment Specification	Charging						
	Voltage (V)			Current (A)			
	3.0			-			
Manufacturer/type	Battery specification						
	Non-rechargeable batteries			Rechargeable batteries			
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
*) / CR2032	-	0 mA	-	-	-	-	
*) / CR2032	-	0 mA (BR1 SC)	-	-	-	-	
*) / CR2032	-	2.90 mA (BD1 pin 1 to pin 2 SC)	-	-	-	-	
*) / CR2032	-	2.79 mA (BD1 pin 3 to pin 2 SC)	-	-	-	-	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C)							
Component No.	Fault condition	Charge/discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
Supplementary information:							
*) See appended table 4.1.2							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
M.4.2	TABLE: Charging safeguards for equipment containing a secondary lithium battery				N/A
Maximum specified charging voltage (V)					—
Maximum specified charging current (A)					—
Highest specified charging temperature (°C)					
Lowest specified charging temperature (°C)					
Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	
Supplementary information:					
Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature					

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)						P
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
USB (2.0) output (Front)	Normal operated	5.37	60	2.5	8	13.5	100
	Single fault condition, F11 SC	5.37	60	7.8	8	41.9	100
PS2 port (PS2_KB_MS1) pin 4 to GND	Normal operated	5.29	60	3.5	8	21.7	100
	Single fault condition, KF1 SC	5.35	60	4.1	8	21.9	100
PS2 port (PS2_KB_MS1) pin 1, 2 to GND	Normal operated	5.23	-	0	8	0	100
PS2 port (PS2_KB_MS1) pin 3, pin 5-9 to GND	Normal operated	0	-	0	8	0	100
DVI	Normal operated	5.29	60	2.5	8	13.3	100

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IEC 62368-1							
Clause	Requirement + Test	Result - Remark					Verdict
(VGA_DVI 1A) pin D14 to GND	Single fault condition, DF2 SC	5.34	60	5.9	8	31.5	100
DVI (VGA_DVI 1A) pin D6, D7 to GND	Normal operated	5.23	-	0	8	0	100
DVI (VGA_DVI 1A) pin D1-5 to GND	Normal operated	0	-	0	8	0	100
VGA (VGA_DVI 1B) pin 9 to GND	Normal operated	5.23	-	0	8	0	100
VGA (VGA_DVI 1B) pin 1 to GND	Normal operated	0	-	0	8	0	100
HDMI port (HDMI1) pin 18 to GND	Normal operated	5.29	60	2.5	8	31.7	100
	Single fault condition, DF2 SC	5.36	60	6.0	8	32.2	100
HDMI port (HDMI1) pin 15,16 to GND	Normal operated	5.23	-	0	8	0	100
HDMI port (HDMI1) pin 1, 17 to GND	Normal operated	0	-	0	8	0	100
LAN port (LAN1_US B3_1_2) pin 19 to GND	Normal operated	0	-	0	8	0	100
USB3.0	Normal operated	5.29	60	5.0	8	26.5	100

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
port (LAN1_US B3_1_2) pin 1, 10 to GND	IANF1 SC	5.35	60	6.8	8	36.4	100
USB3.0 port (LAN1_US B3_1_2) pin 2, 11 to GND	Normal operated	0	-	0	8	0	100
LAN port (LAN2_US B3_3_4) pin 19 to GND	Normal operated	0	-	0	8	0	100
LAN port (LAN2_US B3_3_4) pin 1, 10 to GND	Normal operated	5.29	60	5.0	8	26.5	100
	Single fault condition, IPHYF1 SC	5.35	60	6.8	8	36.4	100
LAN port (LAN2_US B3_3_4) pin 2, 11 to GND	Normal operated	0	-	0	8	0	100
IN port (HD AUDIO)	Normal operated	0	-	0	8	0	100
Front port (HD AUDIO)	Normal operated	0	-	0	8	0	100
MIC in port (HD AUDIO)	Normal operated	0	-	0	8	0	100
CTR port (HD AUDIO)	Single fault condition, DF2 SC	0	-	0	8	0	100
REAR port (HD AUDIO)	Normal operated	0	-	0	8	0	100

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
SPDIF port (HD AUDIO) pin A to GND	Normal operated	0	-	0	8	0	100
SPDIF port (HD AUDIO) pin B to GND	Normal operated	5.23	-	0	8	0	100
Supplementary Information: SC=Short circuit, OC=Open circuit							



IEC 62368-1						
Clause	Requirement + Test				Result - Remark	Verdict
T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
External enclosure near PSU	Metal	Min. 0.8 mm	Figure V.1 and V.2	30 N	5 s	T3: Energy source did not become accessible, equipment safeguards were not defeated.
External enclosure near PSU	Metal	Min. 0.8 mm	-	250 N	5 s	T5: Energy source did not become accessible, equipment safeguards were not defeated.
Supplementary information:						

T.6, T.9	TABLE: Impact test				P
Location/part		Material	Thickness (mm)	Height (mm)	Observation
Equipment		Metal	Min. 0.8 mm	1 300	T6: Energy source did not become accessible, equipment safeguards were not defeated.
Supplementary information:					

T.7	TABLE: Drop test				N/A
Location/part		Material	Thickness (mm)	Height (mm)	Observation
Supplementary information:					

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
T.8	TABLE: Stress relief test				P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Insulation sheet in the PSU	Plastic	0.4	72.8 *)	7	No risk of shrinkage or distortion.
Supplementary information:					
*) Oven Temperature = Maximum measured temperature value +10 K					

X	TABLE: Alternative method for determining minimum clearances distances			N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)	
Supplementary information:				



IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
4.1.2	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Building-in Power Supply (two provided maximum)	Shenzhen Honor Electronics Co., Ltd.	U1A-D10800- DRB	AC input: 100V-240 V~, 50-60 Hz, 10 A Max., Class I. DC input: 160V-340V, 8 A Max. Output rating: +12 V, 65 A, +12 Vsb, 2.1 A. Total maximum total output power is 800 W;	EN 62368-1	Test report by Guangdong UTL Co., Ltd. (Report No.: 18PNC01144 03001)
HDD (optional)	Seagate Technology LLC	STR009	5 Vdc, 12 Vdc/ 0.75 A, 0.75 A	IEC 62368-1	UL (US)
Alt.)	Interchangeable	Interchangeabl e	5 Vdc, 12 Vdc/ max, 1.5 A, 2.0 A	-	-
System FAN	NIDEC TAIWAN CORP	R80W12BGA C-ef, e=07 or 57 for PWM & Tach, f=xxxxxx, Where x may be 0-9, A-Z, a-z or blank	I/P: 12 Vdc, 1.96 A AIRFLOW: 82.4 CFM min. 2.33 m³/min	EN 60950-1, UL 507	TUV SUD, UL (E339289)
Alt.)	NIDEC AMERICA CORPORATION	D08A-12PS14 03AH1(K)	I/P: 12 Vdc, 0.87 A. 2.06 m³/min	EN 60950-1, UL 507	TUV SUD, UL (E91997)
Alt.)	DELTA ELECTRONICS INC	AFB0812SH	I/P: 12 Vdc, 0.51 A. 1,412 m³/min	EN 60950-1, UL 507	VDE, UL (E132003)
CPU FAN	SUNONWEALTH	PF60251BX- Q030-S99	I/P: 12 Vdc, 300 mA. AIRFLOW: 39.0 CFM	EN 60950-1	TUV Rh, UL (E77551)

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
4.1.2	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Alt.)	DYNAEON INDUSTRIAL CO LTD	DF126028BM	I/P: 12 Vdc, 0.6 A. AIRFLOW: 40.5 CFM	EN 60950-1	TUV Rh, UL (E157868)
RTC Battery (BAT1)	Maxell, Ltd	CR2032	Max. abnormal charge current 10 mA	EN 62368-1 UL 1642	Tested in the equipment UL (MH12568)
Alt.)	Vic-Dawn Enterprise Co Ltd	CR2032	Max. abnormal charge current 10 mA	UL 1642	UL (MH20550)
Alt.)	Interchangeable	Interchangeable	Max. abnormal charge current 10 mA	UL 1642	UL
Polyswitch Fuse (DF2) (For HDMI port, DVI port and VGA port used)	Polytronics Technology Corp	SPR-P260T	6 Vdc, 2.6 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SPR-P175	6 Vdc, 1.75 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SMD1812 series	6 Vdc, 1.5 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Polyswitch Fuse (ILANF1, IPHYF1) (For LAN_USB port)	Polytronics Technology Corp	SPR-P260T	6 Vdc, 2.6 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SPR-P175	6 Vdc, 1.75 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SMD1812 series	6 Vdc, 1.5 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Polyswitch Fuse (KF1) (For PS/2 port used)	Polytronics Technology Corp	SPR-P260T	6 Vdc, 2.6 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SPR-P175	6 Vdc, 1.75 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
4.1.2	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Alt.)	Polytronics Technology Corp	SMD1812 series	6 Vdc, 1.5 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Polyswitch Fuse (For USB port used)	Polytronics Technology Corp	SPR-P260T	6 Vdc, 2.6 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SPR-P175	6 Vdc, 1.75 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Alt.)	Polytronics Technology Corp	SMD1812 series	6 Vdc, 1.5 A	EN 60738-1, UL 1434	TUV Rh, UL (E201431)
Internal wire	REI HSING WIRE CO LTD	1007	80 °C, 300 V, VW-1	UL 758	UL (E108485)
Alt.)	Interchangeable	Interchangeabl e	Min. 80 °C, 300 V, VW-1	UL 758	UL
Internal wire (USB)	FREEWAY ELECTRONIC WIRE & CABLE (DONGGUAN) CO LTD	2725	80 °C, 30 V, VW-1	UL 758	UL (E257034)
Alt.)	Interchangeable	Interchangeabl e	Min. 80 °C, 30 V, VW-1	UL 758	UL
Enclosure Mtl.	Interchangeable	Interchangeabl e	Metal Min. 0.8 mm	EN 62368-1	Tested in the equipment
Front panel	Interchangeable	Interchangeabl e	Min. HB	UL94	UL
PCB	Interchangeable	Interchangeabl e	Min. V-1, Min. 105 °C	UL 796	UL
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-2039. ²⁾ Description line content is optional. Main line description needs to clearly detail the component used for testing.					



IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 62368-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment - Part 1: Safety requirements)			
Differences according to : EN IEC 62368-1:2020+A11:2020			
Attachment Form No. : EU_GD_IEC62368_1C			
Attachment Originator : UL(Demko)			
Master Attachment : 2020-03-10			
Copyright © 2020 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	CENELEC COMMON MODIFICATIONS (EN)		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed "Z".		P
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
1	Modification to Clause 3 .		N/A
3.3.19	Sound exposure <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		N/A
3.3.19.1	momentary exposure level, MEL metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.	No portable sound equipment	N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.3	sound exposure, E A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is $\text{Pa}^2 \text{ s}$. $E = \int_0^T p(t)^2 dt$	No portable sound equipment	N/A
3.3.19.4	sound exposure level, SEL logarithmic measure of sound exposure relative to a reference value, E_0 , typically the 1 kHz threshold of hearing in humans. Note 1 to entry: SEL is measured as A-weighted levels in dB. $SEL = 10 \lg \left(\frac{E}{E_0} \right) \text{ dB}$ Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.	No portable sound equipment	N/A
3.3.19.5	digital signal level relative to full scale, dBFS levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.	No portable sound equipment	N/A
2	Modification to Clause 10		N/A
10.6	Safeguards against acoustic energy sources Replace 10.6 of IEC 62368-1 with the following:		N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.6.1.1	Introduction Safeguard requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an ordinary person, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to: – professional equipment;	Not personal music player	N/A

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	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. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; 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. – a player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.	Not personal music player	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.2	Classification of devices without the capacity to estimate sound dose		N/A
10.6.2.1	General This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3. For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. 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, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song. NOTE Classical music, acoustic music and broadcast 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 content 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 does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, 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 dB.	Not personal music player	N/A
10.6.2.2	RS1 limits (to be superseded, see 10.6.3.2) RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized	Not personal music player	N/A

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	connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		
10.6.2.3	RS2 limits (to be superseded, see 10.6.3.3) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed "programme simulation noise" as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed "programme simulation noise" as described in EN 50332-1.	Not personal music player	N/A
10.6.2.4	RS3 limits RS3 is a class 3 acoustic energy source that exceeds RS2 limits.	Not personal music player	N/A
10.6.3	Classification of devices (new)		N/A
10.6.3.1	General Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.	Not personal music player	N/A
10.6.3.2	RS1 limits (new) RS1 is a class 1 acoustic energy source that does	Not personal music player	N/A

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	not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1.		
10.6.3.3	RS2 limits (new) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1.	Not personal music player	N/A
10.6.4	Requirements for maximum sound exposure		N/A
10.6.4.1	Measurement methods All volume controls shall be turned to maximum during tests.	Not personal music player	N/A

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	Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		
10.6.4.2	Protection of persons Except as given below, protection requirements for parts accessible to ordinary persons, instructed persons and skilled persons are given in 4.3. NOTE 1 Volume control is not considered a safeguard. Between RS2 and an ordinary person, the basic safeguard may be replaced by an instructional safeguard in accordance with Clause F.5, except that the instructional safeguard shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the instructional safeguard may be given through the equipment display during use. The elements of the instructional safeguard shall be as follows:  – element 1a: the symbol , IEC 60417-6044 (2011-01) – element 2: "High sound pressure" or equivalent wording – element 3: "Hearing damage risk" or equivalent wording – element 4: "Do not listen at high volume levels for long periods." or equivalent wording An equipment safeguard shall prevent exposure of an ordinary person to an RS2 source without intentional physical action from the ordinary person and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be	Not personal music player	N/A

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	acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed. NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off. A skilled person shall not be unintentionally exposed to RS3.		
10.6.5	Requirements for dose-based systems		N/A
10.6.5.1	General requirements Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.	Not personal music player	N/A
10.6.5.2	Dose-based warning and requirements	Not personal music player	N/A

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	When a dose of 100 % CSD is reached, and at least at every 100 % further increase of CSD, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % CSD leads to the risk of hearing damage or loss.		
10.6.5.3	Exposure-based requirements With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster. Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.	Not personal music player	N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input With 94 dB LAeq acoustic pressure output of the listening device, and with the volume and sound	Not personal music player	N/A

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	settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed "programme simulation noise" as described in EN 50332-1 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.		
10.6.6.2	Corded listening devices with digital input With any playing device playing the fixed "programme simulation noise" described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.	Not personal music player	N/A
10.6.6.3	Cordless listening devices In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.	Not personal music player	N/A
10.6.6.4	Measurement method <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>	Not personal music player	N/A

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Clause	Requirement + Test				Result - Remark	
3	Modification to the whole document					—
	country” notes in the reference document according to the following list:					—
	0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2
	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2
	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3
	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note
	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4
	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2
	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2
	10.6.4	Note 3	F.3.3.6	Note 3	Y.4.1	Note
	Y.4.5	Note				
4	Modification to Clause 1					N/A
1	Add the following note: <i>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</i>					N/A
5	Modification to 4.Z1					P
4.Z1	Add the following new subclause after 4.9: To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains , 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): a) except as detailed in b) and c), protective			Considered		P

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	devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; 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; 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. 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.		
6	Modification to 5.4.2.3.2.4		N/A
5.4.2.3.2.4	<i>Add the following to the end of this subclause:</i> The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.		N/A
7	Modification to 10.2.1		N/A
10.2.1	Add the following to ^{c)} and ^{d)} in table 39: For additional requirements, see 10.5.1.		N/A
8	Modification to 10.5.1		N/A
10.5.1	<i>Add the following after the first paragraph:</i> For RS 1 compliance is checked by measurement under the following conditions: In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an		N/A

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	intelligible picture for 1 h, at the end of which the measurement is made. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus. Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		
9	Modification to G.7.1		N/A
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
10	Modification to Bibliography		N/A
	Add the following notes for the standards indicated:		N/A

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	IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		
11	ADDITION OF ANNEXES		N/A
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N/A
4.1.15	Denmark, Finland, Norway and Sweden To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark : "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikpropens jord." In Finland : "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway : "Apparatet må tilkoples jordet stikkontakt" In Sweden : "Apparaten skall anslutas till jordat uttag"		N/A

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4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex		N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A
5.4.11.1 and Annex G	Finland and Sweden To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either • 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. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement 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	No TNV circuits	N/A

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	• passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 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. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: • 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 5.4.11; • 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.		
5.5.2.1	Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Noted	P
5.5.6	Finland, Norway and Sweden To the end of the subclause the following is added:		N/A

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	Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.		
5.6.1	Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		N/A
5.6.4.2.1	Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.	See general product information of main test report.	N/A
5.6.4.2.1	France After the indent for pluggable equipment type A , the following is added: – in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.	See general product information of main test report.	N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.		N/A
5.6.8	Norway To the end of the subclause the following is added: Equipment connected with an earthed mains plug		N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	is classified as class I equipment . See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		
5.7.6	Denmark To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A
5.7.6.2	Denmark To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .		N/A
5.7.7.1	Norway and Sweden To the end of the subclause the following is added: The screen of the television 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 needs to be isolated from the screen of a cable distribution system. 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 a retailer, for example. 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: "Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial		N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)" NOTE In Norway, due to regulation for CATV-installations, 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. Translation to Norwegian (the Swedish text will also be accepted in Norway): "Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet." Translation to Swedish: "Apparater 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 apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet."		
8.5.4.2.3	United Kingdom Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		N/A
B.3.1 and B.4	Ireland and United Kingdom The following is applicable:	No direct plug-in equipment	N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment , tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment , until the requirements of Annexes B.3.1 and B.4 are met		
G.4.2	Denmark To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. 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. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase 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. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011	See below; Appliance inlet used No socket-outlets or plug See general product information of main test report. Class I equipment No socket-outlets No socket-outlets	N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a <i>Justification:</i> Heavy Current Regulations, Section 6c		
G.4.2	United Kingdom To the end of the subclause the following is added: 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.	No direct plug-in equipment	N/A
G.7.1	United Kingdom To the first paragraph the following is added: Equipment 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 shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	See general product information of main test report.	N/A
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State	See general product information of main test report.	N/A

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IEC62368_1C- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	which is equivalent to the relevant Irish Standard		
G.7.2	Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm ² is allowed for equipment which is rated over 10 A and up to and including 13 A.	See general product information of main test report.	N/A
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de	No CRT used in the equipment	N/A
ZD	IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)		P

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IEC62368_1C- ATTACHMENT								
Clause	Requirement + Test	Result - Remark	Verdict					
	<table><tr><th rowspan="2">Type of flexible cord</th><th colspan="2">Code designations</th></tr><tr><th>IEC</th><th>CENELEC</th></tr></table>		Type of flexible cord	Code designations		IEC	CENELEC	P
	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	60227 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					
	Cords insulated and sheathed with halogen-free thermoplastic compounds							
	Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F					
Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F						

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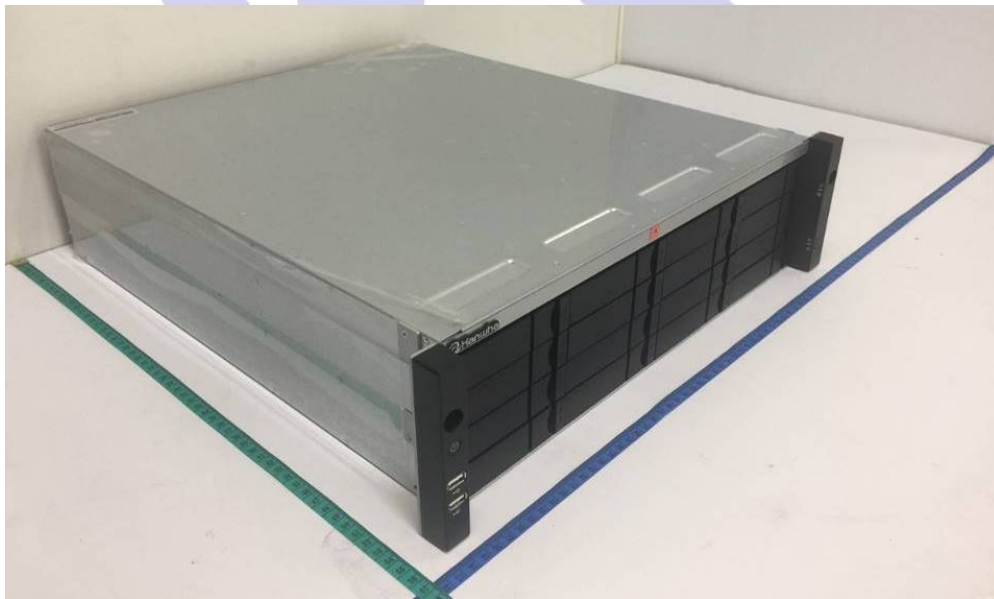
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ATTACHMENT 2

Photographs



<Front top view>



<Front top side view>

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ATTACHMENT 2

Photographs



<Rear bottom view>



<Rear bottom side view>

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ATTACHMENT 2
Photographs



<Interior with PSU/Main board view>



<Interior with Main board view>

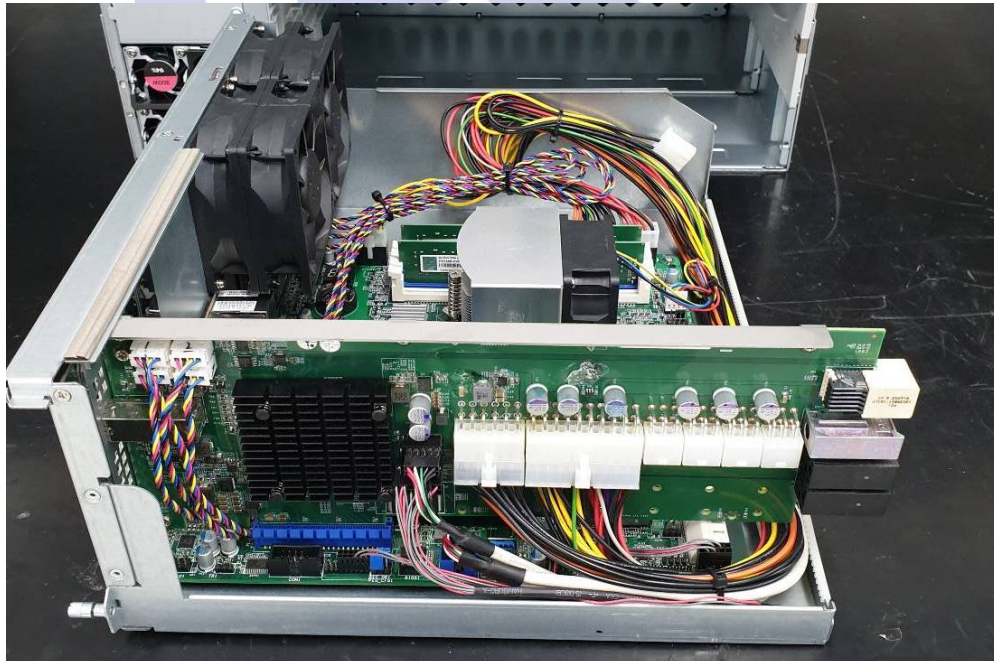
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ATTACHMENT 2

Photographs



<Interior with PSU connected part view>



<Interior with sub board view>

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ATTACHMENT 2

Photographs



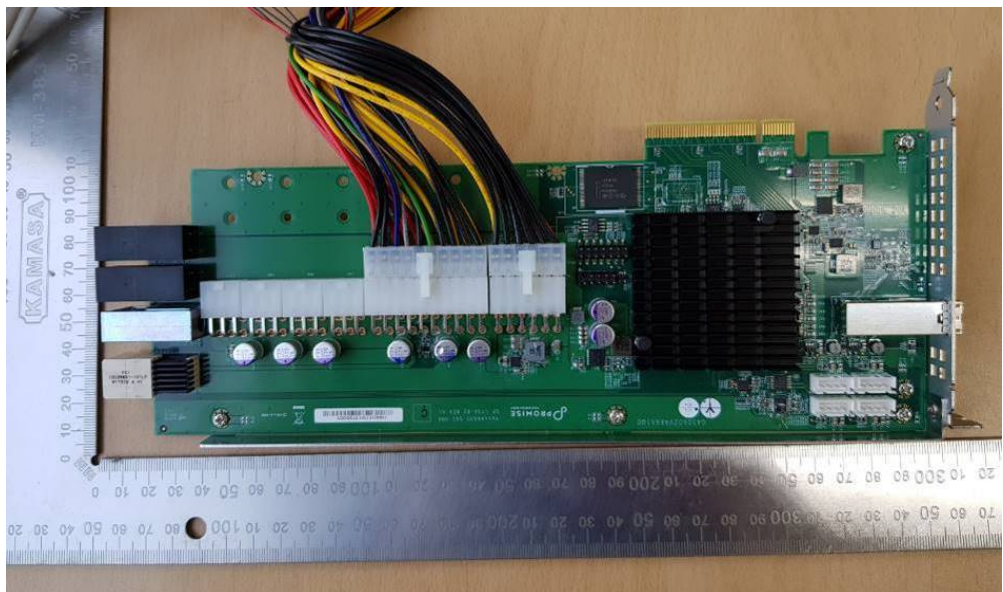
<Main board top view>



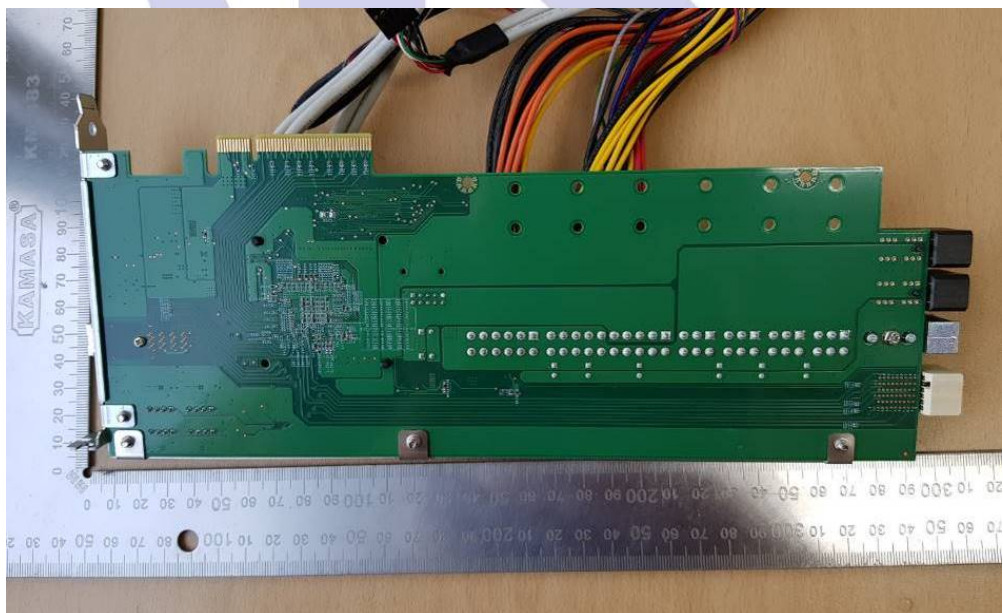
<Main board bottom view>

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ATTACHMENT 2
Photographs



<Sub board top view>



<Sub board bottom view>

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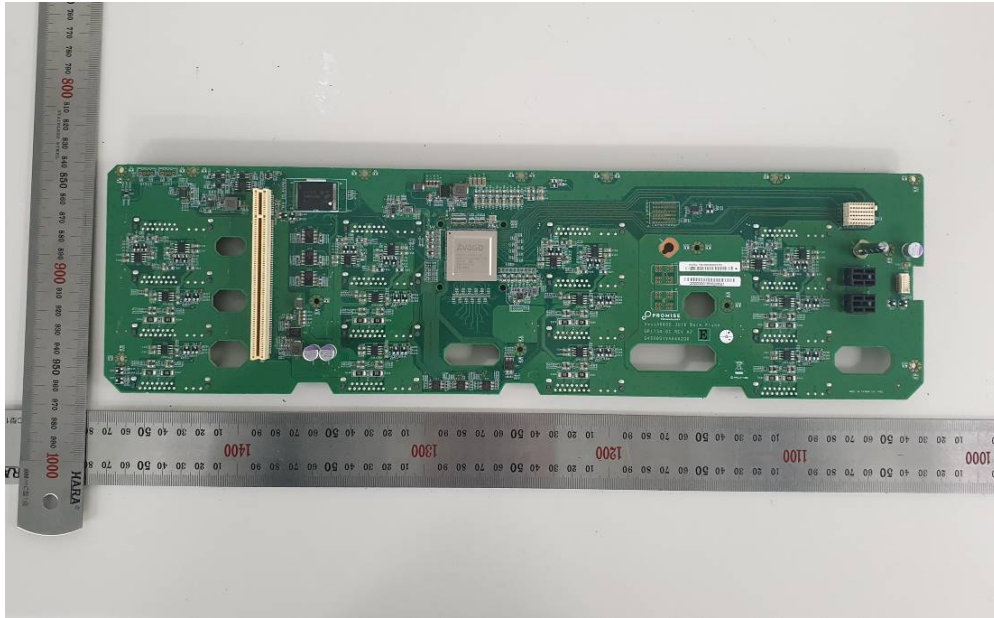


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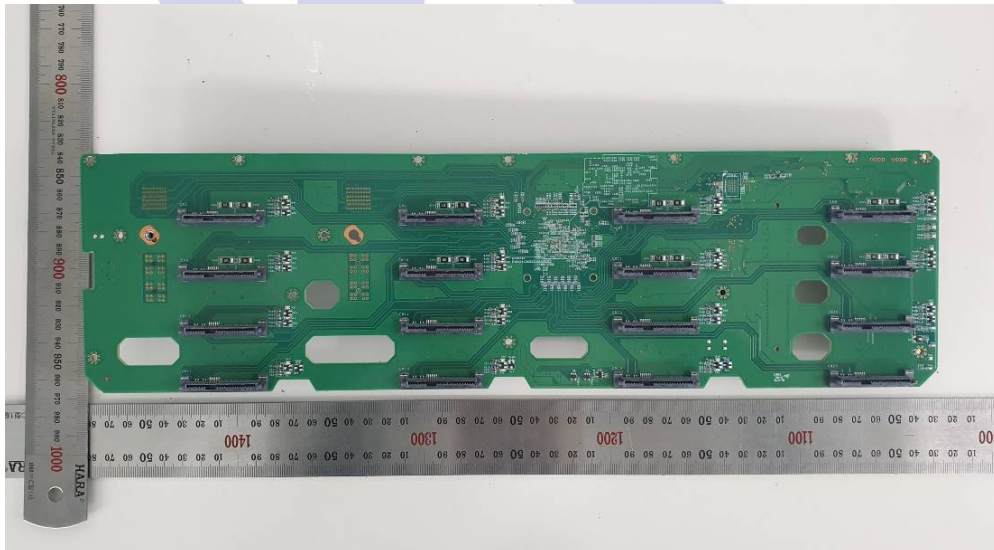
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ATTACHMENT 2

Photographs



<HDD connected board top view>

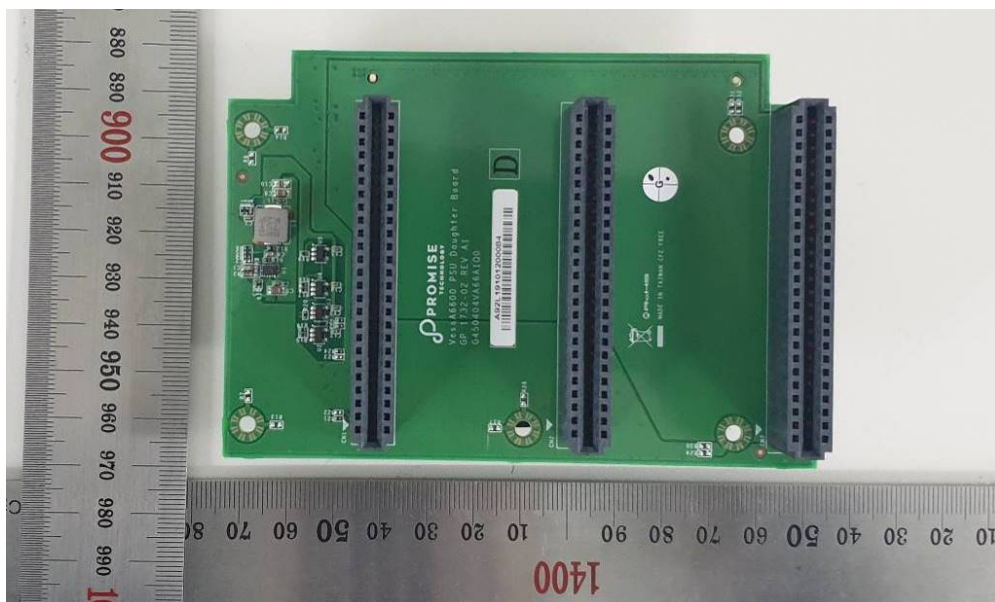


<HDD connected board bottom view>

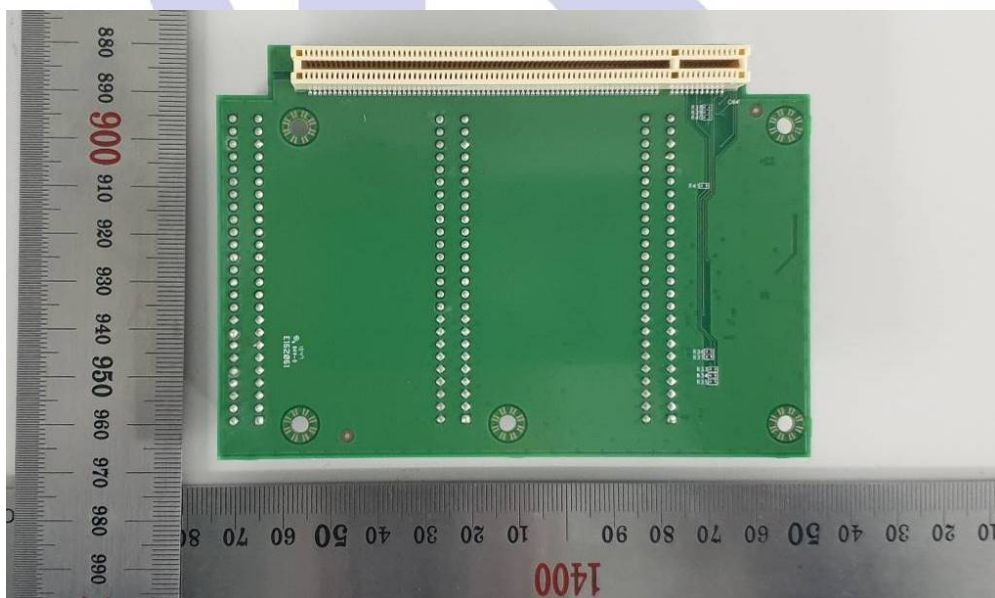
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ATTACHMENT 2

Photographs



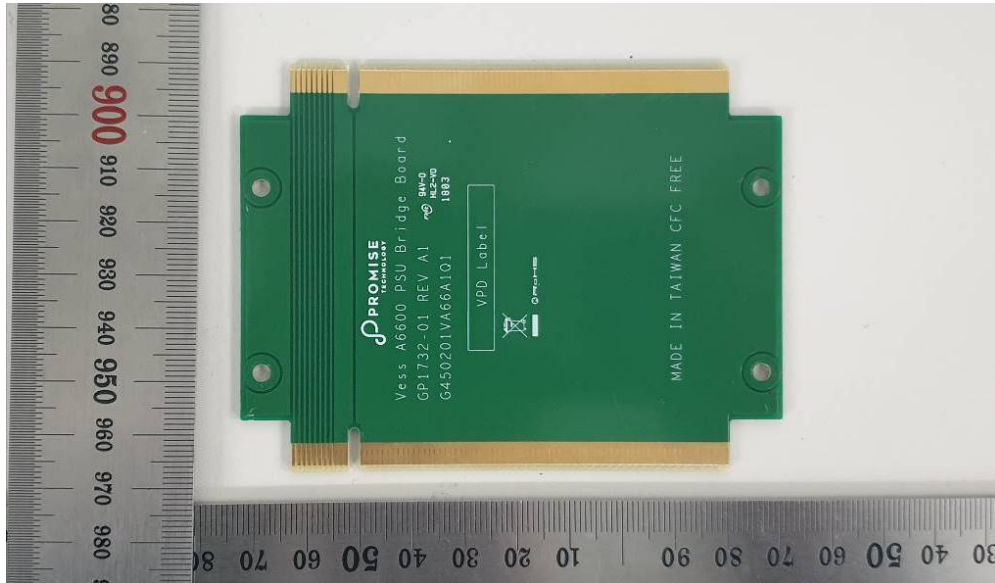
< Power supply unit connected board-1 top view>



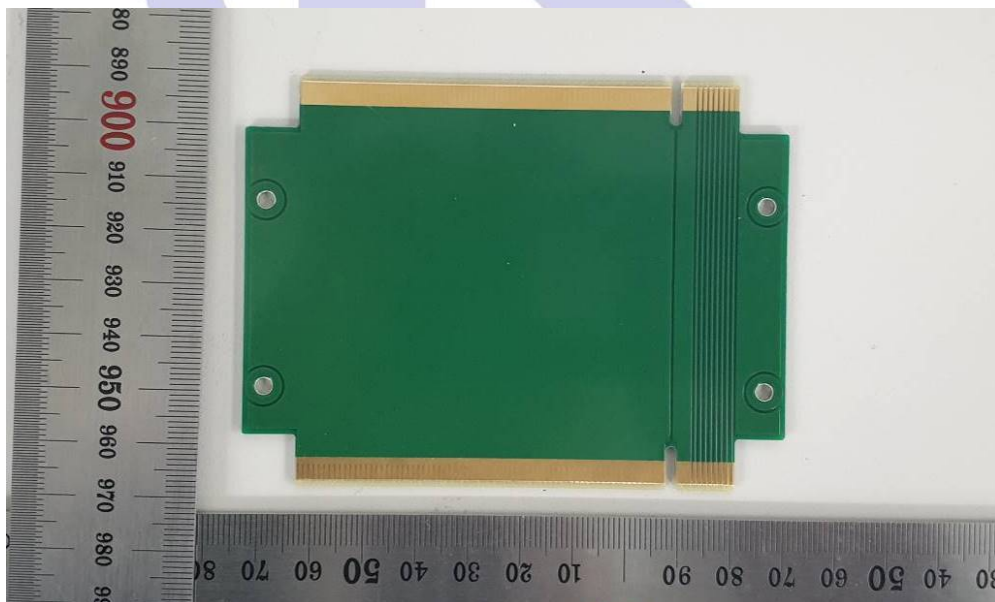
< Power supply unit connected board-1 bottom view>

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ATTACHMENT 2
Photographs



< Power supply unit connected board-2 top view>

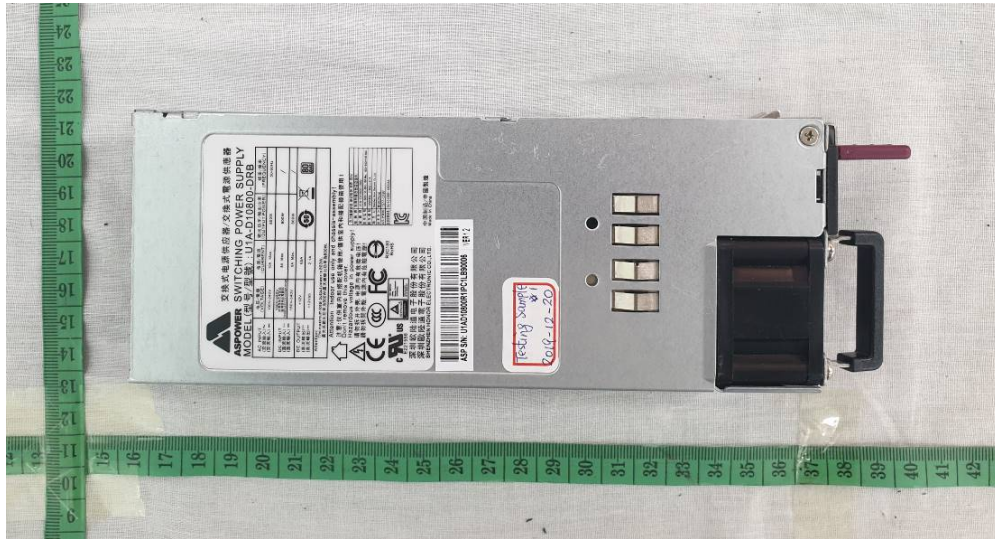


< Power supply unit connected board-2 bottom view>

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<Power supply unit view>

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WISENET

PC-type Network Video Recorder

Quick Guide

PRP-4000H8
PRP-5000H16



PC-type Network Video Recorder

Quick Guide

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Overview

Before reading the user manual

Be sure to read the following before reading the user manual.

- This manual is copyrighted by the manufacturer.
- This manual cannot be reproduced without permission.
- We are not responsible for any damage caused by using products other than the standard product or using the product for the purpose other than mentioned in the manual.
- If you need to open the case and touch the inside of the case for troubleshooting, always contact the dealer where you purchased the product for professional help.
- Do not allow water or liquid to come into contact with the connections of the product.
- Do not apply excessive force or shock.
- Do not pull the power cord by force.
- Do not disassemble the product.
- Use only within the rated input/output power range.
- Use only approved power cords.
- For products with an input ground, be sure to use it with a grounded power plug.

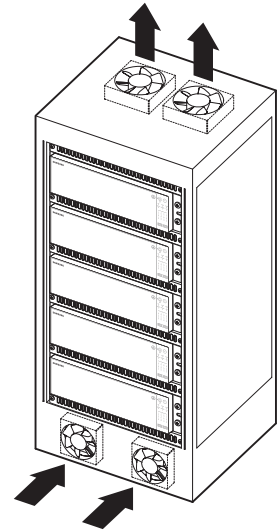
Checking the Installation Environment

This product is a state-of-the-art security equipment with a high capacity hard disk and important circuitry inside.

If the internal temperature of the product is too high, the life span may shorten or failure may occur. Refer to the following recommendations before installation.

When installing this product in a rack, observe the following recommendations.

1. Make sure that the inside of the rack where the product is installed is not sealed.
2. As shown in the figure, make air circulation smooth through the intake and exhaust ports.
3. If you are stacking the product together with other rack-mounted products as shown in the figure, secure a certain amount of space or install a vent for air circulation.
4. For natural convection of air, install the intake port at the bottom of the rack and the exhaust port at the top.
5. It is highly recommended to install a fan motor for air circulation in each intake and exhaust port. (Install a filter that filters dust or foreign matter in the intake fan.)
6. Keep the temperature inside the rack or around the product between 5 °C and 40 °C as shown.



Overview

Configuration and Tips of User Manual

The manual of this product is composed as follows.

- Quick Guide
- SSM User Manual
- System User Manual

This User Manual is the default setting for user's guide. The User Manual contains the following in order:

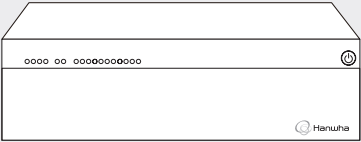
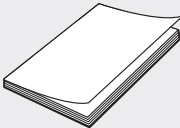
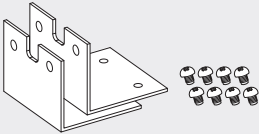
If you want to apply the modification to the actual operating environment, refer to the SSM User Manual and the System User Manual.

- Checking components
- Product name and functions
- How to install a hard disk
- How to create a logical drive
- Guide to SSM operation and installation start



- The operating system and application software installed on this product are optimized for the hardware of this equipment. Do not add or remove any hardware, or update the operating system, or install any other software. Or it may cause the risk of electric shock and product performance degradation.

Package Contents (PRP-4000H8)

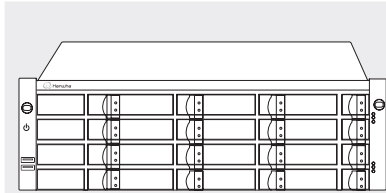
		
NVR	Mouse	Power cord
		
Keyboard	Quick Guide	Bracket rack and mounting screws
		
HDD mounting screws	4 anti-slip feet	Hard disk tray label



- Accessories other than the NVR body are consumables and are excluded from the warranty.
- All manuals can be downloaded from our homepage (www.hanwha-security.com).

Overview

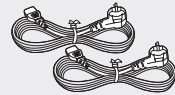
Package Contents (PRP-5000H16)



NVR



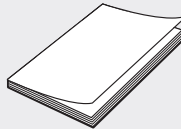
Mouse



Power cord



Keyboard



Quick Guide



HDD mounting screws



Hard disk tray label

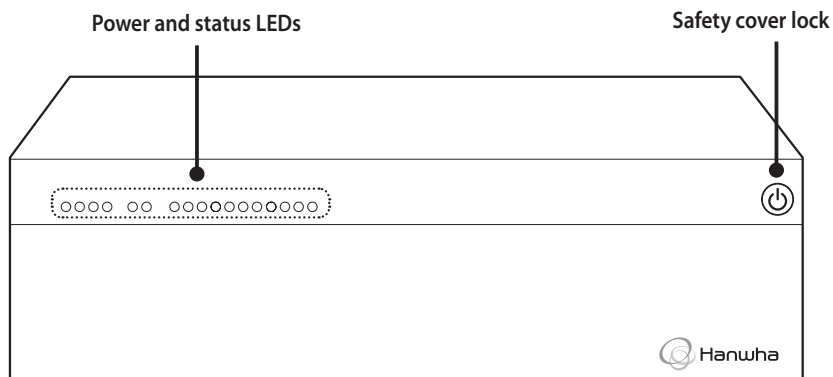


- Accessories other than the NVR body are consumables and are excluded from the warranty.
- All manuals can be downloaded from our homepage (www.hanwha-security.com).
- Rack mounting brackets for mounting in the server rack are sold separately.

Part Names and Functions (PRP-4000H8)

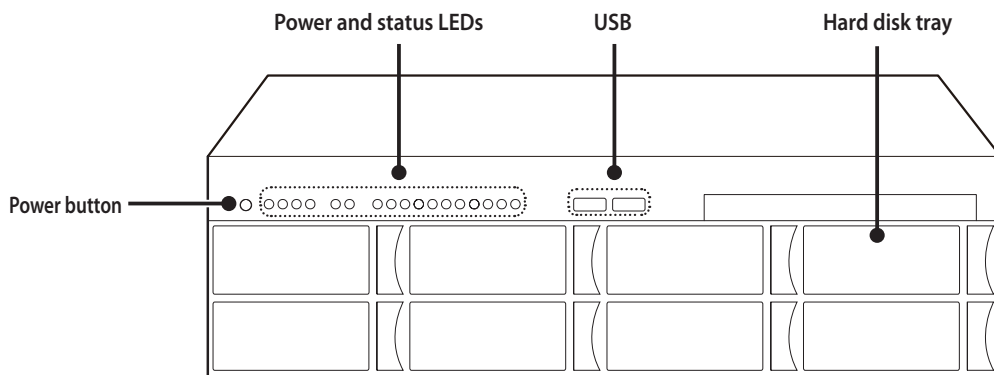
Front

FRONT SIDE WITH SAFETY COVER



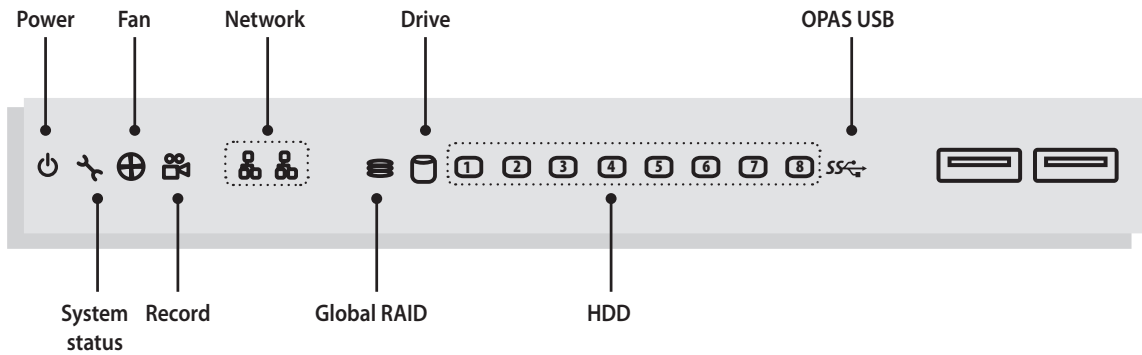
FRONT SIDE WITH SAFETY COVER REMOVED

1. Unlock the lock with the enclosed key.
2. Slide the safety cover approx. 4 mm to the right and pull it off. (Mounting is in reverse order of removal.)

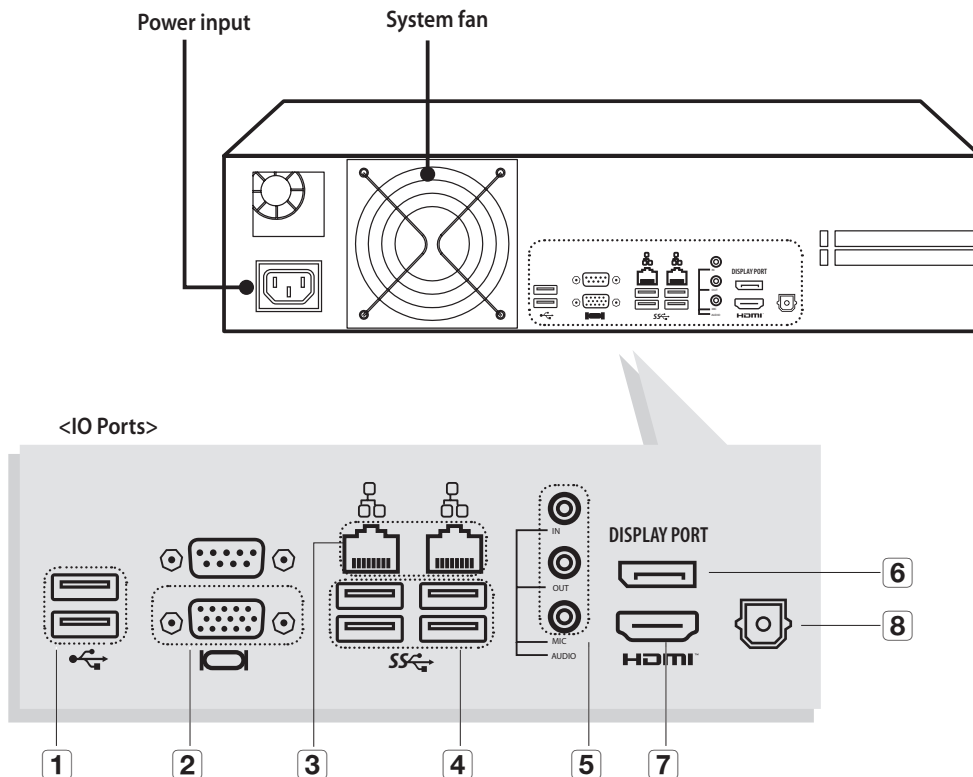


Overview

FRONT LED DISPLAY



Rear

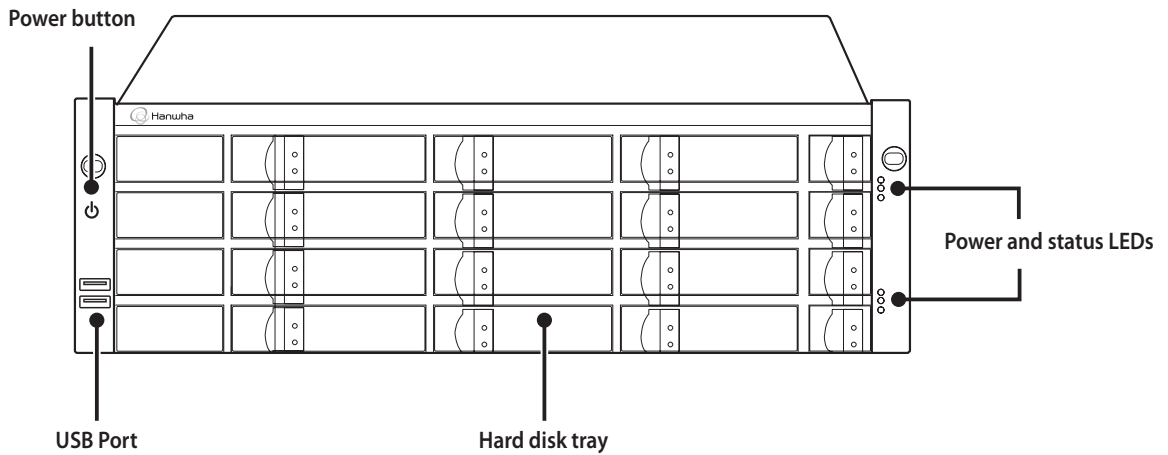


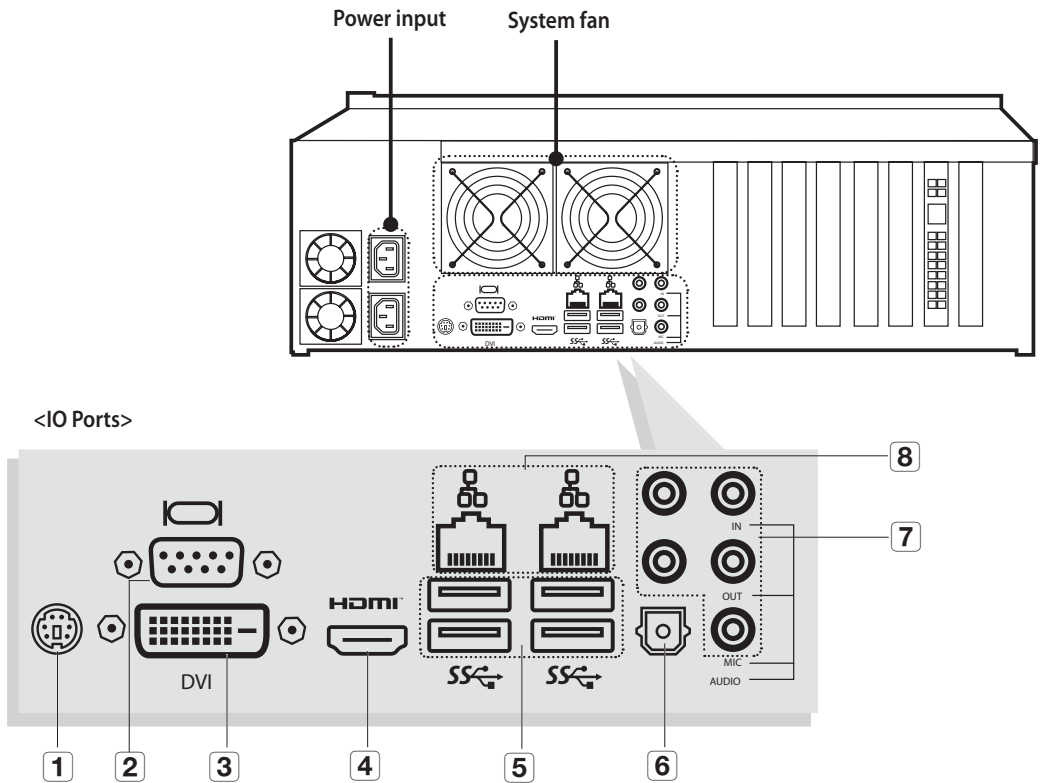
Name	
1	USB 2.0 ports
2	VGA port
3	Gigabit Ethernet ports
4	USB 3.0 ports
5	Audio In/Out
6	Display Port
7	HDMI port
8	S/PDIF out

Overview

Part Names and Functions (PRP-5000H16)

Front





Name	
1	PS/2 Mouse/Keyboard port
2	VGA port
3	DVI port
4	HDMI port
5	USB 3.0 (4 ports)
6	Optical SPDIF output port
7	Audio IO port
8	1000BASE-T RJ-45 (2 ports)

HDD Installation

How to Install HDD

- HDD installation method is as follows.

1. There are many factors inside the product that can cause electric shock, accident, or product failure. So unplug the power and install it.



- Disconnect both power cords of PRP-5000H16.

2. Remove the hard disk tray from the enclosure.
3. Place the HDD in the hard disk tray so that it aligns with the screw holes on each side.
4. Secure the HDD with the included screws. Do not over-tighten it.
5. Reattach the hard disk tray to the enclosure.
6. Repeat steps 2 to 5 until all HDDs are installed.



- Use HDDs as recommended by the Company.
- 6TB : SPZ-6301TS/DO, 10TB : SPZ-10300TS/DO
- When replacing HDD or installing additional HDD, contact the dealer where you purchased the product or service center.
- Precautions on Data Loss (HDD Management)

Be careful not to damage the HDD data.

If you add a HDD, please check if it is compatible HDD product first of all.

Be careful not to damage the HDD because it is a sensitive product that may cause defects due to external environment or shock during use.

Even if the HDD is damaged due to user's carelessness or external environment, the manufacturer will not be held responsible for any damage caused by the user.

- If HDD and data may be damaged

Make frequent backups (duplication) to minimize loss from HDD damage.

Data may be damaged if the product is removed or an external shock is applied during installation.

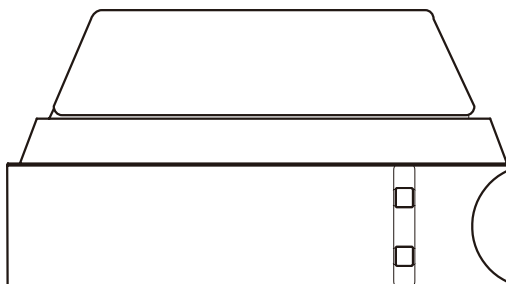
The HDD may be damaged if the product is suddenly stopped, such as a power outage or turning off the power during HDD operation.

Moving the main computer or applying a shock during HDD operation may damage the files or the HDD.

How to Attach HDD

How to remove or attach hard disk tray to/from the enclosure

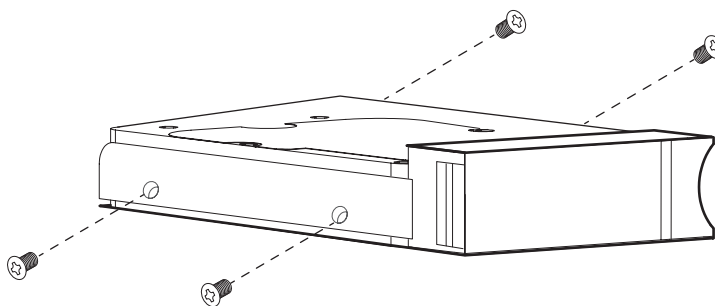
1. Pull the handle to release the latch, then grasp the handle and pull straight out.
2. Place the other hand under the hard disk tray so that it will not fall when you remove or mount it.



When mounting, push the center to insert HDD into the enclosure.

How to attach HDD to hard disk tray of PRP-4000H8

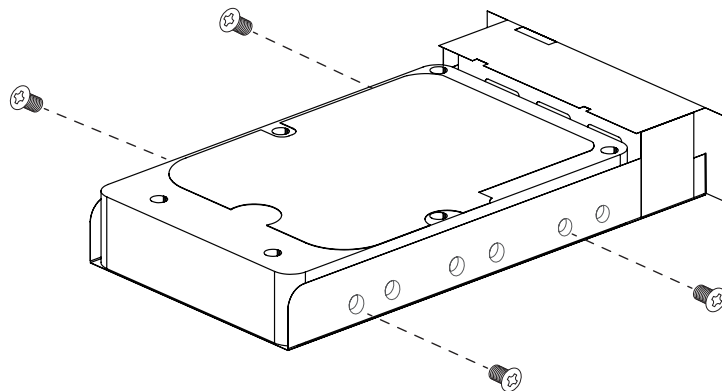
1. Attach the HDD to the hard disk tray using four screws.



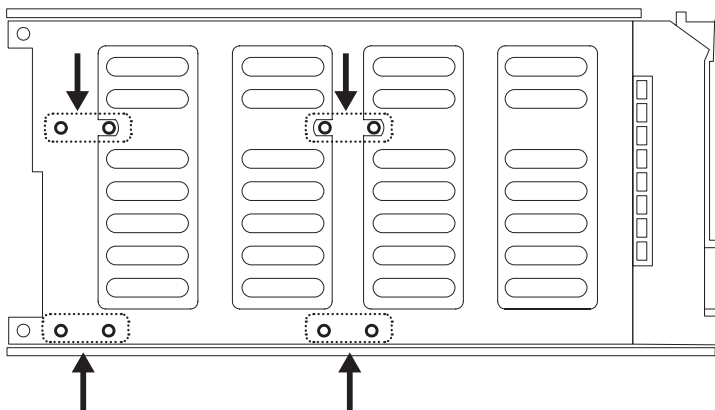
HDD Installation

How to attach HDD to hard disk tray of PRP-5000H16

1. Attach the 3.5" HDD to the hard disk tray using the four screws as shown.



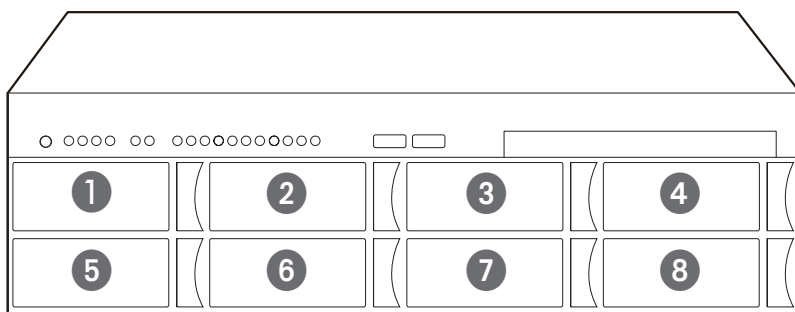
2. Align the 2.5 "HDD with the four holes on the bottom of the hard disk tray as shown and tighten the screws.



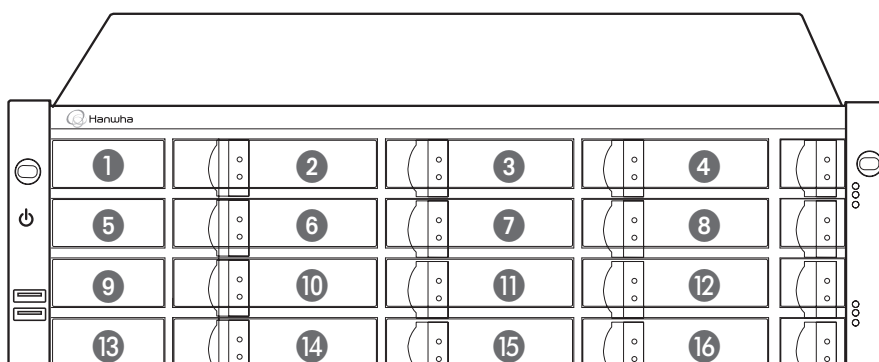
Hard disk tray number

Each hard disk tray of the enclosure is numbered as follows.

PRP-4000H8 HARD DISK TRAY NUMBERS



PRP-5000H16 HARD DISK TRAY NUMBERS



Execution

How to create a logical drive

This chapter describes how to configure logical drives.

1. Click the SSM Service Manager icon on the desktop to launch it.
2. After you click the Stop Service button, check if the service status has changed to Stopped, and exit.



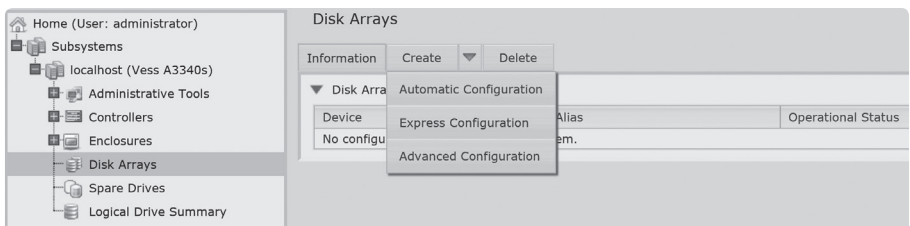
▪ If the service status is shown as Stopped, just exit.

3. Click on the WebPAM ProE icon on your desktop to launch it.
4. When the login screen appears, select your language at the top of the screen.
5. The initial username and password for the login are 'administrator' and 'password'.
6. If no array is configured, go to the disk array menu.
7. The array configuration has three options: automatic configuration, quick configuration, and advanced configuration.
 - Automatic configuration automatically configures the logical drive based on the number of hard disks installed and the selection options. However, it is convenient but does not guarantee optimal storage performance.
 - Quick configuration automatically configures logical drives based on the number of hard disks installed, the number of logical drives you want, and your selection options.
 - Advanced configuration allows you to configure logical drives manually at your own discretion.



▪ Advanced configuration is recommended for logical drive creation optimized for this product. Refer to Advanced Settings in Advanced Configuration on the next page.

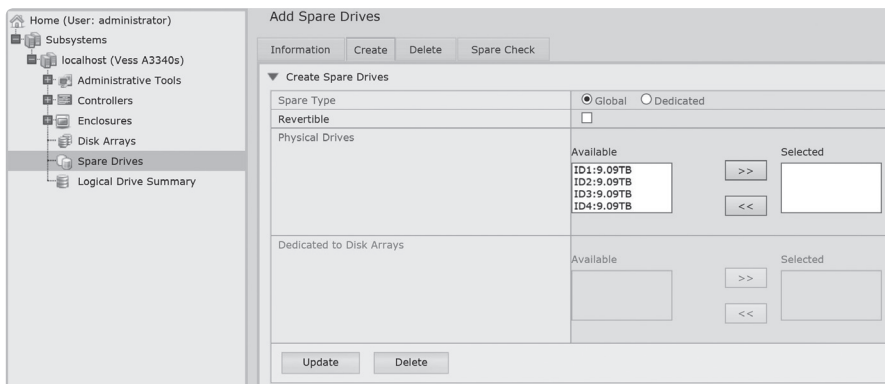
8. A list of generated disk arrays and logical drives can be found in the logical drive summary.



How to configure advanced logical drives

This is a method of configuring a logical drive to maximize the performance of this equipment.

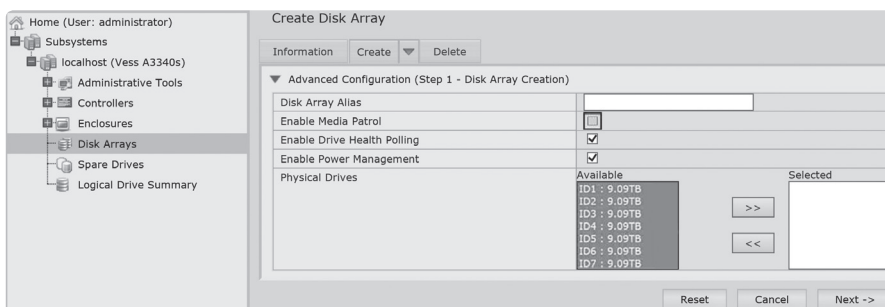
1. To ensure disk availability, select the Spare Drive menu to create a spare drive.



2. From the Create Disk Array menu, choose Advanced Configuration. Disable the Use Media Traversal option in the Create Disk Array menu that appears after selecting, select the number of physical drives, and go to the next step.

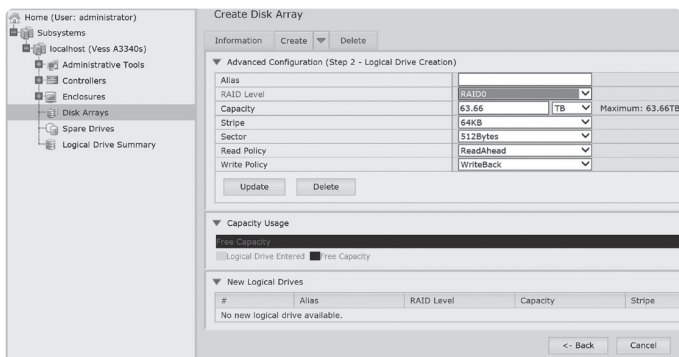


- For optimal storage performance, ensure that there are no more than eight physical drives in a logical drive. Configuration example) When you install 16 physical drives, you should configure two logical drives by assigning 7 to 8 logical drives to one logical drive.

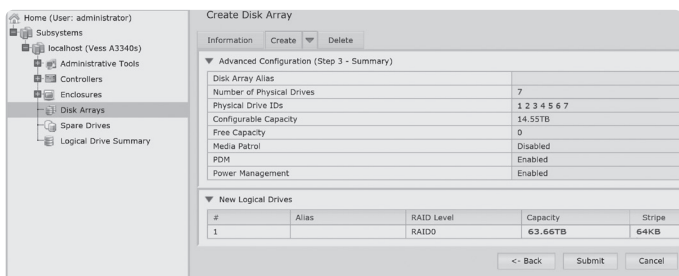


Execution

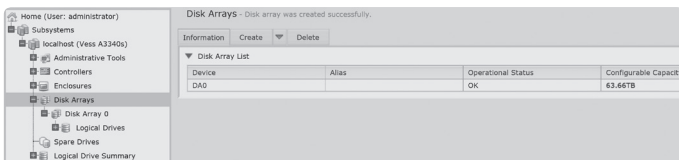
3. After selecting and updating the RAID level, go to the next step.



4. If the configured disk array is correct, click Submit to complete the logical drive configuration.



5. When the disk array configuration is completed, the list of completed arrays appears. Configure the other disk array in the same way.



How to Launch SSM

This chapter describes how to launch SSM.

For more information on how to use SSM, refer to the additional manual on the desktop.

1. Click the SSM Service Manager icon on the desktop to launch it.
2. After you click the Launch Service button, check if the service status has changed to Started.

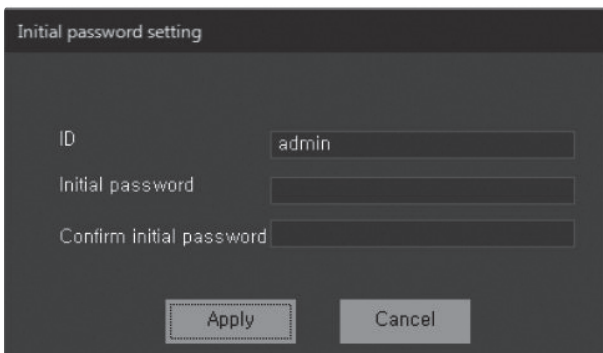


■ If the status of the service is shown as Started, this step is skipped.

3. Select 'Launch SSM service automatically when Windows starts' and apply it, then exit
4. Run the SSM console program from the desktop.
Alternatively, select [Start] → Wisenet → SSM Console.
5. On the login screen, click the Login button.



6. In the initial password setup screen, enter the initial password and click Apply.

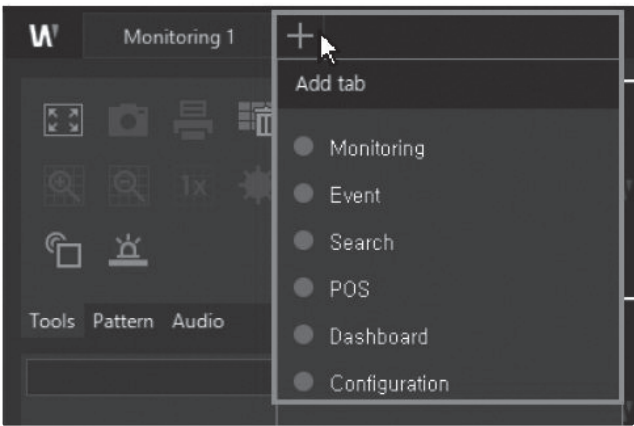


Execution

Menu Description

The menus in the SSM Console client program consist of tabs.
You can freely move on the menu tabs to select the desired menu item.

1. To open a menu page, click the '+' in the upper left corner of the program and select the desired menu.



2. The functions of each menu are as follows.
Device registration, such as cameras, can be managed from Configuration Manager.

Monitoring	You can monitor videos that are taken by cameras in real time. You can also search and play back videos stored on servers and network storage devices.
Event	You can monitor real-time events that occur on devices or retrieve event logs.
Search	You can search thumbnails when a motion detection event occurs in the recorded video. You can also search for a person passing through the virtual line set on the recorded video, or search for a person who is breaking or roaming into a specific area.
POS	You can monitor the data and camera videos of the POS device connected to the NVR in real time. You can also search stored POS data, or play back a video from a specific camera.
Dashboard	You can monitor the status of the SSM core server or monitor the status of registered devices.
Configuration Manager	You can configure and manage SSM core server systems.

3. Refer to the SSM manual on the desktop for the function of each menu and detailed usage of SSM.

Product Specification

Product Specification

Category		PRP-4000H8	PRP-5000H16
Camera	Input	Max. 72CH	Max. 128CH
	Resolution	CIF ~ 12MP	
	Protocol	Wisenet, ONVIF Profile-S	
	Registration	Auto Discovery, Manual	
	Configuration	Add profile edit, Resolution, Fisheye dewarping mode, Hallway View Setup, Brightness/Contrast, Viewing the device settings(Device webpage), Exporting/Importing devices settings, Updating the device firmware	
Live	Monitor	Max. Dual	
	Display	Max. 72ch (Dual Track)	Max. 128ch (Dual Track)
	Split screens	1/4/9/16/25/36/49/64/72/81/Custom/Auto Mode(Common), + 100/121/132 (PRP-5000H16)	
Record	Bandwidth	Max. 400Mbps	*Max. 520Mbps
	Record mode	Normal, Schedule (Continuous / Event), Event (Pre / Post), ARB, Dual-Track	
	Event types	Video loss, Camera event(Sensor, MD, Passing, Entering, Exiting, Disappearing (Appearing), Tampering, Tracking, Face Detection, Audio Detection)	
	Event actions	Instant Viewer, Preset, Alarm Out, Pop-up, Sound and E-mail notification	
Search / playback	Playback bandwidth	Max. 150Mbps	
	Search modes	Date & Time(Calendar)/ Event / Smart search	
	Simultaneous playback	Max. 72ch (Dual Track)	Max. 128ch (Dual Track)
	Playback control	Start/stop, Pause, Faster/Slower forward/backward, Step Forward/Backward, Skip Forward/Backward	
Backup	File formats	AVI, SEC	
	Functions	Manual Backup, Onetime Schedule Backup	
Video	Compression method	H.265, H.264, MJPEG, WiseStream(H.264, H.265)	
	Resolution	CIF ~ 12MP	
	Decoding performance	1080fps@1080p (36 Division), 1728fps@640x360 (72 Division)	1080fps@1080p (36 Division), 3072fps@640x360 (128 Division)
	Fisheye dewarping	Supported	
Audio	Compression methods	G.711 u-law(PCM), G723, G726(ADPCM), AAC	
	Supported	2-way	

* Recording bandwidth may vary depending on RAID configuration. See below.

- 520 Mbps for RAID 0

- 400Mbps for RAID 1/5/6 (RAID 5/6 logical drive consists of up to 8 HDDs)

Product Specification

Category		PRP-4000H8	PRP-5000H16
Date/time synchronization		NTP Server	
PTZ	Control	Via GUI, Controller (SPC-2000, SPC-7000)	
	Preset	255	
System stability	Failover / ARB	Yes(Active&Active)/Yes	
Server clustering		Max. 28EA	Max. 16EA
System control		Mouse, Controller	
Log information		System, Event, User, Device 180 Days	
Hardware	Operating System	Windows 10 IoT Enterprise	
	Processor	Xeon E3 v5 (3.6GHz)	
	M memory	Unbuffered ECC DDR3 8GB x2	
	OS disk	M.2 SSD 128G	
	Hard disk	3.5" 8EA Hot Swap (Max. 80TB)	3.5" 16EA Hot Swap (Max. 160TB)
	RAID	0/1/5/6	
	Monitor output	VGA, HDMI, DP	VGA, DVI, HDMI
	Network	1000 Base-T (RJ-45)	1000 Base-T (RJ-45) x2, IPMI
	Power input	100 ~ 240VAC, 50 ~ 60Hz	
	Power rating	350W Single	Redundant 500W x2
	Operating temperature/ humidity	+5°C to +40°C / 80% or lrss	
	Form factor	2U, 19" rack mount	3U, 19" rack mount
	Dimensions (WxHxD)	440 x 88.2 x 410mm	447 x 131 x 503mm
	Weight	7.38kg (HDD excluded)	17.6kg (HDD excluded)



- Specifications of this product may be changed for performance improvement and user's convenience. Visit our website (www.hanwha-security.com) for the latest specifications and helpful materials.



Hanwha Techwin cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products.

The Eco mark represents Hanwha Techwin's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.



Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.



Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

MEMO

MEMO

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